

# Stacking Opportunities and Risks in Environmental Credit Markets

by Jessica Fox, Royal C. Gardner, and Todd Maki

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## *Editors' Summary*

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Environmental credit markets for mitigating impacts to wetlands, endangered species, water quality, and carbon emissions have been established throughout the United States. Recently, there has been much debate about whether a conservation project should be allowed to produce credits for multiple markets, a practice broadly referred to as credit stacking. But producing stacked credits for multiple markets using one conservation action is not itself controversial; rather, it is the resulting transactions—the sale or transfer of the stacked credits—that can be contentious. Agency rules regarding the relationship between environmental credit markets are not clear and sometimes conflicting. Despite this, projects are moving forward that establish frameworks for selling stacked credits. To reduce uncertainty for both ecosystems and markets, it is critical to establish coordinated policies and regulations to ensure that environmental mitigation markets result in real, verified, and additional mitigation, especially when credit stacking is involved.

Environmental credit markets for mitigating impacts to wetlands, endangered species, water quality, and carbon emissions have been established throughout the United States. These markets offer economic incentives for private landowners to protect natural resources, and the credits generated through such conservation actions may more effectively offset impacts than traditional technological, fee-based, or project-by-project approaches.<sup>1</sup> While there are concerns regarding the ecological validation of these markets,<sup>2</sup> interest in market-based mitigation is growing, and regulatory agencies have developed policies that guide market practices. Recently, there has been much debate (and confusion) about whether a conservation project should be allowed to produce credits for multiple markets, a practice broadly referred to as credit stacking.<sup>3</sup> This Article presents results of a U.S. national survey on credit stacking, discusses several stacking scenarios, and offers thoughts on the need for agencies to provide clearer rules on transactions involving stacked credits.

Conservation on private lands can produce a suite of important ecosystem services. Restoring a wetland, for example, can result in waterfowl habitat, water filtration, and possibly carbon sequestration.<sup>4</sup> Understandably, a private landowner will likely want to maximize the economic returns associated with the full suite of ecosystem services that a conservation action generates. With the existence of four markets in which environmental mitigation credits can be sold, debate about credit stacking is intensifying.<sup>5</sup>

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1. NAT'L RESEARCH COUNCIL, COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT (2001).
2. Margaret A. Palmer & Solange Filoso, *Restoration of Ecosystem Services for Environmental Markets*, 325 *Sci.* 575-76 (2009).
3. Jessica A. Fox, *Getting Two for One: Opportunities and Challenges in Credit Stacking*, in CONSERVATION AND BIODIVERSITY BANKING: A GUIDE TO SETTING UP AND RUNNING BIODIVERSITY CREDIT TRADING SYSTEMS 171-80 (Nathaniel Carroll et al. eds., 2008); G. Tracy Mehan, *Establishing Markets for Ecological Services: Beyond Water Quality to a Complete Portfolio*, 17 *N.Y.U. ENVTL. L.J.* 638 (2008); Danny Morris, *Ecosystem Service Stacking: Can Money Grow on Trees?*, *Weathervane* (Aug. 3, 2009), <http://www.rff.org/ww/archive/2009/08/03/ecosystem-service-stacking-can-money-grow-on-trees.aspx>.
4. Irene Ring et al., *Challenges in Framing the Economics of Ecosystems and Biodiversity: The TEEB Initiative*, 2 *CURRENT OPINION IN ENVIRONMENTAL SUSTAINABILITY* 15-26 (May 2010).
5. Alice Kenny, *When Is Credit Stacking a Double-Dip?*, *The Katoomba Group's Ecosystem Marketplace* (2009), <http://www.ecosystemmarketplace.com/>

To provide clarity on this issue, we conducted a national survey on credit stacking to collect opinions, current research, and examples of stacking in the United States. The survey was sent via e-mail to approximately 1,500 practitioners involved in markets for environmental credits. The electronic survey was open from January 12, 2010, to March 25, 2010. We found that producing stacked credits for multiple markets using one conservation action is not itself controversial; rather, it is the resulting transactions—the sale or transfer of the stacked credits—that can be contentious.

