

# Rethinking biodiversity: from goods and services to “living with”

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## Abstract

Since the 1992 Convention on Biological Diversity, counting and mapping have come to dominate international debates around biodiversity protection. With the emergence of the Ecosystem Services concept, these counting and mapping efforts are increasingly imbued with an economic logic that argues that to save biodiversity, its goods and services must be given monetary value. This article offers a critical engagement with the Ecosystem Services discourse and the way it translates the diversity of nature into a single measure—a “currency”—to be included in systems of exchange. We argue that this conception of biodiversity is too narrow and potentially detrimental because it reduces biodiversity to a series of quantifiable fragmented parts that become liable to counting, mapping, and utilitarian use, and because it reduces social–natural relations to market transactions. Subsequently, we outline possibilities for conceiving and living with biodiversity that go beyond relations of counting, mapping, and commodification. It is important that biodiversity knowledge organizations, such as the recently sanctioned Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES), take these into account. Conserving a diversity of life requires acknowledging a diversity of values, knowledge and framings of biodiversity, and fostering a diversity of social–natural relations.

## Introduction

The recognition of biodiversity loss as a recognizable global environmental problem coincides with a surge in the global scientific effort by a wide variety of institutions and initiatives, such as the World Conservation Monitoring Centre, the Convention on Biological Diversity, the Global Biodiversity Outlook, the European Biodiversity Observation Network, or the Global Biodiversity Information Facility, to count, measure, and map the different ecosystems, species, and genotypes that exist in our world. They see it as their mission to increase taxonomic knowledge of the world's species, promote the collection of ever more data about biodiversity, and archive these in databases in order that they may be used for policy and decision making (Bowker 2005; Turnhout & Boonman-Berson 2011). As the examples of the Millennium Ecosys-

tem Assessment and The Economics of Ecosystems and Biodiversity demonstrate, the concept of Ecosystem Services plays an increasingly important role in these global biodiversity science-policy initiatives.

This article is a critical engagement with the political and technocratic deployment of knowledge by global initiatives in biodiversity science and governance, and its effects on biodiversity conservation practices and policy orientations. Our argument is as follows. First, we argue that technocratic approaches to biodiversity selectively privilege certain aspects of scientific knowledge while ignoring the plurality and diversity of knowledge-making in regards to biodiversity. Second, we explore how the emerging Ecosystem Services discourse of the recently sanctioned Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES) has so far followed a direction that complements a technocratic

approach with a perspective that focuses on economic valuation and financialization. Third, we present a basis for a critical analysis of the Ecosystems Services discourse and the policy orientations and practices it affords. We conclude by arguing that a wide diversity of knowledges, understandings, and valuations of biodiversity must be included in new biodiversity institutions, such as the IPBES, so that they can lead the way not only by rendering the value of biodiversity in terms that are commensurable with markets, but also by imagining appropriate ways of living with biodiversity.

## Biodiversity, science, and conservation

The general premise of many global biodiversity initiatives is that the availability of knowledge about biodiversity is a crucial precondition for effective biodiversity conservation. The Convention on Biological Diversity, for example, states that current deficiencies in taxonomic knowledge impact on “our ability to conserve, use and share the benefits of our biological diversity” (CBD 2007, pg. 1). This type of reasoning reflects a particular science-policy model that assumes a direct and somewhat deterministic relationship between the production and use of knowledge. It follows that obtaining more knowledge and distributing this knowledge more effectively by following the rules of appropriate science communication are viewed as solutions to address the lack of effective action to conserve biodiversity. This model has been robustly criticized in the case of the Intergovernmental Panel on Climate change (IPCC) and global climate science and governance (Hulme 2009; Beck 2010). What these critiques suggest is that simply obtaining and disseminating knowledge about the problem at hand is inadequate and that attempts to concentrate these knowledge gathering efforts may be barking up the wrong tree.

