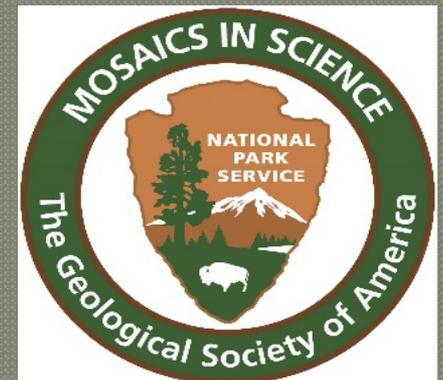
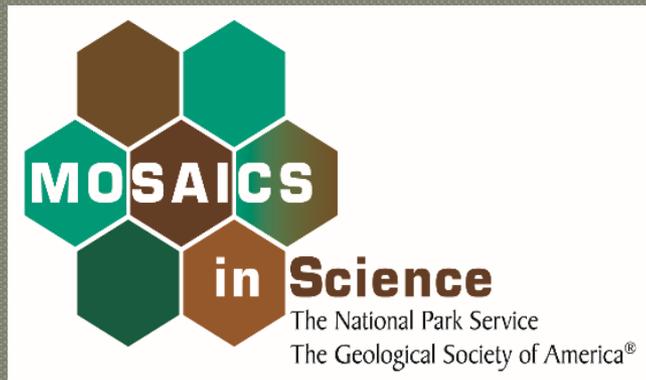


# Bats (Chiroptera) Wildlife Monitoring and Inventory at Glen Canyon National Recreation Area, AZ and UT

Prepared by Michael Fuerte



# Project Overview

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- Resample bats at four legacy sites for GLCA
- Conduct passive acoustic point surveys for bat presence
- Enact protocol to contribute to NABat

# Project Overview

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- Resample bats at ~~four~~ legacy sites for GLCA
- Conduct passive acoustic point surveys for bat presence
- Enact protocol to contribute to NABat

# Project Overview

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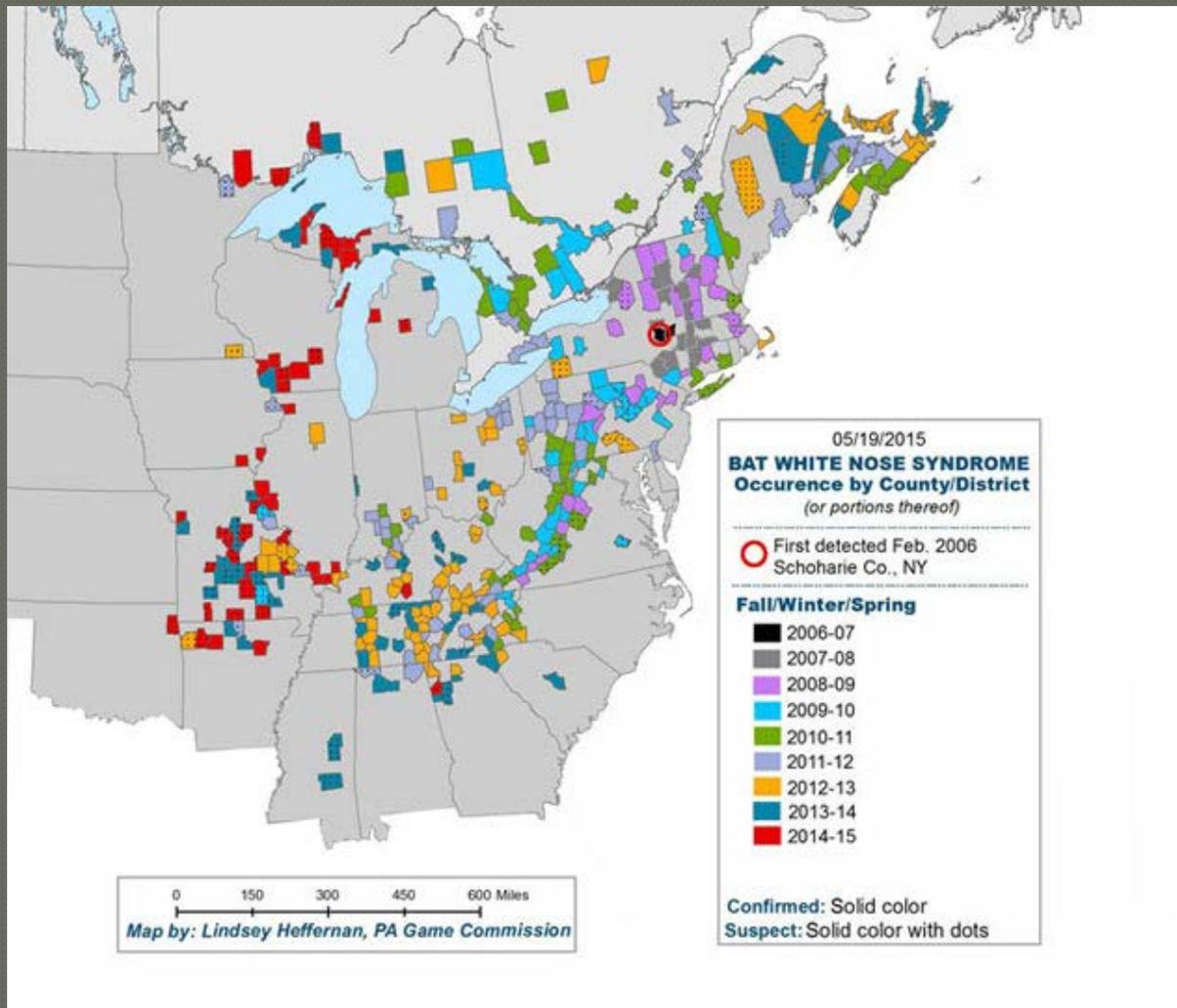
- Resample bats at ~~four~~ legacy sites for GLCA
- Conduct passive acoustic point surveys for bat presence + **Mist Nets**
- Enact protocol to contribute to NABat