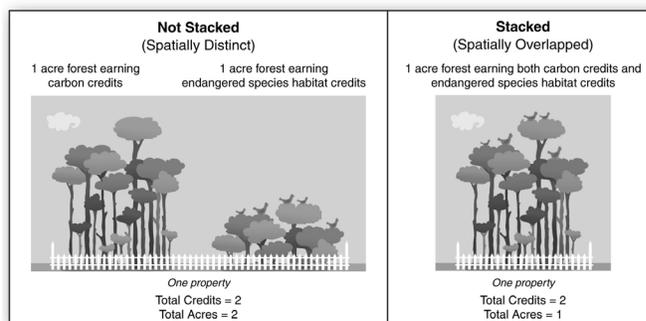
After verification and removal of duplicate inputs, we received polls from 309 individuals for an estimated 20% response rate. Respondents self-identified along the following categories: credit sellers (117), researchers (89), policy-makers (82), credit buyers (17), and credit exchanges (4).<sup>6</sup> The survey offered the following definitions for “mitigation credit stacking”:

1. Establishing more than one credit type on one piece of property, but not spatially overlapped. (selected by 10.0% of respondents)
2. Establishing more than one credit type on spatially overlapping areas, i.e., in the same acre. (83.5% of respondents)
3. Establishing credits on property that is publicly owned (National Park, Forest Service). (0% of respondents)
4. Establishing credits for a best management or conservation practice that was originally funded by the government (via grants, subsidies, payments, etc.). (1.0% of respondents)
5. Other (5.5% of respondents)

Strong consensus was formed for definition 2: establishing more than one credit type on spatially overlapping areas (Figure 1). Survey respondents identified wetland and species credits as the most common stacking scenario. Van Vleck Ranch Mitigation Bank in California, for example, offers vernal pool fairy shrimp credits and vernal pool (wetland) credits, some of which arise from the same parcel of land.<sup>7</sup> These overlapping credits, which represent acres, cannot be unbundled and sold first for species mitigation and secondly for wetland mitigation, or vice versa. Accordingly, once the species or wetland credit associated with a particular parcel is sold (separately or jointly to offset the impacts of a single project), that parcel is effectively retired from the mitigation markets. While species and wetland markets often require approval by an interagency team to ensure appropriate terms for credit use, other stacking scenarios lack this coordinated oversight. As a result, the

selling of credits in different markets often raises concerns about the lack of additionality, or double counting, of the same conservation action.

**Figure 1: Consensus Definition of Credit Stacking in National Survey**



The survey confirmed only one project where stacked credits had been sold in different markets to offset impacts from multiple projects. In 2000, Environmental Banc and Exchange sold wetland credits from its Neu-Con Bank to the North Carolina Department of Transportation. Nine years later, it sold nutrient offset (water quality) credits associated with the same conservation action to the North Carolina Ecosystem Enhancement Program. Criticized as “double dipping,” the transaction led North Carolina to place a moratorium on certifying nutrient offset credits on land previously used to produce wetland credits.<sup>8</sup>

Despite the paucity of such transactions, interest in the concept of stacking is high, with 73.6% of respondents stating that they are either already involved in credit stacking, or that they are interested in getting involved in the future (producing, purchasing, selling, regulating, verifying, buying, monitoring, researching, tracking, and/or trading). We can already find examples of this interest throughout the markets. In its agreement with the U.S. Fish and Wildlife Service (FWS), a conservation bank with endangered Florida panther credits reserved rights for future carbon credits.<sup>9</sup> J.B. Ruhl suggests that leveraging the ancillary benefits of endangered species banks in this way can be environmentally beneficial and financially profitable.<sup>10</sup> In its updated Climate Action Plan, the Maryland Commission on Climate Change contemplates a water quality trading program that also generates carbon credits for use under the state’s recently enacted Greenhouse Gas Reduction Act.<sup>11</sup> The tools to support such approaches

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6. Due to the low response rate of buyers and exchanges, the inputs to questions specific to these categories were dropped from the analysis.  
7. U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Environmental Protection Agency, Van Vleck Ranch Bank Enabling Instrument (2009) (on file with authors).

