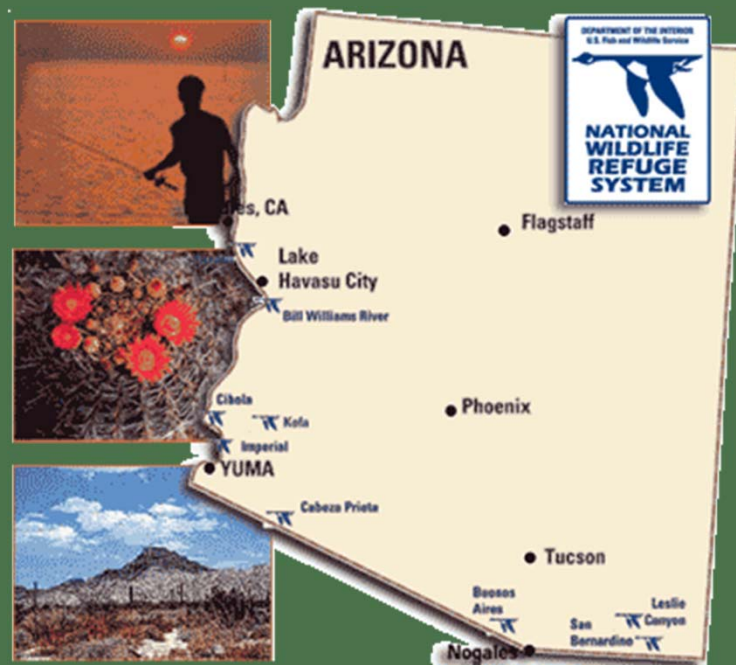


Post-fire Riparian Community Development on the Bill Williams River National Wildlife Refuge

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Bill Williams River NWR



Bill Williams River NWR

- 6,105 acre national wildlife refuge on the Bill Williams River extending from the confluence with the Lower Colorado to about 10 miles upstream.
- Created in 1941 as a migratory bird refuge.
- Largest remaining stand of native-dominated riparian forest on the LCR , about 2,000 acres, and the only one still flood regenerated.
- BWR flows controlled in amplitude and timing by Alamo Dam and local weather conditions. Historic 10 year flows 50,000 -120,000 cfs, now maximum is 7,000 cfs, but even that produces an active floodplain and ecological succession.
- This far 365 species of birds (including the Nutting's!), 56 mammals, 40 herps, and over 300 invertebrates.
- Only site with most of the historic riparian obligate avian community remaining on LCR.

