

Lower Colorado River Riparian Birds: System Monitoring for Riparian Obligate Avian Species

Lower Colorado River Multi-Species Conservation Plan



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Background

1. Implement long-term system-wide monitoring of riparian birds
2. Study the effects of habitat restoration measures



Our Goals

- Determine presence and estimate breeding population sizes of riparian birds with emphasis on species covered under the MSCP
- Determine habitat associations for the covered species
- Derive recommendations for habitat creation and continued

bird monitoring



Arizona Bell's Vireo



Habitat:

Dense, shrubby vegetation and woodland edges, typically with a mesquite component.



Gila Woodpecker



Habitat :

Common nesters in saguaros, but can occur in cottonwood and willow even well away from saguaros.

Sonoran Yellow Warbler



Habitat :

Cottonwood-willow associations, that often including a dense understory

Gilded Flicker



Habitat:

In addition to saguaros will use cottonwood and willow trees and occasionally mesquite habitats with tall snags

Summer Tanager



Habitat:

Found in structurally well developed cottonwood willow stands

Vermilion Flycatcher



Habitat :

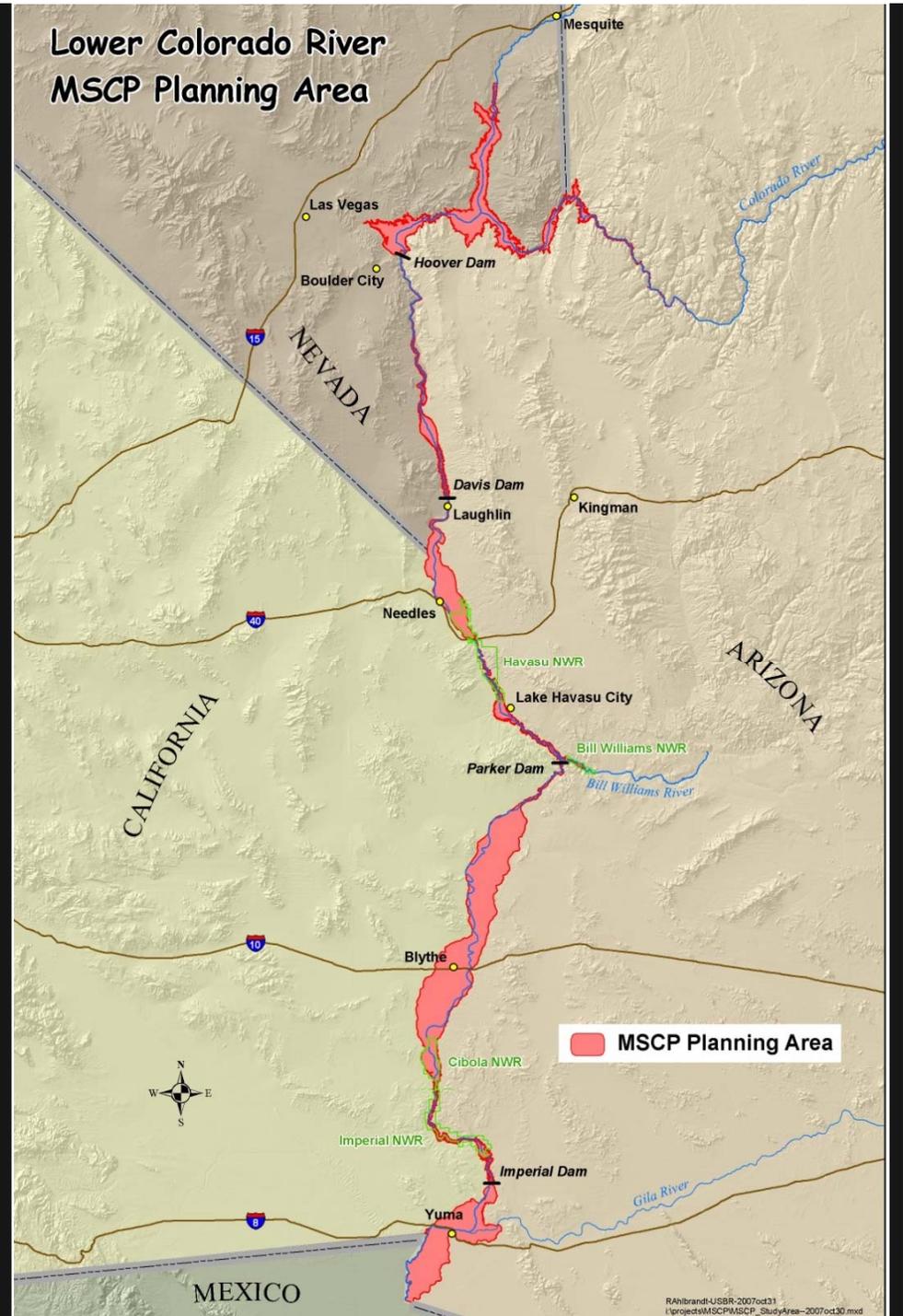
Open areas with perches in scrub, farmlands, agricultural areas, and riparian woodland.

Study Area

Riparian corridors within the historic floodplain of the Colorado River

Plots are selected using a stratified random design
— Strata defined by habitat and geographic location

Plots size based on the habitat, but 300m x 300m or larger



Plot Distribution

System-wide

- Rapid (2 surveys /season)= 80 plots /year
- Intensive (8 surveys/season) = 8 plots/year



Habitat Creation (HC) Sites

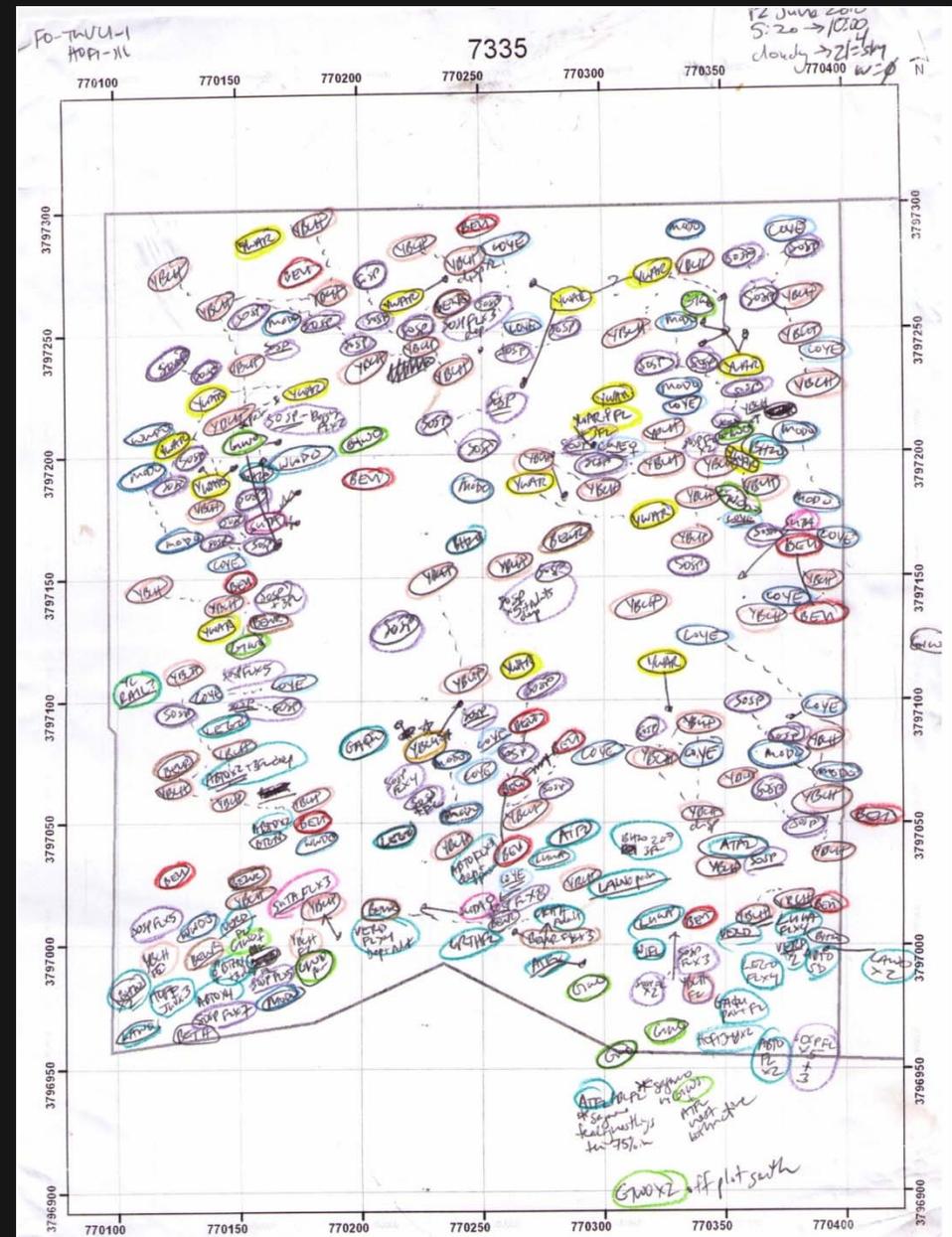
- Rapid = ~60 plots/year
- Intensive = 4 plots/year



