2007 Report on the Status of the Jollyville Plateau Salamander (*Eurycea tonkawae*) on Travis County's Balcones Canyonlands Preserve



Photo: *Jollyville Plateau salamander* L. Zebehazy, Fall 2007

Travis County
Department of Transportation and Natural Resources
Natural Resources Division

Project Number:
0905-0707

January 2008

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The following cover letter and status report were sent to the United States Fish and Wildlife Service (USFWS), Austin Ecological Services Office on 16 April 2007 in response to a 90-day finding on a petition to list the Jollyville Plateau salamander (*Eurycea tonkawae*) as endangered. The original notice was published in the 13 February 2007 Federal Register (USFWS 2007a). The status review Travis County staff provided USFWS describes survey sites, lists a historical and present-day survey timeline, threats, and future conservation efforts. In the 13 December 2007 Federal Register (USFWS 2007b), the listing of the Jollyville Plateau salamander (JPS) as threatened or endangered with critical habitat was announced as warranted, but precluded due to other species with higher listing priority proposals. The USFWS also assigned a listing priority score (or LPN) of 8 to the JPS. The LPN ranges from 1 to 12 with a LPN score of 1 having the highest listing priority due to the magnitude of the threats, immediacy of threats, and taxonomic status of candidate species (USFWS 2007b).

Despite the fact that the JPS is precluded from listing at this time, the Travis County Department of Transportation and Natural Resources, Natural Resources Division will continue to provide protection for the JPS by acquiring more acreage for the Balcones Canyonlands Preserve (BCP) within its range, by conducting quarterly surveys at two permanent survey sites, and by searching for new localities within their BCP-managed properties. We will also provide the USFWS with an annual report that describes our survey and conservation efforts for the JPS each fiscal year.

Also included within this 2007 annual report is an appendix that provides survey data until November 2007.

TRANSPORTATION AND NATURAL RESOURCES

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April 16, 2007

Austin Ecological Services Field Office
U.S. Fish and Wildlife Service
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Austin, TX 78758

RE: USFWS 90 Day Finding on the Petition to List the Jollyville Plateau Salamander

Dear USFWS staff:

Travis County and the City of Austin hold a 10(a)1(b) permit known as the Balcones Canyonlands Conservation Plan (BCCP). Though not a requirement of the BCCP permit, Travis County has been monitoring and managing several populations of Jollyville Plateau Salamander on our County Balcones Canyonlands Preserve (BCP) land. Travis County and the City of Austin are partners in the BCP and have jointly submitted a Jollyville Plateau Salamander Report in the BCP Annual Report to the USFWS each year for several years. These Annual Reports were submitted to USFWS previously but if you would like additional copies of these documents, please contact me.

The following attached document "Status of Jollyville Plateau Salamander (Eurycea tonkawae) On Travis County Balcones Canyonlands Preserve Tracts, April 2007" is here submitted to provide information about these populations on Travis County preserve land as our response to the USFWS 90 Day Findings request for information on this species. Please contact me at (512) 854-7214 or by e-mail - rose.farmer@co.travis.tx.us if you have questions or would like us to provide additional information.

Sincerely,

Rose Farmer
Program Manager

Cc: John Kuhl, Travis County Division Director
Laura Zebehazy, Travis County
Kevin Connally, Travis County

Status of Jollyville Plateau Salamander (*Eurycea tonkawae*) On Travis County Balcones Canyonlands Preserve Tracts

April 2007

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Background

On May 2, 1996, the City of Austin and Travis County were jointly issued an U.S. Fish and Wildlife Service (USFWS) regional permit referred to as the Balcones Canyonlands Conservation Plan (BCCP). This permit allows "incidental take" of eight locally occurring endangered species in compliance with Section 10(a) 1(b) of the Endangered Species Act (U. S. Department of the Interior, Fish and Wildlife Service, 1996ab). The thirty-year permit covers approximately 561,000 acres in western Travis County, Texas identified in the Habitat Conservation Plan and Final Environmental Impact Statement (HCP) (U. S. Department of the Interior, Fish and Wildlife Service, 1996c). The permit also covers incidental take of 27 species of concern should any become listed as threatened or endangered during the life of the permit. The plan also mitigates the permit holders for capital improvement and infrastructure development needs and provides landowners and agencies a streamlined alternative process for compliance with the Endangered Species Act.

