

The Use of Community-Based Conservation in Natural Resource Management:

Case Studies from The Nature Conservancy of Virginia

Ruth G. Babylon

Major Paper submitted to the Faculty of
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Master of Urban & Regional Planning

John Randolph, Chair
Jesse Richardson, Committee Member

October 20, 2003
Blacksburg, Virginia

Keywords: Community-based conservation, ecosystem management, Warm Springs Mountain, The Nature Conservancy, Virginia Coast Reserve, Clinch Valley

The Use of Community-Based Conservation in Natural Resource Management: Case Studies from The Nature Conservancy of Virginia

Ruth Babylon

ABSTRACT

In March 2002, The Nature Conservancy purchased a 9,000-acre tract of land on and near Warm Springs Mountain in Bath County, Virginia. The purpose of this paper is to examine community-based conservation strategies utilized by The Nature Conservancy in two well-established Virginia reserves to determine the effectiveness of those strategies in the protection of Warm Springs Mountain. The Conservancy's previous work on Virginia's Eastern Shore and in the Clinch Valley of southwest Virginia reveals the organization's transition from a strategy of mere land acquisition to the use of community-based conservation in an effort to involve local citizens and promote a proper balance between economics and the environment.

The community-based conservation model developed by TNC on the Eastern Shore and utilized further in the Clinch Valley works well for ecoregions that fit a particular typology. The paper discusses the differences between that typology and the factors affecting the protection of Warm Springs Mountain. In addition, the paper outlines the lessons TNC learned from both positive and negative experiences in the two earlier preserves and proposes how these lessons can be applied to the Warm Springs Mountain Preserve.

Table of Contents

I.	INTRODUCTION	1
II.	ECOSYSTEM MANAGEMENT	
	What is Ecosystem Management?	3
	Private Lands and Conservation	5
	Community-Based Conservation	7
	Conservation by Design	10
	The Nature Conservancy	12
III.	WARM SPRINGS MOUNTAIN PRESERVE	
	Background	
	History	14
	Acquisition	16
	Natural Resources	19
IV.	CASE STUDY: VIRGINIA EASTERN SHORE	
	Background	22
	TNC Initiatives	
	Northampton Economic Forum	24
	Virginia Eastern Shore Corporation	27
	Lessons	30
V.	CASE STUDY: CLINCH VALLEY PROGRAM	
	Background	33
	TNC Initiatives	
	Russell County Vision Forum	38
	Pathways	41
	Lessons	43
VI.	PROTECTING A MOUNTAIN	45
VII.	CONCLUSION	48

List of Figures and Tables

Figure 1: Location of Bath County Virginia.....	15
Figure 2: Location of Northampton County Virginia.....	22
Figure 3: TNC Timeline on Virginia’s Eastern Shore.....	30
Figure 4: Location of Clinch Valley program, southwest Virginia.....	36
Figure 5: Location of TNC preserves.....	48
Table 1: Comparison of the preserves.....	51

INTRODUCTION

In 1999, The Nature Conservancy (TNC), a private conservation organization, commissioned the Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) to prepare a report outlining the significant natural resources of Warm Springs Mountain located in Bath County, Virginia. A large tract of land on Warm Springs Mountain—in continuous private ownership for over 70 years—remained virtually untouched by human activity and presented a potential ecological goldmine for the Conservancy's Virginia chapter.

The DCR-DNH reported concluded that Warm Springs Mountain was indeed of significant ecological importance and further was “perhaps one of the top ten unprotected natural areas in Virginia.” (Ludwig, 1999). Accordingly, The Nature Conservancy purchased 7,000 acres of land on Warm Springs Mountain and an additional 2,000 acres nearby in March 2002. Despite the organization's ownership of the mountain tracts, however, future protection of the mountain ecosystem demanded a long-term commitment by TNC.

The purpose of this paper is to examine and compare conservation strategies utilized by The Nature Conservancy in two well-established Virginia reserves with the organization's as yet uncertain plans for the protection of Warm Springs Mountain. TNC's previous work on Virginia's Eastern Shore and in the Clinch Valley of southwest Virginia reveals the organization's transition from a strategy of mere land acquisition to the use of community-based conservation in an effort to involve local citizens and promote a proper balance between economics and the environment.

The paper begins with a review of the literature in regard to ecosystem management—how it is defined and how community-based conservation methods may help in the goal of ecosystem management. This discussion focuses on the importance of private land ownership in the protection of natural resources and the effectiveness of engaging community members as agents of conservation. The paper then provides an overview of The Nature Conservancy and describes TNC’s prescribed method for the conservation of targeted ecosystems—“Conservation by Design.”

Next the paper orients the reader to the newly purchased preserve on Warm Springs Mountain. The paper touches on the history of the region and the natural resources of Warm Springs Mountain, the two primary factors attracting the interest of the Conservancy.

The paper then examines TNC’s presence on the Eastern Shore of Virginia and in the Clinch Valley of southwest Virginia, specifically in terms of the Conservancy’s use of community-based conservation. The paper provides lessons learned from work in these areas, both in terms of general application to TNC policies and lessons specifically useful for the Warm Springs Mountain Reserve.

After an analysis of these two case studies, the paper draws upon the lessons learned to determine the extent to which those particular community-based conservation methods will be useful in the Conservancy’s work on Warm Springs Mountain. Finally, the paper concludes with an analysis of the factors that are likely to lend a conservation target to the approach used in the first two case studies and with a discussion of how that approach should be modified to best address the complications on Warm Springs Mountain.

ECOSYSTEM MANAGEMENT

Establishing nature preserves of the relatively small size that characterizes most preserves in the United States, while good for our hearts and souls, cannot and will not by itself result in the preservation of as much biodiversity as we want and need. (Weeks, 36).

What is Ecosystem Management?

An ecosystem (or ecological system) is sometimes defined as a community of abiotic (climate, soils, temperature, rocks) and biotic (plants, animals, fungi) elements that interact with each other in a given area. (Peine, 1999). This definition encompasses a range from large and complex systems (such as the Blue Ridge Mountains or the Chesapeake Bay watershed) to minute systems (such as the plants, insects, soil and water in a glass terrarium). Despite frequent references to ecosystem management as a strategy, many government agencies and nongovernmental organizations fail to define the concept of ecosystem. Those entities that attempt a definition, however, agree on the fundamental concept that protection of individual species depends on a management plan that preserves the integrity of the land, water and natural processes supporting those species.

McCormick (1999) and others also point out that ecosystems unaffected by humans or the habitat of humanity seldom exist today. Thus, in a holistic ecosystem management approach, humans must be considered as part of the system (“man in nature”), rather than a separate entity (“man vs. nature”). McCormick further cautions that, because ecosystems constantly change (and our understanding of ecosystems changes), management goals must adapt over time to reflect those changes. (McCormick, 1999).

University of Florida ecologist C. S. Holling addresses this issue with what he calls adaptive ecosystem management. “Evolving systems require policies and actions that not only satisfy social objectives but also achieve continually modified understanding of the evolving conditions and provide flexibility for adapting to surprises.” (Wondolleck, 16). This strategy begins with an action plan based on a hypothesis, incorporates checkpoints along the way to monitor results, and re-evaluates the original plan according to lessons learned. (Wondolleck, 2000).

A study released by the Ecological Society of America (1996) listed several other definitions of ecosystem management including the following:

- “A strategy or plan to manage ecosystems for all associated organisms, as opposed to a strategy or plan for managing individual species.” (Society of American Foresters, 1993).
- “Integrating scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term.” (Fish and Wildlife Service, 1994).
- “Management driven by explicit goals, executed by policies, protocols, and practices, and made adaptable by monitoring and research based on our best understanding of the ecological interactions and processes necessary to sustain ecosystem structure and function.” (Ecological Society of America, 1996).

William Weeks (1997) prefers to do away with the phrase “ecosystem management” altogether. He asserts that ecosystems are so complex that ecologists are only just beginning to take the first shaky steps toward understanding them and that no one—despite their claims—truly practices ecosystem management. Not to discredit the good that has come out of the movement, Weeks notes that the strategy’s “big picture” consideration of the complete system represents a step in the right direction. However, he contends that conservationists more accurately take “an ecosystem approach” toward

the management of a product or natural resource known to have value. (Weeks, 34.) For example, a forester concerned with the production of trees for timber traditionally had a single-minded focus to produce healthy trees with little consideration of the impact of his production methods on connected parts of the ecosystem. Foresters concerned with timber production today are more likely to consider all the inter-related factors of the ecosystem (such as water, soil, nutrients, insects, and fire). However, rather than *managing the ecosystem*, these foresters take an ecosystem approach to the management of a specific natural resource, in this case, timber.

The U.S. Department of Agriculture Committee of Scientists, assigned with the task of presenting the scientific basis for the management of national forests and grasslands, generally concurs with Weeks' assessment: "We have broadened our focus from that of sustaining commodity outputs to that of sustaining ecological processes and a wide variety of goods, services, conditions, and values." (Wondolleck, 14).

Private Lands and Conservation

One of the basic tenants of the ecosystem approach to managing natural resources requires a move from top-down "command and control" policies and regulations to a non-regulatory approach that includes education, outreach, and the involvement of local communities. As industries slowly began to clean up their production processes, environmental groups and government agencies alike began to reassess their philosophies toward the environment. Included in the growing trend was the U.S. Environmental Protection Agency (EPA) which noted past errors in its 1994 Strategic Plan:

Because EPA has concentrated on issuing permits, establishing pollutant limits, and setting national standards, as required by law, the Agency has

not paid enough attention to the overall environmental health of specific ecosystems. In short, EPA has been program-driven rather than place-driven. (Porter, 18).

The plan declares a future commitment to solving problems through place-based approaches involving partnerships with federal, state and local agencies, private organizations and landowners to achieve ecosystem protection. (Porter, 1995).

Efforts to protect an ecosystem require the consideration of privately owned land for several reasons. First, approximately 40% of all the land in the U.S. is owned by the government (federal, state, and local), leaving the majority of lands in private ownership. (Edwards, 1995). Second, private lands support many of the most diverse habitats. The Bureau of Land Management, for example, holds vast tracts of land in the west, but much of this property consists of arid land supporting little more than a few species of sagebrush. Likewise, Virginia's highly touted state park system—though extensive—fails to protect the world-renowned diversity of aquatic species found in the Clinch River area, since most of its lands within this watershed are privately-owned.

