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THE EFFECT OF NON-LOCAL SOCIO-POLITICAL CONTEXT ON COMMUNITY-BASED CONSERVATION INTERVENTIONS: EVALUATING ECOLOGICAL, ECONOMIC, ATTITUDINAL AND BEHAVIOURAL OUTCOMES

Systematic Review Protocol

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1. BACKGROUND

Since the 1980s, conservation efforts in developing countries have generally tried to incorporate the interests and views of local people, an approach called community-based conservation (CBC) (Western et al. 1994). Such strategies provide a mix of conservation and development objectives and employ a range of tactics, such as providing appropriate development opportunities, emphasizing local community involvement, awarding direct compensation, and encouraging tourism (Borgerhoff Mulder & Coppolillo 2005). Despite the prominence of such strategies, and strong arguments for and against their effectiveness (Chan et al. 2007), there have been few quantitative comparative evaluations of their successes and failures. Recent studies using satellite imagery have compared land use change among areas with different degrees and types of protection including strict protected areas, extractive reserves and indigenous reserves (Armenteras et al. 2009; Bray et al. 2008; Ellis & Porter-Bolland 2008; Nepstad et al. 2006). However, these studies provide no insight into the social, economic, and political mechanisms underlying the outcomes of different types of conservation interventions. These interventions require systematic evaluation to understand what factors predict success or failure. Two previous systematic reviews have studied the determinants of conservation success, focusing on the use of development as a conservation tool (Brooks et al. 2006a) and the effect of local cultural context and project engagement with local culture (Waylen et al. 2009). These reviews provide valuable insights into determinants of conservation success and the use of systematic reviews to understand CBC project outcomes. However, they have not tested for the influence of the broader socio-political institutional framework, such as support (or otherwise) for projects from national governments. A growing body of theory and anecdotal evidence suggests these factors can play a significant role in facilitating project success or failure (Smith et al. 2003).

Our proposed work is influenced by the systematic comparative work undertaken by the Workshop in Political Theory and Policy Analysis at Indiana University led by Elinor Ostrom as well as by efforts to systematically examine the effectiveness of different environmental management and policy initiatives through the Centre for Evidence Based Conservation (Sutherland et al. 2004). Ostrom and her associates argue for the need to collect standardized data (Ostrom 2007; Wollenberg et al. 2007) with which to examine the success of common property institutions (CPIs) and linked social-ecological systems (SESs) and this work has produced some remarkable comparative papers (Agrawal & Ostrom 2001; Poteete & Ostrom 2004; Ruttan 2006). This work generated some of the hypotheses introduced in Brooks et al (2006b) and is germinal to the work proposed here. Of particular relevance is Ostrom's introduction of the framework of decomposable systems and nested structures as a tool for analyzing CPIs and SESs (Ostrom 2007; Ostrom & Schlager 1996). Our goal here is to employ this framework to understand the interaction between multiple factors and across multiple scales for existing programs devoted to linking conservation and development. Useful

initial advances in this area (see work conducted by (Agrawal & Chhatre 2006), (Gibson et al. 2005), and (Gibson et al. 2007) and others at IFRI (International Forestry Resources and Institutions) suggest the utility of this approach, highlighting various sets of biophysical, economic and institutional considerations to be important in different contexts. We believe that it is now important to analyze more precisely the context itself, in particular the external socio-political context - features such as the effectivness of national institutions - within which the natural resource management scheme exists.

Here we set out a methodology to determine the degree to which national political, social, and economic factors are associated with the success of conservation interventions. As in the previous systematic reviews, we will use four measures of success in the analyses (ecological, economic, attitudinal and behavioural).

The review will be of value to policy makers and conservation practitioners by highlighting which features of an intervention and its institutional context have significant influence on outcomes. This review will not, of course, specify how the information is to be used, for this remains an issue for further research and ultimately the decision of policy makers. However, it could indicate how much attention, if any, should be given to the improving the conservation-supportiveness of high-level actors and institutions, versus other priorities for enabling conservation. For example, conservation/development organizations, bilateral donors, and governments could re-examine national level institutions and policy to ensure that they are supportive of community-level conservation efforts, while remaining cognizant of broader national goals as well as the desires of local peoples.

2. OBJECTIVE

There are two main objectives for this review. One is to expand the dataset built through the previous reviews to determine whether the original results (pertaining to local cultural context, market incursion, local participation, and access to resources) are refuted or more strongly supported. The second, objective is to assess the role of external (non-local) socio-political context on the outcomes of community-based conservation projects. We will explore the associations between political, cultural, and ecological determinants and project success and will pay particular attention to the institutional effects of different nations' varying commitment to decentralized natural resource management. We are explicitly operationalizing the insights of (Ostrom 2007), and others (Dietz et al. 2003), by examining how the success of different natural resource management strategies is both facilitated and constrained by the national institutional framework within which these strategies are implemented.

