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Quantity Does Not Always Mean Quality: The Importance of Qualitative Social Science in Conservation Research

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ABSTRACT

Qualitative methods are important to gain a deep understanding of complex problems and poorly researched areas. They can be particularly useful to help explain underlying conservation problems. However, the significance in choosing and justifying appropriate methodological frameworks in conservation studies should be given more attention to ensure data are collected and analysed appropriately. We explain when, why, and how qualitative methods should be used and explain sampling strategies in qualitative studies. To improve familiarity with qualitative methods among natural scientists, we recommend expanding training in social sciences and increasing collaboration with social scientists. Given the scale of human impacts on the environment, this type of nuanced analytical skill is critical for progressing biodiversity conservation efforts.

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Choosing an appropriate methodological framework is essential to ensure a study's results are robust. We therefore thank Potgieter et al. (2017) for their critique of Rust et al. (2016). They raise important points on the use and justification of methods, sampling, and data analyses. However, while they claim to “appreciate the qualitative approach of the study” (Potgieter et al. 2017, 3) they appear unaware of when, why, and how qualitative methods should be used. Thus, we do not find their arguments to be persuasive criticisms of the Rust et al. (2016) study, as we explain in more detail in the following.

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There are benefits and costs to any chosen methodological framework, and these should be carefully assessed prior to data collection (Rust and Hughes 2017). Quantitative approaches are more commonly used to test hypothesis-driven questions when preexisting data are available. These studies typically use large sample sizes and statistical analyses to draw generalizable conclusions. Conversely, qualitative methods may be preferred when deeply exploring a topic while trying to preserve the context. Thus, qualitative research tends to study specific cases for maximum exploration using an inductive approach with a smaller, often nonrandom, subset of a population (Newing et al. 2010). Qualitative research also differs in its approach to robustness: While quantitative research strives for internal and external validity, qualitative research strives for credibility and, often, transferability (Guba and Lincoln 1982).

The focus on depth over breadth in qualitative studies does not mean results are any less robust than quantitative ones (Merriam 2009), nor are quantitative studies any more appropriate. Although biologists often default to quantitative methodologies due to biologists' epistemological orientation, it is incorrect to presume quantitative methods yield more accurate results. There are a number of reasons for undertaking qualitative rather than quantitative research. For example, a researcher may wish to explore views of a small group of respondents, such as avid fox hunters who became activists against blood sports. While a questionnaire could test an *a priori* hypothesis for this topic, it would have limited utility in contextualizing or dissecting this phenomenon from the perspective of respondents. If this topic were to be studied quantitatively, it must first be researched qualitatively to identify key themes, questions, and viewpoints to develop the questionnaire. Qualitative methods can provide detailed data about firsthand experiences using insider viewpoints that could be easily missed using predesigned, structured surveys based on outsider perspectives.

Qualitative methods have been employed in a multitude of conservation studies, including examining children's perceptions of cheetahs (Hughes 2013), incentives to poach wildlife (Ghoddousi et al. 2017), and local resistance against tiger conservation (Rastogi et al. 2012). Although there are acknowledged constraints to generalizability, the concepts and theoretical insights from qualitative research can be applied and examined elsewhere, as in Rust et al. (2016). Thus, the aim of qualitative studies is not to extrapolate findings to wider populations—indeed, small nonrandom samples do not allow this. Instead, it is to explore complex phenomena from the participants' point of view while minimizing researcher assumptions and biases to potentially discover unconsidered topics, which is precisely why qualitative methods were used by Rust et al. (2016).

The Potgieter et al. (2017) suggestion to undertake a quantitative study on the Rust et al. (2016) research is merited; therefore, we highlight the follow-up study (Santangeli et al. 2016). Here, the authors quantitatively researched this topic using a larger, random sample and statistically analyzed data to determine the extent of poison used to kill predators on Namibian commercial livestock farms. They found poison was more commonly used where farmers reported more negative work relationships with employees. While this does not infer causation, it suggests wildlife management on farms could be influenced by farmer–employee relations, as initially suggested by Rust et al. (2016).

