Jessamine Gorge: Biological Inventory

By Julian Campbell & Associates (Bluegrass Woodland Restoration Center); under contract with Jessamine County

Cover Photo: looking downstream along Kentucky River from the rocky point west of mouth of Jessamine Crekk; the former Reed II tract is on the right side.

ALSO must
***keep selecting best photos; replace substandard!!!
***insert soil notes under each habitat; base around chart as in BGC; connect better with appnx
***EARLY TREE DATA FROM DEEDS; AND BARTON DATA
***refs: Jillson map of river deposits... ?*geological faults in JG

OPTIONAL.... but important more/less
**species: add S and G ranks to rare species notes
appendices: Palisades mosses check with Risk
*zoology refinement... check more literature...
* read original literature in nat history (bibliography)
** map other features: old paths, roads, caves, sinks...

Jessamine Gorge: Biological Inventory

(Jessamine County, Kentucky)

Prepared for Jessamine County and the
Kentucky Heritage Land Conservation Fund

Final Report, March 2010

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with special assistance from
John Macgregor

[Cover photo shows view down Kentucky River from bluff east of Jessamine Creek's mouth]

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Executive Summary & Recommendations

A biological review of the King/Luddy and Reed Tracts along Jessamine Creek Gorge was conducted during 2009. This included an updated survey of vascular plants, with new field work, and a synthesis of previous data on vertebrate animals in the gorge area. A map of vegetation was assembled from recent field work, older surveys (including plots from the 1970s), and aerial photographs. Descriptive notes are provided for each vegetation type. Also, special notes are provided on rare species, and invasive alien plants.

These tracts form a significant section of Jessamine Gorge, which is one of the most important sites for conservation within the Kentucky River Palisades. The Palisades in general, together with adjacent restorable country, form a prioritized landscape for conservation by The Nature Conservancy and associated agencies, within the Central Ohio Valley. Special habitats along the Palisades, represented well at Jessamine Gorge, include relatively undisturbed stream corridors, clifflines and caves, extensively wooded ravine slopes, and adjacent uplands with remnants of ancient high-level river gravels. Rare species on these tracts at Jessamine Gorge include a few with globally endangered status (gray bat), or threatened status (cleft phlox); and several other rare species in Kentucky occur here.

Obvious issues for management of these tracts include the following.

(a) **Trail System**. Although regular unguided public access will probably not be promoted, there is a need to map, flag, extend or maintain a few irregular trails for professional access and guided tours. These could be partly connected to more accessible parking points, including negotiated crossings of private land if appropriate. Some of the existing entry road-sides and trail-sides do support some native plant species that benefit from regular trampling, driving, mowing or similar disturbance. Herbicides should ***not*** be used for maintenance.

(b) **Invasive Alien Plants**. The biggest current problems are the bush-honeysuckles (*Lonicera maackii* and locally *L. standishii*), which are increasingly dominating the understory of much woodland, especially in young or thin woods with red-cedar and hackberry. The evergreen "winter-creeper" (*Euonymus fortunei*) is becoming a serious problem, and the garlic mustard is already common; see notes above on other potential or local problems.

Effective control will require intensive persistent reduction, and such work has not yet been planned for, let alone budgeted, at local or regional levels. During 2006-2008, KSNPC has undertaken an intensive local effort to reduce honeysuckle around the "Paxistima Point" (north of mouth of Leatherwood Creek), partly using federal funds from the Landowner Incentive Program (LIP). In order to continue and extend such work, multiple partners need to be consulted still, assessing various previous efforts, and considering diverse options for integrating control into the local land economy (e.g. using honeysuckle hauled upslope for goat browse or wood-chip). In the meantime, some obvious priority areas could be targeted if labor is available.

An effective long-term strategy may have to involve continual use of browsing livestock or prescribed fire in some upland woods between the gorge and farmland. Also, there should be

trial plantings for gradual replacement of invasives by appropriate natives in these transitional zones of the landscape. Rough-leaf dogwood (*Cornus drummondii*) is one of the most suitable native replacements for the bush-honeysuckles (*Lonicera maackii, L. standishii*), and mass propagation is beginning at Griffith Woods (Harrison Co.).

(c) **Rare Species Support & Recovery**. The urgent issues related to Overstreet Cave and the gray bats have been addressed in previous communications with Ky. Dept. of Fish and Wildlife Resources; they are appended to this report. Until recent decades, there has been little obvious need to manage for the few globally or regionally rare plants that are currently known at this site, since their habitats have appeared to be more or less stable. However, even on the driest cliffs, the rare plants discovered here are somewhat threatened by the honeysuckle invasion, and these sites should be targeted as priorities for control. Also, just north of the eastern Reed Tract *Paxistima canbyi* is being harmed by the alien insect "euonymus scale." And common chickweed may choke out part of the water-stitchwort (*Stellaria fontinalis*) near Chrisman's Cave.

For a broad long-term plan, there are probably several species of native plant that deserve to be planted at selected sites in or around Jessamine Gorge, since previous clearance and farming appears to have resulted in a relatively impoverished flora prone to invasion by aliens. More easily propagated and established species would include rough-leaf dogwood, viburnums and plums in the shrub layer; plus white-snake root, wood-nettle and wild-ryes in the herb layer.

There could also be much innovative management of the adjacent fields that would enhance native biodiversity as well as staying true to historical goals for the property. In addition to promoting some of the common native plants that already exist in these fields, special plots of less common grasses or herbs could be established. For example, New England aster (*A. novae-angliae*), oxeye-sunflower (*Heliopsis helianthoides*) and prairie mimosa (*Desmanthus illinoiensis*) have much appeal for aesthetic, ecological and economic value. Native provenances of these species from the central Bluegrass are already being marketed by Roundstone Native Seed Inc. (Bonnieville, Hart Co., Ky.).

(d) **Further Research & Education**. Popular, strong, broad-based, integrated programs of great regional significance could be developed for the conserved lands of southern Jessamine County. A general conceptual proposal will be attached to the final version of this report. In order to implement a productive continuing program, meetings are needed with schools, colleges and universities in the region, in order to define common goals, specific activities and sources of support across the community.

Ideally, sound long-term programs can be based on a moderately broad set of cooperative goals for the whole Kentucky River Palisades. For example, ideas for educational programs at Raven Run in Fayette County could be shared with those in Jessamine County. And critical questions for research in the Jessamine Gorge area should generally be developed with applications to the whole Palisades in mind. Clearly, one of the most pressing questions for applied research is how to organize reduction of honeysuckle and other invasive species within this region.

(e) **Potential Income from the Site**. Obviously, funds for management are severely limited. Reduction of alien plants, in particular, will probably not be possible without supplementary resources. There should be careful consideration of potential income from selected activities on these tracts. Such activities could include the following.
(i) Establishment of a fee-paying program for field-trips and educational events. Ideally such programs could be initiated with grants for environmental education and the school or university system.
(ii) Appropriate farming in selected fields. Continued traditional uses should be considered, but in the long-term return to woodland or other native vegetation may be desirable. Growing of native grass and wildflower seed, or other native plants, could be a good use, at least in the short-term.
(iii) Less likely in general—possible income from harvesting of selected wildlife (especially deer) or plant products (e.g. successional red cedar stands). For various reasons, such activities could probably be considered only in the peripheral woods and fields around the main gorge area. Ideally, the community will secure a local manager resident at this site or nearby. That person, and any other helpers, would be encouraged to develop specific plans for a good mix of activities at the site.

(f) **Community Relations**. A long-term goal should be to develop mutual interests with landowners around Jessamine Gorge. At the least, regular communication with selected landowners should be offerred in regard to the following potential activities.
(i) Request permission for occasional crossing of property boundaries to survey biological or ecological features.
(ii) Inquire as to possible future acquisitions of land or easements by Jessamine County or its partners.
(iii) Offer annual field trips and picnics to foster mutual interests, leading to development cooperative plans if appropriate.

Conservation Planning. Underlying all these matters is the need for effective planning in order to coordinate implementation of short-term management, plus pursuit of long-term goals. A logical process for planning can be built on The Nature Conservancy's initial efforts, starting with clear definiton of targets for specific action.

Table 1 outlines how this process could unfold, but clearly a group of partners needs to flesh out such ideas more firmly and document good cooperative decisions for transparent future assessment. At the regional level, the overarching target is a large block of protected land around Jessamine Gorge (line 1). At the habitat level, obvious targets can be the stream system (2) and a restored woodland buffer (3). At the species level, targets could include woody species that suffer catastrophic losses from alien pests (4), native herbs and grasses that deserve recovery (5), and perhaps a general effort to manage ungulates—from deer to regular livestock—that can influence the woodland buffer for better or worse (6). Much more discussion and experimental work is needed at the species level. Moreover, appropriate tradeoffs will be needed to design a sustainable economy on these lands.

Table 1. Potential Format for Summary of Conservation Planning at Jessamine Creek Gorge.

Suggested Targets	Condition ► Goal	Primary Problems*	Primary Solutions*	Progress to 2010
1: 1000+ acres of nature preserve within block of protected farmland	fair ► good with 50+ years of more development	lack of public funds; lack of local support (?); lack of coordination (?)	persist in coordinated effort with clear public goals, avoiding conflicts	most land owners protective; 200-300+ acres secure
2: wild stream with high water quality and complete native biota	fair ► good with 25+ years of further vigilance	continued pollution from farmland; human sewage could still be improved	more focussed watershed effort with agencies, communities, farmers	urban sewage much improved; continued monitoring (?)
3: effective restored woodland buffer with native species	poor ► fair (?) with 100+ years of work from scratch	200 years of clearance, farming; accelerating invasion of alien plants	secure more uplands for woods; promote best trees, shrubs, grasses	none; King-Luddy tract now available for initial trials
4: recovery of infested woody species: ash, elm, butternut, ?paxistima	poor ► fair (?) with 100+ years of dedicated work	globalization; inadequate control; lack of resistant genotypes	work with national & global programs to save genes, breed resistance	none; may be rallying effort around EAB, breeding, etc.
5: selected native herbs & grasses impacted locally by settlement	poor ► good with decades of recovery, partners	past farming, excessive ungulates, over-collection (eg. ginseng)	develop propagation & recovery trials; harvesting plans for economic spp.	none; has not been a focus of conservation community
6: managed ungulates in woodland buffer for native effects (+ fire?)	poor ► fair (?) with decades of research, partners	lack of ecological knowledge; lack of models on farmland	short-term trials, esp. browsing on alien shrubs; long-term research	none; has not been a focus of conservation community

* The fundamental financial problem is to derive appropriate income from the area: from fees for services, and from varied products. Potential services are guided tours and educational courses; potential products range from regular farming to native plants & seed.

Introduction

The King/Luddy and Reed Tracts are important parts of Jessamine Gorge, a unique conservation area in southern Jessamine County, between High Bridge and Camp Nelson (Figure 1-3). These tracts cover about 270 acres, and were acquired by the county in 2004-2006, using funds provided by the Kentucky Heritage Land Conservation Fund. The following report is based on botanical field work conducted by myself (JC) throughout the growing season in 2009. In addition, previous biological inventory in the area or nearby has been reviewed. Information on vertebrates, especially rare species, has been compiled from data of Kentucky State Nature Preserves Commission (contact: B. Palmer-Ball) and Ky. Dept. of Fish and Wildlife Resources (contact: J.R. MacGregor). Some field work by these agencies has been conducted in recent years, with special attention to the caves and their usage by bats. Included with this report are lists of species (mostly in appendices), together with maps of vegetation types, rare plant locations, and areas with serious invasions of alien species.

Site Context: Geology, Soils and Vegetation

Jessamine Gorge lies within the central Bluegrass, in the Kentucky River Palisades section (Figure 1). The steep gorge itself, in strictest definition, covers only about 1.5 square miles, but adjacent woods on uplands and along river slopes enhance its relatively natural context within the region. The Gorge has exceptionally rugged and varied topography for the region, which appears to enhance the ecological and biological diversity.

The central Palisades lies mostly on limestones of Middle Ordovician age (especially the Camp Nelson group). These rocks include some dolomitic strata and bentonites (Crossman & Hraber 1970). Most soils in this neighborhood are highly calcareous, except on some nearby uplands where ancient river terraces have left remnants of alluvial deposits (Jillson 1963, Andrews 2004). Such deposits are well-known a few miles east on high levels above the river in the Scott’s Grove and Camp Nelson areas, as well as on lower terraces in the Polly's Bend and Devils Elbow areas. They also occur to the west in the Handy's Bend and Pleasant Hill area.

Most upland soils in and around Jessamine Gorge can be classified into the following broadly outlined sequence ("catena") of three intergradient soil groups (McDonald et al. 1983; Appendix One). Major series in this locality are printed in **bold**. Those with more acidity are indicated by asterisks (*): these are on ancient high terraces, deeply weathered cherty material, or more shaley bedrock.

(1a) More gentle topography with deeper soils: mostly paleudalfs (**Maury**, Braxton*, Elk Variant*); locally hapludalfs (McAfee, Lowell, Faywood); perhaps scattered argiudolls on lower or damper ground (Loradale, Donerail). Vegetation was generally wooded before settlement, but was mostly cleared for farmland. Original woods probably had much sugar (or black) maple, Ohio buckeye, ashes (blue and white), elms (especially red), hickories (especially bitternut) and oaks (mostly chinquapin and shumard).

(1b) On locally more acid soils or less fertile soils, beech and white oak were probably associated; and perhaps locally hazel in nore brushy woods (1c). Patches of such soil (Elk Variant, upland outliers of regular Elk, and perhaps some Lowell and Faywood) were mapped by McDonald et al. (1983) within mile of two of the river, from Camp Nelson to High Bridge and beyond. The more pronounced patches may correlate with an ancient Pliocene course of the river that could have cut down "Leatherwood Fork"—the first fork of Jessamine Creek up from its mouth—and perhaps "Figg Fork"—the fork to west from High Bridge. It is also possible that some of these soils were formed by locally more shaly bedrock, such as the Logana member of the Lexington Limestone, which is up to 20 ft thick on upper slopes in the Central Palisades (see USGS Quadrangles).

(1c) Locally, some areas were probably somewhat open due to browsing or burning; these were on soils similar to 1a. Remnants of cane on uplands west of Jessamine Creek may have lined ancient trails down into Handy's Bend. To the northeast of Jessamine Gorge, between the West Fork and Easr [Town] Fork, there is another cane remnant (sinkhole north of Shun Pike) and an early traveller from the mouth of Hickman to the head of Jessamine indicated a rather brushy woodland: "the land is very level and of a very pretty mulatto soil and the growth is black and white oak, hickory, and some walnut and sugar trees, and the undergrowth hazel nut and red bud..." (Watkins 1789; transcribed in Young & Duncan 1898). Bur oak, often considered indicator or the most open woods before settlement, is rare to absent within a few miles of the Kentucky River; the closest trees may be along central sections of Jessamine Creek and Hickman Creek, and this species is much more frequent around headwaters of Hickman Creek and Elkhorn Creek (Campbell 1980; see also Davidson 1950).

(2) Intermediate topography and soil depth: mostly hapludalfs (Ashton, **McAfee**, Lowell); but with much mixture in some areas. Most land has been cleared for farming, but there is more interruption by areas with rockier soil. Woods are generally similar to more gentle topography (1) but with more transitions to the following landscape. Second growth woods have locally abundant red cedar.

(3) Steeper topography with shallow rock soils: mostly hapludolls (**Fairmount**); perhaps locally hapludalfs (cf. Renox/Brookside) and eutrochrepts (cf. Garmon). In steeper topography soils are probably much more diverse than indicated by current maps, which use the broadly defined Fairmount series for most of the land. Woodland is prevalent and varies greatly, from relatively mesic sites (lower or cooler) with much sugar maple, to more xeric sites with much chinquapin oak, blue ash and locally red cedar. These variants are detailed in notes on habitats below.

Lowland soils in the region have complex classification, but in Jessamine Gorge and along the Kentucky River, few major series are mapped. Three broadly defined classes may be useful.

(1) High terraces: with hapludalfs on well-drained land (Ashton/Armour, **Elk***); locally fragiudalfs (Otwell*, Lawrence*) or fragiaqualfs (Robertsville*) on less well-drained land. Mesic woods probably predominated over open land before settlement, except where herbivores or humans had concentrated effects. Terraces along the river with more sandy, acid soils (especially

Elk) had much beech and locally tulip poplar, in addition to the usual sugar (or black maple), ashes, elms, bitternut and walnut. Most of the accessible river terraces were cleared, but much has now been abandoned, especially after flooding in 1974.

(2) Active floodplains but with less intense alluviation, usually along relatively small streams: eutrochrepts (?Nolin, Lindside) and fluvaquents (Newark, Melvin). There are only minor inclusions in the Jessamine Gorge area; the closest areas mapped by McDonald et al. (1983) are along headwater tributaries outside the gorge. Woods probably predominated before settlement, with much sycamore, white elm, boxelder and green ash. These have been cleared in places, but they often regrow due to flooding or poor drainage.

(3) Active floodplains with more intense or more frequent alluviation, usuually including most land along larger streams: hapludolls (Boonesborough, **Huntingdon**) and haplaquolls (Lanton, Dunning). Broad bands of relatively deep alluvium (Huntingdon) occur along the river, and generally narrower bands of shallower alluvium (Boonesborough) occur along Jessamine Creek and its triburaries. Woods predominated before settlement, with much silver maple along the damp muddy banks of larger streams; also, sycamore, white elm, boxelder and green ash. Woods have been cleared in places, but they are usually abandoned due to flooding or poor drainage.

Biological Significance. The extensive forested corridor along lower Jessamine Creek, together with some adjacent uplands, forms a focal area of the highest significance within the Palisades region. In addition to the forest, there are several rare plants, and at least two caves are known to harbor rare bats; some of these species are globally imperiled. The importance of the King/Luddy and Reed Tracts has already been recognized by The Nature Conservancy and relevant government agencies, as reflected in their strong direct or indirect support for earlier acquisition and management.

Several pioneering botanists in Kentucky have visited the Palisades section of the Kentucky River, from André Michaux (1783-89) and Short et al. (1833-40) to Garman (1900-1914) and Braun (1943, 1950). McFarland (1946) conducted a floristic survey of Jessamine County, and listed several species from Jessamine Gorge, mostly near Chrisman's Cave. However, McFarland's collections were mostly lost in the fire at University of Kentucky's Herbarium in 1948. A comprehensive floristic account of the Palisades has still not been fully published, though a good initial synthesis was provided in the technical report of Martin et al. (1979). Other significant contributions have included the dissertations of Bryant (1973) and Campbell (1980), and papers on flora and vegetation have already been published for Jessamine Gorge (Campbell & Meijer 1989) and Raven Run (Campbell et al. 1995). Scattered notes on plants in the Gorge have also been provided by Reed (1962), Browne (1967) and probably others. Howell (1975) examined the ecology of water-willow in the Gorge.

In general, Jessamine Gorge provides one of the best examples for the vegetation and flora of calcareous ravines in the central Ohio Valley. As well as the diverse habitat types (as detailed below), with much in relatively good context for the region, there are numerous rare plant species in Jessamine Gorge (Campbell & Meijer 1989). These include globally imperiled species: *Stellaria fontinalis* (= *Arenaria f.*), "water-stitchwort"; *Paxistima canbyi*, "mountain-

lover"; and, formerly, *Physaria globosa* (= *Lesquerella g.*), "bladder-pod" (McFarland 1946). Continued field work along the Kentucky River Palisades and its tributaries has failed to find as much concentration of rare plants as in Jessamine Gorge. Its flora, like the Palisades in general at a larger scale, includes a good cluster of species that have globally restricted or regionally fragmented ranges on calcareous slopes around the central Appalachians, Ohio Valley and mid-western "Prairie Peninsula." These include *Cerastium velutinum* (= *C. arvense* var. *velutinum*); *Cladrastis kentukea* (= *C. lutea*), *Draba ramosissima, Paxistima canbyi, Phlox bifida* var. *stellaria, Prunus virginiana, Schizachne purpurascens, Synandra hispidula, Trillium nivale, Viburnum molle* and *Viola walteri*.

The following written studies of selected fauna in Jessamine Gorge are available.

(a) **Bats**: Lacki et al. (1995) examined feeding habits of gray bats. Also, technical notes have been distributed by J.R. MacGregor (KDFWR, 2002 Sep 24): "Overstreet is the premier maternity colony for the federal endangered gray bay (*Myotis grisescens*) in the Kentucky River Palisades... Although the cave itself is relatively small, its physical configuration allows the ceiling of the cave to serve as an efficient warm air trap during the summer months—the gray bat maternity season—and it thus provides an excellent nursery site for the females and their developing young... Maintaining a large forested buffer and protection from human disturbance are, in my opinion, critical aspects of properly managing the gray bat colony... Although gray bats normally forage over water, and may travel for many miles while foraging, the forest is an important foraging area for some of the adults [see also: Lacki et al 1995] and for many of the young [JRM, pers. obs.]... There are other gray bat caves along and near the Kentucky River in the Palisades... Altogether, I would estimate that the known maternity site located in the Kentucky River Palisades area harbor about 25,000 gray bats in the summer. This translates to about 10-12% of the winter population at the only known major hibernaculum for the species in Kentucky—the Coach Cave/Jesse James Cave systems located in Edmonson County..."

(b) **Reptiles and Amphibians**: MacGregor (1973) studies water snakes; Petranka (1979) including Jessamine Creek in his study of salamanders (*Plethodon* spp.).

(c) **Fishes** (and their parasites): Little (1963), Howell & Jones (1976), Baton (1984).

(d) **Aquatic invertebrates**: Howell & Jones (1976) conducted a pioneering study on effect of pollution in 1971. Despite much damage in Jessamine Creek, the aquatic ecology has now recovered to a significant extent.

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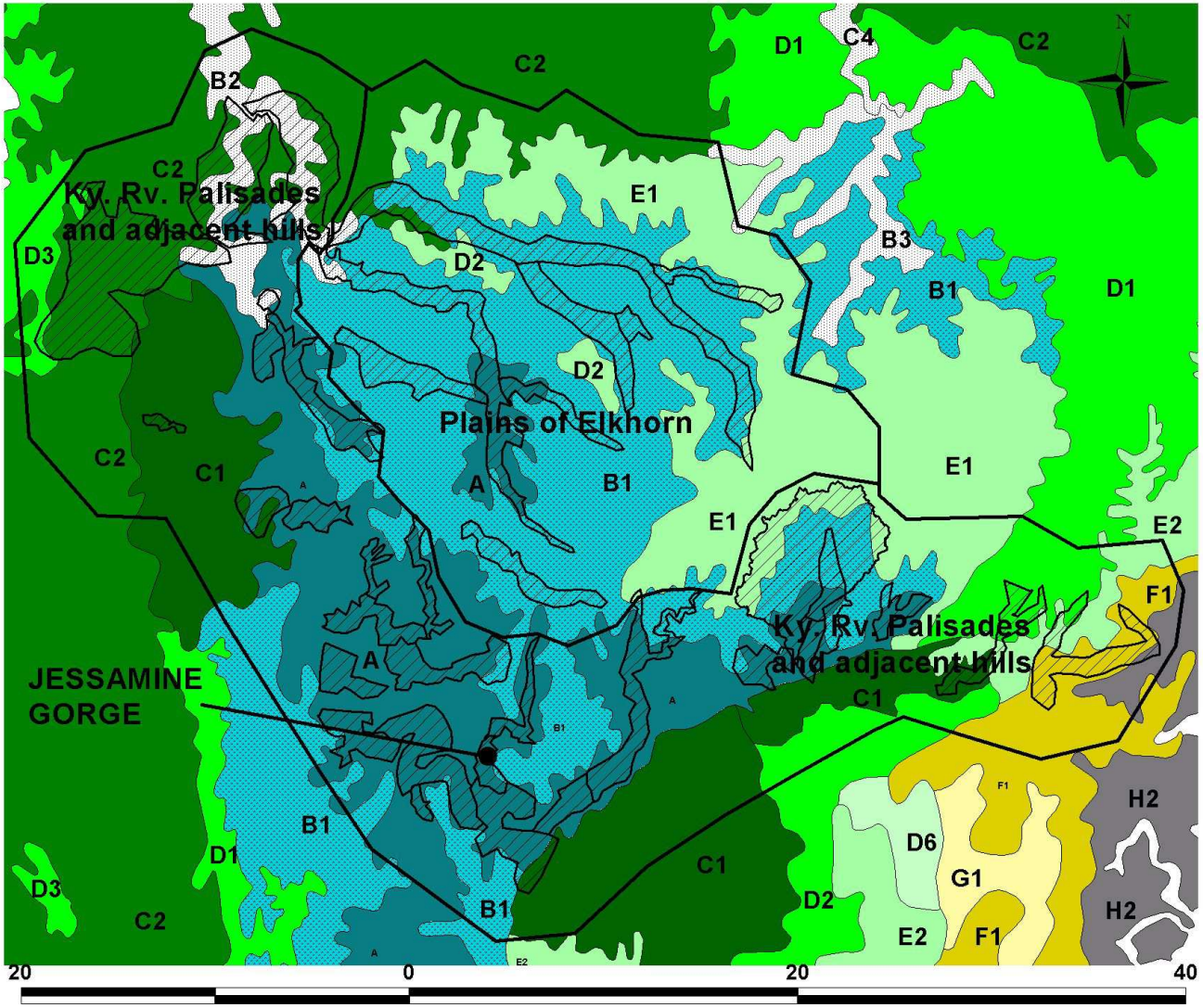
Figure 1 (next two pages). Kentucky River Palisades, showing location of site in relation to: (a) Landtype Associations (LTAs); and (b) overall land use.

Figure 2 (third page). Jessamine Gorge and adjacent land; showing location of tracts acquired by Jessamine County from The Nature Conservancy (previously King/Luddy and Reed I/II). Note that the Bruner tract is still owned by TNC.

Kentucky River Palisades and Elkhorn Plains: Land Type Associations



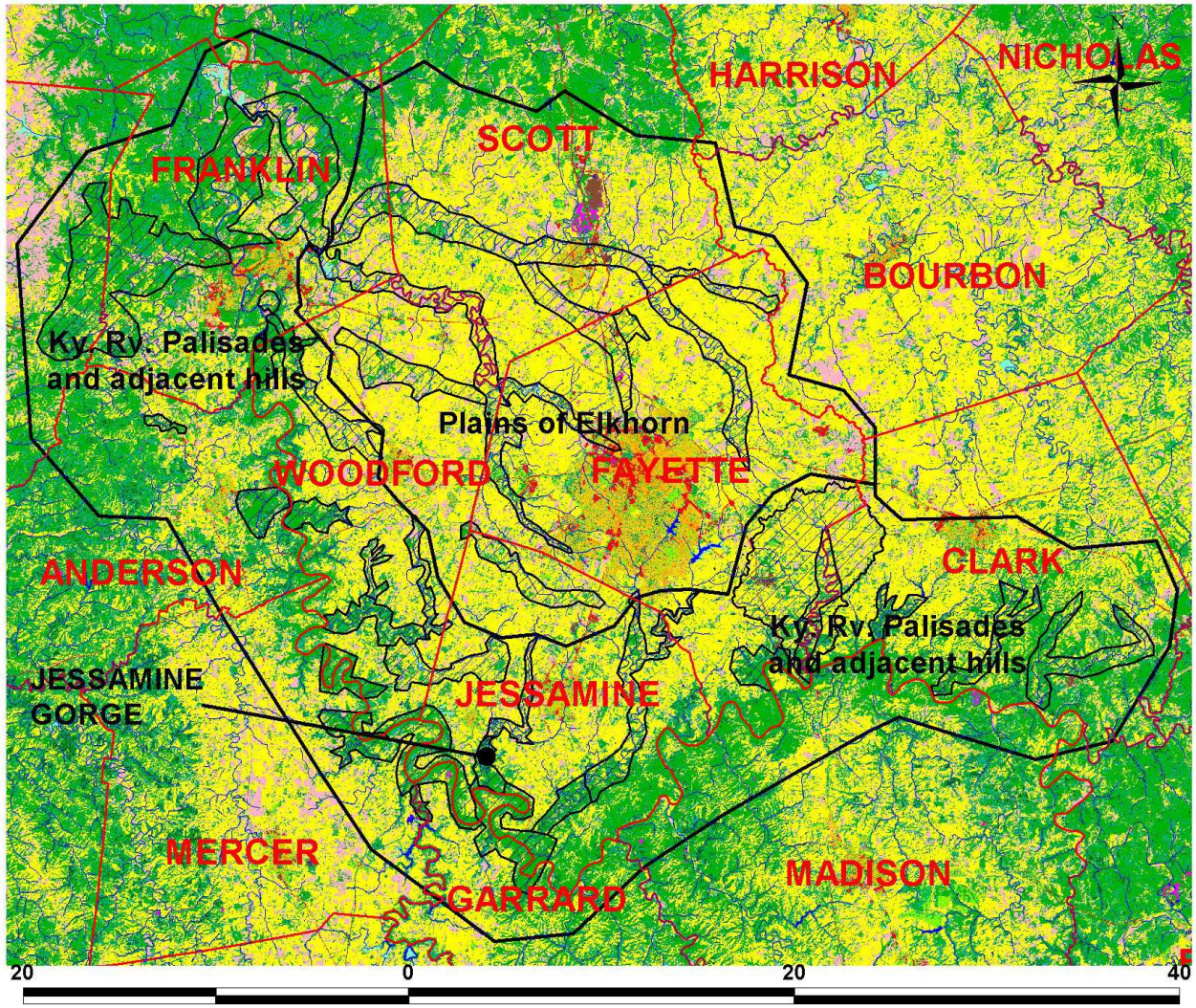
Inner Bluegrass Region
Focal Areas for Conservation

Land Type Associations

- A. Inner Bluegrass Ravines
- B1. Inner Bluegrass Plains
- B2. Inner Bluegrass Valleys (Elkhorn)
- B3. Inner Bluegrass Valleys (Licking)
- C1. Garrard Siltstone Hills
- C2. Eden Shale Hills
- C3. Lower Kentucky Valley
- C4. Lower Licking Valley
- D1. E Bluegrass-Eden Shale Hills
- D2. Eastern Bluegrass Hills
- D3. Western Bluegrass Hills
- D6. E Bluegrass-Damp Flats Transition
- E1. East-central Bluegrass Plain
- E2. Eastern Bluegrass Plains
- F1. Dolomitic Foothills
- G1. Eastern Foothill Flats
- H1. Black shale-siltstone Knobs
- H2. Black shale-dolomite Knobs

The Palisades are mapped here with adjacent hilly land that have long-term potential for wilder conditions, native flora and fauna. Most land is currently farmed or residential, but there is increasing interest in further conservation around the farms and sudivisions.

Kentucky River Palisades and Elkhorn Plains: Land Use, Counties & Streams

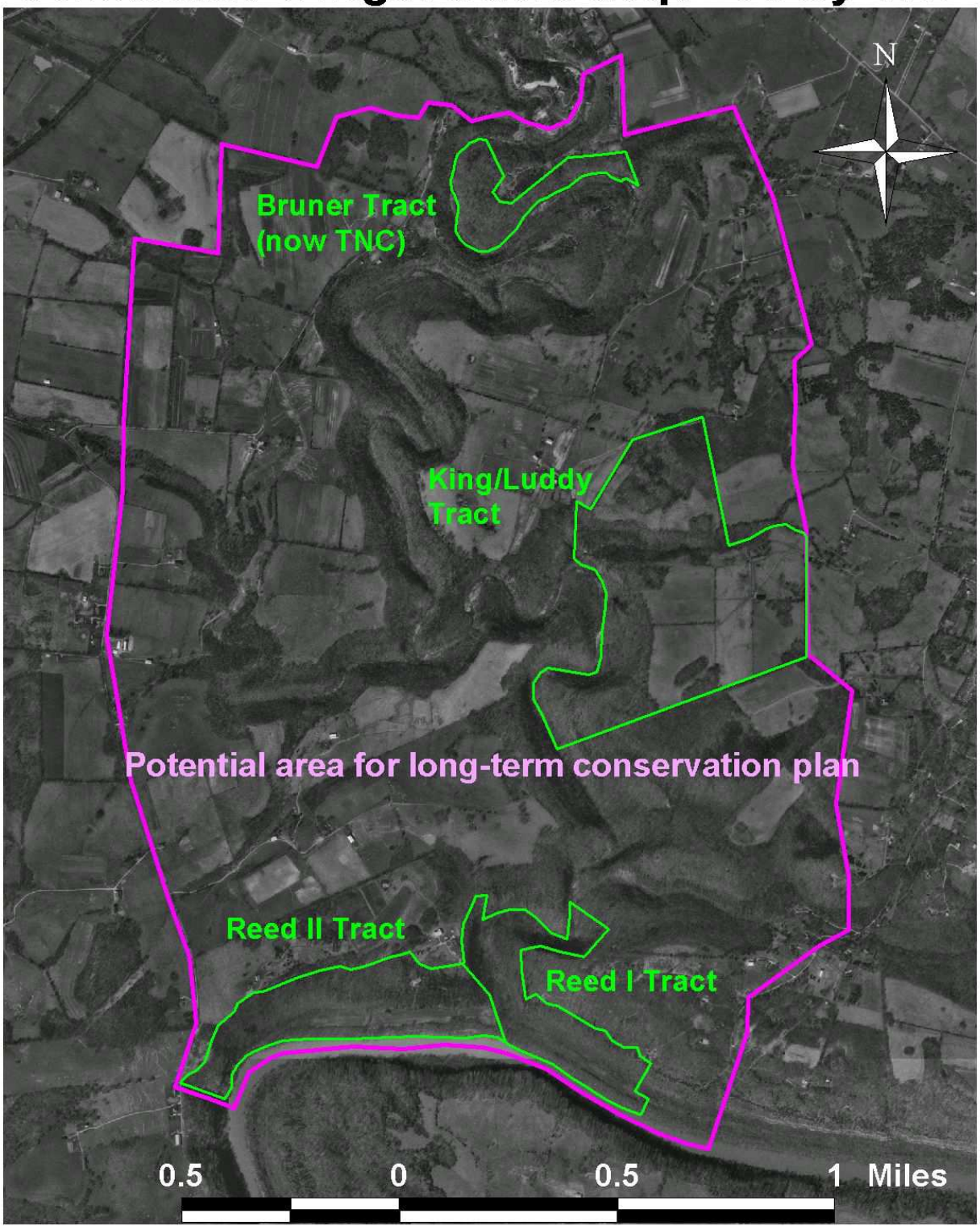


County Boundaries
Palisades and Elkhorn regions
Focal areas for conservation

Focal areas for conservation include stream corridors and watershed units (such as Boone Creek and parts of Benson Creek) where there is potential for a coordinated effort to improve the general environmental quality, in addition to strict protection and restoration of woodland. See individual site plans for details of exactly what lands are most appropriate for conservation of native vegetation and wildlife.

Color code for land uses:
blue = creeks/rivers/lakes
green = woodland
yellow = grassland
pink = cropland
orange/red = urban/suburban
brown/purple = industrial or other intensive uses

Jessamine Gorge: tracts acquired by TNC



Site Context: Land Use History

Before settlement during 1770-1800, it is likely that Jessamine Gorge and adjacent uplands were largely forested. There has not yet been an intensive study of early land surveys in this section of the county. But a broad regional review of early survey data and early written descriptions of the landscape indicate that most the land along the Palisades was well-forested, with sugar maples predominating on mesic sites, or beech along terraces of the river; plus much oak on drier sites, including white oak as well as chinquapin oak on adjacent hills (Campbell 1989). Within Jessamine County, the few early descriptions suggest relatively dense forest in at least the southern half of the county; see especially the journal of Joel Watkins (1789) and other material used for the history of Young & Duncan (1898). Even further north, deep woods with much sugar maple appear to have been present in several areas, though more disturbed in places leading to locally abundant walnut, cherry, locusts and bur oak; for example, see accounts of David Meade at his "Chaumiére du Prairie" (1796-98; quoted in Appendix Two below).

Modern remnants of natural vegetation, and selected indicator species, can provide further clues. As detailed below (under Flora), there are virtually no conservative indicators of formerly open conditions in Jessamine Gorge or nearby. There are however several patches of cane on uplands on the west side, which may be remnants of old broad pathways through the forest down to Handys Bend and the High Bridge area, in order to cross the river there. Thickets of goose plum are close to cane on Menter Branch between Wilmore and High Bridge (Ron Houp's place); that species could have been associated with pre-Columbian native settlement. There are a few records of the interesting native mustard, "bladder-pod" (*Lesquerella globosa*): near Chrisman's Cave in Jessamine Gorge and along Jessamine Station Road (see notes on rare species below). That globally imperiled species appears to be a remnant of trampled or eroded soils in more open woodland of the pre-Columbian landscape. Bur oak, which is probably a remnant of more open woodlands in the region, is notably absent from the southern half of Jessamine County.

The earliest settlements in Jessamine County occurred mostly around springs and farmable bottoms further north, but by 1800 farms were established throughout most of the county. Munsell's (1818) map of Kentucky shows mills along Jessamine Creek, with a cluster of three between the head of the main gorge and the mouth of Town Branch; these have been named Chrisman Mill, Glass Mill, and the one at forks unknown [here]. A frequent general route of travel across the county appears to have led from the mouth of Hickman Creek through this area with mills towards Versailles and Frankfort. Munsell's map shows this route crossing what became US 27 at the junction with Rt. 1268, but thereafter there is rather little correspondence with modern roads. This route may well have been an ancient pathway for people and larger animals, from southeast to northwest across central Kentucky.