We will test eight specific hypotheses. We suggest that success in CBC interventions is more likely where there is:

(1) Supportive external socio-political context, including a high degree of transparency in the government (Smith et al. 2003) and greater degree of democratization (Przeworksi 2000, 2006).

(2) Beneficial environmental/biophysical characteristics including areas of higher elevation and higher rainfall amounts (Agrawal & Chhatre 2006), and an absence of natural disasters, which may affect perceptions of resource scarcity and decisions about long-term investments in conservation (Chapman 1985).

(3) A local cultural/institutional context that is supportive of decentralization (Wyckoff-Baird et al. 2001), and project engagement with local cultural context (Waylen et al. 2009). We will particularly focus on local institutions, defined as formal rules and informal constraints on behaviour (North 1990). Previous work suggests that working with existing cultural and local institutions can contribute to project success (Botha et al. 2007) and that failing to do so can result in project failure (Klein et al. 2007).

(4) Higher levels of utilization of natural resources (Balmford & Whitten 2003; Brooks et al. 2006b).

(5) Higher levels of local participation in the project (Gratwicke et al. 2007; Ribot 2004; Wyckoff-Baird et al. 2001).

(6) Efforts to provide conservation education by the project, which may be needed to understand the purpose of interventions, and so produce local enthusiasm and involvement in conservation (Jacobson et al. 2006)

(7) Market integration and benefit provision (Brooks et al. 2006b; Godoy et al. 1995; Hulme & Murphree 1999).

(8) Higher national-level social-economic status (GDP and HDI) (Smith et al. 2003).

Table 1. Description of Dependent Variables

Variable	*Description*
Ecological success	The consequences for one or a set of species (or habitats) designated as targets of the conservation project.
Economic success	The consequences for the material welfare of the communities involved in and/or affected by the conservation and development project.
Attitudinal success	The views of local residents regarding the goals of the conservation and development project
Behavioural success	Changes in the behaviours of local peoples likely to reduce threats to natural resources.

Table 2. Definitions of key variables relating to external socio-political context

Predictor variable	*Definitions*
Perceived quality of national institutions relating to environmental conservation	Measured as, (1) the number of multilateral environmental agreements to which the country in question belongs, (2) the year the country in question adopted legislation requiring environmental impact assessments, and (3) the year in which environmental ministries were established (see Frank et al (2000) for more detailed descriptions and use of each variable).
Supportiveness of national institutions relating to CBC intervention.	Supportiveness of national institutions towards the existence and goals of the CBC intervention in question as indicated from the source as well as responses to questionnaires solicited from the author(s).
National economic inequality	General inequality of distribution of wealth and socio-economic benefits as indicated by Gini coefficients.
Perceived quality of general national institutions	Effectiveness of national institutions as indicated by measures of democracy and corruption scores *(Transparency International, Freedom House, and see* Przeworksi 2000, 2006*)*
Socio-economic/ development status	Socio-economic status of the country relative to others as indicated by per capita GDP and Human Development Index score.
Support from international NGOs or other agencies	Measured as (1) the number of country chapters of international environmental NGOs established in the country in question (Frank et al 2000), (2) average expenditure per country by NGOs (Scholfield & Brockington 2009) and (3) international aid designated for environmental purposes as recorded by the Development Assistance Committee of the Development Co-operation Directorate (DCD-DAC) in their online database at stats.oecd.org.

3. METHODS

3.1 Study Inclusion Criteria

Studies will be included if they fulfil the following criteria:

- *Type of study* – Primary literature
- *Subjects Studied* – Any conservation and development project associated with a protected area, or community-based conservation project in which conservation is the primary aim. Papers reviewing the impact of a protected area on local communities in the absence of a specific conservation and development project will not be included.
- *Quality of evidence* - Sources that do not provide sufficient general information – no more than approximately 25% missing pieces of data – will not be included.
- *Outcomes* – Ecological, attitudinal, behavioural, and economic outcomes. At least two of these outcomes have to be measured to be included in the review.

3.2 Search strategy

The impetus for this project came from two prior systematic reviews (Brooks et al. 2006a; Waylen et al. 2009), as well as two peer-reviewed papers published by the authors (Brooks et al. 2006b; Waylen, in review). Similar to these studies, we will conduct searches with ISI Web of Science, Anthropology Plus, JSTOR, and Google Scholar electronic databases. We will search for the terms *community based conservation, integrated conservation and development, CBC, ICDP, community based natural resource management,* and *community conservation* in each database. These terms will be searched for only in English language publications. In the case of Google Scholar, any hits beyond 500 for a given search term will not be viewed. Each search will be restricted to papers published between 2007 and 2009 so as not to overlap with the searches conducted in the previous systematic reviews.

