

**Wetland and Conservation Banking in the US:
An Illustration of Biodiversity Offsets
Driven By Regulation**

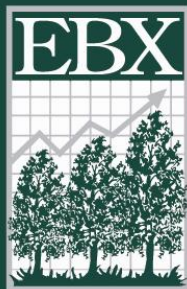
**Business and Biodiversity Offsets Program:
Conservation Banking Workshop**

**Environmental Banc & Exchange, LLC
George Kelly**

**June 29, 2009
Paris, France**

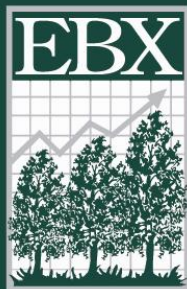
PERSPECTIVE

- Viewpoint of practitioner that has developed, financed and sold over \$80 million in environmental credits
- Entrepreneur that has participated in over 100 projects resulting in the restoration and enhancement of over 50 miles of stream, 6,000 acres of restored wetlands, and the protection of 7,300 acres of critical species habitat, forest and buffer
- President of National Mitigation Banking Association
- Participant in Nutrient Trading Task Forces in Chesapeake Bay, including serving on the Advisory Committee of the Water Quality Fund for the Chesapeake Bay and Member of the Maryland Climate Change Commission (Mitigation Work Group)
- Primarily focused on U.S. domestic market



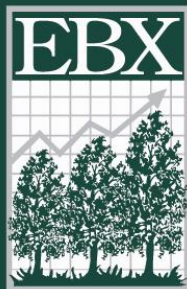
WETLAND / STREAM MARKET (US)

- Market drivers by Clean Water Act goal of “no overall net loss” of wetland acres and functions announced in 1989. Applies to streams as well.
- From 1989 to 1995, mitigation process was ad hoc. Federal Guidance was issued in 1995, which promoted increased mitigation through private sector.
- Three forms of mitigation: 1) permittee-responsible mitigation; 2) mitigation banks; 3) payment to in-lieu funds. Last two mechanisms are referred to as third-party mitigation, since responsibility and liability for completion is transferred to a party other than permittee.
- New regulations effective June 9, 2008, seeks to promote one standard for mitigation. “Preference” for mitigation banking.



