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PERSPECTIVE

An equity lens on behavioral science for conservation

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Abstract

In recent decades, interest in and application of behavioral insights to conservation theory and practice have expanded significantly. Yet the growth of integrated strategies to adapt and guide human behavior in service of conservation outcomes has included limited engagement with questions of equity and power. Here we examine the use of behavioral approaches in conservation efforts, emphasizing potential misapplications that may result from omitting equity and power considerations. Such omission may lead to an overemphasis on the role of individual behaviors relative to system-level drivers of biodiversity loss, result in misalignment between behavioral interventions and the actual drivers of behavior in situ, and incur unanticipated negative social welfare and distributional costs, all of which may undermine conservation success. We offer recommendations for centering equity when applying behavioral insights to conservation, including strategies for high-level agenda setters (scholars, advocates, funders and programmatic leaders) as well as conservation practitioners. The urgent need for biodiversity conservation is insufficient reason to side-step equity and power considerations; we contend that centering equity is consistent with this urgency and key for developing sustainable conservation theory and practice.

KEYWORDS
behavioral insights, behavioral science, conservation, equity, social psychology

1 | INTRODUCTION

Biological conservation is largely concerned with environmental impacts—species extinction, habitat destruction, pollution, etc.—that result from human behaviors. Conservation efforts are often evaluated through assessment of target populations' environmental attitudes or behavioral intentions (Nilsson et al., 2020). Importantly, recent work highlights that these are poor predictors of behavior (Balmford et al., 2021; Nilsson et al., 2020; Tam & Chan, 2017; Weigel et al., 2021). As a result, conservation funders and practitioners increasingly grapple with the gap between attitudes and behavior and seek interventions that directly target the behaviors driving problematic environmental change (Nilsson et al., 2020).

Conservation researchers' recent calls to incorporate the theories, insights and methods of behavioral science into conservation work (Cinner, 2018; Reddy et al., 2017) are a response to this dilemma. Behavioral science is the multidisciplinary, empirical investigation of human behavior; applied behavioral science typically focuses on

understanding and generating behavior change to address real-world problems. Examples include increasing retirement contributions through making enrollment opt-out instead of opt-in (defaults), decreasing residential energy usage by sharing information about average neighborhood use (social norms), and increasing fruit consumption by placing it at eye level (salience) (Benartzi et al., 2017). The rapid expansion of work in this arena asserts behavioral approaches' potential to improve conservation outcomes by directly influencing human behaviors (e.g. Cinner, 2018; Reddy et al., 2017), and ranges from direct calls-to-action to applied frameworks designed to support the rigorous application of behavioral strategies (e.g. Bennett et al., 2017; Reddy et al., 2017).

Yet taken as a whole, the literature forwarding or testing behavioral science's effectiveness for biological conservation suffers from a significant lacuna, largely failing to engage with equity and power (e.g. Reddy et al., 2017; Weigel et al., 2021). This is partly informed by behavioral science's overreliance on Western (and White), educated, industrialized, rich, democratic (WEIRD) participant and scholar populations (Henrich et al., 2010; Roberts et al., 2020; Tam & Milfont, 2020) and research practices that center these nonrepresentative psychologies. When behavioral science applications to biological conservation engage equity, it is treated predominantly as a likely challenge for implementation or an area for further research (e.g. Balmford et al., 2021; Cinner, 2018; Rare and the Behavioural Insights Team, 2019). We agree that behavioral insights may be useful for conservation; however, we caution that omitting consideration of equity will likely come with ethical and instrumental costs.

2 | DEFINING EQUITY

Equity has been discussed as central to public policy and governance for at least three decades (e.g., Frederickson, 1990). More recently, the topic has also gained ground in debates about conservation goals and practices (Martin et al., 2013). The conceptualization of equity within policy and conservation is complex and variable. For this work, we define equity among conservation leaders, practitioners, and communities as what is fair and just, in particular, fair treatment of and outcomes for the less powerful.

