

Navigating Gender at Sea

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Key Points:

- Prior research on fieldwork experiences often ignores the existence of transgender and gender diverse people
- Transgender and gender diverse people face harassment, gendered berthing, and other legal and physical barriers while working at sea
- Improvements to increase equity can be made at the individual, chief scientist and officer, and institutional levels

Abstract

Fieldwork, including work done at sea, is a key component of many geoscientists' careers. Recent studies have highlighted the pervasive sexual harassment faced by women during fieldwork. However, transgender and gender diverse scientists face unique obstacles, which have not yet been studied. We partially fill this gap by sharing our experiences as transgender and gender diverse people. We have experienced sexual harassment, misconduct, privacy issues, and legal and medical struggles as we conduct seagoing work. We provide recommendations to make seagoing work safer to our communities. These recommendations are a starting point to make seagoing work more inclusive for all.

Plain Language Summary

Transgender and gender diverse people have unique lived experiences. Work done in the field and at sea are integral components of many geoscientists' careers. Understanding the barriers that transgender and gender diverse people face during fieldwork is one facet of making the geoscience community more diverse, equitable, and welcoming. This commentary shares some of the lived experiences of the authors and provides recommendations for making seagoing work more welcoming to transgender and gender diverse people.

1 Introduction

Transgender and gender diverse (TGD) people, defined here as an umbrella term to include people whose gender and/or perceived gender differs from their gender assigned at birth, have existed within geosciences historically and through the present day. Data on TGD people in geosciences are limited; however, studies on STEM undergraduates found that TGD students have 7-10% lower retention rates than cisgender students and that factors that predict increased retention of cisgender students in STEM fail to retain TGD students (Hughes, 2018; Maloy et al., 2022). One integral component of geoscience coursework and careers is fieldwork, including work done at sea. Fieldwork can create opportunities for students and early career researchers to further their careers through training, mentoring, and expanded research opportunities. Unfortunately, prolific sexual harassment, defined here as a broad range of verbal and nonverbal behaviors that convey insulting, hostile, and degrading attitudes about a person's gender (Fitzgerald et al., 1995), as well as sexual coercion and unwanted sexual attention (Committee on the Impacts of Sexual Harassment in Academia, 2018) occurs during fieldwork.

Gender shapes the prevalence and power dynamics of harassment during fieldwork. Recent work has largely focused on the experiences of women during fieldwork, finding that 64% of scientists have experienced sexual harassment in the field, and women are 30% more likely to experience harassment and 20% more likely to experience assault than men (Clancy et al., 2014). In the marine sciences, 36% of women have experienced sexual harassment during fieldwork (*Sexual Harassment in Marine Science Report_Women in Ocean Science_March 2021-2.Pdf*, n.d.) and frequent sexual harassment is reported by women working as fishery observers (Thomson, 2021). However, recent studies do not consider the experiences of TGD people during fieldwork (Clancy et al., 2014; Nelson et al., 2017; *Sexual Harassment in Marine Science Report_Women in Ocean Science_March 2021-2.Pdf*, n.d.). This omission of TGD people is likely due to a lack of data (many demographics questions do not ask about gender modality or omit any entries that are not male or female; Burnett et al., 2022; Ashley, 2019; Langin, 2020; Kozlov, 2023; Langin, 2023; Legg et al., 2022) as well as a lack of awareness that

TGD people face unique challenges during fieldwork. Here we aim to partially address this gap using our collective experiences as TGD people during seagoing fieldwork.

Many, though not all, TGD people choose to transition. Transition is a broad term that encompasses legal, medical, and social transition (Ashley & Skolnik, 2022). Legal transition includes changing legal documents to match a person's name and gender. Medical transition often includes gender-affirming hormone treatments and surgeries to alleviate dysphoria. Social transition broadly includes alterations to gender expression that help a person be perceived as their desired gender. These legal, medical, and social aspects of transition can create unique challenges for TGD people, often limiting or even preventing their participation in fieldwork. These factors should be considered when designing fieldwork safety protocols.