Undertaking a Qualitative Study

When choosing how to collect data, it is useful to first decide on a methodology such as phenomenology, ethnography, or narrative inquiry (Rust and Hughes 2017).

Grounded theory (Glaser and Strauss 1967) is a common and highly regarded qualitative methodology, aiming to reduce researcher bias by giving participants a voice. Researchers begin data collection prior to forming hypotheses in order to develop contextual understanding before directing the focus of research. Observations are recorded and analyzed immediately to identify recurrent themes that should influence the direction of the research (Glaser and Strauss 1967). For a more detailed description and justification of this approach, along with the methods, interview questions, sampling strategy, and data analysis used in Rust et al. (2016), see Rust (2015). For further details on the social context of conservation, conflict, social inequality, and racial tension in Namibia, see Rust and Taylor (2016).

Once a methodology has been identified, specific methods must be chosen. If a study focuses on sensitive questions (such as asking about illegal behavior like poaching), researchers can build rapport and trust with respondents through immersion and participant observation (Puri 2010). Alternatively, specially designed quantitative methods to ask sensitive questions, such as randomized response technique, can be used (Nuno and St John 2014). Quantitative methods are most appropriate where preliminary data have been collected and the aim is to verify findings within a wider population, such as the Santangeli et al. (2016) study. However, qualitative methods are, by nature, exploratory so are often used when no prior studies have been conducted, as was the case with Rust et al. (2016).

Qualitative studies often employ nonrandom sampling, such as snowball sampling, because the research can focus on hidden or reluctant populations such as disempowered individuals or those undertaking illicit behaviors (Cohen and Arieli 2011). These techniques can be used to investigate unique phenomena to gain deeper insight on a topic (Ritchie, Lewis, and El Am 2003). Snowball sampling has been employed in numerous conservation studies (e.g., Karanth et al. 2008; Said, Tzanopoulos, and MacMillan 2016). As Rust et al. (2016) gathered data on potentially negative interactions between farmers and workers and on possible illegal behavior by workers, snowball sampling was appropriate. Potgieter et al. (2017) state that snowball sampling can bias data to produce non-representative samples, but the Rust et al. (2016) study was not intended to represent the entire white Namibian commercial farmer population, nor did it claim to do so. Instead, the research aimed to identify themes on the farms sampled that had higher and lower levels of reported livestock depredation, livestock theft, and poaching.

Smaller sample sizes are common in qualitative studies, as the emphasis is on quality and depth of findings over quantity and generalizability. Rust et al. (2016) sought additional interviews and undertook further participant observation until reaching theoretical saturation—an accepted practice in qualitative studies (Creswell 2007). If nonrandom sampling is used, it is inappropriate to undertake numerical analyses to present findings for qualitative studies, as suggested by Potgieter et al. (2017). This is primarily because the population has not been randomly sampled and, in the case of Rust et al. (2016), because the study was based around thematic analysis with the “unit of analysis” being the theme rather than individual perceptions. The Rust et al. (2016) results are therefore presented descriptively and objectively tested through the constant comparative method (Glaser and Strauss 1967). Findings were not extended beyond the population studied, but the authors did suggest, with support from cited research, that similar themes might be found elsewhere and could be important considerations in addressing conflicts about wildlife. It is

unclear whether the conclusions from Rust et al. (2016) could have been discovered using quantitative methods alone.

The methods, sampling strategy, and analysis used by Rust et al. (2016) are not unique to this topic, and we refute the Potgieter et al. (2017) argument that they are inappropriate. Khumalo and Yung (2015) studied the hidden impacts of human–wildlife conflict on Namibian women using an extended case method over 6 months of fieldwork, employing in-depth, semistructured interviews, participant observation, and document review. Sampling was purposive, interviewing 69 respondents. Analysis was conducted by coding common themes throughout interviews. Results were written descriptively using key quotes to support findings. Mosimane et al. (2013) conducted similar research on human–wildlife conflict in Namibia using an analogous qualitative design and sampling strategy.

