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Ecosystem Services: Understanding Market Opportunities for Landowners

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Ecosystem services are the goods and services that people obtain from our environment. These services include clean air and water, climate regulation, pollution control, flood regulation and spiritual values, in addition to more commonly recognized provisions such as food and wood products. Ecosystem services provide a variety of benefits and these services provide critical functions that help prevent ecosystem degradation. Recent scientific reports such as the Millennium Ecosystem Assessment (www.maweb.org/en/index.aspx) highlight the important linkage between these services and human well-being.

Recent developments in the markets for ecosystem services present some new opportunities for forest landowners and managers. Besides the obvious contributions that forest owners provide as good land stewards, there is increasing recognition of the importance of these services and the values they provide to society. Many of these services, such as clean water and wildlife habitat, have been provided from forestland with little consideration of their "market" value and are often considered as "free" public goods. Using market-based analyses for valuing multiple forest benefits has long been the domain of forest economists, but interest from business, government agencies, landowners and conservation groups are now providing new impetus to develop market-based mechanisms for ecosystem services.

PHOTO COURTESY OF ROBERT DEAL

A view of Mt. Hood, Ore., through managed forests containing different stand age and structure features.

Market-based mechanisms provide flexibility in how targets are achieved. Businesses often prefer these market-based regulations because it gives them options to find the most cost-effective solution to comply with environmental standards. Compliance can be obtained through production improvements to reduce pollution by purchasing "credits" from other firms, or from purchasing offset credits from approved activities that compensate for pollution increases elsewhere. These offset credits are an example of how forestlands can play a role; for example, forest landowners would sell carbon credits to power utilities.

Forests play a major role in the global carbon cycle through the ability of trees to withdraw or sequester carbon, and forests serve as a terrestrial carbon sink during most stages of forest development. Riparian forests are also important for shading streams and reducing temperatures during sum-

(CONTINUED ON PAGE 2)

Ecosystem Services: Market Opportunities

(CONTINUED FROM FRONT PAGE)

mer—a critical time for fish and other aquatic organisms. Forests also have high conservation value for a number of threatened and endangered species, for mitigating pollution, for flood control and for other ecosystem services.

PHOTO COURTESY OF ROBERT DEAL

A northern goshawk nest in a managed forest that was partially harvested 80 years ago.

Several new markets for ecosystem services are emerging with a potentially significant market role for forest landowners. These new markets offer potential financial incentives to landowners to maintain and manage forestlands rather than converting these forests into other uses. Brief overviews of carbon markets, water quality trading and wetland and species conservation banking are presented here; more in-depth articles on these topics are printed elsewhere in this publication.

Carbon Markets

Market-based mechanisms for carbon exchange are one way to regulate greenhouse gas emissions. Cap-and-trade regulations establish a limit for carbon dioxide, methane and other greenhouse gases, and then emission allowances are either auctioned or allocated to regulated sectors based on historic emission levels. Excess emission allowances can be generated by production improvements and these allowance-based transactions can be traded among firms in regulated sectors. Project-based transactions can generate offset credits by an approved activity that compensates for emissions by a business in a regulated sector. Examples of offset credits include forest carbon sequestration, methane recapture and alternative energy use. Since about 25 percent of human-induced carbon dioxide emissions are due to land-use change and deforestation, sustainable forest management plays an important role in climate change mitigation strategies. Forestry offsets also provide a range of positive environmental benefits, such as wildlife habitat, water quality improvement and wood products.

The United States does not have a comprehensive national policy mandating limits in greenhouse gas emissions. Instead, the U.S. has voluntary, state- and region-based programs to regulate greenhouse gas emissions.

Two state-based domestic programs, the Regional Greenhouse Gas Initiative in the Northeast U.S., and the California Global Warming Solutions Act, both include cap-and-trade mechanisms to reach greenhouse gas emissions targets. The California act provides for three general types of forestry projects as eligible offset mechanisms including forest management, reforestation and conservation, and all projects must use native species and uneven-aged management.

One voluntary domestic program that has emerged from the public and private sectors is the Chicago Climate Exchange (CCX). It offers a voluntary, legally binding program for reducing and trading greenhouse gas emissions among members. Members that reduce their emissions beyond a pre-established baseline can sell surplus emission allowances on the exchange or bank them for future use. Eligible offsets can come from methane collection and carbon sequestration projects. To list a forestry project on the CCX, landowners must provide evidence that all their forest holdings are managed on a sustainable basis. The exchange approves third parties to ver-

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Next Issue: SAF National Convention: Countdown to '07

PHOTO COURTESY OF ROBERT DEAL

A multi-aged spruce/hemlock forest containing high diversity and abundance of understory vegetation that is important for wildlife habitat.

ify that appropriate forest management practices are taking place.

Water Quality Trading

Unlike global carbon markets, market-based schemes for improving water quality are generally limited to local or regional programs within a specific watershed. Markets for water quality credits are established from a regulatory structure that producers or developers must follow in order to acquire permits for their operations. Water quality trading provides a market-based process for polluters to pay for the reduction of pollutant levels to achieve targets for a watershed.

Water quality trading involves discharges of point source pollution; these dischargers would be the buyers of credits. Dischargers buy credits from sellers, who can be either point sources or non-point sources of pollution or providers of improved habitat to mitigate pollution. Sellers generate water quality credits for sale when they implement pollution control technologies at facilities or land management practices such as tree planting alongside streams that reduce pollutants to acceptable levels. Forest owners and farmers are sellers of water quality credits in many programs. Other participants include water quality permitting authorities, third-party brokers, conservation organizations, watershed councils and private industry groups.

The primary benefit of water quality trading to the buyer is that it lowers the costs of meeting permit requirements. Sellers of credits benefit from the generation of revenue. When conservation and protection efforts are employed by landowners, additional benefits to the watershed include flood and erosion control, habitat retention and wetland restoration. Water quality trading programs must include key

components that define the types of pollutants that can be traded, who can trade, when trades can occur and standards for enforcement, verification and liability.

Wetland and Species Mitigation Banking

Another market for ecosystem services is species and wetland mitigation banking. These markets are based on regulations that require developers to offset any loss of wetland with another area. Developers must obtain a permit before they are allowed to harm a wetland or an endangered species.

Wetland and species mitigation banks sell credits to developers. Regulatory agencies approve a certain number of credits, generally based on acreage, that are used to mitigate development activities. As a result of these regulations, a new industry has emerged in the U.S. with the expressed purpose of providing developers and private landowners with mitigation credits they need to get their development approved. Some of these businesses are large, multi-million dollar firms working in several states. Wetland mitigation banking in particular has developed into a well-established, market-based system where buyers and sellers of credits conduct transactions through wetland banks. One of the challenges for sellers of either wetland or species mitigation banking here in the Pacific Northwest is that it often takes several years to finalize all permits.

Ecosystem Market Opportunities for Landowners

The USDA's plan for the 2007 Farm Bill, introduced on January 31, 2007, includes a new focus on incentive-based conservation in many of the 65 new proposals outlined in the bill. USDA Secretary Johanns has stated that, "We started with the 2002 Farm Bill and propose to improve it by bolstering support for emerging priorities and focusing on a market-oriented approach."

The Farm Bill includes a series of far-reaching proposals that allocate conservation funds based on cost per environmental benefit and create stronger incentives for private markets in ecosystem services. The Title 2 section of the Farm Bill calls on the federal government to "invest $50 million over 10 years to encourage private sector environmental markets to supplement existing conservation and forestry programs." The new Farm Bill also includes cost-share programs to help landowners conserve their land through a variety of technical, financial and education incentives. Opportunities are available through the new wood to energy program to accelerate development and use of new technologies to utilize low-value woody biomass that could offset the demand for fossil fuels. The details are still being developed, but the proposed Farm Bill is a major step to help encourage the development of ecosystem markets.

Many of the market-based incentives for ecosystem services are new and the markets have only recently begun to function. Markets for ecosystem services, including carbon sequestration, water quality trading, and wetland and species conservation banking have expanded the suite of financial incentives for private land stewardship. Carbon markets are projected to grow as state and regional regulatory frameworks become more common and passage of national-scale legislation becomes more likely. These new financial incentives expand opportunities for forest landowners to gain revenue from their lands while providing benefits to society as good land stewards. ◆

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Ecosystem Services: Everything Under the Sun?

BY JAY O'LAUGHLIN

The development of markets for ecosystem services has to some extent been inhibited by definition problems. Why markets? If global development goals are to be met, more attention to ecosystems will be needed, and decision makers will depend on realistic values attached to ecosystem services to ascertain what is gained and lost under different policy options. Monetary values for ecosystem goods or services are a readily understandable basis for comparison, and markets produce the most reliable quantitative values. Markets also are a means to compensate those providing valuable goods and services. So what is an ecosystem service?

