

# Golden-cheeked warbler response to human disturbances

Dianne Robinson<sup>1\*</sup>, Anthony Locatelli<sup>1</sup>, Mike Marshall<sup>2</sup>, Dr. Heather Mathewson<sup>2</sup>, Dr. Michael Morrison<sup>1</sup>, Dr. R. Neal Wilkins<sup>2,3</sup>, and Dr. Roel Lopez<sup>1,2</sup>

<sup>1</sup>Department of Wildlife and Fisheries Science, Texas A&M University

<sup>2</sup>Institute of Renewable Natural Resources, Texas A&M University

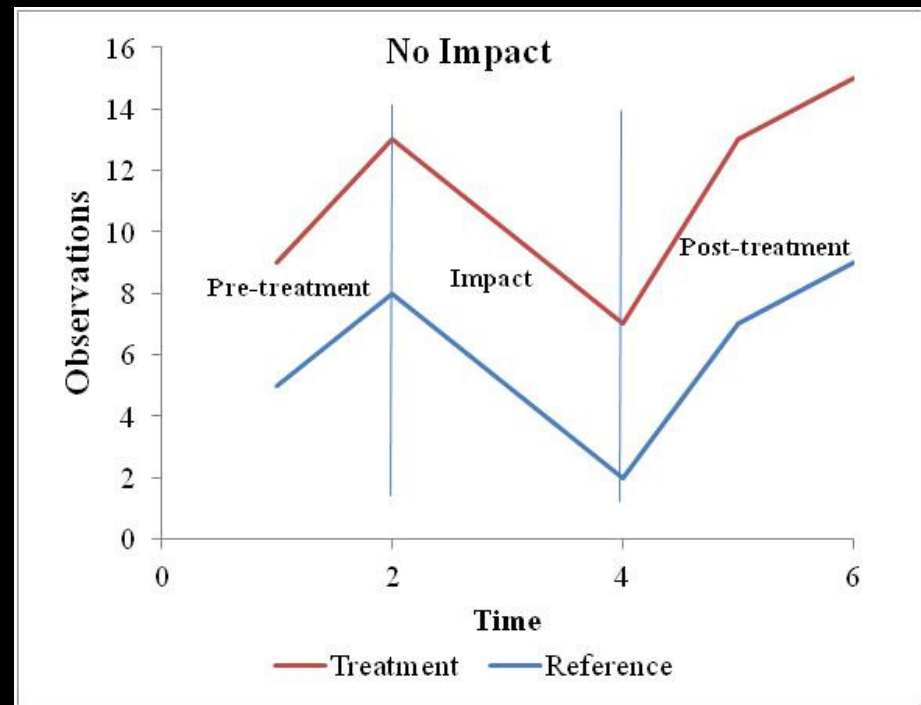
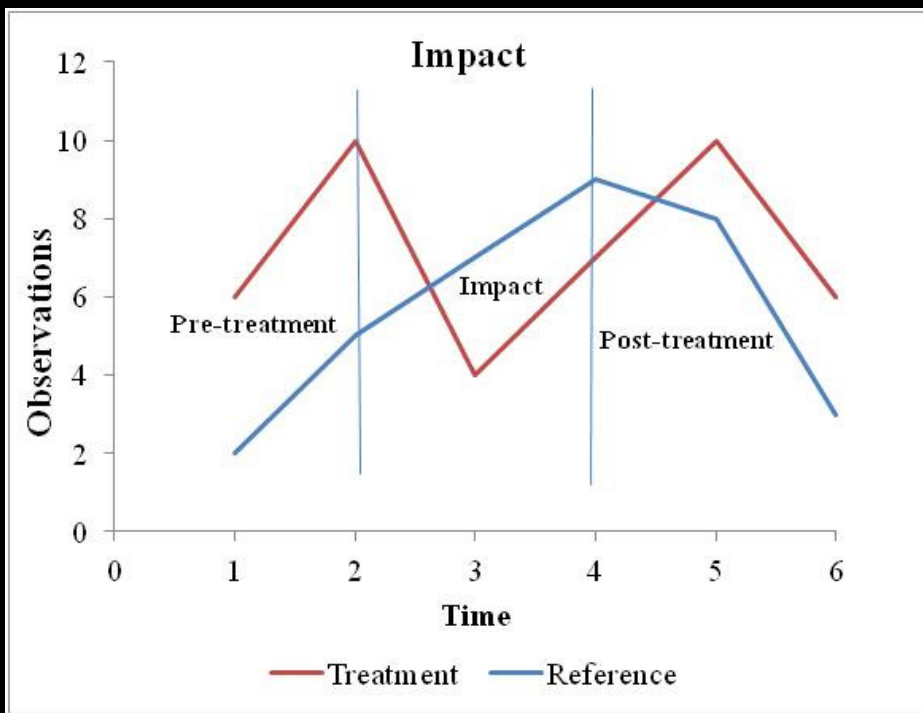
<sup>3</sup>East Wildlife Foundation

