



SYMPOSIUM

Centering Transgender and Gender Non-Conforming Experience, Access, & Safety in Ecological Fieldwork

Shayle B. Matsuda ¹

John G. Shedd Aquarium, Daniel P. Haerther Center for Conservation and Research, Chicago, IL 60605, USA

From the symposium “Envisioning a Diverse, Inclusive & Safe Future for Field Biology” presented at the annual meeting of the Society for Integrative and Comparative Biology virtual annual meeting, January 16–March 31, 2023.

¹E-mail: shaylematsuda@gmail.com

Synopsis Efforts to make ecological sciences more diverse, equitable, and inclusive require us to identify who is being left out and take action to rectify harmful situations. Recruitment of trainees from underrepresented groups alone is insufficient without ensuring a safe and supportive environment where we can flourish. Fieldwork is a critical component and often a requirement for career advancement in ecological sciences, but for transgender and gender non-conforming (TGnC) individuals, it can be disproportionately harmful. TGnC individuals face barriers and gendered violence before, during, and after fieldwork, and our experiences are often lost in current discussions of underrepresented groups in the field. In this article, I discuss the importance of an intersectional framework that focuses on planning, open communication, and trust, to address both the barriers TGnC trainees’ experience with travel, accommodations, and access to medical care, along with their experiences of perceived and actual violence by colleagues and strangers. Additionally, I propose direct actions that those in power, such as Principal Investigators, field station managers, and mentors, can take to ensure a safe and welcoming fieldwork environment that supports TGnC trainees’ physical, emotional, and professional well-being.

Introduction

Preparing for biological fieldwork is a significant accomplishment for transgender and gender non-conforming (TGnC) individuals, who represent one of the most marginalized groups in society (Grant et al. 2011) and academia (Cech and Waidzunus 2021). We face numerous obstacles even before considering participating in a field opportunity. For TGnC individuals who identify as Black, Indigenous, or People of Color (BIPOC), disabled, non-binary, women, or hold other marginalized identities, these challenges are compounded. This perspective aims to guide mentors in the sciences whose mentees are early-career TGnC trainees to make biological fieldwork safe, accessible, and equitable while also creating a space where TGnC trainees can *thrive*. Mentors may include Principal Investigators, faculty, biological research station managers, postdocs, and grad students. The ultimate objective is to facilitate practical changes

that support the safety and success of TGnC trainees in the field of biology. In this discussion, I will provide the context and framing of the challenges and offer fieldwork-specific considerations and suggestions for those in power to contemplate and implement to make positive change. TGnC people exist across all identity groups. Broad efforts to make fieldwork safer for any marginalized community will, therefore, also benefit TGnC individuals. Similarly, prioritizing and efforts to increase TGnC trainees’ safety, accessibility, and privacy during fieldwork will be beneficial for all.

Who we are Labels

As with many identity group labels and categories, terms used by the TGnC community have both positive and negative effects that are rooted in safety and, sometimes, culture. On one hand, they can help us

connect with others who share similar experiences and provide a sense of affirmation and understanding. However, labels can also be harmful when they are used to exclude or target individuals. Additionally, some people may use labels that do not perfectly fit their identity in some situations for safety reasons.

For the purposes of this manuscript, the term “transgender” refers to individuals whose gender identity differs from the gender they were assigned at birth (UCSF 2016). In contrast, “cisgender” refers to those whose gender identity aligns with their assigned gender (UCSF 2016). The abbreviation “trans” is often used as shorthand to encompass a range of gender identities such as transgender, gender non-conforming, non-binary, genderqueer, gender fluid, agender, and others (Davidson 2007). However, it is important to recognize that not all individuals with these identities identify with the western labels “trans” or “transgender” particularly those from cultures with gender identities outside of the western gender binary (Kleiber 2012). There is a rich cultural history of non-western gender identities, including “Two-Spirit” in North American Native American culture (Pyle 2018) and many in the Pacific Islands (Kleiber 2012), such as “māhū” in Native Hawaiian culture (Manalo-Camp 2020). Therefore, it is important not to assume someone’s gender identity and to recognize that gender is a social construct that varies across cultures and historical times. The binary gender identities “man” and “woman” are most common and are assumed to be universal, and stereotypical assumptions about masculinity and femininity are typically used to infer gender identity; however, one’s gender identity may or may not present itself as one of these socially accepted gender presentations. Remember that no one is obligated to disclose their gender identity, whether they are TGnC, or any details about their gender transition.

Gender transition

A person’s gender transition may involve internal, social, legal, or medical steps. Internal steps involve realizing one’s gender identity, while social steps include changing names and/or pronouns and informing those around you. Legal steps may involve changing the name and gender marker on official documents like driver’s licenses, immigration papers, school IDs, or passports. Medical steps may include hormone replacement therapy or surgeries. However, none of these steps is required to be TGnC, and there is no order to which individuals pursue their transition.

More people are coming out as TGnC at a younger age in the United States, with youth representation (13–17 years) estimated to have increased from 10% in 2017

(Herman et al. 2017) to 18% in 2020 (Herman et al. 2022) of the total TGnC population. Supervisors may encounter trainees who are at the beginning stages of their transition or who came out as TGnC in their youth. TGnC individuals are a diverse group, and our lived experiences are unique. There is no one way to be TGnC or a prescribed path for transitioning, and our priorities for safety and inclusion may differ.

Intersectionality and power

Discrimination, harassment, exclusion, and violence disproportionately affect TGnC individuals who belong to multiple marginalized groups (Stotzer 2009; de Vries 2012). Therefore, to work toward safer and more inclusive fieldwork for TGnC trainees, it is essential to adopt an anti-racist intersectional framework. The concept of intersectionality was developed by Dr. Kimberlé Crenshaw in 1989 to address the gaps in antidiscrimination law. While the law was designed to address discrimination along a singular axis—e.g., laws designed to combat racism or sexism—she noted the ways Black women, because they are subject to both racism AND sexism, were often unable to access the protections of that law (Crenshaw 1989). This analytical framework illustrates how systems of oppression are interconnected and overlapping. Intersectionality is useful in our discussion of fieldwork, in that systems of inequality and power in the legal, social, and academic spheres disproportionately and uniquely discriminate against some TGnC individuals. We cannot just focus on one category where trainees may be marginalized. To fully include all, we have to understand and address the inequalities and dangers facing BIPOC TGnC individuals and center the needs and experiences of Black trans women, TGnC individuals with disabilities, LGBTQIA + TGnC folks, and TGnC members of other vulnerable groups to ensure that the work to support TGnC trainees broadly does not leave out the most marginalized among us.