Under the terms of the permit, the City of Austin and Travis County established the Balcones Canyonlands Preserve (BCP) to set aside and manage a minimum of 30,428 acres of habitat for two endangered bird species, the golden-cheeked warbler (*Dendroica chrysoparia*) and black-capped vireo (*Vireo atricapilla*), and six karst species. The permit holders also agreed to manage twenty-seven species of concern that include populations of two rare plants, Texabama croton (*Croton alabamensis* var. *texensis*) and canyon mock-orange (*Philadelphus ernestii*), and a suite of unique invertebrates located in a total of 62 karst features. The BCCP does not require protections for the Jollyville Plateau salamander (JPS) (*Eurycea tonkawae*), however the overall management of Travis County preserve lands benefits the conservation of this species. In the eleven years since the permit's inception, 27,751 of the required 30,428 acres of habitat have been protected.

Survey Site Descriptions

The Balcones Canyonlands of central Texas are characterized by eroded and dissected Cretaceous limestones that form a complex and dynamic system of karst and hydrologic features. This region is home to a number of endemic organisms associated with these unique subterranean and spring habitats, and they often exhibit very limited distributions. The JPS range is restricted to six stream drainages within Travis and Williamson counties. Within Travis County-managed BCP tracts, three locations are known and two of them have been surveyed quarterly each year.

The MacDonald Well site is a spring situated on Travis County's Jollyville Unit which comprises 1,496 acres (605 ha), and is located 13 miles (21 km) northwest of downtown Austin on FM 2769. The location of the MacDonald Well site is approximately 500' SSE of FM 2769 on an unnamed tributary draining into Cypress Creek on the Bunten tract of the Jollyville Unit. The site is marked by a large concrete structure that impounds natural spring flows running into the adjacent creek.

The SAS Canyon springs sites, within the Cypress Creek Watershed, are located approximately 1000' NNE (upper pool) and approximately 1300' NNE (lower pools) of the head of a canyon located approximately 1 mile due north of the intersections of Highway 620 and FM2222. The upper pool is near a spring feature located approximately 400' down slope within the boundaries of an intermittent stream that connects the two pool areas during periods of significant rainfall. The lower pools are fed by a spring below a drainage coming from the west and continue to drain in a southerly direction into the Grandview Hills tract of the Jollyville Unit. Kretchmarr Salamander cave is located in the general area of the lower pools and is privately owned by the SAS Institute. Due to a management agreement between Travis County and SAS, staff is able to access the cave on a quarterly basis to perform surveys for JPS.

The Ribelin Tract survey area is situated within the Bull Creek Watershed approximately 2.5 miles (4 km) ENE from the intersection of FM 2222 and RM 620. The survey area encompasses a shelter cave along the western boundary and tributaries in a canyon that drains into Bull Creek to the west.

Timeline

- A JPS specimen was collected in the 1980's from MacDonald Well and is located at the University of California at Berkeley (Sweet 1982).
- Subsequent surveys of MacDonald Well in the mid-1990s did not verify the presence of JPS; assumed to be no longer viable (Chippendale 1994).
- ABAT (Aquatic Biological Advisory Team) in 1995 recommends further studies of JPS and management plans (Bowles 1995).
- JPS described as a distinct species in *Eurycea* genus (Chippendale et al 2000).
- March 19, 2001, Travis County and COA surveyed MacDonald Well and other southerly tributaries for the presence of JPS. The presence of JPS at MacDonald Well was verified (Travis County 2002).
- 6 more visits to MacDonald Well in 2002 confirmed the presence of JPS, but was not quantified (Travis County 2003).
- SAS Canyon was also informally surveyed during endangered bird surveys in the spring and summer of 2002. JPS presence verified, but not quantified
- Due to limited staff and increased acreages to survey for GCWA and BCVI, JPS surveying was not undertaken in 2003 (K. Connally, personal communication, April 9, 2007)
- On August 10, 2004, Travis County and COA staff delineated and mapped the 84.5 feet survey stretch at MacDonald Well. A JPS survey was also completed with two small juveniles (≤ 1 inch), 15 large juveniles (≤ 2 inches), and seven adults (> 2 inches) recorded. Twenty-two of the individuals were moved to the

cistern/well since isolated pools with no connecting flow did not allow for migration to the spring.