# Project Overview

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- Resample bats at ~~four~~ legacy sites for GLCA
- Conduct passive acoustic point surveys for bat presence + Mist Nets
- Enact protocol to contribute to NABat next year

# Need for Control Data



# Survey Sites



# Survey Sites

**Wilson**



**Ribbon**



**Last  
Chance**



**Lee's  
Ferry**



# Capture method 1: Mist Net



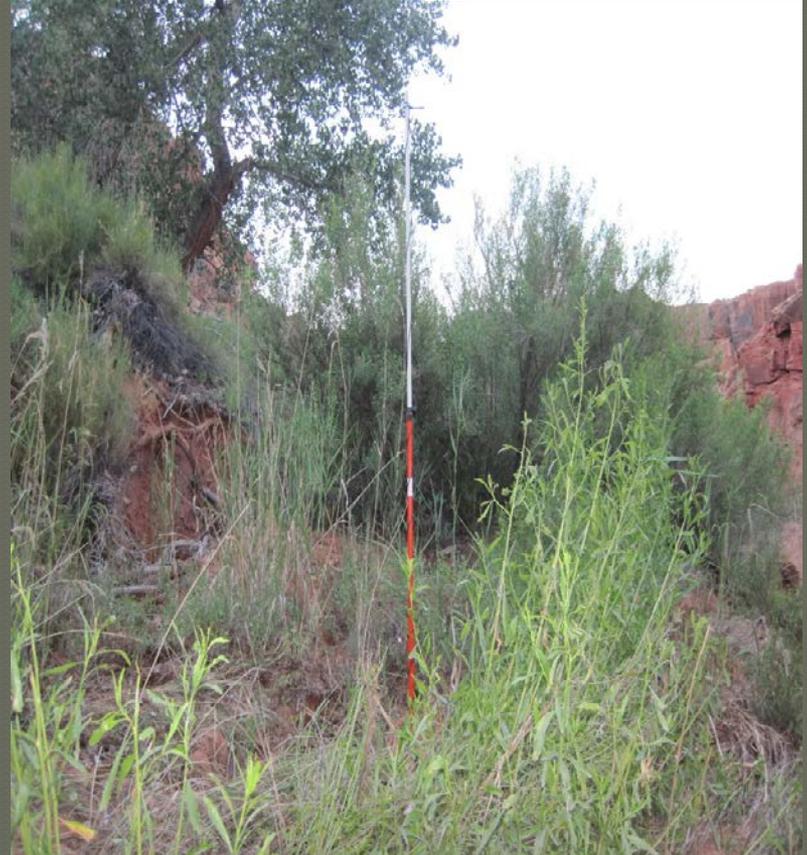
# Capture method 1: Mist Net

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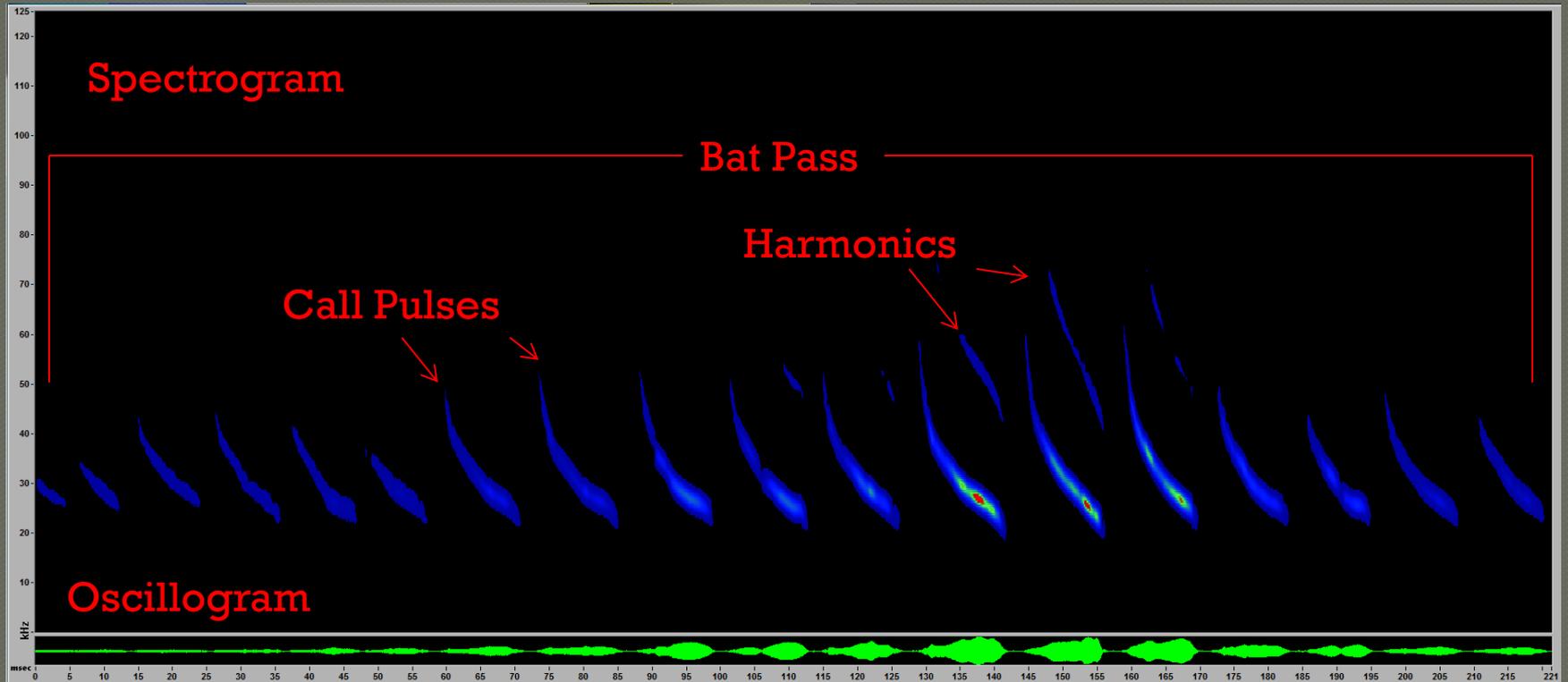
- 2D plane capture in flight corridors
- Netting over isolated bodies of H<sub>2</sub>O
- Nets opened from 1930 to 0000
- Recorded species, age, reproductive status, and weight
- Most reliable method for species ID

