

Improving Accessibility in Nature Education

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For the most recent version of this document, please visit:

<https://extradisciplinary.com/posts/improving-accessibility-in-nature-education>

Project Motivation

Accessible education is of course an intersectional issue, but for this project I chose to focus on disability. Disability can be defined as a health condition that impacts the way a person participates in daily activities (Yu 2024), or more broadly as the interaction between an individual's health condition and environmental factors, such as inaccessible buildings and limited social support (World Health Organization). It's important to note that disability is a natural part of life and that being able-bodied is a temporary condition that can change at any time. Disability is not inherently negative, but social systems and public health policies affect who becomes disabled and what support they receive.

The CDC reports that **more than 1 in 4 adults (over 70 million people) in the United States reported having a disability** in 2022. That number is likely a low estimate that will only increase over time since COVID-19 continues to be a mass disabling event, with each reinfection increasing the probability of developing a severe case of Long Covid. **If we don't intentionally account for disability when planning nature education programming, we will be excluding a significant proportion of our target audience.**

This document contains accessibility guidelines and resources I've compiled while volunteering with Bird Alliance of Oregon (leading field trips and birding outings), Hoyt Arboretum (leading monthly accessible public tours), and Trailkeepers of Oregon (participating in their trail accessibility survey team). Please reach out with recommended resources, organizations prioritizing accessibility and inclusion, and examples of well-crafted trail/outing descriptions so I can continue to update it!

My Background

During graduate school, I conducted archaeological fieldwork in several countries, but quickly learned that many outdoor environments are unsafe for women, LGBTQIA folks, and people of color. Moreover, despite fieldwork being a requirement for graduation and professional advancement in many scientific disciplines, most opportunities are inaccessible to disabled, low-income, and historically marginalized students. My observations led me to observe and evaluate

fieldwork programs in various sciences to identify policies and practices that systematically excluded certain students. My research focused on interventions in higher education, but I found that earlier experiences in nature that were safe and welcoming were crucial for making students feel like they belonged, which in turn made them more likely to persist in science. This realization ultimately inspired me to pursue nature education.

I identify as neurodivergent and disabled. I had a mild traumatic brain injury (TBI) that made my vestibular system extremely sensitive, which means that I experience severe motion sickness and occasional vertigo. I have joint hypermobility that causes chronic pain. My most recent diagnoses are Postural Orthostatic Tachycardia Syndrome (POTS) and Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS). These are dynamic disabilities, where my capacity and support needs change from day to day and even hour to hour, and they are often non-apparent. Basic activities, such as standing up, getting dressed, or walking are difficult; leading a one-hour nature tour expends more than a full day's worth of energy. Besides the physical symptoms, the most difficult aspect of living with these conditions is that they require extensive planning, decision-making, and prioritization to ensure I have the capacity to do the things I need and want to do while also requiring me to remain flexible since I never know how my body will feel on a given day.

Frameworks for Understanding Disability

- Disability Justice: a social justice framework that explores how ableism intersects with other systems of oppression, such as racism and classism, and maintains that cross-disability and cross-movement solidarity is required for liberation.
- Spoon Theory: a commonly-used metaphor to explain the limited amount of capacity chronically ill and disabled folks have and the constant decision-making, planning, and prioritization required to do things that non-disabled folks don't have to think about.
- Universal Design: designing an environment or experience from the start so that it can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, ability, or disability. Some relevant guidelines:
 - Accommodate a wide range of individual preferences and abilities.
 - Use different modes (textual, pictorial, verbal, tactile) for redundant presentation of key information for folks with different learning styles, literacy and language skills, and sensory processing limitations.
 - Reduce cognitive load (e.g., complexity, stress, and feelings of marginalization) and minimize physical exertion.
- Polyvagal Theory: when the sympathetic nervous system is activated (fight or flight response), we lose access to higher-order cognitive functions such as critical thinking, decision-making, memory formation, and communication skills.

- If we want participants to understand and retain information and/or foster a sense of connection with nature and other participants, **a sense of safety is required.**
- Our nervous system's assessment of whether we are safe or threatened is NOT conscious or rational but rather based on external (e.g., overstimulating environments, raised voices, unsafe trails) and internal (e.g., high heart rate, pain, hunger) sensory cues interpreted through the lens of our past experiences (such as trauma associations).
- **Anything we can do to cultivate a sense of safety will lead to better learning outcomes!** Reducing physical exertion, stress, and uncertainty go a long way.
- Inclusive education research: how do specific instructional practices affect learning outcomes, persistence in a subject, and a student's sense of belonging?