A forest, by definition, is an ecosystem characterized by predominant woody vegetation. An ecosystem is a dynamic complex of plant, animal and microorganism communities and the nonliving ("abiotic") environment interacting as a functional unit. A log, a forest or the entire planet may be considered an ecosystem. Relatively undisturbed areas, such as "natural" forests, are ecosystems, as are landscapes with mixed patterns of human use, and those intensively managed and modified by humans, such as agricultural land and urban areas.

Ecosystem services, broadly defined, are the benefits people obtain from ecosystems. We are fundamentally dependent on our natural endowment of ecosystems, even though technology provides some buffering capacity for environmental changes.

The United Nations-sponsored Millennium Ecosystem Assessment project, and other classification schemes, put services in four categories:

• provisioning services such as food, water, timber and fiber;

• regulating services that affect climate, floods, disease, wastes and water quality;

• cultural services that provide recreational, aesthetic and spiritual benefits; and

• supporting services such as soil formation, photosynthesis and nutrient cycling.

Given these categories and the definition of ecosystems, services then are just about everything under the sun, and everything is connected to everything else, right? So of what use is such a broad concept?

More specifically, economists recognize ecosystem services as the end products of nature that benefit human well-being. How is our environmental well-being? Without a system of national environmental accounts to track progress, how do we know? To develop such a system, economists consider regulating and supporting "services" not as benefits that can be valued, but rather as ecosystem processes or functions. Why? Simply to avoid double counting. Without a system of meaningful accounts, the ecosystem service concept is little more than the latest environmental buzzword. In practical applications of the ecosystem service idea it is therefore desirable to maintain a distinction between ecosystem products and processes.

Definition problems aside, the ecosystem service concept appeals to not only economists and ecologists, but also public land managers and private landowners who see opportunities for more efficient and effective provision of basic environmental service flows and a potential for monetary compensation. With all of this interest, ecosystem services has come to represent several related topics, including:

• measurement of ecosystem service flows and the processes underlying those flows;

• understanding the effect of those flows on human well-being;

• valuation of the services; and

• provision of the services (Brown et al. 2006, USFS-RMRS-RWU-4851 Discussion Paper).

The more we know about the ecology of a forest, the better the valuation of the services it provides will be. Ecologists know considerably more than they used to about how ecosystems work, which habitats deliver which services, and in what quantity those services are supplied. As such understanding improves, new financial opportunities emerge and markets develop.

For example, the importance of insect pollination to the quality and quantity of agricultural crops such as coffee, almonds and apples has only recently become appreciated. This kind of information could change the way landowners view forest and rangelands, perhaps encouraging them to help pollinate a neighbor's crops and then be paid for the service. A version of such ecosystem service "blackmail" already happens on an international scale. Britain's minister for the environment noted that developing countries sometimes say to him, "Give us the money or the forest gets it" ("Are you being served?" *The Economist,* April 21, 2005). For pragmatic reasons the ecosystem service concept should not include everything under the sun, but rather those things we can effectively measure and care enough about to pay for them. ◆

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Can Markets Deliver Water Quality?

BY BOBBY COCHRAN

Carbon is trading in European markets for roughly $11/ton and on the Chicago Climate Exchange for $3/ton. While all this momentum has built around carbon trading, water quality trading, another ecosystem service market, has inched along since the late 1980s with more activity in the last 10 years. Water quality trading infuses Clean Water Act compliance with greater flexibility. The U.S. EPA and state water quality agencies "cap" allowable pollution in a given watershed and divvy up how much pollution each regulated party is allowed to put into a lake or river. Parties that reduce pollution below what is required generate credits to sell to others who can't meet their requirements.

Water quality trading shares many characteristics of other ecosystem service markets. It is tied to a regulatory driver, the Clean Water Act, which sets water quality goals. Buyers are most often point sources of pollution: the industries, wastewater treatment plants and municipal stormwater systems that have a pipe draining into water. Nonpoint sources also receive pollution allocations as groups, and in states like Oregon, the forest practices act or other rules work with individual landowners to improve water quality. Pollution sources (both point and nonpoint) that reduce below their cap generate credits that can be sold to sources that have complied with a basic level of treatment, but cannot meet their requirements.

Traditionally, compliance with the Clean Water Act has used concrete and steel technology to decrease discharge of phosphorous, hot water or other pollutants. Many of the water quality trading programs around the country include only point sources as buyers and sellers. Connecticut's Long Island Sound program allows municipal wastewater treatment plants to trade phosphorous reduction credits with each other. Many of the newer programs allow point sources to purchase credits from non-point sources. If agricultural landowners convert to no-till agriculture, they can generate nitrogen reduction credits. If forest landowners increase their stream buffers beyond what is required, those actions could generate temperature or sediment reduction credits.

Coming to Grips with Additionality

In every trading program, these actions must be "additional" to what is already required. This "additionality" is a common element of most ecosystem service markets. To date, participating non-point sources have been agricultural landowners in riparian areas. According to a 2004 review of trading programs conducted at Dartmouth University, forest landowners have only participated in trading programs in Lake Tahoe, Calif., and West Virginia's state trading policy.

PHOTO COURTESY OF CLEAN WATER SERVICES

Canoers float down a healthier Tualatin River.

Water quality trading in general has struggled to find its footing. Of 40 programs in 2004, only 13 of those programs had completed a trade. A number of reasons contribute to this. Unlike carbon or species markets, water quality markets are smaller, constrained by watersheds and limiting in the number of potential buyers and sellers. Unlike wetland mitigation banking, water quality trading brings together more diverse stakeholders working together in ways they are not used to. Ecosystem markets in general are messy. They have a lot of missing information and uncertainty. Whether timber, airplane parts or water quality, markets generally like to be big with a lot of certainty. There is a sticky balance between responding to economic forces in ecosystem service markets and keeping markets local enough to foster the trust and accountability needed to sustain ecosystem service markets. The overall message from water quality trading has been: markets are difficult, but in the end, their ability to redirect investment to actions more likely to enhance water quality makes them worth the challenges and upfront costs.

A Successful Example

There are several successful trading models. In Oregon's Tualatin Basin, flowing from the west side of Portland's metropolitan area into the Willamette River, Clean Water Services (an urban sewer and stormwater utility) has bought three years of temperature reduction credits generated from restoration in agricultural and urban riparian areas.

Clean Water Services faced $50 million in concrete and steel expenses to build refrigerators for pipes and $2 million a year in electricity to decrease the temperature of its discharge to comply with water quality regulations. Staff members joked about asking people to flush ice down the toilet, but instead, they formed a partnership with the Tualatin Soil and Water Conservation District and the Farm Services Agency to augment in-stream flow and riparian shade. Trading saved Clean Water Services several million dollars and generated new funding streams for farmers. Restoration has also provided habitat, water supply and carbon sequestration benefits that would not have happened with concrete and steel. There have been challenges forming the Tualatin program. Clean Water Services buys

two credits for every one it needs to hedge its bets in case trees die before they provide shade, a flood knocks out a project or some other uncertainty occurs. Partners are still defining their roles, but altogether, the challenges of trading have been worth it. Resources are being invested more strategically in the landscapes where they provide the greatest ecological benefits. Trading frameworks are in place or forming in Idaho and California, but are not actively trading.

Water quality trading and markets are not magic. They require a lot of hands-on negotiation and long-term monitoring. They may not always be the best tool for the challenge at hand, and markets alone will certainly not deliver the full range of ecosystem services sustainable communities need. Much of the focus in the forestry sector has been on carbon sequestration services, but we've known for a long time that forests provide a wide range of services. Water quality, habitat and species markets can be a nice source of new revenue for forests. Unlike wetland and species banking, the landowner (seller of credits) generally does not accept any regulatory liability when they sell water quality credits. For other markets, there is a transfer of liability from the regulated entity to the landowner. Water quality credits are usually good for 5-10 years, or some other limited duration, which drives their price down, but also leaves more options for future land uses.

Markets Encourage Flexibility

Markets for ecosystem services are popular policy tools largely because they restore flexibility in reaching national environmental goals. A generation of U.S. environmental policy formed in response to discrete, visible environmental problems such as the Santa Barbara oil spill, pollution at Love Canal or the endangered bald eagle. The Clean Water Act, Endangered Species Act and others have worked well to clean up the worst environmental challenges. Now there is a new set of challenges (climate change, non-point source pollution, urban growth) where no one organization controls the solution. Just complying with existing regulations is not likely to get us to where we need to go. This issue shows how the ecosystem service market concept allows us to look at new solutions, revenue streams and partnerships. Just like carbon sequestration alone is not likely to deliver the ecosystem services sustainable communities need, water quality trading is just one tool, which needs synergies with other markets to be successful.

