Natural History, Conservation Biology and Political Ecology at the Univ. of Ky., as applied to Conservation in Bluegrass versus Appalachia. Julian Campbell, Feb 2017.

Abstract. Natural History is the largely descriptive study of species, plus their ecologies, habitats and distributions. It has now dwindled at the University of Kentucky (UK) to only occasional progress, with just 0-2 theses or dissertations per year. Conservation Biology is the application of natural history and its ecological developments to guide conservation. There are 1-5 theses or dissertations per year with a significant component of this type. Political Ecology is the interaction of society and politics with ecology and conservation. Growing out of geography and human ecology, this nebulous field has exploded after the 1980s. Since 2011 there is an annual conference at UK (DOPE), organized mostly by graduate students of Geography, Anthropology and Philosophy. In Feb 2016, this conference included over 150 presentations, with speakers from across the USA and elsewhere. But little of this Political Ecology has focussed on details of problems within Kentucky. Conservation should become a central application of all three disciplines. I explore this problem here through comparison of challenges for conservation in Appalachian Kentucky versus the Bluegrass region. I make special reference to a controversial project in each case: Robinson Forest and Griffith Woods, both of which have involved UK. I have three central suggestions based on this review.

(1) Effective development of cooperative work should become rooted in regions of moderate size, such as the central Bluegrass or upper Kentucky River watershed; in this way, there can be sufficient focus on the details of each regional section, but without excessively repetitive analysis and planning down the level of individual counties or smaller sites.

(2) There has to be a core of Natural History for definition of effective “targets” in conservation: (a) larger blocks of land for protection, (b) habitat types with most need of restoration, and (c) species-groups with most need of micro-management (or other special attention).

(3) Because people—including professionals—have radically different views of nature, conservation and politics, we need deeper methods for developing better compromises.

Natural History, Conservation Biology and Political Ecology at the University of Kentucky, as applied to Conservation in Bluegrass Versus Appalachia

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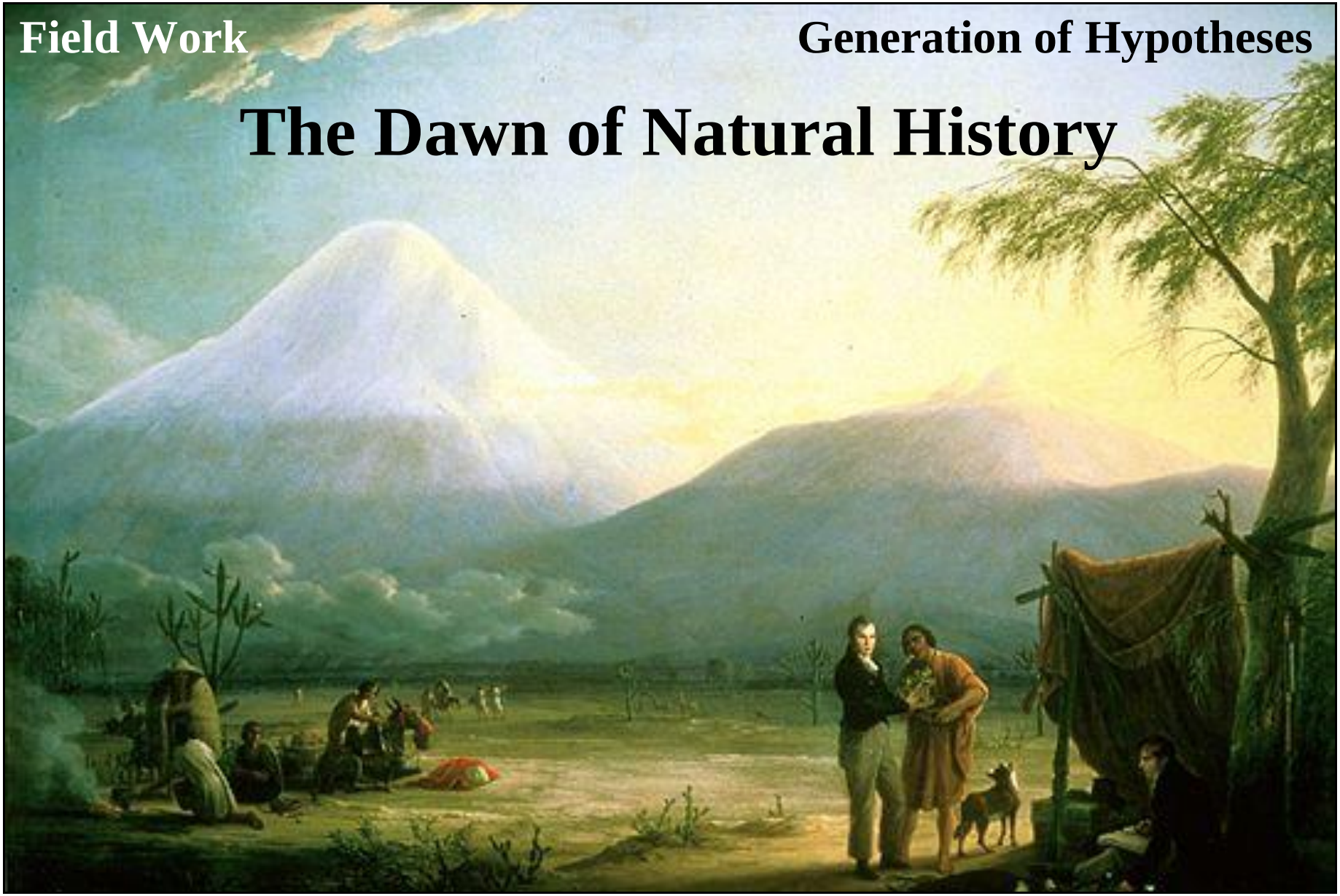
I. Brief History of Themes: Natural History (biotic); Conservation Biology; Political Ecology; Trends at UK

“Conservation of natural resources is the fundamental problem. Unless we solve that problem, it will avail us little to solve all others.” [Theodore Roosevelt, 1907]

“Conservation is, arguably, the pursuit of harmonious balance between reverence for nature and extraction from nature. This is a happy goal.” [me, 2017]



Alexander von Humboldt (1769-1859) & Aimé Bonpland at foot of Chimborazo volcano, painting by Friedrich Georg Weitsch (1810).

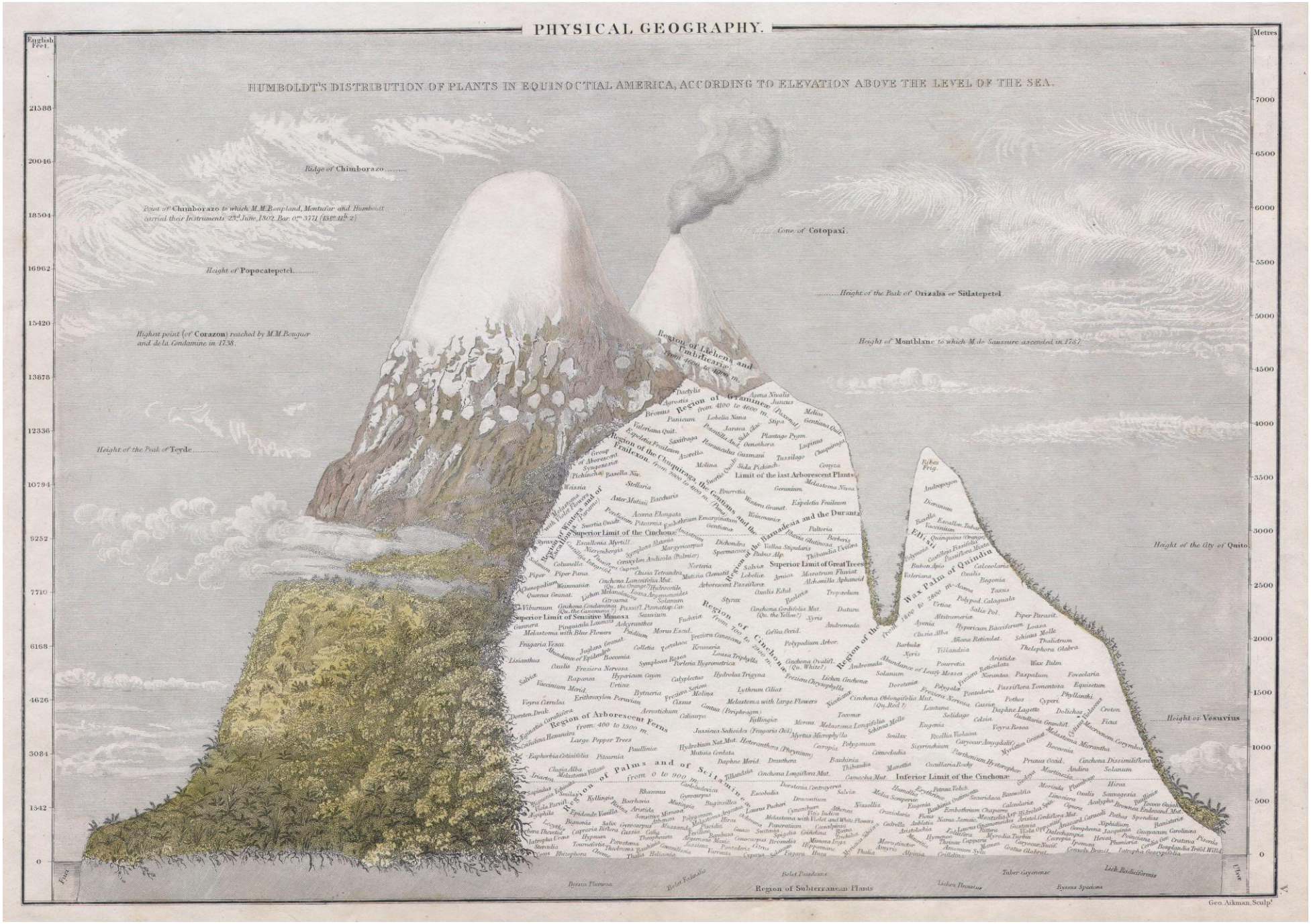
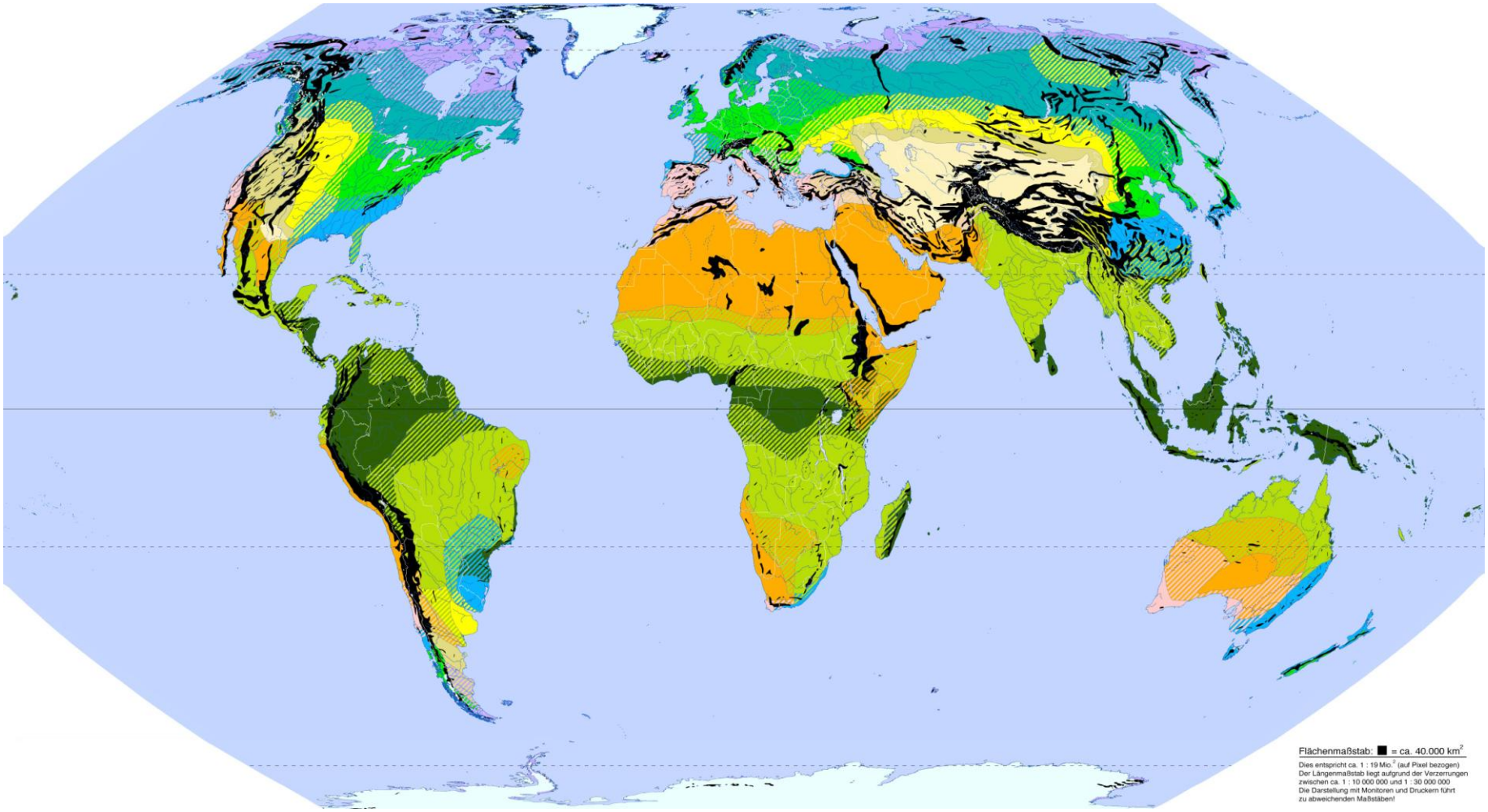


Diagram of Andes by George Aikman (1839) based on work of Humboldt and Bonpland.



