






YOUNG VOICES AND VISIONS FOR THE UN DECADE OF RESTORATION

RE-New (Opinion) Article

Inclusive restoration: ten recommendations to support LGBTQ+ researchers in restoration science

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Scientists who identify as lesbian, gay, bisexual, transgender, queer, or members of other marginalized sexual orientations and gender identities (LGBTQ+) face serious disparities compared to their non-LGBTQ+ peers. Restoration science presents additional risks for LGBTQ+ researchers, including extensive time in the field—sometimes in locations that are hostile to LGBTQ+ people or create discomfort around gender expression and sexual orientation. At the same time, restoration science is uniquely positioned to create change: the same principles that shape ecosystem restoration also provide a blueprint for cultivating inclusion in science. We present 10 recommendations for LGBTQ+ inclusion based on four guiding restoration principles: (1) Context is key; (2) Healthy environments require support; (3) Success needs to be defined; and (4) A diverse future is worth striving for. We provide concrete actions that individuals and institutions can take and emphasize the positive outcomes that LGBTQ+ inclusion can generate for a healthier restoration community.

Key words: conservation, disparities, inclusion, LGBTQ inequality, STEM, UN Decade on Ecosystem Restoration

Implications for Practice

- LGBTQ+ researchers provide unique benefits to restoration science, but also face additional barriers in the discipline, resulting in a need for specific support structures.
- Removing these barriers and supporting LGBTQ+ researchers should be a priority for institutions and individuals engaging in restoration.
- Building LGBTQ+ support structures ultimately improves restoration as a discipline, but will require concentrated effort and concrete actions.
- By enacting the changes recommended here, restoration science can better support LGBTQ+ researchers and lead the way for other disciplines to do the same.

Introduction

Lesbian, gay, bisexual, transgender, and queer people as well as those with other marginalized sexual orientations and gender identities (LGBTQ+; Table 1) experience discrimination in many aspects of life, including the workplace (National Public Radio 2017). For LGBTQ+ people working in science, technology, engineering, and mathematics (STEM), this discrimination has been shown to manifest as professional devaluation, workplace harassment, and social isolation, all of which are most severe for LGBTQ+ people of color and transgender and gender-nonconforming people (Fig. 1; Freeman 2018; Cech &

Waidzunus 2021). Ultimately, these experiences lead to LGBTQ+ individuals being 47% more likely to consider leaving STEM careers than their non-LGBTQ+ colleagues (Cech & Waidzunus 2021), resulting in their significant underrepresentation in STEM fields (17–21% less than expected; Cech & Pham 2017; Freeman 2020). These sobering trends reflect the

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Table 1. Glossary of LGBTQ+ terms. Definitions are adapted from Cooper et al. (2020) and the National LGBTQIA+ Health Education Center Glossary, both of which provide more comprehensive glossaries of LGBTQ+ terms that may be useful to readers, but are not specifically mentioned in these recommendations.

Agender: A term used to describe individuals who do not identify with any gender.

Asexual: A term used to describe individuals who do not experience physical and/or sexual attraction. Asexual is also sometimes used to describe individual who experience physical/sexual attraction only rarely or in certain circumstances.

Bisexual: A term used to describe someone who is attracted romantically, emotionally, or sexually to members of more than one gender.

Closeting: A term used to refer to an individual concealing their sexual orientation or gender identity. When an individual chooses to reveal their sexual orientation or gender identity, they are considered “out of the closet” or just “out.”

Gay: A term used to describe individuals who are primarily attracted romantically, emotionally, or sexually to members of the same gender.

Gender: A socially constructed cultural characteristic used to denote identities like woman and man. Gender can denote a range of identities beyond woman and man, varies from society to society, and changes over time.

Gender binary: A restrictive view of gender as a binary with only male and female as opposed to the broader gender spectrum, which encompasses the wide range of genders expressed by individuals.

Gender expression: The external appearance of an individual’s gender through behavior, clothing, voice, etc. Gender expression may or may not conform to the socially defined characteristics typically associated with an individual’s gender. For example, an individual with a feminine gender expression may identify as a male or non-binary.