Get Involved From Ground-up and the Get-go

Water quality trading programs are still young. Equations, trading rules, market areas and other concepts are being negotiated. To date, a tiny number of programs have included forestry. Forests provide extraordinary water quality services, and so there should be ways to engage forest landowners in selling credits. The most important thing is for forest landowners and their organizations to participate in market formation. The outcomes of ecosystem service markets will be determined by how their rules are constructed.

For example, each water quality trading program has developed equations for how actions translate into credits for sale. If there are no equations linking forest buffers to water quality improvements, then forest landowners may not be able to sell credits. Groups representing landowners can help link buyers and sellers together. Ecosystem services are new niche markets that will need the marketing structure to create services, bring them to market, sell them and ensure their quality over time.

In the next few years, there are some national opportunities for the forest community to engage in trading discussions. In 2006, USDA and EPA signed a memo of cooperation on water quality trading. It is still unclear what this means, but ecosystem service markets are likely to be a central part of the new Farm Bill. There are also debates among USDA and EPA regarding the additionality concept described earlier and the use of multiple funding sources to generate multiple credits. Regionally, the Willamette Partnership is building a water quality market for temperature and a framework for trading multiple ecosystem services. The Puget Sound is exploring options as well. In most cases, these discussions are so new and fluid the forest community has an opportunity to engage in market formation rather than wait for final products. Water quality trading can deliver cleaner water, but it can't do it as the only policy tool and it can't do it without partnerships between landowners, regulators, environmental groups and regulated parties. ◆

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Things to Think About Before Wading into Trading

• Is there demand? Does your watershed have a strict "cap" on pollution that creates a need for point sources to look to forests for help in reducing pollution? It is also helpful if there is more than one potential buyer who needs credits over a long period of time (e.g., in a watershed that is urbanizing with ongoing needs to reduce pollution loads as cities grow).

• Do you have supply? Can you effectively and cheaply reduce the pollutant people are demanding? Can you go above and beyond current rules to do that?

• In many programs, you need to be upstream of the place you're selling credits to. You probably have to be within the same watershed as defined by the water quality regulations.

Conservation Banking: The Opportunity for Forestland Managers

BY NATHANIEL CARROLL

What is a conservation bank? In a nutshell, a conservation bank is a parcel of protected natural land that is authorized to sell a set number of credits, most often in the form of acres of habitat, to a customer that is required by national or state law to mitigate their impact to the same species and habitat on nearby land. The demand for these credits is created by the fact that before a land developer is allowed to harm a protected species, U.S. law requires they obtain a permit. And permits usually require mitigation activities, mitigation that is increasingly being satisfied in the form of credits purchased from a conservation bank, also known as a species mitigation bank.

From an ecological perspective, a conservation bank consolidates preservation efforts on a site specifically chosen for ecological value and guarantees no time delay between the destruction of a site and replacement/preservation of habitat. From a regulatory perspective, a bank shifts the monitoring and enforcement effort from tens or hundreds of individual sites to one single site with one party responsible for reporting and ecological performance. From a credit buyer's perspective, once a credit is purchased they have washed their hands of any legal liability for the maintenance or performance of a mitigation site. And finally, from the perspective of a landowner, a bank is an opportunity to take what is commonly considered a liability on their land—a protected species, and turn it into an asset, that in some cases can demand from $5,000 to $120,000 a pop.

The roots of conservation banking are found in wetland mitigation banking—a similar system of credits and required mitigation, but based on wetlands impacts. While wetland banking got started in the mid 1980s, the first conservation bank wasn't established until 1995.

The first bank, Carlsbad Highlands, was created by Bank of America in response to the challenge of deriving value from a parcel of land they had acquired as the result of a foreclosure on a bad loan that was also home to endangered California gnatcatchers. Bank of America worked with regulators to find a mutually beneficial way to generate revenue from this asset. It took intense development pressure, strong environmental policy and the innovation of California regulators to bring forth this first conservation bank.

Today, there are roughly 500 wetland and 70 species banks in the nation, nearly double the number of banks six years ago. Statewide mitigation banking programs are flourishing across the United States from North Carolina to Texas to Oregon. Just last year, both Massachusetts and Washington launched pilot programs in wetland banking. And more than geographic boundaries are being broken. The second bank in the nation to sell anadromous fish (e.g., salmon) credits has opened sales to the public in California. The scientific and accounting hurdles overcome to make this happen will likely set a precedent on which similar fish banks could spread quickly into the Pacific Northwest, a region in need of tools to balance the needs of humans, salmon and the thousands of species that depend on this iconic fish. And finally, and perhaps with the greatest impact, the new Farm Bill proposes a provision for market-based conservation that would set up the national institutional infrastructure for environmental credit markets to benefit private farms, ranches and forests.

So what does all this mean for forestland managers in the Pacific Northwest? It means there is a growing opportunity to profit from managing your land, or a portion of it, for species habitat. But, as with any nascent market, conservation banking opportunities can be hard to see and a challenge to bring to fruition. To successfully navigate to the financial and ecological rewards of a conservation bank, it is critical to fully understand each ingredient of what it takes to establish a successful conservation bank. As outlined by Craig Denisoff, president of the National Mitigation Banking Association, success is a combination of

Conservation Banking Online Resources

Mitigation Mail eNewsletter: www.ecosystemmarketplace.com/pages/static/signup.php

Banking On Conservation: www.ecosystemmarketplace.com/media/pdf/market_insights_banking_on_mitigation.pdf

Conservation Banking Emerges in the Northwest: www.ecosystemmarketplace.com/pages/article.news.php?component_id=4001&component_version_id=5704&language_id=12

National Mitigation Banking Association: www.mitigationbanking.org/

Sacramento USFWS conservation banking site: www.fws.gov/sacramento/es/cons_bank.htm

USFWS Brochure: www.fws.gov/Endangered/landowner/banking.7.05.pdf

Upcoming: Both a comprehensive book and online database (www.speciesbanking.com) on conservation banks will be available later this year from the Ecosystem Marketplace.

capital, expertise and opportunity.

The first ingredient, capital, you may already have. This is land, cash or access to cash. If you already have land for a potential bank you are at an advantage as land in areas that have demand for mitigation can be very costly. But there are also other significant capital costs such as permitting, design, construction and an endowment. Another significant factor is the fact that conservation banks usually sell their credits over a period of more than four or five years and it can take one or more years to bring the bank online. Your return on investment will not likely be swift.

The second ingredient, expertise, should not be underestimated. Let's admit it—species credit trading is likely out of our core competency as forestland managers. But as managers of the land, we are also likely charged with ensuring the well-being and long-term sustainability of the land, which in most cases includes profitability and tracts with protected species or of high conservation value. We can be better stewards by developing diverse revenue streams from our land, but it will take diversifying our knowledge too. Permitting a conservation bank can take a wide array of specialized expertise such as biology, ecology, real estate, legal, regulatory planning, government process, marketing and sales, and financial accounting. Being familiar with each of these will smooth the bank establishment process even if you plan to subcontract most of the work.

The final ingredient, opportunity, is perhaps the hardest to get a clear picture of. Opportunity is simultaneously having the right conditions for a quality cost-effective product and a reliable market of buyers. This means having a bank site that not only harbors a protected species, but is also high-quality habitat that is ecologically sustainable and has desirable conservation attributes—such as connectivity for species movement. In short, it should be a site of high conservation value for the species (and the regulators charged with ensuring the species recovery), not marginal habitat with an isolated population unlikely to survive without intensive management.

On the market side, a bank must have demand within its service area—the area within which it can sell credits that are still ecologically relevant. This demand should be diverse (in both the public and private sectors) so as not to be exposed to the whim of a few customers or economic fluctuations. And it must be able to compete against the other forms of satisfying mitigation requirements, such as on-site mitigation, in-lieu fees or other conservation banks. Perhaps most important is the regulatory environment you are in. In some regions, regulators aren't familiar or favorable toward conservation banking. In others, they understand the advantages of conservation banking, but it may be their first time permitting a bank and will move slowly. A good working relationship with your regulators can go a long way in the success of your bank.

Understanding your market and your place in it requires a good deal of research. First, reading up on the general practice of conservation banking is a good way to get started (see sidebar for online resources). The industry is always changing and every region has its own flavor of compensatory mitigation. Second, a quick analysis of your particular site and market will give a sense of your opportunity. And third, go meet with your regulators (state and/or federal fish and wildlife agencies); they will be instrumental in the establishment of your bank. ◆

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Greenhouse Gas Emission Offsets and Forestry

BY GORDON SMITH

There has been a lot of talk about forest landowners making money by selling greenhouse gas (GHG) emission offsets. Offsets are reductions in emissions relative to a baseline emission amount or removals of GHGs from the atmosphere. Are sale opportunities real? And if so, do forest landowners want to participate? This article describes attributes of GHG offsets and identifies some issues that a forest landowner should think about before entering into a GHG emission offset agreement.