Fieldwork challenges for TGnC people often stem from unequal power structures, resulting in exclusion and discrimination in academia and science. This harms individuals, erodes trust, and reinforces outdated ideas about who science serves. The medical industry is one sector of science that contributes to the normalization of who science is for and who belongs. For example, TGnC individuals have experienced medical discrimination through refusal of care, harassment, and/or violence (Grant et al. 2010). This often resulted in TGnC individuals delaying or not seeking treatment (Grant et al. 2010). These experiences are compounded for TGnC individuals who also belong to multiple minoritized groups and may ultimately influence their

decisions to pursue STEM fields. Those who do often face systemic barriers (e.g., admissions processes, financial), harassment/violence, and exclusion as a result of transphobia or lack of accessibility or accommodations. Failing to acknowledge this context perpetuates, the misconception that there are few TGnC individuals in STEM due to a lack of interest in the subject, rather than recognizing the existence of innumerable barriers that limit our participation.

What is fieldwork?

Biological fieldwork is the practice of conducting scientific research outside the laboratory, often in natural environments. Trainee fieldwork experiences can range from a single class period to weeks or months. Entire undergraduate classes or solo expeditions may occur in urban city parks, remote national locations, or international settings. Early-career trainees may need to travel, share accommodations, and have limited access to communications. Fieldwork is often an exciting aspect of training. However, for TGnC and other marginalized individuals, it can also be dangerous and anxiety inducing due to perceived and real risks of physical, emotional, and professional violence (Pickrell 2020; Demery and Pipkin 2021; Coon et al. 2022). However, TGnC experience is often not centered or is completely left out in surveys or studies on individual fieldwork experiences of minoritized individuals (Clancy et al. 2014; Reed et al. 2023). It is crucial to acknowledge and understand the unique risks and challenges that TGnC individuals face during fieldwork to make meaningful changes for TGnC trainees in our field programs.

Context matters

Even before TGnC trainees can consider fieldwork, we must first survive as a TGnC youth in a society that is increasingly hostile toward our existence. In the United States, TGnC individuals face unprecedented physical, professional, medical, emotional, political, and legal violence (Powell 2021; Flores et al. 2021; Hughes et al. 2022). The Human Rights Campaign (2020) reported 200+ TGnC individual murders since 2013, with 2021 being the worst year on record (Powell 2020). Besides physical violence, there are record numbers of policy changes that target TGnC civil rights, especially TGnC youth. These policies ban gender-affirming care in states such as Arkansas, Alabama, and Utah (H.B.1570 2021; S.B.184 2022; S.B.16 2023), and new bills often include transition prevention and detransition measures (e.g., H.B.1125 2023; H.B.1080 2023). Other efforts target families of TGnC youth (e.g., Texas and Florida; Reed 2023), or preventing TGnC youth from participating in sports teams that reflect their gender

identity (Movement Advancement Project 2023). These policies contribute to TGnC youth's health, self-esteem, and inclusion at school.

Hostility toward TGnC youth is particularly prevalent in the educational system. In a 2015 survey of K-12 transgender students, 77% reported experiencing harassment or bullying (James et al. 2016). These negative experiences manifest in over 60% of TGnC youth as depression (Human Rights Campaign Foundation 2020) and high rates of suicidal ideation (59% trans boy/man, 48% trans girl/woman, 53% Nonbinary/genderqueer; The Trevor Project 2022), with BIPOC TGnC people disproportionately affected (The Trevor Project 2022). This impacts TGnC student attrition, with 17% of TGnC high school students leaving school (K-12; James et al. 2016).

It is crucial for the mental health and well-being of TGnC trainees to consider how these policies affect their retention rate, attendance, and, in the context of this article, safety in fieldwork. Early experiences in academia, compounded by societal anti-trans efforts, have a systemic impact on students' relationship with education. This affects their interest in participating in field courses or class trips, and ultimately their decision to pursue or remain in higher education (Maloy et al. 2022). If students learn that school is unsafe and that teachers will not protect them, they may choose not to participate in activities that could foster an interest in science and provide the necessary experience for gaining access to higher education programs and labs. This systemic exclusion of TGnC students from higher education and fieldwork-based degrees or careers ultimately may prevent them from contributing to science-driven societal endeavors.

The effort to make fieldwork more inclusive for all

In the wake of the police killing of unarmed Black community member George Floyd in the United States in 2020, there has been an increase in commitments to action to address diversity, equity, inclusion, and justice (DEIJ) across the academic sciences (Jones 2021; Langford 2022; Meikle and Morris 2022). These efforts have included reflection on codes of conduct, hiring of DEIJ officers, valuing DEIJ work of faculty, and, importantly, an increase in internal-department reflection, studies, and perspectives examining the experiences of and recommendations on how to support underrepresented trainees in STEM (Cronin et al. 2021; Jones 2021). Biological fieldwork occurs at the intersection of academia and broader society. It can take field scientists into public lands

or urban or rural environments, where they may work alongside collaborators, or interact with community members, including local law enforcement. Field inclusive efforts must expand and include human interactions and safety considerations in the field.

Studies capturing the experiences of minoritized scientists in fieldwork have increased with recommendations to make fieldwork more equitable and inclusive for underrepresented trainees (Chiarella and Vurro 2020; Viglione 2020; Demery and Pipkin 2021; McGill et al. 2021; Ramírez-Castañeda et al. 2022; Rudzki et al. 2022), including those focusing specifically on LGBTQ+ experiences (Coon et al. 2022; Zebracki and Greatrick 2022). Broad themes in these works include recommendations for promoting equity and inclusion, tools for successful collaboration, fostering respect in the team and the community, and specific steps to increase safety at field sites, while simultaneously addressing institutional and societal barriers to participation (Greene et al. 2021; McGill et al. 2021; Coon et al. 2022; Ramírez-Castañeda et al. 2022; Zebracki and Greatrick 2022). Some commonalities include a push for reevaluations of codes of conduct, attention around safety risks related to travel, restroom access, accommodations, participating in DEIJ trainings, or the development of pre- and post-field experience surveys. It is not enough to commit to inclusion and justice if the barriers that impact TGnC folks are not removed. While many of these actions may also benefit TGnC trainees, there are specific nuances of TGnC identities that may be lost.

There are TGnC individuals found within all underrepresented groups, and therefore, all recommendations that aim to support trainees from all underrepresented identities are important to supporting TGnC trainees. However, the scarcity of literature centering the experiences of TGnC individuals is a significant challenge that is further compounded by insufficient research on this population in academia, STEM fields, and specifically, fieldwork. Surveys often omit TGnC identity questions. Data regarding doctorate graduation rates and faculty positions remain unavailable. This ultimately hinders our ability to fully understand the scope of the problem and evaluate the effectiveness of ongoing actions and interventions.

