



# Kofa National Wildlife Refuge Desert Bighorn Sheep Management

The *Investigative Report and Recommendations for the Kofa Bighorn Sheep Herd* represents a commitment by the AGFD and FWS to accomplish the stated goals and objectives of the document.

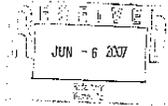
The Report was signed by the FWS's Regional Director and the AGFD's Director in April 2007.

**Investigative Report and Recommendations  
for the Kofa Bighorn Sheep Herd**

Prepared by:  
Kofa National Wildlife Refuge  
Arizona Game and Fish Department

April 17, 2007

Agency Approval:

 U.S. Fish and Wildlife Service	<u>4/4/07</u> Date	
 Arizona Game and Fish Department	<u>5-22-07</u> Date	

1

The report contains strategies that collectively are intended to bolster sheep numbers and help meet objectives related to Refuge purposes and regional translocation programs.



## The approach is comprehensive ...

- Monitoring (annual surveys to track population parameters)
- Research (disease, body condition, mortality)
- Water availability (improve distribution, maintain water at critical sites)
- Human disturbance (hiking during critical periods)
- Predation (manage lion predation as needed to meet objectives)
- Outreach (public awareness and support for active mgmt.)

# Kofa NWR Predation Mgmt. Plan /EA

## Timeline

- Scoping Period .....(April 24 – June 23, 2008)
- Prepare Administrative Draft EA ..... (Aug 28, 2008 – Feb 20, 2009)
- Regional & Washington Office Review ..... (Feb 20 – Aug 3, 2009)
- Federal Register NOA Published .....(Aug 4, 2009)
- 60-Day Public Comment Period for Draft EA .....(Aug 4 –Oct 2, 2009)
- Edit & Prepare Final EA .....(Oct – Dec, 2009)
- Final EA & FONSI ..... (est. March 2010)

## Current Status of EA

- Draft EA out for Public Review (60-Day Period ending October 2nd)
- Public Meeting Scheduled in Yuma for September 16<sup>th</sup>