The Devil is in the Details

In this section, we provide detailed responses to specific criticisms raised by Potgieter et al. (2017). First, the premise of the Rust et al. (2016) study was not based on whether human–wildlife conflict had increased; rather, it questioned why it had not been adequately addressed. Potgieter et al. (2017) stated that human–wildlife conflict is not increasing in Namibia; this is correct, insofar as total conflict is concerned, but this is due to declining conflict with herbivores. By contrast, conflict with predators has actually increased over time (NACSO 2013, Table 3).

Rust et al. (2016) interviewed unemployed and employed workers, but Potgieter et al. (2017) claimed that interviewing unemployed workers could influence their opinions of their former employers. This may be true, but equally, interviewing only employed farm workers could bias data, as employees might be reluctant to speak frankly about their current manager. However, irrespective of chosen method, there will always be some form of reporting bias in research with humans, and researchers should acknowledge this (e.g., Rust 2015).

Potgieter et al. (2017) stated that the Rust et al. (2016) narrative focused only on poorly managed farms, but Table 1 from the original article compared farms with problems to those without. Rust et al. (2016) emphasized farms with greater problems as a way to elucidate this novel finding.

Potgieter et al. (2017) contend that Rust et al. (2016) misquoted two studies (du Toit 1994; Malekano 2000) as research on racial tensions, but the paragraph in Rust et al. (2016) was on poaching and theft. It therefore appears Potgieter et al. (2017) misinterpreted Rust et al. (2016) to assume the article suggested that the root of human–predator conflict on Namibian commercial farms was solely due to racism. However, Figure 1 in the original article theorizes that underlying, nonlinear social drivers of human–carnivore conflict are related to inequality. Indeed, the majority of the article focused on inequality as the primary social driver of human–carnivore conflict. Racism was only referred to nine times throughout the document, whereas poverty and unfair treatment were referred to 33 times. While Rust et al. (2016) do propose a link between racism and carnivore conflict, they do not say one causes the other, contrary to the criticism of Potgieter et al. (2017).

Potgieter et al. (2017) suggest micro- and macro-socioeconomic factors uncovered by Rust et al. (2016) are not limited to commercial livestock farms but could also be

present on communal farms. This could occur and we encourage further studies on this—particularly as there could still be social tensions on communal farms as some farmers employ workers from other ethnic minorities. However, the scope of this research was on commercial farms.

A Positivist Bias in Conservation?

We are now in the epoch of the Anthropocene, where humans have become the greatest driver of environmental change (Steffen, Crutzen, and McNeill 2007). It is no longer sufficient to study ecological phenomena in isolation nor to view conservation as a technical problem. Instead, we must accept conservation as a social and pragmatic problem. Therefore, we should engage all available tools and methods to gain deep, contextual understanding of why and how people are negatively affecting the earth in order to conserve it more effectively.

From the experience of the authors here, qualitative conservation social science studies are sometimes criticized as inappropriate, largely by natural scientists. However, natural and social scientists typically differ in epistemological and ontological perspectives. Critical reflection on the richness, breadth, and rigor of social science methods can help natural scientists appreciate this important dimension of conservation.

We recommend that universities, organizations, and professional societies expand opportunities for training, engagement, and collaboration that expose conservation scientists and practitioners to qualitative methods and social scientists. At the very least, we advise conservationists and ecologists to study social science theory, methods, and research approaches to begin appreciating how social sciences aim to address the complex problems facing our field. We recommend Bennett et al. (2017) and Newing et al. (2010) as starting points.

If we want to be effective conservationists for the future, we must be innovative and fearless in our pursuit of knowledge—even when it challenges long-held assumptions about approaches and epistemologies. Information is not restricted only to the quantitative, and value is not determined solely by generalizability.

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