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DEVELOPMENT AS A CONSERVATION TOOL: EVALUATING ECOLOGICAL, ECONOMIC, ATTITUDINAL, AND BEHAVIORAL OUTCOMES

Systematic Review Protocol

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CENTRE FOR EVIDENCE-BASED CONSERVATION

SYSTEMATIC REVIEW NO. 20

DEVELOPMENT AS A CONSERVATION TOOL: EVALUATING ECOLOGICAL, ECONOMIC, ATTITUDINAL, AND BEHAVIORAL OUTCOMES

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REVIEW PROTOCOL

1. BACKGROUND

In the past 25 years, strategies for linking conservation to development have become prominent. This reflects the recognition of the importance of local support for conservation and the associated assumption that conservation ultimately depends on development and vice versa. Despite sound arguments both for and against the effectiveness of these strategies (Wells *et al.* 1992; Barrett & Arcese 1995; Oates 1999; du Toit *et al.* 2004; McShane & Wells 2004), there have been few quantitative comparative evaluations of their successes and failures (Bruner *et al.* 2001; Salafsky *et al.* 2001; Struhsaker *et al.* 2005). As the focus on, and funding towards, conservation and development projects increases, it is essential that the paradigm be more rigorously examined. Here we set out the methodology to test some of the assumptions of the conservation and development paradigm using four measures of success; ecological, economic, behavioural, and attitudinal.

A systematic review will be used to assess outcomes of conservation and development projects to determine the characteristics associated with ecological, economic, attitudinal, and behavioural success. The review will benefit policy-makers and conservation practitioners by highlighting which project characteristics may be useful in which contexts so as to better design and implement conservation and development interventions.

2. OBJECTIVE OF THE REVIEW

2.1 To what extent do studies evaluate multiple measures of success?

2.2 To test the following hypotheses:

(A) Greater levels of utilization of natural resources and lower levels of protectionism will lead to success in all outcome measures.

(B) Conservation projects that facilitate increased market integration will result in success for all outcome measures.

(C) Greater local input in conservation decisions and greater community control over programs will lead to success in all outcome measures.

(D) The more culturally homogeneous a community, the more successful the project will be in all outcome measures.

Table 1a & b. Definitions of key variables

(a) Definitions of predictor variables

Predictor Variables	Definitions
Utilization / protection	The extent of resource use permitted in the local protected area
Market Integration	The extent of market incursion (selling, purchasing, labor) as well as the associated threat from resource extraction
Decentralization	The extent of local involvement in project planning and implementation
Homogeneity	The amount of socio-cultural variation on local communities

(b) Definitions of outcome variables

Outcome Variables	Definitions
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 material welfare of the communities affected.
Attitudinal Success	The views of local residents to the goals of the conservation project
Behavioural Success	Changes in behaviour likely to reduce threats to natural resources.

3. METHODS

3.1   Search strategy

Electronic database and internet searches

The databases we will use are: ISI Web of Knowledge, Anthropology Plus, Biblioline, and JSTOR.

Search terms we will use are as follows:

- ICDP
- integrated conservation and development project
- community based conservation
- conservation and development

These terms will be searched for only in English language publications.

Other searches

The bibliographies of the case studies revealed during research for Borgerhoff Mulder and Coppolillo (2005) will be reviewed for additional papers. In addition, the bibliography of integrated conservation and development projects (ICDP) provided by Brown (2002), and Flintan (2000) will also be searched for relevant papers.

3.2   Study inclusion criteria

Specific inclusion criteria will be based on peer-reviewed publications, the presence of some form of conservation and development project, and the number of monitored outcomes. Projects with data on all four dimensions will allow us to analyze the interdependencies among different measures of success.

- **Relevant Subjects:** Any conservation and development project associated with a protected area. 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.

- **Type of Intervention**: Relevant project interventions include integrated conservation and development projects (ICDP), community based conservation (CBC), and ecotourism.

- **Types of Outcome:** At least two of the four outcomes (ecological, economic, behavioural, and attitudinal) are required to be reviewed for inclusion in the study.

- **Types of Study:** Studies that provide neither quantitative nor qualitative monitoring information will not be included. Outcomes will be categorized into quantitative measurement and qualitative measurement.

Relevance assessment

Both primary researchers (JSB, MAF) will independently assess references for relevance at full text viewing using the inclusion criteria. In cases of uncertainty, both researchers will read the reference in question and discuss its inclusion.