Detection ratios are estimated using birds recorded during the rapid surveys & the actual number of territories determined by intensive surveys

Area Search Survey Method

- Same method used by all survey efforts
- Begin at sunrise and last several hours
- Plot systematically surveyed by passing within 50m of all points
- Surveyor identifies and tallies all birds
- Bird sightings, locations, and breeding evidence recorded



Sample of an intensive plot with territory mapping

Testing the Assumptions of the Double Sampling Method

Do intensive area searches provide unbiased estimates of bird numbers

Factors that could bias the estimates:

- Secretive species
- Density of vegetation
- Density of birds

Extra Intensive

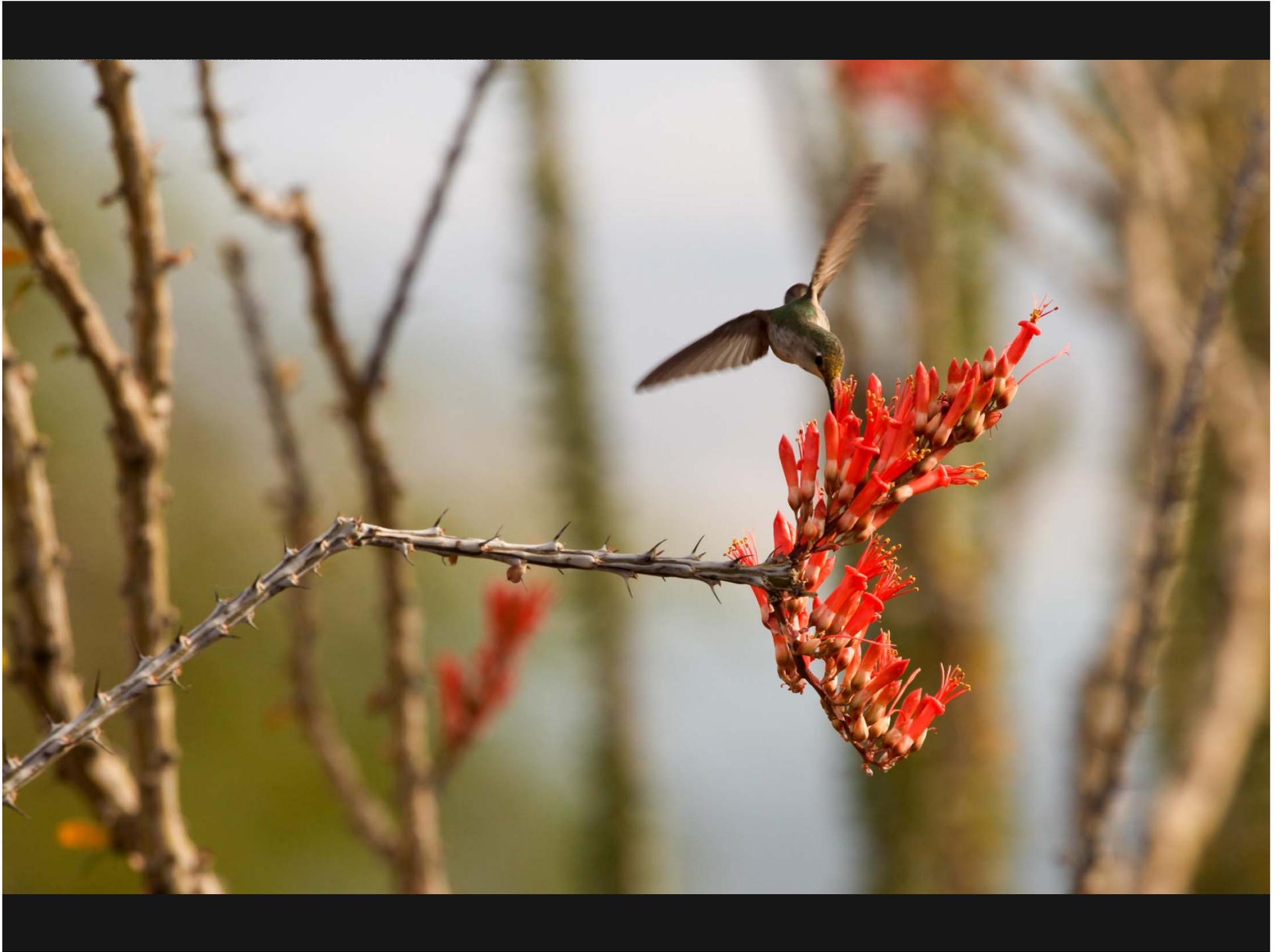
- 8 randomly selected plots
- Each plot surveyed 16 times



