



## Parks and People: Assessing the Human Welfare Effects of Establishing Protected Areas for Biodiversity Conservation

DAVID S. WILKIE,\*§ GILDA A. MORELLI,\* JOSEFIEN DEMMER,† MALCOLM STARKEY,† PAUL TELFER,‡ AND MATTHEW STEIL†

\*Department of Psychology, Boston College, 501 McGuinn Hall, Chestnut Hill, MA 02467, U.S.A.

†Wildlife Conservation Society, B.P. 7847, Libreville, Gabon

‡Centre International de Recherches Médicales, B.P. 769, Franceville, Gabon

### Introduction

In the last several years, and most particularly since the Vth IUCN World Parks Congress in Durban, South Africa, the conservation and social advocacy communities appear locked in an increasingly acrimonious debate over protected areas—a debate that risks diminishing societal support for protected areas and the conservation of biodiversity (Sanderson & Redford 2003). Conservationists argue that environmental regulations are essential to ensure the sustainability of the planet's biological systems and the health and welfare of people, and that protected areas are an indispensable tool in that regulatory toolbox (Peres 1995; Kramer et al. 1997; Brandon et al. 1998; Terborgh 1999). Social advocates contest establishment and management of protected areas, and they do so for three reasons. First, they argue that only initiatives related to poverty alleviation will lead to successful biodiversity conservation because only these initiatives address the root cause of environmental destruction (c.f. Duraiappah 1998; Ravnborg 2003). Second, protected areas take away the property and rights of local people and can be an unjust drag on their present and future welfare (e.g., Ghimire & Pimbert 1997; Colchester 2004; Oilwatch and the World Rainforest Movement 2004). Third, even if parks do generate economic value, the distribution of these benefits is so skewed against poor rural people that the role of parks in local development is negligible and they neither justly compensate for lost property and rights nor contribute to poverty alleviation (Brockington 2003; McShane 2003).

The second assertion, that establishing national parks without recompense compromises the corporal, economic, social, cultural, educational, and spiritual welfare of people who live in or near these protected landscapes, is certainly emotive. It is also largely apocryphal, however, because to date little empirical evidence exists to substantiate the contention that parks are bad for local people (Schmidt-Soltau & Brockington 2004). This is true, in part, because demonstrating that protected areas are a drag on the welfare of local peoples is difficult for several reasons.

First, the tangible value of natural resources to households varies enormously. For example, in a recent meta-analysis of 54 case studies of the value of forest resources to the rural poor (Vedeld et al. 2004), average annual household income from forest resources ranged from \$0 to \$3458. Second, studies assessing the impact of terrestrial protected areas on local people are either *ex ante* predictions of social impacts or *post facto* measures of present welfare with no baseline data on local households before the establishment of the park or reserve. The primary problem with *post facto* assessments is that merely showing that local people around parks and reserves are often poor and marginalized from national society says little about the role of parks in their poverty and marginalization. Rather, the status of these people may simply reflect the fact that protected areas are often established in the most remote regions within countries where resources may be less abundant or productive and where households rarely have access to markets and are the last to be provided with social services. Third, longitudinal studies have not been conducted that track changes in human welfare indicators over time within the same households local to a protected area. Finally, the welfare of households

§email david.wilkie@bc.edu

that traditionally have claims on park resources has never been compared concurrently with the welfare of “control” households that do not. Consequently one cannot assess whether changes in the welfare of park proximal households over time result from the establishment of the protected areas or from other exogenous factors such as a change in currency or commodity values that are likely to affect the welfare of all households within a nation.

