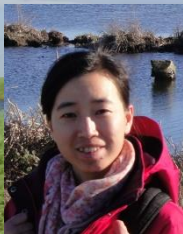


Wetland Service Markets: Banking and Management Lessons from the US

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What is a Wetland?

"Those areas that are inundated or saturated by surface or ground water (hydrology) at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands generally include swamps, marshes, bogs, and similar areas" (40 CFR 232.2(r)). Definition used by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps.)

"Whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters." Definition of The Ramsar Convention.

The Ramsar Convention

The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and sustainable use of wetlands and their resources. It was signed in Ramsar, Iran in 1971.

There are 160 Contracting Parties and 1,929 sites designated for the Ramsar List of Wetlands of International Importance.



Xixi National Wetland Park, Hangzhou, Zhejiang

Wetland Service

- Flood mitigation
- Storm damage protection
- Water quality improvement
- Habitat for wildlife
- Recreation
- Education

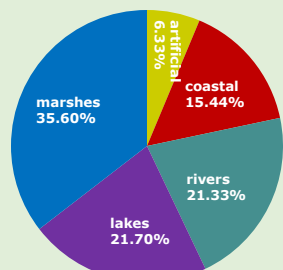


Baishuiyang Natural Reserve, Nide, Fujian

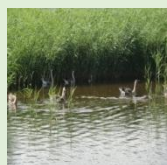
It is estimated that the global value of wetland ecosystems is \$14.9 trillion.

Wetlands in China

China's wetlands – including rivers, lakes, marshes, mangroves - cover 96,200,000 acres, ranking first in Asia and representing 10% of the world's total.



Mangroves



Marshes

Wetland types in China

Wetland Conservation

China joined Ramsar in 1992. Since then, China has made rapid progress in wetland conservation. To date, a total of 550 wetland nature reserves and 100 wetland parks have been established.

China presently has 37 sites designated as Wetlands of International Importance under the Ramsar Convention, with a surface area totalling 13 million acres.



Zhalong, Heilongjiang Nature Reserve.
A system of permanent and seasonally flooded freshwater marshes, shallow lakes and ponds, with extensive reedbeds and grasslands. Home of red-crowned cranes.



Ruoergai Plateau peatlands, Sichuan.
Comprising 490,000 ha, the peatlands are found in a shallow basin surrounded by hills and mountains, and are part of the headwaters of the Yellow River.

Wetland Restoration

With an improved understanding that healthy wetland ecosystems play a vital role in sustainable economic development, China made major efforts in wetland restoration, as signified by the policy to return reclaimed croplands to wetlands, to enhance the degraded wetlands, and to emigrate ecologically.



Quanzhou Bay, Fujian
1,000 acres of mangroves have been restored since 2000. Local people have become the protectors of mangroves.

Wetland Challenges

Natural wetlands in China have suffered great loss and degradation (e.g., 23.0% freshwater swamps, 51.2% coastal wetlands lost). Especially over the last 50 years, there has been some misguided policies and the ever increasing population pressure has taken a toll on these natural resources.

Lessons from the United States

The lower 48 states contained an estimated 105.5 million acres of wetlands in 1997. From 1780's to 1970's almost half of original wetlands had been drained and converted to other uses, but since then the rate of loss has decreased.

Various factors have contributed to the decline in the loss rate including implementation and enforcement of wetland protection measures and elimination of some incentives for wetland drainage. In addition, wetland restoration and creation actions have also helped reduce overall wetland losses.

Wetland-related laws and regulations

Federal:

Clean Water Act
National Environmental Policy Act
Rivers and Harbors Act
Federal Agriculture Improvement and Reform Act
Endangered Species Act
Food Security Act
Fish and Wildlife Coordination Act

State(Oregon):

State Removal-fill law
Forest Practices Act
Oregon Wetland Inventory and Wetland Conservation Plans
Oregon Wetlands Mitigation Bank Act

Local

Some city and county land use ordinances

Mitigation

Those who intend to remove or fill in wetlands or other waters of the U.S. must apply for a permit from the Corps or state agency under Section 404 of the Clean Water Act. Consistent with the wetland programs' goal of "no net loss of wetlands," these permits are required to mitigate the effects of wetland loss.

