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Viability Assessment Report For Dry-Xeric Oak Forest Habitat Association

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I. Description of Habitat Association:

Dry-xeric oak forests usually occur on very dry and infertile uplands, but can also occur on steep, south-facing slopes or rock outcrops. Soils are usually coarse textured, and dry soil conditions may prevail most of the year (USDA Forest Service, 1997). Two recognized subtypes of dry-xeric oak forests occur in the South, a widespread subtype and a southern subtype. Only the widespread subtype occurs on the Daniel Boone National Forest (DBNF). Dominant species in this type include black oak, post oak, blackjack oak, chestnut oak, scarlet oak and limited white oak. Water on these sites is primarily from surface sources (rainfall). On some sites, limited amounts of ground water help maintain the sites. Sunlight, which drives photosynthesis, is the major source of energy. Decay of vegetation and byproducts of fires, which may pass through the dry-xeric oak habitat association, also provides energy sources. Periodic surface fires are important for maintaining this community type. Fires are thought to have burned frequently enough to restrict tree density and promote the growth of shade intolerant grasses, forbs, and shrubs (USDA Forest Service, 1997). Lightning fires occur, but are rare. Periodic tornadoes and flooding are probably the most important natural disturbances today.

The dry-xeric oak forest is found in all the ecological provinces and sections throughout the Hot Continental Division (220). The DBNF occurs in three of these ecological sections: Interior Low Plateau and Highland Rim (222E), Cumberland Mountains (M221C) and Northern Cumberland Plateau (221H). Dry-xeric oak habitat occurs in all three of these ecological sections. On the DBNF, Interior Low Plateau and Highland Rim, dry-xeric oak habitat occurs in the following landtype associations (LTAs) (USDA Forest Service, 1997a; 1996)

- Triplett Creek Knobs (222En002)
- Knob Flats (222En001) Land Type Association.

In the Cumberland Mountain ecological section of the DBNF, dry-xeric oak habitat occurs in the following LTAs (USDA Forest Service, 1997a; 1996):

- Northern Jellico Mountains (M221Cd001).

The majority of the dry xeric oak habitat on the DBNF occurs in the Northern Cumberland Plateau ecological province. In the Northern Cumberland Plateau, dry-xeric oak habitat occurs in the following LTAs (USDA Forest Service, 1997a; 1996):

- Northern Cliff / Karst (221Hb006)
- Northern Escarpment (221Hb004)
- Northern Low Hills / Cliff Transition (221Hb005)
- Central Knobstone Escarpment (221Hb001)
- Northern Rolling Hills (221He003)
- North Fork Kentucky Cliffs (221Hb003)
- Central Cliff (221Hb002)
- Southern Knobstone Escarpment (221He001)
- London-Corbin Plain Transition (221Hc007)
- Rockcastle Hills (221Hc005)
- London-Corbin Plain (221Hc006)
- Southern Cliff (221Hc003)
- Big South Fork Plateau (221Hc004)
- Low Hills (221He002)
- Low Hills / Rugged Hills Transition (221Ha002)
- Southern Middle Breathitt Rugged Hills (221Ha001).

On the DBNF, this forest type typically occupies ridges between the clifftops with pine, on Dekalb and Hartsells soils derived from sandstone or on Gilpin and Whitley soils derived from sandstone and shale. It is also widespread on drier Trappist soils derived from Devonian black shale. On the DBNF, typical dominant species in this habitat association are chestnut oak and scarlet oak. In successional stands, there appears to be a general trend from pine species to scarlet oak to chestnut oak. Other frequent trees, especially in the understory, include white pine, black gum and red maple. Frequent small tree and shrub species include sourwood, mountain laurel, blueberry, and rhododendron. In moister transitions, American holly, big leaf magnolia and devil's walking stick are found in this habitat association. Herb cover is largely restricted to openings or on better soils with less undergrowth of ericaceous species and includes ground pine, spotted wintergreen, whorled loosestrife, butterfly pea, dwarf cinquefoil, dittany, foxglove, angelica, Maryland golden aster, sweet goldenrod, wavy leaf aster, pink lady's slipper and rattlesnake plantain (USDA Forest Service et al, 1989).

