

MSCP Conservation Area and System Wide Acoustic Monitoring

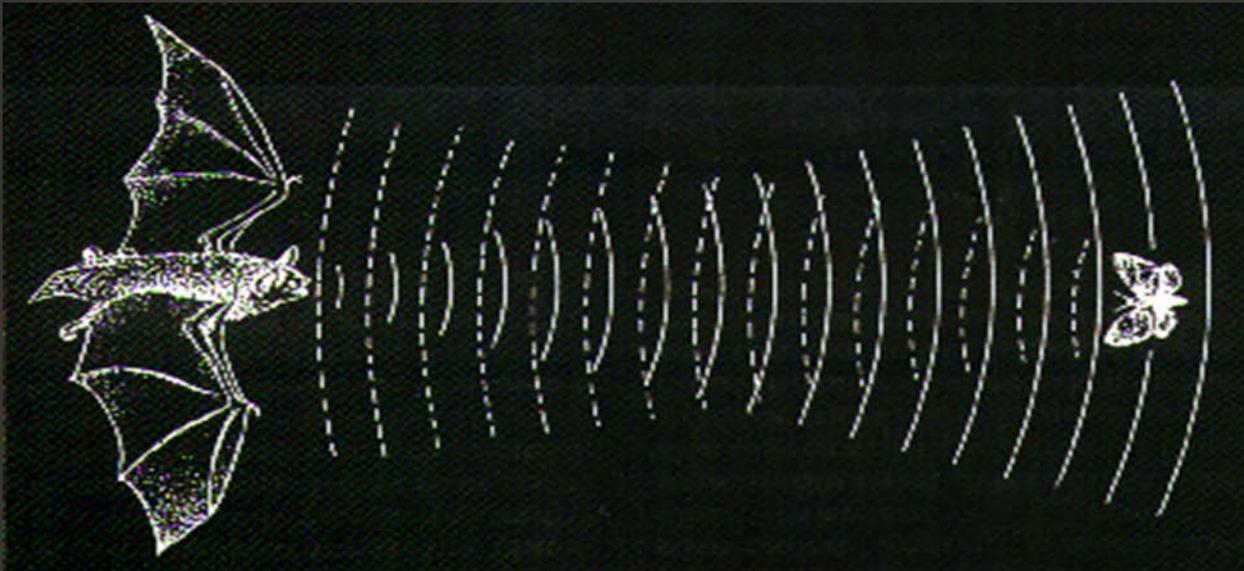


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Benefits of Acoustic Monitoring

- Can Detect Greater Species Diversity and Activity Than Traditional Methods
- O'Farrell and Gannon 1999, 86.9% Acoustically vs. 63.5% Captures.
- Allows for Cost Efficient Long Term Monitoring
- Detect Occupancy and Activity Patterns
- Monitor Temporal and Spatial Activity



Project Objective

- Acoustically Assess Nightly Bat Activity Patterns and Proportion of Nights Occupied at Nine MSCP Conservation Areas and Five System-Wide Areas Along the LCR