\*Corresponding Author: [diannehd@gmail.com](mailto:diannehd@gmail.com)



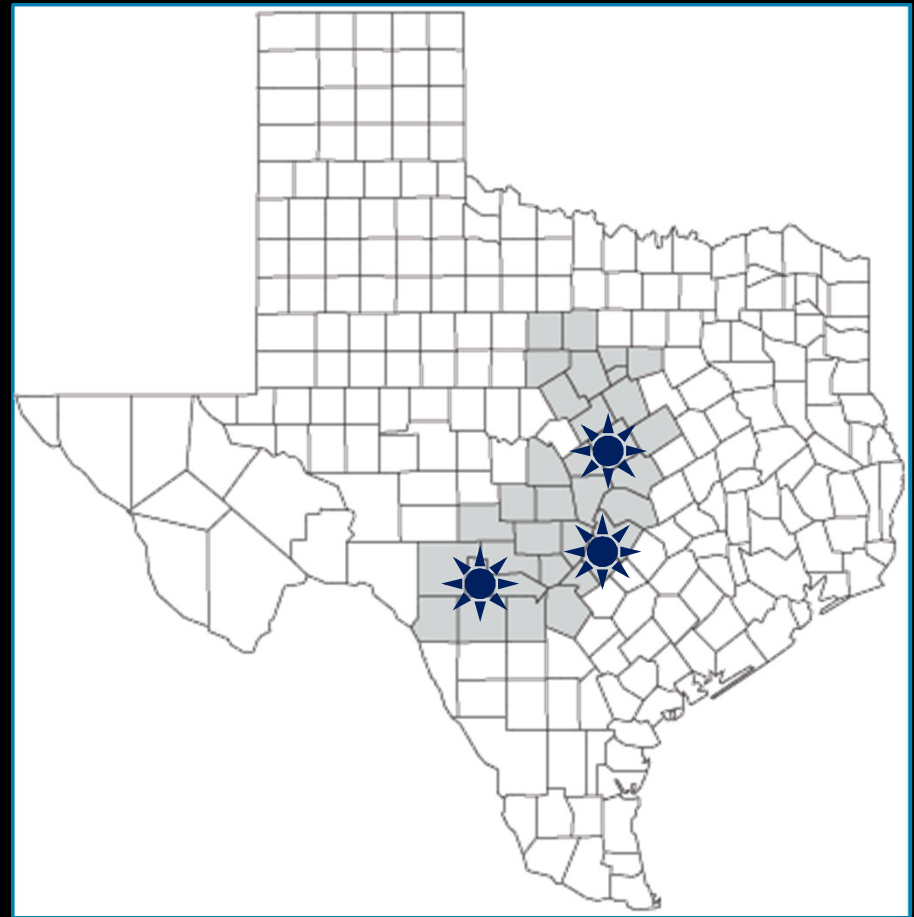