Fieldwork

It is negligent of a fieldwork-focused program to recruit TGnC trainees before ensuring that the experience will be safe, welcoming, and supportive; inclusion alone is insufficient. Whether it is a day trip or a multi-week expedition, each requires planning and intentionality to

ensure a safe experience for all trainees. The subsequent sections highlight specific challenges TGnC individuals face in the field, followed by a discussion of specific considerations and actions those in a supervisory role can take in advance to mitigate these challenges. Supervisors may include Principal Investigators, program administrators, station managers, staff scientists, instructor, postdoctoral or graduate student mentors, or other individuals with power over the trainee. Although supervisors may have different degrees of power and authority in decision-making processes, everyone has the ability to advocate and intervene, regardless of their position or authority.

Planning

Under your supervision, trainees' perception of their safety during fieldwork will first depend on the environment created in your lab or classroom. Several factors can influence this perception, including accountability, effective communication, and a commitment to a discrimination-free environment. Transparency, positive group dynamics, and intolerance of bullying and microaggressions can also contribute to this perception. Fostering open communication and cooperation can work to make all members feel valued. These factors contribute to trainees' understanding of your values, behavior under pressure, and, ultimately, your ability to protect them in the field. This perception will continue to evolve during pre-trip plans for fieldwork, which means, as a supervisor, you must remain vigilant.

To empower trainees while under your supervision, you will need to be open to early and candid communication with trainees, their agency in decision-making, and forethought when planning fieldwork, even in challenging situations where options may be limited. For example, during the process of assigning roommates for a non-binary trainee, it is advisable to provide information and options early. Always allow trainees to be a part of final decisions around logistics, which may enable them to participate safely. However, this does not absolve you of responsibility for problem-solving better solutions, such as selecting a different field station, providing single-occupancy rooms or non-gender segregated options, or questioning why unsafe sites are still chosen. Trainees may have creative solutions but may also decide not to participate in some cases.

Pre-planning

You can take several actions during the pre-trip planning phase to support TGnC trainees. First, a pre-travel survey should be developed that all trainees, regardless of their gender identity, must fill out. This

will provide a confidential space for TGnC trainees to share any concerns early and confidentially; this is different from a standard medical questionnaire that some TGnC students may decide not to disclose. Example questions include preferred name, pronouns (fill in the blank), accessibility and/or accommodation needs (e.g., access to refrigeration for medication), and open-ended spaces to share any concerns or things they would like you to know. Attention to how questions are worded can help make TGnC individuals feel seen and encouraged to respond. For example, make sure to clearly state confidentiality, have open-ended answers rather than check boxes, and make it clear that it is okay to skip questions. A fill-in-the-blank for gender identity or pronouns can communicate to a trainee that the mentor is familiar with terminology outside the gender binary. However, the level of engagement with and therefore the effectiveness of this survey may depend on your prior demonstration of creating a safe space and/or addressing complaints of harassment. Second, it is crucial to ensure that expectations for fieldwork are clearly communicated. This includes long workdays, limited, or no days off, physical requirements such as the ability to swim, hike, or lift, and available food options. It is also essential to address any potential access limitations, such as no cell phone or internet service, or limited access to cold storage for some gender-affirming medications. This information is crucial for undergraduate trainees, field classes, and anyone going into the field for the first time, who may not anticipate the lack of access to accommodations that support their physical and mental health.

It is becoming more common for facilitators and teams to participate in trainings before fieldwork. First-aid training can help manage minor incidents and prevent TGnC individuals from needing to access professional medical care in unfriendly locations. Other training, such as anti-bias, bystander intervention, mental health crisis intervention, and anti-discrimination training (e.g., [ADVANCEGeo Partnership 2018](#); [Mattheis et al. 2022](#)), can educate and empower individuals to recognize and intervene. These types of trainings can also create opportunities for discussing potential scenarios and how to respond to them. However, it is essential to avoid tokenizing or singling out members of marginalized groups during these discussions. Additionally, it is important to be mindful of not triggering past traumas and not allowing the conversation or role-plays to become offensive. These trainings should be mandatory for all participants and leaders, and it is critical that they are facilitated by professionals with expertise in the subject and in facilitation. These trainings and discussions can also

help build a team's shared code of conduct and foster a sense of shared values.

Code of conduct

A thoughtful, clear, and transparent code of conduct is a key component to any fieldwork expedition. By developing and sharing a clear plan for addressing and de-escalating situations that may arise between trainees and individuals outside the group, mentors communicate that the safety of trainees is a top priority, even over data generation. It is critical that it is well-thought-out with clear reporting mechanisms, steps for follow-through, and definitive protection and confidentiality for the reporter. Anything short of this can empower or protect perpetrators ([Foxx et al. 2019](#)). Co-creating can increase understanding of and buy-in from the team; however, you should provide the basis for the code, and are responsible for ensuring that it is robust. Team members should have the opportunity to submit anonymous feedback that is incorporated, but all should agree to the document. The more specific the document can be the more power it has—rather than saying “respect everyone,” consider defining what respect is; do not touch anyone else without their consent; do not comment on anyone's body or appearance (even if you think it is a compliment); do not assume gender identities; etc. Further, understanding your role as a mandated reporter is important. It is important that this code of conduct is shared with and agreed to by any other collaborators. If you are at a field station, look into what their current code of conduct is, and consider sharing yours with them. There are many helpful resources (e.g., [ADVANCEGeo Partnership 2018](#); [Association of Polar Early Career Scientists 2023](#)). Additionally, the campus Title IX offices should be able to provide assistance. In turn, TGnC trainees may be more inclined to assume the risks of attending a field excursion if they are confident that they are seen and respected by the program.

Travel documentation

It is important to keep in mind that travel-related documents may require more time for a TGnC trainee to acquire. This is especially true when trainee documentation (e.g., passport, driver's license, or school ID) does not match their name or gender identity. Consider travel options that do not require document checks (e.g., carpool vs flight), and know the rules and turnaround times for updating gender markers on IDs. Be ready if your trainee requests support and stay up to date on your institution's protocol for purchasing flights. For example, as of 2021, changing gender markers on a US passport does not require a physician's letter (8

FAM 403.3; [Foreign Affairs Manual | U.S. Department of State 2021](#)), and as of 2022, US citizens can select a gender marker of “X” on their US passport regardless if the gender marker was changed on other official documents (e.g., birth certificate or state ID; [United States Department of State | Bureau of Consular Affairs 2022](#)). If your institution has a separate department that books flights, be aware that the booking process may be discriminatory and harmful to your trainee. This process requires the outing of a trainee if their name and gender do not match their legal identification documents, and the trainee may face transphobia from individuals or the institution. It is important to consider how you can intervene to ensure the process is handled thoughtfully and safely.