Farming has predominated in the area until now, except for abandonment in some particular circumstances. The river bottoms have been generally farmed, with difficult rocky roads down to them in some cases, as in those bottoms east and west of Jessamine Creek. But, especially after the big flood of 1974, such enterprises dwindled or halted and all of the bottomland adjacent Jessamine Creek now has various stages of regrowth. On uplands, thinner

rocky soils became abandoned in some cases, and thickets of red cedar have often taken hold, to be followed in some cases by ashes, elms and other trees. These stands seem to date mostly from after the 1930s. On deeper or damper soils, locusts, cherry, walnut and hackberry tend to dominant in younger stands, rather than red cedar. There is much less abandonment on such soils, but fencerows do tend to accumulate these tree species.

More recently, since the 1980s, there has been some subdivision of farms for residential use. On the east side of Jessamine Gorge, several large lots (ca. 10-50 acres) were built on initially and then a clustered subdivision between Leatherwood Creek and Overstreet Creek.

Figure 4. Jessamine Gorge and its farmed context [group 2]
(a) Lower gorge; showing wide range of habitats in small distances, from streamside to clifftop.
(b) Typical upland scene; hayfield on part of the old Overstreet Farm (King/Luddy Tract).
(c) Subdivision off McGee Lane; developed by Marvin Lear and family.
(d) Old abandoned farmhouse on the Overstreet Farm; with large basswoods retained in yard.
(e) Extension of McGree Lane down onto the river bottom; abandoned in 1970s.
(f) Abandoned spraying equipment on toeslope in lower gorge.
(g) Abandoned barn on river bottom; on terrace now dominated by boxelder and nettle.
(h) Adjacent river bank, showing three current levels; farming abandoned after floods in 1970s.

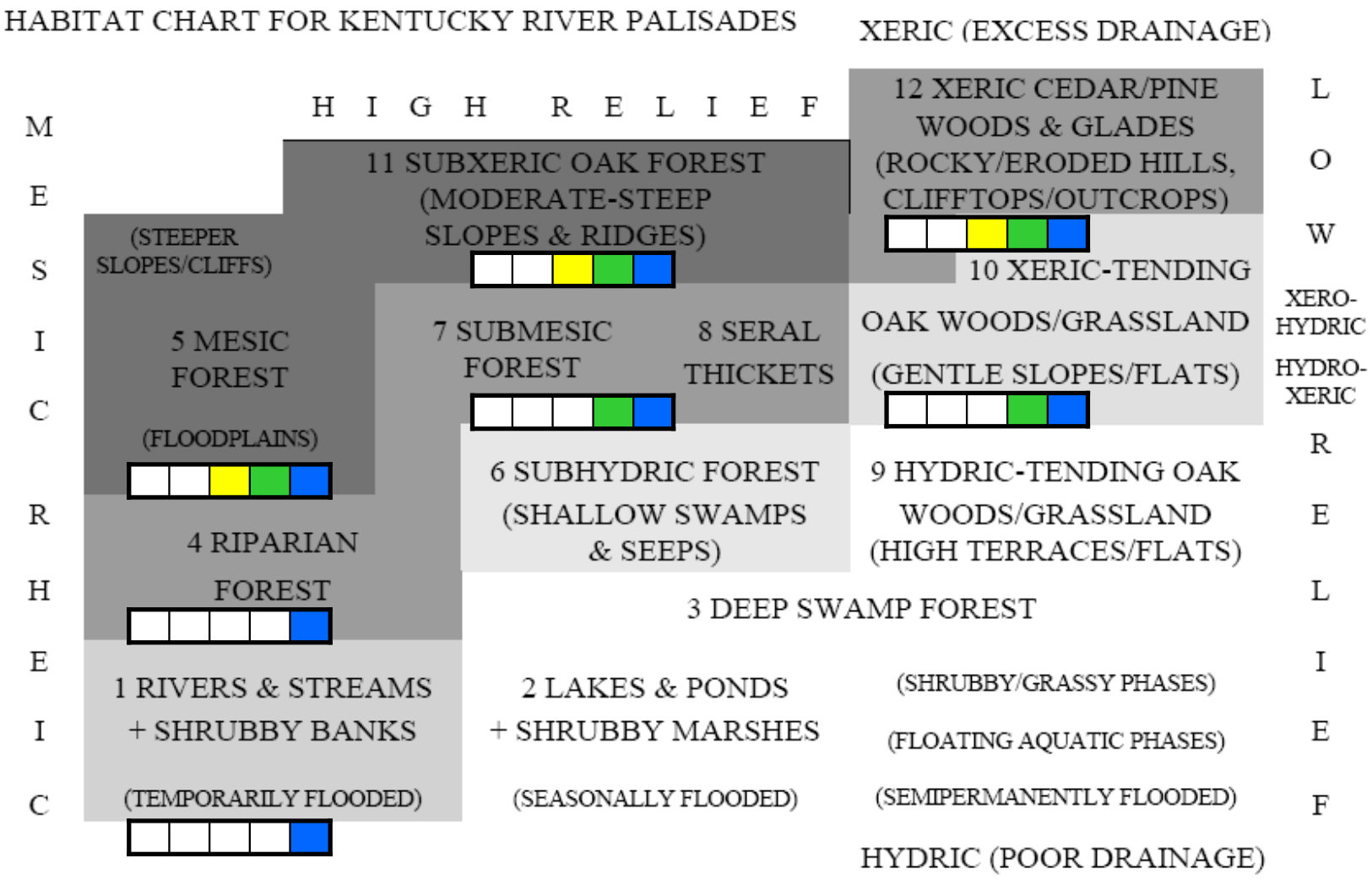
Figure 4a. Lower gorge; showing diversee habitats in small distances; streamside to clifftop.

Figure 4b. Typical upland hayfield on part of the old Overstreet Farm (King/Luddy Tract).
Figure 4c. Subdivision off McGee Lane; developed by Marvin Lear and family.

Figure 3d. Abandoned farmhouse on the Overstreet Farm, with large basswood retained in yard. Basswood trees provide much honey for bees, as well as rapid growth of deep shade.

Figure 4e. Extension of McGree Lane down onto the river bottom; abandoned in 1970s.
Figure 4f. Abandoned spraying equipment on toeslope in lower gorge.

Figure 4g. Old barn on river terrace now dominated by boxelder; abandoned after 1970s floods.
Figure 4h. River bank, showing three current levels; silver maple dominant at middle level.



Dark grey = widespread classes (each ca. 20-80% of land); medium grey = minor classes (each ca. 5-20% of land); light grey = rare classes (each ca. 1-5% of land). Color bars show typical pH range: red = ca. 4-5.5; yellow = ca. 5-6; blue = ca. 6.5-7

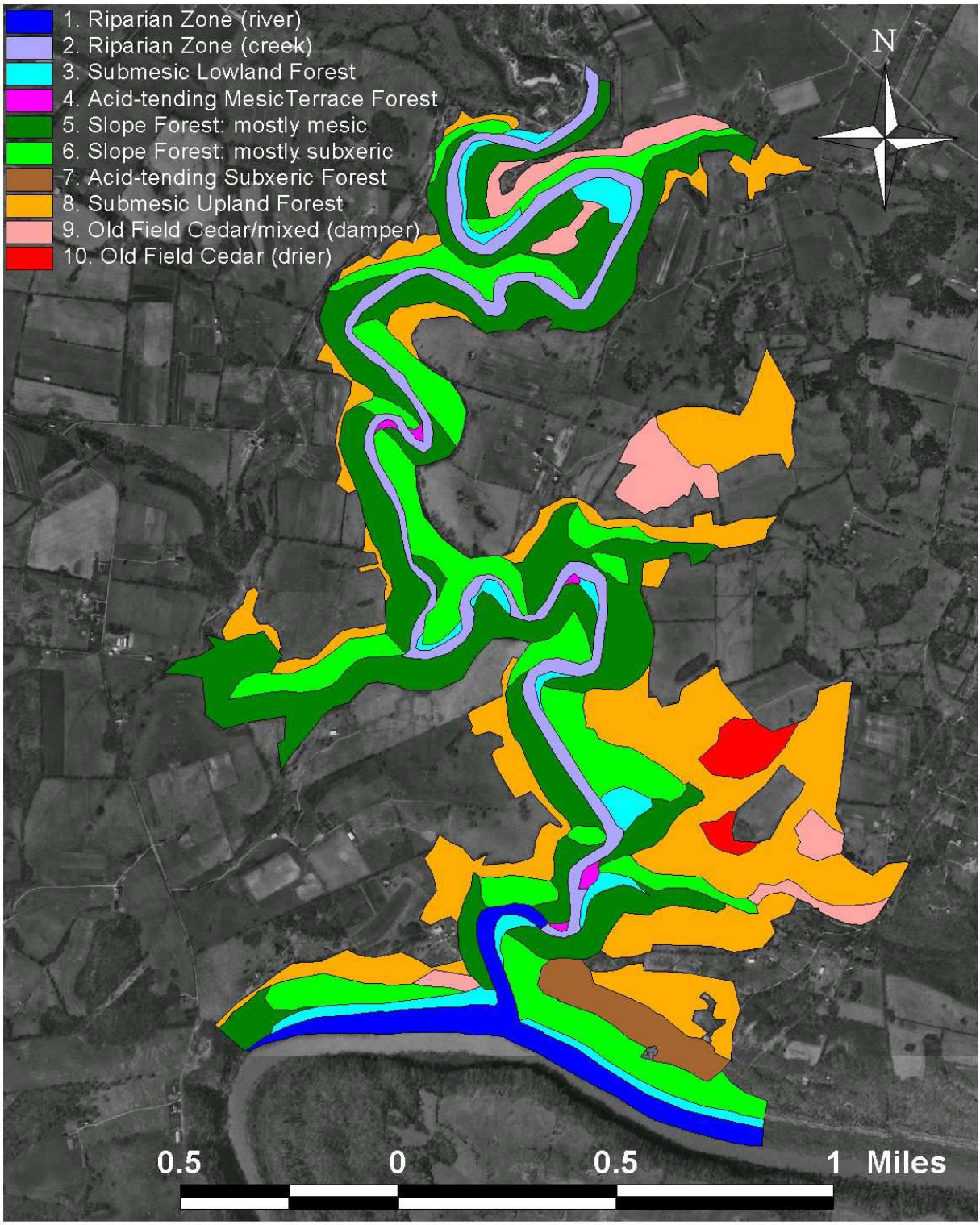
Figure 5 [previous page]. Summary diagram of natural (presettlement) habitats along the Kentucky River Palisades. Note that classes are artificial concepts for practical application; they intergrade extensively, and the exact boundaries, angles and edges in this diagram are for convenience rather than close representations of reality. Numbers before names of classes are the initial JC codes under the broader descriptions below.

Figure 6 [following page]. Forest Types.

Relationship of these mapping units to the descriptions of compositional types in this report is as follows.

1. Riparian forest (river): see A and B in text; with silver maple along river banks.
2. Riparian forest (creek): see A and B in text; without silver maple; with transitions to H(i).
3. Submesic lowland forest: see H(i) in text; with transitions to C etc.
4. Acid-tendiding mesic terrace forest; see C in text; with transitions to Detc.
5. Slope forest (mostly mesic): see D in text mostly but also much intermixing with E.
6. Slope forest (mostly subxeric): see E in text mostly; F along cliffs; also much intermixed D.
7. Acid-tending subxeric forest: see G; with transitions to E and H(ii).
8. Submesic upland forest: see H(ii) mostly.
9. Old field cedar/mixed forest: see H(iii) mostly.
10. Old field cedar forest: see H(iv) mostly.

Jessamine Gorge Forest Types (mapping units)



Outline of Habitat Types

The following descriptions are based on field work from throughout Jessamine Gorge, but virtually all habitats are well represented on the King/Luddy and Reed tracts. Special features of those tracts are noted below, and the photos also illustrate them. After the type's general name below, there are lists of the 'JC' codes used in the Geographic Information System associated with this report; plus the closest matches to 'KN' types of Kentucky's Natural Heritage Program (see website of Ky. State Nature Preserves website); plus the 'NV' types of the National Vegetation Classification (best match to 'CEGL' numbers on website of NatureServe). See Appendix Four for more details of species composition. Figure 5 illustrates the general scheme of gradients between habitats, and Figures 6-8 provides photos of varied examples for different habitats.

A. Open stream corridor: aquatic and rheophytic zones
[JC 01.E; KN typic gravel/cobble bar; NV 4286]
Aquatic vegetation within Jessamine Creek consists mostly of water-willow beds (*Justicia americana*). Patches of lizard-tail (*Saururus cernuus*) also occur where the current is slower. Fresh alluvial deposits on banks are colonized by several annuals, including *Polygonum* spp., *Impatiens capensis, Pilea pumila* and *Bidens* spp. Other characteristic species along the cobbly or rocky banks have been found in small numbers, but not necessarily on these tracts: e.g. *Hypericum sphaerocarpum* (old collection from below Chrisman's Cave of M.E. Wharton at Univ. of Ky.). In a few spots, a few characteristic riparian shrubs occur: *Cephalanthus occidentalis, Cornus obliqua, Hamamelis virginiana, Salix carolinianum* and *Viburnum dentatum*.

B. Riparian woods: including transitions to mesic/submesic terraces.
[JC 04.E; KN riparian forest; NV 4690, 6217]
This habitat occurs on frequently flooded banks and terraces. It is mostly dominated by boxelder; but this is replaced by silver maple on low damp muddy banks below the lowest riffle of Jessamine Creek, and along most of the river banks. Other common trees include sycamore, white elm and a little green ash; plus walnut, hackberry, red elm and locally buckeyes on higher ground or toe-slope transitions to mesic (3) or submesic forest (6). Shrubs are scattered at low density: especially elder and spicebush; also pawpaw, ironwood and hydrangea at upper levels.

Ground vegetation in less disturbed shady woods it locally dominated by wood-nettle (*Laportea canadensis*), which has been largely removed in formerly farmed areas and is relatively slow to recover. Including formerly farmed areas, other locally frequent species are pea-vine (*Amphicarpaea bracteata*), lowland asters (*Aster lanceolatus* & *ontarionis* [= *Symphyotrichum l.* & o.]), wild rye (*Elymus macgregorii*), white snakeroot (*Eupatorium rugosum* [= *Ageratina altissima*], jewel-weeds (especially *Impatiens pallida* in shade), Japanese grass (*Microstegium vimineum*), rich weed (*Pilea pumila*), knotweeds (especially *Polygonum longisetum*), and violets (*Viola papilionacea, V. striata*). Less common—but characteristic—species include *Cicuta maculata, Lysimachia nummularia, Phlox paniculata* and *Rudbeckia laciniata*. Mesic or submesic transitions have additional species: e.g. *Hydrophyllum* spp., *Osmorhiza* spp., *Valeriana pauciflora, Valerianella radiata* and some uncommon to rare mints

(*Meehania cordata, Monarda "serotina", Stachys tenuifolia, Synandra hispidula*). Some areas are relatively open due to damage from flooding at lower levels, or from past farming at higher levels; *Aster* spp. (especially *lanceolatus*) and *Solidago* spp. (*gigantea* and *altissima*) are locally dominant in such areas, together with more typical old field species and common weeds (especially *Ambrosia trifida*); see further notes below (7).

C. Mesic woods on slopes: including transitions to subxeric/submesic woods.
[JC 05.E; KN calcareous mesophytic forest; NV 2062, 6471, 8412]
This habitat occurs widely on lower slopes, and more locally on upper slopes, especially with northern or eastern aspect. It is mostly dominated by sugar maple or locally black maple, at least in the subcanopy. Other common trees, at least locally, include buckeyes (both species), basswood, walnut, hackberry, elms, ashes (blue* and white*) and oaks: northern red (often codominant on N/E aspects), shumard* (especially on gentler toe-slopes and transitions to uplands), and chinquapin* (especially in transitions to subxeric woods on drier slopes). The vegetation grades into subxeric or submesic forest, sometimes with distinct shifts in the ground vegetation; species marked with asterisks (*) are more common in these transitions. On drier or upper slopes ashes, oaks and hickories are more common; see also notes below under subxeric woods on gentler slopes above cliffs (6).

Small tree species are generally infrequent, with only scattered hornbeam (lower transitions), hophornbeam (drier transitions), pawpaw (lower) and dogwood (upper). However, some shrubs are locally common: spicebush (on lower slopes), hydrangea (on rocky lower slopes), bladdernut (on steeper rocky slopes) and, unfortunately, Amur bush-honeysuckle* (especially on upper slopes or in more disturbed woods). The small shrub, wild gooseberry (*Ribes cynosbati*) is scattered on rocks.

Ground vegetation is highly varied, with colonies of several locally common species. These include wild ginger (*Asarum canadense*), Short's aster (*Aster shortii*)*, sedges (especially *Carex albursina, grisea*, jamesii, oligocarpa*, rosea**), woodland brome-grass (*Bromus pubescens*), wild hyacinth (*Camassia scilloides*), beakgrain grass (*Diarrhena americana*)*, *Dicentra* spp., bottlebrush grass (*Elymus hystrix*)*, trout-lilies (*Erythronium* spp.), waterleafs (especially *Hydrophyllum macrophyllum*), wood fescue (*Festuca subverticillata = F. obtusa*), bedstraws (*Galium aparine*, circaezans*), twinleaf (*Jeffersonia diphylla*)*, bears-foot (*Polymnia canadensis*)*, bloodroot (*Sanguinaria canadensis*), gregarious sanicle (*Sanicula odorata = S. gregaria*)*, false Solomon's seal (*Smilacina racemosa*), broad-leaved spiderwort (*Tradescantia subaspera*) and cornsalad (*Valerianella radiata*). The biennial *Polymnia* and annual *Valerianella* are especially abundant on low south/west-facing slopes, where perhaps promoted by damp sunny conditions in late winter and early spring; some graminoids may also be favored on such sites (*Bromus, Diarrhena, Elymus*). Less widespread or abundant in mesic woods, but still characteristic, are *Polystichum acrostichoides, Cystopteris protrusa*; *Dentaria laciniata, Enemion biternatum, Euonymus obovatus, Hepatica acutiloba, Mertensia virginica, Osmorhiza claytonii, Phacelia bipinnatifida, Prenanthes altissima, Saxifraga virginiensis, Sedum ternatum, Solidago flexicaulis, Stellaria corei, Thaspium barbinode, Viola sororia*; *Arisaema triphyllum, Brachyelytrum erectum, Trillium sessile.*

D. Mesic woods on terraces.
[JC 05.D.1; KN cf. floodplain ridge/terrace forest; NV 5014, 7321]
This variant formerly occurred widely on bottoms along the river and its major tributaries (on the Elk soil series), but it is now highly restricted in the region. At Jessamine Gorge, there are only a few sites with various tendencies towards this type, covering up to 5000 m^2, especially on the convex sides of bends in the creek. The best example is at the mouth of Leatherwood Creek, just north of the Reed Tracts; here soil is distinctly acid (pH ca. 5), and lower fertility is indicated for K and N levels (Campbell & Meijer 1989). The woody species on these small terraces are not much different from slopes, and sugar maple is locally dominant. However, they are typified by small groups of beech trees (with up to 5-10 trees of ca. 60-120 cm dbh) and tulip poplar, plus occasional white oak and sassafras. Spicebush, pawpaw and ironwood are typical in the understory. Ground vegetation includes a distinctive local abundance of mayapple (*Podophyllum*), woodland phlox (*P. divaricata*) and Jacob's ladder (*Polemonium*); these are less common on more calcareous slopes. Other frequent species include *Aster shortii, Carex rosea, Claytonia virginica, Dentaria laciniata, Enemion biternatum, Erythronium americanum, Galium concinnum, Hepatica americana, Parthenocissus quinquefolius, Rhus radicans, Smilacina racemosa, Solidago flexicaulis, Stellaria corei*. Two distinctive mosses include *Aulacomnium heterostichum* and *Bartramia pomiformis*.

E. Subxeric woods on steep slopes; including much cliff-line.
[JC 11.E; KN calcareous subxeric forest; NV 6162, 4267, 8442]
This occurs on or near cliffs with shallow rocky soils, especially with southern or western aspects. Blue ash and chinquapin oak are generally common to dominant. Other frequent trees include red cedar (especially on more open clifftops and in old fields), sugar maple (especially in the understory and in the canopy on deeper soils), shumard oak (especially on gentler slopes), buckeyes (especially *glabra*), rock elm (restricted to steeper slopes), and yellow-wood (local along cliffs, especially N/E-facing). On deeper soils, especially with farming history, there is often more black walnut, hackberry, cherry, red elm and white ash (locally replacing blue ash).

Scattered to locally frequent small tree species include *Cercis canadensis, Ostrya virginiana* (especially on gentler slopes above cliffs), *Prunus americana* (especially in disturbed areas), *Rhamnus caroliniana* and *Viburnum rufidulum*. Shrubs include, unfortunately, much Amur bush-honeysuckle (Lonicera maackii, especially on upper slopes in transitions to farmland), and a little *Lonicera standishii* (persistent and increasing along cliffs). But there are also diverse natives such as bladder-nut (at mid-slope in transitions to mesic woods below), aromatic sumac (especially clifftops), wafer-ash (especially clifftops), ninebark (*Physocarpus*, clifftops), upland rose (*Rosa carolina*, especially ledges set back from cliffs), coral-berry (especially in more disturbed areas), *Viburnum rafinesquianum* (clifftops), and prickly ash (clifftops). Diverse vines are also present, notably crossvine (*Bignonia capreolata*) and *Smilax bona-nox*.

Ground vegetation includes diverse mixtures of species, reflecting the great variety of micro-habitats. See also notes under “mesic woods” (3), which intergrades extensive with subxeric woods. The following provisionally organized groups of species are often muddled up

on the ground, but are suggested here for further research. Particularly common to locally abundant species areas are in **bold**.

(i) Rocky slopes in moderate to relatively deep shade: ***Aster shortii***, *Arisaema triphyllum, Asplenium platyneuron, Carex albursina, C. communus, C. laxiflora,* ***Diarrhena americana***, *Dioscorea quaternata,* ***Elymus hystrix***, *Galium circaezans,* ***Jeffersonia diphylla***, ***Muhlenbergia sobolifera***, *Polygonatum biflorum,* ***Polymnia canadensis*** (especially mesic transitions), *Senecio obovatus, Solidago ulmifolia, Thalictrum dioicum, Triosteum aurantiacum, Uvularia perfoliata, Viola subsinuata* ("*palmata*" auct.).
(ii) Boulders, clifftops and nearby ledges, generally with sufficient soil (ca. 1-5 cm) or shade to avoid extreme xeric conditions (see notes under d): *Aquilegia canadensis, Boechera laevigata* (= *Arabis l.*), ***Carex eburnea***, *Cerastium velutinum*, Clematis cf. viorna, Nothoscordium bivalve, Phlox bifida*, Pleiopeltis polypodioides, Silene caroliniana, Solidago sphacelata, Thaspium barbinode* (or perhaps transitions to *chapmanii*), *Woodsia obtusa*; *Elymus svensonii, Melica nitens* Schizachne purpurascens*.* Asterisks (*) indicate species restricted to narrow points; see below (5) and notes on rare species (*Paxistima canbyi, Trillium nivale, Viola walteri*).
(iii) Cliff-faces and crevices: *Asplenium* spp. (*ruta-muraria, resiliens*), *Draba ramosissima,* ***Heuchera macrorhiza***, *Pellaea atropurpurea.*
(iv) Extremely xeric ledges with little soil (< 1 cm) or shade: *Allium cernuum,* ***Arenaria patula***, ***Aster oblongifolius***, *Houstonia* spp. (especially *nigricans*), ***Panicum flexile***, *Penstemon hirsutus, Sedum pulchellum.*
(v) Ledges and gentler slopes with more weathered soil, especially set back from cliff-tops: *Carex pensylvanica, Danthonia spicata, Dichanthelium boscii, Helianthus* spp. (especially *microcephalus*), *Oxalis violacea, Poa cuspidata* (esp. N/E-facing), *Silene virginica, Stellaria pubera.*
(vi) More disturbed areas on deeper soils, especially along trails or in transitions to farmland: *Blephilia ciliata, Bromus pubescens, Corydalis flavula, Delphinium tricorne, Lespedeza frutescens ("violacea" auct.), Phacelia purshii, Salvia lyrata.*

F. Xeric Points and Cliff-tops.
[JC 12.E; KN red-cedar oak forest; NV 4271]
This is a local segregate of "subxeric woods" that is worth recognizing for some purposes. There are about 20 distinct "points" in Jessamine Gorge (Figure...), usually leading down to bends in the creek or to mouths of tributaries. Soils and vegetation on these sites are highly heterogeneous, especially where xeric cliff-tops overlie steep north-facing slopes. Some provisional data collected by Campbell & Meijer (1989) suggested that phosphorous levels can be usually low, compared to typical slopes; see also Bryant (1973). Woody composition is similar to typical slopes, except that red cedar is more abundant; also, shrubby species (as listed under 4) are more common, forming distinctive zones at some sites. The cliff-top flora listed above (especially under 4b) is generally diverse and includes rare species that are generally absent on more regular, straighter cliff-tops elsewhere.

Figure 7a. Riparian zone along lower riffles of creek; sycamores and boxelders line stream.
Figure 7b. Low terrace along creek's mouth; *Aster lanceolatus* dominant under thin boxelder.

Figure 7c. Transition from river-bottom to toeslope; mix of *Laportea* and *Elymus macgregorii*.
Figure 7d. Sinkhole on uplands with submesic woodland; ground dominated by *E. macgregorii*.


Figure 7e (left). Toeslope with young mesic-submesic woods in old field; common *Hydrophyllum canadensis* and *Sanicula odorata*.
Figure 7f (right). Mesic woods: transition from lower slope with *Polymnia canadensis* to drier slope with *Delphinium tricorne*. *P.c.* is an annual or biennial most common in transitions from mesic to subxeric conditions; in dry years, seedlings often fail to establish.

Figure 7g. Mesic upper slope; maple, basswood and white ash, with slippery elm in understory.
Figure 7h. Mid-slope transition; maple, basswood and white ash to chinquapin oak and blue ash.

Figure 7i. Subxeric woods near cliffs; local dominant *Muhlenbergia sobolifera* on ground.
Figure 7j. Subxeric-mesic woods; locally dominant *Diarrhena* in grassy ground-vegetation.

Figure 7k. Small point near top of lead down from Reed Tract west; red-cedar local dominant.

Figure 7l. Wafer-ash (citrus family); a clonally-spreading small tree of more open clifftops.
Figure 7m. *Minuartia patula* and *Sedum pulchellum*; annuals typical of thin soil on outcrops.

G. Subxeric woods on gentler slopes set back from cliffs.
[JC 11.D; KN transition to acidic subxeric forest; NV 4793, 7240, 6216, 7699]
In these areas, especially the upper fringe of woods along the transition to fields, there are local occurrences of species that are indicative of more acid or infertile soils, such as beech, tulip poplar, white oak, black oak, pignut hickory, mockernut hickory, sassafras and persimmon. In places, there are transitions to subxeric forest that may have been locally dominated by white oak before settlement, as in the Scott's Grove and Camp Nelson area further east. However, most of the land has been cleared, and disturbance in remnants has enhanced a tendency to submesic conditions. The best example along Jessamine Creek is ca. 30-50 acres on uplands between its mouth and the end of McGee Lane, mostly outside the tracts focused on in this report.

In better stands, canopy trees are ca. 30-50 cm dbh, with some up to 8 dm (especially shumard oak). More distinctive areas are dominated by varied oaks: chinquapin oak, white oak (at least locally frequent), shumard oak and northern red oak. Hickories include shagbark (locally frequent) and scattered pignut (or their apparent hybrid "ovalis"). Ashes, blue and white, are locally frequent, with blue ash common in some understories. Sugar maple is also common but often largely restricted to the understory. Smaller woody species are generally not common, but include hophornbeam and upland rose. Amur bush honeysuckle is infrequent in more mature woods, and seems to be limited by shade and deer-browsing. Ground vegetation is generally thin in the shade, especially where oak litter is accumulated, without pronounced dominants. Typical species include relatively frequent *Aster shortii*, *Carex* spp. (?pensylvanica, hitchcockiana, ?*timida*), *Danthonia spicata, Diarrhena americana, Hybanthus concolor, Oxalis violacea, Podophyllum peltatum,* ?*Polymnia canadensis, Prenanthes altissima, Solidago ulmifolia, Tradescantia virginiana, Viola triloba*. Less frequent species are also distinctive, such as *Conopholis americana, Cynoglossum virginianum, Dasystoma macrophylla, Desmodium rotundifolium, Eupatorium purpureum, Helianthus* spp. (*divaricatus, hirsutus, microcephalus*), *Hydrastis canadensis, Lespedeza* (*frutescens, intermedia, procumbens*), *Paronychia canadensis, Potentilla simplex, Rudbeckia tenax* (in openings), *Sphenopholis nitida*.

H. Submesic woods and thickets:
[JC 07.E/D.1/2; KN cf. walnut-buckeye-cane forest; NV cf. 4437, 5035]
This type of woods occurs in various transitions from deeper woods on protected slopes, usually with abundant sugar maple, to areas that have had more history of cutting, grazing or other disturbance. Broadly defined, it includes young woods and thickets with locally abundant locusts (especially old pastures), walnut, hackberry, white ash (especially upper slopes) and red cedar (especially on drier soils). Two variants could be distinguished along Jessamine Creek:
(a) on lowlands, especially higher terraces along the river;
(b) on uplands, especially around swales and headwaters before cutting down into main gorge.
Typical trees in relatively mature examples include frequent shumard oak, bitternut hickory, white ash (especially young upland woods), red elm (locally common in understory), hackberry, Ohio buckeye (especially lower areas), and sugar or black maple (locally abundant, at least in understories). Several other species can occur, especially in transitions to other types. Smaller woody species in more disturbed woods include locally frequent multiflora rose, Amur bush-honeysuckle and coral-berry (especially in more recently grazed woods); Japanese honeysuckle is

also locally extensive. In transitions to deeper woods, spicebush and pawpaw are locally common.

Ground vegetation is varied, including locally common garlic-mustard (*Alliaria petiolata*), pea-vine (*Amphicarpaea bracteata*, at least on lowlands), *Aster shortii*, assorted sedges (*Carex*: especially *blanda, grisea, jamesii, sparganioides*), wild chervil (*Chaerophyllum procumbens*), *Corydalis flavula*, wild-ryes (especially *Elymus macgregorii* in more mature woods), early fleabane (*Erigeron philadelphicus*), woodland fescue (*Festuca subverticillata*), bedstraw (*Galium aparine*), Japanese grass (*Microstegium vimineum*), Miami mist (*Phacelia purshii*), gregarious sanicle (*Sanicula odorata = gregaria*), corn-salad (*Valerianella radiata*), wing-stems (*Verbesina alternifolia, occidentalis, virginica*), and violets (*V. papilionacea, striata*). In deeper woods, or adjacent to deeper woods, several other species can be locally common: e.g. upland waterleaf (*Hydrophyllum macrophyllum*), wood-nettle (*Laportea*, in lower areas), sweet cicilies (*Osmorhiza* spp.), mayapple (*Podophyllum*), *Polymnia canadensis* (steeper slopes), broad-leaved spiderwort (*Tradescantia subaspera*, in lower areas). Many other species can occur in more open including common old field species (e.g. *Solidago altissima*).

Submesic woods with locally abundant walnut and hackberry are widespread on fertile soil in east-central North America, but because they are usually much disturbed and fragmented, they have not been recognized sufficiently as remnants from an original natural type. There is still no clear match in the National Vegetation Classification (but see "cane forest" variant). A review of modern and historical data is needed across the range of this type. Local historical research, especially associated with the Griffith Woods project (Harrison Co.), indicates that similar woods did occur before settlement, but with more elms (rather than hackberry) and locally abundant buckeye. A continental geographic review indicates that the type, broadly defined, is distributed as far west as Nebraska, where it often occurs in narrow strips between deeper woods on slopes (with northern red oak and basswood) and more open woods on lowlands (with much bur oak, local shrubs like roughleaf dogwood, and transitions to prairie).

For example, Steinauer & Rolfsmeier (2003) described woods of this type for Nebraska Species in their lowland walnut and bur oak forest (which they state could be combined) are listed in Table .., which indicates the high degree of similarity with woods in the Bluegrass region, including the strips of woods in Jessamine Gorge. The authors stated: "Some land managers have been led to believe these site represent "degraded" oak savannas and should be destructively managed to restore savanna conditions (although herbaceous dominants of savanna communities are rarely, if ever, present in these sites). It is believed that since these sites occur along permanent streams (now extremely downcut), that periodic spring flooding may have protected these sites from fire and allowed them to maintain forest species. Currently, no level, lowland open oak woodlands or savannas are known in Nebraska." Note also that a study in central Illinois, at the 325 acre Funk's Grove, showed that the open grown bur oaks here with stem diameter of 85-160 cm (dbh) were only 110-140 years old, dating from 30-70 years after settlement (Szafoni et al. 1994): "Indeed, the public land survey description for the 0.5 mile that passes through this bur oak stand reads "timber black walnut, ash"... Without the information supplied by these increment cores, the existence of a mesic forest at this location would have been misinterpreted in favor of an open bur oak savanna."

Table 2. Species listed by Steinauer & Rolfsmeier (2003) in Nebraska for their lowland walnut-hackberry-bur oak forest types (combining walnut segregate with CEGL 2052). Asterisked species (*) occur in the same type within the Bluegrass region, and those with two asterisks (**) occur in Jessamine Gorge.
Brackets [ ] indicate peripheral presence in Nebraska, with transitions in range or habitat.
Question marks (?) indicate the species is present in the Bluegrass region but there is historical uncertainty about its typical occurrence in the generalized Bluegrass walnut-hackberry-buckeye woods.

Large tree species
Juglans nigra#* (locally dominant and up to 30 m tall), *Carya cordiformis*#*
Celtis occidentalis#*, *Ulmus americana*#*, *U. rubra*#*, [*U. thomasii*?*], *Morus rubra*#*
Quercus macrocarpa# (cododominant with *Celtis* in more disturbed woods), [*Quercus rubra*?*]
Gymnocladus dioica#*, *Gleditsia triacanthos*#*
Fraxinus pennsylvanica#* (Nebraska is beyond range of *americana, quadrangulata*),
[*Tilia americana*?*], [*Populus deltoides*] [*Platanus occidentalis*#*]
Aesculus glabra#*, [*Acer saccharinum**]

Small tree species and shrubs
Small trees: [*Ostrya virginiana*#*] (Nebraska is beyond the range of *Carpinus*)
Large shrubs: *Cornus drummondii*#*, *Zanthoxylum americanum*#*, [*Viburnum lentago*]
Small shrubs: *Ribes missouriense*?* (locally abundant with walnut), *Symphoricarpos orbiculatus*#* (w/bur oak)

Vines
Woody: *Parthenocissus quinquefolia*#*, *Smilax hispida*#*, *Toxicodendron radicans*#*;
Non-woody: *Menispermum canadense*#*

Herbs (non-tubiflorous/asteroid)
Dicentra cucullaria#*, *Polygonum virginianum*#*, *Arabis dentata*?
Impatiens pallida#*, *Laportea canadensis*#*, *Urtica dioica* (*?).
*Erythronium albidum**#

Herbs (tubiflorous/asteroid)
Chaerophyllum procumbens#*, *Cryptotaenia canadensis*#*, *Osmorhiza longistylis*#*, *Sanicula odorata*#*
Ellisia nyctelea, *Hydrophyllum virginianum* ?*, *Galium aparine*#*,
Rudbeckia laciniata#*, *Verbesina alternifolia*#*, *Aster shortii*#*

Graminoids
Carex aggregata#*, *C. blanda*#*, *C. davisii**, *C. grisea*#*, *C. sprengelii*
Elymus macgregorii#*, *E. virginicus*#*, *Festuca subverticillata*#*, *Leersia virginica*#*,
Diarrhena obovata (Nebraska is beyond the range of vicariant relative, *D. americana*)

I. Old Field Cedar Forest.
[JC 12.E/D.3/4; KN cf. red-cedar-oak forest; NV]
This is detailed here, since it occurs mostly outside the gorge. Its composition is generally similar to submesic woods and thickets, but with more drought-tolerant species.

J. Fields.
[JC 10.E/D; KN n/a; NV n/a]
Hayfields and pastures surround most of the woods along Jessamine Gorge. These include several fields on the King/Luddy Tract; cropped fields also used to occur on bottoms of the Reed Tracts, but were abandoned in the 1970s after severe flooding. Hayfields on the King/Luddy tract are generally dominated by fescue and bluegrass. Other common species, at least locally, include orchard grass, timothy, sedges (especially *aggregata, blanda, molesta*), yarrow, black-eyed Susan (*Rudbeckia serotina*), clovers (especially *campestre*), wingstems (especially *virginica*), and smooth purple vetch. Fencerows and woodland edges tend to have species typical of "submesic woods and thickets" (as noted above under 6). Older fencerows, perhaps dating to early settlement, have locally common sugar maple, plus occasional chinquapin oak. More recent fencerows are usually dominated by white ash and cherry.

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Figure 8. Woods on poorer upland soils adjacent to the gorge [group 4]
(a) Subxeric oak-hickory woods on east side; locally frequent white oak and shagbark hickory.
(b) Patch of goldenseal (*Hydrastis*) in slightly mesic phase of (a), with sugar maple understory.
(c) Narrow-leaved spiderwort (*Tradescantia virginiana*); a characteristic species in (a).
(d) American Columbo (*Frasera*); a characteristic species in thin disturbed variants of (a).
(e) Grove of sassafras at edge of woods; a characteristic old-field species on less fertile soils.

Figure 9. Fields on uplands [group 5]
(a) Edge of old hayfield, with multiflora rose and hemlock (*Conium maculatum*).
(b) Bluegrass-dominated field, with patches of yarrow (*Achillea*) and vetch (*Vicia villosa*).
(c) *Carex molesta*, a native sedge locally common in older hayfields.
(d) Green milkweed (*Asclepias viridis*), an unpalatable species locally frequent in old pastures.

Figure 8a. Subxeric oak-hickory woods; locally frequent white oak and shagbark hickory.
Figure 8b. Patch of goldenseal in slightly mesic phase of (a), with sugar maple understory.


