Received: 29 January 2021 | Accepted: 10 November 2021

DOI: 10.1002/pan3.10293

PEOPLE AND NATURE | BRITISH ECOLOGICAL SOCIETY

REVIEW AND SYNTHESIS

Assessing human well-being constructs with environmental and equity aspects: A review of the landscape

Erin C. Betley[1] | Amanda Sigouin[1] | Pua'ala Pascua[1] | Samantha H. Cheng[1] | Kenneth Iain MacDonald[2] | Felicity Arengo[1] | Yildiz Aumeeruddy-Thomas[3] | Sophie Caillon[3] | Marney E. Isaac[2] | Stacy D. Jupiter[4] | Alexander Mawyer[5] | Manuel Mejia[6] | Alexandria C. Moore[1] | Delphine Renard[3] | Lea Sébastien[7] | Nadav Gazit[1] | Eleanor J. Sterling[1]

[1]Center for Biodiversity and Conservation, American Museum of Natural History, New York, NY, USA; [2]University of Toronto, Toronto, ON, Canada; [3]CEFE, CNRS, Université de Montpellier, University Paul Valéry Montpellier 3, EPHE, IRD, Montpellier, France; [4]Wildlife Conservation Society, Melanesia Program, Suva, Fiji; [5]University of Hawai'i at Mānoa, Honolulu, HI, USA; [6]Coral Reef Alliance, Honolulu, HI, USA and [7]Toulouse II University, CNRS Geode research center, Toulouse, France

Correspondence
Erin C. Betley
Email: ebetley@amnh.org

Funding information
Jaffe Family Foundation; Lynette and Richard Jaffe; InSHS-CNRS program "Soutien à la Mobilité Internationale-2018"; Science for Nature and People Partnership; Gordon and Betty Moore Foundation; National Science Foundation, Grant/Award Number: 1444184, EF-1427091 and EF-1427453; CNRS-INEE (Institut écologie et environnement)

Handling Editor: Patricia Carignano Torres

Abstract

1. Decades of theory and scholarship on the concept of human well-being have informed a proliferation of approaches to assess well-being and support public policy aimed at sustainability and improving quality of life.
2. Human well-being is multidimensional, and well-being emerges when the dimensions and interrelationships interact as a system. In this paper, we illuminate two crucial components of well-being that are often excluded from policy because of their relative difficulty to measure and manage: equity and interrelationships between humans and the environment.
3. We use a mixed-methods approach to review and summarize progress to date in developing well-being constructs (including frameworks and methods) that address these two components.
4. Well-being frameworks that do not consider the environment, or interrelationships between people and their environment, are not truly measuring well-being in all its dimensions.
5. Use of equity lenses to assess well-being frameworks aligns with increasing efforts to more holistically characterize well-being and to guide sustainability management in ethical and equitable ways.
6. Based on the findings of our review, we identify several pathways forward for the development and implementation of well-being frameworks that can inform efforts to leverage well-being for public policy.

KEYWORDS
equity, human–environment interactions, human–environment interrelations, nature, social–ecological systems, sustainability, well-being

1 | INTRODUCTION

Well-being is at the core of public policy efforts to engender just, equitable and sustainable futures in a rapidly changing world, especially amidst the increasing frequency of climatic, environmental and economic shocks that affect human well-being. But what constitutes living well, or a good life? While answers to this question vary among individuals and social groups throughout the world, researchers and policymakers have drawn from over 50 years of theory and scholarship on well-being to develop measures that can span mental and physical health, social, cultural, spiritual, economic and environmental dimensions, among others (see Barrington-Leigh & Escande, 2018; King et al., 2014). In their review of the concept and assessment of well-being in a socioecological context, King et al. (2014) describe the evolution of various ways to assess well-being, including the so-called 'objective' and 'subjective' measures of social components, environmental sustainability indicators, quality of life indices and theories of multidimensional well-being. They, along with other efforts to summarize conceptualizations of human well-being in published literature (see Boarini et al., 2014; Hoekstra, 2019; Lijadi, 2018; Schleicher et al., 2017; White, 2015), review the proliferation of well-being frameworks in recent decades and illustrate the wide range of interpretations of the concept and its dimensions.

Increasingly, well-being frameworks emphasize considerations of equity[1] and relational values. One such example is the concept of Nature's Contributions to People, put forth by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES, 2019), which builds on the ecosystem service concept popularized by the landmark Millennium Ecosystem Assessment (MA, 2005), to highlight the various ways (positive and negative) that nature shapes people's well-being (Díaz et al., 2018). Another example is the 4Cs framework (Breslow et al., 2016), a conceptual human well-being framework designed specifically for use in ecosystem-based management by resource managers and decision-makers. The 4Cs framework describes the major constituents of human well-being as: connections (being with others and the environment), capabilities (enabling individuals and communities to act meaningfully to pursue their goals), conditions (circumstances where human needs are met), and cross-cutting domains of equity and justice, security, resilience and sustainability.

Building on a long legacy of attempts to determine what constitutes a good life (Hoesktra, 2019), frameworks such as these two examples represent both an expansion of how well-being is conceptualized and an opportunity to rethink efforts to advance well-being in research and public policy. These efforts face considerable challenges, including determining what to track and measure among the infinite variety of possibilities, who decides what and how to measure, and how results are used within and across different scales. We argue that amidst this complexity, a true understanding of well-being is incomplete if it overlooks well-being frameworks that consider (a) the inherently linked environmental dimension of human well-being and (b) equity. To date, there is no comprehensive review of how frameworks such as these have been developed and implemented. Below we explore these two factors, and outline how they inform the aims of this paper in providing an updated and broader review of existing well-being frameworks and methods (henceforth, termed constructs[2]).

The environment[3] is a cross-cutting factor crucial to well-being. When researchers and practitioners adopt a holistic lens that includes an environmental dimension of well-being, they can characterize linked human and environmental systems, and provide rich context about social values and priorities. This lens is essential to the development of equitable and effective policies and management actions in support of a desired social–ecological state (Armitage et al., 2012; Helne & Hirvilammi, 2015; Schleicher et al., 2017). Well-being, after all, is not simply a collection of dimensions, but rather a combination of interrelated, dynamic factors across social, cultural, economic, political and environmental contexts. As indicated by Carmenta et al. (this issue) and Schleicher et al. (2017), the centrality of the environment to human well-being has gained increased attention in recent years in the development and sustainability literatures and to some extent in the international policy arena (partially in response to the growing prevalence of large-scale natural disasters such as flooding, wildfires, droughts, etc. which negatively impact human well-being on a mass scale; UNDRR, 2020), yet knowledge gaps remain in determining how environmental dimensions intersect with objective, subjective, collective and relational aspects of well-being (Bennett et al., 2015; Coulthard et al., this issue; McKinnon et al., 2016).

As framed by Schleicher et al. (2017) in their review of philosophical accounts and conceptual frameworks of well-being, there is a distinction between constructs that consider the environment as a 'determinant' of human well-being (instrumental external driver), and those that consider the environment as a 'constituent' (internal) element of well-being (Dasgupta, 2001). In their study, Schleicher et al. found that where frameworks mention an environment–well-being relationship, the environment is most often treated as a determinant. We argue that well-being constructs should consider the environment to be a constituent of well-being, and should also recognize the interrelationships (i.e. synergies, trade-offs and neutral interactions) between people and their environment that are crucial to well-being (Howe et al., 2014; Schleicher et al., 2017).

Research that explicitly addresses the dynamic reciprocal interactions and relational values between people and the environment (Chan et al., 2016, 2018; Gould et al., 2020; Leong et al., 2019; Stålhammar & Thorén, 2019) contributes to a broad shift in public policy towards more holistic accounts of human–nature connectedness and to conceptualizations of well-being rooted in diverse knowledge systems and worldviews (Díaz et al., 2015, 2018; Helne & Hirvilammi, 2015). Consideration of these relationships requires addressing well-being through a systems approach—explicitly considering the structure (parts and interrelationships), behaviour and purpose or function of complex adaptive systems (Preiser et al., 2018; Figure 1). In systems theory, the whole is greater than the sum of its parts (Meadows, 2008), and relational systems thinking considers how the embedded relationships between parts of a system inform its overall function or purpose (Goodchild, 2021).

It is well established that systemic and structural inequities have significant and differential impacts on well-being (Bailey et al., 2017; Guedes et al., 2012; Mitra et al., 2020). To address this, some emphasize that well-being is culturally mediated and may not be equally or homogeneously experienced across social groups, such as within and across Indigenous and non-Indigenous groups, or urban and rural dwellers (Cooke et al., 2007; Cooper et al., 2014; Sangha et al., 2015; Virtanen et al., 2020). These framings recognize that historical legacies privilege or empower some while marginalizing others, producing hierarchies across language, culture, socioeconomic context, value systems and geography (Aguado et al., 2018). Equity is central to developing and implementing well-being constructs in terms of power and politics (Leach et al., 2018). Those applying an equity lens to understanding well-being (Figure 1c) might ask: What are different ways well-being can be framed or understood and by whom? Whose worldviews, knowledge and values frame well-being metrics? Who is defining well-being constructs, and who is excluded from this process and from decision-making that relates to well-being? How are rights, responsibilities, benefits and costs distributed? What is the political, economic, environmental and social context for inequities, including historical and current power dynamics? In this paper, we assess how equity has been considered in such constructs, as we believe researchers and practitioners would benefit from learning about why and how equity is considered in past and ongoing efforts to measure well-being (McDermott et al., 2013).

Given the evolving scholarship on well-being and the drive for public policy that provides it, researchers and practitioners may struggle to navigate the landscape of well-being constructs that have been developed and implemented to date, and to report on the frameworks they choose to apply (Figure 1). In this paper, we report on the results of a search to identify well-being constructs, published in peer-reviewed and grey literature, that consider multiple interacting dimensions of human well-being, including an environmental dimension, as well as equity. To inform future efforts to leverage well-being for public policy, we then assess these well-being constructs through the following research questions: (a) How are well-being constructs that consider environmental dimensions and equity being developed, measured and applied to decision-making? (b) How do well-being constructs with environmental and equity aspects consider environmental dimensions of well-being, and to what extent do these constructs illuminate interrelationships between human well-being and environmental dimensions? and (c)

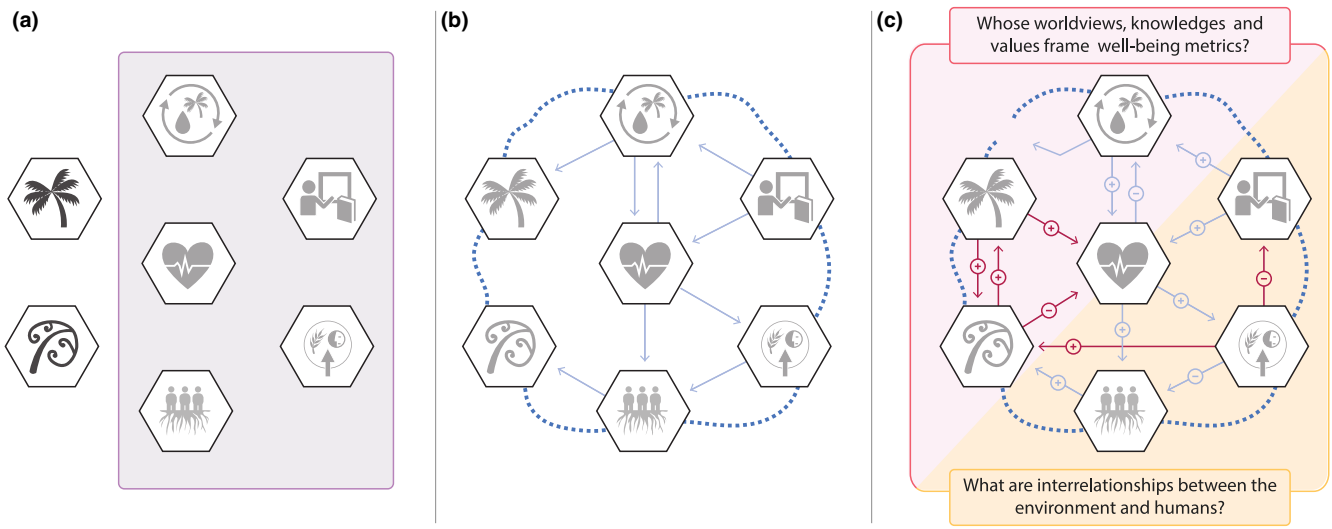

FIGURE 1 Conceptual framework of well-being using environmental and equity lenses. (a) Human well-being is multidimensional. Indices of well-being vary in terms of which dimensions are measured, for example some measure human well-being without considering the environment in which people live or without considering cultural dimensions (the seven icons shown are hypothetical dimensions derived from Sterling et al., 2020 and randomly placed within the space shown); (b) Well-being is not simply a collection of dimensions, but rather a system of interrelated dimensions. Well-being emerges when the dimensions and interrelationships interact as a system, in which the whole is greater than the sum of its parts; (c) In this paper, we use two different lenses or perspectives to help illuminate crucial components of well-being; a lens centred on equity and a lens on interrelationships between humans and the environment

How do well-being constructs with environmental and equity aspects consider equity?