# Commission Update



## KOFA Environmental Assessment and Predation Management Plan

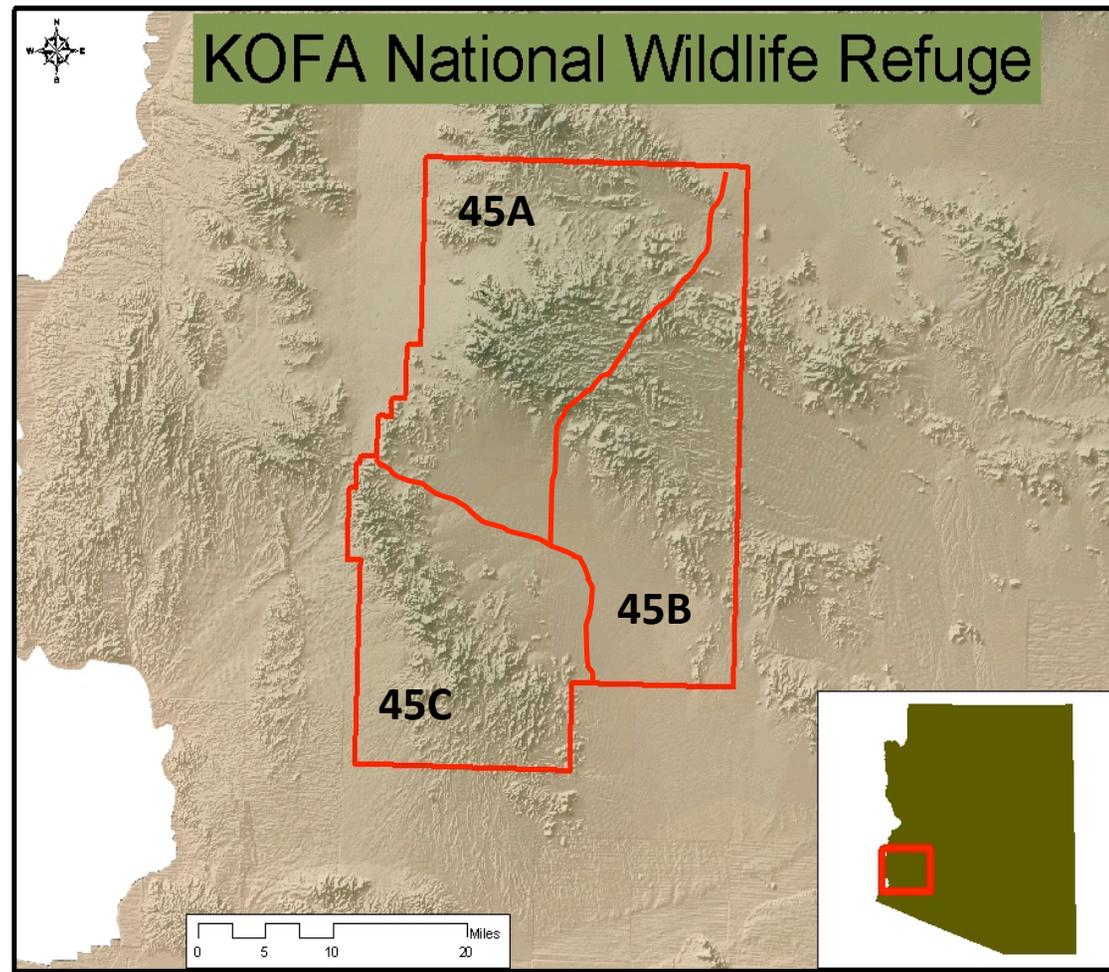