8. North Carolina Program Evaluation Division, *Department of Environment and Natural Resources Mitigation Determinations: Special Report to the General Assembly*, Rep. No. 2009-3 (Dec. 16, 2009).

9. Florida Panther Conservation, II L.L.C., and U.S. Fish and Wildlife Service, *Conservation Banking Agreement for Florida Panther Conservation Bank, II* (2010) (on file with authors).

10. J.B. Ruhl, *Keeping the Endangered Species Act Relevant*, 19 DUKE ENVTL. L. & POL’Y F. 275 (2009).

11. MARYLAND COMMISSION ON CLIMATE CHANGE, UPDATE TO GOVERNOR AND GENERAL ASSEMBLY (Jan. 2010), <http://www.mde.state.md.us/assets/>

are in development by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), which is working with various organizations to develop a calculator that will estimate both water quality and carbon credits from agricultural conservation practices (the Nutrient Trading Tool).

Further, several federally funded projects are underway for creating infrastructure that will support trading multiple credit types. These include the Bay Bank in Chesapeake Bay (biodiversity, carbon, and water quality), the Ohio River Basin Trading Project (water quality and carbon), and the Willamette Partnership in Oregon (salmon habitat, wetlands, and water quality). All of these efforts plan to utilize a web-based trading platform that will facilitate the credit sales. Of these, the Willamette Partnership has proactively developed a credit accounting protocol intended to ensure the additionality of its stacked credits.<sup>12</sup> Our survey showed that interest across the stacking scenarios is fairly even for the combined options among species banking, wetland banking, water quality trading, and carbon trading.

Generally, however, current agency rules regarding the relationship between environmental credit markets are not clear. The U.S. Environmental Protection Agency (EPA) Water Quality Trading Policy, for example, “supports the creation of water quality trading credits in ways that achieve ancillary environmental benefits beyond the required reductions in specific pollutant loads, such as the creation and restoration of wetlands, floodplains and wildlife and/or waterfowl habitat,” but it does not clarify whether the producer of the water quality credits retains the right to sell credits associated with the ancillary benefits (carbon sequestration, endangered species habitat, etc.).<sup>13</sup> The challenge of developing clear rules for transactions involving stacked credits is compounded by the number of agencies involved in environmental credit markets and different currencies of credits between markets (acres, pounds/tons, and breeding pairs) (Table 1).

Also meriting discussion are credits based on conservation actions that were originally government-funded, a practice referred to as payment stacking (definition 4 from the national survey on credit stacking). The federal government has long provided economic incentives to private landowners, especially in the agricultural sector where improved management of farmlands has the potential to generate substantial ecological benefits.<sup>14</sup> May farmers (and others) use this federal money to produce and sell environmental credits?

Rules governing the private use of credits produced with federal funds are not entirely consistent. The USDA Conservation Reserve Program (CRP), which pays farmers to install conservation practices, allows for “the sale of carbon, water quality, or other environmental credits” insofar as those sales are “consistent with the soil, water, and wildlife conservation purposes of the program.”<sup>15</sup> USDA’s Wetlands Reserve Program (WRP) and Environmental Quality Incentives Program have similar provisions.<sup>16</sup> In contrast, the U.S. Army Corps of Engineers (the Corps) and EPA have issued a regulation that precludes the use of CRP or WRP monies to generate wetland credits.<sup>17</sup> Similarly, FWS Guidance for Conservation Banking provides that lands (including agricultural lands) that have been protected or restored through other federal programs are generally not eligible to produce species credits.<sup>18</sup>

Buyers of environmental credits are extremely interested in engaging agriculture, as it can bring an abundant supply of reasonably priced credits to market. However, expanding this sector’s role in environmental markets requires interagency coordination, which is historically lacking. In 2008, the USDA established the Office of Environmental Markets, whose goal is to facilitate the participation of farmers, ranchers, and forest landowners in environmental markets; ideally this office will clarify the mechanisms for agriculture to engage in appropriate credit and payment stacking. More broadly, with multiple federal agencies involved in the oversight of environmental markets (EPA, the FWS, the USDA, the Corps, and the National Oceanic and Atmospheric Administration), as well as many state agencies, a larger coordination effort will be necessary to clarify ambiguities and inconsistencies, and ensure accountability of stacked credits.