Gender identity: The specific gender(s) with which an individual personally identifies.

Gender nonconforming, nonbinary, or genderqueer: Terms used to identify individuals who do not identify their gender as only either a man or woman. Nonbinary, genderqueer, and gender nonconforming individuals may identify as a gender other than man or woman, multiple genders potentially including man and/or woman, or no gender (see: agender).

Intersectionality: The complex and cumulative interactions between multiple social categorizations or identities (e.g. race, socio-economic status, gender, and sexuality), which can create multifaceted and overlapping experiences of discrimination and privilege.

LGBT/LGBTQ/LGBTQIA/LGBTQ+: An umbrella term used to group individuals with marginalized sexual orientations and gender identities. Each letter corresponds to a specific sexual orientation or gender identity (lesbian, gay, bisexual, transgender, queer, intersex, asexual, etc). In these recommendations, the term LGBTQ+ is intended to be inclusive of all identities in this community, but other combinations are accepted as long as care is taken to recognize the unique experiences of particular identities when necessary (e.g. transgender individuals may have different experiences than gay or lesbian individuals).

Lesbian: A term used to describe individuals who identify as women and are romantically, emotionally, or sexually attracted to other women.

Neo-pronouns: Pronouns not in common use in English (i.e. not he/him, she/her, or they/them). Neopronouns may reflect how an individual specifically identifies with their own gender or an effort to disconnect gender from historical norms. Examples include ze/zir or xe/xem and are generally used identically to traditional pronouns (e.g. “When Jasmine went to the store ze picked up zir supplies and took them back to zir office”).

Pronouns: A word used in place of a specific nouns object. Commonly used pronouns for people include words that do not connote a specific gender like “I,” “you,” and “them” as well as some that are traditionally gender-specific like “he” and “she.” When referring to people using pronouns be sure to follow their lead and choose appropriate pronouns for their gender based on their own preferences. Keep in mind pronouns like they/them pronouns can be used as singular pronouns (and are recognized by the APA style guide), but are still conjugated in the plural. For example, “Spencer is in the lab right now because they are analyzing data.” Some individuals may use multiple sets of pronouns including they/them pronouns, typically written in the form of he/they, they/she, etc. Typically this means the individual is comfortable with either set of pronouns (e.g. he/him or they/their) but may have a preference for the first pronouns listed (e.g. someone with they/he pronouns may prefer they/them pronouns, but will also accept he/him pronouns). When in doubt, just ask the individual. See also: Neopronouns.

Queer: An umbrella term to describe non-heterosexual and transgender individuals as well as individuals with nonnormative gender identities. Queer was historically an offensive term and some LGBTQ+ individuals prefer not to be defined as queer while others take pride in reclaiming the term. In general, follow the LGBTQ+ individual’s lead and how they choose to identify themselves.

Sex: Classification based on structural or functional characteristics of a person or organism, like chromosomes, reproductive organs, and hormonal levels, that allow assignment as male, female, or intersex (neither male nor female). For humans, an individual’s sex does not necessarily align with their gender identity.

Sexual orientation: An umbrella term to describe the pattern of romantic, emotional, or physical attraction to members of the same gender or other genders. Examples include homosexual, heterosexual, and bisexual.

Transgender: An umbrella term used to describe an individual with a gender identity that does not match the sex they were assigned at birth. Trans man is often used to describe a man who was not assigned male at birth and trans female is often used to describe a woman who was not assigned female at birth. Some non-binary or gender nonconforming people may also identify as transgender.

Two-spirit: A term used within some Native American and First Nations communities to describe individuals who combine activities or social roles of both men and women with unique statuses within many tribes. Traditionally many two-spirit individuals occupy a distinct alternative gender status or “third gender” and may engage in same-sex relationships.

reality that unsupportive environments create unequal systems (Fig. 1).

