

Bat Monitoring at Riparian Habitat Creation Areas



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Two methods are used to collect data at HCA's

Acoustic Surveys

- Conducted using long term monitoring stations
- Collects species presence and activity levels



Capture Surveys

- Conducted using triple high mist-nets
- Collects demographic data



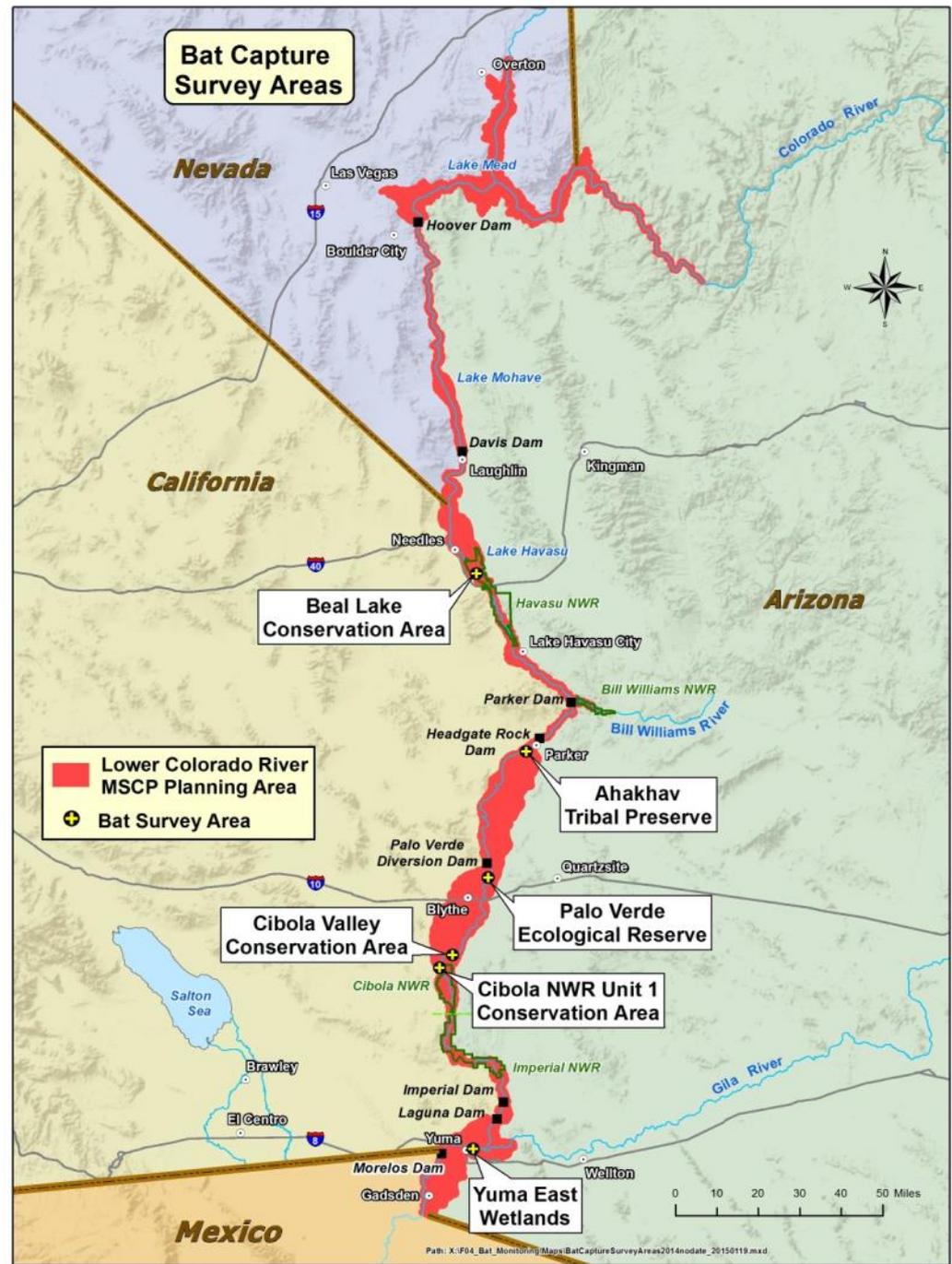
Goals of Bat Capture Surveys

- Augment acoustic surveys for the detection of MSCP bat species at conservation areas (some species difficult to detect with acoustic survey methods, i.e. whispering bats)
- Collect demographic information about MSCP bat species (which helps to understand how they are utilizing the habitat, i.e. resident vs. migrant)
- Collect information about other bat species utilizing conservation areas (such as presence of species that use cottonwood-willow habitat when covered species have not yet been detected)



Background

- Preliminary surveys began in 2007 at four sites
- Protocol was established in 2009
- 2009-2012 four sites were monitored during each survey period
- In 2012, two additional exploratory sites were included and in 2013 were added to the full survey schedule
- Since then, a total of six sites have been surveyed each year



Methods

- Each site surveyed once per month from May-September
- Surveys started a half hour after sunset and continued for 4 hours (weather permitting)
- Three triple high mist-nets (over 8 meters high) were used at all sites
- Net length varied from 6-18 meters



Cibola NWR Unit 1
Conservation Area (CNU1):
Nature Trail and Mass
Planting



‘Ahakhav Tribal
Preserve (AKTP)

