



From-The-Wild: Towards Co-Designing For and From Nature

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ABSTRACT

Here we present in-progress methodological research exploring how to co-design technology for nature-related experiences. To support increasingly situated and participatory practices in this space, we propose a turn towards co-designing *from-the-wild*, i.e. ideating during raw engagements that are radically situated in nature. Our approach extends existing in-the-wild practices by (1) enacting co-design in natural (rather than human-made) environments, and (2) avoiding techniques that privilege the designer's agenda over other stakeholders' and compromise the situated nature of ideation. Our contribution includes: (1) the proposal of co-designing *from-the-wild* as a response to the limitations of existing in-the-wild methods when designing for and from nature; and (2) early reflections from our hands-on engagement with said approach, which begin to surface exciting opportunities and constraints emerging in this methodological space. By sharing our work-in-progress with the HCI community, we hope to spark a conversation stimulating future co-design methods research in increasingly wilder directions.

CCS CONCEPTS

• **Human-centered computing** → Interaction design; Interaction design process and methods; Participatory design; Interaction design; Interaction design process and methods; Contextual design.

KEYWORDS

Co-design, design methods, design research, nature, in-the-wild, from-the-wild, interaction design, human-forest interaction, situated design

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1 INTRODUCTION

In-the-wild methods enable designers and researchers to displace their activity from the studio or lab to the contexts targeted by their work [30]. As a result of that move, they can get a better, deeper, and richer understanding of the (likely complex) idiosyncrasies of

those contexts and empathize with stakeholders. That contributes to shaping innovations that are more likely to be contextually sensitive and respond to the real needs and desires of stakeholders. A broad range of existing methods that can be used to design and research in-the-wild. Here we review a representative sample:

Several in-the-wild methods can be used for need finding and contextual research purposes. For example, *diary studies* [36] invite research subjects to document their thoughts and actions on their own within the course of their everyday business, and then send those data to the researcher without the latter ever intervening. *Design probes* [7], in their multiple variations (e.g. *cultural probes* [15], *technology probes* [21], or *sensory probes* [16]) follow a similar approach; yet, instead of inviting people to simply document actions and ideas, they prompt them with creative tasks that produce emotionally-rich output designers can use to empathize with them as an inspirational starting point for ideation. *Design ethnography* [11] also enables the collection of rich data about people's contextual activity in-situ; yet, in this case, it is not performed by research subjects themselves but by a designer or researcher who immerses themselves in context.

In-the-wild methods can also be used for evaluation, both at early and advanced stages of design. For example, *wizard of oz* [12] allows designers to "fake" functional prototypes and create an illusion that they work, and thus supports testing of prototypes in context. *Provotypes* [8] also enable designers to expose stakeholders to prototypes, in this case not to evaluate or iterate on the prototypes themselves but to provoke stakeholders and trigger a creative, visceral response in them. More generally, as shown by e.g. [22], an in-the-wild approach can be applied to traditional user study procedures, displacing them from the confines of a lab to the actual contexts where the designed intervention is supposed to be used, and therefore accounting for the many variables that can only be found in those particular contexts.

An in-the-wild approach can also be applied to co-design and ideation practices, which are the focus of this paper. For example, methods like *embodied sketching* [26] and *bodystorming* [33] use people's bodies as a prototyping material, as a means of co-imagining novel technology and exploring how it may pan out in practice. *Speculative enactments* [14] and *labs in the wild* [39] follow a similar approach with an added element of speculation: they enable people to simulate and co-experience future scenarios in ways that the emergent speculations feel meaningful and consequential to them. *Situated play design* [2] methods also support in-the-wild co-design activity, in this case centered on uncovering the playful potential of day-to-day activities and scenarios and using that potential as design material; e.g. *play & culture workshops* [3] invite stakeholders to play with, experiment, and make creative use of playful traditions relevant to the day-to-day activity targeted by the design or research project (e.g. playing with food traditions

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to inspire future mealtime technology designs). Finally, *walkshops* [38] are workshops that take place in transit and thus enable reflexive in-the-wild co-design engagements that are not based in a fixed location; as such, they can be a useful method for supporting reflexive and critical ideation in projects concerned with large or fluid spaces such as smart city innovation projects.