3.3 Study quality assessment

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

3.4 Data extraction strategy

Two researchers (JSB, MAF) will code each paper separately and then meet to discuss their findings. When coders disagree, each will make a case for their decision and the most appropriate (i.e. ultimately agreed upon) response will be chosen. Coders will base their decisions only on the information presented in the paper and will not incorporate knowledge gained from other sources to add information. To test this procedure, the coding protocol was applied to Wells *et al.*'s (1999) review of ICDPs in Indonesia (this publication will not be used in the study because it is not peer reviewed nor does it contain a sufficient number of monitored outcome variables, though it covers many of the independent variables of interest). Changes to the coding protocol were made based on discrepancies between reviewers and information in the literature.

3.5 Data synthesis

Information will be extracted from reviewed studies to create a dataset, and both qualitative and quantitative information will be used. We have created variables to describe a project's local environment, protected area, community (or communities) affected, threats to the local environment, monitoring information related to the success of the project, and the primary author's profession and discipline. The full coding sheet that will be applied to each paper can be found in Appendix A.

4. POTENTIAL CONFLICTS OF INTEREST AND SOURCES OF SUPPORT

5. REFERENCES

Barrett, C. B., and P. Arcese. 1995. Are integrated conservation-development projects (Icdps) sustainable - on the conservation of large mammals in Sub-Saharan Africa. World Development **23**:1073-1084.

Borgerhoff Mulder, M., and P. Coppolillo 2005. Conservation: linking ecology, economics, and culture. Princeton University Press, Princeton.

Brown, K. 2002. Innovations for conservation and development. The Geographical Journal **168**:6-17.

Bruner, A. G., R. E. Gullison, R. E. Rice, and G. A. B. da Fonseca. 2001. Effectiveness of parks in protecting tropical biodiversity. Science **291**:125-128.

du Toit, J. T., B. H. Walker, and B. M. Campbell. 2004. Conserving tropical nature: current challenges for ecologists. Trends in Ecology & Evolution **19**:12-17.

McShane, T. O., and M. P. Wells 2004. Getting biodiversity projects to work: Towards a more effective conservation and development. Columbia University Press, New York.

Oates, J. F. 1999. Myth and reality in the rain forest: how conservation strategies are failing in West Africa. University of California Press, Berkeley.

Salafsky, N., H. Cauley, G. Balachander, B. Cordes, J. Parks, C. Margoluis, S. Bhatt, C. Encarnacion, D. Russell, and R. Margoluis. 2001. A systematic test of an enterprise strategy for community-based biodiversity conservation. Conservation Biology **15**:1585-1595.

Struhsaker, T. T., P. J. Struhsaker, and K. S. Siex. 2005. Conserving Africa's rain forests: problems in protected areas and possible solutions. Biological Conservation **123**:45-54.

Wells, M., K. Brandon, and L. Hannah 1992. Parks and people: linking protected area management with local communities. World Bank, Washington, DC.

Wells, M., S. Guggenheim, A. Khan, W. Wardojo, and P. Jepson 1999. Investing in biodiversity: a review of Indonesia's integrated conservation and development projects. World Bank, Washington, DC.

Author affiliation: what type of organization is the author affiliated with (three boxes for multiple authors)

      University
      Conservation NGO
      Development Agency
      Government Agency
      Consultant
      Undefined

Academic discipline: what is the author's academic discipline (three boxes for multiple authors)

      Social Scientist
      Economist
      Geographer
      Ecologist
      Environmental Law
      Undefined

Author's currency: the author's particular focus in the article; if more than one currency, choose the primary one unless they are given equal weight, then choose *mixed*; note that 'economic' refers to community development as well as income generating programs

      Conservation
      Economic
      Joint Management
      Mixed (Conservation/Economic)
      Mixed (Conservation/Management)
      Mixed (Economic/Management)
      Mixed (Conservation/Economic/Management)
      Political
      Undefined

Temporal reference to project: is the article written as a general review or an evaluation over a designated time period

      General overview
      (X yrs) evaluation – enter the number of years manually

Case study name: the name the project is known by

Case study site: country

Geographic location: choose the "terrestrial biorealm" (as indicated on the WWF website – http://www.worldwildlifefund.org) in which the study site is located

      Neartic
      Oceanic
      Neotropical
      Antarctic
      Afrotropical

Pelearctic
Indo-Malay
Australasia

Project initiation: the date the project was started

Date protected area gazetted: if the project is located within a protected area or pertains to resource use in a protected area, in what year was the protected area created

IUCN ranking: see definitions below (taken from Stevens, 1997, p.17; original source: IUCN Commission on National Parks and Protected Areas, 1994, p.17-23); if the ranking is not explicitly stated in the article, then make best guess based on information given ; if unsure select *undefined*

Strict Nature Reserve
National Park
National Monument
Habitat/Species Management Area
Protected Landscape (this incorporates anthropological reserve category)
Managed Resource Area (this incorporates multiple use area category)
Undefined

Definitions:
I. Strict Nature Reserve/Wilderness Area: Protected area managed mainly for science of wilderness protection.