2 | METHODS

We conducted a review of peer-reviewed and grey literature to explore emerging understandings of well-being constructs that consider (a) interrelationships between people and their environment and (b) equity. For this review, we adapted the systematic map approach in 'Guidelines and Standards for Evidence Synthesis in Environmental Management' developed by the Centre for Evidence Based Conservation at Bangor University (Collaboration for Environmental Evidence, 2018), including validation of inter-reviewer reliability during screening and data extraction.

2.1 | Search strategy

We designed and tested search sets consisting of search terms to identify probable well-being constructs described in relevant peer-reviewed articles published in Web of Science (see Appendix A in Supporting Information for search strategy). We combined the search outputs with additional peer-reviewed and grey literature identified through purposive sampling and expert solicitation, including several articles from this Special Issue, and through institutional and organizational website searches. Our search strategy included backward citation searching of literature screened for inclusion in our coding, and forward citation searching of selected included literature (Collaboration for Environmental Evidence, 2018; Livoreil et al., 2017).

2.2 | Screening of search returns

We performed abstract and title level screening of all citations from our search strategy using Colandr (Cheng et al., 2018). Studies were included for coding if they met the following three criteria: (a) the study attempts to measure or quantify human well-being; (b) the study considers multiple dimensions of well-being, including an environmental dimension (i.e. broadly conceived; the study can consider the environment to be a determinant or a constituent of well-being); and (c) the study considers equity. To validate inter-reviewer reliability, reviewers assessed a sub-sample of search returns through blinded side-by-side screening to calibrate interpretation of the criteria prior to screening the full set of returns. A list of all studies coded, along with their associated well-being constructs, is included in Appendix B in Supporting Information.

2.3 | Data extraction

We developed an a priori codebook to extract information from each codable study and refined the codebook through an iterative process with the multidisciplinary coding team. This iterative process included multiple blinded test coding rounds, where inter-reviewer agreement and the codebook descriptions were improved through discussion of any discrepancies in extraction of both objective and subjective data. We extracted data to assess the following aspects: general information on the study (overview and context, including geography, sector, scale and well-being definition); the development and measurement of a construct (including methods, dimensions, considerations of equity and of interrelationships between dimensions, and indicators); and implementation of the construct for decision-making (for full codebook, see Appendix A in Supporting Information). Coding fields included a combination of a priori categories and free text. In some instances, multiple studies covered the same construct, each providing additional information, in which case we coded all relevant information from the studies as a single construct.

We used several equity lenses to assess how well-being constructs aspects consider equity, from how constructs are developed and implemented, to what is being measured by the constructs. One equity lens drew from Friedman et al.'s (2018) summary of the literature on social equity in the biodiversity conservation arena, noting four commonly used components across disciplines: distributional (distribution of rights, responsibilities, costs and benefits); procedural (how decisions are made and by whom); recognitional (equal status for different distinct identities, histories, values and interests—related to cognitive justice); and contextual (a broader grouping of underlying social, economic, environmental and political factors). A second lens assessed how equity is considered across a range of categories of social differentiation, from race and gender to ability and religion.

2.4 | Analysis

We calculated descriptive statistics on the studies in our dataset and undertook a qualitative inductive thematic review (Thomas & Harden, 2008) of coded studies to address our research questions. To validate inter-reviewer reliability, multiple reviewers analysed qualitative data that was extracted as free text, and discussed any discrepancies in interpretation to reach agreement.

3 | RESULTS AND DISCUSSION

We identified 377 potentially relevant studies through our search strategy, and after abstract and title-level screening for inclusion criteria, we included 79 studies for coding (reflecting 53 constructs—see Appendix B for list of all included constructs). Figure 2 is an index for the findings from our analysis of coded well-being constructs in relation to our research questions. We present our key findings from our review here, and additional results from our data extraction are in Appendix C.

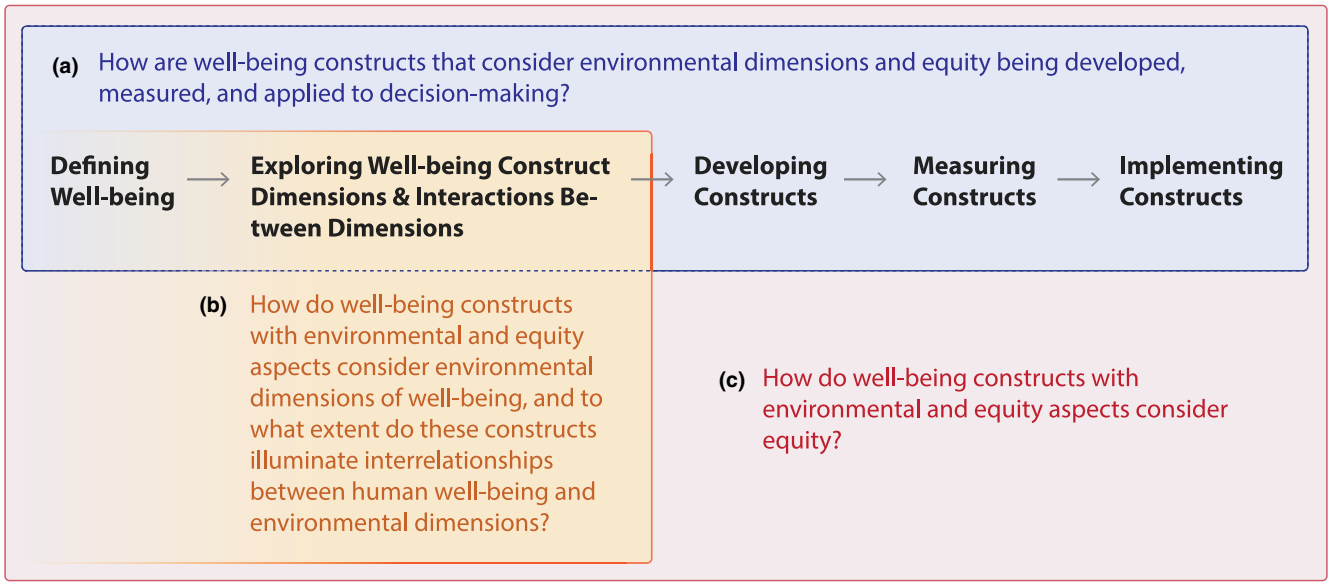

FIGURE 2 Index for findings from the three research questions in this paper. The findings from our first research question (a) span five aspects assessed through our codebook, from defining well-being to implementing constructs. The findings from our second research question (b) relate primarily to exploring well-being construct dimensions and interactions between dimensions, and are further explored in defining well-being. The findings from our third research question (c) index across both (a) and (b), and are organized into three overarching sections: components of equity lens, categories of social differentiation lens and implications of using equity lenses

3.1 | How are well-being constructs that consider environmental dimensions and equity being developed, measured and applied to decision-making?

3.1.1 | Defining well-being

We examined whether the studies provided a definition of well-being, and if so, how well-being was conceived, which is likely to influence how well-being is operationalized. We found that roughly one-third of the final coded dataset provided an explicit definition of well-being; in the other studies, the coder could infer a definition (45%) or one was not present at all (~20%).[4] We found a range of references cited in these definitions, with three frameworks appearing more than once: the capability framework of Sen (1999); the Organisation for Economic Cooperation and Development (OECD, 2020) framework; and the Millennium Ecosystem Assessment framework (MA, 2005).

The definitions provided varied in how they framed well-being. For example, several studies specifically acknowledged that well-being is an ambiguous concept that can be defined and interpreted in different ways (e.g. Aguado et al., 2018; Lebel et al., 2015). Some well-being definitions include both social and ecological systems (e.g. Breslow et al., 2016; Donkersloot et al., 2020) and others frame their definition around 'outcomes that matter to people' (e.g. OECD, 2020). The concept of subjective well-being was also commonly mentioned in the provided definitions (e.g. Tauro et al., this issue; Donkersloot et al., 2020). Another common theme was the mention of the contextualized nature of well-being, as demonstrated by the multiple studies citing the capabilities approach by Sen (1999) which emphasizes the importance of context, resisting a set list of parameters required for well-being.

Given our research questions B and C, we specifically assessed whether the definitions included terms related to equity, the environment and interrelationships between dimensions to understand how fundamental these aspects were considered in regard to well-being. Our results show that over one-third of the studies integrated some equity concerns within their well-being definition, using a range of equity-adjacent terms such as equality, recognition, capability, justice and empowerment. More than half of the studies integrated environmental aspects with their well-being definition with terms such as sustainable, ecosystem services, environment and nature. Nearly 25% of the definitions mentioned interrelationships with phrasings such as 'links between well-being and nature' (Tauro et al., this issue), 'relationships with place' (Carmenta et al., this issue) and 'harmonious coexistence with nature' (León, 2015).

We found it notable that in a set of cases chosen partially for their focus on well-being, two-thirds did not provide an explicit definition of the term. Of the definitions provided, there was diversity in the citations referenced and aspects included, which reflects the myriad ways in which the concept can be conceived and mirrors other well-being research showing that the term is broadly used by a range of disciplines that apply different meanings. The use of well-being and emphasis of its associated terms (subjective, objective and relational well-being) has changed through time, often impacted by the field in which it is used (White, 2015), and like terms such as 'resilience'

(Baggio et al., 2015) and the 'anthropocene' (Braje & Lauer, 2020), is acting as a boundary object which requires continuing scrutiny.

3.1.2 | Exploring well-being construct dimensions and interactions between dimensions

We explored the range of dimensions, or conceptual categories, that constructs used to organize different aspects of well-being. The majority of the coded constructs had dimensions related to environmental, health, social, cultural and economic aspects; however, these were operationalized in different ways. The environmental dimension is explored in depth in section 3.2. We found that most constructs measured positive or desirable aspects of well-being. However, many also specifically discuss negative aspects (or ill-being). For instance, in their study of the impacts of private protected areas and ecotourism through interviews of local people, Serenari et al. (2017) identified 'eviction with few alternatives' due to privatization of land as a recurring theme in a local communities' well-being framework, and Estes (2015) notes the need to balance between the use of positive and negative indicators within dimensions.

The majority of studies (65%) did not report on interactions (such as synergies and trade-offs) between any dimensions of well-being. Of those that did, we found that roughly 20% explicitly recognized interactions while in 15% of cases the recognition was inferred. Similar patterns arose in data collection for well-being constructs. While many studies discussed the importance of recognizing or considering interactions across dimensions, few actually included this in design, measurement or implementation, though Pinar (2019) propose a method to incorporate interactions between dimensions that can be tailored to a particular place.

Well-being frameworks work within the context of complex social–ecological systems and should, theoretically, encompass interactions and change dynamics. Yet, many frameworks do not yet do so. A focus on aggregate notions of well-being—for example on overall poverty, or single elements such as cash income as the primary measure of poverty—can miss heterogeneity in social and ecological dimensions of poverty as well as the dynamics within and between dimensions of well-being (Agrawal & Chhatre, 2011; Woodhouse et al., 2018). This same pattern in overlooking heterogeneity and dynamics is seen in approaches to understanding ecosystem services; most studies focus on a single service at a time and do not consider the interplay between them (Renard et al., 2015) or disregard the need for disaggregate analysis of ecosystem service benefits across social groups, especially marginalized groups (Chaudhary et al., 2018). Efforts to frame outcomes in terms of interrelationships reflect attempts to move beyond mono-consequentialism and recognize where change in one dimension may induce complementary change or occur at the cost of other dimensions of well-being (e.g. Fischer et al., 2017; Hirsch et al., 2013; Oracion et al., 2005).

Thoroughly capturing and reflecting the relationships within and across well-being dimensions requires moving beyond the idea of winners and losers and framings of synergies or co-benefit scenarios. A social group, or even an individual, can simultaneously experience gains in some dimensions and losses in others (Cinner et al., 2014; Daw et al., 2011; O'Brien & Leichenko, 2003). Thus, co-benefit framings can oversimplify the diversity and complexity of impacts from change and come with a potential high risk to reward ratio (Gurney et al., 2015). Without taking into account all likely dimensions of well-being that are important for local contexts and the range of interactions between these dimensions, programmes risk exacerbating existing inequities and stressors (McShane et al., 2011) and limiting long-term sustainability (Chaigneau & Brown, 2016). In addition, by not taking into account interactions between dimensions (both in concept and in practice), programmes could lead to false conclusions that objectives were achieved without significant costs when in reality, those costs may have been experienced but not measured.