2 BACKGROUND

2.1 The landscape of in-the-wild design and research methods

In-the-wild methods enable designers and researchers to displace their activity from the studio or lab to the contexts targeted by their work [30]. As a result of that move, they can get a better, deeper, and richer understanding of the (likely complex) idiosyncrasies of those contexts and empathize with stakeholders. That contributes to shaping innovations that are more likely to be contextually sensitive and respond to the real needs and desires of stakeholders. A broad range of existing methods that can be used to design and research in-the-wild. Here we review a representative sample:

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2.2 A move towards the *from-the-wild* design

However useful, existing in-the-wild methods have limitations. Here we highlight two that we argue challenge the co-design of technologies experiences from and for nature in sustainable, democratic, and contextually sensitive ways.

The first shortcoming of existing in-the-wild methods is that they are often oriented towards co-design activity that takes place within human-made environments—let them be indoors or in the urban space. The qualities of those are considerably different from nature's, e.g. nature is wilder and less controllable, so methods envisioned for the former may not directly apply to the latter. One could argue that existing in-the-wild approaches might not be wild enough after all—there are claims that the way they are framed and implemented trivializes the very notion of “wilderness” [37]. Beyond HCI, we see works that embrace a “wilder” notion of situated participation, e.g. participatory forestry [28] or more-than-human oriented co-design aimed at meaning-making through hands-on engagement with nature [9]. Yet, those works do not necessarily have a focus on co-designing technology, and as such the methods employed should also be revised if they are to support tech design. Building on recent calls for new participatory methods that respond to the emergence of new design spaces and the challenges that they bring about, e.g. [6], we suggest that as we keep creating tech for nature-related scenarios and experiences, we need new methods that support us to co-design *from-the-wild*—beyond the comfortable confines of human-made environments, where resources are scarce and unpredictability high.

Another limitation of in-the-wild approaches is that they often place designers in a position of power and privilege their agenda over contextual activity. That is especially true for methods for co-design and ideation. Even if conducted in-the-wild, co-design workshops are still workshops; they are motivated by the needs and regulated by the constraints of design research. Participants approach them as such, as extraneous events with their own set of rules, aims, and meanings; ones that are different from people's everyday business, even if relevant to them. Such approach can hinder diversity of participation, as not all kinds of people are willing to engage in decidedly design-focused conversations. Further, even if workshops allocate time for in-situ, contextual activity, that activity cannot be fully considered in-the-wild as it still takes place within the scope of a design-oriented workshop. In other words, however

situated and participatory, workshops and similar kinds of in-the-wild co-design activities are still somewhat artificial events where connection with context is compromised. Inspired by [23]’s call for exploring ways of better combining the strengths of ethnographic and co-design practices, we propose to respond to that limitation by radicalizing the notion of “wilderness” in co-design: How could we support ideation that takes place within the actual course of a situated, mundane, contextual activity—e.g., during a real hike that has its own meaning, purpose, and structure regardless of a design or research agenda—rather than in the form of a workshop where the designer or researcher’s agenda dictates the flow of events?

3 METHOD

The work we present here is a part of a larger project exploring how to design technology that enriches people’s nature experiences. We have an agenda of enhancing existing in-the-wild methods so we can better co-design from-the-wild: we investigate how to facilitate multi-stakeholder co-design from nature itself, in the hopes that co-imagining future human-tech-nature interplays in-situ might lead to more contextually, environmentally, and socio-emotionally sensitive innovation. To carve the foundations of a from-the-wild turn to HCI, we use an action-reflection approach to methods research [34]: we engage hands-on with the constraints and affordances of co-designing from nature and reflect on our process to distill design-oriented knowledge.