# Impact Assessment Design

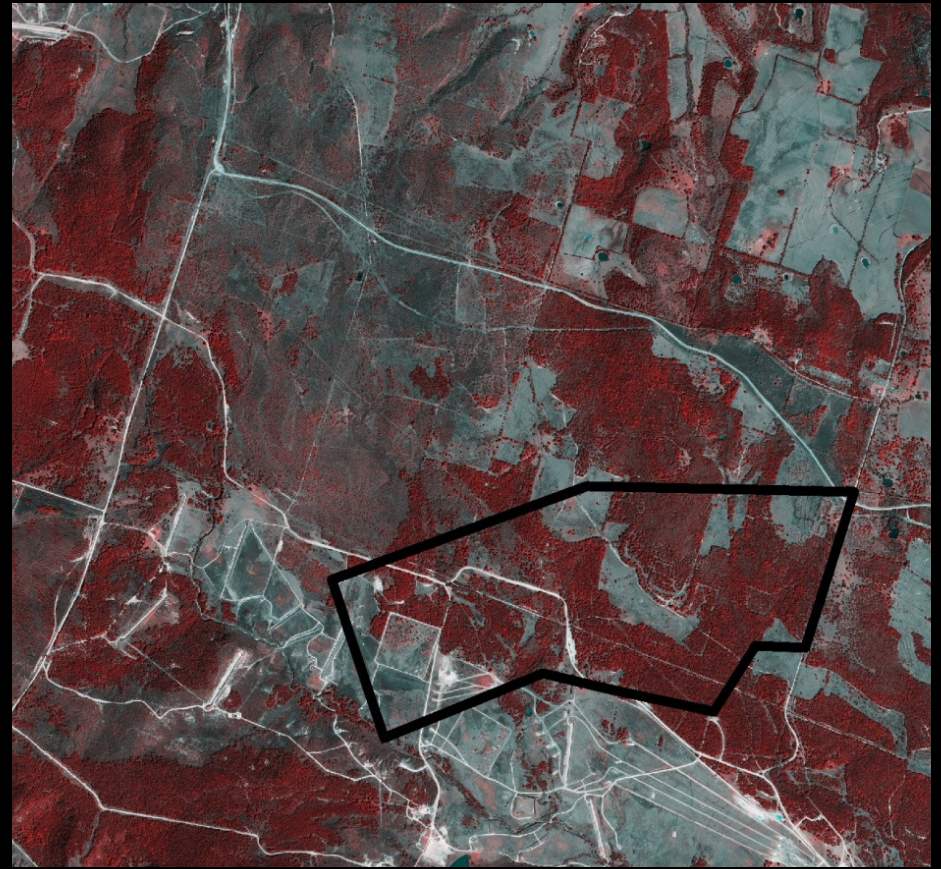
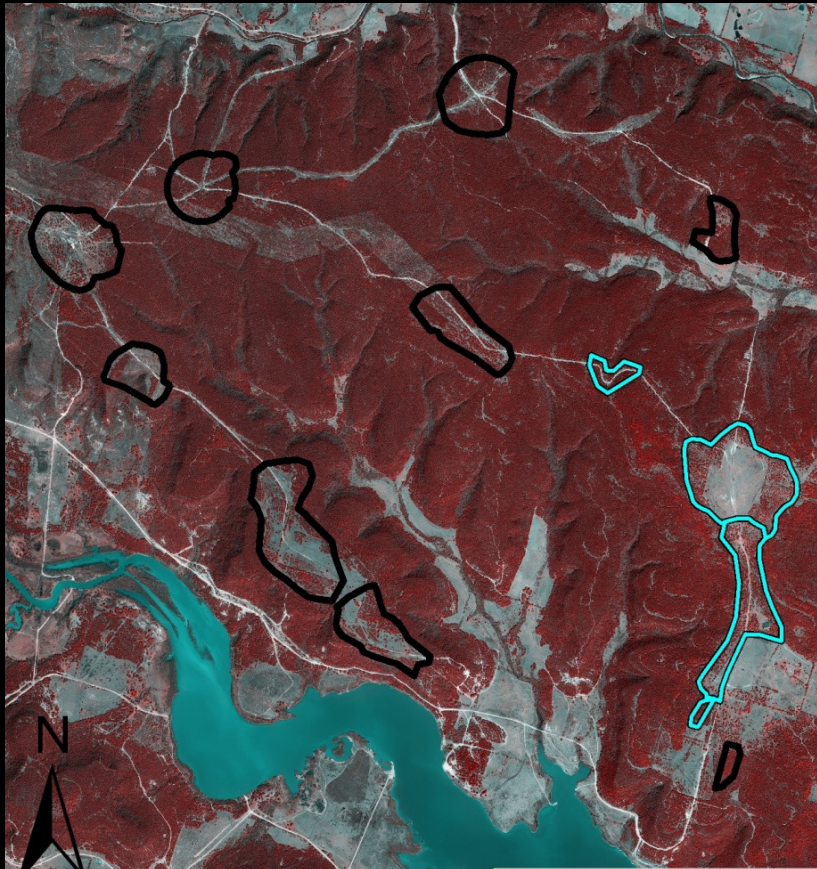