What is fair is contentious and subjective, and fairness must be evaluated contextually across the multiple arenas where power hierarchies manifest (Chu et al., 1999). Engaging with equity thus requires engaging with power: both existing power structures and the new dynamics and opportunities for power that are created by conservation processes. In conservation, power differentials exist within and across levels of actors including communities, practitioners, conservation organizations, and funders. These power differentials reflect, for instance, larger power dynamics based on the intersection of group membership (e.g., race, class, gender) and societal construction of those groups, hierarchies of monetary and physical resources and political influence (Ranjan et al., 2019), and the intertwined histories of conservation science, displacement, and colonization (Chapin, 2004). Each factor will have ramifications for the application of behavioral science, and each should be addressed if behavioral science is not to reinforce the very systems that have resulted in current patterns of environmental devastation. Strategies for doing so are discussed further in the recommendations we present at the end of this piece.

We explicitly focus on inequities between those who design and implement behavioral interventions (the scholars, advocates, funders, programmatic leaders, and conservation practitioners) and the targets of those interventions. We do so in terms of both recognition (of worldviews, preferences, and assumptions) and representation (power and voice in intervention design and decision-making). As elucidated below, such power imbalances may give rise to further inequities, in particular, where conservationists dominate defining conservation problems and solutions, apply behavioral strategies in contexts far removed from those in which interventions were developed and tested, or track limited outcomes without examining the full extent of an intervention's effects. Additionally, we emphasize distributional inequities within populations targeted by behavioral interventions by engaging the possibility that behavioral interventions may benefit those already better able to manage environmental constraints, and further marginalize communities and people with fewer resources.

Our review of the last decade of published literature on the application of behavioral insights to place-based conservation revealed a general lack of work that addresses, or includes recommendations for engaging with, equity and power. As an interdisciplinary team of social psychologists, environmental governance scholars, and public policy researchers, we offer an informed discussion of these issues in the application of behavioral science to conservation, followed by a set of recommendations designed to allow conservationists to better incorporate equity into their work. We intend our roadmap to allow conservationists to leverage behavioral insights while addressing equity, allowing users to move forward both practical conservation and applied behavioral science. In considering equity, conservationists act in alignment with the public values embraced by their field and increase the likelihood of sustainable conservation success.

3 | IMPLICATIONS OF OMITTING EQUITY WHEN APPLYING BEHAVIORAL SCIENCE TO CONSERVATION

Effective incorporation of equity to conservation efforts will require intentional effort, resources and time. Critical rates of environmental destruction, and the perception that behavioral interventions can drive behavior change to mitigate that destruction, may thus be forwarded as justification for ignoring equity. However, inattention to equity comes with its own costs. Here we discuss the issues that may arise when conservationists fail to carefully engage equity in applying behavioral interventions.

3.1 | Issue 1: Addressing the wrong problem

Identifying the drivers of problematic environmental change requires attention to scale: specifically, identifying and addressing the true drivers of the observed problem rather than assigning blame to proximal populations' behaviors by default. This is being done in some circles—by targeting key intermediaries in wild species value chains (Pascual-Fernández et al., 2019), or addressing civil conflict that may drive poaching and illegal fishing (Pomeroy et al., 2016), for example. Yet many applied behavioral interventions target resource-reliant, less wealthy, and less powerful populations (Finkbeiner et al., 2018; Jones et al., 2019; Simmons et al., 2020). As a result, more influential distal drivers (such as market structures and systemic challenges) and the behavior of the more privileged remain unaddressed. Targeting resource users may place the burden of conservation on those already most impacted by and vulnerable to environmental change, and may lock resource-reliant populations into economic marginalization, thereby undermining the sustainability of any behavior change achieved. Such targeting also reinforces the power-laden social structures and social inequities that form the context in which conservation has become necessary. Behavioral science interventions may be tailored and applied to the privileged (including, for example, individuals further up the value chain) as well as more marginalized resource users. However, behavioral science is not well suited to address structural inequities, which would be better addressed by traditional policy tools (Benartzi et al., 2017). Where structural issues are core drivers of environmental degradation, emphasis on individual behavior creates a mismatch of scale that will inhibit sustained, large-scale change (e.g., Hagmann et al., 2019).

