



Case report

Land Body Ecologies: A case study for global transdisciplinary collaboration at the intersections of environment and mental health



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ABSTRACT

Land Body Ecologies (LBE) is a global, transdisciplinary research group seeking to understand the mental health dimensions of minority, Indigenous and other land-dependent communities' relationship to ecologies in a changing environment. We posit that our project is a successful case of global transdisciplinary collaboration that can serve as an example for others. In this paper we present: (1) an overview of our project structure across various disciplines and geographies; (2) a description of how we manage day-to-day operations and decision-making; (3) details of how we operationalise collaboration through examples from three key areas – creative methodologies, language considerations and authorship; (4) a discussion on strengths and limitations of the project.

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1. Introduction

Mental health and well-being depend on the environment [1] with ever-present problems ranging from globalization and urbanization to biodiversity loss and climate change [2]. These changes are from human activities and create pressing challenges to our health [3]. Their causes and solutions lie in a wide range of sectors including global health, humanities, planetary science, human rights, and politics. Transdisciplinary research approaches across sectors are therefore crucial to understanding and addressing the interwoven issues [4]. Softening the rigidity of disciplinary boundaries and encouraging professions and disciplines to collaborate means sharing expertise to co-produce knowledge to help everyone [5].

Transdisciplinary research and practice can be particularly effective in exploring environmental change and mental health beyond established research disciplines, as shown by initiatives such as the Pacific Rim Climate and Health Equity network [6] and the Asia Pacific Disaster Mental Health Network [7]. They can be employed to gather multiple stories and look across multiple perspectives, but also to transcend such perspectives and explorations for creating new paths. Going beyond merely exchange amongst fields, transdisciplinarity builds on these interactions for research and application to navigate the challenges that contemporary social and environmental changes are posing to our health, including our mental health.

Land Body Ecologies (LBE) is a group of people from different disciplines, geographies and generations researching the mental health dimensions of land-dependent communities' relationship to their ecologies in a changing environment. LBE is based in the Arctic, India, Kenya, Uganda, and the United Kingdom, and includes artists;

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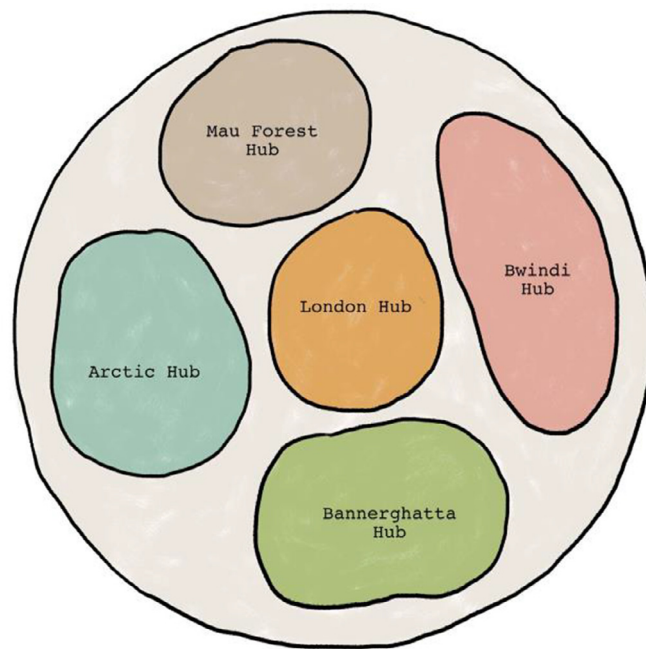


Fig. 1. The network of hubs, across different locations and encompassing different landscapes. © Quicksand and Land Body Ecologies.

Indigenous and land dependent community representatives; design, mental health, and climate change researchers; human rights activists; filmmakers; and communication designers. Previous work together, although not as one collective, brought pre-established trust and friendship to LBE's composition.