# Bioacoustics

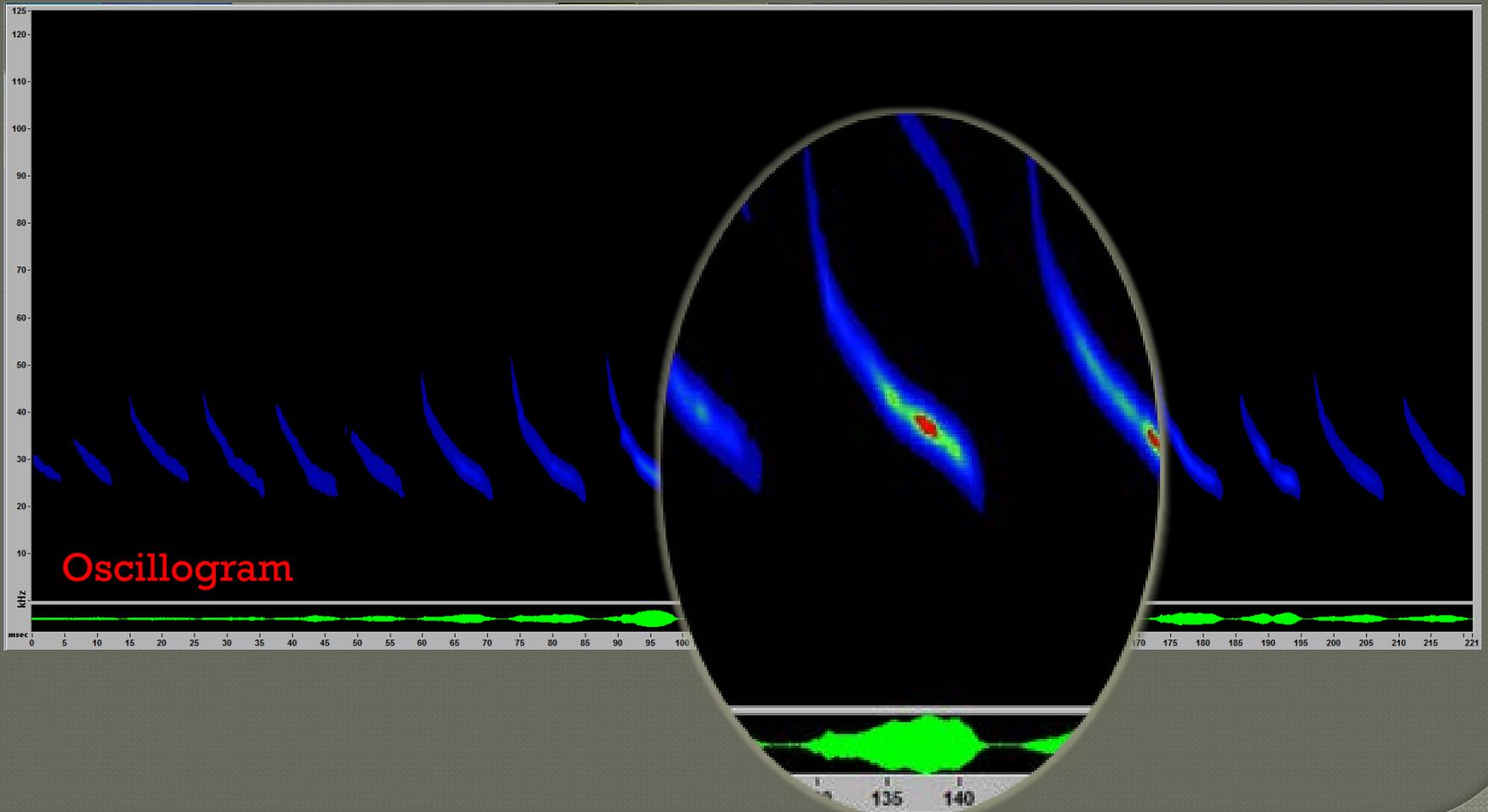
- Collects sound pulses in 3D sphere
- Autonomous recordings from 7:30 to 5:30
- Record via environmental triggers
- Recording time varied by site (10-40hrs)
- Data processed in SonoBat



