

Assessing Graduate Student Volunteer Impacts and Stewardship Reciprocity

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Abstract

The profound effects of engaging with nature are widely acknowledged, with a growing recognition of the advantages of purposeful activities in nature, such as participation in environmental volunteerism. Cultural ecosystem services (CES) encompass individuals' intangible relationships with their environment, including contributions of nature to mental well-being and a sense of place. One way to experience these CES firsthand is through community-based stewardship opportunities that foster meaningful connections between people and place. The Heʻeia National Estuarine Research Reserve (NERR) organizes volunteer opportunities, referred to as *Laulima* (many hands) *Days*, for graduate students, researchers, and a broader network of collaborators as an opportunity to participate in biocultural restoration projects in the ahupuaʻa (historic land division) of Heʻeia, Hawaiʻi. Further, *Laulima Days* provide opportunities to further reciprocal relationships with ʻāina by giving back to researched areas. The overarching objective of this capstone project was to discern the CES experienced by graduate students through their participation in biocultural stewardship events. This overarching objective was addressed with three specific objectives: (i) to identify the CES experienced by graduate student participation at *Laulima Days*; (ii) to investigate what aspects of well-being are influenced by the CES experienced at *Laulima Days*; and (iii) to determine if participation in biocultural restoration influences graduate student researcher development. Fourteen interviews were conducted with graduate student participants of *Laulima Days*. Interviews were analyzed using thematic analysis to identify Connect, Learn, Value, Well-being, ʻĀina, and Emotions as the six overarching subjects. Respondents noted several CES, including deepened connection to place, sense of responsibility, and lessened stress. *Laulima Days* helped students foster reciprocal relationships with place and strengthened relationships between researchers and community members, which is necessary for place-based and co-developed research that aligns with the needs and interests of local communities. These findings provide valuable guidance for integrating CES assessment into restoration monitoring, a need voiced by stewardship communities in Hawaiʻi. This research also presents a semi-structured survey, co-developed with interviewees, that can be used to assess the nonmaterial benefits of biocultural restoration projects in Heʻeia and beyond.

Keywords: cultural ecosystem services, social-ecological, stewardship, Hawaiʻi

Motivation

The impact of immersing oneself in the natural world is increasingly recognized. This underscores the many benefits linked to intentional engagements in natural environments, which is exemplified by involvement in environmental stewardship (Hansen-Ketchum & Halpenny, 2011). Why, and more importantly, how do we associate energy dedication, primarily through service such as volunteering, with well-being? An expanding field of literature documents the importance of connecting to nature and the positive benefits to individual well-being (Bratman et al., 2012; Clay et al., 2022). Positive benefits to well-being through environmental stewardship may be invaluable for specific demographic groups, such as graduate students. Graduate students must acquire extensive skills and information to advance in their degrees and future careers. The continual pressure to perform well results in high levels of stress built into many graduate students' institutional experiences (Mousavi et al., 2018). Further, participation in service activities may enhance college students' academic development, life skill development, and sense of civic responsibility (Astin & Sax, 1998). Investigating the experiences of volunteers may illuminate ways to leverage proactive measures to promote the well-being of graduate students. Understanding the reciprocal relationship between humans and nature is essential when considering the benefits of environmental engagement for the well-being of humans, which aligns closely with the concept of ecosystem services (ES).

Ecosystem services (ES) are divided into four main classes of services: provisioning, regulating, supporting, and cultural (Millennium Ecosystem Assessment, 2005). ES are widely understood as the benefits humans derive from nature and are generally understood to be one-way flows from ecosystems to people (Comberti et al., 2015). Emerging frameworks also highlight the positive contributions of people in addition to the negative harms, moving away from the uni-directional, negative flows between people and ecosystems that are often part of social-ecological systems (SES) models (Heller et al., 2023).