Third, public lands often serve merely as “islands” of protection for biodiversity. Though the national parks and national wildlife refuges provide homes for a wide array of wildlife, protection to those animals is no longer available if they happen to stray across the park boundary into adjacent private lands. In addition, critical habitats protected on these “islands” of publicly owned lands continue to be at the mercy of land use decisions carried out on the rest of the ecosystem. (Edwards, 1995). For example, although the Yellowstone River provides a haven for an abundance of aquatic species within Yellowstone National Park, the river's quality continues to be threatened by land uses such as mining in areas upriver and outside the park's boundaries.

Community-Based Conservation

When citizens recognize and understand the impact of their activities on a place they know and love, they are often receptive to the call for stewardship. (Diamond, 193).

Motivating private landowners to become involved in the protection of the ecosystem in which they live often presents challenges. Landowners traditionally react suspiciously to any (perceived or real) designs on their land by a government agency or a private organization. Such landowners may be more likely to take up a cause for conservation if the cause is place-based. For example, the “Save the Bay” campaign effectively rallied a widespread and very diverse population toward the restoration of the Chesapeake Bay. As soon as landowners became aware of the impact of their day-to-day actions on the health of this treasured natural resource, they responded by taking action to help resolve the problem. (Diamond, 1996).

Another motivating factor for landowner involvement in environmental stewardship lies in demonstrating that the protection of the environment need not be achieved at the expense of the economy. More specifically, conservation organizations need to illustrate that the achievement of a healthy environment often actually contributes to a robust economy. Oyster farmers on the Chesapeake Bay, for example, need not be convinced of this notion. However, many stakeholders continue to see the two as opposing issues.

Vermont Governor Howard Dean cited several ties between a healthy environment in his state and a strong economy, including aquifer recharge areas, wetlands to reduce flooding, and outdoor recreational opportunities such as hiking to reduce health care costs. (Diamond, 1996). In addition to recreational benefits, Edwards

(1995) adds that a flourishing environment contributes educational benefits, cultural benefits and extractive benefits (for example, timber extracted for furniture). Moreover, as urban areas sprawl outward and the manmade landscape in which we live becomes increasingly congested, travelers seek out nature-based vacations for activities such as bird-watching.

The illustration of this important connection between the economy and the protection of a valued natural resource often provides a critical first step in community-based conservation. However, in much the same way that agencies and organizations fail to communicate their definition of ecosystem management, some localities attempt community-based projects without pausing to consider the definition of “community.” Beyond a common political boundary such as a county or town line, communities consist of a diverse group of individuals each with their own interests and agendas.

Community-based approaches to conservation often fall short of stated goals because too few organizations realize the intricacies of the communities they seek to mobilize. Instead of perceiving communities as a small (in both population and geographic area) unified whole, more attention should be given to the processes within communities and the varying influences of different players, whether citizens or public officials. Although community-based natural resource management is admirable in concept, the strategy remains unproven with respect to its effectiveness according to Agrawal and Gibson (2000). Much of the literature that touts the use of community-based conservation as a strategy includes little research regarding the adequacy of communities as agents of conservation. (Agrawal and Gibson, 2000). Accordingly,

agencies and organizations should look more critically at community complexities before getting started to boost chances of success. (Agrawal and Gibson, 2000).

Perhaps more importantly, the development of community-based projects begins with a solid understanding of the social and economic conditions existing within that community—a step that has been traditionally overlooked. “Good strategy incorporates or at least acknowledges the things people hold dear as we ask them to change.” (Weeks, 1997). Building this understanding of a community involves asking questions such as the following:

- Who lives on the land that affects the ecosystem we want to protect?
- How many residents are there? Is that number increasing or decreasing and how fast?
- What are the age, educational, and income profiles of community members and how are they changing?
- What do the residents believe are the area’s principal problems and aspirations?
- What are the major industries and employers and how is the land used?

(Weeks, 1997).

Answers to these questions help facilitate initial conversations with people in a given area. These conversations should be open and honest but not come too early in the process. In Weeks’ findings, it was easier to work with a community and achieve conservation goals after a thorough analysis of the socio-economics of the region. For example, if a conservation organization such as The Nature Conservancy wishes to address pollution of the Roanoke River with residents of Pittsylvania County, the Conservancy should first develop a profile of county residents to determine (among other things) what drives the economy in that region of the Roanoke River watershed. If TNC

finds that a large percentage of people in Pittsylvania County earn their primary income through beef cattle operations and that the number of farmers is dropping due to lack of profitability, then the Conservancy should incorporate those factors into the organization's plans to protect the river.

While initial research by the group may reveal that "cattle in the creeks" ranked high as a primary source of pollution to the river, TNC would be ill-advised to promote fencing of the creeks after discovering that such action would almost certainly pose a financial burden to already-struggling farmers. A better strategy to motivate community residents after obtaining this community profile might include community outreach by TNC to educate farmers about programs that provide financial incentives for fencing cattle out of the streams.

Conservation by Design

The Nature Conservancy's use of community-based conservation falls within a broader scheme developed by the organization known as Conservation by Design. In this process, TNC first identifies species, natural communities or ecosystems that the organization considers a high priority for conservation. After identifying an area, the Conservancy proceeds through a five-step strategy to protect it. Formerly called the "Five S's" approach to ecosystem management, the steps are: Systems, Stresses, Sources, Strategies, and Success. (Weeks, 1997).

The organization must first fully understand the ecological **system** that is being preserved. This process includes defining the area of the system by useful boundaries and determining what types of natural communities and species exist within that

boundary. The Conservancy also needs to fully understand the natural processes that take place in the system. During this stage, tough choices often need to be made to avoid the temptation to incorporate too large an area into the target region.

After defining the ecosystem and agreeing to objectives for its management, the next two steps of the Conservation by Design process should go smoothly. The first of these steps identifies the **stresses** to the health of a species, community or the ecosystem as a whole. TNC scientists first analyze natural stresses such as fire, flooding, pests, and non-native plants. Of greater importance, of course, concerns the identification of those stresses caused by human intervention. Whether natural or manmade, the Conservancy attempts to be as specific as possible when identifying stresses. Rather than citing “habitat destruction” as a stress, for example, researchers might divide this broad category into such threats as sedimentation in waterways, reduction of undergrowth in forests, or fragmentation of large tracts of land. In this way, the next step: identifying and ranking the **sources** of these stresses becomes clearer. In the previous example, TNC scientists may conclude that the sources of such problems include cultivation of agricultural lands adjacent to riparian corridors, increased deer population, and the building of roads.

While the first three steps require careful and deliberate analysis, the fourth step—to develop **strategies**—requires a creative and open mind. At this stage of the process, the TNC staff devises methods for reducing or eliminating the stresses. Potential strategies used include land acquisition or conservation easements, or partnerships with public agencies or private organizations or industries. Within this stage, the Conservancy also seeks to understand the social and economic context of the human inhabitants within

the ecosystem since conservation of the ecosystem often requires the community's assistance.

The final step calls for a periodic review of the **successes** of the program in terms of reduced threats or improved biodiversity or health of the ecosystem. The Nature Conservancy initially defined success in terms of acres of land protected. However, land conservation can be accomplished with no guarantees of subsequent increases in biodiversity. Therefore, the population numbers of a target species gathered every three to five years, for example, might provide a better measuring stick of the organization's achievements. Furthermore, despite seemingly ending the "5 S's" process, the project team must set clear goals and establish the factor or factors that will be measured early in the planning stages.

The Conservation by Design process reflects the Conservancy's desire to approach conservation from an ecosystem perspective. However, the organization did not always practice conservation by this philosophy. As with many conservation organizations, TNC began operations with a small staff on a limited budget. Over time, as the Conservancy became established and as ecosystem management philosophies evolved, the Conservancy expanded its mission from the acquisition of individual parcels of land ("the world's last great places") to the comprehensive protection of ecoregions.

The Nature Conservancy

Incorporated in 1951, TNC worked out of a small Washington, D.C. office with a handful of employees dedicated to the broad goal of preserving natural areas. In 1955, TNC raised money to help purchase a 60-acre river gorge in New York and Connecticut

in what became their first attempt to practice conservation through direct ownership. That same year the owners of Parramore Island on Virginia's Eastern Shore enlisted TNC's help in an attempt to thwart plans announced by the U.S. Navy to use the island as a bombing range. The plan never materialized, but the initial contact set in motion the Conservancy's interest in protecting the entire chain of barrier islands off the coast of Virginia. The organization settled on land acquisition as the primary means for achieving their lofty goal and over the next twenty years began purchasing islands. By 1975, the land trust owned all or part of 14 of the 18 islands, establishing the Virginia Coast Reserve. (Virginia Coast Reserve, 2003).

As early as the 1960s, the land trust recognized the importance of working locally, and began opening state and local offices around the country. Carrying on the philosophy of founding president Robert Pough, TNC chose a non-confrontational style of working with government officials, landowners, and corporations. Instead of publicly denouncing plans to build roads or clear-cut a forest, for example, the Conservancy quietly arranged meetings with individuals and presented a case for protecting the natural resources in the area. The Conservancy stressed that threats to the environment should be seen as problems to be solved by a collective decision of all stakeholders in a way that would be satisfactory to all sides. In addition, TNC sharpened its mission statement to its current goal "to preserve the plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive." (TNC, 2003a).

The philosophy paid off. In the 1980s, TNC's revenue grew from \$58 million to \$222 million and its staff from 77 to nearly 1,000. By 2002, revenue had soared to \$972

million and TNC employees numbered over 3,000. Branch offices now exist in all 50 states and in 30 countries. In the United States, the organization currently manages over 7 million acres of protected lands and owns outright 2 million of those acres, including 1,400 nature preserves. (Ottaway, 2003a). The Nature Conservancy of Virginia claims 36,000 members and owns more than 30 nature preserves. (TNC, 2002a).

WARM SPRINGS MOUNTAIN PRESERVE

Background

Just before reaching Warm Springs you cross a mountain called after them...the ascent is tedious and protracted but the descent is not open to any such imputation and is indeed rather discomposing to a plain citizen's nerves, from the rapidity with which it is negotiated by the stage...The comfort of this rapid descent is not at all improved by seeing precipices of some hundred feet on one side within a short distance of the wheel and the conviction that the whole machinery must work perfectly to save one from disaster. (Philadelphia physician "Dr. O." 1833; Ingalls, 23).