Financial and medical support

Financial constraints can disproportionately affect TGnC trainees’ participation. TGnC individuals may lack financial support, experience houselessness, or suffer from food insecurity ([James et al. 2016](#)), which can make basic living expenses and scientific/field-ready gear barriers to participation. Moreover, requiring trainees to pay upfront for items and wait for reimbursement through grants can further limit the participation of trainees who cannot afford it.

Although gender-affirming care is more accessible through health insurance today, not all TGnC individuals have access and may have to pay out of pocket, in addition to general health care costs that may arise during fieldwork (e.g., SCUBA physicals). For trainees early in their transition, replacing field clothing that affirms their gender can be costly and limit their ability to participate. To address this, acquiring gender-neutral lab gear that can be borrowed can help alleviate the burden. Providing program-branded gear such as university sweatshirts can also help protect TGnC trainees by easily identifying affiliation to bystanders who might question their presence ([Demery and Pipkin 2021](#)). Other options to consider include fronting funding, offsetting lost wages, and providing upfront disclosure of the total financial burden of a trip.

Fieldwork location

Lastly, one of the most important considerations you can make is the geographic location of the trip. For field courses or day trips, this may be more flexible. For graduate students who may be going to specific sites to answer hypothesis-driven questions or to field sites that you have built a years- or decades-long relationship with, this can feel more challenging. Take the extra time to consider other options rather than sending trainees into unsafe field locations. Could the research question

be answered in another system? Could students get the same quality of experience at a different field station?

To evaluate the potential risks of a fieldwork location, it is crucial to have an understanding of both the legal protections afforded to TGnC individuals and the prevailing social climate of the area(s) in question. As you do this research, consider the legal, medical, and social implications your trainees may face. Field site decisions for fieldwork are important within the United States and abroad. There are resources that track anti-trans legislation in the United States (e.g., [Transgender Law Center’s National Equality Map 2012](#); [American Civil Liberties Union \(ACLU\) Mapping Attacks on LGBTQ Rights in U.S. State Legislature 2023](#)) and abroad (e.g., [Transgender Rights Map](#); [Transgender Europe 2022](#)). Information for every country may not be easily accessible and referring to resources that focus more broadly on LGBTQ + folks may be a good second choice (e.g., [Field Safety Map](#); [Pride Field Network n.d.](#)). Due to the lack of peer reviewed published literature on this topic, more up to date information may be found on personal websites like blogs, civil and legal rights websites (e.g., [Transgender Law Center](#)), and government travel websites.

Travel to the field site

Cars or vans are often used for local excursions or trips with multiple nearby destinations. In these situations, consider how to sort trainees into vehicles and, if you are not present, who is responsible for ensuring a harassment-free and respectful experience. Additionally, consider how you assign the driver(s). For instance, what could happen if the vehicle was pulled over in a remote location in a state or country with no legal protections for TGnC people or where being TGnC is illegal, and your trainee’s license did not match the perceived gender of the trainee by local law enforcement?

Air travel may be the only option for accessing some remote field locations, but it introduces many obstacles for TGnC people, especially before takeoff. The TSA (Transportation Security Administration) has used AIT (Advanced Imaging Technology) since 2008 ([Cogswell 2019](#)) to screen passenger’s bodies. This requires a TSA agent to push a button that corresponds with the agent’s assumption of a traveler’s gender identity (binary). This can lead to flagging of an “anomaly” that requires further screening. This process has led to harassment and degrading comments ([Grant et al. 2011](#)) and could result in non-consensual outing that may cause mental distress for TGnC travelers; this may be additionally damaging if the trainee is not out to the laboratory

group. Ensure that both the mentor and TGnC trainee know the most up to date procedures and rights (United States Government 2023; for the most up to date information please see, <https://www.tsa.gov/transgender-passengers>). However, note that TSA only operates in the United States, so it is important to learn the security protocols during international travel, and to consider how immigration processes may be more challenging if a trainee's passport name, gender marker, or photo does not match the security personnel's assumed gender assignment of the trainee.

Certain items can increase the likelihood of being subjected to additional screening, such as scientific equipment. Specifically, homemade equipment (do-it-yourself) utilizing Arduino computers, numerous cables, and PVC may attract extra scrutiny from security and draw more attention. When traveling internationally, it is essential to understand the screening protocols in the countries you will be visiting and how they could impact TGnC individuals, particularly in places where there are no legal safeguards for our community.

The TSA PreCheck program is one way to make air travel safer for TGnC trainees that can benefit everyone. This program allows travelers to skip the AIT and instead pass through a metal detector (note: passengers are still randomly stopped for pat downs). Consider providing funding for *everyone* in the lab who wants it to have TSA PreCheck. There are also periodic community-funded opportunities for TGnC folks to pay for PreCheck (e.g., Black Trans Travel Fund 2023). Finally, while some trainees may want your support going through the checkpoint, provide the opportunity for folks to choose to meet the group on the other side.

In the field

While effective planning is crucial for fieldwork, unexpected situations are inevitable. Thorough research and preparation for potential risks can help your team and trainees handle unforeseen circumstances. Field teams vary in size and experience, from undergraduate courses with over 20 participants to solo graduate students working in remote locations or joining other teams' expeditions. However, working in the field alone, whether collecting plants along the California coast or joining a government liveaboard team, can present challenges. In the former case, fieldworkers might encounter violence from someone who believes they do not belong there. In the latter case, they might experience discomfort or lack advocacy in situations involving harassment or discrimination. It is important to note that BIPOC TGnC trainees face greater risks of experiencing violence than those with greater privilege (McCown and Platt 2021).

Partnering with more experienced fieldworkers can enhance the ability of TGnC trainees to navigate environmental and social challenges and think quickly on their feet. It also fosters creative problem-solving, such as identifying safe locations for hormone injections or selecting field gear that conceals body contours effectively. This type of mentorship and guidance can help trainees anticipate and prepare for potential challenges not only in the field, but also in their future careers.

However, there is a shortage of senior-level TGnC faculty in the sciences. As a result, much of this work is led by early career scientists and other TGnC trainees through informal affinity groups, blog posts, and workshops at LGBTQ + STEM conferences.