Human-ecosystem relationships are developed through the contributions of the environment to human well-being in material and non-material means (Amberson et al., 2016). Chan et al. (2012) define these non-material benefits, including capabilities and experiences that arise from human-ecosystem relations, as cultural ecosystem services (CES). Hawai'i frameworks for understanding CES include reciprocal relationships between people and place, a sense of security, traditional values, and cultural subsistence (Pascua et al., 2017). Measuring

non-material and culturally significant benefits derived from ecosystems is crucial for fully integrating human dimensions into sustainable management (Leong et al., 2019). Further, investigating metrics for assessing ES and measures of human well-being has been identified in the field of SES as a need for advancing research into biocultural restoration (Winter et al., 2020).

Beyond this lack of valuation systems for CES, there is also a need to further link CES to human well-being and assess more subjective and intangible CES (Rodrigues et al., 2017). The relationship between CES and well-being is multifaceted and not linear (Huynh et al., 2022). A review by Lovell et al. (2015) found limited high-quality study designs in this discipline, resulting in limited direct evidence of environmental enhancement activities as health interventions. Further, many of the Lovell et al. (2015) review studies were conducted in “Western” contexts. However, Hawai‘i and other Indigenous communities have a distinct movement of environmental stewardship guided by biocultural relationships.

Background

A comprehensive understanding of the impacts of participation in environmental stewardship is not only academically valuable but crucial for the betterment of individuals and the environments they aim to serve. Guiney and Oberhauser’s (2009) study on conservation volunteers sheds light on the profound relationship between humans and nature, revealing that volunteer motivations encompass a desire to learn about and teach others about the natural world. This study underscores the significance of conservation volunteer programs in fostering a connection to nature, thereby emphasizing the importance of understanding these motivations for effective program design and implementation. Volunteerism can be crucial in addressing local ecosystem pressures by fostering community involvement and emphasizing cultural values in resource stewardship (Ingram et al., 2018). Additionally, Coventry et al. (2019) contribute to this narrative by qualitatively highlighting the co-benefits of conservation and citizen science for the environment and individual health and well-being. Their findings suggest that purposeful activities in public green spaces, such as volunteering, have the potential to promote health and mental well-being—an invaluable perspective in the context of overall community wellness.

Shum et al. (2023) explored the multifaceted motivations of volunteers, further emphasizing the need for a nuanced understanding of various factors. Values alignment with the

organization, social influence, the opportunity to learn, and optimism emerged as common threads shaping volunteering decisions. This motivation may vary based on the frequency of involvement, and CES has driven regular participation (Takase et al., 2019). Further, environmental identity, private pro-environmental behavior, and civic engagement were all positively correlated with the frequency of participation in stewardship events (Dresner et al., 2015). Recognizing and comprehending these connections not only enriches understanding of volunteerism but also offers practical insights to propel the establishment of stronger relationships by improving recruitment, retention, and the success of conservation initiatives (Sextus et al., 2024). In summary, these prior studies reveal that the theory driving volunteers is intricate and multifaceted, extending beyond a mere desire to contribute time or improve the environment.

Theory originating in the environmental psychology field and the theory of planned behavior suggests that behavior is determined by intentions, attitudes, and subjective norms (Ajzen, 1991). Bremer et al. (2018) found that families participating in kalo production most valued the intangible benefits they gained by developing reciprocal relationships between themselves and ‘āina (land). Additionally, interest in the biocultural values of traditional agricultural systems has been demonstrated by communities working to restore traditional terrestrial agriculture, as well as nearshore aquaculture, for linked cultural, economic, and environmental benefits (Ruttenberg & Kawelo, 2016). Studies such as these cite emerging theories on biocultural restoration, suggesting evaluations of biocultural projects should include place-based outcomes and indicators relevant to and defined by local communities (Dacks et al., 2019). Biocultural restoration is a multifaceted approach that acts to restore the health of ecosystems while preserving and revitalizing the cultural knowledge, practices, and relationships of the Indigenous communities that inhabit that ecosystem (Chang et al., 2019). The value of this approach is the emphasis on interconnections between the environment and culture, recognizing how these links impact well-being. The evidence presented here collectively argues for a comprehensive investigation of volunteer impacts, emphasizing the reciprocal relationship between humans and the environmental causes they champion, the potential co-benefits for individuals and the environment, and stewardship groups' vital role in fostering community resilience.

