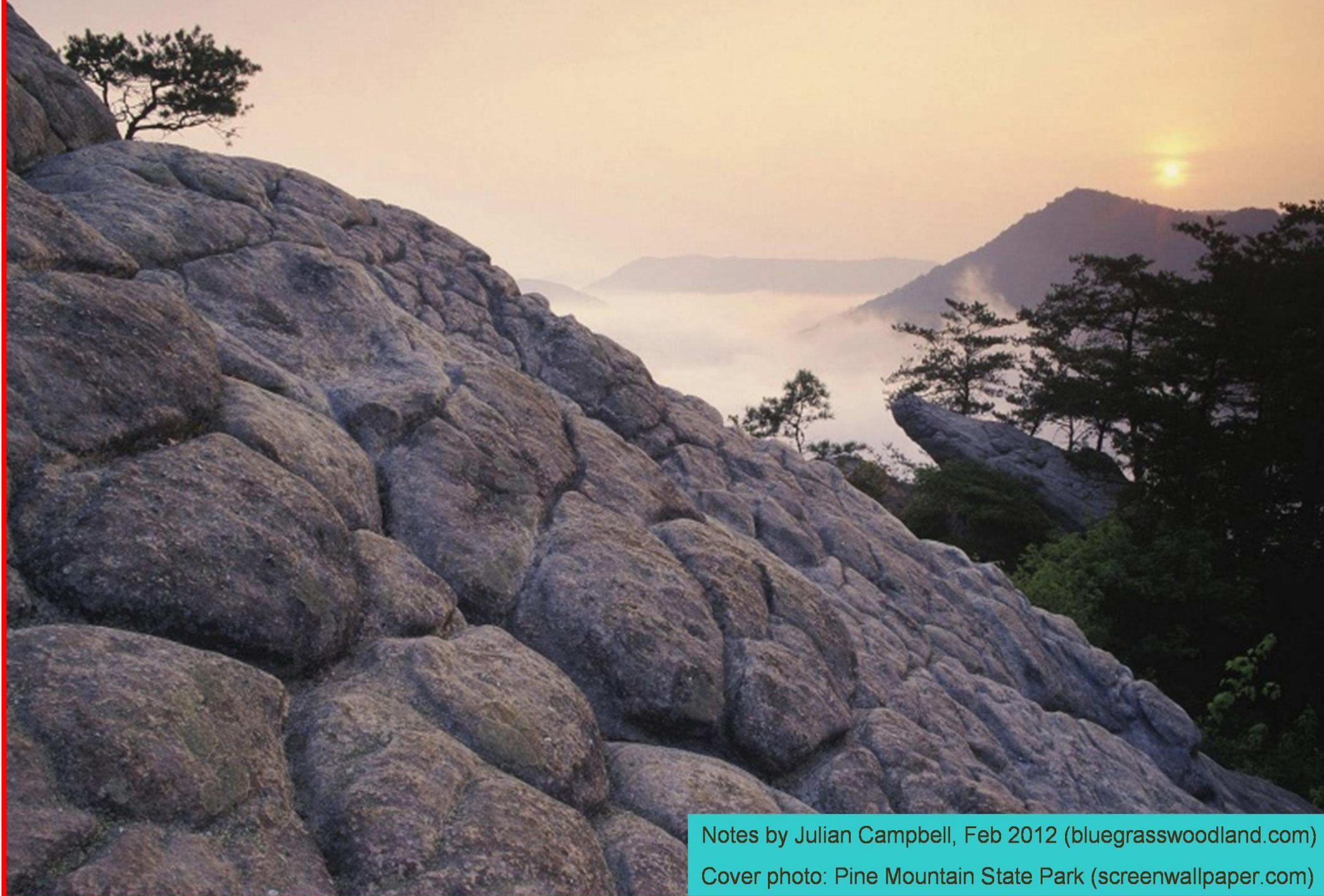


WASIOTO

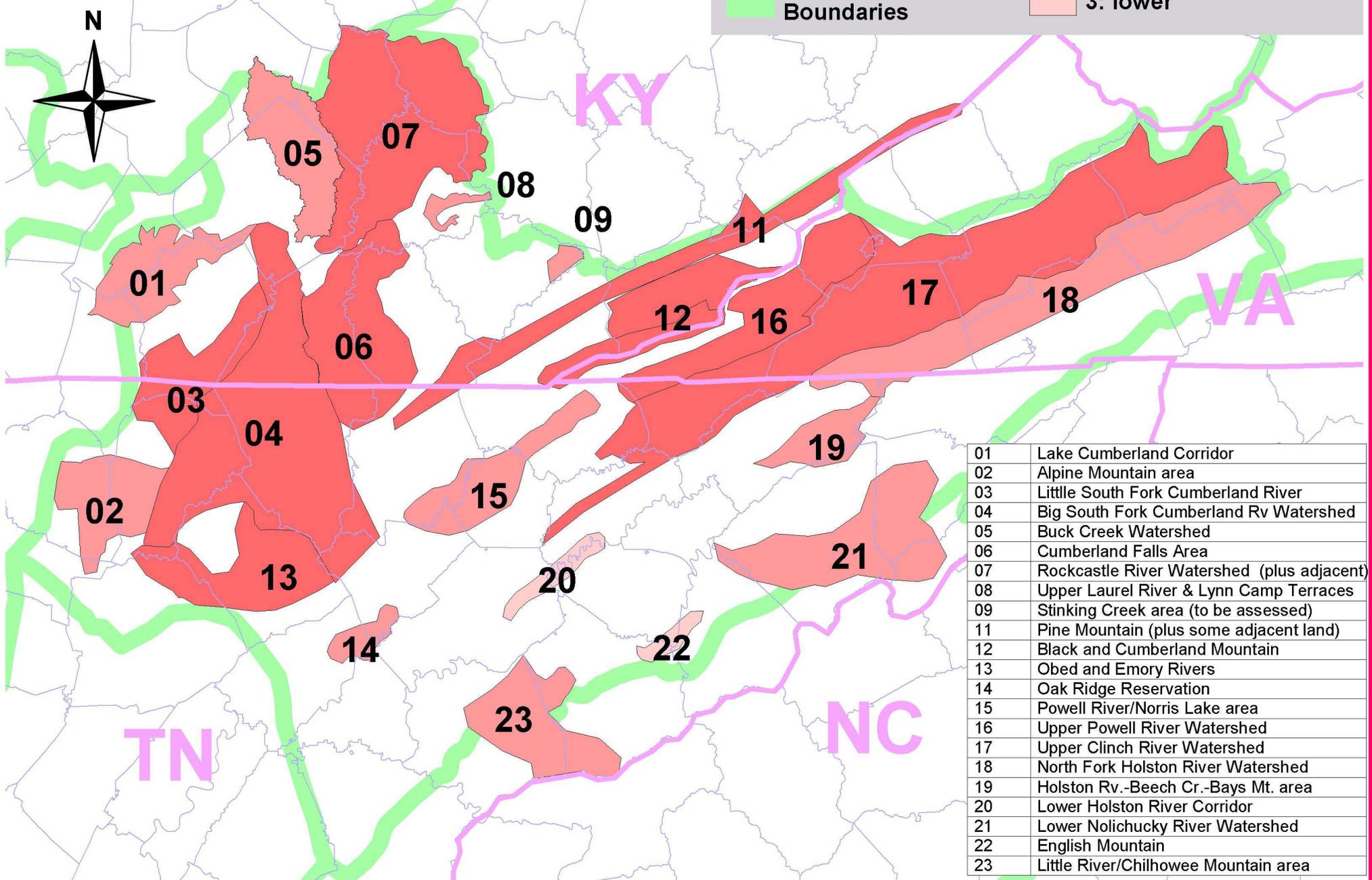


Notes by Julian Campbell, Feb 2012 (bluegrasswoodland.com)