Accommodations

Accommodations are crucial to the success of participants on multi-day field excursions. In addition to providing a good night's sleep, living quarters often serve as a space for building camaraderie. In a safe and supportive environment, they can facilitate bonding and connection. Living quarters also offer individuals an opportunity to prioritize their mental health after long and often stressful workdays. In this way, they are a critical component of mental health, providing a space for recharging activities, such as reading a book, reflecting in a journal, or connecting with loved ones and the community on the internet.

However, accommodations can be a source of anxiety for TGnC individuals (Greene et al. 2021). Living quarters on fieldwork trips are often single-gender and shared. The process of assigning gender-segregated accommodations can be problematic, causing trainees to opt-out of field experiences before signing up. This is especially difficult for non-binary individuals who are forced to choose a binary-gendered space and for those early in their transition who may not be out to all participants. For instance, a first-year trans PhD student who is out to friends but not labmates may face the decision to dorm in the women's or men's dorms. The difficulty often lies in weighing the potential for reduced mental health against perceived or actual violence.

Furthermore, living quarters can become a source of stress for TGnC individuals if not adequately mediated. Microaggressions against TGnC individuals can persist during fieldwork and have profound mental health consequences. This is particularly true when trainees have limited access to crucial support systems such as friends, chosen-family, community, and therapy. Multi-day fieldwork trips where privacy and resources like cell and Wi-Fi reception is limited can further exacerbate these issues. Unchecked macroaggressions

during fieldwork can make TGnC trainees feel trapped and overwhelmed, leading to significant harm. It is crucial to address harassment head-on to avoid an excessive mental (and sometimes physical) burden on trainees.

To contextualize, there has been an increase in reporting of and discussion around sexual harassment, bullying, physical violence, and threats of professional retaliation during fieldwork (Clancy et al. 2014; Nash 2021; Mattheis et al. 2022), in part buoyed by the #MeToo movement (Nash and Nielsen 2020). Women and trainees are the most frequent targets of harassment, but despite a positive trend, often incentive to report incidents remains low due to lack of action against perpetrators (Nash and Nielsen 2020). TGnC people are at greater risk of experiencing gender-based violence (Stotzer 2009; Wirtz et al. 2020) and are over four times more likely to face violent harassment, such as sexual, verbal, and physical abuse, than cisgender individuals (Flores et al. 2021); this is especially true for trans women of color. Shared and remote living situations combined with unequal power dynamics can exacerbate this by creating a situation where consistent and unchecked microaggressions, sexual harassment, physical violence, and bullying can occur. These experiences have been documented as citable reasons why many have chosen to leave the sciences (Clancy et al. 2017; Mattheis et al. 2022), and every effort must be made to ensure an end to this.

Perceived threats to safety and lack of privacy can have negative effects on TGnC trainees, both mentally and physically, and ultimately may impact their performance in scientific activities. Fear of bullying, being outed, or lack of privacy for gender-affirming care may result in a lack of sleep (e.g., falling asleep after or waking up before others), which in turn can lead to disrupted field performance. Some trainees who bind or tuck require privacy to remove compression materials, as wearing them for extended periods can lead to serious medical consequences (Peitzmeier et al. 2017; Malik et al. 2022). TGnC individuals on hormone replacement therapy (HRT) require private spaces for administering injections and secure storage for medications, including those that require consistent refrigeration. Laundry in the field, which is often hang-dry, also presents a privacy concern. Without secure areas for personal gender-affirming belongings and the ability to be alone when needed, TGnC trainees may face additional medical and mental health challenges.

Restrooms

Access to safe and private restrooms is crucial for field safety. Bathroom access has become a policy issue in

the United States, leading to an increase in harassment of TGnC people using restrooms, particularly trans women (Warner and Mehta 2021). As you plan the travel itinerary, location and protocol for hygiene facilities should be considered. Do not leave it to individuals to speak up when a restroom break is needed. Restroom breaks should be scheduled, and information on the times and locations of planned stops should be provided to help trainees plan. Choose rest stops with single-stall or gender-neutral restrooms whenever possible. TGnC folks on hormone replacement therapy may also require more restroom breaks (Matsuo et al. 2019). The timing and location of restroom breaks may also impact a TGnC trainee's decision on fluid intake to avoid using the restroom, which can result in bladder infections or urinary tract infections. Leaving adequate time at each rest stop location can also make it easier for a TGnC trainee to access restrooms after a crowd, providing them with added protection when navigating potential negative interactions.

Once at the field site, having a schedule, standard guidelines, and a clear and confidential communication system for concerns related to hygiene facility access is important, especially in remote locations and during outdoor excursions such as hiking, camping, or small watercraft trips. Standardizing group restroom protocols when private restrooms are not available, or even when they are, is important for trainees' protection and should be communicated to the group in advance. For example, having everyone turn around or use a bucket on a day trip on the water or in the woods, instead of leaving it to trainees to select behavior based on someone's assumed gender.

Taking precautionary measures to ensure trainees' privacy and safety when using hygienic facilities is crucial. Free sanitary napkins and tampons should be easily, yet discreetly, accessible to all trainees, especially in places without restrooms. Researching gender-neutral restrooms at field stations can also have a significant impact. Lastly, when staying at dorm-style accommodations, it is important to ask the station in advance if showers are individual, have functional doors/curtains, and are lockable. Trainees should be provided with enough downtime to access showers at a time that feels safest for them.

Medical accessibility and mental health

Before traveling to field locations, it is essential to consider and assess access to emergency medical facilities and urgent care. As previously mentioned, geographic location can greatly impact the quality and accessibility of medical care for TGnC folks. Many TGnC folks have experienced medical violence, refusal

of care, or may refuse to receive emergency medical care. As a supervisor, know where the closest and safest LGBTQ + hospitals are and have a plan for how to advocate for your trainee most successfully. Jointly, take preventative measures, such as having a well-stocked first aid kit and encouraging all trainees to pack medicines to tackle common field medical issues (such as food poisoning or urinary tract infections), can help avoid the need to seek out medical facilities. By being proactive and prepared, you can ensure the safety and well-being of your team.

Additionally, look out for signs of medical distress. For example, if you are in the tropics and you notice someone TGnC wearing a lot of clothing to hide the contours of their body, be aware that they may become overheated. Again, having a conversation with a TGnC trainee about their comfort in case of a medical emergency will be helpful. For example, being aware of names to use during a medical emergency can be helpful as a trainee's medical insurance card may reflect a legal name and not the name they go by.

