

HABITAT USE AND HOME RANGE ESTIMATES FOR TULE ELK IN EASTERN SAN LUIS OBISPO COUNTY



BOB STAFFORD, CDFW, CENTRAL REGION
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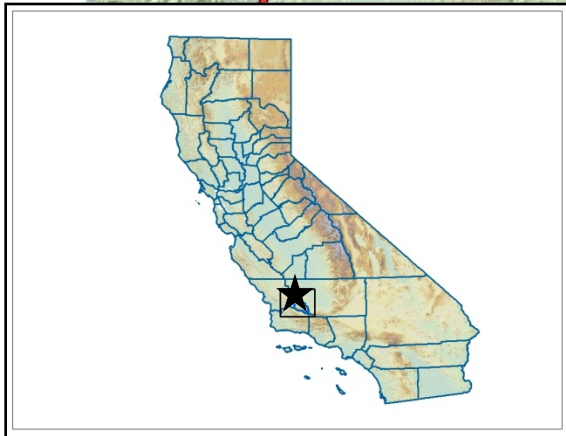
TULE ELK HISTORY



- **NEARLY EXTINCT BY LATE 1800'S**
- **INTRODUCED/REINTRODUCED IN 1920'S**
- **139 TULE ELK REINTRODUCED INTO SLO COUNTY EARLY 1980'S**
- **~1,000 TULE ELK NOW IN SLO COUNTY**

STUDY LOCATION

STUDY AREA











STUDY AREA SUBHERDS

CALIFORNIA VALLEY (CV)

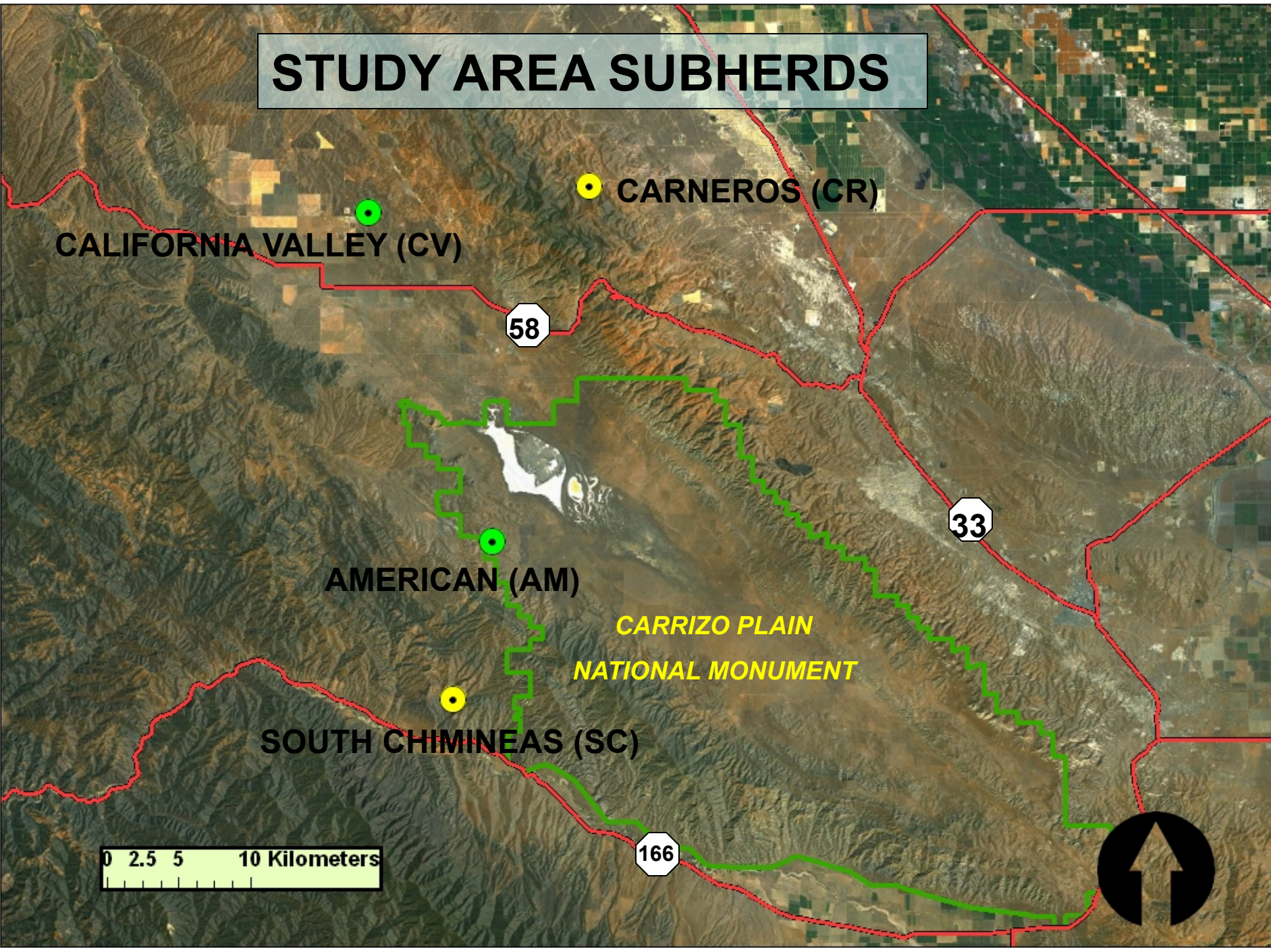
CARNEROS (CR)

AMERICAN (AM)

SOUTH CHIMINEAS (SC)

CARRIZO PLAIN
NATIONAL MONUMENT

0 2.5 5 10 Kilometers







GPS COLLARS 2005-2009

18 COLLARS (14 female, 4 male)

4 Separate subherds

All collar data - store on board




Location every 1-13 hours

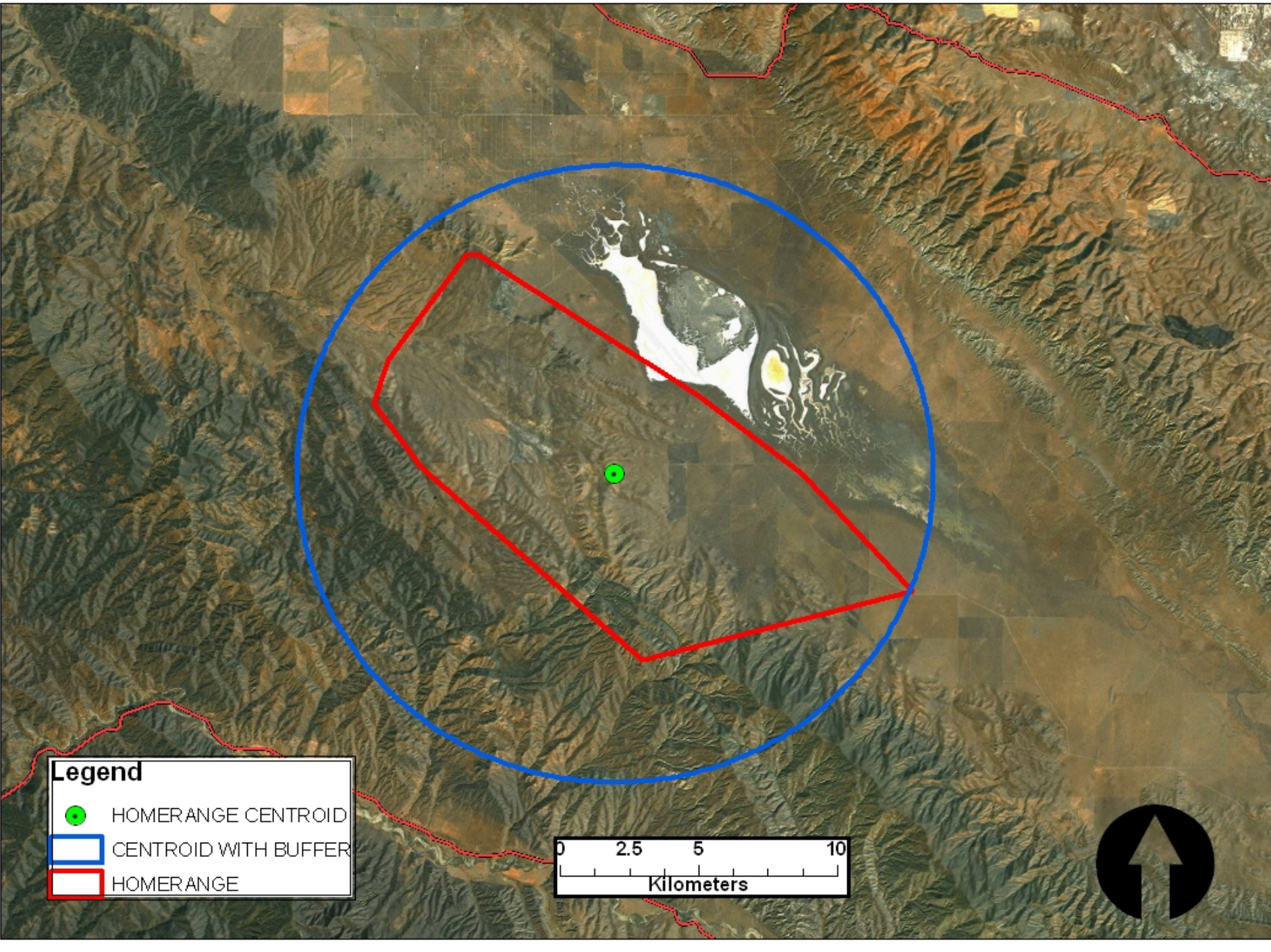
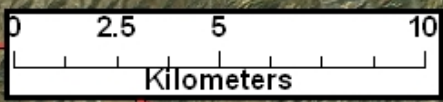
Collars recording 15-22 months