Objectives

This project aimed to increase understanding of the relationship between environmental volunteering and graduate student well-being. The overarching objective of this capstone project was to discern the CES experienced by graduate students through their participation in biocultural stewardship events. This overarching objective was addressed with three specific objectives: (i) to identify the CES experienced by graduate student participation at Laulima Days; (ii) to investigate what aspects of well-being are influenced by the CES experienced at Laulima Days; and (iii) to determine if participation in biocultural restoration influences graduate student researcher development.

Methods

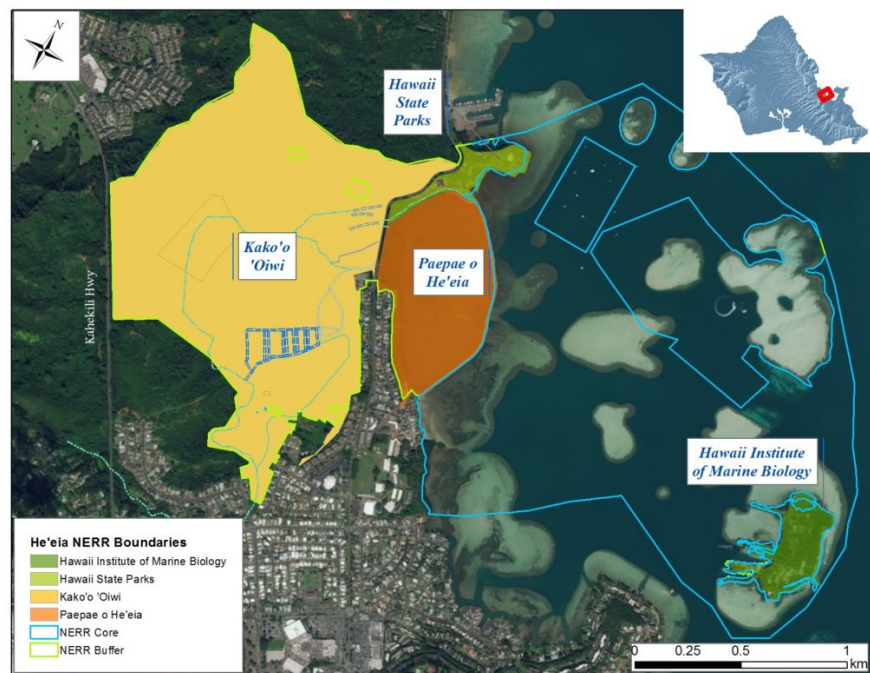


Figure 1. Map of the He'eia NERR in Ko'olaupoko, O'ahu. (<https://heeianerr.org/>)

The He'eia National Estuarine Research Reserve (NERR) represents a strong partnership among federal, state, and community-based entities, all committed to a vision of resilient estuaries and coastal watersheds where human and natural communities thrive. It is part of a network of 30 sites established under the Coastal Zone Management Act, housed in the National

Oceanic and Atmospheric Administration, all designed to support ecosystem health and the interconnectedness of people and the environment (<https://coast.noaa.gov/nerrs>)

He‘eia National Estuarine Research Reserve (He‘eia NERR) is based in Ko‘olaupoko, O‘ahu, Hawai‘i. It preserves biological and cultural integrity through stewardship rooted in Native Hawaiian philosophies and values. One He‘eia NERR partner, Kāko‘o ‘Ōiwi, is a non-profit organization restoring nearly 405 acres of He‘eia wetlands through traditional agriculture to enhance ecological productivity. Paepae o He‘eia, another He‘eia NERR partner, is a non-profit organization dedicated to mālama (care for) He‘eia Fishpond and to protecting resources for the community. The He‘eia NERR facilitates Laulima (many hands) Days, where volunteers are hosted at NERR partner sites, including Paepae o He‘eia and Kāko‘o ‘Ōiwi, to conduct biocultural restoration activities. Laulima Day activities (LD) are fueled by intention. For example, an intention for a recent LD at Kāko‘o ‘Ōiwi is described as:

“Our intention is to kōkua the efforts of the most mauka (upland) restoration project of this ahupua‘a of He‘eia. What happens mauka determines the mauli (life/spirit) of the waters below. It is said that this heiau was dedicated to the god Kanehekili, the god of thunder and lightning.” (Source: Ko‘olaupoko Hawaiian Civic Club)” He‘eia NERR March Monthly Newsletter

LD are designed, in part, to encourage graduate students from the University of Hawai‘i at Mānoa (UHM) to continue engaging with their environment and communities throughout the ahupua‘a as they move forward in their research. However, what remains unknown is what these students experience and gain from participating and to what extent. Currently, there is no system for evaluating students’ experiences in this program.

Interviews explored why attendees attend LD and their experiences participating (Appendix A). He‘eia NERR staff provided a list of past and current Graduate Research Assistants (GRAs) supported by the He‘eia NERR. All NERR GRAs are required to attend at least one LD every month, but many choose to attend more frequently. Using purposeful sampling methods, fourteen graduate students, including NERR GRAs, were selected for interviews because of their extended and repeated participation in LD events. Students were contacted via email to schedule interviews with myself or professionals associated with the He‘eia NERR: Dr. Rachel Dacks, Casey Ching, or Aimee Sato. Interviews were offered by

NERR staff because some interviewees may have existing relationships with the staff and felt more comfortable discussing personal experiences with them. Other factors contributing to interview scheduling included the availability of the interviewee, interviewer, and preferred location of the interview. The interview protocol and tools were approved by UH IRB (#2023-00640).

With the permission of the interviewees, interviews were recorded with a physical voice recorder if the interview was in person or via Zoom if remote. After each interview, the recording was uploaded to Otter.ai (Otter.ai, Inc.) to form a transcript. Transcripts were then manually reviewed and checked for mistakes and inaccuracies. The approved transcripts were then coded using the qualitative analysis software NVivo (Lumivero), which allowed me to assign codes to sections of the transcripts. The data was iteratively coded, in three rounds, without a pre-existing framework or codes, allowing themes to emerge from the data (Kuckartz, 2014). Codes were inductively added to a codebook as new concepts arose (Saldaña, 2021). This overall process illuminated themes of shared experiences and feelings regarding LD. Codes were grouped into subjects, themes, and attitudes to clarify the overarching ideas (Appendix B).

"It's the connections to people, it's the connections to the places. And part of the connection to the places is giving back to a place that had a lot of meaning for me, still has a lot of meaning for me."

Connecting their actions to tangible work in the He'eia ahupua'a (land management system) resulted in establishing and deepening similarly varied social relationships. Beyond simply forming new connections, participants emphasized the importance of maintaining and reestablishing existing ones. This reconnection process was described as profoundly fulfilling and essential to a sense of belonging. One participant highlighted how trust and familiarity developed over time through these efforts, stating,

"I think it's also allowed me to build up over time a lot more trust with our site partners, so I'm able to have closer collaborative conversations with them and just interact much easier, and we know each other better now, so that's really affected what I'm working on a lot in a positive way."

The physical and social aspects of the volunteer work naturally encouraged interaction. Conversations flowed more easily during tasks like weeding, planting, or hauling stones, creating an organic and inclusive social environment. Participants noted that these moments often led to unexpected yet meaningful exchanges. *"Every time you're walking, you end up walking with someone new,"* one participant observed. Furthermore, a general sense of camaraderie emerged from the shared purpose and collective effort. This energy helped foster a deeper understanding and appreciation of the interconnectedness between people and their environment, strengthening individual and communal ties.

Emotions

Laulima Day participation evoked a broad spectrum of emotions, reflecting the depth and diversity of participants' experiences with 'āina, community, and work. Many described feelings of inspiration and motivation sparked by the meaningful purpose of their efforts and the opportunity to contribute to something larger than themselves. One participant expressed pride in contributing beyond their scientific work, sharing,

“I was able to take pride that I was able to give back to my community in more than just science like I'm helping a community group that is about restoring cultural sites.”