No data are available on the specific experiences of LGBTQ+ people in restoration science, but the discipline poses unique additional barriers. Restoration scientists and practitioners spend extended time in the field, often in remote

areas and locations with limited resources, increasing risks of isolation and harassment. These dangers are further heightened in countries with laws or cultural norms that are hostile to LGBTQ+ people, which can force researchers to re-closet themselves or forego professional opportunities. Furthermore, because restoration often requires partnership with a variety of

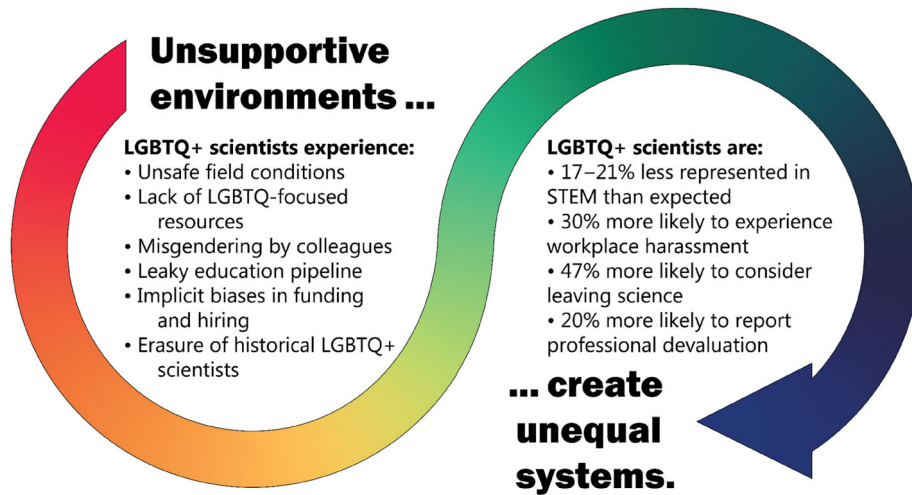


Figure 1. Rationale for change. LGBTQ+ scientists face an unsupportive environment, resulting in an unequal system with serious disparities compared to their non-LGBTQ+ peers. See text for references.

stakeholders—including local community members, managers, philanthropists, and legislators—restoration professionals may face a wider range of pressures around identity and avenues for discrimination. LGBTQ+ researchers must balance reflecting their authentic identities with not endangering themselves or their projects by inflaming prejudiced stakeholders.

While LGBTQ+ researchers face certain risks, their lived experiences bring unique and crucial perspectives to restoration projects and their context within local communities. LGBTQ+ researchers also serve as critical role models and sources of representation for other LGBTQ+ individuals, especially in areas without visible LGBTQ+ communities. Such representation empowers restoration projects to not only restore natural environments but also address stigmas and barriers facing LGBTQ+ people, especially as current outdoor culture can be exclusionary of LGBTQ+ people (Bren & Prince 2022). Ultimately, this diversification of backgrounds and viewpoints in restoration helps address a history of marginalization and has been demonstrated to lead to more novel scientific findings (Hofstra et al. 2020).

Here, we argue that the discipline of restoration science is ideally positioned to build LGBTQ+ inclusion and bolster diversity in the long term. Restoration practitioners already have the tools and frameworks to improve degraded ecosystems; by adapting these tools, we can also improve the field of restoration science to be a more inclusive, supportive environment. As a group of LGBTQ+ restoration scientists, we put forth 10 recommendations for institutions and individuals to address inequities facing LGBTQ+ researchers. These are framed within four ecological principles that guide the restoration of degraded ecosystems (Gann et al. 2019), except in this case, the degraded ecosystem is the field of restoration science itself (Fig. 2). We believe that these lessons learned from restoration—context is key, healthy environments require support, success needs to be defined, and a diverse future is worth striving for—can lead

the way for other scientific disciplines to develop more comprehensive commitments to change.

Recommendations

Context Is Key

Learn About LGBTQ+ Identities and Communities.

Knowledge of the local environment forms the basis for any successful restoration project; taking the time to understand a site’s topography, communities, and natural history provides a critical foundation for success. Similarly, understanding LGBTQ+ identities, culture, and history is a vital foundation for inclusion and support efforts, like learning about a new ecosystem; however, it takes time and dedication. The learning process can take on many forms (e.g. books, films, conversations, podcasts, lectures), but should center LGBTQ+ voices (see Table 2, for examples).