3.1.3 | Developing constructs

We found varying levels of detail regarding how a construct was developed. For some constructs, there was little to no information on the process and methods by which it was created (e.g. Centre for Thriving Places, 2019; Fontalvo-Herazo et al., 2007; Office for National Statistics, 2020); we could not find information on how different categories were determined and/or who had a say in the development process. Other studies provide extensive detail around the development process itself (e.g. Meo-Sewabu, 2015; New Zealand Government, 2019; Trebeck & Abeyasekera, 2012). This could be for several reasons; first, some constructs provide more detail as they are aiming to create and describe a framework for use by other researchers and practitioners. In this case, providing such detail is crucial to allow for replication of the construct. It is also possible that for some of the constructs with little to no detail, definitive documents exist on the construct that are hard to find. If so, these details should be more widely shared.

We found that almost half (45%) of the studies in our final dataset described some type of validation of the construct as it was developed. Construct validation varied in approach and included triangulation of data (Pereira et al., 2005), testing against alternatives (Wallace et al., 2020), peer review (Meo-Sewabu, 2015; NZEPA, 2020) and literature review (Centre for Thriving Places, 2019; City of Santa Monica, 2017). Validation also involved surveys and/or interviews to determine whether the construct appropriately reflects what is important to those whose well-being is being measured, an indication of procedural equity in construct development; see more discussion on this in Section 3.3 (Camfield & Ruta, 2007; Canadian Index of Wellbeing, 2016; Meo-Sewabu, 2015). Some studies discussed a single validation event, whereas others employed a dynamic approach with regular ground truthing of the construct (Canadian Index of Wellbeing, 2016).

We found that two-thirds of the well-being constructs we coded included indicators, and of that subset, we identified two broad conceptual approaches to how a construct was developed.

One process conceptually begins at the indicator level, building upon pre-existing indicators to develop a well-being construct (hereafter 'indicators to concept'). Almost 40% of constructs that provided indicators were categorized by this model, in which the index is a direct reflection of the underlying available metrics. We found the majority of constructs using this approach were applied at national or broader regional scales. The other approach conceptually moves in the opposite direction (hereafter 'concept to indicators'): the well-being construct is first developed, which, in turn, determines the underlying indicators; these constructs are primarily applied at sub-national and local levels. We found both approaches among the well-being constructs we coded. For instance, the U.S. Environmental Protection Agency Well-being Index (Summers et al., 2017), Thriving Places Index (Centre for Thriving Places, 2019) and Canadian Index of Wellbeing (Canadian Index of Wellbeing, 2016) take an 'indicators to concept' approach. In contrast, the Vanuatu National Sustainable Development Plan Monitoring and Evaluation Framework (DSPPAC, 2017), Indicators of Resilience in Socio-ecological Production Landscapes and Seascapes (Dunbar et al., 2020), and New Zealand Environmental Protection Authority Matauranga [Māori] Framework (NZEPA, 2020) take a 'concept to indicators' approach. Some constructs (e.g. the United Nations University Institute for the Advanced Study of Sustainability or UNU-IAS framework) were developed to be applicable across social groups by suggesting more general indicators that can be tailored to suit local contexts and needs (Verschuuren et al., 2014).

When considering the two methodological approaches to indicator development ('indicator to concept' vs. 'concept to indicator'), we see trade-offs. Constructs that are developed from existing indicators might be more quickly and easily implemented, and more easily compared across diverse contexts as the underlying indicator data are already being measured and collected. One consideration, however, is whether these a priori indicators are measuring what is most important for well-being, or rather selecting data that are readily available. For instance, the Thriving Places Index is described as, 'first and foremost… a resource that can be used' because it pulls from 'data that is already available, rather than creating a wishlist of ideal indicators' (Centre for Thriving Places, 2019, p. 14). This practical aspect of being readily usable certainly has its merits; however, exclusively using source data from global datasets and/or national statistical offices might reflect certain notions of what should be measured (or can easily be measured at scale) rather than the most meaningful measures (Sterling, Filardi, et al., 2017). That said, existing indicators can certainly have meaning for the people it is measuring. For instance, the Canadian Well-being Index uses pre-existing indicators from different Canadian authorities, but is the result of extensive consultation with groups of Canadians to ensure it reflects what matters most to them and reflects the importance of procedural equity in developing constructs (see more discussion on this in Section 3.3).

The approach that takes 'concept to indicator' might better reflect the group for which it is describing well-being. This approach requires rigor in understanding what really matters to that group and then determining how to measure sometimes intangible attributes (similar to the process described in Section 3.3 for a biocultural approach that centres equity). However, in our experience, and inferred from the reviewed cases, a concept to indicators approach can be very rewarding in its relevance but also take extensive time and resources to measure, collect, store and analyse the resulting data. Such an approach can also present difficulties in developing and validating appropriate indicators and providing a robust system for continued measurement and data collection.

3.1.4 | Measuring constructs

We assessed how well-being constructs with environmental and equity aspects collected data to measure well-being, and report here our findings on levels of measurement (see Appendix C for additional results).

Well-being constructs can measure well-being at different levels, such as at the individual level or a broader level such as community or collective well-being. Well-being measured at the individual or household level can be summed or averaged to give a measure of well-being for a broader group. For example, the Living Standards Measurement Survey measures progress towards poverty alleviation primarily at the household scale and uses these results to describe overall poverty across a region/area (Thomsen et al., 2018). As another example, the Global Person Generated Index (GPGI; Camfield & Ruta, 2007) asks individuals to list issues that are most important to them and to score their satisfaction in those areas. This creates a personalized approach to well-being, which is aggregated across groups to provide an overall picture of well-being; similar approaches have been applied to measure poverty and livelihoods (e.g. the Basic Necessities Survey; Clements et al., 2014). Approaches such as the GPGI contrast with the more common method of using predetermined metrics that are believed to be indicative of well-being for all individuals. Aggregating individual measures of well-being, regardless of how they are collected, can be useful for identifying opportunities to improve individual experience and well-being. That said, simple averages can obscure and perpetuate existing inequalities by not acknowledging underlying differences in well-being within a given population (Chaudhary et al., 2018).

A second suite of framings takes into account the relationships between individual and collective well-being. Constructs with this framing acknowledge that individual well-being is intertwined with the well-being of the collective, underlining the relational dimension of well-being (Donkersloot et al., 2020; Meo-Sewabu, 2015). Proponents of these concepts argue that averaging or summing is not feasible because well-being is non-cumulative (Dawson & Martin, 2015; Irvine et al., 2016). In this framing, well-being may be measured instead by the overall health of the collective, based, for instance, on social exchange networks (e.g. regularity of sharing resources with neighbours, helping in communal or neighbouring gardens, participating in roles dictated by social norms,

and contributions for future generations, etc.; Meo-Sewabu, 2015). As an example, the UNU-IAS community well-being assessment framework was developed to measure well-being of rural communities, rather than individual community members, as 'individual satisfaction is usually subsumed by broader community goals and preferences for well-being' (Verschuuren et al., 2014, p. 35). Constructs with this framing often acknowledge that individual well-being improves through individual contributions to the collective (Donkersloot et al., 2020; Meo-Sewabu, 2015). Higher-level organization and resilience can also contribute to individual well-being, for instance, through institutional capacity to respond to changes and shocks, such as with government safety nets (Ulrichs et al., 2019). This includes structural aspects that are not measured at the individual scale but are integral to individual well-being (e.g. healthcare system capacity; GIPMO, 2019; Shiell et al., 2020).

Some constructs acknowledge the difference between these levels and choose to measure at multiple levels. For example, the City of Santa Monica (2017) construct includes individual-level information such as health and personal outlook as well as community-level assessment that reflects aspects such as infrastructure and services.

At the broader level, the importance of collective well-being echoes what has been discussed in other sectors (e.g. conservation, natural resource management, collective and cooperative action), where individual contribution to and participation in management and governance of a commons resource is a crucial component of well-being at multiple scales (e.g. McCrea et al., 2014; McGregor, 2007; Ostrom, 1990; Woodhouse et al., 2015). For instance, Meo-Sewabu (2015) notes that in the Fijian context, definitions of wealth and well-being (*sautu*) rely on relationships to other people and to the fertility of land and sea. *Yalomatua*, or wisdom, in the context of *sautu* is knowing the 'way of being' in relation to *Vanua*, which is a complex Fijian word for a people and their place/environment, spirituality, chief, history and culture. An inability to contribute to the collective level, or to fulfil the roles set out by social norms is seen as not healthy, to the point of being disrespectful or shameful. Importantly, this framing also considers how collective strength, for instance in strong institutions such as governance or health care, can contribute to individual well-being. The Fijian worldview also resonates with the Māori concepts of *whakapapa* (broadly interpreted as genealogy) and *tuakana-teina* (broadly interpreted as the relationship between older and younger siblings) which connects an individual to their human and non-human ancestors in addition to codifying their responsibilities to both people and place (Lyver et al., 2019). These themes of collective well-being emerging in Fiji and Aotearoa New Zealand are also reflected in the Pacific Northwest, for example through efforts led by Donatuto et al. (2014), Donatuto et al. (2016) to develop a community health evaluation methodology centred on Indigenous definitions of health that result from interweaving of practices and knowledge about coexistence with other humans and with nature. The Indigenous health indicators developed through this work are all measured at the community level, including dimensions of community connection, security of natural resources, cultural use, education, self-determination and resilience.

Many development policies manifest at the community level, making community well-being a crucial consideration for management. This consideration should include the relational level of interactions with others, humans or non-humans, that a particular culture or social group might view as most important for understanding their well-being. For instance, western framings are often more focused on individual well-being and place less emphasis on the importance of the health and condition of the collective as its own standalone entity or of hybrid nature–culture communities (Aumeeruddy-Thomas & Hmimsa, 2018). There is a need to incorporate recognitional equity through understanding local worldviews on this notion and not privilege western, individual-focused understandings of well-being (more discussion on this in section 3.3). It is clear that myriad socioeconomic and environmental factors influence well-being, and these different factors operate at different scales (Small et al., 2017). As such, multilevel approaches could encompass dynamic aspects of well-being.

3.1.5 | Implementing constructs

Three-quarters of the constructs analysed did not mention how they were integrated into planning, monitoring and/or decision-making. However, for several constructs, there were details around how they were used in framing strategic plans, policies and programmatic decisions (e.g. Breslow et al., 2016; City of Santa Monica, 2017; DSPPAC, 2017; Dunbar et al., 2020; NZ EPA, 2020; New Zealand Government, 2019). Some constructs were developed by practitioners or government agencies responsible for decision-making, for instance, the Aotearoa New Zealand EPA uses the Matauranga [Māori] Framework for decision-making in permitting review processes and also to inform a series of cultural capability building initiatives within the agency (NZ EPA, 2020). Other constructs were developed by a range of stakeholders with the goal of characterizing well-being in policy-relevant ways. For example, after its development, the Canadian Index of Wellbeing convened a group of experts to review the Index's findings and develop relevant strategies and specific policy actions (Canadian Index of Wellbeing, 2016). Some studies that described implementation of a well-being construct used evaluation to identify ways that implementation could inform future applications. For example, the Aotearoa New Zealand Well-being Budget design process integrates 'impact analysis and evaluation of policies' to support evidence-based management (New Zealand Government, 2019, p. 6).

3.2 | How do well-being constructs with environmental and equity aspects consider environmental dimensions of well-being, and to what extent do these constructs illuminate interrelationships between human well-being and environmental dimensions?

Given our inclusion criteria, all the constructs we assessed included the environment in some way, either as a determinant or a constituent

of well-being and there was variation in how the environment was described. In terms of dimensions, some constructs simply had an 'environment' dimension, whereas others described this dimension with terms related to the physical environment and security. Some constructs explicitly referred to the benefits to humans from the environment through the term ecosystem services. Others referred to diversity, ecosystem protection, resilience and biodiversity, or referenced humans' care for the environment through stewardship. A few environment-related dimensions referred to nature providing sustenance, with terms like 'food' and 'agricultural biodiversity'. Some constructs used multiple dimensions to express the myriad ways the environment is related to well-being. For instance, Wallace et al. (2020) describe 'adequate resources', 'aesthetically pleasing environment' and 'benign physical environment' as three environmentally related end-state values.

