2006 STATE WILDLIFE GRANT:
HABITAT RESTORATION OF THE ARKANSAS BLACKLAND ECOSYSTEM
TO BENEFIT MULTIPLE SPECIES OF GREATEST CONCERN

FINAL REPORT

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ACKNOWLEDGEMENTS

Project Area: Arkansas Blackland Ecosystem

The blackland prairies, woodlands, and bottomlands in Arkansas harbor more than 315 animal and 600 plant species, including many that are considered at-risk in Arkansas and globally. There are also 22 ecological communities that have been described from the blackland region of Arkansas.

The Blackland Ecosystem Conservation Area is located in six counties in southwest Arkansas in the Upper West Gulf Coastal Plain Ecoregion. Roberts (1979) estimated there were originally 325,000 acres of blackland ecosystem in Arkansas. In a 2000-2001 survey, about 9% of the original blackland ecosystem was in a restorable (restoration of fire, removal of invasive plants) condition. Ecological assessments conducted by The Nature Conservancy (TNC) and Arkansas Natural Heritage Commission (ANHC) have identified core conservation sites totaling 35,000 acres that is best suited for restoration activities.

Project Vision

The long-term conservation vision for the Arkansas Blackland Conservation Area is to conserve and restore functional terrestrial systems. The systems should support stable populations of CWCS *Species of Special Concern* and their associated ecological communities. This vision includes working in partnership with local communities and public entities to incorporate compatible economic and cultural interests within the Arkansas Blackland Ecosystem into the long-term conservation of its biodiversity.

Project Objectives

- To increase the amount of suitable habitat for Species of Greatest Concern on privately-owned lands within the Blackland ecosystem by 500 acres.
- To facilitate restoration efforts on private lands by the development of tract-specific blackland ecosystem restoration plans for willing landowners.
- To assist private landowners in implementing blackland conservation strategies by removing non-native and invasive plant species through technical assistance.
- To increase long-term stewardship efforts by private landowners and expand suitable habitat for species of greatest concern (beyond the project period of this proposal).
- To implement blackland ecosystem conservation education through presentations, public outreach, and technical assistance.
- To implement program monitoring on private lands to measure success of restoration and maintenance activities and ensure that lessons learned from this effort feed back to technical assistance providers.

Deliverables:

1. Reduction of eastern red cedar on 350 acres of private land.
   Payment on completion with report $7,500, TNC match $7,500.
2. Reduction of invasive non-native species on 150 acres of private lands.
   Payment on completion with report $7,500, TNC match $7,500.
3. Report on the operations and successful outreach efforts.
   Payment on completion $5,000, TNC match $5,000.
4. Delivery of out reach materials.
   Payment on completion $5,000, TNC match $5,000.
5. Final report and map that shows the increase in suitable habitat.
   Payment on completion $5,000, TNC match $5,000.

Deliverable Completed:

1) Reduction of eastern red cedar from 350 acres of private land.

TNC rented a 70-90HP tracked skidsteer loader used in conjunction with a V-blade shear made by Havroc and manufactured specifically for use with skidsteer loaders and owned by TNC. Stems were sheared at ground level. Work was conducted when soil conditions allowed (not too wet). Cedar reduction was performed on the Byers Tract (260 acres) and the Rogers Tract (100 acres).

Cedar removal was conducted July and August 2007, and May - August 2008 on the Byers Tract. The Rogers Tract was cut from August through September 2008. In addition to being cut with shear mounted on

Cedar removal on Byers Tract.

skidsteer Rogers also had 20 hours hand-crew chainsaw felling. Thickets of eastern red cedar encroaching on prairie openings and connected to existing prairie openings were targeted for shearing. Cut piles were made near uncut cedar and were reduced when the areas are burned in the following fall or spring. Maps of cedar reduction areas can be found in Attachment I. Photopoints were established at the Byers Tract and can be found in Attachment II. Initial photo points of the Rogers tract were not taken but post cedar cutting photos were taken and can be found in Attachment II.

Examples of cedar shearing work.

Byers Tract: Before cedar shearing.

After cedar shearing.

Deliverable Completed:

2) Reduction of invasive non-native species on 150 acres of private lands.

Two non-native species of sweetclover (*Melilotus spp.*), sericea lespedeza (*Lespedeza cuneata*), and Johnson grass (*Sorghum halepense*) were targeted for treatment. Treatments occurred between May 2008 and August 2008. Treatments occurred on Columbus Prairie (20 acres) in Hempstead County and the Byers Tract (130 acres) in Hempstead County; both properties are adjacent to the Rick Evans Grandview Prairie WMA.

A grid system was used to treat the above described properties. Sweetclover was treated with spot burning and chemical treatments. Sericea lespedeza and Johnson grass were

treated with chemical applications.

Treated sericea lespedeza

Herbicide application for sericea lespedeza and sweetclover was done using the product Remedy Ultra®, which contains Triclopyr ester. A marking dye was added to spray mixtures to maximize spraying efficiency. Remedy Ultra® is used in controlling woody and herbaceous broadleaf plants, and has little to no impact on grasses.

Treatments included the use of spot and broadcast spraying. The seasonality and timing of the application of Remedy Ultra® during active plant growth and before seed head formation is critical for the application to work most effectively.

Remedy Ultra® treatments were delivered with 3-gallon backpack sprayer and ATV mounted 25-gallon tank equipped with a spot-spray gun and boomless nozzle broadcast sprayer. Remedy Ultra® was mixed at a 0.5 oz per gallon of water concentration.