In this paper, we provide an overview of how the LBE project is set up and our ways of working. We explain why LBE is a successful case of transdisciplinary collaboration in climate and health research through three arguments. First, by placing creative methodologies at the heart of our work, we successfully allow for a level of flexibility and space within which expressions can surface organically and collaboratively. This is crucial in mental health research and expressions of suffering. Second, we spotlight how our ways of acknowledging and navigating differences of language and culture counters practices of universalisation that would otherwise flatten perspectives and experiences. Third, LBE implements an inclusive modality of authorship that reduces barriers to knowledge production and benefits the evidence base in climate and health. We end with critical reflections of strengths and limitations of this collaboration.

2. How we work

2.1. LBE's establishment and research questions

LBE was initiated by Invisible Flock, an arts studio in Yorkshire, England, working at the intersection of art, technology and environment. Through its artistic practice, Invisible Flock connects and collaborates across many sectors, bringing people together to discuss shared challenges around health and the environment. In 2021, LBE received the Wellcome Trust's Hub Award, a £1 million residency grant that supports transdisciplinary groups to explore creative and innovative approaches to health research and engagement.

Building on the concept of *solastalgia* – coined by philosopher Glenn Albrecht as “the distress that is produced by environmental change impacting on people while they are directly connected to their home environment” [8] – LBE questions whether the concept adequately encompasses the experiences of marginalized and land-dependent communities, including Indigenous Peoples, considering that most empirical papers on the topic have not been conducted by Indigenous Peoples [9]. Research questions include: “How do our

rights to land and to healthy ecosystems connect to our own rights to health?”; “How and in which ways does mental health suffer when land is harmed?”; “Can the land and body be recognised as an ecology?”; “How do historical injustices, such as colonialism, feature in experiences of solastalgia?”

2.2. Decentralized structure

One of the central aspects of the Hub Award is the offering of a physical space within the Wellcome Collection in London, UK, for a two-year residency. While such space is useful, it was neither possible nor ethical to conduct our research so far removed from landscapes where people are living through extreme marginalization and vulnerabilities related to the mental health impacts of environmental change. Such vulnerabilities are primarily due to the intrinsic connection of their cultures and identities with the environment in which they are based – an understanding that shapes our use of the term *land-dependent* when referring to communities.¹

Therefore, LBE implements a decentralised structure (Fig. 1), pushing for a conceptual shift of ‘the Hub’ as a single place to a ‘network of Hubs’: across the Arctic (Finland), Bannerghatta (India), Bwindi (Uganda), Mau Forest (Kenya) and London (UK). The embeddedness of the first four aforementioned hubs within their local communities is crucial because it allows for deeper engagement. A research team spread across these landscapes – including researchers who belong to the engaged communities and identify as having lived experience of solastalgia – lead LBE's research to a participatory approach throughout.

While the *community-embedded* hubs operate as a key mechanism for immersion, the London Hub anchors an essential point for engagement with a broad spectrum of people. It thus bears more responsibilities for developing the project's communications tools

¹ In our view, an attempt to proceed without encompassing such perspectives could create an unjust structure where a handful of people living at a distance from these locations rely on the work and experience of persons and communities elsewhere without offering true agency or power over the direction the research would be taken. Further, being far removed from the landscapes, peoples, and cultures that form the uniqueness means the distance can make it easier to think in abstracts or make generalizations which can be harmful and, in some cases, lead to further marginalization in research and the evidence base.

and interfaces, as well as logistics and production facilitation. By setting up the community-embedded hubs, our structure more soundly enacts and supports community based participatory research approaches (CBPR). For example, in Uganda, Bwindi Hub is led by Action for Batwa Empowerment Group (ABEG), an organisation representing the Indigenous Batwa, and decided to recruit young Batwa research assistants to conduct qualitative and quantitative research on the project. The reason expressed for this decision is that the community has experienced research fatigue due to non-Batwa researchers conducting research on the community. As one Batwa researcher said, “Most people and organisations have been coming for the last years... to the Batwa, researching about them, and the bad thing [is] they don't bring back the information, or they don't do anything for them. So, it has caused fatigue in the Batwa, which makes them feel not to participate anymore in research” [10]. By employing Batwa researchers, when a person from the community is approached for an interview or other data collection, they would be met with a person familiar to them. Trust is already established, because the researcher has a level of understanding through lived experience that helps put the participant at ease.