Accurately Define Gender. Scientists understand the importance of using specific and accurate language when discussing research, but language is also integral in creating a supportive environment for LGBTQ+ people—particularly in discussions of sex and gender. The two terms are often conflated but, while intertwined, are not interchangeable (Fausto-Sterling 2000; Table 1). For example, “sex” and not “gender” should be used to discuss male-to-female ratios in a restored oyster reef, while “gender” is appropriate to detail the demographics of participants in a community science event. Additionally, consider that even the biological definition of sex is fluid as many examples from nature demonstrate, including intersex people without a clear biological sex (Fausto-Sterling 2000).

It is also critical to acknowledge that not everyone identifies with the gender they were assigned at birth, such as transgender men and women, some intersex individuals, and gender-nonconforming individuals who do not fall neatly onto a

Recommendations for LGBTQ+ support in restoration science based on key restoration principles

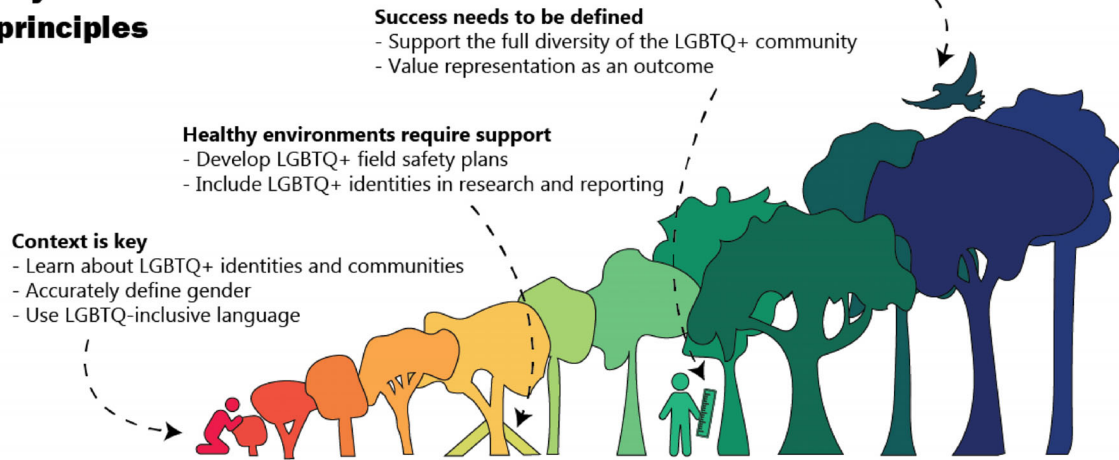


Figure 2. Recommendations based on key restoration principles. The 10 recommendations for LGBTQ+ inclusion and support in restoration science are intended to be viewed akin to a traditional restoration project and are therefore split into four common restoration principles.

male–female gender binary (including non-binary, genderqueer, two-spirit, or agender people; Table 1). While data on these groups are limited or non-existent in many restoration contexts (as efforts often consider only binary genders, e.g. Broeckhoven & Cliquet 2015; de Siqueira et al. 2021), it is essential to make space for all gender identities to avoid further erasure of marginalized communities. Defining gender in a way that creates a safe and welcoming context for all is an action that can be implemented at all levels—from individuals to project leaders to institutions.

Use LGBTQ-Inclusive Language. Restoration scientists are often adept at classification because the use of natural history provides clues about how species interact with their environment, thereby informing restoration management. LGBTQ+ people often face similar classifications, and on an individual level, may have a complex history with the terms used to describe themselves. This can make it seem daunting to anticipate how an individual identifies or which terms they prefer. The simple solution is to avoid assumptions about a person’s gender, sexuality, or partner status and consider that gender expression does not necessarily match gender identity (Table 1).