II. Current Status of the Habitat Association on the Daniel Boone National Forest

The dry-xeric oak forest types on the DBNF are tracked in the Continuous Inventory of Stand Conditions (CISC) and are represented as chestnut oak (52), scarlet oak (59), and chestnut oak - scarlet oak (60). The management codes in this forest type, dry-xeric oak, are defined as follows:

(52) – 70+ percent of the dominant and co-dominant basal area is hardwood, and 50+ percent is chestnut oak;

(59) – 70+ percent of the dominant and co-dominant basal area is hardwood, and 50+ percent is scarlet oak, and

(60) – 70+ percent of the dominant and co-dominant basal area is hardwood, and 50+ percent of chestnut oak and scarlet oak (USDA Forest Service, 1992).

On the DBNF, approximately 665,000 acres are in forested land. Of this acreage, approximately 6 percent or 39,856 acres are within the dry-xeric oak forest type, as described. Utilizing the CISC database, the dry-xeric oak forest type occurring on the Daniel Boone National Forest was further divided to represent age and acres (USDA Forest Service, 1998).

Table 1. Dry-xeric oak forest type represented by age and acres.

AGE	ACRES		AGE	ACRES	
0-10	2,942		81-90	8,846	
11-20	949		91-100	4,646	
21-30	326		101-110	1,859	
31-40	233		111-120	557	
41-50	329		121-130	32	
51-60	1,130		131-140	108	
61-70	8,326				
71-80	9,973			TOTAL	39,856

III. Management Needs: Recommendations for the Conservation of Habitat to Ensure Species Viability

The desired future condition for this habitat association would be to provide amounts of suitable habitat in the proper stages of succession to ensure that the species dependant on the association have a high probability of persistence on the forest. This would involve maintaining a structured age class distribution with emphasis on maintaining a significant component of habitat that contains the habitat modifiers required by various species.

- Evaluate habitats to determine those capable of supporting reintroduction of species at risk.

- *Rationale: Specific species management within this habitat association may require reintroduction efforts to ensure continued persistence of that particular species or group of species in this association.*
- Dry-xeric oak types need to be represented in a range of age classes.
 - *Rationale: Dry-xeric oak makes up approximately 6 percent of the forest type on the DBNF. The species identified in this habitat association require a variety of age classes, elevations and tract sizes. A range of age classes, along with their accompanying attributes, is a necessary component of this habitat association. Age distribution management along with implementation of best management practices should ensure continued persistence of the species identified in this habitat association.*
- Where applicable, leave project unit boundaries with irregular and feathered edges.
 - *Rationale: Abrupt habitat changes can create barriers to wildlife passing through the unit.*

IV. Management Needs: Monitoring and Inventory to Ensure Species Viability

Monitoring and inventory of the Dry-Xeric Oak Habitat Association will need to be implemented at a level sufficient to provide data to track the current condition of the habitat. The following items are considered necessary to ensure that the association can be properly evaluated and decisions supported.

- Inventory should be conducted in each stand (or analysis unit) at least once every 10 years. Stand (or analysis unit) inventory should also be conducted in response to events that have potential to alter the landscape i.e., windstorms, winter storms, and infestations (high priority).
 - *Rationale: Inventory to identify and update baseline data or assess changed conditions after non-prescribed major disturbances. Inventory may be at the stand level or larger units may be used (such as ecological or habitat units) as long as the data is sufficient to assess the required parameters. Current data from past inventory work may need to be supplemented to include additional habitat modifier data. This inventory may be part of the prescription process but should not be limited to project planning efforts.*
- Employ GIS and vegetation management databases to track the condition and composition of the Dry-Xeric Oak Habitat Association (high priority).
 - *Rationale: The use of FS Veg (CISC or best available science) in concert with our GIS coverage of stands should be adequate to assess the composition, age class and spatial distribution of the pine habitat and habitat modifiers. This makes the assumption that the inventory data collects the necessary information regarding habitat modifiers.*

- Continue to implement R8 landbird monitoring program (high priority).
 - *Rationale: This monitoring program will help track the persistence of the avian species in this habitat association. This may be a critical element in documenting avian species trends in this association. This monitoring program contains points linked to this association it would be considered an excellent tool for both species-specific and association monitoring.*

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Attachment A.