History

Bath County lies within the Valley and Ridge Province of the Appalachian Mountains on Virginia's western border. (Figure 1). In the 1800s, the county's numerous thermal springs attracted tourists from New York to Louisiana. Many visitors soaked in the springs or drank the mineral waters at the advice of doctors who believed the waters could cure such ills as gout, hepatitis, bronchial diseases and paralysis. Other visitors came to these mountains to escape the hot, disease-plagued cities, where cholera and yellow fever claimed victims every summer.



Figure 1: Location of Bath County, Virginia

Still others traveled to Bath County purely for the social scene. By the mid-1800s, more than a half-dozen resorts dotted the landscape in the region, drawing travelers for not only bathing in the pools, but activities such as billiards, dancing and horseback riding.

The Homestead Resort in Hot Springs, established in 1766, was the oldest of these spas and boasted a collection of seven thermal springs of varying temperatures. The resort's owner, Dr. Thomas Goode, marketed the springs as the best in the area for therapeutic purposes, publishing letters of testimony from patients as evidence. Not surprisingly, The Homestead gained a reputation for attracting only the very ill, and the social elite preferred stays at the more fashionable Warm Springs and Greenbrier hotels.

By the late 1880s, the spa scene began to diminish and several hotels closed or were torn down. The remaining hotels showed signs of age as owners lacked the funds to keep up with maintenance. In 1888, the Virginia Hot Springs Company (VHS), led by Melville E. Ingalls, purchased several of the aging resorts, including The Homestead, with plans to renovate them. However, the corporation soon determined that the Warm Springs Valley could no longer support more than one hotel. VHS chose to focus their attentions solely on the restoration of The Homestead. The decision paid off. While neighboring resorts continued to decline, The Homestead received a much-needed facelift and by the late 1890s the hotel became the premier destination of choice for tourists.

In 1922, VHS purchased more than 7,000 acres of land on the mountain that overlooked The Homestead with the intent to preserve the land in its forested state. President Fay Ingalls hoped to preserve the forest cover on Warm Springs Mountain primarily to maintain the quality and quantity of the springs emanating from the mountain. Although estimates of water flow given to him by engineers prior to his purchase proved to be exaggerated, Ingalls remained steadfast in his decision to buy the mountain land. “The purchase of the tract was a good one,” he wrote in his book The Valley Road. “The protection of existing water sources was secured, the Valley has been saved from possibly undesirable development on the ridge which overlooks it, a site for an airport was acquired, and some of the loveliest country about here preserved from vandals.” (Ingalls, 178).

Acquisition

In 1993 the last of the Ingalls family decided to leave the resort business. Virginia Hot Springs sold The Homestead Resort and 3,000 acres of surrounding lands to ClubCorp, an owner of hotels and resorts around the world. VHS continued to hold ownership of an additional 12,000 acres of land, including the 7,000-acre tract on Warm Springs Mountain purchased by Fay Ingalls in the 1920s.

However in 2001, VHS decided to sell the company and all its assets. Knowing that much of the steep Warm Springs Mountain tract would be of little interest to developers, VHS began discussions with several conservation organizations, hoping to find a buyer for the sensitive lands. At the same time, VHS approached ClubCorp as the

logical buyer of the remaining developable tracts in Hot Springs near the resort and in Warm Springs five miles to the north.

To help with the decision to purchase VHS, ClubCorp brought in Celebration Associates LLC, a community development company that had managed other resort properties for a subsidiary of ClubCorp. Celebration prepared a preliminary study for the corporation outlining the development potential of the VHS tracts. After considerable negotiation between VHS and ClubCorp, however, ClubCorp suddenly backed out of the deal, leaving VHS to search for a new prospective buyer. No one knew the virtues of the property better than Celebration Associates. Accordingly, VHS offered to sell the 12,000 acres of land to Celebration, ClubCorp's former consultant. (Adams, 2003).

Celebration Associates is a development company known for its upscale, environmentally sensitive communities in the Southeast. Before creating Celebration Associates, the company's founders, Don Kaloren and Charles Adams, worked for the Walt Disney Company, creating the new urbanist town Celebration near Orlando, Florida. By 2001, the relatively young company had served only as development managers for other companies—it had never been the principle owner of the land that was to be developed.

Celebration was interested in developing only about a quarter of the 12,000 acres of land available for sale by Virginia Hot Springs and was not particularly interested in purchasing the company. However, VHS insisted that the lands and company be sold in their entirety. The company encouraged Celebration to contact The Nature Conservancy, long considered the most likely of the conservation groups to acquire the mountain lands. Adams had worked with The Nature Conservancy during his employment with Disney

and considered the organization's confirmed interest in the lands key to Celebration's plans.

By 2002 the deal was completed when the shareholders in Virginia Hot Springs, Inc. voted to sell the remaining 12,000 acres of land and all shares of stock to Celebration. Celebration Associates LLC then assumed the Virginia Hot Springs, Inc. name and on the same day sold 9,000 acres of environmentally sensitive lands to The Nature Conservancy. The lengthy and complicated transaction included three tri-party agreements between The Homestead (ClubCorp), Virginia Hot Springs, Inc. (formerly Celebration Assoc.), and The Nature Conservancy:

- 1) Mutual easement: created and defined terms of easements across each entity's lands in cases where TNC or VHS tracts were landlocked;
- 2) Pedestrian trails: spelled out the shared use of 90 miles of existing trails on and near Warm Springs Mountain by TNC, VHS, and The Homestead;
- 3) Restrictive covenants: limited the ability of any of the entities to extensively harvest timber and forbid competitive activities such as the building of another resort hotel.

Virginia Hot Springs' plans consist of approximately 400 vacation and second homes in and around the hamlets of Warm Springs and Hot Springs. Most of the homes will be on two to three acre lots and the building envelope on each lot will be specifically designed to ensure that houses blend in with the surrounding landscape. In addition to the land already sold to the Conservancy, VHS plans to donate conservation easements to the organization on as much as 50 to 60 percent of the undeveloped lands that will surround the home lots. "Most people don't want to have to take care of 10 to 20 acres of land," Adams said, "So we came up with this approach that they can own in fee simple

one to two acres, but they'll be looking out over 50 acres of meadow that is going to be constrained by a conservation easement.” (Adams, 2003).

Local residents expressed some apprehension regarding the effects of such large-scale development on the rural environment of Bath County. However, The Nature Conservancy and Virginia Hot Springs held several informational meetings after the purchase to alleviate concerns. Long-time resident Kent Ford and his wife, Ellen, continue to have doubts about the impending development, but regard TNC's presence in the county as a positive outcome. “Warm Springs Mountain is a wonderful place,” he said. “We've been worried for years that VHS would run out of money and sell the land to a developer. We are very enthusiastic that it has become the property of The Nature Conservancy.” (Ford, 2003).

Natural Resources of Warm Springs Mountain

The view from Flag Rock, on the crest-line of Warm Springs Mountain, can scarcely be surpassed with respect to scenic loveliness and interest...Because these heights are forest-clad, and thus screen the open lands between them the outlook is almost as primeval to us as it was to the pathfinder of nearly two centuries ago.

As part of the valley and ridge region of the Appalachian Mountain chain, Bath County is characterized by a series of parallel mountains and valleys which run in a southwest direction through the county. At a length of twenty-eight miles and rising to a height of 4,225 feet at its highest point, Warm Springs Mountain stands as one of the most prominent of these mountains. Running through the center of the county, the mountain divides Bath into two distinct regions: the Cowpasture River Valley to the east and the Warm Springs Valley to the west. The Warm Springs Mountain reserve consists

of not only the 7,000-acre tract on Warm Springs Mountain, but an additional 2,000 acres of environmentally sensitive lands on nearby Coles Mountain and along Cascades Creek near Hot Springs.

The slopes of Warm Springs Mountain, once dominated by American chestnut, now consist of mixed hardwoods including red oaks, hickories, and sugar maples. Other areas of the mountain include stands of basswood, ash, and poplar. Eastern hemlock forests, often with an understory of mountain laurel and rhododendron, grace the more acidic gorges and sheltered riparian areas within this plant community.

In drier areas of the mountain, particularly on ridgetops and exposed side slopes, Virginia and Table Mountain pines commonly grow alongside scarlet, chestnut and post oaks. These Pine-Oak communities thrive on rocky, sandy, or low-nutrient soils. A globally rare natural community known as the montane pine barren exists as a subset within these dry regions. This community type generally requires a combination of dry, rocky soil conditions and periodic fires to maintain viability. Although similar to the Pine-Oak community found more commonly, the vegetation found in this community type never reaches tree height. The montane pine barren's assortment of native Catawba rhododendron, pitch pine, mountain laurel, and black huckleberry form a landscape characterized by thick shrub growth. While similar communities exist sporadically throughout the northern and central Appalachians and on "shrub balds" of the Southern Appalachians, the montane pine barrens existing on Warm Springs Mountain represent the only significant occurrence of their type in Virginia. (Crichton, 2003).

Within the natural communities found on and near Warm Springs, the inventory conducted by the Department of Conservation and Recreation's Division of Natural

Heritage (DCR-DNH) identified several rare plant species including variable sedge, bunchberry and Fraser's Marsh St. John's-wort. (Ludwig, 1999). The DCR-DNH inventory of the area also found several rare animals including Herbard's noctuid and herodias underwing moths and two cave species, Hoffman's springtail and oldfield coil.

Reptiles living in the mountain habitat include timber rattlesnakes and milk snakes. The DCR-DNH inventory of the area did not locate a population of ground skinks, a type of small lizard, cited on the mountain by an earlier study. Although common to eastern Virginia, no known population of ground skinks occurs west of the Blue Ridge Mountains. Common amphibians include the spring peeper, wood frog, pickerel frog, and red-spotted newt. In addition, black bear, white-tailed deer, bobcats, striped skunks, raccoons, opossums, coyotes, and an estimated 50 species of birds reside on the mountain. (Ludwig, 1999).

A number of threats need to be addressed, including the decimation of oaks by the gypsy moth, the almost certain demise of Eastern hemlocks from the woolly adelgid, and the continued spread of the Anthracnose fungus on dogwoods. Invasive, non-native plants such as garlic mustard and bittersweet prove equally destructive, choking out native vegetation throughout the area. In addition, the practice of fire suppression over the last century, over-browsing by the growing deer population, and acid deposition all pose problems to the diverse communities on the mountain and in the Cowpasture River below.