However, advocates of this model can be found not only in the policy domain but also among a group of conservation scientists who aim to enhance conservation by advocating the acceleration of biodiversity data collection. E.O. Wilson (2000, pg. 2279), for example, has argued that to achieve effective conservation it is important to “finish the Linnaean enterprise [and] describe and classify all of the surviving species of the world.” This rationale also underpins recent genomic approaches to documenting and archiving all biodiversity on the planet (Ellis *et al.* 2010; Waterton *et al.* in press). Although this model has considerable intuitive appeal, it fails to recognize the messy realities of and dynamic interactions between knowledge production and decision making processes (Waterton 2002; Lawton 2007). First, decision making processes are shaped by multiple ratio-

nalities and values, many of which are not considered as “knowledge.” Second, effective action does not necessarily require precise information, even though the lack of such information is often used as a reason not to take action (Dessai *et al.* 2009). Third, the model fails to recognize that far from being a neutral input that informs decision making, scientific understandings of biodiversity effectively shape decision making in particular reductionist ways that may be counter-productive for the kinds of broad-based decision making processes needed for effective conservation practices (Funtowicz & Ravetz 1993; Robertson & Hull 2001).

The last point above suggests that, the way in which biodiversity gets represented in biodiversity knowledge affects not only the way in which biodiversity is perceived and understood, but also the way in which it is enacted in policy, conservation, and management practices. We can use this general point to think more about the trend toward representing biodiversity as “ecosystem services.” As global biodiversity science-policy initiatives increasingly frame usable policy-relevant knowledge as knowledge that facilitates the exchange of ecosystem services in markets, the world that is represented in policy and decision making will increasingly be seen as consisting of ecosystem services that need to be counted, valued, governed, and exchanged (Robertson 2012). In other words, there is a risky circularity in these processes. A concern shared by many, as we explore below, is that attempts to accumulate knowledge according to particular logics—in this case ecosystem services and economic logics—work inside and perpetuate the very logics that have produced biodiversity loss in the first place, and that biodiversity conservation tries to rectify (Yusoff 2010). Ironically, this brings to market ever more aspects of biodiversity, whereas other aspects of biodiversity that currently have no or little value within these logics risk not being conserved at all, or even destroyed.

## The IPBES and the representation of biodiversity

In 2006, Loreau *et al.* (2006) argued that biodiversity is in need of representation by a science-based organization deemed capable—following the model of the IPCC—of generating useable knowledge about biodiversity and of communicating it to policy and decision making processes. It appears that this wish will be granted if the implementation of the IPBES remains steady-state.

A first critical question that arises is whether the IPCC is in fact an appropriate model to follow in the case of biodiversity (Hulme *et al.* 2011; Turnhout *et al.* 2012). Will the IPBES, just as the IPCC, become locked in by

the assumption of a tight relationship between science and policy (i.e., a technocratic version of science), or will it provide a forum for multiple scientific and nonscientific understandings of biodiversity? The initial rhetoric around this institution suggests the former. For example, the UNEP draft decision on the IPBES defends “the need to strengthen and improve the science-policy interface for biodiversity and ecosystem services” and proposes “a science-policy platform” to achieve that (UNEP 2011, pg. 1). Similarly, a press release states that the IPCC-like platform “will bridge the gulf between the wealth of scientific knowledge on the accelerating declines and degradation of the natural world, with knowledge on effective solutions and decisive government action required to reverse these damaging trends” (UNEP 2010a). Moreover, it will enhance policy relevance by facilitating a “closer integration of the different elements of the science-policy process—research, monitoring, assessment and policy development” (Perrings *et al.* 2011, pg. 1139). These citations demonstrate that scientific biodiversity knowledge is seen as universally representative, as neutral, as singular and as directly communicative from science to policy.

In reaction to this rhetoric, we question a relationship where specific scientific experts and technocrats can at their discretion decide which aspects of scientific knowledge to use in policy decisions or not, and how. The selection of the types of knowledge that are considered relevant and usable is not a neutral activity and necessarily reflects specific political and social priorities. If in the final instance this becomes the model by which the IPBES develops its own understanding and approaches to biodiversity, it will inevitably fail to become an open forum for the consideration of multiple scientific and nonscientific views of biodiversity, something which is necessary to effectively address the problem of biodiversity loss. A second critical question is whether the IPBES should place biodiversity in the economic domain. Given the use of the term “Ecosystem Services” in IPBES’ own title, together with the growing scientific and policy commitments to place a value on the “services” that nature provides, this is no longer even a question. The IPBES is already envisaged as an institution that will generate usable knowledge about the “multitrillion dollar services” that biodiversity produces (UNEP 2010b).