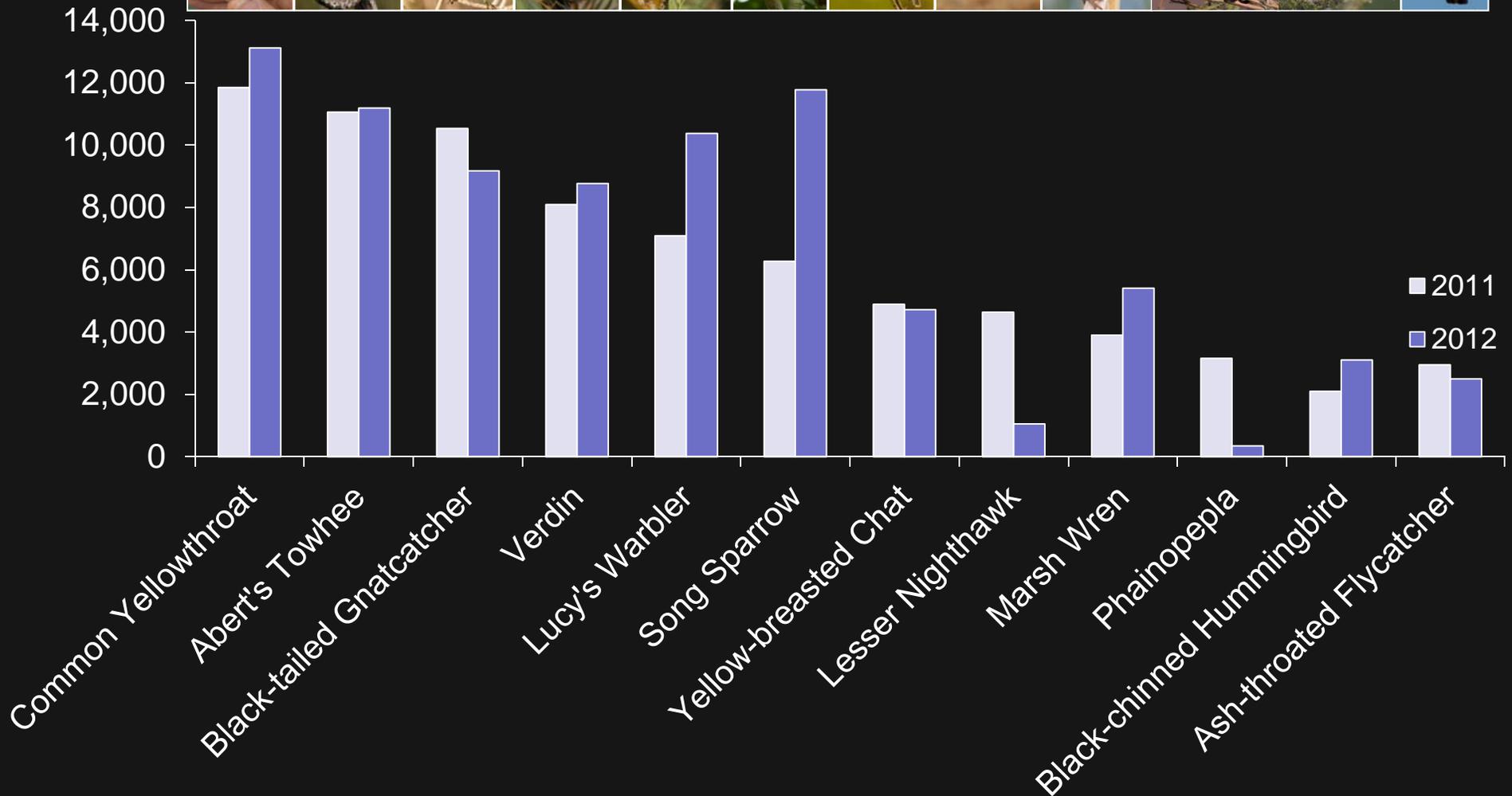
Extra-Intensive Survey Methods

- A subset of plots are surveyed by independent observers using all 3 survey efforts
- This effort will increase a limiting factor of the intensive survey method: **Time**.
- This data will be analyzed in depth after 3 years, today we will give just a little preliminary data

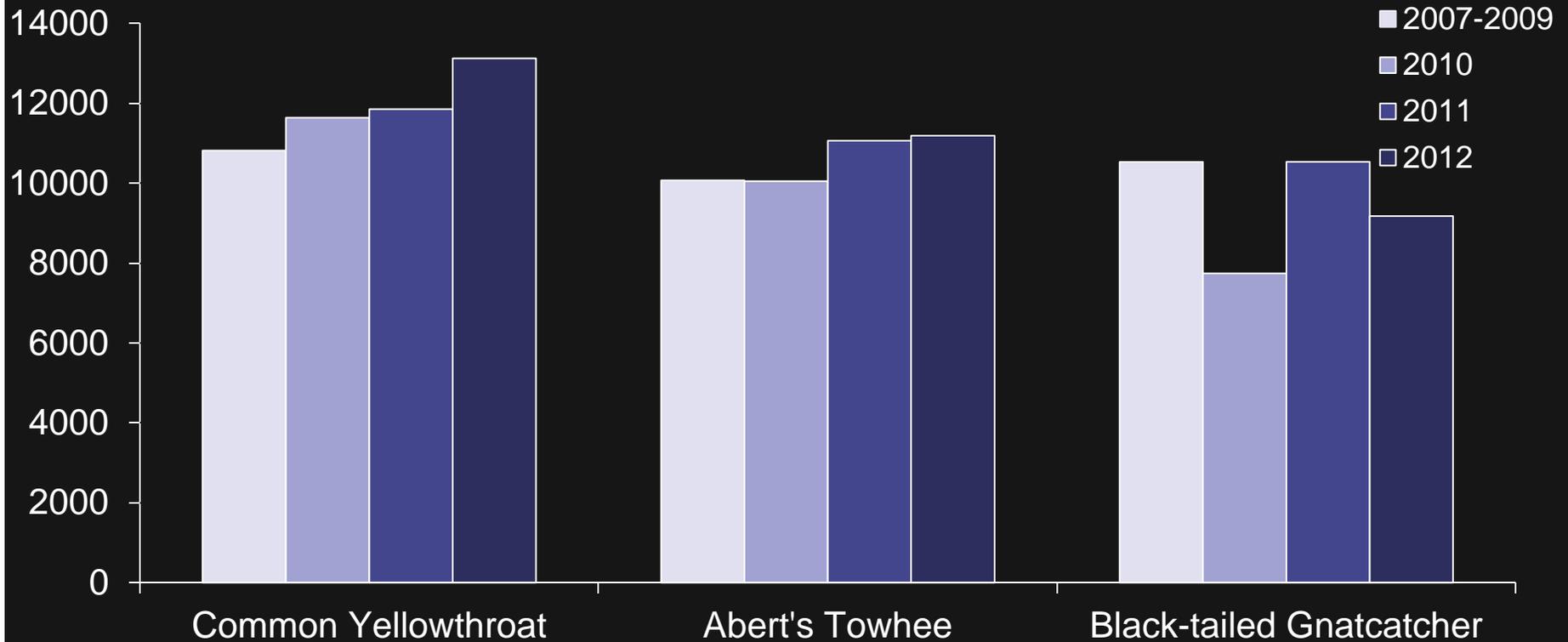




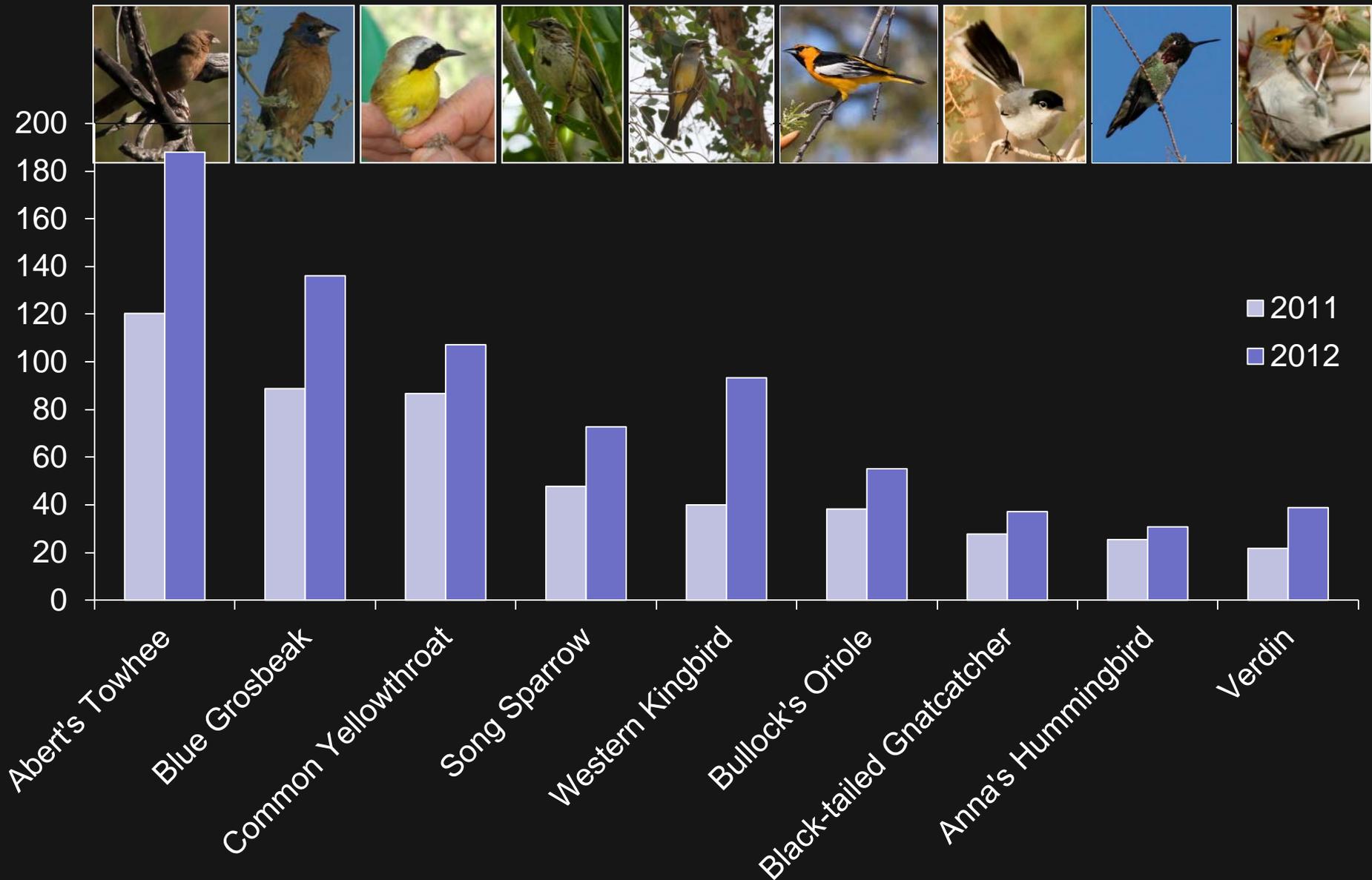
Population size estimates for most common riparian species: 2011 & 2012