# Study Area

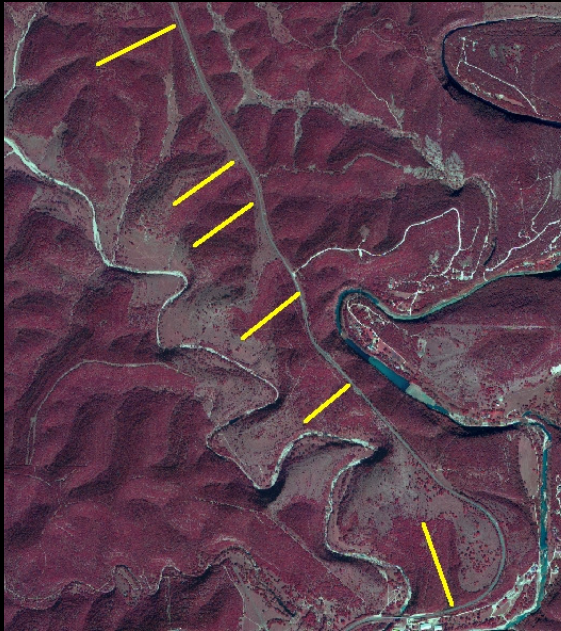
- Fort Hood
  - Gatesville, TX
- Hwy 83
  - Leakey, TX
- Hwy 71
  - Austin, TX