Behavioral conservation interventions may also falter where local values do not match those being leveraged to motivate behavior change; for example, where demand-reduction campaigns targeting the wildlife trade rely on Western, neoliberal values in non-Western contexts (Thomas-Walters et al., 2020). Existing literature cautions against promoting value changes without understanding context, as such approaches can cause the breakdown of existing positive social norms, and any resulting behavior change is unlikely to endure (Manfredo et al., 2017). Inappropriate targeting of values may be particularly likely where organizations that are driven by Western and Eurocentric values and worldviews fund, design, and implement behavioral interventions in diverse, international contexts. In such cases, potential interventions may conflict with local culture, customs, values, traditions, and learned best practices, undermining the sustainability of conservation. This is a failure of equitable recognition, as intervening organizations are privileging and assuming the universality or preeminence of their own frames over those of the people with and for whom they claim to work.

3.2 | Issue 2: Selecting the wrong solution

Many behavioral interventions are drawn from lab-based contexts and nonrepresentative samples, thus subject to generalizability constraints when applied in the field, where conditions differ (Cinner, 2018). For example, scarcity conditions differ between source research (e.g., economic shocks) and applied contexts (e.g., chronic scarcity) in ways that differentially impact cognitive load and behavioral responses. Much of the research on behavioral science in conservation focuses on attitudes and beliefs as they relate to Western consumers' proenvironmental behavior (Osbaldiston & Schott, 2012); such studies' conclusions are relevant primarily for choices made without significant scarcity constraints, while findings may be applied in contexts where scarcity is a defining feature of daily experience. This is concerning not only for equity (neglecting the ramifications of behavior change interventions for those already living in precarity), but also for intervention success, as scarcity has an effect on cognitive processing and decision-making (Mani et al., 2013; Schubert, 2017). Furthermore, while the two are correlated, financial scarcity and natural resource scarcity produce distinct effects on behavior—for instance, financial scarcity reduced sustainable choices and proenvironmental attitudes while water scarcity increased sustainable choices and environmental motivations (Sachdeva & Zhao, 2021). Ecolabels nudging US consumers to purchase, for example, dolphin-safe tuna—even if the consumers are budget constrained—are substantively different from nudges that seek to change the resource use behaviors of resource-reliant populations who live in poverty and/or precarity.

More broadly, interventions are commonly applied to groups and in communities that differ from the WEIRD populations on which they were initially tested—indeed, while slowly becoming more diverse, the majority of behavioral science research is drawn from WEIRD populations (Henrich et al., 2010). Applied behavioral interventions that are based on the small, at times unstable, effect sizes and drawn from the preferences and psychologies of nonrepresentative populations in controlled lab settings may have little to no positive effect in real-world contexts. Absence of hypothesized effects is observed even when applied research occurs in a Western setting (Reddy et al., 2020). Such interventions may be even less applicable in different cultural contexts, given that numerous individual, interpersonal, and sociocultural factors interact to influence proenvironmental attitudes and behavior (Gifford & Nilsson, 2014).

3.3 | Issue 3: Attending to the wrong outcomes

Previous work has found that welfare benefits from proenvironmental interventions are overestimated and that costs to participants are real (Schubert, 2017). Conservation-focused behavioral interventions such as "green nudges" often aim to promote social, rather than individual, welfare (Schubert, 2017), yet "social welfare" is nonmonolithic. Similarly, behavioral interventions are generally forwarded as low- or no-cost (Benartzi et al., 2017). Both arguments obscure the reality that benefits and costs may be differentially experienced by subgroups within larger populations (Thunström, 2019). This issue is exacerbated where socioeconomic effects of conservation are reported in aggregate, obscuring those differential effects. Higher-than-anticipated costs or minimal benefits may reinforce inequity, hinder adoption of desired behaviors or cessation of less desired ones, or result in behavior change that does not last. Furthermore, practitioners implementing inappropriate or unsuccessful behavioral interventions experience costs of their own when failure results in interpersonal consequences, such as a loss of trust and social capital (Stern, 2017) among conservation partners.