In March 2003, The Nature Conservancy released a Conservation Plan which specifically outlined species and habitats of primary interest to the organization. The plan further detailed threats to these conservation targets and followed with goals and

objectives for threat abatement and restoration of habitats. Clearly, the Conservancy considered acquisition of the mountain tracts insufficient to provide for its long-term protection. What remains to be seen, however, are the Conservancy’s methods for achieving that protection. To that end, TNC can look to their continuing conservation efforts on Virginia’s Eastern Shore and in the Clinch Valley of southwest Virginia. In the management of these preserves, the organization evolved from a system of land acquisition to broader means of protecting natural resources—through management of whole systems. This evolution, in turn, prompted TNC’s decision to integrate community needs into conservation strategies.

CASE STUDY: VIRGINIA EASTERN SHORE

Background

The Virginia Eastern Shore is a 70-mile long peninsula bounded on the east by the Atlantic Ocean and on the west by the Chesapeake Bay. Accomack County lies in the northern half of the peninsula with Northampton County to the south. (Figure 2). The peninsula is well known for its colonies of nesting shorebirds—the largest on the east coast of the United States. (Edwards, 1995). A chain of barrier islands off the coast stretches from the Maryland/Virginia border to the southern tip of the peninsula.



Figure 2: Location of Northampton County, Virginia

These islands harbor over 250 species of raptors, songbirds and shorebirds and provide a primary resting point for migratory waterfowl. (Edwards, 1995).

In 1955 the owners of Parramore Island enlisted The Nature Conservancy's help in an attempt to thwart plans announced by the U.S. Navy to use their island as a bombing range. The Navy's plan never materialized, but the initial contact prompted the Conservancy's desire to protect not only Parramore Island, but the entire chain of barrier islands off the coast of Virginia.

In 1969, a development company announced its purchase of several barrier islands with the intent to develop a seaside resort for up to 50,000 people. (Hall, 1997). Public opposition, wetlands regulations and economic hardships stalled this plan, and The Nature Conservancy—who had been quietly working behind the scenes for more than a decade—began to purchase the barrier islands one by one.

Over time TNC acquired all or part of 14 islands in the chain, establishing the 45,000-acre Virginia Coast Reserve (VCR). Notable for being one of the last intact coastal landscapes on the Atlantic seaboard, the United Nations recognized VCR as an International Biosphere Reserve in 1979. The island chain was also recognized as a U.S. Department of Interior National Natural Landmark, a National Science Foundation Long Term Ecological Research Site and a Western Hemisphere International Shorebird Reserve Network Site. (VA Coast Reserve, 2003).

In 1984, VCR's new director, John Hall, began the long-term process of working with communities on the shore to explain TNC's vision and goals and to build trust with those who were apprehensive of the organization that had now become the Shore's

largest landowner. Hall's efforts took TNC beyond land acquisition into the realm of social and economic issues of local communities—a first for the organization.

The Conservancy's protection of the islands now seemed complete. Through direct ownership of the islands, TNC could look forward to a future of stewardship and focus their attention on other threatened areas of the state for similar acquisition plans.

However, by the late 1980s TNC realized that protection of the islands alone would not be sufficient. The marshes and coastal bays that surround the islands provide habitat to a myriad of fish and shellfish that serve as food for the protected colonies of birds. The forests and pastures on the mainland provide additional sources of food as well as corridors for migrating birds. "Island systems and salt marsh depend on shallow bays depend on shore watercourses depend on land use on the seaside of the peninsula." (Weeks, 87-88). Consequently, TNC decided to implement an ecosystem approach in these peripheral areas—a critical step in the long-term protection of the Virginia Coast Reserve and its inhabitants.

TNC Initiatives

Northampton Economic Forum

Initially, TNC continued to use land acquisition as a strategy, buying properties around the deepwater ports on the mainland as a means of controlling the activities that took place there. Another strategy encouraged private landowners to donate conservation easements on seaside farms to help restrict residential development and keep the land in productive agricultural use. In addition, TNC purchased farms directly as they became

available for sale, placed development restrictions on the land and then resold the farms to buyers willing to accept the reduced development potential of the land.

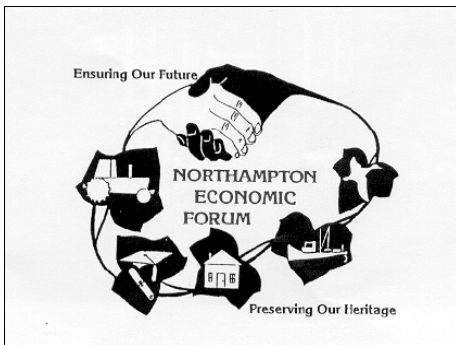
These strategies all helped to protect the ecosystem, but TNC needed to devise other options for conservation for two reasons. First, as a practical matter TNC could not purchase all the land available for sale, and even if feasible, such action would have been inappropriate. Portions of the mainland had been farmed for over 300 years and its conversion to a nature preserve would have been a significant loss to the region's culture and identity. Second, the conservation easement program proved time-consuming to introduce and explain. In addition, many farmers resisted the idea of placing restrictions on their land.

While TNC strived to get these programs underway, farms continued to sell due to lack of profitability. Profits from crops fell while expenses for equipment and agricultural supplies steadily climbed. Likewise, real property taxes began to rise as the value of land on the Shore reflected an increase in development pressure from the south. The Hampton Roads urban area just across the Chesapeake Bay Bridge-Tunnel to the south was experiencing a rapid increase in population and more and more city residents in the Hampton Roads area looked to the relatively undeveloped Eastern Shore as a site for retirement or vacation homes. At the same time, the Northampton County unemployment rate exceeded 10 percent. (Parker, 2003).

The increasing development pressure in Northampton County concerned The Nature Conservancy. The group determined that new action was necessary to protect the conservation values of their Virginia Coast Reserve. Adopting a strategy similar to that proposed by McCormick (1999), TNC reasoned that successful protection of the Eastern

Shore's natural resources required the integration of the social and economic needs of the people living within that ecosystem. The Conservancy based their new community-based conservation strategy on what they called "the three-legged stool" concept, explaining that a thriving ecosystem depended on a strong economy, stable community and a healthy environment in equal measures. The stool would not stand if any one of the legs became weaker than another. TNC further summarized the new philosophy by stating:

"Community-based conservation means that we respect the needs of local communities by developing ways to conserve biological diversity while enabling people to live



productively on the landscape." (TNC, 2003c).

To that end, TNC spearheaded the organization of a work group known as the Northampton Economic Forum in 1991 to discuss the needs of the community. To

strengthen their position in the region, the Conservancy teamed up with the local chapter of the National Association for the Advancement of Colored People (NAACP) and a local citizen's group, Citizens for a Better Eastern Shore. Over 100 participants from the community worked together over the course of a year to craft a strategic plan for the future of Northampton County. The work group considered the plan a compliment to the county's comprehensive plan. However, this plan would be more focused and included a "clear delegation of responsibility and a detailed implementation schedule."

(Northampton Economic Forum, 1).

The plan stated a primary goal to improve the standard of living for more of Northampton County's residents by the 21st century. This included improving the school

system and increasing the availability of higher paying jobs. Participants of the community group set objectives to achieve this goal without losing the community's links to the environment or to its past: "The county...will demonstrate that a community can grow and prosper without abandoning a rural way of life tied to the fertile land and clean, productive waters of the Eastern Shore." (Northampton Economic Forum, 3).

The need for jobs dominated the early discussions held by the Forum. The Eastern Shore's poverty rate was twice as high as the national average. (Dabson, 2001). The farming and fishing industries that had supported residents for centuries were declining in numbers and in demand for products. The area began to attract undesirable economic development prospects such as a maximum-security prison and a medical waste treatment facility. The region desperately needed an economic boost that would not only be compatible with the environment, but which would reflect the culture and unique identity of the Eastern Shore and its people. Accordingly, the plan developed by the Northampton Economic Forum called for "'Home-Grown' Economic Development and Quality Job Creation" as one of its top priorities. (Northampton Economic Forum, 18). Early goals in the plan called for attempts to lure former residents back to the area, discussions with local businesses to identify issues of greatest concern and an improved system for helping new businesses get started.

Virginia Eastern Shore Corporation

In 1995, The Nature Conservancy decided to help the Forum participants in their attempt to bring about economic stability. The Conservancy formed the Center for Compatible Economic Development (CCED), an independent unit of the Conservancy that TNC felt would foster the "next generation of sustainable development approaches."

(Dabson, 19). The CCED was the brainchild of William Weeks, who believed that conservation and economics could be compatible if the right type of development was used. If communities invested in environmentally friendly businesses (such as agriculture or local crafts) rather than haphazard unplanned development, he proposed, then economic stability could be achieved without a significant loss of land or degradation of the riparian areas on the Eastern Shore.

With Weeks at the helm, the CCED launched the Virginia Eastern Shore Corporation (VESC), the first of 30 flagship operations created across the country to test his theory. (Ottaway, 2003). CCED designed the Virginia Eastern Shore Corporation as a for-profit corporation with goals to: 1) promote and market goods and services that captured the Shore's cultural heritage, 2) provide funding for new and existing small businesses, and 3) purchase and sell agricultural lands and affordable housing for local citizens. The plan stated goals to create at least 250 new jobs within five years and to develop more than 50 ecologically friendly businesses within 10 years. (Dabson, 2001).

This effort launched an experiment like none other for TNC, one that they hoped could be used as a model at other TNC sites around the country. A half dozen investors provided start-up funding for the venture. By the time CCED began the experimental enterprise, the Center had raised \$1,225,000 in equity and had been approved for an additional \$1,500,000 loans. (Dabson, 2001).

As promised, VESC helped generate a series of start-up businesses which included clam and oyster operations, an eco-tourism company, and a producer of potato chips from the locally grown Hayman sweet potato. Within a short period of time, however, the complexity of the operation took its toll on those involved. VESC quickly

amended its initial projections of turning a profit within four years to within 10 years. In addition, VESC decided to put the planned real estate and venture capital programs on hold. These actions only delayed the inevitable. After two years, the corporation had lost more than \$1 million--86% of its initial capital. (Dabson, 2001). By the end of 1999, the Conservancy decided to dissolve the Virginia Eastern Shore Corporation.

The Ford Foundation and the Mary Flagler Cary Trust—CCED's two largest contributors—found the experience as unsettling as did TNC. Anxious about future investments of capital, the two corporations funded a study of VESC operations, hoping to determine what went wrong. The resulting 28-page report showed that an underlying conflict existed from the beginning between the for-profit nature of the corporation and its mission to accomplish social change. "It embeds into the organization's genetics a persistent tension between the commercial rules and values of the marketplace and the quite different rules and values that social visionaries live by." (Dabson, 10).