Figure 8d (left). American Columbo (*Frasera*); a characteristic species in thin disturbed variants of (a).
Figure 8e (right). Grove of sassafras at edge of woods; a characteristic old-field species on less fertile soils.


Figure 8e. Grove of sassafras at edge of woods; a characteristic old-field tree species on less fertile soils.


Figure 9a (left). Edge of old hayfield, with multiflora rose and hemlock (*Conium maculatum*).
Figure 9b (right). Bluegrass-dominated field, with patches of yarrow (*Achillea*) and vetch (*Vicia villosa*).

Figure 9c. *Carex molesta*, a native sedge locally common in older hayfields.
Figure 9d. Green milkweed (*Asclepias viridis*), an unpalatable species in some old pastures.

Annotated List of Flowering Plants & Ferns

Attached is the list of vascular plants known from Jessamine Gorge and adjacent lands; species specifically recorded from the King/Luddy and Reed tracts or nearby (within 100 yards) are indicated by "T" at left margin. In addition, all other species known from the Palisades region are listed, excluding infrequent weeds and aliens in fields and residential areas; species of ponds and Ky. Rv. oxbows, mostly downstream of the Palisades, are also excluded. Species noted as "expected" probably do occur in or near the Jessamine Gorge area (within a mile or so to east or west). Species noted as "possible" may occur in the Palisades, but there is relatively little chance that they occur in this particular locality. Nomenclature is generally “old-fashioned”, with broad genus concepts, largely following Fernald's (1950) “Gray’s Manual” and Wilson & Francis (2004). For recent changes coming into modern usage, see Jones' (2005) guide to the Kentucky Flora, Campbell & Medley (in preparation), and Weakley (in preparation).

About 610 species are known from Jessamine Gorge plus adjacent fields, with ca. 450 from the gorge itself. So far, 422 species have been recorded on the tracts surveyed for this report. Based on a thorough review of the Atlas, about 110 additional species can be expected in similar areas along the Palisades, plus up to about 120 species in peripheral habitats (including high terraces with more acid soils). Thus, the Jessamine Gorge area contains at least 70-85% of the total flora along the Palisades. All of these numbers include alien species, which comprise about a quarter in each case.

Biogeographic Components

There is a diverse mixture of biogeographic components in the flora of the Palisades. Most of the locally uncommon to rare species have largely northern or Appalachian ranges, in the following groups [*those found at Jessamine Gorge are indicated by asterisks]:
Northern (to upper mid-western): **Cerastium velutinum, *Lonicera dioica, Piptatherum racemosum, *Prunus virginiana, *Ribes missouriense, *Trillium nivale, *Schizachne purpurascens, *Ulmus thomasii*.

(a) Appalachian (widespread): **Aesculus flava, *Carex purpurifera, *Meehania cordata, *Aster divaricatus, *Iris cristata,*Poa cuspidata*.

(b) Appalachian (calcareous): **Draba ramosissima, *Paxistima canbyi, Solidago harrisii* [perhaps also *Phlox subulata* var. *australis*, as mapped by Wherry.]

(c) Appalachian-Ozarkian: **Cladrastis kentukea*.

(d) Only a few species have distinctly more southern ranges, reaching northern limits along or near the Kentucky River: **Cocculus caroliniana, *Melica mutica, Pachysandra proumbens, *Poa autumnalis, *Ulmus alata, *Viola walteri*.

An additional group of rare species, including most of the globally imperiled species, have ranges restricted to the Interior Low Plateaus (around central Kentucky and central

Tennessee) and, in some cases, other calcareous localities further west to the Ozarks and upper mid-west.

(e) ILP endemics: *Arabis perstellata, Calamintha glabella, *Elymus svensonii, *Lesquerella globosa, *Stellaria fontinalis*; except for *S. fontinalis* these are all concentrated in the lower Palisades section, especially around Franklin County. [The broad-leaved variant of *Houstonia nigricans* (cf. var. *rupestris*) might also be included here.]

(f) ILP-Ozarkian/mid-western: *Arabis dentata, Calamintha glabella, Lonicera reticulata, Phlox amplifolia, *Viburnum molle*; except for *V. molle*, these are mostly concentrated along the lower Palisades, around Franklin County.

In general, there is a strong dominance of species typical of base-rich soils, with pH ca. 6-7. However, there are concentrations of more acidophyllous species on terraces within the gorge, and on some gentler upland slopes or flats where soils may be partly derived from ancient high terrace deposits. The lower terraces have characteristic concentrations of beech (*Fagus*) and tulip-poplar (*Liriodendron*); see more detailed notes above on habitats (3B). The upper slopes and high terrace deposits have concentrations of white oaks (*Quercus alba*) and others trees of oak-hickory forests (e.g. *Q. velutina, Carya ovata, C. glabra*); see notes above on habitat (4C). Examples for these two groups of species are as follows, though they do overlap somewhat.

(1) Low terraces, toe-slopes, benches: *Aristolochia serpentaria, Dioscorea quaternata, Epifagus virginiana, Panax quinquefolius, Polystichum acrostichoides, Scutellaria elliptica, Vicia caroliniana*.

(2) Higher gentle slopes and ancient terraces (woods, thickets and fields): *Cynoglossum virginianum, Desmodium rotundifolium, Lespedeza intermedia, Lespedeza procumbens, Sassafras albidum, Spiranthes cernua, Spiranthes vernalis*.

The flora of the Palisades obviously includes species typical of a much wider range of habitats than those which prevail over uplands of the central Bluegrass region. It is likely that some of the species concentrated in or near these ravines were formerly more widespread over the landscape. Such species can be suggested from historical clues, including old herbarium specimens, as well as their occasional occurrence in apparent remnants of the original vegetation. This evidence is being assembled in order to guide restoration at Griffith Woods and elsewhere in the region (Table ..). However, many species were probably restricted, more or less, to habitats found only along the Palisades. Such restriction was probably most acute for species of more rocky or xeric sites, including even red cedar (*Juniperus virginiana*), which was virtually absent away from hills along the river before settlement. Note that yellow-wood (*Cladrastis*) and rock elm (*Ulmus thomasii*) are the only trees of the central Bluegrass region that are restricted to the Palisades.

In contrast, some species of deeper soils, especially those typical of more open or disturbed woods, were probably much less common in the deeper woods along the Palisades.

Such trends may be reflected in the relatively scarcity or absence of the following species in or near Jessamine Gorge today, though some do occur in adjacent farmland.
(1) Uncommon or local along Palisades: *Arundinaria gigantea*, *Asclepias tuberosa, Aster novae-angliae, Collinsia verna, Helianthus tuberosus, Heliopsis helianthoides, Onosmodium hispidissimum, Polymnia uvedalia, Ratibida pinnata, Trifolium stoloniferum, Silphium perfoliatum, Zizia aurea*.

(2) Virtually absent along Palisades: *Crataegus* spp., *Quercus macrocarpa, Corylus americana Ceanothus americanus*; *Asclepias verticillata, Carex davisii, Desmanthus illinoensis, Prenanthes biennis, Phalaris arundinacea, Sphenopholis intermedia, Sporobolus compositus*.

Native grassland species are poorly represented in the fields around Jessamine Gorge. Only rather common weedy natives were found in the old fields and fencerows: e.g. *Asclepias viridis, Carex aggregata, Solidago altissima, Vernonia gigantea*.

Rare Plant Species

Within Jessamine Gorge as a whole, the following rare species are monitored for protection by the Ky. State Nature Preserves Commission (*), or probably should be (#) or have considerable local interest for potential protection, propagation and recovery. Species that are globally imperiled (G1 to G2G3) are indicated with double or triple asterisks. Most of these species are generally uncommon or rare across the state (with less than S4 rank in the Natural Heritage system). A few species are less rare in Kentucky as a whole but locally rare within the Bluegrass region or exhibiting unusually "conservative" distribution (reflecting probable "remnant" status from presettlement vegetation): the *Carex* spp., *Hydrastis*, *Iris*, *Meehania*, *Synandra*. Species' names in brackets [ ] have not been found on the tracts studied here, but some of these may still be expected. Figure ... shows the documented locations for most of these species in Jessamine Gorge; see also attached GIS materials. A few of these species are scattered widely in suitable habitat and plants are not mapped: *Cladrastis*, *Draba, Ulmus*. Note that the report of *Solidago rupestris* by Campbell & Meijer (1989) has not been verified, and this species probably does not occur within the gorge though it is locally common along rocky banks of the Kentucky River.

Carex (Sedges): *C. purpurifera* and *C. cf. timida* were identified here; these are rarely recorded within the central Bluegrass region. This would be the first record of *timida* from the Inner Bluegrass; confirmation is needed in the herbarium.

#Cerastium velutinum (Clifftop Chickweed; = *C. arvense* var. *velutinum*): several patches occur in Jessamine Gorge; one of the largest populations, with 100s of plants, occurs on the NW-facing point between mouths of Leatherwood Creek and Jessamine Creek.

Cladrastis kentukea (Yellow-wood): several small trees have been found along the cliffs or nearby; this species is scattered through most of Jessamine Gorge, but the species is unknown upstream of the Ky. 1268 bridge.

Draba ramosissima (Drooping Draba): this is widely scattered on cliffs; in Ky. it is unknown outside the Palisades.

Hydrastis canadensis (Goldenseal): a large patch, with 100s of stems in 50-100 m^2, was found in dry woods above the point southeast of the mouth of Jessamine Creek. The only other patch known in the central Bluegrass is at Scott's Grove (near Camp Nelson).

[*Iris cristata*] (Dwarf Crested Iris): R. Jones (pers. comm.) discovered this species on a terrace in the gorge during the 1980s; it has not been relocated. Although widespread across much of the east-central states, only one other site for this species has been found in the central Bluegrass region, on another terrace near the Kentucky River in Jessamine Co.

[******Lesquerella globosa*] (Bladder-pod): there is only a historical record (1939) from near Chrisman's Cave (McFarland 1946); note also plants found by John Brushaber near Wilmore in 1990s.]

[*Lilium michiganense*] (Mid-western Wood-lily). There are rather confusing field notes of J.R. MacGregor and W. Meijer from the 1970s indicating that this species occurred "along the alluvial deposits bordering the stream"; "At the road [path?] junction near Jessamine Creek, near the 'J' of Jessamine on the topographical map, is a stand of old beeches. North of this occur *Lilium ?michiganense* (wild lily), *Synandra* and *Trillium reclinatum* [flexipes]." This largely mid-western species is widely scattered over central and western regions of Kentucky, including a few on low slopes of tributaries along the Palisades. But virtually no large secure populations are known. Most records come from single plants or small groups of non-flowering plants in deep shade. Like other species of *Lilium*, *michiganense* appears to do best in thin woods and edges with a moderate disturbance regime that has been largely lost. Rooting of hogs may have been a major factor restricting the species.

[*Meehania cordata*] (Mountain Catnip): this species is largely restricted to central Appalachian regions. The only verified site west of the Appalachians is on terraces with beech trees on relatively acid, cherty alluvial soils of Jessamine Gorge.

[**Melica nitens*] (Cliff Melic-grass): a few clumps of this species have been found just north of the Reed (west) tract, on dry ledges of the lead opposite Leatherwood Creek.

Monarda serotina ined. (Lowland Bee-balm). These plants have been provisionally named M. serotina by R.T. Simmers (pers. comm). Based on initial revision (especially at GH, NCU & NY), they occur largely west of the Appalachians (Ala., Ky., Ill., Ind., Mo., Ohio, Tenn.), but are also scattered in the east (D.C., Del., Md., N.C., Pa., W.Va.). They appear intermediate between fistulosa and clinopodia, with probable hybrid origin.

[***Paxistima canbyi*] (Mountain-lover): within the Bluegrass region, this species is known only on the point to north of Leatherwood Creek; it has been searched for at many other suitable sites in Jessamine Gorge and the Palisades.

****Phlox bifida** ssp. *stellaria* (Cleft Phlox): this is frequent on the S-facing point east of the mouth of Jessamine Creek and on the SW-facing point north of mouth of Leatherwood Creek; smaller patches have been found on less exposed NW-facing points upstream; the latter include a patch recorded during the 1970s and 1980s on the small point just north of Overstreet Cave (R. Cranfill and J.R. MacGregor, pers. comm.), but which has not been relocated.

[#*Prunus virginiana*] (Choke Cherry): this northern shrub has been found at a few sites in Jessamine Gorge but not yet on the tracts studied here; it can be expected on rocky points.

Ribes missouriense (Midwestern Currant). This is uncommon to rare on calcareous bluffs in central and western region of the state. It was found by M. Medley on the rocky point with *Paxistima*; further verification and field work is needed to map it in more detail. Without flowers or fruits, this species is hard to distinguish from the more northeastern cynosbati (F, Cr), and a few identifications remain tentative. Its leaves tend to be smaller (ca. 1.5-3.5 cm across versus 2-5 cm), more deeply lobed (with sinuses extending well beyond half way to the middle), and less hairy (especially on upper surfaces). Also, its spines tend to be longer (ca. 7-17 mm versus 5-10 mm).

***Schizachne purpurascens* (Purple Melic-grass): this northern grass occurs on several rocky points.

*****Stellaria fontinalis** (Water Stitchwort): a large population of this globally imperiled species occurs just south of Chrisman's Cave, outside the tracts studied here, and some smaller patches have also been found in the Gorge; one of these was on rocks below Overstreet Cave, but it has not been relocated since ca. 1980.

Synandra hispidula (White Wood-mint): patches are scattered along much of Jessamine Gorge, mostly in the transition from riparian zones with *Acer negundo* to toe-slopes with *Acer saccharum*.

[**Trillium nivale*] (Snow Trillium): this northern species is known on the point north of Leatherwood Creek and the point north of Chrisman's Cave.

Ulmus thomasii (Rock Elm): locally frequent in subxeric woods on steeper slopes.

[#*Viburnum molle*] (Round-leaved Arrow-wood): several plants have been found just north of Reed East along Leatherwood Creek, and elsewhere in the gorge.

[**Viola walteri*] (Walter's Violet): this has been found only on the point north of Leatherwood Creek plus the point north of Chrisman's Cave.

[#*Waldsteinia fragarioides*] (Barren Strawberry): found on one small point between King/Luddy and Reed East Tracts.

Table 3. Distributions of rare versus widespread native plant species of the central Bluegrass region in relation to the openness-related gradient.
1 = deep shade; 2 = average woods; 3 = thin woods, trails through woods;
4 = open or young woods, thickets, edges; 5 = grassland; 6 = bare ground, rock or water.
Distributions are based on general experience with the flora and vegetation, plus a thorough survey of old floristic literature and herbarium specimens.

Groups of species	**Typical position on openness-related gradient**					
Numbers of native species in the central Bluegrass region and adjacent Eden Shale Hills	**1**	**2**	**3**	**4**	**5**	**6**
Total numbers of native species in region	**122**	**154**	**134**	**171**	**148**	**138**
(a) Upland species restricted to ravines and hills that may have been slightly more widespread (209)	47	45	26	37	28	26
(b) Upland species that are less restricted and that probably were much more widespread (69)	25	12	11	11	4	6
(c) Lowland species restricted to wetlands and river valleys that may have been slightly more widespread (45)	1	6	4	6	10	18
(d) Lowland species that are less restricted and that probably were much more widespread (16)	0	1	0	3	1	11
(e) Species known from the Griffith Farm or within 5 miles in similar habitat, excluding the river corridor (242)	15	64	31	40	51	41
(f) Globally rare or imperiled species (G2-G3G4)	1	2	3	4	1	1
(g) Regionally imperiled or disappeared (G4-G5)	2	2	3	2	6	1
Numbers of alien species in the central Bluegrass						
(h) Most threatening alien species in woodland or grassland	0	1	10	3	7	0
(i) Moderately or locally threatening species	0	1	6	8	14	10
(j) Other naturalized aliens in the central Bluegrass flora	0	0	5	21	24	66
(k) Alien species at the Griffith Farm or nearby	0	1	14	17	27	54

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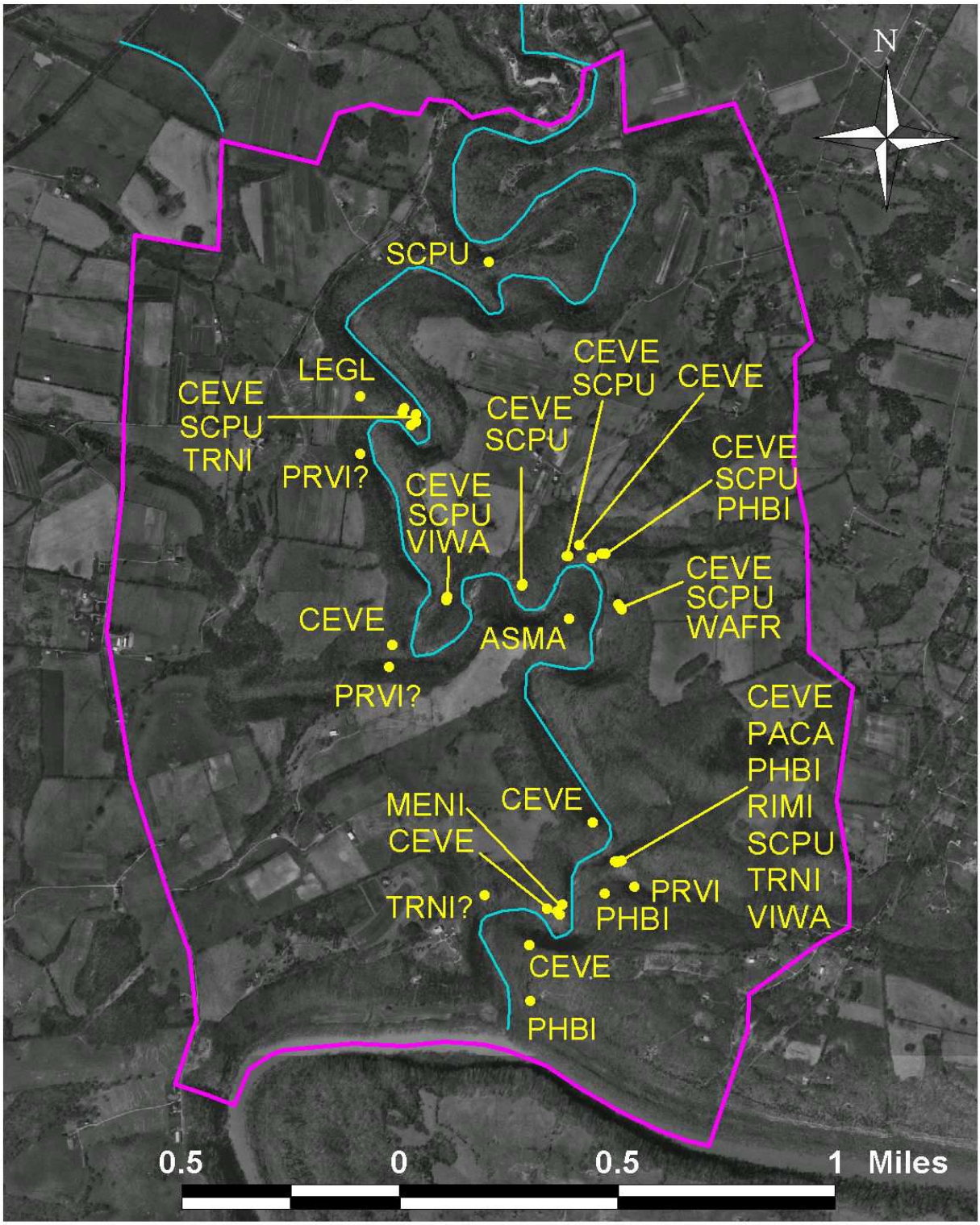
Figure 10 (next two pages). Maps showing locations for rare plants.

(a) Species typical of dry (xeric/subxeric) points and upper slopes:
CEVE = Cerastium velutinum;
LRGL = Lesquerella globosa (approx. historic location from 1940s collection)
PACA = Paxistima canbyi;
PHPI = Phlox bifida var. stellaria;
PRVI = Prunus virginiana;
SCPU = Schizachne purpurascens;
TRNI = Trillium nivale (southwestern site is uncertain, perhaps dubious);
VIWA = Viola walteri;
WAFR = Waldsteinia fragarioides.

(b) Species typical of moist (mesic/submesic) uplands, terraces, toe slopes and talus:
ARGI = Arundinaria gigantea;
CXPU = Carex purpurifera;
HYCA = Hydrastis canadensis;
IRCR = Iris cristata;
MECO = Meehania cordata;
MOSE = Monarda serotina;
MUSY = Muhlenbergia sylvatica (or possible transiton/to tenuiflora);
SORU = Solidago rupestris;
STFO = Stellaria fontinalis (some patche are dubious or disappeared)
SYHI = Synandra hispidula;
VIMO = Viburnum molle.

Jessamine Gorge: rare xeric/subxeric species



Jessamine Gorge: rare mesic/submesic species

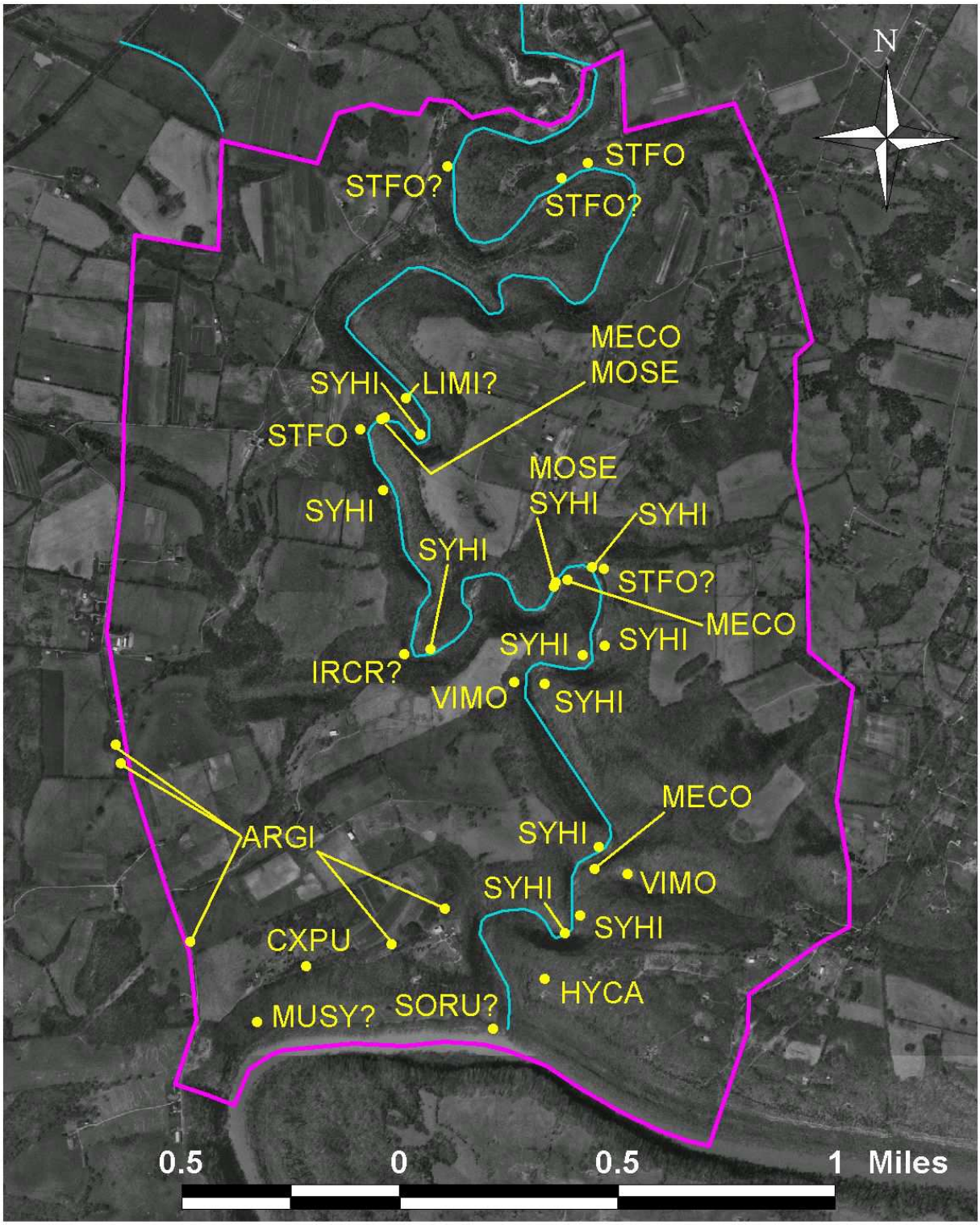


Figure 11. Rare plants of dry points: *Paxistima canbyi* (UL); *Trillium nivale* (UR); *Viola walteri* (LL); *Phlox bifida* var. *stellaria* (LR).

Above image cropped from missouriplants.com

Above image cropped from Thomas G. Barnes (at plants.usda.gov)

Figure 12. Rare plants of damper sites: *Stellaria fontinalis* (UL); *Synandra hispidula* (UR); *Iris cristata* (LL); *Meehania cordata* (LR).

Invasive Alien Plants

These are the species with most invasive behavior into the woods. Species typical of fields are not included here, since in the natural conditions they would become largely eliminated by the shade of forest succession. However, some of these are locally abundant in edges: e.g. *Rosa multiflora*. Several additional aliens in the area could become problematic in the woods but currently are rather infrequent to rare; their status should be review in future decades. These include several herbs with at least partial shade tolerance: e.g. *Duschesnea indica* (esp. in disturbed farmed woods), *Hesperis matronalis* (locally frequent near end of McGee Lane), *Lysimachia nummularia* (esp. on damp bottoms), *Lamium pupureum* (esp. in disturbed farmed woods), *Nepeta cataria* (esp. under cliffs). There are also several woody species in the woods or nearby to keep an eye on: e.g. *Maclura pomifera*, *Rhamnus cathartica*, *Prunus mahaleb*, ?*Ligustrum* spp., ?*Euonymus alatus*, ?*Morus alba*.

In the following list, the most abundant species are indicated by asterisks, with a three-point scale. The most serious long-term threats are indicated by bold—these are already abundant or expected to increase substantially over the coming decades.

**Ailanthus altissima* (Tree-of-Heaven): several patches occur along roads and edges but no significant invasions are noted so far within the gorge; with vigilance, this species could be reduced by aggressive, persistent, focused campaign for several years.

Alliaria petiolata (Garlic Mustard). During the 1970s, there was no record of this species in the Jessamine Creek area. It is now widespread in upland woods (H ii above), especially on deeper soils, but virtually absent in deeper woods with thick native herb layer (especially D above). It is also scattered along stream terraces (H i) and streambanks (B), but becomes rare to absent downstream in the ravine; it is virtually absent on the river bottom near the mouth of Jessamine Creek. There is little prospect for control, but native perennials could gradually reduce it, perhaps with supplementary plantings; local experiments with livestock might also be useful.

Euonymus fortunei (Purple Winter-creeper). During the 1970s, this was found at few sites: the only plots with it were 29 and 31. Now there are many widely scattered patches, especially in less accessible places along the bases of cliffs, where deer and other herbivores have less chance to reduce it—this evergreen species is a relatively palatable plant much eaten by deer in the winter. It could become a major problem at the site, and should be carefully monitored and reduced. Local experiments with livestock might be useful.

**Glechoma hederacea* (Gill-over-the-ground): locally frequent in disturbed woods, especially on bottoms.

**Lonicera japonica* (Japanese Honeysuckle): locally abundant in thin woods, especially near upland edges; perhaps not a major threat at this site, since it does not generally invade deeper woods without considerable disturbance.

***_**Lonicera maackii**_** (Amur Bush-honeysuckle). In the 1970s this was absent from most of the Jessamine Gorge area: it was absent from all 20 plots. In the 1980s, the first major invasion was noted on the Bruner Tract, on the S-facing slopes there after that old farmland was largely abandoned and part sold to The Nature Conservancy. *L. maackii* is now a major problem in several sections, especially some younger woods at the edge of the tract (H ii) and also within the central sections along the cliffs (E), where birds have probably dropped seed below the red cedars. It is also common on or near cliffs (F), in relatively steep inaccessible places. But it remains relatively infrequent within deeper shade, especially under maples, basswoods, elms, oaks and hickories (especially in C). Locally intense deer browsing appears to reduce the honeysuckle somewhat, and this may interact with shade to reduce invasion in the the deeper woods. Prospects for control are poor, unless we can train a new generation of students interested in getting their kicks from bush-whacking with hand-tools onto steep slopes and cliffs, perhaps off a rappelling line.

Lonicera standishii**** (Standish's Bush-honeysuckle): scattered in much smaller numbers along the cliffs but locally dominant in the shrub layer on drier slopes; not yet seen more than 100 m from cliffs; this species is harder to reduce because it layers laterally from branches.

Microstegium vimineum**** (Japanese Grass): this shade tolerant annual is common in damp disturbed woods, especially flooded areas and formerly grazed areas; it is probably kept out by dense native herb layers such as *Laportea canadense* and *Eupatorium rugosum*; it grows in similar places to the native grass, *Leersia virginica* (a perennial but often establishing from seed).

***Ornithogalum umbellatum* (Star-of-Bethlehem): locally abundant, especially in thin woods that have been disturbed in the past; uplands and locally on lowlands but not on rocky slopes.

**Perilla frutescens* (Beaf-steak-plant): scattered and locally frequent, especially in grazed woods and edges.

Polygonum longisetum**** (Japanese Smartweed): locally frequent along streams and disturbed areas; this is probably quite persistent and intractable; grows in similar places to the native *P. punctatum*.

Stellaria media**** (Common Chickweed): locally abundant in some years, sometimes spreading into rocky woods and swamping native species; it is a special problem on the seeping slopes around the population of *S. fontinalis*.

**Veronica hederifolia* (Ivy-leaved Speedwell): perhaps only local in disturbed woods, but potentially abundant; further assessment is needed.

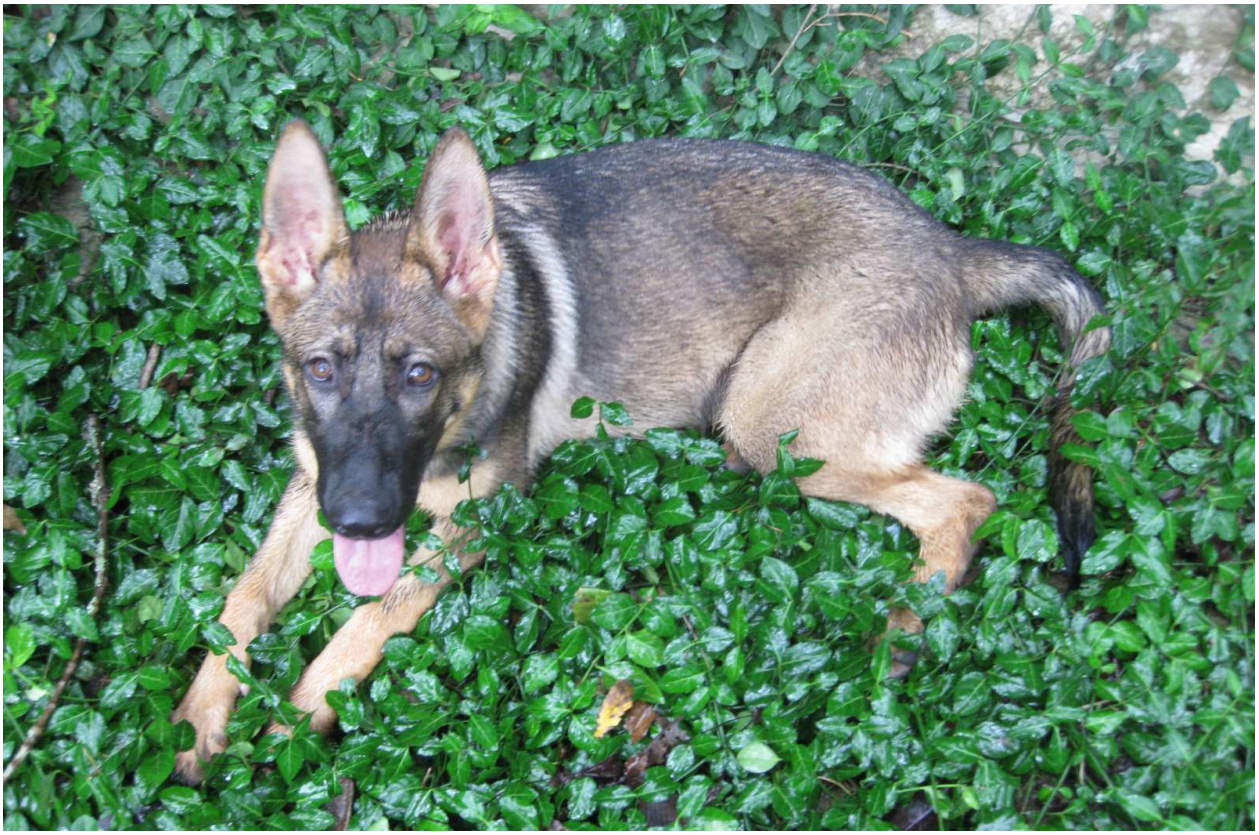


image from missouriplants.com

image from greengrasslandscape.com

image from invasivespecies.blogspot.com

image from www.sci.munz.cz/bot_zahr

Figure 13. Invasives: (UL) *Lonicera maackii* (Amur honeysuckle); (UR) *Euonymus fortunei* (Winter-creeper); (LL) *Alliaria petiolata* (Garlic Mustard); (LR) *Stellaria media* (Chickweed).

Annotated List of Vertebrates

The list attached to this report included several species that have not yet been observed on or near Jessamine Gorge but that are likely to occur here, at least in the expanded area with adjacent farmland and the river corridor. These supplementary species are marked "expected" and should not be taken to indicate observation on these tracts. For these data, thanks are due to Brainard Palmer-Ball (with his 1996 "Kentucky Breeding Bird Atlas"), John R. MacGregor (report of 24 September 2002) and others; see also various websites on Kentucky's vertebrates. The following species are uncommon to rare in the Bluegrass Region. Those marked with asterisks (*) are listed by state government (KSNPC). Those with ** or *** are globally threatened or endangered, and have been listed by federal government (USFWS), at least as candidates.

Salamanders

Desmognathus fuscus fuscus (northern dusky salamander); JRM reports from near Overstreet Cave/Falls; rare in Bluegrass, where the only records are from Palisades.

Gyrinophilus porphyriticus duryi (Kentucky spring salamander); JRM reports from near Overstreet Cave/Falls; local in Bluegrass.

Pseudotriton [montanus] diastichus (midland mud salamander); JRM reports from near Overstreet Cave/Falls; local in Bluegrass.

Pseudotriton ruber (northern red salamander); JRM reports from along Overstreet Creek; rare/local in Bluegrass, only in Palisades.

Reptiles

Eumeces fasciatus (five-lined skink); JRM reports; extremely rare in Bluegrass.

Agkistrodon contortrix (copperhead); JRM reports; very uncommon to rare in Bluegrass.

Mammals

*****Corynorhinus rafinesquii*** (Rafinesque's Big-eared Bat); JRM reports based on a photo of a single bat from caver early 1980s.

******Myotis sodalis*** (Indiana bat); JRM reports from Overstreet and Chrisman's Cave; very uncommon to rare in Bluegrass.

******Myotis grisescens*** (gray bat); JRM reports from Overstreet and Chrisman's Cave; very uncommon to rare in Bluegrass.

****Neotoma magister*** (Alleghany woodrat); JRM reports from along cliffs or nearby; uncommon in Bluegrass.

Bibliography

Andrews, W.M. 2004. Geologic controls on Plio-Pleistocene drainage evolution of the Kentucky River in central Kentucky. Ph. D. dissertation, University of Kentucky, Lexington, Kentucky.

Barnes, T.G., & S.W. Francis. 2004. Wildflowers and Ferns of Kentucky. The University Press of Kentucky, Lexington, Kentucky.

Barton, J.E. 1919. The Mineral and Forest Resources of Kentucky. Department of Geology and Forestry. [Kentucky State Government.] Vol. 1, Series 5.

Baton, M. 1984. The fishes of Jessamine Creek, Jessamine County, Kentucky. Transactions of the Kentucky Academy of Science 45: 30-32.

Braun, E.L. 1943. An Annotated Catalog of Spermatophytes of Kentucky. John S. Swift Co. Cincinnati, Ohio.

Braun, E.L. 1950. Deciduous Forest of Eastern North America. The Blakiston Compamy, Philadelphia, Pennsylvania.

Browne, E.T. 1967. Herbarium and field notes on Kentucky plants. I. New state records, rarities and a new form. Castanea 32: 77-84.

Bryant, W. S. 1973. An Ecological Investigation of Panther Rock, Anderson County, Kentucky. Ph. D. Dissertation. Southern Illinois University, Carbondale, Illinois.

Campbell, J.J.N. 1989. Historical evidence of forest composition in the Bluegrass Region of Kentucky. Pages 231-246 in G. Rink & C.A. Budelsky. Seventh Central Hardwood Forest Conference, Proceedings. North Central Forest Experiment Station, USDA Forest Service.

Campbell, J.J.N., & M.E. Medley. [In preparation.] Atlas of Vascular Plants in Kentucky. Submitted to University Press of Kentucky, Lexington, Kentucky.

Campbell, J.J.N., & W. Meijer. 1989. The flora and vegetation of Jessamine Gorge, Jessamine County, Kentucky, a remarkable concentration of rare species in the Bluegrass region. Trans. Kentucky Acad. Sci. 50: 27-45.

Campbell, J.J.N., D.G. Ruch & W. Meijer. 1995. The flora and vegetation of Raven Run Nature Sanctuary, Fayette County, Kentucky. Proceedings of the Indiana Academy of Science 104: 139-184.