To further elucidate the key considerations raised, consider a hypothetical example, based on practices and strategies in use, of how a behavioral intervention might differentially impact three families living in a small, remote coastal community near a coral reef. Historically, each of these families has fished for grouper and sold their catch at a local market. Because grouper aggregate in large numbers to spawn, they are extremely easy to catch *en masse* at predictable times of year, which can result in overfishing (Sala et al., 2001). Recognizing this, the national government in our example has recently instituted a ban on fishing for grouper during spawning season—but the government lacks the capacity to monitor and enforce the ban, especially in remote areas.

An international conservation organization steps in to fill this capacity gap. The organization takes a behavioral approach, combining strategic information provision with a commitment mechanism. They visit just prior to grouper spawning season, reminding the community of the ban and of the future consequences of fishing out the spawning aggregation. They hand out buttons with a picture of a smiling grouper thanking the wearer for protecting her children, and frame the button as a way to publicly signal the wearer's commitment to not fish for grouper. In this collectivist society, social desirability pressure is strong. Everyone takes and wears a button. But our families face distinct choices when deciding whether or not to honor the public commitment they have been pressured into making. The first two families live relatively well; they have access to productive agricultural lands, and sell some of what they grow, while some family members work for cash at a local tourist resort. The income they would gain from catching grouper is useful and could, perhaps, purchase additional modern conveniences for their home, but these are not necessities. In short, they have the resources and adaptability to withstand the loss of income associated with upholding the ban. Furthermore, their relative wealth already gives them high social standing in the village, which they can maintain and improve by acting as public advocates for future generations of both people and grouper. They wear their buttons with pride and broadcast their commitment to upholding the ban. The third family, however, is much less wealthy; grouper fishing is their only source of cash income. They have young children whose school fees need to be paid next month, and the old engine on their boat desperately needs to be replaced. They are much less able to withstand the loss of income associated with complying with the ban.

The conservation organization has failed to consider the differential decision-constraints faced in this community, effectively translating a complex financial, social, and psychological issue into a Western frame of choice and agency. Thus, ban violators are social deviants who risk loss of social status and exclusion, the costs of which are particularly high in more collective cultures. The dilemma faced by the third family is this: lose necessary cash income, or face the consequences of violating norms in a collectivist society.

The organization conducts an impact evaluation but does not disaggregate their findings by social–economic status. They find reduced fishing for grouper and claim success. But the evaluation misses the differential effects. Without realizing it, the organization has geared their

intervention to those who are relatively privileged and who have the bandwidth and ability to respond in the desired way. The two relatively wealthy families do indeed stop fishing for grouper. But not only has the intervention not been uniformly successful—the third family violated the grouper ban—it has incurred uneven costs that primarily fall on the shoulders of those who were already relatively disadvantaged. As a result of choosing to pay school fees and replace their boat engine, the third family faces ongoing social and psychological costs, adding shame, stress and social sanctioning to the scarcity and precarity they already faced. Through this lens, we see how this intervention has the potential to exacerbate existing disparities.

Having, in its view, successfully addressed the threat to the sustainability of the grouper aggregation, the conservation agency is dismayed to return five years later to find, where the village once was, a construction site for a major golf resort financed by an international property development group. Construction activities have altered reef-land interactions and rendered the area an unsuitable habitat for grouper spawning. Neglecting larger power dynamics in this natural resource system led to partial diagnosis of threats to the grouper population. And targeting the least powerful actors—the grouper fishers—with behavior change interventions left unchallenged and unchanged the behaviors of the international developers and investors, and the chain of government officials across levels, who had incentives to support a development scheme that ultimately sealed the fate of the grouper spawning aggregation. In this context, supporting existing village institutions, assisting the community to engage successfully with more powerful actors, and applying behavior change tools to powerful tourism-sector actors may have been a more successful strategy.