As expected, the way the environmental term was characterized impacted what that dimension measured. For instance, those dimensions described in terms of security and physical properties measure whether basic properties are within ranges favourable to well-being (e.g. temperature, lead concentration). Similarly, the dimensions framed in terms of their benefits to humans focus on essential resources such as clean air, water, availability of food. In contrast, dimensions that highlight the integrity of ecosystems and biodiversity included different indicators such as the density of endangered species in an area (Shaker, 2018).

The consideration of interrelationships between human well-being and environmental aspects in the constructs manifested in different ways. Some of the analysed constructs provided great detail regarding conceptualization of these connections. For instance, the IPBES Conceptual Framework of well-being describes six interlinked elements between natural and social systems, such as anthropogenic assets, which refer to built infrastructure that inherently is co-produced and linked with nature (Díaz et al., 2015). IPBES's framework acknowledges that different worldviews colour these human–nature relationships and creates space for them to change through time and vary across scales (i.e. local relationships to the environment are different from global scale feedbacks and relationships). Taking a different approach, Thiry et al. (2018) lay out the three key ways poverty and the environment relate to each other in their conceptualization, specifically through 'livelihood, environmental health and vulnerability to environmental hazards'. In the case of a construct by Flaherty et al. (2019), a 'place-based lens' was applied to fully consider the various ways that the environment impacts individuals and social groups.

Operationalizing inclusion of human–environment interrelationships was sometimes addressed through a dimension focused on one's relationship to place. For instance, the Thriving Places Index (Centre for Thriving Places Index, 2019) includes a dimension called 'Place and Environment' while another construct includes a dimension called 'Place and Planet', that considers how the environment (built and natural) supports community values and well-being (City of Santa Monica, 2017). Other constructs include dimensions such as 'Connection to Nature' (Flaherty et al., 2019) and 'Tangible and Intangible interrelationships we have with other people and with nature' (Breslow et al., 2016). Several constructs designed for planning and management of natural resources are explicit about the need to measure trade-offs and synergies related to well-being for effective policy (e.g. Llopis et al., this issue; New Zealand Government, 2019; Wallace et al., 2020). Similarly, the Bhutan National Happiness Index (Centre for Bhutan Studies & GNH Research, 2016, p. 243) describes how understanding such interlinkages 'supports high impact policy sequencing'. Another construct explicitly calls for examination of interrelationships by applying a systems approach to indicator selection to ensure the different elements of a system and their interactions with the environment are fully considered (Fontalvo-Herazo et al., 2007). The construct details that an indicator should not only measure performance regarding the system at hand, but also the other systems connected to it.

Some constructs reported on how data collection led to identification of links between people and their environment. For instance, Llopis et al. (this issue) described how the complex nature of the interrelationships at hand became apparent through interviews about well-being in Madagascar, and Dawson et al. (this issue) detail that all respondents described their well-being as inextricably linked to their Caatinga landscape in northeastern Brazil. As part of data collection, Tauro et al. (this issue) assessed the links between well-being and one's territory through land analysis (i.e. areas of forests, bodies of water, etc.).

3.3 | How do well-being constructs with environmental and equity aspects consider equity?

3.3.1 | Components of equity lens

We found that about half of the studies clearly demonstrated procedural equity in the process of developing well-being constructs, for example, with inclusion of stakeholders and/or using a co-creation process, while a quarter of the studies demonstrated it during data collection and measurement. Several data sampling designs aimed to incorporate procedural equity, with studies describing the use of inclusive participatory techniques, empowerment, participation in governance or in construct development, and interweaving of Indigenous knowledge. For example, Biedenweg et al. (2017) explicitly considered social justice during the process of ranking and finalizing human well-being indicators for a project in Puget Sound, Washington. The project placed substantial effort in recruiting participants representing a wide range of backgrounds and expertise (including Native Americans, conservationists, agricultural interests, economic developers and members of the conservative political Tea Party movement in the United States, among others) and followed key aspects of pluralistic social justice: the recognition and participation of diverse stakeholders and the commitment to protecting those who are most vulnerable to environmental challenges and most likely to be affected by decisions to address them. Similarly, Pereira et al. (2005) used diversity sampling techniques to account

for gender and age bias in their sampling design, in addition to seeking people engaged in different activities and people considered worse or better off economically. Fontalvo-Herazo et al. (2007) employed an inclusive participatory process to involve local coastal stakeholders in the design of a coastal management indicator system in Brazil. They encouraged participation of people from different groups and living conditions through sub-group meetings at the village level, to alleviate concerns of young, female or otherwise marginalized stakeholder groups in sharing potentially sensitive information.

In assessing how the well-being constructs in this study considered equity overall, we found variation in the consideration of the components of equity we assessed (Figure 3). Distributional equity was most frequently present across development of constructs, measurement using the construct, and the few instances where a construct was implemented. We found that some studies took a very clear and purposeful approach to considering equity in their constructs, while others took a more superficial approach. As mentioned previously, the 4Cs framework developed by Breslow et al. (2016) conceives of equity and justice as a cross-cutting domain (defined as 'comparisons among gender, age, ethnicity, income and other variables; evidence of racism and discrimination; rights; human rights violations'), and represents a well-being construct that considers all four components of equity covered in our analysis. For example, distributional equity is considered in the construct's 'Conditions' domain, with attributes such as access to food, water and healthcare, and in the 'Capabilities' domain, with consideration of sovereignty and rights. Breslow et al. intentionally measure freedom and voice, engendering procedural equity and noting that public participation can sometimes be undemocratic and/or inequitable. Under the Capabilities domain, the authors provide examples of recognitional equity as factors directly enabling individuals and communities to act meaningfully to pursue their goals, including livelihoods and activities, knowledge systems, political participation and governance. Underpinning the 4C's framework is contextual equity, embodied in the definition of the equity and justice cross-cutting domain.

3.3.2 | Categories of social differentiation lens

The categories of social differentiation around which equity was considered varied, with gender, ethnicity, culture and class/economic most often explicitly or implicitly considered (Table 1). Out of all the instances where social differentiation was considered, 80% were explicit and 20% implicit.[5] In the development of their well-being construct, Breslow et al. (2016) explicitly considered the following equity categories: racial, gender, class/economic, ethnicity/cultural, political, social and livelihood/employment. The authors noted that equity and justice are central concerns in studies of human well-being, and that while relative experiences and perceptions of inequity negatively influence well-being and can lead to inter-group conflicts, having confidence in the security of favourable conditions, such as employment or democratic governance, contributes directly to one's well-being. Donkersloot et al. (2020) assess the sustainability and equity of Alaska salmon fisheries and examines equity across health, class/economic, ethnicity, culture, political, social and livelihood/employment categories. The authors assessed a range of indicators, including many equity-based indicators such as market value of fishery access rights compared to median household income by community, and discussed their utility and limitations as assessment tools that can effectively measure and evaluate social considerations within fishery systems.

3.3.3 | Implications of using equity lenses

From a procedural equity lens, cultural protocols and norms are especially important to consider when deciding on data collection methods. Our study identified some lesser known methods that carefully followed cultural customs and norms (see Appendix C), which, in turn, could provide insights beyond those found in more standardized approaches. Participatory methods such as transect walks and trend lines are particularly useful for taking into account the

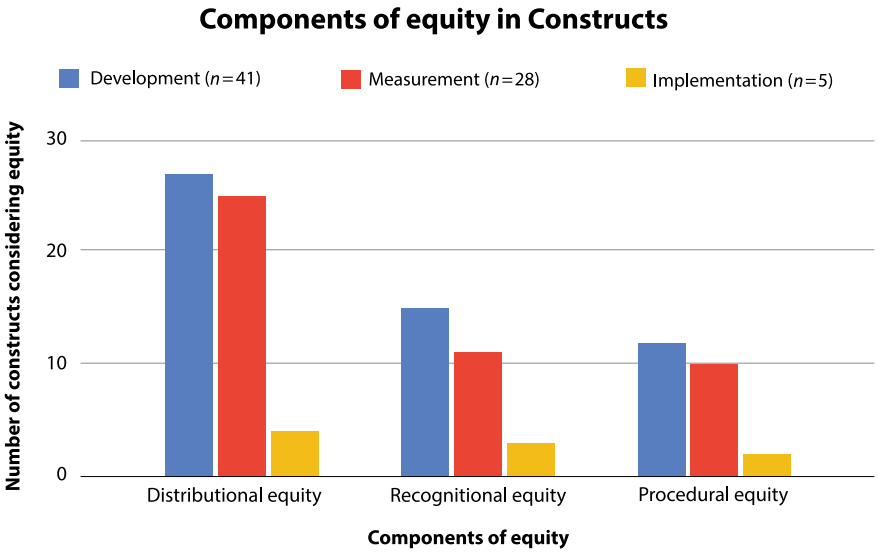

FIGURE 3 Components of distributional, recognitional and procedural equity present in well-being constructs with environmental and equity aspects (data on contextual equity are not presented, given variation in reporting of consideration of contextual equity in constructs)

TABLE 1 Equity or equity-adjacent concepts recognized in dimensions of development (constructs, $n = 41$) and measurement (constructs $n = 28$) of well-being constructs with environmental and equity aspects and measurement, by category of social differentiation (from most commonly recognized to least)

Gender[a]
Ethnicity, Culture
Class/Economic
Livelihood/Employment
Social
Political
Health
Ability
Racial
Age/generational
Religion
Sexual Orientation
Urban/Rural

[a]Gender categories primarily focused on binary gender.

specificities of a particular place as an element of well-being which is context dependent. Method combinations and sequencing is also something to consider in data collection. For instance, Fontalvo-Herazo (2007) discussed how surveys were helpful in preliminary data collection, but were limited in that they only provided insights based on the researchers' frame of mind at the time of designing the survey, and did not create space for additional conversation. For this reason, the authors felt it was imperative to also have participatory methods such as village meetings to help determine which indicators were most appropriate in a particular setting. Furthermore, Lebel et al. (2015) found that a combination of qualitative, quantitative and participatory methods was necessary to fully capture the most important dimensions of well-being.

Externally derived (sometimes referred to as 'western', 'Eurocentric', 'Global North' or 'mainstream') framings of well-being can be problematic if they do not resonate with local or cultural contexts, including the heterogeneity of worldviews, values and priorities circulating within them. Discordances can result in the potential misapplication of measures when social groups do not subscribe to the values prioritized via externally derived frameworks and approaches (Aguado et al., 2018; Donkersloot et al., 2020). For example, analyses examining the gaps and overlaps between important components of well-being in the Pacific Islands and those described via the Sustainable Development Goals (SDGs) revealed that regionally important factors such as the connections between and across people and place, and the importance of Indigenous and local knowledge were represented minimally (if at all) in the globally oriented SDG framework (Sterling et al., 2020). Several cases noted that single indicators rarely translate across scale and that even within a place there can be problems arriving at a consensus on what is important to measure (Breslow et al., 2016; Donkersloot, 2020). This critique also resonates with calls for plural valuation processes, epistemic diversity, and with cognitive justice, or equity for all forms of knowledge that is cognizant of power disparities (Jacobs et al., 2020; Pascual et al., 2017; Rodriguez, 2017). For example, Rincón-Ruiz et al. (2019) describe how the dominant ecosystem services paradigm can be reframed to be more inclusive and allow for inclusion of multiple perspectives and plural valuation.

Better understanding of local and cultural contexts for well-being initiatives requires an approach that explicitly identifies and learns from local values, knowledge systems and management practices, used in combination with methods to incorporate evidence from multiple sources and scales (Donatuto et al., 2016; Sterling, Betley, et al., 2017; Tengö et al., 2014). This is sometimes referred to as a biocultural approach (Gavin et al., 2015). Several studies have described what such an approach can look like when modification and implementation of environmental, sustainability or conservation goals are carried out with the explicit approval of, and in collaboration with, affected communities, so that the approach addresses the distinct features of those social groups (Dacks et al., 2019; McCarter et al., 2018; Sterling, Filardi, et al., 2017); this aligns with the concept to indicators approach discussed earlier in Section 3.1. Notably, biocultural approaches begin with cognitive justice and an understanding of priorities and needs defined and sanctioned through legitimate community institutions that inform community decision-making towards sustainable pathways for development. However, perhaps more importantly, biocultural approaches help to characterize interrelationships between biological and cultural dimensions of a system and, when used in combination with inclusive and participatory methods that engage local stakeholders, can support community empowerment and, ultimately, improved environmental and social outcomes of resource management initiatives. These types of community-focused approaches are increasingly being used for setting indicators and expressions of well-being in practical and meaningful ways for understanding and measuring well-being and progress towards sustainability. While such approaches are not without their challenges, case studies have demonstrated that when careful and explicit acknowledgement is given to inclusion of different worldviews, it can lead to a truly participatory process seen as legitimate by all involved parties (e.g. Matuk et al., 2020).