7 August, 2009

Region IV

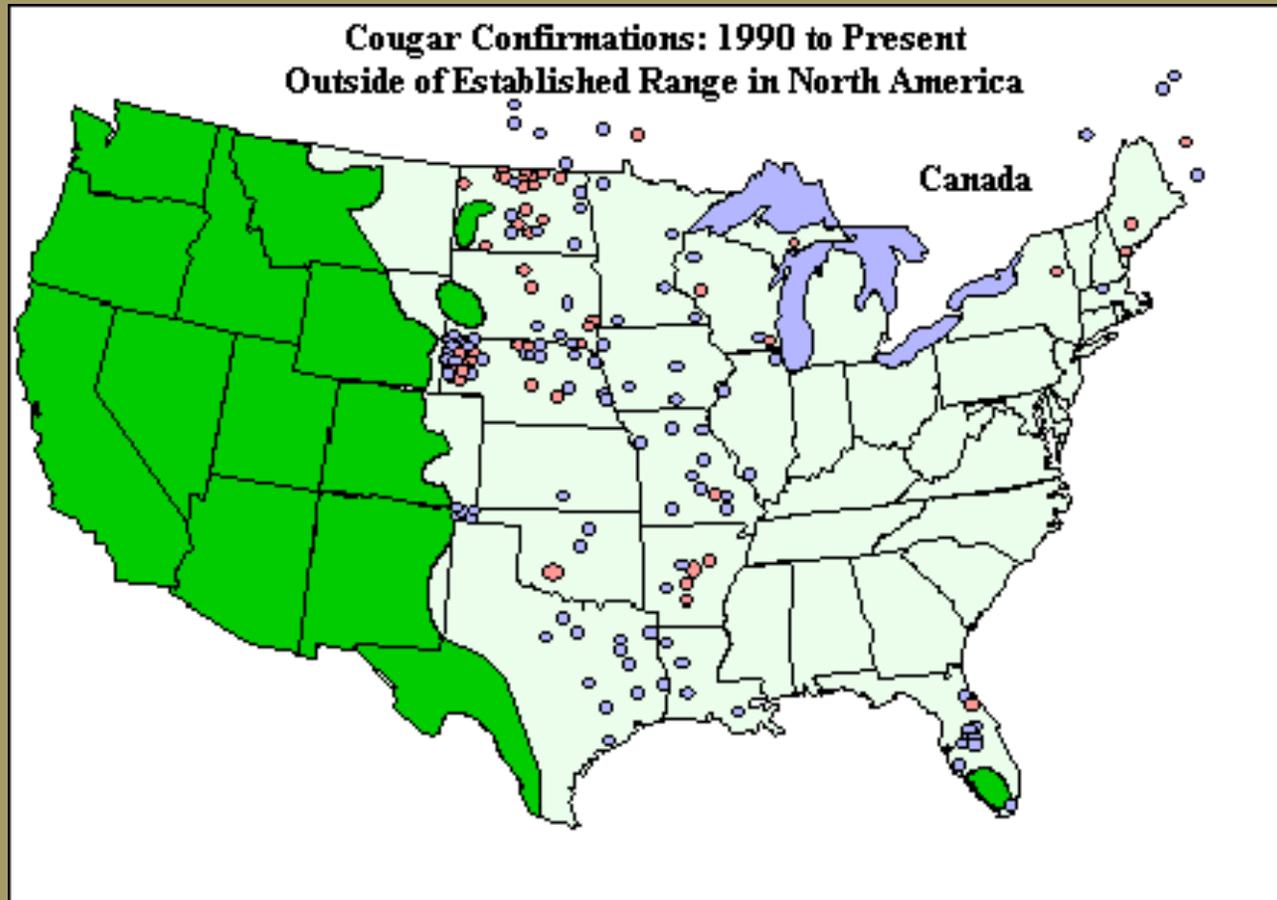
# KOFA E.A. Update

- 665,400 Acres
- 436 bighorn sheep
