# CITY OF AUSTIN

# WHITE-TAILED DEER SURVEY PROGRAM

## Balcones Canyonlands Preserve

## Fiscal Year 2000-01

The City of Austin
Parks & Recreation Department
Natural Resources Division

Prepared by Jackie Davis
December, 2001

## I. DEER CENSUS METHODS

There are several census techniques which can be used to perform ground deer censusing, i.e. the Hahn, Spotlight, and Mobile Line techniques. As with previous monitoring years, the City of Austin (COA) used the Spotlight technique to census deer on the Balcones Canyonlands Preserve (BCP) tracts. The Spotlight technique determines deer populations by counting the number of deer spotted along a census line, calculating the number of acres seen along this census line, and dividing the number of acres by the number of deer observed to give an estimate of the deer population (expressed as acres per deer).

A standard Texas Parks & Wildlife Department (TPWD) "visibility form" allows the census taker to calculate the number of acres observed along the route of the census. At intervals of 0.2 mile, the distance in yards which can be seen to the right and to the left are noted on the form. When this distance (usually 5 miles for the BCP census) is divided by the number of stops (usually 26), an average width of the census strip is determined. Through a formula provided by TPWD, the total number of acres seen (acres of visibility) for that specific survey can then be determined:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| _____ | / | _____ | X | _____ | / | 4840 | = | _____ |
| Total visible yards (n miles) | | No. of readings ( 5n + 1) | | Length of line in yards (1760 n) | | Sq. yards / acre | | Acres of visibility |

The number of deer seen during that survey will then be expressed as acres per deer:

| | | | | |
|---|---|---|---|---|
| _____ | / | _____ | = | _____ |
| Acres of visibility | | Total # of deer | | # of acres per deer |

The Spotlight technique involves using high intensity spotlights to count deer at night. The COA biologists usually use a pickup, with two crew members sitting in the back of the pickup, counting the deer, and the driver of the pickup marking the data on the "visibility form." We begin the count between 30 to 45 minutes after sundown. The vehicle speed is generally between 2 mph to 6 mph, and visibility readings are taken every 0.2 mile. We determine sex and age (fawns) when possible. We also note all other animals (invertebrates, reptiles, birds, mammals) which we encounter along the route.

## II. RESULTS AND DISCUSSION

The surveys conducted in the fall of 2001 were the third in a series of consecutive annual monitoring studies conducted by COA biologists to determine the approximate numbers of deer on the COA BCP tracts. The same locations, routes and distances which were used in the Fall Survey 2000 were used again for the Fall Survey 2001. The three location sites are

as follows: **(1) Upper Bull Creek**, extending from the west side of the Canyon Creek tract, crossing through the uplands of the Hanks tract, then traversing down and through the lowlands of the Franklin and Lanier tracts, and then onto the WTP#4 tract; **(2) Emma Long City Park**, extending from City Park Road on the northern side down to an off-road trail on the uplands portion, then continuing down City Park Road into the campground area along the river; **(3) South Lake Austin Macrosite**, extending from the Baldwin tract south of Bohls and traversing the uplands on the west side of Bohls up to the river overlook; the survey then resumes on the private road which bisects Reicher Ranch; and lastly, the survey resumes on a portion of Double J&T at the very eastern end of Kollmeyer Drive, traversing the lowlands along the river.

Two surveys were conducted for the Upper Bull Creek location, producing an average density of one deer for every 9.57 acres. The average densities for the years 2000 and 1999 were 5.4 acres/deer and 11.5 acres/deer, respectively.

Two surveys were conducted for the Emma Long City Park location, producing an average density of one deer for every 1.53 acres. The average densities for the years 2000 and 1999 were 1.34 acres/deer and 1.2 acres/deer, respectively. The 2001 data continue to confirm that the Emma Long City Park has a severe problem with over-population of the deer herd. The deer were small in stature and weight (visual determinations). Interestingly, one of the bucks had a 13-point count on his antlers.

Two surveys were conducted for the South Lake Austin Macrosite location, producing an average density of one deer for every 6.63 acres. The average densities for the years 2000 and 1999 were 4.14 acres/deer and 3.17 acres/deer, respectively.

## III. CONCLUSIONS

The 2001 deer survey data continue to support BCP staff's conclusion of previous years, i.e., deer densities are unacceptably high and continue a long-term trend of negatively impacting the endangered species habitat of the BCP, as well as the overall health of the BCP ecosystem. The severe deer browse has prevented the regeneration of many generations (at least 20-25 years) of native hardwoods and understory woody shrubs on the BCP tracts. (See Leland Russell's dissertation "Effects of White-tailed Deer on the Dynamics and Structure of Spanish Oak Populations on the Eastern Edwards Plateau, Texas" and his paper "Rarity of Oak Saplings in Savannas and Woodlands of the Eastern Edwards Plateau, Texas" for further discussions o the effects of deer browse on hardwoods.)

