Dry Coniferous Woodlands

Southern Blue Ridge Mountains

This habitat type occurs on sites that are dryer than most mountain sites, including ridgetops, spur ridges, and along steep slopes, generally in the low to middle elevations below 3,500 feet on southern or western aspects. These sites contain shallow, often extremely acidic soils. Dry coniferous woodlands are variously referred to or include ecological communities such as pine-oak heath (Schafale and Weakley 1990) and southern yellow pine (Hunter *et al*. 1999, SAMAB 1996). Typically, lower elevation sites are dominated by Virginia or pitch pine, which is replaced near 3,000 feet with dominance by table mountain pine. Canopy species may include table mountain pine, pitch pine, Virginia pine, chestnut oak, Carolina hemlock, or white pine. In addition, a wide variety of hardwood trees are often dispersed throughout this habitat including scarlet and chestnut oak, hickories, sourwood, black gum, and sassafras. The understory is often very dense mountain laurel or rhododendron, though some sites, particularly those which have experienced recurring fires, support diverse understories of a wide variety of *Vaccinium* and other ericaceous shrubs and herbs (NCNHP 2001).

Fire and other disturbances have played a critical role in the establishment, maintenance, composition and structure of dry coniferous woodlands. There is little doubt that frequent fires are necessary to sustain this habitat, and that in the absence of fire, these communities generally succeed into hardwood forest conditions (Hunter *et al*. 1999). Table mountain pine and table mountain/pitch pine stands in particular can only reproduce in a fire maintained system due to their serotinous cones and shade intolerance. The distribution and abundance of table mountain-pitch pine habitat will likely change with active management and restoration, the invasion of exotic organisms and the impact of forest decline agents (Williams 1998).

Table 1. Priority species associated with montane dry coniferous woodlands.

Group	Scientific name	Common name	State status* (Federal status)
Birds	*Accipiter cooperii*	Cooper's Hawk	SC
	Accipiter striatus	Sharp-shinned Hawk	SR
	Dendroica discolor	Prairie Warbler	
	Helmitheros vermivorous	Worm-eating Warbler	
	Loxia curvirostra	Red Crossbill	SC
	Melanerpes erythrocephalus	Red-headed Woodpecker	
	Sitta pusilla	Brown-headed Nuthatch	
Reptiles	*Crotalus horridus*	Timber Rattlesnake	SC
	Eumeces anthracinus	Coal Skink	

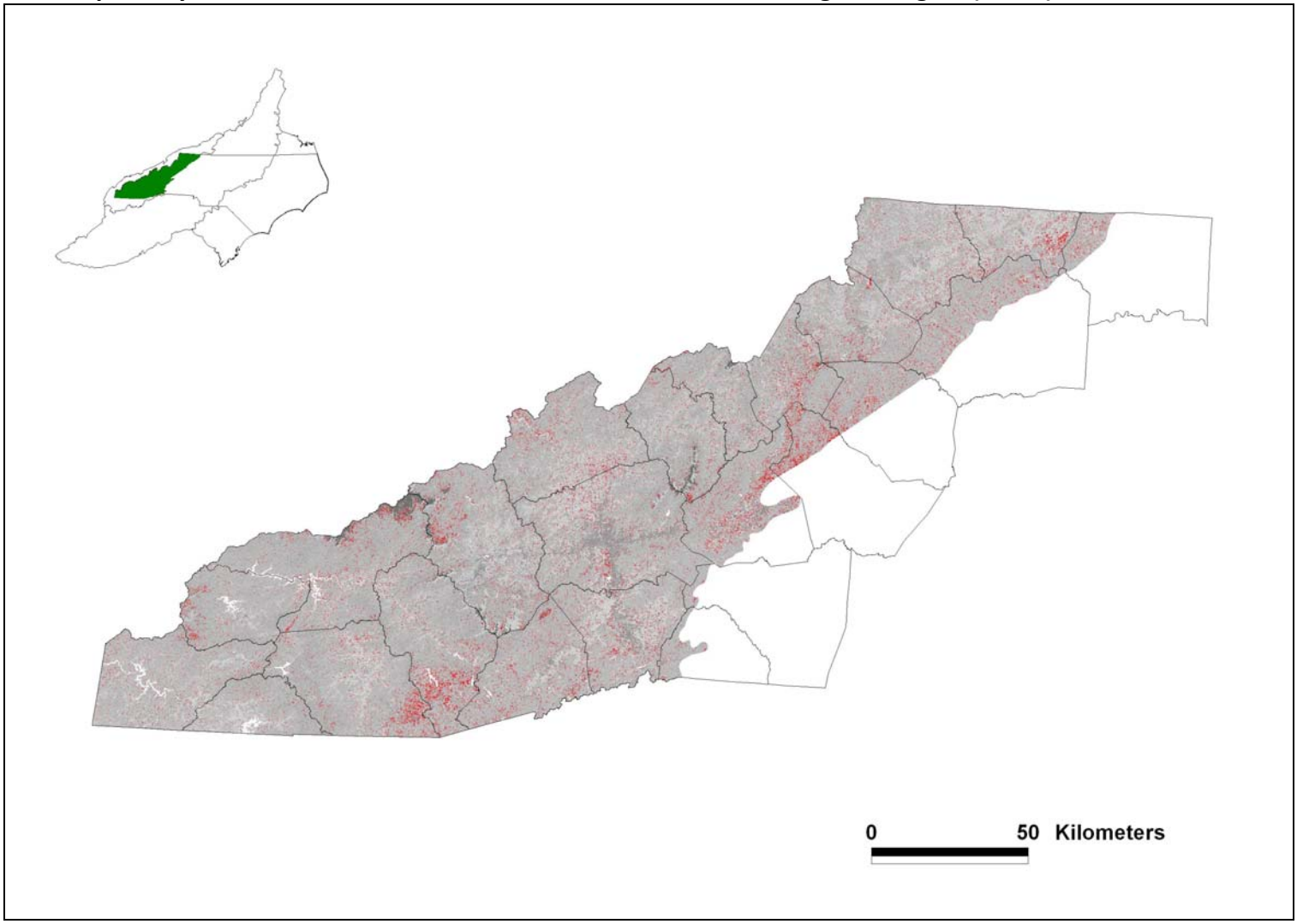
*Abbreviations
SC Special Concern
SR Significantly Rare

