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PERSPECTIVE

Multiple-Benefit Conservation defined

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Abstract

A new term, Multiple-Benefit Conservation, has emerged in the conservation community, but has not been defined. We define Multiple-Benefit Conservation as *conservation efforts designed to simultaneously benefit local communities of people, enhance ecological function, and improve habitat quality for fish and wildlife*. Its key features are setting ecological and societal goals at the outset and defining success as achieving these goals simultaneously. This is in contrast to efforts aimed at one goal that *may* also produce co-benefits; it is inclusive of ecosystem services but not limited by a focus solely on human benefit. Strengths of this approach include that it is constructive, inclusive of multiple worldviews, easily communicated, solutions-oriented, and compelling. Multiple-Benefit Conservation as we define and describe it here appears to provide a pathway useful for designing conservation efforts that are more likely to be inclusive, that will quantify trade-offs among goals, and can embrace pluralistic conservation leadership.

KEYWORDS

co-benefits, conservation planning, ecosystem services, human dimensions, pluralistic leadership, trade-offs, win-win

1 | INTRODUCTION

Our efforts to conserve biodiversity are falling woefully short, with unprecedented rates of biodiversity loss and extinction. At the same time, the realm of conservation has broadened beyond a focus on biodiversity, acknowledging the importance of addressing intersecting issues such as mitigating and adapting to climate change, links between the environment and human health, sustainable development goals, and environmental justice. Conservation in practice has already begun a transition from a focus on individual at-risk species to one that recognizes the inextricable links between social and ecological systems. One approach to this, including at large conservation organizations, has been a focus on conserving nature primarily for the benefit of people (e.g., Kareiva, Groves, & Marvier, 2014; Ahlering et al. 2020). An alternative approach has been termed "nature and people" or "human dimensions" where the emphasis is on traditions, cultural structures, and institutions to create better outcomes for human societies and the natural environment (Bennett et al., 2017; Mace, 2014).

The concept of Multiple-Benefit Conservation has emerged recently in applied conservation planning, perhaps to acknowledge and address these intertwined ecological and social systems in a way that is easily understood by—and speaks to the range of interests that motivate—the many practitioners and other interested parties of conservation, including funders, local community members, policymakers, restoration ecologists, and

voters. The general concept appears to be gaining momentum, with a growing number of local, regional, and global efforts that are embracing the term "multiple benefits." We have also noticed "multiple-benefit" increasingly used as a modifier describing projects in the fields of water management and conservation (e.g., California Water Efficiency Partnership, 2020; Everard & McInnes, 2013), agriculture (e.g., Arbuckle, Tyndall, & Sorenson, 2015), and energy efficiency (e.g., Environmental Protection Agency, 2018), as well as a growing number of conservation initiatives. For example, the reduced emissions from deforestation and forest degradation (REDD+) program has recently expanded from a rigorous focus on greenhouse gas mitigation to include robust "multiple benefit standards" that represent real additional benefits such as water quality (Richards & Panfil, 2011). This evolution was driven in part by a survey that found that these co-benefits were the most important motive for carbon-offset buyers to choose forest carbon projects (ECOSECURITIES, 2010). One of the three strategic goals for the United Nations Decade on Ecosystem Restoration is to increase understanding of the multiple benefits of restoration (UNEP, 2020). In California, the concept is showing up in large funding programs and as a new division within one government agency. For example, the bond measure language of Proposition 84, which established $1 billion to implement regional water management plans, states that eligible plans shall "use an integrated, multi-benefit approach to project selection and design," and "projects that may be funded ... must provide multiple benefits" (Proposition 84, Public Resources Code § 75026(a)). Finally, the term is beginning to find its way into conservation journals (e.g., Golet, Anderson, Luster, & Werner, 2009; Rohde, Reynolds, & Howard, 2019).

We believe Multiple-Benefit Conservation has emerged from other concepts such as ecosystem services and win-win conservation as a relatively simple, meaningful way to address conservation for nature and people. To our knowledge, however, it has not been formally defined. We believe that the concept holds promise for conservation and that there is enough momentum around the use of the term that a formal definition and discussion of it is warranted. Here, we define Multiple-Benefit Conservation, discuss its strengths, and note as well the challenges and opportunities. Our intent is to provide all types of conservation practitioners with a simple, useful understanding of Multiple-Benefit Conservation so that we can build on this momentum and the opportunities Multiple-Benefit Conservation brings, in hopes of making our collective work more effective.

