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Forum

Corruption and conservation: The need for empirical analyses. A response to Smith & Walpole

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Smith & Walpole (2005) focus on a heretofore little examined issue of unknown importance: the role of corruption in affecting biodiversity conservation outcomes. Unfortunately, there are no well-executed empirical studies of the relationship between corruption and conservation to guide practitioners. As noted by Smith & Walpole, however, the role of corruption in affecting other economic outcomes has been the subject of numerous theoretical and empirical analyses. These other analyses offer useful insights to conservationists precisely because the biodiversity context is representative of a larger class of contexts in which power is delegated to self-interested bureaucrats. Readers interested in the topic would do well to take a close look at the references in Smith & Walpole, as well as visiting the World Bank's website on corruption and governance (World Bank, 2005).

To many readers it may seem obvious that corruption is bad for conservation. Indeed, Smith & Walpole tend to emphasize the negative effects of corruption on biodiversity outcomes. However, there are many obvious relationships in the conservation literature that were eventually shown to be wrong or more complicated than originally thought (e.g. 'Poverty drives biodiversity decline, and thus raising incomes can arrest the decline'). Thus, it is worthwhile to emphasize that corruption can have both positive and negative effects, and these effects can be different across scales. For example, a corrupt government may be less likely to attract direct foreign investment for petroleum exploration in sensitive ecosystems (Bohn & Deacon, 2000), but more likely to impede the performance of conservation practitioners working in the same ecosystems. A corrupt government is less likely to invest in infrastructure development in rural areas, which often leads to ecosystem conversion, while also being more willing to allow illegal logging. Economists (Heyes & Rickman, 1999; Harrington, 1988) have shown that, in some cases, exempting environmental violators from penalties can actually be beneficial if tolerating violations in one period or sphere of policy induces greater compliance in other periods or policy areas. In many low-income nations it is precisely the opportunity for private gain from conservation projects that has generated so much conservation support among governmental and non-governmental organizations (the latter are often staffed by current or former government employees shut out from conservation funds directed around government channels).

Even if the net effects of corruption on conservation outcomes were negative, the cure for corruption will not necessarily improve conservation outcomes. For example, decentralization of government power is promoted globally as a way to reduce corruption (Vergara, 1999). Decentralization has effects on ecosystems directly, by allowing local actors more authority over the use of their resources, and indirectly through its effect on corruption and public expenditures. Direct effects on biodiversity may be positive, such as improving the management of extractive resources (Edmunds, 2002), or negative, by disaggregating the public benefits from biodiversity and thus lowering support for making biodiversity available in sufficient quantities (Chapman, 2003). With regard to corruption, decentralization can encourage it by enhancing bureaucrat incentives to act for one's own private gain (Persson & Tabellini, 2000), or it can discourage it by fostering inter-jurisdictional competition that dissipates the gains from corruption (Arikan, 2004; Fisman & Gotti, 2000). Henderson & Kuncoro (2004) argue that decentralization reduces corruption only to the extent that decentralization reduces regulations (because corruption stems from the power to regulate and control). A decrease in regulations, however, may do more harm to ecosystem protection than the current corruption does. With all of these effects working in competing directions on biodiversity outcomes, one can see how daunting the task is for analysts to untangle the relationships between corruption and conservation outcomes.

Although Smith & Walpole point the reader to articles on corruption and economic outcomes, other articles further illustrate that the relationship between corruption and environmental outcomes can be complex, and highlight the need for good theory as well as good empirical analysis. For example, Frediksson *et al.* (2003) use theory and data to argue that corruption reduces the stringency of environmental laws in the United States. Using theory and cross-national data, Frediksson

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& Svensson (2003) find a similar effect, but note that the effect disappears as political instability increases. The theoretical model of Damania (2002) demonstrates that, even if corruption were reined in, the potential for corruption (in the absence of acts of corruption) can still impede the ability of regulators to control environmentally degrading activities.

The potential complexity of the relationship between corruption and conservation outcomes underscores an important point: no progress will be made in this area if biologists continue to work on these issues in isolation. Collaborating with economists and political scientists is requisite not only because of the theoretical perspectives offered by these disciplines, but also because economists and political scientists are better trained than biologists in conducting empirical evaluations of the effects of socio-political variables.