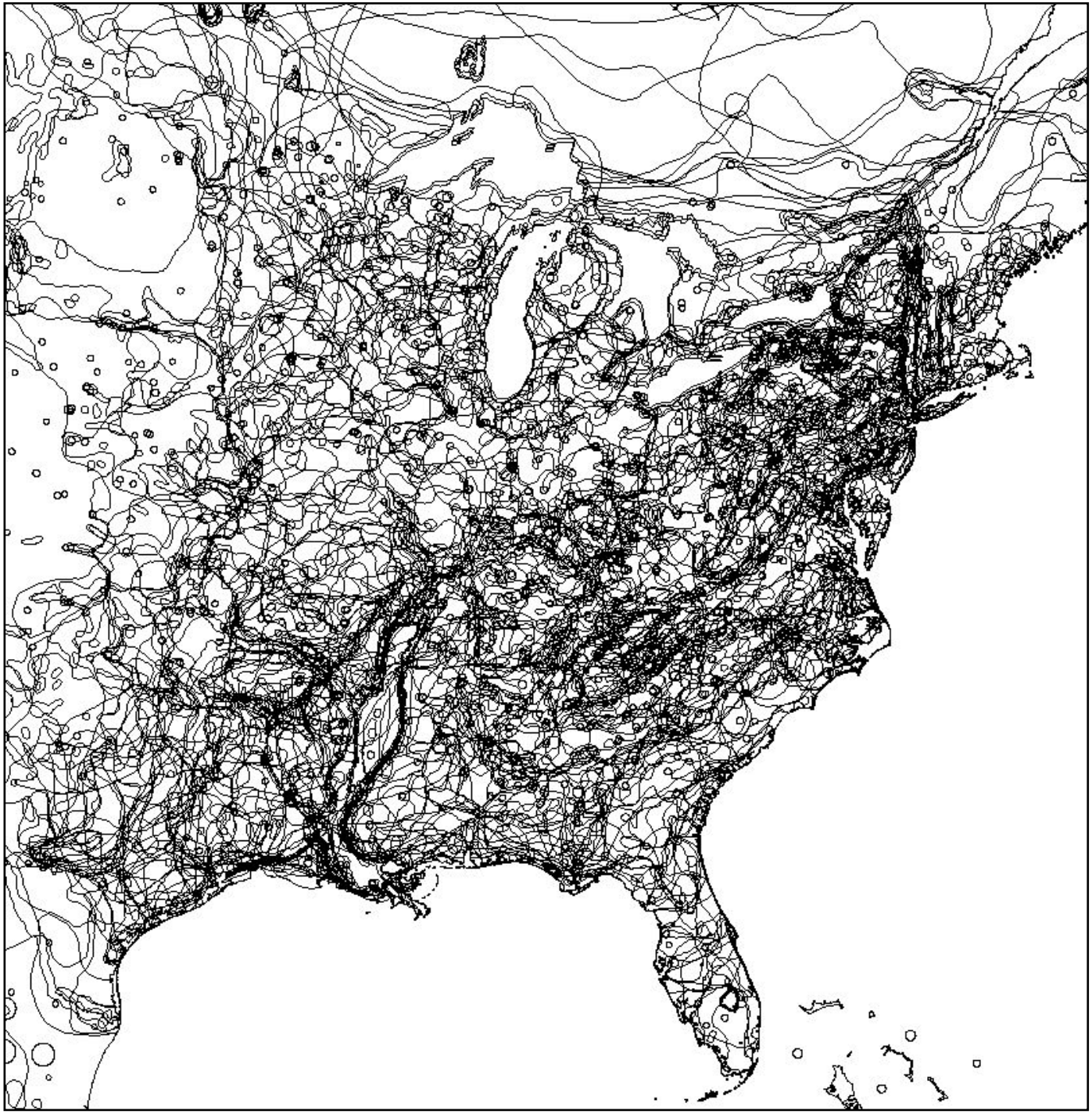
Biomes of the Earth, based on best modern synthesis of Heinrich Walter and students; including "Zonobiome und Zonoökotone der Erde" nach Walter und Breckle (1983). Posted at https://upload.wikimedia.org/wikipedia/commons/8/84/Zonobiome.png. Note that within eastern North America we still more refinement of such maps in order to understand shifts in current biogeographic patterns, and responses to climatic change.

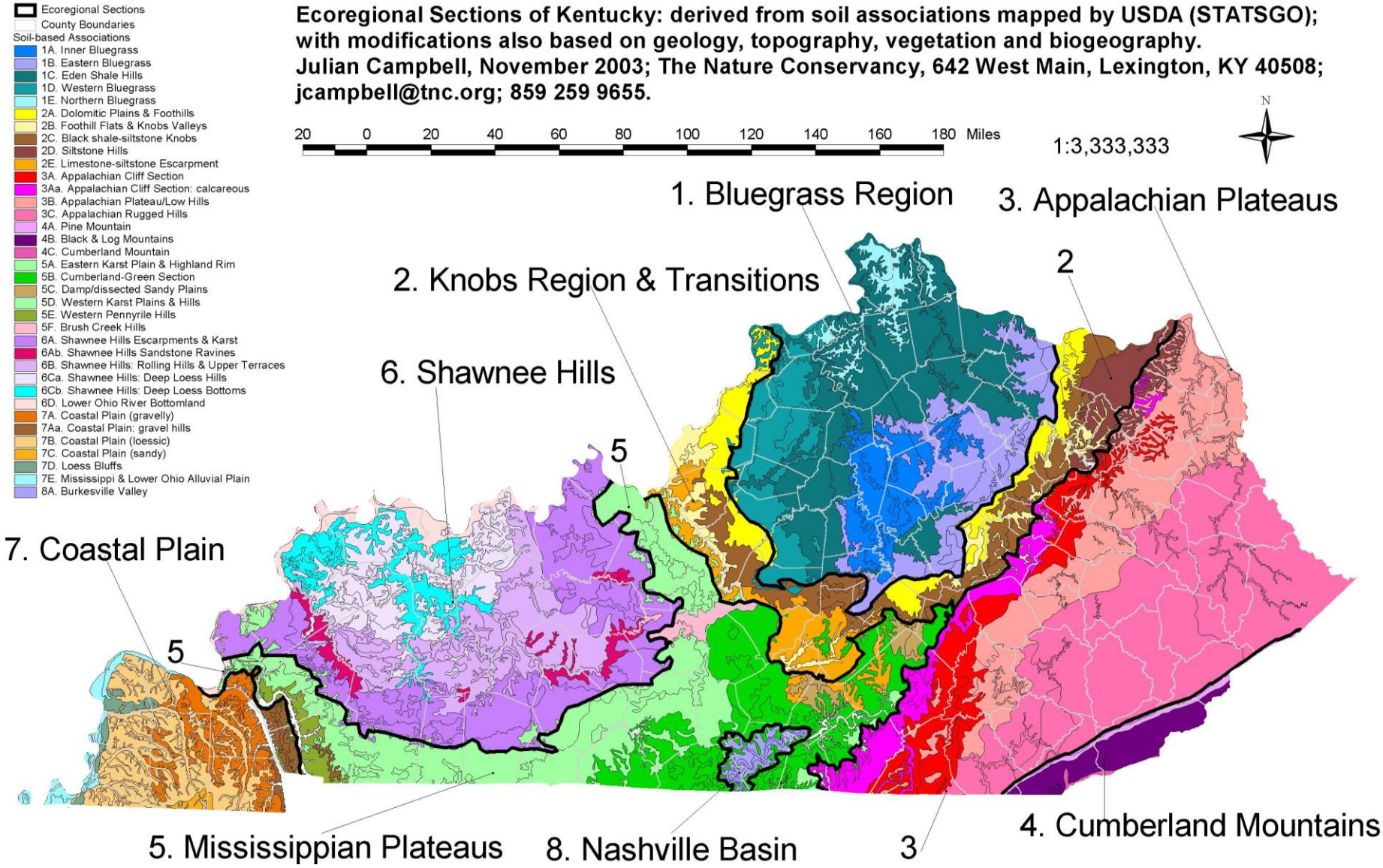
Tree ranges boundaries from Little (1971 etc) overlayed: Q-Z.

Key questions: How can we quantify clustering of boundaries?

Are clusters related to abrupt shifts in environment, or do they reflect thresholds of biological response?

Are any clusters anachronistic in terms of current environment—i.e. do they reflect historical factors?





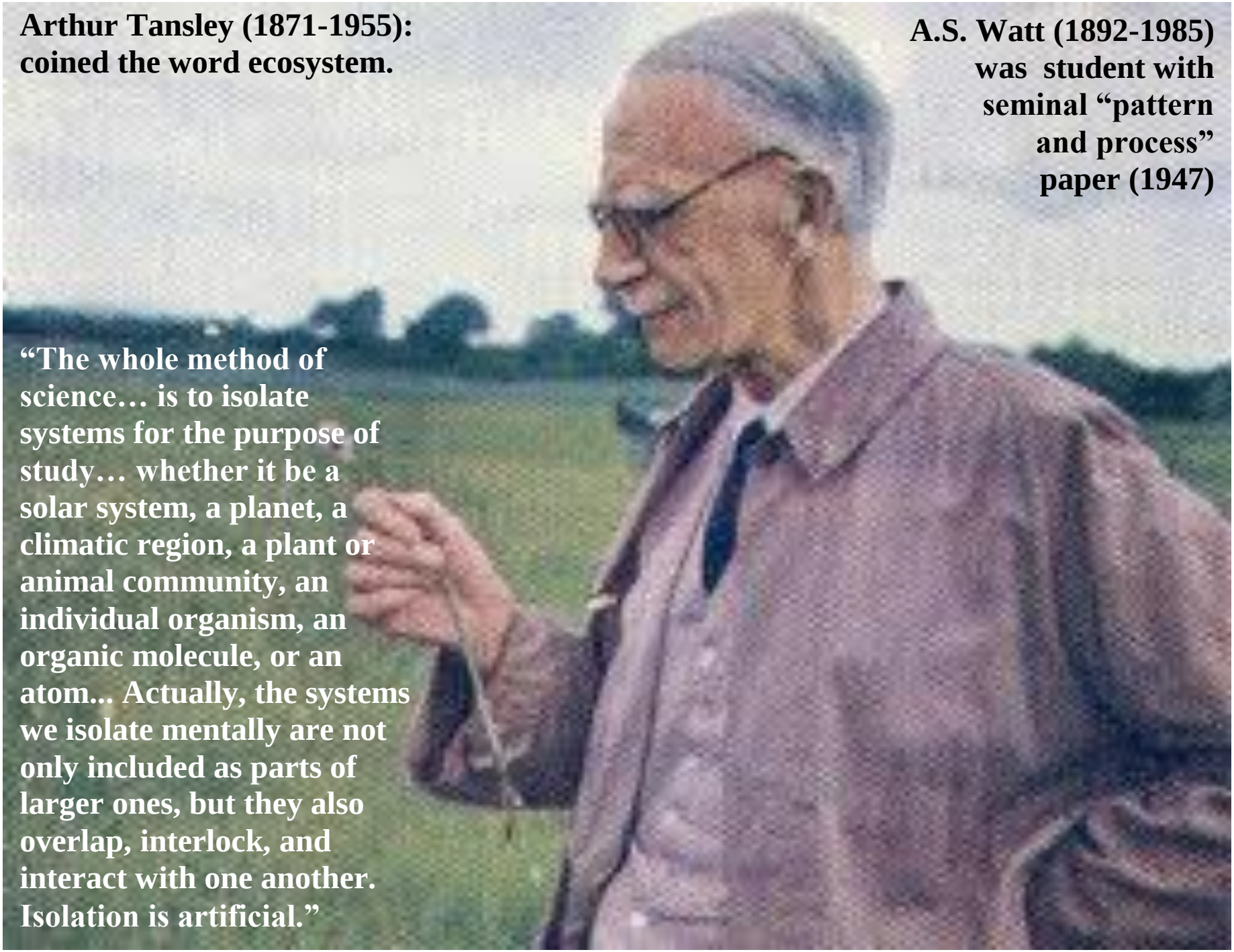
1. Landscape Level: ecoregional sections based on climate, geology, topography & soils.

I made this map to represent overall patterns in ecological conditions across Kentucky. Any student of our Natural History should pay close attention to maps like this. There is no one best map—but it is important to seek the best map for each purpose at hand.