Crossman, E.R., & S.V. Hrabar. 1970. Geologic Map of the Wilmore Quadrangle, central Kentucky. U.S.G.S. Map GQ-847.

Fernald, M.L. 1950. Gray's Manual of Botany. 8th edition. Van Nostrand, New York, New York.

Garman, H. 1900-14. [1900] Kentucky forage plants—the grasses. Bulletin of the Kentucky Agricultural Experiment Station 87: 55-121 & plates. [1902] Kentucky forage plants—the clovers and their allies. Ibid. 98: 3-46. [1913] The woody plants of Kentucky. Ibid. 169: 1-62. [1914] Some Kentucky weeds and poisonous plants. Ibid. 183: 255-339. & plates.

Howell, H.H. 1975. Some ecological factors affecting the occurrence of water willow, *Justicia americana*, in Jessamine Creek, Kentucky. Transactions of the Kentucky Academy of Science 36: 43-50.

Howell, H.H., & M.W. Jones. 1976. Some of the effects of domestic sewage discharge into Hickman and Jessamine Creeks in Jessamine County, Kentucky. Research Report No. 93. Kentucky Water Resources Research Institute, Lexington. [Available from National Technical Information Service, Springfield VA, as PB-251 378.]

Jillson, W.R. 1948. [a] The Hickman abandoned channel of the Kentucky River, a study in Pliocene drainage, physiography and geology. [b] The Pleasant Hill abandoned channel of the Kentucky River, a study in Pliocene drainage. Roberts Printing Company, Franfort. [Several other papers on abandoned channels were published by the author in 1943-63.]

Jones, R.L. 2005. Plant Life of Kentucky: an Illustrated Guide to the Vascular Flora. The University Press of Kentucky, Lexington, Kentucky.

Lacki, M.J., L.S. Burford & J.O. Whitaker. 1995. Food habits of gray bats in Kentucky. Journal of Mammalogy 76: 1256-1259.

Little, J.W. 1963. A study of some digenetic trematodes from fishes caught in Jessamine Creek, Jessamine County, Kentucky. [M.Sc. thesis, University of Kentucky, Lexington; check details.]

MacGregor, J.R. 1973. Observations on the natural history of two species of water snakes, *Natrix sipidon* and *Regina septemvittata*, along Jessamine Creek. M.Sc. thesis, University of Kentucky, Lexington, Kentucky.

Michaux, A. 1793-96. Journal of Andre Michaux's Travels into Kentucky. Reprinted In: Thwaites, R.C. (ed.) 1904. Early Western Travels. Vol. 3. 1784-1846. Arthur H. Blake Co. Cleveland, Ohio.

Munsell, L. 1818. A Map of the State of Kentucky. General Assembly of Kentucky.

Steinauer, G., & S. Rolfsmeier. 2003. Terrestrial natural communities of Nebraska. Nebraska Natural Heritage Program, Lincoln, Nebraska (2000 draft). Revised as: Biology Technical Note 65 (Nebraska). U.S.D.A Natural Resources Conservation Service.

Reed, C.F. 1962. The genus *Trillium* in Kentucky. Castanea 27: 143-155.
Palmer-Ball, B. 1996. The Kentucky Breeding Bird Atlas. University Press of Kentucky.

Petranka, J.W. 1979. The effects of severe winter weather on *Plethodon dorsalis* and *Plethodon richmondi* populations in central Kentucky. Journal of Herpetology 13: 369-371.

Short, C.W., R. Peter & Griswold. 1833. Catalogue of the native phaenogamus plants and ferns of Kentucky. Transylvania Journal of Medicine and Associated Sciences 6: 490-501. [See also supplements published in this journal and the following; full citations in Campbell & Medley, in prep.).

Short, C.W. 1840. A fourth supplementary catalogue of the plants of Kentucky. Western Journal of Medicine 2: 283-288.

Szafoni, R.E., R.L. Phipps & F.M. Harty. 1994. Large, open-grown trees as indicators of presettlement savanna. Natural Areas Journal 14:107-112.

Appendix One. General characteristics of soil series, plus general interpreted relationships with topography and presettlement vegetation.

Most data come from the Jessamine County Soil Survey (McDonald et al. 1983). In the charts, additional soil series to be expected are in square brackets, with data derived from various adjacent county surveys.

Explanation of format for data on soils.
First line. Soil class, with abbreviations as follows: a = alfic; ch = chromic; cu = cumulic; d = dystric; f = fluventic; fa = fluvaquentic; h = humic; le = leptic; li = lithic; m = mollic; o = oxyaquic; q = aquic; r = rendollic; t = typic; v = vertic.

At right margin, topsoil color is coded as follows: b = brown (or brownish); d = dark; g = gray (or grayish); k = black; l = light; m = mottled; o = olive; p = pale; r = red (or reddish); s = strong (for deep brown); v = very dark; y = yellow (or yellowish).

Second line. Name of soil series, with abbreviations for typical texture (excluding eroded clayey phases on steeper slopes) as follows: c = clay; csil = cherty silt loam; fsal = fine sandy loam; l = loam; sa = sand; sic = silty clay; sicl = silty clay loam; si = silt; sil = silt loam; shsil = shaly silt loam; rl = rocky loam (or complex mixture); rsic = rocky (or flaggy) silty clay.

Third line. Typical slope in percent; followed by typical depth to bedrock in feet.
At left margin, asterisks (*) indicate that slopes are often steep enough for significant differences in soil and vegetation of N/NE-facing versus S/SW-facing aspects.

At right margin, general drainage class is coded as follows: 1 = very poorly drained; 2 = poorly drained; 3 = somewhat poorly drained; 4 = moderately well-drained; 5 = well-drained; 6 = somewhat excessively drained; 7 = excessively drained.

Fourth line. Parent material, with abbreviations as follows: >> = thick loess mantle; > = thin or patchy loess mantle; As = acid shale; Ca = acid clay; Cc = calcareous clay (often mixed with Ch); Ck = chalky limestone (with marl); Ct = cherty limestone; Cs = calcareous shale; Li = limestone (arg = argillaceous); Sa = sandstone; Sh = shale (undifferentiated),

Followed by topographic context: bot = bottomland (with generally fresh alluvium); col = colluvium; dep = depression alluvium (tending to sla); flu = fluvial; mar = marine; pon = ponded alluvium (tending to sla); res = residuum; sla = slack-water deposits (with fine-textured alluvium on bottomlands, terraces or locally uplands); ter = terrace (with generally weathered alluvium); upl = uplands (often with undifferentiated residuum or colluvium).

At right margin, typical pH of topsoil (ca. 0-8 inches) is coded as follows: A = 4.5-5 (very strongly acid); B = 5.1-5.5 (strongly acid); C = 5.6-6 (medium acid); D = 6.1-6.5 (slightly acid) ; E = 6.6-7.3 (circumneutral); F = 7.3-8 (alkaline). Note: in most cases pH is less in mid to low horizons by 0-1 units; ">" indicate a strong trend; "<" indicates the opposite trend; "~" = highly variable.

Characteristics of soil series in the Inner Bluegrass of Jessamine County.
See explanation of codes on previous page.* Shaded series appear to be present in Jessamine Gorge or adjacent fields; but mapping is not detailed enough to document some of these at small scales. Some of the more hydric soils at lower right are on broader bottoms of the Kentucky River and locally along sluggish streams on the uplands. The more shaly soils (especially Faywood and Lowell) occur a few miles to the east. Soils on steeper slopes are probably more varied than the county soil survey indicates; the tentative soil series names in brackets at the left side may suggest taxadjuncts to be investigated.

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	m-Eutrochrept? b [~Garmon] yb * 6 E	li-Hapludoll db Fairmount rsic b *6-12; 1-2 5 Li(Sh) res E	li-Hapludalf dgb Faywood sil yb *2-30; 2-3 5 LiSh res C<	t-Hapludalf b Lowell sil sb 2-12; 3-7 5 LiSh res C<	
UPLANDS steep to gentle slopes; some ancient terraces	li-Hapludoll db Fairmount rsic b *12-60; 0.5-1 5 Li(Sh) coll/res? E	m-Hapludalf db McAfee rsil rb *6-20; ~2 5 Li res E<	m-Hapludalf db McAfee sil rb 2-20; ~3 5 Li res D<	t-Paleudalf db [Braxton] sil yr 0-20; 3-12 5 Ch res/ter B	t-Paleudalf b Elk Variant sil b 2-6; 5++ 5 Li+ ter/res B
UPLANDS toe slopes, terraces, flats; locally damp	m-Hapludalf? b [~Renox] dyb 5 D?	m-Hapludalf db Ashton sil b 2-6; 5+ 5 Li coll/ter D	t-Paleudalf b Maury sil rb 0-12; 5-15+ 5 >Li res/ter D<	t-Argiudoll vdgb [Loradale] sil b 2-12; 4-10+ 5 Li(Sh) res/ter D<	t-Argiudoll db Donerail sil dyb 2-6; 5+ 4 Li ter/res C<
HIGH TERRACE mostly old alluvial terraces; deeply weathered	u-Hapludalf b [Armour] sil b 0-12; 4-10 5 Li ter C	u-Hapludalf b Elk sil sb 2-12; 5-20 5 Li+ ter B	t-Fragiudalf dyb [Otwell] sil sb 2-8; 4-12 4 Li+ ter B<	a-Fragiudalf dgb Lawrence sil pmo 0-2; 5-8 3 Li(Sh) ter(res) B<	t-Fragiaqualf vdg [Robertsville]sil lg 0-2; 5+ 2 Li+ ter B
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		df-Eutrochrept b [Nolin] sil b 0-2; 5-12? 5 LiShSa+ bot D	fa-Eutrochrept dgb Lindside sil b 0-2; 5+ 4 Li+ bot D	a-Fluvaquent b Newark sil lbg 0-2; 5+ 3 Li+ bot D	t-Fluvaquent dgb Melvin sil g 0-2; 5-15+ 2 Li+ bot D
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	f-Hapludoll db Boonesboro si b 0-4; 2-3 5 Li bot E	t-Hapludoll db Huntingdon **sil dgb** 0-3; 4-10 5 Li bot E	qcu-Hapludoll b [Egam] sicl dgb 0; 3-15 4 Li bot E	cu-Haplaquoll vdgb [Lanton] sicl k 0; 4+ 2 Li bot E	fa-Haplaquoll vdg Dunning sicl dg 0-2; 6-10 1 Li bot D

* **NRCS codes for soil textures differ: si** – silt; **sil** – silt loam; **l** – loam; **sl** – sandy loam; **fsl** – fine sandy loam; **ls**—loamy sand, **s** – sand; **scl** – sandy clay loam; **cl** – clay loam; **sicl** – silty clay loam; **sic** – silty clay; **sc** – sandy clay; **c** -- clay. Some modifiers: **Gr** – gravelly (0.2-7.5 cm); **Cb** – cobbly (7.5-25 cm); **St** – stony (25-50 cm); **By** – bouldery (>60 cm); **Cn** – channery (flat 0.2-15 cm); **Fl** – flaggy (flat 15-38 cm).

Soil Classes: see NRCS website for definitions and descriptions.
Alfisols (blue); entisols (green); inceptisols (pink); mollisols (grey); ultisols (orange)

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	Eutrochrept	Hapludoll	Hapludalf	Hapludalf	
UPLANDS steep to gentle slopes; some ancient terraces	Hapludoll	Hapludalf	Hapludalf	Paleudalf	Paleudalf
UPLANDS toe slopes, terraces, flats; locally damp	Hapludalf	Hapludalf	Paleudalf	Argiudoll	Argiudoll
HIGH TERRACE mostly old alluvial terraces; deeply weathered	Hapludalf	Hapludalf	Fragiudalf	Fragiudalf	Fragiaqualf
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		Eutrochrept	Eutrochrept	Fluvaquent	Fluvaquent
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	Hapludoll	Hapludoll	Hapludoll	Haplaquoll	Haplaquoll

Mid-range of Slope: degrees. Note that in all soil series slope varies greatly, with some inclusions on level ground to gentle slopes (0-6%) in most cases. The more sloping variants of each soil series are often present at eroding edges of more gentle slopes or flats.

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	>10	>10	16	7	
UPLANDS steep to gentle slopes; some ancient terraces	36	13	11	10	4
UPLANDS toe slopes, terraces, flats; locally damp	>10	4	6	7	4
HIGH TERRACE mostly old alluvial terraces; deeply weathered	6	7	5	1	1
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		1	1	1	1
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	2	2	0	0	1

Mid-range of Soil Depth (to bottom of C horizon): feet

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	<1?	1.5	2.5	5	
UPLANDS steep to gentle slopes; some ancient terraces	0.75	2	3	7.5	>5
UPLANDS toe slopes, terraces, flats; locally damp	<1?	>5	10+	7+	>5
HIGH TERRACE mostly old alluvial terraces; deeply weathered	7	12.5	8	6.5	>5
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		8.5?	>5	>5	10+
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	2.5	7	9	>4	8

Drainage: 1 = very poorly drained; 2 = poorly drained; 3 = somewhat poorly drained; 4 = moderately well-drained; 5 = well-drained; 6 = somewhat excessively drained.

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	6	5	5	5	
UPLANDS steep to gentle slopes; some ancient terraces	5	5	5	5	5
UPLANDS toe slopes, terraces, flats; locally damp	5	5	5	5	4
HIGH TERRACE mostly old alluvial terraces; deeply weathered	5	5	4	3	2
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		5	4	3	2
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	5	5	4	2	1

Typical pH of topsoil: A = 4.5-5; B = 5.1-5.5; C = 5.6-6; D = 6.1-6.5; E = 6.6-7.5; F = 7.6-8.5
Note: in most cases pH is less in mid to low horizons by 0-1 units; ">" indicates a strong trend in that direction; "<" indicates the opposite trend; "~" = highly variable (by 1-2 pH units).

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	E	E	C<	C<	
UPLANDS steep to gentle slopes; some ancient terraces	E	E<	D<	B	B
UPLANDS toe slopes, terraces, flats; locally damp	D?	D	D<	D<	C<
HIGH TERRACE mostly old alluvial terraces; deeply weathered	C	B	B<	B<	B
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		D	D	D	D
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	E	E	E	E	D

Typical color of upper A horizon (topsoil ca. 0-6 inches deep).

rb: 213 82 0; yr: 255 91 0; dyb: 144 123 0; yb: 204 153 0; lyb: 184 158 0; sb: 178 64 0; db: 105 51 0; b: 164 82 0; lb: 176 117 58; dob: 178 131 0; lob: 217 160 56; po: 220 162 0; o: 204 153 0; oy: 204 180 0; dog 178 131 0; og 175 159 64; log 191 175 81;
vdgb: 81 63 49; dgb: 107 83 65; gb: 139 108 85; vdg: 51 51 51; dg: 76 76 76; g: 100 100 100; lg 128 128 128; lbg 147 101 73

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	brown	dark brown	dark grey brown		
UPLANDS steep to gentle slopes; some ancient terraces	dark brown	brown	dark brown	dark brown	brown
UPLANDS toe slopes, terraces, flats; locally damp	brown	dark brown	brown	very dark grey brown	dark brown
HIGH TERRACE mostly old alluvial terraces; deeply weathered	brown	brown	dark yellow brown	dark grey brown	very dark grey
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		brown	dark grey brown	brown	dark grey brown
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	dark brown	dark brown	brown	very dark grey brown	very dark grey

Typical color of mid-upper B horizon (usually ca. 10-40 inches deep).
rb: 213 82 0; yr: 255 91 0; dyb: 144 123 0; yb: 204 153 0; lyb: 184 158 0; sb: 178 64 0; db: 105 51 0; b: 164 82 0; lb: 176 117 58; dob: 178 131 0; lob: 217 160 56; po: 220 162 0; o: 204 153 0; oy: 204 180 0; dog 178 131 0; og 175 159 64; log 191 175 81;
vdgb: 81 63 49; dgb: 107 83 65; gb: 139 108 85; vdg: 51 51 51; dg: 76 76 76; g: 100 100 100; lg 128 128 128; lbg 147 101 73

TYPICAL TOPO-GRAPHY	MORE HILLY LANDSCAPES IN GENERAL often more rocky		INTERMEDIATE LANDSCAPES IN GENERAL moderate to deep		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly drier slopes or ridges; locally more shale	yellowish brown	brown	yellowish brown	strong brown	
UPLANDS steep to gentle slopes; some ancient terraces	brown	reddish brown	reddish brown	yellowish red	brown
UPLANDS toe slopes, terraces, flats; locally damp	dark yellowish brown	brown	reddish brown	brown	dark yellowish brown
HIGH TERRACE mostly old alluvial terraces; deeply weathered	brown	strong brown	strong brown	pale mottled olive	light grey
BOTTOMLAND moderate fresh alluvium; higher, densely wooded		brown	brown	light brownish grey	grey
BOTTOMLAND much fresh/slack alluvium; lower, thinly wooded	brown	dark greyish brown	very dark greyish brown	black	dark grey

Typical Vegetation Before Settlement in 1770-1800.
This is a provisional estimation to be checked eventually with details of early land surveys. Shaded boxes indicate types that are most extensive at Jessamine Gorge.

VEGET-ATION	MORE HILLY LANDSCAPES IN GENERAL all well-drained		INTERMEDIATE LANDSCAPES IN GENERAL mostly deep soils		LESS HILLY LANDSCAPES IN GENERAL less well-drained
UPLANDS mostly steeper slopes, some excess drainage	shrubs red cedar **chinquapin oak** **blue ash**, rock elm	**chinquapin oak** **shumard oak** **blue/white ash** sugar maple	white/black oak shagbark hickory white ash sugar maple	similar to left	
UPLANDS gentle or steep slopes, mostly well drained	**northern red oak** white ash, red elm basswood **sugar maple**	chinquapin/sh. oak **bitternut hickory** **Ohio buckeye** sugar/black maple	chinquapin/sh. oak **black walnut** hickories **ashes**, red elm	similar to left (plus local acid-loving species)	similar to left (plus acid-loving species)
UPLANDS mostly gentler slopes/flats; some poorly drained	sweet buckeye white ash, red elm **basswood** **maples**	**walnut, hickories** white ash, red elm **Ohio buckeye** **maples**	bur/shumard oak black/honey locust **walnut, hickories** **white ash, elms**	similar to left (plus local seeps and springs)	similar to left (plus seeps and springs)
TERRACES mostly old alluvium	black walnut tulip poplar sugar maple beech	black walnut tulip poplar **sugar maple** **beech**	?walnut, hickories ?tulip, oaks ?white elm ?green ash	lowland oaks sweetgum **green ash** red maple	swamp white oak sweetgum green ash red maple
BOTTOMLAND mostly fresh alluvium (higher)	sycamore boxelder	sycamore white elm **boxelder**	bur oak **white elm** box elder **green ash**	lowland oaks white elm **green ash**	swamp white oak green ash
BOTTOMLAND mostly fresh alluvium (lower)	**syamore** **boxelder**	**sycamore** **boxelder** **silver maple**		marshes	marshes

Appendix Two. **Historical Accounts of the Jessamine County with Relevance to Vegetation.**

Joel Watkins. 1789. Journal. Printed in: Virginia Speed Herold (ed.). 1936. Joel Watkins' Diary of 1789. Register of the Kentucky State Historical Society 34: 215-250.

"June 24th Wednesday—After breakfasting I set out from the fork of Dickses River for Mr. Watkins's in Woodford County on the north side of Kentucky River—the Land Broken to the River and the groth Oak etc. forded the River at the Mouth of Hickman after Le[a]ving the river the Land & groth nearly the same as have mentioned above [—] after traveling seven or Eight miles on the rode that Leads from the River to lexington I turn'd to the left of sd. rode and cross'd a Water Course that's Call'd East-Jessiman after [—] after Leaving the said Creek the Land is very Level and of a very Pretty Mulatto soil and the groth is Black & White oak [,] hickory and some Walnut and Sugar Tree and the undergroth Hazelnut and red Bud—'till I arrived to West Jessiman [—] I proseeded up the sd. Run to Head—the Land altering as Proseed up said Creek sometimes Better and then Worse—untill I came near the head springs The Land there appearing very rich 'till I struck the Waters of South Elk Horn—& Broken—but Here I began to Travel in Land that Lay Well and to appearance the richest that have seen in the destrict [—] The groth being Walnut and Cherry not tall and dead toped and but thin [—] the Land Continued n[e]arly the same to the last mentioned Creek which I struck Just below Lewis Craigs Mill on sd. Creek from thence proseeded down the said Run to a Certain Bowmans—got dinner and got directions for Mr. Watkin's—after Leaving the sd. Creek saw no Material alteration in the Land 'till cross'd Shannons Run (near this Run saw a Jack ass and heard him Bray which is a hideous noise.) The groth began to get much Taller etc. 'till I arrived at Mr. Watkins's which was narly dark being very kindly received by sd. Gentn. This days Journey I performed by myself as have done many others in this Country—NB The Kentucky River at the Mouth of Hickman is upward of a hundred yards Wide—This day I pass'd several very good farmes and Especially Mr. Jno. Craigs [,] Badly Watered between the two Jassimans so much so that people Settle only along the said Creek."

"July 15th After taking breakfast in Town [Lexington] myself & Mr. Bon Set out for the South Side of Kentucky River with an intention of going to Cumberland Settlement but of this sceam [scheme] more anon. The Land Lies very well and appears very rich from Lexington to East Jesiman and then Both the groth and Land begin to alter the Land becoming more Broken as we came nigher the river [—] and the groth Chiefly Oak [—] we ferried the said River at the Mouth of Hickman and Preseeded as far as Capt. Ballenger this evening and Put up."

David Meade. 1796a. Letter to Joseph Prentis in Webb-Prentis Papers, Alderman Library, University of Virginia. Printed with commentary in: Gill, H.B. & G.M. Curtis. 1992. A Virginian's first views of Kentucky: David Meade to Joseph Prentis, August 14, 1796. Register of the Kentucky Historical Society 90: 117-139.

p. 132-133: in 1796, written from Lexington, Kentucky, to Williamsburg, Virginia.
"But it is not only the land near the river that merits high commendation, the country to a vast distance north & south tho' more or less rolling is extremely rich. From the foot of the Laurel Mountain [near Ohio River] to this place, except about six miles to the east of the Blue Licks

upon the main Licking & a very little on the hither side, my eyes have not beheld a single acre of mean land & indeed a considerable portion of that excepted, is good farming land. I am at this moment near the center of the largest body of fine land (which varies not in its quality) in the western country. Such is the opinion of all. It is a general plain of more than forty miles in extent every way. This land does not lay as flat as Elizabeth City [Virginia] but better for cultivation—agreeably waving—more like the most level parts of Frederick & Berkley, a comparison would do credit to those counties, if truth would allow me to make it. The limestone here of which there is abundance differs much from that on the other side the Aleganys. It seems to be compounded of marine shells & lays so far below the surface as to be no interuption to the labors of the husbandman."

"Property in Fayette County is much divided, consequently high. Few people hold more than three or four hundred acres, and (perhaps) there are more who own less than a hundred acres than over three hundred. Farms of fifty & even twenty five are not uncommon. An oak tree is as scarce in this country as a black walnut or ash is upon high land with you. The growth here is sweet maple [sugar maple], wallnut, ash, both kinds of locust, particularly the fruit bearing [honey locust], which is extremely high & large. Poplar [tulip/yellow poplar] only in some places & these of vast size, scaly bark hickory [shagbark/shellbark] not uncommon. Buckeye (differing materially from your horse chestnut being only a species or variation of the same genus); cherry tree, mulberry, &c with but few of the common kinds to the eastwards. The undergrowth, usually the spice bush & frequently a young growth of sugar maple, wherever the woods are a little open or a piece of cleared ground not in cultivation, the whole is covered with elder bushes mixed with a high weed call'd devils bit or iron weed [*Vernonia gigantea*], well known to me at Maycox [Virginia] to be eradicated only by the grubing hoe. The only wild grass in the settled parts is what is here call'd the nimble-will [*Muhlenbergia schreberi*] more resembling the wire grass [*Poa compressa* according to Gill & Curtis] than any other in Virginia. It is rather finer."

"Perhaps there never has been heretofore a time or is likely to be hereafter when this country did or will appear to greater disadvantage where the early stations were established. The wild herbage consisting of cane & pea vine is entirely eat out and the place of it supplied by weeds not agreeable to cattle. The wood range is therefore not good yet but where the wild food has been more recently consumed the whole face of the earth is as bare of every kind of herbage as the gravel walks in your garden. In these parts of cow would starve in the woods. In the very earliest settlements as about Danville, the nimble-will, a very good pasture grass, has taken place of the weedy growth which first succeded the primitive cane brake. This will be the case in four or five years every where on this side [of] the Kentucky River."

"In the mean time it behooves the farmer to cultivate grass & all those who have lands enough opened to spare, sew them in blue grass or clover. No farm ever so small is without a timothy meadow. Vast quantities of hay are made here. Many good farmers make extensive wood pasture by clearing up the under brush & small trees and sewing blue grass seed sometimes mixed with timothy. Of that number is your acquaintance Col. G. Nicholas [first attorney general of Kentucky]."

David Meade. 1796b. Check other version: to his sister, with minor differences in wording.

David Meade. 1796c. Letter from Lexington, Kentucky, to his sister Ann Randolph in Virginia; dated October 20, 1796. Original in the collected papers of William Bolling, housed in the Rare Book, Manuscript, and Special Collections Library at Duke University.

The following section was transcribed by JC from pages 1-2, describing land around Lexington, and more specifically Meade's land in northern Jessamine County at the site where his house "Chaumiere de Prairie" was later built, on what came to be known as Catnip Hill Road. The transcription of words is literal, but it does incorporate sentence endings and beginnings, plus a few additional commas, into the original freer form of the letter. Also, long dashes are substituted for the short dashes in the original.

"We are now arrived at the pleasant month of October, which as to weather is much as with you - but the new [illegible, perhaps "life"] which our woods have put on, is much more beautiful than those of Virginia. Some has yet retain[ed] the Summer green - but the greater part are clear bright yellow & some indeed red. The sweet Maple stands amongst the for[e]most of those which have changed a fine green for a yellow. The woods now afford most delightful walks, and riding on horseback in the crossroads & private ways is not less so. There are indeed small obstacles produced by trees laying across the path - but such as are not easily surmounted by step[p]ing or leaping over are to be avoided by going round, for the woods are very open and clear of underbrush."

" In the course of next week we propose removing from hence - and a very disagreeable move it will be to Sally and the girls. Our log houses are but little advanced - nor are they likely to be finished inside [before] Christmas. We must therefore necessarily go into the indifferent habitation built by our predecessor - it consists of two small rooms with fire places below, and two above partly in the roof. The owner and his large family - a dirty crew - have occupied it and are yet in it. The condition such inhabitants have put it in is so filthy that it will take some time to purify it - bad as it will if left be. We must necessarily take up our abode in it for a time. The term of three months for which we rented our present apartment expires about this time - and tho' I have no doubt but that my obliging landlord would willingly suffer us to remain here as much longer as would be agreeable to us, I find it very inconvenient to linger absent from our Farm. If I could have spent the chief of my time there, our new house would have been nearly finished by this time."

"But another consideration of no less moment presents in favor of a speedy removal - namely the expense of living in this Town, which is much too great for my small funds. Could you beli[e]ve that we have this morning given two shillings for half a bushel of Indian Meal? This you will conclude is a consequence of the scarcity of Corn - but it is no such thing, for greater crops of Corn were never made in Kentucky than it is said were this year... [to be continued]"

David Meade. 1797d. Another letter to his sister in the papers of William Bolling; see 1797c. Dated June 1797. Page three.
"...our house is in the corner of a wood (and a very noble one it is)..."

John Price. 1799. Letter to Col. Joseph H. Daviess, Louisville, Ky. Written from Jessamine County, August 28. Transcribed on page 3 in: S.M. Duncan (1886); Sketch of Jessamine County; locally published. See also related material in Woodson (1897) and in Young & S.M. Duncan (1898); as cited below.

"Dear Sir: You will please to allow me to present you the thanks of the people of this county for the valuable services you rendered in securing the right to form a new county, which I had the honor of being the first to represent in the General Assembly of last year, and to which I gave the name of "Jessamine," from a flower which flourishes in various parts of the county, and a creek bearing the same name, which rises from a spring near the plantation of Jesse Koker [Cogar], and flows south near twenty miles, and empties into the Kentucky River. Your kind recommendation of Thomas Caldwell, John Berry, Gabriel Madison, John Lewis and Co. William Price for justices of the peace, I heartily approve. They are all good men, and well known to me as men who will do their duty in any position they may be called to occupy. You will dismiss the suits against Col. Price. Let me hear from you soon. Your friend, John Price"

Interpretation. There have alternative stories for the origin of the name Jessamine, as noted in the sources cited above. This letter is taken to be the most authentic source for the origin. If the name was based on a flower, what was that species? Nothing like Jasmine (*Gelsemium*) occurs here; or was it a species of honeysuckle (*Lonicera*)? Perhaps it was a showy spring wildflower like *Phacelia bipinnatifida*.

Francois André Michaux. 1802. [Journal entries for his trip to the Ohio Valley.] First translated and printed with the complete 1802 journal in 1805. Travels to the West of the Allegheny Mountains... B. Crosby and Co. and J.F. Hughes, London. Reprinted in R.G. Thwaites (ed). 1904. Early Western Travels. 1748-1846. Vol. III. The Arthur C. Clark Co., Cleveland, Ohio.

p. 209-210: August 10-12th, heading south from Lexington, in what is now Jessamine Co.
"...and as the establishment formed to naturalize the vine in Kentucky was but a few miles out of my road, I resolved to go and see it... About fourteen miles from Lexington I quitted the Hickman Ferry road [now US 27], turned to my left [probably close to Ky. Route 39], and strolled into the woods, so that I did not reach the vineyard till the evening, when I was handsomely received by Mr. Dufour, who superintends the business... The spot that he has chosen is on the Kentucky river, about twenty miles from Lexington [probably near Ky. Route 39]. The soil is excellent and the vineyard is planted upon the declivity of a hill exposed to the south, and the base of which is about two hundred fathoms from the river..."

"I did not set out from the vineyard till the second day after my arrival. Mr. Dufour offered, in order to shorten my journey, to conduct me through the wood where they cross the Kentucky River. I accepted his proposal, and although the distance was only four miles we took two hours to accomplish it, as we were obliged to alight either to climb up or descend the mountains, or to leap our horses over the trunks of old trees piled one upon another [Eden Shale Hills around Pink and Little Hickman]. The soil, as fertile as in the environs of Lexington, will be difficult to cultivate, on account of the great inequality of the ground. Beech [*Fagus*], nut [probably *Carya*], and oak [*Quercus*] trees, form chiefly the mass of the forests. We crossed, in the mean time, the

shallows of the river [perhaps at Devils Elbow to Canoe Creek], covered exclusively with beautiful palms [sycamores]... In this season of the year the Kentucky River is so low at Hickman Ferry [later Camp Nelson and the US 27 bridge] that a person may ford it with the greatest ease."

Interpretation. Clarification of this route would come from researches into the exact location of the "Kentucky Vineyard Society" that was established during 1798-1802, and managed by Jean-Jaques Dufour; perhaps there are records describing the location.

Lyman C. Draper (ed.) and John D. Shane. 1842-51. Draper Manuscripts in the Archives of the Wisconsin Historical Society, Madison, Wisconsin. [Microfilm widely available.]

11CC, p. 216-217: **Robert Gwynne**, interviewed by John D. Shane in the 1840s [?]; recalling the Clover Bottom area on "Shawnee Run Road" (now Mundys Landing Road in southern Woodford Co.); Gwynne came to Kentucky in 1784, and appears to have lived in Jessamine or Woodford Co. close to this area.

"Cane down here [along Shawnee Run Road] was only in very little patches, and that not the big rank quality but a kind of maiden cane, as high as a man's head. Here the timber was white, red, and black oak. There [presumably further from the river on better soils] ash and walnut. Where ever big ash or big walnut now grows, there was cane lands. But little black walnut [in second growth] is not on what was cane ground. The Shawnee Run Indian trace was never more than a foot wide.—was a foot deep. It passed thro' Clover bottom, where Mr. Clanahan made a pre-emption.—called so becs [because] the Buffalo clover grew up there in a little space, about twice as big as this house (a stone house w 3 rooms on the ground floor.)"

Miss Jessamine Woodson. 1897. Sketch of Jessamine County. Read by the author to the Acme Literary Club on Feb. 22, 1897. Partly included in Young and Duncan (1898); see below. Printed in full by the Jessamine County Historical Society, Nicholasville, Kentucky, September 1969. The following curious passages were not included in Young and Duncan; and there are other passages that reflect a romantic interest in nature, as perhaps deserving reverance.

p. 5. "Although so small in area, we have twenty miles bordering on the most picturesque river in the world [Kentucky River], which winds about and in and out with many a graceful curve and scallop, and many a "blossom sailing", clear and sparkling, rippling and glancing, reflecting precipitous banks of the wildest grandeur, and clad in verdure, towering hundreds of feet towards the skies, showing white marble ledges as Carara and the blue limestone in varied and exquisite shapes of turns and polished shafts and flat ledges, on which grow in great profusion delicate ferns, graceful vines—the rare and gorgeous tea-vine among them [perhaps *Bignonia capreolata*]—and dainty flowers of every hue, beautiful flowering shrubs, fruit trees and evergreens. Quantities of the finest timber are found here, and some future day, when our resources are developed and our hidden treasures unearthed, noble castles will be erected on these heights, grander and more beautiful than those on the Rhine, and on that day, a Kentucky Longfellow will have immortalized its beauties and the heroic deeds of our people, and a native Dickens will have made known to the world, some of our quaint and original characters."

p. 10. "A few miles below [High Bridge] is the Brooklyn bridge, and one of the locks, recently finished. A mile or two above, on the Harrodsburg pike, is an enchanting little cove or shady dell, a trysting place for fairies and elfins, the loveliest place in the world for a picnic. It is secluded from the dust and glare of the pike above, a valley of ferns and with graceful vines and dainty flowers of every hue, the delicate wild flax in starry blossoms of white and blue, the anemone, the mountain pink, the wild pansy and bluetts along the rippling, sparkling stream with many a little break over a fall of six to twenty feet, making a misty floating veil of exquisite lace work, and emptying into a crystal pool, ready for the most fastidious bather. On every side of this palace of the Gods, are walls of marble with tall trees and shrubs growing out of them, and cave of some extent."

B.H. Young and S.M. Duncan. 1898. A History of Jessamine County from its Earliest Settlement [1798] to 1898. Courier-Journal Job Printing Company, Louisville. Full text at: http://www.archive.org/stream/historyofjessami00you/historyofjessami00you_djvu.txt

p. 9: “for the first time put in permanent form… accounts of the men who first cut down the forests, grubbed the cane brakes and drove out the savages who disputed its possession…”
“The first and only fort in Jessamine County was established by Levi Todd in 1779. This was one year before Lexington was built. The line of travel between Harrodsburg and the Fayette county stations passed through the northern and western parts of the county, and on this trace, near Keene, Todd’s station was built.”

p. 21-22: letter from Major Ben Netherland to Major Hopkins in 1802. “A few days ago four Cherokee Indians from Iredell County, N.C., called at my home and remaining overnight. Next morning one of them was too sick to travel. All day his sufferings were severe and painful. I sent for Drs. Gale and Peter Trisler, who at one pronounced his case hopeless. After intense suffering for four days the poor Indian died. His poor, disconsolate friends were painfully grieved at the death of one of their number, who was a man of some notoriety among his people, particularly as an expert hunter, having himself killed seventy-odd deer while on the last October hunt in the Cumberland mountains. The dead body of the poor Indian was taken to the Kentucky river cliffs, eight miles south of Nicholasville, and interred in the earth after the Indian custom, but instead of filling the vault with earth, as is used by us, these poor Indians made a frame work of wood, like a steep roof, which they put round the mouth, and reared up a heavy pile of earth, giving it the appearance of a potatoe heap. The three Indians who buried their comrade appeared bowed with grief. One seated himself on the ground, directing his face towards sunset, and extending his voice, making a great and sore lamentation. As much as I hate these wild children of the forest, I could not refrain from shedding tears when looking at them in this honest grief at the loss of one who was regarded as a good and true man. In four or five weeks after the death of their comrade, the same party, with a brother of the Indian, who died, came back and took his body in a small wagon to North Carolina, a distance of more than 300 miles, and reintered his remains in the land of his birth among his own people. I have been much among the Cherokee of North Carolina. I consider them among the best of our Indian friends. They have strange customs. I wish I had time to give you more correct idea of their character as compared with the other Indian tribes of our country.”

p. 37. “Gen. Percival Butler… came to Jessamine county in 1784, and settled at the mouth of Hickman creek and engaged in merchandise. This point was then one of great importance. The Kentucky river was the outlet for a large portion of Central Kentucky, and flatboats plied up and down the stream carrying the commerce of the country tributary to it. The rich lands lying in proximity were already producing large treasure which found market in the East and at New Orleans. Gen. James Wilkinson has opened a large dry goods store at Lexington in 1784. Salt was carried out of the Salt river from Mann and Bullitt Licks to Nashville, and the Kentucky river was also sending its tide of wealth to the outside world. In 1785 a ferry had been established at the mouth of Hickman creek by the Virginia legislature, and in 1787 Wilkinson had pushed his trade down the Mississippi to New Orleans, and the mouth of Hickman at once become a center of trade. By this date roads were cut through from Lexington to Danville, Stanford and Lancaster, and the chartering of the ferry as early as 1785 shows that a large trade crossed at this point. Prior to this date no other ferry had been established by Virginia except the one across the Kentucky river at Boonesboro (1779). The next were those at the mouth of Hickman, the mouth of Jack’s Creek, Madison county, at Long Lick, and two at Louisville, to the mouths of Silver creek and Mill Run.”

p. 46-48: “It is strange that, from the time of the settlement at Harrodsburg in 1774 down to 1779, there were no stations established in Jessamine county. In Mercer, Boyle, Fayette, Woodford, Madison, Scott and Franklin, numerous stations were erected, but with all the richness of the land in Jessamine county, none came to found a fort within its midst. There were surveys made in the county during this time, one of which, the Abram Hite survey of 2,000 acres on Marble creek, was both permanent and important, and discussed in the fort at Harrodsburg in 1774 and 1775. A Mr. Black established a station on what is known as the G. B. Bryan farm, half way between Nicholasville and Brookline on the Harrodsburg turnpike. It was on the old trace which led through the county along the waters of Jessamine creek to the waters of South Elkhorn. There were several large boiling springs in the locality, and as these were always in demand for settlements. Black located his station there. It was composed of several cabins, and the land was originally part of what is known as the "Craig Survey," and was subsequently owned by Archibald Logan, who was a rich tanner and had an establishment in Lexington. Logan conveyed this land to his daughter, Mrs. Hord, when he left Jessamine county in 1829, and the house known as the Patterson House is where Logan lived. Mrs. Hord conveyed the place to her daughter, Mrs. Worley, and she conveyed it to others, and it is now owned by the Bryan's heirs. Beginning with 1783, this station became quite an important one, and was one of the stopping places for those who followed the trace from Mercer and Boyle to Franklin and Woodford counties."