# Fort Hood



# Highway 83



Treatment

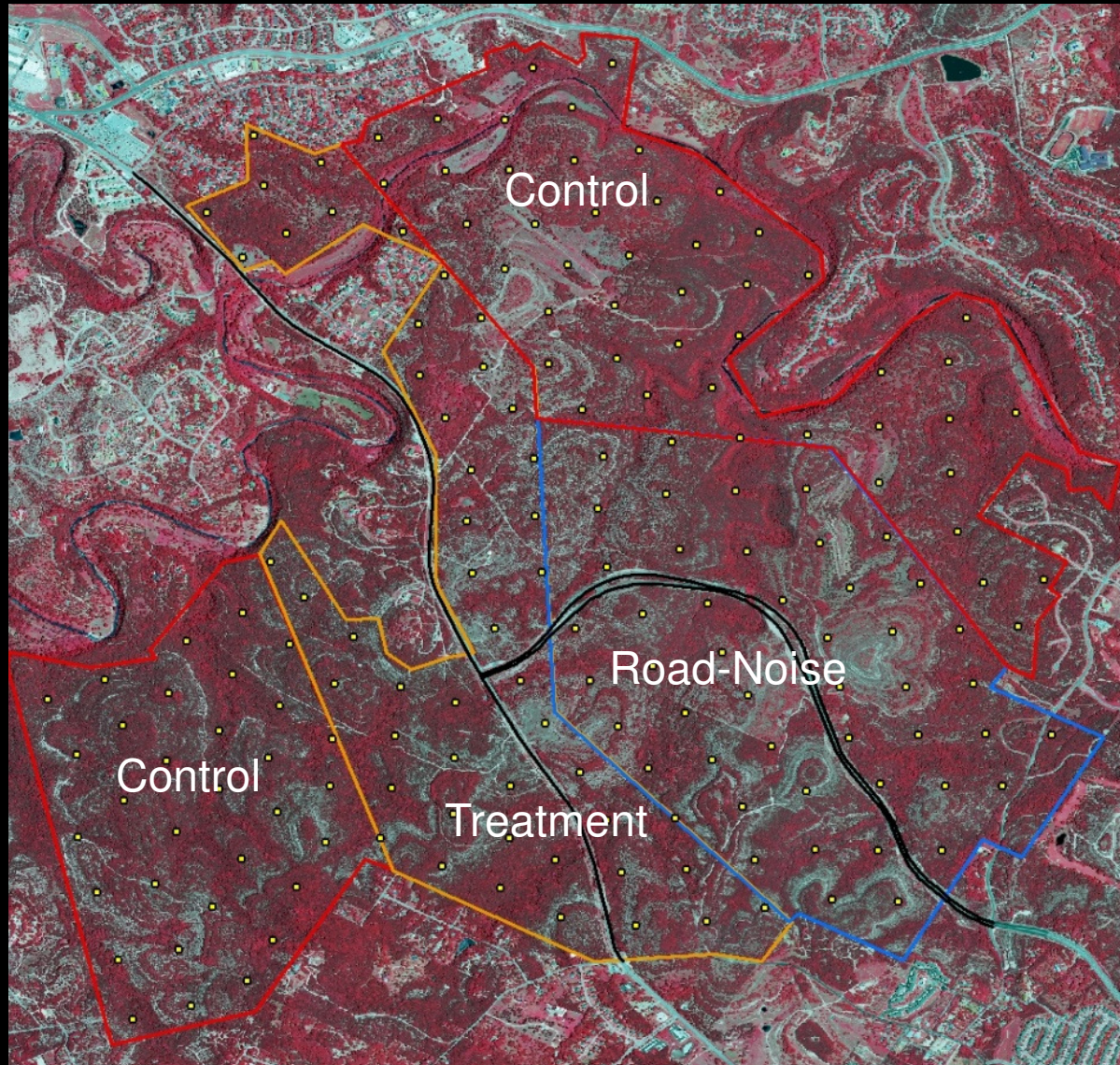


No-noise

Road-noise



# Highway 71





# Methods

- Ambient Noise
- Direct Impacts
  - Pairing success
  - Fledging success

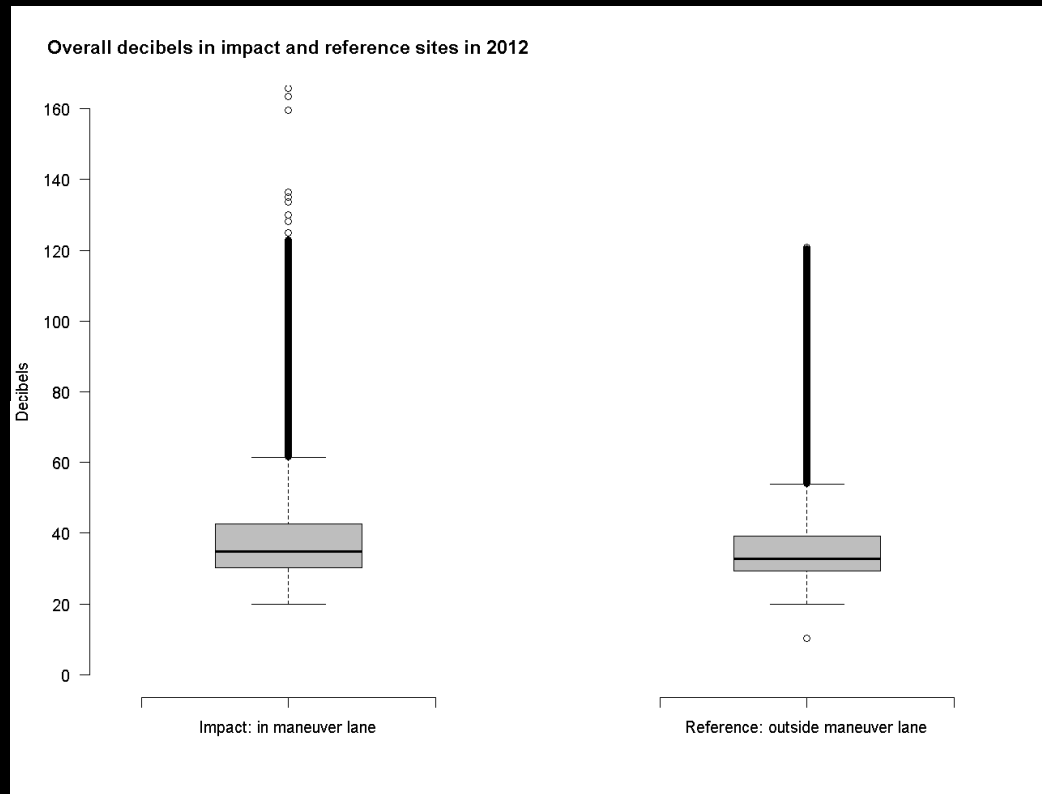


- Behavioral Responses
  - Territory Establishment
  - Response to Noise



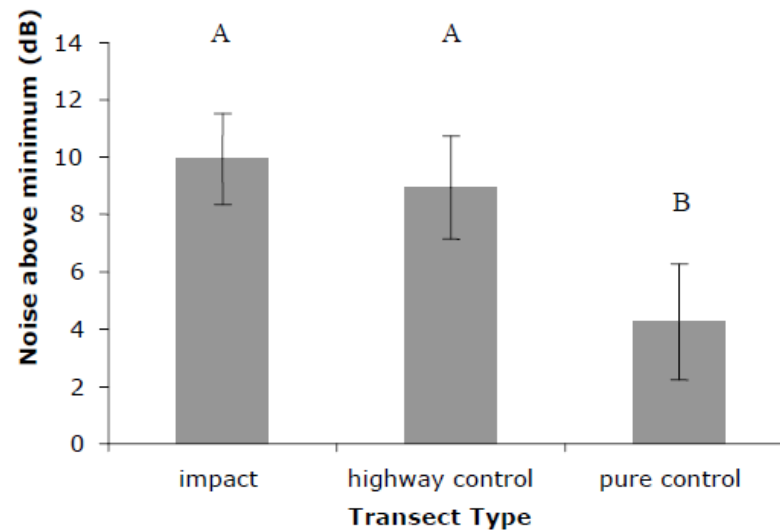
# Ambient Noise Levels

- Fort Hood