- Also on August 10, 2004, SAS Canyon was surveyed for JPS. Three small juveniles, seven large juveniles, and three adults were recorded. Most of the run was dry with intermittent pools. Tentative boundaries of the survey section were laid out but were not mapped.
- JPS were not surveyed at MacDonald Well or SAS Canyon throughout 2005 due to staff limitations and dry conditions. However, on May 6, 2005, Travis County and COA staff surveyed for JPS on the Ribelin tract of the Balcones Canyonlands Preserve. All of the tributaries and a shelter cave were surveyed, and one adult was observed in a spring on a tributary that flows towards Bull Creek and five adults were found during a quick search of Bull Creek along the Ribelin and Lanier boundary.
- Other springs in the Cypress Creek watershed on Travis County preserve property were searched for the presence of JPS during the summer of 2005. No new sites were documented.
- MacDonald Well was surveyed twice in 2006, May 19th & October 30th. A survey was attempted on August 25th, but the creek was dry and only two to three feet of water was in the well structure. On May 19th, 236 individuals were documented in the 84.5 feet survey site. Adult JPS comprised 66% of surveyed individuals while 29% were large juveniles and 5% were small juveniles. Lisa O'Donnell, COA staff, took toe clippings from three individuals for chytrid fungus testing during this survey. One hundred individuals were observed during the October 30th survey of MacDonald Well. Most of the salamanders were adults with only two small juveniles noted (60 adults; 38 large juveniles; 2 small juveniles).
- SAS Canyon was surveyed June 13th, August 25th, and November 17th, 2006. Thirteen Jollyville Plateau salamanders (6 adults; 6 large juveniles; 1 small juvenile) were documented in SAS canyon in June. Chytrid fungus sampling toe clippings were taken from one salamander and swabs were taken of the feet, thighs, and abdomens of two leopard frogs during the June survey. Only four individuals were noted during the August 25th survey of SAS Canyon (3 adults; 1 small juvenile). Most of the survey area was dry. On November 17th, nine adults and 4 large juveniles were observed (13 total).
- Kretchmarr Salamander Cave was surveyed August 25th and November 9th, 2006. Three JPS (2 adults; 1 large juvenile) were observed August 25th, and five JPS (4 adults; 1 small juvenile) were found on November 9th.
- On July 28, 2006, results from the Pisces Molecular Lab in Boulder, CO confirmed positive results for chytrid fungus on the salamanders sampled at MacDonald Well and SAS Canyon, as well as at 13 other sample sites across multiple watersheds. Only one of the two leopard frogs swabbed from SAS Canyon came back positive. Chytrid fungus affects keratinized skin, which is restricted to the feet of JPS, which may explain the lack of observable infection. Further research needs to address the impacts of chytrid fungus on amphibians and anurans of Central Texas.

- As of April 2007, MacDonald Well, SAS Canyon, and Kretchmarr Salamander Cave were surveyed once each. Kretchmarr Salamander Cave was surveyed on February 21, 2007, and seven individuals were recorded (1 adult; 5 large juveniles; 1 small juvenile). Travis County and COA staff surveyed MacDonald Well February 23, 2007. During that survey, 121 individuals were recorded. Most of the salamanders were adults (69%) and the remaining were large (25%) and small (6%) juveniles. Extensive amounts of algae were present throughout the survey stretch. This made surveying more difficult. None of the algae appeared to be Cladophora, however samples were collected for identification.
- On March 8, 2007, Travis County staff surveyed SAS Canyon. In the upper pool of the survey, two decomposed JPS were found entangled in a large, floating algae mat that covered 85% of the surface of the pool. One injured JPS was discovered floating on its back in a riffle just below the pool. The injured salamander was placed in a bin with water to assess its condition. It appeared to have red splotch on the top of its head, and it would occasionally respond to stimuli. At the end of the survey period, the injured salamander was released in a lower pool of the survey that was not impacted by algae. Not including the dead and injured salamanders, twenty individuals were recorded during the survey (12 adults; 7 large juveniles; 1 small juvenile).
- On March 9, 2007, Lisa O'Donnell (COA) and Laura Zebehazy (Travis County) returned to SAS Canyon to collect water samples, measure the water chemistry, and take pictures of the upper pool and lower pool of the survey. Clarity of the upper pool where the dead and injured salamanders were found was much clearer than the previous day due to removal of algae mats during the survey.
- On March 21, the Environmental Laboratory Services returned the results of the water samples taken from SAS Canyon, which showed normal, or no detection of, *e. coli*, phosphorus, and ammonia. However, the results for the test from nitrogen, nitrate, and nitrite showed a higher result (0.36 mg/L) in the upper pool where the dead and injured salamanders were observed than the lower pool (0.05 mg/L). Elevated values of nitrogen suggest runoff of fertilizers from nearby developed areas (L. O'Donnell, personal communication, April 3, 2007). At the head of SAS Canyon, Wilson Parke Avenue runs east to west from RM 620 N and parallels the former SASOL property (now Leander ISD) and the SAS Institute property. Runoff enters the canyon underneath Wilson Parke Avenue through two culverts, however the direction of underground water flow has not been determined for the springs.

