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## Remote participatory research has logistical benefits, but presents scientific and ethical challenges

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## PERSPECTIVE

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## 1. Introduction

Participatory action research (PAR) has now gained international recognition from environmental managers, and has been identified as an asset for efficient, ethical and more democratic decision-making process in environmental policies (United Nation 1992, Reed *et al* 2018). We define PAR as the active involvement of community members (e.g. authorities, businesses, citizen organizations) 'in all phases of the action inquiry processed, from defining relevant research questions and topics to designing and implementing the investigation, sharing the available resources, acknowledging community-based expertise and making results accessible and understandable to community members and the broader public' (Ballard and Belsky 2010). Although both PAR and citizen science involve non-academic participants, we favored the use of PAR as it emphasizes the contribution of research to the decision-making process. Even if fundamental principles of PAR vary among authors, they agree on mutual interactions and learning between academics and other participants, and reflexivity regarding one's research stance (Wilkinson and Wilkinson 2018, Chevalier and Buckles 2019). More specifically, PAR encompasses short to long-term interactions with individuals, groups, or organizations via communication and consultation, or more deliberative joint knowledge production (Arnstein 1969, Reed *et al* 2018). Participatory methodologies include informative tools (e.g. newsletters, public hearings), one-on-one interactions (e.g. interviews, Q-methodology) and group exchanges (e.g. workshops, focus groups, serious games).

While the pros and cons of participatory methodologies have been discussed in the literature (Luyet

*et al* 2012, Chevalier and Buckles 2019), the unprecedented sanitary constraints posed by the COVID-19 pandemic (hereafter called COVID) have shed some light on the use of remote participatory methods. These methods include any use of video and audio technologies via secure internet connections as a means and mode of transport in real-time (vs. in-person) research activities (Liegghio and Caragata 2021, p 5), for instance zoom-operated focus groups. Remote participatory methods were already used by environmental PAR researchers conducting in-person meetings (e.g. Bailenson 2021, Hall *et al* 2021, Kelman 2021) but their popularity has grown exponentially during COVID to the point that combining in-person and virtual participation is becoming the new standard. Recent research in environmental PAR has revealed the logistical value of remote methods, which are generally less costly and more accessible to participants while leaving a smaller carbon footprint (Fraser *et al* 2017).

Going beyond the logistical considerations of remote PAR, this article explores the scientific and ethical challenges of using remote methods in environmental research. We draw on Cash *et al*'s (2003) criteria, namely credibility, salience and legitimacy, for an effective knowledge system for sustainable development. We illustrate the conceptual development of this perspective with two case studies drawn from our PAR experience conducted remotely in box 1. We first explore the challenges of conducting remote PAR in the light of credibility, which 'involves the scientific adequacy of the technical evidence and arguments' (Cash *et al* 2003, p 8086). Secondly, we examine the salience and legitimacy criteria, which respectively refer to 'the relevance of the assessments to the needs of decision makers' (p 8086) and to the

**Box 1.** Challenges, lessons learnt and recommendations from two Canadian case studies of remotely conducted PAR. In the first case study (identified as BC), we used the Q-methodology to prioritize conservation actions in the Biodiversity Committee of Papineau county (Québec). In the second case study (identified as CESCO), we conducted consultative workshops with stakeholders regarding conservation measures on private lands at the provincial level.

Dimension	Challenge	Switching from in person to remote participation: lessons learnt	Recommendations
Scientific— formulation of research hypotheses	Understanding the local context	In-person participation gave researchers a better picture of the local context compared to remote participation. (BC) The field experience of one of the two researchers (before COVID) facilitated the inductive approach specific to qualitative research. (BC)	Develop trust through several meetings and iterative development of research design with diverse stakeholders well before starting the research (if possible, through in-person meetings).
Scientific— workshop facilitation	Understand participants' verbal and non-verbal language	The self-completion of Q-sorts hindered the monitoring of spontaneous comments and body cues (BC)  Body language consolidated or tempered the expression of one's opinion (e.g. 'Guess who i am looking at' ironic comments) and was difficult to capture remotely (BC, CESCO).	Accompany (virtually) respondents during the classification of statements to document the logic of their classification and reactions to the statements presented. Record the interview can help analyze verbal and non-verbal cues.
Logistic— participants recruitment	Representative and inclusive recruitment of participants  Integration of anthropocentric and ecocentric values	Online participant recruitment was significantly faster and response success rate was significantly higher compared to the previous in-person workshops (CESCO). Yet, the participants panel was not as inclusive as wished. Actions often speak louder than words to express one's environmental values. Revealing and integrating ecocentric values was much easier during in-person interactions (e.g. collective field visits) (CESCO).	Physical presence in the study area allows for spontaneous meetings of local stakeholders and subsequent recruitment. If impossible, diverse remote recruitment channels (telephone, radio, newspapers, social networks, etc) may contribute to more inclusivity. Rather than using only discourse analysis, remote investigations on ecocentric values can rely on visual content through picture or video interpretation.
Ethical— confidentiality	Maintaining the confidentiality of discussions	We used a video conferencing software that indicates who launches video capturing. However, the existence of non-detectable video-capture softwares might deter some participants from fully speaking their mind. (BC)	Remind participants of the confidentiality of the discussions before each workshop. Offer participants the possibility of individual meetings.