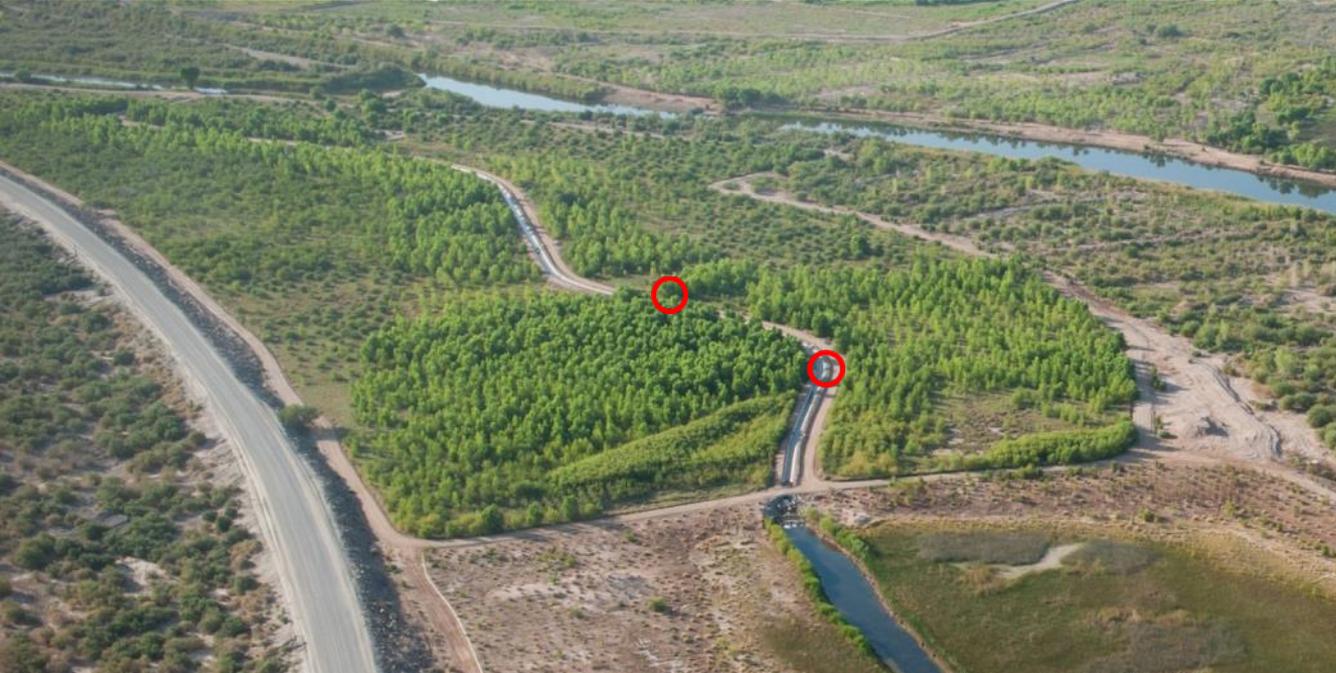


Cibola Valley Conservation Area (CVCA)



Palo Verde Ecological Reserve (PVER)

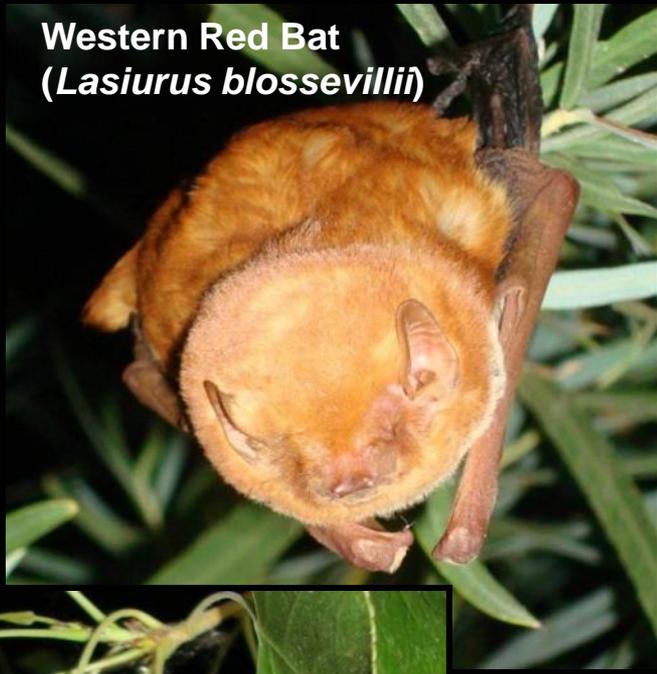
Beal Lake
Conservation Area
(BLCA)



Yuma East
Wetlands
(YEWE)

Covered and Evaluation Bat Species

Western Red Bat
(*Lasiurus blossevillii*)



Townsend's
Big-Eared Bat
(*Corynorhinus townsendii*)



California Leaf-Nosed Bat
(*Macrotus californicus*)



Western Yellow Bat
(*Lasiurus xanthinus*)

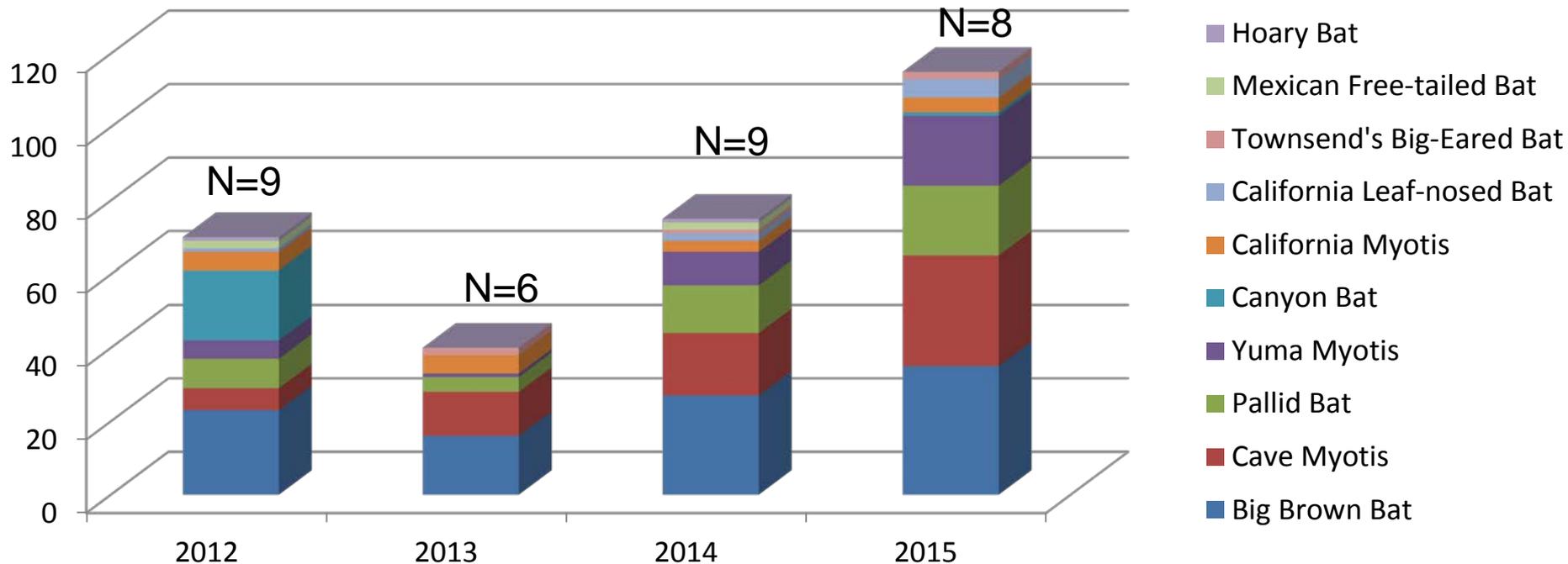


Results

Beal Lake Conservation Area (BLCA)

2012-2015

- 300 bats of 10 species captured *N = Species Richness*
- Two MSCP species: California leaf-nosed and Townsend's big-eared
- Female Townsend's big-eared bats have been captured in 2013, 2014, and 2015.