2 | DEFINITION AND STRENGTHS OF THE APPROACH

We define Multiple-Benefit Conservation as *conservation efforts designed to simultaneously benefit local communities of people, enhance ecological function, and improve habitat quality for fish and wildlife*. The key features of a Multiple-Benefit Conservation effort are defining multiple goals at the outset, and designing the effort to achieve all of these goals simultaneously. The goals can span the spectrum from ecological- to societal-benefits and will reflect the particular situation and values of the interested parties. Further, each goal can be defined in terms of its own metrics (e.g., X improvement in drinking water quality, Y rate of carbon sequestration, and at least Z individuals of a wildlife species); they do not have to be framed in terms of a common currency or economic valuation.

While Multiple-Benefit Conservation extends from and builds on several concepts including especially ecosystem services and win-win conservation, it also brings several new strengths and leaves behind several weaknesses, which we believe contribute to its current momentum within applied conservation planning. Multiple-Benefit Conservation is flexible in that it can focus on benefits to humans, as is the case with an ecosystem services approach (e.g., Fisher et al., 2011), but it does not need to and it can more readily include a broader range of goals that are not human-centered. Similarly, win-win conservation aims to achieve ecological and socioeconomic benefits with the latter primarily construed as solely economic benefits (DeGroot et al. 2010, Chaigneau & Brown 2016). In addition, win-win conservation has been criticized for failing to acknowledge the trade-offs between goals and implying that everybody will win (McShane et al., 2011, Chaigneau & Brown 2016) while wrestling with the trade-offs is a key component of Multiple-Benefit Conservation (see below).

Here, we expand on the definition, explore its strengths, discuss the challenges and opportunities to implementation, and further distinguish it from similar concepts.

2.1 | Multiple-Benefit Conservation

2.1.1 | Constructive

Multiple-Benefit Conservation, while to our knowledge not previously defined, is also not entirely new. For example, bird conservation efforts have been repeatedly recognized as providing co-benefits and as contributing

to ecosystem services, demonstrating scientific support for the concept of achieving multiple benefits with a single conservation project (see e.g., http://nabci-us.org/resources/relevancy-toolkit/). However, a key distinction is that a successful Multiple-Benefit Conservation effort is defined as achieving multiple goals simultaneously, in contrast to projects aimed at one primary goal but which *may* also produce desirable co-benefits as a side-effect. By defining multiple goals from the start, the initial design of a Multiple-Benefit Conservation effort is positioned to take into consideration any trade-offs or constraints among them to maximize chances of success. As well, the design could also capitalize on any potential synergies resulting from setting multiple goals at the outset.

2.1.2 | Inclusive of multiple worldviews and values

The global conservation community is extremely diverse (Sandbrook, Fisher, Holmes, Luque-Lora, & Keane, 2019), yet conservation strategy and decision-making are often dominated by unrepresentative groups (Gould, Phukan, Mendoza, Ardoin, & Panikkar, 2018, Sandbrook et al., 2019, Tallis & Lubchenco 2014). Conservation planning is frequently framed in terms of an economic valuation of the direct value for human benefit (Gómez-Baggethun & Ruiz-Pérez, 2011; Mace, 2014), yet "conservation capitalism" (emphasizing the role of corporations, economic arguments, and market-based approaches in conservation) is a polarizing strategy in the global conservation community compared to "people-centered conservation" (emphasizing the role of and benefits to the interested party) or "science-led ecocentrism" (emphasizing the role of science and benefits to species and ecosystems; Sandbrook et al., 2019). More broadly, people who might support and donate to conservation efforts are also diverse and motivated by a range of views on morality and ethics, which can be undermined by an emphasis on economic arguments and market-based incentives (Batavia et al., 2018; Bekessy, Runge, Kusmanoff, Keith, & Wintle, 2018). Therefore, the dominant approach to conservation strategy, planning, and decision-making frequently excludes the world views and values of many conservation practitioners and supporters, risks alienating critical partners and interested parties, and has been called unethical (Gould et al., 2018; Kohler, Holland, Kotiaho, Desrousseaux, & Potts, 2019). Because Multiple-Benefit Conservation requires only defining multiple goals, and does not require them to be measured using a common currency or framing them in terms of their economic valuation, this approach can avoid these risks. To be successful, conservation efforts need to be more welcoming and inclusive of multiple worldviews and values (Gould et al., 2018, Kohler et al., 2019), and because by definition Multiple-Benefit Conservation includes multiple values as goals of the conservation project, this approach can provide an inclusive, pluralistic framework for engaging with (and addressing the needs of) diverse groups of people.

