

Current distribution of the swift fox (*Vulpes velox*) in Texas

by

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A Thesis

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## ACKNOWLEDGMENTS

Many graduate students experience the uncanny sensation that their life is not their own. Their thoughts are dominated with data analysis, project design, looming deadlines, glitches in the field schedule, supply acquisition/fabrication, and how they will possibly fix the Dodge's brakes, check traps, finalize a grant proposal, prepare a presentation and contact landowners simultaneously. Their activities no longer include personal interests; rather, their schedules are warped to include coursework, fieldwork, budgeting, grant writing, report preparation, data analysis, meetings, email. Only the very early and very late hours remain for pursuits generally considered *enjoyable*. Self medication via coffee and libations ensues. Mood swings veering from snappishness to sarcasm to relief to manic hilarity are experienced. Inanimate objects are sequentially damned then praised (the computer is an example, as are software programs and field vehicles). Are these students crazy? I submit that they are...married-to their project and those involved. What other relationship induces such dramatic emotional ups and downs, requires so much personal sacrifice, involves such complicated scheduling, is supposed to instill a sense of security but at times leaves you feeling inept and unloved? Here, if I had known I was about to be sold off for the figurative two goats and a bag of potatoes (two foxes and a bag of dead rabbits?), are the vows I would have given.

Dearly beloved, we are gathered today to celebrate the relationship between this graduate student, Doni Schwalm, and her beloved, the Acknowledged. Together they have pledged to work towards that blessed goal, the graduate degree. Doni has chosen to write her vows to reflect the unique and multifaceted nature of this relationship.

I, Doni Schwalm, pledge the following: To my longsuffering parents and sister, who have to explain to friends, family, and small town busybodies why their 30 year old daughter/sister is still in school and studying to become a 'liberal hippie tree hugger' at that, I pledge the infrequent phone call and even more infrequent visit home as well as my unwavering gratitude and awareness as to the true source of my strength and spirit. To those agencies which provide funding (NFWF, TPWD, the CH Foundation, Houston Zoo, the Houston Safari Club), I will make small but frequent funding requests via proposals submitted by the deadline, and will do my best to keep ORS off our collective backs. To my committee members, I will not hassle you with too many questions, meetings or poorly written manuscripts, and I will attempt to either win you over or send you into a sugary (and hopefully pliable) stupor by providing diverse, tasty treats when we do meet. With special regard to Warren Ballard and Heather Whitlaw, however, I must admit you will deal with me more frequently and in unexpected ways, such as the incessant borrowing of your steam cleaner, frequent crashing of holiday functions, and the inclusion of unflattering photos in my thesis defense. To my bright and budding field technicians (Amanda Bryant, Rachel Crowhurst, Andrew McDonnell, Erin Posthumus, Leslie Rucker, and Bill Stotts), I will initiate you mercilessly into the wonderful world of carnivore research which you are so convinced is your calling. Under my watchful eye, you will learn to discern between salvageable and unsalvageable roadkill (The hard way. Maggots included.) and master the ever so sensitive art of skunk whispering. Basically, I will destroy your sense of smell and gag reflex, but these are overrated. You will also experience my manic obsession with cleanliness and vehicle care, which will drive you a little crazy, but you will gain a stellar reference and true friend from the ordeal. To the

landowners who participated with this research (esp. Fred Pronger, the Poole family and one family who wished to not be named but fed me Mexican food often), I will not trap when its rainy and rut up your pastures, nor will I leave your gates open and release the fiendish herds of yearling Angus which insist on playing with my traps. Your willingness to allow a stranger onto your private property with the express purpose of searching for a potentially endangered species is much appreciated. And finally, to my cohorts, the graduate students. Where to begin?? I will serve as your social coordinator, choosing to organize Friday happy hour (or Tuesday happy hour for that matter) over more pressing tasks (example: this thesis). I will unfailingly chronicle our nights of debauchery with my digital camera. I will tolerate your many jibes at my age-and get you back by forcing you into slave labor-esque deck building situations at my home. I will do my best to teach you how to two step and Western swing (Ryan, Tony, Mike and Adam). I will laugh uproariously at your myriad tales (Dave, Richard and Caleb). And I will miss you all intensely as you each graduate and move on to the next step in your life. Kasi, Kate, and Nicole, I bestow upon you the special honor of having “Wild Thing” as your ring tone on my phone and the promise to always have a listening ear and a frozen cocktail ready. Lastly, Kara-I have known you the longest of any of my scientist friends and you have been my constant sounding board all these years; we started our careers together back in Wisconsin and now here we are, graduating and getting all...*grownup*. Thanks for being there. Always. When’s the next trip to Idaho???

## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>ii</b>
<b>ABSTRACT</b>	<b>vi</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF FIGURES</b>	<b>viii</b>
<b>CHAPTER</b>	
<b>I. CURRENT DISTRIBUTION OF THE SWIFT FOX IN TEXAS</b>	<b>1</b>
Introduction	1
Methods	2
Study Area	2
Scat Surveys	3
Live Trapping	4
Results	6
Scat Surveys	6
Live Trapping	6
Discussion	7
<b>LITERATURE CITED</b>	<b>20</b>
<b>APPENDIX</b>	
A. LIST OF COUNTIES INCLUDED IN THE SURVEY AREA	23

## ABSTRACT

Distribution and abundance data suggest that the swift fox (*Vulpes velox*) has experienced range wide declines in distribution and density. Swift fox are associated with short grass and mixed grass systems in the Great Plains region. In Texas, these habitats have undergone extensive alteration, primarily as a result of agricultural development. Historic records indicated swift fox occurred in 79 counties in Texas. The current distribution of swift fox in the state is unknown, but surveys conducted in 1996 and 1997 indicated the species' range was considerably reduced. We used scat surveys and live trapping to assess the current distribution of the species. We established 93 scat survey transects, representing 550 survey kilometers, in 35 counties encompassing the majority of remnant mixed grass and short grass habitat in Texas. Transects were surveyed once per year between 07 July and 31 November in 2005 and 2006. Laboratory DNA analysis was conducted on scats to determine the identity of the depositing species. We collected 166 scats for both years combined. Of these, 9 were identified as swift fox scats. All swift fox scats originated from 1 of the 35 counties surveyed.

Surveying the entire 35 county area using live traps was logistically unfeasible. We selected counties which we believed had the highest likelihood of having resident swift fox based on proximity to known swift fox populations and total remnant grassland. We surveyed 7 counties during the 2005 and 2006 field seasons. Grassland fragments in each county were randomly selected and surveyed for 2 consecutive nights once per year. We captured 39 individual swift fox during both years

combined. We detected swift fox in 2 of the 35 counties surveyed. Our results indicated that the current swift fox distribution in Texas is significantly reduced from the historic species distribution.

## **LIST OF TABLES**

1.1	Species identified via DNA analysis of scats collected in Texas during 2005 and 2006.	11
1.2	Total trap nights and individual swift fox captured per county surveyed using live traps in Texas during 2005 and 2006.	12
1.3	Nontarget species captured during 2005 and 2006 live trapping surveys for swift fox in Texas.	13
1.4	Swift fox relative abundance estimates (number of swift fox per 100 trap nights) for currently inhabited counties in Texas based on live trapping results in 2005 and 2006.	14

## **LIST OF FIGURES**

1.1	Estimated historic distribution of swift fox in Texas. The most recent distribution estimate for swift fox in Texas is also shown (from Mote et al. 1998).	15
1.2	Area surveyed for swift fox in Texas during 2005 and 2006 scat transects and live trapping surveys.	16
1.3	Location of scat transects in Texas counties surveyed for swift fox during 2005 and 2006.	17
1.4	Results of scat surveys for swift fox conducted in Texas during 2005 and 2006.	18
1.5	Results of live trapping results for swift fox conducted in Texas during 2005 and 2006.	19















































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