

Pivotal cultural values of nature cannot be integrated into the ecosystem services framework

In a recent issue of PNAS, Daniel et al. (1) attempted to advance the integration of cultural values and cultural ecosystem services (ES) into the ES framework. Although I agree with the authors that cultural values are of eminent importance, I see two flaws in their argument.

The range of cultural values correlating to ecological structures and functions is much more limited than they claim. Many cultural values attaching to the natural/cultivated environment cannot be addressed in this way. An area's appropriateness for recreational activities like fishing or walking can be assessed in this way, but not its value with respect to feelings of belonging, cultural heritage, and other symbolic meanings. These essentially rely on an area's unique character; thus, only an increase in characteristic elements will augment a landscape's cultural value, whereas addition of uncharacteristic ones will diminish it. This value can be assessed only through hermeneutic approaches that determine how far an actual landscape reflects the idea of this landscape and that judge how far the given arrangement corresponds to the specific meaningful scenery expected in this geographical region by the users (2, 3). Because the assessment of elements and their arrangement relates to this specific idea, parameters cited by the authors like "species richness," "habitat diversity," and "percentage of green trees retained" are inappropriate. Although each landscape may be identifiable by a combination of general parameters, these are not suited to operationalize the assessment of its cultural meanings and values (as is true for, say, Thomas Cole's paintings).

If a natural/cultivated environment has symbolic meanings, and thus is associated with emotions and moods, ecosystems are typically neither the object of these values nor do they contribute significantly to them. Ecosystems consist of an ecological community and its abiotic environment, which, together, form a system of causally interacting components. However, the objects of cultural meanings in this regard are neither ecosys-

tems nor complexes of ecosystems but shaped phenomena like mountains, lakes, forests, and symbolic landscapes (4, 5). A lake's shimmering surface that invites us to contemplation is not an ecological object. Landscapes are basically life-worldly aesthetic unities with symbolic meanings, arrangements of symbolic objects but not systems of interacting biophysical objects. Similarly, the sense of a poem results from a meaningful arrangement of words and not from a pattern of ink on paper. Instrumental and cultural values of nature adhere to categorically different objects: the former to ecosystems and the latter to aesthetic-symbolic objects. Wood and roses are both products of ecosystems; however, although the instrumental values of wood result from properties produced by nature, this is not true of the cultural value of roses in the US national floral emblem. Admittedly, ecosystems produce the plants and animals that we perceive as parts of landscapes; however, the object "cultural landscape" is a product of a specific way of seeing within the cultural framework of symbolic experience (4, 5).

Thus, pivotal cultural values attaching to the natural/cultivated environment cannot be integrated into the ES framework, and should not be called cultural ES.

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