As one anonymous survey respondent summarized, “the primary issue around stacking is additionality—that is, has the environmental benefit already been paid for somehow.” While open-mindedness exists regarding stacking’s potential ecological benefits, with 83.9% of survey respondents stating that there is either a “positive” ecological benefit or that “it depends” on the details of the stacking scenario (Figure 2), our research revealed no papers, peer-reviewed or otherwise, that verified the ecological foundation for transactions involving stacked credits. Scientifically informed rules need to be developed. Such rules would also benefit the long-term viability of environmental markets themselves. Environmental markets suffer when the ecological value of the underlying credits are in doubt.<sup>19</sup> Accordingly, to reduce uncertainty for both ecosystems and markets, it is criti-

document/Air/ClimateChange/Report\_1.pdf.

12. Willamette Partnership, *Ecosystem Credit Accounting Pilot General Crediting Protocol V1.1*. (Sept. 2009), <http://willamettepartnership.org/General%20Crediting%20Protocol%201.1.pdf>.  
 13. U.S. EPA, *Final Water Quality Trading Policy* (Jan. 13, 2003), <http://water.epa.gov/type/watersheds/trading/finalpolicy2003.cfm>.  
 14. WORLD RESOURCES INSTITUTE, MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELLBEING SYNTHESIS (2005).

15. 7 C.F.R. §1410.63 (2010).

16. 7 C.F.R. §1467.20; 7 C.F.R. §1466.36 (2010).

17. 33 C.F.R. §332.3(j)(2) (2010).

18. FWS, *Guidance for the Establishment, Use, and Operation of Conservation Banks* (2003), <http://endangered.fws.gov/policies/conservation-banking.pdf>.

19. Katherine Hamilton et al., *Fortifying the Foundation: State of Voluntary Carbon Markets*, The Katoomba Group’s Ecosystem Marketplace (May 2009).

**Table 1: Summary of Environmental Credit Markets in the United States**

|   | <b>Wetlands</b>   | <b>Endangered Species</b>  | <b>Water Quality</b>  | <b>Carbon</b>   |
|---|---|--|---|---|
| <b>Underlying U.S. Federal Laws Driving Markets</b>                                       | Clean Water Act (§404)  | Endangered Species Act (§7, §10)   | Clean Water Act (§303)  | Currently none. (Possibly in the future under the Clean Air Act, if greenhouse gas trading is allowed.)   |
| <b>Federal Laws, Regulations, Policies, and Guidance for Environmental Credit Markets</b> | Compensatory Mitigation for Loss of Aquatic Resources <sup>1</sup>  | Federal Guidance for the Establishment, Use, and Operation of Conservation Banks <sup>2</sup>  | U.S. EPA Water Quality Trading Policy <sup>3</sup>  | Currently none.   |
| <b>State Laws, Regulations, Policies, and Guidance for Environmental Credit Markets</b>   | At least 31 states have wetland mitigation laws, regulations, and/or policies <sup>4</sup>  | California Official Policy on Conservation Banks <sup>5</sup>  | Seven statewide trading frameworks in place (CO, ID, MI, OH, OR, PA, VT) with an additional four in development (FL, MD, MN, WV) <sup>6</sup> | Regional Greenhouse Gas Initiative; Western Climate Initiative (program in development); Midwestern Regional Greenhouse Gas Reduction Accord (program in development); Oregon Carbon Dioxide Standard of 1997 (H.B. 3283); California Global Warming Solutions Act of 2006 (AB-32); Washington SB6001 Mitigating the Impacts of Climate Change, 2007. |
| <b>Commodity (Credit Currency)</b>  | A functional or areal measure (such as <b>acres</b> of wetlands) representing the accrual or attainment of aquatic functions at a compensatory mitigation site.   | <b>Acres</b> of habitat and/or numbers of <b>breeding pairs</b> representing the quantification of species or habitat conservation values within a conservation bank.                              | <b>Pounds</b> of nutrient reductions (e.g., total phosphorus and total nitrogen) or sediment loads. Other pollutants on a case-by-case basis. | Offset credits typically represent <b>short tons</b> or <b>metric tons (tonnes)</b> of carbon dioxide equivalent (tCO <sub>2</sub> e) reductions.   |
| <b>Government Agencies Involved in Credit Approval</b>                                    | Interagency Review Team for federal Clean Water Act credits. Army Corps is chair; other members can be EPA, the FWS, the NRCS, NOAA (specifically, National Marine Fisheries Service), and other federal, tribal, state, and/or local agency representatives. | Conservation Bank Review Team. The FWS or NOAA (specifically, National Marine Fisheries Service) is chair; other members can be other federal, state, tribal, and/or local agency representatives. | EPA and various state agencies.   | Various state agencies.<br><br>(For voluntary carbon markets, nongovernmental offset standards organizations, including Climate Action Reserve, Voluntary Carbon Standard Association, American Carbon Registry, and Chicago Climate Exchange.)   |