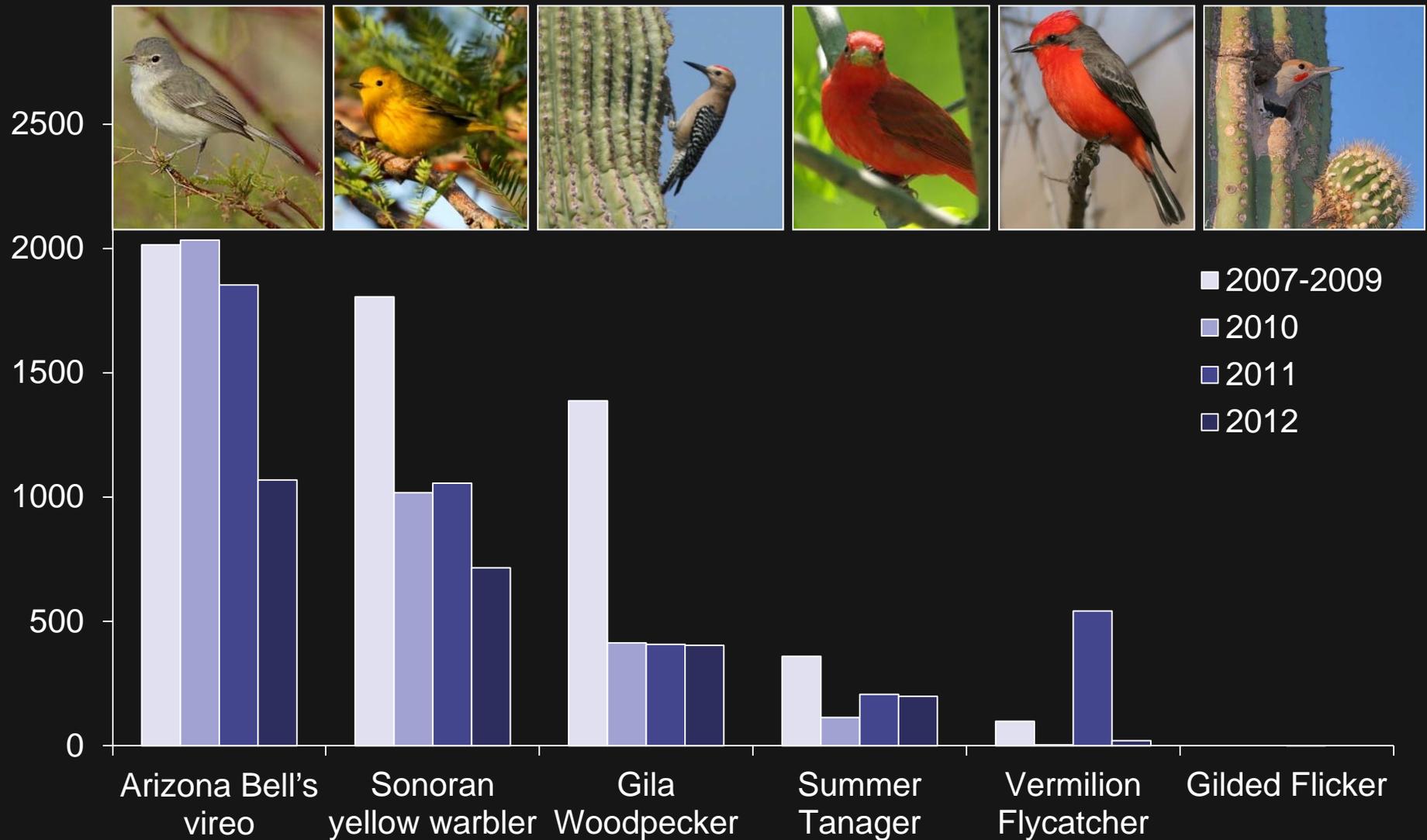
Population size estimates for 3 most common territorial breeding birds: 2007-2012



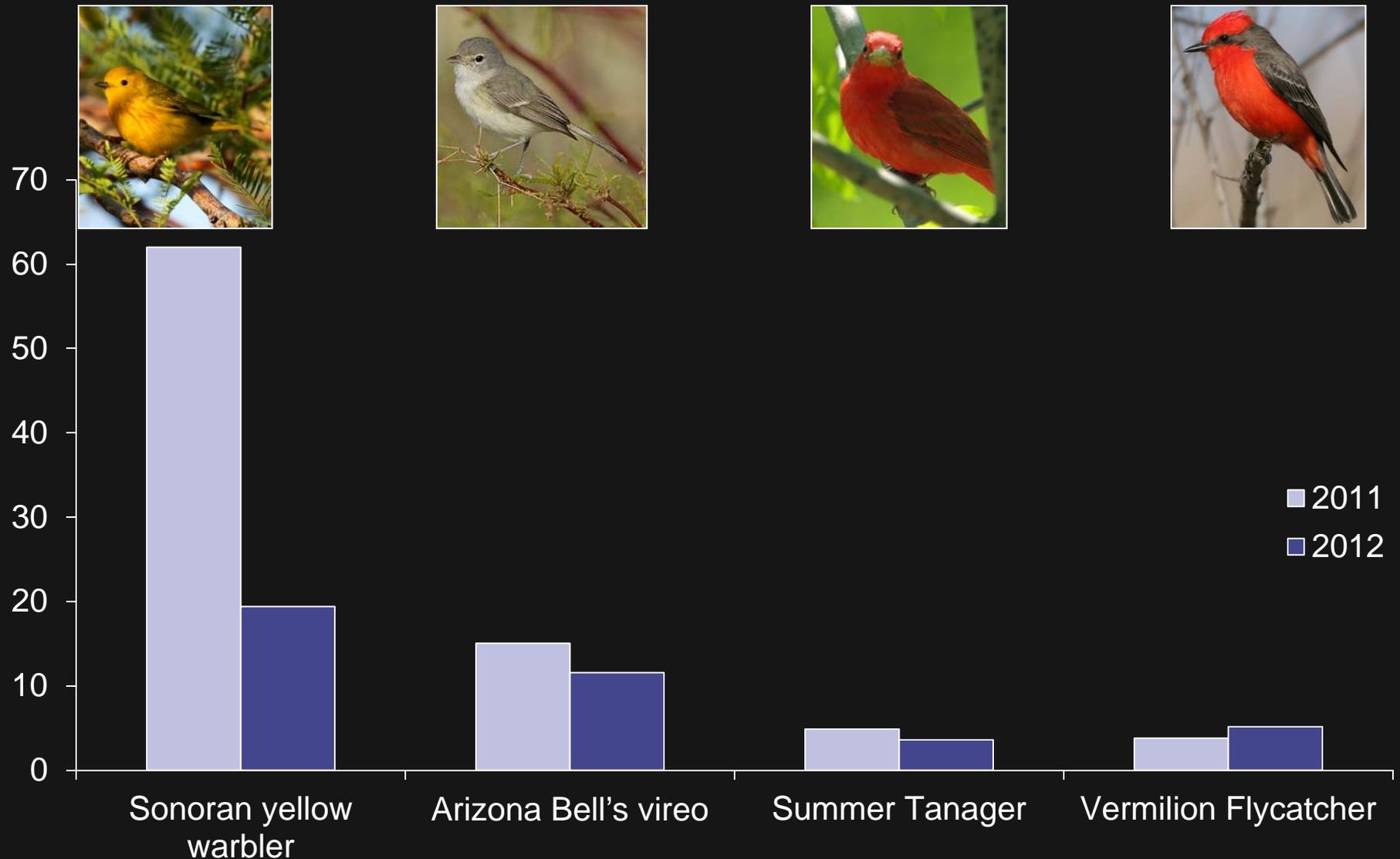
Population size estimates for common riparian species in habitat creation sites: 2011 & 2012