Accessible Outdoor Programming

Choosing Locations



Can you achieve your desired learning objectives at a more accessible site, while moving at a slower pace, and/or with frequent rest breaks?

- Birdability's Access Considerations for Birding Locations is an excellent overview of factors to consider when choosing locations for outdoor education more generally.
 - Field Inclusive's Accessible Fieldwork Checklist and Safety Plan Template also useful for planning extended experiences and travel (domestic and international).
- Is the site accessible by public transit?
 - Over 70% of disabled folks are underemployed and therefore more likely to lack access to a reliable car (this also increases access among people of color and working-class folks).
- Does the site have a parking lot with accessible parking spots? Uncertainty about parking can be a major stressor. A lack of nearby parking and/or parking with accessible spots can be a deal-breaker.
- Does the site have paved or hard-packed trails that are at least 3 feet wide? Does the trail have any stairs, large curbs/lips, washouts, or other obstacles to mobility devices?
 - Trail Surface Types: Pros and Cons for Accessibility
- Does the trail have minimal elevation gain without steep grades?
 - Steep grades may be inaccessible to some mobility aids and folks with cardiopulmonary conditions, joint pain, and fatigue/post-exertional malaise. Steep cross-grades can be difficult to navigate with mobility aids.

- Are there places to sit and rest along the way?
 - Remember that getting up and down from the ground may not be an option for folks with mobility issues, joint pain, and orthostatic intolerance.
- Are there accessible restrooms that fit mobility aids and have grab bars?
 - Squatting outdoors might be a no-go for folks with balance issues, orthostatic intolerance, joint pain, and frequent urination due to medication.
 - Access to restrooms is also more welcoming for folks who have periods and folks who are less comfortable in the outdoors.

Provide Detailed Information



One of the main barriers to participating in outdoor recreation is a lack of useful information about accessibility and trail conditions.

- [Birdability's guide to writing bird outing event descriptions](#) is another great overview that's comprehensive without being overwhelming.
- Provide information in advance so folks can make an informed decision about whether or not the activity is a good fit for them.
 - At a minimum: trail name, length, elevation gain, maximum slope, trail surface, exposure, seating
 - Subjective measures (e.g., a quick and easy hike) aren't very helpful because everyone's capacities are different. Instead of assuming ease/difficulty, provide objective information about the trail.
 - Time estimates also aren't particularly helpful unless you are very explicit (2 hours at a brisk pace with no breaks vs. a leisurely walk with frequent stops).
 - Bathroom options
 - Public transit and parking options
 - What to bring (especially important for folks with limited experience in the outdoors)
- Examples of trail descriptions:
 - [Birdability bird outing event description examples](#)
 - [Disabled Hikers](#) online trail guides and [The Disabled Hiker's Guide to Western Washington and Oregon \(book\)](#).
 - [Iris Emerick's \(OTD/S\) Accessibility Assessments of birding locations in Portland](#)
 - Access Recreation's [list of Accessible Trails in greater Portland region](#)

- Access Recreation's [Guidelines for Providing Trail Information to People With Disabilities](#) (very detailed!)

Proactively Offer Accommodations



By considering accessibility and inclusion during the planning stage and proactively offering accommodations during the outing, you can reduce the decision fatigue related to folks choosing whether to disclose disability status and/or advocate for their needs in public.

- Explicitly welcome people with disabilities, chronic illnesses, and mobility aids to attend the program. Invite folks to contact you in advance to discuss support needs and accommodations.
- Consider offering programming where masks are required, recommended, and/or welcomed—especially if the event is held indoors or requires close proximity—to make it accessible to immunocompromised people.
 - I generally wear a mask indoors with groups of people I don't know well. I typically do not wear a mask outdoors, but I always carry a mask and put it on in solidarity if someone else in the group chooses to wear one.
- Offer sliding scale pricing or free programming when possible.
- Provide loaner equipment that will allow folks to fully participate (e.g., binoculars, tents, waders, portable stools, etc.). Outdoor equipment is financially inaccessible to many!
- At the event, invite folks to chat with you about any support/accessibility needs you can help meet so they can participate fully.
- Repeat the trail description and plan verbally at the beginning of your activity so folks can decide whether to bring any assistive equipment. If on a multi-location outing, provide this information at each stop.
 - For example, if we are going to hike continuously, I might bring my rollator or no mobility aid, depending on the trail conditions. If we are going to walk for five minutes then stand in a meadow and talk for 30 minutes, I might bring a portable stool.
- Proactively stop for a 5 minute break near seating (ideally in the shade) every 30–60 minutes, even if no one explicitly asks for a break. Be mindful of where you choose to stop and talk for extended periods.
- If you have participants in your group who are blind or low vision, be sure to notify them of any obstacles (such as low-hanging branches) and changes in the trail conditions (steep drop-off to the left, two steps going up, roots and rocks). Provide detailed descriptions of

what you are observing (color, defining characteristics, size) and offer tactile input when possible (e.g., a leaf or fruit of the tree you're discussing).

