Biological Conservation 224 (2018) 71–74

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

Perspective

Ask not what nature can do for you: A critique of ecosystem services as a communication strategy

S.A. Bekessy[a,b,c,*], M.C. Runge[d], A.M. Kusmanoff[a,b,c], D.A. Keith[c,e,f], B.A. Wintle[b,c,g]

[a] ICONScience, RMIT University, School of Global, Urban and Social Studies, Melbourne, Australia
[b] Centre of Excellence for Environmental Decisions, Australia
[c] National Environment Research Programme, Threatened Species Recovery Hub, Australia
[d] US Geological Survey, Patuxent Wildlife Research Center, Laurel, MD, USA
[e] University of New South Wales, Centre for Ecosystem Sciences, School of Biological, Earth and Environmental Sciences, Sydney, NSW, Australia
[f] New South Wales Office of Environment and Heritage, Hurstville, NSW, Australia
[g] University of Melbourne, School of Biosciences, Melbourne, Victoria 3010, Australia

ARTICLE INFO

Keywords:
Message framing
Biodiversity
Ecosystem services
Marketing
Communications

ABSTRACT

Given the urgent need to raise public awareness on biodiversity issues, we review the effectiveness of "ecosystem services" as a frame for promoting biodiversity conservation. Since its inception as a communications tool in the 1970s, the concept of ecosystem services has become pervasive in biodiversity policy. While the goal of securing ecosystem services is absolutely legitimate, we argue that it has had limited success as a vehicle for securing public interest and support for nature, which is crucial to securing long-term social mandates for protection. Emerging evidence suggests that focusing on ecosystem services rather than the intrinsic value of nature is unlikely to be effective in bolstering public support for nature conservation. Theory to guide effective communication about nature is urgently needed. In the mean-time, communicators should reflect on their objectives and intended audience and revisit the way nature is framed to ensure maximum resonance.

1. The rise of ecosystem services

The concept of ecosystem services was developed as a communication tool in the 1970s to attract public interest in biodiversity conservation (e.g. Westman, 1977). Highlighting humanity's dependence on the services provided by nature was thought to be a way of "*telling stories that link biodiversity to the things that matter to people*" (Secretariat of the Convention on Biological Diversity (CBD), 2014).

Since then, the term has achieved global prominence and has evolved an economic focus, facilitating the valuation of biodiversity in monetary terms (Costanza et al., 1997). This puts decision-making in terms that are easier to communicate to decision makers, allowing trade-offs to be evaluated in a single (typically monetary) currency (Deliege and Neuteleers, 2015). Largely due to this fact, the last couple of decades have seen the economic interpretation of ecosystem services land squarely on the decision making table. While commodification of nature does not originate from the ecosystem services literature, the application of ecosystem services concepts often leads to attempts to quantify and monetize elements of biodiversity so that they can be valued and traded against other benefits.

The concept of ecosystem services is now pervasive in environment policy agenda setting. For example, the publication in 2005 of the UNEP Millennium Ecosystem Goals (Millennium Ecosystem Assessment, 2005) focused heavily on understanding the links between ecosystems and human welfare; the Intergovernmental Platform on Biodiversity and Ecosystem Services has a specific mandate to report on the services we derive from nature; the European Commission Biodiversity Policy includes a major initiative focused on the Economics of Ecosystems and Biodiversity (European Commission, 2016) and the IUCN has committed substantial resources to implementing ecosystem services programs (International Union for Conservation of Nature (IUCN), 2016). Following this trend, a proliferation of programs focused on ecosystem services (sometimes mixed with intrinsic arguments for conserving biodiversity) has emerged from organisations such as The Nature Conservancy, Conservation International, World Wildlife Fund, and Wildlife Conservation Society (Goldman and Tallis, 2009). Market-based instruments that often involve the commodification of ecosystem services (Deliege and Neuteleers, 2015) are fast becoming the policy instruments of choice for biodiversity management around the world (e.g. Ecosystem Marketplace, 2016). While we acknowledge that the ecosystem service concept can encompass many types of services and values (Schröter et al., 2014), it is chiefly anthropocentric

* Corresponding author at: RMIT University, School of Global, Urban and Social Studies, GPO Box 2476, Melbourne, Victoria 3001, Australia.
E-mail address: sarah.bekessy@rmit.edu.au (S.A. Bekessy).

https://doi.org/10.1016/j.biocon.2018.05.017
Received 18 October 2017; Received in revised form 25 March 2018; Accepted 18 May 2018
Available online 31 May 2018
0006-3207/

services, and often their corresponding economic valuation, that tend to be promoted through this frame.