"The difficulty in obtaining water in this general section was very great, and Joel Watkins, in his diary, says: June 24 [1789]—"Forded river at mouth of Hickman; after travelling seven or eight miles on the road that leads from the river to Lexington I turned to the left of said road and crossed a water course called East Jessamine; after leaving the said creek, the land is very level and of a very pretty mulatto soil and the growth is black and white oak, hickory, and some walnut and sugar trees, and the undergrowth hazel nut and red bud, till I arrived at West Jessamine. I proceeded up said river to head, the land altering as I proceeded up said creek until I came near the head springs, the land there appearing very rich till I struck the waters of South Elkhorn. This

day I passed several good farms, and especially John Craig's, badly watered between the two Jessamines, so much so that people settled only along the said creeks." This scarcity of water was doubtless one of the reasons for establishing the station at Black's."

Interpretation. See later more complete transcription of this journal above [Watkins 1978]; this route between West Jessamine Creek [now Town Fork] and East Jessamine would have left US 27 near Handy or Vineyard then NNW, crossing current Shun Pike, joining West Jessamine towards current junction of US 68 and Rt 169; according to the NRCS soil survey, this route crosses a curious patch of less intensely calcareous soils—Faywood and Lowell—intermixed with the purer Inner Bluegrass soils—Maury, McAfee and Fairmount; such mixture of soils might explain the mix of oak-hickory-hazel and walnut-sugar-redbud that Watkins recorded; geological mapping here need further investigation.

"Watkins says August 18 [1789 not 1889 as printed in error in Young & Duncan in 1898]: "Passed Dick's river at McGuir's, from thence we proceeded to Curd's Ferry on Kentucky, which is at the mouth of Dick's river—the latter we forded— (hero the cliffs are of amazing height); we proceeded towards Lexington about eight miles; we turned to the left of said road past Black Station on the waters of Clear creek, proceeded onward, the land lying very well, but the growth indicating the rock being nigh the surface of the earth; we crossed several forks of Clear creek; we came to Captain Woodfolk's mentioned on page 22; from this place the land continued very slightly, both soil and Growth, to Mr. Watkins', at which place we arrived about dark— received very kindly." He also says, August 24: "Monday, after breakfast with Mr. W., set out for the south side of Kentucky river, agreeing with the aforesaid gentleman at parting to keep up a literary correspondence, past Black Station again and crossed the two forks of Jessamine and arrived at Kentucky river at the mouth of Hickman, which I forded, and arrived at Mr. Walker's at two hours besun.""

"It will be seen that the trace along by Black's Station was the road usually traveled by those who passed from Garrard and Mercer and Boyle to Woodford and Franklin. Another station in Jessamine county was built by Levi Todd a little northwest of Keene—its exact location can not now be determined—it, is, however, laid down upon Filson's map, but was abandoned. This was a fort. The road from Harrodsburg to Lexington doubtless passed by Black's Station, and from this on to Todd's Station.

"There was also another route by which they crossed the river to the mouth of Hickman, followed Hickman for some distance, and then turned northeast towards Lexington, then their route followed Hickman for several miles, then struck East Jessamine and followed it to its Head at Mrs. Horine's on the Southern Railroad, about a mile east of Nicholasville, and from this over to the headwaters of Jessamine, and from this along the general route of the Lexington and Harrodsburgh turnpike to Lexington. This is shown by deposition of David Williams, which was filed in the case of Mansoirs Executors vs. Craig Williams, in which Williams deposes as follows: "He was well acquainted with Hickman's creek from a small distance above the survey, 'Abram Hite,' to the head of the creek, and that the east fork of Jessamine was as well known to the people of Harrodsburg as Hickman's creek was. The east fork of Jessamine lay more out of the course generally taken by hunters in traveling from Harrodsburg to the waters of the Licking;

they commonly fell on main Jessamine above the mouth of East Fork; thence up the main Jessamine spring; thence crossing the waters of Hickman to Boone's creek, and over to the head of Stroud's creek, where there were roads leading down most of its branches to the Salt Licks. It was also common to pass by main Jessamine above the East Fork and by Todd's station on the waters of Hickman to go to the headwaters of South and North Elkhorn. This deponent, with others, frequently took this road to avoid large canebrakes.""

Interpretation. These canebrakes appear to have occurred on the gentle lands around what became Nicholasville and the lands between Hickman and Boone Creek, draining to Marble Creek and Raven Run; there are a few remnants of cane in these lands; by taking the route along West Jessamine they could connect more directly into the more shaly "east-central Bluegrass Plains" on the southeast side of what became Lexington; these shaly lands included more white oak-hickory, sugar tree and even local beech, in contrast to pure Inner Bluegrass lands.

p. 48-51. The Last Indians. "The high cliffs, covered with dense forests of cedar and other timber, along the Kentucky river, and their utter inaccessibility, rendered them excellent hiding places for the Indians who disturbed the settlers as late as the end of 1792. No great incursion of the Indians into Kentucky happened after the battle of Blue Licks, in 1782, but predatory bands, consisting of four or five warriors, both from the south 'and from the north, gave the settlers great disturbance and uneasiness and murdered a great many women and children. Shortly after the battle of Blue Licks the people abandoned the forts and scattered out in their log cabins over the state. Fear of Indian raids had been removed and the immense tide of settlers which came into the state dur- ing this period took up lands in every part, but as late as 1792 many people were killed in Garrard. Lincoln, Madison and Jessamine."

"On July 6, 1793, Major Benjamin Netherland wrote the following letter to Governor Shelby, which gives a contemporaneous account of these troubles:

"Mingo Tavern, Fayette county. Ky., July 6, 1792. To His Excellency, Isaac Shelby. Governor of Kentucky. Dear Sir — Your letter of the 28th [?] of June, was handed to me on yesterday by John Wilson. I tender to you my hearty, warm thanks for the good opinion you express concerning my poor services in the defense of our beloved country. To enjoy your confidence and friendship may well be considered a distinguished honor, and I shall at all times consider it a pleasure to he of serv- ice to you. There have but few depredations occurred in these parts of the countv. Last year it was reported three men were killed by a party of Shawnees. They were pursued, overtaken and two of them were killed the following day at Boonesboro. About three months ago two Indians crossed the Kentucky at the mouth of the Dix river, and came among the settlers, as they said, for trading. I was not pleased at seeing such treacherous enemies, and gave orders to Tom Lewis and his father to keep a watch on them. They spoke English very well and were trying to make the impression that they were our best friends. When they left the next morning they met one of the settlers named Michael Hififner, who had been to see Thomas Rowland, who settled on a planta- tion some miles above. The Indians told Hififner he must let them have his horse. This he refused, when he heard the snap of a gun. He at once jumped from the horse and stabbed the Indian to the heart. He then turned upon the other, who shot him in the arm and ran off into the timber. Hififner, being a good Indian fighter and a brave and active man.

pursued him. and before the Indian could reload his gun Hififner caught him and knocked his brains out with a club, and threw his body down the high cliffs into the river. The body of the Indian he stabbed to death was buried."

"A party of Wyandots killed a man at the mouth of Jessamine last spring. At the various crossings Indian tracks have been discovered. At Paint Lick two years ago two men were killed by this same party of Indians. It is my opinion that if 50 mounted men were employed to scour the Kentucky river cliffs during the fall, I feel sure no more of our people would be ambushed and killed. These hills and cliffs. Major Whitley says, are good hiding places for Indians to do us much injury. I must urge you to appoint Tom Wilson captain and lieutenant of this end of the county. He is young and active and can run like the wind, and such service would be in keeping with his nature, which is daring and full of adventure. I would seek the place myself, but I have so long neglected my private affairs that it would be ruinous for me to put my affairs into the hands of others, who seek their own interest to the neglect of mine, besides I have now the high and responsible duties of husband and father, which I can not throw aside without doing great injustice to the innocent who look to me for protection as husband and father. Your old friend, B. Netherland.""

p. 51. "All sorts of "varmints" were plentiful in the days of the early settlers. Bears and rattlesnakes were in great abundance. On the farm of Mr. Alexander Willoughby, near Sulphur Well, one of the great curiosities was a place known as "Rattlesnake Spring." When the land was first settled this spring was a great resort for these snakes. The water issued from a large crevice in a lime- stone rock, overlaid by a bold bank. Near the spring was a cave. Major Netherland, who visited the place in 1796, says: "In the fall of the year they would crawl from the cave to the spring and enter the crevice of the rock, where they remained torpid during the winter. When the warmth of spring revived them they would emerge from the crevice and the cave and bask in the warm sun. At this season they fell an easy prey to the destroyer. Henry Allsman, who is now living on this portion of Mr. Willoughby's land, told me he and his family have killed hundreds of them in the last week. He would pile them up on a log heap and burn them. By this wholesale slaughter, this enemy of God and man was extirpated, and in another season of spring and summer nothing will remain of that representative of the transgression but his hateful name." The man Allsman here referred to was the father of the notorious Andrew Allsman, who caused General McNeil to shoot ten innocent men at Palymra, Mo. He was born on this farm in 1805 and left home in 1829. Allsman boasted on the streets of Palmvra of causing the death of these men. The next day after he made this dreadful confession his dead body was found hung and riddled with bullets. He had been put to death by Col. Joe Porter's men in the neiuhborhood."

p. 68. "Jessamine creek — one hundred years ago a stream of large volume and great beauty — rises near the line of the R. N. L & B. Railroad, close to the station called Nealton [?] and about half a mile from where the Nicholasville & Versailles turnpike [now Rt 169] crosses, and on the land now owned by Pleasant Cook, Esq. Along its banks grew the jessamine in richest profusion. This flower was found in great abundance in many parts of the territory embraced by the new county. The name had been given to the creek by the pioneers, and the beauty of the plant and the beauty of the name so impressed the early settlers that they called this beautiful stream Jessamine

creek. It is about twenty miles long and empties into the Kentucky river. Colonel Price asked that the new county should be called Jessamine."

"The Price Letter about the Formation of the County. Barbour Home, Jessamine county: November 13, 1820. My Esteemed Friend : I have read your favor of October 6th with much pleasure. The county of Jessamine was surveyed by my friend, Maj. Frederick Zimmerman. I think he commenced his work in May, 1796, but the county was not organized as a county until February 14th. In August the next year I was chosen as a member of the General Assembly by the county — without opposition. The name Jessamine was selected from a flower that grows on many creeks in the county."

p. 69. "Col. John Price induced many of his Virginia friends to settle in the Marble creek neighborhood. The following letter to Lewis Tapp will be extremely interesting, as he has many descendants in Jessamine county: "Lexington, Ky., May 10, 1805. Dear-Sir and Friend: I have received yours of April 2d. I take great pleasure in informing you that if you have a desire to leave Virginia and settle in Kentucky I would advise you to pay a visit to this portion of Kentucky. Jessamine county was formed eight years ago. I settled in the limits of the county in 1788 The population is 5,400. The surface of the land for the most part gently undulating, rising here and there into hills and moderate elevations. The timber is white ash, hickory, hackberry, elm, white oak, also white and black walnut. Besides this variety of timber in the county, cedar trees, yellow poplar, beech and cherry is scattered over various parts of the county. The principal creeks in the county are Hickman and Jessamine. There are also numerous smaller streams well distributed throughout the county. You can buy good land in this town for $20 per acre and in Elkhorn first-class land is worth from $10 to $12 per acre. As I am just in the act of going to Nashville in Jesse Cogar's flat-boat at Frankfort, I trust you will make us a visit soon. Your old friend, John Price. Lewis Tapp, Staunton, Augusta county, A'a.""

p. 147: from Miss Jessamine Woodson's history of the county for the Acme Club; with description of the county extracted here. “We see waving fields of grain, hemp, tobacco and woodland pastures, carpeted with green, velvety grass, and trees that are tall and straight and of great variety and of wondrous beauty, and under these and in the meadows are groups of fat sheep, Jerseys and Shorthorns, thoroughbred horses, Berkshire pigs and Southdown sheep. Thrifty fruit orchards we see, too, and green hedges of osage orange, and stone fences and barn yards with all sort of pretty domestic fowls... Our bluegrass pasture lands are our special pride. Grass as soft as velvet, and with blades often a yard long, and as fine as a silken cord, without a weed, growing close to the very trunks of the tall wide-spreading elms, walnut, oak and maple trees. Here is the home of the dryads and wood-nymphs, and here the poet must have been inspired to write, “The Grove’s were God’s First Temples,” and these actually were to the noble army of pioneers who first set up “The Banner of the Cross” while building log-cabins with rifles in their hands. The country is gently undulating, with hill and dale, meadow and wood, giving variety and sparing the eye of monotony until you approach the river, when it becomes more rugged, but always grander and more wonderful in beauty and sublimity…”

p. 148-149: notes on Jessamine Creek (with see photo of spring at head). “Two large oaks trees grow immediately over the spring, and rise out of the cliff overhanging it. While the stream has

never gone dry within the memory of the young men, the current of water has very much decreased in the last fifty years… That part of the stream called "The Narrows," near Glass' mill, has some most beautiful and picturesque scenery… High up on the cliffs on the west side of the stream near the "Narrows" is the famous Chrisman Cave… A short distance below Spark's Ford is a natural curiosity, known as the "Little Mountain." It is a mound standing out separate and single and having no connection with the cliffs."

p. 151: notes on Hickman Creek. "…empties into the Kentucky river near what is called "Boone's Knob." … The country between the two branches of Hickman creek is one of the most fertile in Jessamine county. The section drained by Hickman creek is well timbered, and still has a superb growth of oak, hackberry, ash and hickory, with a sprinkling of maple. Along this creek the earliest settlements of Jessamine county were made…"

p. 158: notes on crops and soils. "In 1840, Gen. James Shelby, of Fayette county, received from the Agricultural Society a premium for the most productive five acres of corn. The five acres yielded 550 bushels, or 110 bushels per acre; but in the same year Walter C. Young, of Jessamine county, who then lived in the eastern part of it, gathered, by disinterested parties, from two acres of a field of corn, the enormous yield of 195 bushels and 198 1-2 bushels, respectively, which stands, so far as known, as the largest yield ever obtained from a similar area"

p. 160. "The growth of hemp commenced with the earliest days of settlement of Kentucky. It came with the corn and flex, among the first products of the state. The soil of Jessamine county has always been extremely favorable to the production of this plant. The black loam, so general throughout many parts of the county, produces hemp of very heavy and excellent fibre, and Jessamine county stands among the greatest hemp-producing counties of Kentucky. Per acre, no county in the state produces a larger yield."

p. 216-218: notes on Chaumiere. "Prior to 1796 David Meade, a son of the founder of Chaumiere, came to Kentucky. He was attracted by the splendid climate, fertile soil, wonderful forests, and charming surroundings, and induced his father [also David] to leave a beautiful home in Virginia, on the James river, and come to the wilds of Kentucky… David Meade [the father] was a man of large fortune… He purchased about three hundred acres of land from the Crocketts and the Woodsons… The beautiful forest trees attracted his admiration and won his affections. Sugar trees, poplar, ash, oak, hackberry and walnut, all growing in most superb profusion, determined his choice of residence… He founded at this locality a home, called Chaumiere des Prairies, but it was familiarly known throughout the county as Chaumiere, which is the French for Indian Village. On this small place David Meade lavished vast sums of money… He laid out a hundred acres of Chaumiere into a beautiful garden. He imported rare and exquisite plants. He made lakes, constructed water falls, shaped islands, built summer houses and porters' lodges, and in this backwoods wilderness created an ideal Englishman's home. He had a large retinue of liveried servants, splendid coaches, magnificent furniture, service largely of silver, and maintained in every way the style of a feudal lord…"

"The oldest son had died young and unmarried. At Colonel Meade's death [1832], none were able to maintain or hold Chaumiere, and so it went under the hammer under block and was

bought by a plain, practical farmer. This surprised and distressed the citizens of Jessamine county, who had taken a just pride in this strange and beautiful home, and in a little while after the new owner of the place had been announced, there was placarded in large letters on the houses of the grounds the words “Paradise Lost.” This caused the purchaser to become indignant, and in less than a week the beautiful flower gardens were filled with horses, cattle and hogs. The glorious forest trees were felled, lodges torn down, parks destroyed, and lakes drained. A portion of the house was pulled down, and in the rooms that were once the resort of fashion and made memorable by the presence of the most distinguished people in the land, were stored wheath and corn. Only three rooms remain of this once magnificent home.”

“On a hill overlooking Chaumiere in a neglected burying ground, sleeps the dust of David Meade and his wife and a few of his family, but the memories of Chaumiere will long live in Jessamine county and in the West.”

Mrs. Ida Withers Harrison. 1915. Chaumiére du Prairie. Journal of American History 9: 563-574. This is based on several older sources, especially an unpublished (?) memoir of David Meade [1744-1830], written ca. 1824.

p. 570. "In 1825 Doctor Craik, Rector of the Episcopal Church in Lexington, writes of it [Chaumiére] with equal enthusiasm. He says:... "Colonel Meade told me he had selected his present residence on account of the natural beauties of the country, and he pointed with enthusiasm to several groups of sugar maples, with the lovely grass beneath them, as the most attractive features of the place.""

p. 570. "One of David Meade's granddaughters, Mrs. Susan C. Williams, give a more intimate description of this paradise in the wilderness... "The bird-cage walk was cut through a dense plum thicket, excluding the sun, and lead to a dell, where there was a large spring of water, and the mouth of a cave."

Appendix Three. Vascular Plants found in Jessamine Gorge or nearby; including adjacent fields and roadsides
To be developed for whole Palisades in the final draft, based on the Atlas of Vascular Plants in Kentucky (Campbell & Medley, in prep.); that source is freely available and provides further explanation of herbarium/source codes, alien codes and habitat codes. Species found on the King or Reed Tracts are be indicated by T.

Abbreviations for abundance are as follows:
abu = abundant; com = common; fre = frequent; pre = present; occ = occasional; rar = rare; nea = nearby; loc = locally
Also: dbh = diameter at breast height; esp = especially; lvs = leaves; sev = several

SCIENTIFIC NAME	COMMON NAME	JG presence	T = known on project tracts	Jessamine Gorge Comment; CM = Campbell & Meijer 1989); JRM = John MacGregor
TREES		*TREES*		
Acer negundo L.	boxelder	com; loc dom	T	
Acer nigrum Michx. f.	black maple	loc com	T	
Acer rubrum L.	upland red maple		possible	rare in region; including var. trilobum T. & G.
Acer saccharinum L.	silver maple	loc dom	T	
Acer saccharum Marsh.	sugar maple	abu: loc dom	T	perhaps including var. schneckii Rehd.
Aesculus flava Ait.	sweet buckeye	loc fre	T	
Aesculus glabra Willd.	stinking buckeye	loc abu	T	
Ailanthus altissima (P. Mill.) Swingle	tree-of-hell	loc		
Broussonetia papyrifera (L.) L'Hér. ex Vent.	paper mulberry		possible	locally escaped on uplands
Carya alba (L.) Nutt. ex Ell.	mockernut hickory	rar		
Carya cordiformis (Wangenh.) K. Koch	bitternut hickory	loc fre	T	
Carya glabra (P. Mill.) Sweet	pignut hickory	occ	T	
Carya laciniosa (Michx. f.) G.	shellbark hickory	occ	T	

Don				
Carya ovalis (Wangenh.) Sarg.	sweet pignut hickory	occ	T	appears to be glabra x ovata swarm
Carya ovata (P. Mill.) K. Koch	shagbark hickory	loc fre	T	
Celtis laevigata Willd.	southern hackberry	rar	T	upland fencerows; some perhaps x occidentalis
Celtis occidentalis L.	common hackberry	fre; loc com	T	
Celtis tenuifolia Nutt.	dwarf hackberry	occ	T	some apparently x occidentalis
Cladrastis kentukea (Dum.-Cours.) Rudd	yellowwood	occ	T	
Diospyros virginiana L.	persimmon	occ	T	
Fagus grandifolia Ehrh.	beech	loc	T	
Fraxinus americana L.	white ash	com; loc dom	T	hairy (var biltmoreana) loc on uplands
Fraxinus pennsylvanica Marsh.	green ash	loc fre	T	all smooth? (var subintegerrima)
Fraxinus quadrangulata Michx.	blue ash	loc dom	T	
Gleditsia triacanthos L.	honeylocust	occ	T	
Gymnocladus dioicus (L.) K. Koch	coffeetree	occ	T	
Juglans cinerea L.	white walnut	ext?	T	1970s near Overstreet Cave on low point/slope
Juglans nigra L.	black walnut	loc abu	T	
Juniperus virginiana L.	redcedar	loc dom	T	
Liriodendron tulipifera L.	tuliptree	occ	T	
Maclura pomifera (Raf.) Schneid.	osage orange	occ		one on creek bank in ravine; also fencerows nearby
Morus alba L.	white mulberry	nea		
Morus rubra L.	red mulberry	occ	T	
Nyssa sylvatica Marsh.	blackgum		possible	rare; Camp Nelson etc.
Pinus virginiana P. Mill.	scrub pine		possible	perhaps just escapes; Camp Nelson etc.

Platanus occidentalis L.	plane-tree/sycamore	loc com	T	
Populus alba	white poplar		possible	old homesites
Populus deltoides Bartr. ex Marsh.	cottonwood		possible	mostly downstream on broader bottoms
Prunus avium (L.) L.	sweet cherry		possible	old homesites
Prunus serotina Ehrh.	black cherry	loc fre	T	
Quercus alba L.	white oak	loc fre	T	
Quercus falcata Michx.	southern red oak		possible	rare; Camp Nelson etc.
Quercus imbricaria Michx.	shingle oak	occ		also hybrid with rubra (CM)
Quercus montana Willd.	chestnut oak		possible	rare above cliffs in JESS (Houp Farm)
Quercus muehlenbergii Engelm.	chinquapin oak	loc com	T	
Quercus rubra L.	northern red oak	loc abu	T	
Quercus shumardii Buckl.	western red oak	loc abu	T	note 12 dm tree up from falls (S side)
Quercus stellata Wangenh.	post oak	occ		
Quercus velutina Lam.	black oak	occ		
Robinia pseudoacacia L.	black locust	loc abu	T	
Salix nigra Marsh.	black willow	occ		
Sassafras albidum (Nutt.) Nees	sassafras	occ	T	
Tilia americana L.	northern basswood	occ?		
Tilia heterophylla Vent.	mountain basswood	loc fre	T	
Ulmus alata Michx.	winged elm	rar		old field on Bruner Tract
Ulmus americana L.	white elm	loc fre	T	
Ulmus rubra Muhl.	red elm	loc fre	T	
Ulmus thomasii Sarg.	northern rock elm	loc fre	T	
SHRUBS		*SHRUBS*		
Alnus serrulata (Ait.) Willd.	alder		possible	rare on river terraces
Amelanchier arborea (Michx. f.) Fern.	common serviceberry	occ	T	check locations
Amorpha fruticosa L.	indigo-bush		possible	banks of Ky. Rv.

Arundinaria gigantea (Walt.) Muhl.	cane	occ		loc com nea along Handys Bend Rd
Asimina triloba (L.) Dunal	pawpaw	loc com	T	
Carpinus caroliniana Walt.	hornbeam	loc fre	T	
Cephalanthus occidentalis L.	buttonbush	rar		banks of creek below Chrisman's Cave? check
Cercis canadensis L.	redbud	loc fre	T	
Cornus alternifolia L. f.	alternate-leaved dogwood	occ		
Cornus drummondii C.A. Mey.	rough-leaved dogwood	occ		
Cornus florida L.	flowering dogwood	occ; loc fre	T	
Cornus obliqua Raf.	narrow-leaved silky dogwood	occ		
Dirca palustris L.	leatherwood	occ	T	
Euonymus alatus (Thunb.) Sieb.	burning-bush		expected	
Euonymus americana L.	strawberry-bush	occ	T	
Euonymus atropurpurea Jacq.	spindle	occ	T	
Hamamelis virginiana L.	witchhazel	occ	T	
Hydrangea arborescens L.	wild hydrangea	loc com	T	
Hypericum prolificum L.	common shrubby St. Johnswort	occ	T	clifftops
Ligustrum sinense Lour.	Chinese privet	occ	T	spreading from cultivation
Ligustrum vulgare L.	European privet		expected	check ids (versus sinense etc)
Lindera benzoin (L.) Blume	spicebush	loc com	T	
Lonicera maackii (Rupr.) Herder	Amur honeysuckle	com; loc abu	T	was occ ca. 1980 (0% plots in CM)
Lonicera standishii Jacques	Standish's honeysuckle	occ; loc abu	T	none seen ca. 1980
Ostrya virginiana (P. Mill.) K. Koch	hophornbeam	loc fre	T	

Physocarpus opulifolius (L.) Maxim.	ninebark	occ	T	clifftops
Prunus americana Marsh.	common plum	occ	T	all hairy (var. lanata)??
Prunus mahaleb L.	Mahaleb cherry	rar		
Prunus munsoniana W. Wight & Hedrick	Goose plum		possible	1970s note from Handys Bend; expected at old home sites, old fencerows; perhaps also angustifolia, hortulana
Prunus virginiana L.	chokecherry	rar	T	
Ptelea trifoliata L.	hoptree	loc fre	T	
Rhamnus caroliniana Walt.	common buck-cherry	loc	T	
Rhamnus cathartica L.	Europaean buck-cherry	rar		Paxistima Point; 1980s-1990s (CM)
Rhamnus davurica Pallas	Dahurian buck-cherry		possible	spreading from cultivation
Rhamnus lanceolata Pursh	lance-leaved buck-cherry	occ		
Rhus aromatica Ait.	fragrant sumac	loc fre	T	
Rhus copallinum L.	shining sumac		possible	at Scott's Grove to east
Rhus glabra L.	smooth sumac	occ	T	
Rhus typhina L.	staghorn sumac	rar		old fields/edges (Reed, Bruner)
Ribes cynosbati L.	eastern gooseberry	occ	T	
Ribes missouriense Nutt.	western gooseberry	rar	T	check records/locations
Rosa canina L.	dog rose		possible	old fencerows, homesites; and other cultivars are possible
Rosa carolina L.	hill rose	loc com	T	
Rosa multiflora Thunb. ex Murr.	multiflora rose	loc com	T	esp upper edges
Rosa palustris Marsh.	swamp rose	rar?		McFarland 1946? check setigera?
Rubus occidentalis L.	wild raspberry	loc	T	
Rubus pensilvanicus Poir.	common	loc com	T	may include argutus, frondosus etc.

	blackberry			
Salix caroliniana Michx.	river-rock willow	rar		banks of creek
Salix eriocephala Michx.	limestone willow		possible	Benson Cr (FRAN)
Salix interior Rowlee	sandbar willow		expected	open riverbanks, streambanks
Salix purpurea L.	purplish-leaved willow	nea		formerly at bridge below Wilmore
Sambucus canadensis L.	elderberry	loc	T	
Staphylea trifolia L.	bladdernut	loc abu	T	
Symphoricarpos orbiculatus Moench	coralberry	loc abu	T	
Vaccinium stamineum L.	deerberry		possible	rare; one site in Scott's Grove
Viburnum dentatum L.	southern/hairy arrow-wood	rar?		banks of creek below Figg; recheck
Viburnum molle Michx.	round-leaved arrow-wood	occ		steeper slopes but sheltered
Viburnum prunifolium L.	smooth blackhaw	occ		
Viburnum rafinesquianum J.A. Schultes	sessile arrow-wood	occ; loc fre	T	all is smooth (var affine)
Viburnum rufidulum Raf.	rusty blackhaw	occ	T	
Zanthoxylum americanum P. Mill.	pricklyash	occ	T	
VINES		*VINES*		
Ampelopsis arborea (L.) Koehne	pinnate peppervine		possible	lowlands
Ampelopsis cordata Michx.	cordate peppervine		expected	lowlands
Bignonia capreolata L.	crossvine	com; loc fre	T	esp fencerows
Campsis radicans (L.) Seem. ex Bureau	trumpet creeper	occ	T	
Celastrus scandens L.	American bittersweet	occ		
Clematis virginiana L.	virgin's-bower	rar	T	river bottom thicket east of Jess Cr mouth
Euonymus fortunei (Turcz.)	purplish winter-	loc	T	was occ in ca. 1980 (3% plots in CM)

Hand.-Maz.	creeper			
Lonicera dioica L.	pale honeysuckle	occ	T	
Lonicera japonica Thunb.	Japanese honeysuckle	com; loc abu	T	
Lonicera reticulata Raf.	grape honeysuckle		downstream	rare on cliffs
Parthenocissus quinquefolia (L.) Planch.	Virginia creeper	com	T	
Phoradendron leucarpum (Raf.) Reveal & M.C. Johnston	mistletoe	rar		on walnut (CM)
Rhus radicans L.	poison ivy	com; loc abu	T	
Smilax bona-nox L.	rough greenbrier	loc fre	T	
Smilax glauca Walt.	pale greenbrier		possible	more acid soils; high terraces
Smilax hispida Raf.	bristly greenbrier	loc fre	T	
Smilax rotundifolia L.	common greenbrier	rar	T	
Vitis aestivalis Michx.	upland hairy-grape	occ	T	
Vitis baileyana Munson	mountain smooth-grape		possible	often confused with cinerea
Vitis cinerea (Engelm.) Millard	lowland hairy-grape		possible	riverbanks
Vitis riparia Michx.	riverbank smooth-grape		possible	riverbanks
Vitis vulpina L.	common smooth-grape	loc com	T	
HERBS		*HERBS*		
Abutilon theophrasti Medik.	velvetleaf		expected	fields
Acalypha deamii (Weatherby) Ahles	lowland mercury		possible	riparian woods
Acalypha ostryifolia Riddell	broad-leaved mercury	nea?		fields
Acalypha rhomboidea Raf.	greater mercury	nea?		fields

Acalypha virginica L.	lesser mercury		possible	high terraces, eroded areas
Achillea millefolium L.	yarrow	loc com	T	
Actaea pachypoda Ell.	white baneberry	occ	T	
Adiantum pedatum L.	maidenhair fern	occ; loc fre	T	
Agastache nepetoides (L.) Kuntze	giant hyssop	occ	T	
Agave virginica L.	American aloe	occ	T	
Agrimonia parviflora Ait.	marsh agrimony	rar		
Agrimonia pubescens Wallr.	hairy agrimony	occ; loc fre?	T	
Agrimonia rostellata Wallr.	smooth agrimony	occ	T	
Agrostis gigantea Roth	redtop grass		expected	fields
Agrostis hyemalis (Walt.) B.S.P.	late bentgrass		expected	dry eroded/infertile upland fields; perhaps also elliottiana
Agrostis perennans (Walt.) Tuckerman	upland bentgrass		expected	upland woods on acid soils
Alisma subcordatum Raf.	water plantain		possible	stream pools, ponds
Alliaria petiolata (Bieb.) Cavara & Grande	garlic mustard	loc com	T	none recorded ca 1980; zero in plots!!!
Allium burdickii (Hanes) A.G. Jones	narrow wild leek	rar?		to be checked further; well known at Raven Run
Allium canadense L.	wild onion	occ	T	
Allium cernuum Roth	nodding onion	occ	T	
Allium tricoccum Ait.	broad wild leek	occ		some may tend to burdickii; check
Allium vineale L.	weed onion	loc fre	T	
Alyssum alyssoides (L.) L.			possible	locally established above cliffs
Amaranthus hybridus L.	common amaranth	pre?		CM: id to check
Amaranthus retroflexus L.	field amaranth	pre?	T	
Amaranthus spinosus L.	spiny amaranth	occ	T	
Ambrosia artemisiifolia L.	common ragweed	loc com	T	
Ambrosia trifida L.	giant ragweed	loc abu	T	
Ammannia coccinea Rottb.	greater pond-		possible	riverbanks, pond-shores

	purslane			
Amphicarpaea bracteata (L.) Fern.	common hogpeanut	loc com	T	
Anagallis arvensis L.	scarlet pimpernel		possible	fields
Andropogon gerardii Vitman	big bluestem	rar	T	formerly in bottomland field (CM); nearby loc abu on rocky river banks
Andropogon gyrans Ashe	sheathed broomsedge	occ		old field (Bruner? CM)
Andropogon scoparius Michx.	little bluestem		possible	riverbanks (Boone Creek)
Andropogon virginicus L.	common broomsedge	loc fre	T	
Anemone virginiana L.	thimbleweed	occ	T	
Antennaria plantaginifolia (L.) Richards.	hairy pussytoes	rar		also var. arnoglossa expected (= A. parlinii)
Anthemis cotula L.	stinking chamomile	occ	T	
Apios americana Medik.	potato bean	rar		CM: check details
Aplectrum hyemale (Muhl. ex Willd.) Torr.	puttyroot orchid		possible	rare: Raven Run (FAYE); also MERC
Apocynum cannabinum L.	dogbane	loc com	T	
Aquilegia canadensis L.	columbine	loc com	T	
Arabidopsis thaliana (L.) Heynh.	mouseear cress		expected	fields
Arabis dentata Raf.	Short's rockcress		expected	toeslopes/floodplains; = A. shortii; see also A. perstellata downstream
Arabis hirsuta (L.) Scop. var. pycnocarpa (M. Hopkins) Rollins	northern rockcress		possible	rare below cliffs
Arabis laevigata (Muhl. ex Willd.) Poir.	common rockcress	loc fre	T	
Arabis virginica (L.) Poir.	southern field cress		expected	fields; now Planodes v.
Arctium minus Bernh.	burrdock	occ	T	

Arenaria patula Michx.	limestone stitchwort	loc fre	T	includes Minuartia muscorum
Arenaria serpyllifolia L.	common sandwort		expected	fields
Arisaema dracontium (L.) Schott	green dragon	occ	T	
Arisaema triphyllum (L.) Schott	jack-in-the-pulpit	com	T	
Aristida oligantha Michx.	spreading threeawn-grass		possible	infertile eroded upland fields
Aristolochia serpentaria L.	birthwort	rar	T	toe slope west of mouth
Artemisia annua L.	fine-leaved wormwood	occ		
Asarum canadense L.	wildginger	loc abu	T	vars. canadense/acuminatum and reflexum
Asclepias incarnata L.	swamp milkweed	occ		
Asclepias quadrifolia Jacq.	fourleaf milkweed	occ	T	
Asclepias syriaca L.	common milkweed	loc com	T	
Asclepias tuberosa L.	orange milkweed		possible	less fertile, dry upland fields
Asclepias viridis Walt.	common green milkweed	loc fre	T	King/Luddy: pasture near road
Asparagus officinalis L.	asparagus		expected	old home sites, fields
Asplenium platyneuron (L.) B.S.P.	common ebony spleenwort	fre; loc com	T	
Asplenium resiliens Kunze	small ebony spleenwort	rar		See Cranfill (1980) etc.
Asplenium rhizophyllum L.	climbing spleenwort	occ; loc fre	T	
Asplenium ruta-muraria L.	lime-cliff spleenwort	occ	T	
Asplenium trichomanes L.	maidenhair spleenwort		expected	probably ssp. quadrivalens D.E. Meyer
Aster cordifolius L.	common wood-blue-aster	occ; loc fre		