- See also: [Blind Birders Tip Sheet](#)

Be Flexible



Adapt your programming to meet the needs of your group (and please be kind about it). Prioritize your group's wellbeing and experience over specific outcomes, such as finishing a hike.

- Make a good-faith effort to provide requested accommodations. If you don't think they are feasible for your outing or organization, offer potential alternatives instead of an outright rejection.
 - If your primary reasons for denying an accommodation are that: 1) it would require a bit more administrative work or planning on your end and/or 2) you're concerned about "fairness", you're not prioritizing equity and inclusion.
 - Disabled folks are frequently denied reasonable accommodations and treated like a burden. Compassionate communication goes a long way.
- Don't pressure folks to push through hikes or other physical exertion. This can be **harmful** to those with post-exertional malaise—it can trigger a worsening of symptoms and reduce functional capacity for days, weeks, or even months.
- Lower stress and reduce cognitive load by giving folks autonomy over how they engage and participate. This benefits everyone, but especially neurodivergent folks, people with anxiety, and other disabled folks trying to conserve energy.
 - Allow folks to opt-out of icebreakers, working in groups, and sharing out.
 - Avoid cold-calling and instead ask for volunteers to answer questions.
 - Don't force eye contact or instruct people to stop stimming.
 - Be mindful of personal space and physical contact.

Local Programming Examples

- [Oregon Wheelchair Hiking](#): weekly meet-up group [led by Franklin Ouchida](#)
- Bird Alliance of Oregon: [Accessible Birding Outing](#), [Accessible Birding with Zeiss](#)
- [Iris Emerick's accessible birding outings](#) in partnership with Bird Alliance of Oregon
- [Feminist Bird Club PDX](#) and [Rey Snyder](#) offer birding events for queer, BIPOC, neurodivergent, and/or disabled folks

- Hoyt Arboretum: [Trees For All Public Tour](#); also offers American Sign Language Interpretation for a few public tours throughout the year
- Portland Parks and Recreation [Adaptive Recreation: ASL Hike](#), [Meet Us There Adaptive Hikes](#)
- [Nature Walks for Autism Community at Tryon Creek](#)
- [Disabled Hikers Community Gathering](#)

Accessible Learning Materials



There are a lot of resources available for how to make documents, websites, social media, and course materials more accessible. Start incorporating best practices a little at a time instead of trying to overhaul all of your material at once.

- Provide information in multiple formats to accommodate different ways of processing
 - Some people find it easier to absorb information by listening, reading text, referencing images and diagrams, watching videos, or while doing/moving
 - e.g., providing handouts with key words, concepts, or diagrams can help folks retain what you're saying (supports folks who are neurodivergent, hard of hearing, and English Language Learners)
- Provide learning materials in advance to help folks who need more time to process information. It's also good practice to provide key terminology in advance to ASL interpreters.
- Offer large-text and/or Braille options for interpretive panels, posters, and slides (often called an accessibility copy).
- Whenever possible, avoid providing text via scanned and/or flattened documents since they can't be used by screen readers (low vision) and text-to-speech programs (often used by neurodivergent people with dyslexia, migraines, etc.)
 - Use .docx, Google Docs, and/or export to PDF (don't flatten!)
 - Prioritize legibility: sans serif fonts in high contrast colors are generally easier to read; avoid all caps and small font size
 - Use headings and subheadings (select the format instead of bolding or changing font sizes manually) to indicate how information is related and make screen reader navigation easier
 - [Birdability's tips for maximizing the readability of text](#)
- Use [image descriptions and alt-text](#). If there is important text in an image, be sure to type it out.

- Use descriptive hyperlink text (instead of “click here,” describe what you’re linking to) for folks navigating websites via screenreaders.
- Enable live-captioning during Zoom meetings and send recordings when possible to support folks who are neurodivergent, hard of hearing, and English Language Learners.
 - [Birdability’s instructions for adding captions to online videos](#)
- Ensure your website is accessible (e.g., font selection, contrast, tab navigation, etc.)
 - [Web Accessibility Fundamentals](#)
- Social media: add image descriptions and alt-text, camelcase hashtags, put mentions and hashtags at the end of the post instead of sprinkling throughout
 - [How to Make Your Outdoor Content Accessible for People with Disabilities](#)