We do not have sufficient data here in Travis County to determine at what deer density the native vegetation of hardwoods and understory will begin to experience regeneration. Estimates for an acceptable average number of deer in relation to the carrying capacity of the land vary widely and range from a low estimate of one deer for every 11-14 acres (Kerr Wildlife Management Area), to a medium estimate of one deer for every 20-40 acres, to a high estimate of one deer per 100 acres. As stated in the BCP Land Management Plan (Vol. 1, Management Handbook): "A majority of the BCP could be classified as a mature oak-juniper forest with an understory of deciduous species requiring little light. The carrying capacity of this oak-juniper forest could be as high as *one deer per 100 acres* because of the sensitive nature of these understory plants."

An effective deer management and cull program, along with proper game fencing, should be initiated immediately. A briefing paper on the current status of the Ctiy's deer populations was jointly written by COA BCP and Water Quality Protection Lands (WQPL) staff ("Environmental Evaluation of Proposed Reduction of White-tailed deer Populations on City of Austin Balcones Canyonlands Preserves and Water Quality Protection Lands", Oct. 5, 2001; see attached executive summary). The paper discussed impacts to the City's preserve land and proposed actions to protect the City's natural resources.

**DEER SURVEYS**
**COA/BCP**
**FALL SEASON, 2001**

| **Date** | **Upper Bull** | **Emma Long** | **So. Lk. Austin** |
|---|---|---|---|
| 10/3/01 | | | 7.52 acres/deer |
| 10/9/01 | 12.67 acres/deer | | |
| 10/18/01 | | 1.54 acres/deer | |
| 10/25/01 | | | 5.75 acres/deer |
| 11/1/01 | 6.48 acres/deer | | |
| 11/19/01 | | 1.52 acres/deer | |
| **Average** | **9.57 acres/deer** | **1.53 acres/deer** | **6.63 acres/deer** |