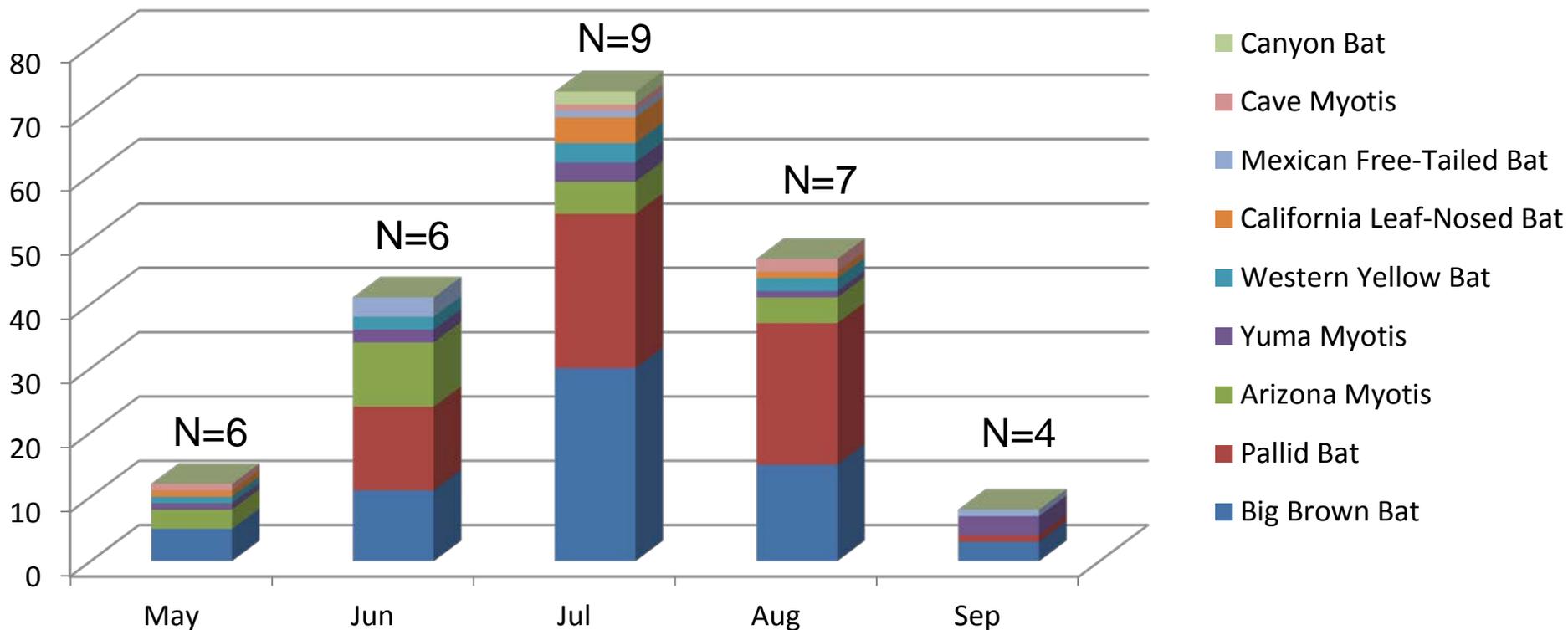


Results

'Ahakhav Tribal Preserve (AKTP)

2015

- 181 bats of 9 species captured *N= Species Richness*
- Two MSCP species: western yellow bat and California leaf-nosed bat
- Lactating females captured for both MSCP species in July

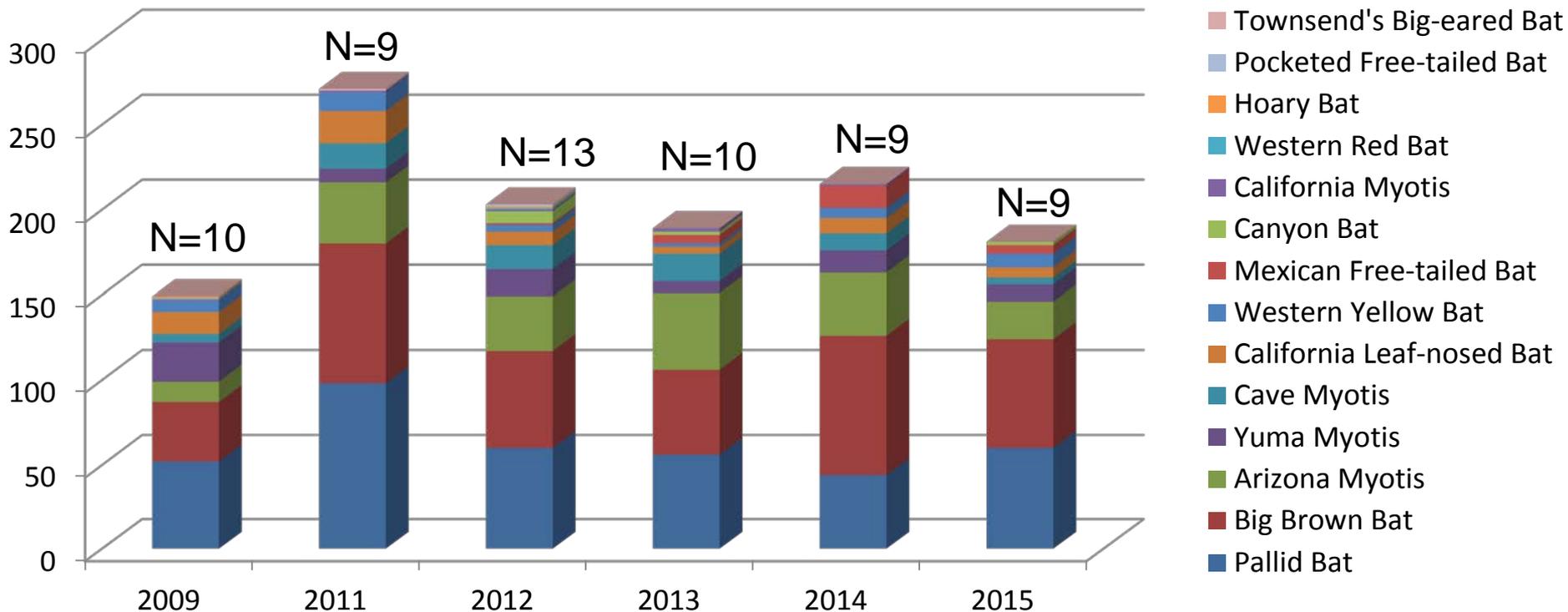


Results

'Ahakhav Tribal Preserve (AKTP)