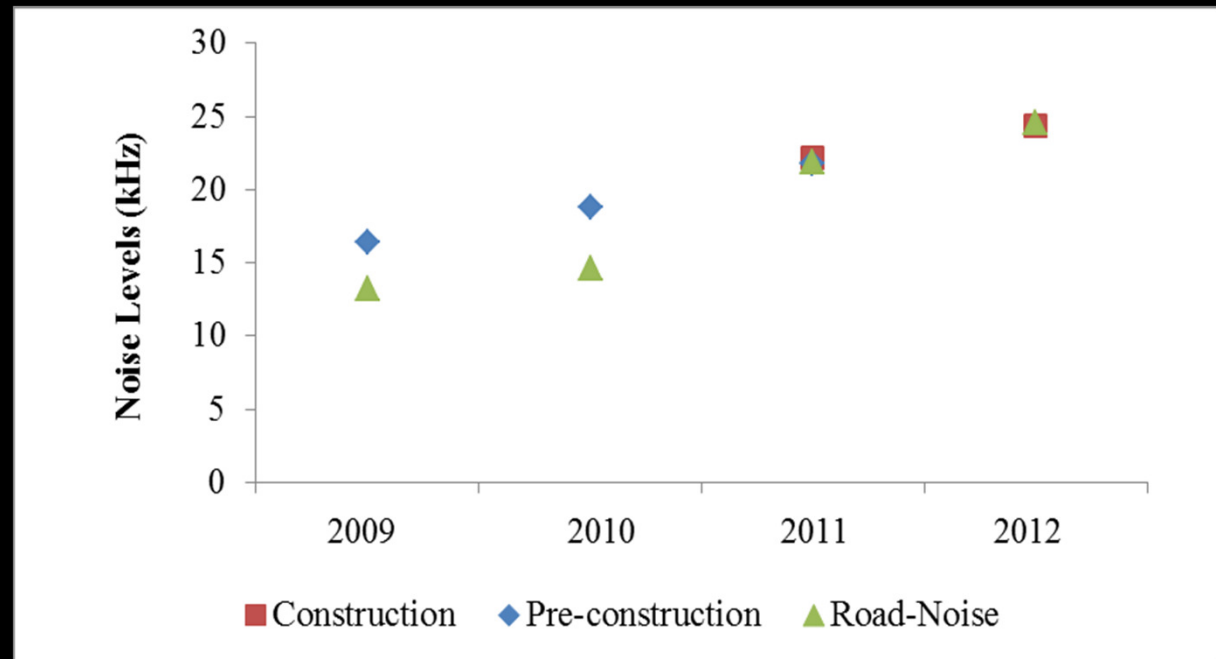
# Ambient Noise Levels

- Hwy 83



# Ambient Noise Levels

- Hwy 71



# Direct Impacts

- Pairing success
- Fledging success
- Territory placement



# Vocal Adjustment

Phrase 2, Type A

Study Site

Song Measure

- **Treatment (construction)**  
**Fort Hood**

- Lower Frequency
- Upper Frequency

- **Treatment (pre-construction)**  
**Hwy 71**

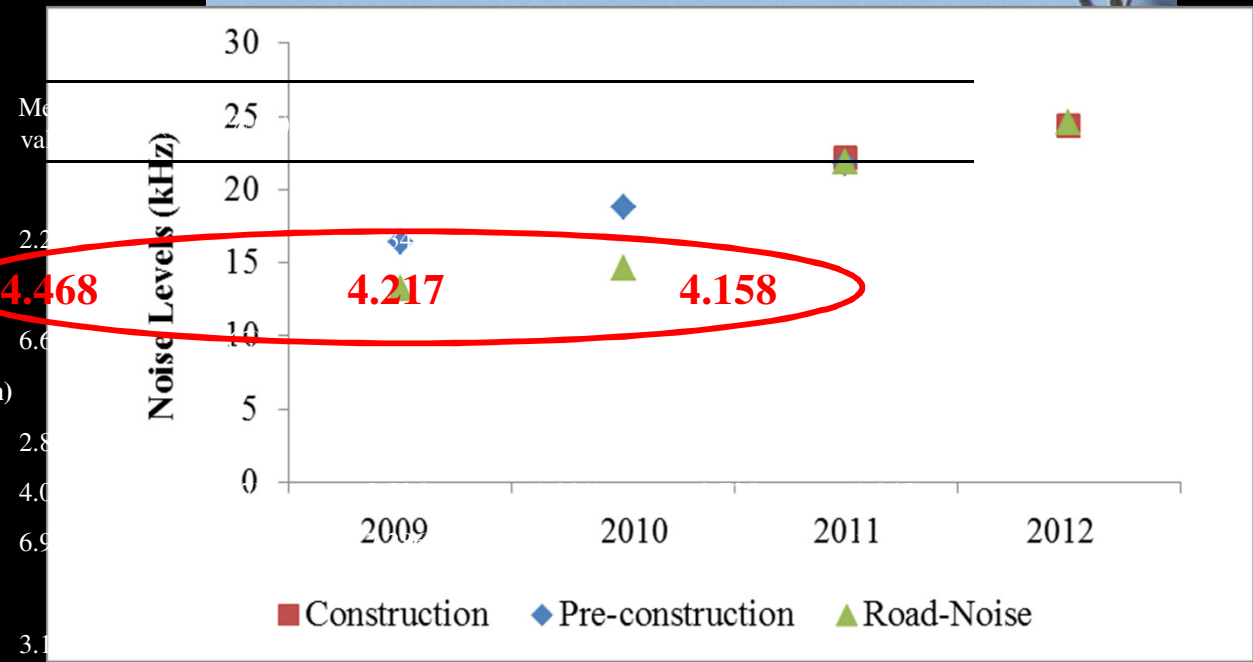