Achieving equity in any effort to develop, measure and implement a well-being construct can be a multifaceted endeavour (as reviewed by Sterling, Betley, et al., 2017), given the numerous factors to consider when engaging stakeholders, such as type of engagement (e.g. passive information sharing vs. active partnership); timing (e.g. initial inclusion and duration of stakeholder involvement); level of transparency of the process; conflict resolution success; and other factors which must be balanced against the risk of 'engagement fatigue'. Meo-Sewabu (2015) interrogated the complexity of procedural equity intersecting with contextual and recognitional equity by exploring cultural constructs of health and well-being in a Fijian village in Lau and in a transnational Fijian community in Whanganui, Aotearoa New Zealand. The author found that developments initially thought to create more freedom and distributional equity for the villages in fact made them more dependent on outside resources, for example market economies. As the cash economy displaces the traditional barter system and exchange of goods through kinship ties, the author argues that this

process disrupts the structures that sustain social capital within the village communities, further illuminating patterns of uneven (Harvey, 2005; Smith, 2010) or even anti-equitable development (Li, 2014) familiar in other disciplinary literatures. Procedural and recognitional equity is strongly emphasized throughout the construct development and data collection phases through efforts to embody 'Fijian information-sharing protocols' in methodology, with researchers developing an understanding of the Fijian worldview of health and well-being and using culturally appropriate procedures and working to establish good interpersonal relationships and rapport with ethnic Fijian participants. Given that value differences across scales and geographies can result in disjunctions between those collecting data and those affected by the collected data, Meo-Sewabu (2015) provides a poignant narrative on challenges the author faced with New Zealand university ethics panels proscribing methods counter to cultural procedures in her community in Fiji. The author noted that if she had followed the iterated procedures from her university (e.g. conducting interviews only with participants unknown to the researcher or in accordance with randomized sampling designed to reduce 'bias'), she risked offending her clan. Fijian protocol directs her to undertake the research in either her parents' community or that of her husband.

3.4 | Limitations of this review

While we aimed to identify well-being constructs that consider both equity and environmental dimensions, this paper is not a comprehensive review of every construct that meets this criteria, in part because the study of well-being is a disparate, diverse and ever-evolving field. A search strategy that returns all of the ways well-being is conceived around the world would be an enormous effort, and new terms are emerging concomitantly in the literature. That said, future research could expand on this work by including additional search terms and conducting searches in other languages.

In bringing equity into view when assessing well-being constructs, coders in our study often needed to make inferences to identify the equity and equity-adjacent terms in studies that were not explicit about addressing equity in their constructs. We also encountered conceptual and methodological issues around power. We observe that, in our work, as well as in many of the works in the literature that we reviewed, power is acknowledged but rarely specified, much less addressed in a systematic or theoretically informed manner. As has been well established, science has never been 'pure' but, rather, is imperfect as the product of human influence, shaped by society and culture through time and space (Shapin, 2010), caught up in the political struggles of all of their diverse contexts. We argue that what some call contextual equity or recognitional equity is crucial in the context of designing and implementing well-being metrics because what gets measured can overlook important values of people whose social group is being measured in ways that support or do not support the political goals, aspirations or movements of particular social groups engaged in the real politics of representation, authority or agency. For instance, much published scholarship is grounded in an understanding of well-being as foundationally about individual experience and that summing over a set of individual experiences via aggregation is sufficient to understand community/national well-being. However, such approaches may ignore worldviews that consider collective well-being as something with its own distinct characteristics and desired features which are not easily captured by measuring at the individual level. The result may be an insidious paradox in which the imposition of outside worldviews of well-being on the people whose well-being is being measured reproduces and reinforces existing manipulative, repressive or otherwise hegemonic structures which have been brought to bear on Indigenous Peoples and Local Communities globally, over centuries, by various colonial, missionizing, globalizing or transnational capital projects. As the political geographer, Sultana (2021, p. 7) notes in a recent analysis of such complex problems of knowledge and power, 'Capacious, fluid, creative, and subversive thinking is necessary not only in further critiquing complexities of empire, imperialism, and capitalism but also decentring them and fostering cognitive and epistemic justice'. While our current work could not fully take up Sultana's challenge, in addition to urging that well-being researchers and practitioners centre equity and equity-related topics, we strongly encourage that they enter into their projects, in advance of field research, analysis or implementation, with clarity around conceptualizations, models and methods for investigating the diverse dynamics of power. Sensitive engagement with these dynamics, always found at the intersection of society and environment, is necessary for advancing ethical science towards sustainable ecological futures and well-being across scales. We suggest that any discussion or investigation of equity and frameworks of well-being consider power dynamics, power relations, cognizance of power-disparities, and the practical ethics of empowerment for social groups located within particular political histories and sociocultural contexts.

4 | CONCLUSION

In this review, we use a mixed-methods approach to review and summarize progress to date in developing, measuring, and implementing well-being constructs that address equity as well as interrelationships between humans and the environment.

Through our analysis of available published information on these constructs, we distil several key findings. Most importantly, we note a consistent lack of transparency and specificity in how well-being is defined in many well-being-focused studies. We find that the most frequently used dimensions in the well-being constructs in our study relate to environmental, health, social, cultural and economic aspects; and rarely do constructs consider interactions among any dimensions of well-being or potentially significant differences in local and cultural understandings of those

dimensions themselves (Caillon et al., 2017; Sterling et al., 2020). For the constructs that considered interrelationships between human well-being and environmental aspects, we found a variety of different approaches, including several constructs that address these interrelationships through a dimension focused on one's relationship to place. When reviewing how well-being constructs are developed, we identify two broad conceptual approaches, from 'indicators to concept' or 'concept to indicators' that tend to be applied most frequently at national scales and above or in local applications, respectively. We identify different ways that collective well-being can be measured: aggregated from measurements at an individual level and a level that considers interactions between individuals and the collective. The latter level can overcome methodological challenges with aggregated individual measures, because well-being is heterogeneous and non-cumulative, and also reflect cultural contexts that emphasize collective well-being. A significant majority of the studies we analysed had no mention of how the construct described was integrated into planning, monitoring and/or decision-making.

We used two different equity lenses to assess how well-being was considered in constructs, and found that distributional equity was most frequently present across development, measurement and (infrequent) implementation of a construct. We found that some studies took a very clear and purposeful approach to considering equity in their constructs, both for components of equity and categories of social differentiation, while others took a more superficial approach. Our use of these equity lenses raised more questions than presented answers. Some of these questions include: how should well-being metrics be framed, and who defines (and who does not define) resources and allocation for measurement? Can taking an approach that considers interrelationships across human and environmental dimensions provide additional context for clarifying what rights, responsibilities, benefits and costs are, who measures and secures them, and how they are distributed? Overall, while some may express concerns about moving away from standardized quantitative metrics, others are moving forward in developing inspirational examples of well-being constructs that use intentional cultural competency and deep ethnographies to inform planning and design (Agyeman, 2012, 2013; Rishbeth et al., 2018).

Our work points to several pathways forward for development and implementation of well-being frameworks that can inform efforts to leverage well-being for public policy, especially in relation to sustainability.

1. Many aspects of well-being remain poorly understood, likely in part because it is such a complex and multi-scalar concept. The path forward must include sharing different ways that well-being is defined and sharing knowledge and expertise about development, measurement and implementation of well-being-focused approaches.
2. It is not sufficient for well-being frameworks to only assess the discrete dimensions of a construct; rather frameworks must leverage interdisciplinary approaches to assess interactions among the dimensions of well-being, both in concept and in practice, that may produce trade-offs as well as synergies.
3. Well-being frameworks that do not consider the environment (as constituent or determinant), or interrelationships between people and their environment, are not truly measuring well-being in all its dimensions. Carefully designed quantitative (exploring causation) and qualitative approaches should be used to better understand the complexity of these interrelationships (see Schleicher et al., 2017).
4. Future work should explore the implications of different ways to measure collective well-being (from aggregation of individualized measurements to broader measures of community or collective well-being) for different components of equity, in particular recognitional equity. Such work may begin to more adequately address the heterogeneous character of well-being across socially salient groups or domains within the community of study.
5. There is value in expanded efforts to (a) validate well-being constructs, in part to help ensure equity; (b) share how validated constructs have been integrated into planning, monitoring and/or decision-making; and (c) assess the implementation of well-being constructs for improved monitoring, evaluation and learning.
6. Use of equity lenses to assess well-being frameworks and further exploration of how well-being-focused approaches can advance equity in all its dimensions (distributional, procedural, contextual, and recognitional) and will support public policy aimed towards enhancing well-being amidst increasing frequency of global shocks that affect human well-being. This, in turn, aligns with increasing efforts to more holistically characterize well-being to both inform and guide sustainability management in ethical and equitable ways.
7. Constructs should be developed to explicitly centre equity and equity-related categories of social differentiation such as gender when it is present in their efforts (rather than implying it), and share information on guidelines or metrics relating to equity when the construct is being implemented while accounting for the multidimensionality and intersectional complexity of equity within particular social and cultural contexts (Leach et al., 2018). In addition, if equity is not included in development, measurement or implementation of a construct, then the limitations of the construct as a result of the omission must be considered.

ACKNOWLEDGEMENTS

We acknowledge the Indigenous Nations and Peoples on whose traditional and ancestral homelands many of the institutions represented in this paper and its authorship are located. We recognize the longstanding significance of these lands for Indigenous Nations and Peoples past, present and future. The material is based on work supported by the National Science Foundation under grant numbers No. EF-1427091, EF-1427453, and 1444184 and work conducted by the Assessing Biocultural Indicators Working Group supported in part by SNAPP: Science for Nature and People Partnership, a collaboration of The Nature Conservancy, the Wildlife Conservation Society and the National Center for Ecological Analysis and Synthesis (NCEAS)

at the University of California, Santa Barbara. Any opinions, findings and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation. Support for this project also comes from the Gordon and Betty Moore Foundation, Lynette and Richard Jaffe and the Jaffe Family Foundation. SC received support from the InSHS-CNRS program 'Soutien à la Mobilité Internationale-2018'. Partial support for this work comes from PICS (Projet International de Coopération Scientifique) funded by CNRS-INEE (Institut écologie et environnement) for 'The Institutional Dynamics of Conversion to Organic Wine Production: A Comparative Analysis in Occitanie, France', a collaboration between the University of Toronto—Department of Geography and CNRS—Centre d'Ecologie Fonctionnelle et Evolutive. We thank Ana Luz Porzecanski for her input. We are grateful to the editors of this Special Issue and the authors of the other papers in this issue for their thorough comments and constructive support.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORS' CONTRIBUTIONS

E.C.B., N.G., P.P., A.S. and E.J.S. conceived the ideas and designed the methodology; E.J.S. and P.P. screened search results for relevant citations; Y.A.-T., F.A., E.C.B., S.C., S.H.C., M.E.I., P.P., D.R., L.S., A.S. and E.J.S. coded the papers and analysed the results; E.C.B., P.P., A.S. and E.J.S. led the writing of the manuscript. All authors contributed substantively and critically to the drafts and gave final approval for publication.

DATA AVAILABILITY STATEMENT

The authors have archived the data collected during this research in the online, publicly available database Zenodo https://doi.org/10.5281/zenodo.5758636 (Betley et al., 2021). Data can also be accessed upon request via the corresponding author.

ORCID

Erin C. Betley https://orcid.org/0000-0002-0009-8939
Amanda Sigouin https://orcid.org/0000-0002-1272-1898
Samantha H. Cheng https://orcid.org/0000-0003-1799-6310
Felicity Arengo https://orcid.org/0000-0002-2511-1167
Yildiz Aumeeruddy-Thomas https://orcid.org/0000-0002-2690-0571
Marney E. Isaac https://orcid.org/0000-0002-5975-833X
Alexander Mawyer https://orcid.org/0000-0001-9742-1677
Alexandria C. Moore https://orcid.org/0000-0003-3563-7119
Delphine Renard https://orcid.org/0000-0002-3228-4269
Eleanor J. Sterling https://orcid.org/0000-0003-2692-8264

ENDNOTES

[1] Equity as 'the absence of systematic disparities … between groups with different levels of underlying social advantage/disadvantage—that is, wealth, power, or prestige' (Braveman & Gruskin 2003, p. 254).