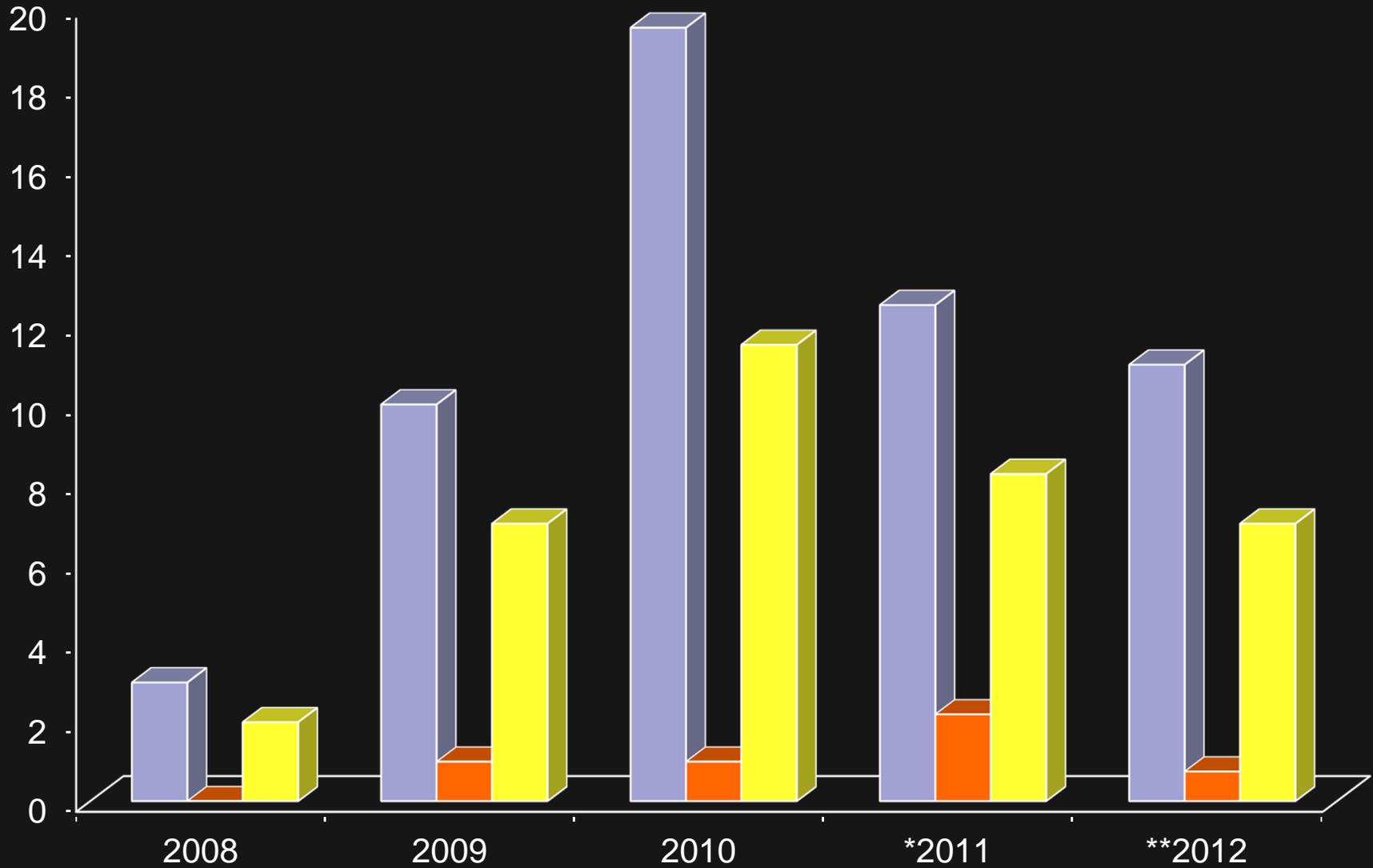
Population size estimates for 6 MSCCP covered species: 2007-2012



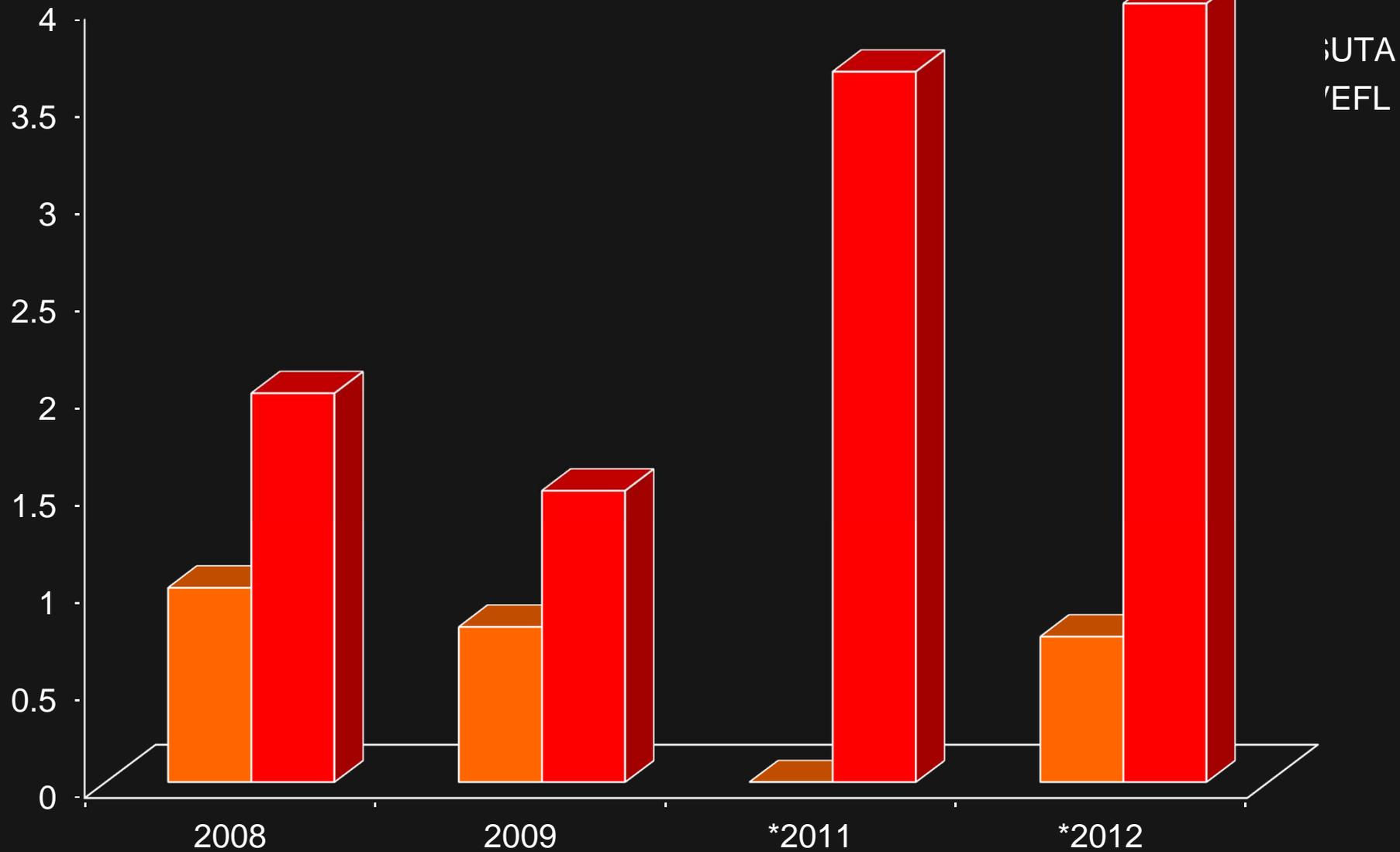
Population size estimates on habitat creation sites for MSCP covered species: 2011 & 2012