Location And Condition Of Habitat

Dry coniferous woodlands are widespread in the southern Appalachians as a whole, however they are more common in the ridge and valley and Cumberland Plateau physiographic regions than in the Southern Blue Ridge of western North Carolina. The Southern Appalachian Assessment reported over 3.7 million acres of southern yellow pine forest throughout the entire southern Appalachian region (SAMAB 1996). However, within the Southern Blue Ridge portion (mostly NC, with small amounts of TN, GA, and SC), Hunter *et al*. (1999) report only 650,000 acres. The US Forest Service estimates only 31,000 acres of southern yellow pine forest on the Pisgah and Nantahala National Forests of Western North Carolina (USFS 2001). Owing to the relatively low elevations occupied by dry coniferous forests in the region, significant ownership of this habitat occurs in western North Carolina upon state owned lands (Thurmond-Chatham, South Mountains, and Green River Game Lands; South Mountains State Park; Dupont State Forest). Most of the dry coniferous woodland habitat occurs in the foothills region, or in the far western counties (e.g., Cherokee and Clay counties).

With respect to the condition of dry coniferous forest in western North Carolina, it can only be characterized as quite variable. Because of the relationship between fire and other disturbances and the maintenance of this habitat, some sites are relatively open woodlands; others are densely packed with understory shrubs and succeeding into hardwood forest. In general, most are middle aged stands. There are examples of both older and younger age classes represented across the landscape, and there are also particular areas managed more intensively with prescribed fires though such areas are not common relative to the amount that is not actively managed. Map 1 depicts locations of dry coniferous woodlands in the Southern Blue Ridge ecoregion.

Map 1. Dry coniferous woodland habitats in the Southern Blue Ridge ecoregion (in red).



Data source: NC GAP, 1992.

Problems Affecting Species And Habitats

The most significant problem affecting dry coniferous forests in North Carolina is the lack of regular fires needed to maintain and reproduce this habitat type. Fire suppression, or the inability to use fire as a management tool, is resulting in a decline in both quantity and quality of this habitat. Not only will these forests not be able to reproduce themselves without fire, but those stands which are not regularly burned often develop dense mountain laurel/rhododendron understories that shade out other shrubs and herbaceous plants, thus lowering the habitat quality and diversity of wildlife which could utilize the area.

Another general problem associated with dry coniferous forest is the southern pine beetle. Beetle outbreaks can have significant impacts upon this habitat type, killing the dominant pine overstory. However, southern pine beetles are a native insect and periodic outbreaks are a natural occurrence. What makes pine beetle outbreaks detrimental to the habitat is often the lack of fire after an outbreak leading to the development of dry hardwood habitats and thus the loss of the coniferous habitat.

Additional problems faced by individual species associated with dry coniferous forest include the lack of early successional habitat of this type or conversion of this habitat to other pine habitat (i.e. white pine) for species such as prairie warblers, woodpeckers, and nuthatches. Timber rattlesnake persecution in these habitats also remains a significant threat. And again, lack of management of the stands decreases the quality of habitat for woodland hawks by decreasing prey abundance and limiting their ability to hunt in dense understory growth.

As with all habitats, human development is rapidly decreasing the availability of this habitat across the region. Not only are we losing the habitat to development, but development in or adjacent to these sites leads to a significant problem with respect to managing these habitats with prescribed fire. Even where dry coniferous forest management could occur, we are often limited in our abilities to use fire as a management tool, due to the proximity of residential or other development.

Species And Habitat Conservation Actions and Priorities For Implementation

Besides research, surveys, and monitoring of the species and the habitat, two major conservation actions need to be pursued. First, we must protect as much of this habitat as possible from conversion to other habitats or from outright loss to human development. Acquisition for conservation ownership should be a high priority, as should the development and implementation of voluntary measures to conserve and manage dry coniferous forest on private lands. This can be pursued through existing or new programs to promote maintenance and appropriate management of this habitat on private lands (e.g., Farm Bill programs and other landowner incentive programs such as the Forest Landbird Legacy Program, or stewardship forestry). And second, we must do everything possible to promote appropriate management of dry coniferous forest on public land through increased use of prescribed fire as a management tool. Prescribed burning is necessary to promote understory development, as well as maintain overall habitat quality and function.

Priority Research, Survey, And Monitoring

- **Surveys**
  - For all of the priority species associated with dry coniferous woodland, we need to intensify efforts to establish our knowledge of their distribution and status, particularly species for which broad scale monitoring (e.g., BBS for birds) has not provided adequate information, such as: brown-headed nuthatch, red-headed woodpecker, prairie warbler, Cooper's and sharp-shinned hawks, coal skinks, timber rattlesnakes.
- **Monitoring**
  - Monitoring protocols and procedures need to be developed or refined that will allow us to measure population trends of the priority wildlife species, as well as the health and distribution of this relatively rare habitat through time.

- **Research**
  - Research needs to continue on topics including efficient and effective means to manage and improve the quality and quantity of dry coniferous forest, with a particular eye towards techniques that are applicable in our developing landscape (e.g., *in the absence of fire, either as a natural event or as a management tool, what other means might be available to sustain this habitat across the landscape?).*

Supporting References

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