MSCP Covered Bat Species

Western Red Bat



Western Yellow Bat



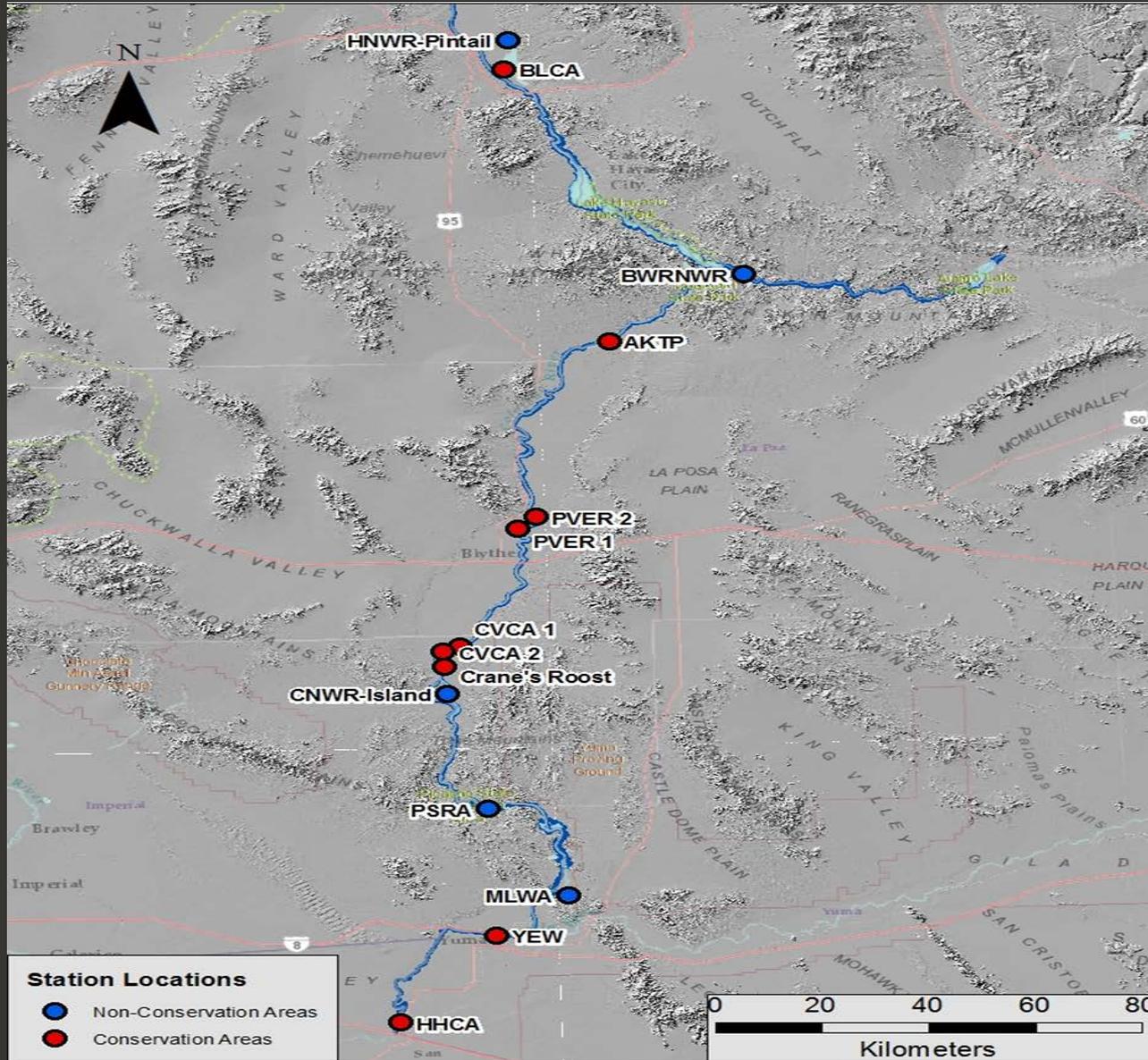
California Leaf-Nosed Bat



Townsend's Big-Eared Bat



Study Area



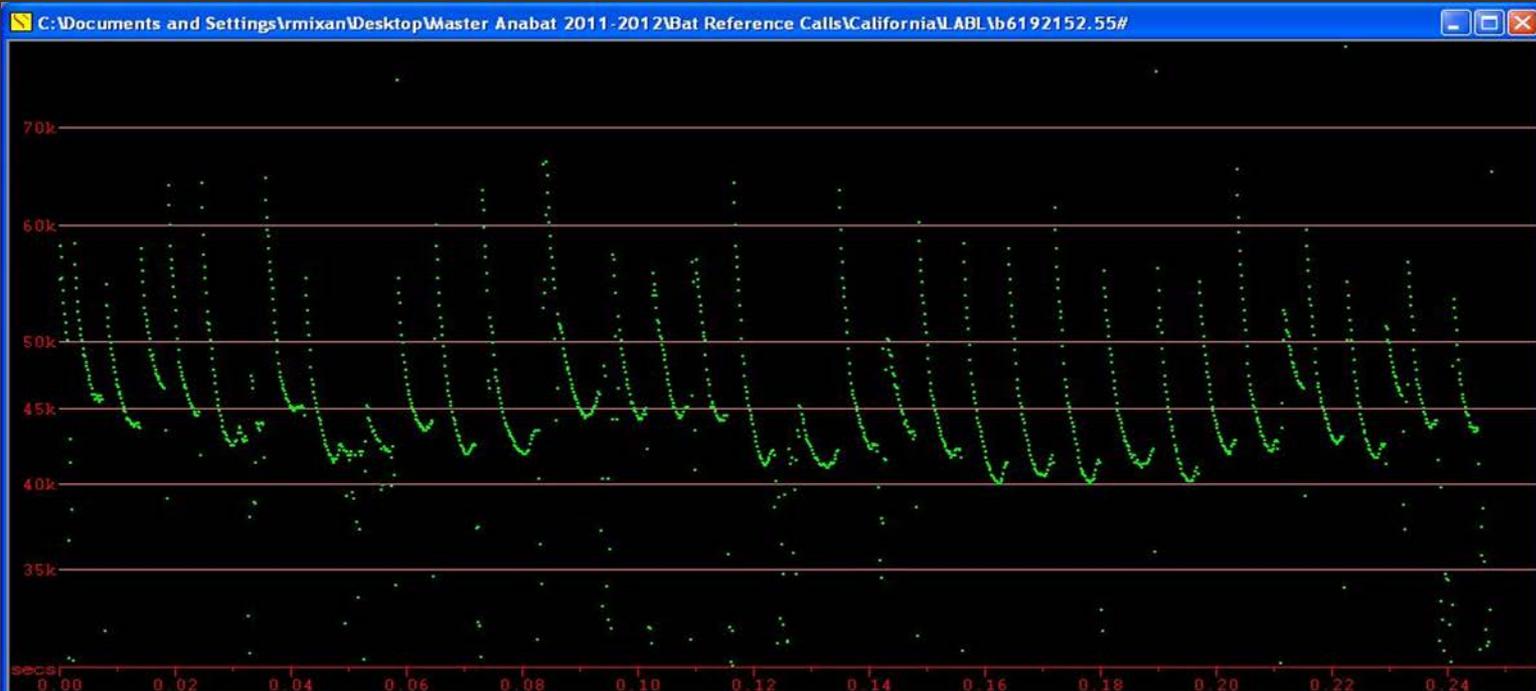
Methods

- Record Calls Nightly From Sunset to Sunrise June through August.
- Noise Filter
- Apply Species Specific Filters
- Manually Verify Calls (167,597)
- Kaleidoscope
- System-Wide 2016 and Conservation Area 2015 Data.



Acoustic Analysis

- Verified Calls Go Through a Call Minute Analysis
- Measure of Relative Activity
- Eliminates Bias of Over-Estimating or Under-Estimating Abundance