[2] We define a well-being construct as a framework, method, approach or tools for conceptualizing and measuring well-being. This can include conceptual frameworks, indices, dashboards and indicators.

[3] We define environment as the multidimensional concept of the non-human physical environment, including living and non-living components, along with the physical processes that comprise the global earth system at different scales. The environment includes human-modified and non-human-modified systems.

[4] Example of explicit definition: 'we define human wellbeing as a state of being with others and the environment, which arises when human needs are met, when individuals and communities can act meaningfully to pursue their goals, and when individuals and communities enjoy a satisfactory quality of life' (Breslow et al., 2016, p. 251). In contrast, Dawson and Martin (2015, p. 62) provide an example of an inferred definition; they did not state their definition but explain that they used 'emerging frameworks for studying multiple dimensions of human wellbeing, drawing on Amartya Sen's capabilities approach to human development'.

[5] As an example of an explicit consideration of distributional equity related to health, the National Sustainable Development Plan for the Republic of Vanuatu lays out the following policy objective: to 'Ensure that the population of Vanuatu has equitable access to affordable, quality health care through the fair distribution of facilities that are suitably resourced and equipped' (DSPPAC, 2017, p. 11). As an example of inferred consideration of class/economic, health and livelihood/employment in relation to equity, the Oxfam Humankind Index discusses 'deprived communities', relying on the Scottish Index of Multiple Deprivation 2020 which defines deprivation in terms of income, employment and health (Trebeck & Abeyasekera, 2012; Dunlop & Swales, 2012).

REFERENCES

Agrawal, A., & Chhatre, A. (2011). Against mono-consequentialism: Multiple outcomes and their drivers in social-ecological systems. *Global Environmental Change*, *21*, 1–3. https://doi.org/10.1016/j.gloenvcha.2010.12.007

Aguado, M., González, J. A., Bellott, K., López-Santiago, C., & Montes, C. (2018). Exploring subjective well-being and ecosystem services perception along a rural–urban gradient in the high Andes of Ecuador. *Ecosystem Services*, *34*, 1–10. https://doi.org/10.1016/j.ecoser.2018.09.002

Agyeman, J. (2012). *Cultural competency: Towards culturally inclusive practice. Re-imagining equality, living within limits*. Retrieved from http://julianagyeman.com/2012/08/cultural-competency-towards-culturally-inclusive-practice/

Agyeman, J. (2013). *Introducing just sustainabilities: Policy, planning, and practice*. Zed Books Ltd.

Armitage, D., Béné, C., Charles, A. T., Johnson, D., & Allison, E. H. (2012). The interplay of well-being and resilience in applying a social-ecological perspective. *Ecology and Society*, *17*(4). https://doi.org/10.5751/ES-04940-170415

Aumeeruddy-Thomas, Y., & Hmimsa, Y. (2018). Fig and olive domestication in the Rif, Northern Morocco. Entangled human and tree lives and history. In C. Stepanoff & J.-D. Vigne (Ed.), *Hybrid communities: Biosocial approaches to domestication and other transspecies relationships* (pp. 179–198). Routledge.

Baggio, J. A., Brown, K., & Hellebrandt, D. (2015). Boundary object or bridging concept? A citation network analysis of resilience. *Ecology and Society*, *20*(2). https://doi.org/10.5751/ES-07484-200202

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. *The Lancet*, *389*, 1453–1463. https://doi.org/10.1016/S0140-6736(17)30569-X

Barrington-Leigh, C., & Escande, A. (2018). Measuring progress and well-being: A comparative review of indicators. *Social Indicators Research*, *135*, 893–925. https://doi.org/10.1007/s11205-016-1505-0

Bennett, E. M., Cramer, W., Begossi, A., Cundill, G., Díaz, S., Egoh, B. N., Geijzendorffer, I. R., Krug, C. B., Lavorel, S., Lazos, E., & Lebel, L. (2015). Linking biodiversity, ecosystem services, and human well-being: Three challenges for designing research for sustainability. *Current Opinion in Environmental Sustainability*, *14*, 76–85.

Betley, E. (2021). Assessing human well-being constructs with environmental and equity aspects: A review of the landscape. *Zenodo*. https://doi.org/10.5281/zenodo.5758636

Biedenweg, K., Harguth, H., & Stiles, K. (2017). The science and politics of human well-being: A case study in cocreating indicators for Puget Sound restoration. *Ecology and Society*, *22*(3), 11. https://doi.org/10.5751/ES-09424-220311

Boarini, R., Kolev, A., & McGregor, A. (2014). *Measuring well-being and progress in countries at different stages of development: Towards a more universal conceptual framework*. OECD Development Centre Working Papers, No. 325. OECD Publishing. Retrieved from https://doi.org/10.1787/5jxss4hv2d8n-en

Braje, T. J., & Lauer, M. (2020). A meaningful anthropocene? Golden spikes, transitions, boundary objects, and anthropogenic seascapes. *Sustainability*, *12*, 6459.

Braveman, P., & Gruskin, S. (2003). Defining equity in health. *Journal of Epidemiology & Community Health*, *57*, 254–258. https://doi.org/10.1136/jech.57.4.254

Breslow, S. J., Sojka, B., Barnea, R., Basurto, X., Carothers, C., Charnley, S., Coulthard, S., Dolšak, N., Donatuto, J., García-Quijano, C., Hicks, C. C., Levine, A., Mascia, M. B., Norman, K., Poe, M., Satterfield, T., Martin, K. S., & Levin, P. S. (2016). Conceptualizing and operationalizing human wellbeing for ecosystem assessment and management. *Environmental Science & Policy*, *66*, 250–259. https://doi.org/10.1016/j.envsci.2016.06.023

Caillon, S., Cullman, G., Verschuuren, B., & Sterling, E. J. (2017). Moving beyond the human–nature dichotomy through biocultural approaches: including ecological well-being in resilience indicators. *Ecology and Society*, *22*(4), 27.

Camfield, L., & Ruta, D. (2007). 'Translation is not enough': Using the Global Person Generated Index (GPGI) to assess individual quality of life in Bangladesh, Thailand, and Ethiopia. *Quality of Life Research*, *16*, 1039–1051. https://doi.org/10.1007/s11136-007-9182-8

Canadian Index of Wellbeing (2016). *How are Canadians Really Doing? The 2016 CIW National Report*. Canadian Index of Wellbeing and University of Waterloo. Retrieved from https://uwaterloo.ca/canadian-index-wellbeing/reports

Carmenta, R. A., Steward, B. V., Renan, C., Adielley, A., & Carmina, N. (this issue). Lost in transition? The impact of environment and development interventions on place-based wellbeing in the Brazilian Amazon. *People and Nature*.

Centre for Bhutan Studies & GNH Research. (2016). *A compass towards a just and harmonious society: 2015 GNH survey report*. Retrieved from https://www.bhutanstudies.org.bt/a-compass-towards-a-just-and-harmonious-society-2015-gnh-survey-report/

Centre for Thriving Places. (2019). *Thriving places index 2019 full report*. Centre for Thriving Places. Retrieved from https://www.thrivingplacesindex.org/page/insights/reports

Chaigneau, T., & Brown, K. (2016). Challenging the win-win discourse on conservation and development: Analyzing support for marine protected areas. *Ecology and Society*, *21*(1). https://doi.org/10.5751/ES-08204-210136

Chan, K. M. A., Balvanera, P., Benessaiah, K., Chapman, M., Díaz, S., Gómez-Baggethun, E., Gould, R., Hannahs, N., Jax, K., Klain, S., Luck, G. W., Martín-López, B., Muraca, B., Norton, B., Ott, K., Pascual, U., Satterfield, T., Tadaki, M., Taggart, J., & Turner, N. (2016). Opinion: Why protect nature? Rethinking values and the environment. *Proceedings of the National Academy of Sciences of the United States of America*, *113*, 1462–1465. https://doi.org/10.1073/pnas.1525002113

Chan, K. M. A., Gould, R. K., & Pascual, U. (2018). Editorial overview: Relational values: What are they, and what's the fuss about? *Current Opinion in Environmental Sustainability*, *35*, A1–A7.

Chaudhary, S., McGregor, A., Houston, D., & Chettri, N. (2018). Environmental justice and ecosystem services: A disaggregated analysis of community access to forest benefits in Nepal. *Ecosystem Service*, *29*, 99–115. https://doi.org/10.1016/j.ecoser.2017.10.020

Cheng, S. H., Augustin, C., Bethel, A., Gill, D., Anzaroot, S., Brun, J., DeWilde, B., Minnich, R. C., Garside, R., Masuda, Y. J., Miller, D. C., Wilkie, D., Wongbusarakum, S., & McKinnon, M. C. (2018). Using machine learning to advance synthesis and use of conservation and environmental evidence. *Conservation Biology*, *32*, 762–764. https://doi.org/10.1111/cobi.13117

Cinner, J. E., Daw, T., Huchery, C., Thoya, P., Wamukota, A., Cedras, M., & Abunge, C. (2014). Winners and losers in marine conservation: Fishers' displacement and livelihood benefits from marine reserves. *Society & Natural Resources*, *27*, 994–1005. https://doi.org/10.1080/08941920.2014.918229

City of Santa Monica. (2017). *2017 wellbeing index findings summary*. Retrieved from https://santamonicawellbeing.org/Media/Default/findings/2017_WellbeingIndexFindingsSummary_SaMo.pdf

Clements, T., Suon, S., Wilkie, D. S., & Milner-Gulland, E. (2014). Impacts of protected areas on local livelihoods in Cambodia. *World Development*, *64*, S125–S134. https://doi.org/10.1016/j.worlddev.2014.03.008

Collaboration for Environmental Evidence. (2018). *Guidelines and standards for evidence synthesis in environmental management*. Version 5.0. Collaboration for Environmental Evidence.

Cooke, M., Mitrou, F., Lawrence, D., Guimond, E., & Beavon, D. (2007). Indigenous well-being in four countries: An application of the UNDP'S human development index to indigenous peoples in Australia, Canada, New Zealand, and the United States. *BMC International Health and Human Rights*, *7*, 9. https://doi.org/10.1186/1472-698X-7-9

Cooper, R., Burton, E., & Cooper, C. (2014). *Wellbeing: A complete reference guide, wellbeing and the environment*. John Wiley & Sons.

Coulthard, S., White, C., McGregor, A., Sandaruwan, K. P. G. L., Manimohan, R., & Paranamana, N. (this issue). The importance of the relational dimension of wellbeing for conservation efforts: A methodology and evidence from South Asian and UK fisheries. *People and Nature*.

Dacks, R., Ticktin, T., Mawyer, A., Caillon, S., Claudet, J., Fabre, P., Jupiter, S. D., McCarter, J., Mejia, M., Pascua, P., Sterling, E., & Wongbusarakum, S. (2019). Developing biocultural indicators for resource management. *Conservation Science and Practice*, *1*, e38. https://doi.org/10.1111/csp2.38

Dasgupta, P. (2001). Constituents and determinants of well-being. In P. Dasgupta (Ed.), *Human well-being and the natural environment* (pp. 33–40). Oxford University Press.

Daw, T., Brown, K., Rosendo, S., & Pomeroy, R. (2011). Applying the ecosystem services concept to poverty alleviation: The need to disaggregate human well-being. *Environmental Conservation*, *38*, 370–379. https://doi.org/10.1017/S0376892911000506

Dawson, N., & Martin, A. (2015). Assessing the contribution of ecosystem services to human wellbeing: A disaggregated study in western Rwanda. *Ecological Economics*, *117*, 62–72. https://doi.org/10.1016/j.ecolecon.2015.06.018

Dawson, N., Mustin, K., Carvalho, W., de Sousa, J. S. B., Todeschini, F., & Tabarelli, M. (this issue). The people of the Caatinga: Struggles for recognition and sustainable futures beyond exclusive conservation. *People and Nature*.

Department of Strategic Policy Planning and Aid Coordination (DSPPAC). (2017). *Vanuatu 2030 the people's plan*. National Sustainable Development Plan Monitoring and Evaluation Framework.

Department of Strategic Policy, Planning and Aid Coordination. Retrieved from https://dsppac.gov.vu/

Díaz, S., Demissew, S., Carabias, J., Joly, C., Lonsdale, M., Ash, N., Larigauderie, A., Adhikari, J. R., Arico, S., Báldi, A., Bartuska, A., Baste, I. A., Bilgin, A., Brondizio, E., Chan, K. M. A., Figueroa, V. E., Duraiappah, A., Fischer, M., Hill, R., … Zlatanova, D. (2015). The IPBES Conceptual Framework – Connecting nature and people. *Current Opinion in Environmental Sustainability*, *14*, 1–16. https://doi.org/10.1016/j.cosust.2014.11.002

Díaz, S. U., Pascual, M., Stenseke, B., Martín-López, R. T., Watson, Z., Molnár, R., Hill, K. M. A., Chan, I. A., Baste, K. A., Brauman, S., Polasky, A., Church, M., Lonsdale, A., Larigauderie, P. W., van Leadley, A. P. E., van der Oudenhoven, F., Plaat, M., Schröter, S., Lavorel, Y., … Lindley, Y. S. (2018). Assessing nature's contributions to people. *Science*, *359*, 270–272.

