LETTER

Discussion of forest definitions and tree cover estimates for Haiti

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In PNAS, Hedges et al. (1) estimate that only 0.32% of "primary forest" cover of Haiti remains. They argue the situation is dire and predict that Haiti will have no remaining primary forest by 2035 (1). We highlight several assumptions in their forest definition parameters and subsequent national extrapolation that result in subjective and potentially biased results—a phenomenon that the authors paradoxically note is common in forest cover estimates (2). The exclusion of extensive secondary forest, regrown before and since 1988, incorrectly establishes this arbitrary date as a baseline condition and ignores the likelihood that some of these 1988 stands included secondary forests. Additionally, their approach discounts a well-known forest classification standard—established in Haiti, for Haiti—that includes forest categories (and unknown biodiversity) that would be excluded from their national estimate, based on their primary forest definition (3). Although Hedges et al. (1) advocate the application of their model globally, their definition makes it virtually impossible to restore primary forest in Haiti or elsewhere.

Excluding forest types in their initial conditions (1984 Landsat image) may result in erroneous national estimates in later years. Furthermore, Hedges et al. (1) assume that the entire surface of Haiti was once covered with primary forest. However, evidence suggests that as little as 35 to 55% of the land area of Haiti may be capable of supporting primary forest (4, 5). Topography and prevailing winds result in orographic effects that impair the establishment of forests that would meet their primary forest definition (6, 7).

Several aspects of Landsat land cover classification are problematic and may bias the results. For example, annual medoid composite images for land cover analyses may introduce significant systematic bias. The medoid method description (8) makes it clear that composites should be created for images only within a given season. Annual medoid composites could introduce a systematic downward bias in tree cover estimates as a result of including images from the two dry seasons, especially since these images may be preferentially selected due to cloud-free conditions. Furthermore, Hedges et al. (1) selectively apply the United Nation's Food and Agricultural Organization's forest definition using the 0.5-ha patch size, but with a strict 70% canopy cover criteria, rather than the standard 10%.

We share the concerns of Hedges et al. (1) for protecting the remaining forests in Haiti; however, the bar that their article sets may prevent Haitian policymakers, donors, technical experts, and others from recognizing historically documented forests and seeking innovative solutions to restore degraded secondary forests and promote reforestation. Haitians meet most of their domestic energy needs not through the felling of primary forests but through sustained charcoal production on tree-covered land including secondary forests, woodlands, woodlots, and arboreal fallow. A strictly conservationist approach to forest protection may miss opportunities to encourage more sustainable charcoal production to reduce pressure on forest resources (9). Because of the portrayal of Haiti as a worst-case scenario of deforestation, the article by Hedges et al. may result in negative policy reverberations and implications globally. Although reforestation and conservation in Haiti can be challenging and difficult, there is evidence of successful reforestation efforts, supporting equally important human and ecosystem functions (10).

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