- 4-5 mountain lions



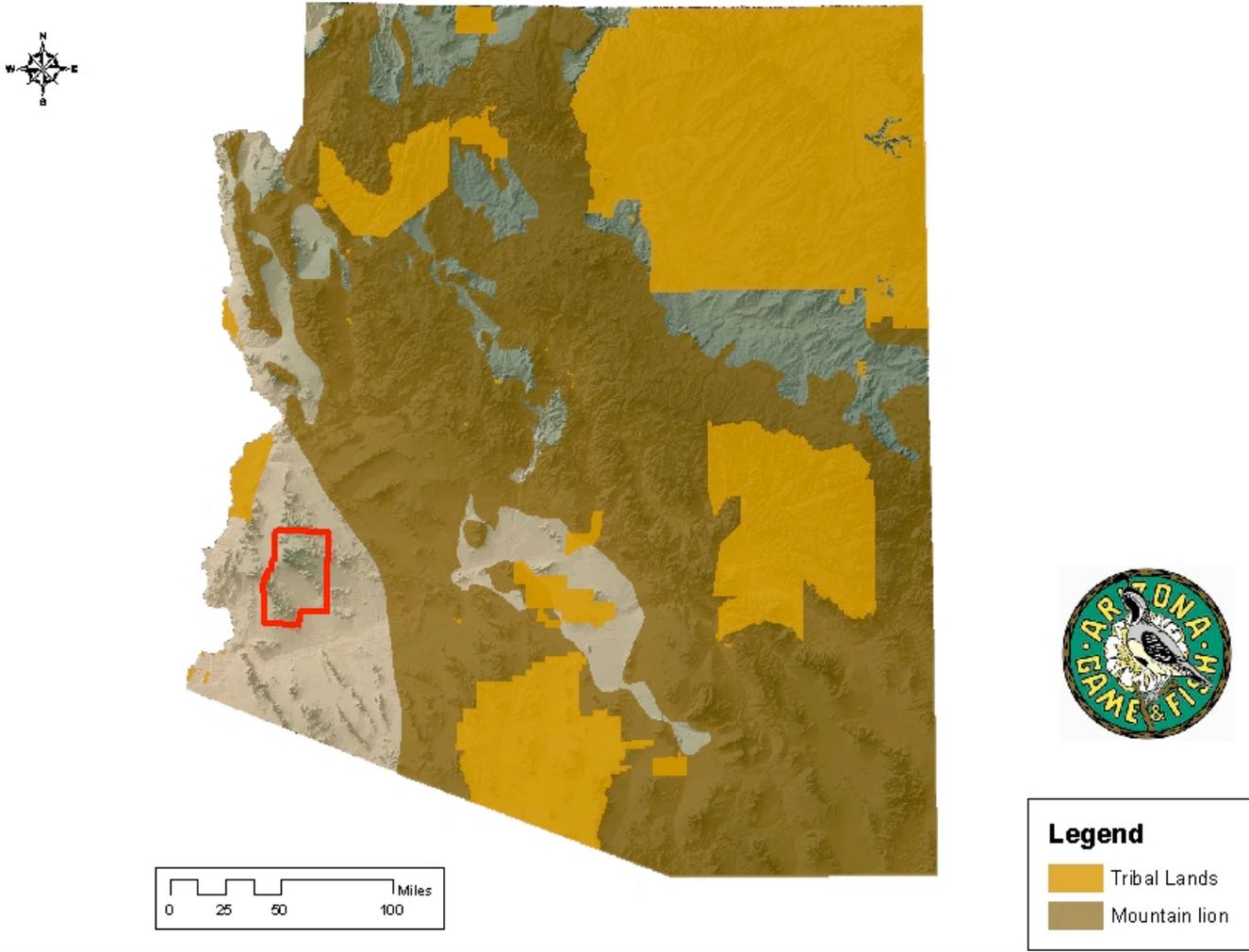
# Big Picture Map

“A compelling wildlife success story”

