



Voter Response to Conservation Policies in Madagascar

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Summary. — International conservation groups pour millions of dollars into developing countries to help preserve resources and set conservation priorities, but critics argue that affected populations are often excluded from the decision-making process. In 2003 many in the international community praised the president of Madagascar for his pledge to more than triple the area under protection. This paper examines how voting patterns in the president's re-election bid differed in communities affected by these policies. The results suggest less support for the president in regions with new protected areas but that these policies would be unlikely to change the outcome of an election.

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1. INTRODUCTION

Developing countries with significant biodiversity face external and internal pressures to conserve those resources while trying to respect traditional land use rights and demands for short-run benefits of resource extraction. Madagascar is one such country—considered a global conservation priority for both its high rates of endemic species and high rates of deforestation. Therefore many in the international community praised President Marc Ravalomanana, who came to power in 2002, for his pledge to more than triple the area under protection over five years. Because many local residents depended on the forests for wood, agricultural land, and other resources, the government vowed to work with local communities to develop sustainable management plans. But how did local populations view these policies? Was this seen as a power-grab cutting off access to lands they had used for generations or as a needed reform to preserve dwindling resources?¹ Would increasing tourist revenues from eco-tourism help win support? Using both instrumental variables (IV) estimations and panel data, this paper explores these issues using country-wide data at the commune² level by examining how voting patterns in Ravalomanana's re-election bid in 2006 differed in communities affected by the new protected areas.

Governments have long used protected area designations to preserve natural resources and biodiversity as public goods. The world's total terrestrial protected area has increased steadily over the last century, with approximately 12.7% under some form of nationally designated protection in 2010, and increasing the total area protected is part of the Millennium Development Goals (Bertzky *et al.*, 2012). However, there has been some criticism of the growing power and influence of the largest international conservation NGOs in determining new protected areas and setting national environmental agendas, often to the detriment of local populations (Chapin, 2004; Holmes, 2007; Rabesahala Horning, 2008).

Protected areas (PAs) include a range of protections from the strictest (nature reserves, wilderness areas, and national parks) to areas where various sustainable resource uses are allowed. In response to the criticism and, in some cases, outright hostility of local populations, recent decades saw a shift toward less restrictive PAs to recognize local rights to the land and involve local communities in resource management and in

tourism operations for local income generation. Community Based Natural Resource Management (CBNRM) approaches and Integrated Conservation and Development Programs (ICDPs) grew out of this shift. However, the results of these programs have been mixed, both in terms of conservation and development outcomes. Critics argue that in practice these arrangements have frequently been imposed from the outside rather than involving true participation of the population and development programs were often poorly conceived (Chapin, 2004). True decentralization of resource control has often been thwarted by powerful interests (Ribot, Agrawal, & Larson, 2006). In other cases, "local management" resulted in elite capture of the resources or the benefits from them, such as from ecotourism (Dressler *et al.*, 2010; Jones, 2004; Kellert, Mehta, Ebbin, & Lichtenfeld, 2000; Nelson & Agrawal, 2008; Raik, 2007; Ribot *et al.*, 2006).

There are relatively few rigorous impact assessments of the effect of protected areas on local populations (Andam, Ferraro, Sims, Healy, & Holland, 2010; Wilkie, Morelli, Demmer, Starkey, Telfer, & Steil, 2006) and the results of these analyses are mixed. Andam *et al.* (2010) find positive net effects of protected areas in terms of poverty reduction in Thailand and Costa Rica. In Madagascar, Ferraro (2002) estimates that the creation of the Ranomafana National Park cost the average household living near the park \$19–70 annually in terms of lost access to resources. The gains from tourism were limited to a small number of people in a few areas. Using contingent valuation methods, Shyamsundar and Kramer (1996) estimate that the average household valued lost access to the Mantadia National Park at \$50 per year.

Given the wide range of outcomes of protected area management arrangements, it is not surprising that local opinion of them varies. In Nepal, Mehta and Kellert (1998) found that residents supported ecotourism and forestry efforts but felt that the development goals were unmet and benefits were

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not equally distributed. In Indonesia, [Walpole and Goodwin \(2001\)](#) found that positive local attitudes toward tourism were associated with greater tourist revenues, but that this did not translate into greater support for conservation. In Tanzania, 38% of villagers did not believe they played a role in wildlife conservation decisions and 50% felt that the government cared more about wildlife than the people ([Gillingham & Lee, 1999](#)).

In Madagascar, an agroforestry component of an ICDP program near Montange d'Ambre and Ankarana in the north of the country was successful in terms of planting trees, but many villagers did not view the project as beneficial to them ([Gezon & Freed, 1999](#)). Also in the Ankarana region, [Gezon \(1997\)](#) documents complaints of local traditional authorities regarding the rights to organize tourism and to issue park permits and the deficiency of promised development projects and revenue. In a study of three parks in Madagascar, [Marcus \(2001\)](#) finds that the majority of local residents were happy the parks were created, but viewed them as foreign (i.e., non-malagasy) creations. People often failed to associate development projects with the ICDP efforts and saw conservation as secondary to their economic needs. Residents in two communities living near the Zahamena National Park felt that their well-being had been negatively affected by restricted access to the park and that promised tourism revenue and development projects did not materialize ([Raboanarielina, 2012](#)).