Here we share our reflections from our first effort in this space: an exploration where we used first-person methods—whose potential for leveraging designers’ tacit expertise is widely recognized in HCI [13][25][32]—to experience first-hand what it might mean to ideate within the course of commonplace nature activities. During 4 months, the first author of the paper did 16 trips to nature to experiment first-hand with a range of commonplace nature activities: running, hiking, camping, foraging, and snow walking. The trips ranged from 30’ to 2 days long, depending on activities involved, and had different social configurations: the researcher alone, with a pair, a small group (3-4 people), or a larger group (5+). Some trips were organized by the researcher, others by other participants. In all cases, the trips had a motivation regardless of research, e.g. foraging to find mushrooms, or camping to hang out with friends; yet, all participants were informed that they would be included in our research, and they consented to it. The trips took place, were structured, and scaffolded regardless of the researcher’s agenda: we used them as chances to experiment with what it might mean to ideate within situated, radically naturalistic nature activity. While engaging with that activity, the researcher explored ways of imagining (and helping others to imagine) how future tech might contribute to enriching people’s experience of nature. Table 1 in the Appendix provides a detailed account of all the nature trips we did, the activities and participants they involved, and the means we used to document them.

To document the trips, the researcher experimented with different forms of documentation using the means at hand, e.g. recording voice memos, taking photos, or writing short notes on their phone. After each trip, he made an entry on visual diary [4] to synthesize the key learnings and support them with photos, videos, and written anecdotes. He also annotated the data with post-session reflections,

thereby engaging in on-going meaning-making in parallel with data collection. The resulting document¹ features the researcher’s learnings from the nature trips, illustrated by events that occurred in them, and extended through reflexive annotations. Upon completion of the 16 trips, the researcher used reflexive [10], inductive [19] thematic analysis to examine the contents of the visual diary. First, he did two rounds round of coding to iteratively identify relevant themes, i.e. to surface reflections that were relevant to co-designing *from-the-wild*. Then, he clustered the visual diary contents based on those themes and articulated them into preliminary findings. Those findings were shared with two additional researchers (also co-authors) so they could contest and contribute to enriching the analysis. The analysis concluded with a final iteration where the first author addressed the other researchers’ comments and produced the final findings report. The following section presents a synthesis of those findings. We frame them as early reflections on how to facilitate fruitful co-design processes *from-the-wild*.

4 FINDINGS: EARLY REFLECTIONS ON CO-DESIGNING FROM-THE-WILD

Here we share the findings from our 16 trips to nature. We structure them as three themes that highlight challenges and opportunities of co-designing from-the-wild. They can inspire others to co-design for and from nature. To support our reflections, we use quotes from the researcher’s diary using the convention NT#, e.g. NT1 refers to nature trip 1.

4.1 Theme 1: Staying in the moment while co-designing

The researcher experienced first-hand the potential of situated activity as a platform for co-design: “It’s different to go to a forest because of a workshop [. . .] than to just go because you want to and then, organically, talk about design ideas. The mood is different [and] I feel that ideas are more likely to emerge in the latter scenario” (nature trip 10). Arguably, “ideas that come up while experiencing nature are likely to have a stronger connection with joy (that is, the joy of being and doing things in nature) than with rational thinking. That can lead to more joyful and meaningful imaginaries” (NT12) that are inspired by what people find exciting and fun about nature, not by an abstract idea of it. An example is an idea produced during a solo walk in the forest: while admiring the autumn colors and listening to the sounds of birds and the wind, the researcher imagined an “app [that allows people to] creat[e] a sound bank of [their] nature activities and then replay them at home, or [to] stor[e] the color palette of the forests [they] visit, and then see [their] house mimic them” through and IoT system (NT12). That design idea emerged directly from, and responded to, his in-situ experience of that precious moment; a creative connection that would likely not have happened if he had not had that experience.