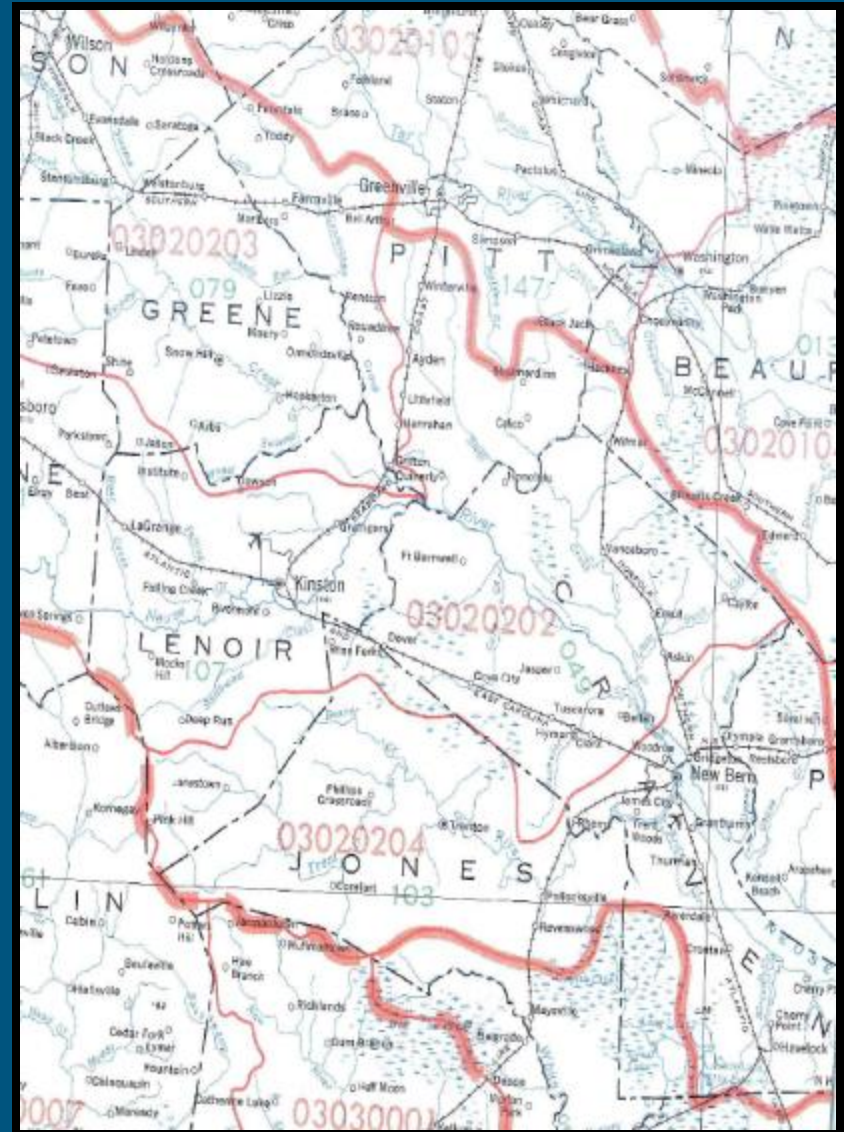
BANKING PROCESS

- Mitigation banking involves – The restoration, enhancement or preservation of an environmental asset; the conversion of resources into marketable credits based on a credit ratio; the sale of credits to offset impacts to similar resources within a service area
- File prospectus or concept plan with the Interagency Banking Team (“IRT”)
- Obtain approval under Mitigation Banking Instrument (“MBI”) process takes 1-3 years
- MBI is legal instrument that identifies the following:
 - credit ratio
 - credit release schedule
 - service area
 - financial assurances
 - easement placement
 - credits
 - performance standards
 - monitoring and maintenance
 - force majeure
 - endowment obligations
- Performance Standards
 - Wetlands – hydrologic and vegetative
 - Streams – Structural integrity, overbank flooding, vegetative buffer
- Conservation Easement and bonding must be in place before credits may be sold
- Hunting, recreation and selective timber harvest might be continued



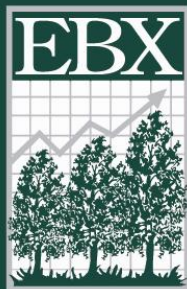
CREDIT SALES

- Impacts must be within service area of bank as outlined in MBI – very limited
- Army Corps makes case-by-case determination to determine if credits acceptable: in-kind, on-site
- Permit sequencing still take place – avoid, minimize, mitigate
- Credits must be released and available consistent with credit schedule
- The typical credit ratio is as follows:
 - Restoration = 1:1
 - Creation = 3:1
 - Enhancement = 2:1
 - Preservation = 5:1
- The typical credit release schedule is as follows:
 - 15% or MBI extension or easement placement
 - 10% after year 1
 - 10% after year 2
 - 10% after year 3
 - 10% after year 4
 - 15% after year 5
 - 25% after success criteria met or year 5



DIFFERENT TYPES OF MITIGATION METRICS

- **Acreage/Linear Feet:** a simple acreage or linear foot index is often used as a surrogate for wetland or stream functions.
- **Best Professional Judgment:** a case by case assessment made by resource agencies
- **Functional Equivalency:** an established assessment methodology designed to measure one or more wetland functions or services. For example:
 - HGM (Hydrogeomorphic methodology)
 - HEP (Habitat Evaluation Procedure)
 - UMAM (Uniform Mitigation Assessment Method – Florida)
 - WHAP (Wildlife Habitat Appraisal Procedure)
- **Combination:** an approach that combines both professional judgment with acreage scaled to some value of functionality



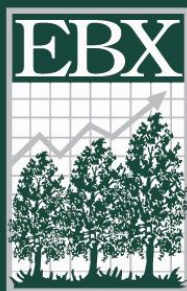
TYPICAL PERFORMANCE CRITERIA

- *Wetlands*

- Hydrology – 5-10 years
 - Groundwater wells installed (manual and automatic) (follow Army Corps protocol)
 - Hydrologic success: Between 5% - 12.5% of growing season
 - Reference Site: if rainfall not normal, then assess reference data (targeted community)
 - Rain gauges
- Vegetation – 5-10 years
 - Monitoring plots based on aerial coverage (2% of restoration site) (Plots cover 0.1 acres in size)
 - 680 stems per acres planted
 - 320 stems per acres after 5 years
 - If greater than 25% mortality, then replacement
 - Invasive control and species diversity (i.e., red maple no more than 20%)
 - Reference reach assessment
 - Rain gauges