4 | TOOLS FOR PRACTICAL INCORPORATION

Building upon recent calls for conservation practitioners to develop expertise and formalize oversight and evaluation for behavioral interventions (Sullivan-Wiley, 2020), we present strategies to assess and incorporate equity in this nascent field (Figure 1). We draw our recommendations from a literature review including position pieces as well as scholarship examining applied, place-based behavioral conservation interventions, and from our field-specific expertise in social equity, applied policy practices, behavioral science, and natural resource conservation and management. Equity considerations in applied behavioral science are complex and difficult to disentangle, and pathways toward equitable use of behavioral science in conservation will not be uniform or simple. The following should be considered a starting point rather than a prescriptive solution.

4.1 | Recommendations for high-level agenda setters

1. Recognize equity and power as integral components of scoping, selecting, designing, and implementing behavioral interventions for conservation. As discussed above, behavioral interventions may have ethically objectionable equity impacts that also threaten conservation success. Funders, capacity builders, and others who promote the use of behavioral science in conservation thus have an ethical and functional responsibility to engage with equity, rather than treating it as secondary, tangential, or a footnote for future consideration. Consult and adapt equity-forward resources such as racial and gender equity toolkits[1,2] and integrate equity into frameworks guiding interventions at all stages. Provide line-item funding for the collection of disaggregated equity impact data. Expand staff responsibilities and agency to include identifying equity issues likely to arise from within their work and build staff-wide accountability for implementing the recommendations that follow.
2. Challenge the often unspoken assumptions about the appropriate targets—both behaviors and populations—of behavioral interventions. Pay careful attention to scale, and identify both proximal and distal causes of the issues being addressed, through attention to existing power structures and organizational and personal positionality vis-à-vis those structures. Framing matters here—consider working with "local communities and partners" rather than "target populations" to "develop shared programs and practices" rather than "interventions." Prioritize the voices, preferences, and needs of the less powerful, as a corrective to business-as-usual approaches that tend to lock these populations out of decision making and positions of influence. Accept that where causes are deeply rooted in systems, a focus on individual behavior change is ultimately counterproductive; in these cases behavioral interventions should not be pursued.
3. Critically consider the generalizability of source research, recognizing that behavioral science itself suffers from biases and equity issues. Behavioral

[1] https://www.racialequityalliance.org/wp-content/uploads/2015/10/GARE-Racial_Equity_Toolkit.pdf
[2] https://www.mangrovesforthefuture.org/assets/Repository/Documents/Gender-Analysis-Toolkit-for-Coastal-Management-Practitioners.pdf