Dosage / Mixing	3 gal Backpack Sprayer	25 gal ATV Sprayer
Remedy Ultra	1.5 oz	12 oz

Dosage per Implementation Device:

Johnson grass was treated with premixed ready to apply glyphosate. The glyphosate was delivered with 3-gallon backpack sprayer and bottle/jug spaying guns.

Particular environmental conditions were avoided during the treatment process. Herbicided treatments were applied on days with low winds and were not applied to stands of exotics in standing water.

SPECIES	TREATMENT TIME	METHOD	DOSAGE
Sweetclover	May – July 2008	Spot Burning	Propane torch wilting terminal leaves and stems.
Sweetclover	July – August 2008	Chemical Treatment: Triclopyr ester	0.5 oz / gallon of water
Sericea lespedeza	July – August 2008	Chemical Treatment: Triclopyr ester	0.5 oz / gallon of water
Johnson grass	July – August 2008	Chemical Treatment: Glyphosate	Premixed ready to apply.

Species control methods:

Sweetclover was the most abundant invasive species and was most prevalent adjacent to disturbed areas. All of the species are disturbance oriented and usually found along roads, old home sites and eroded areas. A map of the area treated for invasive species is included in Attachment III. Exotics were treated on Columbus Prairie (20 acres treated) and the Byers Tract (130 acres treated).

Deliverable Completed:

3) Report on the operations and successful outreach efforts.

Blackland Ecosystem presentations and field trips were provided to several groups including the Arkansas Legislative Sub-Committee for AGFC (presentation Attachment IV) and Arkansas State Police. Annual Landowner Appreciation functions (Cookout on the Prairie) were held in June 10th 2006, May 12th 2007, and May 10th, 2008 at Grandview Education Center (a sample of presentation used is available in Attachment V) for all landowners around the conservation area. Blackland landowners and other key individuals attended and were given presentations by TNC and AGFC.

Increased landowner contact resulted in the landowner of a high-priority blackland tract near Rick Evans Grandview Prairie Wildlife Management Area committing to a perpetual conservation easement on his 380 acre tract (Byers Tract). Which has progressed even further the owner has obtained a Partners for Fish and Wildlife grant to continue funding prescribed fire on his property till 2014. Another landowner with 1,300 acres adjacent to the White Cliffs Blackland Natural Area is also considering a conservation easement.

Deliverable Completed:

4) Delivery of out reach materials.

As part of this project, TNC worked with Arkansas Game and Fish Commission to successfully develop and produce a Blackland Ecosystem Poster and state-framework lesson plan. Posters and lesson plans were sent to teachers in counties containing blacklands. Posters are available from AGFC and TNC, free of charge.

Deliverable Completed:

5) Final report and map that shows the increase in suitable habitat.

Covertype mapping was conducted during August 2006 and August 2008. Seven covertypes were used including designations for prairie, woodland, riparian woodland, non-native grassland, and others.

Cover type mapping was conducted on Columbus Prairie, Byers Tract, and pretreatment only on Rogers Tract, because cedars were removed from the Rogers Tract near the conclusion of the grant little cover type change is expected in that short amount of time. Previous cedar removal projects have shown that the prairie responds positively to such treatment but takes at least one growing season to show a response. The full cover type mapping report can be found in Attachment VI.

Figure 3. Very low (V) quality dry-mesic blackland prairie.

Seven community covertypes were mapped during the assessment (Table 1); however, these types can be lumped into four categories: prairie, woodland, savanna, and nonnative grassland. 259 acres (51% of total acres) of the area were mapped as prairie; 144 acres (29% of total acres) were mapped as woodland; 10 acres (2% of total acres) were mapped as savanna; 92 acres (18% of total acres) were mapped as nonnative grassland.

The ecological quality of the property was evaluated pre and post treatment in the summer of 2006 and 2008 (Table 1). This mapping can be used to track the pace of the restoration. In 2006, 87 acres (21% of total acres) were mapped as medium quality (M, M+, and M- combined), 232 acres (56% of total acres) as low quality (L, L+, and L- combined), and 94 acres (23% of total acres) as very low quality (V). In 2008, 148 acres (36% of total acres) were mapped as medium (M, M+, and M- combined), 265 acres (64% of total acres) as low (L, L+, and L- combined), and 0 acres (0% of total acres) as very low quality.

Table 1. Community type, quality, and acres (pre- and post-treatment) for private lands qualitative assessment.

Community	Quality	Acres (pretreatment)	Acres (post-treatment)
Calcareous blackland woodland	M	2	2
Calcareous blackland woodland	L+	3	3
Calcareous blackland woodland	L	30	30
Dry mesic blackland prairie	M+	24	24
Dry mesic blackland prairie	M	23	49
Dry mesic blackland prairie	M-	14	52
Dry mesic blackland prairie	L+	1	89
Dry mesic blackland prairie	L	42	10
Dry mesic blackland prairie	L-	24	1
Dry mesic blackland prairie	V	94	0
Dry-mesic blackland savanna	M	2	10
Dry-mesic blackland savanna	M-	8	0
Mesic blackland prairie	M-	3	3
Mesic blackland prairie	L-	8	8
Mesic blackland prairie	L	23	23
Riparian blackland woodland	M	0.2	0.2
Riparian blackland woodland	L	101	101
Southern red oak woodland	M	8	8
Pasture/nonnative grassland		92	92

Figure 4. Medium quality dry-mesic blackland prairie.