2. The effectiveness of ecosystem services as a communications tool

Research in communication, sociology, psychology, and political science has shown that the way in which an issue is "framed" can influence the judgments an individual might make in relation to this issue. In reframing nature as a set of specific and quantifiable services, ecosystem services reinforces the market-driven view that nature is important only to the extent that it provides goods and services of (economic) value to humans (McCauley, 2006; Coffey, 2015). This ignores any intrinsic values people may have for nature (e.g. Schultz 2001), with its persuasive value relying on an assumption of human rationality informed by the "value" that is attributed to the services provided by nature. Many of the arguments for using the ecosystem services approach are centered on the idea that this allows the value of nature to be better included and properly considered by policy makers. By providing a dollar value for these hitherto "free" services, their value can be better weighed against competing values and interests, and thus afford "nature" greater regard than it has historically received in such cost-benefit analyses. Although far from clear-cut, this seems a reasonable approach to informing a cost-benefit analysis (which itself should be only one element of the decision making process).

However, the ecosystem services logic has not been confined to this context, and often appears in the wider conservation discourse, including as a deliberate technique for promoting nature conservation (Kusmanoff et al., 2017a). Given that humans are not strictly rational, are easily influenced by emotions and other biases (see particularly the advertising literature) and seldom change views owing only to being presented with new information (climate change is an example), there is a question as to the effectiveness of the ecosystem services approach as a communication tool. This raises the question of whether this shift in the way we frame our relationship to nature has delivered improvements in public engagement, conservation and environmental stewardship.

While academic publication on the topic of ecosystem services has grown exponentially in recent years (Cornell, 2011; West 2015), interest in biodiversity conservation by the media has over the same time period has plateaued (Legagneux et al., 2018). This is in contrast to the topic of climate change which has up to eight times the level of media covered compared to biodiversity, a discrepancy that cannot be explained by different scientific output between the two issues (Legagneux et al., 2018). This does not prove that the increased attention to ecosystem services is *causing* a plateau in media interest in biodiversity conservation, but these trends do suggest that the aim of increasing public interest in nature conservation has not been achieved via the increase in attention to ecosystem services. Importantly, over a similar period, almost every indicator of the status of the worlds' biodiversity has trended negatively, including increasing deforestation rates and increasing average risk of extinction for birds, mammals and amphibians (Secretariat of the Convention on Biological Diversity (CBD), 2014). Legagneux et al. (2018) argue that these biodiversity conservation challenges are simply not reaching the public and that improved communication strategies are urgently needed to raise public awareness.

3. Why ecosystem services may not be the best frame for public engagement

The concept of ecosystem services has arguably been very successful at integrating conservation in mainstream economics and sustainable development ideology and convincing academics to engage with concept (Norgaard, 2010). Other analyses have focused on the failure of the concept to deliver effective conservation action, particularly with respect to payment for ecosystem services schemes (e.g. Büscher, 2012; Wynne-Jones, 2012). Here we are focusing on the success of the term at engaging the public in biodiversity conservation.

There are a number of possible explanations as to why use of ecosystem services may not have been had the desired effect of promoting conservation engagement. The first is that programs focusing on ecosystem services are adopted at the expense of targeted conservation programs for biological diversity at genetic, species and ecosystem levels of organization (McCauley, 2006). The focus on ecosystem services is not delivering umbrella protection to biodiversity, rather it is taking attention and resources away from threatened species (McCauley, 2006). But this claim goes against the available evidence, with some studies arguing that threatened species programs have not suffered as a result of the focus on ecosystem services (Goldman and Tallis, 2009).