The use of pronouns is a particularly common and instructive example. Generally, the best practice is to volunteer your own pronouns when you meet someone new (e.g. “My name is Taylor and I use he/him pronouns”). While this style of introduction may feel lengthy at first, it creates the space for others to provide their own pronouns and normalizes the reality that pronouns do not correspond to any particular appearance. Additionally, keep in mind that a person’s pronouns may be new to you. For example, some non-binary people use they/them as singular pronouns, while others may use neopronouns like ze/zir (Table 1). Mistakes happen when introducing new language constructs, but these patterns

become second-nature with time. Small changes like pronoun introductions, degendered writing, and avoiding assumptions around a person’s gender can create a more welcoming and supportive community for all LGBTQ+ people.

Healthy Environments Require Support

Develop LGBTQ+ Field Safety Plans. Fieldwork is a defining aspect of research for many restoration ecologists. However, field research can exacerbate safety issues for LGBTQ+ scientists and other marginalized individuals (Demery & Pipkin 2021). The remote nature of restoration fieldwork heightens concerns for LGBTQ+ people around harassment, threats, and physical violence, especially for visibly queer, gender-nonconforming, and non-white people. While risks in the field are not limited to LGBTQ+ individuals, their experiences must be situated in the context that LGBTQ+ individuals regularly face verbal and physical violence in response to their identity. This risk is heightened in countries and communities with legislation or cultural norms antagonistic to LGBTQ+ people (Mendos 2020). Just as restoration incorporates practices to overcome high-risk periods of vulnerability for restored organisms, restoration science must create adequate support and safety protocols for LGBTQ+ individuals when they work in high-risk situations.

Demery and Pipkin (2021) provide a comprehensive toolkit to build safer field experiences for at-risk individuals. Here, we highlight key recommendations in the context of LGBTQ+ identities. Field safety plans are essential and should explicitly consider how protocols differentially impact LGBTQ+ researchers. If projects are being conducted in an area with a history of violence toward LGBTQ+ people, managers should discuss risks directly with LGBTQ+ participants and make explicit

Table 2. Recommendations and specific actions institutions and individuals can take to implement them. This list is not exhaustive and is intended to focus primarily on restoration-specific actions. Note that some actions listed for institutions can also be undertaken by individuals and vice-versa.

