"Forests: Finding Solutions for the Chesapeake Bay"

INTRODUCTION

Forestry activities are generally considered to be among the land uses that can impact water quality or habitat. As a result, most water quality programs including those at the Chesapeake focussed their energy primarily on BMP implementation and monitoring. Although these efforts are worthwhile, forestry-generated nutrient loads remain a very small portion of the total non-point sources. *For example, in the Chesapeake Bay watershed, only 0.6% of the total result from forest management* activities are estimated to be contributing to the nutrient loads. As a result, the positive contributions of partnerships with state and federal forestry agencies and the potential of cooperative forestry programs have often been overlooked in environmental protection and restoration efforts. Although forests alone cannot solve the problem of the Chesapeake Bay's many watersheds, "forestry solutions" can ensure good land stewardship, *improve water quality, restore and protect habitat, and* provide watershed sustainability over the long term.

WHY ARE FORESTS IMPORTANT TO THE BAY?

Extensive research findings support the fact that forests are the most beneficial land use in terms of *water quality*. As a living filter, forests capture rainfall, regulate stormwater and streamflow, filter pollutants, and recharge and stabilize soils. Forests used as riparian ***buffers*** are preventing pollutants from upland and groundwater sources from reaching streams, rivers and estuaries.

Forests also retain *atmospherically deposited nitrogen* between a low of 32% and a high of 100%. In the northeastern U.S., 70-80% is the average rate of retention. With air contributing an increasingly significant portion of nitrogen loads, a gaining forest land base translates into more N *gaining access to the estuary.* Research in urban settings also shows that *forests can exert control* over ***climate*** as well as ***air quality***. Savings of greater than 25% on heating and 10% on cooling costs in areas with adequate urban forests have been shown. Trees can also trap particulates and smog-related chemicals. Also of importance in concerns for global warming, 1 acre of trees can remove 4 tons of ***carbon*** dioxide annually; producing enough oxygen for over 1000 people.

Forest ***habitats*** are an essential part of life for many of the watershed's animal, bird, and plant life. Forests along streams, rivers and shorelines are essential to the life stages of aquatic life and over 1/2 the species of terrestrial wildlife in the watershed. Decaying leaves and wood are an essential part of the food chain. Providing habitat for anadramous and game fish is of particular interest to the Chesapeake Bay. Human quality of life is also enhanced by trees and forests.

Resilience is a measurement of long-term sustainability. It represents a watershed's ability to withstand the stresses of man's impact and natural events such as floods, hurricanes, or climate change. The concept of resilience is not as commonly understood as pollution control or fishery management, but it may be just as vital to the health of our estuaries. For example, a healthy resilient person may not even contract a flu when exposed. However, the same flu may kill a weak or unhealthy person. Elements of the natural ecosystem such as forests, wetlands, SAV, and oysters reinforce or strengthen the Chesapeake's ecosystem.

CHANGES IN THE FOREST

The valuable place that forests may have in our water quality enhancement strategies is just beginning to be recognized. Proper ***stewardship of managed forests*** as well as ***conserving and replanting forests*** and using them to reduce pollution should play an increasing role. Approaches to ***forest planning*** at the state level are incorporating ecological and watershed needs in many areas, such as targeting state assistance by priority watershed or habitat needs. ***Riparian forests*** and their use as buffers for agricultural and urban lands also present a tremendous opportunity for both water quality and habitat restoration. Many states are looking closely at existing and incentive-based approaches to private farms and forests to encourage buffer protection and establishment.

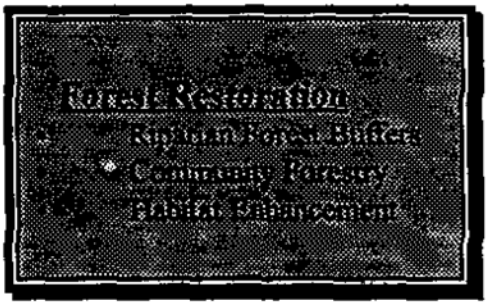
Although the actions above can be seen solely as a question of sound management and restoration, in many areas forests are also facing the impacts of ***land consumption***. In the Chesapeake Bay region, between 1970 to 1980, the amount of land used for residential/commercial purposes grew 180%, three times (3X) the rate at which population grew (50%). Once covering 95% of the watershed, forests now make up less than 60%. The total forest acreage managed each year for wood products is relatively small. Conversions of forests to other land uses, primarily new development, occur at a rate as high as 100 acres/day. Enhancing our capability to retain forests in ***development planning*** remains a formidable issue.