Positive field work experiences are more common when field sites are operated in an egalitarian manner, providing intentionally safe living and working conditions, creating avenues for conversation and reporting misconduct, and including diverse participants (Nelson et al., 2017). Thus, recommendations for preventing harassment during fieldwork include having a code of conduct and ensuring accountability for misconduct (Nelson et al., 2017). The Women in Ocean Science organization recommends creating and communicating sexual harassment policies and procedures, creating a trained and trusted sexual harassment officer, and addressing power differentials in senior staff (*Sexual Harassment in Marine Science Report_Women in Ocean Science_March 2021-2.Pdf*, n.d.). While these are useful recommendations, TGD people face specific barriers that have not been detailed by previous studies. Drawing from our experiences with fieldwork, here we describe the barriers we have encountered while at sea and offer our recommendations on how to eliminate these discriminatory practices towards TGD people.

2 Author positionality statement

This paper draws directly from the experiences of the authors. We include an author positionality statement to illustrate the shared identities within the authorial team and to highlight that our experiences are not and cannot be representative of all TGD people at sea. We collected demographic information for the authors using an anonymous survey. All authors fall under the TGD umbrella, with nine authors who are transgender, ten who are nonbinary, two who are transfeminine, five who are transmasculine, four who are gender nonconforming, and one who is agender. Most authors are early career, including one undergraduate student, five graduate students, and three postdocs. Two authors are in other positions within academia and two have careers outside of academia, such as seagoing technician. Eleven authors specified that they are white, and one author each specified that they are Asian American and Black-Afro Indigenous. Two authors specified that they are Hispanic or Latine. Eleven authors are queer, three are bisexual, three are pansexual, one is lesbian, and one is androsexual. Three authors specified that they are disabled. Some authors hold multiple identities, such that totals do not always equal the number of authors.

3 Common challenges of TGD people at sea

TGD people have participated in the geosciences and seagoing work throughout history. For example, Elke Mackenzie, a prominent and meticulous lichenologist, did not publicly disclose that she was a woman until she was 58 (Imbler, 2020). Using modern terminology, most of Mackenzie's lichenology career occurred while she was "closeted", meaning that she did not transition and her TGD status was not publicly disclosed. TGD people such as Eugene Falleni,

Jack Bee Garland, John Weed, and George Wilson worked in historically men-only marine industries and the navy by “assimilating” into cisgender society (see definitions in Table S1). Additional TGD people likely participated in the geosciences and in seagoing work, but were not out and therefore we do not know their names or histories. In recent decades, an increasing number of TGD people are out, able to transition, and may not aim to assimilate into cisgender society. In this section, we describe common experiences and challenges that the authors have experienced before, during, and after research cruises.

3.1 Cruise preparation

Preparation for a research cruise typically involves paperwork containing personal information for domestic or foreign governments as well as internal cruise planning officials (e.g., for chief scientists, funding agencies). Many TGD people opt to change their name and gender marker on official documents, which takes months of processing through state and federal agencies and may interfere with cruise travel. The process of changing gender markers on official documents varies by state and country and may require surgeries. Some TGD people do not want these surgeries and thus are unable to update official documentation. These considerations require TGD people to undertake additional planning around cruise dates and academic programs. Additionally, certain gender markers (e.g., ‘X’ marker is allowed on U.S. passports) are not accepted in all countries, and passports with these markers may make travel more difficult (Quinan, 2022). Some authors chose to not change their passport markers to ‘X’ to avoid potential travel issues. Some authors with ‘X’ markers had experienced difficulty obtaining visas for cruise related travel. Multiple authors reported cruise travel as a reason to alter the timeline of their official document changes.

TGD people may encounter scenarios where their reported name and/or gender marker on official paperwork does not match their lived name and/or gender, which can pose logistical and personal challenges. For example, a TGD person may identify as nonbinary, have a passport which says ‘M’, and pass as a woman. Gender markers on official documentation paperwork are typically used for internal berthing plans since berths are often separated into binary men or women cabins. Therefore, this TGD person may need to contact the cruise planner and involuntarily disclose that they are transgender and should be berthed with women. This leads to uncomfortable situations, particularly for those who are not publicly out or who are not perceived as their true gender. Allotted gendered berthing enforces barriers that restrict or exclude TGD people from going to sea (Krum et al., 2013).