2.3. Scale and agility

Each hub is responsible for the planning, implementing, and reporting of its research and engagement activities. The small size of all organizations involved means we can collectively maintain agility.² This agility is critical for the engagement with LBE's growing network of *collaborators*, individuals with whom we partner for support over a specific area or action following the identification of gaps within the project, and whose swift incorporation into the project is crucial for the smooth running of the research.³

2.4. Communication

LBE holds internal online workshops monthly, as an opportunity to share updates as well as for overall deliberation. While the London Hub schedules and coordinates these, suggested agendas are circulated in advance so that all hubs can contribute to its setting. As time difference and workloads make it difficult for all team members to attend every occasion, workshops are recorded and made accessible to all afterwards. This practice allows us to process information at our individual pace – which is particularly important for members for whom English is not a first language, or who face connectivity issues that hinder participation during the workshop. Other messaging channels used interchangeably depending on individual preference and availability include email, Whatsapp and Slack, and online applications used include Google Drive, Miro, and Zoom.

2.5. Leadership, autonomy and collaboration

Due to LBE's active commitment to decentralizing its structure, we strike a fine line between autonomy and collaboration. As part of such efforts, the group mostly operates under a model of collective decision making. Matters regarding the research prioritize the autonomy of each hub. This autonomy is demonstrated through the case of our research questions, designed locally for each hub's research aims, with support from other hubs only when requested. However, there

are certain responsibilities that sit with specific organizations. For example, the overall financial responsibility of LBE lies with the legal grant recipient, Invisible Flock, and in terms of its visual identity, Quicksand, a Design Research Consultancy anchoring the Bannerghatta Hub, leads the way due to their professional expertise in the field. Finally, regarding messaging to external audiences about LBE, the person who approves a given text varies constantly, depending on the occasion, focus and specific audience.

3. Transdisciplinarity in practice

3.1. Creative methodologies

LBE employs creative methodologies and artistic responses as part of the research process to hold space for alternative forms of expression (Fig. 2). Our artistic approach is less about knowing, objectively, than it is about experiencing, subjectively, and so our creative methods are designed in an iterative manner with research participants [11]. This is crucial when researching mental health experiences because each mental health experience is specific to the individual. Aiming to fix any single approach ahead of data collection risks excluding the plurality of expressions and knowledge.

Sound recording, for example, has been an important method for listening to the land as much as to the stories grounded within it. Every sound, just as every smell, taste, sight, or tactile sensation, integrates an authentic experience of *embodied listening* – of taking in stories as wholly as possible. Our creation of the *Land Body Ecologies Podcast*, which presents narrative storytelling from each hub, instigated a process of *deep listening* [12,13] in conversation with interviewees. To demonstrate why such practices help produce valuable knowledge and how we conduct them collaboratively, we delineate the steps taken to create an episode about the significance of bees for the Ogiek community in Mau Forest. This topic was chosen because honey has become increasingly scarce within Mau Forest Complex due to climate change [14].

Steps taken to create a podcast episode at the Mau Forest Hub

On-site training by London Hub (LH) member with Mau Forest Hub (MFH) researcher on usage of sound recording equipment.
Ongoing remote training on sound recording and filmography.
LH team and MFH lead researcher explore potential stories for the podcast on a call.
Additional call between LH production team and MFH lead researcher to create a storyboard.
MFH researchers decide who from the Ogiek community will be featured.
MFH researcher conducts sound recordings of the forest.
MFH researcher records Ogiek beekeeper building hives.
MFH researcher and LH podcast production team jointly review the recordings. A previous podcast episode (Arctic Hub) is used as a reference, to inspire ideas on sounds important to record in Mau Forest.
MFH researcher conducts a second round of recordings.
A professional studio recording session is booked in Nakuru for MFH members to record English translations for interviews voice overs.