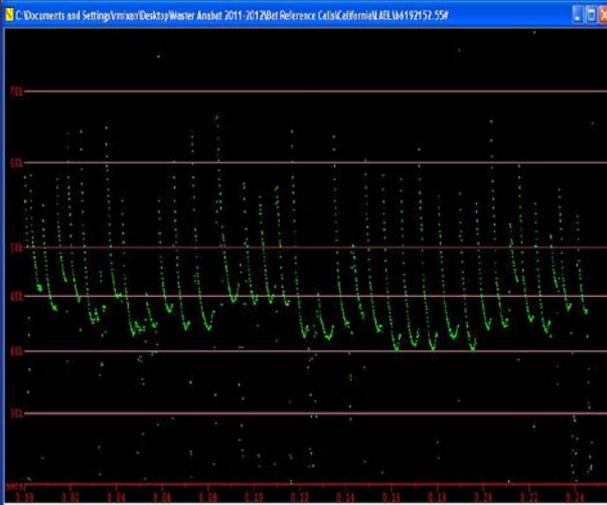


Station Maintenance

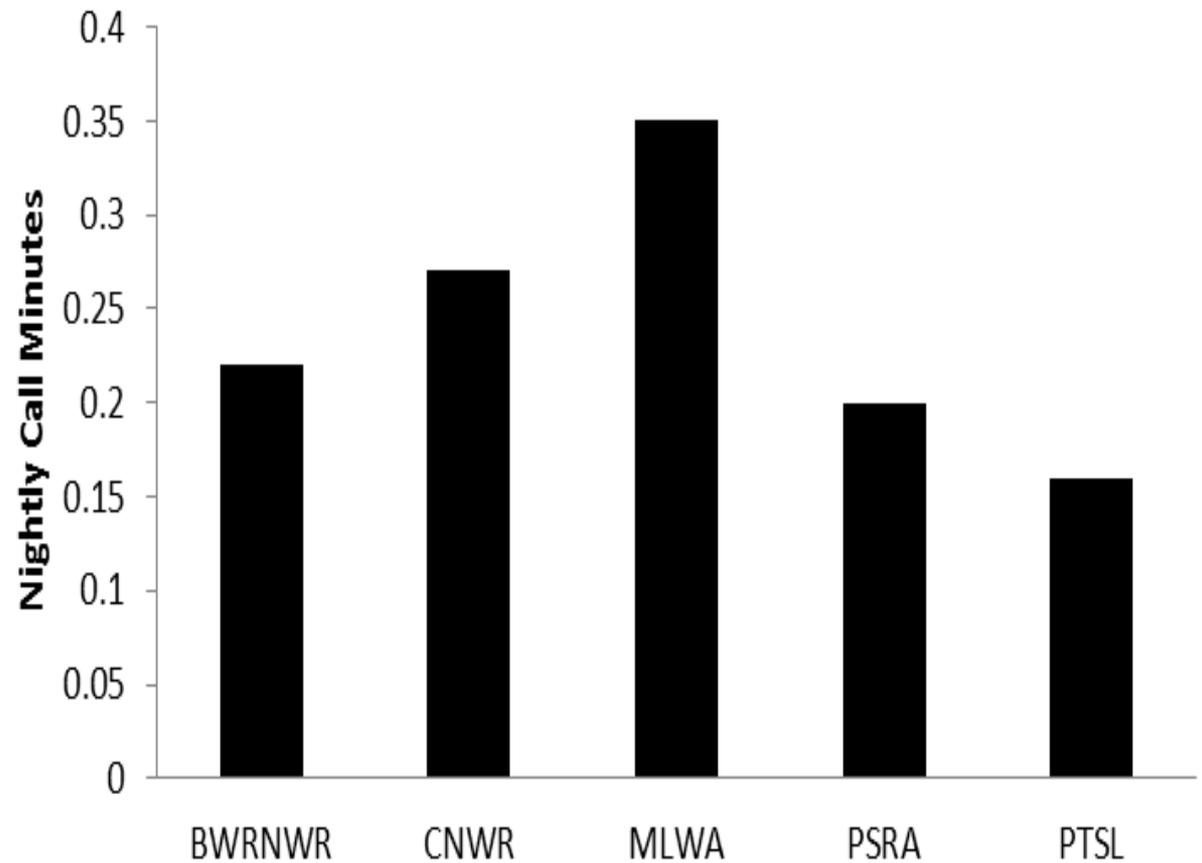
- Conservation Areas 2015
 - AKTP
 - PVER 2
 - YEWE
- System-Wide Areas 2016
 - MLWA
 - PTSL
 - BWRNWR
 - CNWR



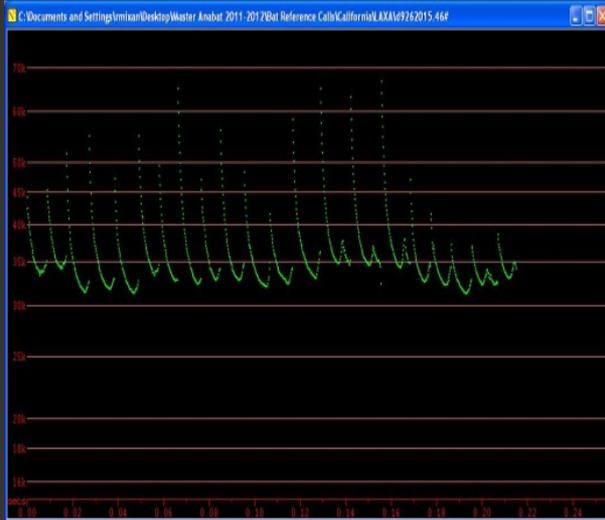
System-Wide Western Red Bat Relative Activity