2.1.3 | Easily communicated

Communicating conservation science and decision-making processes is key to an effective conservation strategy, but is unfortunately not one that conservation scientists are trained to do (Bickford, Posa, Qie, Campos-Arceiz, & Kudavidanage, 2012). Technical jargon that is difficult to understand can exclude partners and other interested parties from the conversation, but we believe that the term Multiple-Benefit Conservation is relatively easily understood by a wide range of potential users—for example, scientists, philanthropists, practitioners, local community members, and policymakers. Through conversations with colleagues, we also believe it is a term that is relatively easily translated into Spanish ("una conservación de beneficios múltiples," Edwin Juarez, pers. comm) and French ("conservation à bénéfices multiples," Amélie Lescroel, pers. comm.). In addition, "Multiple Benefit" or "Multi-Benefit" is a phrase already commonly found in products on store shelves, at least in the U.S., ranging from cat food to hair products, that should help make this concept relatively easy to the mainstream in conservation discourse. It also has the virtue of being "constructively ambiguous," in that users can agree in principle on the concept of designing a conservation project to meet multiple goals before getting bogged down in the details of defining those goals (Sayer et al., 2013). However, more dialogue about the term would be needed before assuming it is meaningful for any particular culture.

2.1.4 | Solutions-oriented

Conservation advocates for a single goal (e.g., an at-risk species), can often find themselves in conflict with advocates for other taxa, other environmental goals (e.g., alternative energy projects), or other goals that would benefit local communities of people (e.g., housing or jobs). Consequently, partners, funders, and interested parties are often forced to choose one side over the others, splintering the potential support and funding for accomplishing anything. This situation can contribute to a scarcity mindset, in which conservation advocates

preemptively constrain their goals to be much smaller than is needed in hopes of aligning with perceived feasibility and political support (Manning, Lindenmayer, & Fischer, 2006), while partners, funders, and other interested parties are put off by the negativity, conflict, and hopelessness of the situation. On the other hand, ignoring some of the trade-offs in favor of focusing only on the win-wins can similarly alienate some of the interested parties. While not a panacea for all conflict, and acknowledging that conflict can be good for conservation (Matulis & Moyer, 2016), Multiple-Benefit Conservation is a positive, solution-oriented framework for defining multiple goals simultaneously, explicitly examining the potential trade-offs and synergies between them, and designing projects to maximize the chances of achieving multiple outcomes. Hope and optimism are requirements for successful biodiversity conservation (Beever, 2000; Clayton & Myers, 2009; Swaisgood & Sheppard, 2011), and we believe that Multiple-Benefit Conservation is a hopeful yet realistic frame for bringing advocates for different goals together toward positive solutions.

2.1.5 | Compelling

Just as ecological diversity has been shown to confer ecological resilience (e.g., Oliver et al., 2015), we hypothesize that the diversity of goals inherent in Multiple-Benefit Conservation will result in more diverse support for conservation projects, a more diverse array of innovative projects implemented, and more durable conservation outcomes. For example, there was insufficient support from the U.S. Army Corps of Engineers for a project in California's Central Valley with a singular goal of improving flood protection for the local community of people, because the benefits did not outweigh the costs (Owens Viani, 2019). However, once the project expanded to include ecosystem restoration goals, with a diversified list of partners and funders, the new, multiple-benefit project was approved and implemented (Owens Viani, 2019). Similarly, ecosystem restoration projects to meet biodiversity conservation goals alone can be difficult to fund, but diversifying those goals to include carbon sequestration can bring in new partners and funding sources (Matzek, Stella, & Ropion, 2018).

