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Explaining Global Patterns of International Aid for Linked Biodiversity Conservation and Development

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Summary. — There is little systematic knowledge about the nature, extent, and trends of international aid for projects that link biodiversity conservation and development goals. This study uses a new dataset to analyze spatial and temporal patterns of such aid globally over the past three decades. Results reveal significant donor selectivity in aid allocation, though linked conservation and development aid comprised more than two-thirds of all biodiversity-related assistance. Biodiversity aid generally was directed to biodiversity-rich, well-governed countries, but countries able to exert greater political leverage secured more linked aid than aid targeted to conservation without a stated development objective.

Key words — conservation finance, environmental aid, foreign aid, aid allocation, biodiversity conservation, sustainable development

1. INTRODUCTION

Policies and programs designed to integrate biodiversity conservation and poverty reduction remain a major focus of national governments, international funding agencies, and implementing organizations (Sachs *et al.*, 2009; Tallis, Kareiva, Marvier, & Chang, 2008; United Nations, 2012). Longstanding debate about the extent to which biodiversity conservation and poverty alleviation goals can or should be combined nevertheless continues (Roe, Elliott, Sandbrook, & Walpole, 2012). However, this debate as well as current policy and practice occur in the absence of systematic knowledge of the nature, scope, and trends of international financial support for efforts to achieve social–ecological synergy. There remains a surprising dearth of empirical information on international aid for linked biodiversity conservation and development. At the same time, there is also little information about how this funding compares to investment in more narrowly targeted conservation interventions that do not explicitly include development aspirations.

Existing studies have estimated the financing necessary to reach international biodiversity conservation targets (James, Gaston, & Balmford, 1999, 2001; McCarthy *et al.*, 2012), identified who should pay for these costs based on benefits (Balmford & Whitten, 2003), and shown where current needs are greatest (Waldron *et al.*, 2013). Recent research has examined global patterns of international aid for development generally (Tierney *et al.*, 2011), for environmental purposes (Hicks, Parks, Roberts, & Tierney, 2008), and for biodiversity more specifically (Miller, Agrawal, & Roberts, 2013). However, there has been no global, over time study that disaggregates biodiversity-related aid according to the broad approach to conservation it supports. Has more international aid flowed for activities focused solely on the protection of biological diversity or for those that explicitly promote both biodiversity conservation *and* human development objectives? How have aid flows changed over the past three decades? And, finally, what explains patterns in the allocation of these two types of aid?

To answer these questions I use a new dataset derived from AidData (2012) to provide a comprehensive assessment of official donor assistance for linked conservation and development globally during the period 1980–2008. This article compares "mixed" biodiversity conservation and development aid, which explicitly addresses *both* ecological and economic objectives, to "strict" biodiversity aid, which is more narrowly focused on conservation objectives without a stated development component. It describes spatial patterns and temporal trends in the allocation of these two types of aid and develops and tests hypotheses that may explain this allocation. Treating the allocation of each type of aid as a separate outcome allows analysis of their relationship and whether the drivers of allocation are the same or different for each.

The allocation of aid has been shown to influence its ultimate effectiveness (Collier & Dollar, 2004; Tierney *et al.*, 2011; Wright & Winters, 2010). Thus, disaggregating biodiversity-related aid into strict and mixed categories can open new avenues for comparative analysis of their relative effectiveness. By investigating these two kinds of aid this study responds to calls to examine the multiple outcomes—in this case flows of different types of biodiversity-related assistance—generated by social-ecological processes relating to sustainability (Agrawal & Chhatre, 2011). It sheds light on donor and recipient country preferences and their interactions at a global scale. Building from theoretical insights and methods from scholarship on development aid, the article examines factors such as the conservation need, governance, and political–economic leverage of recipient countries and donor interest that may determine how strict and mixed biodiversity aid are allocated. Results advance theoretical and empirical understanding of the determinants of aid allocation and provide a more solid empirical basis for debates

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about the relative place of different conservation approaches on the international agenda.

The next section presents background information on efforts to link biodiversity conservation and poverty reduction and develops a series of hypotheses based on a review of the literature on the allocation of foreign aid. In Section 3, I describe the data on aid and a suite of other variables hypothesized to affect biodiversity aid allocation. This section also details the statistical models and methods employed to analyze the data. Section 4 presents results on aid patterns and trends over the past three decades and on the determinants of aid allocation. Section 5 discusses these and other empirical results. Finally, Section 6 concludes by considering the relevance of this study to policy and research. This section highlights opportunities that the results open up for better understanding the effectiveness of different kinds of biodiversity aid.