A second possibility is that the capacity for the public to engage with environmental issues has been dominated by climate change at the expense of biodiversity. Veríssimo et al., 2014 found evidence to support such trends in the coverage of these topics within the scientific and newspaper press, as well as the relative distribution of funding from key agencies. But does the public really have an upper limit to their capacity to consider environmental issues? Does concern for one necessitate a lesser concern for the other? While correlation does not imply causation, this result *does* point to the failure of conservation advocates to communicate the biodiversity crisis in as compelling a way as has been articulated for climate change, and this is supported by recent analyses (Legagneux et al., 2018).

It could be that framing biodiversity in terms of ecosystem services is not an adequately broad or effective communication approach to result in widespread change. People are generally more motivated to change behaviour by antecedent values, attitudes and social and personal norms than by rational thought (Azjen, 1991). Hence, supplying technically correct, logical information about the value of a tree to the economy is unlikely to effectively communicate to the public why we shouldn't cut it down. Combining ecosystem services and empathy arguments is also unlikely to work. Confusing the message by selling the idea of the economic benefits of nature, while also appealing to its emotional qualities feels incongruent and possibly offensive for some people who have an emotional connection to nature (Futerra, 2015).

4. Ecosystem services may undermine intrinsic values

The intention behind the use of ecosystem services to promote conservations is that representing arguments for nature as services that nature provides ultimately leads to a deeper appreciation of the intrinsic value of biodiversity (Goldman and Tallis, 2009). This argument suggests that such an approach may engage people who do not already have high levels of intrinsic care for nature. We know of no evidence that indicates that reinforcing instrumental values can actually generate intrinsic values, however, as we discuss in the following paragraph, there is evidence that it can *undermine* intrinsic values.

Motivational crowding-out is the process whereby intrinsic altruistic motivations for behaviour are replaced by extrinsic self-interested motivations when an external (generally monetary) reward is offered for the behaviour. The classic example is the child who is paid by her parents to complete a household chore; once the child expects to receive money for the task, they are willing to do it again only if they receive a similar monetary reward (Frey and Jegen, 2001). This is a concern for monetary incentives in conservation (Bekessy and Cooke, 2011; Rode et al., 2015). By framing nature as a collection of ecosystem services, these anthropocentric benefits have the capacity to act as extrinsic motivations for practicing conservation and may act to crowd-out intrinsic motivations to care for the environment. It has been demonstrated that even communicating an aspect of nature in terms of economically framed ecosystem services (i.e. in terms of valuation) can crowd-out intrinsic motivations for conserving that aspect of nature (Kusmanoff, 2017) and lead people to contribute less money to a

natural resource conservation fund (Goff et al., 2017). In the case of conservation advocacy, if people are consistently compelled to support conservation of nature that provides valuable ecosystem services, their intrinsic value of nature may be crowded-out such that they come to care less (or not to care) for those places in nature that do not offer sufficiently valuable (in dollar terms) services.

For crowding out to occur, the external incentive (e.g. money or in this case the ecosystem services) must be a factor in driving the behavior. For people who already have a strong appreciation of nature, ecosystem services provide an additional reason to care for nature, but do not drive this care (this is referred to as "crowding-in"). However, for those people with only a little intrinsic care for nature, ecosystem services may be their most tangible and compelling reason to conserve nature, and thus crowd-out the small degree of intrinsic motivation initially present. This means that for people with low intrinsic care for nature, ecosystem services framing of conservation messages may be counterproductive at fostering those values, while for people with a higher intrinsic care for nature, these messages may reinforce that care but will not achieve "additionality" in the recruitment of conservation supporters.

5. How *should* we frame biodiversity messages?

There is surprisingly little research into how people respond to biodiversity messages, but this information is important to understanding why our policies, management approaches and campaigns succeed or fail. The potential for a strong correlation between public concern and conservation policy and priorities (Martín-López et al., 2009) makes communicating biodiversity issues in ways that resonate with the general public a critical task.

So what *do* we know about how the conservation of nature should be communicated to improve public engagement? The first point is that the term biodiversity itself seems problematic, with repeated surveys pointing towards a gross lack of understanding of the term (for example, 62% of EU citizens did not know the meaning or had never heard of the term biodiversity (The Gallup Organisation, 2010). "Nature" is a less technical term that more people understand and relate to; indeed the IPBES has embraced this term (Díaz et al., 2015).