3 | CHALLENGES AND OPPORTUNITIES

Because Multiple-Benefit Conservation starts with defining goals aimed at achieving multiple benefits simultaneously, there will naturally be challenges inherent in increasing project complexity (Rohde et al., 2019). For anyone who has worked on a conservation project, the challenges are familiar, but we believe employing a Multiple-Benefit Conservation frame can more clearly define these challenges and improve opportunities to address them. To start, simply defining and agreeing upon the project and research goals with several partners is daunting and frequently prioritizes the goals and interests of the funder. Goal-setting should reflect the diverse interests and values of the interested parties, and while this is already currently a challenge, there is evidence that the people included in this process are not yet diverse enough (Gould et al., 2018, Tallis & Lubchenco 2014). Marginalized groups are rarely authentically and equitably included in goal setting, yet are often directly impacted (Gould et al., 2018; Law et al., 2018; Taylor, 2016). Hence, there is an important opportunity to use the frame of Multiple-Benefit Conservation to include more people (and more diverse people) in conservation planning and practice than ever before. Because truly inclusive goal setting is extremely challenging in practice, especially because interested parties are likely to possess different levels of power, Pascual et al. (2017) provide a rationale and method for the incorporation of different values in decision-making.

Another challenge and opportunity lies in identifying and addressing trade-offs between goals. It has become popular in conservation to seek solutions that are win-win, usually referring to biodiversity conservation and economic development (McShane et al., 2011), but there is a temptation to focus only on maximizing a few benefits that can be achieved together relatively easily without considering the possible trade-offs. By defining multiple goals at the outset, the Multiple-Benefit Conservation frame provides an opportunity to expose goals that may conflict with each other and optimize the design of a conservation effort in recognition of this conflict. For example, Dybala et al. (2019) found that riparian restoration provided both bird conservation benefits and carbon storage benefits, but exposed a trade-off in that carbon storage was highest in the densest parts of the forest, exactly where bird abundance and diversity were lowest. Thus, both benefits cannot be maximized at the same time. A new riparian restoration project embedded in a Multiple-Benefit Conservation frame, with explicit goals of achieving both bird conservation benefits and carbon storage benefits defined at the outset, might be designed or managed differently to maintain a forest density that is optimized across both goals. For example, the acceptable range of values for each benefit could be defined (e.g., minimum bird abundance and minimum carbon stored), to identify the mutually acceptable range of forest densities required to meet both goals (e.g., Poff

et al., 2016). Crucially, these benefits *do not* have to be quantified in the same units (e.g., in terms of their economic valuation), but only in terms of the desired magnitude of each benefit and an understanding of how each is expected to change in response to the proposed conservation effort.

Trade-offs are already acknowledged in the conservation literature and approaches exist to help scientists, natural resource managers, and policymakers characterize and quantify benefits and trade-offs of multiple objectives (e.g., Bradford & D'Amato, 2012). While Multiple-Benefit Conservation provides an opportunity to optimize across multiple objectives, it cannot avoid the challenge of wholly incompatible objectives and the need for partners to negotiate, manage conflict, and collaborate productively (Hurst, Stern, Hull, & Axson, 2020; Redpath et al., 2013). Further, we caution that benefits and trade-offs should be considered on multiple spatial and temporal scales to identify who benefits and who pays a cost (Rodríguez et al., 2006). This caution is particularly important when keeping in mind the historical lack of inclusion in conservation decision-making and the very real harm that conservation efforts have imposed on some communities. For example, enactment of the Migratory Bird Treaty Act without consideration for northern indigenous peoples' traditional subsistence hunting forced communities to abandon or conceal these practices or risk criminal prosecution, contributing to fear and mistrust and further excluding these communities from migratory birds management (Wolfe, Paige, & Scott, 1990). The 1996 amendment to the Migratory Bird Treaty Act finally legalized subsistence hunting, defined multiple goals that included both bird conservation and the perpetuation of subsistence customs and cultures, and led to the creation of the Alaska Migratory Bird Co-management Council which formally includes Alaska Natives in management decisions regulating harvest (Alcorn, 2008). By authentically including more perspectives in goal-setting, the examination of benefits and trade-offs, and decision-making, we are hopeful that this kind of harm can be avoided in the future.