Recommendation	Institutional Actions	Individual Actions
1. Learn about LGBTQ+ identities and communities	<ul style="list-style-type: none"> Share resources about LGBTQ+ identities (Pride Month or other local LGBTQ+ event times can be good opportunities for this) 	<ul style="list-style-type: none"> Read perspectives from LGBTQ+ researchers (e.g. 500queerscientists.com; Freeman 2018) Listen to LGBTQ+ media (e.g. SciCurious and Queer Science podcasts) Ask friends and colleagues about their own experiences (and accept that they may prefer not to discuss them)
2. Accurately define gender	<ul style="list-style-type: none"> Allow open-ended responses to gender identity questions on surveys or in submission options for journals 	<ul style="list-style-type: none"> Do not conflate sex and gender when discussing research results Consider intersex and gender nonbinary individuals when designing studies which incorporate human sex and/or gender
3. Use LGBTQ-inclusive language	<ul style="list-style-type: none"> De-gender institutional protocols and writings (e.g. “artificial structure” rather than “man-made structure”; “esteemed guests” rather than “ladies and gentlemen”; singular “they” or “one” rather than “he or she”) 	<ul style="list-style-type: none"> Share your own pronouns in introductions and use the correct pronouns for other people Avoid assuming someone’s gender identity or sexuality (e.g. ask whether a colleague’s “partner” will attend an event rather than their “husband” or “boyfriend if you do not know the gender of their partner)
4. Develop LGBTQ+ field safety plans	<ul style="list-style-type: none"> Consult Demery and Pipkin (2021) when designing institutional guidelines for field safety Incorporate bathroom breaks when designing daily field plans for lab or class trips to ensure transgender or gender nonbinary students and colleagues have access to a safe restroom Provide written evidence of institutional affiliation or approval to support individuals who are questioned or harassed in the field 	<ul style="list-style-type: none"> Offer to accompany or serve as a contact person for colleagues conducting field work alone Speak up against bigoted comments and micro-aggressions in the field, including from other colleagues Ensure you know who to contact in case colleagues are in emergency situations and any urgent medical information that may be needed
5. Include LGBTQ+ identities in research and reporting	<ul style="list-style-type: none"> Include LGBTQ+ identities in inclusion criteria and funding calls for research into marginalized communities Maintain and report (anonymous) data on LGBTQ+ identities to allow researchers to accurately quantify underrepresentation 	<ul style="list-style-type: none"> Consider whether and how your research or restoration programs can be designed to advance LGBTQ+ engagement
6. Support the full diversity of the LGBTQ+ community	<ul style="list-style-type: none"> Measure the success of inclusion initiatives across a wide range of LGBTQ+ identities with special attention paid for LGBTQ+ individuals from other marginalized backgrounds Center LGBTQ+ people from diverse, intersectional backgrounds in decisions about LGBTQ+ support 	<ul style="list-style-type: none"> Consider the compounding and unique experiences of LGBTQ+ colleagues who are disabled, people of color, female, indigenous, or from other marginalized backgrounds and the impacts these experiences may have on their experience in restoration Maintain a “both/and” mindset, in which colleagues are viewed for their whole identity; for example, individuals can be both strong advocates for LGBTQ+ inclusion <i>and</i> members of different societal groups <i>and</i> excellent scientists, practitioners, or professionals
7. Value representation as an outcome	<ul style="list-style-type: none"> Include LGBTQ+ representation as a valued outcome of restoration efforts with LGBTQ+ researchers 	<ul style="list-style-type: none"> Consider the benefits that LGBTQ+ colleagues provide to restoration projects and the unique ways that they can enhance project outcomes
8. Improve access to nature for LGBTQ+ individuals	<ul style="list-style-type: none"> Open avenues for funding to support collaboration between LGBTQ+ outdoors groups and restoration projects 	<ul style="list-style-type: none"> Reach out to local LGBTQ+ community groups or outdoor organizations (e.g. Venture Out Project, Queer Nature, Wild Diversity) and try to incorporate them into local restoration efforts
9. Address barriers to education for LGBTQ+ students	<ul style="list-style-type: none"> Display clear signs of support like pride flags in public areas Enforce no tolerance practices for hate speech and discrimination and establish explicit protocols for dealing with these situations beforehand 	<ul style="list-style-type: none"> Read resources like Cooper et al. (2020) and Zemenick et al. (2022) before teaching a course Celebrate historic and current LGBTQ+ scientists and conservationists as role models in the classroom, explicitly recognizing their intersectional personal and professional identities

Table 2. Continued

Recommendation	Institutional Actions	Individual Actions
10. Support LGBTQ+ leaders as role models for the next generation	<ul style="list-style-type: none"> • Fund specific fellowships and educational scholarships for LGBTQ+ students • Demonstrate via mission statements and policies that work improving diversity, equity, and inclusion is central to effective restoration • Fund LGBTQ+ scientists and research into improving LGBTQ+ inclusion and support 	<ul style="list-style-type: none"> • Solicit student feedback on challenges or needs in the classroom, field, or laboratory, and be willing to serve as an advocate when resources or support are needed • Recognize the often-unacknowledged work LGBTQ+ colleagues contribute to restoration projects in the form of inclusion efforts • Encourage colleagues and students from under-represented groups to view themselves as leaders on multiple professional fronts

plans to ensure that risk is mitigated or avoided, and that support structures are in place in the event of harassment. Protective measures like carrying evidence of institutional approval and maintaining regular contact with colleagues should be considered depending on the research. Context is important and there is no silver bullet to create safe field environments for LGBTQ+ researchers. Therefore, it is important to ask LGBTQ+ team members how their well-being can best be supported. Most importantly, be proactive; do not wait until after a team member is threatened or harassed to develop safety protocols.

Include LGBTQ+ Identities in Research and Reporting.