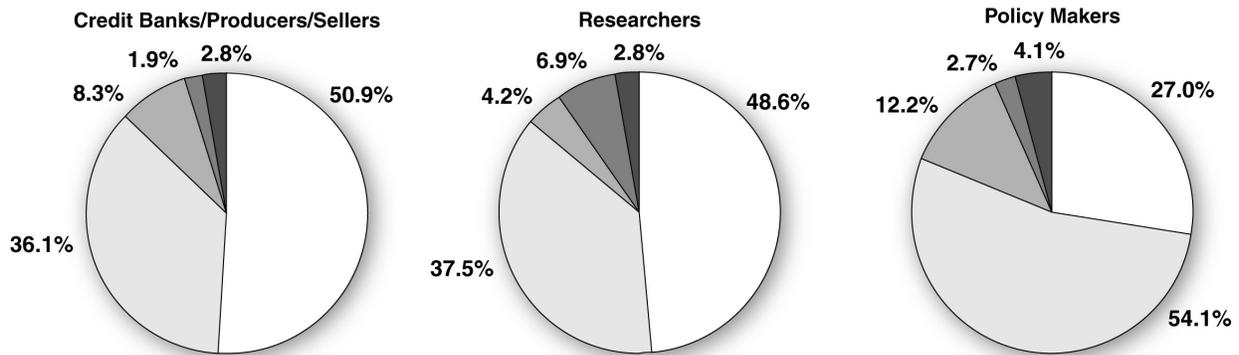
1. 33 C.F.R. pt. 332 (2010).

2. FWS, *Guidance for the Establishment, Use, and Operation of Conservation Banks* (2003), <http://endangered.fws.gov/policies/conservation-banking.pdf>.3. U.S. EPA, *Final Water Quality Trading Policy* (Jan. 13, 2003), <http://water.epa.gov/type/watersheds/trading/finalpolicy2003.cfm>.4. ENVIRONMENTAL LAW INSTITUTE, *BANKS AND FEES: THE STATUS OF OFFSITE WETLAND MITIGATION IN THE UNITED STATES* (2002).5. The Resources Agency and California Environmental Protection Agency, *Official Policy on Conservation Banks* (1995), <http://ceres.ca.gov/wetlands/policies/mit-bank.html>.6. U.S. EPA, *State and Individual Water Quality Trading Programs* (February 2010), <http://water.epa.gov/type/watersheds/trading/tradingmap.cfm>.

cal to establish coordinated policies and regulations to ensure that environmental mitigation markets result in real, verified, and additional mitigation, especially when credit stacking is involved.

**Figure 2: Results of National Survey on Ecological Value of Credit Stacking**

What level of ecological value do you believe credit stacking provides over establishing a bank for only one credit type?



- Positive/Increased ecological value (increased habitat, increased water quality, reduced species risk, reduced climate impact, etc.)
- It depends on the credit stacking scenario
- Negative (decreased habitat, decreased water quality, increased species risk, increased climate impact, etc.)
- I am unsure or do not know
- No difference from a bank for only one credit type