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## Environmental Protection and Affection in East Africa

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OPEN PEER COMMENTARY

# Environmental Protection and Affection in East Africa

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This article questions the degree to which ecological theory can be used as justification for protection of ‘natural environments’ as well as in determining which portions or features of those environments should be protected. As have others, Mark Sagoff points to a range of uncertainties and difficulties involved in the use of ecological theory ‘either to conceptualize what to preserve in the natural world or to understand the reasons to preserve it.’ Rather than the use of ecologic concepts (‘scientization of the environment’ in his terms), he suggests that ‘the nature that should be counted as “environmental” comprises wild places that—because of their beauty, history, intricacy, and majesty—people care about,’ and that nature should be defined more on the basis of ‘personal affection’ than scientific analysis.

Sagoff does not, however, critically examine or provide actual or hypothetical examples of the application of such ‘affective criteria’ to formulating a conservation strategy. Nor does the article discuss the history or current state of affective responses to nature, including, for example, such contrary trends as the history of dissent in the US and elsewhere over the establishment and management of national parks, or more broadly, the history of commitment to ‘taming’ rather than protecting nature. Moreover, the paper is strongly premised on objective and subjective conditions in the US and other wealthy nations and does not consider how very different conditions in the developing world may affect its perspectives and conclusions.

We suggest that the article’s premises and prescriptions are not well suited to the conditions and challenges in most developing countries. This is particularly true in sub-Saharan Africa, where we conduct research on the social and ecological impacts of protected areas. We will briefly cite features and cases from East Africa that indicate difficulties with the paper’s arguments and point to a more pragmatic approach to justifying and identifying the objectives for protection of natural environments.

In many respects we agree with Sagoff’s critiques, and agree that in East Africa and elsewhere, the relevant criteria for protection of natural environments should not—and mostly cannot—invoke ‘primeval nature’ or ecologic processes undisturbed by human

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activity. African environments have such a long history of human habitation and use, as well as a massive expansion of human impact since the mid-20th century, that it is very difficult to identify areas that are or have historically been unaffected by human activities. Although this accords with many of the author's critiques, these points have been recognized in ecologic literature for some time, and much of the ecologic theory Sagoff criticizes is obsolete. One of the weaknesses of his paper is that conservation, an important aspect of environmental protection, is more the realm of conservation biology than systems ecology, and his main tie to conservation biology is Soulé's article, which was written in 1985. Both ecology and conservation biology have changed enormously since then, and there is no longer any assumption by scientists that the landscapes to be conserved are stable, primeval, or even undisturbed.

However, neither can decisions on environmental protection pragmatically be based on a person or group's affective appreciation of nature's beauty. Affective valuations of nature can be important—perhaps more as goals than as decision criteria. But esthetic valuations vary greatly across individuals and groups, they are likely to change over time, and they would be extremely difficult to assess and use in practice. Moreover, there are almost always tradeoffs in the costs and benefits of protection that need to be considered, as well as the disparate distributions of who bears the costs of protection and to whom the benefits accrue.

Instead, we submit that the objective should be to achieve a desired set of balances in a continuum from relatively undomesticated to highly domesticated environments, at a range of spatial scales and in a context of rapid and widespread change. The basic questions involve whether and how much space to preserve for relatively undomesticated areas that harbor undomesticated fauna and flora even though they are not primeval, not entirely indigenous, and not unaffected by past or present human activity. In fact, what currently exists in East Africa, and many other regions is a dynamic patchwork of (mostly expanding) areas of highly domesticated landscapes and (mostly contracting) undomesticated landscape fragments of varying sizes that represent a range of biomes. In some cases, the domesticated and relatively undomesticated landscapes overlap, particularly in savanna regions, and in others they are separated by sharp boundaries.

The mid-altitude forest parks of the three main countries of East Africa and their surrounding human landscapes present the most stark boundaries in the region between domesticated and undomesticated landscapes. Every one of the protected mid-altitude forests in the three large countries of East Africa—Kenya, Tanzania, and Uganda—is surrounded by dense and growing human populations, and the boundaries of the protected forests are all clearly visible in satellite images (unlike savanna parks in this or other parts of Africa). All forest parks are bordered by intensively farmed landscapes, with varying combinations of small farms and larger commercial agricultural enterprises. Uganda, for example, has five protected mid-altitude forests that are national parks, whose combined area ( $\sim 3300 \text{ km}^2$ ) is about 1.6% of the country's land area. The total population living within just five km of the park boundaries is estimated as over 1.1 million in 2010, or over 3.4% of national population. Over 2 million people, almost 7% of the national total, are estimated to live within 10 km of the parks' boundaries. Fifty to sixty years ago, most of these forests were surrounded by sparsely populated landscapes. Today, they are islands of relatively undomesticated habitat surrounded by highly populated intensively domesticated landscapes. The enormous growth of population around them partly reflects the high rate of population growth in each of the countries (whose total populations increased

almost six-fold between 1950 and 2010), but it has also been strongly enhanced by migration to these productive areas from other regions.

Most of the forest parks in East Africa contain species of plants (trees and herbaceous species) and animals (particularly primates, forest elephants, and other mammals, birds, and arthropods) no longer found in the highly domesticated landscapes around the parks. Many species are restricted to the protected forests. In the absence of protected boundaries, it is highly likely that the remaining forests would be converted to agriculture and other domesticated land uses. Outside the protected areas are often smaller unprotected or lightly protected habitat fragments, all of which are declining in extent and species diversity. Similarly but at a larger scale, unprotected mid-altitude forest areas, such as the Mau Forest complex in Kenya, have diminished sharply through conversion to agricultural land by both small-scale farmers and large-scale enterprises, and have been subject to extraction of timber, animal populations, and other resources. There are plenty of reasons to believe that, in the absence of protection, almost all of the mid-altitude forests and most of the wildlife within them will disappear fairly rapidly and be absorbed into the expanding domesticated landscapes around them.

This does not mean that people do not place value on remaining forests. In our research, many current residents cite their environmental service benefits, particularly in improving climate and rainfall (Harterter & Goldman, 2011). However, the land, wood, and some of the fauna represent potential resources that would rapidly be exploited and converted in the absence of protected boundaries. Moreover, those who live near park boundaries are subject to the hazards of animal pests that attack their crops, livestock, and sometimes their families. Few local residents express appreciation for the presence of undomesticated animals, even when they note the environmental benefits of forests.

Why protect remaining portions of nature in East Africa? It is not because they represent primeval undisturbed ecosystems. Neither is it because popular appreciation for nature overwhelmingly favors its protection, though in at least some cases, local residents believe that some elements of nature provide some environmental services. However, in the absence of formal enforced protection, most large remaining portions of nature will disappear for at least three interconnected reasons: (a) conversion of undomesticated to domesticated land can benefit many people (poor and/or rich); (b) undomesticated nature has costs and risks for many people, especially those living near it (in addition some benefits); (c) extraction of natural products (e.g., timber, ivory; oil, etc.) can disproportionately benefit some people; others may also benefit though at lower levels, or they may be harmed, or may be indifferent, but they mostly can't or won't prevent extraction on their own. Overall, at least some evidence indicates that people in East Africa and other developing regions can often appreciate and accept protection of nature if it is seen as protected fairly from and for all, and if at least some of their losses and foregone gains from protection are compensated. As in today's richer countries, appreciation for nature is likely to grow over time with protection. But the ultimate justification for protection should include leaving space for undomesticated species and habitats as a human moral obligation.

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