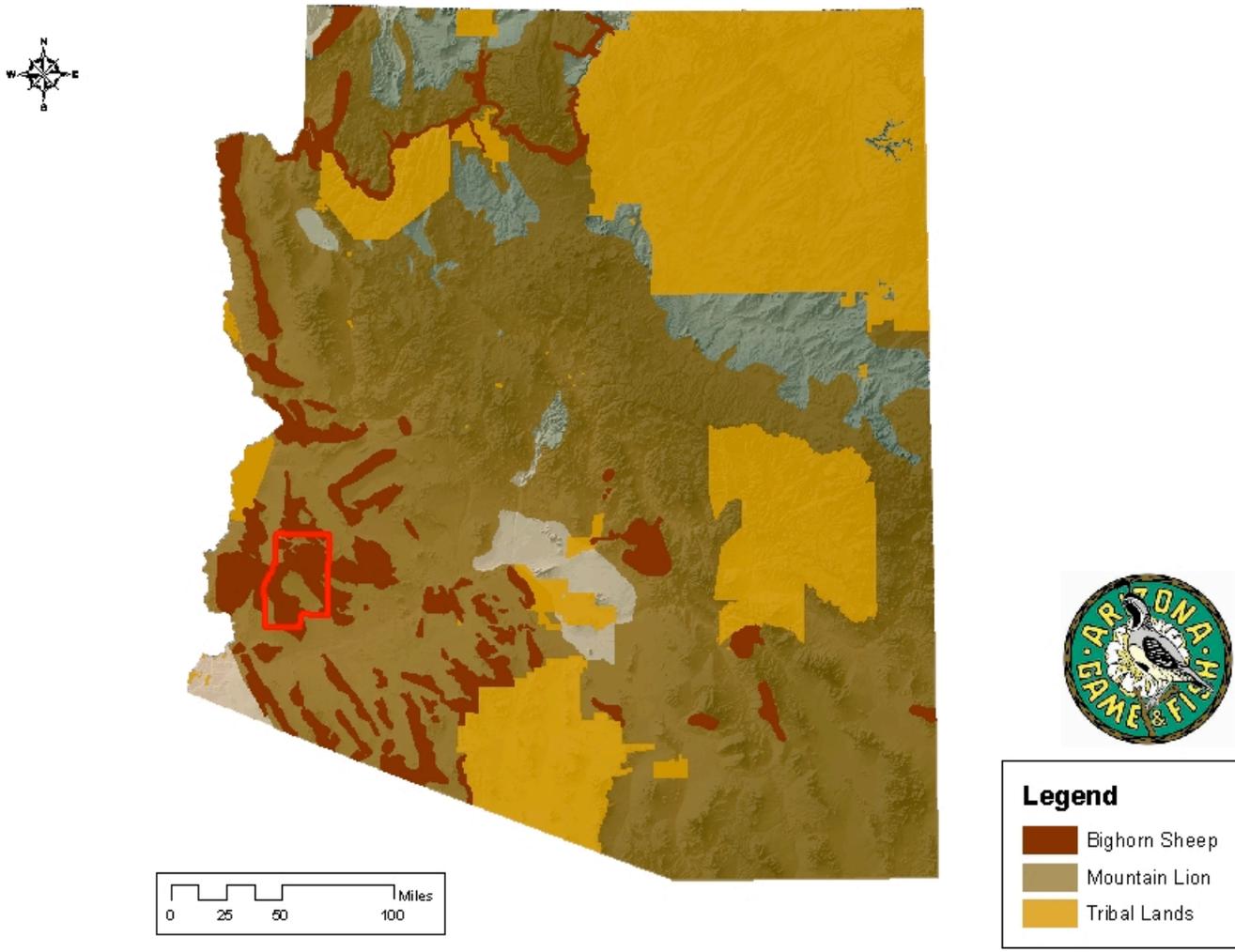


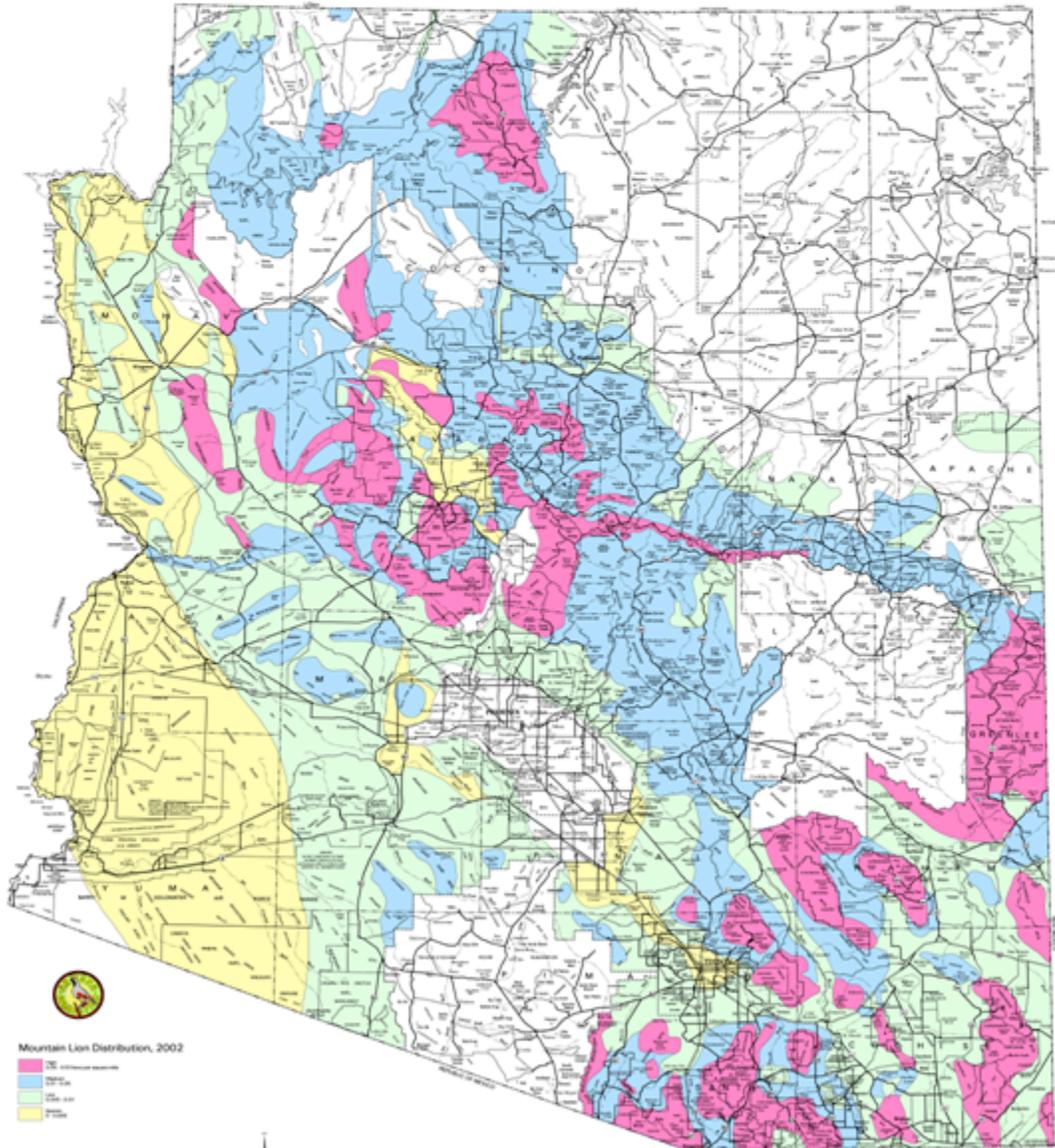
From *The Cougar Network*

# Historic Mountain Lion Distribution



## Current Mountain Lion and