Species List: Dry-Xeric Oak Habitat Association

Class	Common/Species
ANIMALS	
Birds	Eastern Wood Pewee/ <i>Contopus virens</i> Cerulean Warbler/ <i>Dendroica caerulea</i> Least Flycatcher/ <i>Empidonax minimus</i> Red-headed Woodpecker/ <i>Melanerpes erythrocephalus</i> Summer Tanager/ <i>Piranga rubra</i> Ovenbird/ <i>Seiurus aurocapillus</i>
Insects	Appalachian Grizzled Skipper/ <i>Pyrgus wyandot</i> Regal Fritillary/ <i>Speyeria idalia</i>
PLANTS	
Dicots	American Chestnut/ <i>Castanea dentata</i> Chinquapin (generic)/ <i>Castanea pumila</i> Allegheny Chinquapin/ <i>Castanea pumila</i> var. <i>pumila</i> American Cow-wheat/ <i>Melampyrum lineare</i> Cumberland Azalea/ <i>Rhododendron cumberlandense</i> Hairy Snout Bean/ <i>Rhynchosia tomentosa</i> American Chaffseed/ <i>Schwalbea americana</i> Spiked Hoary-pea/ <i>Tephrosia spicata</i> Cutleaf Meadow Parsnip/ <i>Thaspium pinnatifidum</i> Velvet Bush Pea (generic)/ <i>Thermopsis mollis</i> Velvet Bush Pea/ <i>Thermopsis mollis</i> var. <i>mollis</i>
Monocots	Pink Lady's-slipper/ <i>Cypripedium acaule</i> Bearded Skeleton Grass/ <i>Gymnopogon ambiguus</i> Wood Lily/ <i>Lilium philadelphicum</i> var. <i>philadelphicum</i> Rough Dropseed/ <i>Sporobolus clandestinus</i>
Mosses	Dog Paw Moss, Elegant Moss/ <i>Dicranum scoparium</i>

Attachment B.

Dry-Xeric Oak Forest Species/Habitat Relationships with References

ANIMALS

Birds

Eastern Wood Pewee – *Contopus virens* – This species preferred habitat is rather open mature woodland in a rather dry situation (Hamel, 1992). This species may be absent from younger, second growth forest where an open midstory has not yet developed. In such habitat they often frequent edges and road or stream corridors (Palmer-Ball, 1996). They typically utilize large deciduous trees for the nest site but may use conifers in mixed forest types. This species may be found in numbers in most major forest types examined in Kentucky (Mengel, 1965). The eastern wood pewee would be attracted to the more open, dry conditions that are characteristic of dry-xeric oak forests and would be attracted to the dominance of hardwoods for nesting.

Cerulean Warbler – *Dendroica caerulea* – This species would be primarily attracted to the hardwood component of mixed pine-oak stands. Cerulean Warblers depend primarily on extensive tracts of mature, relatively undisturbed, deciduous forest. These birds occur in floodplains and upland sites that have large trees (> 20" dbh) in which to nest. Both nesting and foraging take place in the canopies of hardwoods. Stands are usually somewhat open, with little understory; however, according to Buehler and Nicholson, monitoring data suggest that breeding territories in the Cumberland Mountains tend to have fewer canopy trees and greater shrub coverage than those elsewhere (1997). The birds are rarely found in tracts less than 250 hectares, whereas maximum population densities occur in tracts greater than 3000 ha (Buehler and Nicholson 1997). Hamel gives a minimum tract size of 1750 ha (1992). The cerulean warbler would be attracted to the dominance of hardwoods and the more open, dry conditions that are characteristic of dry-xeric oak forests.

Least Flycatcher – *Empidonax minimus* – This is a species of open conditions; it is rarely encountered deep in the forest. Open, deciduous woods (particularly those that have been disturbed by burning or logging), forest edge, fields with scattered large trees, and other habitats that provide early successional conditions are utilized. During spring migration, Mengel observed male birds in alders and willows in a marshy, Laurel County meadow (1965). Most of the breeding population frequents elevations above 2500 feet. The least flycatcher would be attracted primarily to the hardwood component of this forest and the more open conditions that usually predominate in the dry-xeric sites.

Red-headed Woodpecker – *Melanerpes erythrocephalus* – Semi-open to open habitat with an abundance of large (> 14" dbh), dead trees is preferred for both breeding and wintering purposes. Relatively open, mature woods, swamps, clearings within mixed woodland, forest edges, and places where groves of trees are present, such as park-like settings, are commonly used. On the DBNF, the birds are often observed in pine-dominated stands that have been frequently burned (L. Perry, pers. obs.). Nesting is in dead trees, or in dead limbs of live trees (Mengel 1965). This species generally avoids mature closed canopy forest during the breeding season (Palmer-Ball

1996). The red-headed woodpecker would be attracted to the more open, dry conditions that are characteristic of dry-xeric oak forests and would be attracted to the presence of oaks for foraging.