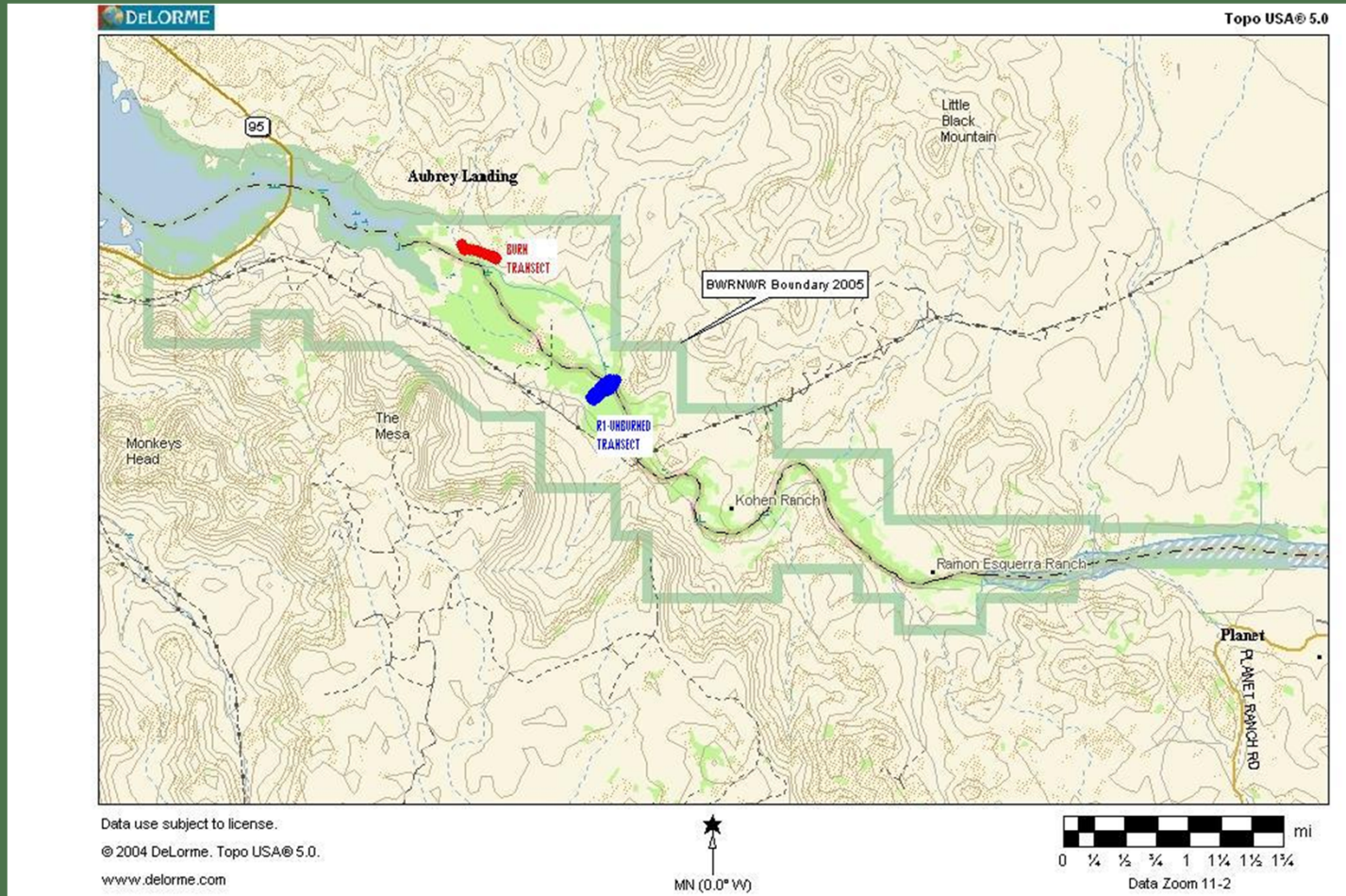
Strip Transects were established in 1998/1999 for Inventory and Monitoring of several habitats

- ▶ 400 m long x 20 m wide with 20 stations 20m apart = .8 hectare, 3 minutes per station run 3 consecutive days. In effect, 20 contiguous plots in floodplain riparian, abandoned ag., uplands, and others.
- ▶ For birds, 4 times per year beginning solstices and equinoxes start 30 min after sunrise except winter; for small mammals run spring and fall with Sherman live-traps 3 days, 2 nights.
- ▶ Vegetation including woody and herbaceous species - canopy, relative abundance and density in plot, and 100 pt line intercept for densometer.
- ▶ Min max temp, start temp, humidity, wind, moon, precipitation, etc.
- ▶ Birds, small mammals, some herps but will look at avian data today

August 2006...



Looks like time for another transect for post-fire monitoring...



The basics...

B1 - BURNED

Native Woody Stems	79/.8 ha
Salt Cedar	59 %
Shrubs	14.17 %
H2O edge (perminant)	75 m
Overbank 2006	50 %

R1 - UNBURNED

Native Woody Stems	72/ .8 ha
Salt Cedar	65.1%
Shrubs	.58%
H2O edge (seasonal)	0 m
Overbank 2006	75%

The birds...

B1 - BURN

	2007	2008	2009	2010	2011	Tot
N	162	209	243	360	558	1532
S	35	39	39	48	47	69
Rip Spp	7	5	6	9	12	14
Uniq Spp						13
D	.9579	.9463	.9462	.9361	.9259	.9553

R1 - UNBURNED

	2006	2007	2008	2009	2010	2011	Tot
N	(566)	487	379	427	329	416	2038
S	(48)	47	42	44	35	47	72
Rip Spp	(12)	12	9	11	10	13	17
Uniq Spp							19
D	.9489	.9531	.9316	.9554	.9286	.9317	.9480

Community similarity between burned and unburned sites by year

B1xR1	2006	2007	2008	2009	2010	2011	all
% similarity		47.05	53.49	60.62	68.20	62.71	75.13
Jaccard's Coefficient		.4385	.4727	.4821	.5961	.4920	.6436
Morisita's Index		.6485	.6559	.8125	.9287	.7659	.905

Ten most common species (across all seasons)