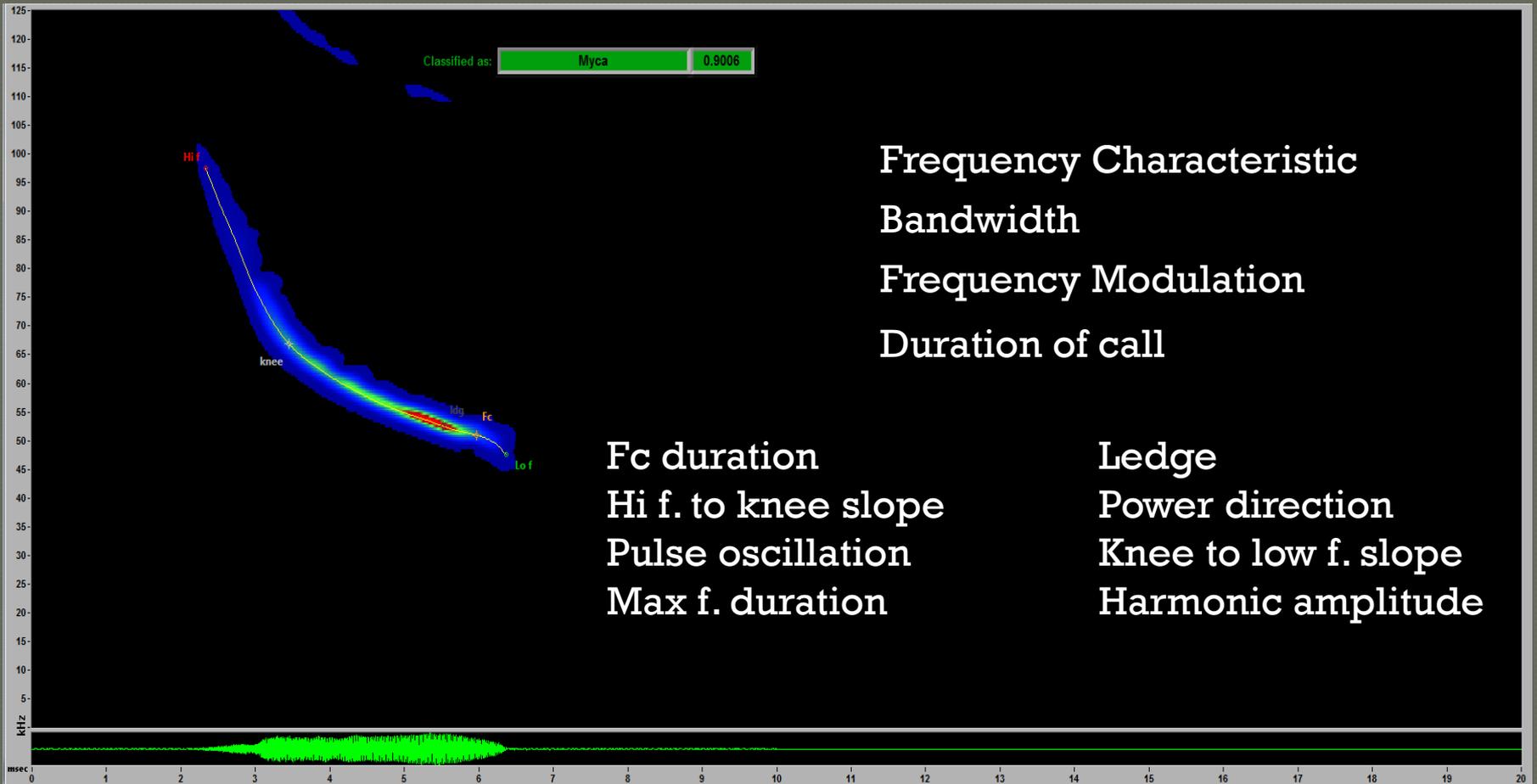
# Bioacoustics



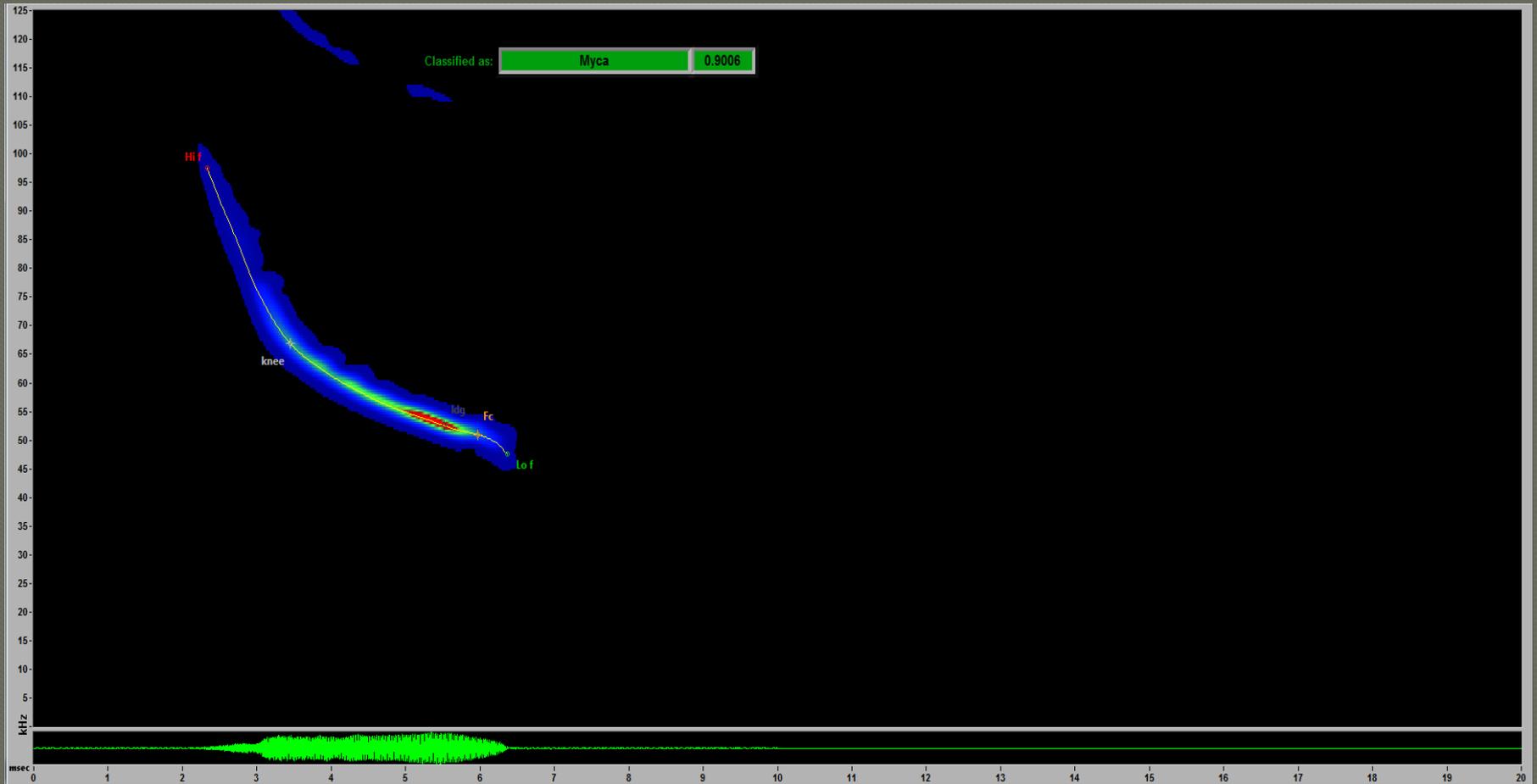
# Bioacoustics



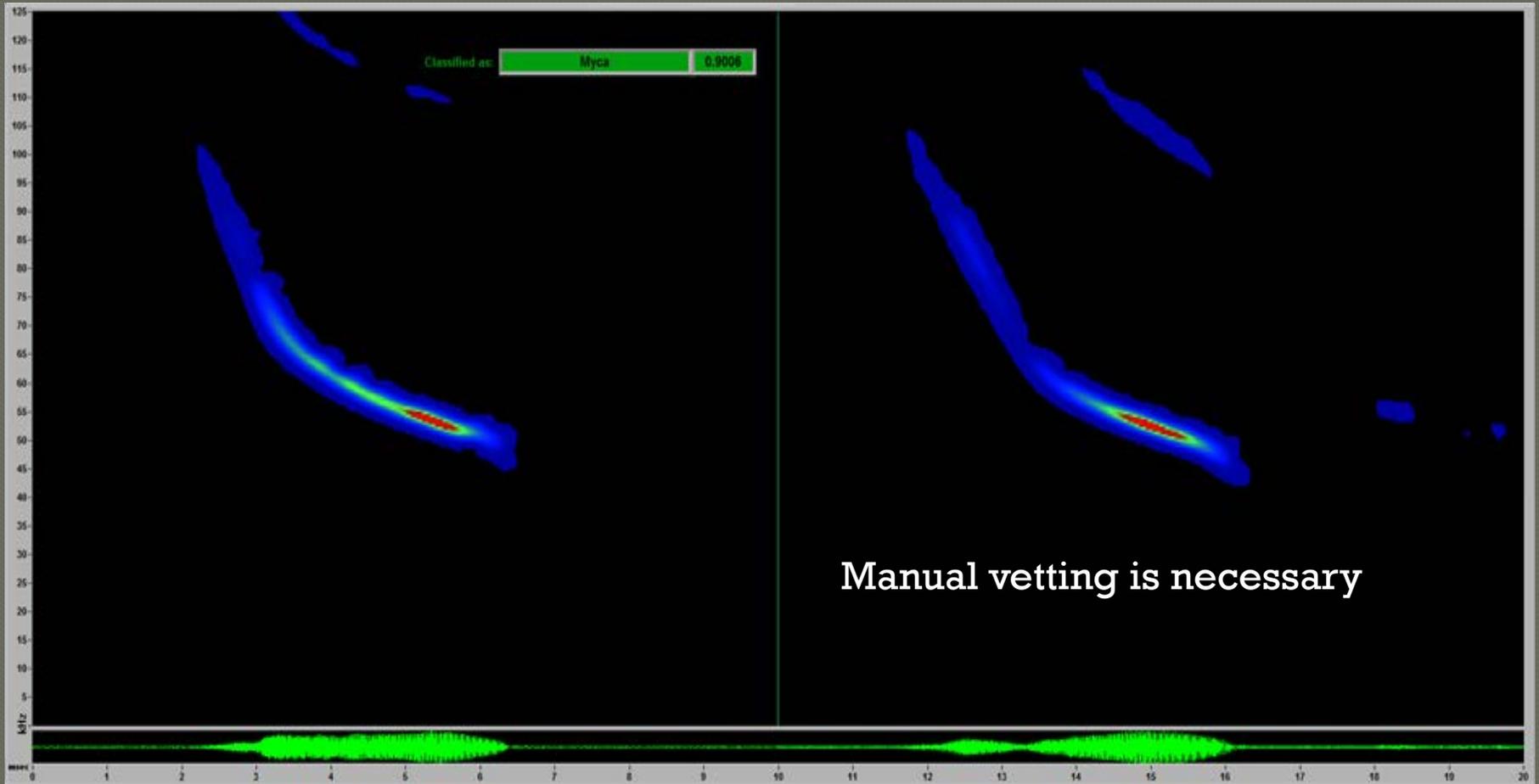
# Bioacoustics



# Bioacoustics



# Bioacoustics



# Results

<b>Recording Sites</b>	<b>Dates</b>	<b>Call sequences recorded</b>	<b>Recordings available to manual vetting</b>	<b>Total Sampling Time (hours)</b>
<b>Egypt Trailhead</b>	9 June	11	3	10
<b>Wahweap Housing</b>	10 June	339	108	10
<b>Wilson Creek</b>	15 June	552	143	10
<b>Ribbon Canyon</b>	16 June	270	91	10
<b>Last Chance Creek</b>	1, 2, and 17 June	2332	991	30
<b>Paria River</b>	3-5 and 18 June	3435	1002	40

# Results

## Mist Net:

California myotis  
Small-footed myotis  
Fringed myotis  
Long-legged myotis  
Yuma myotis  
Canyon bat  
Townsend's big-eared bat  
Allen's lappet-browed bat  
Pallid bat →→→→→→→  
Brazilian free-tailed bat