Bighorn Sheep Distributions





Mountain Lion Distribution, 2002

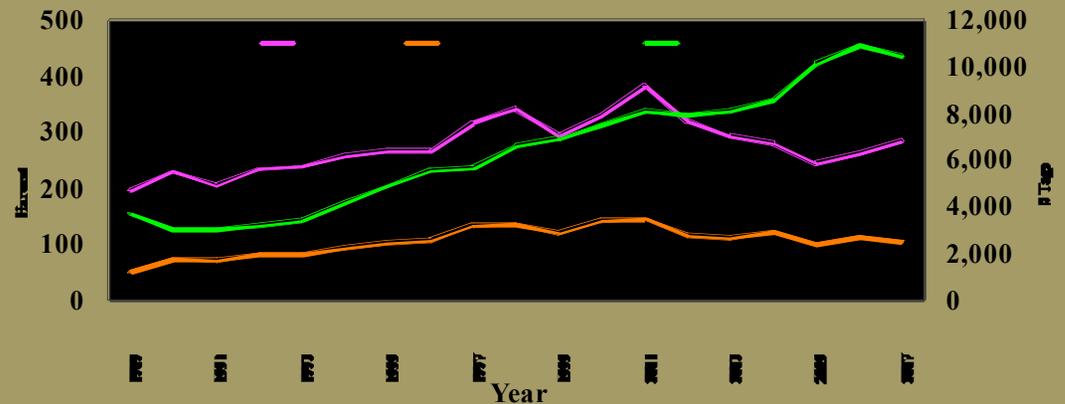
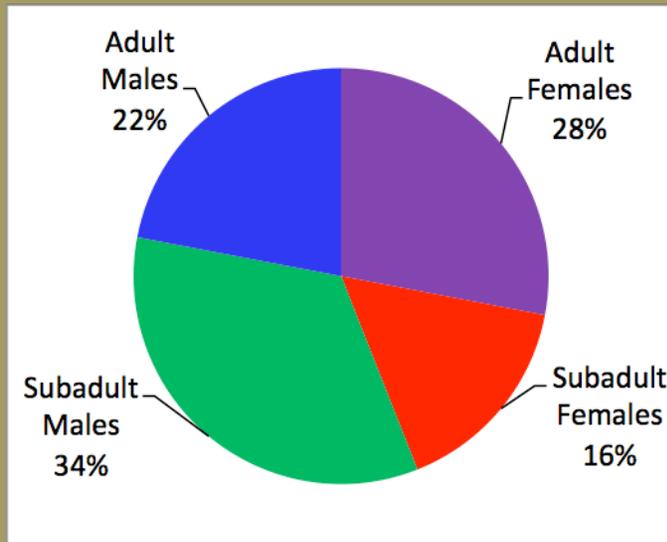
- Tonto
- Salt River
- Verde
- Pinal