Ia. Strict Nature Reserve: Area of land and/or sea possessing some outstanding or representative
ecosystems, geological or physiological features and /or species, protected primarily for scientific research and/or environmental monitoring.

Ib. Wilderness Area: Large area of unmodified or slightly modified land and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

II. National Park: Protected area managed mainly for ecosystem protection and recreation. Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for spiritual, scientific, educational, recreational, and visitor opportunities, all of which must be environmentally and culturally compatible.

III. Natural Monument: Protected area managed mainly for conservation of specific natural features. Area containing one, or more, specific natural or natural/cultural feature of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities, or cultural significance.

IV. Habitat/Species Management Area: Protected area managed mainly for conservation through management intervention. Area of land and/or sea subject to active intervention for management purposes to ensure the maintenance of habitats and/or to meet the requirements of specific species.

V. Protected Landscape/Seascape: Protected area managed mainly for landscape/seascape protection and recreation. Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological, and/or cultural value and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area.

VI. Managed Resource Protected Area: Protected area managed mainly for the sustainable use of natural ecosystems. Area containing predominating unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing a sustainable flow of natural products and services to meet community needs.

Utilization-Protection Axis: select the category which describes where the project falls on the utilization-protection axis, in terms of resource use within the project area; *compensation* refers to development projects such as schools, roads, and clinics; *substitution* refers to the promotion of alternative sources of food or income which removes the pressure on the threatened resource; *enhancement* refers to improving the market for the resource to increase value and control exploitation (see Abbot, 2001, p.1116)

Full Protection
Protection with Education
Protection with Ecotourism
ICDP Emphasizing Compensation
ICDP Emphasizing Substitution
ICDP Emphasizing Enhancement

Ranking certainty: check this box if the article explicitly states the protected area's ranking

Ecosystem type: select one of the ecoregions from the WWF website (http://www.worldwildlifefund.org); for a list of the ecoregions found in each country see also Olson and Dinerstein "The Global 200: A Representation Approach to Conserving the Earth's Most Biologically Valuable Ecoregions" Conservation Biology 12(3):502-515.

Tropical & Subtropical Moist Broadleaf Forests
Tropical & Subtropical Dry Broadleaf Forests
Tropical & Subtropical Coniferous Forests
Temperate Broadleaf & Mixed Forests
Temperate Conifer Forests
Boreal Forests/Taiga
Tropical & Subtropical Grasslands, Savannas & Shrublands
Temperate Grasslands, Savannas & Shrublands
Flooded Grasslands & Savannas
Montane Grasslands & Shrublands
Tundra
Mediterranean Forests, Woodlands & Scrub
Deserts & Xeric Shrublands
Mangroves

Marine
Undefined

Protected area coverage: the amount of land in protected area

Land tenure: who owns and manages the land; for *joint* specify the joint owners
Private (local)
Private (non-local)
Communal (indigenous)
State/Regional
National
Joint – specify joint land tenure arrangements as they arise in the articles

Use (utilization types): how is the land used (three boxes so that multiple uses can be recorded)
Grazing
Wood collection
Grass collection (building)
Other collection (fruits and medicines)
Subsistence hunting
Commercial hunting
Subsistence fishing
Commercial fishing
Tourism
Trophy hunting
Subsistence agricultural
Commercial agriculture (cash cropping)
Ceremonial usage
Undefined

Subsistence types: how do the local people generally make a living; select *mixed* when more than one of the listed subsistence types is present
Hunters and gatherers
Hunter-gatherer-horticulturalists
Pastoralists
Agropastoralists
Horticulturalists (non-plow agriculture)
Agrarians (plow agricultural)
Commercial/Industrial (commercial agriculture)
Mixed
Undefined

Project impetus: where did the idea for the project originate

Project implementation: who or what organization is responsible for implementing the project

Level of centralization: what type (level) of organization is responsible for implementing the project (refers to the organization entered for *project implementation*); see also Murphree, 1994