Resources

Books

- [Demystifying Disability](#) by Emily Ladau
 - An excellent introduction for everyone
- [The Anti-Ableist Manifesto](#) by Tiffany Yu
 - A primer for folks familiar with social justice language
- [Against Technoableism: Rethinking Who Needs Improvement](#) by Ashley Shew
 - Focus on technology and mobility devices; also a great chapter about disability and climate change
- [Care Work: Dreaming Disability Justice](#) by Leah Lakshmi Piepzna-Samarasinha
 - Rethinking how we conceptualize, offer, and receive collective care
- [The Invisible Kingdom: Reimagining Chronic Illness](#) by Megan O’Rourke
 - Helpful for understanding the countless barriers folks with chronic illness encounter while seeking diagnosis and treatment
- [The Spoon Theory](#) by Christine Miserandino
 - Helpful for understanding the reduced functional capacity and increased cognitive load of many folks with disabilities and chronic illnesses
- [Unmasking Autism: Discovering the New Faces of Neurodiversity](#) by Devon Price
 - Helpful for understanding autism and neurodivergence in general
- [The Disabled Hiker's Guide to Western Washington and Oregon](#) by Syren Nagakyrie

- Provides trail information for ~60 outdoor adventures

Organizations & Communities

- [Access Recreation](#): detailed information about trails in the Portland-Vancouver region
 - [Trailkeepers of Oregon](#) has recently partnered with Access Recreation to survey trails for accessibility and compile the information on [Oregon Hikers](#).
- [Disabled Hikers](#): community, trail guides, inclusive hikes
- [Birdability](#): community, guidelines, map of birding locations
- [Access Birding](#): consulting and training services for designing and leading bird outings for people with disabilities

Lists of Accessible Trails

- Access Recreation's [list of accessible trails in greater Portland region](#)
- [Disabled Hikers](#) trail guides
- [Birdability Map](#)
- Oregon Spinal Cord Injury Connection's [list of accessible trails in Oregon and southwest Washington](#)
- P.S. People with disabilities can request a FREE [America the Beautiful - National Parks & Federal Recreational Lands Access Pass](#)

Stewardship

- [US Forest Service Accessibility Resources](#)
- [Trail Accessibility Hub](#): resources for planning, constructing, and maintaining accessible trails

Adaptive Equipment

- [Adventures Without Limits](#): outdoor adventures with adaptive equipment
- [Oregon Adaptive Sports](#): outdoor adventures with adaptive equipment
- [Adaptive Birding Equipment](#)

Increasing Access

- [Iris Emerick's Occupational Therapy Doctoral Capstone Portfolio](#) on accessibility and inclusivity in birding
- [OSU Accessible Event Planning Guidelines](#): includes links to local agencies

Disability Trainings, Etiquette, and Communication

- [OSU Extension Service Outdoor School EDAI Resource Library](#) (EDAI = equity, diversity, accessibility, and inclusion)
- [Birdability Inclusive Communication and Language Tips](#)
- [Diversability Becoming Anti-Ableist online course](#)
- Disability Awareness Training [Accessibility Skills: Communication Strategies](#)
- Disability Awareness Training [Disability Etiquette](#)
- [National Center on Disability and Journalism Disability Language Style Guide](#)

Etiquette Basics



If any of the points below are unfamiliar, I recommend reading the book *Demystifying Disability* and *The Anti-Ableist Manifesto* linked above.

- Don't assume disability status based on someone's age, appearance, behavior, or communication.
- In general, default to person-first (a person with disabilities) rather than identity-first (a disabled person) language, unless you're told otherwise. Ask folks how they prefer to be identified and then use their chosen language.
- Don't ask for someone's disability "origin story" or other private details.
- Don't offer unsolicited advice about managing/treating their disability.
- Don't imply someone's disability is a tragedy or, alternatively, that they're inspiring for existing with a disability.
- Presume competence! Don't assume what folks can or cannot do—ask them what their support needs are.
- Ask folks if they'd like help BEFORE you act. Even if well-intentioned, your attempt to help may actually make things harder.
- Don't touch the person or their adaptive equipment without permission.
- Speak directly to the disabled person when you're talking to them rather than speaking to a companion, caretaker, or interpreter.
- Having a physical impairment does not mean that someone also has a cognitive impairment and vice versa.
- Accept and respect service dogs! Don't touch or distract working dogs. You *may* ask what disability-related actions the dog is trained to do to distinguish them from a pet or emotional

support animal. You may *not* ask for people to disclose their disabilities and medical conditions. Service dogs do not need to be registered (there is no centralized registration system, though there are voluntary registration lists) and they may be trained by their owners (professionally-trained dogs can cost \$50,000+).