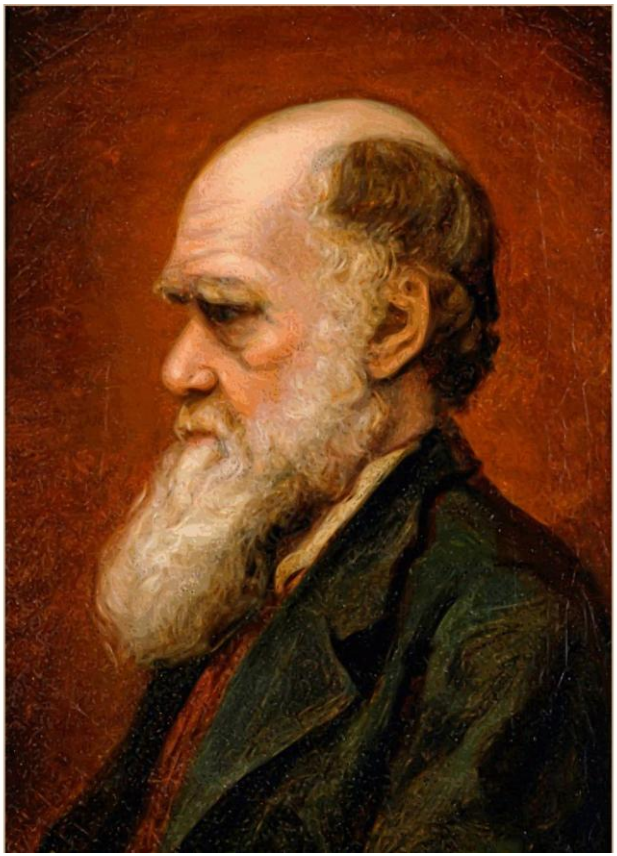
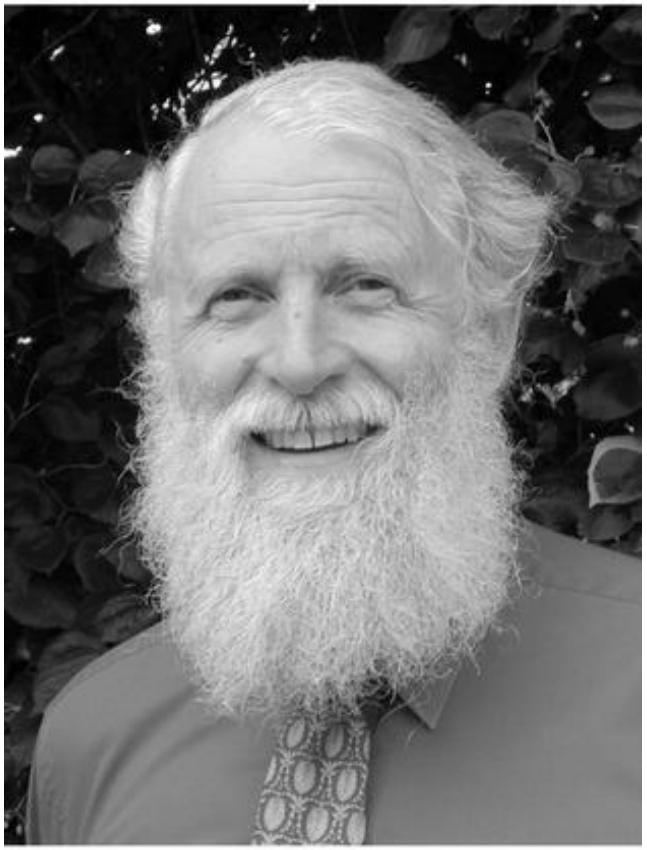
2. Habitat Level: local ecological trends involving patterns of species in space and time.

Left: model of Gilbert White (1720-1793) author of "Natural History of Selborne" (1789). "England's first ecologist"—soils, habitats, phenology, bird migration, reptile hibernation

Right: "A Selbornian View" in 1751, drawn by Thomas Mulso, John's elder brother, who was an close associate of Gilbert White. Note, again, wooded hills versus farmed plains.


Arthur Tansley (1871-1955): coined the word ecosystem.
A.S. Watt (1892-1985) was student with seminal "pattern and process" paper (1947)
"The whole method of science… is to isolate systems for the purpose of study… whether it be a solar system, a planet, a climatic region, a plant or animal community, an individual organism, an organic molecule, or an atom... Actually, the systems we isolate mentally are not only included as parts of larger ones, but they also overlap, interlock, and interact with one another. Isolation is artificial."

Oliver Rackham [from obituary by Peter Grubb in Guardian, Friday 20 February 2015]: "Leading ecologist of trees and landscape who debunked the 'pseudo-history' of forests"; *Ancient Woodland* (1980, 2003*); *The History of the Countryside* (1986); with A.T. Grove the epic *The Nature of Mediterranean Europe: An Ecological History* (2003)---full of PE! "Conservation is really applied historical ecology... [we] need to combine the mind-sets of scientists and historians in an age which discourages dialogue between the two."*

3. Species Level: from taxonomic groups, to evolutionary models, to functional trends; with modern shift from generating to testing of hypotheses but synthesis remains critical.

These are three great men who have championed the detailed study of species, and in many cases integrating these interests with natural selection, ecology and global patterns.
Carolus Linnaeus (1708-1771): first formalized the binomial nomenclature for species.
Charles Darwin (1809-1882, painted by Laura Russell in 1869): concept of evolution.
Peter Grubb (Cambridge University); his 'regeneration niche' paper is much cited (3800).

He is obsessed with the fundamental problems: what ecological factors maintain the great diversity of species; and what are the functional tradeoffs in their adaptations?

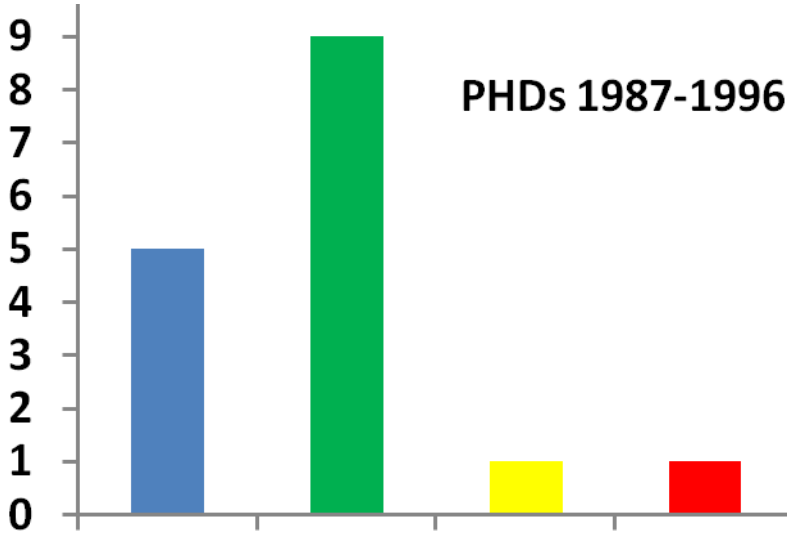
Although men, of course, have dominated Natural History, women have made essential contributions, eg Beatrix Potter These three above have been leaders in Kentucky, largely through botanical work; none have children!
Left: Lucy Braun (1891-1971); wrote the book on forests & initiated efforts to conserve natural areas in Ohio Valley.
Center: Mary Wharton (1912-1991); wrote books on local natural history, and formed first endowed local preserve.
Right: Carol Baskin, one of most accomplished scientists at the University of Kentucky; wrote the book on seeds.

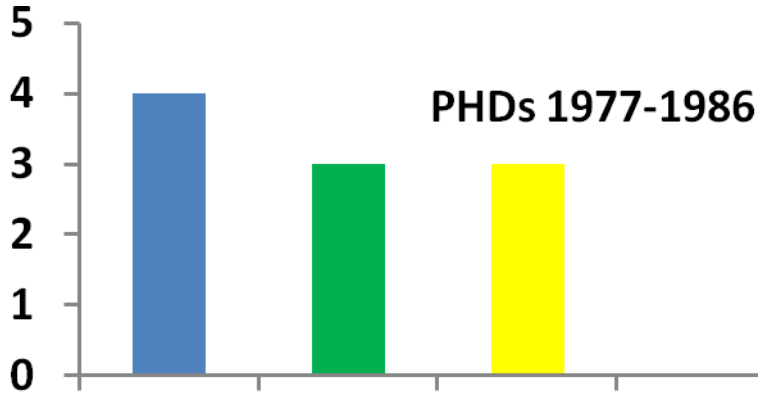
Conservation Biology is the application of natural history and its ecological developments to guide conservation. These two men tried to instill such interests at UK in their own ways. Left: Willem Meijer (1923-2003), botanist with colorful career—like Rafinesque he struggled with Admin. Right: David Maehr (1955-2008), first professor at UK to focus on conservation biology, especially large mammals and birds—died in small plane accident.

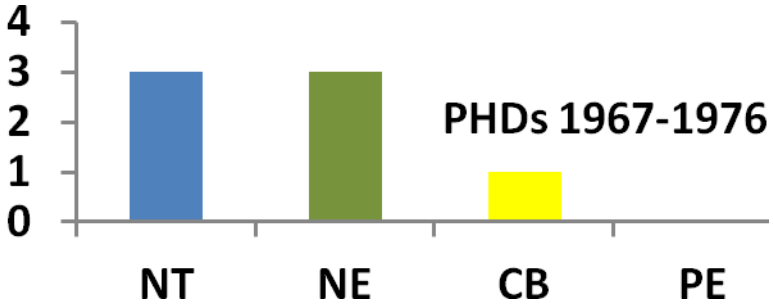
Political Ecology is the interaction of society and politics with ecology and conservation. Wendell Berry is, arguably, the most well-known political ecologist in Kentucky, but he might not use that term. Berry received a National Humanities Award in 2012, when he delivered the annual Jefferson Lecture in the Humanities at the Kennedy Center in DC.

“The problem, as it appears to me, is that we are using the wrong language. The language we use to speak of the world and its creatures, including ourselves, has gained a certain analytical power (along with a lot of expertish pomp) but has lost much of its power to designate what is being analyzed or to convey any respect or care or affection or devotion toward it. As a result we have a lot of genuinely concerned people calling upon us to “save” a world which their language simultaneously reduces to an assemblage of perfectly featureless and dispirited “ecosystems,” “organisms,” “environments,” and the like. It is impossible to prefigure the salvation of the world in the same language by which the world has been dismembered and defaced.”
(Wendell Berry, Life is a Miracle, Counterpoint, 2000, p. 8).

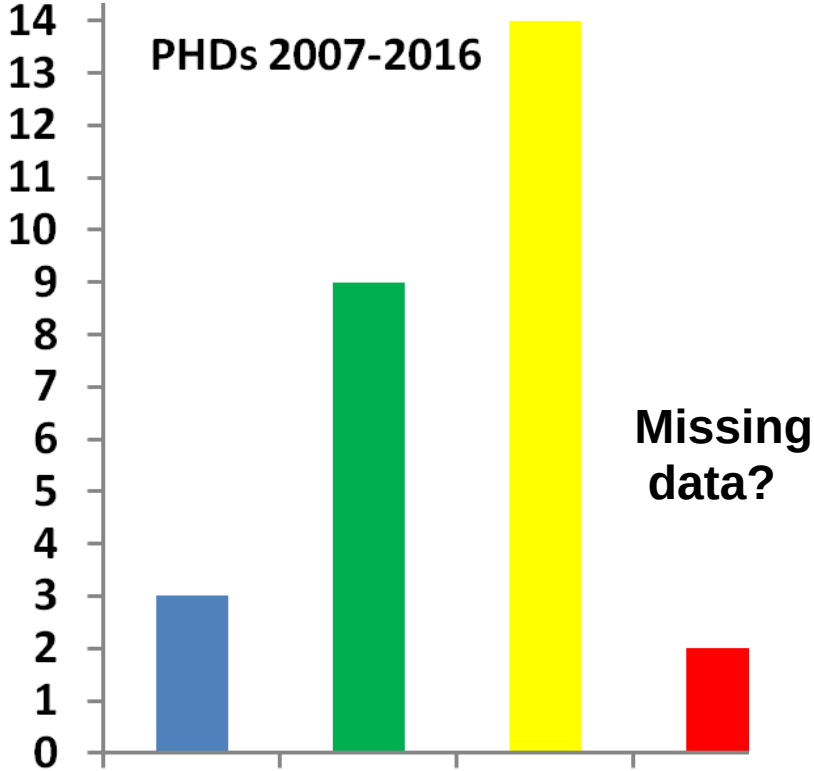
He then lambastes our sectored university life in Chapter Six.