4 | STRENGTHENING THE APPROACH

Multiple-Benefit Conservation by its nature requires multidisciplinary science, spanning at least ecological and social sciences, as well as leadership, communication, and conflict resolution skills to work productively with multiple researchers, resource managers, policymakers, and, importantly, multiple interested parties. To realize its full potential, Multiple-Benefit Conservation will also require pluralistic leadership. Pluralistic leaders create an environment that values diversity, attempt to integrate all cultures into a project structure, minimize biases, and make sure the collective voices on a project are genuinely heard and represented (Cox, 1993). Because conservation leadership today is often dominated by unrepresentative groups (Gould et al., 2018, Sandbrook et al., 2019, Tallis & Lubchenco 2014), we recommend increased and improved efforts to include, support, and/or train a diversity of people concerned with conservation, with the leadership skills and interdisciplinary training we need.

Careful attention must be paid to avoid the pitfall of overpromising and under-delivering. It has become clear that projects sold as win-win conservation frequently fail to fully deliver the outcomes promised (McShane et al., 2011) and given the complexities inherent in any conservation project it will be inevitable that some multiple-benefit projects will not deliver all benefits or not at the magnitude expected. Furthermore, as with any novel concept, there is the risk that the term will be interpreted differently across stakeholders; this has occurred with the term "climate smart agriculture" leading to criticisms of greenwashing (Alexander, 2019). To strengthen the approach, Multiple-Benefit Conservation must therefore be realistic and transparent about the range of outcomes that can be expected and maintained and be clear about the risks to success. Additionally, the direction and magnitude of any benefit will likely change over time in response to changing environmental and social conditions. Hence, we suggest that regular monitoring of the goals of the project and the attitudes and perceptions of the project participants could help to determine if or when further intervention is needed and to provide clear communication to support project success long-term.

Like all conservation, one of the greatest challenges to Multiple-Benefit Conservation is how to include diverse voices with power inequalities in goal setting and decision-making and determining what trade-offs are acceptable in the context of social and environmental justice. Should we even consider trading-off some values over others? Progress on these issues is only just emerging and the recently established United Nations' Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is providing initial guidance (Pascual et al., 2017). However, there is a need for engagement between social and ecological sciences to address trade-offs among equity and ecological outcomes (Pascual et al., 2014). Practitioners of Multiple-Benefit Conservation should become familiar with IPBES and should consider engaging with social scientists at the outset of projects.

Multiple-Benefit Conservation is not the solution to the conservation crisis, but we believe it is a positive step,

one that integrates emerging societal issues with conservation in a formal yet flexible way. Further, it has the potential to do so in a way that authentically includes diverse worldviews and values which may prove critical for greater, more durable conservation outcomes.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

The idea for this Perspective was developed by all authors. Thomas Gardali wrote most of the manuscript with Kristen E. Dybala and Nathaniel E. Seavy contributing to every section including writing and research.

ETHICS STATEMENT

No data were collected or used for this paper. Institutional ethics review was not required. The manuscript only used the opinions of the authors.

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REFERENCES

Ahlering, M. A., Cornett, M., Blann, K., White, M., Lenhart, C., Dixon, C., ... Possingham, H. (2020). A conservation science agenda for a changing Upper Midwest and Great Plains, United States. *Conservation Science and Practice*, *2*(8), e236.

Alcorn, D. (2008). *The effectiveness of the 1996 protocol amendment to the migratory bird treaty with Canada establishing the Alaska migratory bird co-management process*. Report to the Alaska Migratory Bird Co-management Council.

Alexander, S. (2019). How does the meaning of climate-smart agriculture differ among stakeholders. *Future of Food: Journal on Food, Agriculture and Society*, *7*, 21–30.

Arbuckle, J. G., Tyndall, J. C., & Sorenson, E. (2015). Iowans' perspectives on targeted approaches for multiple-benefit agriculture measuring support for a paradigm shift in Agri-environmental policy. In *Sociology technical report 1038*. Ames, IA: Iowa State University.

Batavia, C., Bruskotter, J. T., Jones, J. A., Vucetich, J. A., Gosnell, H., & Nelson, M. P. (2018). Nature for whom? How type of beneficiary influences the effectiveness of conservation outreach messages. *Biological Conservation*, *228*, 158–166.

Beever, E. (2000). The role of optimism in conservation biology. *Conservation Biology*, *14*, 907–909.

Bekessy, S. A., Runge, M. C., Kusmanoff, A. M., Keith, D. A., & Wintle, B. A. (2018). Ask not what nature can do for you: A critique of ecosystem services as a communication strategy. *Biological Conservation*, *224*, 71–74.

