

Tree Swallow Progress Report

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Tree Swallow (*Tachycineta bicolor*) nest success, site fidelity, and seasonal movement at Red Slough Wildlife Management Area

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Introduction

The Tree Swallow (*Tachycineta bicolor*) is a Nearctic-Nearctic migrant that has expanded its historic range southward. Throughout the northern extent of this species range, this swallow has been studied frequently; however, little is known about their nesting biology in the southern part of the range. Our objective was to continue a study of the nest success, site fidelity, and seasonal movement of Tree Swallows at Red Slough Wildlife Management Area (WMA) in 2011. This study began in 2009 with Ross Anderson and Dr. Doug Wood.

Methods

Field protocols are based on the *Golondrinas de las Americas* program designed by the Cornell Lab of Ornithology. This is an international cooperative research effort and their research methods are well established in Tree Swallow field research. An array of 57 nest boxes was monitored from March 16 to July 24, 2011. Adult Tree Swallows were target captured and age, sex, and morphometric measurements were recorded for each swallow. Uniquely numbered bands allowed us to determine if Tree Swallows exhibited site fidelity and allowed for the study

of inter- and intra-seasonal movement patterns. Nestlings were also banded to determine if population recruitment occurred at Red Slough WMA and to establish a banded population of Tree Swallows.

Nest box use, nest initiation dates, clutch size, number of eggs hatched/clutch, number of young fledged/nest, and any cause specific nest loss were recorded. Nests were collected for a nest material composition study.

Results

Eighty-six percent (49/57) of the nest boxes were used by Tree Swallows. There were a total of 72 nest attempts (≥ 1 egg laid), with a mean clutch size of 5.2 eggs/nest attempt. Eighty-five percent (61/72) of nest attempts fledged ≥ 1 young with a mean of 4.2 young fledged per nest attempt. Eleven nests failed: 6 to Texas Rat Snakes, 4 due to abandonment, and 1 to flooding. A total of 290 new Tree Swallows were banded. These include 3 AHY (After Hatch Year) males, 8 SY (Second Year) females, 12 ASY (After Second Year) females, and 267 nestlings. Eight AHY males, 12 SY females, and 21 ASY females were recaptured. One SY female was recaptured when there was no clutch in the box.

Site Fidelity

Twenty-six percent (23/87) of the adult Tree Swallows banded in 2009 and 2010 were recaptured in 2011. Thirty-eight percent (18/47) of the females banded and 12.5% (5/40) of the males banded as adults in 2009 and 2010 were recaptured. When including nestlings banded in 2009 and 2010, the recapture rate was 12% (41/346). The recruitment rate of nestlings banded in 2009- 2010 was 7% (18/259). There were no birds captured from other sites.

The mean inter-seasonal movement was 1,077 meters. The range was 0 to 4,120 meters. Males averaged a distance of 1,307 meters, with a range of 0 to 4,120 meters. Females averaged

a distance of 1,022 meters, with a range of 0 to 2,894 meters. For intra-seasonal movement, there was only one female that moved for a distance of 118 meters.

Nest Composition and Microclimate

Currently, we are summarizing and analyzing this data to be included in the completed thesis document.

Discussion

Throughout the 3-year study, the number of birds banded has increased annually. In 2011 the number of nestlings banded doubled. This is due to two large spikes in nest initiation. The first spike occurred in May after heavy rains occurred. The second was in mid-June.

Nest success was extremely high at 85%. The average number fledged per nest was 4.2 young per nest. For the entire study (2009 – current), nest success was 83%, with an average of 4.2 young fledged per nest. When compared to the published literature, our success rate is slightly higher than the 79% reported elsewhere for Tree Swallows. The number of young fledged per nest is 4.7 in the published literature. The combination of 4.2 young fledged per nest and the high nest success rate indicate that Red Slough is a potential source population for Tree Swallows.

Overall, the population shows a bias towards second year females. This is potentially due to older birds migrating earlier than younger birds. These older birds migrate to the historic breeding range, which leaves nesting opportunities available for second year females.

Throughout the study rat snakes have been the greatest cause of nest loss. This trend continued in 2011. Currently there are no snake guards in place. In 2012 there will be no snake guards added. In 2013 snake guards will be added to study their effectiveness.

Overall the study has been a success. The nest success rates have been consistently high

and Red Slough is a potential source population for Tree Swallows. The high nest box use by Tree Swallows at Red Slough shows that nest boxes are an effective management tool for this species. Currently Oklahoma is in a severe drought, and it will be interesting to observe the Tree Swallow's response to this drought in 2012. More data loggers have been purchased thanks to funding obtained by Robert Bastarache, which will help us collect microclimate data during the 2012 year. The assistance provided by Robert Bastarache and David Arbour is greatly appreciated.