Conflict and challenges to authority are common with the creation of new protected areas ([Brandon, Redford, & Sanderson, 1998](#); [Holmes, 2007](#)) and the evidence presented above for Madagascar suggests that local populations may view new protected areas negatively. There are no national opinion polls or large-scale assessments in areas likely to be affected by the new protected areas in Madagascar, but perhaps voters registered their discontent at the polls. While environmental policies may not rise to the top of concerns for most voters (for the US case, see [Guber, 2001](#); [List & Sturm, 2006](#)), voting is one mechanism through which people can try to hold their leaders accountable and express their opinions. Evidence from a variety of countries does suggest that negative experiences with government have a strong impact on voting behavior ([Pande, 2011](#)) and thus if there are residents directly and negatively affected by the government's plan for protected areas, voter behavior might reflect this.

This paper uses a unique combination of data to analyze the relationship between votes in a presidential election and national conservation policies. The data from Madagascar cover the entire country at the commune level, and include presidential elections results, commune data, and forest and protected area maps. The richness of the data allows for both IV and fixed effects (panel) estimations to control for the possible endogeneity of protected areas. Results find evidence of fewer votes for the incumbent both in communes with new protected areas and also in communes with a higher percentage of people relying on the forests for their income.

The paper is organized as follows. The next section explains the environmental and political context in Madagascar and a description of the data follows. This is followed by the estimation strategy and results. The paper concludes with a discussion of the results.

2. BACKGROUND

Madagascar is well-known for its amazing biodiversity, including lemurs and baobabs. Because the island separated from the continent of Africa more than 165 million years ago, life on the island evolved in isolation ([Norris, 2006](#)). As

a consequence, an estimated 85% of its plant species, 90% of mammal and reptile species, and 99% of amphibians are endemic. Over 90% of endemic animal species live in forests and woodlands ([Harper, Steininger, Tucker, Juhn, & Hawkins, 2007](#)). Unfortunately, the country has also become known for its high rate of deforestation and it is considered a global conservation priority. From the 1950s to around 2000, approximately 40% of its forest was lost ([Harper et al., 2007](#)). The forest loss in the 1990s alone was around 10% ([Butler & Moser, 2007](#)).

(a) Protected areas in madagascar

Forest policy and protected areas in Madagascar have a long history, dating back to the pre-colonial period. In the early 19th century, King Andrianampoinimerina banned cutting of trees for firewood and claimed the forests as royal property ([Bertrand, Rabesahala Horning, & Pierre Montagne, 2009](#); [Raik, 2007](#)). In the mid to late 19th century, policies banned the burning of forest, settling in the forests, and the slash and burn cultivation technique known as *tavy*. During the French colonial period (1896–1961), all forests were officially under control of the state and the first protected areas were established in 1927 ([Raik, 2007](#)). There was little change in forest policy in the first decades of the post-colonial period and the inability of the government to control and manage the forests led, in practice, to an open access situation. According to [Raik \(2007\)](#), the policies of designating protected forests as off-limits to the local population led to “a paradoxical conflict between illegal local-level forest exploitation regarded as legitimate by local people, and the legally-sanctioned forestry policies regarded as illegitimate by local people” (p.7).

Things began to change in the late 1980s and early 1990s as the country opened up, began to receive significant foreign assistance for conservation and developed its first National Environmental Action Plan (NEAP). The first phase of the NEAP focused on creating and managing new protected areas and introducing Integrated Conservation and Development Programs (ICDP) in the surrounding areas. While ICDPs continued to be an important component of many projects, disappointing results and trends in the international conservation movement led to a shift toward broader regional approaches to managing resources and formal community-based management arrangements as part of the second phase (1998–2003) of the NEAP ([Gezon, 2000](#); [Gezon & Freed, 1999](#); [Raik, 2007](#)). New laws allowed for contracts between the state and local communities specifying rules and enforcement mechanisms for resource management ([Bertrand et al., 2009](#); [Raik, 2007](#)). Like earlier phases, the second phase of the NEAP also faced problems. The process of writing the contracts was often cumbersome, there was anecdotal evidence of elite capture, and the conservation outcomes were not obvious.

(b) Deforestation

The main causes of deforestation in Madagascar are disputed and have varied over time and with changing economic and political forces. An important contributing factor has long been the slash-and-burn system of *tavy*, primarily practiced in the eastern part of the country. Although [Jarosz \(1993\)](#) argues that during the colonial period French logging concessions and the promotion of cash crops were more important causes of deforestation than *tavy*, the practice continues to take a large toll on the forests, particularly as population pressure increases.

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