2009-2015

- 1,208 bats of 14 species captured *N= Species Richness*
- All four MSCP species captured (only 1 Townsend's in 2011)
- Western yellow bat and CA leaf-nosed bat captured every year



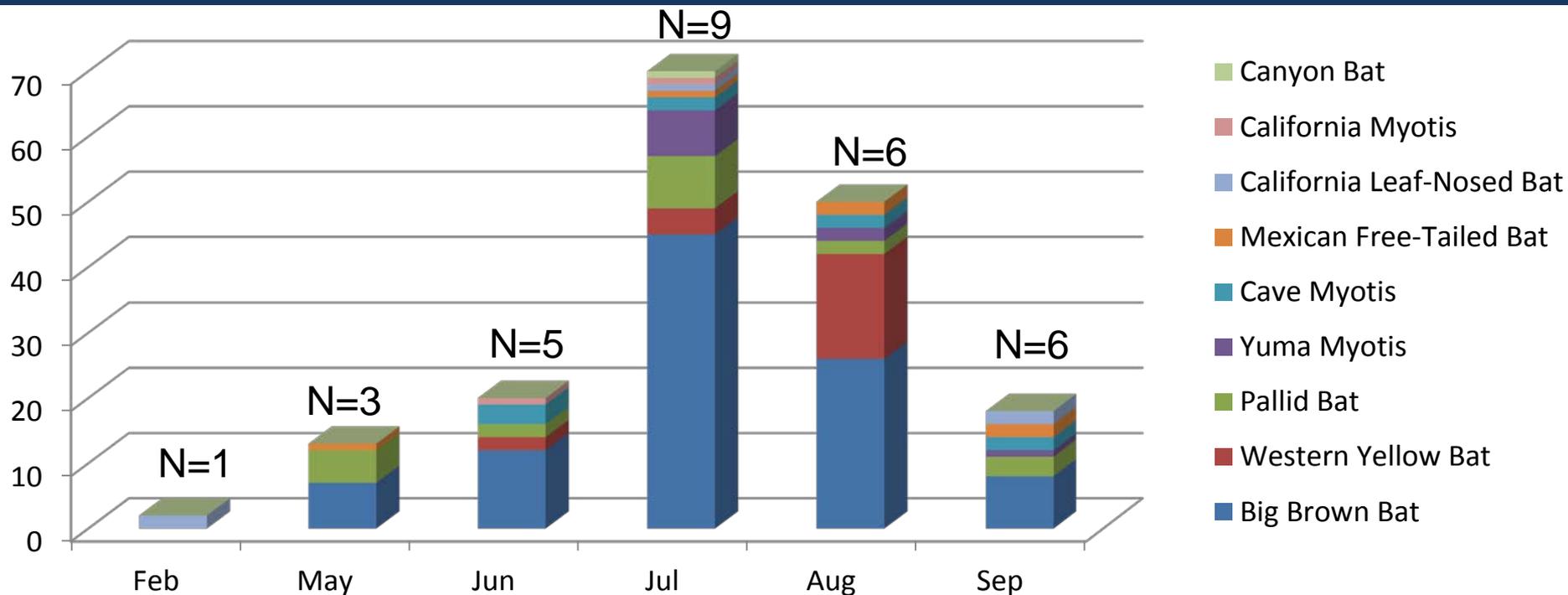
Results

Palo Verde Ecological Reserve (PVER)

2015

- 172 bats of 9 species captured
- Two MSCP species: western yellow bat and California leaf-nosed bat
- Lactating (June) and post-lactating (July) female yellow bats captured
- Lactating female leaf-nosed bat captured in July

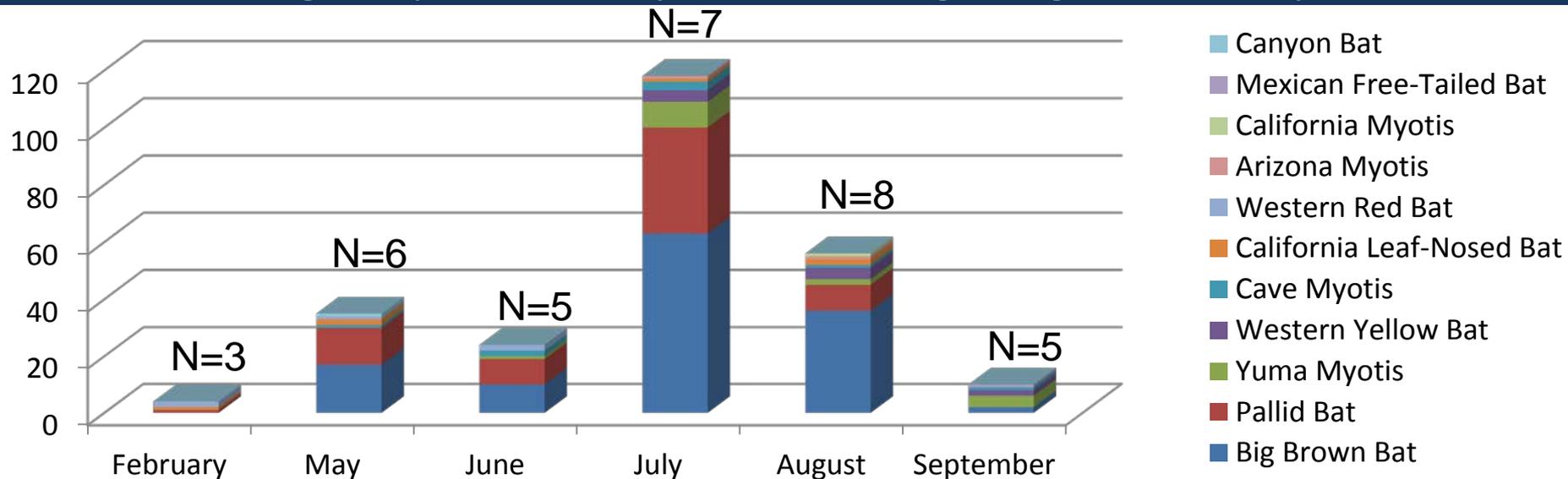
N= Species Richness



Results

Cibola Valley Conservation Area (CVCA) 2015

- 247 bats of 11 species captured *N= Species Richness*
- A red bat captured in Feb was originally captured and PIT tagged in Feb 2014; indicating winter site fidelity
- One pregnant (May) and one post-lactating (Aug) CA leaf-nosed bat
- One lactating western red bat (June)
- One lactating (July) and one post-lactating (Aug) western yellow bat