DATA ANALYSES

- DATA ANALYZED IN ARCGIS 9.3.1
- HAWTH'S TOOLS (MCP)
- GAP VEGETATION (WHR TYPES)
- SOME VEG TYPES COMBINED (CRC, MCH)
- WILCOXAN RANK SUM TEST (HR COMP)
- FISHER'S EXACT TEST (HABITAT)
- DATA FROM SUBHERDS COMBINED









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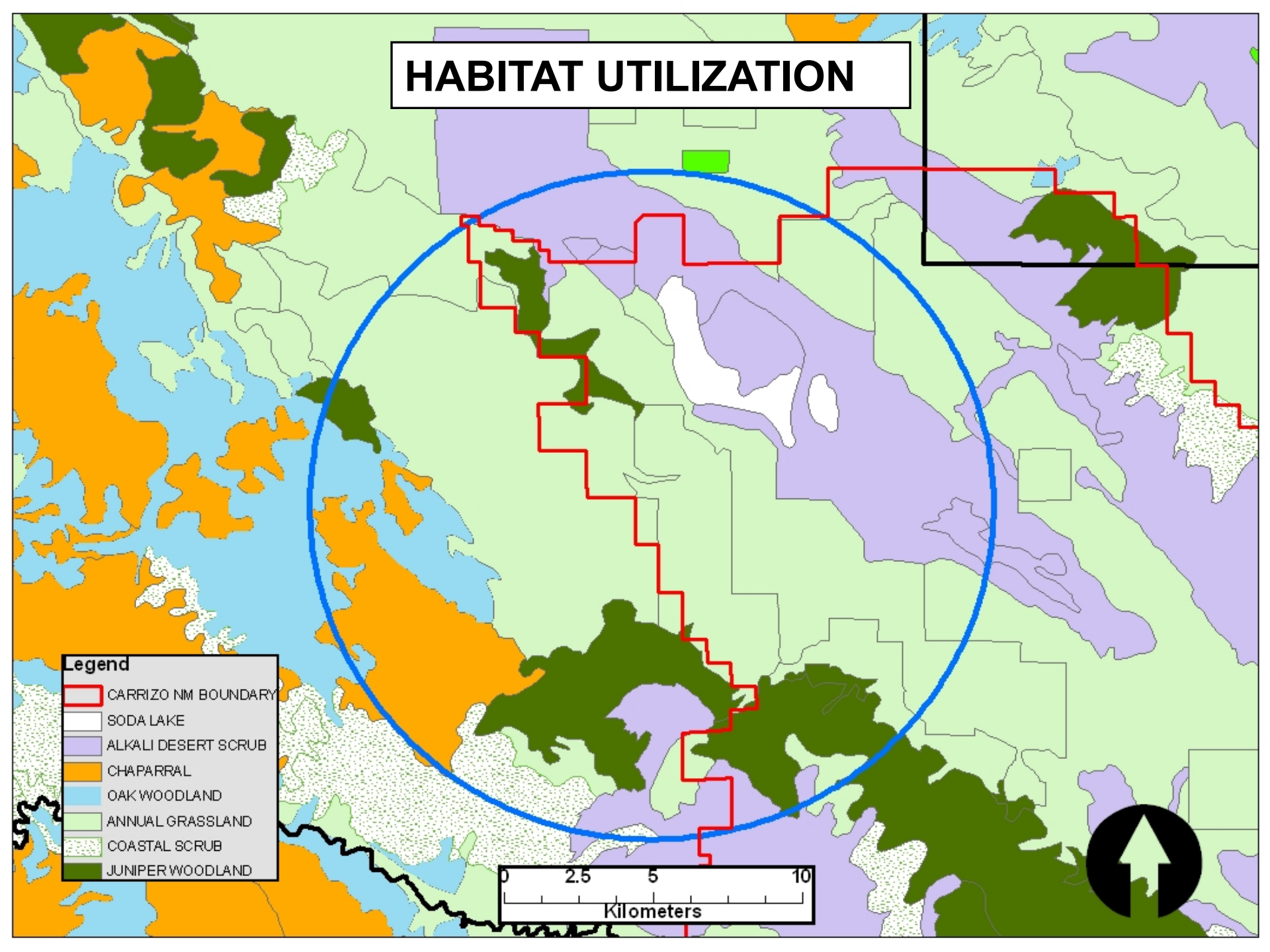
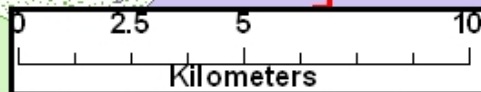
-  HOMERANGE CENTROID
-  CENTROID WITH BUFFER
-  HOMERANGE