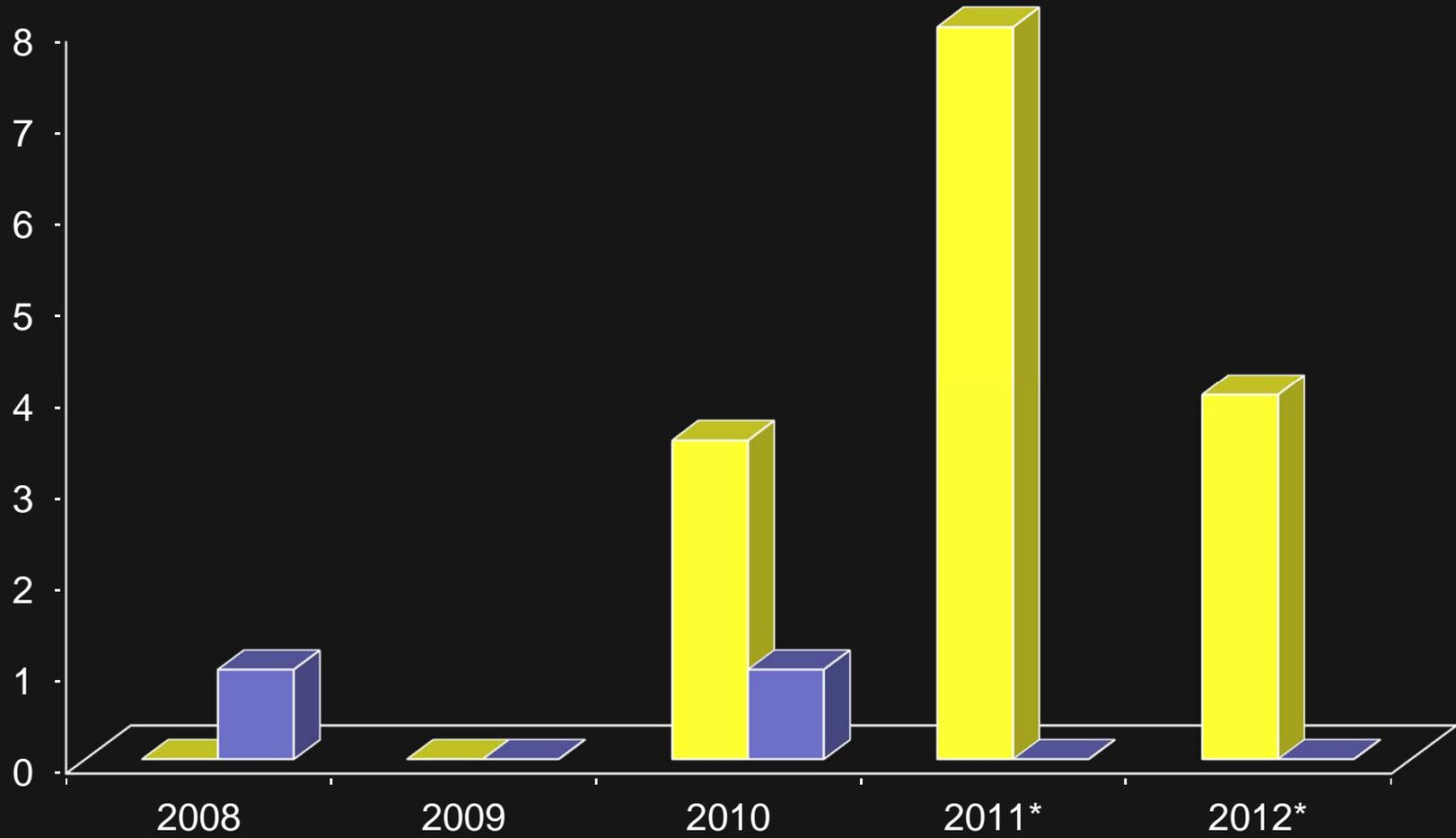
Beal HC



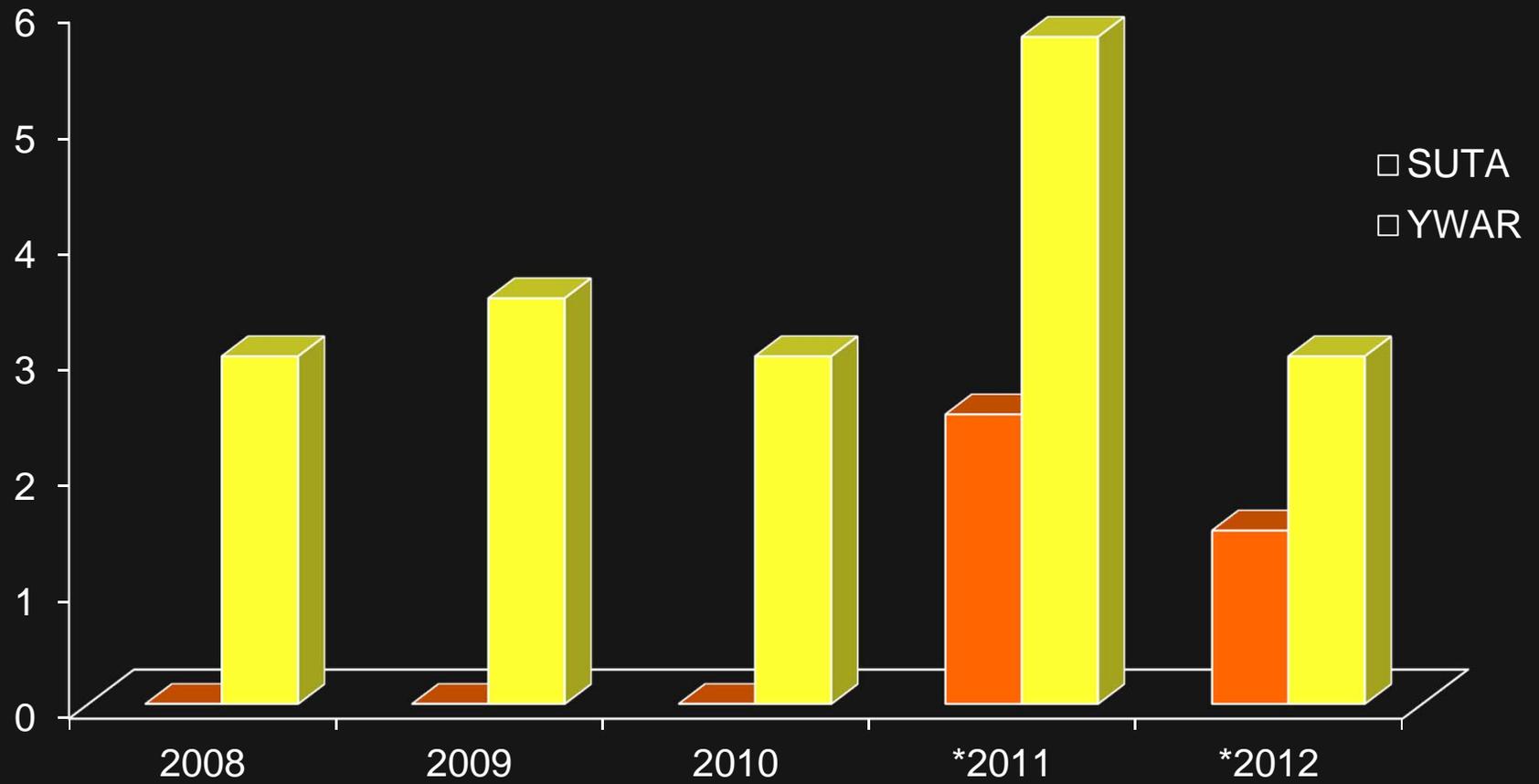
CRIT HC



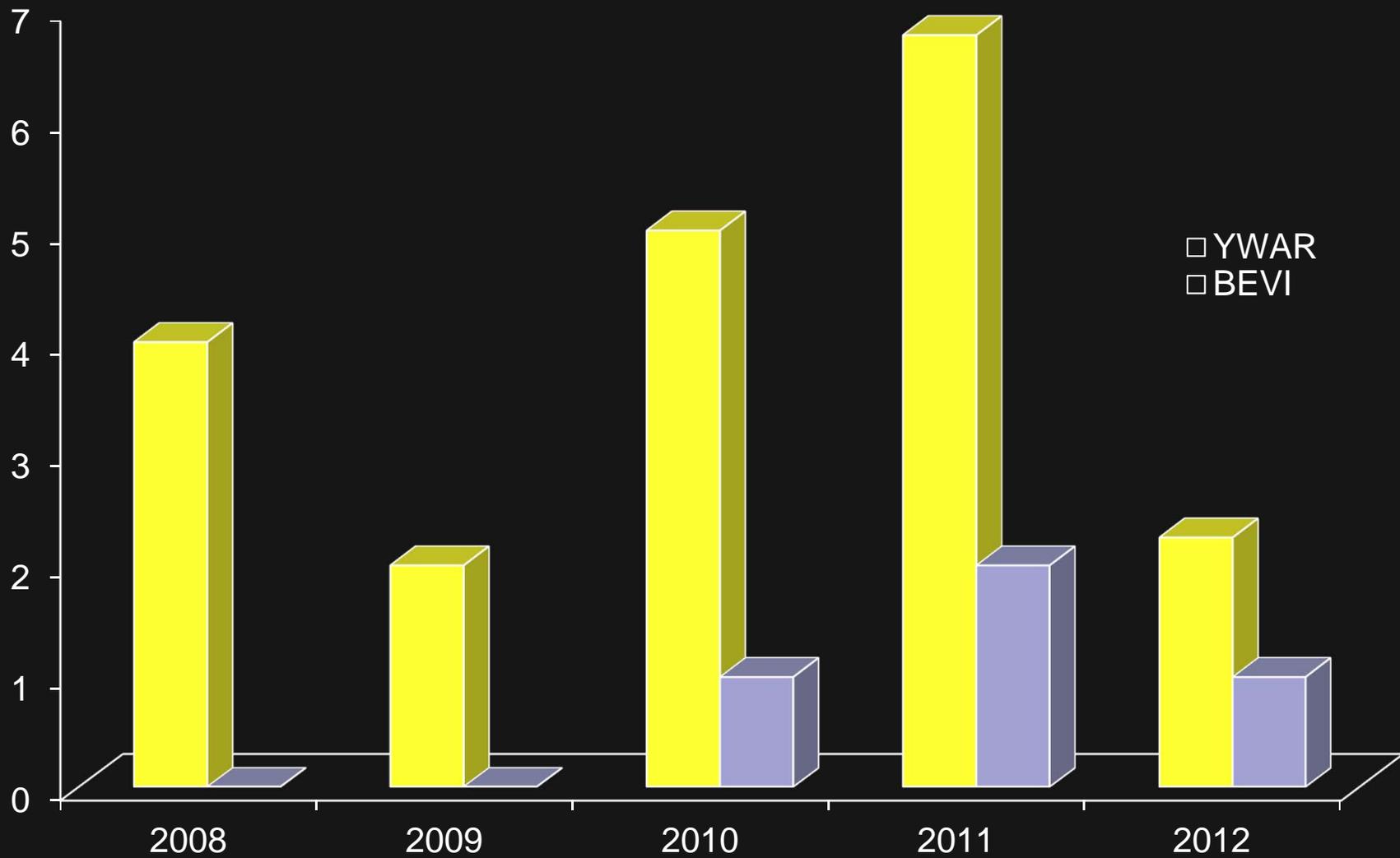
PVER HC



CVCA HC

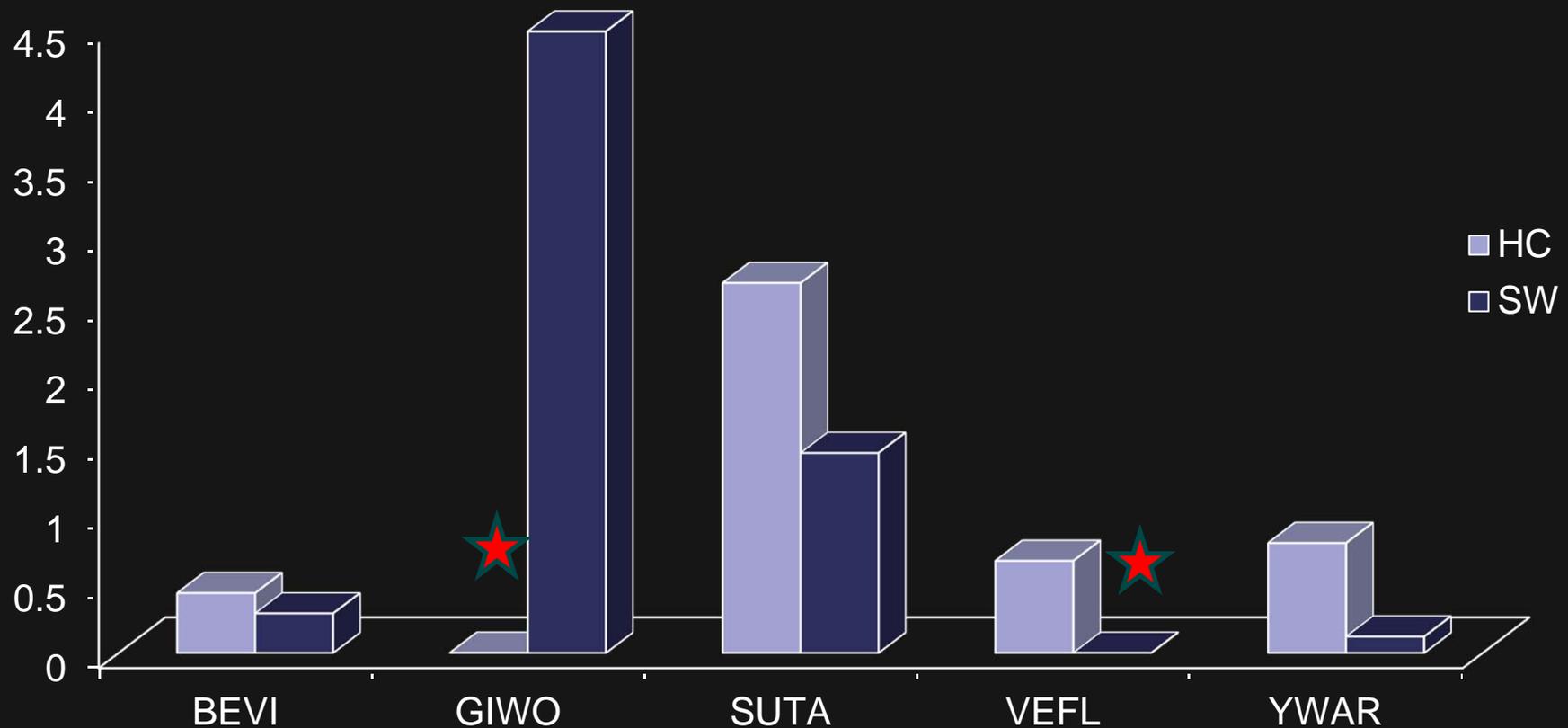


Nature Trail HC



Average Territory Size Covered Species

Average territory sizes were larger in Habitat Creation sites when compared to the system-wide plots (2011 & 2012 data)

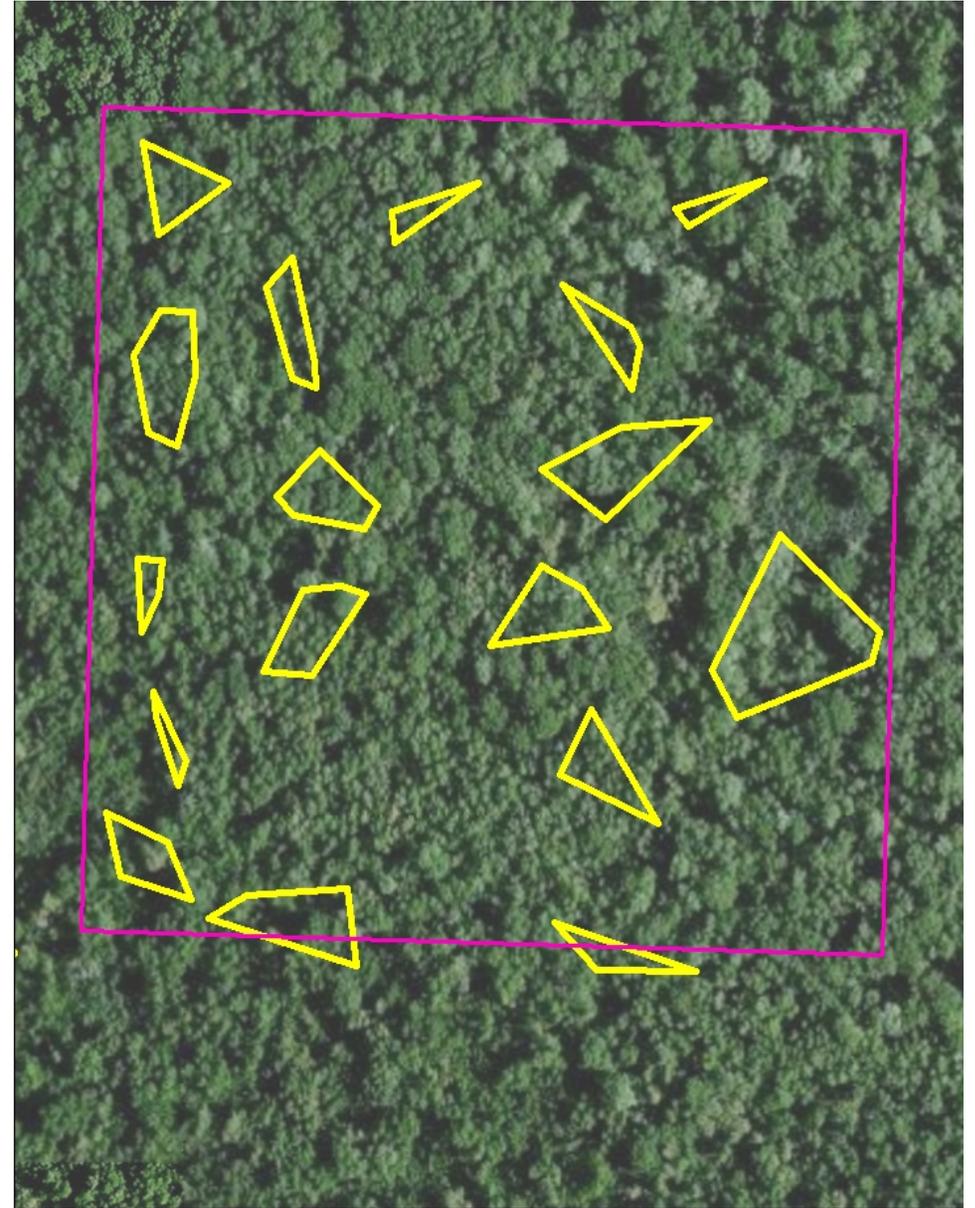


★ There were no GIWO found on habitat creation sites and there were no VEFL found on the system-wide plots

Map depicts YWAR territories at CRIT HC site. HC area = 45.6 HA. Average territory size for these YWAR = 1.5



Map depicts YWAR territories at SW plot. Plot area = 9.05 HA. Average territory size for these YWAR = 0.05 HA



Why are territory sizes larger at HC sites? Our Hypotheses

- Denser habitat on system-wide plots and more vegetation diversity in structure and species**