### A Need for Sound Science

To ascertain with confidence the influence of establishing and managing protected areas on the welfare of local people it is vital that conservation and social scientists conduct rigorous, controlled studies. These should track the changing health and wealth of a statistically meaningful set of families before and after (1, 3, 5, 10 years) the establishment of the park or reserve. Families participating in the studies should be equally divided between those that use and have traditional claims on park resources and “control” households that do not because control houses are unlikely to be subject to a taking of resource access and use rights or recipients of direct or indirect compensation as a consequence of park establishment. Control households also allow one to detect changes in family welfare that stem from factors exogenous to the influence of the protected area. To ensure that the human welfare metrics to be assessed in these studies (e.g., consumption, health, education, social relations, income and wealth) are valid and accepted by a broad constituency, researchers should consider the guidelines provided by the World Bank for assessing impoverishment risks associated with projects (Cernea & McDowell 2000).

Information should be collected at both the village and household level. Control households should be selected to match park-influenced households in terms of ethnicity, market and natural resource access, and wealth. Data should be collected by teams of intensively trained local language assistants led by experienced social scientists.

At the village level a mix of participatory mapping and survey methods can be used to gather data on the extent and spatial distribution of natural resource use, market access, access to social services, and commodity prices. Remote sensing can be used to estimate relative abundance and spatial distribution of natural and anthropogenic types of land cover within 5, 10, and 20 km of each settlement.

A household-level panel of a large sample of families can use ethnographic methods to create a narrative history of study families in the community and to assess self-perceptions of health, economic welfare, dietary sufficiency, family function, and community cohesion or conflict. Quantitative surveys of each household, built on the World Bank Living Standards Measurement Study, can be used to assess (1) demographic attributes of the house-

hold (age and gender composition, ethnicity, education level); (2) short-term health, proxied by body-mass index and mid-upper-arm circumference of all family members; (3) household wealth, proxied by the value of a standard basket of assets and the quality of house construction; (4) household income, assessed as all sources of labor, trade, exchange, and remittance revenue generated by all family members in the previous month; and (5) consumption of natural resources, agricultural products, and manufactured goods, based on variable time-period recall (Apaza et al. 2002; Wilkie et al. 2005). Household data should be gathered on an equal number of park-influenced and control households and should be repeated using the same panel of households at several intervals in the future. During repeat surveys missing households should be found, whenever possible, and interviewed to determine why they left their villages.

Data from these village-level and household-panel surveys allow one to (1) evaluate the contribution of natural resources to park-influenced and control household economies and to assess how this changes over time as park-resource-use regulations are formalized and enforced; (2) evaluate the influence of market and natural resource access, residence duration, access to health and education services, and ethnicity on household welfare; (3) compare the sources and levels of income of park-influenced and control households over time; and (4) assess, using the Gini coefficient, income, health, and consumption inequality within and across households in park-influenced and control communities and track these levels of inequality over time.

To encourage comparative studies and to promote transparency, 12 months after collection the survey data—without personal identifiers and with an accompanying data dictionary—should be posted in SQL format on a public-access data archive such as the Data and Program Library Service at the University of Wisconsin-Madison (<http://dpls.dacc.wisc.edu/archive.html>) or the Inter-university Consortium for Political and Social Research at the University of Michigan (<http://www.icpsr.umich.edu/org/index.html>).

### An Ongoing Example

As a first example of a Parks and People study to scientifically assess the effects of protected areas on human welfare, we have initiated a 5-year effort in Gabon. Around 4 of the 13 new national parks established recently by President Bongo Odimba, we are tracking the welfare of 1000 households that traditionally have used park resources and are comparing their livelihoods with those of an equal sample of “control” households that live outside the influence of the same national parks. All research protocols and details of data collection methods are available on request.

We hope our research in Gabon and future studies modeled on similar methods will allow assessment, in a rigorous and controlled manner, of the effect of protected areas on household welfare. Understanding whether and how protected areas influence the welfare of households that reside close to parks and reserves is a critical first step in developing and implementing policies to address any adverse effects of parks on people and in identifying policy options that increase local benefits associated with parks.

## Acknowledgments

The Parks and People research in Gabon is supported with startup funding from the John D. and Catherine T. MacArthur Foundation and is being undertaken by Boston College in collaboration with the Conseil National des Parcs Nationaux (CNP) of Gabon and the Wildlife Conservation Society.

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