HABITAT UTILIZATION

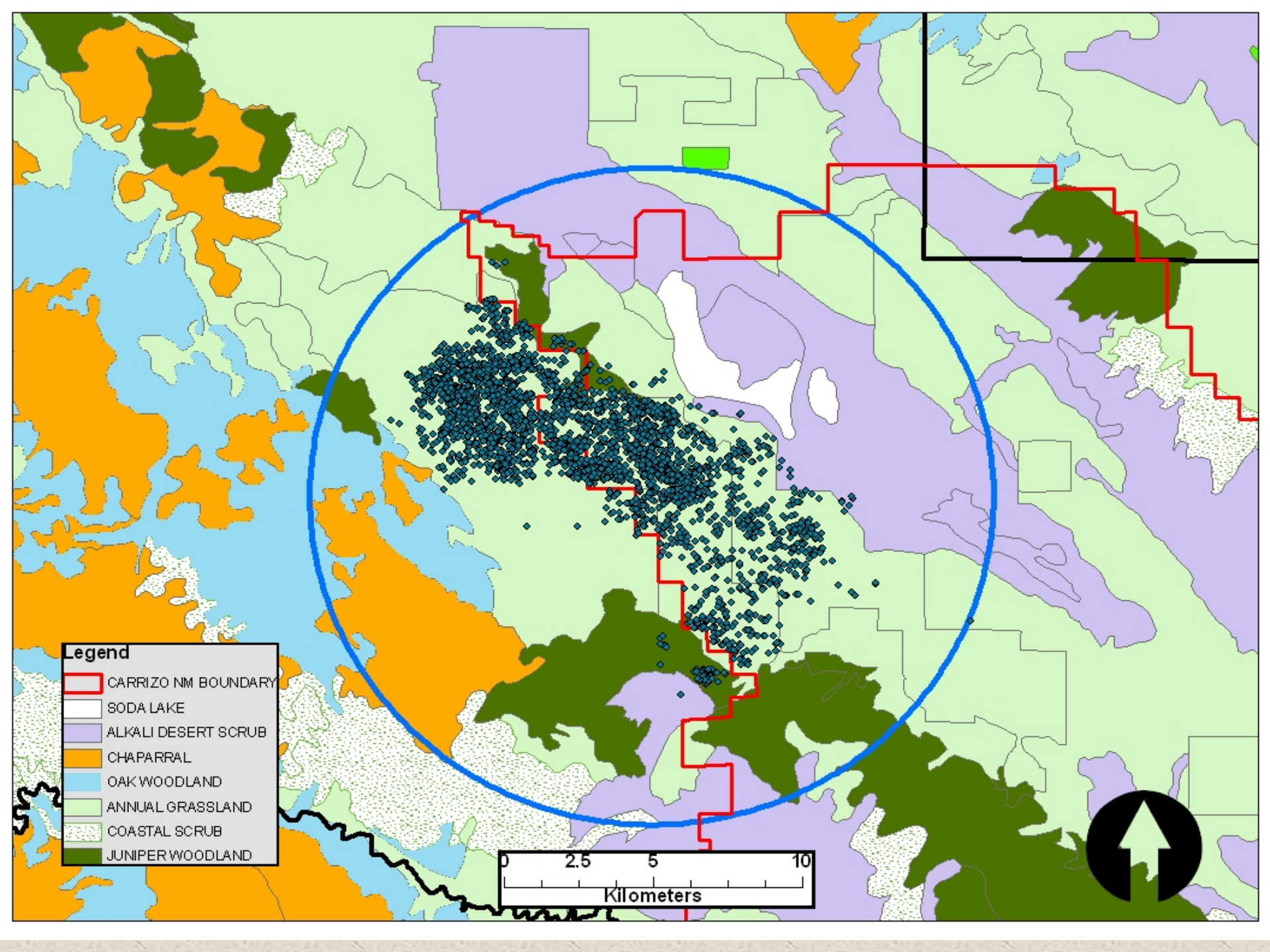
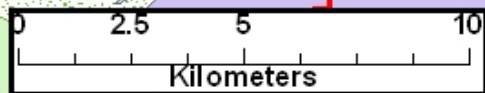
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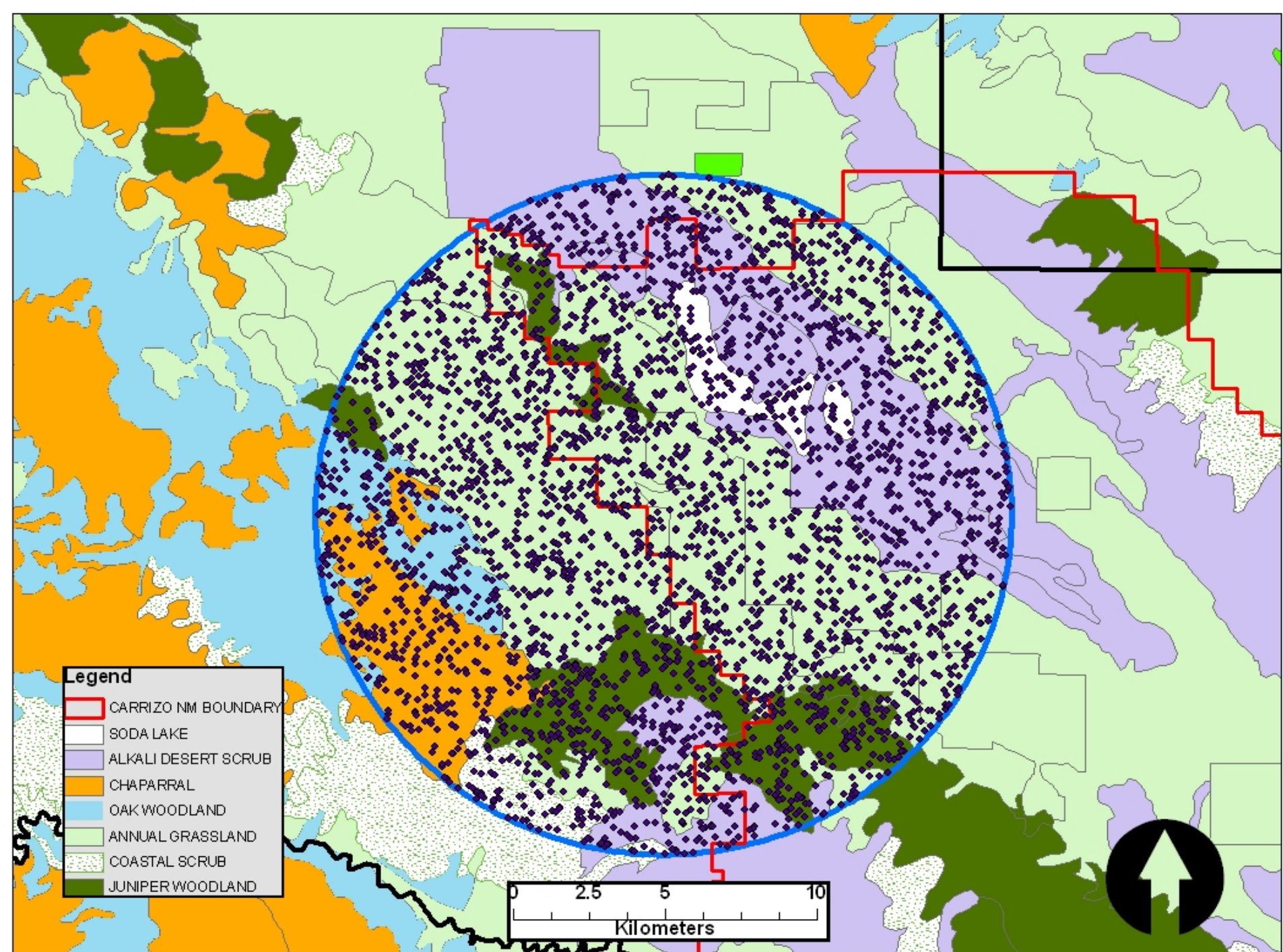
-  CARRIZO NM BOUNDARY
-  SODA LAKE
-  ALKALI DESERT SCRUB
-  CHAPARRAL
-  OAK WOODLAND
-  ANNUAL GRASSLAND
-  COASTAL SCRUB
-  JUNIPER WOODLAND



Legend

-  CARRIZO NM BOUNDARY
-  SODA LAKE
-  ALKALI DESERT SCRUB
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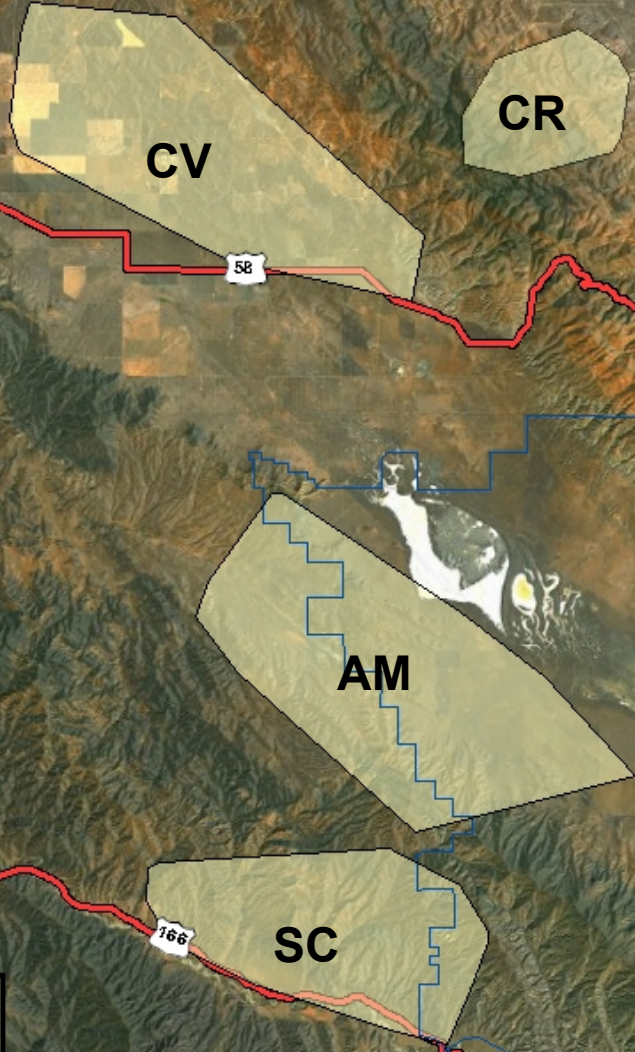