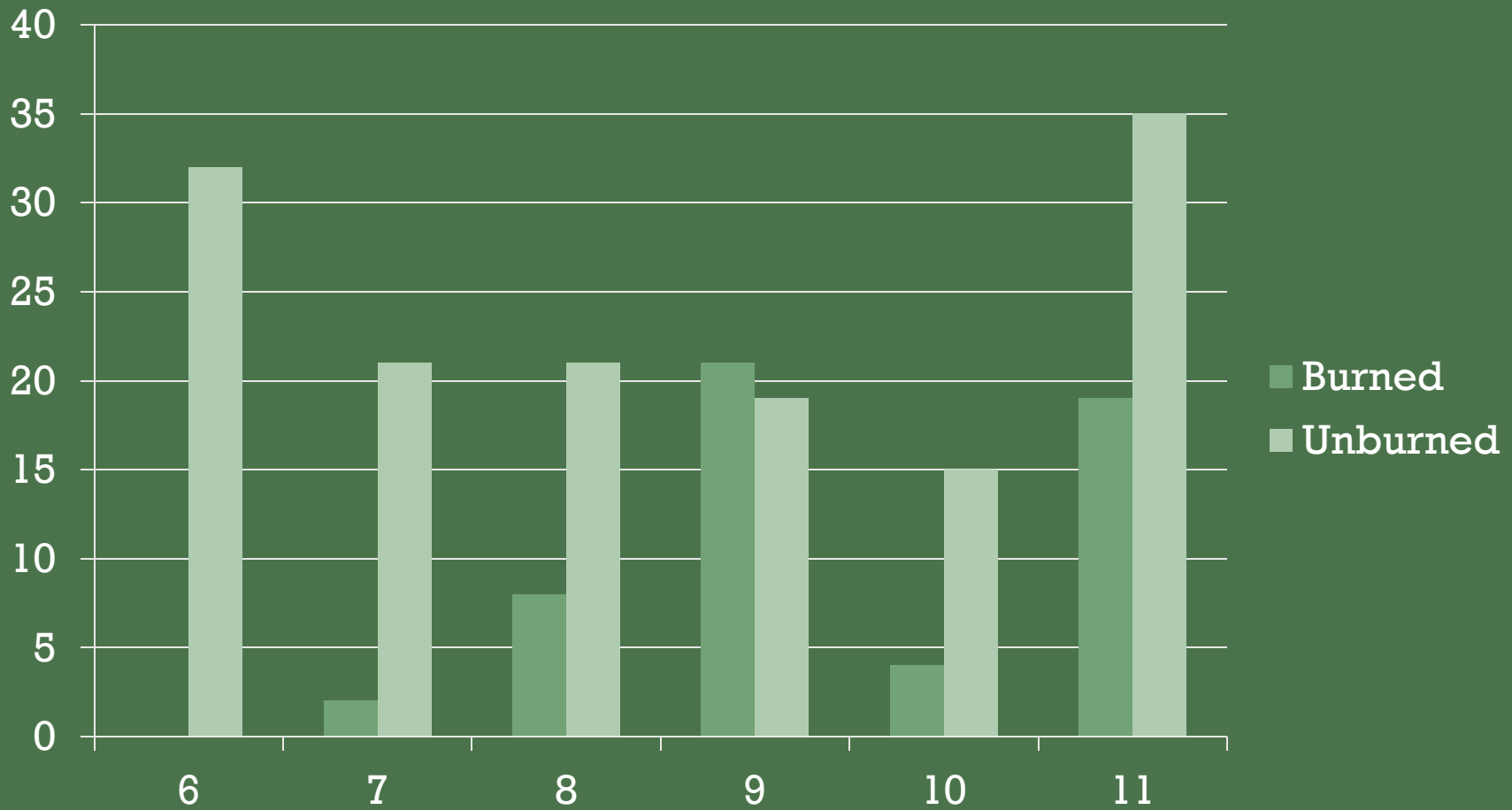
B1 - BURNED

Species	5 year N
Yellow-rumped Warbler	176
Song Sparrow	135
Yellow-breasted Chat	93
Red-winged Blackbird	76
Great-tailed Grackle	70
Ruby-crowned Kinglet	64
Mourning Dove	61
Brown-headed Cowbird	58
Abert's Towhee	54
Gila Woodpecker	50