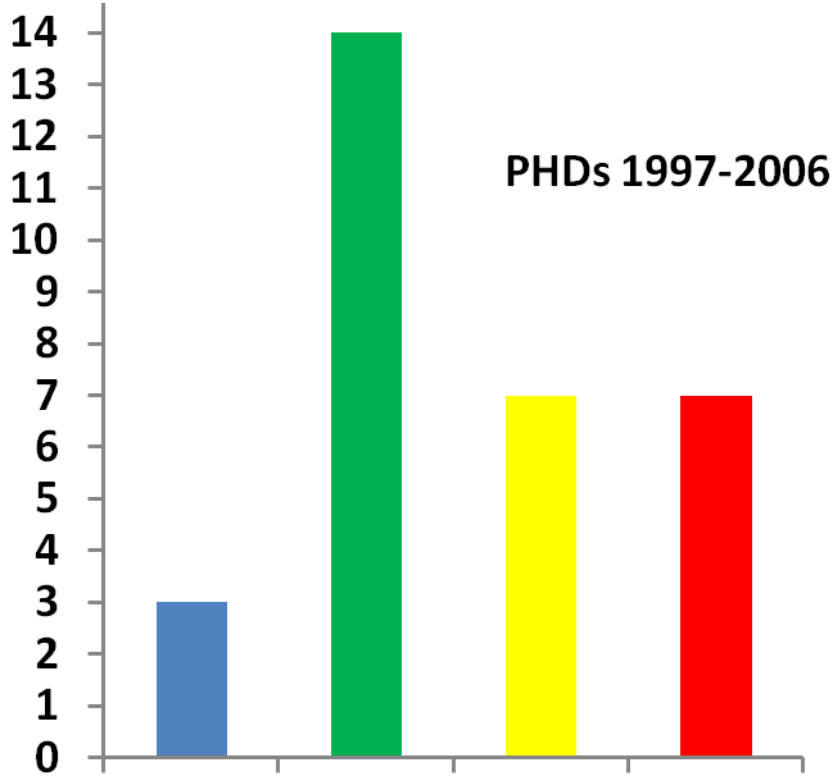


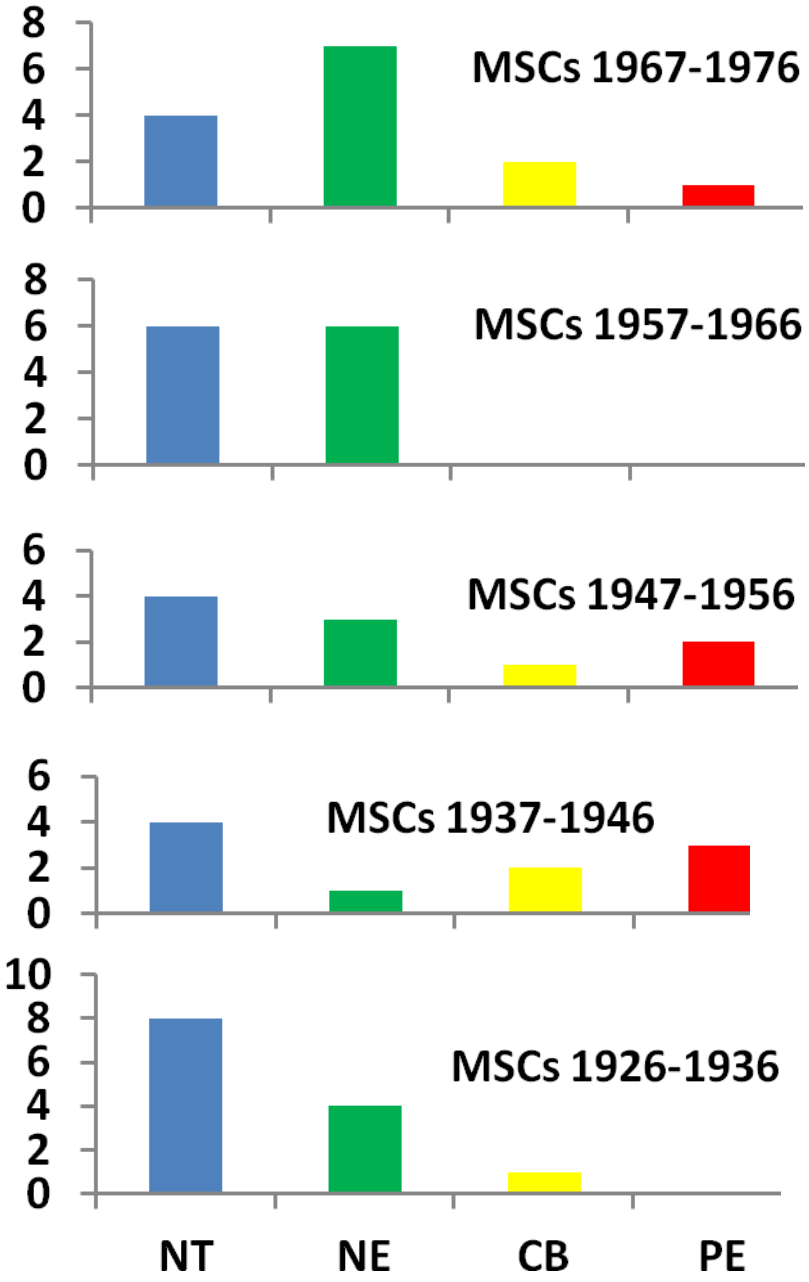


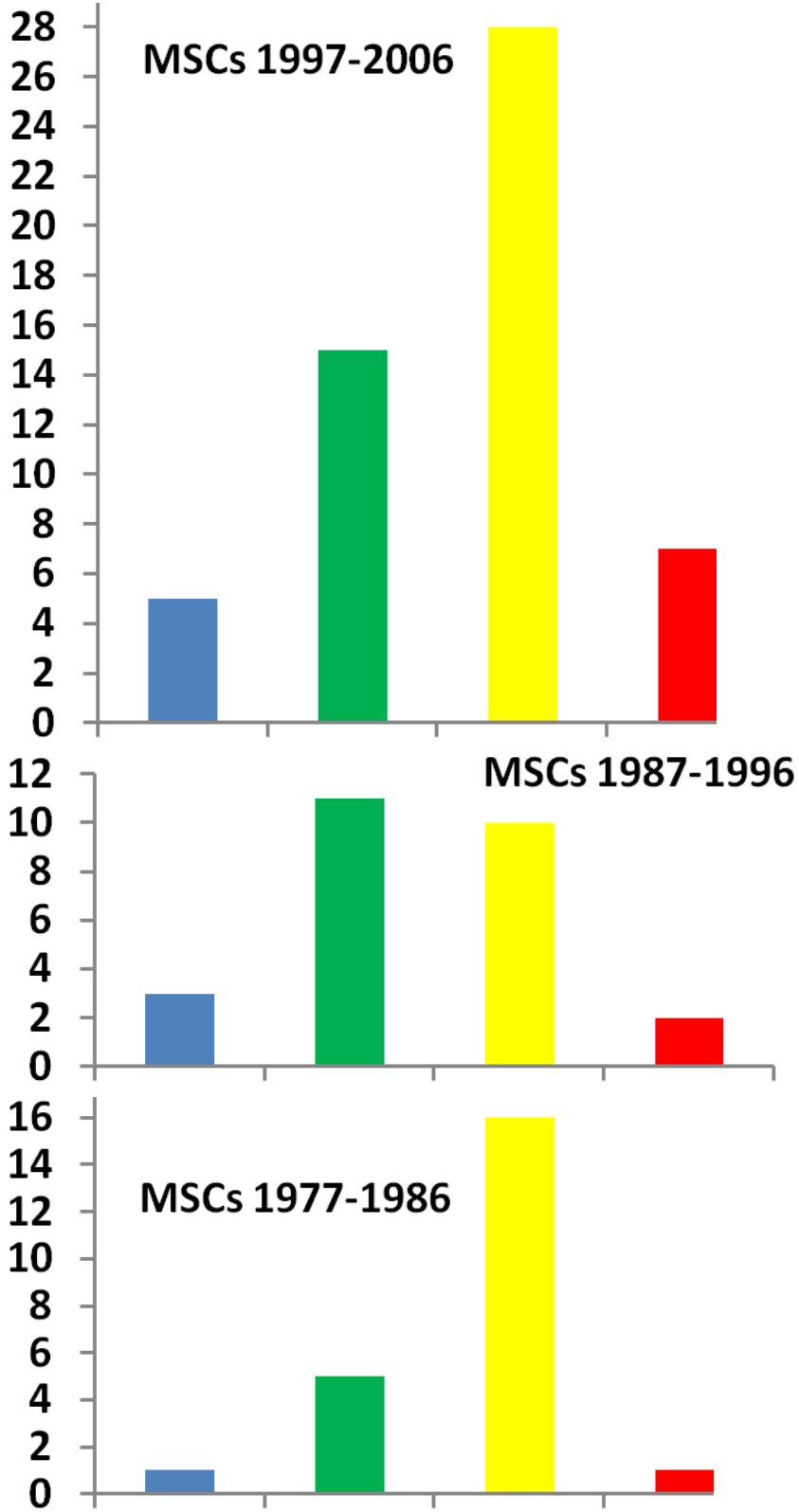


NT = Natural History, taxonomic/descriptive
NE = Natural History, ecological/functional
CB = Conservation Biology in broad sense
PE= Political Ecology involving conservation









NT = Natural History, taxonomic/descriptive
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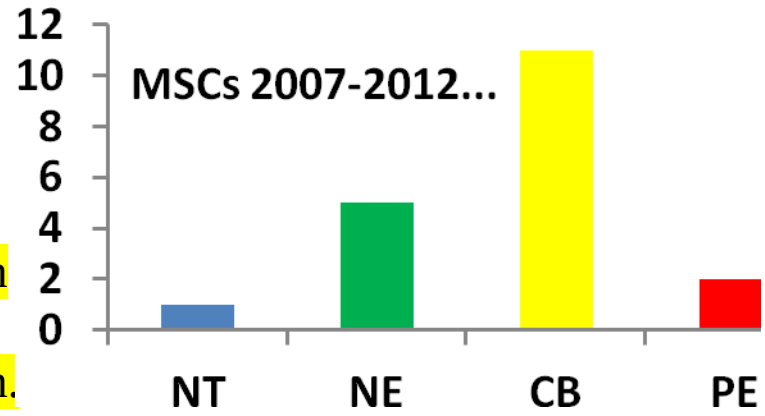
These are provisional data, not yet checked against recent unprocessed submissions in the UK library.* "Masters" (MSCs) may include PHDs in some cases.



Excluded are projects focussed on internal aspects of a single species (without environmental interactions); or on abiotic systems (climate, water, air, soil, topography);or on agricultural systems (versus wild); or on human health.

NT: largely systematic or taxonomic work; also general multispecies surveys in field. These have generally dwindled, especially after 1970s, except in Entomology! Note especially that little systematic botany was ever established at UK.

NE: largely focussed on ecological or related functional aspects of one or a few species. These include studies of interactions with environment, competitors or prey, especially studies in relatively limited or artificial conditions. Largely physiological studies are excluded.

CB: generally includes any study with direct aspect of biological conservation in title / abstract. Excludes PE studies. The initial increase in late 1970s mostly involves mine-restoration and associated tree-planting; after 1990s the further surge involves diverse other subjects (with much less focus on mines), including alien species and effects of climate change. Was delayed initial increase in PhDs versus Masters, until the late 1990s, perhaps due to faculty not at first approving largely applied science versus pure science for doctorates (especially in Biology)?

PE: generally restricted here to studies that deal directly with some aspect of public policy, understanding or political influence in biological conservation. The few studies before 1980 were all based inside Kentucky; after 1980 almost all based outside Kentucky, and mostly outside the USA. But there are no PhDs recorded so far during past decade!—missing data?*

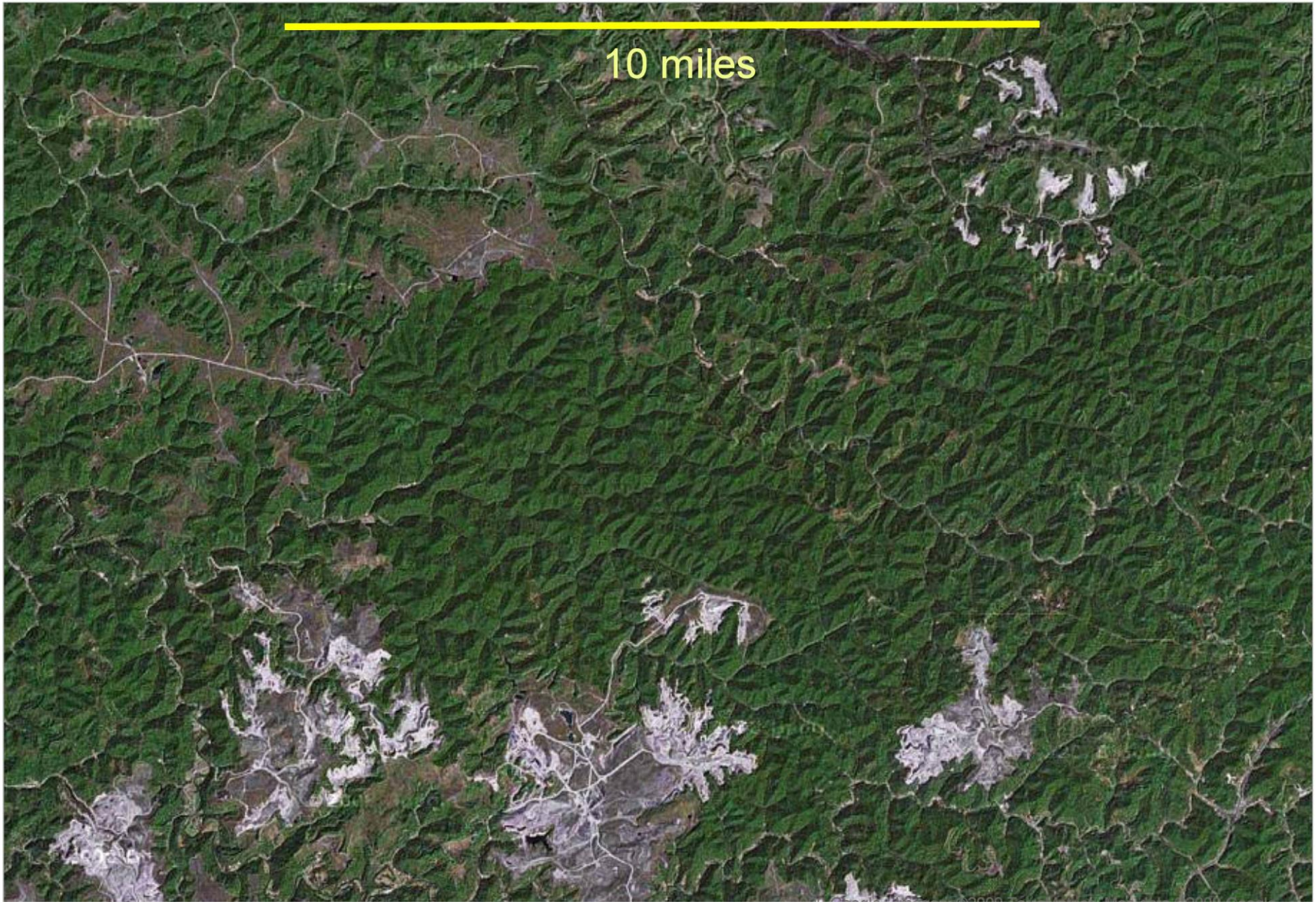
II. Examples of Current Problems: Robinson Forest & Griffith Woods