DATA SUMMARY

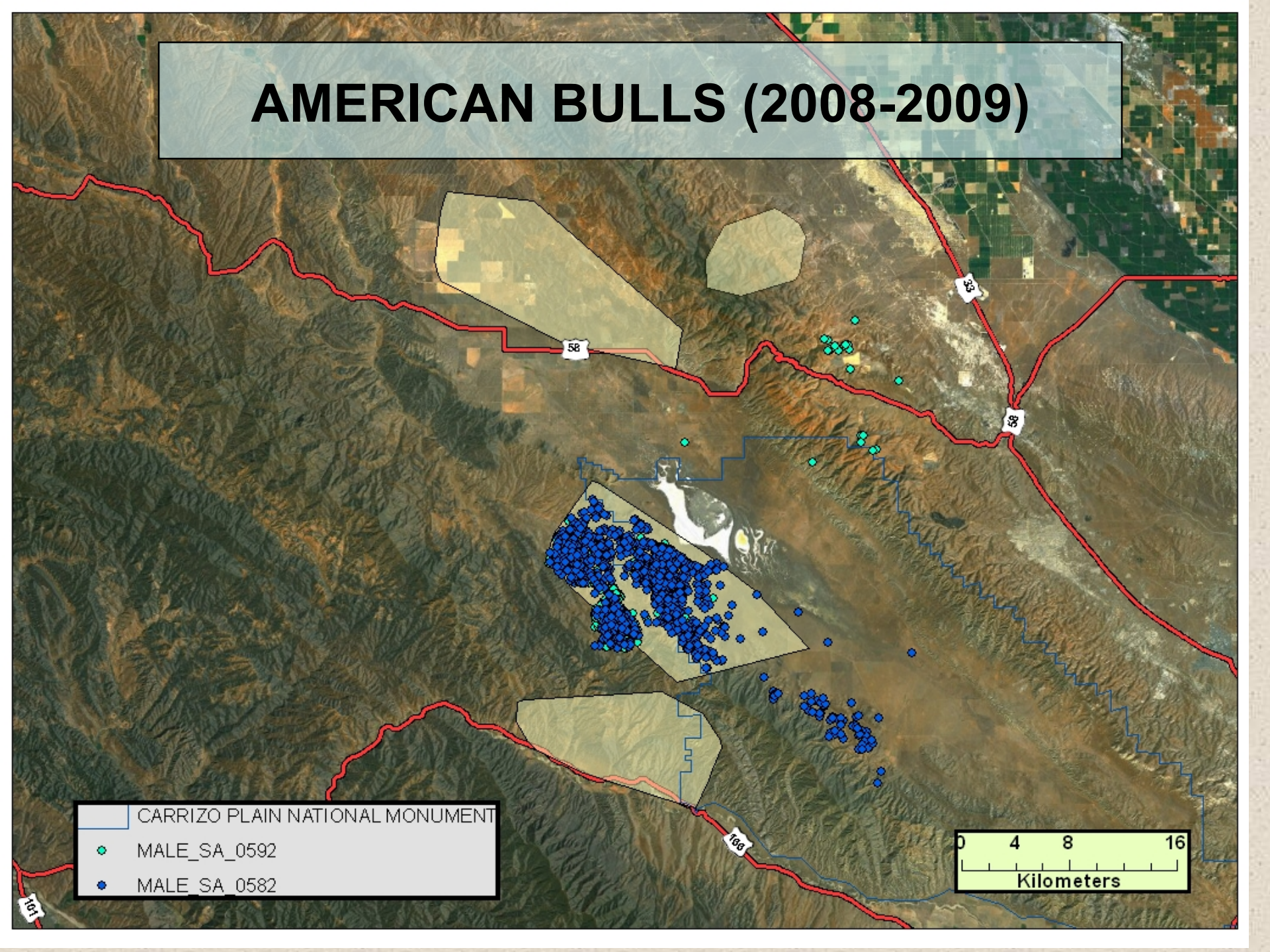
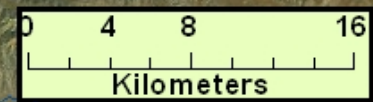
SUBHERD/SEX	# ANIMALS	YEARS	# POINTS
Carneros - Cow	1	2005-2006	1,081
Cal. Valley - Cow	2	2005-2006	1,789
American - Cow	3	2005-2009	3,484
American - Bull	2	2008-2009	1,866
S. Chimineas - Cow	5	2005-2009	17,677
S. Chimineas - Bull	2	2008	1,313
TOTALS	15	----	27,210

COW ELK HOMERANGES (2005-2009)

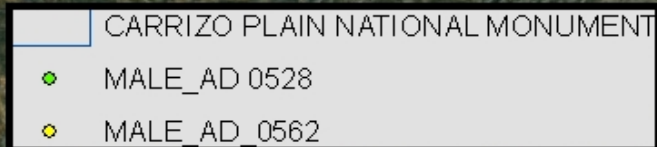


AMERICAN BULLS (2008-2009)

- CARRIZO PLAIN NATIONAL MONUMENT
- MALE_SA_0592
- MALE SA 0582



SOUTH CHIMINEAS BULLS- 2008



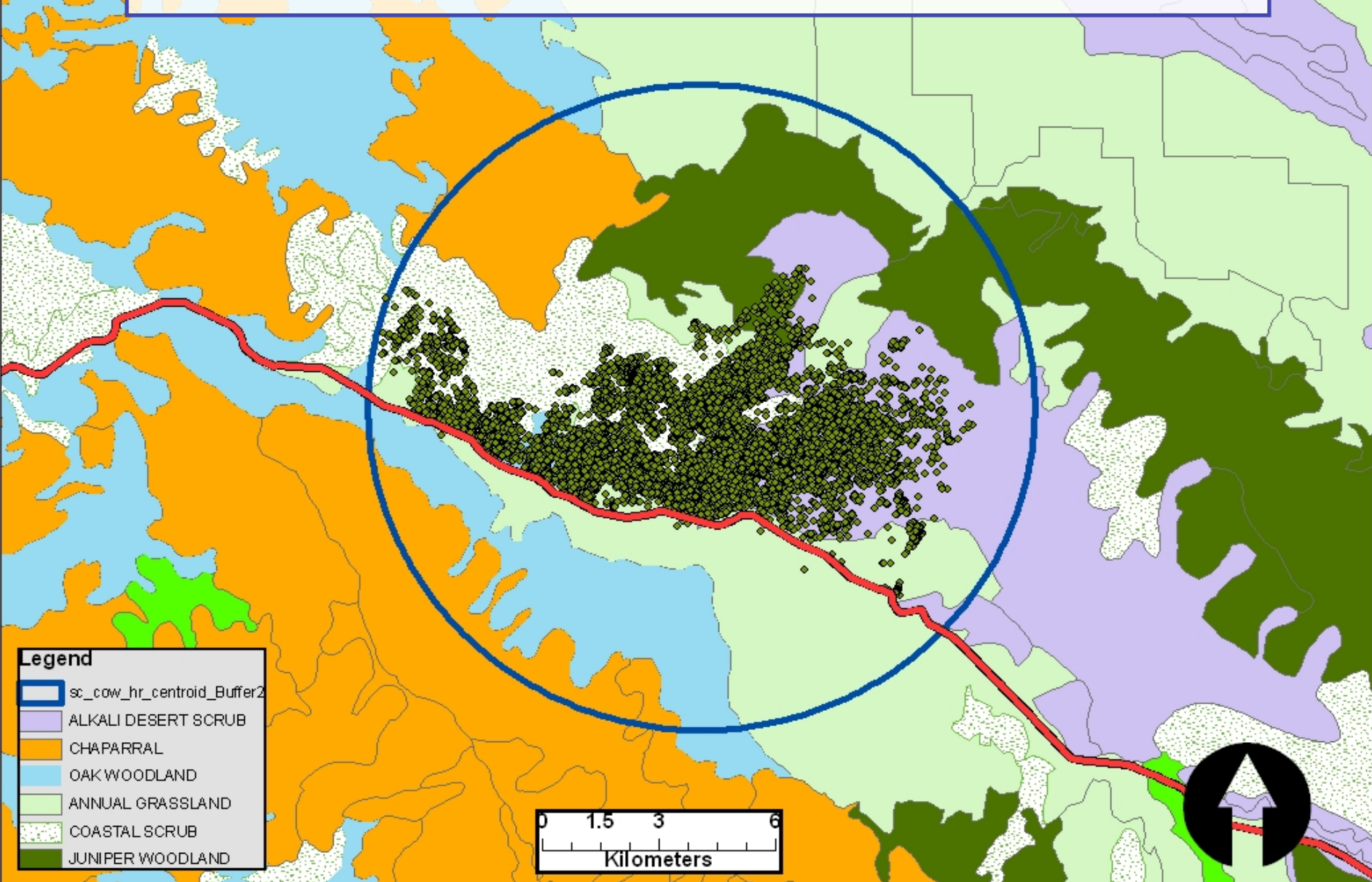
HOMERANGES

SUBHERD/SEX	# ANIMALS	\bar{x} HOMERANGE (ha)	RANGE (ha)
Carneros – Cow*	1	3,618*	3,618
S. Chimineas - Cow	5	6,154 ± 1,609	4,256 – 7,860
Cal. Valley - Cow	2	12,152 ± 1,707	11,663 -12,640
American - Cow	3	10,668 ± 2,970	8,554 – 14,063
COW ELK TOTALS	11	8,245	3,618 – 14,063
American - Bull	2	29,072 ± 3,389	26,676 – 31,469
S. Chimineas - Bull	2	12,757 ± 6,167	8,397 – 17,118
BULL ELK TOTALS	4	20,914	8,397 – 31,469

HOMERANGE SUMMARY

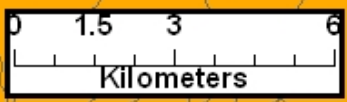
- NO SIG. DIFFERENCE IN HOMERANGE SIZE BETWEEN BULLS
- NO SIG. DIFFERENCE W/IN SUBHERD BY SEX
- ♂ HOMERANGES > ♀ HOMERANGES (P=0.026, df=15, U=39)
- AMERICAN ♀ HOMERANGES > S. CHIMINEAS ♀ HOMERANGES (P=.036, df=8, U=15)