Because the atmosphere mixes, and because climate change is a function of global atmospheric conditions, it is possible to count an offset created in one location against an emission from a different location. This geographic fungibility makes offset trading possible.

Voluntary vs. Regulatory Markets

Voluntary markets for GHG emission offsets are fundamentally different from regulatory markets. Voluntary markets are just that. Participants in voluntary markets often establish legally binding contracts with each other, but the market participants set the terms of their obligations and interactions. In contrast, regulatory markets are created by a regulatory entity that compels regulated entities to meet specific emission limits and defines the attributes of credits or offsets that the regulator may accept as compliance with an emission limit.

It is important to note the distinction between offsets and allowances. In regulatory markets, the regulatory agency sets each entity's baseline, awarding that amount of emission allowances to the entity. The aggregate amount of allowances for a particular period is the total net amount allowed to be emitted during that period, often referred to as the "cap" on emissions. In contrast, offsets are created by entities or in sectors whose emissions are not capped. Offsets may be brought into a system where emissions are capped or may be used outside of a system with an emission cap, and must result from actions that mitigate emissions beyond what would have occurred in the absence of the project.

Setting the emission baseline of a project—that is, the amount of emissions that would likely have occurred in the absence of the project—is problematic because one never knows for sure what might have happened if the activity did not occur. There are two components of baselines: (1) the emissions and sequestration that would have occurred within the project boundary in the absence of the project; and (2) any displacement of emissions from inside the project boundary to outside the project boundary caused by the project. This displacement is called leakage.

By convention, GHG emission offsets and allowances are denominated in metric tons carbon dioxide (CO_2) equivalent. Of human-caused GHG emissions, CO_2 is the main component affected by forest management.

Before committing to create offsets, a landowner should choose the venue in which the offsets will be used to maximize the changes it will be recognized in the chosen venue. An offset is useless if the venue in which the holder needs to use it does not accept it.

Regulatory GHG markets in the United States are only now emerging. Of these, only the Regional Greenhouse Gas Initiative (RGGI) states how forest carbon sequestration can create tradable offsets. Europe's emission allowance and offset market is large, but offsets generated within the U.S. cannot be sold into the European reg-

ulatory market because the U.S. has not ratified the Kyoto Protocol treaty limiting national GHG emissions.

Several voluntary markets for GHG emission offsets exist in the U.S., but demand is low. Despite these difficulties, at least several dozen forest carbon offset projects have been implemented, and several million tons of GHG offsets based on changing forest management have been exchanged.

Regardless of what market offsets are being sold into, they should be verified by an independent third party to ensure to the public, buyers and regulators that the claimed amount of GHG emission benefit actually has been achieved.

Reversibility

Forest carbon sequestration is reversible. That is, the carbon stored in biomass and other organic matter can be converted back to CO_2 and emitted to the atmosphere. If the sequestered carbon is released, any offsets based on this sequestration are lost. This risk reduces the price of offsets relative to non-reversible offsets generated by reducing emissions. Because of this reversibility, monitoring must take place to ensure that sequestration continues to exist.

Some GHG emission offset programs allow forest carbon sequestration to count as an offset as long as the sequestration is held a minimum number of years specified by the program. Other programs require the sequestration to be held permanently, which obligates the land to be kept in forest cover. If the user of the offset must replace the offset when it expires, and if offset prices are rising, temporary offsets may have no value.

Offset Prices

Prices buyers pay for offsets vary by the venue in which the offset may be used, the certainty that the offset is real, the degree of risk that the offset may be reversed or invalidated, and the quantity exchanged. In U.S. voluntary markets, most wholesale transactions of offsets are in the $3-6 per metric ton CO_2 equivalent, and most retail transactions are in the $5-10 per metric ton CO_2 equivalent range. In some smaller-scale demonstration projects, buyers have paid $20-80 per metric

ton CO_2 equivalent. At the time of this writing, vintage 2008 offsets in the European regulatory market are selling for more than $20 per metric ton CO_2 equivalent. The RGGI market has a provision that, at the start of the program, limits the price of offsets to $7.70 per metric ton CO_2 equivalent, with the price rising over time.

Forest Management Activities that Can Create Offsets

A variety of forest management activities have been proposed for creating GHG emission offsets. Some of these activities actually can create GHG emission offsets. A few of the most frequently discussed strategies are outlined here.

Afforestation. Establishing and growing trees on land that has not been in forest cover increases the amount of carbon stored on the site. The carbon in woody biomass comes from CO_2 in the air. Through photosynthesis, trees and other plants break down CO_2, release the oxygen to the atmosphere and use the carbon to create carbohydrates. Some of the carbohydrates are used to create biomass, thus storing—or sequestering—the carbon and reducing the amount of GHG in the atmosphere. Of all the types of GHG emission offsets that can be created by changing land management, sequestration by afforestation is the most widely accepted.

Afforestation projects in temperate forests generally create offsets at the rate of 2-5 metric tons CO_2 equivalent, per acre, per year. For most forest types, this rate of sequestration can be maintained for 6-12 decades.

It is possible to create offsets by afforestation at low to moderate costs per ton CO_2 equivalent. If one does not count the cost of land and only counts the cost of site preparation, stand establishment and stand maintenance, it may be possible to create offsets for a couple dollars per ton CO_2 equivalent. Including land costs, at current U.S. forestland prices, typically it will cost approximately $15 per ton CO_2 equivalent to create GHG offsets.

Avoided Deforestation. Globally, more than 18 percent of anthropogenic GHG emissions come from forest clearing or forest degradation. Stopping deforestation would be an important contribution to reducing GHG emissions. However, if the purpose of deforestation is to get timber for selling into wood markets or to get land for commercial agriculture, protecting one parcel of land generally has little effect on the rate of clearing because most of the clearing is merely shifted to another location. Methods exist for estimating the amount of displacement, but they are not broadly understood or accepted.

Several groups are developing methods for quantifying GHG benefits of avoiding deforestation. However, at this time no regulatory market accepts offsets created by avoiding deforestation.

Extending Rotations. Extending the length of timber rotations increases the average standing timber stock. Timber stock is somewhat closely correlated to carbon stock, and lengthening timber rotations also can create GHG emission offsets.

However, when the time value of money is considered, creating offsets by lengthening rotations can be very expensive, per ton CO_2 of offset created. The bulk of the cost is loss of present value of timber harvest.

Wood for Energy. Using wood as fuel can create GHG emission offsets if the wood displaces fossil fuel. For example, if a coal plant begins co-firing wood chips with coal, and the wood harvest does not result in long-term reduction of forest carbon stocks, it may be possible to maintain electricity production while reducing GHG emissions from fossil fuel. If forest carbon stocks are permanently reduced, the emissions from burning the wood must be counted, and in this case burning wood generally will not create offsets.

A biomass energy project may not create offsets for the owner of the biomass energy facility. If emissions are reduced, the reductions might be achieved by others. For example, consider a new biomass energy facility that sells electricity directly to a large user. Further assume that the large user previously bought electricity from the local utility, and that the local utility powers its generation plant with

coal. In this case, the emission reduction occurs within facilities owned and controlled by the local utility, and thus the local utility would count these emission reductions in its annual emissions inventory. In a voluntary offset market, some buyers might be willing to pay the biomass facility to operate, believing that fossil-generated energy is being displaced. However, in a regulatory market, the local utility will count and own the reduction, not the biomass facility.

Sequestration in Wood Products. Most species of wood are approximately half carbon, by dry weight. Thus, anything made of wood fiber stores carbon, including paper and construction lumber.

However, wood products are created to serve market demand. The sequestration is not additional to what would happen in the absence of offset payments, so it does not create offsets. Also, it is not practical for each person to measure how much wood is in a building they own. It is possible that in the future a policy decision will be made that assigns ownership of carbon sequestration in wood products to landowners or mills.

Intensification of Forest Management. It has been argued that intensifying forest management sequesters carbon because it increases the growth rate of trees, but growth is only half of the equation. Sequestration is net of growth minus emissions, and harvesting causes approximately half the carbon in a tree to be emitted to the atmosphere as CO_2. These emissions come from decomposition of slash, roots and stumps, and from burning of wood waste.

If starting from bare ground, intensive management may sequester carbon faster than less intensive management. But if one starts with a mature forest that has not been intensively managed, intensifying management reduces forest carbon stocks as it reduces standing timber volume. If growth is fast enough and wood products remain in use long enough, eventually carbon stored in the sum of products (sometimes from multiple rotations) and regrowth can exceed the carbon stock present in the forest immediately before intensification was initiated. For forests in the Pacific Northwest, it usually takes at least several decades to cancel out emissions from increasing the intensity of management of a mature forest.