Thus, as we have outlined above, the IPBES and those involved in its creation promote an understanding of biodiversity that combines a technocratic approach, which relies on carefully selected scientific experts and/or knowledge to define, identify, measure, and map biodiversity, with an economic perspective that focuses on the concept of Ecosystem Services. These two perspectives combine in what we call the Ecosystem Services discourse. This discourse requires scientific knowledge, but

not just any type of scientific knowledge about biodiversity. It requires knowledge that is not only scientifically grounded but also usable and relevant, which currently means that it needs to reflect the political priorities of the Ecosystem Services discourse (Robertson 2004). Thus, the discourse selectively focuses on scientific knowledge about ecosystem services with the aim to enhance the economic value and political significance of biodiversity. The potential consequences of this Ecosystem Services discourse warrant close and critical scrutiny.

### **The ecosystem services discourse: counting, mapping, commodification**

As we have outlined above, the Ecosystem Services discourse promotes a technocratic and economic perspective on biodiversity. In particular, it frames biodiversity in specific reductionist terms: as ecosystem services that can be represented with a single measure. Subsequently, this provides the necessary basis for using this measure as the bearer of economic value, which in turn, enables the commodification of these services by incorporating them in systems of exchange. It is in this sense that the Ecosystem Services discourse contributes to the commodification of biodiversity.

Several scientists and practitioners in this field have reservations about the possibility and desirability of monetizing and trading biodiversity. Yet the Ecosystem Services discourse appears in many current conservation and resource management practices and is seen as an effective strategy to protect biodiversity. Biodiversity and conservation debates reveal that it is now not uncommon for conservationists to believe that—as McAfee & Shapiro (2010, pg. 580) put it—“the natural environment can best be safeguarded by valuing and managing “nature’s services” as tradable commodities.” It follows that so high are the global threats to bio-diverse regions of the world, their protection requires a price, a value, which can be expressed and realized as a credit. According to this logic, consumption, economic growth, and biodiversity conservation go hand-in-hand; the costs of maintaining the status quo, promoting conservation action, or allowing development on an area can become part of the equation and win-win solutions can be sought (Igoe & Brockington 2007; McAfee 1999; for a recent practical example of this approach see Harlow *et al.* 2012).

Although the Ecosystem Services approach is endorsed by many major conservation organizations, for example the World Wildlife Fund or Conservation International, there are serious problems with some of its underlying assumptions. First, research on common resource management shows that determining the value of an

ecosystem or a species is often a contentious issue whereby many distinct views and perspectives come into play depending on one's social, economic, educational, and political background (Forsyth 2003; White 2006; Ostrom *et al.* 2007). In particular, although many actors in these processes can be effectively targeted through economic incentives, many others cannot or prefer not to attribute monetary value to or invest in "goods" that have symbolic, social, or cultural relevance (Neves-Graca 2004). Hence, the common resource management literature has shown that there exist mechanisms that do not depend on financial incentives and economic logics and that can be much more effective—though not without their own problems—at securing the long terms sustainability of biodiversity. These include traditional belief systems and common land agreements (e.g., Berkes 2008; The Pastoral Communing Partnership 2008; Sasaki *et al.* 2010). These kinds of systems and mechanisms are particularly important in light of the second problem with the Ecosystem Services approach. The Ecosystem Services approach cannot guarantee long term conservation, not only because—as the notion of discount rate implies—commodities and services have a higher monetary value in the present than they will likely have in the future (Daly & Farley 2010), but also because subjecting these commodities and services to market forces means that their monetary value may in fact decline to the extent that all financial incentives for conservation are removed—something we are now beginning to witness in the global carbon market. Thirdly, in view of the fact that not all ecological value is translatable into economic or financial value (Berkes *et al.* 2000), the question is, what prioritizations and hierarchies will be created when economic values together with values not formalized in these systems enter into processes of decision making? Finally, when biodiversity is translated into a singular measure or currency that becomes the bearer of value, it may thereby enter into systems of banking and exchange and become the credit for the ongoing creation of debits, which, simply put, are acts of biodiversity destruction or loss. Thus, and this is particularly clear in offset schemes, biodiversity becomes the capital upon which future biodiversity loss or destruction can be exchanged (Robertson 2004).