Many annotations made by the researcher reflected on how to care for people’s experience of the nature activity at focus—i.e., allowing them to experience and enjoy the activity in their own terms—while still meeting the needs of co-design, e.g. generating ideas. To ensure that the lived experience of co-design participants

¹The full visual diary can be accessed here: <https://bit.ly/fromthewild>

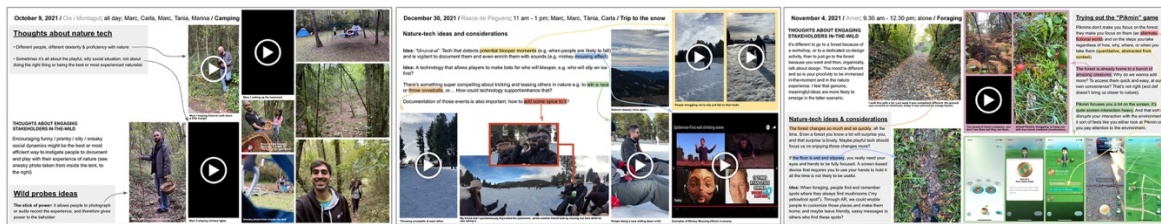


Figure 1: Three examples of slides included in the visual diary used by the researcher to document the nature trips.

leads to joyful imaginaries, facilitators should try to avoid disrupting that experience too much; they should find “the right balance between enjoying the moment and talking about nature tech, [to] avoid distracting [people] from being present in and focused on the experience [they] are sharing” (NT4). The researcher identified specific moments within nature activities that could be leveraged to ideate. For example, in the context of running, “stop moments might be a good opportunity for quick chit-chats: while running, it’s easy that nice ideas come to mind” as it affords “a different way of thinking, [an] introspective moment”, while “stop moments are very pleasant and relaxing, [...] which can support creativity” (NT6). In the context of less strenuous activities, e.g. hiking, the researcher found similar opportunities for co-design conversation in “drinking or resting moments”, in “photo moments, or [in] the time used for stretching” (NT12).

The researcher also reflected on the unpredictable nature of ideas generation, which is exacerbated in the context of nature-related activity. According to him, “some days you’ll get lots of ideas, some others not” (NT7), so facilitators “should just plan with this in mind and not force things” (NT7)—ideally projecting longer-term engagement involving several interventions in case one or more of them do not yield substantial results. That unpredictability poses challenges, especially in nature activities where facilitators have limited capacity to intervene, e.g. “how do we squeeze in co-design convo in situations where our nature activity is short or time-pressured?” (NT12). However challenging, though, that unpredictability can also be seen as an opportunity. On several occasions, the researcher went to nature without any intention of co-designing, but him or his peers produced interesting ideas anyway. For example, “a training session that wasn’t meant to be a fieldwork session ended up turning into a fruitful co-design expedition because interesting thoughts [...] came up spontaneously” (NT14). Arguably, then, “designers should always be ready to capture [their] spontaneous ideas, but most importantly [they] should be vigilant to help others to articulate theirs and to document them” (NT13).

4.2 Theme 2: Facilitating ideation within nature: the importance of playfulness, introspection, familiarity, exertion, and sense-making

Throughout the study, the researcher experimented with diverse ways of stimulating creative thinking within nature. According to his experience, “after the first idea pops up, things tend to flow more naturally, like a snowball effect” (NT15). But before that happens, “break[ing] the ice by proposing a provocative, out-of-the-box idea”

could help to “show [participants] that crazy speculation is both fine and desirable” (NT2). The researcher experimented with different ways of dropping disruptive ideas: “either hav[ing] ideas ready” of one’s own, or “identif[y]ing” a creative person in the pool of participants and prompt[ing] them to be a creative initiator” (NT15). He found the latter to be more useful, as “ideas coming from a participant are likely to generate more trust in other participants” (NT15). Another strategy he found useful got people excited about technology ideation was to “jok[e] about how [he] make[s] a living out of doing this research”—it helped to “build rapport with people and initiat[e] conversations in a way that feel natural” (NT4).