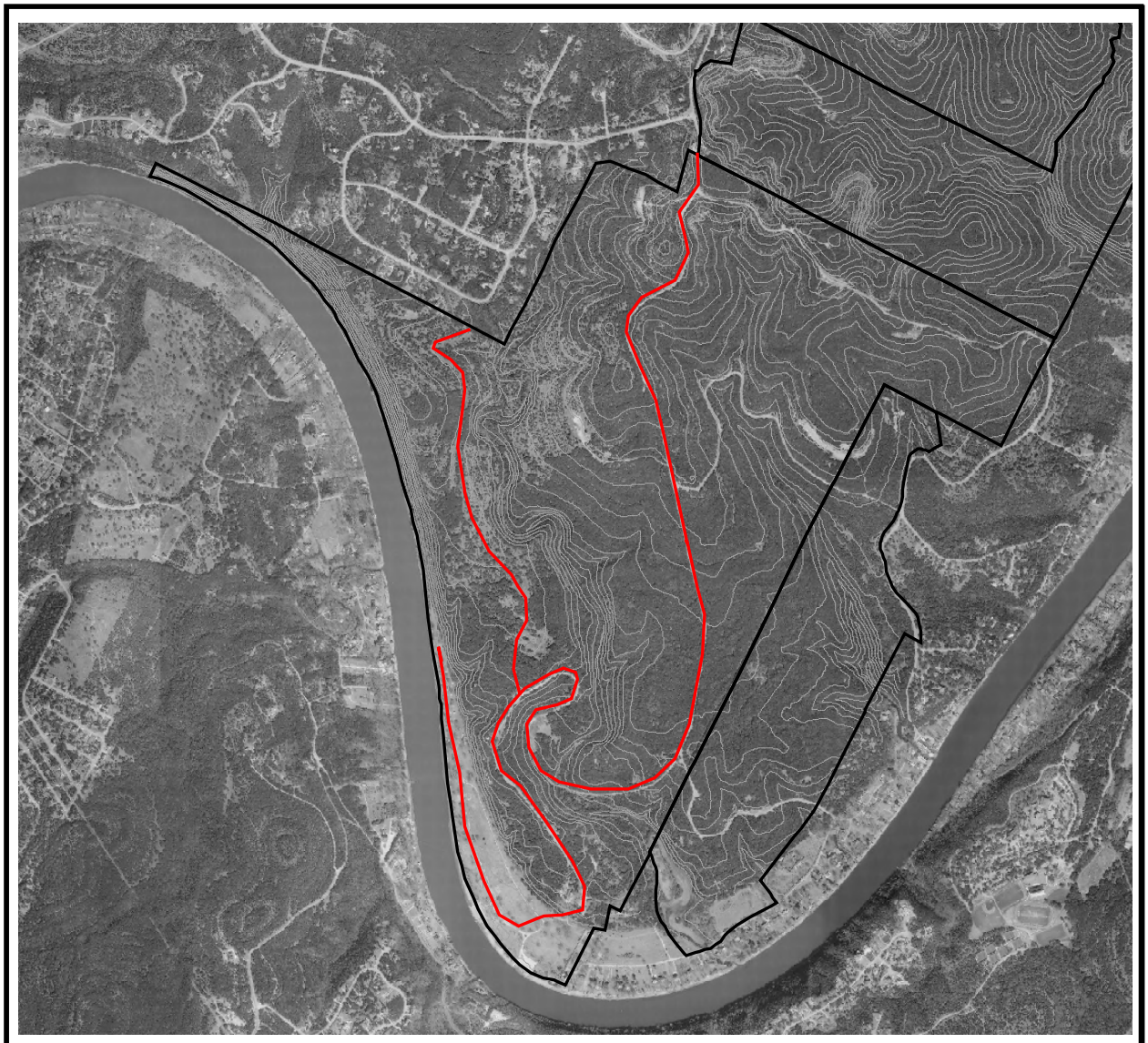


# 2001 White Tailed Deer Surveys
# Upper Bull Creek

Legend
Survey Route
Property Boundary

Scale
0.2 0 0.2 0.4 Miles

N
W E
S

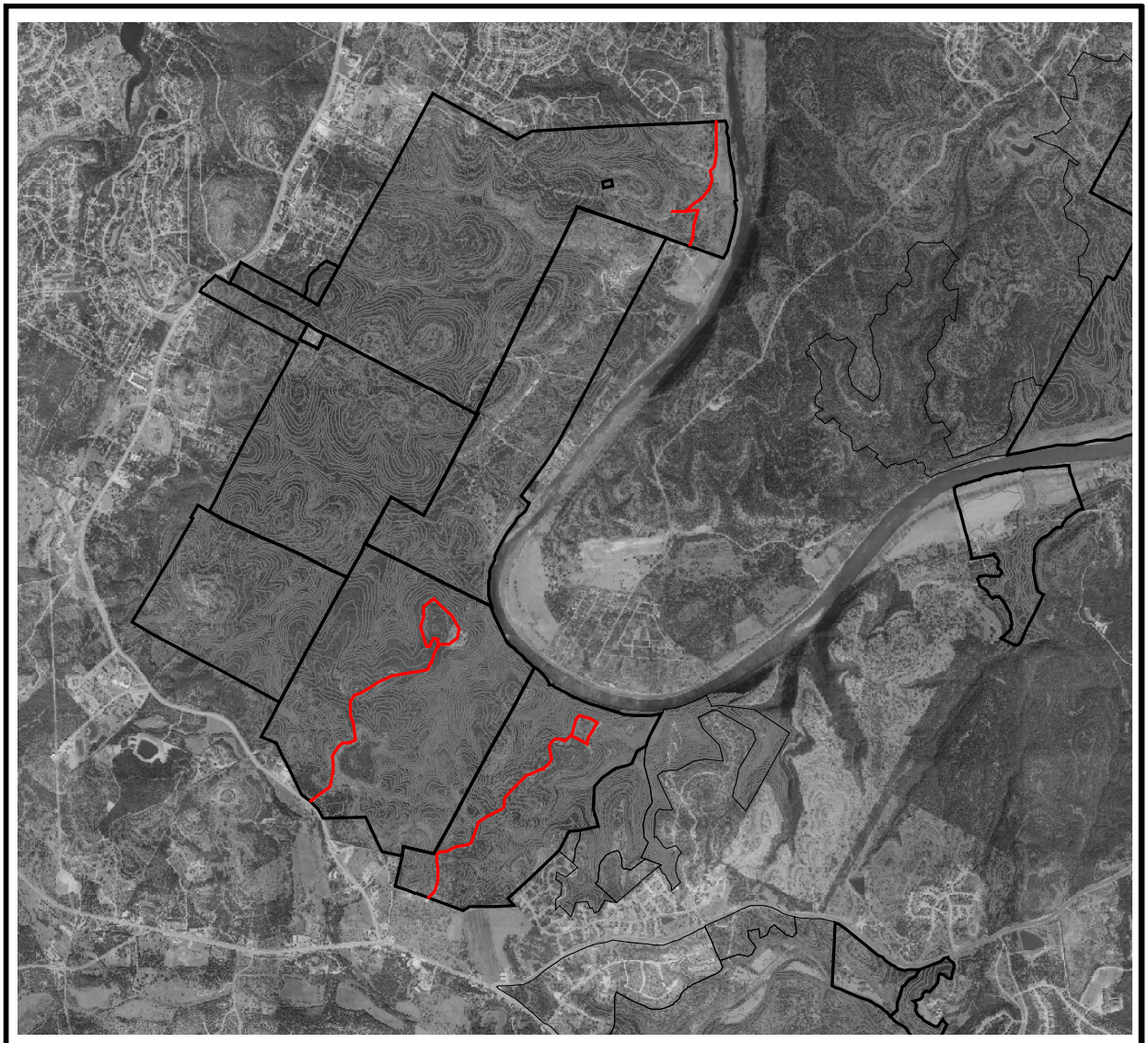


# 2001 White Tailed Deer Surveys
# Emma Long Tract

Legend
Survey Route
Property Boundary

Scale
0.6 0 0.6 1.2 1.8 Miles

N
W E
S



# 2001 White Tailed Deer Surveys
# Bohls, Reicher, and Double J and T Tracts

Legend
Survey Route
Property Boundary

Scale
1 0 1 2 3 Miles

N
W E
S

# Environmental Evaluation
# of
# Proposed Reduction of White-tailed Deer Populations on City of Austin Balcones Canyonlands Preserves and Water Quality Protection Lands

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**October 5, 2001**

# Environmental Evaluation
# Of
# Proposed Reduction of White-tailed Deer Populations On City of Austin Balcones Canyonlands Preserves And Water Quality Protection Lands

## Executive Summary

On August 21, 2001 the Environmental Conservation Program Manager, Water and Wastewater Utility, was directed by the City Manager to develop a briefing paper on the current status of the white-tailed deer populations on City Preserves. The briefing paper was to define observed and potential future impacts to preserve land from white-tailed deer and to propose actions to protect the natural resources of the City of Austin. This task was to be developed in cooperation with the Manager of the Balcones Canyonlands Preserve Program, Parks and Recreation Department, and to encompass Water Quality Protection Lands and the Balcones Canyonlands Preserves.

The City Preserves, Balcones Canyonlands Preserve and Water Quality Protection Lands, were established by the City of Austin to provide an enhanced quality of life for the citizens of the City through the protection of water quality, air quality, green space, visual aesthetics, endangered species, wildlife, and other natural resources.

The City of Austin holds two federal Endangered Species Act Section 10(a) permits directing the protection of nine listed species (Barton Creek salamander, golden-cheeked warbler, black-capped vireo, and six karst invertebrates) that occur on City owned land. The abnormally high populations of white-tailed deer on the City Preserves are severely damaging the habitats occupied by listed species and in-turn threatening the species themselves. Heavy deer browse is preventing the re-growth of deciduous brush and trees in City Preserve lands. Deciduous regeneration and the long-term health of a balanced ecosystem require significant reduction of local white-tailed deer numbers.