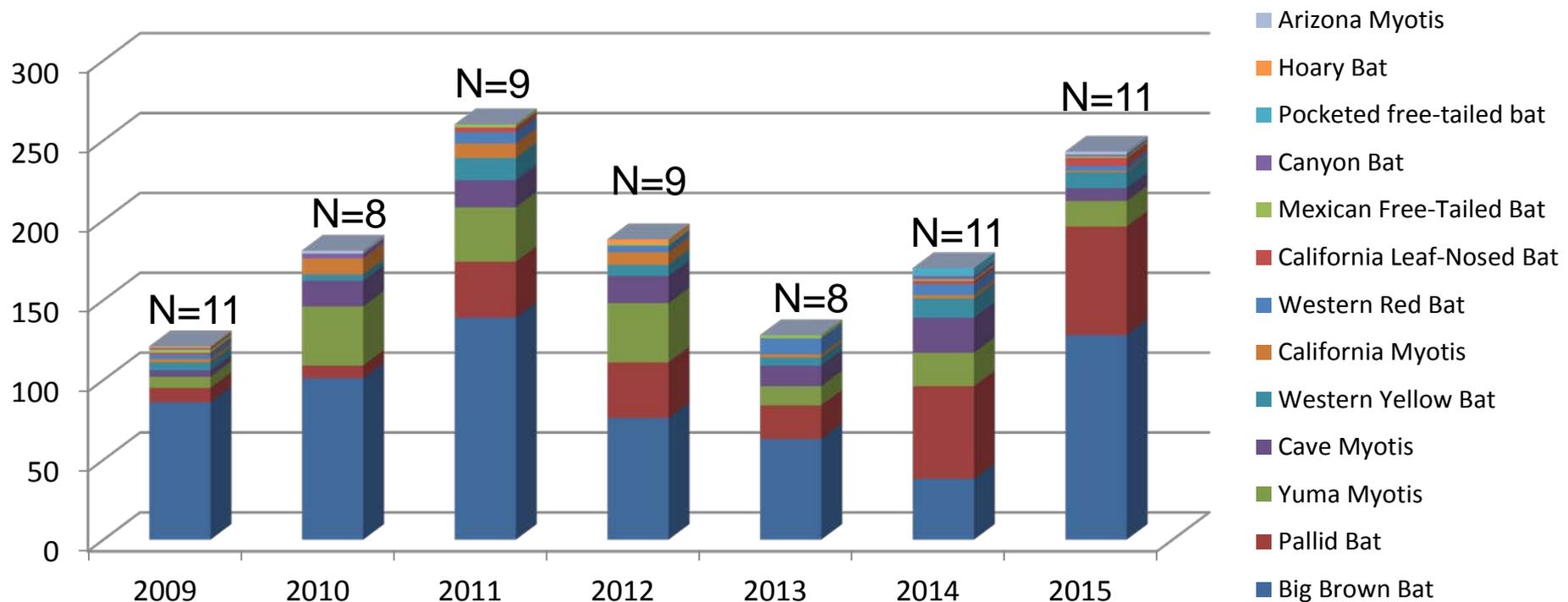


Results

Cibola Valley Conservation Area (CVCA)

2009-2015 (summer season only)

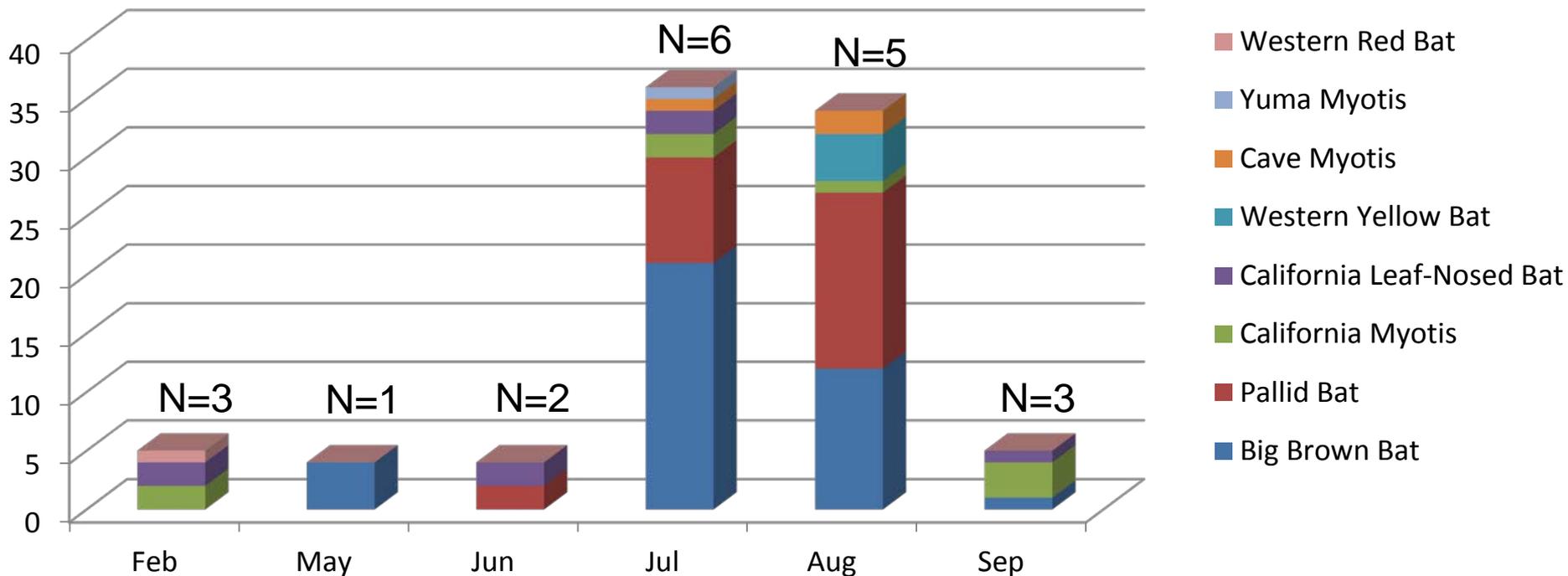
- 1,291 bats of 13 species captured *N= Species Richness*
- Western red bats captured every summer since 2011
- Western yellow bats captured every year
- CA leaf-nosed bats captured in 2009, 2011, 2014, and 2015