FINDING "FORESTRY SOLUTIONS"

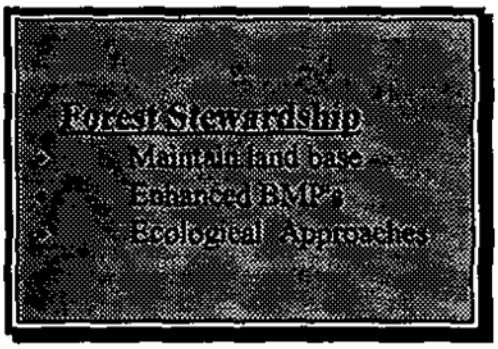
Forestry solutions are defined as "actions which utilize trees, forests, or forestry techniques and programs to help solve water quality, living resource, or land stewardship problems." Using this approach requires a ***change in perspective*** about forests from part of the background landscape to a "frontline" tool within more traditional forms of pollution prevention and control. The Chesapeake Bay Program has begun to focus on the role of forests in ecosystem health and restoration. By building a ***partnership*** with State Forestry Agencies through a Forestry Work Group, the Program can utilize cooperative forestry programs and expertise. The group ensures leadership for forestry issues and provides a forum for finding ways to target

traditional and innovative forestry programs to meet the Bay's restoration goals. The USDA Forest Service, through its State and Private Forestry Branch has served in an organizational role. Building strategies to inventory and track forest land, retain forests during development planning, and prevent fragmentation, especially along waterways are key goals. The use of forests and open space in stormwater control and planning is also being demonstrated.

The restoration of ***riparian forest buffers***, has been a primary focus to date. A scientific consensus report on water quality function, an inventory of buffers on 100,000 miles of streams, and research/monitoring studies are underway. Training and workshops for field personnel, citizens, and local governments has also been essential. ***Demonstration projects*** in agricultural watersheds as well as in urban areas involve local citizens in restoring riparian and other forest lands.



A Federal/State/Local partnership has been formed to implement ***Urban and Community Forestry programs*** in each of the states. These programs are diverse, helping local communities assess their natural resources, set up ***neighborhood education and stewardship*** programs for trees and open space, restore riparian and other habitats, establish greenways, build self-esteem and job skills for inner-city youth, provide urban forestry-based jobs, and work with local planners to retain forests in developing areas. Studies of the urban-rural "fringe" may yield ideas about development thresholds for some watersheds.



With over 85% of the forest land in the watershed held in private ownership, ***forest stewardship*** programs also help rural landowners plan for sound ecologically-based management and as a result help retain their lands in forest. Management of forest lands can provide multiple benefits as well as economic returns. The Forest Stewardship program has four primary components: 1) technical assistance for forest management, 2) development of forest stewardship plans for individual landowners, 3) cost-share incentives for stewardship practices, and 4) statewide plans for the purchase of conservation easements.

Individual Bay states have also taken dramatic steps. The Critical Areas Law (MD) and Chesapeake Bay Preservation Act (VA) include significant provisions for retention of forests in areas nearest the Bay. ***Landmark legislation*** in MD, the Forest Conservation Act, requires consideration of forests during development, restricts clearing, and in some cases requires afforestation. Growth legislation in Maryland and Virginia have initiated planning for sensitive areas such as forests. Educational effort are underway to increase the awareness of local planners, engineers, and regulators about the importance of retaining forests during the development process.

In addition to cooperative forestry programs, ***public forests*** can play a strong cooperative role in protecting our estuaries. Approximately 3.5 million acres of the watersheds of many headwater streams in the Chesapeake Bay basin are managed in State and National Forests. A source of stability in land use, they can also serve as demonstration areas, research study sites, and help in public education efforts. The USDA Forest Service also maintains the largest ***forest land research*** program in the world. A source of scientific information and technical assistance on issues from global climate change and air deposition to ecological function, fisheries, wildlife and water quality, forestry research may serve as additional partners in estuary studies.

CLOSING

For the Chesapeake Bay and other areas where water quality is a critical concern, forest land cover may be a critical element in the resilience of the ecosystem and its watershed. Forests may also be integral to an array of other important issues: reaching nutrient and sediment reduction goals, achieving a long term cap on nutrient levels, protection and restoration of ecosystem function and health, issues related to growth and development, habitat considerations, as well as important social and economic concerns. In "Turning the Tide", Tom Horton wrote,

> *"we must learn to see the Chesapeake Bay as a whole; as a system whose forests and oysters and underwater grasses and marshes are every bit as much components of pollution control and environmental health as sewage treatment plants, catalytic converters, and sediment control fences."*

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NORTHEASTERN AREA
State and Private Forestry