Bennett, N. J., Roth, R., Klain, S. C., Chan, K. M. A., Christie, P., Clark, D. A., ... Wyborn, C. (2017). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biological Conservation*, *205*, 93–108.

Bickford, D., Posa, M. R. C., Qie, L., Campos-Arceiz, A., & Kudavidanage, E. P. (2012). Science communication for biodiversity conservation. *Biological Conservation*, *151*, 74–76.

Bradford, J. B., & D'Amato, A. W. (2012). Recognizing trade-offs in multi-objective land management. *Frontiers in Ecology and the Environment*, *10*, 210–216.

California Water Efficiency Partnership (2020). The multiple-benefits of water conservation. https://calwep.org/wp-content/uploads/2020/05/CalWEP_Multi-Benefits-Landscape-Transformation_May-2020.pdf

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), art36. https://doi.org/10.5751/ES-08204-210136.

Clayton, S., & Myers, G. (2009). *Conservation psychology: Understanding and promoting human Care for Nature*. Chichester, UK: Wiley-Blackwell.

Cox, T. (1993). *Cultural diversity in organizations*. San Francisco: Berrett-Koehler.

De Groot, R. (2010). Integrating the ecological and economic dimensions in biodiversity and ecosystem service valuation. In P. Kumar (Ed.), *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations*. (9–40). Oxford, UK: Earthscan.

Dybala, K. E., Steger, K., Walsh, R. G., Smart, D. R., Gardali, T., & Seavy, N. E. (2019). Optimizing carbon storage and biodiversity co-benefits in reforested riparian zones. *Journal of Applied Ecology*, *56*, 343–353.

ECOSECURITIES. (2010). *The Forest carbon offsetting report 2010*. Oxford: UK 35 p.

Environmental Protection Agency (2018). Quantifying the multiple benefits of energy efficiency and renewable energy. https://www.epa.gov/sites/production/files/2018-07/documents/epa_slb_multiple_benefits_508.pdf

Everard, M., & McInnes, R. (2013). Systemic solutions for multibenefit water and environmental management. *Science of the Total Environment*, *461-462*, 170–179. https://doi.org/10.1016/j.scitotenv.2013.05.010

Fisher, B., Bradbury, R. B., Andrews, J. E., Ausden, M., Bentham-Green, S., White, S. M., & Gill, J. A. (2011). Impacts of species-led conservation on ecosystem services of wetlands: Understanding co-benefits and tradeoffs. *Biodiversity and Conservation*, *20*, 2461–2481.

Golet, G. H., Anderson, B., Luster, R. A., & Werner, G. (2009). Collaborative planning fosters multiple-benefit restoration

projects on the Sacramento River. *Conservation Biology*, *23*, 1634–1637.

Gómez-Baggethun, E., & Ruiz-Pérez, M. (2011). Economic valuation and the commodification of ecosystem services. *Progress in Physical Geography: Earth and Environment*, *35*, 613–628.

Gould, R. K., Phukan, I., Mendoza, M. E., Ardoin, N. M., & Panikkar, B. (2018). Seizing opportunities to diversify conservation. *Conservation Letters*, *11*, e12431.

Hurst, K., Stern, M. J., Hull, R. B., & Axson, D. (2020). Addressing identity-related barriers to collaboration for conservation through self-affirmation theory and moral foundations theory. *Conservation Biology*, *0*, 1–9.

Kareiva, P., Groves, C., & Marvier, M. (2014). The evolving linkage between conservation science and practice at the nature conservancy. *Journal of Applied Ecology*, *51*, 1137–1147.

Kohler, F., Holland, T. G., Kotiaho, J. S., Desrousseaux, M., & Potts, M. D. (2019). Embracing diverse worldviews to share planet earth. *Conservation Biology*, *33*, 1014–1022.

Law, E. A., Bennett, N. J., Ives, C. D., Friedman, R., Davis, K. J., Archibald, C., & Wilson, K. A. (2018). Equity trade-offs in conservation decision making. *Conservation Biology*, *32*, 294–303.

Mace, G. M. (2014). Whose conservation? *Science*, *345*, 1558–1560.

Manning, A. D., Lindenmayer, D. B., & Fischer, J. (2006). Stretch goals and backcasting: Approaches for overcoming barriers to large-scale ecological restoration. *Restoration Ecology*, *14*, 487–492.