Donatuto, J., Campbell, L., & Gregory, R. (2016). Developing responsive indicators of indigenous community health. *International Journal of Environmental Research and Public Health*, *13*(9), 899. https://doi.org/10.3390/ijerph13090899

Donatuto, J., Grossman, E. E., Konovsky, J., Grossman, S., & Campbell, L. W. (2014). Indigenous community health and climate change: Integrating biophysical and social science indicators. *Coastal Management*, *42*(4), 355–373. https://doi.org/10.1080/08920753.2014.923140

Donkersloot, R., Black, J. C., Carothers, C., Ringer, D., Justin, W., Clay, P. M., Poe, M. R., Gavenus, E. R., Voinot-Baron, W., Stevens, C., Williams, M., Raymond-Yakoubian, J., Christiansen, F., Breslow, S. J., Langdon, S. J., Coleman, J. M., & Clark, S. J. (2020). Assessing the sustainability and equity of Alaska salmon fisheries through a well-being framework. *Ecology and Society*, *25*(2). https://doi.org/10.5751/ES-11549-250218

Dunbar, W., Subramanian, S. M., Matsumoto, I., Natori, Y., Dublin, D., Bergamini, N., Mijatovic, D., Álvarez, A. G., Yiu, E., & Ichikawa, K. (2020). Lessons learned from application of the 'indicators of resilience in socio-ecological production landscapes and seascapes (SEPLS)' under the Satoyama initiative. In O. Saito, S. M. Subramanian, S. Hashimoto, & K. Takeuchi (Eds.), *Managing socio-ecological production landscapes and seascapes for sustainable communities in Asia* (pp. 93–116). Springer.

Dunlop, S., & Swales, K. (2012). Measuring wellbeing in Scotland: The Oxfam Humankind Index. *Fraser of Allander Economic Commentary*, *36*, 81–88.

Estes, R. J. (2015). The index of social progress: Objective approaches. In W. Glatzer, L. Camfield, V. Møller, & M. Rojas (Eds.), *The index of social progress: Objective approaches* (pp. 159–205). Springer.

Fischer, J., Abson, D. J., Bergsten, A., Collier, N. F., Dorresteijn, I., Hanspach, J., Hylander, K., Schultner, J., & Senbeta, F. (2017). Reframing the food–biodiversity challenge. *Trends in Ecology & Evolution*, *32*, 335–345. https://doi.org/10.1016/j.tree.2017.02.009

Flaherty, E., Kirkpatrick, K., & Snow, T. (2019). *Human and environmental well-being in Alaska's Kachemak Bay Watershed: An ecosystem services assessment* (Master's thesis). University of Michigan. https://deepblue.lib.umich.edu/handle/2027.42/148820

Fontalvo-Herazo, M. L., Glaser, M., & Lobato-Ribeiro, A. (2007). A method for the participatory design of an indicator system as a tool for local coastal management. *Ocean & Coastal Management*, *50*, 779–795. https://doi.org/10.1016/j.ocecoaman.2007.03.005

Friedman, R. S., Law, E. A., Bennett, N. J., Ives, C. D., Thorn, J. P. R., & Wilson, K. A. (2018). How just and just how? A systematic review of social equity in conservation research. *Environmental Research Letters*, *13*, 053001. https://doi.org/10.1088/1748-9326/aabcde

Gavin, M. C., McCarter, J., Mead, A., Berkes, F., Stepp, J. R., Peterson, D., & Tang, R. (2015). Defining biocultural approaches to conservation. *Trends in Ecology & Evolution*, *30*, 140–145. https://doi.org/10.1016/j.tree.2014.12.005

Goodchild, M. (2021). Relational systems thinking: That's how change is going to come, from our earth mother. *Journal of Awareness-Based Systems Change*, *1*(1), 75–103. https://doi.org/10.47061/jabsc.v1i1.577

Gould, R. K., Bremer, L. L., Pascua, P., & Meza-Prad, K. (2020). Frontiers in cultural ecosystem services: Toward greater equity and justice in ecosystem services research and practice. *BioScience*, *70*(12), 1093–1107. https://doi.org/10.1093/biosci/biaa112

Government of Iceland Prime Minister's Office (GIPMO). (2019). *Indicators for measuring well-being*. Retrieved from https://www.government.is/lisalib/getfile.aspx?itemid=fc981010-da09-11e9-944d-005056bc4d74

Guedes, G. R., Brondízio, E. S., Barbieri, A. F., Anne, R., Penna-Firme, R., & D'Antona, Á. O. (2012). Poverty and inequality in the rural Brazilian Amazon: A multidimensional approach. *Human Ecology*, *40*, 41–57. https://doi.org/10.1007/s10745-011-9444-5

Gurney, G. G., Pressey, R. L., Cinner, J. E., Pollnac, R., & Campbell, S. J. (2015). Integrated conservation and development: Evaluating a community-based marine protected area project for equality of socioeconomic impacts. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *370*, 20140277. https://doi.org/10.1098/rstb.2014.0277

Harvey, D. (2005). *Spaces of neoliberalization: Towards a theory of uneven geographical development*. Franz Steiner Verlag.

Helne, T., & Hirvilammi, T. (2015). Wellbeing and sustainability: A relational approach. *Sustainable Development*, *23*(3), 167–175. https://doi.org/10.1002/sd.1581

Hirsch, P. D., Brosius, J. P., & Gagnon, P. (2013). Navigating complex trade-offs in conservation and development: An integrative framework. *Issues in Interdisciplinary Studies*, *13*, 99–122.

Hoekstra, R. (2019). *Replacing GDP by 2030: Towards a common language for the well-being and sustainability community*. Cambridge University Press.

Howe, C., Suich, H., Vira, B., & Mace, G. M. (2014). Creating win-wins from trade-offs? Ecosystem services for human well-being: A meta-analysis of ecosystem service trade-offs and synergies in the real world. *Global Environmental Change*, *28*, 263–275. https://doi.org/10.1016/j.gloenvcha.2014.07.005

Irvine, K. N., O'Brien, L., Ravenscroft, N., Cooper, N., Everard, M., Fazey, I., Reed, M. S., & Kenter, J. O. (2016). Ecosystem services and the idea of shared values. *Ecosystem Services*, *21*, 184–193. https://doi.org/10.1016/j.ecoser.2016.07.001

Jacobs, S., Zafra-Calvo, N., Gonzalez-Jimenez, D., Guibrunet, L., Benessaiah, K., Berghöfer, A., Chaves-Chaparro, J., Díaz, S., Gomez-Baggethun, E., Lele, S., Martín-López, B., Masterson, V. A., Merçon, J., Moersberger, H., Muraca, B., Norström, A., O'Farrell, P., Ordonez, J. C., Prieur-Richard, A.-H., … Balvanera, P. (2020). Use your power for good: Plural valuation of nature – The Oaxaca statement. *Global Sustainability*, *3*, e8. https://doi.org/10.1017/sus.2020.2

King, M. F., Renó, V. F., & Novo, E. M. L. M. (2014). The concept, dimensions and methods of assessment of human well-being within a socioecological context: A literature review. *Social Indicators Research*, *116*, 681–698. https://doi.org/10.1007/s11205-013-0320-0

Leach, M., Reyers, B., Bai, X., Brondizio, E. S., Cook, C., Díaz, S., Espindola, G., Scobie, M., Stafford-Smith, M., & Subramanian, S. M. (2018). Equity and sustainability in the Anthropocene: A social–ecological systems perspective on their intertwined futures. *Global Sustainability*, *1*. https://doi.org/10.1017/sus.2018.12

Lebel, L., Wattana, S., & Talerngsri, P. (2015). Assessments of ecosystem services and human well-being in Thailand build and create demand for coproductive capacity. *Ecology and Society*, *20*(1). https://doi.org/10.5751/ES-06527-200112

León, M. (2015). *Del discurso a la medición: Propuesta metodológica para medir el Buen Vivir en Ecuador*. Instituto Nacional de Estadística y Censos (INEC). Retrieved from https://www.ecuadorencifras.gob.ec/wp-content/uploads/downloads/2016/10/Buen-Vivir-en-el-Ecuador.pdf

Leong, K. M., Wongbusarakum, S., Ingram, R. J., Mawyer, A., & Poe, M. R. (2019). Improving representation of human well-being and cultural importance in conceptualizing the West Hawai'i Ecosystem. *Frontiers in Marine Science*, *6*, 231.

Li, T. M. (2014). *Land's end: Capitalist relations on an indigenous frontier*. Duke University Press.

Lijadi, A. A. (2018). *Theoretical foundations to outline human wellbeing: Metaanalytic literature review for defining empowered life years*. IIASA Working Paper. IIASA, Laxenburg, Austria: WP18002. Retrieved from http://pure.iiasa.ac.at/id/eprint/15119/

Livoreil, B., Glanville, J., Haddaway, N. R., Bayliss, H., Bethel, A., de Lachapelle, F. F., Robalino, S., Savilaakso, S., Zhou, W., Petrokofsky, G., & Frampton, G. (2017). Systematic searching for environmental evidence using multiple tools and sources. *Environmental Evidence*, *6*, 1–14. https://doi.org/10.1186/s13750-017-0099-6

Llopis, J. C., Diebold, C. L., Schneider, F., Harimalala, P. C., Andriamihaja, O. R., Messerli, P., & Zaehringer, J. G. (this issue). Land use and human well-being in Northeastern Madagascar. *People and Nature*.

Lyver, P. O. B., Ruru, J., Scott, N., Tylianakis, J. M., Arnold, J., Malinen, S. K., Bataille, C. Y., Herse, M. R., Jones, C. J., Gormley, A. M., Peltzer, D. A., Taura, Y., Timoti, P., Stone, C., Wilcox, M., & Moller, H. (2019). Building biocultural approaches into Aotearoa-New Zealand's conservation future. *Journal of the Royal Society of New Zealand*, *49*(3), 394–411.

Matuk, F. A., Behagel, J. H., Simas, F. N. B., Do Amaral, E. F., Haverroth, M., & Turnhout, E. (2020). Including diverse knowledges and worldviews in environmental assessment and planning: The Brazilian Amazon Kaxinawá Nova Olinda Indigenous Land case. *Ecosystems and People*, *16*, 95–113.

McCarter, J., Sterling, E. J., Jupiter, S. D., Cullman, G. D., Albert, S., Basi, M., Betley, E., Boseto, D., Bulehite, E. S., Harron, R., Holland, P. S., Horning, N., Hughes, A., Jino, N., Malone, C., Mauli, S., Pae, B., Papae, R., Rence, F., … Filardi, C. E. (2018). Biocultural approaches to developing well-being indicators in Solomon Islands. *Ecology and Society*, *23*(1), 32.

McCrea, R., Walton, A., & Leonard, R. (2014). A conceptual framework for investigating community wellbeing and resilience. *Rural Society*, *23*, 270–282. https://doi.org/10.1080/10371656.2014.11082070

McDermott, M., Mahanty, S., & Schreckenberg, K. (2013). Examining equity: A multidimensional framework for assessing equity in payments for ecosystem services. *Environmental Science & Policy*, *33*, 416–427. https://doi.org/10.1016/j.envsci.2012.10.006

McGregor, J. A. (2007). *Wellbeing in developing countries: From theory to research*. Cambridge University Press.

McKinnon, M. C., Cheng, S. H., Dupre, S., Edmond, J., Garside, R., Glew, L., Holland, M. B., Levine, E., Masuda, Y. J., & Miller, D. C. (2016). What are the effects of nature conservation on human well-being? A systematic map of empirical evidence from developing countries. *Environmental Evidence*, *5*, 1–25.

McShane, T. O., Hirsch, P. D., Trung, T. C., Songorwa, A. N., Kinzig, A., Monteferri, B., Mutekanga, D., Van Thang, H., Dammert, J. L., & Pulgar-Vidal, M. (2011). Hard choices: Making trade-offs between biodiversity conservation and human well-being. *Biological Conservation*, *144*, 966–972.

Meadows, D. (2008). *Thinking in systems: A primer*. Chelsea Green Publishing.