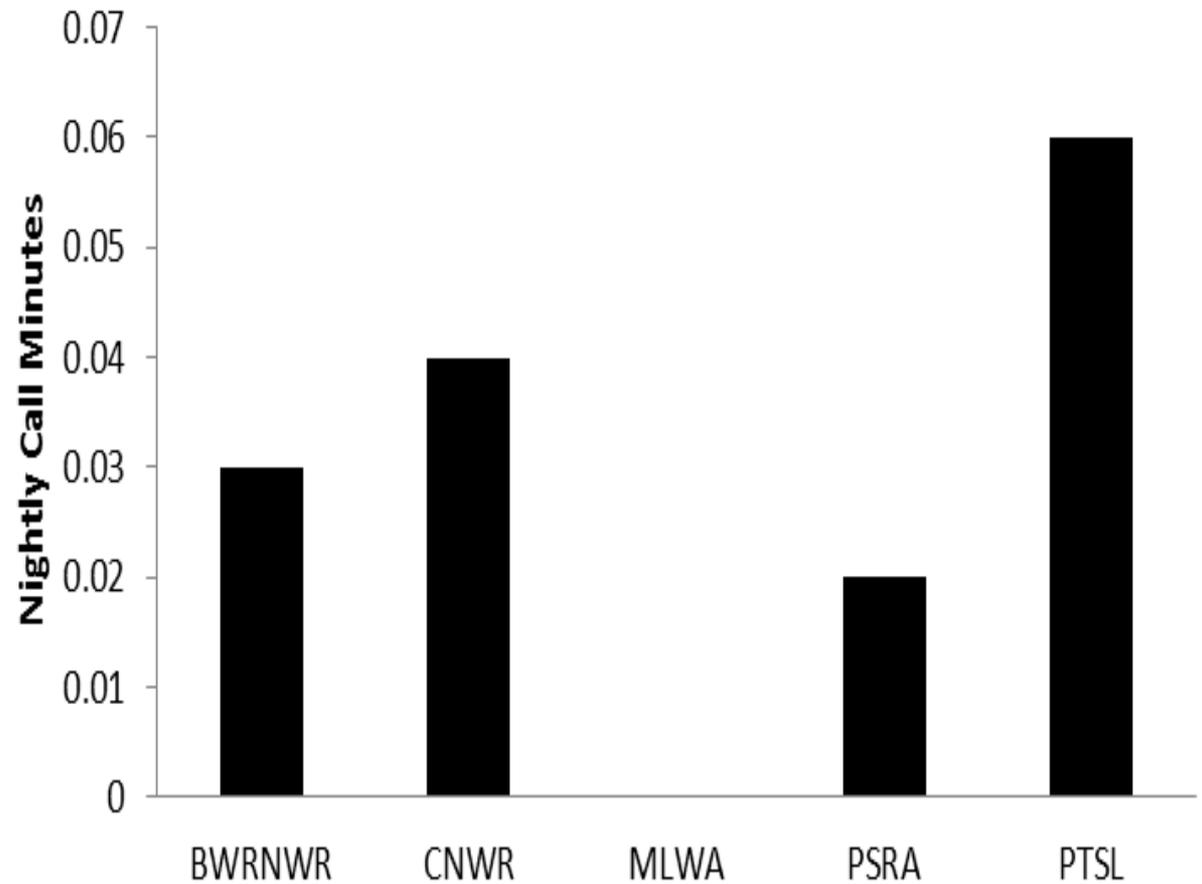
Western Red Bat



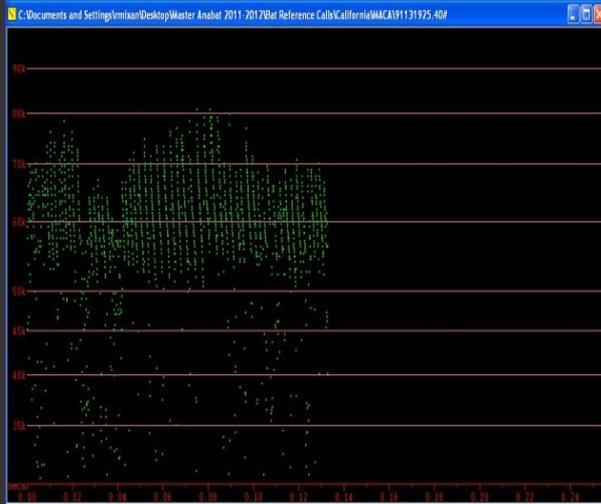
System-Wide Western Yellow Bat Relative Activity



