WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

Forest Watershed Ecosystem Services

Nature provides communities with myriad *ecosystem services*; ranging from fresh drinking water to pest control to areas for recreation. In 2010, the Washington Legislature defined ecosystem services as "benefits that the public enjoys as a result of natural processes and biological diversity." Historically, economic systems have not fairly accounted for all the goods and services from nature on which we fundamentally depend. Failure to adequately account for the benefits of nature carries with it the risk of ignoring their deterioration and loss, until a crisis occurs.

In 2005, a team of more than 1,300 scientists from across the globe released the Millennium Ecosystem Assessment report. Their findings revealed that ecosystem degradation is occurring at an alarming rate. Many other efforts recently have been made or are underway to estimate the economic, socio-cultural and ecological values at stake in maintaining the integrity of foundational ecological systems (see links below).

DNR is assisting in a broad effort toward ecosystem services awareness. Building this awareness will help governments, businesses, and the public recognize nature's true value and result in their investing in ecosystem protection, and in turn, promoting human wellbeing. DNR is enthusiastic about assisting in both protecting and enhancing the benefits of ecosystem services, and rewarding owners of forests and farms who can help provide these benefits.

Forest Watersheds

Streamside (riparian) forests are "living filters" that absorb sediments and transform pollutants before they reach drinking water sources. Forests also soak up stormwater and provide shade for streams that keeps water cool, which is critical to the health of salmon and other aquatic organisms. Forest conversion to non-forest land uses means the loss of vital forest watershed benefits — including water flow regulation, flood control, water purification, erosion control, and salmon habitat—to the region's citizens, communities, and businesses.

Economic Value

Watershed restoration and protection can significantly reduce or prevent downstream water management costs. Cleaner water generally requires less time- and energy-intensive water treatment for public consumption. Providing protection to upstream salmon habitat ensures higher rates of survival, which supports commercial and recreational fisheries. Improving wetland ecosystem functions regulates stormwater and prevents flood damage occurrences downstream.

New York City's 2007 agreement for filtration avoidance provides a classic example of a city utility committed to promoting natural resource security by investing in green versus gray infrastructure. The agreement to enhance existing Catskill/Delaware watershed protection programs exempts the city from

constructing a costly new water filtration plant. This study demonstrates the potential for significant cost savings (an estimated $5 to $7 billion) between constructing a new filtration plant and restoring the integrity of the largest unfiltered water supply system in the U.S.

A regional example comes from the Tualatin River Basin in Oregon State. In 2004 the local water utility, Clean Water Services, began implementing a watershed-based approach to water quality improvement through water quality credit trading. Credits are awarded to agricultural producers who partake in riparian planting and other stream enhancement activities. By 2011, this program resulted in 35 miles of restoration projects in the basin, allowing Clean Water Services to avoid investing in a multi-million dollar artificial chiller to cool effluent from the water treatment plant.

Market-based Conservation

A market-based framework for conservation encourages innovative maintenance and restoration of ecological benefits while allowing people to receive financial rewards for providing ecosystem services. In the last decade, about $1 billion was traded in global ecosystem markets. These market-like exchanges provide an opportunity for: (a) forest or farm landowners who are prepared to implement conservation and/or restoration practices; and (b) people who are willing to pay for ecosystem services resulting from the upstream management practices. Market-based frameworks act as a complement to more traditional regulatory protections or public land ownership, and attempt to harness market forces to reward levels or types of ecosystem services beyond those provided by these other means.

Forest and farm landowners upstream can seek out opportunities and collaborate with downstream beneficiaries to understand the specific watershed-related ecosystem services their lands provide, as well as the desired practices and resulting payments they could expect.

Entities that have an interest in making payments for ecosystem services might include public and private wastewater treatment plants, stormwater management entities, drinking water utilities, developers, salmon recovery organizations including tribes, and public departments of transportation. Buyers of ecosystem services are investing in natural spaces instead of manufactured water management solutions, or “green infrastructure” instead of “gray infrastructure,” which has proven more cost effective in many instances.