The breakdown above evidences the space held for participants to develop their own exploration. Step 7 is pivotal because, while the researcher documented the hive-building process, the beekeeper was verbally explaining what he was doing and, amidst his explanation, began singing. Fig. 3 reveals the song:

This experience highlights the ability of creative practices to organically surface knowledge about Ogiek traditional hives through an individual's preferred mode of expressing it. While conventional research interviews could have a Q&A format and research questions fixed in advance, the method applied allowed the interviewee to demonstrate, reflect and drive the conversation through their craft. Further, this is one expression from a series of conversations with beekeepers that featured in a podcast episode, in which the fact the beehives are passed down through generations of Ogiek is identified.

² The name of each organization and the number of members in each are as follows: ABEG – Action for Batwa Empowerment Group in Uganda (7), Invisible Flock in the United Kingdom (6), Minority Rights Group in the United Kingdom (29), OPDP – Ogiek Peoples Development Program in Kenya (9), Quicksand in India (8), and Waria in Finland (7).

³ Collaborators' expertise vary from academics of global health, animal behavior specialists or human rights, to sound recording artists, creative writers and musicians. At the time of writing, LBE's collaborator network has grown to 85 individuals across eight countries.

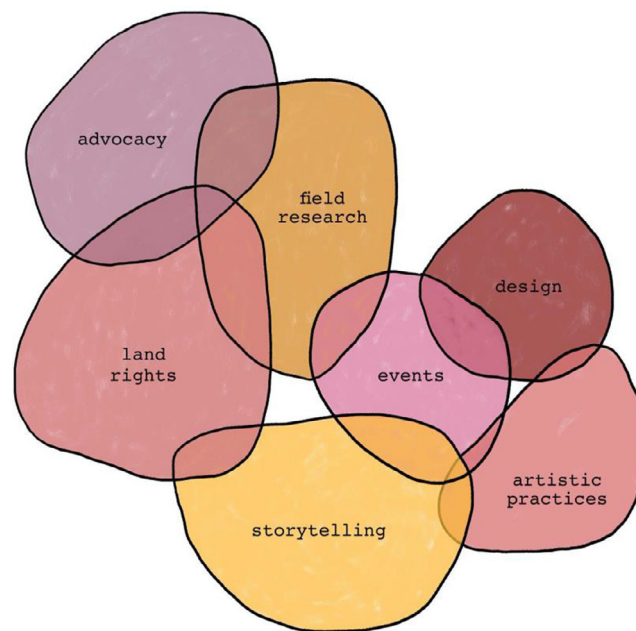


Fig. 2. Creative methodologies are applied at the intersections of the multiple fields that LBE encompasses, holding space for alternative forms of expression.
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Therefore, what we learned through this engagement with the beekeeper and the podcast production process is the extent to which bees, an element of Mau Forest's biodiversity that transitions between physical and spiritual territories of Ogiek, are central to Ogiek identity and history. As a result, the declining bee population due to climate change poses a risk to that identity.

3.2. Language

Language is one of the interfaces through which our team acknowledges and navigates its differences. Our core team speaks 30 languages in total, 11 as a first language. The constant exercise of bringing this to light emphasises the non-universality of language. By *non-universality* we refer to the awareness of the systems of knowledge on which one constantly relies to interpret and relate to the world around them – and whose awareness, in turn, equips us to challenge. An early example faced by LBE was the realization that the mere fact that the concept of *mental health* is rooted in European and Anglo-American systems of thought (and medicine) [15], leads to experiences related to mental health across varied geographies to be, potentially, elaborated (and related to) under different terms. Across a range of cultures, experiences can be elaborated and perceived as belonging to different realms, and this will be both reflected in and shaped by their respective languages. This is one more reason why at LBE specific research questions are being developed locally, in close collaboration with each community involved.

The LBE Podcast exemplifies how language differences have been addressed and embraced across the research outputs. As each episode explores a different geography, the importance of allowing for expressions to surface in people's native languages became evident. As reach is also a priority for LBE, statements are also translated into English. Finally, the podcast conveys a further provocation: beyond English, Finnish or Rutwa, the LBE Podcast gestures toward the need to listen to other forms of language – that of the landscape. While every episode includes one version in the respective native language and another in English, it is also followed by a counterpart: a B-side episode that features the language of the landscape itself, where environment sounds are captured and offered space to be an expression of their own.