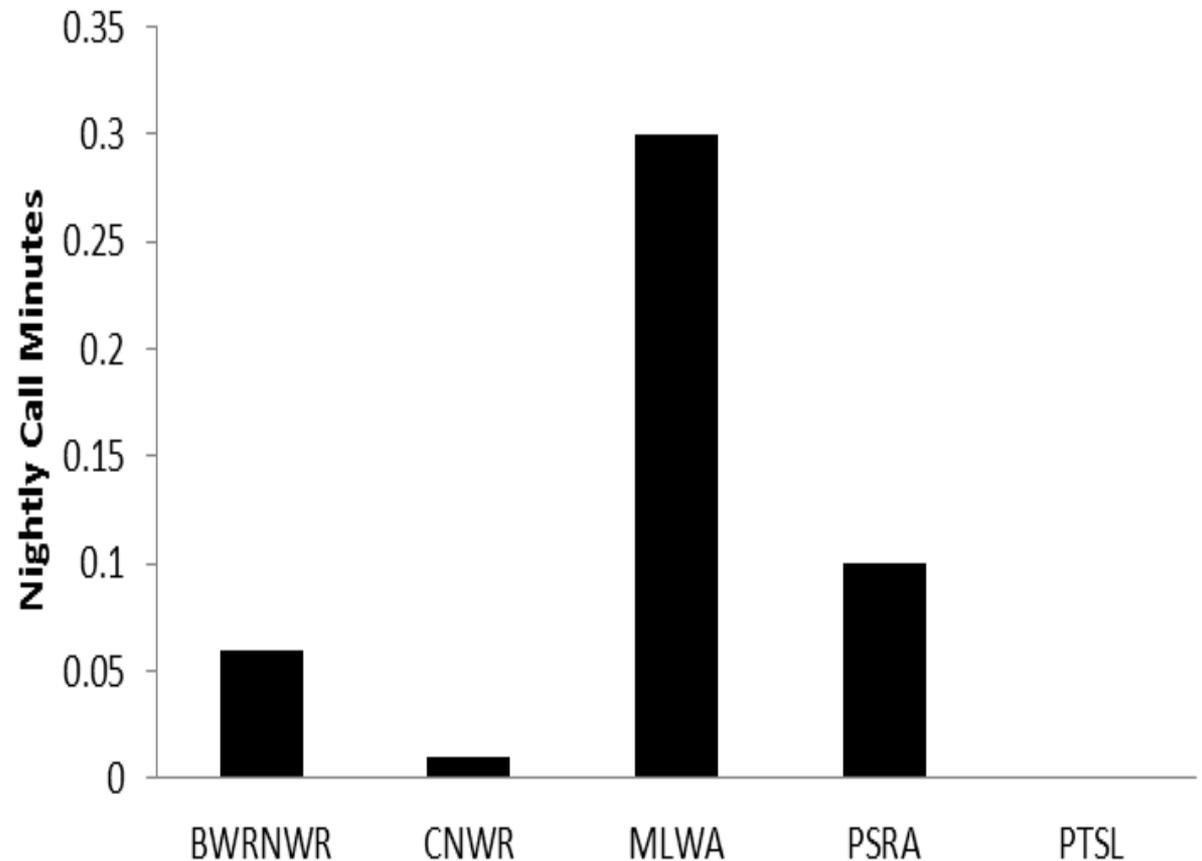
Western Yellow Bat



System-Wide California Leaf-Nosed Bat Relative Activity

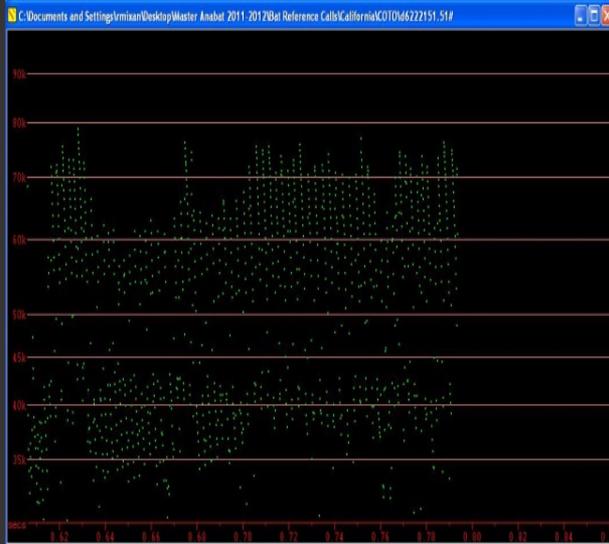
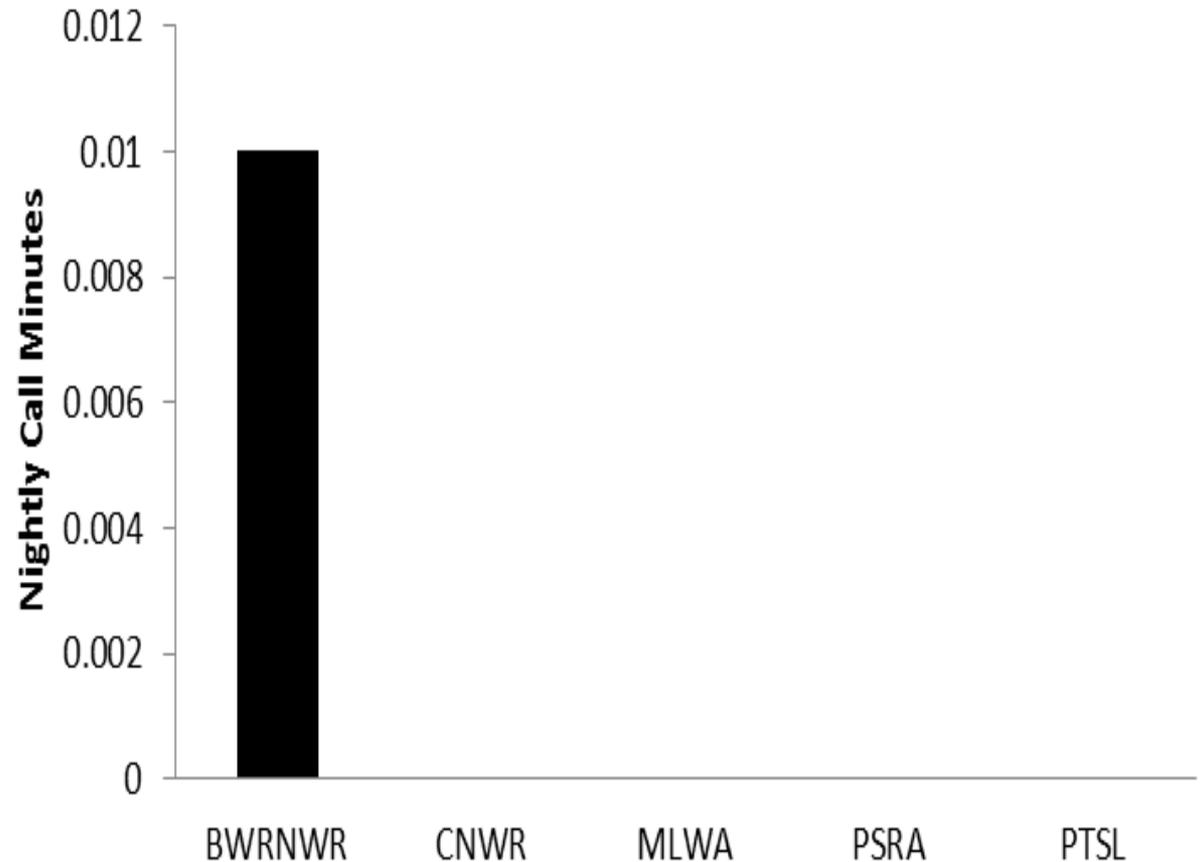