- *Streams*

- Cross sections (2 per 1000 linear feet) (inclusive of riffle and pool)
- Pattern (sinuosity, meander width ratio, radius of curvature)
- Longitudinal profile (years 1, 3 and 5)(Thalweg, water surface, inner berm, bankfull and top of bank)
- Some instances: Benthic macroinvertebrates or fishing sampling



ENVIRONMENTAL BANC & EXCHANGE

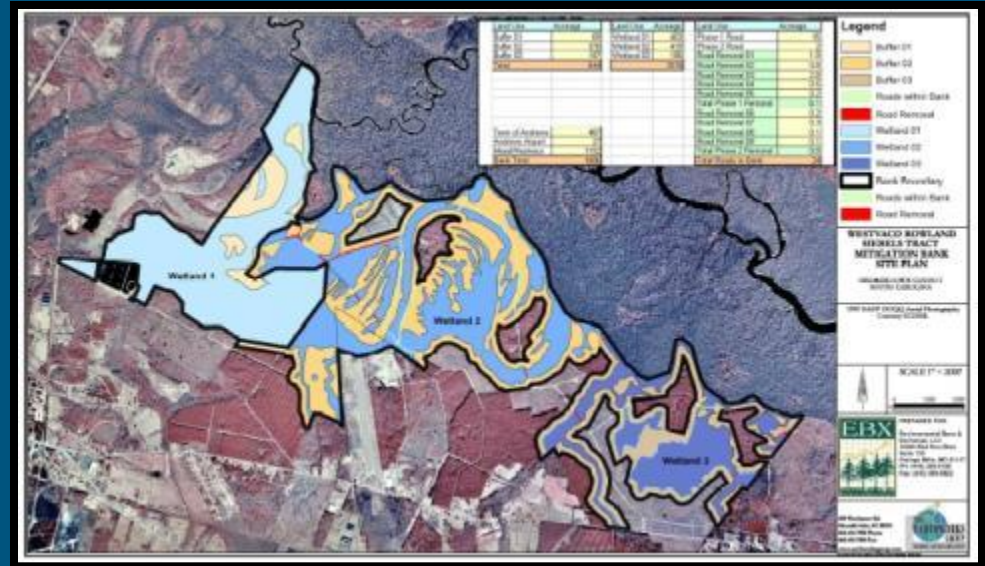
Example - Wetland and Stream Mitigation Bank In North Carolina

- 133 acres of restoration of bottomland hardwood forest and 11,800 linear feet of restoration of meandering coastal plain stream.
- Instream structures were used to control stream bed grade, promote riffles and pools, and reduce stress on stream banks.
- Approximately 1200 shrubs were transplanted to the stream bank and 90,000 new hardwood and shrub stems were planted.
- Monitoring wells continually record groundwater levels and sampling plots are inspected quarterly to record vegetative data.
- Water gauges record stream flow and over-bank events and annual inspection of stations along the stream provide data on dimensional integrity and aquatic life.



CRITICAL WETLAND / STREAM MARKET ELEMENTS

- Clear policy goals and strict enforcement
- Evolution to uniform mitigation standards
- Rigorous certification process of mitigation process
- Mitigation easily understandable by impactors (Compensation ratio 1-2 times impact)
- Understandable metrics
- Transfer of liability to mitigation project sponsor if a bank



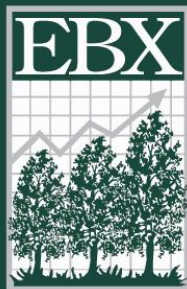
CONSERVATION BANKING PROCESS

- Endangered Species Act, Conservation Banking Guidance, 2003 (US Department of the Interior)
- No “no net loss” requirement. Primarily preservation with significant management requirements.

ESA - Section 7 – federal agencies - “jeopardy”

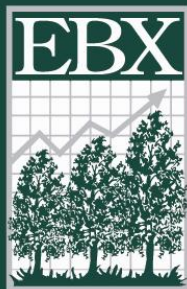
ESA - Section 10 – private parties - “incidental take”

- Three primary forms of mitigation: conservation banking; habitat conservation plans; and ad hoc mitigation. Habitat Conservation Plans may be project specific or regional.
- Process: Conservation Bank Enabling Agreement which includes Resource Management Plan (Interim and Long-Term); Easement; and Endowment of Management Plan
- Mitigation metric: habitat or sustainable population of species. Depends on recovery objectives of the species.