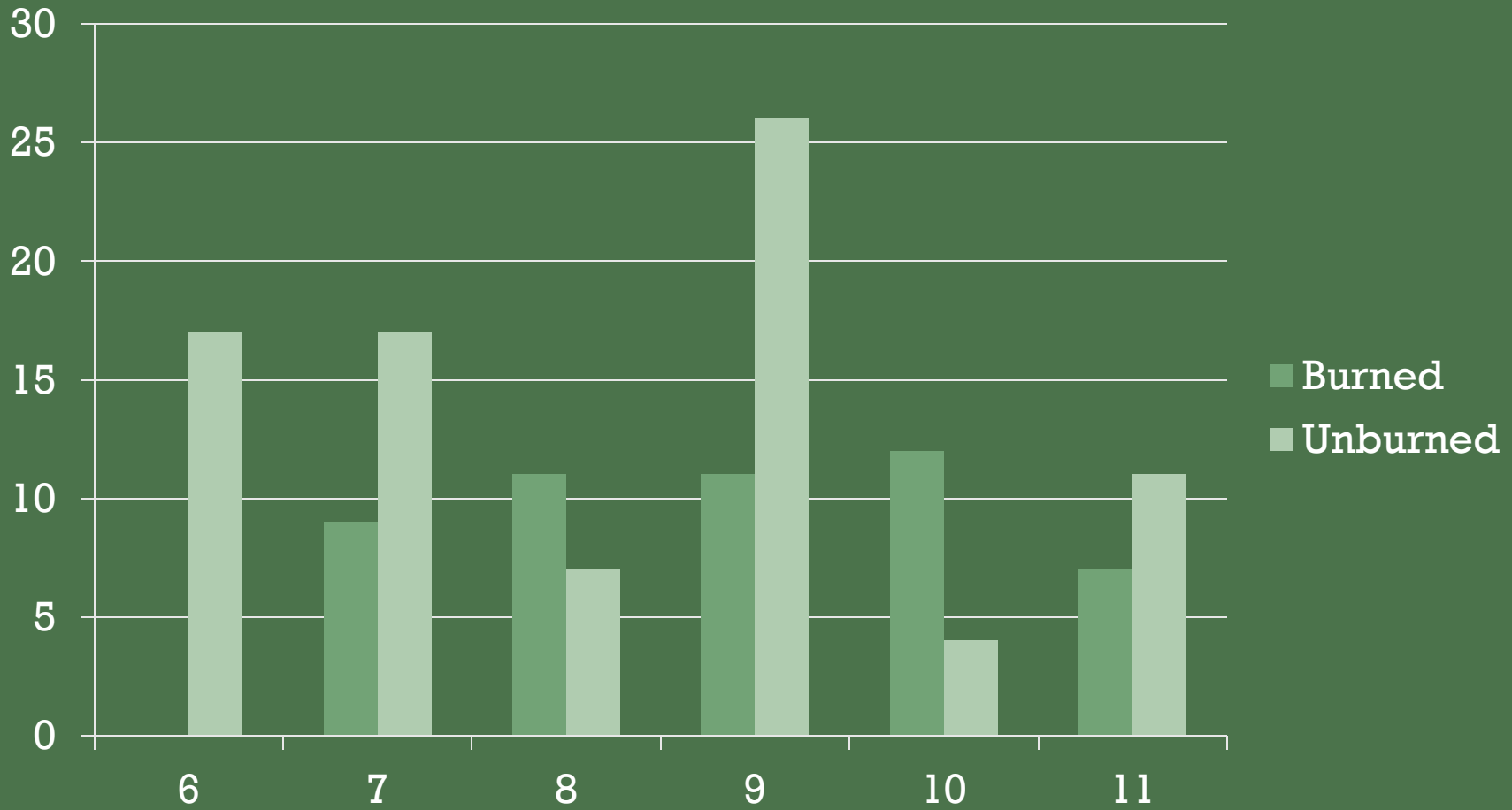
R1 - UNBURNED

Species	5 year N
Song Sparrow	240
Yellow-rumped Warbler	231
Yellow-breasted Chat	138
Abert's Towhee	111
Ruby-crowned Kinglet	100
Gamble's Quail	90
Mourning Dove	83
Bewick's Wren	75
Yellow Warbler	66
Gila Woodpecker	65