Aside from logistical preparation, there are personal considerations to be mindful of while preparing for sea. TGD people who are undergoing hormone replacement therapy (hormone replacement therapy or HRT; e.g., testosterone, estrogen, progesterone) often need special permission from doctors or prescribers to order several months of medication for fieldwork away from land. This is not always an option for TGD people, as some laws place restrictions on health insurance providers such that the cost of HRT may not be covered for extended time periods. Altogether, pre-cruise planning for TGD people can take significantly more time and energy relative to cisgender colleagues.

3.2 Life at Sea

At sea, the safety of all passengers is the ultimate concern, and safety includes prevention of both physical and emotional harm. Unfortunately, the authors’ experiences as TGD people at sea includes forms of harm from scientists as well as crew members. Misgendering, both

intentional and accidental, is a frequent occurrence and has documented negative effects on mental health and wellbeing (Matsuno et al., 2022; McLemore, 2018). Intentional misgendering is a form of sexual harassment (*Sexual Orientation and Gender Identity (SOGI) Discrimination | U.S. Equal Employment Opportunity Commission*, n.d.).

When boarding a research vessel, TGD people must decide whether to disclose their TGD status to other passengers. One occurrence that is helpful for TGD people is the normalization of sharing pronouns, especially from chief scientists and ship officers (I. R. Johnson et al., 2021). However, we do not recommend mandatory pronoun sharing (e.g. requiring pronouns as a part of cruise planning), as this can force TGD people to either out or misgender themselves (Frery, 2022).

Physical harm can also occur as a result of being TGD at sea. For some TGD people, this may involve chest binding (flattening chest tissue) or tucking (concealing external genitalia) for prolonged periods of time, which can result in nausea, physical pain, and injury (Poteat et al., 2018). Problems from these practices are exacerbated by not allowing TGD people to choose their cabinmates, as TGD people may need to bind or tuck even in their cabins. Additionally, some authors reported feeling uncomfortable or unable to use the bathroom that aligns with their gender identity, instead opting to use the bathroom less frequently. On vessels without a bathroom, TGD people may forgo relieving themselves at all due to privacy concerns, with potential health risks such as dehydration and urinary tract infection. Having a well-communicated plan for bathroom usage ahead of departure can alleviate these privacy concerns.

Several authors stated that they had not reported harassment because the person they were meant to report concerns to (e.g. Chief Scientist) was the perpetrator or was known to be unaccepting of TGD people. To alleviate this, there should be reporting systems in place, clear reporting policies, a leadership-enforced safe-space policy, and someone to report harassment to who is not in a position of power (i.e., neither the ship's captain nor chief scientist).

3.3 Post-cruise

After returning to land, there are often celebrations with scientists and crew that involve alcohol. While this can be a time to unwind and celebrate a successful research expedition, it is also a time when multiple authors reported being subject to inappropriate comments, questions, and jokes regarding their gender identities and expressions. In some cases, what was an otherwise positive at sea experience became a negative one, as the TGD person realized their shipmates had held harmful prejudices all along. These comments and jokes can constitute sexual harassment.

The stressors and harm of going to sea as a TGD person, as described above, have led some authors to change their career plans to avoid future seagoing work. Others report being passed over and overlooked due to their gender identity, therefore missing important career opportunities. Even if TGD individuals stay in the seagoing oceanographic discipline, the stress and discomfort of the above experiences can negatively affect their work and health (Cech & Waidzun, 2021).

These common challenges experienced by TGD individuals at sea include forms of sexual harassment as well as obstacles unique to TGD people, such as logistical challenges due to legal and medical transition. Both kinds of challenges should be taken into account when considering ways to make seagoing work more inclusive for all. We note that additional challenges are likely experienced by TGD people with intersectional identities (e.g., race, folks

with disabilities; Chiarella & Vurro, 2020; Núñez et al., 2020), and indeed, authors with these intersectional identities reported more negative experiences.