Mental health awareness is crucial in the field. Be mindful of the mental well-being of trainees and recognize signs of increased anxiety, panic attacks, or depression. Conducting a pre-trip survey can help identify mental health needs and concerns as well as how to support trainees in different situations. For example, the survey can address topics including how to disclose TGnC status (if necessary) in an emergency requiring an ambulance, or what a trainee needs from you to help them manage anxiety attacks. To learn more about how to support TGnC trainee mental health, resources such as Trans Lifeline (translifeline.org) or THRIVE Lifeline (thrivelifeline.org) for TGnC STEM-specific resources can provide helpful information. By prioritizing mental health awareness and support, you can help create a safe and supportive environment for all trainees in the field.

Other people

Fieldwork presents various environmental and elemental hazards, but the dangers posed by other humans can be particularly concerning. Your trainees will interact with a range of individuals, including community members, local law enforcement, tourists, station or ship managers and staff, other scientists, and colleagues in addition to you and your lab members. Whether you are traveling to new field sites every day, returning to a field station you have visited for years, or spending weeks at sea, each situation carries a certain level of interpersonal risk.

To mitigate these risks, start by examining yourself and your group. Take the time to identify and respond to instances of harassment directed by members of your team toward TGnC individuals whether part of your group or not. This requires you to be able to identify what harassment and microaggressions look like. Reflect on your own assumptions and biases. For example, do you assign gender roles, such as carrying heavy equipment or cooking duties? Do you use gendered language like "guys" to refer to the whole group? Examining your own gender biases can help you recognize when others in your group engage in this behavior as well. These biases can be harder to identify than more overt forms of bullying, such as misgendering or dead-naming. Seek out professional training for yourself and your group on antidiscrimination and bystander interventions ([Anadu et al. 2020](#)).

If you see a TGnC person laughing at a joke made at their expense or at the expense of the TGnC community, it could be a sign that they feel it is safer to go along with it than to call out the behavior. It is important to recognize the harm this situation can cause to the victim, and the potential for the environment to encourage the perpetrator's sense of entitlement. Even people who identify as allies can be difficult to confront if they say or do something harmful. This can be due to the fear that confronting them will make them feel bad that they made a mistake and could result in losing the person's support. However, rather than centering their own guilt, allies should focus on the needs and experiences of TGnC individuals. Allyship is an ongoing process and not something self-claimed and should be grounded on continuous effort and action to ensure authenticity rather than performativity ([Arif et al. 2022](#)).

When interacting with people who are not in your group, it is important to have a plan. Consider how you will respond to harassment, microaggressions, or mistakes in various circumstances so that in the moment, you can act quickly to keep the victim safe. Talk to your TGnC trainees about how they would like you to intervene, if at all, if they are misgendered. Understand that support may look different based on the circumstances, but always prioritize the individual's privacy and never out them without their consent. In fieldwork settings, TGnC individuals may encounter challenges such as being singled out and harassed by community members, face discrimination for using the restroom, bullied by visitors at a campground or state park, or experience stalking or sexual harassment by a station employee. When a TGnC trainee reports to you any instance of harassment, believe them, take it seriously, and report it. You are likely mandated.

After the trip

The process to make fieldwork safe and accommodating for TGnC trainees is iterative. One important aspect of this is providing an early and confidential channel for trainees to provide feedback on their experiences in the field. Additionally, a schedule for regular, confidential, check-ins during the trip can help identify and address potential issues as they arise. However, it is crucial to first build a foundation of mutual respect with trainees before expecting them to trust you with their concerns. It is important to acknowledge that harassment or bullying may persist even after leaving the field, particularly if the perpetrator is affiliated with the same institution. Trainees also may fear retribution if they report bullying or microaggressions that occurred during fieldwork, which is why it is necessary that you foster a sense of trust with them.

Conclusion

The challenges faced by TGnC individuals in fieldwork are complex and multi-faceted, and there is no one-size-fits-all solution. However, those in positions of power and privilege must take steps to create a more inclusive and safe environment for TGnC individuals in fieldwork and STEM more broadly. These steps can include self-education, actively listening to and centering the experiences and needs of TGnC individuals, and working to dismantle systemic barriers and power structures that perpetuate discrimination and exclusion. While this manuscript focuses on specific suggestions for making field programs more accessible to TGnC individuals, it is important to recognize that such changes are only temporary solutions until systemic change occurs. Achieving this will require deep internal reflection and systemic change in academia and society. It is crucial to remember that this work is ongoing and requires sustained effort, as well as a willingness to listen and learn from the experiences of those who have been impacted by discrimination and exclusion in STEM.

Acknowledgments

I would like to thank Vanessa K Hilliard Young (Saint Mary's College), Robin Verble (Missouri University of Science and Technology), and Corinne L. Richards Zawacki (University of Pittsburgh), the organizers of the "Envisioning a Diverse, Inclusive & Safe Future for Field Biology" symposium at the Society of Integrative and Comparative Biology 2023 conference. Thank you to Tina Togafau (University of Hawai'i at Mānoa), Tallie Ben-Daniel, and Leo Gaskins (Duke University) for their helpful comments and suggestions. I would like

to express my gratitude to my M.Sc. advisor, Terry Gosliner, and the entire 2015 Philippines Verde Island Passage Biodiversity Expedition team at the California Academy of Sciences. It was during my first fieldwork experience with them that I faced and overcame many of the challenges that shaped my research journey.

Conflict of Interest

The author declares no conflicts of interest.

Data Availability

No data were collected or analysed in this work.