The experience was both humbling and nourishing, offering volunteers a chance to ground themselves physically and emotionally in their work. As another participant explained,

“It is a really good way for me to kind of get out of my head and into my body kind of situation. So I very much enjoy that. Yeah, I think that's part of why I feel like it's so grounding for me, it's kind of like a way to feel.”

For many, the experience fostered pride and responsibility, instilling a deep sense of stewardship and respect for the ‘āina and its cultural significance. As another eloquently stated, “I want to participate in taking care of these spaces because I love them. But that's part of caring and keeping them.” Participants also experienced curiosity and imagination as the hands-on tasks and observations encouraged them to explore new perspectives and appreciate the dynamic nature of the ecosystem.

Moments of enjoyment, fun, and satisfaction created a joyful and lighthearted atmosphere, while familiarity and comfort made the experience feel welcoming and inclusive. However, these emotions were balanced by occasional nervousness or intimidation, often stemming from the physical or cultural unfamiliarity of the tasks, which ultimately evolved into trust and confidence through shared work.

Value

The values embodied by LD deeply resonated with the values of its participants, creating a meaningful alignment that enhanced the volunteer experience. Central to this connection was ‘sweat equity’, the idea that contributing physical effort toward a greater purpose was rewarding and an essential way to give back. Many participants felt a profound sense of giving back, recognizing that their work was not just about individual achievement but about tangibly supporting the community and environment. As one participant noted,

“The intention is more about maintaining, maintaining balance, giving back to spaces again that have meant a lot to me, and really also trying to follow through on a value that I hold, that I also try to share with other people.”

The work's cultural significance further reinforced this alignment, as participants reflected on the importance of preserving and restoring spaces tied to heritage and tradition. This deep connection encouraged a sense of reciprocity and cultural literacy. As another participant shared,

“The more important it became for me to really understand and be culturally literate in this place as well, understanding the ideas and philosophies, the values of the local communities so that I could be more respectful of this place and ensure that I'm actually contributing to it and not just taking from it, you know, to be reciprocal, rather than extractive.”

Through their involvement, volunteers gained new perspectives, appreciating the interconnectedness of cultural and ecological systems and how these connections shaped their sense of care and responsibility. This shared ethos of care for the land and the community underscored the collective commitment to sustaining and honoring the ‘āina, making LD a profoundly fulfilling and values-driven experience for all involved.

Education

Many reflected on what it means to be a researcher in He‘eia and how LD significantly impacted their educational journey. Beyond fostering connections, LD provided a unique platform for education, knowledge exchange, and personal and professional development as scientists. For many participants, these experiences encouraged a deeper exploration of their roles as researchers working within a community and environment with cultural, ecological, and historical significance. As one participant noted,

“It provided a lot of context to the research in which we're doing that I don't think people that aren't going to those places don't fully understand the context in which they're fully doing their research.”

The interdisciplinary nature of LD helped break down the silos described by interviewees. Participants gained opportunities to engage with the ahupua‘a as a system, broadening their understanding of integrated ecological and cultural practices.

“It's an opportunity to understand what's going on in the whole watershed,”

one interviewee explained that the hands-on engagement deepened their appreciation for the interconnectedness of land, water, and community within the moku system.

Additionally, these hands-on experiences encouraged researchers to rethink the ethical dimensions of their work. LD prompted many to reflect on what it means to conduct science in a way that is not only rigorous but also respectful and aligned with the local community's values. For some, this involved recognizing the importance of forming strong partnerships with local stakeholders. As one participant stated,

“I think that if you want to conduct any research anywhere, to have local partnerships that are supportive of the project, and like, that are going to be the ones that the information, the data collected in any way will be impacting them.”