Even if corruption were clearly correlated with ecosystem and species decline, one cannot infer causation. What we really want to know is 'What would the conservation outcome look like in the absence of corruption, but with all the other observable and unobservable characteristics unchanged?' Of course, we cannot observe this counterfactual outcome and must use observations on the variability of corruption across nations and across time to identify corruption's effect. However, choosing which nations will serve as controls to make inferences about the counterfactual is not easy. For example, if nations with a high abundance of commercial timber species are both more likely to have corruption and more likely to experience ecosystem conversion, then a comparison of average outcomes across corrupt nations and less corrupt nations suffers from selection bias, whereby characteristics that influence conservation also influence the probability of having high levels of corruption. Having to identify high and low levels of corruption also highlights the measurement problem associated with empirical studies of corruption. Analysts use a variety of measures, ranging from corruption conviction rates among government employees in high-income nations to Transparency International scores in all nations.

The case of illegal trade in wildlife, highlighted by Smith & Walpole, provides another example of the difficulty in identifying the effect of corruption on conservation outcomes. Is corruption a cause of illegal wildlife trade or simply a result of such trade (i.e. the high potential payoffs lead to many attempts at rent extraction)? Or are corruption and trade jointly determined? In a statistical study of water pollution, Pargal *et al.* (1997) noted that government inspections and firm emissions are not likely to be independent, but rather jointly determined. Hence they used appropriate econometric methods (in this case, two stage least squares) to estimate jointly an inspection model and an emissions model. They found that even when increased emissions prompt further inspections, the additional inspections have no effect on subsequent emissions. Their results provide strong indirect evidence of the effects of corruption (inspections could be merely a mechanism for eliciting bribes, rather than a regulatory tool for improving the environment).

Issues of causation, selection bias and simultaneity are important but, unlike in other social policy fields, these issues are rarely addressed in the biodiversity conservation literature. Simple correlations and poorly specified empirical models mean little when working in a field in which action is required.

As Smith & Walpole note 'even if corruption does play an important causal role, the extent to which it should be prioritized over other known threats to biodiversity cannot currently be determined.' This point cannot be overemphasized. Those of us who publish research are evaluated on the persuasiveness of our analysis. We often fall into the trap of emphasizing one factor (e.g. corruption), urging that something be done (e.g. champion anti-corruption measures), and failing to identify the tradeoffs inherent in implementing our recommendations (e.g. what do we give up by spending scarce conservation resources trying to reduce corruption in low-income nations?). Rather than advocating a partial analysis of the role of corruption in conservation outcomes, Smith & Walpole correctly recommend that corruption be included as an explanatory variable in long-overdue, well-designed analyses of conservation outcomes (i.e. studies that include a number of factors posited to influence conservation outcomes). In partial analyses, analysts generally find what they seek, and waste time and energy doing so.

If empirical analyses suggest that reducing corruption is indeed a priority for action, conservation practitioners and researchers would do well to return to the existing literature on combating corruption before formulating a response. As Smith & Walpole note, corruption is a rational, strategic response to incentives, and thus a successful solution must depend on changing the payoffs from the choice to engage in corruption. Economists have demonstrated, however, that changing these payoffs is not straightforward. For example, Basu *et al.* (1992) showed that penalties imposed on the bribe giver reduces the level of corruption. In contrast, Mookherjee & Png (1995) demonstrated that an increase in the fines imposed on the bribe taker only leads to higher bribes being paid. Besley & McLaren (1993) scrutinized the common claim that increasing the wages of bureaucrats can diminish the gains from bribe taking and found that only under certain conditions can wage improvements deter corruption.

In the end, Smith & Walpole point to a long-known, but persistent, problem within the field of biodiversity

conservation: the appalling paucity of rigorous theory and well designed, empirical analyses of (1) the driving forces of ecosystem and species decline and (2) the relative effectiveness of interventions aimed at reversing this decline. Unless well-trained social scientists are encouraged by conservation scientists to take an interest in the global decline of biodiversity, we will make little progress in stemming this decline.

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