Telling horror stories about the biodiversity crisis and the loss of species is a strategy that is unlikely to convince skeptics of the need for action (Christmas et al., 2013). The key problem here is that people who will respond to these messages are those who are already concerned (Christmas et al., 2013). In an experiment to discover best approaches to convince climate skeptics to be pro-environmental, Bain et al. (2012) found that communicating the positive effects of climate action on interpersonal relationships or economic or technological development was more effective at encouraging pro-environmental intentions than communicating health risks of climate inaction. It is possible that positively-framed rationales are more effective at convincing skeptics than arguments focusing on negative consequences. However, targeted studies focussed on biodiversity rather than climate change are required to substantiate this claim.

Zelnio (2012) argues that ecosystem services could be the positive message needed to convince skeptics of the need to preserve nature and to motivate action. But the problem here is that research shows consistently low awareness of, and engagement with provisioning, regulating and supporting services (such as provision of clean water) (Christmas et al., 2013).

From a marketing perspective, the raw material for biodiversity communications strategies is the stuff of dreams: that is, the innate interest, awe and wonder for *nature* that remains remarkably high in many parts of the world (e.g. Lindemann-Matthies and Bose, 2008). A spiritual relationship with nature is central to many cultures and its stewardship is often perceived as a mandate from God (Negi, 2005). Children naturally gravitate towards the wonder and fascination of the natural world (Kellert, 2005): their first words are often the names of animals; books and films that appeal to children are about animals; favourite activities are zoos, aquariums and children's farms; and up to 90% of the dreams of children under 6 years are about animals (Peterson, 2000). Hence, we argue that it is the aesthetic, cultural and spiritual rewards that the diversity of life provides that is likely to drive most public interest in nature, not the delivery of services.

Some argue that framing nature as ecosystem services and focusing on "need" messages is not just missing opportunities, it might indeed be a dangerous strategy that can actively undermine positive action for species conservation (Crompton, 2010). There are two lines of argument. The first is that messages about the need for ecosystem services tend to reinforce egoistic values, which, in the long-term, undermine engagement with biodiversity (Crompton, 2010). The other argument is that focusing on services gives a false sense of security because it evokes the perception that 'nature will find its way' and will continue to provide services even if some component species are lost (Christmas et al., 2013).

6. Room for ecosystem services

We do not suggest that ecosystem services must always be counterproductive or offer zero value for conservation advocacy, instead we argue that there are better and more strategic ways to frame biodiversity conservation messages. We do ultimately rely on the multitude of ecosystem services that nature provides: clean air, clean water, pollination, recreation, and so many others. We should attend to the properties of the natural world that provide these services. In some instances, a focus on ecosystem services will lead to win-win outcomes for biodiversity, but this will not automatically be the case. Venter et al., 2009, for example, demonstrated that cost-effective spending for REDD+ (Reducing Emissions from Deforestation and Forest Degradation) would protect little biodiversity. Hence, we need specific strategies for managing both, but should be opportunistic regarding potential synergies.

Whether or not synergistic strategies can be found, the concept of ecosystem services is not likely to be the omnibus communication tool that its originators had hoped it would be (Westman, 1977). Indeed, as a broad communications strategy, it can have perverse outcomes, because it reduces the focus on nature to its utilitarian values, diminishing the focus on the fundamental aesthetic, ethical, spiritual, and stewardship values that are at the heart of our relationships with nature. In a decision-making context, a focus on ecosystem services tends to draw attention to variables that can be easily monetized, and away from those that can be more compelling in terms of communicating the importance of nature (Fisher and Brown, 2014).

Perhaps the deepest problem undermining nature messages is that communicators typically do not identify the desired audience nor define the objectives of communication strategies. Are we trying to protect biodiversity, conserve threatened species, set aside wilderness, create recreational opportunities, confirm the existence value of nature, or pursue a responsibility for stewardship? Are we trying to change people's beliefs, alter their values, or simply encourage them to behave in a way that will conserve nature? To whom are we communicating, what is the objective and how will we measure the success of our communication efforts? The answers to these questions will be key to deciding how best to frame nature to engage different sectors more actively in its conservation.

