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Background

- Western society perpetuates the idea of humans as superior to Nature.
- This influences our economic, social, and political ideas and decisions surrounding the environment, which currently do not prioritize our connection to it.
- A lack of connection to nature means we lose out on many learning opportunities and cause harm to nonhuman species and ecosystems.
- Nature-based Citizen Science (public participation in scientific research) has the potential to foster environmental citizenship in communities and beyond.

Research Question

What are some best practices for enacting a nature-based citizen science (NBCS) initiative that increases their participant's connectedness to the non-human world?

Internship + Methods

Interned with Stillwaters Environmental Center Winter 2022, collecting **personal observations**.

- Wrote lesson plans on 2 NBCS projects intended for High School student education.
- Worked on several NBCS restoration projects including monitoring water quality, Sitka Spruce mortality, and beach profiling.

Administered surveys to the general public of Kingston and Stillwaters EC volunteers to collect data on their experiences and connectedness to nature.

Conducted a **literature review** on certain themes, evaluations, and recommendations for NBCS programs and scholarly work on connectedness to nature.

Results

- Based on the connectedness to nature scale, survey results (n=67) showed those involved in restoration-based volunteer work had a slightly stronger connection (See fig. 1).

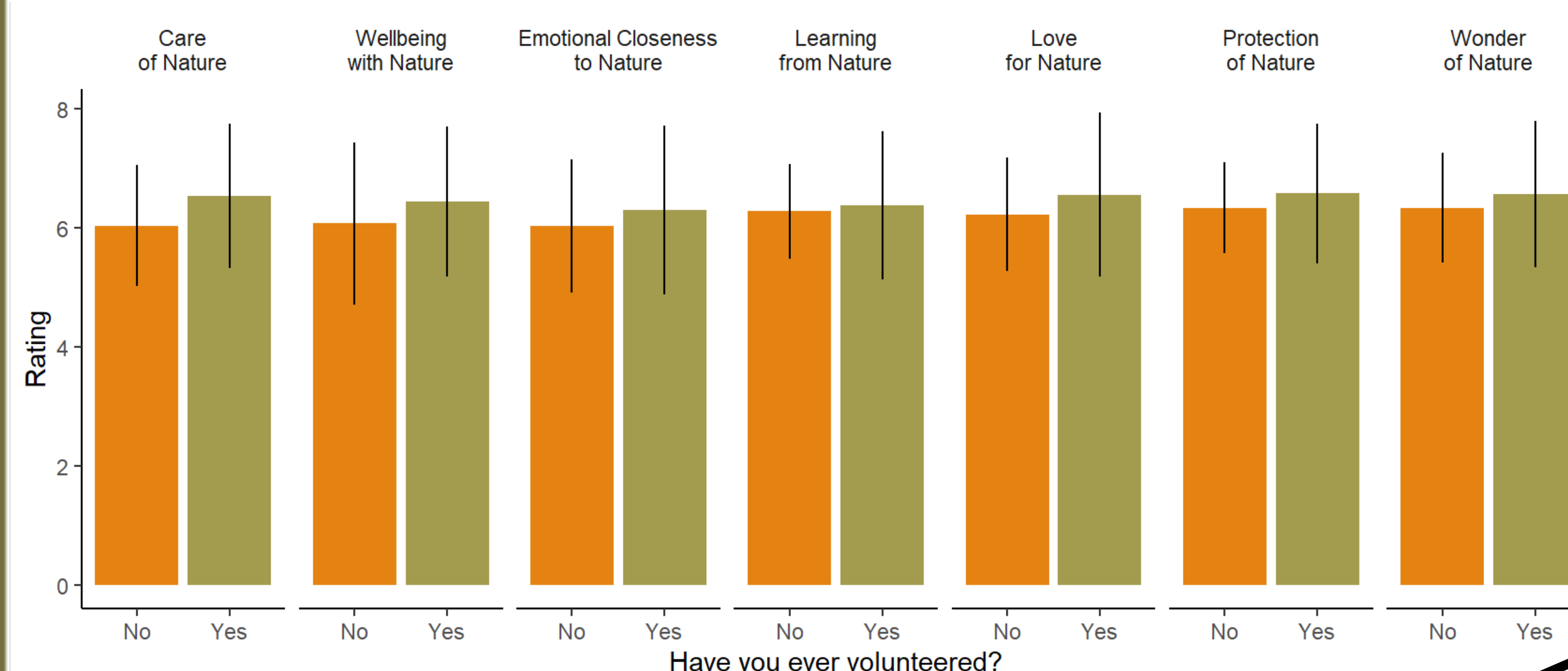
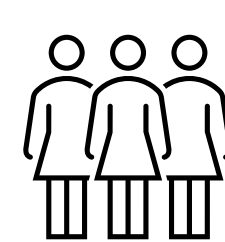


Figure 1. Survey data of the average rating of each connectedness to nature question for volunteers involved in restoration work compared to those that have not volunteered.