Results

Cibola NWR Unit 1 Conservation Area (CNU1) 2015

- 88 bats of 8 species captured *N= Species Richness*
- Three MSCP species captured (western red bat was in Feb survey)
- Two pregnant (June) and one lactating (July) CA leaf-nosed bats
- Western yellow bats all captured in Aug (likely migrants)

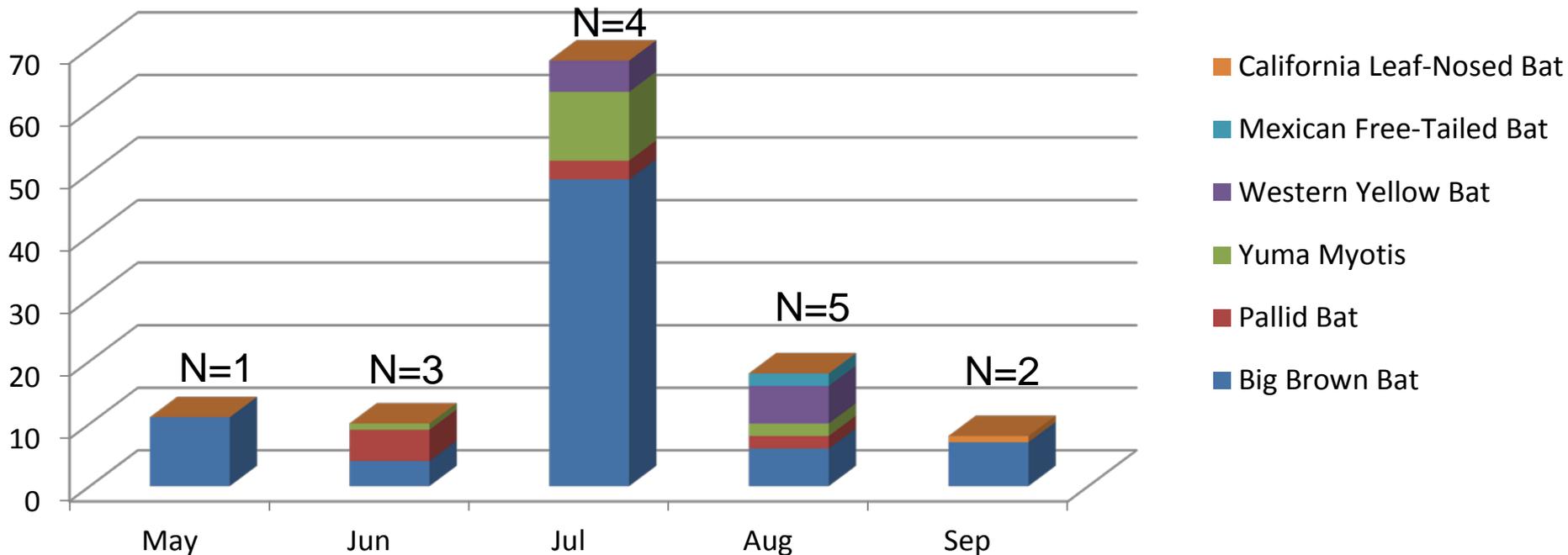


Results

Yuma East Wetlands (YEWE)

2015

- 115 bats of 6 species captured *N= Species Richness*
- Two MSCP species: western yellow bat and CA leaf-nosed bat
- All yellow bats captured in July were juveniles
- The leaf-nosed bat (male) captured in Sept was reproductively active

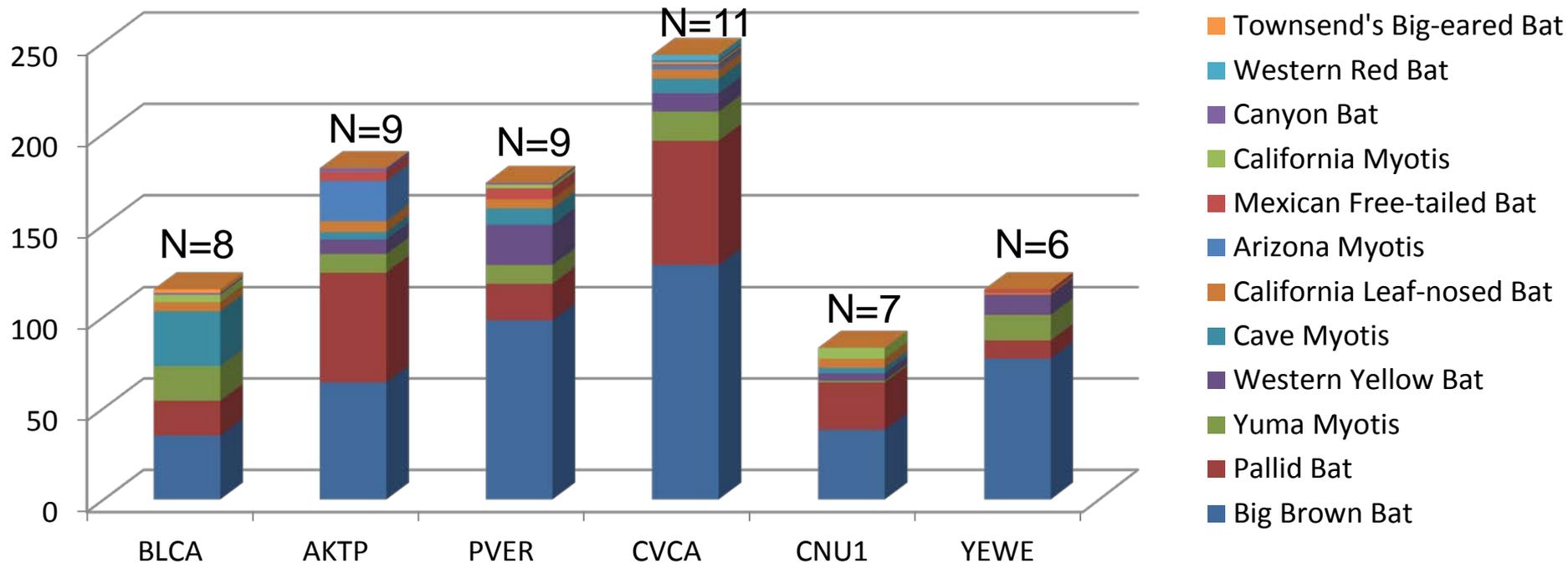


Summary of all sites

2015 – Summer surveys only

- 910 bats of 12 species captured
- Western red bats only captured at CVCA
- Western yellow bats captured at all sites except BLCA
- CA leaf-nosed bats captured at all sites
- Two Townsend's big-eared bats captured at BLCA