The common understanding that framing nature in terms of ecosystem services is a universally effective approach to promoting biodiversity conservation requires comprehensive evaluation. Indeed, the emerging (but slim) evidence points in the opposite direction—that focusing on "services" rather than the awe and wonder of nature is unlikely to be effective in bolstering broad public support for conservation. Currently, there is little rigor behind our decisions to use different strategies for engaging the public with nature, with little convincing research upon which to improve this situation. It is likely

that there are situations in which communicating nature in terms of ecosystem services *will* be effective (for example securing commitments for funding initiatives at high levels of government or appealing to industry). But we need to unpack this. In the meantime, communicators should think carefully about their objectives and intended audience and frequently revisit the way nature is framed to ensure maximum resonance (see Kusmanoff et al., 2017b for a guide).

Acknowledgments

SB, BW and AK were supported by the Australian Government through the Australian Research Council Centre of Excellence for Environmental Decisions (CE11001000104) and the Australian Government's National Environmental Science Program (NESP), Threatened Species Recovery Hub. SB was additionally funded by an Australian Research Council Future Fellowship (FT130101225). MR was supported by NESP and the US Geological Survey. Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

References

Azjen, I., 1991. The theory of planned behaviour. Organ Behav Hum Dec 50, 179–211.
Bain, P.G., Hornsey, M.J., Bongiorno, R., et al., 2012. Promoting pro-environmental action in climate change deniers. Nat. Clim. Chang. 2, 600–603.
Bekessy, S.A., Cooke, B., 2011. Social and cultural drivers behind the success of Payment for Ecosystem Services (PES). Pages 141–155. In: Ottaviani, D., El-Hage Scialabba, N. (Eds.), Payment for Ecosystem Services and Food Security. Food and Agriculture Organization, Rome.
Büscher, B., 2012. Payments for ecosystem services as neoliberal conservation: (re-interpreting) evidence from the Maloti-Drakensberg. South Africa. Conserv. Soc. 10, 29.
Christmas, S., Wright, L., Morris, L., et al., 2013. Engaging People in Biodiversity Issues. Final Unpublished Report of the Biodiversity Segmentation Scoping Study. Defra (Department for Environmental, Food and Rural Affiars), London, England.
Coffey, B., 2015. Unpacking the politics of natural capital and economic metaphors in environmental policy discourse. Environmental Politics 25, 1–20.
Cornell, S., 2011. The rise and rise of ecosystem services: is "value" the best bridging concept between society and the natural world? Procedia Environ Sci 6, 88–95.
Costanza, R., Steffen, W., Noone, K., et al., 1997. The value of the world's ecosystem services and natural capital. Nature 387, 253–260.
Crompton, T., 2010. Common cause: the case for working with our cultural values. UK: WWF-UK (World Wildlife Fund for Nature-UK) (100 pages).
Deliege, G., Neuteleers, S., 2015. Should biodiversity be useful? Scope and limits of ecosystem services as an argument for biodiversity conservation. Environ Value 24, 165–182.
Díaz, S., Demissew, S., Carabias, J., et al., 2015. The IPBES conceptual framework — connecting nature and people. Curr. Opin. Environ. Sustain. 14, 1–6.
Ecosystem Marketplace, 2016. Available from: http://www.ecosystemmarketplace.com, Accessed date: May 2016.
European Commission, 2016. The Economics of Ecosystems and Biodiversity. European Commission Website. Available from. http://ec.europa.eu/environment/nature/biodiversity/economics (accessed May 2016).
Fisher, J.A., Brown, K., 2014. Ecosystem services concepts and approaches in conservation: just a rhetorical tool? Ecol. Econ. 108, 257–265.
Frey, B.S., Jegen, R., 2001. Motivation crowding theory. J. Econ. Surv. 15, 589–611.