SOUTH CHIMINEAS HABITAT USE

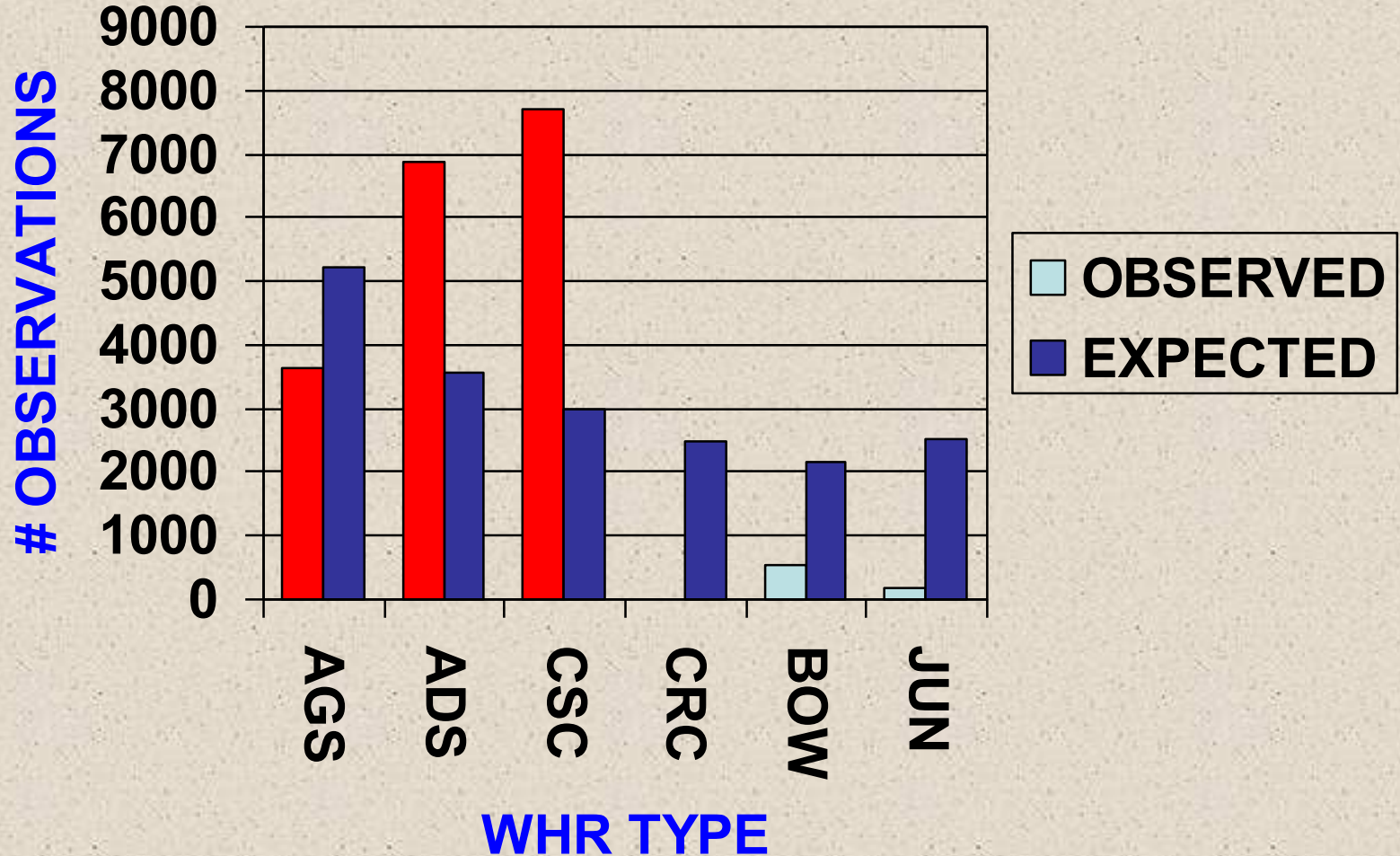


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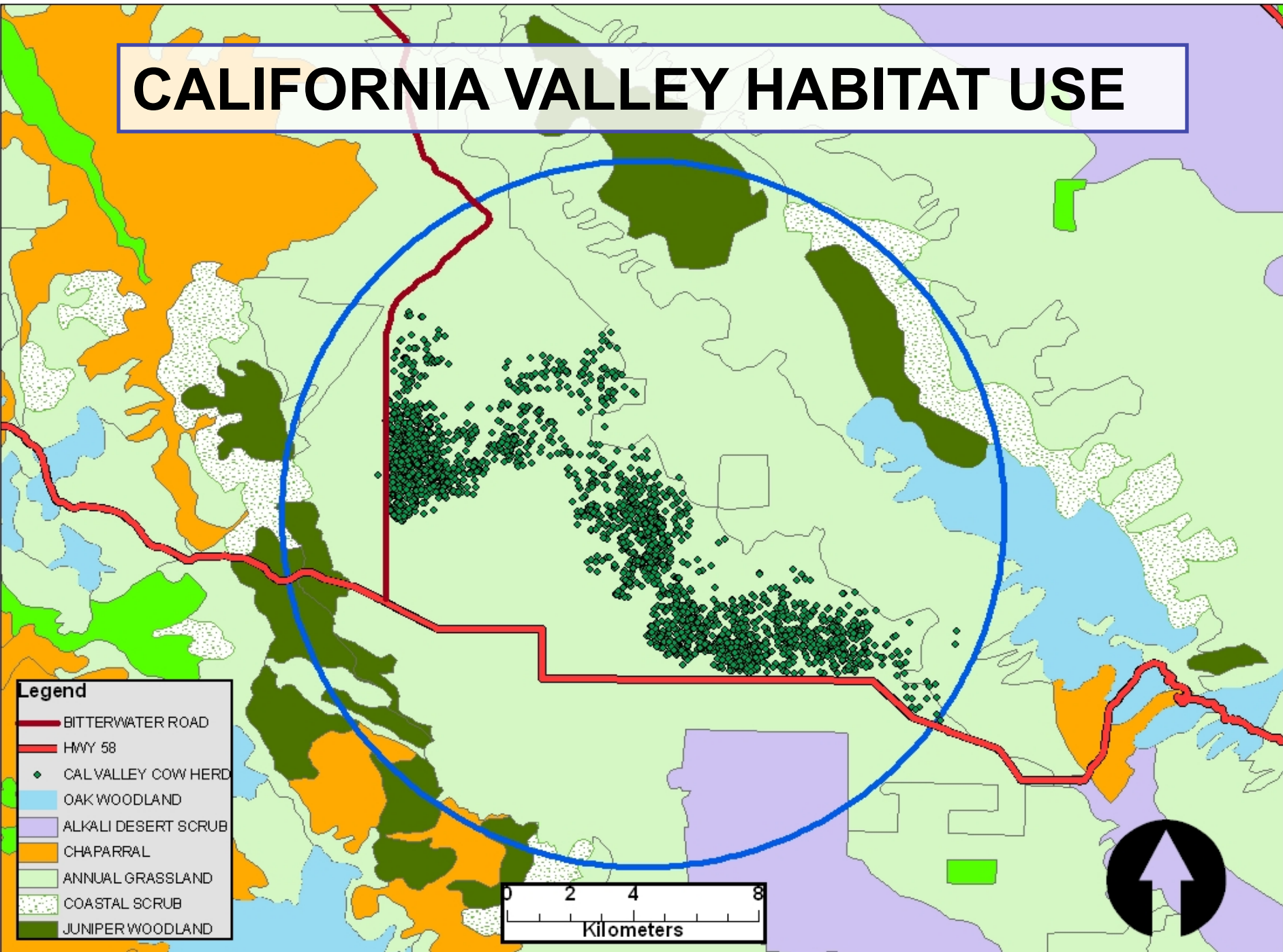
- sc_cow_hr_centroid_Buffer2
- ALKALI DESERT SCRUB
- CHAPARRAL
- OAK WOODLAND
- ANNUAL GRASSLAND
- COASTAL SCRUB
- JUNIPER WOODLAND