Summer Tanager – *Piranga rubra* – Relatively dry sites, which tend to produce stands of a semi-open condition, are frequented by this species. Uplands are commonly used, but the birds may occur in a variety of habitats, including bottomlands and wooded residential areas. Forest types range from hardwood to pine-hardwood stands of open to medium density. On the DBNF, the birds are frequently found in mature, mixed pine stands that have been burned and undergone midstory removal (L. Perry, pers. obs.). Oaks are often chosen for nesting, in open woodland or forest edge and often over open spaces such as roads and clearings (Mengel 1965). The summer tanager would be expected to occur in this habitat association primarily due to the more open conditions that generally prevail in dry-xeric sites and also would be attracted to the oak component of these forests for nesting.

Ovenbird – *Seiurus aurocapillus* – Mature and second growth forest conditions are utilized, on dry to moderately moist sites with light to moderate understory. Birds are more common in stands with closed canopies and open ground—This is a ground nesting species that forages in the leaf litter or on the soil. Mengel observed nests on logging roads and under small logs, sheltered by ferns, on steep, mesophytic slopes (1965); however, Baker and Lacki note that birds are more abundant in non-harvested than in harvested areas (1997). Upland stands and sloping terrain are preferred, but a variety of deciduous and mixed (e.g., pine-oak) forest types are used. This is a forest interior species having a minimum necessary tract size of 15 ha (Hamel 1992). The ovenbird would be attracted to the dominance of deciduous trees and more open ground conditions that are typical of dry-xeric oak forests.

Insects

Appalachian Grizzled Skipper – *Pyrgus wyandot* – In Kentucky, *Pyrgus wyandot* is only known from eastern shale barrens in Harlan County. Elsewhere it is known to occur in open areas near woods, including valley bottoms, barrens, meadows, grassy hillsides and scrub oak openings. Its food sources include wild strawberry, Canadian cinquefoil, blueberry, and plants belonging to the rose family.

Regal Fritillary – *Speyeria spedia* – This butterfly was once considered common in the natural grasslands, pastures and wet meadows of the northeastern United States. In the mid-west, fire-maintained oak-pine barrens supplied significant amounts of habitat for the Regal Fritillary. Food sources include violets, milkweeds, thistles, and other nectar producers. This species is now considered to be extirpated from Kentucky.

PLANTS

Dicots

American Chestnut - *Castanea dentata* – American chestnut is far less common today than it once was. A fungal disease introduced from Asia in 1904 decimated the species in about 30 years. The species sprouts prolifically and sprouts are still found through its range. American chestnut once dominated much of what is now upland oak forest. On what is now Daniel Boone

National Forest land, American chestnut was found on narrow sandstone and conglomerate ridges along the edge of the escarpment and in the Redbird area. It was associated with chestnut oak. Scarlet and black oaks replaced it on these sites. Today on the Daniel Boone National Forest, sprouts are common to scarce on upper slopes and ridges near the escarpment and on portions of the Redbird District. The species grows on acid soils that are generally poor, dry, and located on sites subject to fire. It is believed that fire promoted the species.

Allegheny Chinquapin – *Castanea pumila* var. *pumila* – This tree is found in dry upland oak or oak-yellow pine forests. It usually occurs where midstory and shrub layers are sparse, or the canopy is open. The species at least somewhat adapted to fire, sprouting readily after fire. It may respond to fire in the way American chestnut and oaks do.

American Cow-wheat – *Melampyrum lineare* (generic) – The taxonomy of American Cow-wheat is somewhat confused with numerous uses by various authors. Following Medley (1993), only the var. *pectinatum* is likely to present on the DBNF. Specimens not identified to variety from the DBNF area are assumed to be this variety. Habitat details are described below for the variety.

Cumberland Azalea – *Rhododendron cumberlandense* – This azalea is restricted to the central Appalachian Mountains. It grows in open oak and oak-yellow pine forest, usually on dry, rocky slopes or ridges. It usually occurs as scattered individuals, but may form small clumps. The DBNF populations are in the same habitat. Most occurrences are in the Jellicos and on the Redbird District.

