



Requiring Responsible Mitigation Banking



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Abstract

Virginia is facing widespread loss of its tidal wetlands due to sea level rise. Sea level rise, the result of thermal expansion and increased glacial melting, is occurring at a rate faster than wetlands can adapt and move to higher ground, resulting in marsh submergence (Kirwan et al. 2010). Tidal wetlands provide innumerable ecosystem services that benefit both humans and general biodiversity, including pollutant filtration, erosion prevention and flood control (Hansson et al. 2005). They are also key hatcheries and nurseries for marine organisms, and provide habitat for various species (Hansson et al. 2005). The issue of wetland loss is particularly relevant to Virginia because Virginia is experiencing the fastest sea level rise of any state on the eastern seaboard.

In the national attempt to achieve "no-net-loss" of wetlands, the business of wetland mitigation banking has experienced enormous growth over the past few decades. These banks' purpose is to compensate for wetland loss due to development through the restoration and creation of wetlands elsewhere. While this mitigates the rate of wetland loss, "no-net-loss" is not truly achieved because development is the only federally recognized force destroying wetlands today. Wetland mitigation banks should be required to take sea level rise into account when selecting new sites, and forbidden from using sites where function losses exceed 5% within 50 years, using the "low" sea level rise projections included in the Virginia Institute of Marine Science's 2013 Recurrent Flooding Study. This will ensure longer lasting protected wetlands in the mitigation banks, and decrease developer-based wetland destruction.

A Tidal Wetlands Disappearing Act

Wetlands perform various ecological functions that support biodiversity and human life. These function include

- Pollutant filtration
- Floodwater storage
- Protection from storm surges
- Erosion and sedimentation control
- Aquifer recharge
- Spawning and nursery habitat
- Carbon sequestration



Figure 1: The rate of sea level rise is rapidly accelerating, posing an increasingly significant threat to coastal biodiversity

Findings from a recent study in Australia suggest that wetlands may be up to 50 times more effective than forests at sequestering carbon, making them an extremely unique and valuable ecosystem (Gallucci 2015). Due to this ecosystem's wealth of services and benefits, wetland loss has a high cost to humans.

Sea level rise is the combined result of thermal expansion and glacial melting due to anthropogenic climate change, and its rate is currently accelerating (Kirwan et al. 2010). This poses a great threat to the valuable tidal wetlands that provide countless ecological services. Virginia's tidal wetlands are particularly threatened by sea level rise because this state is facing the fastest rate of sea level rise of any state on the eastern seaboard (Stiles 2015).

Recognizing the need to protect wetlands, the United States adopted a policy of 'no-net-loss' in 1989 (Bendor 2007). Section 404 of the Clean Water Act also sets forth the need for a permit from the U.S. Army Corps of Engineers when one's development will drain, fill, dredge or otherwise harm an area of wetland. Since 'no-net-loss' is the goal, federal law states that wetland loss in one area must be matched by the addition of wetland elsewhere. This is called compensatory mitigation. Only after determining that, after avoidance and minimization techniques have been implemented, the development will result in some form of wetland damage, may the developer turn to compensatory mitigation.

Improving the System

I propose that the regulatory bodies of Virginia whom approve and deny applications for new tidal wetland mitigation bank sites in this state require banker consideration of the foreseeable impacts of sea level rise in site selection. Mitigation bankers should be required to take sea level rise into account when selecting new sites, and forbidden from using sites where function losses exceed 5% within 50 years, using the "low" sea level rise projections included in the Virginia Institute of Marine Science's 2013 Recurrent Flooding Study. This would entail the addition of only a single rule to the Virginia Department of Environmental Quality's Wetland Mitigation Checklist.



Figure 2: Wetlands are unique ecosystems that perform numerous ecological functions to support biodiversity (Flickr)

What is Wetland Mitigation Banking?

- Preferred form of compensatory mitigation by the US Environmental Protection Agency
- Three players: Credit suppliers (mitigation banks), developers and regulators (U.S. Army Corps of Engineers, Environmental Protection Agency, Virginia Department of Environmental Quality, US Fish and Wildlife Service, Virginia Department of Game and Fisheries)

Process

- Mitigation banker submits a permit application for the establishment of new mitigation bank site to the regulatory agencies (this could include the restoration, enhancement, preservation or creation of wetlands)
- Agencies form a review team and determine whether or not to approve or deny the proposed site based on the banker's adherence to the existing rules and regulations regarding site selection
- After all avoidance and minimization of potential impacts has been exhausted and wetland function will still be lost due to his actions, a developer may purchase credits from the mitigation bank to offset his impact

Why It Works

- It's a quick fix. Wetland mitigation bankers already perform extensive research in surveying where next to place a new bank, and data regarding projected sea level rise in the coming years is abundant and readily available. The addition of one requirement to the existing checklist that mitigation banks must follow would be an extremely easy task.
- It's cheap. This proposal would require no additional funding and would be a one-time fix. The cost of the change would fall on the wetland mitigation banks, as they would likely face higher property costs.
- It will provide lasting protection. Credit cost would rise, shifting higher costs to the developers. If credits are deemed too expensive, developers may be more hesitant to take action that would damage wetlands and cause a need to purchase credits. In that sense, this recommendation protects wetlands from anthropogenic damage from the start.
- It helps fulfill promises already made. This proposal requests the end of the continued waste of time and money that comes with creating new wetland mitigation banks in places they will not last. Both the United States and the Commonwealth of Virginia have explicitly stated that they are striving for 'no net loss' of wetlands, and this recommendation helps assure that their goal will be met far into the future.

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