Cover photo: Pine Mountain State Park (screenwallpaper.com)

**The Wasioto Region, a focus for conservation:
North Cumberland Plateau and Ridge & Valley
(Upper Cumberland and Tennessee Rv. Watersheds)**

 State Boundaries	Focal Areas for Conservation
 County Boundaries	 1: highest significance
 Ecoregional Boundaries	 2: medium
	 3: lower



01	Lake Cumberland Corridor
02	Alpine Mountain area
03	Little South Fork Cumberland River
04	Big South Fork Cumberland Rv Watershed
05	Buck Creek Watershed
06	Cumberland Falls Area
07	Rockcastle River Watershed (plus adjacent)
08	Upper Laurel River & Lynn Camp Terraces
09	Stinking Creek area (to be assessed)
11	Pine Mountain (plus some adjacent land)
12	Black and Cumberland Mountain
13	Obed and Emory Rivers
14	Oak Ridge Reservation
15	Powell River/Norris Lake area
16	Upper Powell River Watershed
17	Upper Clinch River Watershed
18	North Fork Holston River Watershed
19	Holston Rv.-Beech Cr.-Bays Mt. area
20	Lower Holston River Corridor
21	Lower Nolichucky River Watershed
22	English Mountain
23	Little River/Chilhowee Mountain area



**THE WASIOTO REGION, A FOCUS FOR CONSERVATION:
Northern Cumberland Plateau plus Ridge & Valley, in the
watersheds of Upper Cumberland and Tennessee Rivers.**

Team-work. Natural regions can be defined for coordination among varied types of conservationist. Such regions should embrace similar ecological conditions in each case, and range over a reasonably moderate scale to allow frequent gathering, sharing and resolving. The ‘Wasioto’ contains a traditional center for native American culture, especially the Cherokee in recent centuries. In its southern section Knoxville became a modern city, and in the north Kentucky’s London-Corbin area is now trying to become a sprawling metropolis.

The Nature Conservancy has planned for biodiversity across their whole “Cumberlands and Southern Ridge & Valley Ecoregion” —from Alabama to West Virginia—but details of their massive 2003 report became difficult to digest for local use. There have been two significant institutional developments within the Wasioto region during recent years. To the east, TNC plus varied agencies first teamed up in 1990 to develop the “Clinch-Powell Clean Rivers Initiative”. This project now undertakes much work in those watersheds—the most significant remaining systems for aquatic biodiversity in the Appalachians. To the west, agencies and non-profits have acquired much land since the 1930s, but overall communication and coordination has lagged. In 2006, TNC helped to form the “Alliance for the Cumberlands”—a network of organizations interested in environmental affairs on the whole Cumberland Plateau. The Alliance has had to focus mostly on the Tennessee portion, with offices in Cookeville and Knoxville. In addition to promoting ecotourism, it has fostered collaboration between wildlife agencies of Tennessee and Kentucky, urging special efforts in the Big South Fork area. But results are not obvious.

The Kentucky Natural Lands Trust has focussed on acquiring land along Pine Mountain during the past two decades. They have also accepted donations of conservation easements in this region. But it is not clear if they will get directly involved in land-management.



Powell River Valley, VA. Alternating Ridges & Valleys, with diverse geology & soils (Richard Kretz, highknoblandform.com)



Clinch River Power Plant, Russell Co., VA., with “no modern pollution controls” (Kent Kessinger, www.appvoices.org)

It would clearly be useful for interested conservationists in this region to meet regularly, pool data and ideas, leading to more common ground and joint action. Although specialists presumably cooperate on details in their subjects, it is often difficult for general ecologists and the public at large to appreciate what exactly is being planned, done and achieved. In particular, it would be good to know if trends in populations of imperiled species show any signs of recovery, and if the effects of human actions—good or bad—can be estimated and presented for all of us to see. Moreover, at the level of habitats and whole landscapes, is there general agreement about goals for restoration and for building connections between protected areas? What progress is being made in these efforts, and if there are failures what can we learn?