To examine national socio-political context we will select countries for which there are at least four papers included in the systematic review. For instance, the data set from the previous systematic reviews contains multiple interventions in Tanzania, Brazil, Madagascar, and Nepal. For these countries, and additional ones that we identify through the proposed review, we will gather the relevant information on socio-political context from publicly available sources (see Table 2). We anticipate a final sample of 9-10 countries based on totals in the existing dataset from Waylen et al (*in review*).

3.3 Study quality assessment

The researchers will together determine which papers fulfil the selection criteria for inclusion in this study. All studies that fulfil the selection criteria will be included without preferring one type of study to another.

3.4 Data extraction strategy

The two primary researchers will code each paper separately and then meet together to discuss their findings. When coders disagree, each will make a case for their decision and the most appropriate response, when agreed upon, will be chosen. Coders will base their decision only on information presented in the paper, and will not incorporate knowledge from outside sources into their decisions. The protocol will first be tested using articles that do not meet the inclusion criteria (i.e. no explicit conservation aim). Where the coding protocol is ambiguous it will be revised. We will measure four aspects of conservation project outcomes (attitudinal, behavioural, economic and ecological; table 1). For each outcome type reported, the degree of success will be recorded on a 3-point scale from ‘success’ to ‘mixed’ to ‘failure’. Success is based on the original authors’ assessment of whether the project made substantive progress to meeting the relevant aims of the project. We will also record the quality of measurement of each outcome recorded (from good quality (based on extensive survey and detailed reporting), to medium quality (brief summary of outcome), to poor quality (anecdotal reporting of outcome), and will correlate this with level of success reported, to check whether data quality affects authors’ conclusions.

3.5 Searching for further data

Existing evaluations of conservation efforts (Andam et al. 2008; Armenteras et al. 2009; Bruner et al. 2001; Ellis & Porter-Bolland 2008; Nepstad et al. 2006; Salafsky et al. 2001; Struhsaker 2005) suffer from a variety of problems (Agrawal & Redford 2006; Brooks et al. 2006b; Hayes 2006). First, measures of the multiple key outcomes (e.g., biodiversity conservation, poverty alleviation, and other aspects of social and economic welfare) are either missing, weak, or unidimensional. Second, there is a failure to address the potential tradeoffs of biodiversity and poverty reduction, reflecting the philosophy that conservation and development offer potential win-win outcomes. Third, and perhaps most critically, comparative studies have failed to investigate the critical circumstantial or contextual conditions that affect which strategies thrive or fail. As both case studies and comparative statistical analyses reveal, local biophysical and cultural conditions and the political relationships in which they are embedded are critically important to conservation initiative outcomes (Agrawal 2003; Agrawal & Chhatre 2006; Barrett et al. 2006).

As such, in addition to extracting data from existing studies as we have done in previous systematic reviews, we will also gather data on environmental conditions as well as national level data on socio-political institutional characteristics listed in Table 2.

Further, due to the paucity of reliable data in the primary literature, the conclusions from both previous systematic reviews of community-based conservation initiatives are open to question and neither study was able to adequately address other important questions and confounds related to demographic and biophysical factors and the interdependencies between the four measures of success. While this study will increase the total sample size and make our analysis more robust, we also recognize the need to actively seek further evidence for case studies in our systematic search to address the problem of missing data. To accomplish this, we will search for any subsequent peer-reviewed publications on the projects selected by our systematic review, and send a a standardized questionnaire to authors of the most recent papers found, and any colleagues known by them to have knowledge of the case studies in our database. We aim to ask questions that provide qualitative and quantitative information on the variables in the data set (see Appendix for variables to be coded). This will remove or at least mitigate the problems of missing data in the dataset, due to poor quality reporting.

3.6 Data synthesis

The information extracted from the studies will be used to create a dataset stored in Excel. Qualitative and quantitative information will be used to create variables that describe the project and its context. The full coding sheet can be found in the Appendix. The data from this systematic review will be combined with that from the analysis conducted by Waylen et al. (*in review)*.

3.7 Data analysis

The data obtained from the systematic review will be analyzed following the procedure used in Brooks et al. (2006a) and Waylen et al (*In review).* We will calculate two-way associations between predictor and outcome variables using the Goodman-Kruskal gamma statistic and calculate p-values using the Monte Carlo method. To control for the false discovery rate (which is necessary given the number of predictor and outcome variable combinations and this many hypothesis tests), we will generate a q value to replace each p-value based on the algorithms of Storey (2002) and using R statistical computing packages.

To test our hypotheses related to national socio-political context, we will use standard hierarchical analyses, using the *lmer* package in R.

4. CONFLICTS OF INTEREST

There are no potential conflicts of interest declared.

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