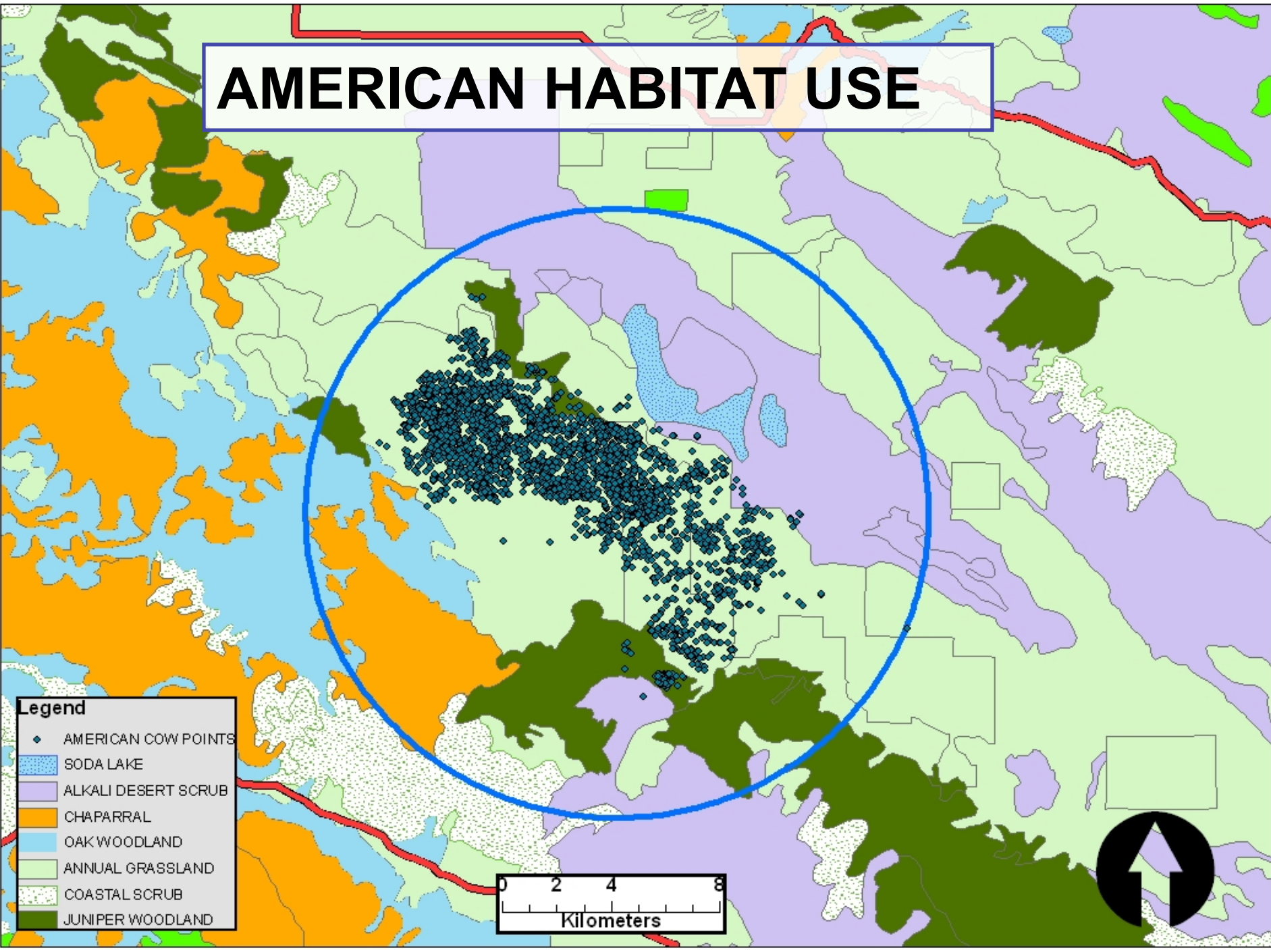
SOUTH CHIMINEAS



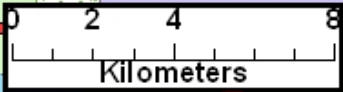
CALIFORNIA VALLEY HABITAT USE



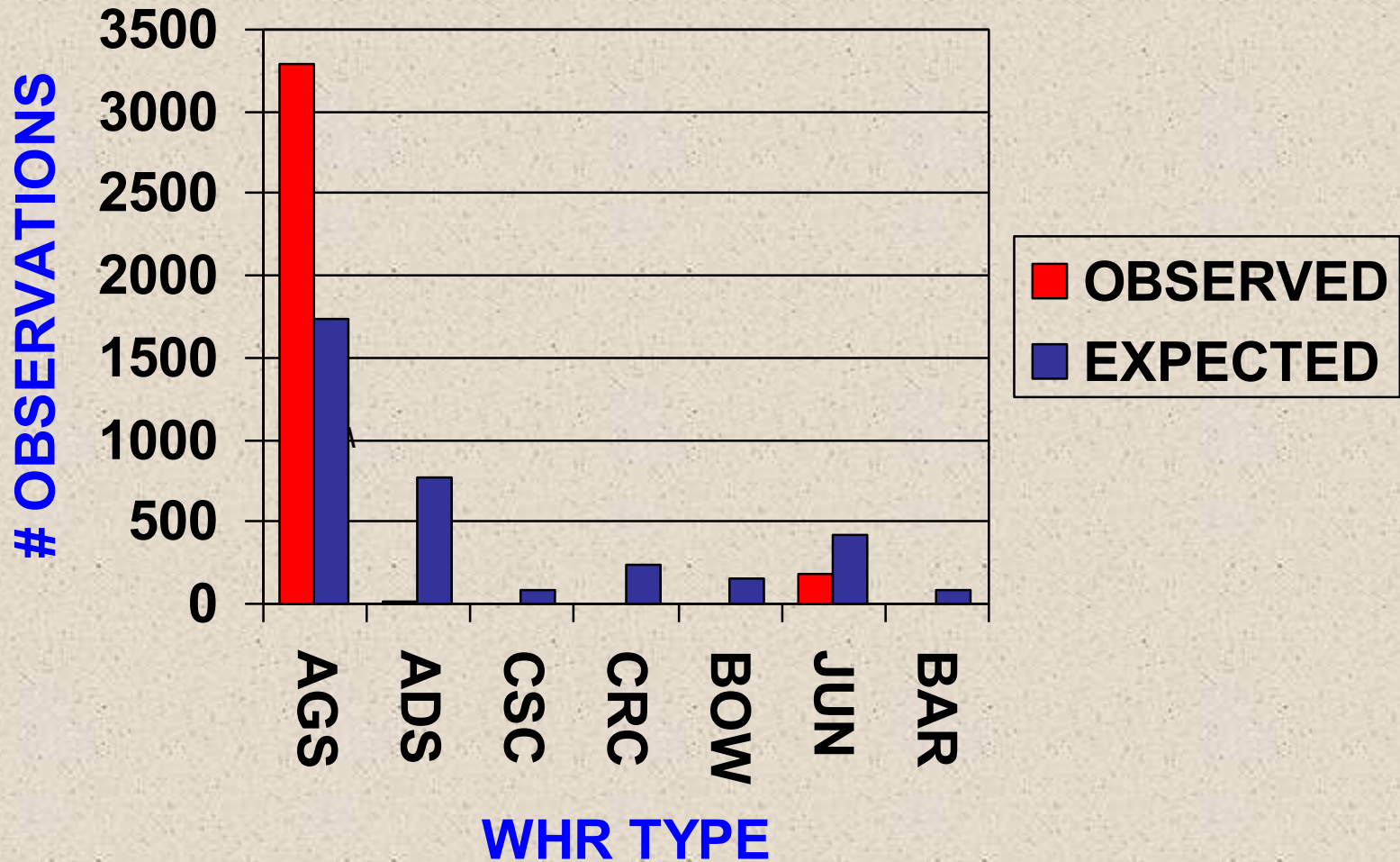
AMERICAN HABITAT USE



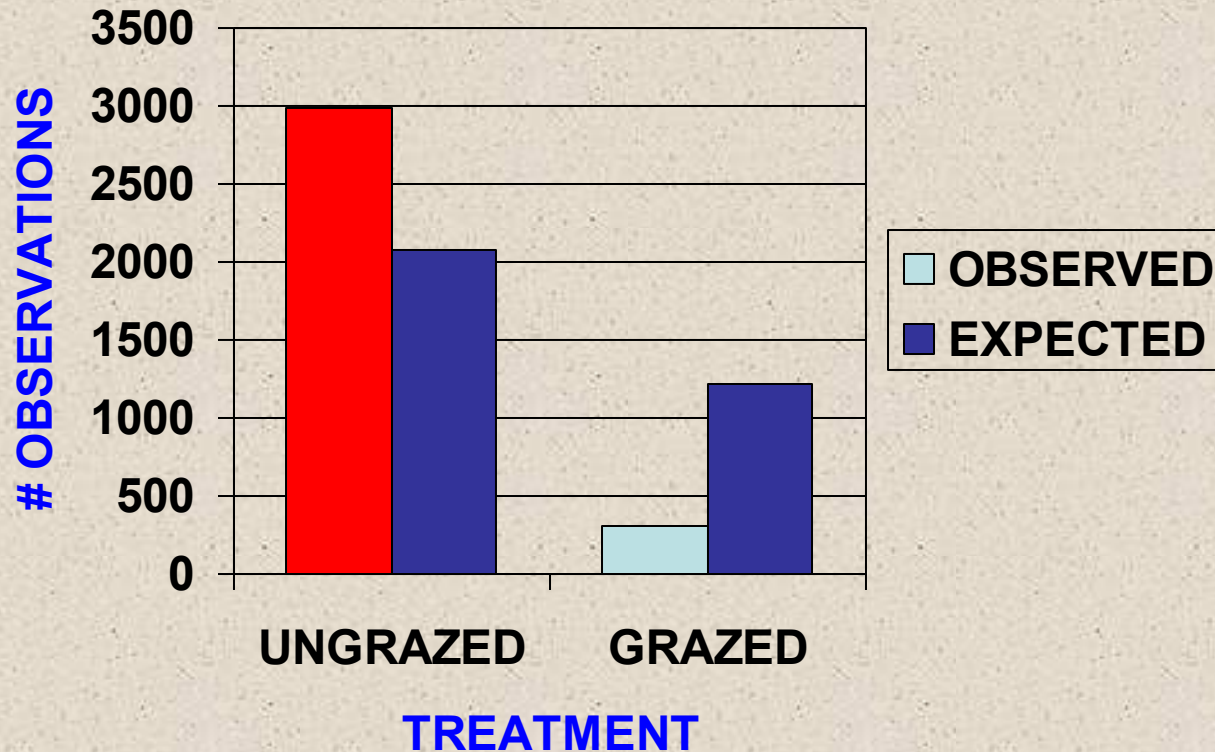
- Legend**
- ◆ AMERICAN COW POINTS
 - SODA LAKE
 - ALKALI DESERT SCRUB
 - CHAPARRAL