Participating in LD gave researchers a clearer sense of how their work could align with the principles of pono science. This ethical perspective enriched their roles as scientists and underscored the significance of humility and collaboration in their work. For some, this meant questioning conventional research practices and considering how they might center community voices and values in their methodologies. Others highlighted the importance of reciprocity, ensuring their research contributes meaningfully to the communities and ‘āina with which they interact.

‘Āina

A large part of the value of the experience is facilitated through physically spending time in ‘āina. The hands-on opportunity to engage with the elements, get dirty, and work directly with the environment allowed participants to develop further and deepen their relationship with the ‘āina. Despite the physical challenges, many described this as a welcome and rewarding contrast to their usual routines, which often revolved around office work and technology. Stepping away from screens and into the natural world provided a refreshing and grounding experience that participants cherished.

This time spent in the ‘āina also allowed students to observe the landscape's evolving nature over time, fostering a unique sense of connection to the cycles and rhythms of the environment. As one participant described,

“Being able to go through the Laulima Day kind of lets me go into these spaces and access them.”

For many graduate students, the opportunity to access these areas was significant, as they might not otherwise have had the chance to engage with the land in such a meaningful and intentional way.

Engaging with these sites physically through LD fostered a profound sense of place that extended beyond academic or professional interest to a personal and emotional connection. This intimate engagement cultivated a heightened sense of responsibility and care for the land. Another interviewee reflected,

“I’m really feeling a different level of responsibility and relationship to that place.”

Through these experiences, participants built a stronger bond with ‘āina and found themselves more attuned to their role in its stewardship. The physical labor and time spent in these spaces reinforced the interconnectedness of their actions with the health and vitality of the ahupua‘a, fostering a sense of purpose and accountability that transcended the tasks in the moment.

Well-being

The positive effect on the well-being of graduate students was evident in the coding of interviews. Interviewees described feeling less stressed and experiencing a sense of fulfillment after participating in LD activities. This can be attributed to the previously mentioned emotions elicited, such as joy, gratitude, and a sense of connection. As one participant noted,

“There were definitely days where I felt like just not in a good mood, doing something physical helped a lot.”

These emotions contribute to overall mental and emotional resilience, helping participants navigate the challenges of graduate life.

In addition to positive emotions from participating in LD, many interviewees reported a sense of confidence. The collaborative nature of the activities provided a supportive environment where individuals could take on meaningful roles, enhancing their self-efficacy and fostering a sense of

achievement. Furthermore, the opportunities to build interpersonal skills through socializing at the sites resulted in increased comfort and decreased anxiety. As one interviewee explained,

“I’ve been able to get past anxiety through working shoulder to shoulder with other people.”

LD also offered a sense of purpose and connection to the broader community, reinforcing the feeling of making a tangible difference. Being present and engaged in physical, hands-on work helped students to feel grounded and balanced, which was especially important amidst the academic pressures they faced.

“It’s a really good way for me to get out of my head and into my body. So I very much enjoy that. That’s part of why I feel like it’s so grounding for me,”

one participant shared. This grounding effect supported their mental health and helped them cultivate mindfulness.

Discussion

This study set out to better understand the relationship between environmental volunteering and graduate student well-being through the lens of cultural ecosystem services (CES). The findings from interviews with graduate student participants at Lāulima Days clearly demonstrate that these events are not only sites of ecological restoration but also spaces of cultural learning, emotional reflection, and personal growth. In this section, we revisit each of the project’s three objectives and situate our findings within the broader body of scholarship on CES, ‘āina-based learning, and graduate student development.

Objective 1: Identifying the CES experienced at Lāulima Days

Participants described a wide range of CES derived from participation in stewardship activities, including cultural identity, spiritual enrichment, social cohesion, and place-based knowledge. These findings align with previous work identifying the role of CES in fostering emotional, cultural, and relational values in community-based conservation (Chan et al., 2012). Like previous studies on Indigenous and local stewardship practices, Lāulima Days offered students an avenue to connect to the landscape in ways that transcended scientific or technical understanding (Pascua et al., 2017). This supports arguments that CES, particularly in biocultural contexts, are often deeply tied to identity and a sense of kuleana (responsibility) (Whyte, 2013).