The researcher also found that instigating participants to “play with their experience of nature” (NT3) might help them to listen to and creatively experiment with their experiential desires. An example is a situation where a participant of a camping trip (NT3) sneakily photographed other campers’ sleepy faces in the morning, from inside their tent, and shared them as friendly pranks on WhatsApp. Encouraging those kinds of behaviors might help to surface ideas beyond the scope of focused co-design engagements: “Even if sometimes co-design conversations are not had directly, simply engaging people and seeing how they act, behave, and desire things raises a bunch of ideas of exciting nature-tech futures” (NT11). Another example is an idea that derived from the spontaneous behavior a participant of a hike: while walking down a hill they had previously climbed with a fair share of suffering, the participant graciously said: “Here’s where I almost got a heart attack!”—which led to a great deal of laughter. That joyful situation inspired a design idea the researcher documented as the “No-breath cam”: a set of heartrate sensors and 360° cameras people can use when hiking in group so that “when someone is exhausted, cameras take a photo to catch their funny face, so an album of photos can be produced” for the party to re-live the funny moment afterward (NT4). Researchers should be vigilant to the emergence of those kinds of spontaneous events—what [2] calls *play potentials*—as they can be a valuable inspiration for design.

The researcher’s notes also reflect on the potential of combining hands-on experimentation with reflexive ideation. A conversation with a hiker revealed that certain forms of hiking, e.g. back packing, are not only leisurely: “people also go there to find themselves” (NT4). They are exciting opportunities for stimulating deep, introspective conversations about people’s desires. Therefore, when co-designing during group nature activities, “having time alone to think and experience [could be] a good way of coming up with ideas, to then regroup and share” (NT9).

The researcher also found familiarity to contribute to their and other participants’ creative performance. At a later stage of the

process, when visiting a particular nature location for the fifth time, he realized that “ideas seem to flourish a lot more when [one] become[s] familiar with a nature area [or] activity”, and that therefore, “an adaptation or training process might be useful” (NT12). He also experienced, by its absence, the importance of building momentum when it comes to stimulating creative thinking. At some point, when trying to ideate while running after four weeks of not co-designing *from-the-wild*, he noted that “I haven’t gone out in the nature much over the last two weeks (and certainly not in a research capacity) and it’s been hard for me to produce ideas again” (NT15). He identified two possible factors behind that struggle: First, he had lost “shape and [could] no longer handle intense physical activity” (NT15). That is an especially relevant issue for a facilitator, “who needs to have positive thinking and emotions, and be sharp and ready to react, all of which are really hard [while] suffering” (NT15). When facilitating co-design *from-the-wild* within strenuous activity, “being able to wait a bit for others, or running/walking at a slower pace than your usual rhythm, gives you an extra breath that enables reflection” (NT9). The second factor has to do with one’s mental state: when one has not engaged in co-design *from-the-wild* in a while, they “get out of the ‘creative mode’ and it takes a while to re-initiate it” (NT15). That makes us think that, to facilitate collective ideation *from-the-wild*, engaging people over time and building creative momentum might be desirable.

Finally, the researcher saw an opportunity for using co-design *from-the-wild* as a platform for not only generating ideas but also making sense of them. In particular, he noticed the potential of strenuous nature-related activities, e.g. running, as platforms for sub-conscious sense-making: “when I can’t make sense of complexity, I go running and [. . .] all of a sudden, everything makes sense, like a true ‘eureka’ moment. That makes me think that maybe we shouldn’t only use in-the-wild engagements to collect data and produce ideas, but also to do sense-making of existing thoughts and ideas” (NT15). That can be an important asset in co-design *from-the-wild*, as “findings from these kinds of engagements are often messy, and a challenged documentation makes them even messier. Serious sense-making is needed both throughout the process (not necessarily within a single session, but between consecutive sessions) and afterwards, once the whole process has concluded” (NT15). Interestingly, the capacity of physical activity to stimulate creative and reflexive thinking has been vastly studied before (e.g. [17]), but that potential has hardly been leveraged in co-design methodology. We suggest that this opens exciting opportunities for future co-design methods research, e.g. investigating whether “that effect also happen at a group scale or it only happens at an individual level” or developing “mechanism[s] for multi-stakeholder validation of (or reflection on) ideas produced” through co-design *from-the-wild* (NT15).