In addition, the report charged TNC with taking on more than they could possibly manage. The scope of the project was unrealistic, particularly for an organization that had no real background in business management. The start-up of one business would have been difficult enough, but to try to operate a series of businesses, a real estate venture, and a venture capital program was inherently unmanageable. The Business Plan revealed a number of flaws "...from too many start-ups and inadequate market analysis to groundless, extreme optimism, unsupported assumptions, and too many roles for a hands-on CEO." (Dabson, 13).

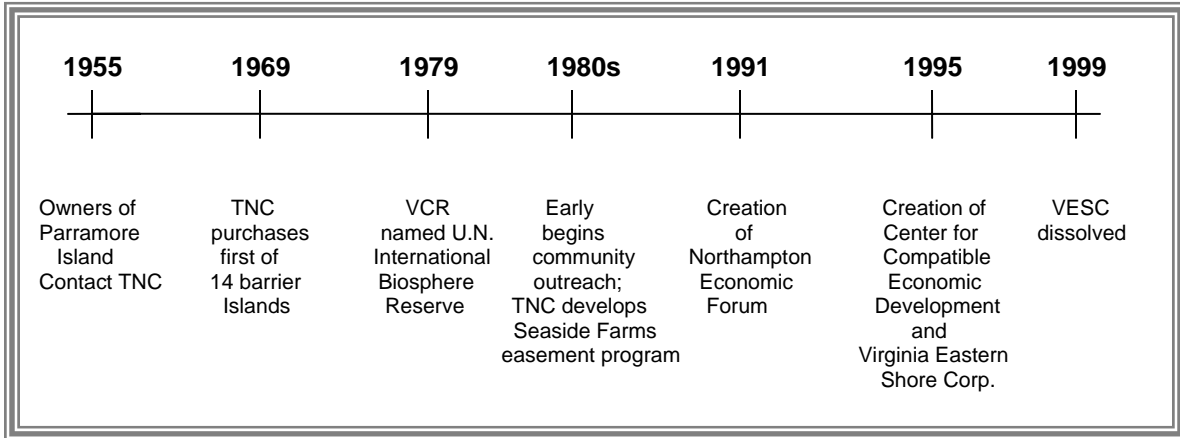


Figure 3: TNC Timeline on Virginia's Eastern Shore

The demise of the VESC brought to a close the first three decades of resource management by The Nature Conservancy on the Shore (Figure 3). Although TNC's experimental initiatives often demonstrated lack of foresight and planning, the resulting failures contributed important lessons to the organization. These lessons and those gained from successful projects on the Shore provided valuable guidelines for the Conservancy's general operations which could be later applied to the planning process for Warm Springs Mountain.

Lessons

Despite the failure of the Virginia Eastern Shore Corporation to achieve its lofty goals, The Nature Conservancy accomplished much on Virginia's remote peninsula. The Virginia Coast Reserve continues to protect one of the last remaining unspoiled coastal habitats on the entire East Coast. John Hall's work with residents on the Eastern Shore in the mid-'80s set a precedent for the Conservancy in attempting to develop community trust and understanding of the TNC mission. More importantly, TNC gradually shifted

its philosophy from protection of natural resources through land acquisition to a broader use of conservation strategies in response to threats to the Virginia Coast Reserve. One of those strategies—the Seaside Farms program—succeeded in securing conservation easements on farmland that faced imminent danger of being converted to development.

In addition, the Northampton Economic Forum was the first attempt by TNC to lead a community-based conservation effort toward sustainable economic development. This effort later served as a model for other communities around the state. The Forum succeeded in generating funding for business opportunities and in creating a plan for Northampton’s future at a time when the county struggled economically. By the late 1990s the economy had improved in Northampton County. Business activity increased and unemployment (above 10% at the time that TNC initiated the community meetings) dropped below four percent. The Northampton Economic Forum—having accomplished its mission—disbanded late in the decade. (Parker, 2003).

Lessons learned from the Conservancy’s disappointments on the Shore equally benefited the organization. First, the successful operation of a for-profit corporation of the magnitude that TNC proposed on the Eastern Shore demanded skills and resources beyond the capabilities of the Conservancy. President Steve McCormick explained: “We’re a nonprofit organization. We don’t tend to think like a business...That’s okay, probably even appropriate, but it means we’re very inexperienced in running a business.” (Ottaway, 2003b).

Second, the demise of the Virginia Eastern Shore Corporation led TNC to re-examine the organization’s structure and leadership on the peninsula. For nearly twenty years, VCR’s director, John Hall, benefited from nearly complete autonomy. Without the

scrutiny of the parent organization, the director remained unaccountable for his actions on the Shore eventually resulting in liabilities of \$24 million by the time of his departure in 2001. (Ottaway, 2003). Following the advice of the Ford Foundation's report (which observed that "too many cooks spoil the pot"), TNC removed VCR's independent status and designated the reserve as one of the key landscape programs under the direction of the Virginia Chapter of The Nature Conservancy.

Likewise, TNC dissolved the Center for Compatible Economic Development and revised its mission to concentrate on the development of business partnerships. According to Bruce Boggs—one of the few original CCED employees remaining at TNC—this decision "reflected an organizational philosophy that involved integrating specialized expertise into operating units and moving it out of centralized specialty shops based at headquarters." (Boggs, 2003).

Third, although TNC credits John Hall for initiating community outreach, the Conservancy likely erred by waiting so long. By the early-1980s when Hall began working with local residents, TNC had already been a presence on the Shore for nearly two decades. Hall's attempts to engage the Shore communities by necessity centered on dispelling fears and forging friendships with many residents who had previously formed an unfavorable opinion of the conservation group. The Conservancy's twenty years of "top-down," guarded conservation strategies had alienated the very people that were best able to help TNC with their mission to protect the natural resources of the area. This realization opened the doors to TNC's future community-based conservation methods which would not only provide information sooner, but would encourage active input and participation from communities in the conservation process.

Current VCR director, Steve Parker, notes that the Conservancy's changes of philosophy through lessons learned on the Shore provides the organization with a better model for future endeavors:

I learned that we were not very good at either raising the kind of money it takes to start a business...nor very good at trying to help it succeed, and in general were not competitive in the for-profit arena, given the limited role we had. TNC is very good at conservation of bio-diversity and facilitating partnerships and collaboration between diverse organizations (public, private, for profit) and we are focused on those strengths in terms of our on-going and future conservation work. (Parker, 2003).

To that end, VCR currently boasts partnerships with a local land trust, the U.S. Fish and Wildlife Service, the state parks, the Virginia Department of Game and Inland Fisheries, and public officials and residents of Northampton County. Primary goals for the Conservancy include the enhancement and restoration of coastal wetland and mainland habitats for the area's diverse population of birds and the continuing education of the public regarding the critical ties between human activities on the mainland and the overall health of the shore's ecosystem.

CASE STUDY: CLINCH VALLEY PROGRAM

Background

The Upper Tennessee River Valley lies in far southwest Virginia, hundreds of miles away and a world apart from Virginia's Eastern Shore. Here, the dramatic ridges and valleys of the Appalachian Mountains dominate the landscape. Mixed hardwood forests and understories of mountain laurel and rhododendron cover the steep slopes and

a wide array of freshwater aquatic species inhabit the rivers and streams that course through the valleys.

During the Ice Ages of North America, the Tennessee escaped the glaciation that covered nearly everything in the north and midwest. As freshwater systems in those regions froze, some species survived by migrating south. Many others faced a certain demise. The Tennessee River's path, however, dipping south from Kentucky and then turning north, kept it free-flowing and sufficiently warm to allow its aquatic inhabitants to take refuge from the advancing ice sheet.

In addition, the Tennessee River watershed is the fifth largest in the United States, covering a total of 41,000 square miles. (Simmons, 1997). The river's streams and tributaries connect to the Mississippi river drainage, creating an enormous network of connected freshwater systems. (Beaty, 2003). These two factors resulted in the presence of a great diversity of aquatic life within the watershed, uninterrupted for tens of thousands of years. (Beaty, 2003).

The Powell, Clinch, and Holston rivers form a sub-watershed of the Tennessee that covers 2,200 square miles and likewise contains a wide variety of freshwater aquatic species. These rivers provide habitat for forty-five species of mussels and over 100 species of freshwater fish. Of those species, twenty-nine species of mussels and nineteen fish species are listed as rare. (TNC, 2002b). All told, over 400 species of rare plants and animals live within this watershed, considered one of the greatest concentrations of rare species in the United States. (American Rivers Association, 2003a).

However, decades of abuses to the land along the rivers resulted in the gradual degradation of the water quality and a resultant threat to the survival of the species found

in those rivers. Recent scientific studies find that freshwater aquatic species throughout the United States are dying out at a rate similar to that of rainforest species. (American Rivers Association, 2003b). Considered the most imperiled species in the world, tropical rainforest species become extinct at an average rate of 35 species per day. (PBS, 1996). Ecologists consider freshwater mussels to be the most endangered group of animals in the U.S. (Biber, 2002). Although the Endangered Species Act (ESA) protects some species of mussels, Biber contends that this and other environmental laws fall far short of orchestrating a comeback for imperiled mussels. One critical factor in the ESA's inability to stop the decline of mussel species lies in the near-impossibility of recovering a species once its habitat has been compromised. (Biber, 2002).

Mussels, as filter feeders, are extremely sensitive to pollution and serve as important indicators of water quality and stream health. Scientists regularly examine mussel tissue to determine past and present pollutants of the water such as pesticides and heavy metals. Unfortunately, many of those pollutants also cause the demise of mussel species. A 1918 survey of the Clinch River's mussel population revealed 60 existing species, 20 more than are found there today. (American Rivers Association, 2003a). A long history of poor logging, mining, and farming practices resulting in sedimentation, erosion and agricultural runoff contributed to the loss of these mussels. Other human-caused threats include the impoundment of the river for reservoirs, bacterial contamination from leaking sewer lines and toxic waste from industries. (Beaty, 2003).