 - OAK WOODLAND
 - ANNUAL GRASSLAND
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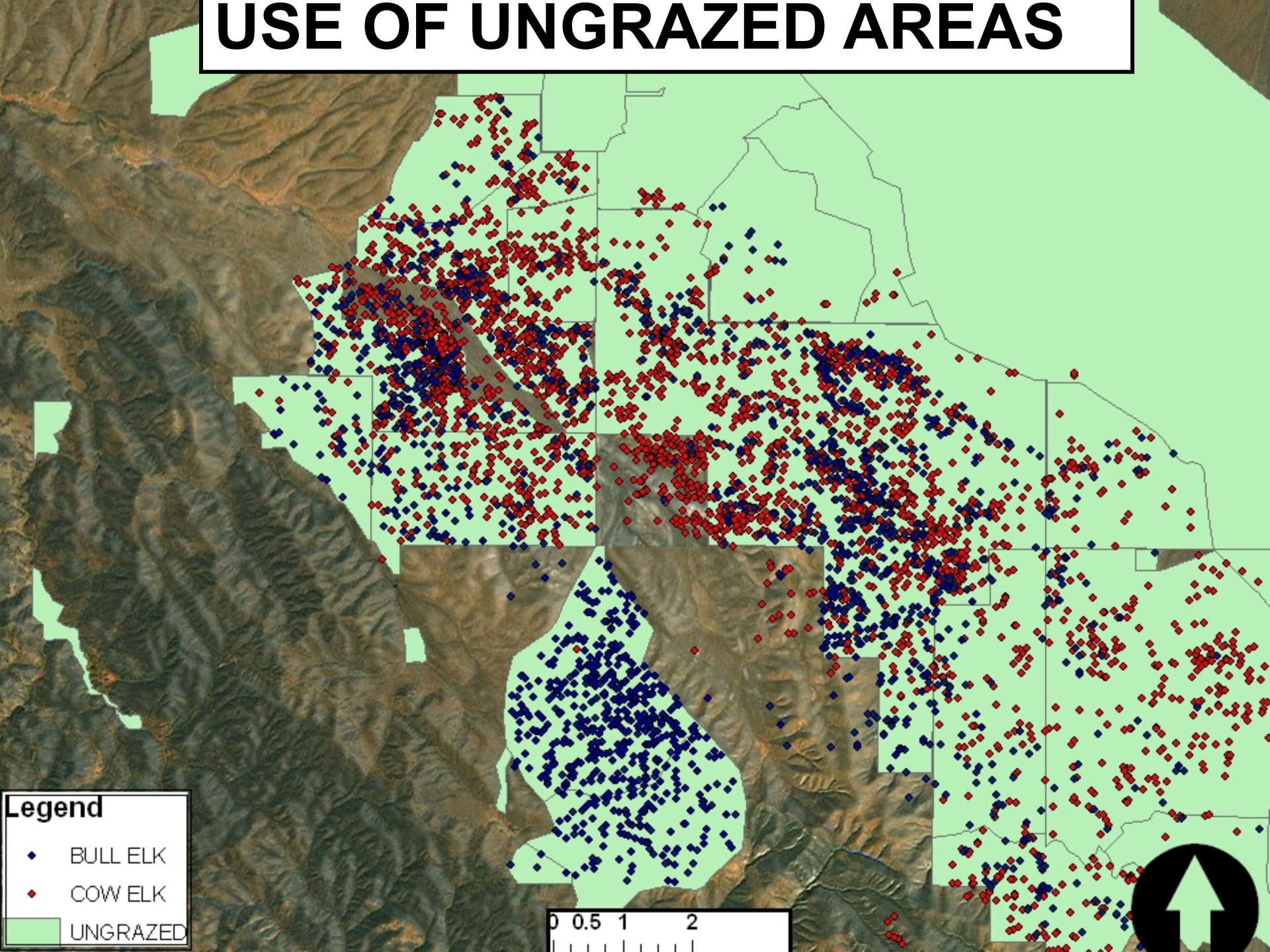
AMERICAN



GRAZING EFFECTS

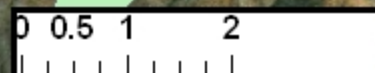


USE OF UNGRAZED AREAS



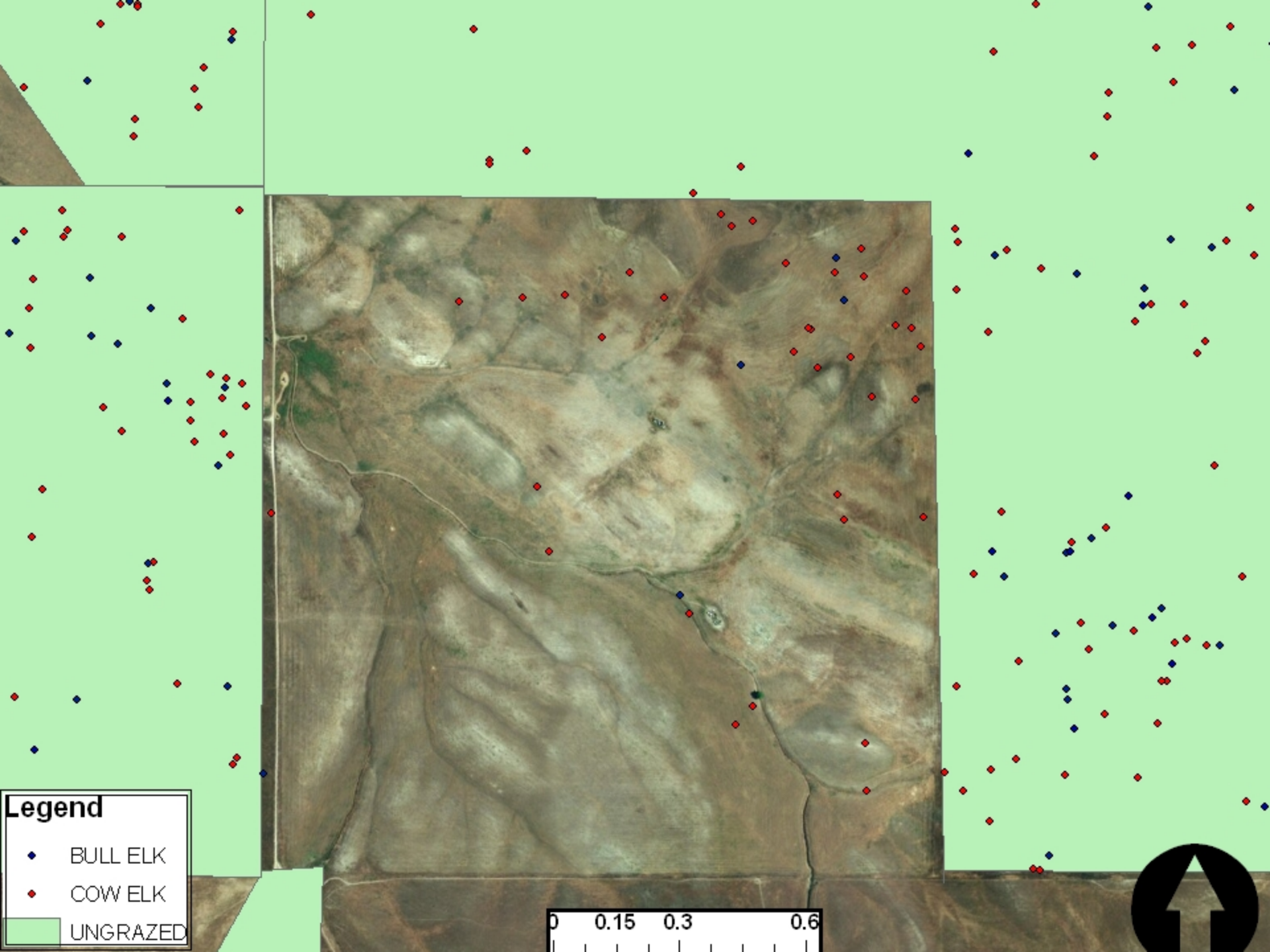
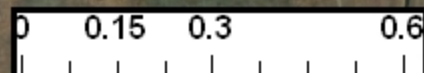
Legend

