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Opinion
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Can Agricultural and Conservation Be Separate?

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Opinion

In his challenging document "Half earth: Our planet's fight for life," noted biologist E. O. Wilson proposes the goal of setting aside 50% of the world's surface to preservation of biodiversity. With his erudite writing and eminence as a scientist, Professor Wilson's position is likely to seem attractive, to some. Many will find it misguided, indeed almost pollyannish in its romantic biophilia. My own position, taken in its extreme form, is that 100% of the world's surface should be dedicated to the preservation of biodiversity -- the question is not really how much but how to do it. But that is not my concern. I cite Wilson for his extreme position, one that would imply that all the world's necessities (food and other natural resources) could be obtained in 50% of the world's surface, which might imply enormous intensification of all human activities there. Following arguments made in our book "Nature's Matrix" I do not really object to setting aside 50% for the preservation of earth's biodiversity, but rather am concerned with what happens in the other 50% Furthermore, 50% simply will not be enough to avoid the massive extinction we are currently involved in. Professor Wilson's vision of 50% of the area in a vast collection of fragments of "natural" vegetation would not, according to well-accepted ecological theory (indeed some of which he himself helped develop), preserve all the biodiversity. A massive extinction debt (already in place) would condemn perhaps half of the world's species (or 25% or 75% -- the figure cannot be estimated presently) species to eventual extinction.

There is an alternative extreme. Dutch ecologists Jef Huisman and Menno Schilthuizen, responding to what is obviously a social construction, "Dutch Nature," note in a popular article (Published in the Volkskrant, a major Dutch daily newspaper),

". . . nature is not a fixed diorama, and the pursuit of a constructed nature of predefined composition is a potentially disastrous course. It would be better for nature conservation to consider more general goals: what should be the extent of biodiversity and what limits are acceptable within which it is allowed to fluctuate? What should be the nature of the overall food web? Such global indicators would enable us to develop monitoring programs and not suggest that we immediately panic if an alien species invades or a native species plummets. It would be of more value to conservation if we were to shed the idea of a fixed blueprint of 'Dutch nature' and acknowledge the dynamic aspects of that Dutch nature. "

In other words, these Dutch ecologists are basically arguing that (at least in the Netherlands), the entire notion of 'nature" is clearly a constructed idea. If conservation is to mean anything, it is necessary to take a more scientific approach and define terms that are measureable and can be studied scientifically so as to make decisions about "nature conservation." They are effectively saying, as many other analysts have said before about romantic concepts such as pristineness, that such an approach clearly does not make sense for a country like the Netherlands.

We extend these important observations and apply them equally to the rest of the world. No place on earth has been completely untouched by *Homo sapiens*, and even if it were, there is no reason to believe that its current state is somehow eternal, as we know from many fossil sequences. The so-called pristine rain forests of the Amazon basin, for example, are riddled with current and anthropological evidence of massive human modification of the landscapes in the recent past, apparently fostering intensive soil management for intensive agriculture. Palynological studies of the eastern forest biome of North America, show dramatic shifts in species composition, strongly suggesting that the famous "climax" of early community ecologists is likely a temporary state after all, calling into question the entire idea of pristineness. Early ecologists used to

talk about the "Oak/Hickory climax" as one of the major pristine forest types of eastern North America, yet we now know it is a temporary vegetation formation resulting from Native American hunting and agricultural management, gaining pristine status through the need for White colonists to claim a "wilderness" devoid of real people. Many other examples can be cited.

This leads me to an admittedly extreme position. There is nothing really natural to start with, so the struggle to "preserve nature" is a fool's errand, a statement that I must immediately clarify, to avoid being quoted out of context. It is an extreme that I construct for heuristic purposes.

As might be expected, I defined these two extremes so I can position myself in the "rational" middle. Wilson is wrong but the characterization of the "there is no such thing as nature," is wrong too. But both contain kernels of truth. Wilson's persistence in defending the "little things that run the world" (insects, spiders, fungi, bacteria, etc...) certainly is correct, and his unstated, but I think probably true, feeling that we know so little of how those little things function, especially when they are all interacting with one another -- feeding on each other, competing with one another for food, occupying each other's favorite territories, sharing diseases with one another, etc.... -- we probably could best preserve them by not doing anything, by making an area free from any human activity whatsoever. Yet, in the end, in face of our acknowledged ignorance, this also may be nothing more than a fool's errand.

Moving away from the two extreme positions, there are some analysts who take a similar position to E O. Wilson, arguing that we must categorize the land into preserved versus non-preserved (the later of which is mainly agricultural). The non-preserved area presumably functions to provide *Homo sapiens* with what it needs, so if we make it as productive as possible, we need less of it and thus can devote more to preserved area. That is, we can spare more land for nature conservation if we intensify production on the non-spared land. Other analysts take a position closer to the other extreme, and view the non-preserved habitat as an additional important repository of biodiversity to be shared with productive activities. This debate between land sparing and land sharing is similar to previous attempts at simplifying the problem of conservation (the SLOSS debate, the Forest Transition Model (FTM), Integrated Conservation Units (ICUs), and others, represent, in my view, poor formulations of the problem in the first place.

My alternative might be termed "Whole earth: Our planet's only chance," and acknowledges that all ecosystems are effectively open systems, with species coming and going, surviving for a while in some local places, but eventually going extinct, only to be recolonized from other areas in the future. This dynamic (most recently referred to as metacommunity dynamics) occurs whether we are talking about fragments of "natural nature" or extensive large areas of "natural nature." The problem is not what is in those fragments or large areas, but what is in between. That is, biodiversity dynamics operates at a large landscape level with some patches of the landscape amenable to some species but not others, other patches useful not as perennial repositories of particular populations but as temporary way stations (sometimes referred to as propagating sinks) for species to migrate from one patch to another. The point is that the focus of conservation needs to include the entire landscape. Allowing for a few refuges in the middle of a biological desert (which is what most of industrial agriculture has become), may make romantic conservationists feel as though some preservation is happening (since they can imagine a "wilderness" or "pristineness" when hiking or motoring), but such a position, while politically convenient, is a biological disaster. Extinctions will build up from local to regional, and without the continual local replenishment from migration, will turn into global extinctions. It is precisely the reason we vaccinate people for diseases -- we reduce the migration (transmission) potential of the disease organism from fragment to fragment (person to person) and, by reducing the migratory (transmission) potential of the disease organism, we make it go locally extinct (stop the epidemic). I presume it is obvious that this epidemiological strategy is not something we should be trying to do in the case of conservation.

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