The Nature Conservancy first became involved in the Clinch Valley with the purchase of Pendleton Island in 1983. This collection of three islands totaling 35 acres of mostly wooded land lies in the Clinch River in Scott County. Since this initial small

acquisition, the Conservancy gradually expanded their conservation target area to include the entire 2,200 square mile watershed of the Clinch, Powell and Holston Rivers. The ecosystem covers all or part of six counties in Virginia and three additional counties in Tennessee. (Figure 4). Scientists consider the area the nation's most critical for imperiled aquatic organisms. Five globally rare species live here: the purple bean, fluted kidneyshell, slabside pearl mussel, Tennessee pigtoe and Tennessee clubshell. A sixth species, the tan riffleshell, is found nowhere else in the world. (TNC, 2002b). Consequently, TNC designated the region as one of six "biological hot spots" of the United States.



Figure 4: Location of Clinch Valley program, southwest Virginia

TNC concentrated initially on the plight of the mussels and freshwater fish species in the watershed. Unlike early plans on the Eastern Shore, TNC did not employ land acquisition as an initial strategy for the area. In the Clinch, TNC formed partnerships with other organizations and agencies in an effort to obtain funding for conservation projects. In one of the earliest of such projects, TNC initiated a streambank-restoration plan with the U.S. Fish and Wildlife Service that compensated farmers for fencing cattle out of the Clinch River. To date, the project has restored over 20 miles of riverbank, preventing silt from contaminating the river. The project continues with the help of the Natural Resources Conservation Service, Soil and Water Districts, and the

Black Diamond and Clinch Valley Resource Conservation & Development councils. (TNC, 2002b).

Over time, TNC's conservation strategy in the Clinch Valley expanded to include land acquisition. The Conservancy currently owns and manages a total of seven preserves within the 2,200 square mile watershed, including the 850-acre Kyles Ford tract and the 500-acre Cleveland Island tract. (Beaty, 2003). Moreover, the Conservancy was instrumental in the Virginia Department of Conservation and Recreation's acquisition of three State Natural Area Preserves in the region: the Cleveland Barrens and The Pinnacle in Russell County and The Cedars in Lee County, totaling over 1,700 acres. (TNC, 2002c).

TNC Initiatives

As was the case on the Eastern Shore, TNC developed a strong interest in working with private landowners in the Clinch Valley. According to Dr. Braven Beaty, Stewardship Ecologist for the Clinch, the logical decision to develop community-based conservation in the area was derived from “the realization that the old TNC model of buying properties and protecting it from development or what-have-you wasn't going to work....” Protection of the habitats for mussels and fish depended on too many land use factors beyond TNC's control in points upriver. As an example, Beaty cited the pollution of 50 miles of the North Fork of the Holston River from an industrial plant in Saltville, Virginia. Unlined waste ponds at the plant allowed mercury to seep into the waterways for nearly 75 years, resulting in a fish advisory that remains in effect. (Beatty, 2003). TNC determined that community outreach—which had resulted in great success on the Eastern Shore—presented a natural progression for the Clinch.

The Russell County Vision Forum

In 1996, TNC staff approached Russell County citizens and public officials hoping to create interest in community-based conservation of the Clinch-Powell watershed. The core committee that TNC brought together included members of the Cumberland Plateau Planning District, Russell County Public Schools, the Department of Social Services, the Clinch Valley Soil and Water Conservation District, and the Chamber of Commerce. At the first meeting of what would be known as the Russell County Vision Forum, the Conservancy presented a case study that caught the attention of participants. The case study detailed the work of the Northampton Economic Forum.

Northampton County's accomplishments impressed the Russell County group. Through the efforts of a small group of people, the Eastern Shore county succeeded in engaging stakeholders from many different sectors in the collective pursuit of compatible economic development. In the five years since TNC helped create the Northampton Economic Forum, that diverse group of people garnered approximately \$17.5 million in new investments from federal, state, local and private sources. (Corporation for Enterprise Development, 1997).

Moreover, the Russell County group was well aware of the environmental and socio-economic similarities between the two counties. Both contained highly prized natural resources facing degradation by human activities: haphazard development on the Shore and traditional farming practices in the Clinch. In addition, both counties were home to a disproportionate number of low-income families, in large part resulting from the downturn of the industries that had once brought them economic stability. The loss of jobs in farming and fishing on the Eastern Shore paralleled a reduced demand for coal

miners and farmers in Southwest Virginia. The poverty rate in Russell County in the early 1990s, over 22 percent, doubled that of the state's rate. (Corporation for Enterprise Development, 1997).

TNC considered its community-based conservation (“three-legged stool”) approach a good fit for the Clinch Valley region. In Russell County—as on the shore—The Forum placed the highest priority on business development. Members of the Forum noted that, although Russell County officials worked hard to bring in outside industries, the county expended little effort on existing businesses and entrepreneurs. Accordingly, the Forum developed a “Shop Russell County” campaign as one of the first strategies developed to help local business ventures. A second strategy proposed establishing a new dry kiln in the area to provide local sawmills with a place to dry and market lumber. The Forum's strategic plan also called for more opportunities for all residents and a concerted effort to build community pride. Strategies to that end included a school-to-work program for youth, development of a community center, and greater access to the Pinnacles Natural Area Preserve to increase tourism. (Corporation for Enterprise Development, 1997).

Within three years after developing their goals for Russell County, the Forum released “Celebrating Success: A Community's Progress for Compatible Economic Development.” This publication detailed programs that had been established as a result of the community planning meetings. With help from TNC, Congressman Rick Boucher, Delegate for Virginia's Ninth District, the Russell County Board of Supervisors and others, the Forum met their goal for a working dry kiln with the creation of the Russell County Primary Wood Processing Center. The center included a 20,000 board foot solar

kiln, an air dry yard and a sawing-predrying shed. To encourage local shopping, the Chamber of Commerce promoted a “Countdown to Christmas” campaign. Establishment of a weekly farmers market likewise supported local agricultural. (Russell Co. Chamber of Commerce, 1999).

Following the successes of the Northampton Economic Forum and the Russell County Vision Forum, The Nature Conservancy found itself in a surprising new position. Rather than having to pitch the idea of community planning to localities, communities began to seek out the Conservancy first. Small towns in the Clinch Valley region such as St. Paul, Honaker and Cedar Bluff showed interest in organizing the same kind of community-based efforts that TNC had initiated in Northampton and Russell counties. “And in return for providing the financial and expertise leadership of facilitating the process,” Dr. Beaty explained, “what we got from the community was a commitment to—at *at least at the outset*—start with environmental concerns equally on the table with everything else.” (Beaty, 2003).

Getting that commitment from members of the community in the Clinch Valley, according to Beaty, required little effort. Despite the almost universal focus in impoverished regions toward attracting industries to provide employment, Clinch residents understood well the importance of protecting their prized resource. “In the Cedar Bluff steering committee meeting, we went around the room and had everybody list what they thought were the community’s biggest assets and almost everyone mentioned the Clinch River because they live right on it and they connect with it.” (Harless, 2003).

Pathways

The growing interest shown by Virginia communities and others as a result of TNC's work on the Eastern Shore and in the Clinch Valley inspired The Nature Conservancy to design an action plan that could be used as a model by communities around the country. The plan synthesized and summarized the basic steps taken in the two Virginia projects as well as similar projects in Key Largo, Florida, the Les Cheneaux region of northern Michigan, and the Yampa Valley of Colorado. TNC's Center for Compatible Economic Development created the concept and resulting publication titled Pathways: Building a Local Initiative for Compatible Economic Development in 1999.

The Conservancy designed the workbook to be used with TNC facilitators or by the community as a guide for walking through the process on their own. The end result of the process would be a strategic plan outlining the community's economic, social, and environmental goals. Among the benefits of developing such a plan is the enhanced ability to secure community development grants. "The first question they ask you is 'Have you been involved in any kind of strategic planning process?' If the community has, it shows to grant funders that they're serious." (Beaty, 2003).

TNC first tested the Pathways Community Workbook on six communities around the country, among them Mathews County, Virginia on the Chesapeake Bay and the town of St. Paul in Russell County. The Workbook follows an eight-step process beginning with the formation of a small working group that is charged with the task of creating a community-based plan for compatible development. The workbook then encourages leaders to examine community "readiness" for such an undertaking, secure sponsor organizations for the process, and create a steering committee to lead the initiative.

The newly-formed committee next engages in careful research of the area to determine strengths and weaknesses of the community, following the three-legged stool approach. This Rapid Community Assessment helps define the character of the community, its history and culture, recreational opportunities, sources of conflict and more. The Rapid Economic Assessment includes the gathering of demographics and economic data and the source of threats to the economy. The Environmental Assessment first encourages participants to prepare a brief natural history of the area to foster a special sense of place within the community. Identifying the natural resources of the area, the physical environment, water systems, native plant and animal species, and major land uses comes next, followed by a listing of major stresses and sources of stress to those resources.

Once threats and opportunities to each key area have been identified, the Pathways model then leads participants through the process of developing a community vision, determining strategic priorities, and planning for action. The process seemingly culminates by drafting and publishing the new community strategic plan. However, rather than “sit back and see what happens,” the Pathways Workbook encourages the community to keep the initiative alive by helping to identify funding sources for detailed strategies and assisting community members in completion of initial action steps. The workbook further notes the value of reviewing and updating the strategic plan every three to five years. (Corporation for Compatible Economic Development, 1999).

The Conservancy’s use of community-based conservation in the Clinch Valley closely followed the model set on Virginia’s Eastern Shore. Because TNC targeted the entire Clinch River watershed as its conservation area, the Conservancy considered land

acquisition only a small part of their conservation strategies for the region. The organization chose to involve the communities within the Clinch Valley after noting the success of the Northampton Economic Forum. However, compatible economic development remained a relatively new concept for the Conservancy. TNC's use of this strategy continued to evolve after lessons learned in the Clinch Valley.

Lessons

TNC continues to use the Pathways process, following the steps outlined in the Pathways workbook. Theresa Harless, Manager of the Community Partnerships Program in the Clinch Valley, currently leads community-based Pathways projects in the small towns of Cedar Bluff and Honaker. (Harless, 2003). However, Harless and others at TNC picked up several valuable lessons after observing differences between the initial Russell County Vision Forum and the spin-off project in St. Paul known as “St. Paul Tomorrow.”

First, TNC learned that communities must be ready to undertake such compatible economic development projects. The Conservancy feels that in some cases, they may have initiated the process too soon, before identifying the best people to provide leadership and direction to the process. (Crowe, 2003). “You need to find the sparkplugs in the community—the people that can make things happen. In some situations we moved ahead without finding those sparkplugs.” (Crowe, 2003).

