



Chesapeake Bay Program
A Watershed Partnership

Identifying Important Landscapes in the Chesapeake Bay Watershed

The Resource Lands Assessment - A Tool for Regional Conservation Planning

Background/Objective

The Resource Lands Assessment (RLA) is a project aimed at addressing the Chesapeake 2000 Commitment to identify those forests, farms and wetlands in the Bay watershed that have the highest value for habitat, water quality, economy and culture; and to evaluate those lands based on their vulnerability to development. The RLA uses GIS models to assess the landscape within the watershed, and demonstrate the utility of these models for land preservation planning at multiple spatial scales.



Study Area

The Resource Lands Assessment was conducted for land area within the Chesapeake Bay Watershed, within the states of New York, Pennsylvania, Maryland, Delaware, West Virginia, Virginia and the District of Columbia. Due to data limitations the Forest Economics Assessment was limited to Maryland, Pennsylvania, and Virginia. The Ecological Network Assessment excluded New York.

Approach

The Chesapeake Bay Program created a Resource Lands Assessment Task force in 2000. The Task force utilized a Technical Work Team to develop analytical approaches for assessing the forests, farms and wetlands within the Chesapeake Bay Watershed. Geographic Information Systems (GIS) were used to manipulate and combine data from a variety of sources based on decision rules developed and reviewed by partner organizations within the Chesapeake Bay Program (CBP). The resulting assessment models can be utilized individually or in combination. The composite data sets can be reclassified and applied at different geographic scales based on the needs of the user.

Methods

Each of the six assessment models uses a series of GIS data layers that were selected to represent ecological, cultural or socioeconomic phenomena. Data layers were selected based on their importance in assigning “value” to the landscape, and were weighted using input from resource experts within and outside of the Chesapeake Bay Program. Each assessment model carried different assumptions for appropriate data, the use of weights, and the limitations regarding display and interpretation of the composite results. Additional information on the methods employed for each assessment model is available on request from the Chesapeake Bay Program.

Intended Uses

The Resource Lands Assessment provides a regional multi-state look at the most important remaining resource lands in the Chesapeake Bay Watershed. The initial purpose was to respond to the Chesapeake 2000 Commitment to “complete an assessment of the Bay’s resource lands including forests and farms, emphasizing their role in the protection of water quality and critical habitats, as well as cultural and economic viability.” Other applications have since emerged; such as providing guidance to state and local government in land protection strategy development, serving as an information resource for the land trust community, suggesting conservation focus areas within and to complement watershed restoration plans, and identifying areas important to maintain for resource-based industry. Perhaps its most important use however, is to encourage strategic conservation planning at multiple scales throughout the Chesapeake Bay watershed.

Data

The RLA methodology utilized a wide variety of existing data from federal and state-specific sources. Example data sets included:

- Land Cover
- Hydrography
- Wetlands
- Roads, Railroads and Power lines
- Protected Lands
- Rare Species Locations (Except PA)
- Watershed Boundaries
- Acid Mine Drainage
- Ecoregions
- Vegetation
- Potential Habitat Distribution
- Soils
- Elevation, Aspect and Slope
- Forest Fragmentation Metrics
- Hydrogeomorphic Regions
- Floodplains
- Imperviousness
- Water Quality
- Drinking Water Supplies
- Precipitation
- Human Population (Census)
- Property Ownership
- Historic Timber Harvests
- Resource-Based Economic Data
- Public and Private Land Designations
- Mill Locations
- National Historic Landmarks
- National Register Historic Districts and Sites
- State Inventories of Historic Sites
- Archaeological Sites

Ecological Network Model



The Ecological Network Assessment aims to identify the most important remaining habitats in the Virginia, Maryland, Pennsylvania, West

Virginia, Delaware, and D.C. portions of the Bay Watershed. The assessment applies a “hubs and corridors” approach, which is based on principles of landscape ecology and conservation biology, that suggest that size and connectivity are critical factors of high integrity habitat.

Water Quality Protection Model

The Water Quality model aims to identify forests and wetlands important in protecting water quality and sustaining watershed integrity. This “watershed value” is based on physical and biological functions that store precipitation, retain and assimilate nutrients, moderate runoff, protect soils and maintain important critical landscape functions such as those of riparian buffers.



Forest

Economic Model

The identification of economically important forest lands focuses on the potential for future economic benefits associated with timber management activities. This considers not only the potential economic gain from forest harvest operations, but also the long-term economic sustainability of forest management and the local importance of the timber and wood products industry.

Prime Farmland Model

Assessing the extent of farming on prime soils in the Bay watershed is a useful measure for determining the lands of highest importance for agricultural productivity and sustainability. Areas of intense agricultural activity on prime soils can be overlaid with maps of development pressure to prioritize agricultural preservation activities.



Cultural Assessment Model

Growth and development not only threaten lands of high value for water quality and habitat, but also cultural lands that directly connect many citizens in the Bay watershed to the land. Important in preserving heritage and traditional values, cultural lands often define a sense of place. The objective of the cultural assessment is to identify lands that provide historic and archaeological assets and further inform preservation efforts.

Vulnerability Model

The vulnerability layer evaluates the relative potential risk of future land conversion to urban uses. Vulnerability is defined as a function of suitability for development and proximity to growth “hot spots.” The vulnerability layer is useful as a stand-alone layer to evaluate development trends, but can also be combined with the other RLA layers to prioritize land conservation efforts.



For More Information

Maps are available on our website:

<http://www.chesapeakebay.net/maps.htm> -- to view maps for all six assessments.

<http://maps2.chesapeakebay.net/website/rla/viewer.htm> -- to map interactively.

Acknowledgements

The Resource Lands Assessment is a product of a collaborative effort involving the staffs of natural resource agencies in Pennsylvania, Maryland and Virginia and the Chesapeake Bay Program Office. Primary participants in the development of the RLA tools and data displayed here include:

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Stephanie Orndorf, *The Nature Conservancy – PA Office (formerly CBP)*
Al Todd, *US Forest Service*
Ted Weber, *Maryland Department of Natural Resources*
John Wolf, *US National Park Service*



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