References

- ADVANCEGeo Partnership 2018. Codes of conduct. (https://se.rc.carleton.edu/advancegeo/resources/codes_conduct.html).
- American Civil Liberties Union. 2023. Mapping attacks on LGBTQ rights in U.S. State Legislature American Civil Liberties Union. (<https://www.aclu.org/legislative-attacks-on-lgbtq-rights>).
- Anadu J, Ali H, Jackson C. 2020. Ten steps to protect BIPOC scholars in the field. *Eos*, 101. <https://eos.org/opinions/ten-steps-to-protect-bipoc-scholars-in-the-field>. (<https://doi.org/10.1029/2020EO150525>).
- Arif S, Afolabi T, Mitrzyk BM, Thomas TF, Borja-Hart N, Wade L, Henson B. 2022. Engaging in authentic allyship as part of our professional development. *Am J Pharm Educ* 86:8690.
- Association of Polar Early Career Scientists. 2023. Field code of conduct APECS. (<https://www.apecs.is/career-resources/diversity-equity-inclusion/field-code-of-conduct.html>).
- Black Trans Travel Fund. 2023. Apply for funding. Black Trans Travel Fund. (<https://www.blacktranstravelfund.com/apply-for-funding.html>).
- Cech EA, Waidzunas TJ. 2021. Systemic inequalities for LGBTQ professionals in STEM. *Sci Adv* 7:eabe0933.
- Chiarella D, Vurro G. 2020. Fieldwork and disability: an overview for an inclusive experience. *Geol Mag* 157:1933–8.
- Clancy KB, Lee KMN, Rodgers EM, Richey C. 2017. Double jeopardy in astronomy and planetary science: women of color face greater risks of gendered and racial harassment. *JGR Planets* 122:1610–23.
- Clancy KBH, Nelson RG, Rutherford JN, Hinde K. 2014. Survey of academic field experiences (SAFE): trainees report harassment and assault. *PLoS One* 9:e102172.
- Cogswell PFS. 2019. Use of advanced imaging technology at checkpoints Transportation Security Administration. (https://www.dhs.gov/sites/default/files/publications/tsa_-_use_of_advanced_imaging_technology_at_checkpoints.pdf).
- Coon JJ, Alexander NB, Smith EM, Spellman M, Klimasmith IM, Allen-Custodio LT, Clarkberg TE, Lynch L, Knutson D, Fountain K et al. 2022. Best practices for LGBTQ + inclusion during ecological fieldwork: considering safety, cis/heteronormativity and structural barriers. *J Appl Ecol* 60:393–9.
- Crenshaw K. 1989. Demarginalizing the intersection of race and sex: a black feminist critique of antidiscrimination doctrine,

- feminist theory and antiracist politics. University of Chicago Legal Forum. 1989:8.
- Cronin MR, Alonzo SH, Adamczak SK, Baker DN, Beltran RS, Borker AL, Favilla AB, Gatins R, Goetz LC, Hack N et al. 2021. Anti-racist interventions to transform ecology, evolution and conservation biology departments. *Nat Ecol Evol* 5:1213–23.
- Davidson M. 2007. Seeking refuge under the umbrella: inclusion, exclusion, and organizing within the category transgender. *Sex Res Social Policy* 4:60.
- Demery A-JC, Pipkin MA. 2021. Safe fieldwork strategies for at-risk individuals, their supervisors and institutions. *Nat Ecol Evol* 5:5–9.
- de Vries K M, 2012. Intersectional identities and conceptions of the self: the experience of transgender people. *Symb Interact* 35:49–67.
- Flores AR, Meyer IH, Langton L, Herman JL. 2021. Gender identity disparities in criminal victimization: National Crime Victimization Survey, 2017–2018. *Am J Public Health* 111:726–9.
- Foreign Affairs Manual | U.S. Department of State. 2021. 8 FAM 403.3 gender designation United States. (<https://fam.state.gov/fam/08fam/08fam040303.html>).
- Fox AJ, Barak RS, Lichtenberger TM, Richardson LK, Rodgers AJ, Webb Williams E. 2019. Evaluating the prevalence and quality of conference codes of conduct. *Proc Natl Acad Sci USA* 116:14931–6.
- Grant JM, Mottet LA, D. Min. JT, Harrisoin J, Herman JL, Keisling M. 2011. Injustice at every turn: a report of the national transgender discrimination survey. Washington, DC: National Center for Transgender Equality and National Gay and Lesbian Task Force.
- Grant JM, Mottet LA, Tanis J, With DM, Herman JL, Harrison J, Keisling M. 2010. National Transgender Discrimination Survey Report on health and health care. Washington, DC: National Center for Transgender Equality and the National Gay and Lesbian Task Force.
- Greene S, Antell G, Atterby J, Bhatia R, Dunne E, Giles S, Groh S, Hanson E, Hilton J, Knight H et al. 2021. Safety and belonging in the field: a checklist for educators. (<https://eartharxiv.org/repository/view/2607/>). EarthArXiv.
- Herman JL, Flores AR, Brown TNT, Wilson BDM, Conron KJ. 2017. Age of individuals who identify as transgender in the United States. Los Angeles, CA: The Williams Institute.
- Herman JL, Flores AR, O'Neill KK. 2022. How many adults and youth identify as transgender in the United States? The Williams Institute, UCLA School of Law. (<https://williamsinstitute.law.ucla.edu/wp-content/uploads/Trans-Pop-Update-Jun-2022.pdf>).
- Hughes LD, King WM, Gamarel KE, Geronimus AT, Panagiotou OA, Hugtto JMW. 2022. Differences in all-cause mortality among transgender and non-transgender people enrolled in private insurance. *Demography* 59:1023–43.
- Human Rights Campaign Foundation. 2020. Dismantling a culture of violence human rights campaign. (<https://hrc-prod-requests.s3-us-west-2.amazonaws.com/files/assets/resources/Dismantling-a-Culture-of-Violence-010721.pdf>).
- James SE, Herman JL, Rankin S, Keisling M, Mottet L, Anafi M. 2016. The Report of the 2015 U.S. Transgender Survey. Washington, DC: National Center for Transgender Equality.
- Jones JC. 2021. We need accomplices, not allies in the fight for an equitable geoscience. *AGU Advances* 2:e2021AV000482.
- S.B.16 – Utah House 2023. Transgender medical treatments and procedures amendments. (<https://le.utah.gov/~2023/bills/sbillenr/SB0016.pdf>).
- Kleiber E. 2012. Research guides: gender identity and sexual identity in the Pacific and Hawai'i: introduction. (<https://guides.library.manoa.hawaii.edu/c.php?g=105466&p=686754>).
- Langford GM. 2022. Inclusivity in cell biology: cultural identity and the power of authenticity. *Mol Biol Cell* 33:ae5.
- S.B. 1570 – Arkansas House. 2021. The Arkansas Save Adolescents from Experimentation (SAFE) Act.
- McCown CM, Platt LF. 2021. Violence against Queer and TGNC people of Color. In: Lund EM, Burgess C, Johnson AJ, editors. *Violence against LGBTQ+ persons: research, practice, and advocacy*. Cham: Springer International Publishing. p. 203–17.
- McGill BM, Foster MJ, Pruitt AN, Thomas SG, Arsenault ER, Hanschu J, Wahwahsuck K, Cortez E, Zarek K, Loecke TD et al. 2021. You are welcome here: a practical guide to diversity, equity, and inclusion for undergraduates embarking on an ecological research experience. *Ecol Evol* 11:3636–45.
- Malik M, Cooney EE, Brevelle J-M, Poteat T. 2022. Tucking practices and attributed health effects in transfeminine individuals *Transgender Health* (<https://doi.org/10.1089/trgh.2022.0064>).
- Maloy J, Kwapisz MB, Hughes BE. 2022. Factors influencing retention of transgender and gender nonconforming students in undergraduate STEM majors. *CBE Life Sci Educ* 21:ar13.
- Manalo-Camp AK. 2020. Māhū Resistance: challenging colonial structures of power and gender medium. (<https://medium.com/@adamkeawe/m%C4%81h%C5%AB-resistance-challenging-colonial-structures-of-power-and-gender-6f0c1e96cded>).
- Matsuo K, Ichihara K, Gotoh M, Masumori N. 2019. Comparison of the uroflowmetry parameter results between transgender males undergoing gender-affirming hormone therapy and age-matched cisgender females: preliminary data. *Transgend Health* 4:152–6.
- Mattheis A, Marín-Spiotta E, Nandihalli S, Schneider B, Barnes RT. 2022. “Maybe this is just not the place for me.” gender harassment and discrimination in the geosciences. *PLoS One* 17:e0268562.
- Meikle PA, Morris LR. 2022. University Social Responsibility: challenging systemic racism in the aftermath of George Floyd's murder. *Admin Sci* 12:36.
- Movement Advancement Project. 2023. Bans on transgender youth participation in sports. (https://www.lgbtmap.org/equality-maps/sports_participation_bans).
- Nash M. 2021. National Antarctic Program responses to field-work sexual harassment. *Antarct Sci* 33:560–71.
- Nash M, Nielsen H. 2020. Gendered power relations and sexual harassment in antarctic science in the age of #MeToo. *Aust Fem Stud* 35:261–76.
- H.B.1125 – Mississippi House 2023. Regulate Experimental Adolescent Procedures (REAP) Act; create to regulate transgender procedures and surgeries. (<https://legiscan.com/MS/text/HB1125/2023>).
- Peitzmeier S, Gardner I, Weinand J, Corbet A, Acevedo K. 2017. Health impact of chest binding among transgender adults: a community-engaged, cross-sectional study. *Cult Health Sex* 19:64–75.