Objective 2: Exploring how CES influence graduate student well-being

The emotional and psychological benefits reported by participants, such as feeling grounded, more connected, or more hopeful, mirror research showing that interactions with nature, particularly within culturally meaningful settings, can reduce stress, enhance emotional resilience, and improve mental health (Bratman et al., 2019). Importantly, these benefits were not purely individual: participants emphasized how communal labor, and shared intention fostered a sense of belonging, echoing studies on social connectedness as a key CES pathway (Russell et al., 2013). Every interviewee recommended ‘āina-based experiences to their peers, suggesting strong perceived value and potential for enhancing the well-being of a broader student population.

Objective 3: Determining the influence on researcher development

Participation in Laulima Days also appears to influence how students approach their research and academic identities. Students reflected on how working with ‘āina expanded their frameworks beyond disciplinary boundaries, encouraging more holistic, ethical, and culturally grounded approaches to environmental science. This is consistent with the literature on transformative learning and place-based education, which highlights how experiential, culturally anchored learning can reshape students’ values and research priorities (Bang et al., 2014). Notably, nine of the fourteen interviewees were Marine Biology students and had participated in Laulima Days through their Marine Biology 600 course, a required two-week field-based introduction before the start of their first semester. This early and intentional exposure to ‘āina-based learning helped spark deeper engagement and motivation in both their academic trajectories and personal commitments to stewardship. Students described how the course created space for them to reflect on their positionality, relationships with place, and the ethical dimensions of doing research in Hawai‘i. The alignment of classroom content with lived experience through service-learning helped solidify their sense of purpose and inspired greater responsibility as researchers working in culturally sensitive contexts. These findings suggest that embedding ‘āina-based pedagogy within graduate curricula can be a powerful lever for motivating and grounding students in values-driven, community-responsive scholarship.

Implications for the University of Hawai‘i System

Given the alignment of these findings with broader scholarship on CES and well-being, the University of Hawai‘i system may consider expanding ‘āina-based learning opportunities across

departments. The UH Mānoa 2025 Strategic Plan identifies the campus as a Native Hawaiian Place of Learning, a vision that Laulima Days directly support. Implementing a graduate-level equivalent of the undergraduate Hawaiian, Asian, and Pacific Issues (HAP) requirement could ensure more equitable exposure to place-based learning. Further, integrating ‘āina-based pedagogy into NREM curricula may fill knowledge gaps in Hawai‘i’s environmental history, ethics, and Indigenous resource management systems (Bremer et al., 2018).

Conclusion

Overall, this project reinforces the significance of environmental volunteering as more than a form of service, it is a deeply cultural and relational experience that promotes well-being and shapes emerging scholars. In centering CES within graduate student experiences, this work contributes to growing calls for higher education to more fully embrace Indigenous knowledge systems, community partnerships, and land-based learning as essential to academic and personal development.

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Appendix

A. Laulima Day Semi-Structured Interview Questions

[Interviewer introduces themselves again (e.g., where they are from, and what their position at UH is, their role in the study, their research, etc.)]

1. Can you please introduce yourself and tell me where are you from?
2. a. How many years have you been attending UH for grad school? (if already graduated, when did they attend grad school)
b. What is/was the topic of your research?
3. a. When did you begin attending Laulima Days?
[if not specified, inquire whether they attended Laulima Days before they became a NERR RA]
b. Do you attend any other volunteer work days?
[if not specified, ask when this began—long-term? or only since in grad school?]
4. Approximately how many Laulima Days have you attended OR approximately how often do you attend Laulima Days?
5. Are Laulima Days what you expected? Is there anything unexpected that you experienced/learned through your participation in Laulima Days?
6. How do you choose which Laulima Days to attend?
[keep in mind that Laulima days are now offered almost every week with different community partners, on different days of the week]
7. Why do you think the NERR requires its GAs to attend Laulima Days?
8. Why do you attend Laulima Days?
- a. Follow up: if you were not required to attend Laulima Days for your RA, would you still attend? Same frequency?
9. a) Take some time to think of a specific Laulima Day that stands out in your mind. What made this day memorable? *[Probes, if needed]*
 - Does it have something to do with:
 - Someone who you interacted with?