Successful restoration efforts typically require support structures targeted to specific threatened species or areas. Inclusion efforts similarly leverage diversity initiatives that explicitly target and prioritize underrepresented groups in hiring practices, scholarships, funding calls, and similar practices. Many of these programs have improved research outcomes, integration into scientific communities, and student retention for underrepresented groups (e.g. Estrada et al. 2016). However, LGBTQ+ identities can be overlooked in diversity initiatives, despite evidence of LGBTQ+ disparities in STEM and, with particular relevance to restoration, the broader outdoors (Bren & Prince 2022). Certain government agencies, for example, provide funding for STEM education research into traditionally defined underrepresented groups (i.e. race and gender) but will only fund LGBTQ+ education initiatives if researchers provide evidence of LGBTQ+ underrepresentation—the exact result that can only be provided if research is funded in the first place (Freeman 2020). It is undeniably important to continue to include traditionally defined underrepresented groups based on factors like race and ethnicity in diversity initiatives, but institutions should also explicitly acknowledge that LGBTQ+ individuals face unique, often intersectional, challenges in restoration and should therefore be included in research, outreach, and reporting.

Success Needs to Be Defined

Support the Full Diversity of the LGBTQ+ Community. The biodiverse ecosystems that scientists restore are not homogenous, and neither is the LGBTQ+ community. Correspondingly, efforts

to support LGBTQ+ inclusion cannot have a narrow scope. For example, threats faced by transgender researchers are not the same as those faced by queer-cisgender researchers, and efforts that protect only one group are not truly LGBTQ+ inclusive. One way to visualize these differences is to consider LGBTQ+ identities as a series of spectra related to sexual orientation, gender identity, gender expression, and other gender and sexuality markers. Within this multi-dimensional space, efforts designed around the needs of cisgender gay men may, for example, leave asexual women or non-binary people without proper support.

LGBTQ+ identities also intersect a multitude of other social factors that shape a person, including race, ethnicity, language, disability status, and socio-economic background. One’s experience as an LGBTQ+ individual is often shaped by these overlaps resulting in unique experiences. For example, LGBTQ+ people of color are twice as likely to report experiencing discrimination due to sexual orientation or gender identity when applying for jobs than white LGBTQ+ people (National Public Radio 2017). Intersectionality is therefore a vital consideration for inclusion efforts to support all members of the community (Crenshaw 1989) as inclusion efforts that treat white, able-bodied, or wealthy statuses as the “default” for LGBTQ+ people will ultimately fail to work equitably. To address this, consider the *compounding and unique* ways that factors such as race (e.g. Graves & Jarvis 2020), language (e.g. Pulitzer-Ahles et al. 2020), disability status (e.g. Powell 2021), and other identities (Woolston 2021) impact researchers. Avoid putting LGBTQ+ individuals in a box around any one aspect of their identity and envision how successful policies and programs can support individuals in full.

Value Representation as an Outcome. Choosing which outcome to measure is one of the most challenging parts of any restoration project. Environmental health, ecosystem services, and economic value all compete as metrics of success, yet restoration projects often overlook outcomes that arise from the act of restoration itself. One key example for LGBTQ+ researchers is the representation they bring to local stakeholders and communities involved in restoration. Positive LGBTQ+ representation like this can counteract existing negative stereotypes and lead people to less bigoted views

(GLAAD 2021). Restoration, in particular, often takes place in under-served communities, remote areas, and countries with legacies of discrimination against LGBTQ+ communities (often as a result of colonization; e.g. Ireland 2013) resulting in limited openness of and exposure to LGBTQ+ people (Movement Advancement Project 2019; Mendos 2020). LGBTQ+ researchers could therefore be in a unique position—potentially among the first openly LGBTQ+ people that communities interact with closely.

With support, these opportunities for positive representation can enrich societal perceptions of LGBTQ+ people and create a safer environment for local communities—making LGBTQ+ representation a meaningful success metric in its own right. However, this can also place additional, sometimes unwanted, pressure on LGBTQ+ researchers. Just as self-sustaining ecosystem health is the gold-standard of success in restoration, successful inclusion efforts should be defined not just by the presence of LGBTQ+ people, but whether engagement, belonging, and support facilitate their long-term success and contributions.