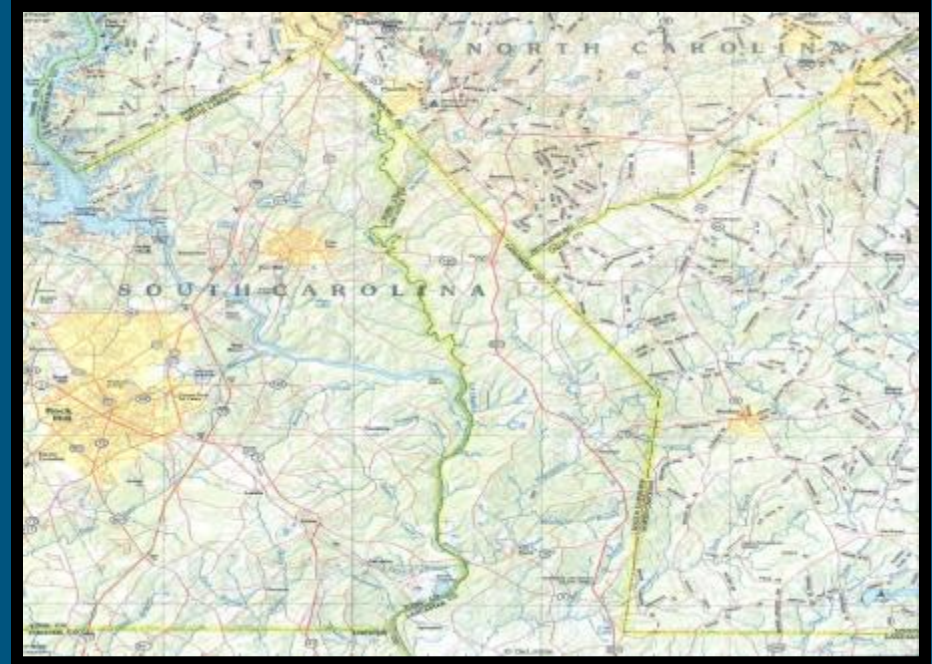
CONSERVATION BANKING MARKET (US)

- Primarily in California and West where there are strong state counterpart laws and broad drivers
- Mitigation concept for endangered species less clear than wetlands within statutory and regulatory framework. “No net loss” concept is not as pronounced
- Variability in enforcement leads to uncertainty in market
- Habitat Conservation Plans can create a framework for supporting banking or may undercut banking by providing for in-lieu fees
- Less homogenous mitigation metrics due to multiple species with different recovery needs (i.e., Fairy Shrimp, Red Cockaded Woodpecker, Golden Cheek Warbler, Salmon, Burrowing Owls, Swainson Hawk, Kit Fox, Heelsplitter Mussel, Cheat Salamander, Gopher Tortoise, Scrub Jay, and Indiana Bat)



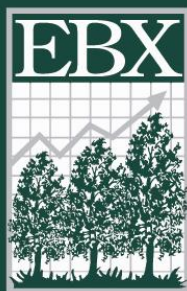
EXAMPLE - CAROLINA HEELSPLITTER

- Species
- Species Conservation Strategy
- Bank Location & Description
- Bank Structure
- Service Area
- Credit Release Schedule
- Bank Resource Management Plan
- Credit Purchase Process and Drivers
- Financial Assurances



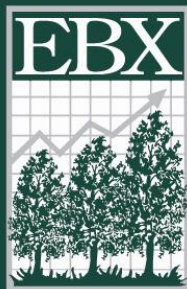
BARRIERS AND OPPORTUNITIES BIODIVERSITY MARKET

- Greater transparency— Regional Internet Bank Information Tracking System and Speciesbanking.com are helping identify historical trending in two markets. Information may be imperfect, due to limited data points.
- Supply in market is not static and is hard to discern; as standards are raised, it will eliminate certain less sophisticated suppliers.
- Pricing not readily available and localized.
- Mitigation standards may be variable and regional (evolution to one regulatory standard in wetlands; species is less clear).
- Niche-based and localized market.
- Variability in enforcement, which is the heart of the regulatory market. Market drivers are not always present.
- Certification process still evolving (credits are not yet fungible).
- Risk and liability transfer is important for credit buyer.



CONCLUSION

- Type of mitigation determined by type of resource objectives and type of existing laws
- In the US, regulatory enforcement and implementing policies are the key drivers to creating markets
- Voluntary markets have more flexibility than regulatory markets in promoting offsets
- Factors such as: clear and uniform standards; uniform mitigation metrics; transfer of liability; and rigorous certification process are keys to facilitating market.



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