

State Wildlife Grants Program Final Report



Project Title: Recovery of State Threatened Timber Rattlesnake (*Crotalus horridus*) Populations in Minnesota's Blufflands State Parks and Scientific and Natural Areas

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Project Period: March 1, 2004 – December 31, 2005

Timber Rattlesnake Monitoring & Survey:

Preliminary searches of known/potential den sites were completed as needed for habitat work during 2004. A more complete survey for timber rattlesnakes was completed during the spring emergence period of 2005. The survey essentially duplicated an early survey completed in 1990-1991 at the same State Parks (Keyler and Oldfield, 1992).

Although the two survey periods are not directly comparable due to varying survey techniques at varying locations, the end result is a significant and alarming decrease in population size. All the locations have suffered significant declines in the numbers of timber rattlesnakes.

Please note that all location information has been removed from this document to protect Minnesota's Timber Rattlesnake populations



Survey crew searching for timber rattlesnakes during spring emergence.

Despite the large population declines indicated from the 2005 survey work, there were some optimistic data collected as well: 1) an active den was documented at one state park (this den had reproduction occur over the last 2-3 years at least), 2) a gravid female was observed, and 3) a rattlesnake was observed at a den site that was heavily vandalized and poached in the early to mid-1990's (and thought to be possibly destroyed),

Timber Rattlesnake Habitat Management:

We assessed habitat quality and management priorities on all bluff prairies and potential den sites, transient habitat, or other use areas. Habitat work largely involved cutting woody vegetation from bluff prairies. Woody vegetation that was removed varied considerably from park to park and site to site. In general, shrub type brush removal involved ninebark, dogwood, plum, sumac, and prickly ash. Larger trees were girdled or cut and removed from the site and consisted primarily of elm, box elder, ash, hickory, and to a small degree red cedar).



Example of what we considered a potential den site when doing preliminary assessments of sites to prioritize habitat management needs.

Summary of timber rattlesnake habitat management accomplishments for 2004.				
	# of sites managed	acres managed	# of Rx burns	acres of Rx burns
XXXXX	10	20	3	14
XXXXX	7	6	1	5
XXXXX	7	11	4	78
XXXXX	6	16	0	0
XXXXX	2	4	0	0
XXXXX	4	7	3	13
XXXXX	1	4	0	0
TOTALS	37	68	11	173

Summary of timber rattlesnake habitat management accomplishments for 2005.				
	# of sites managed	acres managed	# of Rx burns	acres of Rx burns
XXXXX	6	15	5	38
XXXXX	3	7	2	4
XXXXX	4	13	5	85
XXXXX	3	9	1	22
XXXXX	0	0	1	1
XXXXX	1	2	1	6
XXXXX	1	1	0	0
TOTALS	18	47	15	203



Example of over-grown bluff prairie and shaded rock outcrop. (There is a major rock outcrop in the center of the woody vegetation). This site is very difficult to maintain with prescribed fire
Date: June 2004



Habitat management work on the same site included reducing patch size of shrub species and cutting or girdling larger undesirable trees. Brush piles were burned the same winter.

Date: mid-Nov. 2004



Same rock outcrop the following season. Notice the larger girdled trees are dead or dying, the brush piles are gone, and vegetation has recovered and filled in the bare areas. This site has considerably more sunlight and is now more easily maintained with fire.

Date: August 2005

All habitat management and prescribed burns were completed prior to timber rattlesnake emergence or after fall egress when working on sites with known or potentially active den sites. Only sites that currently possess a very low potential to serve as an active den or birthing area were managed during the time when rattlesnakes are active. Additionally, these sites were 'pre-scouted' during the emergence period and prior to actually doing the management work to verify that no snakes were currently using the sites. This strategy seemed to work well by concentrating management activities during snake over-wintering but yet allowing habitat improvements on lower priority sites.



This site had a full canopy of young tree cover. Note the rough blazingstar enjoying the sunlight and the open savanna in the background. Cutting and girdling undesirable tree species followed by a prescribed burn were the management actions on the site.

Project Summary:

This project provided a concentrated effort to improve habitat conditions on south and west facing dry prairie and savanna communities. Habitat assessments and priorities were established and guided management actions. These communities are exceedingly rare or in poor condition throughout SE MN. This project allowed significant improvements on numerous sites. The monitoring and survey work documented a drastic decline in timber rattlesnakes at most parks. At the same time, we remain optimistic by the documentation of reproduction at 2 of the parks and the improvements in habitat conditions at all parks. "...if recovery of timber rattlesnake populations is to succeed, it will likely take many years, and a constant and unrelenting commitment to protect the timber rattlesnake sites in State Parks from human interference, excessive habitat interventions, and protection of quality timber rattlesnake habitat" (Keyler and LeClere 2005).

Literature Cited:

Keyler, D.E. and Oldfield, B. 1992. Timber Rattlesnake (*Crotalus horridus*) field survey on southeastern MN state lands (1990-1991). Unpublished report submitted to MN Dept. of Natural Resources Nongame Wildlife Program.

Keyler, D.E. and LeClere, J. 2005. Timber Rattlesnake Field Survey XXXXX, XXXXX, XXXXX, and XXXXX State Parks. Unpublished report submitted to MN Dept. of Natural Resources, Div. of Parks and Recreation

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