A Diverse Future Is Worth Striving for

Improve Access to Nature for LGBTQ+ Individuals.

Everyone develops a passion for the environment in different ways, but access to nature is a key element to how many researchers first connect with the world around them. Improving access to nature forges connections between people and the environment; this is especially true for children and can help inspire careers in environmental fields like restoration (Rosa & Collado 2019). One way to address the underrepresentation of LGBTQ+ people in the natural sciences is to showcase openly LGBTQ+ professionals and their connections with nature. For example, restoration scientists are in ideal positions to partner with organizations that connect LGBTQ+ people with nature (Table 2) to collaborate on restoration projects and potentially inspire them to start their own journey into environmental science.

Address Barriers to Education for LGBTQ+ Individuals.

Underrepresentation in STEM is often viewed as a “leaky pipeline” issue, although it is perhaps better visualized as a “hostile obstacle course” (Berhe et al. 2022). A key hurdle along this obstacle course for LGBTQ+ individuals in STEM fields like environmental science occurs in education. LGBTQ+ undergraduates are more likely to switch out of STEM fields than their non-LGBTQ+ peers, despite showing high interest in STEM and having research experience (Hughes 2018). Many factors can drive this disparity, including feeling unwelcome, direct harassment, and lack of supportive mentorship.

Addressing these barriers will require a range of actions, including those detailed by Cooper et al. (2020) for academic biology, and others recommended here. For restoration coursework in particular, emphasizing how the research and contributions of well-known LGBTQ+ environmentalists like conservationist Rachel Carson and marine biologist Ruth Gates

were shaped by their sexualities can help provide role models and improve student retention. Educators and departments must also ensure that classrooms are safe spaces for LGBTQ+ students. Having zero-tolerance policies for homophobic and transphobic remarks, displaying clear signs of support, and planning inclusive field components can help remove educational barriers for LGBTQ+ students in restoration.

Support LGBTQ+ Leaders as Role Models for the Next Generation.

Scientists can feel pressured to mask identity factors such as their sexual orientation or gender identity, as STEM fields have traditionally prized separation between a researcher’s identity and their achievements. For LGBTQ+ researchers, this identity-blind view of science has the consequences of re-closeting them in discussions of science, erasing historical LGBTQ+ scientists, and ultimately leading to a view of science as heterosexual and cisgender by default. For example, gay men and lesbians are perceived as less scientific and less connected to STEM than straight men or women (Palmer et al. 2021). To combat this misperception, LGBTQ+ scientists’ identities should be celebrated, with individuals and institutions acknowledging their critical service as role models for future generations of LGBTQ+ researchers. In particular, the policies and actions of institutions must demonstrate that diversity, equity, and inclusion efforts—including those centering LGBTQ+ communities—are a valued and essential component of restoration because LGBTQ+ scientists cannot and should not choose between their identities as a scientist and as an advocate for the LGBTQ+ community. Celebrating and supporting LGBTQ+ leaders demonstrates that LGBTQ+ people belong not only in STEM, but in the outdoors, at the head of a classroom, in meeting rooms with legislators, and anywhere that an ecosystem is in need of care.

Conclusion

Restoration is a human endeavor, and as long as some humans are excluded from restoration science, the field cannot reach its full potential. In the current system, LGBTQ+ researchers are at risk of being unsupported, unwelcome, and unsafe, resulting in underrepresentation and disparities in funding, research outputs, and career paths between LGBTQ+ researchers and their non-LGBTQ+ peers. The discipline of restoration science is in a unique position. Restoration practitioners already have the necessary tools to build healthy, flourishing ecosystems. By adapting these tools to build a supportive and diverse community within the discipline, restoration science can establish itself as a leader in inclusion and an inspiration for other STEM fields. The recommendations laid out here should encourage discussions that result in change, but it is important to remember that inclusion, like restoration, is a long and evolving process. An ecosystem can only recover if it has a healthy foundation and support structures. Restoration as a field can now create that foundation; support the growth, well-being, and inclusion of LGBTQ+ researchers; and lead the way for other scientific disciplines.

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