3.3. Authorship

Recognizing our team's unique composition, LBE challenges the culture of authorship largely in place, rethinking how decisions are made on who is credited as author in academic outputs. We recognize that the standard requirement of affiliation with an academic or research institution creates barriers for expert communities with lived experience to contribute to the evidence base. LBE counters this by recognizing as knowledge holders the communities living through environmental changes (and whose mental health is directly impacted by those changes). Attributing authorship on the criteria of having written words or expressed agreement with a draft is not

I started making my hive today. I will now go and hang it now. Now, before I hang it, let me at least pick the leaves of perekeywet so that I put it in the hive so that I start, I go close with because this is what we used to close it in ancient time, yes we used to close using it man, huuh.
(singing) *kole po koret ab Kemei wee, kole mweinget hee eeh, kole chukipo kugooo wee, woi tetab babaiyon, kole mweingenyon hee, kole mwengenyon hee hee, kole mweingenyon hee [it is said to be for the land of drought wee, said hive bee eeh, said those of grandfather wee, woi a cow of my father, said my hive wee, said my hive bee hee, said my hive bee], huuh haah.*

Fig. 3. Excerpt from recording of an Ogiek beekeeper at the Mau Forest. Transcribing and mapping the recordings is part of the work process across both hubs, Mau Forest Hub and London Hub, during the creation of an episode of *Land Body Ecologies Podcast*.

enough, and we view authorship as an exercise beyond putting pen to paper: one that encompasses the conversations and consultations with those with lived experience of the issues, as well as those who are doing the research collection [16]. The production of this article highlights our collaborative approach to authorship as team members whose perspectives, research and lived experiences make the basis of our arguments are hereby included in the authorship credit.

4. Discussion: strengths and limitations

The following section reflects on three aspects of LBE we identify as strengths. The first is one hub, the London Hub, being responsible for coordinating all hubs and maintaining an overview of all activities. This coordination includes administration and project management, as well as identifying advocacy opportunities in which the various hubs can engage, which requires leveraging relationships across networks and nurturing partnership opportunities as they arise. This clear allocation allows the community-embedded hubs more capacity to deepen specific research plans tied to their respective landscapes.

The second aspect is implementing a CBPR approach, so that the lead for each Hub is embedded within their own community. This approach not only ensures local trust from the start, allowing immediate engagement, but also provides a positive example of equity and inclusion for research. From the outset, the project allowed diversity in thoughts, knowledges and experiences to come together, presenting transdisciplinarity for improving knowledge co-production and application.

The third strength is the holding of *Storytelling Sessions* – internal meetings during which one hub delivers a presentation to the others for wider conversation, aiming to share stories as they surface in the research. Each Hub decides if and when to deliver a session, in the format of their choice. These sessions have been critical for two reasons. Firstly, the process of preparing the presentation prompts reflection as findings are revealed. By gathering as a wide collective to discuss findings, questions posed by colleagues with different perspectives offer new strands of thought to explore. The sessions allow for the identification of points of convergence in themes arising across all hubs (as well as differences), leading to discussion and joint deliberation on ways forward. Secondly, the sessions are a safe space for the team to reflect on our individual places as researchers. This is because we recognize the power of stories in helping us connect to experiences. An example of its effectiveness is when the Bannerghatta Hub team delivered a session and one presenter expressed how his interactions with the stories he encountered while conducting research made him realize how he, too, was experiencing solastalgia. That moment of self-reflection emerged thanks to the interactions with these stories, reiterating the power of storytelling. Further, these expressions from the research team elucidate the impact of constantly building and reinforcing trust within the team.

At the time of writing, 10 months into the project, we have identified two main limitations when operationalizing a transdisciplinary collaboration for climate and mental health research. First, there is not enough face-to-face time amongst our collective. The reasons for this range from travel disruptions caused by the Covid-19 pandemic to financial constraints. Face-to-face time is crucial for many people to strengthen relationships and to permit organic discussions and ideas to surface. More such interactions would have reinforced the project.