The applicants are required to avoid and minimize the impacts of wetlands as much as possible before considering the compensatory mitigation.

Compensatory mitigation actions typically include creating a wetland where one did not exist before, restoring a former wetland, enhancing an existing but degraded wetland, or in exceptional cases, preserving an existing healthy wetland.

Mitigation banking

A wetlands mitigation bank is a wetland area that has been restored, established, enhanced, or preserved, which is then set aside to compensate for future conversions of wetlands for development activities.

The purpose is to replace the physical and biological functions and human-use values of wetlands due to unavoidable losses from anticipated development. Banking is most suitable for the compensation of development activities in which individual losses may be minor.



The idea of mitigation banking was born in the 1970's, based on the need for a simpler way to mitigate the loss for wetlands caused by development projects. Typically, developers had neither the expertise nor the incentive to mitigate the impacts of their projects on wetlands. Using a market approach, a third party (banker) could create, restore, or enhance wetlands to create a bank of wetland credits to compensate for the adverse impacts to wetlands. The 'credits' are similar to cash deposits in a checking account.

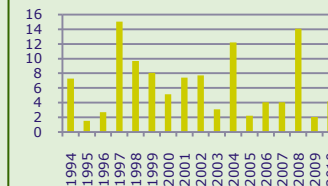
By consolidating mitigation for many small losses in one site, a bank can be more environmentally beneficial than piecemeal on-site compensatory mitigation and more easily protected. It can also be more efficiently monitored.

Case study

The West Eugene Wetlands Mitigation Bank takes place within the Long Tom River watershed, of which Amazon Creek is a tributary.

The program includes wetland restoration and enhancement on a number of suitable sites and the certification and sale of mitigation credits to applicants required to provide compensation for adverse impacts to wetland resources.

The West Eugene Bank is the only public bank in Oregon, which is managed by the West Eugene Wetlands Partnership.



	Purchase Date	Credits in Transaction	Balance
Credit balance as of January 1, 2010			21.75
Credits requested for certification during year		0.00	21.75
Uncertified credits removed from inventory		0.00	21.75
Credits sold in 2010			
City of Eugene PVI Airport	April 2010	(8.72)	13.03
Eugene Water & Electric Board	May 2010	(8.50)	4.53
City of Eugene PVI Airport	July 2010	(2.98)	1.55
Subtotal of credits sold in 2010		(14.20)	
Credit balance as of December 31, 2010			1.55

Annual Credit Sales, 1994 - 2010

Since its first credit sale in 1994, the West Eugene Mitigation Bank has sold a total of 110.47 compensatory mitigation credits.

Source: West Eugene Wetlands Mitigation Bank 2010 Annual Report

Credit sales during 2010

The impact wetlands are located within the Bank's service area. Till the end of 2010, credits have been sold to over 170 developers.

Source: RiBITS database

In summary, the West Eugene Bank is a key instrument to achieve three major objectives:

- (1) to restore and enhance wetland communities in Eugene
- (2) to provide certified mitigation credits to public and private entities for development impacts of wetlands
- (3) to provide an alternative to meet mitigation needs in a timely and economic manner

Conclusion

•As experiences have demonstrated in the USA, legislation is the key to successful wetland management.

•In the past forty years, great efforts have been made to achieve the ultimate goal of "no net loss of wetlands".

•Mitigation is the replacement of unavoidably lost wetland resources with created or restored wetlands, with the goal of replacing as fully as possible the functions and public benefits of the lost wetland.

•Mitigation banking is an effective way to satisfy economic and community development and wetland protection.

Acknowledgement

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