RF: an Appalachian 'preserve' with extensive forest, but threatened by logging and mining; potential value as less disturbed 'reference'; contains some of best remaining headwater streams of upper Kentucky River, a watershed highly degraded by mining.

GW: the best remnant of Bluegrass woodland, but with a long history of farming; original ecology deserves deeper study and application; part of South Fork of Licking River watershed, which is also generally degraded but targeted for long-term restoration.

[Note: EPA-related programs often dominate local projects...]

Robinson Forest is ca. 75 miles ESE of UK (image July 2007)



Robinson Forest is surrounded by mines and logging (Jun 2016)

Robinson Forest: central questions...

Natural History. What can we learn from this best remnant of relatively undisturbed forest left in the Eastern Coalfields of Kentucky?

Conservation Biology. What values would emanate from continual enhancement of natural qualities here, versus extraction of resources?

Political Ecology. What efforts should the Univ. of Ky. make to discuss alternative visions and to build consensus across the community?

and short-comings...

Natural History. There has still been no thorough comparison of current conditions with the estimated prehistoric, based on records.

Conservation Biology. The university does not seem to have defined the essential goals here in terms of landscape, habitats and species.

Political Ecology. Activism has been largely reactive to new crises rather than engaging the university in proactive discussion of plans.

14,800 acres were donated from E.O. Robinson Mountain Fund to UK in 1923, but entrusted with these goals:

- "...for the purpose of agricultural experimental work and teaching, and for the practical demonstration of reforestation..."
- "The second party [university] will institute and maintain upon said lands such model farm or farms, orchards and such experimental farm development as may be desirable within the judgment,"
- "to the end that practical demonstration, study and work in operating farms in the mountain region and in teaching agriculture therein,"
- "so as to conserve the soil fertility, add to it and utilize it most profitably and practically among the inhabitants in the mountain region."

But almost 5000 acres were sold or leased out for mining in the 1970s, leaving the central block of about 10,000 acres.

And within this block there have been logging experiments, as initiated during 2007-2009, plus further proposals to reduce the forest for mining, most recently in 2003.

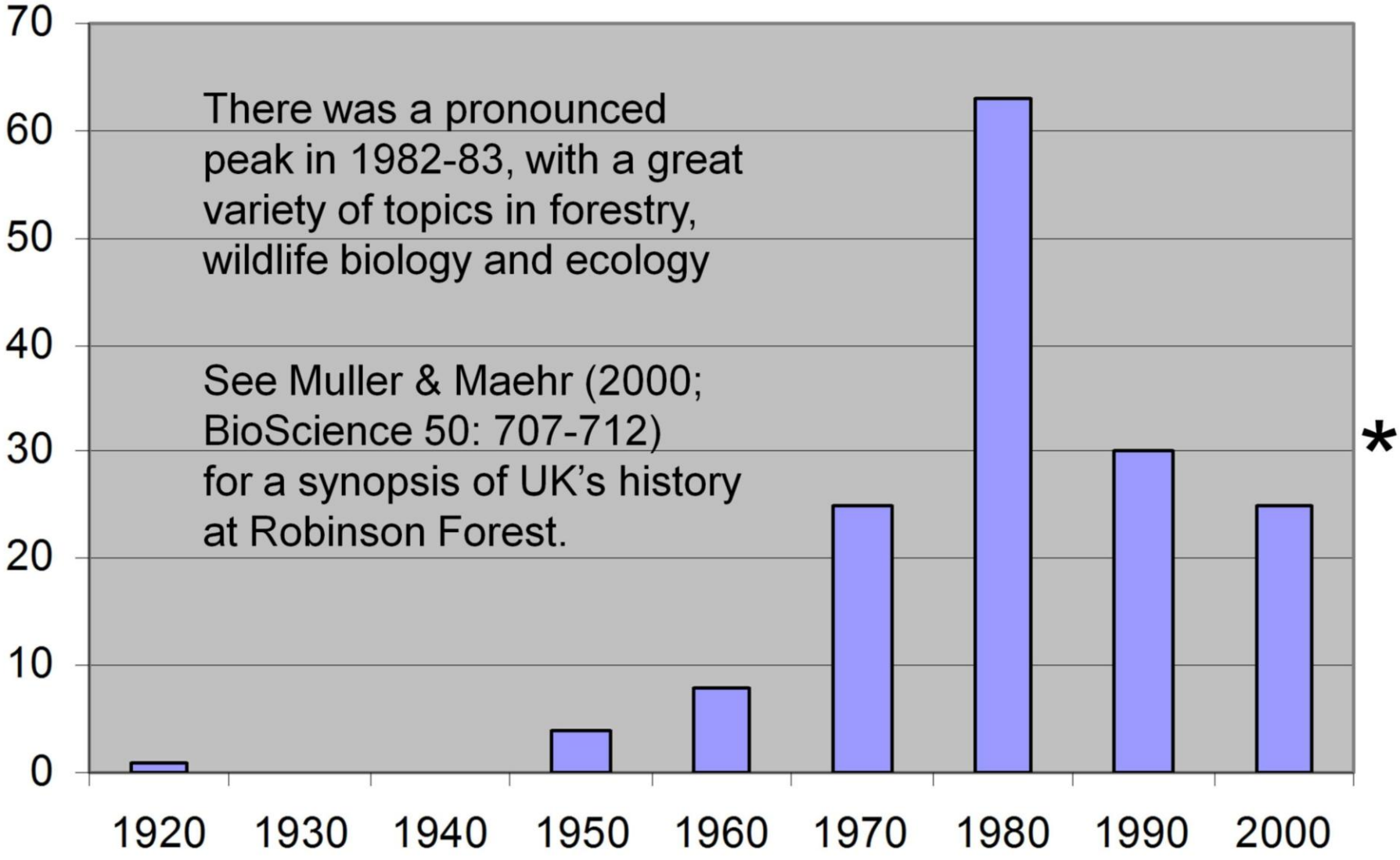
Initial financial “trust” from Robinson Fund had largely disappeared by 1990 under UK; further “quasi-endowment” of $30+ million from coal revenues in 1990s was also spent.

Serious independent investigation of the financial, legal and ethical issues here does not seem to have been performed.

The logging experiment is reported to have grossed just $133,000 for UK from sale of timber. There have been associated research grants, graduate students and publications—But was balance of research interests optimal?

These 10,000 acres remain our best opportunity to recover and understand potential older growth on the central Cumberland Plateau—But will this ‘reference’ status be valued?

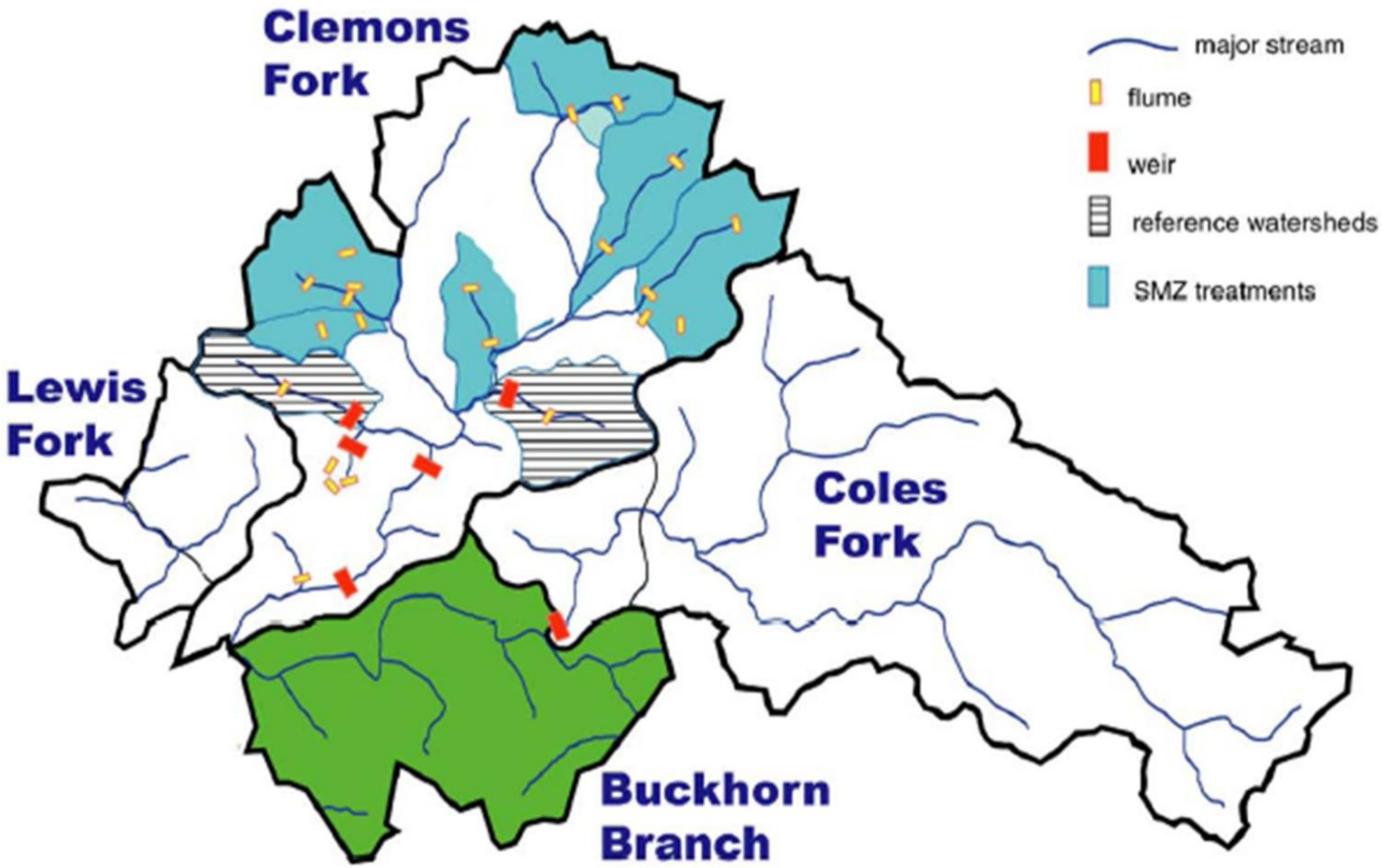
Number of publications covering research conducted at Robinson Forest by decade, with first year indicated on axis at bottom. Data are from UK's 2000 bibliography; plus Google Scholar for 2000-2009; 2010-2016 ca. 26*



There was a pronounced peak in 1982-83, with a great variety of topics in forestry, wildlife biology and ecology

See Muller & Maehr (2000; BioScience 50: 707-712) for a synopsis of UK's history at Robinson Forest.

The controversial logging experiment, now underway (2007-2009), attempts to measure the effects of varied logging (with different degrees of stream-impact) on stream corridors and water quality. But there is no designed study of effects on vegetation and soils across the logged watershed units.



Recent research here has emphasized “hard” experimental science, but we need much more comparative research with sites across region.

<u>The only recent political ecology dissertation on Kentucky?</u>
David Gough (2013): “The Value of the Commonwealth: an Ecocritical History of Robinson Forest.” PhD, Univ. of Iowa!

“Ultimately, this dissertation argues that throughout the 20th Century, the university has repeatedly closed off the forest from “the people” of eastern Kentucky that the donor directed the land to serve. In the 21st Century, then, the university, with assistance from “the people,” will need to rearticulate its use of the forest, encouraging the long-term economic, environmental, social, and cultural sustainability of Robinson Forest.” [He notes initial evictions by UK in 1924.]