The Wasioto region has much complex biodiversity at levels of landscape (or watershed), habitat (or community) and species (or other taxa). Nevertheless, it would be more reasonable to focus cooperative efforts in conservation at this scale, rather than the whole Cumberland Plateau plus Ridge & Valley regions, as initially attempted by TNC. If interested people can share data more directly, completely and transparently within the Wasioto, they are more likely to develop honest measures of success or failure. Ideally, true teamwork can then be advanced between individuals and representatives of different organizations. Institutions tend to provide ‘rosy’ publicity about their own efforts, in order to retain and grow support. Instead, a regular conference (or ‘neotribal meeting’) could itself develop the measures of success or failure with some independence. Interested parties would be invited to provide brief presentations, plus whatever appended documents they want. A democratically elected committee could assemble the presentations into an annual report and summarize results, with plenty of opportunity for ‘minority opinions.’ The Cherokee could be invited to provide special comment and chair a session.

The most useful starting point for such collaboration would be a annual meeting, open to the public, together with regular field trips. Hosting of such events could be rotated among obvious partners.



Near Big South Fork of Cumberland River; cliffs, ravines and streams alternate with gentle uplands that have a history of fire.



Obed Wild & Scenic River, with complex zonation of habitats along river and lower slopes (Adam Brimer; knoxnews.com)

Target-definition. At the landscape level, there are clear priorities in the upper Clinch, Powell, Obed, Big South Fork, Little South Fork and Rockcastle River watersheds. These aquatic systems have considerable potential for long-term recovery, although several species are highly imperiled. Much effort should also be focused on the more extensive blocks of forest in these watersheds and elsewhere, such as the Cumberland Mountains. Priorities are less obvious in more degraded landscapes, especially where there has been much mining, farming or other development. But less rugged landscapes with more human disturbance do contain significant remnants of distinctive woodland and grassland types, as in the Catoosa and Oak Ridge areas. In such landscapes, a more detailed account of their natural history would be useful.

At the habitat level, there are priorities for protection of smaller sites—such as caves—and for varied types of restoration, supplementing broader programs of land protection. For example, it is important to focus on enhancement of riparian vegetation in selected areas, as well as general work across watersheds. Especially in less rugged landscapes, riparian zones and wetlands are often significant in themselves. Special conditions exist in some types of streamheads and seeps, including several globally imperiled plants.

On uplands, the prevalent diverse forest types may not need special focus, but the overall balance of older growth versus younger trees for timber is a controversial matter (and maples versus oaks), especially on public land. More research, discussion and debate is often needed to approach a better balance of interests in forests. It is also important to seek more consensus on the appropriate use of fire for restoring open grassy woodlands, where many rare plants and animals used to prosper. These species include several that are endangered or have disappeared from the region. Good examples of the original open woodlands are generally absent, and the few remnants are often overlooked in broader planning. Unfortunately, government agencies have not had enough interest or impetus to pursue good restoration, with the notable exception of Tennessee's Wildlife Resources Division at Catoosa WMA in Morgan County.



After the pine-beetle outbreak in the 1990s, the Catoosa WMA seized the opportunity for recovery of native grassy openings.



Streamheads near Big South Fork, where thin wet woods can be opened up more with fire, allowing rare plants to prosper (NPS).

At the species level, what are the priorities for micro-management: in recovery of imperiled species—or in reduction of invasive aliens? Among endangered aquatics, it is tragic that several mussels and fishes have become at least locally extinct—but the USFWS and its partners are making progress in artificial raising of some species for reintroductions. A few vertebrates also receive attention, especially larger mammals. Direct assistance at nesting sites can be useful for birds like the red-cockaded woodpecker. But the impending catastrophe for most bats appears to be largely unavoidable. For selected plants, there is a need to propagate species used in riparian restoration and other habitats.