4 Recommendations and Conclusions

We provide a list of recommendations that individuals and institutions may use to improve the seagoing fieldwork experience for TGD people. These recommendations should be considered as a specific case within the broader discussion of field safety in science and promoting inclusivity in geosciences (e.g. Ackerman et al., 2023; Coon et al. 2023; Demery and Pipkin 2021; Behl et al., 2021). The list is non-exhaustive and is intended to be used as a starting point. It includes suggestions on what to do (“do”), pitfalls to avoid (“don’t”), and alternative actions (“instead”), and, where relevant, resources for additional information (Table 1). The rows are color- and number-coded to show who is most likely empowered to implement these recommendations: all individuals, chief scientists and ship officers, and institutions that fund, plan, or administer research cruises. Several of these recommendations can support not only TGD people but many categories of people who have been historically excluded from seagoing research, including women and racial minorities (Ali et al., 2021). We note that these recommendations are general; soliciting and listening to the preferences of the local TGD community is still necessary. For context, we also provide relevant definitions and suggested language surrounding TGD identities and experiences in the Supplemental Information.

TGD people experience unique challenges at sea, such as struggles due to legal documentation not matching our true genders, sexual harassment and other misconduct, difficulty accessing medication, privacy concerns due to berthing and bathroom arrangements, and retaliation for reporting misconduct. Some recommendations that everyone can take into consideration are including pronouns when introducing themselves and privately correcting others who misgender TGD people. These recommendations, and the others listed in Table 1, are a step towards a more inclusive environment for all during fieldwork.

	DO	DON'T	INSTEAD
1	Refer to everyone the way they ask you to refer to them (e.g. names, pronouns, identities)	Require everyone to state their pronouns, as this can force people to either misgender themselves or out themselves to others	Introduce yourself using the name you prefer and your pronouns, to set the precedent for others
1	Handle misgendering incidents briefly, directly, and on your own	Tell the misgendered person about the incident or expect them to handle it later	Where's Jason? She went for lunch. They went for lunch? Right, yes, they did
2	Include respect for transgender people in safety / harassment training. Include indigenous genders (e.g. two-spirit)	Avoid the topic as at least 1% of the US is trans / nonbinary and 0.1-2% are intersex (InterACT 2021; Brown 2022; Nonbinary Wiki Contributors 2022)	Assume questions around berths, bathrooms, and pronouns will arise. Prepare all authority figures aboard
2	Ask for berthing preferences from all scientists onboard. Clearly communicate berthing and bathroom plans ahead of time.	Assume you can pair people by gender based on their names, appearance, or gender markers on legal identification	When planning, ask questions such as: 'Our berthings have 2 bunks. What individuals or genders would you prefer to share with?'
2	Check how ports handle X gender markers on identification. The UAE, for instance, will not allow entry [see Movement Advancement Project 2023, Quinan 2022]	Wait for the affected persons to ask about the port's requirements	Consider this issue in the cruise planning phase and communicate this information to TGD persons
2	Provide anonymous methods of feedback for cases of harassment, misconduct, and discomfort	Require personnel to communicate directly with captains, marine technicians, or other authority figures	Offer an online portal or intermediary service to anonymously report incidences. Explain its use at safety announcements, training, and berthing
2	Collect inclusive data on TGD people that go to sea	Use inadequate sets of identifiers such as 'man or woman or other' and 'male / trans male or female / trans female'	Collect demographics data on both gender and transgender status (Kronk et al 2022)
2	Include gender and / or pronouns as an optional category for ship rosters	Require that gender and pronouns be listed on the ship roster, as this can force people to either misgender themselves or out themselves	Allow people to self-describe in optional, free-text boxes
2 3	Adopt inclusive ethics and codes of conduct, disseminate best practices	Assume that everyone already knows appropriate conduct and best practices	Share relevant codes of conduct and best practices with scientists and crew
2 3	Publicly display Equity, Diversity, and Inclusion (EDI) statements at institutes and onboard	Assume that EDI persons know they are included and accepted	Explicitly acknowledge TGD people in public EDI statements
2 3	Work with EDI experts to audit procedures and educate staff	Ask TGD people to audit procedures and educate as an unpaid service	Seek out TGD-led organizations that can provide guidance and / or pay TGD experts to consult
3	Consider additional single-bunk berthings on new research vessels.	Assume that everyone has equal privacy needs, or allocate single bunk berths based solely on seniority	Ask about accommodations generally, the same way you might ask about dietary needs

Table 1. Recommendations. Number and color on the left indicate the target: 1 (yellow) for everyone, 2 (white) for chief scientists and ship officers, and 3 (brown) for institutions.

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