## Lake Wales Ridge -- Introduction

The Lake Wales Ridge is a 100 mile ancient sand ridge lying north-south along central peninsular Florida. At its widest the Ridge is 10 miles wide. The Ridge ecosystem is a mosaic of xeric upland islands linked by mesic lowlands and wetlands. The uplands consist of five different community types, which are habitat for 31 federally or state listed plants and 25 federally or state listed animals. Eleven plants and two animal species are endemic to the Ridge. Twelve federal, state, county, and private agencies manage 35 conservation properties, totalling over 90,000 acres. At least 10 more areas are targeted for conservation acquisition. Prescribed fire is the primary management need for these sites. The critical threats are fire suppression and commercial/residential development.

The Nature Conservancy's Lake Wales Ridge Program began its conservation planning in June 2000. All eight Ridge Program staff members participate in the process along with Protection, Stewardship, Government Relations, and Philanthropy staff from the Florida Chapter Office.

### Targets

### 1. Xeric Uplands Matrix

The matrix consists of the xeric upland "islands," their associated seasonal ponds, and the surrounding lowlands. Only 15% of the xeric uplands remain. Citrus and commercial/residential areas surround the remaining native habitat. The xeric uplands include sandhill, yellow sand scrub, rosemary balds, rosemary-oak scrub, and scrubby flatwoods. Lowlands include seasonal ponds, wet and mesic flatwoods and prairies, seepage slopes, and several types of forested wetlands. Because of very frequent lightning in Central Florida, all but the wettest natural communities have evolved with fire. Fire frequencies in uplands range from every 3-5 years to every 25 to 50 years. In the past 50 years, fire has been increasingly excluded from natural areas as citrus and commercial/residential development has increased. Fire exclusion has resulted in hardwood shrub and/or sand pine invasion, resulting in a decrease in open sand areas, which are are crucial for many native species, in uplands and native herbaceous groundcover in mesic habitats. The state began extensive conservation acquisition on the Ridge in the 1980's. However, fire management continues to be slowly implemented on most sites, and central Florida is rapidly becoming more urban.

### 2. Florida Scrub-jay

The Florida Scrub-jay is Federally listed as Threatened, and the state population has declined by almost 50% over the past ten years. Scrub-jays inhabit rosemary-oak scrub and scrubby flatwoods where fire has limited pine invasion and shrub heights. This species was made a target separate from the xeric

upland matrix because the jays have specific habitat needs that may not be suitable for another focal target, Rare Upland Plants of Concern. Viability analyses by researchers at Archbold Biological Station suggest that all or most remaining potential habitat is needed for Scrub-jays; therefore, specific management guidelines for protecting Scrub-jays along with rare plants need to be developed.

### 3. Sand-dwelling organisms

Included in this target are the sand skink (*Neoseps reynoldsi*), blue-tailed mole skink (*Eumeces egregius lividus),* soil crusts, and numerous invertebrates. All need open sand gaps, which are lost with fire suppression. We separated these organisms from the xeric upland matrix because of two concerns: 1) Many land managers are considering using mechanical treatments to lower their fuel loads in many overgrown areas prior to or instead of fire. We are uncertain of the impacts that the ground disturbance may have on these nested targets. Also, where burning occurs after treatment, we suspect that dense piles of fuel may lead to higher mortality for these organisms because of increased heat intensity at the ground level. 2) In long unburned areas where woody shrubs have become dominant, fire has resulted in only short-term increases in open sand, which soon disappear as shrubs resprout.

### 4. Rare Upland Plants of Concern

These are *Crotalaria avonensis, Dicerandra christmanii, Dicerandra frutescens, Conradina brevifolia,* and *Polygala lewtonii.* All except *P. lewtonii* occur in scrub and scrubby flatwoods and rely on open sand gaps. Research by Archbold Biological Station suggests that optimal habitat needs for Scrub-jays may not be suitable for these species because the optimal shrub heights for jays may restrict the size and abundance of sand gaps. As with Sand-dwelling Organisms, there is also the concern that fire may have limited potential to create open sand patches where woody shrubs have become dominant.

*P. lewtonii* is restricted to sandhills. Ten years of demographic monitoring on TNC sandhill sites has shown that this species thrives best in frequently burned areas with an open understory. The other sandhill sites on the Ridge are mostly long-unburned and have lost their native herbaceous groundcover. Fire is difficult to re-introduce to these areas because of the lack of fine fuels. Therefore, there is a challenge to restore habitat for *P. lewtonii.*

### 5. Cutthroat grass communities

Cutthroat grass (*Panicum abscissum)* is endemic to Central Florida. It occurs on mesic flatwoods and prairies, seepage slopes, and seasonal ponds. Historically within these communities, cutthroat grass, when present, was the dominant species, comprising almost a monoculture within the understory. At least 80% of

cutthroat areas have been lost to agriculture and other development. In remaining natural habitat, lowered water tables have resulted in a decrease of potential habitat for cutthroat grass. Where cutthroat grass mains, fire exclusion has led to the displacement of herbaceous cover by shrubs. Fire has been successful in maintaining existing cutthroat areas on Ridge conservation sites. However, we remain concerned that increasing water demands will continue to degrade cutthroat habitat.

**6. Ziziphus**

There exist only five areas where the shrub Ziziphus (*Ziziphus celata*) occurs. All but one of these areas are on unprotected private lands. Archbold Biological Station and Historic Bok Sanctuary have been conducting genetic and demographic studies of all five populations. Their data reveal that there is extremely low genetic variability within the populations. The researchers are currently attempting to produce viable fruit from compatible individuals from different sites so that new sexually compatible populations can be introduced to conservation areas

**7. Seepage/blackwater streams.**

There are six high-quality seepage/blackwater stream systems remaining on the Lake Wales Ridge. The numerous other streams on the Ridge have been severely degraded by lowered water tables, low water quality, and non-native invasive species. The six stream systems of concern lie at least partially within conservation sites. However, increasing development around the conservation sites and the associated increases in water demand threaten these systems.