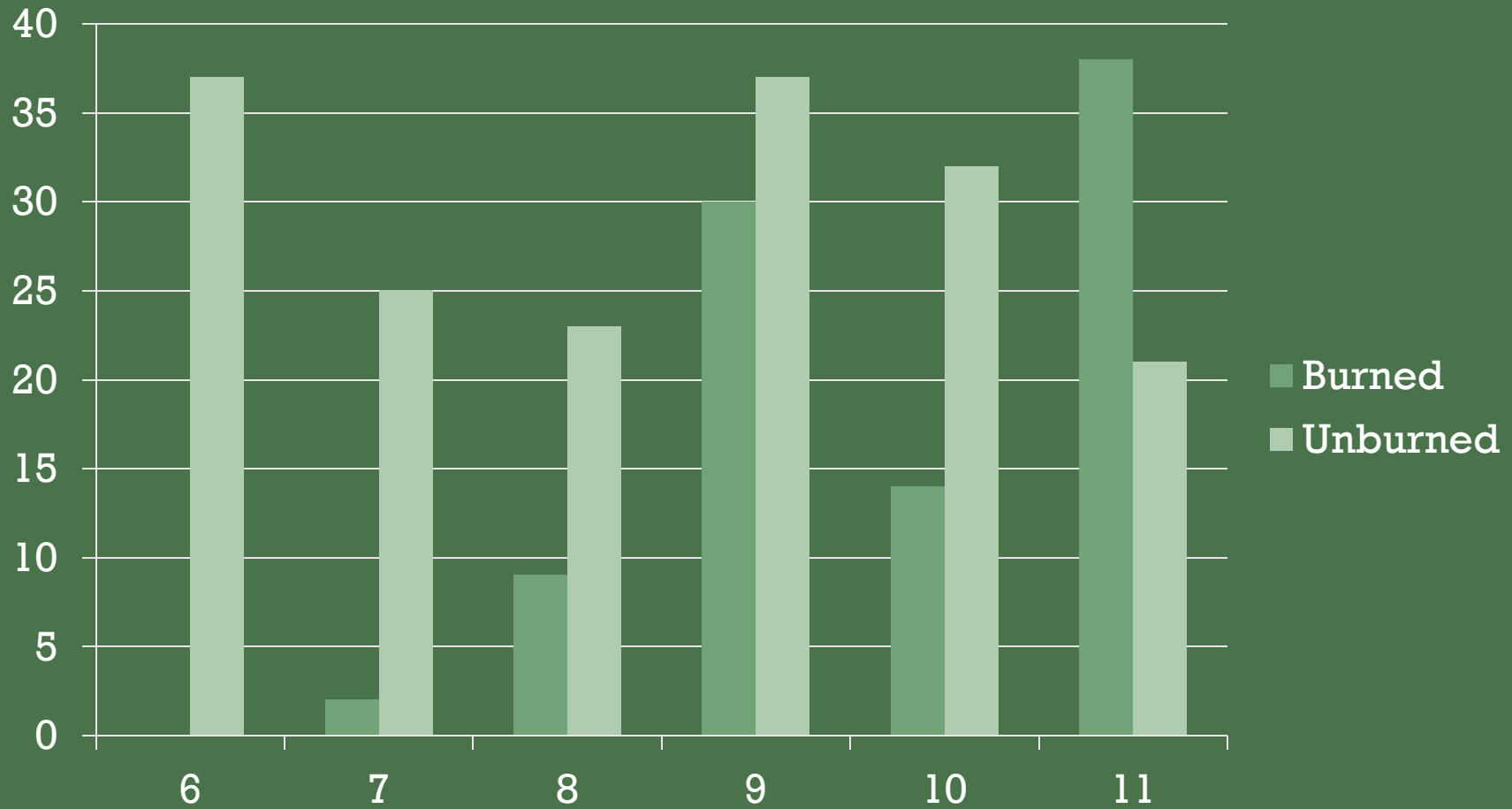
Abert's Towhee



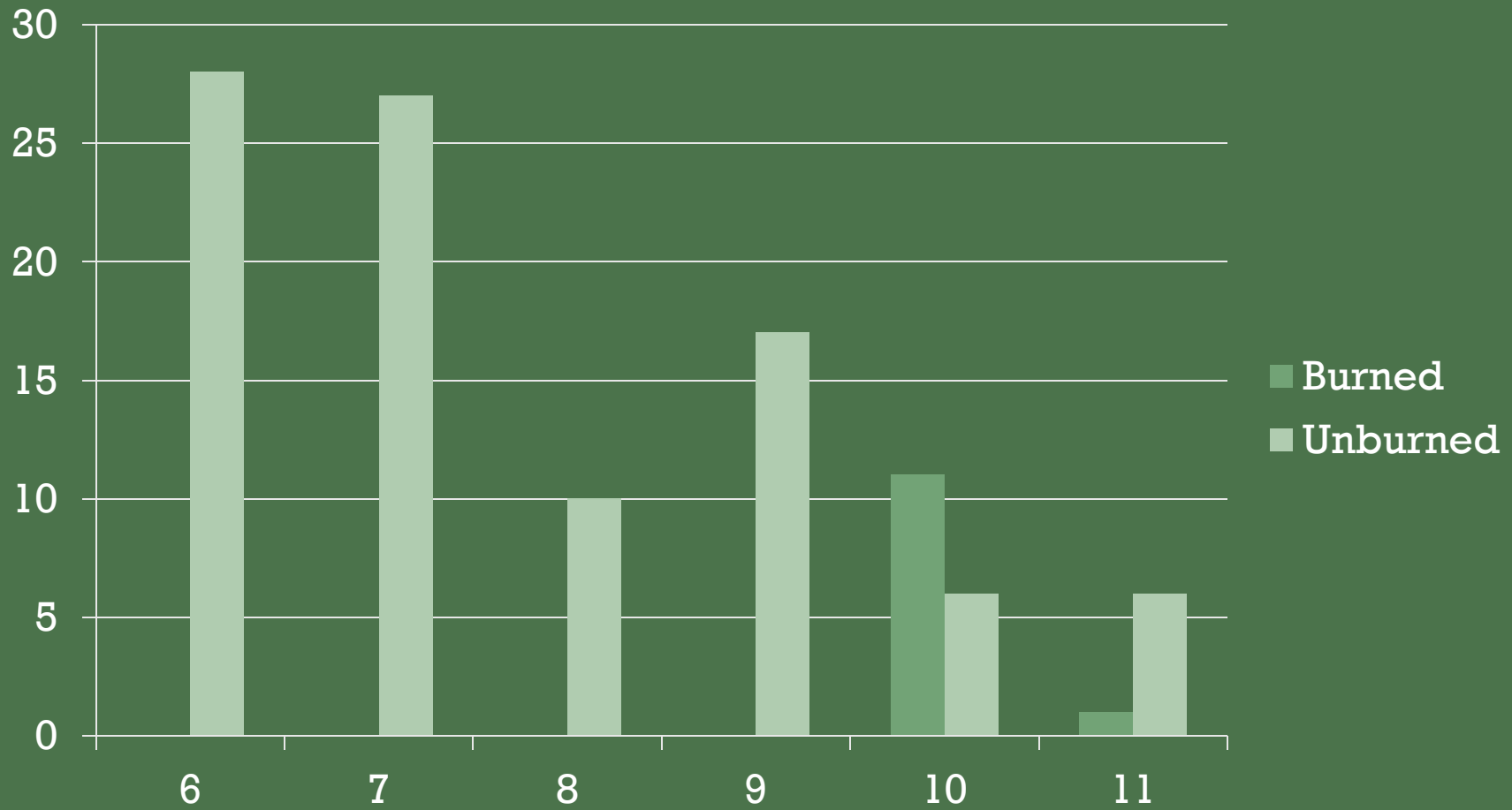
Gila Woodpecker



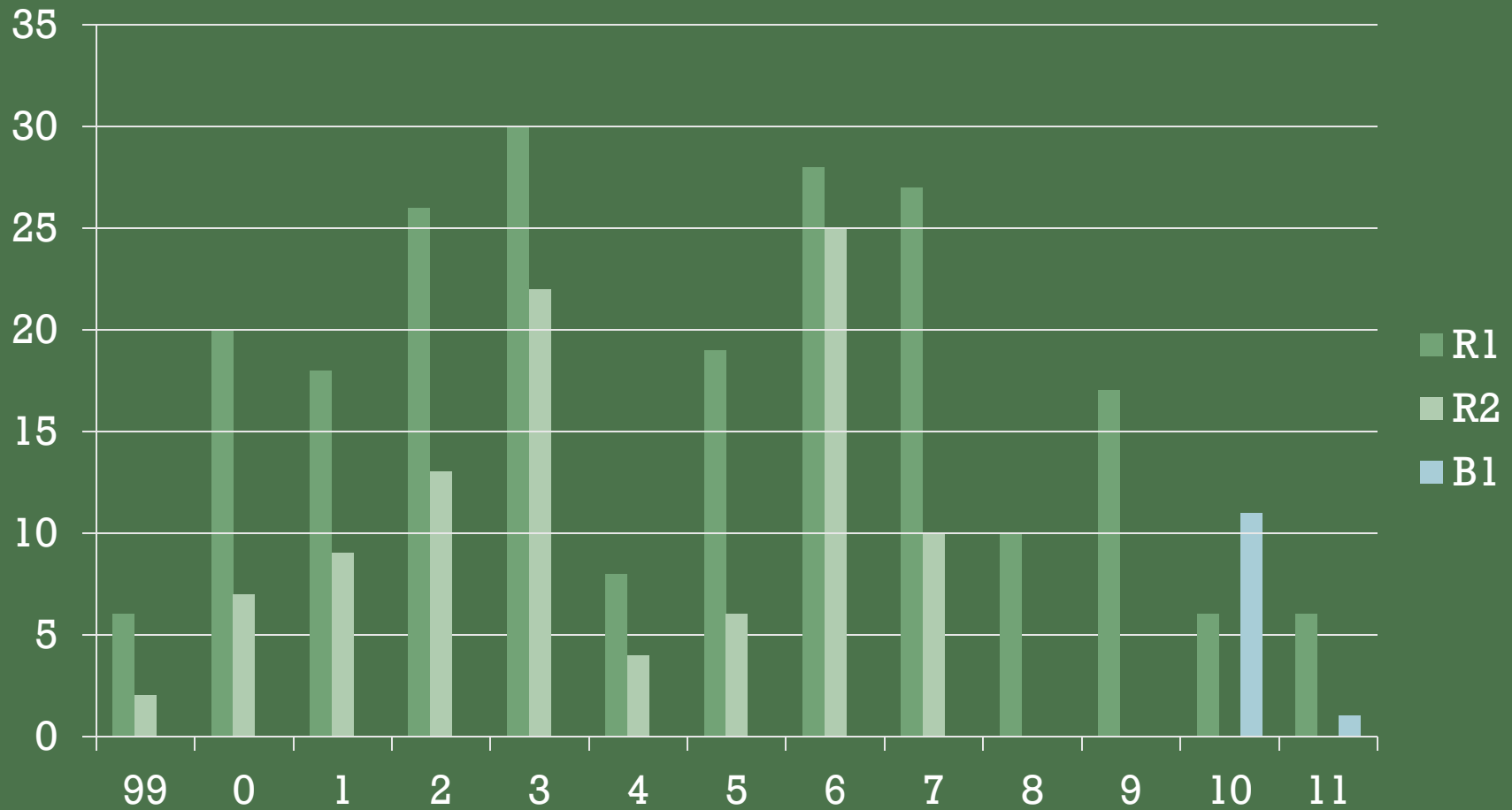
Yellow-breasted Chat



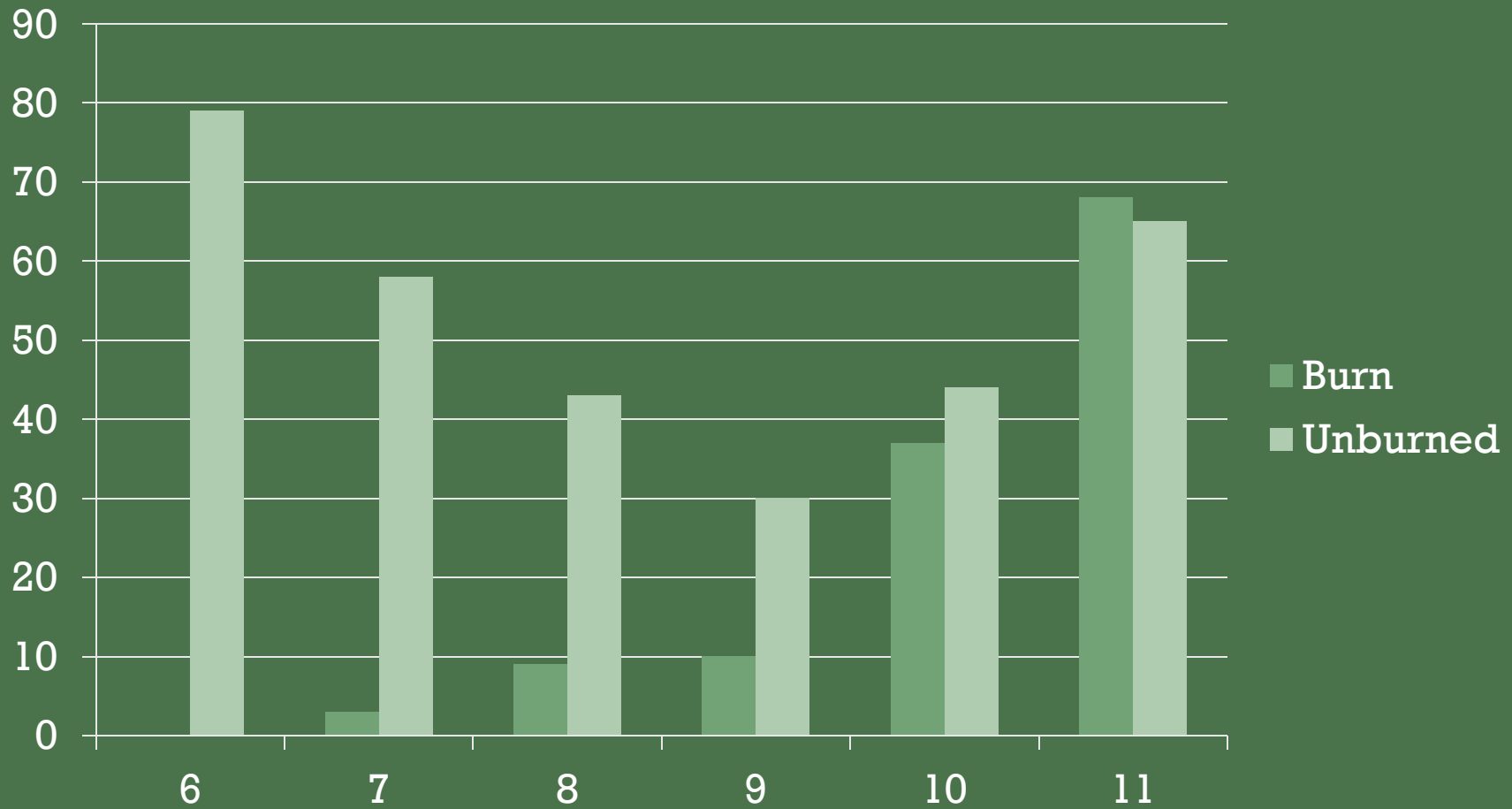
Yellow Warbler



Yellow Warbler all years



Song Sparrow



R1 – Summer 2005



B1 summer 2007



B1 summer 2011...



Still the cast of characters is different between the 2 sites...

B1-BURNED

- ◉ Brown-crested Flycatcher (0/8)