Aster divaricatus L.	white wood aster	occ		an Appalachian disjunct
Aster lanceolatus Willd.	swamp little-white-aster	loc dom	T	
Aster lateriflorus (L.) Britt.	purplish little-white-aster	loc?		expected more on acid soils?
Aster macrophyllus L.	rough bigleaf wood aster	rar		check schreberii; may be difficult to separate
Aster novae-angliae L.	tall purple-aster		expected	fields
Aster oblongifolius Nutt.	lime purple-aster	loc com	T	
Aster ontarionis Wieg.	soft little-white-aster	loc fre	T	
Aster phlogifolius Muhl. ex Willd.	wood purple-aster		possible	rare; Boone Creek (Clark Co.)
Aster pilosus Willd.	old-field little-white-aster	loc abu	T	
Aster prenanthoides Muhl. ex Willd.	streamside blue-aster	occ		sw edge of Appalachian/northern range
Aster shortii Lindl.	lime wood-blue-aster	com; loc abu	T	
Astranthium integrifolium (Michx.) Nutt.	western daisy		possible	damp fields, streambanks
Athyrium asplenioides (Michx.) A.A. Eat.	lady fern		possible	high terraces?
Athyrium pycnocarpon (Spreng.) Tidestrom	giant spleenwort	loc	T	
Baptisia australis (L.) R. Br. ex Ait. f.	blue wild indigo		possible	rare on rocky banks of Ky. Rv.
Barbarea vulgaris Ait. f.	winter-cress	loc com	T	
Belamcanda chinensis (L.) DC.	blackberry lily	occ	T	
Bidens aristosa (Michx.) Britt.	common bur-marigold		possible	damp fields, ditches; esp. on more acid soil; check nomenclature
Bidens bipinnata L.	upland bur-	loc com	T	

	marigold			
Bidens cernua L.	connate bur-marigold		expected	streambanks, ponds
Bidens comosa (Gray) Wieg.	petioled bur-marigold	occ?		CM: check id
Bidens frondosa L.	small discoid bur-marigold	loc com?	T	check
Blephilia ciliata (L.) Benth.	blue wood-mint	occ	T	
Blephilia hirsuta (Pursh) Benth.	white wood-mint		expected	along trails in submesic woods
Boehmeria cylindrica (L.) Sw.	water hemp	occ	T	
Botrychium dissectum Spreng.	dissected grapefern	rar		
Botrychium virginianum (L.) Sw.	rattlesnake fern	occ	T	
Brachyelytrum erectum (Schreb. ex Spreng.) Beauv.	beech-grass	loc fre	T	
Brassica napus L.	rape		expected	fields; and relatives
Brickellia eupatorioides (L.) Shinners	alternate boneset	occ; loc fre	T	
Bromus inermis Leyss.	creeping brome-grass		expected	fields, roadsides
Bromus japonicus Thunb. ex Murr.	Japanese cheat-grass	occ; loc fre?	T	
Bromus latiglumis (Shear) A.S. Hitchc.	tall brome-grass		possible	
Bromus pubescens Muhl. ex Willd.	eastern brome-grass	loc fre	T	also check for latiglumis, nottowayanus
Bromus racemosus L.	common cheat-grass	occ?		check ids; confused with japonicus
Bromus tectorum L.	lesser-awned cheat-grass		expected	roadsides
Calamintha glabella (Michx.)	glade calamint		downstream	

Benth.				
Camassia scilloides (Raf.) Cory	wild hyacinth	loc fre	T	esp low slopes
Campanula americana L.	tall bellflower	occ; loc fre	T	
Capsella bursa-pastoris (L.) Medik.	shepherd's purse	occ	T	
Cardamine bulbosa (Schreb. ex Muhl.) B.S.P.	bulbous bittercress	rar		
Cardamine concatenata (Michx.) Sw.	laciniate toothwort	loc com	T	
Cardamine diphylla (Michx.) Wood	broad-leaved toothwort	occ	T	
Cardamine douglassii Britt.	limestone bittercress	loc com	T	
Cardamine hirsuta L.	common bittercress	occ	T	
Cardamine parviflora L.	sand bittercress			
Cardamine pensylvanica Muhl. ex Willd.	smooth bittercress		expected	streambanks, springs, seeps?
Carduus nutans L.	nodding plumeless thistle	loc fre	T	
Carex aggregata Mackenz.	rich meadow spike-sedge	loc fre	T	"muhlenbergii" of CM
Carex albicans Willd. ex Spreng.	exert tufted fine-sedge		expected	drier upland woods; perhaps also emmonsii
Carex albursina Sheldon	greater lax-sedge	loc com	T	
Carex amphibola Steud.	common wrinkled-sedge	occ?	T	perhaps on more acid soils than grisea
Carex blanda Dewey	weedy lax-sedge	com; loc fre	T	
Carex careyana Torr. ex Dewey	large-seeded lax-sedge	occ	T	
Carex cephalophora Muhl. ex Willd.	woodland headed spike-sedge	occ	T	

Carex communis Bailey	larger tufted fine-sedge	occ; loc fre?	T	
Carex conjuncta Boott	lime fox-sedge		expected	fields; perhaps also stipata on more acid soils
Carex cristatella Britt.	spreading scale-sedge	rar?		old record; check McFarland 1946; expected in damp fields
Carex digitalis Willd.	lesser lax-sedge		possible	check record from Scotts Grove; acid soils
Carex eburnea Boott	lime-cliff hair-sedge	loc fre	T	
Carex emoryi Dewey	basic water-sedge		extinct?	probably was on Ky. Rv. banks before damming
Carex festucacea Schkuhr ex Willd.	western rounded scale-sedge		possible	damp acid soils; and perhaps other related species
Carex frankii Kunth	scaly head-sedge	occ		
Carex granularis Muhl. ex Willd.	tufted lime-sedge		expected	damp fields, streambanks
Carex grayi Carey	basic rounded hop-sedge		possible	riverbanks
Carex grisea Wahlenb.	brownish wrinkled-sedge	occ; loc fre	T	
Carex hirsutella Mackenzie	common grassland hairy-sedge	occ		
Carex hirtifolia Mackenzie	hairy richwood sedge		possible	only an old/obscure record from MERC
Carex hitchcockiana Dewey	hispid wrinkled-sedge	occ	T	
Carex jamesii Schwein.	rich-wood tufted-sedge	loc fre	T	
Carex laevivaginata (Kükenth.) Mackenzie	bog fox-sedge		possible	damp acid soils; terraces?
Carex laxiculmis Schwein.	lesser blue lax-		possible	few records in Palisades; at least

	sedge			some = var. copulata
Carex laxiflora Lam.	common lax-sedge	loc?	T	check ids more
Carex leavenworthii Dewey	broad headed spike-sedge		expected	damp fields, ditches
Carex mesochorea Mackenzie	western headed spike-sedge		expected	fields
Carex molesta Mackenzie ex Bright	lime scale-sedge	loc fre	T	perhaps = "cristatella" of CM; see also other related species
Carex normalis Mackenzie	rich-wood scale-sedge		expected	submesic woods; perhaps more away from Palisades
Carex oligocarpa Schkuhr ex Willd.	lesser wrinkled-sedge	occ; loc com	T	
Carex pensylvanica Lam.	spreading fine-sedge	loc fre	T	
Carex planispicata Naczi	planar wrinkled-sedge		possible	more acid soils
Carex plantaginea Lam.	candycane lax-sedge		possible	rare: Raven Run only?
Carex platyphylla Carey	greater blue lax-sedge	loc fre	T	often upper slopes of mesic woods
Carex purpurifera Mackenzie	purple lax-sedge	rar; loc fre	T	along Reed's road; rich shaded bank
Carex rosea Schkuhr ex Willd.	moist-woods little-spike-sedge	loc fre	T	perhaps also radiata on damp acid soils
Carex shortiana Dewey	lime-meadow-sedge	occ	T	toeslope-terrace transiton; also expected in damp fields, edges
Carex sparganioides Muhl. ex Willd.	rich-woods spike-sedge	occ; loc fre	T	
Carex striatula Michx.	exert lax-sedge		possible	dry acid soils; few records; need rechecking
Carex texensis (Torr.) Bailey	field spike-sedge		expected	fields
Carex timida Naczi & B.A. Ford		occ?	T	check coll; upper woods near mouth?
Carex tribuloides Wahlenb. var.	marsh thin-scale-		possible	wet fields, ditches; on more acid soils

tribuloides	sedge			
Carex umbellata Schkuhr ex Willd.	limestone hidden fine-sedge		expected	drier woods, trails, glades
Carex vulpinoidea Michx.	fine-fox-sedge		expected	wet fields, ditches
Cassia fasciculata Michx.	greater partridge-pea		possible	high terraces, fields; sometimes sown
Cassia marilandica L.	upland senna	occ	T	
Caulophyllum thalictroides (L.) Michx.	blue cohosh	occ	T	
Centaurea biebersteinii DC.	spotted knapweed		expected	dry fields, roadsides
Cerastium glomeratum Thuill.	sticky mouse-ear chickweed		expected	fields
Cerastium nutans Raf.	nodding mouse-ear chickweed	occ	T	
Cerastium velutinum Raf.	nodding mouse-ear chickweed	rar; loc fre	T	
Cerastium vulgare Hartman	common mouse-ear chickweed	occ?	T	(fontanum ssp. vulgare; "vulgatum")
Chaerophyllum procumbens (L.) Crantz	smooth wild chervil	pre	T	see also var. shortii
Chaerophyllum tainturieri Hook.	hairy wild chervil		expected	dry fields, roadsides
Chasmanthium latifolium (Michx.) Yates	common wood-oats	occ; loc fre	T	low-mid slopes, esp. near streams and locally along cliffs
Chelone glabra L.	white turtlehead	rar?		old record; check McFarland 1946
Chenopodium album L.	common goosefoot	loc com	T	
Chenopodium ambrosioides L.	Mexican tea	occ	T	
Chenopodium simplex (Torr.) Raf.	maple-leaved goosefoot	occ	T	below cliffs
Chenopodium standleyanum Aellen	slender goosefoot	occ?	T	check records
Chimaphila maculata (L.) Pursh	striped		possible	rare on more acid soils

	wintergreen			
Chrysanthemum leucanthemum L.	oxeye daisy	loc com	T	
Cichorium intybus L.	chicory	loc com	T	
Cicuta maculata L.	spotted cowbane	occ		riverbottom
Cinna arundinacea L.	wood reedgrass	occ		
Circaea canadensis (L.) Hill	enchanter's nightshade	occ	T	
Cirsium arvense (L.) Scop.	creeping thistle	occ?		CM: probably increased since then
Cirsium discolor (Muhl. ex Willd.) Spreng.	old-field thistle	loc fre	T	
Cirsium vulgare (Savi) Ten.	bull thistle	nea?		
Claytonia virginica L.	common spring-beauty	loc abu	T	
Clematis viorna L.	common leather-flower	rar; loc fre		hairy variant; cf. flaccida Small
Cocculus carolinus (L.) DC.	red-berried moonseed	occ	T	S-face below Reed's house
Collinsia verna Nutt.	blue-eyed-Mary	rar?		old record; check McFarland 1946
Collinsonia canadensis L.	horse-balm	occ		CM
Comandra umbellata (L.) Nutt.	bastard toadflax		possible	on bluffs to west
Commelina communis L.	common dayflower	occ		
Commelina diffusa Burm. f.	lowland dayflower		expected	river bottoms
Conium maculatum L.	poison hemlock	occ; loc abu	T	
Conopholis americana (L.) Wallr. f.	squawroot	occ	T	
Convolvulus arvensis L.	field bindweed	nea?		
Convolvulus fraterniflorus (Mackenzie & Bush) Mackenzie & Bush	angle-leaved bindweed	nea?		[= Calystegia f.]
Corallorhiza odontorhiza	late coral-root		expected	

(Willd.) Poir.				
Corallorhiza wisteriana Conrad	early coral-root		expected	several old/obscure records along Palisades
Coronilla varia L.	crown-vetch	nea		roadsides, nearby fields
Corydalis flavula (Raf.) DC.	yellow fumewort	loc com	T	
Crepis pulchra L.	handsome hawksbeard		expected	fields, roadsides
Croton capitatus Michx.	woolly croton		possible	fields, roadsides
Croton monanthogynus Michx.	lime croton	nea?	T	
Cryptotaenia canadensis (L.) DC.	honewort	loc fre	T	
Cuphea viscosissima Jacq.	blue waxweed	occ; loc fre	T	
Cuscuta campestris Yuncker	field dodder	occ?		CM: check ids (close to pentagona)
Cuscuta pentagona Engelm.	five-angled dodder		expected	streambanks, damp fields
Cynanchum laeve (Michx.) Pers.	honey-vine	occ	T	
Cynodon dactylon (L.) Pers.	Bermuda-grass		expected	lawns, roadsides, fields
Cynoglossum virginianum L.	wild comfrey	occ		
Cyperus esculentus L.	chufa flatsedge		expected	fields, gardens, roadsides
Cyperus flavescens L.	yellow flatsedge		possible	more acid soils
Cyperus odoratus L.	fragrant flatsedge		expected	fields, gardens, roadsides
Cyperus squarrosus L.	bearded flatsedge	loc fre?		Bruner Tract; check colls/notes ca 1990
Cyperus strigosus L.	common flatsedge	occ; loc fre	T	
Cypripedium pubescens Willd.	yellow lady's slipper		possible	rare if present; few old/obscure records
Cystopteris bulbifera (L.) Bernh.	bulblet fern	loc fre	T	
Cystopteris protrusa (Weatherby) Blasdell	common fragile fern	loc com	T	
Cystopteris tennesseensis Shaver	cliffty fragile fern		expected	
Dactylis glomerata L.	orchardgrass	loc abu	T	
Danthonia spicata (L.) Beauv. ex Roemer & J.A. Schultes	common poverty-grass	occ; loc fre	T	

Dasistoma macrophylla (Nutt.) Raf.	mullein foxglove	occ	T	[misided as Aureolaria sometimes]
Datura stramonium L.	jimsonweed	occ		
Daucus carota L.	wild carot	loc com	T	
Delphinium ajacis	garden larkspur	rar		fields; CM
Delphinium tricorne Michx.	wood larkspur	loc com	T	
Descurainia pinnata (Walt.) Britt.	wild tansy		expected	var. brachycarpa (Richards.) Fern.
Desmodium glutinosum (Muhl. ex Willd.) Wood	rich wood tick-trefoil	occ; loc fre	T	
Desmodium nudiflorum (L.) DC.	common wood tick-trefoil		possible	woods on high terraces
Desmodium paniculatum (L.) DC.	narrow-leaved tick-trefoil	occ	T	
Desmodium pauciflorum (Nutt.) DC.	pale wood tick-trefoil	rar		
Desmodium perplexum Schub.	hairy field tick-trefoil	loc com	T	
Desmodium rotundifolium DC.	low round-leaved tick-trefoil	rar		
Diarrhena americana Beauv.	beakgrain grass	fre; loc dom	T	
Dicentra canadensis (Goldie) Walp.	squirrel corn	loc abu	T	
Dicentra cucullaria (L.) Bernh.	dutchman's breeches	loc com	T	
Digitaria ischaemum (Schreb.) Schreb. ex Muhl.	smooth crabgrass		expected	fields, roadsides
Digitaria sanguinalis (L.) Scop.	hairy crabgrass	pre	T	
Dioscorea polystachya Turcz.	air-potato yam		expected	esp. old home sites [= oppositifolia, batatas]
Dioscorea quaternata J.F. Gmel.	wild yam	fre	T	perhaps also villosa on sandy bottoms along river

Dipsacus fullonum L.	teasel	occ	T	
Dipsacus laciniatus L.	teasel	rar		
Dodecatheon meadia L.	shooting-star	occ; loc fre	T	
Draba ramosissima Desv.	cliff draba	occ	T	
Draba verna L.	weed draba	occ	T	
Dryopteris marginalis (L.) Gray	marginal woodfern	loc	T	
Duchesnea indica (Andr.) Focke	false strawberry	occ	T	
Echinochloa crus-galli (L.) Beauv.	barnyard puddle-grass	occ	T	
Echinochloa muricata (Beauv.) Fern.	bristly puddle-grass	rar?		
Eclipta prostrata (L.) L.	false daisy		expected	streambanks, damp fields, ditches
Eleocharis erythropoda Steud.	reddish spike-rush		possible	rocky streambanks, riverbanks
Eleocharis obtusa (Willd.) J.A. Schultes	common spike-rush	occ		
Elephantopus carolinianus Raeusch.	common elephant's-foot	com	T	
Eleusine indica (L.) Gaertn.	goose-grass	occ	T	
Elodea americana Michx.	common waterweed		extinct	formerly in Ky. Rv.; perhaps also E. nuttallii
Elymus hystrix L.	bottlebrush-grass	com; loc abu	T	
Elymus macgregorii J. Camp. & R. Brooks	early wild-rye	com; loc abu	T	
Elymus riparius Wieg.	lowland nodding wild-rye		expected	riverbanks
Elymus svensonii Church	bottlebrush-grass	rar?	T	introgressed with hystrix; few pure patches?
Elymus villosus Muhl. ex Willd.	upland nodding wild-rye	loc fre	T	also expected is var. arkansanas (Raven Run)
Elymus virginicus L. var. intermedius (Vasey) Bush	hairy common wild-rye		expected	riverbanks

Elymus virginicus L. var. virginicus	smooth common wild-rye	loc com	T	
Enemion biternatum Raf.	deep-lobed rue anemone	pre?	T	
Epifagus virginiana (L.) W. Bart.	beechdrops	rar		
Epilobium coloratum Biehler	eastern willowherb	rar		CM; check details
Equisetum arvense L.	branched horsetail		possible	streambanks?
Equisetum hyemale L.	straight horsetail		possible	streambanks?
Eragrostis cilianensis (All.) Vign. ex Janchen	stinking love-grass		expected	fields; minor is also possible
Eragrostis hypnoides (Lam.) B.S.P.	shore love-grass		possible	riverbanks; esp. before damming
Eragrostis pectinacea (Michx.) Nees ex Steud.	common love-grass	occ; loc fre	T	
Erechtites hieracifolia (L.) Raf. ex DC.	fireweed		possible	fields, thickets, edges; more acid soils?
Erigenia bulbosa (Michx.) Nutt.	harbinger-of-spring	occ; loc fre?	T	
Erigeron annuus (L.) Pers.	common daisy-fleabane	loc abu	T	
Erigeron canadensis L.	common horseweed	nea	T	
Erigeron philadelphicus L.	early daisy-fleabane	fre; loc com	T	
Erigeron strigosus Muhl. ex Willd.	western daisy-fleabane		expected	fields
Erysimum repandum L.	spreading wallflower		expected	fields
Erythronium albidum Nutt.	white trout-lily	occ; loc abu	T	
Erythronium americanum Ker-Gawl.	yellow trout-lily	fre; loc abu	T	
Euonymus obovatus Nutt.	creeping	loc fre	T	

	strawberry-bush			
Eupatorium altissimum L.	lime boneset	loc fre	T	
Eupatorium coelestinum L.	blue mistflower	occ	T	
Eupatorium fistulosum Barratt	common joe-pye-weed	occ		CM; creek floodplain
Eupatorium incarnatum Walt.	upland mistflower	occ	T	along Reed Rd; also McFarland 1946
Eupatorium perfoliatum L.	marsh boneset	occ	T	
Eupatorium purpureum L.	wood joe-pye-weed	occ	T	
Eupatorium rugosum Houtt.	common snakeroot	fre; loc abu	T	
Eupatorium serotinum Michx.	lowland boneset		possible	damp acid soils; terraces
Eupatorium sessilifolium L.	wood boneset	occ		
Euphorbia commutata Engelm.	wood spurge	occ; loc fre	T	
Euphorbia corollata L.	showy spurge		possible	high terraces
Euphorbia dentata Michx.	toothed spurge	rar		probably with E. davidii (dentata var. gracillima)
Euphorbia humistrata Engelm.	western milk-purslane	occ	T	roadbed to Reed; perhaps also with vermiculata
Euphorbia maculata L.	common milk-purslane		expected	fields, roadbeds
Euphorbia nutans Lag.	greater milk-purslane	occ	T	
Festuca arundinacea Schreb.	tall fescue	loc dom	T	
Festuca rubra L.	red fescue		possible	exact identity and status of plants in central Ky. remains uncertain; see Atlas
Festuca subverticillata (Pers.) Alexeev	wood fescue	fre; loc abu	T	
Fragaria virginiana Duchesne	wild strawberry	occ		
Frasera caroliniensis Walt.	colombo	occ	T	
Galearis spectabilis (L.) Raf.	showy orchid		possible	perhaps locally extinct; only a few old/obscure records

Galinsoga quadriradiata Cav.	shaggy-soldier	occ; loc fre?		
Galium aparine L.	cleaving bedstraw	loc abu	T	
Galium circaezans Michx.	dry wood bedstraw	loc fre	T	
Galium concinnum Torr. & Gray	needle-leaved bedstraw	occ; loc fre	T	
Galium pedemontanum (Bellardi) All.	piedmont bedstraw		expected	fields
Galium triflorum Michx.	moist wood bedstraw	occ	T	
Gaura biennis L.	lowland gaura	occ		CM: check: old edge below Reed?
Gentiana saponaria L.	marsh gentian		possible	riverbottoms
Geranium carolinianum L.	field geranium	occ	T	
Geranium maculatum L.	wood geranium	occ; loc com		
Geum canadense Jacq.	white avens	loc com	T	
Geum vernum (Raf.) Torr. & Gray	spring avens	occ	T	
Geum virginianum L.	cream avens		possible	reported from Camp Nelson area
Glechoma hederacea L.	gill-over-the-ground	loc fre	T	
Glyceria striata (Lam.) A.S. Hitchc.	common mannagrass	occ; loc fre?	T	
Gnaphalium obtusifolium L.	common everlasting	occ	T	
Gnaphalium purpureum L.	purple everlasting	occ?		CM: old records?
Goodyera pubescens (Willd.) R. Br. ex Ait. f.	rattlesnake plantain	rar		check data; also ANDE, FAYE
Gratiola neglecta Torr.	common pond-hyssop		expected	ponds, ditches
Hackelia virginiana (L.) I.M. Johnston	beggars-lice		expected	mostly in upland woods

Hedeoma pulegioides (L.) Pers.	pennyroyal	occ; loc fre		
Helenium autumnale L.	broad-leaved sneezeweed	occ		
Helianthus decapetalus L.	large wood sunflower	occ?	T	on toe slopes and upper wood (w/Hydrastis); check ids versus trachelifolius
Helianthus divaricatus L.	sessile wood sunflower	rar		
Helianthus hirsutus Raf.	common glade sunflower	rar		
Helianthus microcephalus Torr. & Gray	small wood sunflower	occ; loc fre	T	
Helianthus tuberosus L.	tuberous sunflower	rar		
Heliopsis helianthoides (L.) Sweet	oxeye-sunflower		expected	
Hemerocallis fulva (L.) L.	orange daylily		expected	loc abu along Ky. Rv. nearby (Bowmans Bend)
Hepatica acutiloba DC.	acute hepatica	loc abu	T	
Hesperis matronalis L.	dames-rocket	occ		end of McGee Lane
Heuchera americana L.	common alumroot	occ	T	
Heuchera macrorhiza Small	lime-cliff alumroot	occ; loc fre	T	
Hexalectris spicata (Walt.) Barnh.	crested coral-root		possible	rare: only known at Scott's Grove to east
Hibiscus moscheutos L.	broad-leaved rosemallow		possible	riverbanks; at least before settlement
Hieracium gronovii L.	common upright hawkweed		possible	dry acid soils; reported from Scott's Grove to east
Holosteum umbellatum L.	nodding mouse-ear chickweed		possible	esp. in fields on high terraces
Hordeum pusillum Nutt.	little barley		expected	roadsides
Houstonia canadensis Willd. ex	rosette-leaved	occ		

Roemer & J.A. Schultes	bluets			
Houstonia lanceolata (Poir.) Britt.	lance-leaved bluets	occ		[= H. purpurea var. calycosa]
Houstonia longifolia Gartn.	hilltop bluets	rar?		CM: check ids; perhaps = canadensis x lanceolata
Houstonia nigricans (Lam.) Fern.	limestone bluets	occ; loc fre	T	broad-leaved variant; could be named var. rupestris (Raf.) new comb.
Humulus japonicus Sieb. & Zucc.	Japanese hops		possible	spreading on banks of Ky. Rv.
Hybanthus concolor (T.F. Forst.) Spreng.	greenviolet	occ	T	
Hydrastis canadensis L.	goldenseal	rar	T	somewhat acid upland woods west of mouth
Hydrophyllum appendiculatum Michx.	blue waterleaf	loc fre	T	
Hydrophyllum canadense L.	lowland waterleaf	occ; loc abu	T	
Hydrophyllum macrophyllum Nutt.	upland waterleaf	loc com	T	
Hypericum dolabriforme Vent.	cedar-glade St. John's-wort		expected	flatter outcrops set back from cliffs
Hypericum mutilum L.	dwarf St. Johns-wort		possible	high terraces
Hypericum perforatum L.	weedy St. John's-wort		expected	fields
Hypericum punctatum Lam.	common St. Johnswort	occ	T	
Hypericum sphaerocarpum Michx.	shoreline St. Johnswort	rar?		old coll. of Wharton; 1950s check
Hypoxis hirsuta (L.) Coville	yellow-eyed-grass		possible	dry acid soils; reported from Scotts Grove
Impatiens capensis Meerb.	orange jewelweed	loc com	T	
Impatiens pallida Nutt.	yellow jewelweed	loc com	T	

Iodanthus pinnatifidus (Michx.) Steud.	purple-rocket	occ	T	
Ipomoea hederacea Jacq.	ivy-leaved morning-glory	occ		
Ipomoea lacunosa L.	lesser morning-glory	occ		
Ipomoea purpurea (L.) Roth	garden morning-glory		expected	fields
Iresine rhizomatosa Standl.	woolly staff		expected	riverbanks
Iris cristata Ait.	common dwarf iris	rar		mouth of Figg Creek
Iva annua L.	annual sumpweed		possible	riverbottoms; damp fields
Jeffersonia diphylla (L.) Pers.	twinleaf	loc abu	T	
Juncus dudleyi Wieg.	greater path-rush		expected	streambanks, wet fields
Juncus effusus L. var. solutus Fern. & Wieg.	greater marsh-rush		possible	more acid soils; high terraces?
Juncus tenuis Willd.	common path-rush	pre		
Justicia americana (L.) Vahl	water-willow	loc abu	T	
Lactuca canadensis L.	common wild lettuce	nea		fields, roadsides
Lactuca floridana (L.) Gaertn.	common blue lettuce	rar	T	
Lactuca serriola L.	prickly lettuce	loc fre	T	
Lamium amplexicaule L.	dryland henbit	occ	T	
Lamium purpureum L.	common henbit	occ; loc fre	T	
Laportea canadensis (L.) Weddell	wood nettle	loc abu	T	
Leersia oryzoides (L.) Sw.	lowland rice-grass		expected	marshy streambanks
Leersia virginica Willd.	common rice-grass	occ; loc fre	T	
Leonurus cardiaca L.	motherwort	occ		
Lepidium campestre (L.) Ait. f.	old-field pepperweed		expected	fields
Lepidium virginicum L.	common	loc com	T	

	pepperweed			
Leptochloa brachiata Steudl.	southern feathergrass		possible	fields, riverbanks
Lespedeza frutescens (L.) Hornem. ("violacea")	lime bush-clover	occ; loc fre	T	dirt roadbed; "violacea"
Lespedeza intermedia (L. Wats.) Britt.	intermediate bush-clover	rar		perhaps true violacea
Lespedeza procumbens Michx.	hairy creeping bush-clover	occ		
Lespedeza stipulacea Maxim.	Korean clover		expected	fields; widely planted
Lesquerella globosa Desv.	bladder-pod	rar?		old records only; 1950s/60s; check details
Leucospora multifida (Michx.) Nutt.	shore-hyssop		expected	fields; riverbanks
Liatris squarrosa (L.) Michx.	small blazing star		possible	rare; 1979 record from Handys Bend
Lilium michiganense Farw.	western lily	rar?		old record (CM); largely disappeared
Linaria vulgaris P. Mill.	butter-and-eggs		expected	fields
Lindernia dubia (L.) Pennell	pond-pimpernel		expected	ponds, wet fields; also var. anagallidea
Liparis liliifolia (L.) L.C. Rich. ex Ker-Gawl.	tway-blade orchid	occ		perhaps becoming rare; check locations
Lithospermum arvense L.	bastard alkanet	occ	T	
Lithospermum canescens (Michx.) Lehm.	orange puccoon		possible	rare on rocky uplands openings
Lobelia cardinalis L.	cardinal-flower		possible	streambanks on more acid, marshy substrate; perhaps associated with high terraces
Lobelia inflata L.	common lobelia	occ	T	
Lobelia siphilitica L.	great blue lobelia	occ	T	
Lobelia spicata Lam.	spikate lobelia	occ		
Ludwigia decurrens Walt.	annual water-primrose		possible	riverbanks

Ludwigia peploides (Kunth) Raven	floating water-primrose		possible	streambanks, ponds
Luzula echinata (Small) F.J. Herm.	common woodrush		possible	more acid soils; high terraces?
Lycopodium digitatum Dill. ex A. Braun	common ground-cedar		possible	high terraces?
Lycopus americanus Muhl. ex W. Bart.	dissected water-horehound		expected	streambanks, ponds
Lycopus virginicus L.	common water-horehound		possible	streambanks, ponds; more acid soil
Lysimachia lanceolata Walt.	common loosestrife	rar?		CM: check details
Lysimachia nummularia L.	creeping loosestrife	occ	T	
Lysimachia quadrifolia L.	wood loosestrife	rar?		CM: check details
Maianthemum racemosum (L.) Link	false solomon's-seal	loc fre	T	
Malva neglecta Wallr.	common mallow		expected	fields
Malvastrum hispidum (Pursh) Horchr.	glade mallow		possible	rocky flats on uplands
Matelea gonocarpos (Walt.) Shinners	angularfruit milkvine	rar?	T	slope below Reed; also along his road; seed coll to be grown
Matelea obliqua (Jacq.) Woods.	climbing milkvine	occ	T	need to check versus gonocarpus
Matricaria discoidea DC.	false chamomile		expected	fields
Medicago lupulina L.	black medick	nea?		
Medicago sativa L.	alfalfa		expected	fields
Meehania cordata (Nutt.) Britt.	mountain catnip	rar		
Melica mutica Walt.	common melic-grass		expected	rocky woods
Melica nitens (Scribn.) Nutt. ex Piper	common melic-grass	loc		
Melilotus alba Medikus	white sweetclover	loc com	T	

Melilotus officinalis (L.) Lam.	yellow sweetclover	loc com?	T	
Menispermum canadense L.	common moonseed	occ; loc fre?	T	
Mentha spicata L.	spearmint	loc		streamheads, ditches
Mertensia virginica (L.) Pers. ex Link	bluebells	occ; loc abu	T	
Microstegium vimineum (Trin.) A. Camus	Japanese grass	loc fre	T	
Mimulus alatus Ait.	common monkeyflower	occ		
Mitella diphylla L.	miterwort	occ	T	
Mollugo verticillata L.	carpetweed	occ	T	
Monarda aff. fistulosa L. (mesic broad-leaved form)	lowland bergamot	occ?		"serotina"; probable hybrid origin from clinopodia and fistulosa
Monarda fistulosa L.	common bergamot	occ		most/all is var. mollis
Muhlenbergia cuspidata (Torr. ex Hook.) Rydb.	plains muhly		possible	reported from ANDE (Bryant 1973); perhaps also a record of capillaris from FRAN (Medley)
Muhlenbergia frondosa (Poir.) Fern.	riverbank muhly	occ	T	
Muhlenbergia schreberi J.F. Gmel.	nimblewill	occ; loc fre	T	
Muhlenbergia sobolifera (Muhl. ex Willd.) Trin.	lime muhly	fre; loc abu	T	
Muhlenbergia sylvatica Torr. ex Gray	wood muhly	rar?	T	gully on low river slope; perhaps transitional to tenuiflora
Myosotis macrosperma Engelm.	wood forget-me-not	occ	T	
Nasturtium officinale R. Brown	water-cress	occ; loc		
Nothoscordum bivalve (L.) Britt.	crowpoison	occ; loc fre	T	
Obolaria virginica L.	pennywort		possible	rare in woods on acid soil

Oenothera biennis L.	common evening-primrose	occ; loc fre	T	
Oenothera triloba Nutt.	glade evening-primrose		possible	rocky/eroded flats
Onoclea sensibilis L.	swamp fern		possible	high terraces?
Onosmodium hispidissimum Mack.	gromwell		possible	rare on rocky upland openings
Ophioglossum pycnostichum (Fern.) A.& D. Löve	common adderstongue		possible	terraces?
Opuntia humifusa (Raf.) Raf.	prickly pear	rar; loc fre	T	roadside from Corman Lane
Ornithogalum umbellatum L.	star-of-Bethlehem	loc com		esp in grazed upland woods/edges
Orobanche uniflora L.	wood broomrape		possible	rare in woods on acid soil
Osmorhiza claytonii (Michx.) C.B. Clarke	hairy cicely	loc fre	T	
Osmorhiza longistylis (Torr.) DC.	smooth cicely	occ; loc fre	T	
Oxalis dillenii Jacq.	lesser yellow sorrel	occ	T	
Oxalis grandis Small	yellow wood-sorrel	occ	T	check for illinoensis
Oxalis illinoensis Schwegman	western wood-sorrel		expected	close to grandis
Oxalis stricta L.	tall wood-sorrel	occ	T	
Oxalis violacea L.	violet wood-sorrel	occ; loc fre	T	
Pachysandra procumbens Michx.	box-spurge		possible	at Camp Nelson to east
Panax quinquefolius L.	ginseng		possible	
Panicum acuminatum Sw. var. fasciculatum (Torr.) Lelong	small hairy panic-grass	occ?		most/all is var. fasciculatum?
Panicum anceps Michx.	meadow fall-panicgrass		expected	fields; more acid soil
Panicum boscii Poir.	hairy-noded broadleaf panic-	loc com	T	

	grass			
Panicum capillare L.	greater witchgrass		expected	fields
Panicum clandestinum L.	dotted broadleaf panic-grass	loc fre	T	
Panicum commutatum J.A. Schultes	lesser broadleaf panic-grass	occ?		recheck details; possible on acid soils but needs confirmation
Panicum dichotomiflorum Michx.	field fall-panicgrass	occ; loc com	T	
Panicum flexile (Gattinger) Scribn.	rock witchgrass	occ; loc fre	T	clifftops, rocky fields, roadsides
Panicum gattingeri Nash	lesser witchgrass		expected	fields
Panicum linearifolium Scribn. ex Nash	common tufted panic-grass	occ		clifftops
Panicum virgatum L.	switchgrass		possible	riverbanks, esp. before settlement
Parietaria pensylvanica Muhl. ex Willd.	pellitory	occ	T	
Paronychia canadensis (L.) Wood	common whitlow-wort	rar		eroding upper slope woods; needs verification
Paspalum fluitans (Ell.) Kunth	water lens-grass		possible	riverbanks, esp. before settlement
Paspalum pubiflorum Rupr. ex Fourn. var. glabrum Vasey ex Scribn.	decumbent lens-grass		expected	fields
Paspalum setaceum Michx. var. muehlenbergii (Nash) D. Banks	lesser lens-grass		expected	fields; esp. var. muhlenbergii/ciliatifolium
Passiflora incarnata L.	purple passionflower		expected	fields/roadsides/railroads
Passiflora lutea L.	yellow passionflower	occ	T	
Pastinaca sativa L.	wild parsnip	occ		
Paxistima canbyi Gray	mountain-lover	rar		Paxistima Point
Pedicularis canadensis L.	common lousewort		possible	rare in woods on acid soil

Pellaea atropurpurea (L.) Link	purple cliffbrake	occ; loc fre	T	
Pellaea glabella Mett. ex Kuhn	smooth cliffbrake	rar?		
Penstemon calycosus Small	felty open beardtongue	occ		
Penstemon digitalis Nutt. ex Sims	smooth open penstemon		possible	riverbanks; wet fields
Penstemon hirsutus (L.) Willd.	smooth closed beardtongue	occ; loc fre	T	
Penthorum sedoides L.	ditch stonecrop		expected	streambanks
Perideridia americana (Nutt. ex DC.) Reichenb.	eastern yampah		possible	
Perilla frutescens (L.) Britt.	beef-steak-plant	occ		
Phacelia bipinnatifida Michx.	purple/Frankfort fog	occ; loc fre	T	
Phacelia purshii Buckl.	blue/Miami mist	loc com	T	
Phleum pratense L.	timothy	loc fre	T	
Phlox amplifolia Britt.	broad-leaved phlox		downstream	downstream of Jessamine Co
Phlox bifida Beck	barrens phlox	loc fre	T	S/W facing points in lower gorge
Phlox divaricata L. var. divaricata	eastern wood phlox	pre	T	
Phryma leptostachya L.	lopseed	occ; loc fre	T	
Phyla lanceolata (Michx.) Greene	fogfruit	occ		
Physalis heterophylla Nees	clammy groundcherry	occ	T	all is var. heterophylla
Physalis subglabrata Mackenzie & Bush	smooth groundcherry	occ	T	
Physostegia virginiana (L.) Benth.	lowland obedient plant		possible	riverbanks; at least before damming
Phytolacca americana L.	pokeweed	loc com	T	
Pilea pumila (L.) Gray	clearweed	loc com	T	

Piptatherum racemosum Ricker ex A.S. Hitchc.	mountain rice-grass		expected	found at several other sites in central Palisades
Plantago aristata Michx.	bristly plantain	rar		
Plantago lanceolata L.	English plantain	loc com	T	
Plantago rugelii Dcne.	broad-leaf plantain	loc fre	T	
Plantago virginica L.	hoary plantain	occ		
Poa annua L.	common annual bluegrass	occ	T	
Poa autumnalis Muhl. ex Ell.	tulip-wood bluegrass	loc		esp. mesic acid soils of low terraces?
Poa compressa L.	compressed bluegrass		expected	dry sites, including below cliffs
Poa cuspidata Nutt.	early wood bluegrass	loc fre		
Poa pratensis L.	common bluegrass	loc dom	T	perhaps also angustifolia as distinct taxon
Poa sylvestris Gray	walnut-wood bluegrass	occ; loc fre	T	
Poa trivialis L.	lowland bluegrass		expected	streambanks, damp fields/edges
Podophyllum peltatum L.	mayapple	loc com	T	
Podostemum ceratophyllum Michx.	riverweed		extinct	formerly in Ky. Rv.
Polemonium reptans L.	Jacob's-ladder	loc fre	T	[hairy forms are not var. villosum]
Polygala cf. lonchophylla Greene	greater milkwort	occ	T	previously known as senega var. latifolia
Polygonatum biflorum (Walt.) Ell.	common Solomon's seal	pre	T	
Polygonatum commutatum (J.A. & J.H. Schultes) A. Dietr.	greater Solomon's seal	pre		
Polygonatum pubescens (Willd.) Pursh	hairy Solomon's seal	occ	T	
Polygonum aviculare L.	lowly knotweed	occ	T	and segregate P. arenastrum Boreau