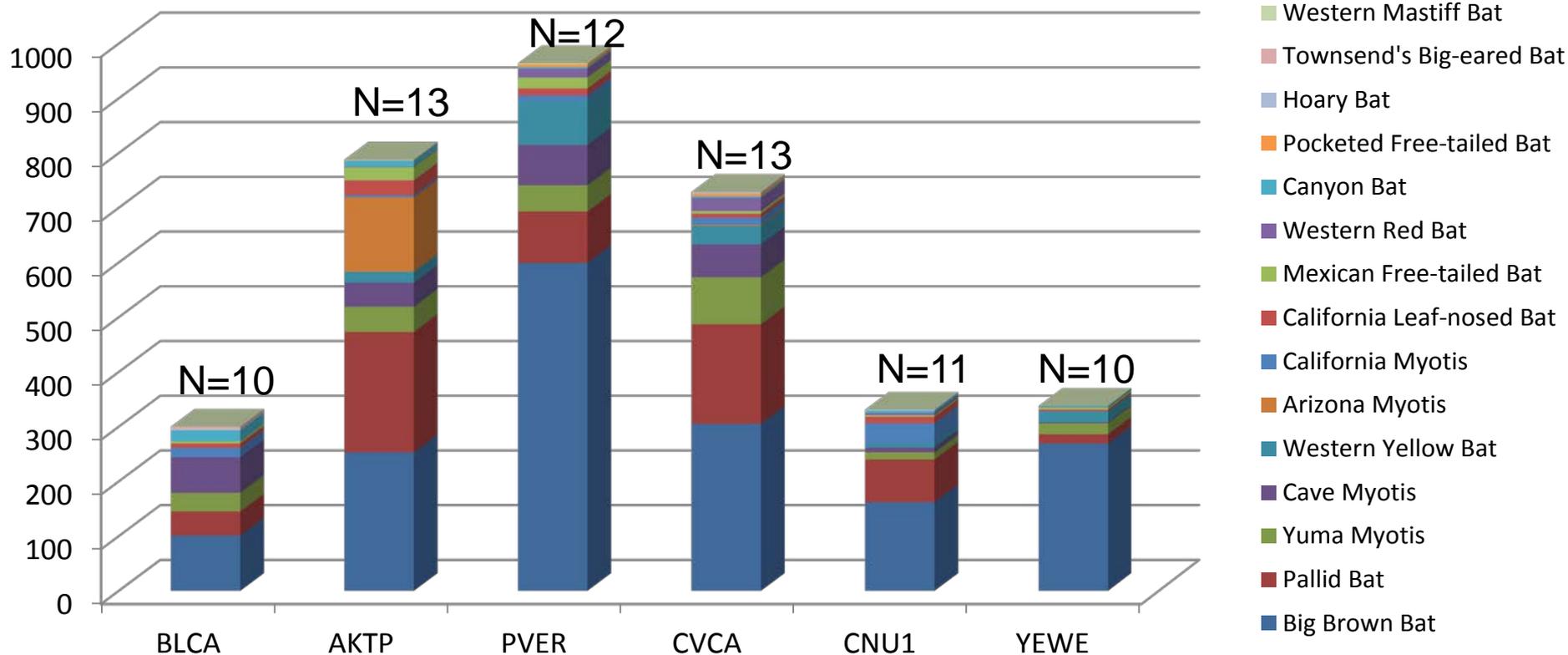
N = Species Richness



Summary of all sites

2012-2015

- 3,450 bats of 15 species captured *N= Species Richness*
- 87% of western red bats have been captured at CVCA and PVER
- BLCA is only site with no red and yellow bat captures
- Townsend's big-eared bats only captured at BLCA



Discussion

- Distance to roost is probably a key factor in detecting any of the 4 MSCP species at a site
- Western red bats are only MSCP species with a high potential to roost within MSCP conservation areas
- MSCP species presence does not necessarily mean high species richness at a site