The demise of chestnut is now being followed by hemlocks, ashes and walnuts, so we must now collect seed from these trees and breed for resistance to pests and pathogens. It would be good to organize nurseries, arboreta and botanical gardens around such efforts. Also, several rare plants of more open woodland and grassland can probably be recovered, but will first need propagation. Many of these species have been well-documented, especially on the Cumberland Plateau, where they tend to occur along rights-of-way. But there has been no organized effort to secure remaining populations or to restore larger areas using local seed. The University of Tennessee is well positioned to lead some of this work, and it has an excellent herbarium, where new species to science are still being documented.

In addition to pests and pathogens, aliens in this region include several invasive plants. Strategies to reduce them (let alone control them) are not clearly established in some cases. The most severe problems range from Hydrilla in the Obed River, plus mimosa trees on the banks, to privets, honeysuckles, sericea lespedeza and Johnson grass on uplands. There are fewer species in deeper shade, but they include the widespread Japanese ‘stilt-grass’ and, spreading on calcareous slopes, the purple winter creeper. While herbicides or other methods do exist to reduce such plants, we need sustainable programs to provide adequate long-term control, and there are fundamental questions of economy and ecology that must then be addressed.



Scene in Ridge & Valley, with some lowlands farmed for 1000s of years; Vaughn place in Hawkins Co., TN, north of Clinch Mt.



“Cedar barrens” in the Ridge & Valley of VA; dry slopes with rocky soils in this region have natural glades (dcr.virginia.gov).

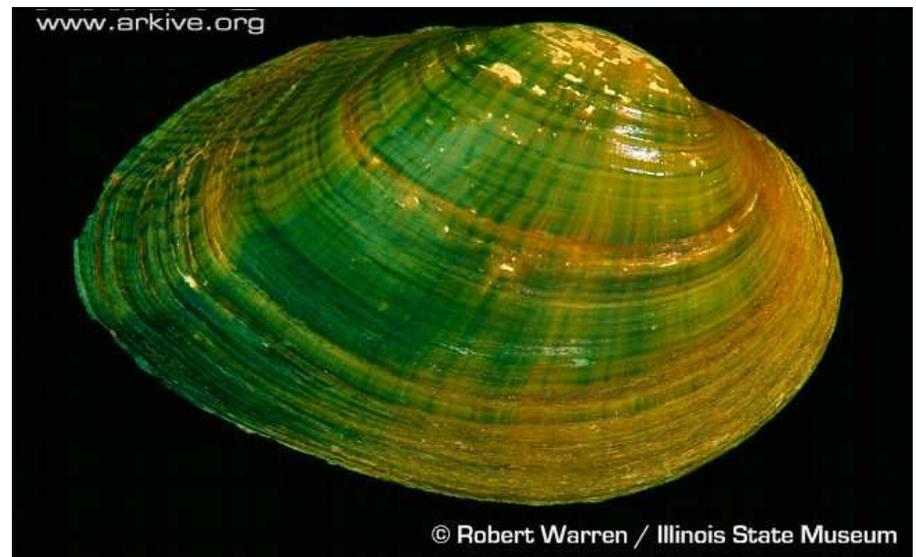
Trade-offs. The overarching trade-off is “more research versus more action.” While there is uncertainty about whether human beings can solve some problems of conservation, we can frame the most important questions that divide us, seek more consensus—or at least balance, and develop mutual support. Regular meetings, communication and debate would help these causes within the Wasioto region.