Polygonum erectum L.	upright knotweed	nea?		
Polygonum hydropiperoides Michx.	common water smartweed	occ?		check id; perhaps punctatum (CM)
Polygonum lapathifolium L.	greater nodding smartweed		expected	esp. streambanks
Polygonum longisetum de Bruyn	Asian pink smartweed	loc abu	T	
Polygonum pensylvanicum L.	greater pink smartweed	occ	T	
Polygonum persicaria L.	European pink smartweed	occ	T	
Polygonum punctatum Ell.	common white smartweed	occ; loc fre?	T	
Polygonum scandens L.	lowland climbing buckwheat	pre	T	perhaps with var. cristata also
Polygonum virginianum L.	wood knotweed	loc fre	T	
Polymnia canadensis L.	white wood-rosinweed	loc dom	T	
Polymnia uvedalia (L.) L.	yellow wood-rosin	rar	T	
Polypodium polypodioides (L.) Watt	resurrection polypody	rar	T	points
Polypodium virginianum L.	rock polypody		possible	See Cranfill (1980) etc.
Polystichum acrostichoides (Michx.) Schott	Christmas fern	loc fre	T	
Portulaca oleracea L.	purslane	occ		
Potamogeton crispus L.	curly-leaved pondweed		expected	streams
Potamogeton foliosus Raf.	narrow-leaved pondweed		expected	streams
Potamogeton nodosus Poir.	broad-leaved pondweed		expected	streams; see also old collections from Ky. Rv. filed under related species
Potamogeton tennesseensis Fern.	Appalachian		extinct?	See old collections (with

	pondweed			"epihydrus"); formerly in Ky. Rv.?
Potentilla norvegica L.	rough cinquefoil	occ		
Potentilla recta L.	sulphur cinquefoil	occ	T	
Potentilla simplex Michx.	common cinquefoil	rar	T	
Prenanthes altissima L.	common wood-lettuce	loc fre	T	
Prenanthes crepidinea Michx.	giant wood-lettuce		possible	damp thickets, edges
Prunella lanceolata W. Bart.	lance-leaved selfheal	occ	T	
Ranunculus abortivus L.	smooth little-buttercup	occ	T	
Ranunculus fascicularis Muhl. ex Bigelow	rocky wood-buttercup		possible	at Scott's Grove to east
Ranunculus hispidus Michx.	common wood-buttercup	occ		
Ranunculus micranthus Nutt.	hairy little-buttercup	com	T	
Ranunculus recurvatus Poir.	lobed wood-buttercup	occ		
Ratibida pinnata (Vent.) Barnh.	prairie coneflower	rar		few on rocky shelf of Bruner Tract
Rorippa palustris (L.) Bess.	tall yellow-cress		expected	streambanks
Rorippa sylvestris (L.) Bess.	creeping yellow-cress		expected	fields
Rudbeckia hirta L. var. pulcherrima Farw.	common blackeyed Susan	loc fre	T	all is var. pulcherrima [= R. serotina]
Rudbeckia laciniata L.	cutleaf coneflower	loc com		
Rudbeckia tenax C.L. Boynt. & Beadle	barrens coneflower	rar	T	upper woods NE of mouth; perhaps also transitions to R. speciosa expected
Rudbeckia triloba L.	lobed coneflower	occ	T	
Rudbeckia truncata Small	cliff coneflower		possible	clifftop at Camp Nelson

Ruellia caroliniensis (J.F. Gmel.) Steud.	upland petunia	rar		
Ruellia humilis Nutt.	limestone petunia	rar	T	
Ruellia strepens L.	lowland petunia	nea	T	
Rumex acetosella L.	sheep sorrel	rar?		eroded upland fields?
Rumex altissimus Wood	stream dock		expected	esp. along smaller streams
Rumex crispus L.	curlyleaf dock	occ	T	
Rumex obtusifolius L.	broadleaf dock	occ	T	
Sagittaria australis (J.G. Sm.) Small	southern arrowhead	occ		CM: id to check; expected in stream pools, ponds; and perhaps other species
Salvia lyrata L.	lyreleaf sage	occ		dry upland woods/edges
Samolus parviflorus Raf.	water-pimpernel	rar?		
Sanguinaria canadensis L.	bloodroot	com	T	
Sanicula canadensis L.	common sanicle	com	T	
Sanicula odorata (Raf.) K.M. Pryer & L.R. Phillippe	gregarious/rich-wood sanicle	loc com	T	[= S. gregaria]
Sanicula trifoliata Bickn.	tulip-wood sanicle	occ		
Saponaria officinalis L.	bouncingbet	occ	T	
Saururus cernuus L.	lizard's tail	occ		
Saxifraga virginiensis Michx.	common saxifrage	loc com	T	
Schizachne purpurascens (Torr.) Swallen	purple false melic-grass	occ; loc fre	T	
Scirpus atrovirens Willd.	pale marsh bulrush	occ		georgianus also possible?
Scirpus cyperinus (L.) Kunth	tall wooly bulrush		possible	ponds, perhaps more acid soils?
Scirpus pendulus Muhl.	prairie bulrush		expected	fields
Scirpus tabernaemontani K.C. Gmel.	tall softstem bulrush		possible	slow streams, ditches, ponds
Scrophularia marilandica L.	figwort	occ		
Scutellaria elliptica Muhl. ex Spreng.	small wood skullcap	occ		
Scutellaria lateriflora L.	mad-dog skullcap	rar		streambanks

Scutellaria leonardii Epling	smooth little skullcap		possible	flat outcrops; also S. parvula to check
Scutellaria nervosa Pursh	small wood skullcap		expected	upland woods on gentler slopes
Scutellaria ovata Hill	heart-leaved skullcap	occ	T	perhaps all is var. versicolor
Sedum pulchellum Michx.	pink stonecrop	loc com	T	
Sedum ternatum Michx.	wood stonecrop	loc com	T	
Senecio anonymus Wood	common ragwort	occ		
Senecio aureus L.	golden ragwort		possible	damp woods/edges on more acid soils
Senecio obovatus Muhl. ex Willd.	wood ragwort	loc fre	T	
Setaria faberi Herrm.	giant foxtail	occ; loc fre	T	
Setaria pumila (Poir.) Roemer & J.A. Schultes	yellow foxtail		expected	fields
Setaria viridis (L.) Beauv.	green foxtail	occ	T	
Sicyos angulatus L.	burr cucumber	occ	T	
Sida spinosa L.	prickly mallow		expected	fields
Silene antirrhina L.	field catchfly		expected	roadsides/railroads
Silene latifolia Poir	white campion	occ?		CM: Lychnis alba
Silene rotundifolia Nutt.	roundleaf catchfly	occ	T	
Silene stellata (L.) Ait. f.	starry campion	occ		
Silene virginica L.	fire pink	occ		
Silene wherryi Small	rock pink	occ	T	CM: S. caroliniana var. wherryi
Silphium perfoliatum L.	cupleaf rosinweed	rar		
Silphium trifoliatum L.	whorled rosinweed		possible	old fields/edges in Camp Nelson area
Sisymbrium officinale (L.) Scop.	hedge-mustard		expected	fields
Sisyrinchium albidum Raf.	white blue-eyed grass		expected	dry outcrops; probably overlooked
Sisyrinchium angustifolium P. Mill.	common blue-eyed grass	pre		

Smilax ecirrata (Engelm. ex Kunth) S. Wats.	upright carrionflower	occ		
Smilax herbacea L.	smooth carrionflower	pre		lasioneura also expected; maybe pulverulenta
Smilax lasioneura Hook.	hairy pale carrionflower		expected	check colls of herbacea
Solanum carolinense L.	horse-nettle	nea?		
Solanum ptychanthum Dunal	wild nightshade	occ	T	
Solidago altissima L.	old-field goldenrod	loc dom	T	check also S. canadensis (sensu stricto)
Solidago caesia L.	blue-stem goldenrod	loc fre	T	
Solidago flexicaulis L.	common zig-zag goldenrod	loc com	T	
Solidago gigantea Ait.	lowland goldenrod	occ; loc fre	T	
Solidago harrisii Steele	limestone broadleaf goldenrod		possible	rare above cliffs at Raven Run
Solidago nemoralis Ait.	gray-haired goldenrod	rar		
Solidago rupestris Raf.	lime-river goldenrod	rar?		CM: check id but loc abu nearby along riverbanks
Solidago sphacelata Raf.	limestone/heartleaf goldenrod	loc fre	T	
Solidago ulmifolia Muhl. ex Willd.	lime-wood/elmleaf goldenrod	loc fre	T	
Sonchus asper (L.) Hill	spiny sowthistle		expected	fields, roadsides
Sonchus oleraceus L.	common sowthistle	nea?		
Sorghastrum nutans (L.) Nash	Indian-grass		possible	riverbanks; at least before damming
Sorghum halepense (L.) Pers.	Johnson-grass	loc?	T	
Spermacoce glabra Michx.	needle-leaved		possible	along Ky. Rv. banks; perhaps extinct

	bluets			
Sphenopholis intermedia (Rydb.) Rydb.	lowland wedge-grass	nea?		check
Sphenopholis nitida (Biehler) Scribn.	upland wedge-grass	occ		
Spiranthes cernua (L.) L.C. Rich.	marsh ladies'-tresses	occ?		JRM partly; check locality (high terraces/seeps?); check also EKY?
Spiranthes gracilis (Bigelow) Beck	southern little ladies'-tresses	occ		JRM partly; perhaps also lacera
Spiranthes ovalis Lindl.	wood ladies'-tresses	rar		JRM partly
Spiranthes vernalis Engelm. & Gray	early ladies'-tresses	rar		JRM partly; check locality (uplands?)
Stellaria corei Shinners	greater wood-chickweed	loc com	T	
Stellaria fontinalis (Short & Peter) B.L. Robins.	water stitchwort	rar; loc	T	disappeared from some minor sites?
Stellaria media (L.) Vill.	common chickweed	com	T	
Stellaria pubera Michx.	wood-chickweed	loc com		
Strophostyles helvula (L.) Ell.	broad-leaved fuzzybean		possible	riverbanks; at least before dams
Stylophorum diphyllum (Michx.) Nutt.	wood poppy	occ	T	
Synandra hispidula (Michx.) Baill.	white wood-beauty	occ; loc fre	T	
Taenidia integerrima (L.) Drude	yellow pimpernel	occ		
Taraxacum officinale G.H. Weber ex Wiggers	common dandelion	loc fre	T	
Teucrium canadense L.	germander	occ	T	var virginicum
Thalictrum dioicum L.	early wood-rue	com	T	
Thalictrum pubescens Pursh	lowland meadow-		expected	rare on streambanks

	rue			
Thalictrum thalictroides (L.) Eames & Boivin	rue-anemone	com	T	
Thaspium barbinode (Michx.) Nutt.	wood-parsnip	loc fre	T	see also possible transitions to chapmanii
Thaspium trifoliatum (L.) Gray	ternate wood-parsnip	occ		all yellow flowered (var flavum); perhaps a distinct species (T. aureum)
Thelypteris hexagonoptera (Michx.) Weatherby	beech-fern	occ		
Thlaspi perfoliatum L.	lesser pennycress	occ		and relatives expected in fields
Tipularia discolor (Pursh) Nutt.	cranefly-orchid	rar		perhaps widely scattered on mesic upper slopes along Palisades; but few plants
Torilis arvensis (Huds.) Link	hedge-parsley	occ		check ids for japonica
Tradescantia subaspera Ker-Gawl.	broad-leaved spiderwort	fre; loc abu	T	
Tradescantia virginiana L.	narrow-leaved spiderwort	occ; loc fre	T	
Tragopogon pratensis L.	lesser goat's beard		expected	fields, roadsides
Trichostema brachiatum L.	lime bluecurls		expected	outcrops
Tridens flavus (L.) A.S. Hitchc.	purpletop-grass	loc com	T	
Trifolium campestre Schreb.	yellow clover	loc com	T	
Trifolium hybridum L.	pink clover		expected	fields
Trifolium pratense L.	red clover	loc fre	T	
Trifolium repens L.	white clover	loc fre	T	
Trifolium stoloniferum Muhl. Ex Eat.	running buffalo clover		possible	rare on streambanks (Boone Cr.)
Trillium flexipes Raf.	nodding trillium	occ	T	
Trillium nivale Riddell	snow trillium	rar; loc fre		
Trillium sessile L.	small sessile-trillium	fre; loc com	T	
Triodanis perfoliata (L.) Nieuwl.	Venus looking-	occ	T	

	glass			
Triosteum angustifolium L.	narrow-leaved horse-gentian	occ	T	
Triosteum aurantiacum Bickn.	broad-leaved horse-gentian	occ		T. perfoliatum may also be expected
Typha latifolia L.	broad cattail		expected	ponds, ditches
Urtica chamaedryoides Pursh	southern nettle	occ		
Uvularia grandiflora Sm.	greater bellwort	loc fre	T	
Uvularia perfoliata L.	lesser bellwort	loc fre	T	
Valeriana pauciflora Michx.	valerian	occ; loc com	T	
Valerianella radiata (L.) Dufr.	southern cornsalad	fre; loc abu	T	
Valerianella umbilicata (Sullivant) Wood	northern cornsalad		expected	colls. need further study; see also chenopodiifolia
Vallisneria americana Michx.	tape-grass		extinct	formerly in Ky. Rv.
Verbascum blattaria L.	moth mullein	occ	T	
Verbascum thapsus L.	common mullein	loc com	T	
Verbena simplex Lehm.	field vervain	occ	T	
Verbena urticifolia L.	white vervain	occ; loc fre	T	
Verbesina alternifolia (L.) Britt. ex Kearney	lowland wingstem	loc com	T	
Verbesina occidentalis (L.) Walt.	eastern wingstem	occ; loc com?		
Verbesina virginica L.	white wingstem	loc fre	T	
Vernonia gigantea (Walt.) Trel.	common ironweed	loc com	T	
Veronica arvensis L.	hairy sessile speedwell	occ	T	
Veronica hederifolia L.	ivyleaf speedwell	occ	T	
Veronica peregrina L.	smooth sessile speedwell	nea?		
Veronica persica Poir.	showy speedwell		possible	roadsides/fields
Veronicastrum virginicum (L.)	Culver's root		possible	rare in woods on ridges

Farw.				
Vicia caroliniana Walt.	white vetch	occ		
Vicia villosa Roth	hairy winter-vetch	loc fre	T	var. varia (= V. dasycarpa)
Vinca minor L.	periwinkle	rar; loc fre		
Viola arvensis Murr.	toothed field-pansy	nea		
Viola bicolor Pursh	common field-pansy	occ; loc fre?		was rafinesqueii
Viola canadensis L.	tall white stemmed-violet	rar; loc fre		toe slopes near creek
Viola egglestonii Brainerd	glade blue-violet		possible	clifftops to east; near Camp Nelson
Viola palmata auct.	palmate blue-violet	occ; loc fre	T	now subsinuata
Viola papilionacea Pursh p.p.	common blue-violet	loc abu	T	
Viola pensylvanica Michx.	smooth yellow stemmed-violet	rar?		perhaps combine with pubescens
Viola pubescens Ait.	downy yellow stemmed-violet	occ	T	
Viola rostrata Pursh	long-spurred spreading violet		possible	rare; but verified in FAYE, JESS
Viola sororia Willd.	hairy blue-violet	loc com	T	
Viola striata Ait.	creamy spreading-violet	loc com	T	
Viola triloba Schwein.	trilobed blue-violet	occ		now palmata
Viola walteri House	walter's violet	rar		
Waldsteinia fragarioides (Michx.) Tratt.	barren strawberry	rar	T	
Woodsia obtusa (Spreng.) Torr.	lime-cliff fern	occ; loc fre	T	
Xanthium canadense P. Mill.	hairy cockleburr	occ	T	
Zizia aptera (Gray) Fern.	upland alexanders	occ	T	

Zizia aurea (L.) W.D.J. Koch	lowland alexanders		expected	streambanks, low woodland
END		*END*		

Appendix Four. List of Species for Each Habitat Type (with abundance annotated).
The codes and names under "Plot Code" match the sequence of habitat notes above. However, this table does does not include lists of species for some less extensive or distinctive types: open aquatic or rheophytic zones along streams (A); mesic woods on terraces (D); and red cedar woods and thickets (I).

Plot Code	SCIENTIFIC NAME	JG	COMMENT
B: JG Riparian (04E)	Acer negundo L.	dom	esp on first terrace along river; also creek bottoms
B: JG Riparian (04E)	Acer saccharinum L.	loc abu	along river; creek below lowest riffles; rare/abs above
B: JG Riparian (04E)	Microstegium vimineum (Trin.) A. Camus	loc abu	where Laportea lacking; esp upper terraces
B: JG Riparian (04E)	Platanus occidentalis L.	loc abu	little along river; much along creek
B: JG Riparian (04E)	Aster ontarionis Wieg.	loc com	lower and esp upper levels!
B: JG Riparian (04E)	Cryptotaenia canadensis (L.) DC.	loc com	
B: JG Riparian (04E)	Eupatorium rugosum Houtt.	loc com	esp upper levels
B: JG Riparian (04E)	Aster lanceolatus Willd.	loc dom	esp lower creek bottom in open woods; upper edge of river flooding?
B: JG Riparian (04E)	Lactuca canadensis L.	loc dom	esp river and lower creek bottoms
B: JG Riparian (04E)	Amphicarpaea bracteata (L.) Fern.	loc fre	
B: JG Riparian (04E)	Impatiens pallida Nutt.	loc fre	gully from first terrace down to silver maple; west of creek
B: JG Riparian (04E)	Pilea pumila (L.) Gray	loc fre	
B: JG Riparian (04E)	Sanicula gregaria Bickn.	loc fre	upper levels
B: JG Riparian (04E)	Cicuta maculata L.	occ	river
B: JG Riparian (04E)	Lonicera maackii (Rupr.) Herder	occ	loc fre in young woods; Reed > Lear; gen abs except upper transitions
B: JG Riparian (04E)	Setaria viridis (L.) Beauv.	occ	

B: JG Riparian (04E)	Solidago gigantea Ait.	occ	
B: JG Riparian (04E)	Lamium purpureum L.	occ; loc fre	
B: JG Riparian (04E)	Polygonum longisetum de Bruyn	occ; loc fre	
B: JG Riparian (04E)	Bignonia capreolata L.	occ?	esp fencerows
B: JG Riparian (04E)	Galium aparine L.	pre	
B: JG Riparian (04E)	Lindera benzoin (L.) Blume	pre	
B: JG Riparian (04E)	Lysimachia nummularia L.	pre	
B: JG Riparian (04E)	Poa sylvestris Gray	pre	
B: JG Riparian (04E)	Polygonum virginianum L.	pre	
B: JG Riparian (04E)	Rudbeckia laciniata L.	pre	
B: JG Riparian (04E)	Sambucus canadensis L.	pre	
B: JG Riparian (04E)	Ulmus rubra Muhl.	pre	upper terrace
B: JG Riparian (04E)	Verbesina alternifolia (L.) Britt. ex Kearney	pre	
B: JG Riparian (04E)	Viola papilionacea Pursh p.p.	pre	
B: JG Riparian (04E)	Juglans nigra L.	pre?	perhaps just sca peripheral
B: JG Riparian (04E)	Clematis virginiana L.	rar	river bottom thicket east of creek mouth
B: JG Riparian (04E)	Fagus grandifolia Ehrh.	rar	one sapling on river bottom
B: JG Riparian (04E)	Polystichum acrostichoides (Michx.) Schott	rar	
B: JG Riparian (04E)	Ulmus americana L.	sca-fre	
Plot Code	SCIENTIFIC NAME	JG	COMMENT
C: JG Mesic Slopes (05E)	Acer nigrum Michx. f.	loc com	check details
C: JG Mesic Slopes (05E)	Acer saccharum Marsh.	abu; loc dom	
C: JG Mesic Slopes (05E)	Aesculus flava Ait.	loc	esp less disturbed slopes?

C: JG Mesic Slopes (05E)	Aesculus glabra Willd.	loc abu	esp understory of past browsed areas?
C: JG Mesic Slopes (05E)	Arisaema triphyllum (L.) Schott	occ	
C: JG Mesic Slopes (05E)	Asarum canadense L.	pre	
C: JG Mesic Slopes (05E)	Asimina triloba (L.) Dunal	occ?	
C: JG Mesic Slopes (05E)	Aster shortii Lindl.	pre	
C: JG Mesic Slopes (05E)	Bignonia capreolata L.	loc	esp fencerows
C: JG Mesic Slopes (05E)	Brachyelytrum erectum (Schreb. ex Spreng.) Beauv.	occ	
C: JG Mesic Slopes (05E)	Bromus pubescens Muhl. ex Willd.	loc fre	
C: JG Mesic Slopes (05E)	Camassia scilloides (Raf.) Cory	loc fre	esp low slopes
C: JG Mesic Slopes (05E)	Cardamine concatenata (Michx.) Sw.	pre	
C: JG Mesic Slopes (05E)	Carex albursina Sheldon	pre	
C: JG Mesic Slopes (05E)	Carex grisea Wahlenb.	pre	trans
C: JG Mesic Slopes (05E)	Carex jamesii Schwein.	pre	
C: JG Mesic Slopes (05E)	Carex oligocarpa Schkuhr ex Willd.	pre	trans
C: JG Mesic Slopes (05E)	Carex rosea Schkuhr ex Willd.	pre	trans
C: JG Mesic Slopes (05E)	Carpinus caroliniana Walt.	occ?	
C: JG Mesic Slopes (05E)	Carya laciniosa (Michx. f.) G. Don	occ	toeslopes
C: JG Mesic Slopes (05E)	Celtis occidentalis L.	occ	esp toe/upper trans
C: JG Mesic Slopes (05E)	Chaerophyllum procumbens (L.) Crantz	pre	
C: JG Mesic Slopes (05E)	Cornus florida L.	occ?	upper
C: JG Mesic Slopes (05E)	Cystopteris protrusa (Weatherby) Blasdell	occ	

C: JG Mesic Slopes (05E)	Diarrhena americana Beauv.	pre	drier trans
C: JG Mesic Slopes (05E)	Dicentra canadensis (Goldie) Walp.	pre	esp damper/richer transitions
C: JG Mesic Slopes (05E)	Dicentra cucullaria (L.) Bernh.	pre	
C: JG Mesic Slopes (05E)	Elymus hystrix L.	pre	drier trans
C: JG Mesic Slopes (05E)	Enemion biternatum Raf.	loc	lower slopes
C: JG Mesic Slopes (05E)	Erythronium albidum Nutt.	pre	esp warmer slopes?
C: JG Mesic Slopes (05E)	Erythronium americanum Ker-Gawl.	pre	
C: JG Mesic Slopes (05E)	Euonymus obovata Nutt.	pre	
C: JG Mesic Slopes (05E)	Fraxinus americana L.	occ	hairy (var biltmoreana) loc on uplands
C: JG Mesic Slopes (05E)	Hepatica acutiloba DC.	pre	
C: JG Mesic Slopes (05E)	Hydrangea arborescens L.	loc	
C: JG Mesic Slopes (05E)	Hydrophyllum appendiculatum Michx.	loc	lower/toe
C: JG Mesic Slopes (05E)	Hydrophyllum macrophyllum Nutt.	loc com	esp drier slopes; eg 2nd point up on E side
C: JG Mesic Slopes (05E)	Jeffersonia diphylla (L.) Pers.	loc com	
C: JG Mesic Slopes (05E)	Juglans nigra L.	occ	esp toe
C: JG Mesic Slopes (05E)	Lindera benzoin (L.) Blume	loc	esp toe slopes
C: JG Mesic Slopes (05E)	Lonicera maackii (Rupr.) Herder	sca; loc fre	little in deeper shade
C: JG Mesic Slopes (05E)	Maianthemum racemosum (L.) Link	pre	
C: JG Mesic Slopes (05E)	Mertensia virginica (L.) Pers. ex Link	occ	
C: JG Mesic Slopes (05E)	Osmorhiza claytonii (Michx.) C.B. Clarke	occ	

C: JG Mesic Slopes (05E)	Ostrya virginiana (P. Mill.) K. Koch	occ?	
C: JG Mesic Slopes (05E)	Phacelia bipinnatifida Michx.	loc fre	low talus/outcrops; often merging with Polymnia above
C: JG Mesic Slopes (05E)	Polymnia canadensis L.	loc dom	esp drier transitions on talus
C: JG Mesic Slopes (05E)	Polystichum acrostichoides (Michx.) Schott	occ	
C: JG Mesic Slopes (05E)	Prenanthes altissima L.	occ	
C: JG Mesic Slopes (05E)	Quercus muehlenbergii Engelm.	fre	esp drier transitions
C: JG Mesic Slopes (05E)	Quercus rubra L.	loc fre	esp upper NE faces
C: JG Mesic Slopes (05E)	Quercus shumardii Buckl.	loc fre	sca trees to 4-8 dm dbh; esp upper and lower transitions
C: JG Mesic Slopes (05E)	Ribes cynosbati L.	occ	on outcrops/boulders
C: JG Mesic Slopes (05E)	Sanguinaria canadensis L.	loc fre	
C: JG Mesic Slopes (05E)	Sanicula gregaria Bickn.	pre	trans
C: JG Mesic Slopes (05E)	Saxifraga virginiensis Michx.	occ	
C: JG Mesic Slopes (05E)	Sedum ternatum Michx.	occ	
C: JG Mesic Slopes (05E)	Solidago flexicaulis L.	occ	
C: JG Mesic Slopes (05E)	Staphylea trifolia L.	loc com	
C: JG Mesic Slopes (05E)	Stellaria corei Shinners	occ	
C: JG Mesic Slopes (05E)	Thaspium barbinode (Michx.) Nutt.	pre	yellow!!
C: JG Mesic Slopes (05E)	Tilia heterophylla Vent.	occ	
C: JG Mesic Slopes (05E)	Tradescantia subaspera Ker-Gawl.	occ; loc fre	esp edges/steeper low/cliff transitions
C: JG Mesic Slopes (05E)	Trillium sessile L.	pre	
C: JG Mesic Slopes (05E)	Valerianella radiata (L.) Dufr.	loc com	esp between Polymnia patches; above on S face along river!
C: JG Mesic Slopes (05E)	Viola sororia Willd.	occ	

Plot Code	SCIENTIFIC NAME	JG	COMMENT
E: JG Subxeric Slopes (11E)	Acer saccharum Marsh.	loc fre	esp understory; esp low
E: JG Subxeric Slopes (11E)	Aesculus glabra Willd.	occ; loc com	esp midslope?
E: JG Subxeric Slopes (11E)	Allium cernuum Roth	pre	
E: JG Subxeric Slopes (11E)	Aquilegia canadensis L.	pre	
E: JG Subxeric Slopes (11E)	Arabis laevigata (Muhl. ex Willd.) Poir.	pre	
E: JG Subxeric Slopes (11E)	Arenaria patula Michx.	loc fre	on rocks
E: JG Subxeric Slopes (11E)	Arisaema triphyllum (L.) Schott	occl loc fre	
E: JG Subxeric Slopes (11E)	Asplenium platyneuron (L.) B.S.P.	pre	
E: JG Subxeric Slopes (11E)	Asplenium resiliens Kunze	pre	
E: JG Subxeric Slopes (11E)	Asplenium ruta-muraria L.	pre	
E: JG Subxeric Slopes (11E)	Aster oblongifolius Nutt.	occ; loc fre	driest slopes, clifftops
E: JG Subxeric Slopes (11E)	Aster shortii Lindl.	fre; loc com	
E: JG Subxeric Slopes (11E)	Bignonia capreolata L.	pre	esp fencerows
E: JG Subxeric Slopes (11E)	Blephilia ciliata (L.) Benth.	pre	
E: JG Subxeric Slopes (11E)	Bromus pubescens Muhl. ex Willd.	loc fre	esp lower
E: JG Subxeric Slopes (11E)	Carex albursina Sheldon	occ; loc fre	lower slopes
E: JG Subxeric Slopes (11E)	Carex communis Bailey	loc	
E: JG Subxeric Slopes (11E)	Carex eburnea Boott	pre	
E: JG Subxeric Slopes (11E)	Carex jamesii Schwein.	occ?	or perhaps timida to check
E: JG Subxeric Slopes (11E)	Carex laxiflora Lam.	occ?	low
E: JG Subxeric Slopes (11E)	Carex pensylvanica Lam.	loc fre?	

E: JG Subxeric Slopes (11E)	Carya ovata (P. Mill.) K. Koch	occ	upper; trans to 11D
E: JG Subxeric Slopes (11E)	Celtis occidentalis L.	occ	esp low
E: JG Subxeric Slopes (11E)	Cerastium velutinum Raf.	loc fre	points in thin rocky soil
E: JG Subxeric Slopes (11E)	Cercis canadensis L.	occ; loc fre	
E: JG Subxeric Slopes (11E)	Chasmanthium latifolium (Michx.) Yates	loc	check: on dry slopes in odd places near cliffs?
E: JG Subxeric Slopes (11E)	Chenopodium album L.	occ	below cliffs
E: JG Subxeric Slopes (11E)	Chenopodium simplex (Torr.) Raf.	occ	below cliffs
E: JG Subxeric Slopes (11E)	Cladrastis kentukea (Dum.-Cours.) Rudd	sca	near outcrops; esp NE slopes?
E: JG Subxeric Slopes (11E)	Clematis viorna L.	pre	
E: JG Subxeric Slopes (11E)	Corydalis flavula (Raf.) DC.	pre	
E: JG Subxeric Slopes (11E)	Danthonia spicata (L.) Beauv. ex Roemer & J.A. Schultes	pre	
E: JG Subxeric Slopes (11E)	Delphinium tricorne Michx.	loc fre	
E: JG Subxeric Slopes (11E)	Diarrhena americana Beauv.	loc dom	esp deeper shade in mesic trans
E: JG Subxeric Slopes (11E)	Dioscorea quaternata J.F. Gmel.	pre	
E: JG Subxeric Slopes (11E)	Diospyros virginiana L.	rar	upper; trans to 11D
E: JG Subxeric Slopes (11E)	Draba ramosissima Desv.	pre	
E: JG Subxeric Slopes (11E)	Elymus hystrix L.	loc dom	near cliffs; see also svensonii in driest sites
E: JG Subxeric Slopes (11E)	Elymus svensonii Church	loc?	introgressed with hystrix; few pure patches?
E: JG Subxeric Slopes (11E)	Euonymus fortunei (Turcz.) Hand.-Maz.	occ; loc fre	esp on/near rocks below cliffs in mesic trans
E: JG Subxeric Slopes (11E)	Fraxinus americana L.	loc	hairy (var biltmoreana) loc on uplands

E: JG Subxeric Slopes (11E)	Fraxinus quadrangulata Michx.	abu; loc dom	
E: JG Subxeric Slopes (11E)	Galium circaezans Michx.	pre	
E: JG Subxeric Slopes (11E)	Geum canadense Jacq.	pre?	
E: JG Subxeric Slopes (11E)	Helianthus divaricatus L.	rar	trans to 11D
E: JG Subxeric Slopes (11E)	Helianthus hirsutus Raf.	rar	trans to 11D
E: JG Subxeric Slopes (11E)	Helianthus microcephalus Torr. & Gray	occ	
E: JG Subxeric Slopes (11E)	Heuchera macrorhiza Small	pre	
E: JG Subxeric Slopes (11E)	Houstonia nigricans (Lam.) Fern.	pre	broad-leaved variant
E: JG Subxeric Slopes (11E)	Hypericum prolificum L.	occ	clifftops; esp near points
E: JG Subxeric Slopes (11E)	Jeffersonia diphylla (L.) Pers.	loc fre	
E: JG Subxeric Slopes (11E)	Juglans nigra L.	occ	esp low
E: JG Subxeric Slopes (11E)	Juniperus virginiana L.	loc com	esp near points, clifftops; and younger woods
E: JG Subxeric Slopes (11E)	Lespedeza frutescens (L.) Hornem. ("violacea")	rar	gentler upper slopes; dirt roadbed; "violacea"
E: JG Subxeric Slopes (11E)	Lithospermum arvense L.	rar	upper slopes; dirt roadbed
E: JG Subxeric Slopes (11E)	Lonicera dioica L.	occ	N face near cliffs
E: JG Subxeric Slopes (11E)	Lonicera maackii (Rupr.) Herder	sca-low fre	esp younger woods; esp uner Juniper
E: JG Subxeric Slopes (11E)	Lonicera standishii Jacques	loc fre	esp dry steep woods above cliffs
E: JG Subxeric Slopes (11E)	Melica nitens (Scribn.) Nutt. ex Piper	rar	points
E: JG Subxeric Slopes (11E)	Muhlenbergia sobolifera (Muhl. ex Willd.) Trin.	loc dom	esp steeper slopes on/near points
E: JG Subxeric Slopes (11E)	Nothoscordum bivalve (L.) Britt.	pre	esp points?
E: JG Subxeric Slopes (11E)	Oxalis violacea L.	occ	esp near points??