Summary

In summary, markets for GHG emission offsets are developing rapidly. Now is the time for forest landowners to consider how creation of GHG emission offsets could be integrated into their activities, the prices they would require to participate in the market, and what types of obligations they are willing to accept. GHG emission offset projects often take two years or more to analyze, plan and prepare, so if a landowner wishes to be selling offsets in three years, preparation should begin now. ◆

Gordon Smith is director of the EcoLands program of Environmental Resources Trust, a not-for-profit with the mission of developing markets that benefit the environment. He can be reached at Environmental Resources Trust, 13047 12th Ave. NW, Seattle, WA 98177.

Willamette Basin is a Model for Future Projects

BY MIKE BEACOM

The Willamette River flows 190 miles through an 11,478-square-mile watershed in Oregon that supports 2.5 million people—almost 70 percent of the state's total population. Within the basin there are 100 cities, including Oregon's largest urban areas and the state capital. Agricultural enterprises including vineyards, nurseries, grass seed and vegetable farms occupy 22 percent of the land.

The population of the basin is expected to double over the next 50 years, and sensitive parts of it are under increasing stress, which prompted the Oregon Department of Environmental Quality in 2004 to implement Total Maximum Daily Load (TMDL) restrictions on three main pollutants: temperature, mercury and bacteria.

A coalition of leaders, called the Willamette Partnership, banded together in an effort to improve the function of basin ecosystems by developing the Willamette Ecosystem Marketplace where regulated industries, developers and other investors can pay land managers to manage for important services provided by nature such as clean abundant water, healthy populations of fish and wildlife, and a stable climate.

"Those services tend to be undervalued in current commodity markets," said David Primozich of the Willamette Partnership, "limiting options for private landowners to recover costs associated with managing their lands to provide the clean drinking water, better fish and wildlife habitat, and clean air we all—including urban residents—expect and depend on."

According to Primozich, one area that will be critical to the marketplace's success is the establishment of a fair and accurate system of monitoring grower output.

"In order for farmers and foresters to sell the ecosystem services they are uniquely positioned to produce, it is necessary to quantify the outputs of targeted, voluntary land management activities in units of measure that match individual drivers," said Primozich. "In the same way various agricultural and forest products are described and sold in units relevant to their markets (variety, quality, size, weight, etc.) regulatory drivers describe units of measure important for endangered species, habitats, water and air quality.

"Once we get on solid ground quantifying ecological outputs from targeted voluntary land management activities, we can build the institutional and legal mechanism needed to pay farmers who target specific ecosystem service markets."

Some programs already exist, such as wetland mitigation and endangered species conservation banking. The marketplace will assist buyers and sellers in these programs in leveraging the additional resources of factories, developers, transportation agencies, cities, and sewer and water ratepayers to expand the scale and effectiveness of conservation areas in the basin.

In 2005, the Willamette Partnership won a $779,000 "Targeted Watershed Grant" from the U.S. Environmental Protection Agency to inaugurate development of the marketplace. The grant will allow the Willamette Partnership to do several things:

- assess the drivers and opportunities for investments;
- formulate scientifically sound methods to quantify the value of conservation actions;
- create a portfolio of investment opportunities;
- establish the technical, legal, regulatory and institutional mechanisms to allow trading of conservation credits; and
- execute transactions, evaluate the project's effectiveness, and prepare a strategic and business plan to continue and expand the marketplace.

Under the terms of the EPA grant, the marketplace must first target transactions to achieve temperature reductions for the Willamette River, consistent with TMDL objectives. In the marketplace, cities and industries that discharge hot water into rivers and streams will be able to purchase conservation credits offered by landowners that restore streamside shade, reconnect floodplains, or take other actions that cool water naturally.

This temperature-focused project, which launched in 2006, intends to construct much of the basic infrastructure needed for the marketplace's operation. However, additional scientific, technical and institution-building work is needed to establish a marketplace that is self sustaining and can facilitate a wide range of transactions to achieve other ecological improvements, such as protection and restoration of fish and wildlife habitat, and at-risk upland oak and prairie landscapes. The Willamette Partnership is therefore vigorously seeking additional seed funding from other sources to underwrite this work in tandem with their implementation of the EPA-funded project.

In April 2006, Willamette Partnership won a $50,000 matching grant from the Oregon Governor's Fund for the Environment to help fund initial outreach and market appraisal efforts.

For more information of the Willamette Partnership or the Willamette Ecosystem Marketplace, visit www.willamettepartnership.org or email David Primozich at primozich@verizon.net. ◆

Mike Beacom, a writer for Forestry Notes, National Association of Conservation Districts, can be reached at msbeacom@gmail.com. This article was reprinted with permission from the October 2006 issue that focused on ecosystem services, see http://forestry.nacdnet.org/forestrynotes/Oct06/insert/October06Insert.pdf.

An Ecosystem Marketplace: Some Opportunities and Challenges

BY GINA LaROCCO

Over the last 30 years, landmark environmental laws have addressed some of the most visible and egregious sources of environmental degradation, but have focused primarily on specific impacts and individual species and habitats. In particular, legal requirements have typically steered mitigation toward on-site locations because it was viewed as the most economically and ecologically appropriate means to offset development impacts. However, it has become increasingly apparent that on-site mitigation does not always present the best approach because it can be quite costly, sites are too small and near-developed areas and development is often completed long before anyone can determine the success or failure of the mitigation effort. Also, while treating isolated problems can address specific issues, such an approach often fails to consider the overall health of the natural environment.

This realization has led to energized discussions regarding the use of market-based tools to provide a more economically and ecologically effective approach to offsetting development impacts and improving conservation efforts. There has been a general recognition that it would likely be more effective and efficient to integrate ecosystem elements (e.g., species, habitat, water quality, etc.) within mitigation bank sites rather than keeping them separate. Under an ideal integrated system, mitigation work could be financed by selling credits to developers and others with regulatory responsibilities to mitigate damage caused by development or discharges. Since ecosystems provide "services," such as clean water and habitat, the notion of bundling payments for ecosystem services is often discussed as a strategy for engaging the private sector in land conservation and restoration at a scale that will be effective. These are some of the concepts that could make up what has been referred to as an "ecosystem marketplace."

However, questions arise as to how an ecosystem marketplace could be implemented. Exploring the opportunities and potential limitations can be a good starting point. Opportunities include modifying the mechanisms used to implement familiar, existing programs, such as wetland mitigation banking, conservation banking, and water quality and carbon trading programs in order to develop a multi-credit banking program. Yet there are some critical limitations that need to be addressed to ensure successful implementation.

While some statutory constraints may exist, such as funding restrictions that prohibit agencies from generating credits beyond its needs, most of the limitations are institutional and political. Many agency staff are resistant to or skeptical of the notion of a multi-credit ecosystem marketplace. Some tend to have an historical preference for on-site mitigation. There also tends to be a lack of coordination among different agencies' programs, thus making it more difficult for landowners to access them or to achieve greater ecological results.

Another overarching concern is whether a market for ecosystem services will actually engage forest and agriculture landowners. The hope is that offering payments for a variety of ecosystem services through credit sales will provide an incentive for landowners to address conservation priorities on their lands and make it equal to or more lucrative than exclusively focusing on commodity production. The intention is to inspire private landowners to engage in multi-credit banking as a supplement or, in some cases, an alternative to intensive forestry or agriculture.

A common question that arises is whether credits should be bundled, stacked or consolidated within a common currency. Bundled or stacked credits would be generated on a site with multiple ecological values. For example, a landowner could plant trees that generate both carbon credits and habitat credits. On the other hand, one currency could be developed so that a bank simply provides "ecosystem credits," which could be used to meet various mitigation requirements. Under this scenario, a developer could buy ecosystem service credits to offset adverse impacts to land and water.

With respect to carbon credits, the ability to accurately value carbon has been the subject of debate. Since carbon trading is global, it is more difficult to track. Carbon trading also generally requires "additionality," which means that buyers of carbon credits need assurance that their investment is not just supporting business-as-usual practices. Defining baselines, however, can be complicated and controversial because carbon trading in the United States remains primarily voluntary, and most traded credits are not related directly to ecosystem conservation or restoration.

Obviously, there are many issues that need to be addressed prior to implementation of any ecosystem marketplace, but it is also obvious that there is increasing interest in the concept. Indeed, there are actions that can be taken now to begin addressing these issues. For example, the development of a reliable, accepted and efficient accounting system would be a good starting point. Creation of state or federal legislation could also encourage development of the concept and provide direction for agencies to work with the private sector to explore avenues for an integrated and efficient system. Overall, these are exciting times for landowners, agencies and investors because an ecosystem marketplace is a tool that can concentrate conservation efforts and investments, as well as diversify income for landowners. ◆

Gina LaRocco is a conservation program associate for Defenders of Wildlife's Northwest Office located in West Linn, Ore. She can be reached at glarocco@defenders.org.