Although putting a price on nature's services may appear to constitute a fairly harmless means by which to achieve both conservation goals and socio-economic objectives, it does not occur without ecological and social consequences. For example, elephants and whales are now commonly expected to earn their own conservation by providing tourism services (Duffy & Moore 2010; Neves 2010). Although whale hunting is no longer the essential economic activity it constituted in earlier cen-

turies, the commoditized whale watching of today is still being promoted as a means to save them from being hunted. Thus, the rendering of whales into a service toward this end does not in fact protect them from markets, but brings them to new markets and exposes them once again to human disturbance. As this example suggests, ecotourism is not necessarily about the creation of a potentially benign and sustainable market to replace a threatening and destructive one; it also constitutes the opening up of ecosystems and species to mass consumption. Thus, despite the powerful win-win arguments that generally accompany the Ecosystem Services discourse, considering nature as a service or commodity will not automatically benefit ecosystems, species, or the poorest (Kosoy & Corbera 2010; McAfee & Shapiro 2010; Büscher *et al.* 2012). In other words, they might not be effective even according to their own objectives (Walker *et al.* 2009; Moreno-Mateos *et al.* 2012).

These problems are recognized—though to varying extent—not only by critics but also by proponents of the Ecosystem Services approach. In that sense the approach is not a uniform or completed project; it is implemented in different ways, many of which do not involve the pricing and trading of ecosystem services, and there are many disagreements and ambiguities about key terms and principles (Dempsey & Robertson 2012; MacDonald & Corson 2012; Roth & Dressler 2012). However, instead of assuming that any such negative effects can be remedied through the perfection of these schemes, for example by the inclusion of so-called safeguards, we argue that the problems are of a more fundamental nature. The main issue is that there is a real risk that the single measure that is used comes to substitute the complex ecosystems, the value of which it seeks to represent. When that happens, the measure becomes what is valued, not what the measure represents. As Sullivan (2010, pg. 127) suggests, "markets do not in and of themselves produce moral behavior: Markets do not care if rainforests fall, if glaciers shrink, or if the values of indigenous cultures are displaced or captured in the service of capitalism. When nature [...] becomes converted into the dollar sign, it is the dollar not the nature that is valued." Finally, this discourse promotes particular activities and attracts particular actors who are in a good position to participate in these activities and as such, it risks rendering irrelevant possible alternative strategies and the actors that promote them (Keeley 1990).

The arguments and examples presented so far demonstrate that the Ecosystem Services discourse is predicated on several problematic assumptions and that it has generated mixed results in practice. It may well be that the commodification of biodiversity, as promoted through the ecosystem-services discourse, will end up enhancing

accelerated exploitation—for example when the price of an ecosystem service drops below a certain threshold—just as much as protection.

## From goods and services to “living with”

Perhaps what is most at stake in the refiguring of the current biodiversity discourse is the fundamental question of our *relationships* with the diversity of organisms with whom we co-inhabit this planet. The discourses of biodiversity, to date—including the Ecosystem Services discourse—have focused on the generation of ever more precise knowledge with the assumption that if this knowledge is followed by effective communication, it will translate into a particular desirable ordering of social–natural relations. These discourses are emblematic of what we might call the project of modernity. But what this project has also done is conceptually separate humans from nature (Latour 2004; Hinchliffe 2007). Within this project, ecosystems have been studied as if humans are not part of it.

In reality however, and as extensively discussed in anthropology and political ecology, humans, and nature have always been and continue to be entangled in varied and complex ways. Such entanglements can be—though not exclusively—oriented around ideas of value and commodity (Palsson 2009). However, few of them can be represented solely by a singular numerical measure or monetary value. It has long been recognized that commodities have a “social life,” most of which is unrelated to their commodity status (Appadurai 1996). Moreover, even the nature that has become commodified has other relations which deserve understanding and scrutiny. We argue here that it would be a mistake for conservation bodies like the IPBES to prioritize certain human–nature relationships—measuring, counting, commodifying—in their endeavors to provide a platform for saving global biodiversity. Our main concern with this approach concerns the kinds of relationships, activities and strategies such a focus leaves out. Rather than perceiving human–nature relationships through a strong focus on Ecosystems Services, as implied in the IPBES’ title, we want to suggest that even institutional strategies for global biodiversity conservation must research into these human–nature entanglements, their variability, their multicultural, and “multinatural” roots (Vivieros de Castro 1998), and the different forms in which such varied relations persist. This will result in a richer understanding of biodiversity as part of a rich variety of social–natural relations (Braun 2002; Raffles 2010).

