

Laidlaw Scholarship for Undergraduate Research and Leadership

Summer 1 – Research : Reflective Report

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Title of Scholarship Project:	<i>“Human Considerations of Surveillance Technologies used in Biodiversity Conservation”</i>

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Namaskaram!

It means the life in me bows down to the life in you.

We say *namaskaram* to greet one another in the south of India, and I think that’s beautiful.

So *Namaskaram!* 🙏.

I am delighted to be reflecting upon my first summer as a Laidlaw Scholar, and as I do so, I am filled up to the brim with nothing but gratitude. The kinds of experiences and learnings this period has gifted me are invaluable not just for my professional growth, but equally for my journey within.

What is the research about?

This short 8-week research project is titled - the "**Human Considerations of Surveillance Technologies used in Biodiversity Conservation**". Allow me to give you context - In the field of Conservation, there is a massive lack of care taken to ensure that human data and privacy are not compromised when trying to protect and preserve other species. This lack of caution has led to serious malpractice and breaches of privacy, with cases as serious as those involving government bodies minutely monitoring the lives and movements of deprived groups and tribal communities. The topic is usually overlooked by many academics in circles of conservation science and is a severely understudied issue.

What are we doing about it?

We wanted to initiate a dialogue. We designed the study to find out what norms govern the use of Conservation Surveillance Technologies (CSTs hereafter) presently, how the data collected from conservation is actually being used, and how we can perhaps stop continued malpractice of these CSTs from happening at a global scale by looking at literature and best practices to give us solutions and ideas for innovation.

This is a qualitative study and uses semi-structured interviews to elicit expert opinion and knowledge of CSTs and their interaction with personal privacy. In this regard, my supervisor and mentor, Dr. David Williams, was instrumental in helping me reach out to 15-20 world-leading academics working in the field of Biodiversity Conservation who were based in the UK and India. After carrying out a literature review and reviewing existing networks, we knew who we needed to approach. We then prepared a large flow of questions we wished to have answered. Though not the exhaustive list, some fundamental questions this research project revolves around are:

- Has the concerned academic considered the ethical implications of their conservation research? To what extent, if at all, they have thought about the impact of their surveillance work on human beings.
- What is the best way to retain the efficacy of "x" conservation technology without compromising human privacy?
- Has the concerned academic come across a breach of privacy whilst pursuing biodiversity conservation either personally or as part of a research group? And if yes, what measures were taken (if any) to ensure protection of information?
- Whether they think conservationists globally should adopt a "best practices" approach towards the issue or whether a regulatory approach is necessary.
- Their views on how this problem may mature moving forward, including the rise in use of AI/ML in conservation.

A refined list of such questions was finalized to produce a concise 'interview sheet' for each academic modified depending on their relevant area of expertise. The interviews were conducted both in-person and online, depending on the location of participants and their availability. All interviews were recorded and transcribed, and further they were thematically coded to distil findings. The methods are reflective of the current norms in qualitative research for expert elicitation.

We aimed to interview experts on different technologies (camera traps, remote sensing, acoustic monitoring, eDNA, AI-monitoring), experts involved with ethics in conservation, as well as experts on the political ecology of conservation surveillance. With a single participant for each area of expertise we would have needed to approach seven participants, but to ensure greater reliability and robustness in our results, we chose to speak to at least two experts from each area. Additional areas were suggested by participants as we conducted the interviews, and so the list of experts kept receiving entries. The main criterion for inclusion was that the participants must have published on conservation surveillance or using conservation technologies, or be seasoned practitioners of research involving such technologies.

What came out of the research and Why is it important?

The simplest way to summarise the results of the research would be as below:

- All interviewees said they had thought about the ethical implications of their work. However, most conservationists mentioned that they had only recently started applying it to research.
- After discussion, all interviewees agreed that a voluntary 'best practices' approach is important and would be more effective than a regulatory approach.
- There were mixed views about AI/ML and its potential impact on humans surveilled under CSTs, with strong arguments suggesting both potential benefits and threats.
- All interviewees agreed that funders and journals play a key role in shaping the narrative.
- There was common agreement on the benefits of more socially sustainable forms of conservation.
- All interviewees agreed that this is an important area of research that is heavily understudied.

We understand from speaking to academics that there is an urgent need for the voluntary adoption of "best practices" within the conservation science community, since policy can take years to incorporate evidenced, research-based solutions. Funding organizations and journals play a critical role in determining how ethically research is carried out. We also understand that AI/ML offers incredible solutions to many barriers we face with respect to data processing, time, and scale. However, the "black box" nature of large language models (LLMs) in use for conservation surveillance must be acknowledged. There is consensus that most conservation practitioners are waking up to this issue and accommodating for errors in their research methods. As a result of the move away from "fortress conservation", there is widespread agreement on the effectiveness of people positive measures such as 'community-led conservation'.