- ◉ Bullock's Oriole (2/22)
- ◉ Cassin's Vireo (0/7)
- ◉ Gambel's Quail (1/90)
- ◉ Summer Tanager (2/36)
- ◉ Wilson's Warbler (1/18)

R1 - UNBURNED

- ◉ American Robin (6/0)
- ◉ Great-tailed Grackle (70/16)
- ◉ Lesser Nighthawk (26/3)
- ◉ No/Gi Flickers (36/9)
- ◉ Red-winged Blackbird (76/7)
- ◉ Say's Phoebe (7/0)

Afterwards...

- 1 year after fire 35 species were found on the B1 transect (all seasons) including ABTO, ATFL, BHCO, Flickers; GIWO, LUWA, YBCH, WWDO, 5 years after 69 have been found. The same year there were 47 detected on the unburned transect.
- 162 individuals were found on B1 transect the first year after the fire; 558 were on transect 5 years later (however, 127 of those were juvenile grackles and redwings found on 2 days last summer eating cicadas). 487 individuals and 416 individuals, respectively, were on R1.
- Years 3-4 after the fire saw return of 50% of the riparian species found on the unburned site to the burn site – BEVI, BLGR, COYE, CRTH, LEGO; YEWA. By year 5 80% had returned although most were about $\frac{1}{2}$ the numbers as the unburned site or presumed 2006 levels.

Many thanks to my volunteer field folks, you have helped us better understand the ways of the wildings...

- ◉ Jan Richmond
- ◉ Bobby Paintner
- ◉ Wayne Paintner
- ◉ John West

- ◉ And all the others who follow me around out there!



Questions?