Carbon and Forest Management: Markets, Wildfires and Air Quality

BY JAY O'LAUGHLIN AND DAREK NALLE


Jay O'Laughlin

Forest ecosystem processes that affect human well-being include carbon cycling and air quality functions. The storage or sequestration of carbon in forests is an ecosystem service of estimable value. Markets where buyers and sellers set the trading value of carbon credits are up and running (see sidebar). Forests have so far played little role in carbon markets, for two reasons: additionality and permanence.

To obtain tradable credit for storing carbon, landowners need to demonstrate that their efforts are in addition to what they would otherwise have done with their property. California forestry protocols for carbon storage are currently under development and may or may not address the issue effectively. The permanence issue reflects the reality that trees are only temporary landscape features. When they die, carbon is released either by decomposing or burning. Another option is prolonging sequestration by converting trees to manufactured wood products. Impermanence makes forest management practices other than afforestation problematic, but a well considered management plan perhaps can overcome that.

In a world where carbon sequestration is beneficial, the burning of forest-based carbon is especially problematic because forest fire smoke is also an acute and pernicious public health problem. Smoke includes enormous quantities of fine particulate matter ($PM_{2.5}$) among many other chemicals and compounds. The 2004 Biscuit Fire in Oregon not only burned across half a million acres, it put 115,000 tons of $PM_{2.5}$ into the air. Smoke plumes from fires in Idaho and Montana can deliver particulates as far away as Chicago.

Supported by new research findings, the U.S. Environmental Protection Agency (EPA) recently strengthened the 24-hour standard for $PM_{2.5}$ by cutting the allowable amount in half. We breathe these tiny chunks of carbon and other materials deeply into our lungs (it takes more than 20 of them to span the breadth of a human hair). New modeling efforts by the National Oceanic and Atmospheric Administration reveal that each year wildfires emit more $PM_{2.5}$ (1.5 to 2.5 million tons) than do the traditional sources that EPA monitors and regulates: fuel combustion (700,000 tons), industrial processes (900,000 tons), and transportation (400,000 tons). If the EPA had a way to regulate wildfire emissions, rest assured it would happen. Hazardous fuel reduction may be the way.

The area burned by wildfires in the 11 western states has been increasing for 30 years. Some scientists predict a warming climate that when coupled with accumulating fuels in forests throughout the West (especially national forests) presage even more widespread fires in the future, perhaps a doubling of current acreage burned. Many managers as well as scientists recognize an urgent need to reduce wildfire risks by removing fuels, using a combination of thin-

ning and prescribed burning.

Wildfires are currently considered a "natural" source of smoke, under an EPA "natural events" policy. Airshed management involves limiting controllable sources of pollutants after wildfires have filled the skies with smoke. That approach is likely to limit the use of prescribed fire, an important fuels reduction tool. That may be a good idea in the short term to limit smoke emissions, but what about the next wildfire? Without prefire fuels treatment it may well burn more intensely across more area and generate more emissions than if treated.

Because wildfires pose a substantial risk to human health, it may be timely for the EPA to partner with land managers and state regulatory agencies and adopt a risk management strategy. Foresters can help. Hazardous fuel reduction is a risk management strategy. Thinning and prescribed burning are preventative maintenance tools: pay now, or pay more later. Strange as it may seem, by putting some smoke in the air today, we may be able to reduce substantially greater quantities of emissions from tomorrow's wildfires. ◆

Jay O'Laughlin is professor, and Darek Nalle is assistant professor, College of Natural Resources, University of Idaho, Moscow. *They thank Philip S. Cook for comments and can be reached at jayo@uidaho.edu and nalle@uidaho.edu. PowerPoint shows depicting this information can be accessed at www.cnrhome.uidaho.edu/default.aspx?pid=87589.*

Can U.S. Forest Owners Profit from Carbon Markets?

The answer to this question depends on rules about forest management practices and their acceptability in various markets as legal carbon tender, or a carbon credit. These rules are currently being written or exist and are subject to revision in the near future. It might seem odd, but forest owners who remove large quantities of carbon from the atmosphere via wood fiber production are generally viewed as not being part of a carbon cycle solution.

From the carbon market point of view, the question whether human activities contribute to climate change is largely irrelevant. The compulsion to do something, anything, about climate change has led to carbon becoming a new commodity traded on exchanges that are evolving about the world today. Global carbon trade in 2005 amounted to approximately US$10 billion. Some forecasts triple that sum for 2007, and the regulatory European carbon trade is not even set to formally begin until 2008.

What constitutes a carbon credit in one market may not in another and vice versa. For example, in Europe, forests and traditional forest products are not admissible as carbon tender. In general, the price of carbon established in these markets is an incentive (or disincentive) in "cap-and-trade" systems designed to reduce carbon emissions. If forests and forest products were admissible, this would increase the supply of carbon offered and thus decrease the price of pollution. Europe is therefore taking an aggressive stance by pressuring net emitters to find alternatives that result in physical reductions of carbon emissions. In short, the European scheme has regulated emissions activities and not land use.

Although the U.S. currently lacks a national regulatory system, individual states, including California and a collective group in the northeast, are taking regulatory action. System-specific details are still being decided. In California, owners who implement forest management practices that lead to late-seral stands (i.e., storing carbon in living trees) are eligible to sell carbon credits. It is unclear, though, if prices received under this management regime would even be enough to cover annual forest property tax payments.

The Chicago Climate Exchange (CCX) offers an alternative to regulation. The CCX is a completely voluntary effort, and any organization anywhere can buy a seat on the exchange. In return the member agrees to legally binding terms that the entity will reduce their current carbon emissions by an agreed-upon percentage by a given future date. The main benefit of membership is that the organization has access to the trading platform and can buy and sell carbon contracts just as other futures contracts are traded on the New York Mercantile Exchange or Chicago Board of Trade.

Some forest practices are admissible as legal carbon tender on the CCX, but traditional timber and forest products outputs currently are not. A forest owner can accrue credits through afforestation, enhancing existing degraded forestland or by urban forestation efforts. The practice must be deemed acceptable through a CCX-approved "Verifier" who also assists in determining the total number of credits granted to the owner. If the owner is not a CCX member, they can access the exchange by selling their credits to a CCX-approved "Aggregator." At approximately US$3.50/ton today, U.S. private forest owners are not overwhelming the exchange with supply. However, as allowable emissions become more stringent across the globe, traditional forest products may eventually play a role. Yet for now, owners who manage for wood fiber production are not a part of a carbon solution.

Countdown to Convention '07

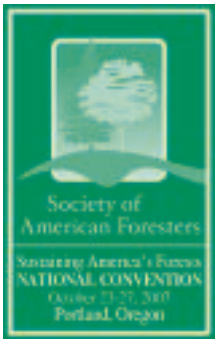
Success Depends Upon Partners

BY CLARK SEELY

Much of the success of the SAF National Convention each year is based on the involvement and efforts of sponsors and exhibitors. The convention literally would not happen without their support, both financially and logistically.

For the 2007 convention in Portland, we are casting a wide net to businesses, nonprofit organizations, government units and individuals to join us in producing a world-class event. We are reaching out to potential partners in both the natural resources field as well as other allied fields of interest including technology, financial, retail and services. We are also reaching out to both national organizations and local partners right here in the Pacific Northwest.

If you are interested in helping support the convention as a sponsor, two pathways are available. The first is to provide general financial support for convention activities by making an all-purpose contribution to help keep general event and registration costs as low as possible.



The second pathway is to provide specific financial support for targeted convention items or events, and the list of possibilities here is long and spans a wide range of financial need from just a few hundred dollars to several thousand dollars. Just a few of the specific opportunities include sponsoring refreshments breaks in the exhibit hall, providing the cyber café for attendees' online access during the convention, publication of the official convention proceedings, the attendee bag and the convention portfolio, student activities such as the quiz bowl, field tour and hosted student attendance costs, providing technical field tour transportation and lunches, and supporting the food and transportation costs of the gala evening reception event at the World Forestry Center. Again, this is just a sampling of the many opportunities, and sponsors can also suggest their own ideas—all ideas are welcome and will be considered.

Sponsors will receive recognition in a variety of ways before, during and after the convention, and your organizational gains in marketing, networking and support to the profession are invaluable. Depending upon the level of sponsorship, you may also receive complimentary exhibit booth space and convention registrations, banner advertisements on the SAF website, and other print and electronic recognition. If you or your organization would like to become a sponsor, please contact me at 503-945-7203 or cseely@odf.state.or.us.