2. THEORIZING BIODIVERSITY AID ALLOCATION

(a) *Linking conservation and development*

The elimination of poverty and conservation of biodiversity are important policy goals of governments across the globe, even if they receive differing levels of commitment (Agrawal & Redford, 2006; Miller *et al.*, 2013; Roe *et al.*, 2012). International policy interventions to address these goals have a long history, but they proceeded largely along separate paths prior to the 1980s (Roe, 2008). In 1980, the publication of the *World Conservation Strategy* helped bring these two goals together by placing conservation squarely on the international development agenda (Robinson, 1993). The broad logic for combining these objectives is that neither development without conservation nor conservation without development is sustainable over the long term. Environmentally destructive development imperils human well-being by threatening the stable functioning of the Earth's life support systems (Cardinale *et al.*, 2012; Griggs *et al.*, 2013) while conservation at the expense of the poorest is ethically, and likely practically, infeasible (Agrawal & Redford, 2006; Brechin, Wilshusen, Fortwangler, & West, 2002).

For over three decades a variety of approaches have thus been attempted to reconcile these twin policy goals, including integrated conservation and development projects (ICDPs), community-based conservation, community-based natural resource management, eco-development, and payments for ecosystem services, among others (Brandon & Wells, 1992; McShane & Wells, 2004; Tallis *et al.*, 2008). Despite the promise of delivering positive outcomes for both people and nature, the results of these efforts have been decidedly mixed (Brooks, Waylen, & Borgerhoff-Mulder, 2012; McShane *et al.*, 2010). Dashed hopes, doubt over the wisdom of combining these goals, and poor knowledge of the complex relationship between poverty and biodiversity have spurred lively debate (Adams *et al.*, 2004; Brockington, Duffy, & Igoe, 2008; Roe *et al.*, 2012). Even as debate continues, government, civil society, and private sector actors remain determined to tackle both objectives simultaneously, as international discourse and discussions around the post-2015 development goals attest (Griggs *et al.*, 2013; United Nations, 2012). However, there is little empirical evidence on the extent and effectiveness of previous efforts to combine these two goals to inform on-going debates and practice. It is therefore important to better understand how international aid, still the most significant source of funding for conservation in biodiversity-rich developing countries (Hein, Miller, & de Groot, 2013; Waldron *et al.*, 2013), has been allocated for mixed *versus* strict approaches, why, and with what effect.

(b) *Hypotheses*

To explain the allocation of mixed and strict biodiversity aid this article examines the influence of key recipient country attributes and donor interest. It focuses on three classes of recipient country attributes: (1) their biodiversity and development needs, (2) their governance quality, and (3) the economic and political leverage they are able to bring to bear on donors. These attributes correspond to the categories of recipient need, recipient merit, and recipient leverage commonly found in writings in political science, economics, and sociology on the allocation of development aid generally (Alesina & Dollar, 2000; Hoeffler & Outram, 2011; Maizels & Nissanke, 1984) and environmental aid more specifically (Figaj, 2010; Hicks *et al.*, 2008). Research in this cross-cutting field also identifies the strategic, military, and political interests of donor governments as important determinants of the allocation of official development assistance. Although geo-strategic interests of donors have been shown to be much less relevant in the post-Cold War era (Bearce & Tirone, 2010; Neumayer, 2003) and biodiversity aid comprises a very small proportion of overall aid, this article also explores how donor interest might affect the allocation of strict and mixed biodiversity aid. Table 1 summarizes hypotheses about how recipient country attributes and donor interest affect the allocation of these two aid types.

Research on environmental aid (Hicks *et al.*, 2008), including that which specifically targets biodiversity (Miller *et al.*, 2013), has shown that this form of development assistance is allocated based the environmental needs of recipient countries. Similarly, the resource allocation strategies for leading environmental donors such as the Global Environment Facility (GEF) explicitly recognize recipient country need. [1] I thus expect that the relative biodiversity importance of recipient countries—their conservation "need"—will be a significant determinant of the allocation of both strict and mixed biodiversity aid. However, while both types should be directed where biodiversity is richest, most rare, or most threatened, I expect that strict aid will be more strongly correlated with biodiversity need than mixed aid. The logic is that processes driving allocation of the latter aid type may prioritize socio-economic factors in addition to or over biological ones. In other words, the additional consideration of socio-economic factors may lead to compromise in which less biologically rich or threatened areas are chosen for investment than would be the case if biological factors alone determined resource allocation.

Even as they consider biodiversity need, official aid donors may also consider "development need" particularly given the poverty orientation of so much international policy and discourse (Roe, 2008) and donor responsiveness to this agenda (Clist, 2011). Thus, we might expect that mixed aid would be directed to poorer countries and those with larger populations. Given its narrower focus, however, I hypothesize that strict aid will not be correlated with development need. Biodiversity aid donors may be especially inclined to target mixed aid to countries with larger populations of rural poor who are more likely to reside near areas of biodiversity importance. Unfortunately, information on rural poverty was only available for 63% of countries in this study, which limited testing of this hypothesis.

Decision-makers within aid agencies may also consider different aspects of "recipient merit" in making decisions about