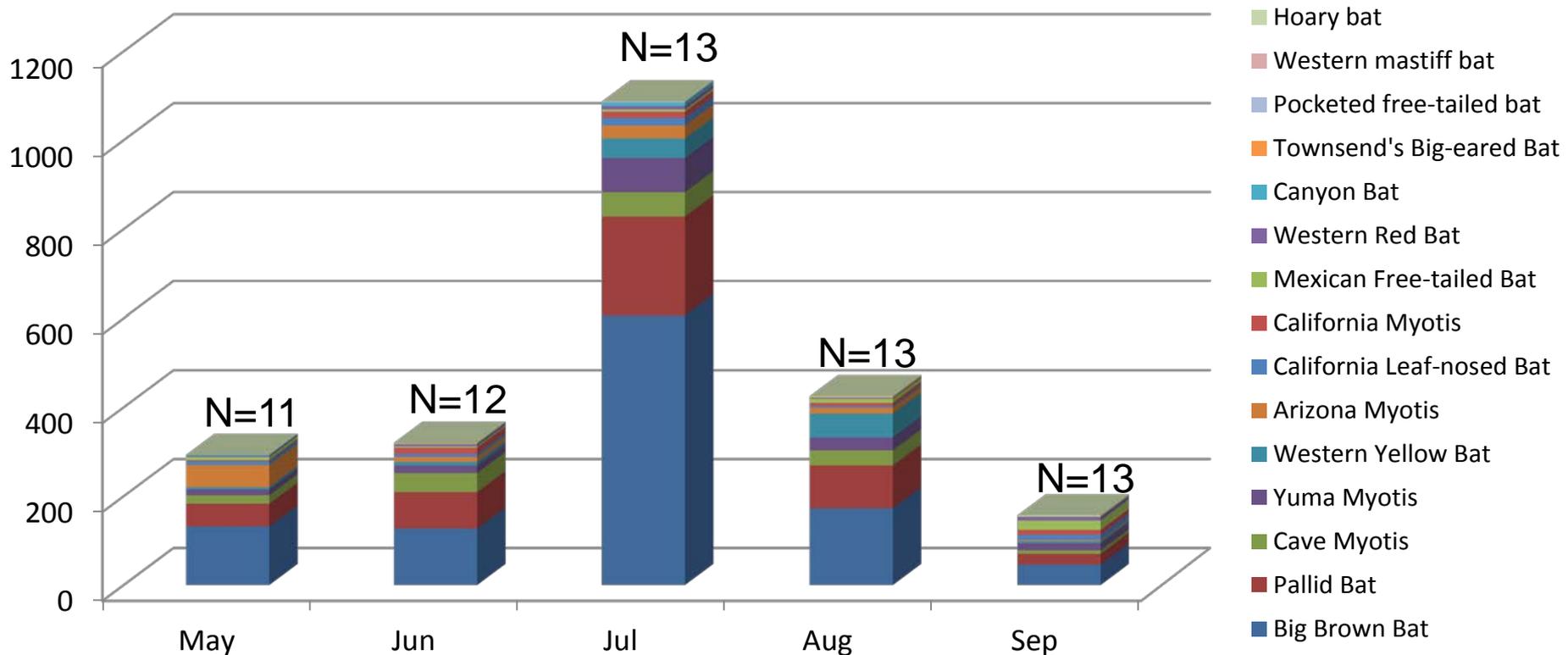
Changes to Monitoring Schedule

- In 2015, acoustic surveys were reduced to target the breeding season from June – August
- In 2016, capture surveys will also be reduced to match the same schedule as acoustic surveys
- Reviewing data for the past 3 years indicates this will likely not decrease our ability to detect MSCP species



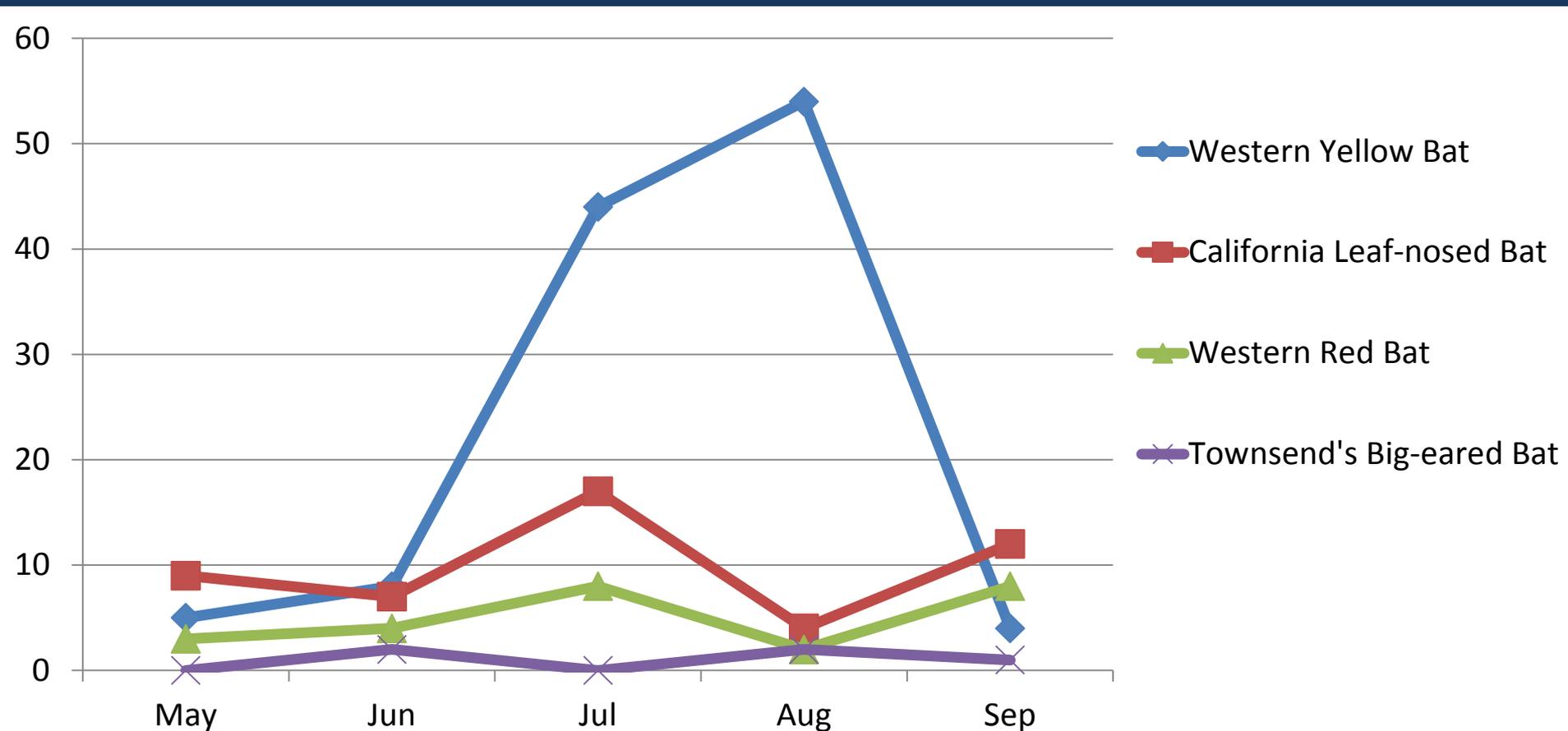
Changes to Monitoring Schedule

- 15 total species have been detected, all species have been detected within the June-August timeframe over the last 3 years
- 80% of all captures occurred within the June-August timeframe



Temporal Differences in Detections

- 92% of western yellow bats (N=115) detected from June-August
- 57% of California leaf-nosed bats (N=49) detected from June-August
- 56% of western red bats (N=25) detected from June-August
- 80% of Townsend's big-eared bats (N=5) detected from June-August



Overall Discussion

- Looking at multiple years of data portrays a better “picture” of what is going on at a site.
- Methods are confirming presence of MSCP species
- Methods collect data incidentally for additional species which can help identify if habitat has been created when MSCP species have not been or are rarely detected.



What's next?

- The same six sites will be surveyed in 2016
- California leaf-nosed bat and Townsend's big-eared bat foraging study (Stay for Pat's talk)
- Want to see some bats? Volunteers welcome!



Questions?



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