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See also: Purcell, L. Edward (1988). Good Neighbor to the Mountains. E.O. Robinson Mountain Fund, Lexington KY [not at UK until 2012].
And: Reece, E., & J.J. Krupa (2013). The Embattled Wilderness. The University of Georgia Press, Athens GA [no citation of Purcell].

Prospects for new direction?

- **But note difficult recent history at UK**

Is there potential for current professionals to move forward, independent of external political strings and excessive ideology?

- **And conflict may cause stagnation**

What is current status of leadership at UK?
What is role for more proactive activism?

Griffith Woods is ca. 23 miles NNE of UK in Harrison County

Our best opportunity in prime Bluegrass farmland
to restore 500-1000 acres of native vegetation
maintained by quasi-natural processes!

Griffith Woods: central questions...

Natural History. How does this best remnant of Bluegrass woodland compare to the prehistoric condition; what ecological factors pertain?

Conservation Biology. How can managers approach the uncertain task of restoration, given former role of large herbivores (> fire)?

Political Ecology. What have we learned from the initial failure to build consensus, and does UK have continued interest in local restoration?

and short-comings...

Natural History. There has been insufficient effort by interested people (and organizations) to share data and ideas on “natural” condition.

Conservation Biology. Despite general agreement that experimentation with varied disturbances is needed, little has occurred.

Political Ecology. After TNC and UK largely abandoned the project, the new management at KDFWR needs input from interested public.

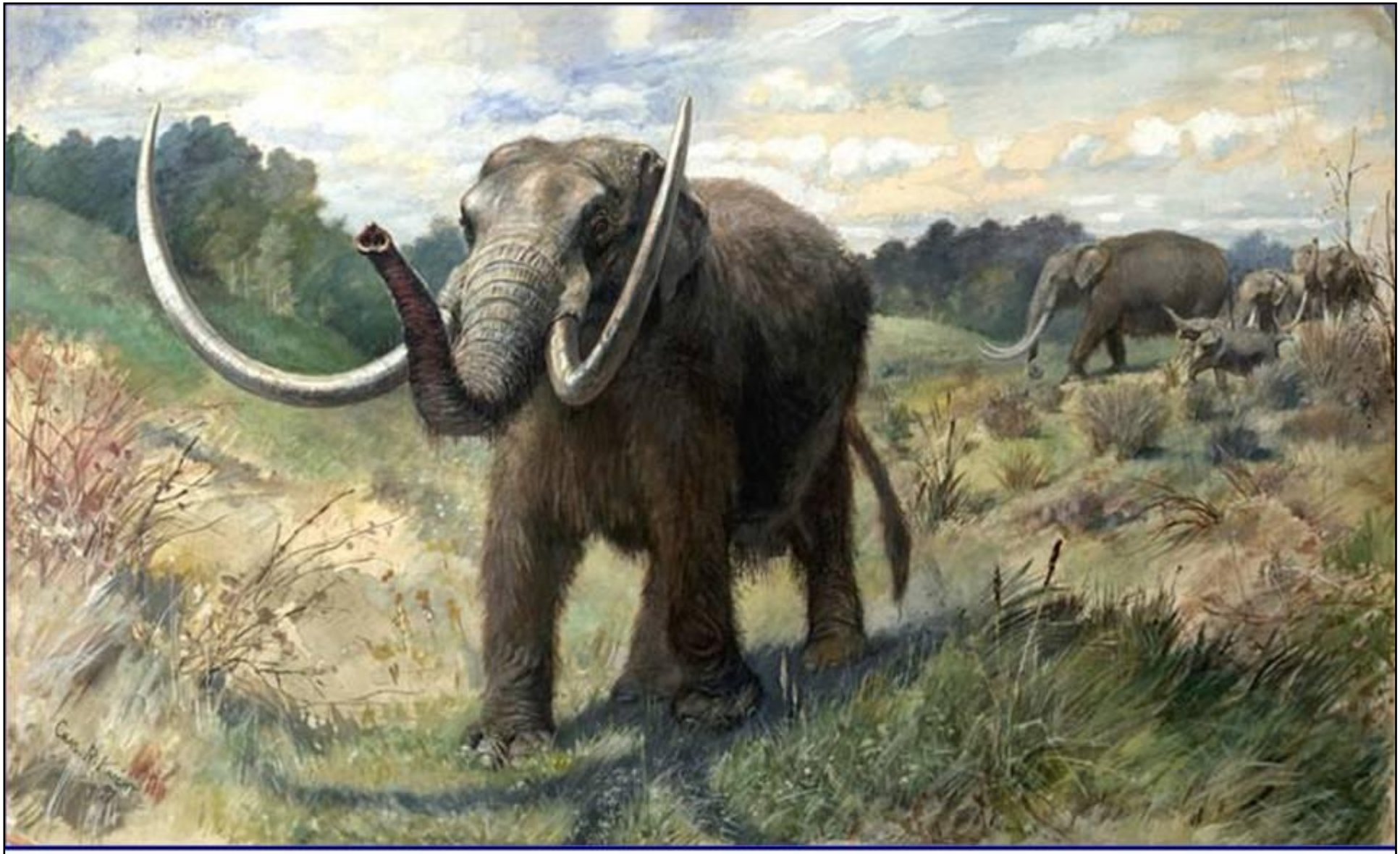
Running buffalo clover is an important plant to understand and recover in Bluegrass Woodlands. It was widely scattered across the Ohio Valley, especially along trails in submesic eutrophic woods, but now globally imperiled. Observed at GW in 1990s, then grown in nursery 2004-2008.

From chip to biochar to goat-forage, there are several potential uses for bush honeysuckles (and some other alien plants).

While probably not leading to much profit, such uses should be explored as the basis for sustainable management of more natural areas in this region.

[photo: Susan Miller, Clark County]

Although a managed herd of bison and elk is not likely to be possible for many years, the concept needs to be kept alive.



American Mastodon, a species of spruce woodlands and cool temperate lowlands that fed a lot on woody plants (including bark and fruit), rather than mostly grass as in the mammoths. Once common in the Bluegrass region, it survived on Earth until 4000-5000 years ago. [Painting by Charles R. Knight]

Prospects for new direction?

- **Clear difficulties among participants**

Institutional agendas; academic paradigms; varied hypotheses, values, beliefs. Is there sufficient potential for individuals to move forward; are institutional strings too knotted?

- **Responsibility, leadership, governance**

Just what is the current status of proposals for projects like Griffith Woods (or Robinson Forest) at state government, UK or TNC?
Is there a role for more ‘cane-raising’ activism?

A Process for Resolving Issues (Consensus Building)

What are common goals and targets?

- Surely we all want native species in naturalistic contexts!
- And can we agree that landscape, habitat and species levels need to be integrated in our planning?

Can we please define critical divisive issues?

- Ideological issues (e.g. naturalistic versus futuristic)
- Historical issues (ecological conditions before 1773)*
- Methods for reduction of aliens, and how to fund
- Guidelines for defining what are "natives" to recover
- Potential roles of browsing, burning, mowing, herbicides

Can we please resolve these issues through research?

- Or agree to disagree: note plenty of room on 745 acres at GW
- At least foster communication among interested people so that good hypotheses are framed, mutual support for research is developed, and appropriate debate is conducted.

* Note historical information at bluegrasswoodland.com; also graduate work of Paul Bradway!

III. Suggested Solutions: at least for Conservation in Kentucky—with UK?

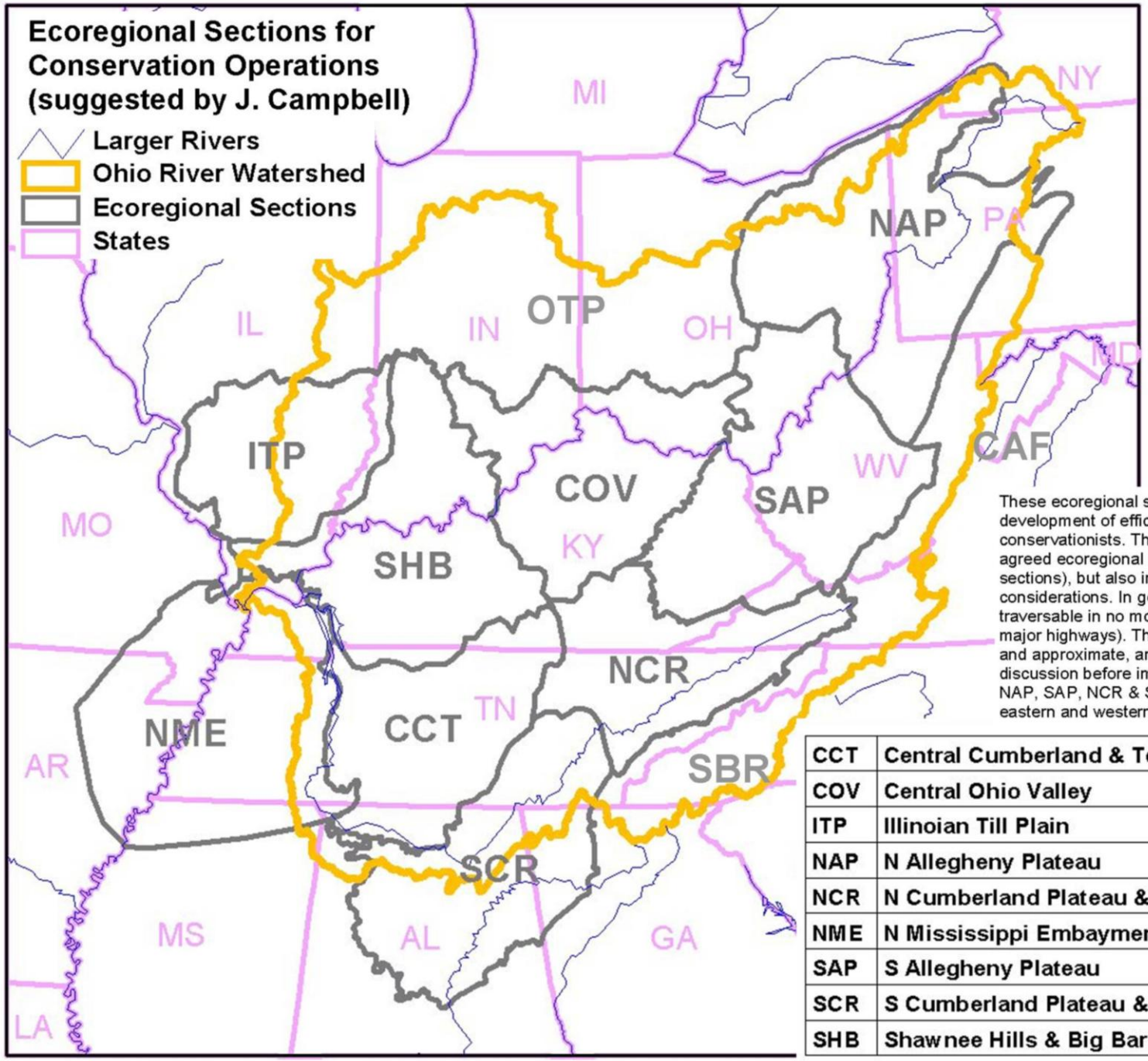
The Three Ts
‘Teamwork’, ‘Targets’ & ‘Tradeoffs’

1. ‘Teamwork’—neotribal agglomeration?

Focus on manageable ecoregional sections for learning and planning.

Host rotated meetings with partners in each of these sections.