Threats

The Balcones Canyonlands Preserve protects habitat for eight federally endangered species, but also consequentially provides protection for a number of plants, animals, and invertebrates, including the Jollyville Plateau salamander. The goal of the BCP to set aside 30,428 acres in western Travis County will contribute to the overall conservation of Central Texas species, however this preserve system is not unaffected by outside threats like urban development, water and air pollution, increased water consumption, and non-native, invasive species. Travis County's JPS populations are impacted by increased

water runoff due to expanded development and impervious cover. The increased water runoff can damage stream habitats, increase nutrient and pollution loads, and decrease overall species diversity in these aquatic systems (Bowles et al 2006). Areas that will drain into SAS Canyon to the east and south of the SAS Canyon sites are slated for future development, and the area north of the MacDonald Well site has been developed rapidly since the inception of the BCP. The latter development area drains into a creek downstream of the McDonald Well spring site but the subsurface impacts to the source of the spring flow is unknown. Most recently, FM 2769, which is approximately 250 feet downstream from the survey site, has undergone a roadway shoulder-widening project.

The tributaries for both MacDonald Well and SAS canyon drain south-to-north. For MacDonald Well, a majority of the drainage occurs within BCP boundaries, however it originates on private property. The head of SAS Canyon begins south of Wilson Parke Avenue with the canyon spring site located north of this road, so this drainage may experience more runoff and pollutants due to proximity to development. Unfortunately, there is a paucity of data available about flowpaths of water in the Northern Segment of the Edwards Aquifer. Implementing research projects that address this issue will help with the conservation of JPS as well as assist in water protection measures.

Human-induced landscape changes may contribute to the introduction or resurgence of wildlife diseases. The documentation of chytrid fungus, which causes chytridiomycosis, within the JPS population needs to be researched further to assess the impacts it may have on the amphibian community.

Future Conservation Efforts

To address the conservation of the JPS, Travis County will continue to acquire land to reach the minimum goal of 30,428 acres required for the BCP which will likely benefit JPS since the preserve acquisitions are within known JPS watersheds. All springs within Travis County BCP tracts will be protected and if found to host JPS, will be managed to protect this species. Travis County will also collaborate in research efforts to elucidate many of the unknowns in regards to JPS life history, habitat preferences, and potential threats and the mechanics of the Northern Segment of the Edwards Aquifer. Also, Travis County will continue to contribute long-term monitoring and water quality data by performing quarterly JPS surveys at MacDonald Well, SAS Canyon, and other preserve sites where appropriate. Staff will explore other preserve springs, creeks, and tributaries for populations of JPS and document any discoveries in annual reports submitted to USFWS. After discovery of additional populations, staff will return on a regular basis to verify JPS presence at these sites. All of the information provided in this report, through 2006, is available in previous BCCP annual reports submitted to the USFWS.

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U. S. Fish and Wildlife Service, Austin Ecological Services Field Office. 2007b. "12-Month Finding on a Petition to List the Jollyville Plateau salamander (Eurycea tonkawae) as Endangered with Critical Habitat." *Federal Register* 72:239 (13 December 2007) pp. 71040 – 71054.

Appendix

Jollyville Plateau salamander survey data from 2004 to 2007
At Travis County permanent survey areas:
MacDonald Well, SAS Canyon, and Kretchmarr salamander cave

MacDonald Well

2004	Winter	Spring	Summer	Fall
Small juvenile <1inch			2	
Large juvenile 1 to 2 inches			15	
Adult >2 inches			7	
Total			**25**	

2006	Winter	Spring	Summer	Fall
Small juvenile <1inch		12	dry	2
Large juvenile 1 to 2 inches		69	dry	38
Adult >2 inches		155	dry	60
Total		**236**		**100**

2007	Winter	Spring	Summer	Fall
Small juvenile <1inch	7	18	7	0
Large juvenile 1 to 2 inches	30	57	62	29
Adult >2 inches	84	117	71	23
Total	**121**	**192**	**140**	**52**

SAS Canyon

2004	Winter	Spring	Summer	Fall
Small juvenile <1inch			3	
Large juvenile 1 to 2 inches			7	
Adult >2 inches			3	
Total			**13**	

2006	Winter	Spring	Summer	Fall
Small juvenile <1inch		1	1	2
Large juvenile 1 to 2 inches		6	0	7
Adult >2 inches		6	3	13
Total		**13**	**4**	**22**

2007	Winter	Spring	Summer	Fall
Small juvenile <1inch	1	2	0	0
Large juvenile 1 to 2 inches	7	10	9	2
Adult >2 inches	8	19	17	12
Total	**16**	**31**	**26**	**14**

Kretchmarr salamander cave

2006	Winter	Spring	Summer	Fall
Small juvenile <1inch			0	1
Large juvenile 1 to 2 inches			1	0
Adult >2 inches			2	4
Total			**3**	**5**

2007	Winter	Spring	Summer	Fall
Small juvenile <1inch	1	0	0	0
Large juvenile 1 to 2 inches	5	2	2	3
Adult >2 inches	1	4	3	0
Total	**7**	**6**	**5**	**3**