The City Preserve lands protect, through the direction of Land Management Plans for the BCP and WQPL, the water resources of the City's watersheds encompassed by the Preserve lands. Heavy deer browse negatively affects the hydrologic functions of the preserve lands. Replacement of the deciduous understory of the woodlands with junipers reduces the volume of water providing recharge and runoff in the Edward Plateau watersheds. Additionally, heavy deer browse reduces the ability of plant communities to protect and enhance water quality.

Six alternative methods, both non-lethal and lethal, of deer population reduction were evaluated as to their efficacy to lower deer population number on managed lands. The methods analyzed included: 1) trap and relocate; 2)immuno-contraception; 3) public hunting; 4) Antlerless and/or Spike White-tailed Deer Control Permit (ADCP); 5) Managed Lands Deer Permit (MLDP); and 6) Depredation Permit.

Based on the evaluations in this Briefing Paper, City Preserve staff recommends using lethal control methods, culling with deer rifles, administered under a Texas Parks and Wildlife Department Anterless and/or Spike White-tailed Deer Control Permit (ADCP). A pilot study will be conducted during FY 2002 to determine the effectiveness of the proposed action on reducing white-tailed deer populations on City preserve lands. City staff from BCP, WQPL and W&WW Utility would conduct the proposed action. The proposed action would take place on the BCP South Lake Austin Macrosite, WQPL Onion Creek Management Unit, and WQPL Lower Bear Creek Management Unit. During the pilot study, culling and disposal will be done three days each week for ten weeks. All meat from the destroyed animals will be donated to the Capitol Area Food Bank, or other charitable avenues. In order to implement this action the Utility Director and PARD Director, City Manager, or City Council, as appropriate, must authorize staff to carry and discharge firearms on City Property.