California Leaf-Nosed Bat



System-Wide Townsend's Big-Eared Bat Relative Activity

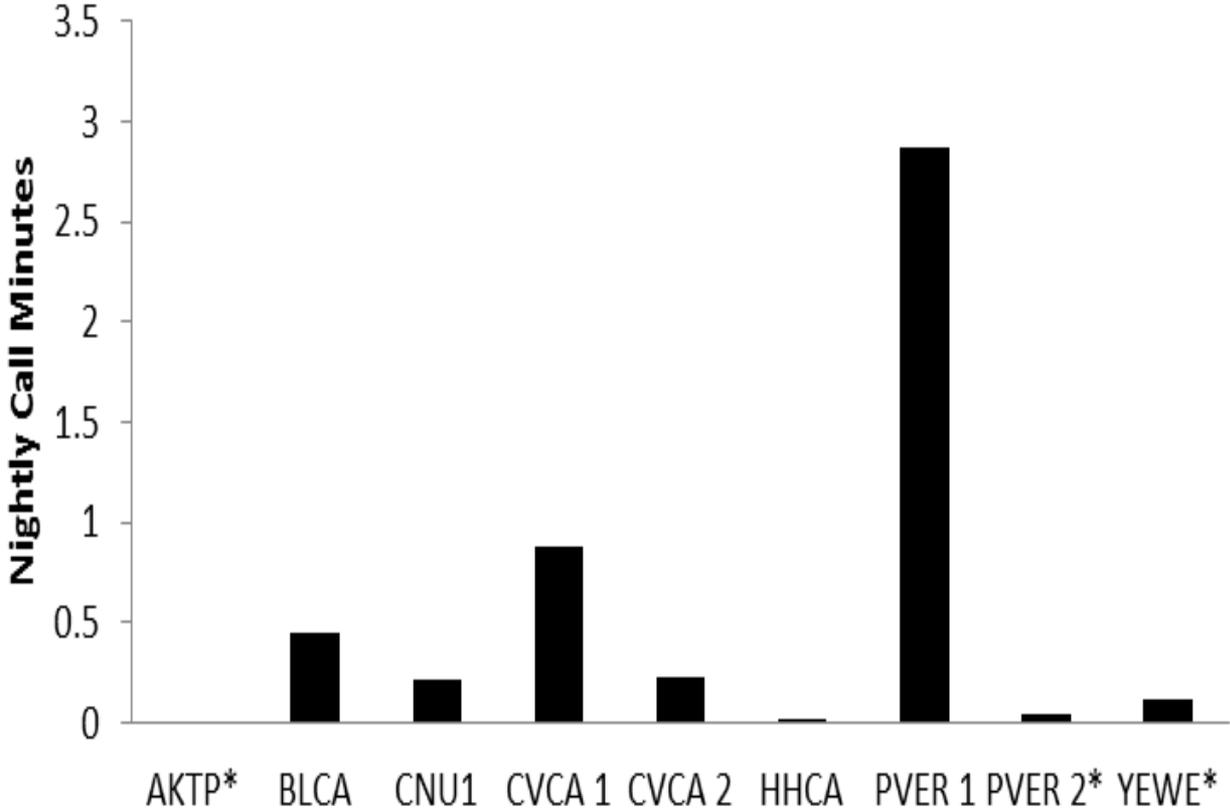
Townsend's Big-Eared Bat



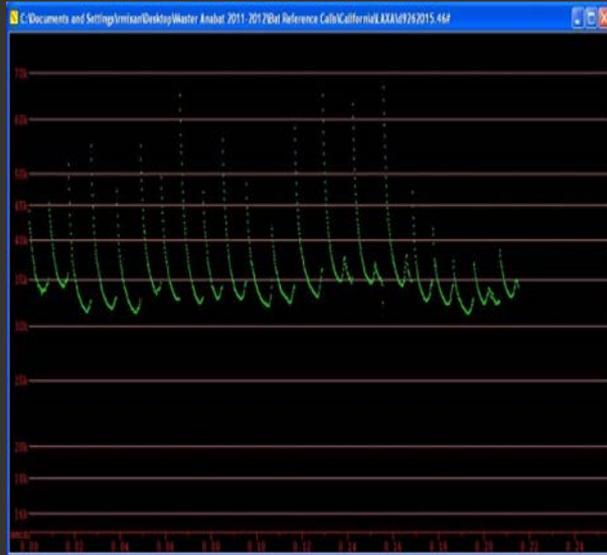
Conservation Area Western Red Bat Relative Activity