American Chaffseed – *Schwalbea americana* – This plant occurs in two general kinds of habitats, wet and dry. In all cases, soils are sandy and somewhat sterile. In wet habitats, the combination of constant water and periodic fire maintain the site in an open condition. The overstory is open as are the midstory and shrub layers beneath it. Generally wet sites are grassy with few shrubs. Periodic fire helps to maintain the open condition of the sites. It also plays a role in triggering flowering. This habitat type is not known from the DBNF. Dry habitats likewise are open with a thin overstory and open midstory and shrub layers. These sites are generally a mixture of forbs, grasses, and low shrubs. Some dry habitats are subjected to periodic burns, which help to maintain the open condition. Fire here also helps to trigger flowering. In other dry habitats, the openness is more edaphically controlled. The historic sites on the DBNF fall into this group. Here fire would have triggered flowering. Other dry DBNF sites could, with periodic fire, support *Schwalbea* populations.

Hairy Snout Bean – *Rhynchosia tomentosa* (var. *tomentosa*) – The hairy snout bean is found throughout most of the southeastern US. It grows in dry, open, often sandy, oak or yellow pine forest, at forest margins, in sandhills, and occasionally in mesic forest. The DBNF sites are all in warm season grassland, or low disturbed vegetation along roads or under powerline rights-of-way.

Spiked Hoary-pea – *Tephrosia spicata* – This plant is a southern species with a number of more northern stations. It is commonly found in dry to wet, open yellow pine or yellow pine-hardwood forest, roadsides, clearings and fields. On the DBNF, the species is found on boulder/cobble bars along larger streams and rivers of the Cumberland River drainage. A few

sites are known from sandy, sparsely shaded openings on ridges.

Cutleaf Meadow Parsnip – *Thaspium pinnatifidum* – The cutleaf meadow parsnip is associated throughout its range with calcareous bedrock including limestone, siltstone, and dolomite. It is a species of moderately shaded forestland. On the DBNF, it is found in open oak or oak-cedar forest on limestone and calcareous siltstone on the Morehead District.

Velvet Bush Pea – *Thermopsis mollis* (generic) – The velvet bush pea exists as two varieties, a piedmont variety discussed below, which is found on in Kentucky, and a montaine variety. The latter occurs in dry-mesic forest on slopes and ridges.

Velvet Bush Pea – *Thermopsis mollis* var. *mollis* – This variety is a Piedmont species that occurs in the mountains and coastal plain as well. It grows on sandy slopes and in dry oak or oak-yellow pine forest usually on ridges. The DBNF sites, the only Kentucky locations, are on broad, sandy ridges in dry-xeric to dry-mesic oak forest. The species only flowers in open areas such as along roads or in tree gaps. It has been observed to form dense patches on disturbed sandy ground. The rhizome is stout and several inches below the surface, suggesting along with the habitat, that fire is beneficial for the species.

Monocots

Pink Lady's-slipper – *Cypripedium acaule* – This orchid occurs in acid forests or wetlands (usually sphagnum bogs). On the DBNF, pink lady-slipper is found in upland oak and mixed pine-oak woods, and occasionally on hummocks within seeps and streamhead wetlands. It occurs in light to heavy shade, but does not seem to flower unless in somewhat open conditions. This species responds well to burning. It is not uncommon to find 3-dozen plants in flower and as many more in vegetation condition following a fire where only a dozen or so were found before. The species is experiencing collection pressure from root diggers. Digging of this species is not permitted on the DBNF.

Bearded Skeleton Grass – *Gymnopogon ambiguous* – Bearded skeleton grass is a coastal plain species that generally occurs in dry, sandy, open forest. It may also occur in open grassland. On the DBNF, it occurs in open warm season grassland and open, sandy ground with or without light forest cover.

Wood Lily – *Lilium philadelphicum* var. *philadelphicum* – This plant occurs from New England to NC and Kentucky. It is found in open, usually dry forest or in open fields or warm season grass areas. On the DBNF, it is know from open yellow pine-oak forest, roadsides, warm season grassland, and old fields. It requires open conditions and is soon choked out by heavy cover of herbaceous or woody species. Fire maintains its habitat and promotes the plant.

Rough Dropseed – *Sporobolus clandestinus* – Rough dropseed is tall grass prairie species, which also occurs on the coastal plain. It is found in dry sandy soil of prairies, openings, barrens, and along roadways and other rights-of-way. On the DBNF, the species is found in McCreary and Pulaski Counties on limestone cliffs and open, sandy yellow pine or yellow pine-oak forest.