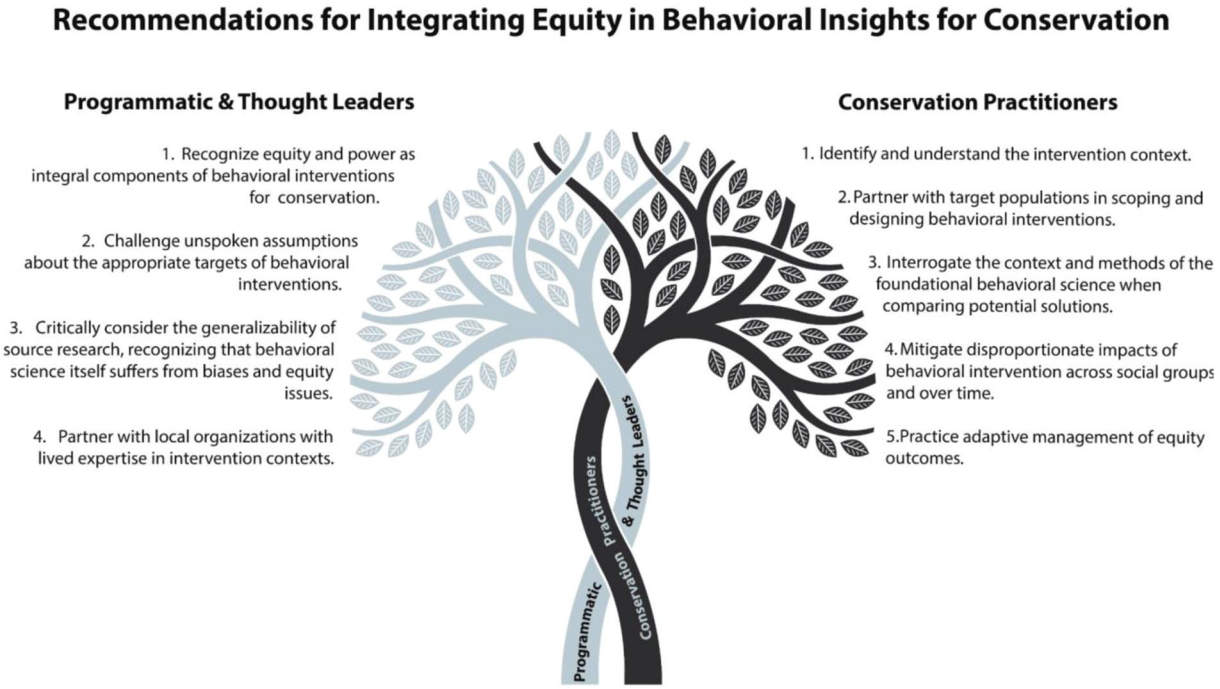

FIGURE 1 Strategies to assess and incorporate equity when applying behavioral science insights to conservation

science provides no panacea for conservation practitioners seeking to change community behaviors. Conservationists have extensive experience with the issues that arise from uncritical, wholesale adoption of conservation strategies (e.g., marine protected areas, De Santo, 2013); leverage these experiences to avoid repeating past mistakes.

4. Partner with local organizations with lived expertise in intervention contexts. Contemporary conservation tends to concentrate power and resources in the hands of large, Global Northern organizations distant from the sites of conservation action (Holmes & Cavanagh, 2016). Smaller, local organizations have more nuanced understandings of local context, including the value drivers of behaviors, potential perverse effects of intervention, and potential equity impacts. Comanagement (Crosman, 2019) and coproduction approaches (Norström et al., 2020) have proliferated in conservation and sustainability in recognition of just such issues. Indeed, the lessons of coproduction should be applied to selecting and implementing behavioral interventions, as has already been suggested elsewhere for conservation applications (Bowie et al., 2020) and practiced, to a limited extent, in public health (Byrne, 2019). Critically, local organizations are also likely to be embedded in and subject to local inequities. To forward equity, all organizations should reflect on their positionality.

4.2 | Recommendations for conservation practitioners

To minimize unanticipated equity costs of behavioral interventions for conservation, and increase the likelihood of conservation success, we suggest that conservation practitioners iteratively consider the following. These recommendations are intended to supplement existing frameworks (e.g., Bennett et al., 2017; Reddy et al., 2017) rather than replace them.

1. *Identify and understand the intervention context*. Ask questions such as: What preexisting structural or other inequities exist? How will those inequities affect interventions, and how will interventions challenge or entrench those inequities? Are there potential targets for behavior change methodologies other than natural resource-dependent populations living in poverty? Also consider questions of recognition, such as the extent to which local worldviews, values, etc. align or conflict with the frames of those proposing or implementing interventions. To deeply engage these questions, articulate and reflect on personal and organizational positionality through an equity lens.
2. *Partner with local communities and people when scoping and designing behavioral interventions*. Stakeholders with lived experience should have input into behavioral conservation efforts that involve them. Go beyond

