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Analysis

Should We Be Wary of Mitigation Banking? Evidence Regarding the Risks Associated with this Wetland Offset Arrangement in Florida

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ABSTRACT

This paper describes and analyzes the risks associated with using mitigation banking for the conservation of wetlands in Florida in the United States. First, we attempt to identify and summarize the main ecological and socio-economic risks regarding mitigation banking that have been discussed in previous studies. Then we analyze the institutional responses adopted by US regulators to limit these risks. We have used empirical evidence including interviews and data analysis to assess the effectiveness of these responses. Our main findings are that the recent regulatory responses adopted to face risks associated with mitigation banking seem to be more effective than what is often assumed. These responses are underpinned by the emergence of a hybrid mode of governance that combines market characteristics and regulatory constraints, and which contributes to enforcing wetland compensation in Florida. However, we also observed some risks inherent in this system, in particular the redistribution of ecosystem services, as the distance between impact sites and compensation sites seems to have increased in Florida in the last several years. In addition, the question is still pending regarding whether or not No Net Loss of wetlands is really achieved through mitigation banking.

1. Introduction

In order to address current ecosystem losses, many countries legally require that developers follow a mitigation hierarchy that includes steps first to avoid, then to reduce, and lastly to offset any impacts on natural habitats. The aim of ecological offsetting is to allow development projects such as urbanization and infrastructure construction while ensuring No Net Loss of natural habitats through the ecological restoration of equivalent degraded natural habitat elsewhere. Today offsetting is required in many policies worldwide (Wilkinson and Thompson, 2006; Madsen et al., 2010; Maron et al., 2015). Wetlands have been subject to this policy tool for 40 years, both in the United States and in Europe (Hough and Robertson, 2009; Levrel et al., 2015; National Research Council, 2001; Quétier et al., 2014).

In the US, the mode of governance of implementing wetland offsets has significantly changed in the last few years, moving from a mainly permittee-based system to a mainly market-based system. The permittee system, known as Permittee-Responsible Mitigation (PRM), works on a case-by-case basis and requires that a developer compensate a project's impact on wetlands by restoring or enhancing a degraded natural wetland near the impacted area. In 2008, PRM represented 59% of the compensatory measures in the US, while by 2014 it represented 37.5% (Madsen et al., 2011; Institute for Water Resources, 2015). Several reports have shown that PRM lacks effectiveness in terms of ecological outcomes and have highlighted the high rate of non-compliance (Government Accountability Office, 2005; National Research Council, 2001). Mitigation banking (MB), created during the 1990s in the US, has been viewed as an innovative tool aimed at improving the efficacy of wetland offsets (Hough and Robertson, 2009). Essentially, MB involves a third party that anticipates the wetland offset needs of developers by carrying out large-scale restoration or enhancement of natural areas prior to any impact; these are known as 'mitigation banks'. The regulator assigns 'mitigation credits' to mitigation banks based on an assessment of the ecological gains made by the restoration project. These credits can then be exchanged in a 'service area' defined by the biophysical boundaries of a water basin. When developers need to compensate for an impact, they buy mitigation credits from the mitigation bank. In 2008, the Final Compensatory Mitigation Rule outlined

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the rules of the process in order to standardize the system at a national scale (USACE and EPA, 2008). This Final Rule document gave a preference to MB, leading to an increase in the use of this governance system from 35% in 2008 to 50% in 2014 (Madsen et al., 2011; Institute for Water Resources, 2015). Another system of governance is In-Lieu Fee (ILF) mitigation. This relies on a fund governed by a public agency or a non-profit organization. As with MB, the principle is to pool the offset needs of several projects; however, unlike MB, the compensatory measures are realized after the impact, when enough money is raised to implement the ILF management plan. The efficacy of ILF mitigation remains less clear at this stage than MB, as it represented only 6% of US compensatory measures in 2008 and 12.5% in 2014; it will not be discussed in this article.

The theoretical advantages of MB compared to PRM (National Research Council, 2001; Government Accountability Office, 2005; Hough and Robertson, 2009) are (1) better control by regulators of fewer stakeholders responsible for the success of compensatory measures, (2) that large-scale ecological restorations have a better chance of success than small, dispersed ones, and (3) that ecological gains would occur prior to any impact, protecting wetlands from temporal ecological losses, and ensuring that some ecological performance standards or milestones are met even if the offset project is not necessarily completed.