Futerra, 2015. Branding biodiversity, the new Nature Message. Futerra Sustainability Communications, London Available from. http://www.wearefuterra.com/wp-content/uploads/2015/10/Branding_Biodiversity.pdf, Accessed date: May 2016.
Goff, S.H., Waring, T.M., Noblet, C.L., 2017. Does pricing nature reduce monetary support for conservation?: evidence from donation behavior in an online experiment. Ecol. Econ. 141, 119–126.
Goldman, R.L., Tallis, H., 2009. A critical analysis of ecosystem services as a tool in conservation projects: the possible perils, the promises, and the partnerships. Ann. N. Y. Acad. Sci. 1162, 63–78.
International Union for Conservation of Nature (IUCN), 2016. Ecosystem Services. IUCN website Available from. https://www.iucn.org/about/union/commissions/cem/cem_work/cem_services/ (accessed May 2016).
Kellert, S.R., 2005. Building for Life: Designing & Understanding the Human-Nature Connection. Island Press, Washington, DC.
Kusmanoff, A., 2017. Framing the Conservation Conversation: An Investigation into Framing Techniques for Communicating Biodiversity Conservation. Doctor of Philosophy (PhD). Global, Urban and Social Studies, RMIT University.
Kusmanoff, A.M., Fidler, F., Gordon, A., Bekessy, S.A., 2017a. Decline of 'biodiversity' in conservation policy discourse in Australia. Environ. Sci. Pol. 77, 160–165.
Kusmanoff, A.M., Fidler, F., Garrard, G.E., Gordon, A., Bekessy, S.A., 2017b. Strategic Framing for more Effective Conservation Messages, Submitted to Frontiers in Ecology and the Environment. (in review).
Legagneux, P., Casajus, N., Cazelles, K., Chevallier, C., Chevrinais, M., Guéry, L., Jacquet, C., Jaffré, M., Naud, M., Noisette, F., Ropars, P., Vissault, S., Archambault, P., Bêty, J., Berteaux, D., Gravel, D., 2018. Our house is burning: Discrepancy in climate change vs. biodiversity coverage in the media as compared to scientific literature. Front. Ecol. Evol. http://dx.doi.org/10.3389/fevo.2017.00175.
Lindemann-Matthies, P., Bose, E., 2008. How many species are there? Public understanding and awareness of biodiversity in Switzerland. Hum. Ecol. 36, 731–742.
Martín-López, B., Montes, C., Ramierz, L., et al., 2009. What drives policy decision-making related to species conservation? Biol. Conserv. 142, 1370–1380.
McCauley, D., 2006. Selling out on nature. Nature 443, 27–28.
Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being. Island Press, Washington DC.
Negi, C.S., 2005. Religion and biodiversity conservation: not a mere analogy. Int. J. Biodivers. Sci. Manag. 1, 85–96.
Norgaard, R.B., 2010. Ecosystem services: from eye-opening metaphor to complexity binder. Ecol. Econ. 69, 1219–1227.
Peterson, B., 2000. Build Me an Ark. Norton, New York.
Rode, J., Gómez-Baggethun, E., Krause, T., 2015. Motivation crowding by economic incentives in conservation policy: a review of the empirical evidence. Ecol. Econ. 109, 80–92.
Schröter, M., van der Zanden, E.H., van Oudenhoven, A.P.E., Remme, R.P., Serna-Chavez, H.M., de Groot, R.S., Opdam, P., 2014. Ecosystem services as a contested concept: a synthesis of critique and counter-arguments. Conserv. Lett. 7, 514–523.
Secretariat of the Convention on Biological Diversity (CBD), 2014. Global Biodiversity Outlook 4. CBD, Montréal, Canada.
The Gallup Organisation, 2010. Attitudes of Europeans towards the Issue of Biodiversity. European Commission. Available from. http://ec.europa.eu/public_opinion/flash/fl_290_en.pdf, Accessed date: May 2016.
Venter, O., Laurance, W.F., Iwamura, T., et al., 2009. Harnessing carbon payments to protect biodiversity. Science 326, 1368.
Veríssimo, D., MacMillan, D.C., Smith, R.J., et al., 2014. Has climate change taken prominence over biodiversity conservation? Bioscience 64, 625–629.
Westman, W.E., 1977. How much are nature's services worth? Science 197, 960–964.
Wynne-Jones, S., 2012. Negotiating neoliberalism: conservationists' role in the development of payments for ecosystem services. Geoforum 43, 1035–1044.
Zelnio, K., 2012. The (Mis)use of messaging in biodiversity loss prevention. Sci. Am (January 4). https://blogs.scientificamerican.com/evo-eco-lab/the-misuse-of-messaging-in-biodiversity-loss-prevention/.