This may appear a tall order for hard-won global institutions like the IPBES. It may also appear as a plea

to “go back” to some pre-modern age, retreat from western habits of rationalization, or deny the extent to which commodifying and instrumental relations do shape human–nonhuman interactions. Yet, this is not our point. Research in the social sciences and humanities has created the scope to be critical about fundamental assumptions concerning the “modern” separation between humans and nature and the ideals of comprehensive knowledge, control, and commodification (Toulmin 1990; Haraway 1996; Latour 2004). However, allowing for the fact that we do live in a modern world, or one that has been fundamentally re-ordered by modernity, this critique does engender the question, “so what can we do?” We consider three possibilities below.

The first thing is to look more carefully at the diversity of human relations with biodiversity. Researchers are beginning to document the many, even myriad, kinds of different relationships that have been crafted over millennia between humans, nonhumans, and things which involve many other qualities besides that of counting or commodification (Ingold 2000; Clark 2003; Hinchliffe 2007; Hird 2009). To take a rather prosaic example from the present, studies of volunteers in ecological restoration and natural history have demonstrated that people in a variety of places shape their relations with nonhuman biodiversity in multiple ways and practices that go far beyond counting, controlling or commodification (Ellis & Waterton 2004; Lorimer 2007; Lawrence & Turnhout 2010; Buizer et al. 2012). Such volunteers are motivated to use their own time and labor to observe, record or restore the natural world around them for different compelling reasons: for reasons of affect, for a desire to maintain tradition, for reasons of spirituality, for a desire to innovate, for a desire to be part of a social network, to take part in collective action, and so on. Learning about these kinds of activities can give us not only a sense of the diversity of nature–society interactions, but also of the things that make these interactions tick—the underlying motivations and satisfactions that make people feel that what they are doing is worth something—outside of rational, market or commodifying relations. Understanding the interactions that ordinary people have with their everyday environments must surely be a resource for any institution concerned to nurture social–natural relations.

Second, we can not only learn about but also build on existing social–natural relationships and practices. A number of researchers have begun thinking in different ways about “living together” (Bird David 2008) “cohabiting” (Raffles 2010), and “living with” (Hinchliffe 2007) in relation to the natural world. And as all humans already do “live with” biodiversity—and often in ways that are not overtly market oriented or amenable to quantification and rationalization—new institutions can learn



from these existing practices and relationships (Berkes *et al.* 2000). These include practices of pastoralism, agriculture, wildlife management, and natural resource management (Van der Ploeg 1993; Goldman 2007; Nadasdy 2011).

Our third suggestion is to avoid creating singular measures to represent the heterogeneous and proliferating relationships between humans and biodiversity (such as recently proposed by Halpern *et al.* 2012). Making life, and lives, commensurable through standardized currencies—a key driver in the Ecosystem Services discourse—may be highly valued by institutions like the IPBES; but it is also inadequate as it may end up marginalizing those relationships that are not represented in governance and policy arenas. A diversity of relations, we argue, is necessary for a diversity of life.

What we are suggesting requires inclusive processes of inquiry with diverse holders of knowledge and a commitment to understand the variety of ways in which humans and nature have forged and continue to forge different relationships with each other. Such processes of inquiry need to be done carefully, symmetrically and creatively to enable the development of common perspectives for action in ways that respect rather than dismiss differences (Verran 2002; Latour 2010). We acknowledge here that the IPBES does recognize the need for pluralistic inputs to its processes. For example, it has recognized the importance of indigenous knowledge in a recent press release (UNEP 2012). So far however, this appears to be a nod to social inclusion that has taken place largely in the margins. Thus, we are concerned that the diversity of understandings that the inclusion of local and indigenous knowledges could potentially introduce, will be co-opted and “integrated” into mainstream knowledge production systems in problematic, instrumental and impoverished ways. These ways might conform to scientific standards, but strip divergent knowledges away from the contexts from which their meanings and values derive (Agrawal 1995). Our hope, on the other hand, is that the IPBES might become an institution that truly interrogates what “living with” biodiversity could mean today, and that it commits to investigating and fostering a variety of ways in which mutually beneficial relationships between nature and society can be supported, perpetuated, modified, or re-invented.

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