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International
National
Regional (state/province/district/locality)
Community
Household
Individual
Mixed (National/International)
Private foundation
Undefined

Decision making: select a rank (1-3) pertaining to the stage of co-management for the project (each rank incorporates several categories adapted from Berkes et al. 1991, p.36)

Rank 1 – no community control; includes the following categories:

· Informing – users are informed about regulations; one-way communication
· Consultation – users are consulted on projects; feedback from research
· Communication – two-way communication; research addresses local concerns

Rank 2 – some community control; include the following categories:

· Regional councils – advisory partnership; government considers recommendations
· Cooperation – incorporation of local knowledge in research; native research assistants
  hired; some management activities contracted to local groups
· Management boards – community involvement in some policy decision making;
  decisions binding

Rank 3 – joint or complete community control; include the following categories:

· Partnership – community and state are equals; joint decision making institutionalized
· Community control – power delegated to community; self-regulation

Benefits target: who are the benefits of the project targeting (two boxes for multiple recipients of benefits)
International
National
Regional (state/province/district/locality)
Community
Household
Individual
Undefined

Institutional evaluation: at what level is the success of the project being evaluated
International
National
Regional (state/province/district/locality)
Community
Household
Individual

Undefined

Affected groups: what groups are directly affected by the project (three boxes to list multiple groups); if selecting *indigenous people*, specify which ethnic group; enter new groups manually
      National Government
      Regional Government
      Indigenous Representative Groups
      Local Lobbyists
      Indigenous People – specify group
      Local Communities
      Local Private (e.g. ranches)
      NGO's (non-government organizations) – specify national or international
      Undefined

Involved groups: what groups are involved but not directly affected by the project; if selecting *indigenous people*, specify which ethnic group; enter new groups manually
      National Government
      Regional Government
      Indigenous Representative Groups
      Local Lobbyists
      Indigenous People – specify group
      Local Communities
      Local Private (e.g. ranches)
      NGO's (non-government organizations) – specify national or international
      Researchers
      Undefined

Market penetration (selling): how involved is the local group in market sales
      Minimal
      Moderate
      Large
      Undefined

Market penetration (purchasing): how involved is the local group in making market purchases
      Minimal
      Moderate
      Large
      Undefined

Market penetration (labor): how involved is the local group in wage labor
      Minimal
      Moderate
      Large
      Undefined

Threat type: what is the main threat to the protected area (three boxes so that multiple threats can be recorded)
      Commercial Meat Poaching

Subsistence Meat Poaching
Fuelwood Poaching
Grazing
Subsistence Agriculture
Commercial Agriculture
Tourism
Commercial Industry
Commercial Timber Extraction
Population Growth
Undefined

Threat motivation: what is the main motivation for using the resource (three boxes corresponding to threats 1-3)
Cash
Subsistence
Cash & Subsistence
Undefined

Scale of threat: how serious is the threat (three boxes corresponding to threats 1-3)
Minimal
Moderate
Large
Undefined

Attitude monitoring: is there monitoring of local peoples' attitudes towards the protected area
Yes, Quantitative
Yes, Qualitative
Yes, Implied
No
Undefined

Attitude success/failure: is the project a success with respect to changing local attitudes in favor of conservation and/or the project (author's assessment)
Success
Limited success
Failure
Undefined

Behavior monitoring: is there monitoring of the continuation of illegal or targeted activities
Yes, Quantitative
Yes, Qualitative
Yes, Implied
No
Undefined

Behavior success/failure: is the project a success with respect to decreasing the occurrence of illegal or targeted activities (author's assessment)
Success

Limited success
Failure
Undefined

Ecological monitoring: is there monitoring of the ecological effects of the project
Yes, Quantitative
Yes, Qualitative
Yes, Implied
No
Undefined

Ecological success/failure: is the project a success with respect to the ecological effects (author's assessment)
Success
Limited success
Failure
Undefined

Economic monitoring: is there monitoring of the economic effects of the project
Yes, Quantitative
Yes, Qualitative
Yes, Implied
No
Undefined

Economic success/failure: is the project a success with respect to the economic impact on the local people (author's assessment)
Success
Limited success
Failure
Undefined

Population: the local population specified in the article

Population source: what is the source of population growth in the area
Local
Immigrant

Asymmetries: report here any disparities between the intended action and/or results of the project and the actual actions taken or actual outcomes; note in this section any groups that should have been involved in the project but were excluded for some reason