4.3 Theme 3: Documenting messy and unpredictable activity within nature

One of the challenges of developing actionable *from-the-wild* strategies is that nature activities can be very different in rhythm, length, ways of using the body and the space, etc.. As such, they may require different forms of facilitation and documentation. For example, “an important variable to consider when thinking about the differences

between different nature activities and how to document them is to what extent they afford ‘stopping moments’ where one can take a short break and document. While in activities e.g. hiking that’s common and fits the flow of the activity well, other activities e.g. running are more intense and continuous, so there isn’t time to stop and document” (NT1). While a range of existing tools—both commercial gadgets, e.g. a *GoPro* camera, and research tools, e.g. the *Probe Tools*—can help designers to document certain kinds of nature activity, the diverse, unpredictable, and uncontrollable character of nature calls for additional tools. In their very first trip to nature, the researcher realized we should work towards “develop[ing] a framework to understand the necessary affordances of [documentation tools], to map out different kinds of nature activities, their traits, their documentation needs and challenges, and the tools that could be helpful why” (NT1).

When experimenting with different documentation forms using the technology at hand, the researcher found writing notes on their phone to be a source of tensions: “if we use the phone to document, distractions from other apps will inevitably happen” (NT12). Those tensions were even more explicit when performing nature activity in group: it “slows down both walking and social engagement” and “creates a divide between [the writer] and others” (NT4). An example of that divide is a situation where a hiker told another one while the researcher was writing: “He’s writing it down, you know” (NT4). Such “disrupt[ion of] the social situation” pressures [the writer] to finish quickly” and makes it likely that they “don’t write well and definitely not creatively” (NT2). Writing was also found to be problematic in strenuous (e.g. running) and hands-intense (e.g. foraging) activities, where “it’s even hard to record a voice memo or to think straight” (NT5). In such scenarios, the researcher thought “it may be best to be able to just note down (or record) keywords. That way, you create memory tokens to what you thought about, but don’t have to write the whole thing on spot” (NT9).

After having engaged in some of the nature trips and, especially, after having processed and reflected on the data collected during those events, the researcher also realized that there was a need for constraining data collection—especially when it came to photo-taking. According to him, avoiding an excessive focus on photo-taking can help to “avoid people going away from the in-the-moment experience” and to “have a manageable amount of data” (NT4). To encourage manageable photo-taking by co-design participants, the researcher thought of two possible approaches to developing new camera tools to support co-design *from-the-wild*: (1) based on scarcity, e.g. a camera that allows a limited amount of photos per camera or per period of time; or (2) based on social pressure, e.g. a camera that blames or teases the user if they take too many photos, so they are aware of the tensions that might bring about.

5 CONCLUSIONS AND FUTURE WORK

In this paper, we made an early proposal of a *from-the-wild* turn to HCI design and research—a move that extends in-the-wild approaches by displacing them from human-made to natural environments and avoiding techniques that privilege the designer’s agenda over contextual concerns. In our (still limited) experience, co-designing *from-the-wild* can support ideation that builds directly

on the lived experiences of people within the course of commonplace activities within nature, and thus give light to ideas that build on and respond to experiences that give people joy and that, as such, are likely to be meaningful to them. Our work so far also suggests that, by displacing design and research towards nature, we may be able to better support design that is more sensitive with the environment and thus embrace a transition towards sustainable HCI [35] that positions the environment as a complex stakeholder that must be seriously considered. An example of that potential is the process behind an idea produced during one of our trips, when admiring the beauty of a forest in autumn led to a design idea that was fueled by a profound appreciation of that forest (see 4.1). Arguably, establishing such kinds of experience-driven, empathic—even loving, one could say—relationships with nature is likely to reclaim a sense of care as a key driver of design—a kind of care that might currently be missing but is largely needed in interaction design [24]. We suggest that, through engagement *from-the wild*, co-design participants might be better positioned to embrace the needs of the environment and take them seriously, in the same way that being exposed first-hand to the needs, feelings, and lived experiences of other humans can contribute to more empathic co-design [40].