- The Bill Will is some of the highest quality habitat in area. So birds are packing in as tightly as the habitat can sustain.**
- Likely there are more resources in the BWD**
 - Possibly higher insect abundance and diversity**
 - More cover for protection**
 - more consistent water supply**

Consistent breeding pair detections over two seasons

(~75-125% in 2011 and 2012)

- Black-tailed Gnatcatcher
- Yellow-breasted Chat
- Sonoran Yellow Warbler*
- Verdin
- Bewick's Wren
- Gila Woodpecker*
- Black-chinned Hummingbird
- Brown-crested Flycatcher
- Lucy's Warbler
- Abert's Towhee
- Blue Grosbeak
- Bullock's Oriole
- Anna's Hummingbird
- Western Kingbird
- Ladder-backed Woodpecker
- Song Sparrow
- Common Yellowthroat
- Arizona Bell's Vireo*



Improved breeding pair detections from 2011 to 2012:

- Marsh Wren
- Crissal Thrasher
- Summer Tanager*
- Pied-billed Grebe
- Phainopepla
- Yuma Clapper Rail*



Still over-estimating breeding territories of some species and underestimating others:



Over:

- Western Kingbird
- Ash-throated Flycatcher

Under:

- Lesser Nighthawk
- California Black Rail*
- Lesser Goldfinch
- Marsh Wren
- Crissal Thrasher



Extra Intensive Discussion

- We are incorporating detailed breeding data from EI effort to address the EI project goals of accurate population size estimates and detection ratios.
- We are using the knowledge gained from these seasons to:
 - **Improve training to focus on more challenging species**
 - **Further adapt protocols and data collection**
 - **Assess threshold of plot “hardness” when the Intensive surveys are working....**

Acknowledgements

- US Bureau of Reclamation, especially Beth Sabin
- USGS Snake River Field Station: Jon Bart
- Lower Colorado River NRW Staff and Biologists (Bill Williams NWR, Havasu NWR, Imperial NWR, Cibola NRW)
- GBBO Staff and seasonal crews
Awesome field crews over the years 2008, 2009, 2010, 2011, and 2012
- Photo credit: Amy Leist