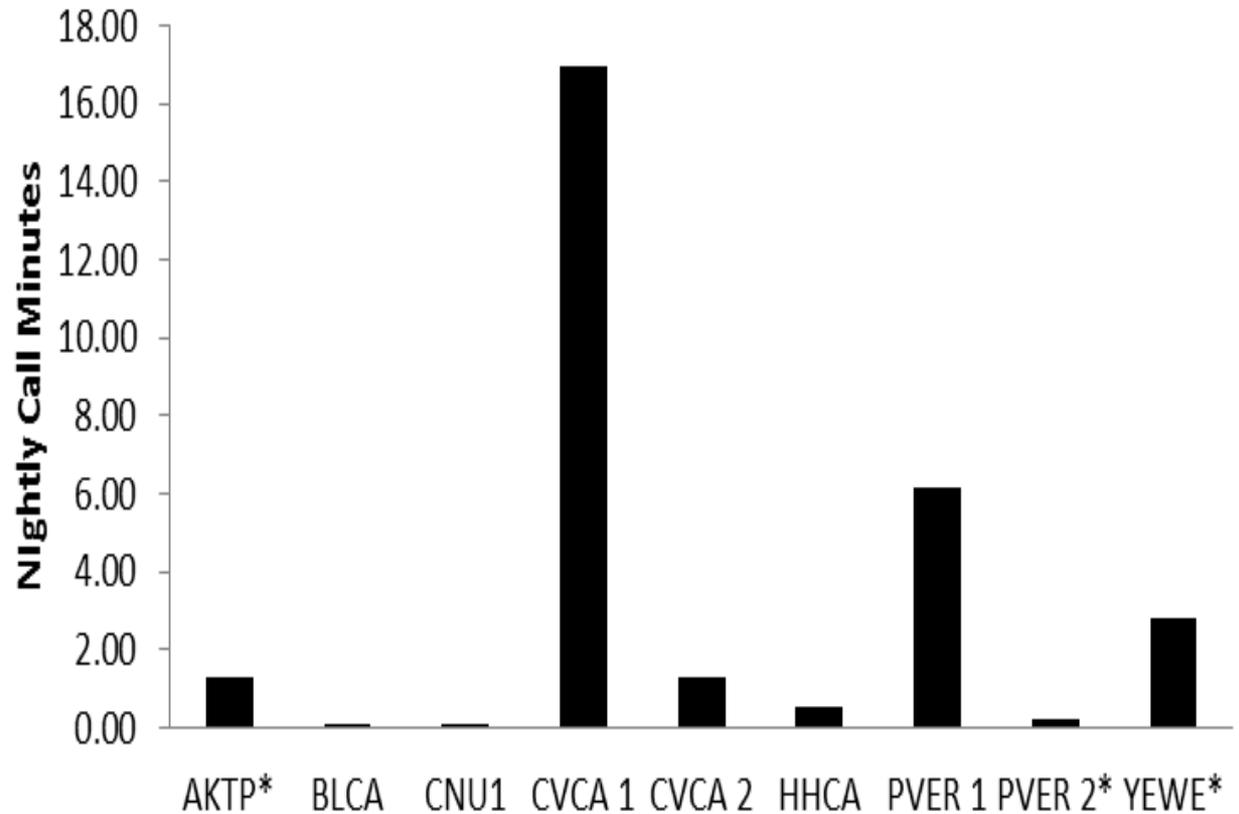
Western Red Bat



Conservation Area Western Yellow Bat Relative Activity

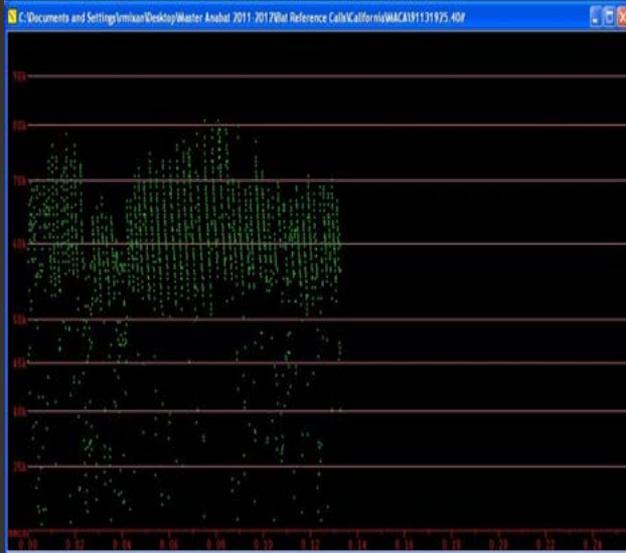
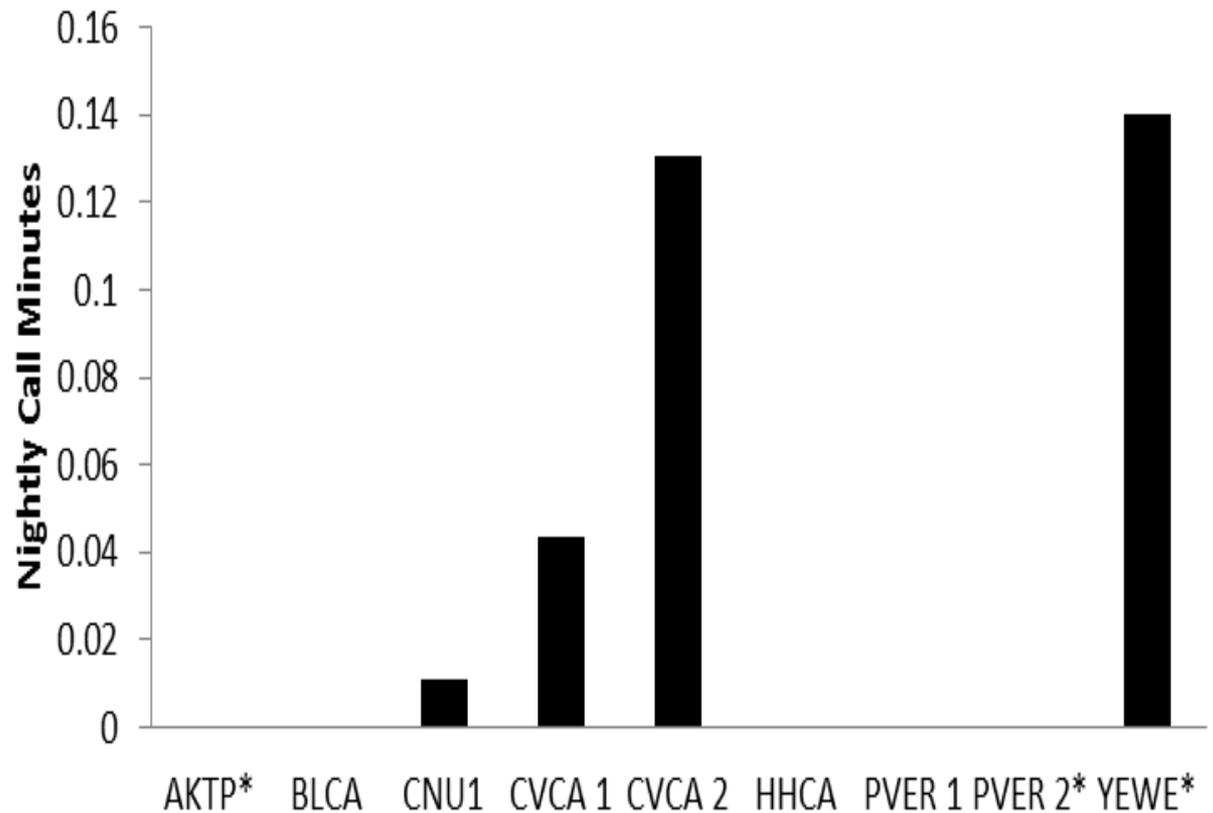


Western Yellow Bat



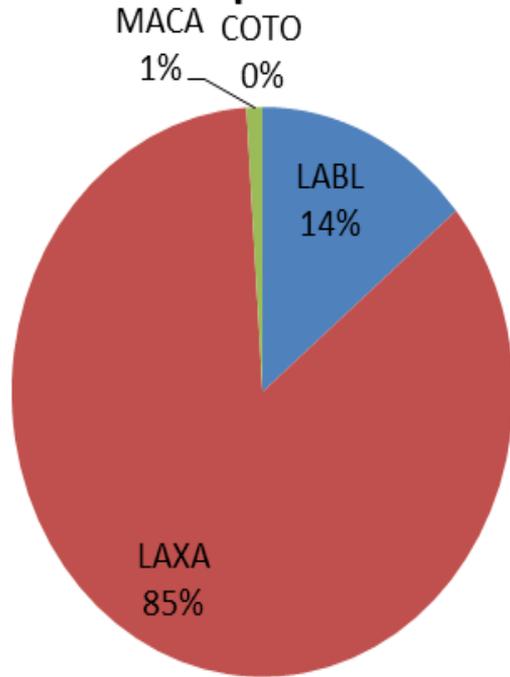
Conservation Area California Leaf-Nosed Bat Relative Activity