- Lower Frequency
- Upper Frequency

Road-Noise

Mean Bandwidth\*

Lower Frequency

Upper Frequency

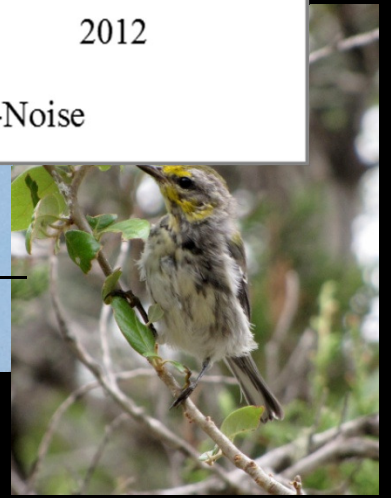


4.468

4.217

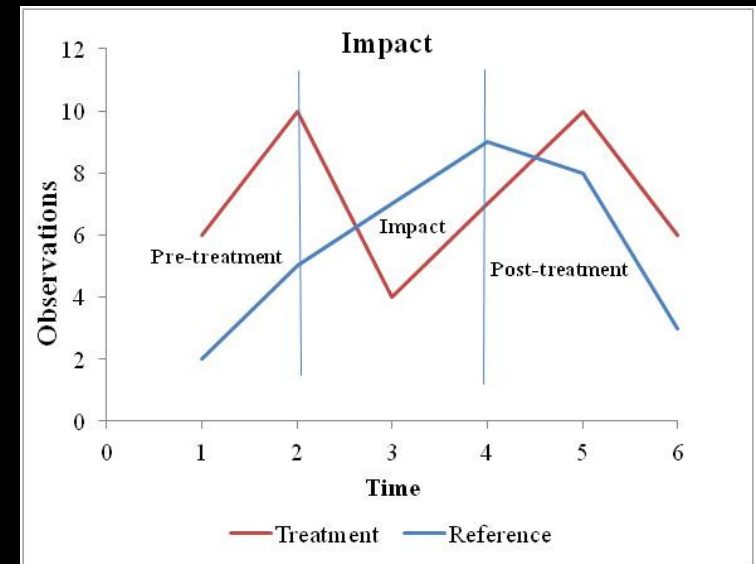
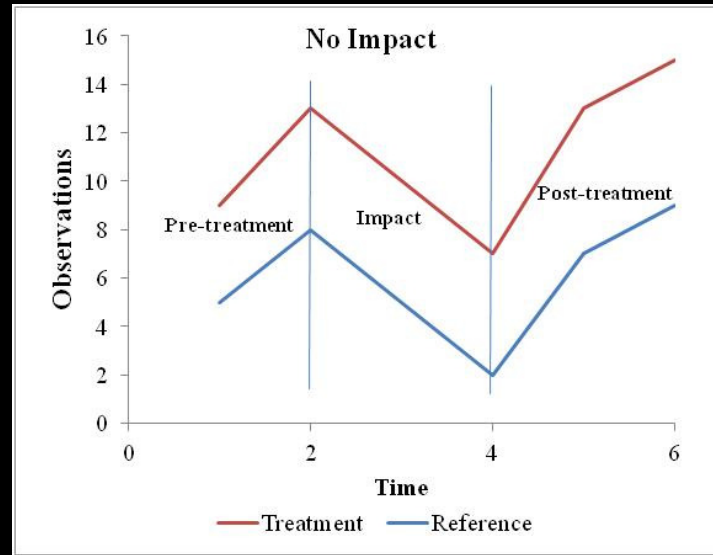
4.158

Mean Bandwidth*	3.1	(0.867)	2.578	(1.224)	3.851	(1.041)
Lower Frequency	3.568	(0.217)	7.069	(0.86)	7.469	(2.098)
Upper Frequency	6.761					



# Impact??

- Ambient Noise Levels
- Pairing Success
- Fledging Success
- Territory Placement
- Warbler Vocalizations





# Acknowledgements

- Texas A&M University
- Institute of Renewable Natural Resources
- U.S. Army Integrated Training Area Management (ITAM) Program, Dept of Defense
- Texas Department of Transportation
- The Nature Conservancy
- TX Parks and Wildlife Department
- Humboldt State University
- Field Technicians