reliability of the process in fairly accounting for the diversity of stakeholders' values, beliefs, opinions, and interests. This leads us to step back from methodological considerations and broaden our exploratory lens to examine remote PAR's social consequences of remote PAR beyond academic circles. We conclude by arguing that conducting remote PAR in a scientifically rigorous way, respectful of the people who contribute to it, requires careful use of remote technologies, to ensure inclusiveness and meaningful participant engagement.

## 2. The ethics of credible environmental research: doing remote participatory research right

Ethics refers to how well-founded values (i.e. what is good, desirable, or important to seek or achieve) translate into everyday interactions with other humans and living beings. Research ethics committees most often evaluate if scientific projects are well designed according to three principles: respect, concern for welfare, and justice (Canada Interagency

Advisory Panel on Research Ethics 2018). These principles are mostly accounted for by seeking the free and informed consent of participants, which implies communicating the context, the foreseeable risks and benefits, and the aftermath of the study at all research stages (Creswell and Poth 2016). We contend that the three principles are key to ensure the credibility of remote PAR, i.e. the public's trust in the scientific process and its conclusions. However, remote methods modify the interactions between researchers and participants, therefore raising the question of accounting for the three ethics principles.

The respect principle requires that researchers recognize that people are free and unique. Using remote methods, this translates into paying special attention to protect participants' privacy and confidentiality. We are particularly concerned about the increasing use of geolocation in participatory mapping, whose implementation must prevent the unintended dissemination of critical information that could harm participants or the community under study (e.g. location of protected species on private lands, publicly available water quality measures that can be attributed to potential polluters). Privacy issues can also arise in online focus groups if participants use their own devices to record session discussions. Hall *et al* (2021) found that participants enter discussions at different time, share confidential material, or '[use] search engines to compensate for their lack of knowledge on a topic'. Here, best practices would include openly acknowledging the risks and benefits associated with the use of remote methods, through written and oral consent (Lobe *et al* 2020).

The second ethics principle, ensuring welfare, refers to maintaining or improving the quality of a person's life (e.g. physical, mental, spiritual health, economic and social status). Ensuring welfare requires a clear understanding of participants' values and social dynamics. Remote methods require an even more thorough observation of verbal and non-verbal communication than in-person methods. Indeed, remote methodologies lack the richness of the in-person experience, where important non-verbal cues are revealed before, during, and after workshops (e.g. body postures, glances, tics, sighs, if some stakeholders arrived together, or were avoiding each other). From a more prosaic standpoint, ensuring the comprehensiveness of stakeholders' participation is more difficult with remote methodologies, as facilitators must restrain spontaneous discussions. Fostering interactions with such constraints can be challenging.

Justice, the third ethics principle, requires that research participation benefits and burdens be fairly distributed between participants. To conform to the justice principle, researchers must meet the same high standards for the equitable distribution of speaking time as for in-person interactions. This is even more

taxing when dealing with groups of stakeholders who possess different forms of knowledge, some derived from direct experience and others from scientific inquiry, which are expressed differently (Berkes 1999, Pascual *et al* 2021). As pointed out by Reed (2008), this issue of a just representation of participants requires a thoughtful and well-designed participant recruitment process. More specifically, remote methods can reduce participation opportunities for those with difficulties in accessing technologies, such as rural residents and individuals with poor IT literacy (Hall *et al* 2021). The justice principle is even more relevant given the growing momentum for recognizing non academic knowledge, which from our experience is often contributed by stakeholders less comfortable with IT. A just participatory remote method should offer alternatives to avoid excluding these disadvantaged actors, for instance by providing a free Internet access point close to their home, by offering technical assistance, or by ensuring all participants have an opportunity to express themselves using a method they are comfortable with.