- Something that you observed?
- Something that you learned?
- The actual work that day?
- Specific circumstances that were occurring in your life during that time?

b) Are there any other days that stand out that you would like to describe?

10. What do you most enjoy at Laulima Days?
11. Have your reasons for attending Laulima Days changed over time? If so, how?
- a. *For interviewees who already graduated:* do you still attend Laulima Days or community work days?
12. Beyond scheduling issues, have you experienced any challenges/barriers/things that made you uncomfortable during your participation in Laulima Day activities?
[*can be physical challenges, or challenges associated with lack of experience/knowledge*]
13. Would you recommend that other graduate students in your program attend Laulima Days?
Why or why not?

[If the interviewer senses that the interviewee may have more to add with additional prompting, the following questions could be asked]

- You briefly touched upon X earlier. Can you please elaborate/explain more about that?
- Have Laulima Days influenced your research?
- Have Laulima Days influenced your relationship with Hawaii or He'eia? Or how you interact/engage with places and communities?
- Have Laulima Days influenced any other aspect of your life?

14. Do you have recommendations for Laulima Days?

We have now come to the last part of the interview, in which I will ask for some feedback on a short survey we are developing. We are planning to roll out a survey so we can get a sense of how other students are impacted by participating in Laulima Days. Students would be asked to complete this survey after each work day. There would be a QR code that would be shared at the end of the work day which would direct students to a short, online survey. [share screen or hard copy of [draft questions](#)]

15. Please take a few minutes to review the highlighted portions of this draft survey. We'd

love to hear your thoughts on whether these questions are appropriate and if you think anything is missing or recommendations for carrying out these surveys.

a. Would you take this survey?

b. *There may be advantages for making this survey identifiable. For example, if you provided your email address, we would be able to send you a copy of your responses and you could look back on those over time. We would also be able to keep better track of responses in relation to the number of Laulima Days a person has attended.*

How would you feel if you had to provide your email address at the start?

Would you be less willing to take the survey? Less willing to offer your honest opinion?

Those are all the questions I have for you. Do you have any questions for me?

Mahalo for your time! We will keep you updated in regards to the progress of this research.

B. Results of thematic analysis of 14 LD interviews as Subject, Theme, and Corresponding Attitude

Subject	Theme	Corresponding Attitudes
Connect		
<i>Relationship building and connections facilitated by LD</i>		
	Connections of importance	To 'āina; community; peers; place; food
	Relationships	Deepening; Establishing
	Social	Maintain connections; reconnect; camaraderie
Learn		
<i>How educational experience is being impacted by LD participation</i>		
	Research ethics	Applied; Impact; Importance
	Development as a scientist	Networking; NERR; Knowledge exchange; Biocultural
Value		
<i>Values represented by LD align with the values of participants</i>		
	Reciprocity	Sweat equity; give back
	Common goal	Cultural significance; Perspective provided; Care
Well-being		
<i>Well-being benefits felt through LD participation</i>		
	Nourishing	Feeling good; Less stressed
	Growing	Build confidence; Building interpersonal skills
	Being present	Balance
'Āina		
<i>'Āina exposure provided by LD</i>		
	Site preferences	Evolving 'āina relationships; Seeing landscape changes
	Physical hana	Getting dirty: Challenging; Immersed in nature

	Access	New experiences; Opportunity
	Unplugging	Away from technology; Out of office; Face to face
Emotions		
<i>Emotions elicited through LD</i>		
	Inspiration	Inspiration; Humbling; Pride; Motivation; Nourishment; Imagination
	Values	Responsibility; Respect; Trust
	Engagement and enjoyment	Curiosity; Enjoyment; Feel good; Fun; Joy; Satisfying
	Comfort	Familiarity; Comfortable; Chill;
	Adverse feelings	Intimidating; Nervous