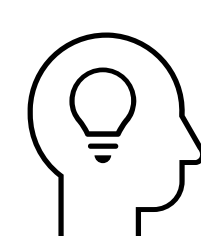
From literary research and collecting personal observations, I found three best practices to impacting a volunteer's connection to nature (see image 1):



Participatory Leadership

- Democratization of projects by focusing on creative collaboration.
- Digital media to broaden outreach.
- Understanding volunteer motivations and benefits (See fig. 2).

Observation: Stillwaters EC has mostly contributory roles for volunteers, but also strives to educate with activities like data analysis (e.g., lesson plans).



Active Learning

- Promote scientific literacy through science-learning goals.
- Prioritize effective training to encourage volunteers to return.

Observation: Returning to the same work each week helped me better understand the land and the scientific process.



Evoking Emotion

- Cultivating a "sense of place" for volunteers.
- Using evocative language and unconventional communication (e.g., Storytelling).

Observation: Stillwaters EC provides community members with hands-on training and lessons with professional scientists (See image 1).



Image 1. Stillwaters Environmental Center hosts educational events where citizens can learn about current projects and findings (left). Hands-on learning is also incorporated as the "students" practice taking water samples, tree cores, etc. (right).

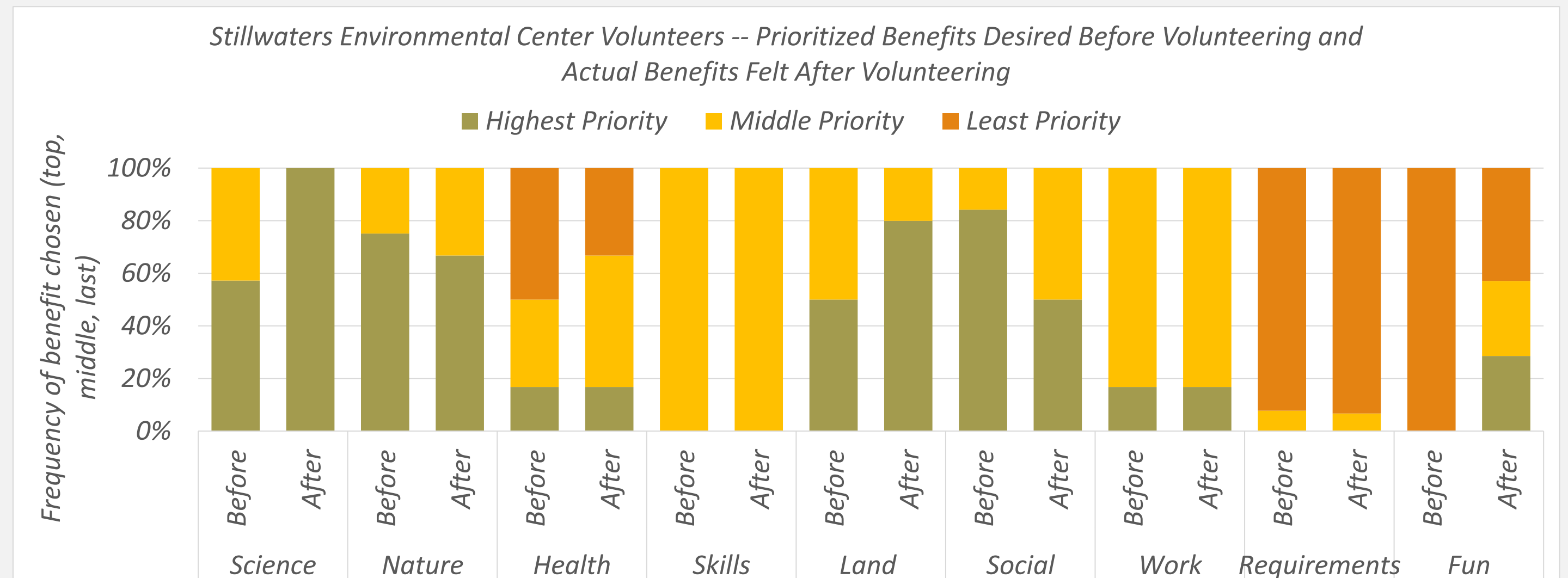


Figure 2. Survey data of NBCS volunteers at Stillwaters Environmental Center (n=20). Shows their motivations before volunteering and if those same motivations were felt after doing the volunteer work.

Implications + Next Steps

- NBCS initiatives create communities that **value**, **understand**, and **celebrate** their nonhuman neighbors and the land shared between them.
- Initiatives should evaluate their participants connection to nature and find ways to augment.
- Initiatives should train their scientists and educators on these best practices before involving volunteers.
- Initiatives should look to those already implementing some of these best practices. (E.g., Stillwaters EC, Cornell Lab of Ornithology, etc.)

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