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Biodiversity Conservation

Review Article

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Abstract

Globally, the biodiversity conservation has gained a lot of support. This is because of the concern for the economic wellbeing of people living in and near biodiversity-rich areas. Also, economic drivers are the main threats to biodiversity. This policy of using economic instruments is being used on a case-by-case basis worldwide. A review of the biodiversity conservation from a global perspective is important to facilitate learning from issues resulting from their implementation. This article documents and reviews the biodiversity conservation. An analysis of demand or supply classification suggests that more instruments are targeted at increasing supply of biological resources for human use. A review of literature and field documents was also employed to determine trends in the conservation. A major trend observed is the relatively low investments in economic instruments used for biodiversity conservation in developing countries, even though such countries tend to be rich in biodiversity.

Keywords: economic instruments, biodiversity conservation and development, conservation strategy.

Introduction:

Biodiversity refers to the variety of life. It is seen in the number of species in an ecosystem or on the entire Earth. Biodiversity gets used as a measure of the health of biological systems, and to see if there is a danger that too many species become extinct. The United Nations designated 2011–2020 as the United Nations Decade on Biodiversity.The location of and threats to biodiversity are distributed unevenly, so prioritization is essential to minimize biodiversity loss. To address this need, biodiversity conservation organizations have proposed nine templates of global priorities over the past decade. Here, we review the concepts, methods, results, impacts, and challenges of these prioritizations of conservation practice within the theoretical irreplaceability/vulnerability framework of systematic conservation planning. Most of the templates prioritize highly irreplaceable regions; some are reactive (prioritizing high vulnerability), and others are proactive (prioritizing low vulnerability). We hope this synthesis improves understanding of these prioritization approaches and that it results in more efficient allocation of geographically flexible conservation funding.

People care most about what is close to them, so most responses to this crisis will be local or national (3). Thus, approximately 90% of the $6 billion of annual conservation funding originates in and is spent within economically rich countries (4). However, this leaves globally flexible funding of hundreds of millions of dollars annually from multilateral agencies (such as the Global Environment Facility), bilateral aid, and private sources including environmentally focused corporations, foundations, and individuals. These resources are frequently the only ones available where conservation is most needed, given that biodiversity is

unevenly distributed and the most biodiverse places are often the most threatened and poorest economically (5).

This study aims at presenting a consolidated global perspective of experiences of the use of economic tools for biodiversity conservation. The objectives of the study are to determine and describe the following:

- The role of economics in biodiversity conservation.
- The economic instruments being used for biodiversity conservation and the justification for their use.
- Some global trends and results of biodiversity conservation.

Observation:

Two general observations are apparent. First, most land (79%) is highlighted by at least one of the prioritization systems. Second, despite this, a noticeable pattern emerges from the overlay of different approaches. There is significant overlap among templates that prioritize irreplaceable regions (11–16), among those that prioritize highly vulnerable regions (11), and among those that prioritize regions of low vulnerability (14, 19, 20), but not between approaches across each of these three general classes (table S1). This provides useful cross-verification of priority regions. These patterns of overlap reflect two approaches to how vulnerability is incorporated into conservation in the broadest sense: reactive (prioritizing areas of high threat and high irreplaceability) and proactive (prioritizing areas of low threat but high irreplaceability). The former are considered the most urgent priorities in conservation planning theory (10) because unless immediate conservation action is taken within them, unique biodiversity will soon be lost. The latter are often de facto priorities, because the opportunities for conservation in these are considerable. Biodiversity conservation clearly needs both approaches, but the implementation of each may correspond to different methods. On the one hand, large-scale conservation initiatives may be possible in wilderness areas, such as the establishment of enormous protected areas (one example is the 3,800,000-ha Tumucumaque National Park, created in the Brazilian state of Amapa´ in 2003). On the other hand, finely tuned conservation will be essential in regions of simultaneously high irreplaceability and threat, where losing even tiny patches of remnant habitat, such as the sites identified by the Alliance for Zero Extinction, would be tragic.

Impact of Global Prioritization.-

The appropriate measure of impact is the success of prioritization in achieving its main goal: influencing globally flexible donors to invest in regions where these funds can contribute most to conservation. Precise data are unavailable for all of the approaches, but hot spots alone have mobilized at least $750 million of funding for Both civil society and government organizations often use the recognition given to regions a global conservation priorities as justification when applying for geographically flexible funding. In addition, the global

prioritization systems must have had sizeable effects in the cancellation, relocation, or mitigation of environmentally harmful activities, even in the absence of specific legislation. Unfortunately, resources still fall an order of magnitude short of required conservation funding (4). Nevertheless, the dollar amounts are impressive, and represent marked increases in conservation investment in these regions.

Discussion:

Threats to Biodiversity and Approaches to Biodiversity Conservation Both biodiversity and sustainable development are currently threatened by human action. Direct threats include habitat degradation and loss, habitat fragmentation, overexploitation or resources, species invasion and climate change (Groom et al, 2006). High losses driven by land-use change and management (e.g. for pasture, food crops and bioenergy crops), commercial forestry, infrastructure development, habitat encroachment and fragmentation, pollution (e.g. nitrogen deposition) and climate change are projected in parts of Asia, Europe and Southern Africa (OECD, 2012). Habitat degradation and loss (as well as fragmentation) are largely caused by conversion, modification, and fragmentation of natural ecosystems for alternative uses such as agriculture and infrastructural development, which do not maintain species diversity or which undermine the provision of vital ecological services. These changes in land use are often driven by the perception that employing land for alternative use would generate higher economic returns (Norton-Griffiths and Southey, 1995). Land use changes often result in irreversible changes to the habitat whose natural systems and component species are destroyed and replaced (Ehrlich and Kremen, 2001). Overexploitation is largely due to the increasing demand for natural resources because of increasing human population. Due to human migration and other factors, several species are introduced in new areas where they invade and Consilience Ekpe: Economic Instruments for Biodiversity Conservation dominate native species. Climate change - which is being observed globally - is making the results of these threats worse. Scientific information now indicates that though climate change is a natural process, human consumption patterns contribute to its increase. These threats are resulting in many more species becoming endangered. The 2008 update of The International Union for Conservation of Nature (IUCN) Red List includes 44,838 species, of which 869 (2%) are Extinct or Extinct the Wild; 16,928 (38%) are threatened with extinction (with 3,246 Critically Endangered, 4,770 Endangered and 8,912 Vulnerable); 3,513 (8%) are Near Threatened; while 5,570 (12%) have insufficient information to determine their threat status (Data Deficient). The number of extinctions might well exceed 1,100 if the 257 Critically Endangered species tagged as 'Possibly Extinct' are considered (IUCN 2008a). A review of the trends in the numbers of endangered species by Ayoo (2008) indicates an increasing number of endangered species. European Commission (2008) indicates that the current decline in biodiversity and the related loss of ecosystem services will continue and in some cases even accelerate – some ecosystems are likely to be damaged beyond repair. It estimates that if human development continues in a "business-as usual" scenario, 11% of natural areas in 2000, 40% of the land currently under low-

impact forms of agriculture and 60% of coral reefs could be lost by 2050. These studies indicate that human actions play a big role in the decline of biodiversity.

Public Awareness

Mobilizing public support across countries, cities, companies and communities would be among the keys to a successful year. "De-mystifying terms such as biodiversity and ecosystems and communicating complex concepts and sometimes obscure scientific terms, will also be vital to get people on board," said UNEP's Executive Director.

"Linking livelihoods, the combating of poverty and the relationship between biodiversity and natural systems with the health of economies needs to set the tone. Equally the link between not only the threat from climate change but the role of living organisms and systems in buffering humanity against the worst impacts of global warming are messages that need to be heard loud and clear," he added.

From Global to Local Priorities

The establishment of global conservation priorities has been extremely influential in directing resources toward broad regions. However, a number of authors have pointed out that global conservation prioritization has had little success in informing actual conservation implementation (8). Separate processes are necessary to identify actual conservation targets and priorities at much finer scales, because even within a region as uniformly important as, for example, Madagascar, biodiversity and threats are not evenly distributed. Bottom-up processes of identification of priorities are therefore essential to ensure the implementation of area-based conservation. Indeed, numerous efforts are underway to identify targets for conservation implementation. Many focus on the site scale, drawing on two decades of work across nearly 170 countries in the designation of important bird areas. There is an obvious need to expand such work to incorporate other taxa and to prioritize the most threatened and irreplaceable sites. Such initiatives have recently gained strong political support under the Convention on Biological Diversity, through the development of the Global Strategy for Plant Conservation and the Programme of Work on Protected Areas. Both mechanisms call for the identification, recognition, and safeguarding of sites of biodiversity conservation importance. Meanwhile, considerable attention is also targeted at the scale of landscapes and seascapes to ensure not just the representation of biodiversity but also of the connectivity, spatial structure, and processes that allow its persistence (53). Global conservation planning is key for strategic allocation of flexible resources. Despite divergence in methods between the different schemes, an overall picture is emerging in which a few regions, particularly in the tropics and in Mediterranean-type environments, are consistently emphasized as priorities for biodiversity conservation. It is crucial that the global donor community channel sufficient resources to these regions, at the very minimum. This focus will continue to improve if the rigor and breadth of biodiversity and threat data continue to be consolidated, which is especially important given the increased accountability demanded from global donors. However, it is through the conservation of actual

sites that biodiversity will ultimately be preserved or lost, and thus drawing the lessons of global conservation prioritization down to a much finer scale is now the primary concern for conservation planning.

Conclusion:

One obvious trend from this study is that there are a lot more supply instruments than demand instruments worldwide. This could be because of the need to increase supply of biological resources to satisfy human needs and wants. This is especially important because of the slower growth of natural resources compared to the demand for them by an increasing human population and other factors.

Current research methodologies are biased because they fail to use controls, which would be required in an experiment. This is because the sites at which conservation programs are implemented are not selected randomly (Ferraro and Pattanayak (2006). I therefore suggest that future research in evaluating the effectiveness of economic instruments should use controls by using matching method which can account for observable correlated covariates. The results of this will present more objective evaluations of economic instruments used for biodiversity conservation.

However, they studied the effectiveness of protected area networks and not economic instruments. Another issue for future research and conservation project implementation is the need to account for the value of the resources to be conserved before deciding the type and quantity of economic instruments to be used. This is not clear in current research and projects. An example is that GEF funds by policy are to pay for incremental costs, which is the difference between the benefits that accrue to the implementing country and benefits that accrue to the whole world. However no empirical valuation has been documented to be used to determine what the incremental cost will be. This process is even not accounted for in the in GEF's project cycle policies and procedures (GEF, 2007). Generally, economic instruments being used for biodiversity conservation are serving good economic as well as conservation purposes. Based on current research, they contribute a lot to biodiversity conservation. They are, however, not panacea that can be used on their own and should therefore be used as complements and supplements of other biodiversity conservation strategies.

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