We hope that the research will eventually be published in a peer-reviewed journal and contribute to the development of the 'Conservation Surveillance' field. As discussed, this is a crucially under-researched area, and building an understanding of how to ensure that conservation technologies are used ethically and with respect for individuals' rights to privacy could have a major impact on how conservation monitoring is performed in the future. Further, this project allows for an open dialogue between academics from diverse fields on such a key topic, potentially leading to useful synergies and fresh perspectives.

The main outputs from this research so far have been a research poster posted to the Laidlaw Scholars Network and this research report. We are now working towards a paper on the topic published to a peer-reviewed journal. The current research will be presented at multiple fora including university events, poster events, and undergraduate research conferences.

Learnings and Experiences

This project was my first interaction with any research-based opportunity. Of my strengths, I have been told many-a-time that empathy, communication, and charisma are obvious at first sight to the onlooker. Having observed that I tend to consider only my strengths when I scout for opportunities, I was keen on completing a research-based scholarship such that I expose myself to a whole new skillset – one that is vital for my professional growth. However, after reading the brief of the proposal at the start of the year, I will not lie about my thoughts being, “Oof. I may have a hard time doing the same thing for 8 weeks.” Little did I know that my assumptions of research being desk-based and monotonous were untrue, and that I would have so much fun in the process!

As part of interviewing academics, I was invited to travel to and conduct interviews at the University of Cambridge and the University of Edinburgh, apart from interviewing academics within our campus at the University of Leeds. This meant that I had the absolute privilege of exploring these stunning cities, travelling the length of the UK by train in the summer, and having access to these prestigious institutions and their faculties. Even the interviews, be it in-person or on MS Teams, were largely organic



Fig. - Vaibhav in Edinburgh, Ecstatic

conversations about the topic intermittently nudged by a glance at the bullets from the word doc on my phone screen.

This approach to interviewing the academics allowed me to ask important open-ended questions that consequently afforded them the freedom to really bring out their expert thinking on the matter. A most beautiful aspect of this was that, knowing my appetite for unending conversation, I feared that this approach may lead to a lost opportunity to ask the experts a sufficient number of relevant questions, and that it may not be the most “productive” way to go about it. Nevertheless, I decided to go ahead with it because it is the way I enjoy conducting interviews, and it puts the interviewee at total ease which usually brings out their best self. To my absolute joy, the academics not only responded positively to the approach, but they heaped praise on the way I carried out the interviews, saying that it was such an effortless conversation and that they had never experienced an interview with such ease before. I was most touched when an experienced professor and lead conservationist who works on Big Animal conservation at the University of Oxford told me that usually, such a process would be carried out via a cold email to the experts followed by a link to the survey. He thanked me for facilitating the space for himself and other academics involved in the study to open up, be engaged, and not feel like a statistic. Similar comments were made by other academics, and it moved me powerfully to know that I was being applauded by these stalwarts.

The invaluable skills of time-management and an organised work culture are those that I often struggle to align myself with. Having to work all the while travelling from Leeds to Abu Dhabi and then to Kochi and Coimbatore, this period has forced me to push myself in that right direction. When I was honoured to receive the scholarship, I thought ‘research’ and ‘leadership’ were to be treated as separate things. I now realize it is otherwise.

The summer of research was much more than just recordings, transcripts, and analyses. By the end of my research period, it was clear to me that I not only had developed my research muscle, but I had equally strengthened my communication skills in ways that I had not foreseen.

Supervisor's Report

It's been a real pleasure working with Vaibhav over the summer and subsequently. His project was very open-ended and flexible, and Vaibhav showed excellent maturity and judgement in deciding what he wanted out of the project and, equally importantly, what he did not want to spend his time doing. He had a clear idea of what kinds of skills he wanted to develop, and what kind of work would keep him motivated and allow him to make the most out of the scholarship. This actually involved a fairly major shift in the kind of project we worked on, and he was instrumental in redesigning the work so that it achieved both his aims and provided the data that I wanted.

His project involved interviewing academics across a broad range of subjects and in some cases asking some difficult questions. He did this with real skill and sensitivity, and I had excellent feedback from the colleagues that he spoke to. He also collected some really valuable data, and I am hopeful that he will write this up as a peer-reviewed publication soon. The project also lays the foundation for further research if Vaibhav wishes to continue with it (or for another student to take up).

Vaibhav really threw himself into things and brought energy and enthusiasm throughout the project. He has excellent interpersonal skills and I would definitely recommend that he tailors his academic and non-academic work to take advantage! In terms of constructive feedback, I do think Vaibhav could perhaps work on his personal organisation. He has huge potential for whatever he wants to do, so he just needs to make sure that he gets the most he can out of his opportunities. This is a real 'learn through experience' skill though, so I have no doubt he will continue to improve.

I hope Vaibhav enjoyed the experience—it was definitely a learning experience for me as well—and pursues this kind of work in the future.

David Williams.

David R Williams



Vaibhav Pramode Nair