Second, TNC discovered over time that the Pathways program generates the greatest results when an experienced facilitator leads the process. For this reason, TNC no longer provides the workbook to communities as a self-help guide, but prefers to use

the workbook to lead communities through the step-by-step process. Not surprisingly, TNC also found that smaller groups tend to be easier to facilitate than larger communities. “That’s what we’ve learned from Russell County. That it’s much easier to do a smaller area at a time, a community instead of a county because it’s much easier to engage the people.” (Harless, 2003).

Most importantly, TNC discovered that community-based conservation strategies that “bubble up” from the community itself have greater success than “top-down” measures led by TNC. “One of the things we found out fairly early on, was the difference between the Russell County effort and the St. Paul effort...was that the Russell County effort was a TNC brainchild pitched to the county Chamber of Commerce, then run as a TNC initiated effort. The effort in St. Paul was the other way around.” (Beatty, 2003).

Lastly, the organization learned that any community undertaking necessarily involves developing (and redeveloping) good relationships with public officials. Although TNC considers the process to be a community-based effort, seldom can such a process succeed without the support of the town council or board of supervisors. Since community-based projects often span many years from their inception to the release of a working strategic plan, the community group must be prepared for changes or setbacks brought to the process by newly elected officials.

The use of community-based conservation on the Eastern Shore and in the Clinch Valley followed similar paths. Both preserves relied on community outreach initiatives that sought to create economic opportunities compatible with the protection of the natural resources in the area. Warm Springs Mountain, however, demands a different type of

community-based conservation. The mountain preserve, although protected from incompatible development, comprises a vastly different landscape and harbors a very different set of threats to the forest ecosystem.

PROTECTING A MOUNTAIN

The Nature Conservancy's acquisition of 7,000 acres on Warm Springs Mountain initiated the process of protecting the forested mountainside. However, as the Conservancy learned on the Eastern Shore of Virginia, direct purchases of land fall short of complete ecosystem protection. Although the Conservancy has yet to determine its strategies for stewardship in Bath County, the organization can apply lessons learned from successes and failures in their prior conservation efforts in Virginia.

The Nature Conservancy's errors at the Virginia Coast Reserve began with providing total autonomy to VCR's director. This freedom resulted in a lack of accountability to the Conservancy's main office in Charlottesville. Consequently, TNC applied this first lesson to Warm Springs by establishing the preserve as one of many throughout the state under the guidance of the state office, rather than granting independent status to the project.

A second lesson learned stems from the desire to create business opportunities for communities within the conservation area. In Bath County, economic development initiatives may be less of a priority than on the Shore. Communities in the area benefit from the many tourists drawn to the George Washington National Forest for recreational opportunities and from guests at The Homestead Resort. In addition, Bath County community residents do not depend on the natural resources of the area to make a living.

TNC's failed company, the Virginia Eastern Shore Corporation, taught the Conservancy that the operation of a large-scale for-profit corporation was not within the realm of TNC capabilities. Should TNC wish to experiment with the creation of additional business opportunities for local residents in Bath County, the organization would be wise to turn to expert assistance outside of the organization to develop a sound business plan.

A third valuable lesson gleaned from the Shore centers on partnerships with public officials. The Conservancy became involved with local government on the Shore from the time they became interested in acquiring the islands. (Crowe, 2003). This policy of working openly with community officials helped establish a rapport between the two entities that would facilitate future projects. The Conservancy followed suit in Warm Springs by immediately talking with Bath County planners and supervisors to dispel any misgivings public officials might have about the conservation group.

“Number one on their list of concerns was the loss of property taxes. We looked into it and found that the county received \$50,000 a year from VHS land holdings. We offered at that point to pay an equivalent amount in lieu of taxes.” (Crowe, 2003). This proposal and TNC's affirmation that the county could continue to use communications towers located on the ridgetop indicated to officials that the organization was receptive to the county's needs.

TNC also learned that relationships with residents in the communities must be fostered as early as possible not only to alleviate fears and suspicions, but to encourage citizen input and participation in the conservation process. For example, TNC and the U.S. Forest Service conduct meetings to garner feedback from the community on

controlled burning of portions of the forest ecosystem. (Crowe, 2003). The Conservancy also formed an early relationship with hunters in the area. Upon TNC's purchase of the Warm Springs Mountain tract several hunt clubs assumed that the organization would revoke their year-to-year hunting leases. (Crowe, 2003). Although TNC did restrict hunting to deer only, the Conservancy encouraged hunt clubs members to continue to use the property. "We want to be good to hunters because they are good stewards of the land. Besides that they can help us maintain roads and gates, and of course, keep the deer population down." (Crowe, 2003).

In another effort to engage the community in the protection of the mountain ecosystem, TNC developed a Stewardship Committee for Warm Springs Mountain comprised of Bath County volunteers. The Conservancy assists these volunteers with such tasks as trail maintenance and spot-control of invasive plants, further promoting community ownership of the mountain and its problems. (Crowe, 2003).

In the Clinch Valley, TNC learned that such community-oriented efforts played an important role in the protection of the conservation target area. The Conservancy adopted a "how-can-we-help-you?" attitude, rather than the former "this-is-what-we-plan-to-do" approach with local residents. Communities such as St. Paul and Cedar Bluffs responded readily to this approach and more communities followed suit.

Applying additional lessons learned in the Clinch Valley, TNC's community-based conservation methods in Bath County should take place within small communities (such as Warm Springs or Bacova) rather than on a county-wide basis. In addition, TNC must first find one or two local residents who can provide leadership for community forums. Once the Conservancy identifies these "sparkplugs," community residents can

help educate TNC staff on the needs and issues of the area. The Conservancy and the community can then work together to incorporate these needs and issues into the conservation plan for Warm Springs Mountain.

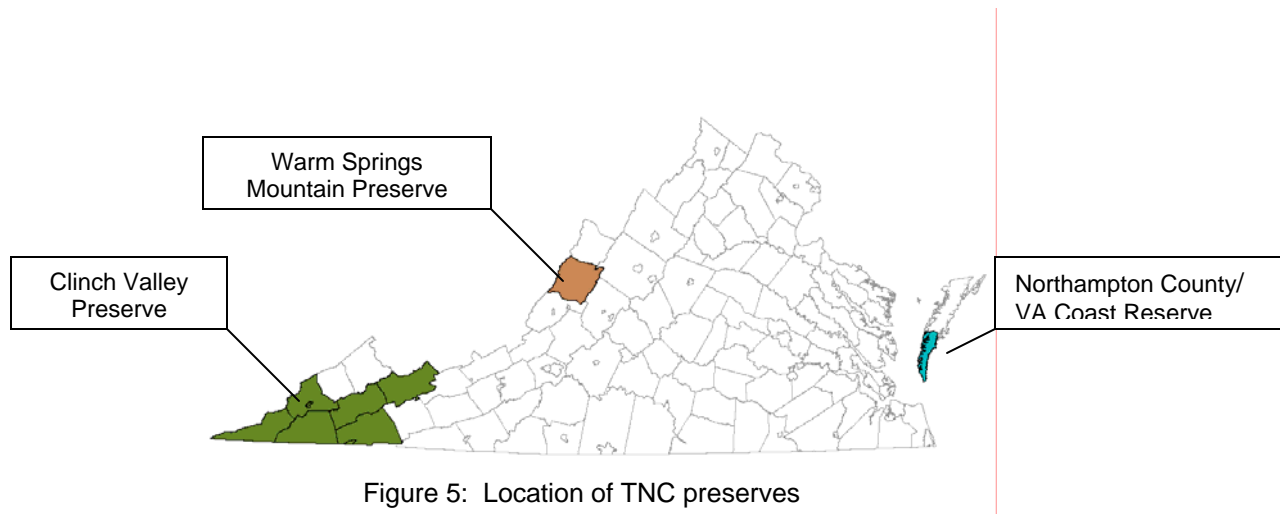


Figure 5: Location of TNC preserves

CONCLUSION

TNC's Conservation by Design process provides a useful comparison of the three preserves examined in this paper. (Table 1). At the outset of this research, the Clinch Valley and Warm Spring Mountain projects appeared to be most similar due to their location within the Appalachian mountain chain. The wetlands, marshes and islands comprising the Virginia Coast Reserve indicated an entirely different type of ecosystem requiring very different strategies for protection. However, upon further analysis, the Clinch Valley and Eastern Shore preserves demonstrated interesting parallels in terms of type and extent of conservation area and the types of threats to the natural resources of those areas.

One of the similarities between the two earlier projects lies in the type of ecosystem targeted for conservation. The Eastern Shore and Clinch Valley preserves consist of primarily aquatic systems. Despite the obvious differences in the types of water (one coastal, the other freshwater) and species threatened, the success of the inhabitants within each of these regions depends in great part on the water quality. The water quality, in turn, is affected by human activities on the land.

In addition to this similarity, the Clinch Valley and Eastern Shore preserves also cover quite extensive areas. In such water-based ecosystems, the target area necessarily covers a large geographic region since threats from human activities exist throughout entire watersheds. The Virginia Coast Reserve (VCR) alone consists of over 45,000 acres of islands, marshes and estuaries. Because creeks and streams on the eastern half of Virginia's peninsula drain to the Atlantic Ocean, the reserve could suffer damaging impacts from incompatible land uses on the mainland. Likewise, leaking septic tanks along a small tributary of the Clinch River in Tazewell County pose a serious threat to the survival of pollution-sensitive mussel species many miles downstream in Russell County.

A third similarity between the Eastern Shore and Clinch Valley projects centers not on the extent of the threats, but on the nature of the threats themselves. (Table 1). On Virginia's Eastern Shore, the most significant threats come from human-caused disturbances, namely, urban development and traditional farming practices. The same is true in the Clinch Valley, where farming, unsound timbering methods, coal mining and impoundments along the Clinch River top the list of threats. These human-caused activities often result in such problems as fragmentation of habitat, pesticide runoff and sedimentation.

Reducing or eliminating such land use activities is rarely an option since these activities often provide socio-economic benefits for a community. Here, too, the economics of the Eastern Shore and Clinch Valley project areas bear some resemblance. Both regions contain small communities whose economic survival traditionally depended on the natural resources of the area—fishing on the Eastern Shore and farming in the Clinch Valley. The decline in these industries left both the coastal and mountain counties relatively impoverished.

The Warm Springs Mountain conservation area presents a very different type of ecosystem. (Table 1). The preserve consists of a central Appalachian mixed hardwood and evergreen forest on the side of a mountain. The target conservation area—although large, at 7,000 acres—remains small and relatively contained in comparison to the earlier TNC projects.