Second, the grant's short timeframe has been a challenge. With a collective ramified in such a way, across so many disciplines, geographies and timezones, it was critical to collaboratively define the project's scope at the start, setting goals and plans for each hub. Then, each hub could set its own timeline for working at their own pace in their own way to achieve the project objectives. When conducting research in mental health, and with persons in the team with lived

experience of these issues, it is important to ensure that rhythms are respected, and conversations or decisions are not rushed purely for the sake of a project timeline. The time taken to familiarize with each other's stories and experiences is part of the research process, and it is fundamental for LBE's transdisciplinary approach.

5. Conclusion

In this case study, LBE's success as a transdisciplinary collaboration is exemplified through three key practices we have embedded in our work: our centering of creative methodologies that provide flexibility and space for organic expressions of experiences and knowledge; our methods of acknowledging and navigating language differences to ensure nuances of experiences are not flattened; and our inclusive modality of authorship that reduces barriers to knowledge production, thus benefiting the climate and health evidence base.

Based on evidence provided, *storytelling sessions* are recommended by LBE as a practice for others exploring transdisciplinary collaboration due to the prompt for reflection and potential to foster interactions through which researchers themselves can connect. On the other hand, as the reduced face-to-face time and the short timeframe of the grant constitute limitations, it is recommended that a substantial amount of time be allocated at the start of every transdisciplinary project for teams to jointly shape work scopes and strengthen relationships that can ensure the project's smooth running.

Transdisciplinarity is an effective form of conducting research that can offer innovative pathways to knowledge within climate and health research, and LBE is a successful case of transdisciplinary research collaboration as it aims to accommodate a multi-sectoral perspective of health and to promote the inclusion of marginalized voices. This also influences academic practice, pushing for more openness to responsive research and synthesis methods and thus actively contributing to community knowledge systems to inform academic writing.

Ultimately, the strengths of the project are evidenced to lie in the plurality of experiences entangled across the team and in the establishment and maintenance of solid, positive relationships, but only so far as both these key components are paired with a set of decisions that substantially facilitate operations – which, in turn, allow for expert community-embedded teams to have their participation optimized, and their time freed up to deepen the research across landscapes that have critical importance for the success of the research.

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Declaration of Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

References

- [1] Tiatia-Seath J, Tupou T, Fookes I. Climate change, mental health, and well-being for Pacific peoples: a literature review. *Contem. Pacific* 2020;32:399–430. doi: 10.1353/cp.2020.0035.
- [2] IPBES. *Global assessment report on biodiversity and ecosystem services of the intergovernmental science-policy platform on biodiversity and ecosystem*