### 3. The ethics of salient and legitimate environmental researchers: doing the right remote participatory research

The social consequences of research activities have been considered an ethical issue for quite some time and in many disciplines, as stressed for instance by anthropologists' principles of professional responsibility (American Anthropological Association 2022). In this section, we focus on the scientific and ethical consequences of conducting remote PAR as researchers embedded in social-ecological systems. To that effect, we evaluate remote PAR using Cash *et al*'s second and third criteria, salience and legitimacy, for an effective knowledge system for sustainable development (Cash *et al* 2003).

Cash *et al*'s (2003) salience criterion refers to the 'relevance of the assessment to the needs of the decision-makers' (p 1). Much has been said on what needs are and how to evaluate them (e.g. Schlüter *et al* 2017), and participation provides a valuable means of accounting for stakeholders' needs. This view of salience is however mostly from the anthropocentric perspective of humans' needs. By its very essence, environmental PAR can extend ethical considerations to the needs of non-human life forms supported by ecosystem functioning (ecocentric perspective). In PAR, therefore, an ecocentric salience criterion can use what we know are the needs of non-human life-forms, from the academic and local knowledge of the ecosystem under study and the autecology of its species. A way to mobilize such knowledge is to use it to answer Rambaldi *et al*'s (2006) practical ethics questions. The authors introduce a series of 'Who/Whose' questions aiming at inducing appropriate ethical choices, for instance 'Who

benefits from the changes [stemming from the PAR]?, or ‘Who is empowered/disempowered?’ in the PAR process. Most of these questions can also be extended to non-human life, to also consider the consequences of a PAR project on their needs.

The legitimacy criterion refers to the reliability of the process in fairly accounting for the diversity of stakeholders’ values, beliefs, opinions, and interests. Legitimacy regards the partial disengagement of researchers from the ecosystems and people they study or co-produce knowledge with. While this distance from the field could reduce the researcher’s legitimacy in the eyes of the participants, remote legitimacy is less of an issue for researchers who already gained legitimacy with participants prior to the use of remote methodology. Therefore, we contend that a major consideration in opting for a remote PAR project is whether the researcher has a sufficiently strong relationship with the social-ecological system under study to adequately understand the uniqueness of its social and ecological dynamics. Indeed, researchers may gather knowledge on an ecosystem’s functioning through reading about its key processes, species, and interactions, or through remote data collection such as drone-borne light detection and ranging (LiDAR) or environmental DNA sampling without ever experiencing the ecosystem *in situ*. In our view, despite their logistical benefits, these automated remote methodologies remove some of the last chances of researchers-participants interaction and decrease the social legitimacy of researchers. From our experience, at least some prior visits to the geographic area, in-person meetings and exchanges of information are necessary to seize the complexity and wealth of the social-ecological system at stake. As expressed by Sword-Daniels *et al* (2018), embodied knowledge about environmental risk requires subjective on-site appraisal to avoid missing important details—the key, for us, to enhance the legitimacy of the later use of remote methods.

#### 4. Conclusion

Researchers have shown an impressive methodological plasticity during COVID to switch from in-person meetings to remote interactions. The transition to digital tools has been very quick, not always very satisfactory, but its logistical benefits have instituted hybrid in-person and virtual meetings as the new normal. The main challenge now is not to fall in dubious methodological habits, and to fully consider the scientific and ethical challenges associated with remote PAR.

We believe that attention must be paid to the credibility, salience, and legitimacy of remote methods to achieve a high-quality participatory process, where all stakeholders are satisfactorily included and respected. We highly recommend weighing the pros and cons of remote participation in their ability to foster

a trust relationship between researchers, participants, and the public at large. Fostering the public’s trust in research requires considerable time and, at some point, in-person meetings. We believe that prior presence in the field remains essential—at least for some of the researchers involved in a PAR project—for sharing common knowledge of places and ecosystems with participants to ensure the legitimacy and efficiency of remote methods. In addition, groups without a common experience of the environmental issue at stake may first need the type of experiential knowledge gained during a field demonstration to later fully participate in remote PAR. Maintaining trust is also supported by sharing and disseminating the results of research projects, another time-consuming challenge of remote PAR.


#### Data availability statement

No new data were created or analysed in this study.

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