More significantly, human activities on the landscape in the communities nearby pose little threat to the natural resources on the mountain. Since TNC owns the mountain land, no threat of development exists. Furthermore, land use practices in the valley below (such as farming) or on nearby mountain slopes (such as timbering) present no challenges to the health of the forest community on Warm Springs Mountain.

Instead, the most significant threats to the Warm Springs Mountain ecosystem exist from the spread of natural pests (diseases, insects, and invasive, non-native plant species), the overpopulation of deer, and the use of fire suppression over the last century.

	Virginia Eastern Shore	Clinch Valley Preserve	Warm Springs Mountain
Systems: The species, natural communities and ecosystems that will be the focus of observation	barrier islands, habitat for nesting birds; coastal waters; estuaries, marshes, wetlands; major flyway for migratory birds	freshwater systems and aquatic species, particularly freshwater mussels	central Appalachian hardwoods; pine community; cave communities
Stresses: How are the conservation targets threatened?	fragmentation of habitat; impairment of water quality	impairment of water quality	decline of hemlocks, dogwoods, other species, Pine-oak communities
Sources: Identifying and ranking the causes of the stresses	urban development; traditional farming practices	reservoirs, traditional farming practices, coal mining, timbering	invasive non-native plants, introduced pests; fungal diseases; fire suppression; overpopulation of deer
Strategies: Finding ways to reduce or eliminate threats (land acquisition, adaptive management, public policies, education of better land use practices)	acquisition of barrier islands; conservation easements on seaside farms; community outreach	some acquisition, community outreach; some public policy related to mining practices	acquisition of Warm Springs Mountain; partnerships with community, U.S. Forest Service, VHS, Inc.
Success: Ways to measure progress	acres of habitat protected by TNC or through partners such as the local land trust, County and private citizens.	miles of buffers along Clinch River and tributaries; mussel and freshwater fish populations	reduction in spread of non-native species; reduced loss of species from fungal diseases and pests

Table 1: Comparison of the Preserves

Lastly, since Bath County's thin, limestone soils fail to support most agriculture, few residents of Bath depend on the natural resources of the area for their livelihood. Though economic hardship is not foreign to the area, Bath County has served for over two centuries as a tourist and recreation destination. Unlike the traditional businesses of the Eastern Shore and Clinch Valley communities, the tourism business continues to thrive, bringing steady revenue to the county.

These significant differences signal a need for a different type of community-based conservation community on Warm Springs Mountain. The compatible economic development model used on the Eastern Shore and in the Clinch Valley—although potentially useful in later stages of strategic planning for Warm Springs—fails to address the immediate concerns of the Warm Springs ecosystem.

The priority in Bath County rests in eliminating or reducing the harmful pests and plants that threaten the native plant communities on the mountain. Although these threats can in many cases be traced to man's interactions with nature over a century ago, abatement cannot be achieved through modifications of current land uses, as was the case with the other preserves examined in this paper.

Nevertheless, community-based conservation can continue to play an important role in the protection of Warm Springs Mountain. As discussed earlier, area residents can be utilized for trail maintenance and assistance with control of invasive plants. In addition, community input should be encouraged in discussions involving strategies to reduce or eliminate insect and fungal diseases and to return controlled burning to the mountain. TNC must also strengthen partnerships with staff of the Warm Springs District of the George Washington National Forest in order to establish compatible goals

and strategies for the entire mountain. Lastly, TNC should develop relationships with both Virginia Hot Springs and The Homestead Resort in a collaboration to encourage the use and appreciation of the mountain by future homeowners in the area and visitors to the resort.

The use of community-based conservation at the Warm Springs Mountain Preserve will necessarily take on a different form from the methods used on the Eastern Shore and in the Clinch Valley. Conservation organizations must create the shape of community based programs through careful analysis of several primary factors: the type of ecosystem that is targeted, the source of threats to the natural resources within the ecosystem, and the socioeconomic needs of communities within the target region. Upon examination of these factors, the Conservancy can determine the best possible approach to engage the community in the conservation process. One size does not fit all. Each conservation target presents a unique set of threats and challenges. Consequently, community outreach methods that work well in some projects may falter in a project of a vastly different scope.

No matter what strategies are employed by The Nature Conservancy in Bath County, past experiences reveal that those strategies need to be periodically reviewed and updated. Of primary significance in Bath County is the Conservancy's direct ownership of the Warm Springs Mountain property, which allows it to have great control over protection measures. This ability, coupled with the use of community outreach strategies and partnerships with state and federal agencies creates a solid foundation for the future protection of this piece of central Appalachian forest.

Works Cited

- Adams, Charles. Virginia Hot Springs, Inc. Personal communication. 3 Mar 2003.
- Agrawal, Arun and Clark C. Gibson, Ed. Communities and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation. New Brunswick, NJ: Rutgers University Press, 2000.
- American Rivers Association. "Clinch River." <<http://www.amrivers.org/rivers/clinchriv.htm>>. 23 Aug 2003a.
- American Rivers Association. "Threats to Fish and Wildlife." <<http://www.amrivers.org/fishwildlife/fwthreats.htm>>. 23 Aug 2003b.
- Beaty, Braven Dr. Stewardship Ecologist, Clinch Valley Program, TNC. Personal communication. 24 Jul 2003.
- Biber, Eric. "The application of the Endangered Species Act to the protection of freshwater mussels: a case study." Environmental Law. 32.1 (2002): 91 – 173.
- Boggs, Bruce. TNC Conservation Learning Group. Personal communication. 8 Aug 2003.
- Corporation for Enterprise Development. "Visions for Russell County: A Community Plan for Compatible Economic Development." Washington, DC: Corporation for Enterprise Development, 1997.
- Corporation for Compatible Economic Development. "Pathways: Building a Local Initiative for Compatible Economic Development." Leesburg, VA: Corporation for Compatible Economic Development, 1999.
- Crichton, Gwynn. Warm Springs Mountain/Cowpasture River Conservation Area Plan. Charlottesville, VA: The Nature Conservancy, 2003.
- Crowe, Linda. Director of Land Protection, The Nature Conservancy of Virginia. Personal communication. 20 Oct 2003.
- Dabson, Brian, Peter Plastrik, and Richard Turner. "Lessons From the Life and Death of the Virginia Eastern Shore Corporation." <http://www.cfed.org/sustainable_economies/econDev/VESC_full_report.pdf>. Washington, DC: Corporation for Enterprise Development, 2001. 16 Aug 2003.
- Diamond, Henry L. and Patrick F. Noonan. Land Use in America. Washington, DC: Island Press, 1996.

- Ecological Society of America. "The Report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management." 15 Sept 1997. <<http://www.epa.gov/ecocommunity/tools/ecosysmn.pdf>>. 10 Aug 2003.
- Edwards, Victoria M. Dealing in Diversity: America's Market for Nature Conservation. Cambridge: University Press, 1995.
- Ford, Kent. Personal communication. 12 Jun 2003.
- Hall, John. "The Virginia Coast Reserve: A Generation of Coastal Conservation." The Islands. 1997.
- Harless, Theresa. Manager, Community Partnerships Program, Clinch Valley Program, TNC. Personal communication. July 2003.
- Ingalls, Fay. The Valley Road. Cleveland: The World Publishing Company, 1949.
- Ludwig, J. C., S. M. Roble, and G. P. Fleming. A Preliminary Natural Heritage Inventory of Warm Springs Mountain, Bath County, Virginia. Natural Heritage Technical Report #99-19. Virginia Department of Conservation and Recreation, Division of Natural Heritage. Richmond. 1999.
- McCormick, Frank J. Ecosystem Management for Sustainability. Peine, John D., Ed. Boca Raton: Lewis Publishers, 1999.
- Nature Conservancy, The. "About Us." <<http://nature.org/aboutus/>> 7 Aug 2003a.
- Nature Conservancy, The. "Clinch Valley Program." <<http://nature.org/wherewework/northamerica/states/virginia/misc/index.html>>. 23 Aug 2003b.
- Nature Conservancy, The. "Community-based Conservation." <<http://nature.org/wherewework/northamerica/states/newyork/eastern/about/art5708.html>>. 23 Aug 2003c.
- Nature Conservancy of Virginia, The. Virginia News. "Our Mission." Fall 2002a.
- Nature Conservancy of Virginia, The. Virginia News. "Demonstration Forests Planned." Fall 2002b.
- Nature Conservancy, The. "Clinch Valley Program: Nowhere Else on Earth..." Abingdon, Virginia, 2002c.
- Northampton Economic Forum, The. "A Blueprint for Economic Growth." Eastville, VA: The Northampton Economic Forum, 1992.

- Ottaway, David B. and Joe Stephens. "Nonprofit Land Bank Amasses Billions." The Washington Post. 4 May 2003a.
- Ottaway, David B. and Joe Stephens. "On Eastern Shore, For-Profit 'Flagship' Hits Shoals." The Washington Post. 5 May 2003b.
- Parker, Steve. Director, VA Coast Reserve. Personal communication. 21 Aug 2003.
- PBS. "Science in the Rainforest." 1996. <http://www.pbs.org/tal/costa_rica/res2/animals.html#six>. 9 Sep 03.
- Peine, John D., ed. Ecosystem Management for Sustainability: Principles and Practices Illustrated by a Regional Biosphere Reserve Cooperative. Boston: Lewis Publishers, 1999.
- Porter, Douglas and David A. Salvesen. Collaborative Planning for Wetlands and Wildlife: Issues and Examples. Washington, DC: Island Press, 1995.
- Russell County Chamber of Commerce. "Celebrating Success: A Community's Progress for Compatible Economic Development." Russell County Vision Forum. 1999.
- Simmons, Morgan. "Tennessee River on conservation group's danger list." The Knoxville News-Sentinel. 18 April 1997. <<http://www.cleanenergy.org/archives/media/pressreleases/TNriver/danger.html>>. 23 Aug 2003.
- Virginia Coast Reserve: A Nature Conservancy Project. <<http://www.virginiacoastreserve.org>>. 19 Jul 2003.
- Weeks, W. William. Beyond the Ark: Tools for an Ecosystem Approach to Conservation. Washington, DC: Island Press. 1997.
- White, Daniel. "Warm Springs Mountain Protected." Virginia News. The Nature Conservancy of Virginia. Spring 2002.
- Wondolleck, Julia M. and Steven L. Yaffee. Making Collaboration Work: Lessons from Innovation in Natural Resource Management. Washington, DC: Island Press, 2000.