## Acoustic:

Silver-haired bat  
Hoary bat  
Big brown bat  
Spotted bat

32 Bats captured and released



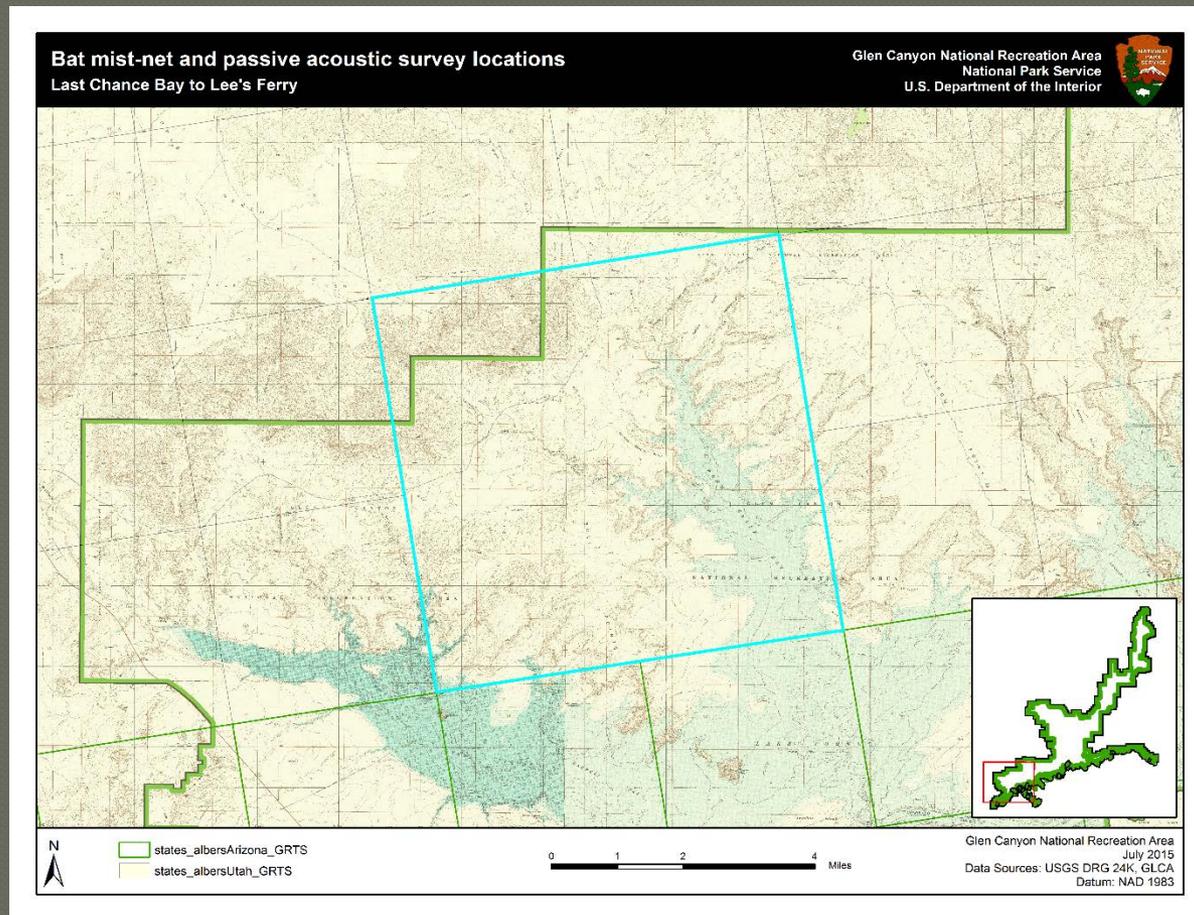
# NABat

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- Passive acoustic point surveys and mobile transects
- Adoption of a 10km x 10km sample unit
  - Divided into 4 quadrats
  - Acoustic surveys conducted in each plot
  - 3 passive and 1 mobile
- Record temporal and spatial variation
- Designate potential roosts (El Pequito)
- Access database for data entry

# NABat

- 10km x 10km sampling unit



# Acknowledgements

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- ◉ GLCA
- ◉ Grand Canyon National Park
- ◉ Timpanogos Cave National Monument
- ◉ Southwest Research Station
  - Bat Conservation and Management Inc.
  - Janet Tyburec Consulting
  - Arizona Game and Fish Department
- ◉ Funding from Partners Organizations
- ◉ Mosaics in Science and GSA

# Acknowledgements

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**Bats!**



# Questions?

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