- ◆ BULL ELK
- ◆ COW ELK
- UNGRAZED

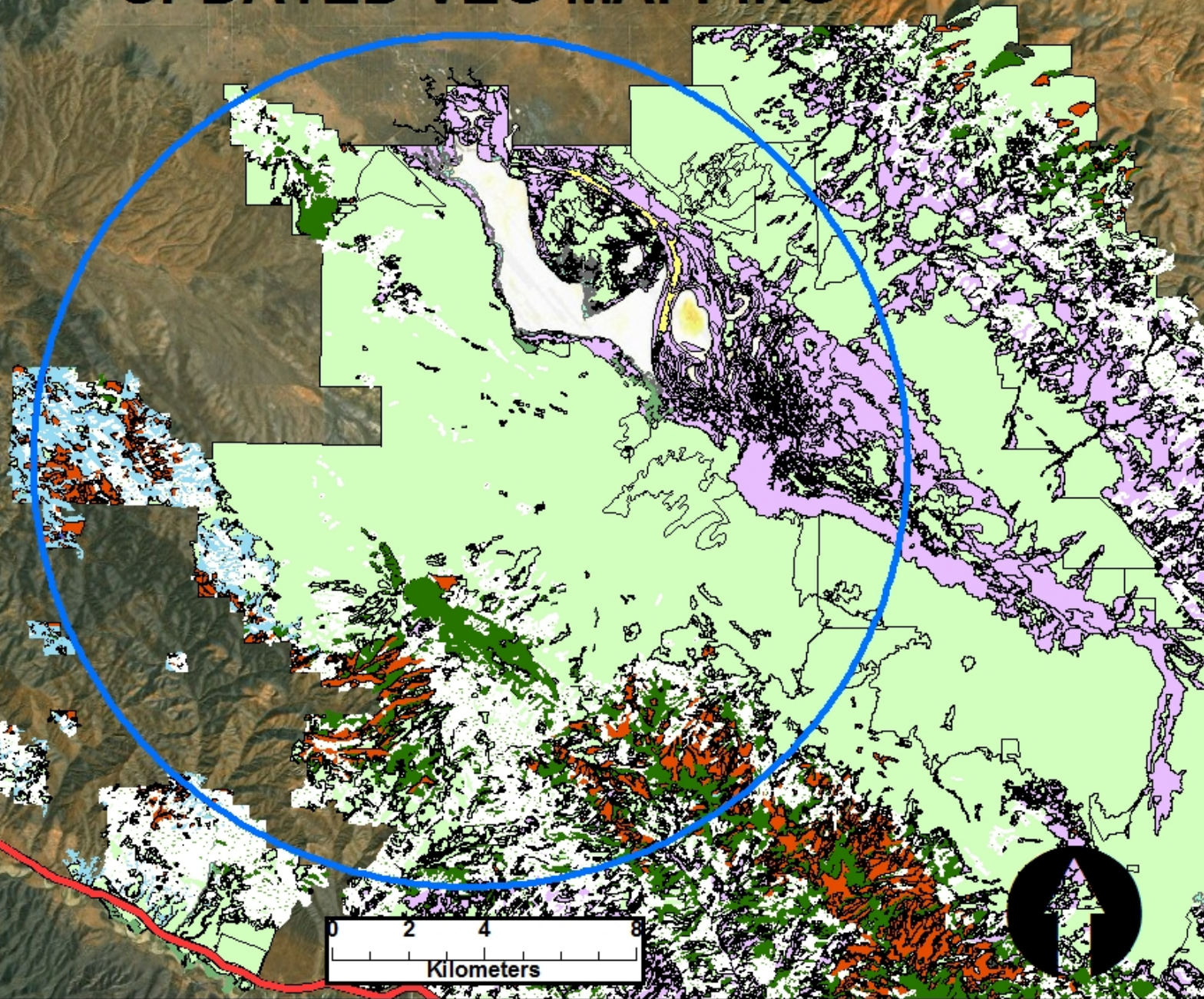


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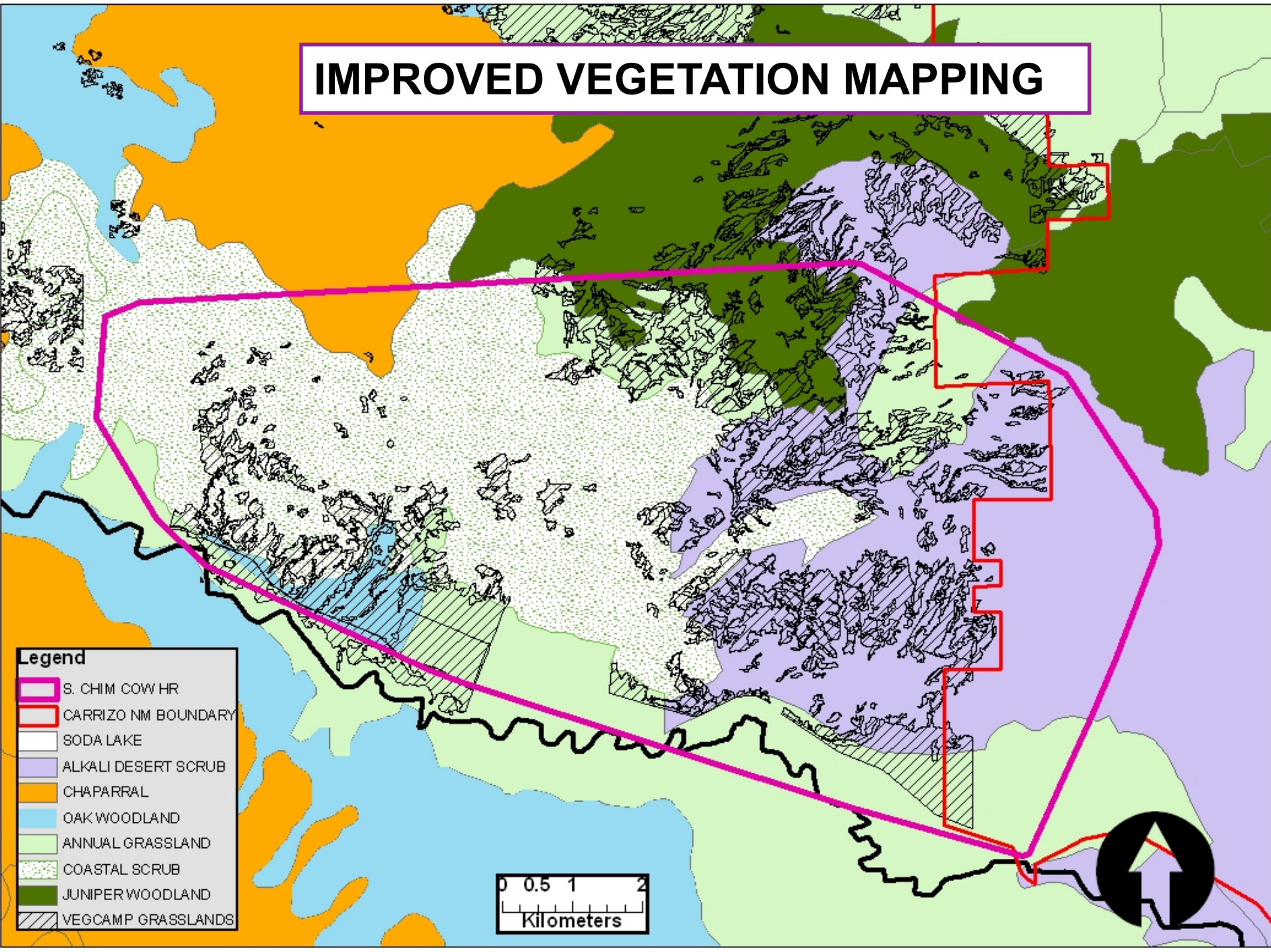
- ◆ BULL ELK
- ◆ COW ELK
- UNGRAZED



UPDATED VEG MAPPING

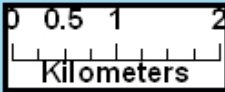


IMPROVED VEGETATION MAPPING



Legend

-  S. CHIM COW HR
-  CARRIZO NM BOUNDARY
-  SODA LAKE
-  ALKALI DESERT SCRUB
-  CHAPARRAL
-  OAK WOODLAND
-  ANNUAL GRASSLAND
-  COASTAL SCRUB
-  JUNIPER WOODLAND
-  VEGCAMP GRASSLANDS



CONCLUSIONS

- NO MOVEMENT OF COW ELK BETWEEN SUBHERDS
- BULL HOMERANGES SIG. LARGER
- CHAPARRAL AVOIDED
- ELK UTILIZED GRASSLANDS MORE*
- ELK SELECTED UNGRAZED GRASSLANDS
- FEMALE ELK RARELY CROSSED PAVED ROADS

FUTURE WORK

- **BETTER VEG DATA COMING**
- **FURTHER ANALYSES OF HABITAT USE**
- **MORE COLLARS 2015**
- **ELK USE BEFORE AND AFTER SOLAR PROJECT**
- **COMPARISON OF ELK USE OF GRAZED LANDS**

THANKS TO

VegCAMP