Matulis, B., & Moyer, J. (2016). Beyond inclusive conservation: The value of pluralism, the need for agonism, and the case for social instrumentalism. *Conservation Letters*, *10*, 279–287. https://doi.org/10.1111/conl.12281

Matzek, V., Stella, J., & Ropion, P. (2018). Development of a carbon calculator tool for riparian forest restoration. *Applied Vegetation Science*, *21*, 584–594.

McShane, T. O., Hirsch, P. D., Trung, T. C., Songorwa, A. N., Kinzig, A., Monteferri, B., ... O'Connor, S. (2011). Hard choices: Making trade-offs between biodiversity conservation and human well-being. *Biological Conservation*, *144*, 966–972. https://doi.org/10.1016/j.biocon.2010.04.038

Oliver, T. H., Heard, M. S., Isaac, N. J. B., Roy, D. B., Procter, D., Eigenbrod, F., ... Bullock, J. M. (2015). Biodiversity and resilience of ecosystem functions. *Trends in Ecology & Evolution*, *30*, 673–684.

Owens Viani, L. (2019). A multipurpose project helps build climate and flood resilience in California. *Landscape Architecture Magazine*, *109*(4), 50–58.

Pascual, U., Balvanera, P., Díaz, S., Pataki, G., Roth, E., Stenseke, M., ... Yagi, N. (2017). Valuing nature's contributions to people: The IPBES approach. *Current Opinion in Environment Sustainability*, *26*, 7–16.

Pascual, U., Phelps, J., Garmendia, E., Brown, K., Corbera, E., Martin, A., ... Muradian, R. (2014). Social equity matters in payments for ecosystem services. *Bioscience*, *64*, 1027–1036.

Poff, N. L., Brown, C. M., Grantham, T. E., Matthews, J. H., Palmer, M. A., Spence, C. M., ... Baeza, A. (2016). Sustainable water management under future uncertainty with eco-engineering decision scaling. *Nature Climate Change*, *6*, 25–34.

Redpath, S. M., Young, J., Evely, A., Adams, W. M., Sutherland, W. J., Whitehouse, A., ... Gutiérrez, R. J. (2013). Understanding and managing conservation conflicts. *Trends in Ecology & Evolution*, *28*, 100–109.

Richards, M., & Panfil, S. N. (2011). Towards cost-effective social impact assessment of REDD+ projects: Meeting the challenge of multiple benefit standards. *International Forestry Review*, *13*, 1–11.

Rodríguez, J. P., Beard, T. D., Jr., Bennett, E. M., Cumming, G. S., Cork, S. J., Agard, J., ... Peterson, G. D. (2006). Trade-offs across space, time, and ecosystem services. *Ecology and Society*, *11*, 28.

Rohde, M. M., Reynolds, M., & Howard, J. (2019). Dynamic multibenefit solutions for global water challenges. *Conservation Science and Practice*, *2*, e144.

Sandbrook, C., Fisher, J. A., Holmes, G., Luque-Lora, R., & Keane, A. (2019). The global conservation movement is diverse but not divided. *Nature Sustainability*, *2*, 316–323.

Sayer, J., Sunderland, T., Ghazoul, J., Pfund, J.-L., Sheil, D., Meijaard, E., ... Buck, L. E. (2013). Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses. *Proceedings of the National Academy of Sciences USA*, *110*, 8349–8356.

Swaisgood, R., & Sheppard, J. (2011). Hope springs eternal: Biodiversity conservation requires that we see the glass as half full. *Bioscience*, *61*, 427–428.

Tallis, H., & Lubchenco, J. (2014). Working together: A call for inclusive conservation. *Nature*, *515*(7525), 27–2.

Taylor, D. E. (2016). *The rise of the American conservation movement: Power, privilege, and environmental protection*. Durham, NC: Duke University Press.

UNEP (2020). Strategy of the United Nations Decade on Ecosystem Restoration. UNEP and FAO. Available from: https://wedocs.unep.org/bitstream/handle/20.500.11822/31813/ERDStrat.pdf?sequence=1&isAllowed=y

Wolfe, R. J., Paige, A. W., & Scott, C. (1990). *The subsistence harvest of migratory birds in Alaska. Technical Paper No. 197*. Division of Subsistence, Juneau, Alaska: Alaska Department of Fish and Game.

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