Meo-Sewabu, L. D. (2015). *'Tu ga na inima ka luvu na waqa': (The bail to get water out of the boat is in the boat yet the boat sinks): The cultural constructs of health and wellbeing amongst Marama iTaukei in a Fijian village in Lau and in a transnational Fijian community in Whanganui, Aotearoa: A thesis presented in fulfilment of the requirements for the degree of Doctor of Philosophy in Social Policy at Massey University, Palmerston North, Aotearoa*: Massey University.

Millennium Ecosystem Assessment (MA). (2005). *Ecosystems and human well-being: Synthesis*. Island Press. Retrieved from http://www.millenniumassessment.org/documents/document.356.aspx.pdf

Mitra, S., Brucker, D. L., & Jajtner, K. (2020). Wellbeing at older ages: Towards an inclusive and multidimensional measure. *Disability and Health Journal*. https://doi.org/10.1016/j.dhjo.2020.100926

New Zealand Environmental Protection Agency (NZEPA). (2020). *Partnership in action: The EPA's mātauranga framework*. https://www.epa.govt.nz/te-hautu/matauranga/

New Zealand Government. (2019). *The wellbeing budget*. New Zealand Treasury. Retrieved from https://treasury.govt.nz/publications/wellbeing-budget/wellbeing-budget-2019

O'Brien, K. L., & Leichenko, R. M. (2003). Winners and losers in the context of global change. *Annals of the Association of American Geographers*, *93*(1), 89–103. https://doi.org/10.1111/1467-8306.93107

OECD. (2020). *How's Life? 2020: Measuring Well-being*. OECD Publishing.

Office for National Statistics. (2020). *Measures of national well-being dashboard*. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/224910/Wellbeing_Policy_and_Analysis_FINAL.PDF

Oracion, E. G., Miller, M. L., & Christie, P. (2005). Marine protected areas for whom? Fisheries, tourism, and solidarity in a Philippine community. *Ocean & Coastal Management*, *48*, 393–410.

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press.

Pascual, U., Balvanera, P., Díaz, S., Pataki, G., Roth, E., Stenseke, M., Watson, R. T., Başak Dessane, E., Islar, M., Kelemen, E., Maris, V., Quaas, M., Subramanian, S. M., Wittmer, H., Adlan, A., Ahn, S., Al-Hafedh, Y. S., Amankwah, E., Asah, S. T., … Yagi, N. (2017). Valuing nature's contributions to people: The IPBES approach. *Current Opinion in Environmental Sustainability*, *26–27*, 7–16. https://doi.org/10.1016/j.cosust.2016.12.006

Pereira, E., Queiroz, C., Pereira, H. M., & Vicente, L. (2005). Ecosystem services and human well-being: A participatory study in a mountain community in Portugal. *Ecology and Society*, *10*(2). https://doi.org/10.5751/ES-01353-100214

Pinar, M. (2019). Multidimensional well-being and inequality across the European regions with alternative interactions between the well-being dimensions. *Social Indicators Research*, *144*, 31–72. https://doi.org/10.1007/s11205-018-2047-4

Preiser, R., Biggs, R., De Vos, A., & Folke, C. (2018). Folke, social-ecological systems as complex adaptive systems: Organizing principles for advancing research methods and approaches. *Ecology & Society*, *23*, 46. https://doi.org/10.5751/ES-10558-230446

Renard, D., Rhemtulla, J. M., & Bennett, E. M. (2015). Historical dynamics in ecosystem service bundles. *Proceedings of the National Academy of Sciences of the United States of America*, *112*, 13411–13416. https://doi.org/10.1073/pnas.1502565112

Rincón-Ruiz, A., Arias-Arévalo, P., Núñez Hernández, J. M., Cotler, H., Aguado Caso, M., Meli, P., Tauro, A., Ávila Akerberg, V. D., Avila-Foucat, V. S., Cardenas, J. P., Castillo Hernández, L. A., Castro, L. G., Cerón Hernández, V. A., Contreras Araque, A., Deschamps-Lomeli, J., Galeana-Pizaña, J. M., Guillén Oñate, K., Hernández Aguilar, J. A., Jimenez, A. D., … Waldron, T. (2019). Applying integrated valuation of ecosystem services in Latin America: Insights from 21 case studies. *Ecosystem Services*, *36*, 100901. https://doi.org/10.1016/j.ecoser.2019.100901

Rishbeth, C., Ganji, F., & Vodicka, G. (2018). Ethnographic understandings of ethnically diverse neighbourhoods to inform urban design practice. *Local Environment*, *23*, 36–53. https://doi.org/10.1080/13549839.2017.1385000

Rodriguez, I. (2017). Linking well-being with cultural revitalization for greater cognitive justice in conservation: Lessons from Venezuela in Canaima National Park. *Ecology and Society*, *22*(4), 24.

Sangha, K. K., Le Brocque, A., Costanza, R., & Cadet-James, Y. (2015). Ecosystems and indigenous well-being: An integrated framework. *Global Ecology and Conservation*, *4*, 197–206. https://doi.org/10.1016/j.gecco.2015.06.008

Schleicher, J., Schaafsma, M., Burgess, N. D., Sandbrook, C., Danks, F., Cowie, C., & Vira, B. (2017). Poorer without it? The neglected role of the natural environment in poverty and wellbeing. *Sustainable Development*, *26*, 83–98. https://doi.org/10.1002/sd.1692

Sen, A. (1999). *Development as freedom*. Oxford University Press.

Serenari, C., Peterson, M. N., Wallace, T., & Stowhas, P. (2017). Private protected areas, ecotourism development and impacts on local people's well-being: A review from case studies in Southern Chile. *Journal of Sustainable Tourism*, *25*(12), 1792–1810.

Shaker, R. R. (2018). A mega-index for the Americas and its underlying sustainable development correlations. *Ecological Indicators*, *89*, 466–479. https://doi.org/10.1016/j.ecolind.2018.01.050

Shapin, S. (2010). *Never pure: Historical studies of science as if it was produced by people with bodies, situated in time, space, culture, and society, and struggling for credibility and authority*. JHU Press.

Shiell, A., Hawe, P., & Kavanagh, S. (2020). Evidence suggests a need to rethink social capital and social capital interventions. *Social Science & Medicine*, *257*, 111930. https://doi.org/10.1016/j.socscimed.2018.09.006

Small, N., Munday, M., & Durance, I. (2017). The challenge of valuing ecosystem services that have no material benefits. *Global Environmental Change*, *44*, 57–67. https://doi.org/10.1016/j.gloenvcha.2017.03.005

Smith, N. (2010). *Uneven development: Nature, capital, and the production of space*. University of Georgia Press.

Stålhammar, S., & Thorén, H. (2019). Three perspectives on relational values of nature. *Sustainability Science*, *14*, 1201–1212. https://doi.org/10.1007/s11625-019-00718-4

Sterling, E. J., Betley, E., Sigouin, A., Gomez, A., Toomey, A., Cullman, G., Malone, C., Pekor, A., Arengo, F., Blair, M., Filardi, C., Landrigan, K., & Porzecanski, A. L. (2017). Assessing the evidence for stakeholder engagement in biodiversity conservation. *Biological Conservation*, *209*, 159–171.

Sterling, E. J., Filardi, C., Toomey, A., Sigouin, A., Betley, E., Gazit, N., Newell, J., Albert, S., Alvira, D., Bergamini, N., Blair, M., Boseto, D., Burrows, K., Bynum, N., Caillon, S., Caselle, J. E., Claudet, J., Cullman, G., Dacks, R., … Jupiter, S. D. (2017). Biocultural approaches to well-being and sustainability indicators across scales. *Nature Ecology & Evolution*, *1*, 1798–1806.

Sterling, E. J., Pascua, Pua'ala, Sigouin, A., Gazit, N., Mandle, L., Betley, E., Aini, J., Albert, S., Caillon, S., Caselle, J. E., Cheng, S. H., Claudet, J., Dacks, R., Darling, E. S., Filardi, C., Jupiter, S. D., Mawyer, A., Mejia, M., Morishige, Kanoe'ulalani, … McCarter, J. (2020). Creating a space for place and multidimensional well-being: Lessons learned from localizing the SDGs. *Sustainability Science*, *15*, 1129–1147. https://doi.org/10.1007/s11625-020-00822-w

Sultana, F. (2021). Progress report in political ecology II: Conjunctures, crises, and critical publics. *Progress in Human Geography*, 03091325211028665.

Summers, J. K., Smith, L. M., Harwell, L. C., & Buck, K. D. (2017). *The development of a human wellbeing index for the United States*. *Quality of Life and Quality of Working Life* (pp. 97–135). In-Tech Publishing.

Tauro, A., Lazos-Chavero, E., Aguado-Caso, M., & Balvanera, P. (this issue). Subjective and place-based well-being: Aspirations to live well linked to nature in dry tropical agroforest frontiers. *People and Nature*.

Tengö, M., Brondizio, E. S., Elmqvist, T., Malmer, P., & Spierenburg, M. (2014). Connecting diverse knowledge systems for enhanced ecosystem governance: The multiple evidence base approach. *Ambio*, *43*, 579–591. https://doi.org/10.1007/s13280-014-0501-3

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). (2019). *Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (Eds.). IPBES Secretariat. 1148 pp. https://doi.org/10.5281/zenodo.3831673

Thiry, G., Alkire, S. & Schleicher, J. (2018). *Incorporating environmental and natural resources within analyses of multidimensional poverty*. OPHI Research in Progress 50a, University of Oxford. https://ophi.org.uk/incorporating-environmental-and-natural-resources-within-analyses-of-multidimensional-poverty/

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, *8*, 45.

Thomsen, S., Tavita, J., & Levi-Teu, Z. (2018). *A pacific perspective on the living standards framework and wellbeing*. New Zealand Treasury Discussion Paper. Retrieved from https://www.econstor.eu/bitstream/10419/205382/1/dp18-09.pdf

Trebeck, K., & Abeyasekera, A. (2012). Oxfam humankind index. Wellbeing and Quality of Life Assessment, 147.

Ulrichs, M., Slater, R., & Costella, C. (2019). Building resilience to climate risks through social protection: From individualised models to systemic transformation. *Disasters*, *43*(Suppl 3), S368–S387. https://doi.org/10.1111/disa.12339

United Nations Office for Disaster Risk Reduction (UNDRR). *Human cost of disasters. An overview of the last 20 years*. 2000–2019, October 2020, 32 p.

Verschuuren, B., Subramanian, S. M., & Hiemstra, W. (2014). *Community well-being in biocultural landscapes: Are we living well?*. Practical Action Publishing.

Virtanen, P. K., Siragusa, L., & Guttorm, H. (2020). Introduction: Toward more inclusive definitions of sustainability. *Current Opinion in Environmental Sustainability*, *43*, 77–82. https://doi.org/10.1016/j.cosust.2020.04.003

Wallace, K. J., Kim, M. K., Rogers, A., & Jago, M. (2020). Classifying human wellbeing values for planning the conservation and use of natural resources. *Journal of Environmental Management*, *256*, 109955. https://doi.org/10.1016/j.jenvman.2019.109955

White, S. C. (2015). *Relational wellbeing: A theoretical and operational approach*. Bath Papers in International Development and Wellbeing. Centre for Development Studies. Bath. University of Bath. Retrieved from https://www.econstor.eu/bitstream/10419/128138/1/bpd43.pdf

Woodhouse, E., Bedelian, C., Dawson, N., & Barnes, P. (2018). Social impacts of protected areas: Exploring evidence of trade-offs and synergies. In K. Schreckenberg, G. Mace, M. Poudyal (Eds.), *Ecosystem services and poverty alleviation: Trade-offs and governance*. Routledge. https://doi.org/10.4324/9780429507090

Woodhouse, E., Homewood, K. M., Beauchamp, E., Clements, T., McCabe, J. T., Wilkie, D., & Milner-Gulland, E. (2015). Guiding principles for evaluating the impacts of conservation interventions on human well-being. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *370*, 20150103. https://doi.org/10.1098/rstb.2015.0103

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

How to cite this article: Betley, E. C., Sigouin, A., Pascua, P., Cheng, S. H., MacDonald, K. I., Arengo, F., Aumeeruddy-Thomas, Y., Caillon, S., Isaac, M. E., Jupiter, S. D., Mawyer, A., Mejia, M., Moore, A. C., Renard, D., Sébastien, L., Gazit, N., & Sterling, E. J. (2021). Assessing human well-being constructs with environmental and equity aspects: A review of the landscape. *People and Nature*, 00, 1–18. https://doi.org/10.1002/pan3.10293