- Pickrell J. 2020. Scientists push against barriers to diversity in the field sciences. *Science* 374:10–1126. (<https://www.science.org/content/article/scientists-push-against-barriers-diversity-field-sciences>).
- Powell L. 2021. 2021 becomes deadliest year on record for transgender and non-binary people. Human Rights Campaign. (<https://www.hrc.org/press-releases/2021-becomes-deadliest-year-on-record-for-transgender-and-non-binary-people>).
- Pride Field Network. n.d. Fieldwork safety map PRIDE Field Network | We aim to connect LGBTQ+ fieldworker, to keep them safe and standing against discrimination. (<https://pridefieldnetwork.com/fieldwork-safety-map/>).
- Pyle K. 2018. Naming and claiming. *TSQ* 5:574–88.
- Ramírez-Castañeda V, Westeen EP, Frederick J, Amini S, Wait DR, Achmadi AS, Andayani N, Arida E, Arifin U, Bernal MA et al. 2022. A set of principles and practical suggestions for equitable fieldwork in biology. *Proc Natl Acad Sci USA* 119:e2122667119.
- Reed D, Prabhakar A, Nelson A, Koizumi K, Keene J, Carr P, Nayak R, Young S, Orvis K, Rahman S et al. 2023. Letter to NSF Director - LGBTQ+ Data redacted. (https://static1.squarespace.com/static/545d3fabe4b0811b5cc48193/t/63c867aefb89f3761070a5a3/1674078140137/Letter+to+NSF+Director+-+LGBTQ%2B+Data_redacted.pdf).
- Reed E. 2023. Utah care ban for trans youth takes effect immediately, Gov. Cox signs. *Erin in the Morning*. (<https://erininthemorn.substack.com/p/utah-care-ban-for-trans-youth-takes>).
- Rudzki EN, Kuebbing SE, Clark DR, Gharaibeh B, Janecka MJ, Kramp R, Kohl KD, Mastalski T, Ohmer MEB, Turcotte MM et al. 2022. A guide for developing a field research safety manual that explicitly considers risks for marginalized identities in the sciences. *Methods Ecol Evol* 13:2318–30.
- S.B.184 – Alabama Senate, Public health, minors, biological male or female, sexual state, practices to alter or affirm minor's sexual identity or perception such as prescribing puberty blocking medication or surgeries, prohibited, exceptions, nurses and school personnel not to withhold information from parents, violations a class C felony. 2022. (<https://legiscan.com/AL/text/SB184/id/2566425>).
- H.B.1080 – South Dakota House. 2023. An act to prohibit certain medical and surgical interventions on minor patients. (<https://mylrc.sdlegislature.gov/api/Documents/249156.pdf>).
- Stotzer RL. 2009. Violence against transgender people: a review of United States data. *Aggress Violent Behav* 14: 170–9.
- The Trevor Project. 2022. 2022 National Survey on LGBTQ Youth Mental Health The Trevor Project. (https://www.thetrevorproject.org/survey-2022/assets/static/trevor01_2022survey_final.pdf).
- Transgender Europe. 2022. Trans Rights Map 2022 reveals slow comeback of progress on trans rights TGEU. (<https://tgeu.org/trans-rights-map-2022/>).
- Transgender Law Center. 2012. National Equality Map Transgender Law Center. (<https://transgenderlawcenter.org/equalitymap>).
- UCSF. 2016. Transgender Care: terminology and definitions UCSF Transgender Care. (<https://transcare.ucsf.edu/guideline/s/terminology>).
- United States Department of State | Bureau of Consular Affairs. 2022. Selecting your gender marker. (<https://travel.state.gov/content/travel/en/passports/need-passport/selecting-your-gender-marker.html>).
- United States Government. 2023. Transgender/non binary / gender nonconforming passengers transportation security administration. (<https://www.tsa.gov/transgender-passengers>).
- Viglione G. 2020. Racism and harassment are common in field research—scientists are speaking up. *Nature* 585:15–6. <http://dx.doi.org/10.1038/d41586-020-02328-y>
- Warner DM, II, Mehta AH. 2021. Identifying and addressing barriers to transgender healthcare: where we are and what we need to do about it. *J Gen Intern Med* 36: 3559–61.
- Wirtz AL, Poteat TC, Malik M, Glass N. 2020. Gender-based violence against transgender people in the United States: a call for research and programming. *Trauma Violence Abuse* 21:227–41.
- Zebracki M, Greatrick A. 2022. Inclusive LGBTQ+ fieldwork: advancing spaces of belonging and safety. *Area* 54: 551–7.