However, as many recent publications have noted, MB also carries risks. These risks are critical to assess in the context of the increasing development of MB in the US and the fact that this system is under discussion in Europe.[2] We identified eight categories of risks associated with MB that have been mentioned in studies:

- The risk of the privatization and commodification of wetlands, reflecting a neoliberal trend and a profound ethical change in conservation practices (Dauguet, 2015; Ives and Bekessy, 2015; Robertson, 2004; Spash, 2015).
- The risk of facilitating rather than limiting development projects (Walker et al., 2009).
- The risk of the homogenization of wetlands induced by market forces (Dauguet, 2015; Walker et al., 2009).
- The risk of the temporal loss of wetlands due to divergences in the timescale of the return on investment for a private firm and the timescale of restoration projects and the release of credits (Robertson and Hayden, 2008; Teresa, 2008).
- The risk of disconnection between impact sites and compensation sites, leading to a change in land-sharing dynamics and to spatial redistribution of the social and economic benefits delivered by wetlands (BenDor et al., 2007; BenDor and Riggsbee, 2011; Ruhl and Salzman, 2006).
- The risk of a lack of long-term management and of bankruptcy (Gardner, 2012; Gardner and Radwan, 2005; Robertson, 2008).
- The risk of reversing the ends and the means: protecting the market rather than the environment (BenDor and Riggsbee, 2011; Gordon et al., 2015; Walker et al., 2009).
- The risk of reversing the ends and the means: using the money generated by offsets to achieve previously agreed conservation targets (Maron et al., 2015; BenDor and Riggsbee, 2011; Gordon et al., 2015; Walker et al., 2009).

To our knowledge, few articles have attempted to provide an overview of the ecological and socio-economic risks of mitigation banking. Two articles have discussed the strengths and weaknesses of MB (Bekessy et al., 2010; Walker et al., 2009), but these were based on a review of the existing literature and on theoretical assumptions. Our study goes further in the analysis of these risks, using various sources of information such as quantitative analysis and interviews.

We conducted an institutional analysis of regulatory tools to determine their effectiveness in controlling the different types of risks arising from MB, using interviews carried out in the US Army Corps of Engineers (USACE) Jacksonville District (whose area of responsibility encompasses the state of Florida), literature review, data collection (from data available on US environmental institution websites) and statistical analysis. This enabled us to distinguish between risks that are addressed by specific regulatory responses and risks that remain to be addressed. We also found that some of the risks cited in previous articles concern the very principle of offsetting rather than MB per se, even if the study intended to specifically address mitigation banking.

The article is organized as follows. Section 2 presents the materials and methods used in this study. Section 3 presents the results and discusses the eight categories of risks mentioned above, the regulatory solutions adopted to limit these risks, and the effectiveness of these measures. The final section concludes by outlining the remaining risks of MB that should be taken into account.

2. Material and Methods

This study is based on a review of existing literature, quantitative analysis, and interviews carried out in Florida (the USACE Jacksonville District). The quantitative analysis was carried out using various information sources. The first was data from the Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS, 2016), a publicly available database that includes several kinds of information on the mitigation banks in a given area, such as the number of transactions, the credit classifications used, the bank type, and the number of credits released and sold. This data was extracted for treatment in July of 2016. We also used data from the National Land Cover Database (Fry et al., 2011; NLCD, 2011) on changes in land cover for the years 2001, 2006 and 2011, which enabled us to assess the surface areas of wetlands and urbanized areas and how these have evolved in Florida. Another source of data was USACE's ORM Permit Decisions database (USACE, 2016), which details all the permit requests for wetland impacts, and from which we extracted data between 2008 and 2016. Spatial analysis was carried out with the ArcGIS tool. Statistical analyses were carried out using Microsoft Excel. The main goal of this data collection was to obtain a broad picture of the situation regarding mitigation banking in the US. Combining the data from the RIBITS and ORM databases for the Jacksonville District, we calculated the mean distance between the centroids of active and inactive (sold-out) mitigation banks and their associated impacts for the 2008–2016 period. We also sought to provide a quantitative description of the MB system in the Jacksonville District in order to compare this district with the rest of the US.

The collected data was complemented by interviews carried out in Florida in 2013. We conducted 54 face-to-face semi-structured interviews in visits to 20 mitigation banks, collecting information on 71 of the 91 approved or pending banks in the Jacksonville District at the time the interviews were held (see Appendix A). All categories of MB stakeholders were interviewed: environmental consultants ($n = 20$), landowners, managers/operators of mitigation banks ($n = 28$), regulators[3] ($n = 7$), brokers of mitigation credits ($n = 4$) and other professions (e.g. lawyers, academics, NGOs, developers/bank clients $n = 6$). One individual could hold several roles. For instance, an environmental consultant might be hired as a mitigation bank manager. The main goal

[2] Germany, for example, has used compensation pools since the early 2000s (Wende et al., 2005). In France, a new biodiversity law voted in 2016 introduced habitat banking, following the creation of several pilot banks.

[3] These included regulators from the Florida Department of Environmental Protection (FDEP), the permitting team and the mitigation banking team of the United States Army Corps of Engineers (USACE) Jacksonville District, the South Florida Ecological Services Office of the United States Fish and Wildlife Service (USFWS), several Water Management Districts (WMD) and several counties.