- services. Bonn, Germany: IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services); 2019.
- [3] IPCC (2021–2022) Sixth assessment report. IPCC (Intergovernmental Panel on Climate Change), Geneva, Switzerland.
 - [4] Whitmee S, Haines A, Beyrer C, Boltz F, Capon AG, de Souza Dias BF, Ezeh A, Frumkin H, Gong P, Head P, et al. Safeguarding human health in the Anthropocene epoch: report of the Rockefeller Foundation-Lancet Commission on planetary health. *Lancet* 2015;386:1973–2028.
 - [5] Prescott Susan L, Wegienka Ganesa, Kort Remco, Nelson David H, Gabrysch Sabine, Hancock Trevor, Kozyrskyj Anita, Lowry Christopher A, Redvers Nicole, Poland Blake, Robinson Jake, Moubarec Jean-Claude, Warber Sara, Jansson Janet, Sinkkonen Aki, Penders John, Erdman Susan, Nanan Ralph, Bosch Matilda van den, Schneider Kirk, Schroeck Nicholas J, Sobko Tanja, Harvie Jamie, Kaplan George A, Moodie Rob, Lengnick Laura, Prilleltensky Isaac, Celidwen Yuria, Berman Susan H, Logan Alan C, Berman Brian. Project earthrise: proceedings of the ninth annual conference of *in vivo* planetary health. *Int J Environ Res Public Health* 2021;18(20):10654. doi: [10.3390/ijerph182010654](https://doi.org/10.3390/ijerph182010654).
 - [6] Palinkas Lawrence A, O'Donnell Meaghan, Kemp Susan, Tiatia Jemaima, Duque Yvonne, Spencer Michael, Basu Rupa, Rosario Kristine Idda Del, Diemer Kristin, Doma Jr Bonifacio, Forbes David, Gibson Kari, Graff-Zivin Joshua, Harris Bruce M, Hawley Nicola, Johnston Jill, Lauraya Fay, Maniquiz Nora Elizabeth F, Marlowe Jay, McCord Gordon C, Nicholls Imogen, Rao Smitha, Saunders Angela Kim, Soritino Salvatore, Springgate Benjamin, Takeuchi David, Ugsang Janette, Villaverde Vivien, Wells Kenneth B, Wong Marleen. Regional research-practice-policy partnerships in response to climate-related disparities: promoting health equity in the Pacific. *Int J Environ Res Public Health* 2022;19(15):9758. doi: [10.3390/ijerph19159758](https://doi.org/10.3390/ijerph19159758).
 - [7] Newnham Elizabeth A, Peta L, Dzidic Enrique LP, Mergelsberg Bhushan, Guragain Emily Ying, Chan Yang, Kim Yoshiharu, Leaning Jennifer, Kayano Ryoma, Wright Michael, Kaththiriarachchi Lalindra, Kato Hiroshi, Osawa Tomoko, Gibbs Lisa. The Asia Pacific disaster mental health network: setting a mental health agenda for the region. *Int J Environ Res Public Health* 2020;17(17):6144. doi: [10.3390/ijerph17176144](https://doi.org/10.3390/ijerph17176144).
 - [8] Albrecht Glenn, Sartore Gina-Maree, Connor Linda, Higginbotham Nick, Freeman Sonia, Kelly Brian, et al. Solastalgia: the distress caused by environmental change. *Australas Psychiatry* 2007;15(Suppl 1):S95–8. doi: [10.1080/10398560701701288](https://doi.org/10.1080/10398560701701288).
 - [9] Galway Lindsay P, Beery Thomas, Jones-Casey Kelsey, Tasala Kirsti. Mapping the solastalgia literature: a scoping review study. *Int J Environ Res Public Health*. 2019;16(15):2662. 8. doi: [10.3390/ijerph16152662](https://doi.org/10.3390/ijerph16152662).
 - [10] LBE: Action for Batwa Empowerment Group. Vimeo. invisible flock. Available at <https://vimeo.com/684179411/ecb9d635c5> Accessed November 10, 2022.
 - [11] Liamputtong P, Rumbold J. *Knowing differently: arts-based and collaborative research methods*. New York: Nova Science Publishers; 2008.
 - [12] Oliveros P. *Deep listening: a composer's sound practice*. New York NE: Lincoln; 2005.
 - [13] Pavlicevic M, Impey A. Deep listening: towards an imaginative reframing of health and well-being practices in international development. *Arts Health* 2013;5(3):238–52. doi: [10.1080/17533015.2013.827227](https://doi.org/10.1080/17533015.2013.827227).
 - [14] Chaudhry S. The impact of climate change on human security: the case of the mau forest complex. *Development* 2015;58:390–8. doi: [10.1057/s41301-016-0022-4](https://doi.org/10.1057/s41301-016-0022-4).
 - [15] Kpanake L. Cultural concepts of the person and mental health in Africa. *Transcult Psychiatry* 2018;55(2):198–218. doi: [10.1177/1363461517749435](https://doi.org/10.1177/1363461517749435).
 - [16] Castleden H, Morgan VS, Neimanis A. Researchers' perspectives on collective/community co-authorship in community-based participatory indigenous research. *J Empirical Res Hum Res Ethics* 2010;5(4):23–32. doi: [10.1525/jer.2010.5.4.23](https://doi.org/10.1525/jer.2010.5.4.23).