E: JG Subxeric Slopes (11E)	Panicum boscii Poir.	pre	
E: JG Subxeric Slopes (11E)	Panicum flexile (Gattinger) Scribn.	pre	
E: JG Subxeric Slopes (11E)	Parietaria pensylvanica Muhl. ex Willd.	loc	cliffbases
E: JG Subxeric Slopes (11E)	Parthenocissus quinquefolia (L.) Planch.	pre	
E: JG Subxeric Slopes (11E)	Pellaea atropurpurea (L.) Link	pre	
E: JG Subxeric Slopes (11E)	Penstemon hirsutus (L.) Willd.	pre	
E: JG Subxeric Slopes (11E)	Phacelia purshii Buckl.	loc	trans to submesic
E: JG Subxeric Slopes (11E)	Phlox bifida Beck	loc fre	S/W facing points in lower gorge
E: JG Subxeric Slopes (11E)	Poa cuspidata Nutt.	pre	
E: JG Subxeric Slopes (11E)	Polygonatum biflorum (Walt.) Ell.	loc fre	some large but not commutatum?
E: JG Subxeric Slopes (11E)	Polymnia canadensis L.	loc dom	esp mesic trans on rocky slopes
E: JG Subxeric Slopes (11E)	Polypodium polypodioides (L.) Watt	rar	patch on large boulder at point near mouth
E: JG Subxeric Slopes (11E)	Prunus americana Marsh.	occ	upper slopes? incl some points?
E: JG Subxeric Slopes (11E)	Ptelea trifoliata L.	occ	esp points; near clifftops
E: JG Subxeric Slopes (11E)	Quercus muehlenbergii Engelm.	abu; loc dom	
E: JG Subxeric Slopes (11E)	Quercus shumardii Buckl.	loc fre	esp low; and trans to 11D
E: JG Subxeric Slopes (11E)	Rhamnus caroliniana Walt.	occ	most/all in upper edges; not slopes?
E: JG Subxeric Slopes (11E)	Rhamnus cathartica L.	rar	Paxistima Point; 1980s-1990s (CM)
E: JG Subxeric Slopes (11E)	Rhus aromatica Ait.	loc fre	esp points; near clifftops
E: JG Subxeric Slopes (11E)	Rhus radicans L.	pre	
E: JG Subxeric Slopes (11E)	Ribes cynosbati L.	rar?	outcrops in mesic trans?
E: JG Subxeric Slopes (11E)	Rosa carolina L.	occ	esp above cliffs; often trans to 11D
E: JG Subxeric Slopes (11E)	Salvia lyrata L.	loc	disturbed trans; to submesic thickets etc

E: JG Subxeric Slopes (11E)	Sanguinaria canadensis L.	occ	lower slopes
E: JG Subxeric Slopes (11E)	Saponaria officinalis L.	occ	below cliffs
E: JG Subxeric Slopes (11E)	Schizachne purpurascens (Torr.) Swallen	occ	points
E: JG Subxeric Slopes (11E)	Sedum pulchellum Michx.	pre	
E: JG Subxeric Slopes (11E)	Senecio obovatus Muhl. ex Willd.	pre	
E: JG Subxeric Slopes (11E)	Silene virginica L.	pre	
E: JG Subxeric Slopes (11E)	Silene wherryi Small	occ	on clifftops/ledges
E: JG Subxeric Slopes (11E)	Smilax bona-nox L.	loc fre	
E: JG Subxeric Slopes (11E)	Solidago flexicaulis L.	occ	mesic trans; N face
E: JG Subxeric Slopes (11E)	Solidago sphacelata Raf.	pre	
E: JG Subxeric Slopes (11E)	Solidago ulmifolia Muhl. ex Willd.	pre?	
E: JG Subxeric Slopes (11E)	Staphylea trifolia L.	loc com	midslope; esp trans to mesic
E: JG Subxeric Slopes (11E)	Stellaria pubera Michx.	pre	
E: JG Subxeric Slopes (11E)	Symphoricarpos orbiculatus Moench	loc fre	
E: JG Subxeric Slopes (11E)	Thalictrum dioicum L.	pre	
E: JG Subxeric Slopes (11E)	Thaspium barbinode (Michx.) Nutt.	occ; loc fre	sdl abundant on 2nd point up from mouth on E
E: JG Subxeric Slopes (11E)	Tilia heterophylla Vent.	occ	deeper soil, above/below
E: JG Subxeric Slopes (11E)	Trillium sessile L.	occ	lower
E: JG Subxeric Slopes (11E)	Triosteum aurantiacum Bickn.	occ	
E: JG Subxeric Slopes (11E)	Ulmus rubra Muhl.	occ?	mesi trans?
E: JG Subxeric Slopes (11E)	Ulmus thomasii Sarg.	sca; loc fre	esp steeper slopes
E: JG Subxeric Slopes (11E)	Uvularia perfoliata L.	pre	
E: JG Subxeric Slopes (11E)	Viburnum rafinesquianum J.A. Schultes	occ; loc fre	N face on points, clifftops
E: JG Subxeric Slopes (11E)	Viburnum rufidulum Raf.	occ	

E: JG Subxeric Slopes (11E)	Viola palmata auct.	sca; loc fre	S face along river on Lear; E of mouth; also hybrids with sor/pap below?
E: JG Subxeric Slopes (11E)	Viola sororia Willd.	occ	low
E: JG Subxeric Slopes (11E)	Woodsia obtusa (Spreng.) Torr.	pre	
E: JG Subxeric Slopes (11E)	Zanthoxylum americanum P. Mill.	loc fre	on points; perhaps old trails???
Plot Code	SCIENTIFIC NAME	JG	COMMENT
G: JG Subxeric Uplands (11D)	Acer saccharum Marsh.	com; loc abu	but all/most in understory
G: JG Subxeric Uplands (11D)	Aster shortii Lindl.	pre	
G: JG Subxeric Uplands (11D)	Carex hitchcockiana Dewey	pre	
G: JG Subxeric Uplands (11D)	Carex timida Naczi & B.A. Ford	pre?	check coll; upper woods near mouth?
G: JG Subxeric Uplands (11D)	Carya glabra (P. Mill.) Sweet	pre	
G: JG Subxeric Uplands (11D)	Carya ovalis (Wangenh.) Sarg.	pre	appears to be glabra x ovata swarm
G: JG Subxeric Uplands (11D)	Carya ovata (P. Mill.) K. Koch	loc fre	
G: JG Subxeric Uplands (11D)	Conopholis americana (L.) Wallr. f.	occ	
G: JG Subxeric Uplands (11D)	Cynoglossum virginianum L.	occ	
G: JG Subxeric Uplands (11D)	Danthonia spicata (L.) Beauv. ex Roemer & J.A. Schultes	pre	
G: JG Subxeric Uplands (11D)	Dasistoma macrophylla (Nutt.) Raf.	pre?	check "Aureolaria virginica"
G: JG Subxeric Uplands (11D)	Desmodium rotundifolium	occ	

	DC.		
G: JG Subxeric Uplands (11D)	Diarrhena americana Beauv.	loc fre	
G: JG Subxeric Uplands (11D)	Eupatorium purpureum L.	occ	
G: JG Subxeric Uplands (11D)	Fraxinus americana L.	pre	hairy (var biltmoreana) loc on uplands
G: JG Subxeric Uplands (11D)	Fraxinus quadrangulata Michx.	loc com	
G: JG Subxeric Uplands (11D)	Helianthus decapetalus L.	occ?	near Hydrastis
G: JG Subxeric Uplands (11D)	Helianthus divaricatus L.	occ	
G: JG Subxeric Uplands (11D)	Helianthus hirsutus Raf.	occ	trails/edges
G: JG Subxeric Uplands (11D)	Hybanthus concolor (T.F. Forst.) Spreng.	pre?	
G: JG Subxeric Uplands (11D)	Hydrastis canadensis L.	loc	one patch w/100s in 100 m2
G: JG Subxeric Uplands (11D)	Lespedeza frutescens (L.) Hornem. ("violacea")	occ	dirt roadbed; "violacea"
G: JG Subxeric Uplands (11D)	Lespedeza intermedia (L. Wats.) Britt.	occ	perhaps true violacea
G: JG Subxeric Uplands (11D)	Lespedeza procumbens Michx.	occ	
G: JG Subxeric Uplands (11D)	Lonicera maackii (Rupr.) Herder	occ	rather little ; much browsed
G: JG Subxeric Uplands (11D)	Ostrya virginiana (P. Mill.) K. Koch	pre?	
G: JG Subxeric Uplands (11D)	Oxalis violacea L.	pre?	
G: JG Subxeric Uplands (11D)	Paronychia canadensis (L.) Wood	occ	
G: JG Subxeric Uplands (11D)	Podophyllum peltatum L.	pre	
G: JG Subxeric Uplands (11D)	Polymnia canadensis L.	pre	
G: JG Subxeric Uplands (11D)	Potentilla simplex Michx.	occ	
G: JG Subxeric Uplands (11D)	Prenanthes altissima L.	pre	
G: JG Subxeric Uplands (11D)	Quercus alba L.	loc fre	3-5 dm
G: JG Subxeric Uplands (11D)	Quercus muehlenbergii	com	to 4 dm

	Engelm.		
G: JG Subxeric Uplands (11D)	Quercus rubra L.	com	
G: JG Subxeric Uplands (11D)	Quercus shumardii Buckl.	com	to 5-8 dm
G: JG Subxeric Uplands (11D)	Rosa carolina L.	pre	
G: JG Subxeric Uplands (11D)	Rudbeckia tenax C.L. Boynt. & Beadle	rar	upper woods NE of mouth
G: JG Subxeric Uplands (11D)	Sassafras albidum (Nutt.) Nees	occ?	edges; submesic trans
G: JG Subxeric Uplands (11D)	Solidago ulmifolia Muhl. ex Willd.	pre	
G: JG Subxeric Uplands (11D)	Sphenopholis nitida (Biehler) Scribn.	occ	
G: JG Subxeric Uplands (11D)	Tilia heterophylla Vent.	occ	near end of McGee Lane
G: JG Subxeric Uplands (11D)	Tradescantia virginiana L.	occ; loc fre	
G: JG Subxeric Uplands (11D)	Viola triloba Schwein.	pre	now palmata
Plot Code	SCIENTIFIC NAME	JG	COMMENT
H: JG Submesic Lowlands (07E)	Acer negundo L.	loc fre	
H: JG Submesic Lowlands (07E)	Acer nigrum Michx. f.	loc	understory w of mouth on slope base
H: JG Submesic Lowlands (07E)	Acer saccharum Marsh.	pre	
H: JG Submesic Lowlands (07E)	Aesculus glabra Willd.	loc fre	esp slope
H: JG Submesic Lowlands (07E)	Alliaria petiolata (Bieb.) Cavara & Grande	occ; loc fre	little/none on river bottom; more up slopes; roads; edges
H: JG Submesic Lowlands (07E)	Allium canadense L.	pre	
H: JG Submesic Lowlands (07E)	Amphicarpaea bracteata (L.) Fern.	loc fre	
H: JG Submesic Lowlands (07E)	Aristolochia serpentaria L.	rar	toe slope w of mouth
H: JG Submesic Lowlands (07E)	Asarum canadense L.	occ; loc com	esp older less distubed woods; but also spreading locally in younger woods
H: JG Submesic Lowlands (07E)	Asimina triloba (L.) Dunal	occ; loc fre	esp older less disturbed woods to west on river bottom

H: JG Submesic Lowlands (07E)	Aster ontarionis Wieg.	loc fre	
H: JG Submesic Lowlands (07E)	Aster shortii Lindl.	loc fre	esp Reed
H: JG Submesic Lowlands (07E)	Bignonia capreolata L.	loc com	esp less disturbed bottom w of mouth
H: JG Submesic Lowlands (07E)	Campanula americana L.	occ	
H: JG Submesic Lowlands (07E)	Carex amphibola Steud.	pre?	
H: JG Submesic Lowlands (07E)	Carex blanda Dewey	pre	
H: JG Submesic Lowlands (07E)	Carex grisea Wahlenb.	loc fre	more on Reed
H: JG Submesic Lowlands (07E)	Carex jamesii Schwein.	loc fre	
H: JG Submesic Lowlands (07E)	Carex oligocarpa Schkuhr ex Willd.	occ	
H: JG Submesic Lowlands (07E)	Carex shortiana Dewey	occ	toeslope-terrace trans
H: JG Submesic Lowlands (07E)	Carex sparganioides Muhl. ex Willd.	loc fre	
H: JG Submesic Lowlands (07E)	Carya cordiformis (Wangenh.) K. Koch	loc com	esp below 2nd point from mouth on E
H: JG Submesic Lowlands (07E)	Celtis occidentalis L.	pre	esp on Reed (> Lear)
H: JG Submesic Lowlands (07E)	Duchesnea indica (Andr.) Focke	pre	
H: JG Submesic Lowlands (07E)	Elymus macgregorii J. Camp. & R. Brooks	loc com	
H: JG Submesic Lowlands (07E)	Enemion biternatum Raf.	pre	
H: JG Submesic Lowlands (07E)	Erigeron philadelphicus L.	loc com	
H: JG Submesic Lowlands (07E)	Euonymus fortunei (Turcz.) Hand.-Maz.	sca	thin on ground
H: JG Submesic Lowlands (07E)	Eupatorium rugosum Houtt.	loc dom	esp low slopes and bottoms w of mouth
H: JG Submesic Lowlands (07E)	Fagus grandifolia Ehrh.	rar	sapling
H: JG Submesic Lowlands (07E)	Festuca subverticillata (Pers.) Alexeev	loc fre	more on Reed (>Lear)
H: JG Submesic Lowlands (07E)	Fraxinus americana L.	pre	hairy (var biltmoreana) loc on uplands
H: JG Submesic Lowlands (07E)	Fraxinus quadrangulata Michx.	pre	

H: JG Submesic Lowlands (07E)	Gleditsia triacanthos L.	occ	esp cliff bases to west of mouth?
H: JG Submesic Lowlands (07E)	Gymnocladus dioicus (L.) K. Koch	occ	
H: JG Submesic Lowlands (07E)	Helianthus decapetalus L.	occ?	or perhaps glabrous tuberosus; by shed on Reed
H: JG Submesic Lowlands (07E)	Hydrophyllum canadense L.	loc abu	older undisturbed woods w of mouth
H: JG Submesic Lowlands (07E)	Hydrophyllum macrophyllum Nutt.	loc com	toeslope below 2nd point
H: JG Submesic Lowlands (07E)	Impatiens pallida Nutt.	loc fre	old undisturbed wood w of mouth
H: JG Submesic Lowlands (07E)	Iodanthus pinnatifidus (Michx.) Steud.	occ	
H: JG Submesic Lowlands (07E)	Juglans nigra L.	com; loc abu	
H: JG Submesic Lowlands (07E)	Juniperus virginiana L.	occ; loc fre	below cliffs w of mouth; to 4 dm in old field
H: JG Submesic Lowlands (07E)	Laportea canadensis (L.) Weddell	loc abu	esp old woods on T434bottoms; less on Reed
H: JG Submesic Lowlands (07E)	Lindera benzoin (L.) Blume	loc fre	esp older undisturbed woods
H: JG Submesic Lowlands (07E)	Lonicera japonica Thunb.	loc com?	
H: JG Submesic Lowlands (07E)	Lysimachia nummularia L.	loc fre	base on slope along old road
H: JG Submesic Lowlands (07E)	Microstegium vimineum (Trin.) A. Camus	loc com	more on Reed
H: JG Submesic Lowlands (07E)	Morus rubra L.	sca	
H: JG Submesic Lowlands (07E)	Muhlenbergia sylvatica Torr. ex Gray	rar	patch in gully on low slope; older woods w of mouth; perhaps trans to tenuiflora based on glumes
H: JG Submesic Lowlands (07E)	Myosotis macrosperma Engelm.	occ	
H: JG Submesic Lowlands (07E)	Osmorhiza claytonii (Michx.) C.B. Clarke	occ	esp older woods?

H: JG Submesic Lowlands (07E)	Osmorhiza longistylis (Torr.) DC.	loc fre	both spp!!
H: JG Submesic Lowlands (07E)	Parthenocissus quinquefolia (L.) Planch.	loc com?	
H: JG Submesic Lowlands (07E)	Phacelia purshii Buckl.	occ	
H: JG Submesic Lowlands (07E)	Phlox divaricata L. var. divaricata	pre	
H: JG Submesic Lowlands (07E)	Poa sylvestris Gray	occ	
H: JG Submesic Lowlands (07E)	Polymnia canadensis L.	loc com	slopes; not bottoms; less on Reed
H: JG Submesic Lowlands (07E)	Polystichum acrostichoides (Michx.) Schott	occ	
H: JG Submesic Lowlands (07E)	Quercus muehlenbergii Engelm.	pre	
H: JG Submesic Lowlands (07E)	Quercus shumardii Buckl.	loc	to 7 dm (see also old plot)
H: JG Submesic Lowlands (07E)	Rhus radicans L.	loc fre?	
H: JG Submesic Lowlands (07E)	Robinia pseudoacacia L.	loc	Reed tract
H: JG Submesic Lowlands (07E)	Sanicula gregaria Bickn.	loc fre	more on Reed
H: JG Submesic Lowlands (07E)	Solidago altissima L.	occ; loc fre	thinner/thickety woods
H: JG Submesic Lowlands (07E)	Solidago flexicaulis L.	occ; loc fre	old woods w of mouth
H: JG Submesic Lowlands (07E)	Solidago gigantea Ait.	occ	
H: JG Submesic Lowlands (07E)	Stylophorum diphyllum (Michx.) Nutt.	occ	older woods on slope base; we of mouth
H: JG Submesic Lowlands (07E)	Tradescantia subaspera Ker-Gawl.	loc com	slope bases
H: JG Submesic Lowlands (07E)	Ulmus americana L.	pre	
H: JG Submesic Lowlands (07E)	Ulmus rubra Muhl.	pre	
H: JG Submesic Lowlands (07E)	Valeriana pauciflora Michx.	occ	older woods w of mouth
H: JG Submesic Lowlands (07E)	Valerianella radiata (L.)	loc abu	esp gaps in Polymnia on slopes; also bottoms

	Dufr.		
H: JG Submesic Lowlands (07E)	Verbesina alternifolia (L.) Britt. ex Kearney	pre	
H: JG Submesic Lowlands (07E)	Viola papilionacea Pursh p.p.	fre; loc dom	esp below Polymnia; more on Reed
H: JG Submesic Lowlands (07E)	Viola sororia Willd.	pre	
H: JG Submesic Lowlands (07E)	Vitis vulpina L.	sca; loc fre	
Plot Code	SCIENTIFIC NAME	JG	COMMENT
H: JG Submesic Uplands (07D)	Acer nigrum Michx. f.	loc fre	
H: JG Submesic Uplands (07D)	Acer saccharum Marsh.	abu; loc dom	esp broader trans on gentle upper slopes to fields
H: JG Submesic Uplands (07D)	Aesculus glabra Willd.	loc	esp low?
H: JG Submesic Uplands (07D)	Alliaria petiolata (Bieb.) Cavara & Grande	loc fre	none recorded ca 1980
H: JG Submesic Uplands (07D)	Arisaema dracontium (L.) Schott	rar	
H: JG Submesic Uplands (07D)	Arundinaria gigantea (Walt.) Muhl.	loc	loc com nea along Handys Bend Rd
H: JG Submesic Uplands (07D)	Aster shortii Lindl.	pre	
H: JG Submesic Uplands (07D)	Carex sparganioides Muhl. ex Willd.	pre	
H: JG Submesic Uplands (07D)	Carya cordiformis (Wangenh.) K. Koch	occ	
H: JG Submesic Uplands (07D)	Carya glabra (P. Mill.) Sweet	occ	
H: JG Submesic Uplands (07D)	Carya ovalis (Wangenh.) Sarg.	occ	appears to be glabra x ovata swarm
H: JG Submesic Uplands (07D)	Carya ovata (P. Mill.) K. Koch	loc fre	
H: JG Submesic Uplands (07D)	Celtis occidentalis L.	pre	

H: JG Submesic Uplands (07D)	Chaerophyllum procumbens (L.) Crantz	pre	
H: JG Submesic Uplands (07D)	Corydalis flavula (Raf.) DC.	pre	
H: JG Submesic Uplands (07D)	Diarrhena americana Beauv.	pre	
H: JG Submesic Uplands (07D)	Diospyros virginiana L.	occ	
H: JG Submesic Uplands (07D)	Elymus macgregorii J. Camp. & R. Brooks	occ; loc fre	only low swale/sink; really w/07E lowland type
H: JG Submesic Uplands (07D)	Elymus villosus Muhl. ex Willd.	loc com	
H: JG Submesic Uplands (07D)	Fraxinus americana L.	com; loc abu	hairy (var biltmoreana) loc on uplands
H: JG Submesic Uplands (07D)	Galium aparine L.	loc fre	
H: JG Submesic Uplands (07D)	Juglans nigra L.	loc	esp low
H: JG Submesic Uplands (07D)	Liriodendron tulipifera L.	occ	low
H: JG Submesic Uplands (07D)	Lonicera japonica Thunb.	pre	
H: JG Submesic Uplands (07D)	Lonicera maackii (Rupr.) Herder	loc com	fairly thick but less in shade esp w/Acs[Ulr]
H: JG Submesic Uplands (07D)	Matelea gonocarpos (Walt.) Shinners	occ	slope below Reed; also along his road; seed coll to be grown
H: JG Submesic Uplands (07D)	Parthenocissus quinquefolia (L.) Planch.	pre?	
H: JG Submesic Uplands (07D)	Phacelia purshii Buckl.	pre	
H: JG Submesic Uplands (07D)	Platanus occidentalis L.	loc	low
H: JG Submesic Uplands (07D)	Podophyllum peltatum L.	pre	
H: JG Submesic Uplands (07D)	Polymnia canadensis L.	pre	
H: JG Submesic Uplands (07D)	Polymnia uvedalia (L.) L.	loc	trans to 11E or 05E
H: JG Submesic Uplands (07D)	Prunus serotina Ehrh.	pre	esp interior fencerows (younger)
H: JG Submesic Uplands (07D)	Quercus alba L.	occ	
H: JG Submesic Uplands (07D)	Quercus muehlenbergii Engelm.	loc fre	esp lower?

H: JG Submesic Uplands (07D)	Quercus rubra L.	occ	
H: JG Submesic Uplands (07D)	Quercus shumardii Buckl.	occ; loc fre	to 7 dm
H: JG Submesic Uplands (07D)	Rhus radicans L.	pre?	
H: JG Submesic Uplands (07D)	Robinia pseudoacacia L.	loc fre	
H: JG Submesic Uplands (07D)	Rosa multiflora Thunb. ex Murr.	loc com	esp upper edges
H: JG Submesic Uplands (07D)	Sassafras albidum (Nutt.) Nees	occ; loc fre	sev clumps 2-4 (5) dm
H: JG Submesic Uplands (07D)	Smilax bona-nox L.	pre?	
H: JG Submesic Uplands (07D)	Symphoricarpos orbiculatus Moench	loc com	widespread in trans to upland fields
H: JG Submesic Uplands (07D)	Tilia heterophylla Vent.	occ	old remnants 8-10 dm by old house
H: JG Submesic Uplands (07D)	Ulmus americana L.	pre?	
H: JG Submesic Uplands (07D)	Ulmus rubra Muhl.	loc com	esp understory; perhaps keeps Lon maa down
H: JG Submesic Uplands (07D)	Valerianella radiata (L.) Dufr.	loc fre	
H: JG Submesic Uplands (07D)	Viola sororia Willd.	pre	
H: JG Submesic Uplands (07D)	Vitis vulpina L.	pre?	
Plot Code	SCIENTIFIC NAME	JG	COMMENT
J: JG Fields (10E)	Acer saccharum Marsh.	loc dom	older fencerows
J: JG Fields (10E)	Achillea millefolium L.	pre	
J: JG Fields (10E)	Carex aggregata Mackenz.	loc com	"muhlenbergii" of CM
J: JG Fields (10E)	Carex blanda Dewey	pre	
J: JG Fields (10E)	Carex molesta Mackenzie ex Bright	loc com	perhaps = "cristatella" of CM
J: JG Fields (10E)	Celtis occidentalis L.	pre	
J: JG Fields (10E)	Conium maculatum L.	pre	edges
J: JG Fields (10E)	Dactylis glomerata L.	pre	
J: JG Fields (10E)	Festuca arundinacea Schreb.	abu; loc dom	

J: JG Fields (10E)	Fraxinus americana L.	pre	esp younger fencerows (versus boundaries)
J: JG Fields (10E)	Lonicera maackii (Rupr.) Herder	pre	was occ ca. 1980 (0% plots in CM)
J: JG Fields (10E)	Phleum pratense L.	pre	
J: JG Fields (10E)	Poa pratensis L.	abu; loc dom	
J: JG Fields (10E)	Prunus serotina Ehrh.	pre	esp younger fencerows (interior)
J: JG Fields (10E)	Quercus muehlenbergii Engelm.	pre	
J: JG Fields (10E)	Rosa multiflora Thunb. ex Murr.	pre	esp upper edges
J: JG Fields (10E)	Rubus pensilvanicus Poir.	pre	
J: JG Fields (10E)	Rudbeckia hirta L. var. pulcherrima Farw.	pre	R. serotina
J: JG Fields (10E)	Sassafras albidum (Nutt.) Nees	pre	
J: JG Fields (10E)	Symphoricarpos orbiculatus Moench	pre	
J: JG Fields (10E)	Trifolium campestre Schreb.	pre	
J: JG Fields (10E)	Ulmus rubra Muhl.	pre	
J: JG Fields (10E)	Verbesina virginica L.	pre	
J: JG Fields (10E)	Vicia villosa Roth	pre	

Appendix Five. Vertebrate Species known at Jessamine Gorge or nearby.

This is a provisional list of species known, expected or possible in Jessamine Gorge or nearby in the Palisades region.
Information on amphibians, reptiles and mammals is based largely on notes of J.R. MacGregor. The list of birds is based largely on the Atlas of Kentucky Birds (Palmer-Ball 1996); it can form the basis for a checklist in future field work.

0.001	**List of Vertebrate Animals known or expected in the Palisades**			
0.002	**Order: Family**	**Scientific Name**	**Common Name**	**Jessamine Gorge**
0.999				
1.000	**Amphibians:**			[Notes from J.R. MacGregor; 1971-2008]
1.030	Ambystomidae	*Ambystoma barbouri*	streamside salamander	JRM: breeds in Overstreet Creek; almost endemic to Bluegrass region
1.040	Salamandridae	*Nothophthalmus viridescens*	eastern red-spotted newt	perhaps no breeding ponds nearby; unlikely but possible in region (JRM)
1.050	Plethodontidae	*Desmognathus fuscus fuscus*	northern dusky salamander	JRM: near Overstreet Cave/Falls; rare in Bluegrass; only records are from Palisades
1.050	Plethodontidae	*Gyrinophilus porphyriticus duryi*	Kentucky spring salamander	JRM: near Overstreet Cave/Falls; local in Bluegrass
1.050	Plethodontidae	*Plethodon glutinosus*	northern slimy salamander	JRM: near Overstreet Cave/Falls
1.050	Plethodontidae	*Plethodon richmondi*	ravine salamander	JRM
1.050	Plethodontidae	*Plethodon dorsalis dorsalis*	eastern zig-zag salamnder	JRM
1.050	Plethodontidae	*Pseudotriton [montanus] diastichus*	midland mud salamander	JRM: near Overstreet Cave/Falls; local in Bluegrass
1.050	Plethodontidae	*Pseudotriton ruber*	northern red salamander	JRM: along Overstreet Creek (2002 June); rare/local in Bluegrass, only in Palisades
1.055	Plethodontidae	*Eurycea cirrigera*	southern two-lined salamander	JRM: near Overstreet Cave/Falls
1.055	Plethodontidae	*Eurycea lucifuga*	cave salamander	JRM; excellent population along Overstreet Creek

1.060	Ranidae	*Rana catesbiana*	bullfrog	JRM
1.060	Ranidae	*Rana clamitans*	green frog	JRM
1.060	Ranidae	*Rana palustris*	pickerel frog	JRM
1.060	Ranidae	*Rana pipiens*	northern leopard frog	possible nearby
1.060	Ranidae	*Rana sphenocephala*	southern leopard frog	possible nearby
1.070	Hylidae	*Pseudacris crucifer*	spring peeper	JRM
1.070	Hylidae	*Hyla chrysoscelis*	Cope's gray tree frog	JRM
1.080	Bufonidae	*Bufo americanus*	American toad	JRM
1.080	Bufonidae	*Bufo fowleri*	Fowler's toad	JRM
1.999				
2.000	**Reptiles:**			[Notes from J.R. MacGregor; 1971-2008]
2.010	Chelydridae	*Chelydra serpentina*	common snapping turtle	possible but no suitable nesting habitat within gorge
2.020	Kinosternidae	*Sternotherus odoratus*	common musk turtle (stinkpot)	possible but no suitable nesting habitat within gorge
2.030	Emydidae	*Graptemys geographica*	common map turtle	possible but no suitable nesting habitat within gorge
2.030	Emydidae	*Graptemys ouachitensis*	Ouachita map turtle	possible but only in river; rare in Ky. Rv. watershed (JRM)
2.030	Emydidae	*Terrapene carolina*	box-turtle	JRM; often prefer to nest along roadsides/trails
2.030	Emydidae	*Trachemys scripta*	red-eared slider	JRM; common in river but no suitable nesting habitat within gorge
2.030	Emydidae	*Chrysemys picta*	painted turtle	possible but unlikely; very uncommon to rare in Bluegrass; restricted to ponds/wetlands (JRM)

2.040	Trionychidae	*Trionyx ferox*	spiny softshell turtle	possible but no suitable nesting habitat within gorge; Wilmore pollution could have hurt (JRM)
2.050	Iguanidae	*Sceloporus undulatus*	eastern fence lizard	JRM; rare in Bluegrass
2.060	Scincidae	*Eumeces laticeps*	broadhead skink	JRM
2.060	Scincidae	*Eumeces fasciatus*	five-lined skink	JRM; extremely rare in Bluegrass
2.070	Colubridae	*Carphophis amoenus*	eastern worm snake	JRM
2.070	Colubridae	*Coluber constrictor*	black racer	JRM
2.070	Colubridae	*Heterodon platyrhinos*	eastern hognose snake	JRM
2.070	Colubridae	*Diadophis punctatus*	ringneck snake	JRM
2.070	Colubridae	*Elaphe obsoleta*	black rat snake	JRM
2.070	Colubridae	*Nerodia sipedon*	northern water-snake	JRM
2.070	Colubridae	*Lampropeltis triangulum*	milk snake	JRM
2.070	Colubridae	*Opheodrys aestivus*	rough green snake	JRM
2.070	Colubridae	*Thamnophis sirtalis*	common garter snake	JRM
2.080	Viperidae	*Agkistrodon contortrix*	copperhead	JRM; very uncommon to rare in Bluegrass
2.999				
3.000	**Mammals:**			[Notes from J.R. MacGregor; 1971-2008]
3.010	Didelphiidae	*Didelphis virginiana*	opossum	JRM
3.020	Soricidae	*Blarina brevicauda*	short-tailed shrew	JRM

3.021	Soricidae	*Cryptotis parva*	least shrew	JRM
3.030	Talpidae	*Scalopus aquaticus*	eastern mole	JRM
3.040	Vespertilionidae	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	JRM; photo of a single bat from caver early 1980s
3.040	Vespertilionidae	*Myotis sodalis*	Indiana bat	JRM; very uncommon to rare in Bluegrass
3.040	Vespertilionidae	*Myotis grisescens*	gray bat	JRM; very uncommon to rare in Bluegrass
3.040	Vespertilionidae	*Myotis leibii*	eastern small-footed bat	not recorded but possible
3.040	Vespertilionidae	*Myotis lucifugus*	little brown bat	JRM; including Chrisman's Cave 1971-76
3.040	Vespertilionidae	*Myotis septentrionalis*	northern bat	JRM; including Chrisman's Cave 1971-76
3.045	Vespertilionidae	*Lasiurus borealis*	red bat	not recorded but expected
3.045	Vespertilionidae	*Eptesicus fuscus*	big brown bat	JRM; including Chrisman's Cave 1971-76
3.045	Vespertilionidae	*Lasionycteris noctivagans*	silver-haired bat	not recorded but possible
3.045	Vespertilionidae	*Nycticeius humeralis*	evening bat	not recorded but possible
3.045	Vespertilionidae	*Perimyotis subflavus*	eastern pipistrelle	JRM; including Chrisman's Cave 1971-76
3.060	Leporidae	*Sylvilagus floridanus*	eastern cottontail rabbit	JRM
3.070	Sciuridae	*Marmota monax*	woodchuck (ground-hog)	JRM
3.070	Sciuridae	*Sciurus carolinensis*	eastern grey squirrel	JC
3.070	Sciuridae	*Sciurus niger*	fox squirrel	not recorded but expected
3.070	Sciuridae	*Glaucomys volans*	southern flying squirrel	JRM

3.070	Sciuridae	*Tamias striatus*	eastern chipmunk	JRM
3.080	Castoridae	*Castor canadensis*	beaver	expected near river
3.090	Cricetidae	*Microtus ochrogaster*	prairie vole	not recorded but possible
3.090	Cricetidae	*Microtus pennsylvanicus*	meadow vole	expected in moist grassy fields
3.090	Cricetidae	*Microtus pinetorum*	pine vole	not recorded but expected
3.090	Cricetidae	*Neotoma magister*	Alleghany woodrat	JRM; along cliffs or nearby; uncommon in Bluegrass
3.090	Cricetidae	*Peromyscus leucopus*	white-footed mouse	JRM
3.090	Cricetidae	*Peromyscus maniculatus*	deer mouse	possible
3.090	Cricetidae	*Ondatra zibethicus*	muskrat	expected in creek
3.100	Canidae	*Canis latrans*	coyote	expected
3.100	Canidae	*Urocyon cinereoargenteus*	common gray fox	expected
3.100	Canidae	*Vulpes vulpes*	red fox	expected
3.120	Procyonidae	*Procyon lotor*	racoon	JRM
3.130	Mustelidae	*Mustela vison*	mink	expected
3.130	Mustelidae	*Mustela frenata*	long-tailed weasel	expected
3.130	Mustelidae	*Lutra canadensis*	northern river otter	possible in creek
3.130	Mustelidae	*Mephitis mephitis*	striped skunk	JRM
3.130	Mustelidae	*Mustela rixosa*	least weasel	not recorded but possible (rare in region)

3.140	Felidae	*Lynx rufus*	bobcat	not recorded but possible
3.150	Cervidae	*Odocoileus virginianus*	deer	JRM
3.999				
4.000	**Birds:**	**Species to be expected**		**[To be reviewed and annotated below by KSNPC and other local experts]**
4.022	Ardeidae	*Casmerodius albus*	Great Blue Heron	
4.030	Ardeidae	*Butorides virescens*	Green Heron	
4.032	Ardeidae	*Nycticorax nycticorax*	Black-crowned Night-heron	
4.034	Ardeidae	*Nyctanassa violacea*	Yellow-crowned Night-Heron	
4.036	Anatidae	*Branta canadensis*	Canada Goose	
4.038	Anatidae	*Aix sponsa*	Wood Duck	
4.040	Anatidae	*Anas platyrhynchos*	Mallard	
4.046	Cathartidae	*Coragyps atratus*	Black Vulture	
4.048	Cathartidae	*Cathartes aura*	Turkey Vulture	
4.058	Accipitridae	*Accipiter striatus*	Sharp-shinned Hawk?	
4.060	Accipitridae	*Accipiter cooperii*	Cooper's Hawk	
4.062	Accipitridae	*Buteo lineatus*	Red-shouldered Hawk?	
4.064	Accipitridae	*Buteo platypterus*	Broad-winged Hawk?	
4.066	Accipitridae	*Buteo jamaicensis*	Red-tailed Hawk	

4.068	Falconidae	*Falco sparverius*	American Kestrel (Sparrow Hawk)	
4.070	Tetraonidae	*Bonasa umbellatus*	Ruffed Grouse?	
4.072	Phasianidae	*Meleagris gallopavo*	Wild Turkey	
4.074	Phasianidae	*Colinus virginianus*	Northern Bobwhite	
4.080	Charadriidae	*Charadrius vociferus*	Killdeer	
4.084	Scolapacidae	*Scolopax minor*	American Woodcock	
4.088	Columbidae	*Columba livia*	Rock Dove (alien)	
4.090	Columbidae	*Zenaida macroura*	Mourning Dove	
4.091	Psittacidae	*Conuropsis carolinensis*	Carolina Parakeet	
4.091	Columbidae	*Ectopistes migratorius*	Passenger Pigeon	
4.092	Cuculidae	*Coccyzus erythropthalmus*	Black-billed Cuckoo?	
4.094	Cuculidae	*Coccyzus americanus*	Yellow-billed Cuckoo	
4.096	Tytonidae	*Tyto alba*	Barn Owl	
4.098	Strigidae	*Otus asio*	Eastern Screech-Owl	
4.100	Strigidae	*Bubo virginianus*	Great Horned Owl	
4.102	Strigidae	*Strix varia*	Barred Owl?	
4.106	Caprimulgidae	*Chordeiles minor*	Common Nighthawk	
4.110	Caprimulgidae	*Caprimulgus vociferus*	Whip-poor-will	

4.112	Apodidae	*Chaetura pelagica*	Chimney Swift	
4.114	Trochilidae	*Archilochus colubris*	Ruby-throated Hummingbird	
4.116	Alcedinidae	*Ceryle alcyon*	Belted Kingfisher	
4.120	Picidae	*Melanerpes carolinus*	Red-bellied Woodpecker	
4.122	Picidae	*Picoides pubescens*	Downy Woodpecker	
4.124	Picidae	*Picoides villosus*	Hairy Woodpecker	
4.128	Picidae	*Colaptes auratus*	Northern Flicker (Yellow-shafted F.)	
4.130	Picidae	*Dryocopus pileatus*	Pileated Woodpecker	
4.132	Tyrannidae	*Contopus virens*	Eastern Wood-pewee	
4.140	Tyrannidae	*Sayornis phoebe*	Eastern Phoebe	
4.142	Tyrannidae	*Myiarchus crinitus*	Great-crested Flycatcher	
4.144	Tyrannidae	*Tyrannus tyrannus*	Eastern Kingbird	
4.148	Hirundinidae	*Progne subis*	Purple Martin	
4.152	Hirundinidae	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow	
4.154	Hirundinidae	*Hirundo rustica*	Barn Swallow	
4.160	Corvidae	*Cyanocitta cristata*	Blue Jay	
4.162	Corvidae	*Corvus brachyrhynchos*	American Crow	
4.168	Paridae	*Parus carolinensis*	Carolina Chickadee	

4.170	Paridae	*Parus bicolor*	Tufted Titmouse	
4.172	Sittidae	*Sitta carolinensis*	White-breasted Nuthatch	
4.176	Troglodytidae	*Thryothorus ludovicianus*	Carolina Wren	
4.178	Troglodytidae	*Thryomanes bewickii*	Bewick's Wren	
4.180	Troglodytidae	*Troglodytes aedon*	House Wren	
4.184	Polioptilidae	*Polioptila caerulea*	Blue-gray Gnatcatcher	
4.186	Turdidae	*Sialis sialis*	Eastern Bluebird	
4.190	Turdidae	*Hylocichla mustelina*	Wood Thrush	
4.191	Turdidae	*Hylocichla ustulata*	Swainson's Thrush	
4.192	Turdidae	*Turdus migratorius*	American Robin	
4.194	Mimidae	*Dumetella carolinensis*	Gray Catbird	
4.196	Mimidae	*Mimus polyglottos*	Northern Mockingbird	
4.198	Mimidae	*Toxostoma rufum*	Brown Thrasher	
4.200	Bombycillidae	*Bombycilla cedorum*	Cedar Waxwing	
4.202	:Laniidae	*Lanius ludovicianus*	Loggerhead Shrike	
4.204	Sturnidae	*Sturnus vulgaris*	European Starling (alien)	
4.206	Vireonidae	*Vireo griseus*	White-eyed Vireo	
4.214	Vireonidae	*Vireo gilvus*	Warbling Vireo	

4.216	Vireonidae	*Vireo olivaceus*	Red-eyed Vireo	
4.217	Vireonidae	*Vireo philadelphicus*	Philadelphia Vireo	
4.222	Parulidae	*Parula americana*	Northern Parula	
4.224	Parulidae	*Dendroica petechia*	Yellow Warbler	
4.228	Parulidae	*Dendroica caerulescens*	Black-throated Blue Warbler	
4.238	Parulidae	*Dendroica discolor*	Prairie Warbler	
4.242	Parulidae	*Mniotilta varia*	Black-and-white Warbler	
4.244	Parulidae	*Setophaga ruticilla*	American Redstart	
4.245	Parulidae	*Vermivora ruficapilla*	Nashville Warbler	
4.239	Parulidae	*Dendroica coronata*	Yellow-rumped Warbler (Myrtle W.)	
4.258	Parulidae	*Geothlypis trichas*	Common Yellowthroat	
4.260	Parulidae	*Wilsonia citrina*	Hooded Warbler	
4.264	Parulidae	*Icteria virens*	Yellow-breasted Chat	
4.266	Thraupidae	*Piranga rubra*	Summer Tanager	
4.268	Thraupidae	*Piranga olivacea*	Scarlet Tanager	
4.270	Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal	
4.272	Cardinalidae	*Pheucticus ludovicianus*	Rose-breasted Grosbeak	
4.276	Cardinalidae	*Passerina cyanea*	Indigo Bunting	

4.280	Emberizidae	*Pipilo erythrophthalmus*	Rufous-sided Towhee	
4.284	Emberizidae	*Spizella passerina*	Chipping Sparrow	
4.286	Emberizidae	*Spizella pusilla*	Field Sparrow	
4.294	Emberizidae	*Ammodramus savannarum*	Grasshopper Sparrow	
4.296	Emberizidae	*Ammodramus henslowii*	Henslow's Sparrow	
4.298	Emberizidae	*Melospiza melodia*	Song Sparrow	
4.304	Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird	
4.306	Icteridae	*Sturnella magna*	Eastern Meadowlark	
4.308	Icteridae	*Quiscalus quiscula*	Common Grackle	
4.310	Icteridae	*Molothrus ater*	Brown-headed Cowbird	
4.312	Icteridae	*Icterus spurius*	Orchard Oriole	
4.314	Icteridae	*Icterus galbula*	Northern Oriole (Baltimore O.)	
4.316	Fringillidae	*Carpodacus mexicanus*	House Finch (alien from the west)	
4.320	Fringillidae	*Carduelis tristis*	American Goldfinch	
4.322	Ploceidae	*Passer domesticus*	House Sparrow (alien)	