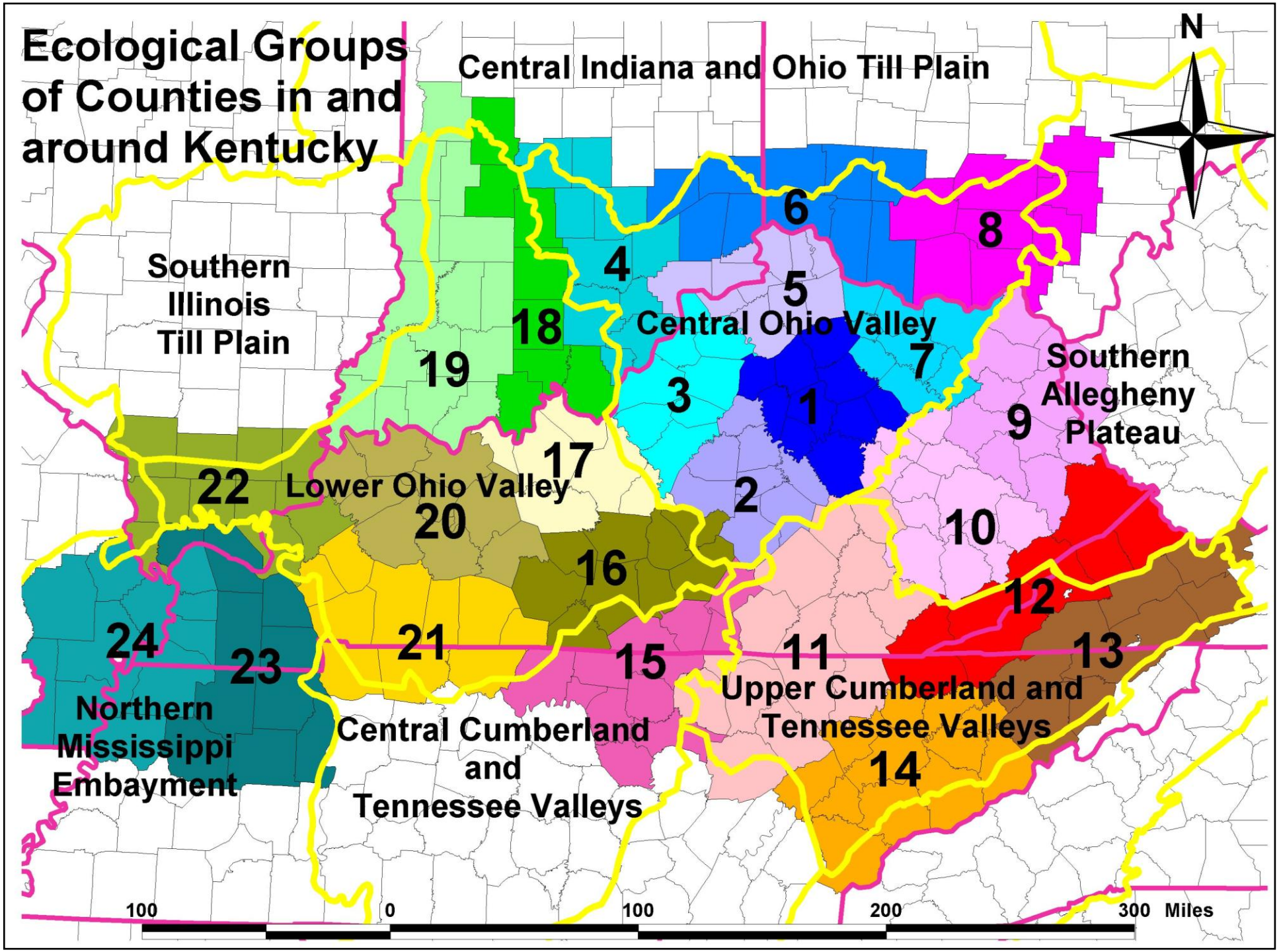
Conduct more regular summer-schools and field-trips across each section.



Peripheral Sections
CAF = Central Appalachian Forest (from TNC).
OTP = Ohio Till Plain; this is a provisional definition, excluding land north of the Ohio River watershed that can be reasonably included with regions around the Great Lakes.
SBR = Southern Blue Ridge (from TNC).

These ecoregional sections are proposed for development of efficient networks of cooperating conservationists. They are generally close to agreed ecoregional sections (or groups of sections), but also incorporate some practical considerations. In general, these should be traversable in no more than two hours drive (on major highways). The boundaries are provisional and approximate, and they deserve thorough discussion before implementation. For example, NAP, SAP, NCR & SCR might be subdivided into eastern and western sections for some purposes.

CCT	Central Cumberland & Tennessee Valleys
COV	Central Ohio Valley
ITP	Illinoian Till Plain
NAP	N Allegheny Plateau
NCR	N Cumberland Plateau & Ridge-and-Valley
NME	N Mississippi Embayment & Alluvial Plain
SAP	S Allegheny Plateau
SCR	S Cumberland Plateau & Ridge-and-Valley
SHB	Shawnee Hills & Big Barrens


Ecological Groups of Counties in and around Kentucky
N
Central Indiana and Ohio Till Plain
Southern Illinois Till Plain
Central Ohio Valley
Southern Allegheny Plateau
Lower Ohio Valley
Northern Mississippi Embayment
Central Cumberland and Tennessee Valleys
Upper Cumberland and Tennessee Valleys
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
100
0
100
200
300 Miles

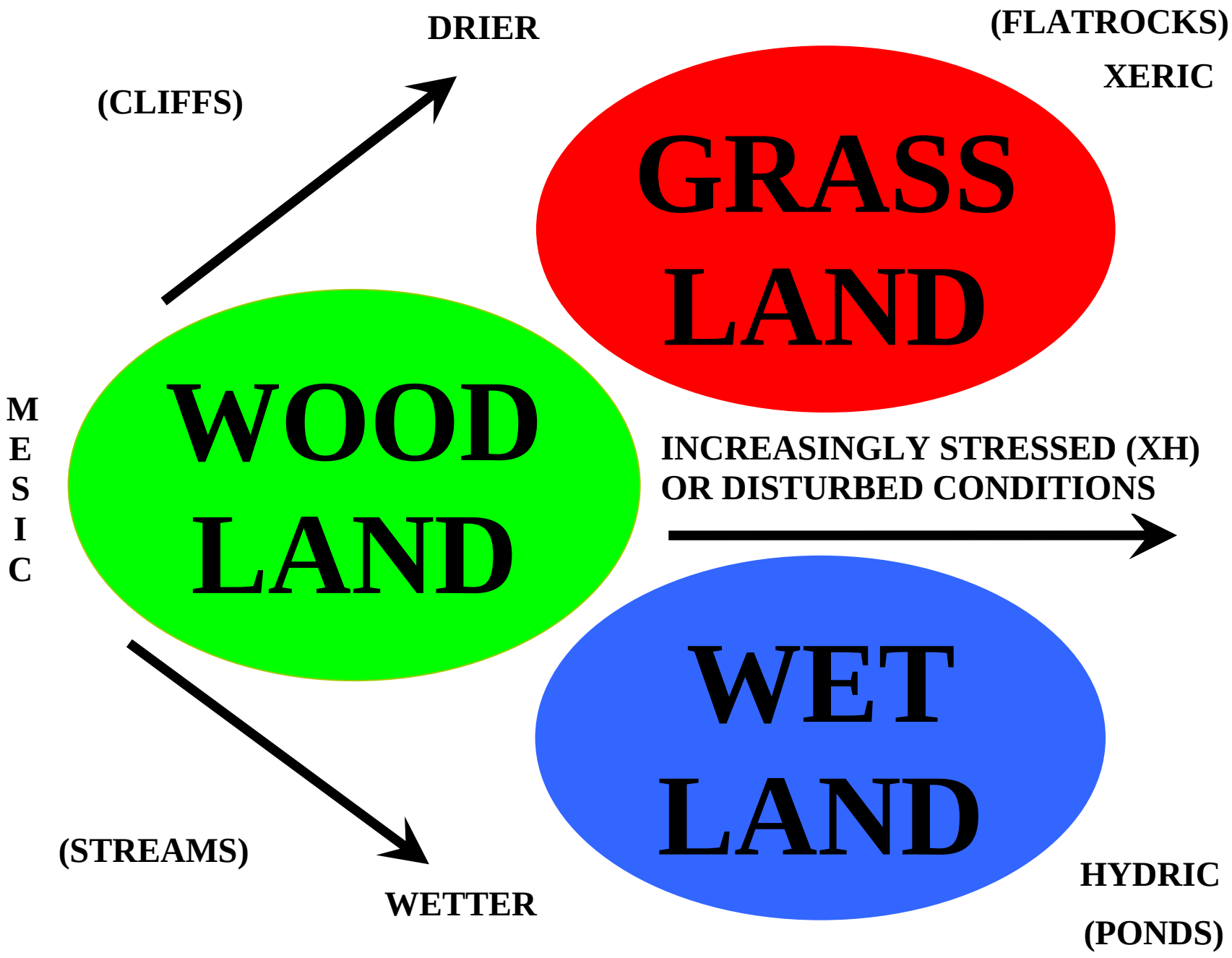
2. ‘Targets’—for conservation planning!

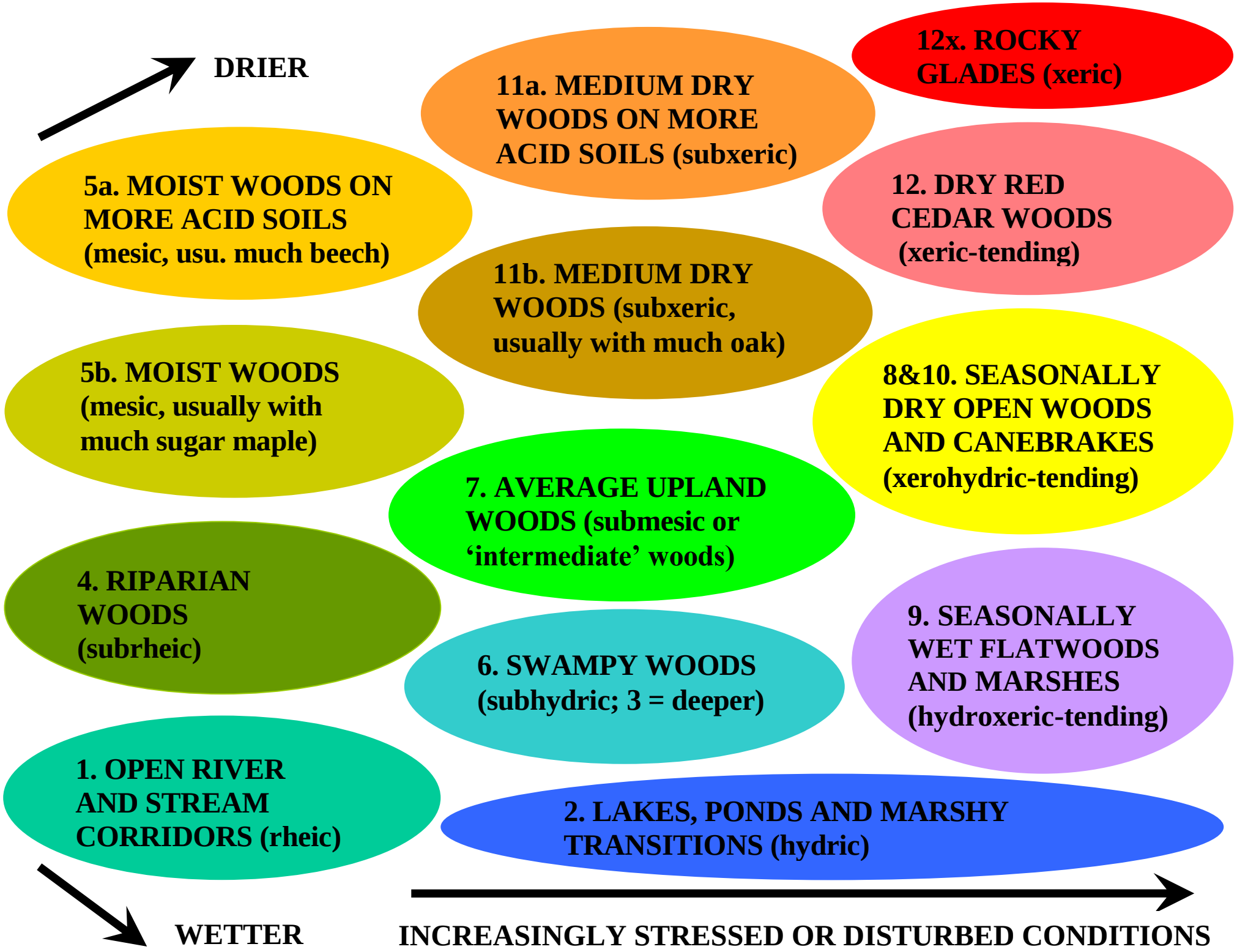
Summarize language for goals at the three general levels of Natural History.