In defining targets, we often ascribe significance to large continuous blocks of wilder land, but the rationale is generally based on ecological supposition—rather than clearly demonstrated facts—and on economic arguments—given lower costs per acre for acquiring and managing larger tracts. The recent protection of large tracts in the coal fields of the Cumberland Plateau and on Pine Mountain is commendable, but smaller sites with special significance can be overlooked on less rugged land with more fragmentation. Streamhead seeps and remnants of more open grassy woodland (with blackjack and post oak) are easily ignored in state or federal programs. Moreover, it can be difficult to promote habitats that need fire for restoration, since prescribed fire is costly and troublesome in some cases. Small patches of unusual habitats can harbor globally rare specialists, such as Leo Collins’ recently described clover (*Trifolium calcaricum*) in Lee County, Virginia, and Aaron Floden’s undescribed *Trautvetteria* in Claiborne Co., Tennessee. In some landscapes, inventory and descriptive analysis are still urgent matters, in order to guide more balanced conservation across the region.

In estimating the effects of human actions and associated environmental factors on targets, there are several obvious scientific problems that deserve research, and which remain somewhat controversial topics. Although TNC’s initial planning for this region did allow for “unknowns” to be identified, and for priorities in research to be outlined, there was little or no subsequent focus or networking among interested people to solve these problems. We need more transparency in these matters. It is particularly important to assess things that influence—or are influenced by—public funding. Critical questions include the following (next page).



Juvenile ashy darter (*Etheostoma cinereum*) from Clinch River in Russell County, 2004, the first collection in VA since the 1960s; endemic to upper Cumberland and Tennessee Rivers.



Oyster mussel (*Epioblasma capsaeformis*) has disappeared from over 80% of its range, and is now critically endangered. Analysis indicates that coal mining and other pollution remain problems.

1. How are changes in climate influencing ecosystems, and what are the implications for conservation plans?
2. How can effects of coal mining on aquatic systems (especially mussel species) be reduced; and how can the post-mine environment be restored and managed for native biodiversity?
3. How can the entrenched impacts of dams and land-uses on large watersheds be mitigated?
4. How can fire be applied at appropriate intervals to restore native grasslands and woodlands (and reduce aliens) across their full presettlement range of sites, from hydric to xeric?
5. How can ungulates be managed to simulate natural interactions in woodlands, especially on eutrophic soils with potential for locally concentrated effects (and reduction of aliens)?
6. How do differences in vegetation influence karst or cave systems, and how can karst landscapes be managed best for water quality?

In developing sustainable economies, there are several critical themes that will need continual attention. For example, the recent establishment of ‘scientific controls’ and ‘certified forestry’ in land deals on the Cumberland Plateau and elsewhere has required some compromises. A broadly transparent, community-based evaluation of such deals will be needed for decades to come. It is especially important to determine how declining species of birds fair on these lands, and if alien plants are controlled. Then, from the economic viewpoint, how can sustainable timber and other forest products be effectively marketed from the region, eventually replacing the coal industry? And in more open grassy woodland, how can management for game animals be combined optimally with use of fire to restore vegetation. And can we find some economic uses for material from invasive plants—perhaps involving use of livestock to browse out brushy alien thickets? These are complex problems for interdisciplinary work.

Many of these issues bear on current decisions about conservation. Do we focus on relatively cheap mountain land that is easy to manage, versus expensive suburban land that is difficult, although perhaps harboring small special remnants? What is the best balance?