Mosses

Dog Paw or Elegant Moss – *Dicranum scoparium* – is found throughout most of eastern North America. It is relatively common on shaded sandstone boulders, outcrops and cliffs. It also occurs on soil in upland forest. It appears to require moderate shade and acid conditions, but will live in moist to dry environments. The species is often subject to fire and frequently portions of clumps are burned, but not the entire clump. The species is collected for the horticultural industry. It may serve as a refugium for some species during fire events, and act as water reservoir and soil stabilizer following fire.

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Attachment C.

Dry-Xeric Oak Habitat Association Matrix

Association	Habitat	Modifier	Class	Common/Species
5-Dry-Xeric Oak	Dry-Xeric Oak Forest	(blank)	INSEC	Regal Fritillary/ Speyeria idalia
			P-DIC	Cow-wheat/ Melampyrum lineare
				Velvet Bushpea/ Thermopsis mollis var. mollis
		Acidic Substrate	P-MOS	Dog Paw Moss, Elegant Moss/ Dicranum scoparium
		Basic Substrate	P-DIC	Cutleaf Meadow-parsnip/ Thaspium pinnatifidum
		Drainage Good	INSEC	Appalachian Grizzled Skipper/ Pyrgus wyandot
				Regal Fritillary/ Speyeria idalia
		Dry	BIRD	Summer Tanager/ Piranga rubra
			P-DIC	Spiked Hoary-pea/ Tephrosia spicata
			P-MON	Pink Lady-slipper/ Cypripedium acaule
				Bearded Skeleton Grass/ Gymnopogon ambiguus
				Rough Dropseed/ Sporobolus clandestinus
		Elevation (above 2300 ft)	BIRD	Least Flycatcher/ Empidonax minimus
		Fire Tolerant/Enhanced		Least Flycatcher/ Empidonax minimus
				Red-headed Woodpecker/ Melanerpes erythrocephalus
			INSEC	Regal Fritillary/ Speyeria idalia
		Forb/Grass Condition		Regal Fritillary/ Speyeria idalia
			P-DIC	Velvet Bushpea/ Thermopsis mollis var. mollis
		Mature forest	BIRD	Cerulean Warbler/ Dendroica caerulea
				Red-headed Woodpecker/ Melanerpes erythrocephalus
		Mid-age Forest		Ovenbird/ Seiurus aurocapillus
		Moderate Shade	P-MON	Wood Lily/ Liliium philadelphicum var. philidelphicum
		Open (Little or No Shade)	BIRD	Summer Tanager/ Piranga rubra
			INSEC	Appalachian Grizzled Skipper/ Pyrgus wyandot
				Regal Fritillary/ Speyeria idalia
			P-DIC	Velvet Bush Pea/ Thermopsis mollis (generic)
			P-MON	Pink Lady-slipper/ Cypripedium acaule
			P-MOS	Dog Paw Moss, Elegant Moss/ Dicranum scoparium
		Open Forest Canopy	BIRD	Least Flycatcher/ Empidonax minimus
				Red-headed Woodpecker/ Melanerpes erythrocephalus
				Summer Tanager/ Piranga rubra
			P-DIC	American Chestnut/ Castanea dentata
				Chinquapin (generic)/ Castanea pumila
				Allegheny Chinquapin/ Castanea pumila var. pumila
				Cutleaf Meadow-parsnip/ Thaspium pinnatifidum
				Velvet Bush Pea/ Thermopsis mollis (generic)
		Open Midstory/Understory	BIRD	Summer Tanager/ Piranga rubra
			P-DIC	Cumberland Azalea/ Rhododendron cumberlandense

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<u>Association</u>	<u>Habitat</u>	<u>Modifier</u>	<u>Class</u>	<u>Common/Species</u>
		Rocky/Rocks	P-MON	Rough Dropseed/ Sporobolus clandestinus
		Sandy Soil	INSEC	Appalachian Grizzled Skipper/ Pyrgus wyandot
				Regal Fritillary/ Speyeria idalia
			P-DIC	Hairy Snout Bean/ Rhynchosia tomentosa
				American Chaffseed/ Schwalbea americana
			P-MON	Rough Dropseed/ Sporobolus clandestinus
		Shrub/Sapling Condition	BIRD	Least Flycatcher/ Empidonax minimus
			INSEC	Regal Fritillary/ Speyeria idalia
		Snags > 6" dbh	BIRD	Red-headed Woodpecker/ Melanerpes erythrocephalus
		Tree and Snags (Cavity Nesters)		Red-headed Woodpecker/ Melanerpes erythrocephalus
		Upland (usually mesic to dry, not subject to holding water)		Cerulean Warbler/ Dendroica caerulea