The other partnership opportunity involves being an exhibitor in the convention center. The exhibit hall is immediately adjacent to both the general session hall and the technical session rooms, and the exhibit exposure will be fantastic. The exhibit hall will also be the site of the Foresters' Fund effort, job fair, poster session, millennial celebration displays, and a variety of food venues. We anticipate filling the exhibit hall to capacity, so you'll want to reserve your space early. For further information on exhibit opportunities and process, contact Bill Brumby, SAF director of Exhibits, Advertising and Corporate Relations at toll free 866-897-8720 ext. 129, or brumbyb@safnet.org.

Additional details on both sponsorships and exhibits are available at the SAF 2007 convention website at www.safconvention.org/natcon-07/sponsors/beasponsor.cfm and www.safconvention.org/natcon-07/exhibitors/exhibit.cfm.

Partners make all the difference at SAF national conventions, and we want you to be our partner this year. Please contact us soon to make your plans as a sponsor, an exhibitor or both! ◆

Clark Seely is 2007 SAF National Convention general co-chair and associate state forester for the Oregon Department of Forestry in Salem. He can be reached at 503-945-7203 or cseely@odf.state.or.us.

Calendar of Events

Cable Logging Workshop, April 17-20, Richmond, British Columbia. Contact: Forest Engineering.

Red Alder and Port-Orford-Cedar: Seed to Saw, April 19, SWOCC, Coos Bay, OR. Registration forms available at www.forestry.org/or/chapters/coos.php.

Washington Farm Forestry Association annual meeting, April 26-28, Red Lion Hotel, Kelso, WA. Contact: Tricia Murphy, 360-748-8889.

Family Forest Symposium—Beyond Sustainability, Enhancing our Woodland Neighborhoods, April 26, and **Chart the Future of Oregon's Family Forests,** April 27-28, Oregon State University, Corvallis, OR. Contact: OSWA, www.oswa.org, 503-588-1813.

Pesticide Laws and Safety—Trainee Review, May 2, Salem, OR. Contact: CCC.

Starker Lecture Series: Science and the Sustainability Transition, May 3, Corvallis, OR. Contact: Oregon State University at www.cof.orst.edu/starkerlectures, 541-737-1585.

SuperAce 06 Seminar, May 3, Beaverton, OR. Contact: Jon Aschenbach, jaschenbach@atterbury.com, 503-646-5393.

The Game of Logging 1-4, May 3-6, Eatonville, WA. Contact: Northwest Certified Forestry, www.nwcertified.org, 360-379-9421.

Contact Information

CCC: Chemeketa Community College, 503-399-5139 or 503-589-7946 for registration information.

WFCA: Western Forestry and Conservation Association, 4033 SW Canyon Rd., Portland, OR 97221, 503-226-4562; richard@westernforestry.org; www.westernforestry.org.

Forest Engineering: Forest Engineering Inc., 620 SW 4th St., Corvallis, OR 97333, 503-754-7558; office@forestenginner.com; www.forestengineer.com.

Send calendar items to the editor, *Western Forester*, 4033 SW Canyon Rd., Portland, OR 97221; fax 503-226-2515; rasor@safnwo.org. The deadline for the May/June 2007 issue is April 16.

Western Forest Economists 42nd Annual Meeting, May 7-9, The Resort at the Mountain, Welches, OR. Contact: WFCA.

Invasive Aquatic Plant and Animal Species, May 10, Salem, OR. Contact: CCC.

Pesticide Right-of-Way Training, May 14, Salem, OR. Contact: CCC.

Oregon SAF Annual Meeting, May 17-18, Riverhouse, Bend, OR. Contact: Ed Keith at ekeith@odf.state.or.us.

Forestry Vegetation Management, May 17, Salem, OR. Contact: CCC.

Private Applicator License Training, May 18, Salem, OR. Contact: CCC.

Mixed/Multiple Tree Species Management, May 31-June 1, Corvallis, OR. Contact: Steve Pilkerton at steve.pilkerton@oregonstate.edu.

The Art and Science of Multi-Aged Forest Management, June 5-6, Klamath Falls, OR. Contact: Anne Maloney, amaloney@odf.state.or.us, 541-883-5681.

Oregon SAF Fellows Luncheon, June 14, Peavy Lodge, Corvallis, OR. Contact: Michele Docy, michele@safnwo.org, 503-224-8046.

Oregon SAF Golf Tournament, June 22, Corvallis, OR. Contact: Mike Tucker, mike@giustinaland.com, 541-345-2301.

Western Forest Mensurationists Meeting, June 24-26, Kelowna, B.C. Contact: WFCA.

Nominate a Deserving Member to SAF Fellow Status

BY G. KIRK DAVID

Over a year ago SAF revised how we elect members who have "provided outstanding service to our Society and to the forestry profession" to the honorary status of SAF Fellow. Our stated goal is to honor approximately five percent in this way. Many of us remember the previous method of election was to have a petition signed by 25 or more members in good standing; a biographical sketch and consent form signed by the nominee; and an election in the nominee's state society.

With the realization that the five percent goal was reached and exceeded, and with the desire to elevate the recognition status of the Fellow honor, SAF decided to form District Fellows Committees (DFC). DFCs review the qualifications of nominees—and recommend the best among those found qualified—for election to Fellow status by the governing body of our Society, the SAF Council.

DFCs consist of at least five SAF Fellows with at least one from each of the state societies in that district. Whenever possible, at least one member must be female. After conferring with state society leadership, the district Council representative annually appoints a chair and members (in staggered five-year terms) to the DFC. No Fellow may serve more than one five-year term on a DFC. DFCs are "continuously active" and will seek out potential Fellow candidates from among the voting district members.

This is where YOU become extremely important to the process. In addition to a consent form signed by the nominee, a completed biographical and professional information form, and a recent photograph, nominations require three letters of recommendation in support of the nomination. The DFC can only consider and forward recommendations for nominees for whom all of these qualifications have been completed. If you know a deserving Professional Member (who has demonstrated both a strong continuing commitment through direct SAF volunteer activities and exemplary action, sustained leadership, and advancement of the forestry profession in the application of forestry, education, public policy, research or technology transfer), you should find three supporters familiar with your deserving candidate's accomplishments and submit that nomination to any of your DFC representatives!

For 2007, District 1 DFC members are: Ann Forest Burns and Pat Cummins from Washington State SAF; Ed Miles and Roger Ward from Inland Empire SAF; and Jim LaBau from Alaska SAF. District 2 members are: John Bell, John Christie, Jean Mater, Bob Weinberger and Blair Moody, all from Oregon SAF.

The DFCs must have their reviewed and recommended nomination packets submitted by July 1 each year, and they need sufficient time to complete their compilations and evaluations fairly. If you have a deserving Fellow candidate in mind, do not delay in getting the necessary information to your DFC now! ◆

District 1 Council Representative Kirk David can be reached at 208-683-3168 or kirkdavid@earthlink.net. District 2 Council Representative Rick Barnes can be reached at 541-673-1208 or rbarnes@barnesinc.com.

OSAF Foundation Forum

Nurturing Forestry in Oregon

In 1985, Merle Lowden, a prominent figure in OSAF, formulated an idea for the creation of a Foundation with a vision of promoting forestry education throughout the state. Later that year, by a vote of the membership, the OSAF Foundation was established.

During their early years, the Trustees of the Foundation had a few simple goals: to organize, become recognized, raise funds to support the activities of the Foundation and to fund projects consistent with its mission. Within the first 10 years, the Foundation exceeded those goals. It was established, recognized in the forestry community and accumulated more than $100,000 in capital.

The Trustees continue to work diligently to increase the Foundation's capital base. Currently, the Foundation has exceeded $300,000 in assets based upon the growth of cumulative contributions of nearly $160,000 (see graph).

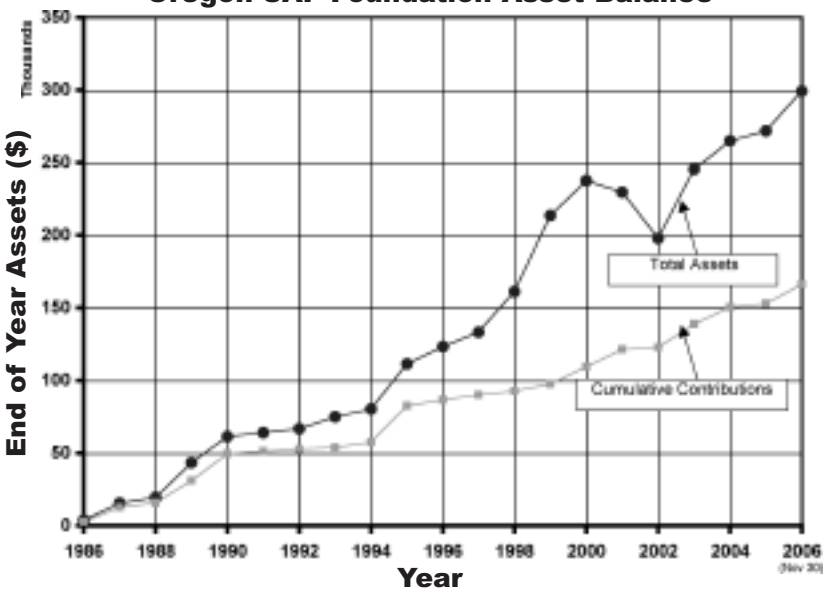
To date, the OSAF Foundation has granted more than $11,000 toward forestry education projects across Oregon. These grants have funded a broad range of projects, including helping chapters to achieve their education outreach projects, providing internships to students in forestry and helping the OSU Ambassador Program travel across Oregon to promote forestry to graduating high school students. In addition, the Foundation has provided over $76,000 in scholarships to undergraduates at the Oregon State University College of Forestry. This year, the scholarship program has been expanded to offer three scholarships to forestry students. These scholarships have helped 23 students obtain degrees in forestry, many of whom are now professional foresters and members within the Society.