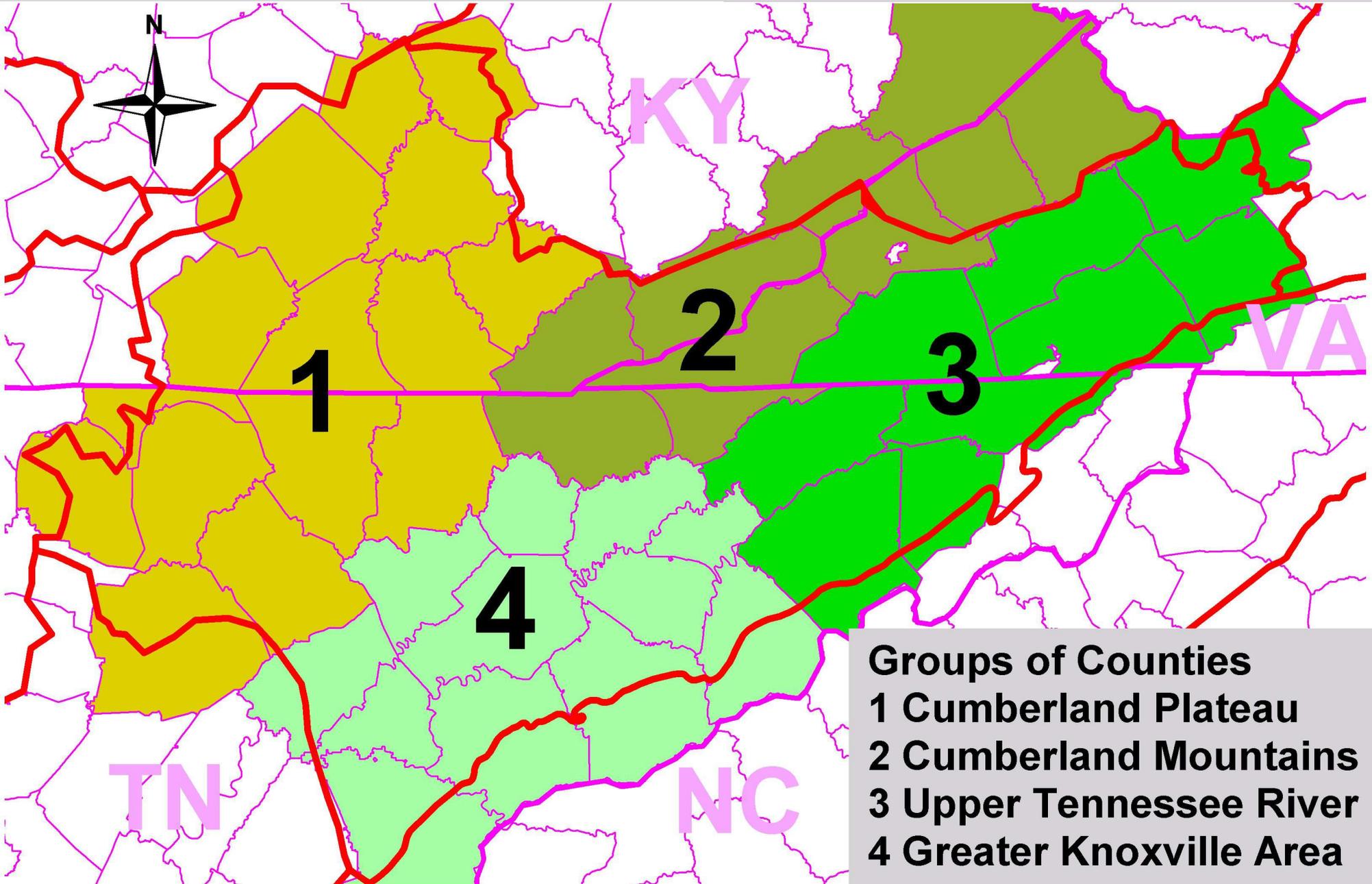
White fringed orchid (*Platanthera integrilabia*) occurs mostly in streamhead seeps on the Plateau (Brad Wilson)



Upland wood lily (*Lilium philadelphicum*) occurs mostly in remnants of open grassy woodland along rights-of-way.

**The Wasioto Region, a focus for conservation:
North Cumberland Plateau and Ridge & Valley
(Upper Cumberland and Tennessee Rv. Watersheds)**

State Boundaries
County Boundaries
Ecoregional Boundaries



Groups of Counties
1 Cumberland Plateau
2 Cumberland Mountains
3 Upper Tennessee River
4 Greater Knoxville Area

0 20 40 60 80 100 120 140 160 180 200 Miles