The work-in-progress reflections we shared here shed light on pragmatic things to consider when co-designing *from-the-wild*, including: thoughts on how to facilitate co-design conversations within commonplace nature-related activity without disrupting it (Section 4.1); hands-on advice on how to help people to creatively imagine how tech might augment their nature experiences (Section 4.2); and reflections on the challenges of documenting co-design within nature (Section 4.3). The aim of our on-going methods research is to get an embodied, contextual sense of the challenges and affordances of facilitating technology-related ideation within the course nature-related activities, to begin to formulate mechanisms for supporting that kind of work. We acknowledge that a lot more can be done to advance that agenda: the work presented here barely scratches the surface of the full potential and complexity of co-designing *from-the-wild*. We intend continue to investigate this under-explored methodological space through a series of research actions: First, we will do more co-design trips to nature to broaden the scope of our explorations—e.g., trying out new nature experiences, engaging different stakeholders and group configurations, etc.—to further explore some of the open questions that were left unanswered in our work so far. Second, we will build on our in-progress findings to formalize a loose protocol for co-designing *from-the-wild*, and experiment with it in real design cases. Third, we are planning a month-long back packing trip where we intend to use an evolved version of our emergent protocol, as well as our associated hands-on learnings, to co-imagine nature-technology futures with backpackers we find on the way. Overall, our long-term aim with this project is to build a solid methodological foundation that enables a participatory and situated co-design of future nature technology. We hope that, by sharing our work-in-progress, we will stimulate a conversation that enriches both our thinking and that of others doing participatory and situated co-design methods research.

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A APPENDIX

Table 1: Detailed account of our nature trips, including: ID, date, type of activity, participants involved, and documentation used

ID	Date	Type of activity	Participants involved	Documentation used
NT1	October 6, 2021	Foraging	The researcher alone	Notes on the phone, photos, videos
NT2	October 7, 2021	Statements	The researcher + 1	Notes on the phone, audio messages, photos, videos
NT3	October 9, 2021	Camping	The researcher + 5	Notes on the phone, photos, videos
NT4	October 11, 2021	Hiking	The researcher + 2	Notes on the phone, audio messages, photos, videos
NT5	October 16, 2021	Trail running	The researcher alone	Audio notes, photos
NT6	October 20, 2021	Trail running	The researcher alone	Notes on the phone, audio notes, photos, screenshots, videos
NT7	October 21, 2021	Foraging	The researcher alone	Notes on the phone, photos, screenshots, Instagram stories, videos
NT8	October 27, 2021	Trail running	The researcher alone	Notes on the phone, photos, Instagram stories, videos with a sports camera
NT9	November 1, 2021	Trail running	The researcher +1	Notes on the phone, photos
NT10	November 4, 2021	Foraging	The researcher alone	Notes on the phone, audio messages, photos, videos, screenshots
NT11	November 19, 2021	Foraging	The researcher +2	Notes on the phone, photos, videos, screenshots
NT12	November 25, 2021	Power walk	The researcher alone	Notes on the phone, photos, videos, screenshots
NT13	November 30, 2021	Running	The researcher alone	Audio messages, photos, videos with sports camera
NT14	December 2, 2021	Running	The researcher alone	Notes on the phone, audio messages, photos, screenshots
NT15	December 24, 2021	Trail running	The researcher alone	Notes on the phone, photos
NT16	December 30, 2021	Snow walking	The researcher +4	Notes on the phone, photos, videos