Today, the Foundation continues to move forward. With a new strategic plan in development we look toward meeting the changing needs of the forestry profession, while still maintaining the vision of our founders—to nurture forestry in Oregon.

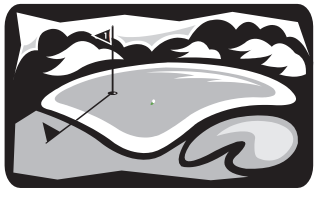
For more information, visit www.forestry.org/or/foundation. ◆

–Eric Kranzush,
OSAF Foundation Chair

Oregon SAF Foundation Asset Balance



2007 Oregon SAF Golf Tournament



Friday, June 22, 2007

Join the Oregon Society of American Foresters at Trysting Tree Golf Course in Corvallis, Oregon for a golf tournament benefiting the OSAF Foundation. The Foundation provides scholarships and internships to forestry students in Oregon at SAF Accredited Universities.

Lots of prizes, contests, and activities for non-golfers

— TO SIGN UP or FOR MORE INFORMATION —
Contact: Mike Tucker at 541-345-2301

Policy Scoreboard

Editor's Note: To keep SAF members informed of state society policy activities, Policy Scoreboard is a regular feature in the Western Forester. *The intent is to provide a brief explanation of the policy activity—you are encouraged to follow up with the listed contact person for detailed information.*

Commercial Harvest Position Update Adopted, Another Under Review. An updated position statement on "Commercial Timber Harvest on Public Lands in Oregon" was approved recently by the OSAF Executive Committee. The original position adopted in 2002 was set to expire in late February, which prompted a fresh review and update of the contents. This issue remains very timely given extensive forest management needs and costs on federal lands, and long-held economic obligations to communities by adjacent state and federal forests. In addition to some specifics about the county payments issue, the position update incorporates some new statements about energy, safety and restoration.

The OSAF position statement on "Landslides on Forest Lands" is set to expire on December 6, 2007. The original position was developed and adopted after the 1996 storms triggered many landslides and raised questions and concerns among policy makers and the public about links to forest practices. Although a lack of very large storms has reduced the visibility of this issue in recent years, our steep, uneven terrain reflects the potential that exists for it to be front page news before too long. The OSAF Policy Committee has begun a review of the current statement and all OSAF members are invited to do the same and pass along any comments to your local chapter officers or the Policy Committee. All of the current OSAF position statements are available at www.forestry.org. Contact: Paul Adams, OSAF Policy chair, 541-737-2946; paul.adams@oregonstate.edu.

OSAF Continues to Examine Credentialing Issue and Options. In late 2006, OSAF surveyed its members about their interest in various options for credentialing of forestry professionals in Oregon. This is not a new issue for OSAF, but the survey was intended to offer a current picture of members' views before pursuing the issue further. The survey was designed to gage interest in some major options that exist, from no credentialing to voluntary registration to required licenses to practice, like those for engineers (i.e., with education, experience and examination standards). A background report on credentialing and summary of existing state programs can be seen at www.safnet.org/policyandpress/LRCinfo.cfm. At least one state (Virginia) has a law that defines a "forester" through an SAF-accredited college degree requirement and prohibits individuals without such a degree from publicly representing themselves as a forester. And, of course, national SAF sponsors the Certified Forester program as a form of voluntary credentialing.

Results of the survey (with about 34 percent of OSAF members responding) suggest that although only about 18 percent support mandatory credentialing, a majority (55 percent) supports OSAF action to better promote voluntary CF credentialing or a law like in Virginia that defines a "forester" to prohibit public misuse of the term. The OSAF Policy and Legislation Committee is closely considering the survey results as it continues to evaluate the credentialing issue and further develop ideas and recommendations for OSAF action. Contact: Paul Adams, OSAF Policy chair, 541-737-2946; paul.adams@oregonstate.edu.

The Ecosystem Marketplace. Do you want to know what California's Governator is doing about CO_2 emissions these days? Check online at The Ecosystem Marketplace, a good source of information for keeping up with ecosystem services market developments. You'll learn that the other western governors have given his ideas a chillier reception than have eastern governors. See www.ecosystemmarketplace.com.

Forests, Carbon Sinks and the Kyoto Protocol. According to Resources for the Future, global warming is a significant problem. The question of the efficacy of the Kyoto Protocol as a remedy, however, is another story. Economist Roger Sedjo says forest "sinks" hold enormous potential as one of the most efficient, low-cost ways to capture or sequester carbon. Read a short article and access the full report at www.rff.org/rff/News/Features/Role-of-Forest-Sinks.cfm.

WSSAF Holds Legislative Dinner. On February 20 the Southwest Washington chapter of WSSAF hosted a Legislative Dinner in Olympia. Attended by seven senators and representatives and 60 SAF members and guests, attendees enjoyed a delicious dinner and a program moderated by Washington state forester and SAF member Vicki Christiansen. Presentations included eastside forest health from Miles Hemstrom of the Forest Service; the trust mandate from Dean Bruce Bare of the University of Washington College of Forest Resources; and forest fragmentation and conversion from Michelle Conner of the Cascade Land Conservancy. Contact: John Trobaugh, Southwest Washington chapter chair, john.trobaugh@dnr.wa.gov. ◆

Come to Bend for the 2007 OSAF Annual Meeting

The Central Oregon SAF Chapter invites you to come to sunny central Oregon for the 2007 OSAF Annual Meeting. We have lots in store for you during this day-and-a-half meeting.

The theme of the meeting is *Changing Facets of the Forest Community*. We will explore how forestry has changed and is changing on all fronts: environmentally, socially, politically and economically. We have a great slate of speakers to kick the meeting off on Thursday, May 17 including Congressman Greg Walden, Hal Salwasser, dean of the OSU College of Forestry, Bruce Shindler, professor OSU College of Forestry, and Brent Davies, director of Community Forestry at Ecotrust in Portland.

The Friday, May 18 program includes an all-day field tour into the pine forests surrounding Sisters, Camp Sherman and beautiful Metolius River. The tour will includes stops on fuel reduction in the wildland urban interface around Sisters, salvage operations on private and federal lands following the Black Crater Fire, Friends of the Metolius forest health demonstration project, Deschutes Basin Land Trust Metolius Preserve to see some innovative forest management activities and talk about the Skyline Forest Proposal (near Bend), the Community Forest Authority for maintaining working forests, and finally, a look at stewardship contracting on the Sisters Ranger District, which is a new way to trade goods for services to get much needed work done on federal lands.

A spouses/guest tour will also be available, which will take folks to Bend's Old Mill District, Deschutes County Historical Society and the town of Sisters for shopping and good food.

If you have misplaced your registration form for the meeting you can download a copy from www.forestry.org. The central Oregon Chapter looks forward to having you all come and have a good time! ◆

Firm Adds Project Manager

Nicole L. Younger has accepted the position of project manager at Integrated Resource Management (IRM) in Philomath, Ore. Younger will graduate in January 2007 from Oregon State University with a Masters of Science in forest biometrics. Her thesis is titled, "Volume, Taper and Crown Responses of a Swiss Needle Cast Infected Douglas-fir Stand to Treatments of Sulfur in the Oregon Coast Range."

In her new position, Younger will be managing forest inventory and cruising projects, as well as providing support to IRM's senior project managers. Ms. Younger is originally from Maine, where she found her passion for forestry among the eastern white pines and balsam firs in her dad's small woodlot. She received her BS in forestry from the University of Maine in 2002, and moved to Oregon where she worked for Starker Forests and Weyerhaeuser before pursuing her MS. She is a member of the Emerald Chapter.

Integrated Resource Management is a forestry-consulting firm that is dedicated to the planning and implementing sustainable and restorative forestry. To find out more about IRM, visit www.irmforestry.com. ◆

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