(a) Landscape: especially larger blocks & intact watersheds (as in previous maps)

(b) Habitat: focussing on types needing restoration (based on ecological gradients)

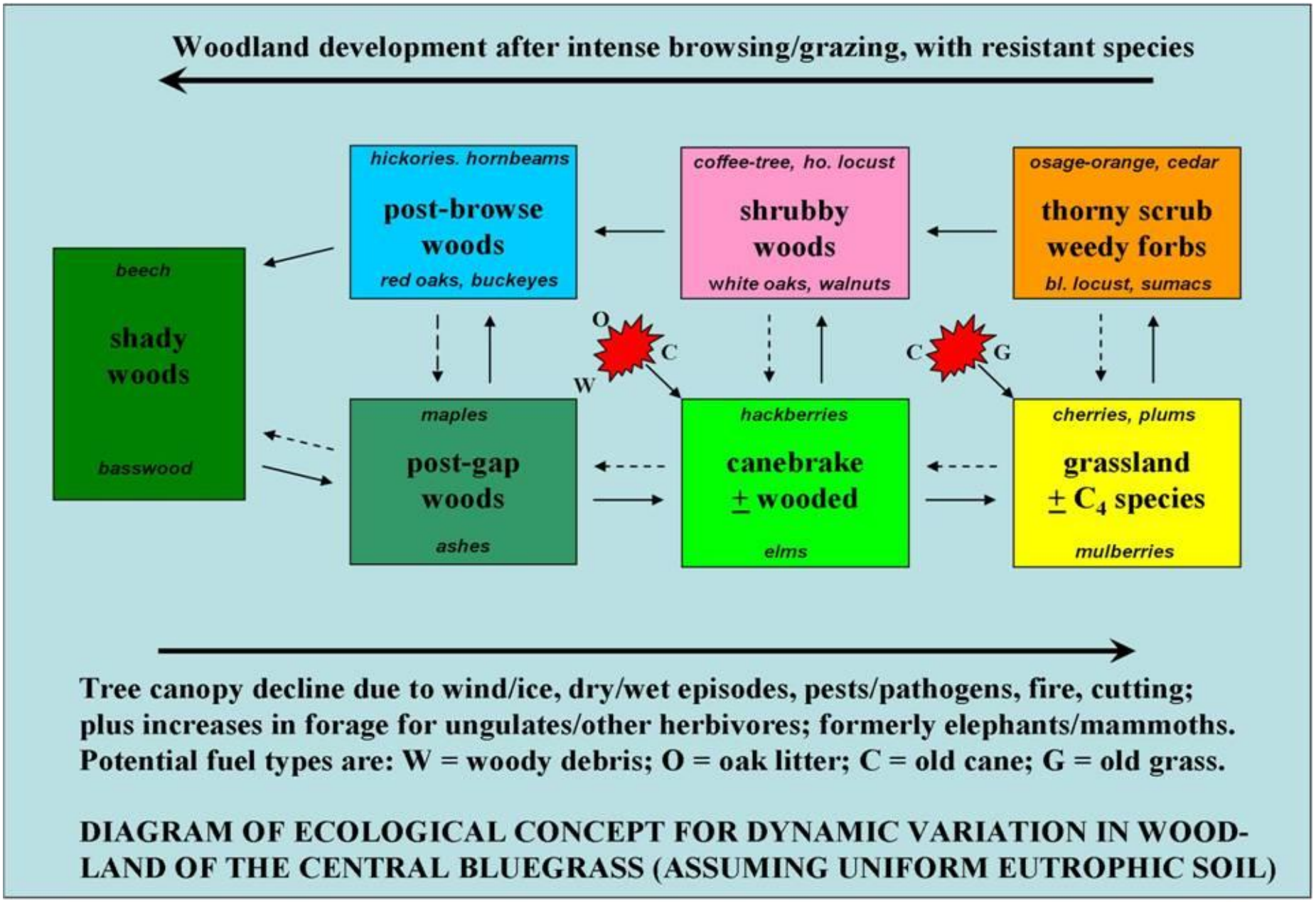
(c) Species: focussing on groups needing recovery even in adequate habitat; also note aliens that most deserve reduction.


DRIER
(FLATROCKS)
XERIC
(CLIFFS)
GRASS LAND
WOOD LAND
M E S I C
INCREASINGLY STRESSED (XH)
OR DISTURBED CONDITIONS
WET LAND
(STREAMS)
WETTER
HYDRIC
(PONDS)


DRIER
11a. MEDIUM DRY WOODS ON MORE ACID SOILS (subxeric)
12x. ROCKY GLADES (xeric)
5a. MOIST WOODS ON MORE ACID SOILS (mesic, usu. much beech)
12. DRY RED CEDAR WOODS (xeric-tending)
11b. MEDIUM DRY WOODS (subxeric, usually with much oak)
5b. MOIST WOODS (mesic, usually with much sugar maple)
8&10. SEASONALLY DRY OPEN WOODS AND CANEBRAKES (xerohydric-tending)
7. AVERAGE UPLAND WOODS (submesic or 'intermediate' woods)
4. RIPARIAN WOODS (subrheic)
9. SEASONALLY WET FLATWOODS AND MARSHES (hydroxeric-tending)
6. SWAMPY WOODS (subhydric; 3 = deeper)
1. OPEN RIVER AND STREAM CORRIDORS (rheic)
2. LAKES, PONDS AND MARSHY TRANSITIONS (hydric)
WETTER
INCREASINGLY STRESSED OR DISTURBED CONDITIONS

GRADIENT IN DRYNESS AND DISTURBANCE	pH-RELATED GRADIENT (A: strongly acid to E: circumneuntral)				
	A	B	C	D	E
xeric or seral (to subxeric)	PINES, HEATHS and transitions with sassafras, persimmon		Varied mixes esp. post oak blackjack o.	RED CEDAR, LOCUSTS CHERRIES, PLUMS diverse hawthorns, briars	
subxeric or seral (to submesic)	OAK-CHESTNUT (former)	OAK-HICKORY: esp. white oak, black oak, s. red oak; pignut, mockernut, shagbark; local red maple, blackgum			OAK-ASH+ chink. oak bur oak+
mesic (to submesic or subxeric)	HEMLOCK BIRCHES +	BEECH, SUGAR MAPLE TULIP, BUCKEYES, BASSWOODS and drier transitions with n. red oak			BLACK MAPLE bitternut+
riparian (to mesic)	absent or rare	RIVER BIRCH, SYCAMORE shrubby willows		BOX ELDER, SILVER MAPLE, SYCAMORE local willow, cottonwood	
subhydric	absent or rare	SWEETGUM, SWAMP RED MAPLE, ALDER		GREEN ASH,WHITE ELM taller willows	

Major gradients on KY uplands (no textbook covers this)



Semantic & conceptual problems have plagued local ecology. Woodland of 1770s was little opened but much browsed—not generally a true savanna! [Vera 2000]

At the core of biotic Natural History is the classification and identification of species. This red oak tree on the UK campus, next to the president's house, is currently (Feb 2017) mis-identified on the label. The species is Shumard Oak (*Quercus shumardii*), not Scarlet Oak as stated.

This is a common mistake for initial students of Kentucky's forests.
The two species occur in different habitats: calcareous (especially Bluegrass region) versus non-calcareous (especially Appalachan).

Fraxinus species
ASH
(OLIVE FAMILY)
(SPECIES)
Prop. U. S. Gov't.
ALL TRUCKS
2 UNIT
NO PARKING
WEDNESDAY
9:30AM TO 11:30AM
STREET SWEEPING

Evergreen Vines in
Deciduous Woods
Julian Campbell: bluegrasswoodland.com

3. ‘Tradeoffs’—in the building of consensus

Entertain stronger efforts
to merge different views of
Nature, Conservation & Compromise.

In organization, use such efforts
to define essential goals
for planning and assessment
(as illustrated in following tables).

Targets (JJNC)	Condition ; Goal	Primary Problems	Primary Solutions	Progress to 2010
1: 10,000+ acres of largely older growth forest; serving research and education in the coal-fields*	fair ; good with 100+ years of minimal management	lack of interest by UK; conflicts between personnel or lack of communication; outside pressures	persist with internal analysis & planning; or external activism may be most obvious strategy	current stalemate while logging experiment unfolds; plans developing for more field work
2: restored riparian forest on most bottomland, other disturbed areas	poor-fair ; good with 100+ years of minimal management	past farming, livestock, logging effects; locally abundant alien plants	allow appropriate areas to recover; make selected plantings; initiate alien reduction	no clear if this is a goal of UK; but many areas are recovering; but bush honeysuckle+
3: restored stream system, free of pollution	fair ; good with 100+ years of forest, watershed protection	past logging, perhaps recent coal mining; to be researched further	enhance stream monitoring, analysis; develop understanding of management effects	logging experiment will provide insight, but deeper research is needed
4: recovery of infested trees: chestnut, butternut, hemlock, ash, elm	poor ; fair (?); needs decades of dedicated work, with enhanced emphasis on problems	globalization; inadequate control; lack of resistant genotypes	work with national, global programs to develop resistance, recovery techniques	small trials with chestnuts, hemlocks have occurred; plan is unclear overall
5: recovery of herbs impacted by settlement	poor ; good with decades of work on selected species	past farming, livestock, collection (esp. ginseng)	develop propagation, recovery trials, harvesting plans	does not seem to have been a focus of UK
6: appropriate management of large animals: elk, deer, bear, other recovered species (?)	poor-fair ; good? need research on their role	potential high impacts of elk near mines; lack of large carnivores to cause natural behavior	enhance long-term research program; include overall inter-action with vegetation	good monitoring of populations (?); some initial graduate work (check with Maehr students)

*Robinson Forest may be the only site in the coal fields of the Southern Allegheny Plateau that could conceivably be managed for older growth. Its regional status needs further study, as does its potential local role as reference/control for comparisons with mined, logged or farmed areas.

Targets (JJNC)	Conditions; Goals	Primary Problems	Primary Solutions	Progress to 2009
1: 500-1000+ acres of potentially semi-natural vegetation*	fair ; good with this 745 acre farm plus neighbors long-term	lack commitment of partners; economic farm forces rule; neighbors?	develop community interest in target; sustainable uses/$	no good economic plan: UK's committee; TNC may backout
2: mesic (shady) Bluegrass woodland (maple- bitternut, etc.)	poor-fair ; fair-good (50-200+ acres with various definitions)	lack of deeper shade (maple etc.); lack of natives; weeds	enhance maple sites; recover natives; reduce weeds	no plantings; 20+ acres of weeds attacked ($1000/acre)
3: submesic Bluegrass woodland (ash-elm, oak-hickory/walnut, buckeye)	poor-fair ; fair-good (200-400+ acres can be defined)	wrong disturbance regime; lack of natives; weeds; **EAB**	establish simple disturbance trials; rec. natives; reduce weeds	disturbance model advanced; no trials; 40+ ac. weeds attacked
4: open woods, thickets & fields (locusts, bur oak, cane, peavine, ?bluegrass)	poor ; fair-good (200-400+ acres can be defined)	wrong disturbance regime; lack of natives; weeds	establish simple disturbance trials; rec. natives; reduce weeds	no trials yet; small trial plantings but UK corn interfered in 2008
5: major species for recovery in mesic woods (ginger, ironwood, etc.)	poor ; fair-good (some present; others < 10 miles)	absence of starts; slow dispersal and spread in most species	develop native plant collection, nursery, demo/trial plantings	starting w/shade in nursery; plantings not yet in woods
6: plants for recovery in submesic woods (clover, pawpaw, etc.)	poor-fair ; good (some present; clover needs trails)	absence of starts; slow dispersal and spread in some species	develop native plant collection, nursery, demo/trial plantings	starting w/shade in nursery; clover trials small; little coop.
7: plants for recovery in open woods to fields (cane, rl-dogwood, etc.)	poor-fair ; good (most can be planted; some slow to start)	absence of starts; slow dispersal and spread in some species	develop native plant collection, nursery, demo/trial plantings	30+ acres of grid plantings made; coop. plans not clear
8: managed deer, elk & bison herd for experimental trials	poor ; fair (need basic research into dynamics)	management problems (fencing, hunting, health, etc.)	increase potential for small initial short-term trials	dream established among managers but methods unclear

* Griffith Woods is the best opportunity for restoration of woodland on uplands of central/southeast Bluegrass. But we need more review of basic historical and current data. And can the neighborhood be included in plans?

Human lessons from Robinson Forest & Griffith Woods, for a more peaceful process?

● Begin with obvious, agreed chores

In any difficult long-term conservation project, with many tasks to perform and limited resources, it is very useful to initiate cooperative work on those actions that all partners have general agreement on. Such work will build mutual experience, understanding and analysis—picking up trash, pulling weeds, raising funds... (forming a "team")

● Admit our ignorance to each other

Embrace transparent evaluation based on new data and results from initial trials—pursue adaptive management based on the three Ts: Team, Target and Trade… (a core trinity of values)

● Frame the critical questions

Define these for important ecological and economic matters that need clarification, research and, if possible, resolution—integrate academic work into planning, implementation and assessment (based on "team")

END

Discussion?—

Can we regroup around central goals for conservation, as above?

Is there any hope for institutional “team-building” here at UK?

Role of Tracy Farmer Center, Institute for Sustainability and the Environment?

Dimensions of Political Ecology (DOPE)—more focus on local studies?

Dirty versus Clean Coal Politics...

Administration versus Faculty...

University Senate?

Circulate critical questions?

Invitations to discuss/debate?

Editorials in Herald-Leader?

Academic papers?

Websites?

Wikipedia (Feb 2017)

“A **land-grant university** (also called **land-grant college** or **land-grant institution**) is an institution of higher education in the United States designated by a state to receive the benefits of the Morrill Acts of 1862 and 1890. The Morrill Acts funded educational institutions by granting federally controlled land to the states for them to sell, to raise funds, to establish and endow "land-grant" colleges. The mission of these institutions as set forth in the 1862 Act is to focus on the teaching of practical agriculture, science, military science and engineering (though "without excluding ... classical studies"), as a response to the industrial revolution and changing social class.[1][2] This mission was in contrast to the historic practice of higher education to focus on an abstract liberal arts curriculum. Ultimately, most land-grant colleges became large public universities that today offer a full spectrum of educational opportunities. However, some land-grant colleges are private schools, including Cornell University, and the Massachusetts Institute of Technology.”

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http://www.uky.edu/CampusGuide/land-grant.html (Feb 2017)

“The Land-Grant College Act of 1862, introduced by Justin Smith Morrill of Vermont, provided funding for institutions of higher learning in each state. Each state received 30,000 acres of federal land for each congressional representative from that state to be sold to provide an endowment for... “at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts...” Much of the land was bought by speculators and the large supply meant that most states received very little for their land. Kentucky received only fifty cents per acre. Some states were able to hold their allotment for several years and sell at a much higher price (the land allotted to Cornell University was eventually sold for over $5.50 per acre). The original Morrill Act was supplemented through the years to provide additional funding for the land-grant institutions.”