research efforts that focus on understanding barriers to adoption of desired behaviors (e.g., Lavoie et al., 2021; Ranjan et al., 2019) by giving locals an authentic voice in identifying conservation problems and solutions, the best way to operationalize key ideas and concepts, and the implementation of behavioral interventions. Carefully design participation to avoid reproducing inequity—for example, both participant self-identification and participation without reimbursement are likely to preclude participation by the working poor. Where problems and solutions are determined prior to engaging locally, consider whether or not those definitions are being driven by a panacea mindset rather than a careful, comprehensive assessment of context. This recommendation is again consistent with the extensive literature on coproduction (e.g., Norström et al., 2020); furthermore, coproduction is likely to be familiar to many practitioners, creating an accessible starting point.

3. *Interrogate the context and methods of the foundational behavioral science when exploring potential solutions.* Ask these questions: Are potential solutions appropriate to local realities? Are findings about this type of intervention transferrable? Consider whether the preferred intervention(s) fully account for cultural context. Identify barriers and facilitating factors including values, local norms and practices, and conditions and nature of scarcity. Also identify the likely costs and benefits of interventions and understand how local people are likely to define, perceive and experience them. Partner communities themselves can support these efforts.
4. *Mitigate disproportionate impacts of behavioral intervention across social groups and over time.* Costs and benefits of conservation interventions may be experienced differently by different subpopulations and over time. For example, those living in greater precarity may be less able to change their behavior and suffer social stigma as a result. Costs and benefits may also accrue at different rates, with high upfront costs and slow-to-realize benefits; careful project design can mitigate these issues (Crosman, 2019).
5. *Practice adaptive management of equity outcomes.* Adaptive management based on environmental outcomes is already familiar to conservationists; for example, carbon market payments to ranchers depend, in some cases, on measurable augmentation of soil carbon on conserved lands (Buckley Biggs et al., 2021). To apply adaptive management to equity, seek funding for the collection and analysis of disaggregated, fine-resolution data, use those data to identify disparate equity impacts among social groups, and tailor management accordingly. Where possible, simple metrics may be enhanced through qualitative strategies to uncover incentives, reactions, power dynamics, and how they shift with behavioral interventions. In all cases, data collection should prioritize relevant and useable data that practitioners and the organizations they represent have the ability and capacity to analyze, learn from, and apply (Gugerty & Karlan, 2018).

5 | CONCLUSION

International agreements governing biological conservation and related activities, including the Convention on Biological Diversity (CBD) Aichi Targets and the UN Sustainable Development Goals (UNSDGs), situate equity as intrinsic to conservation. From this foundation, we argue that equity should serve as a touchstone for the complex reality of applied behavioral science applications to conservation. In particular, while we agree that behavioral science shows promise for biodiversity conservation, we also anticipate multiple equity issues that may arise from a naïve conception of the field's potential in the conservation space. These include inequitable selection of intervention subjects and behaviors, inequitable mismatch between existing behavioral research contexts (and the worldviews, values and conditions therein) and applied contexts, and inequitable distribution of the costs and benefits of interventions. We believe that these issues can be overcome with deliberate attention, and call on conservation practitioners to proceed with caution when applying behavioral interventions. The recommendations listed above provide a roadmap for doing so.

The urgent need for biodiversity conservation may be used to justify the use of behavioral interventions that are not field-tested or otherwise appropriate to applied contexts. Our recommendations will require organizations using behavioral approaches to commit time and resources to address the equity issues we highlight. Both conservation interventions' historical failure to fully consider humans (Chapin, 2004) and recent social justice movements such as #MeToo, Black Lives Matter and Decolonization, mean that equity is increasingly a central part of conservation discourse (e.g., Ybarra, 2018). While we agree that urgency is present and will be ongoing, we draw the conclusion that mindfulness of equity in conservation—and specifically in behavioral conservation—honors that urgency and will enhance sustainable conservation success in the long run.

Tweet

How (and why) should we integrate equity in behavioral science for #conservation? New Perspective in

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