California Leaf-Nosed Bat

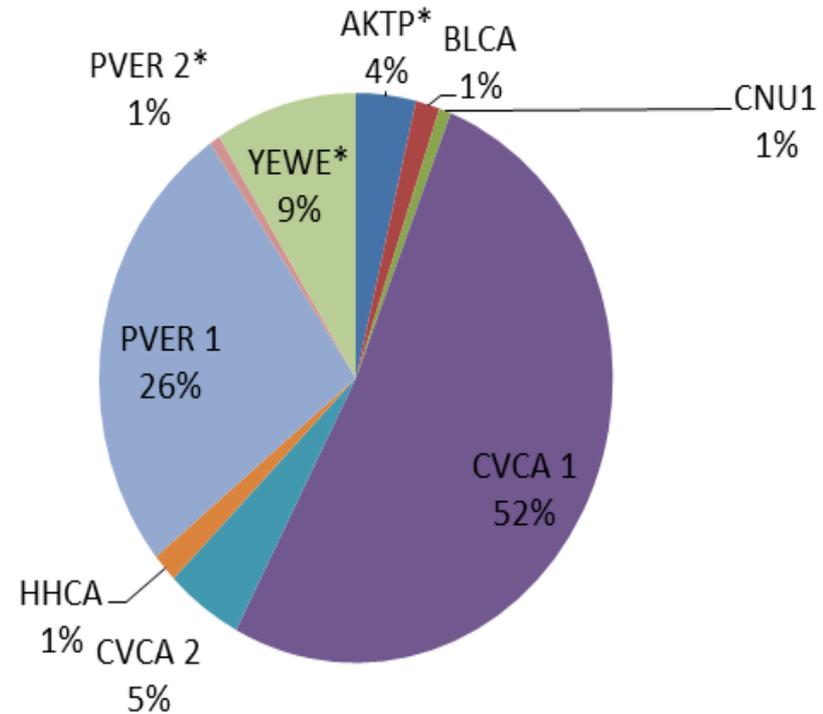


Conservation Area Results 2015

Conservation Area Species Relative Activity

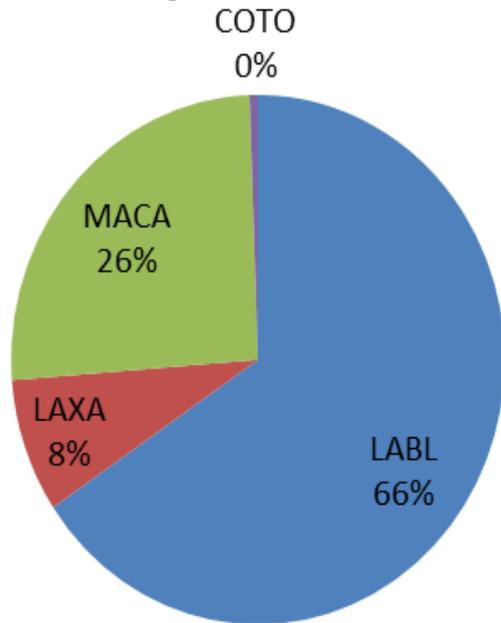


Conservation Area Relative Activity

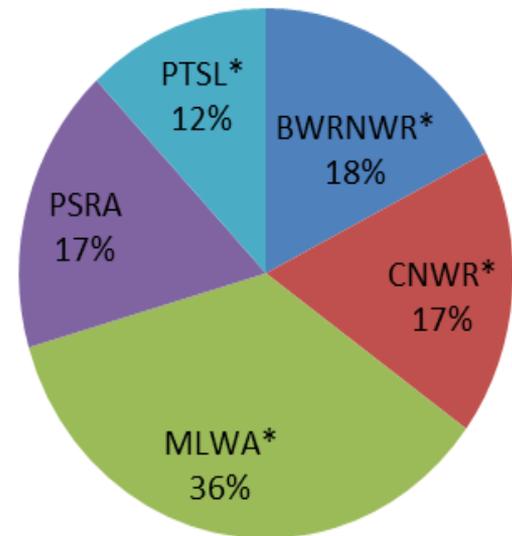


System-Wide Area Results 2016

System-Wide Species Relative Activity



System-Wide Relative Activity



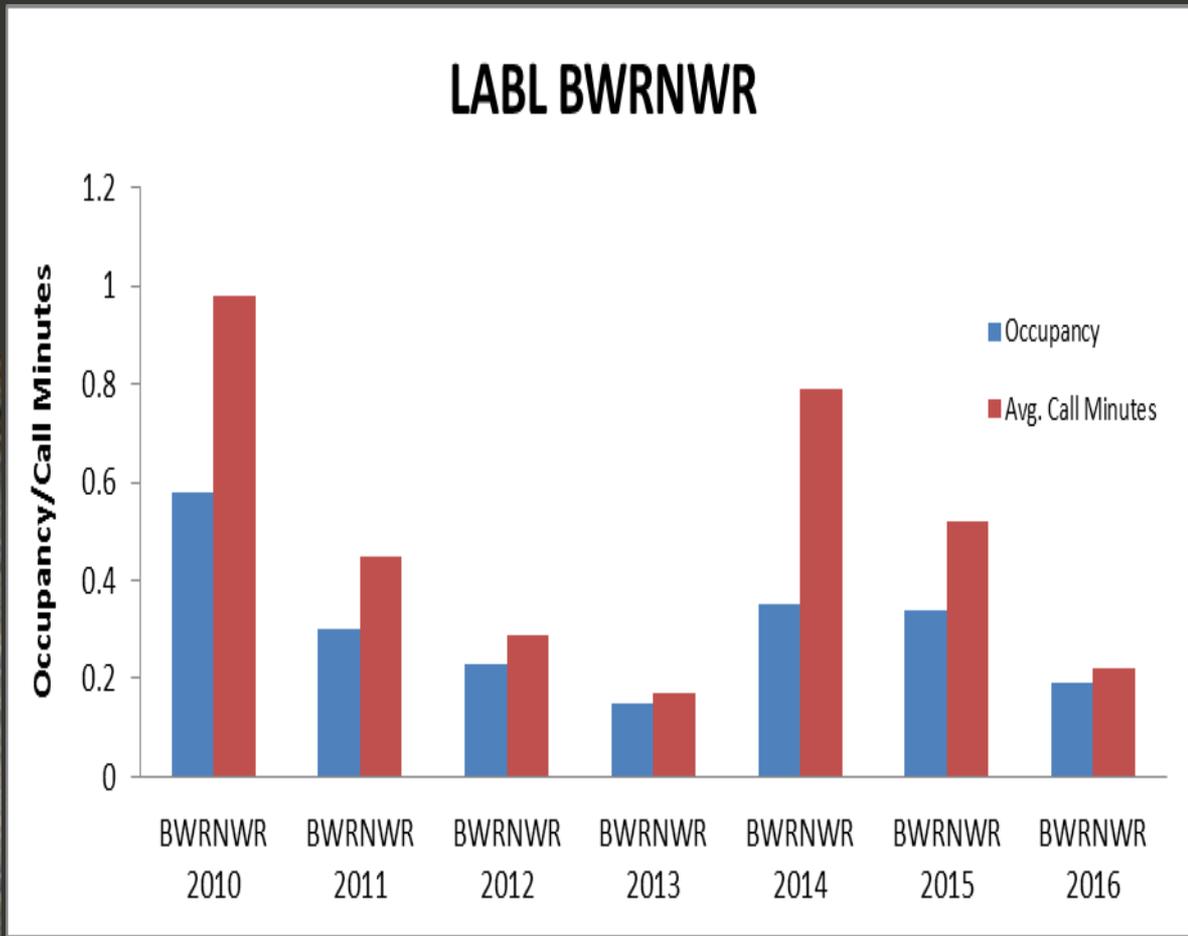
Discussion

○ Conservation vs. System-Wide Areas

- Greatest Activity MSCP Conservation Areas (Area, Vegetation and Palms)
- System-wide migratory pulses
- Conservation Areas 2012-2014
- Fluctuation across years.

○ Future Consideration

- Age
- Composition
- Plant Spacing



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