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**DRAFT**

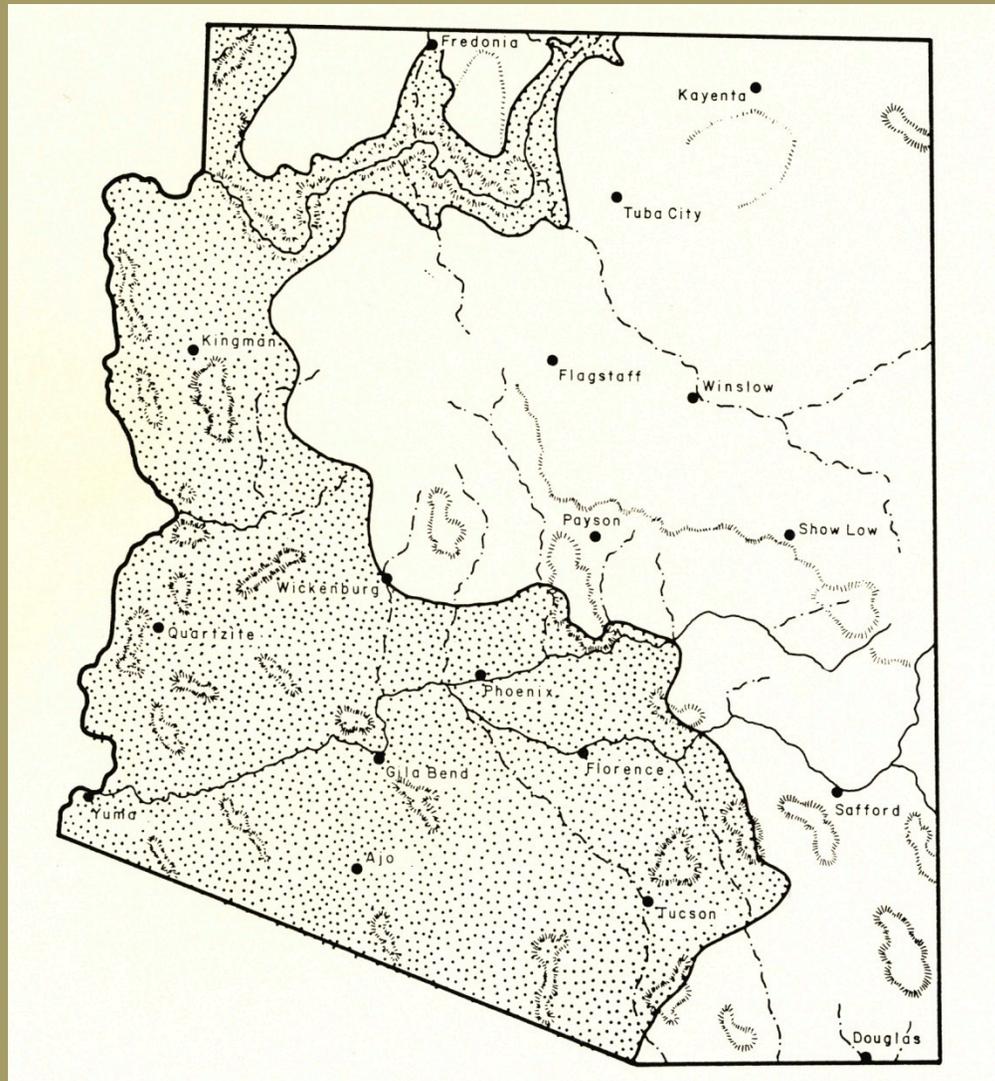
# Lion Management



- All indicators show healthy robust populations in Arizona and across the west – mountain lions are not rare or endangered
- Arizona refining management (age data, mandatory reporting, female and kitten protection)
- Continue making efforts to improve management (Predator Team 2003-2005, Director's Goal 5 2009)

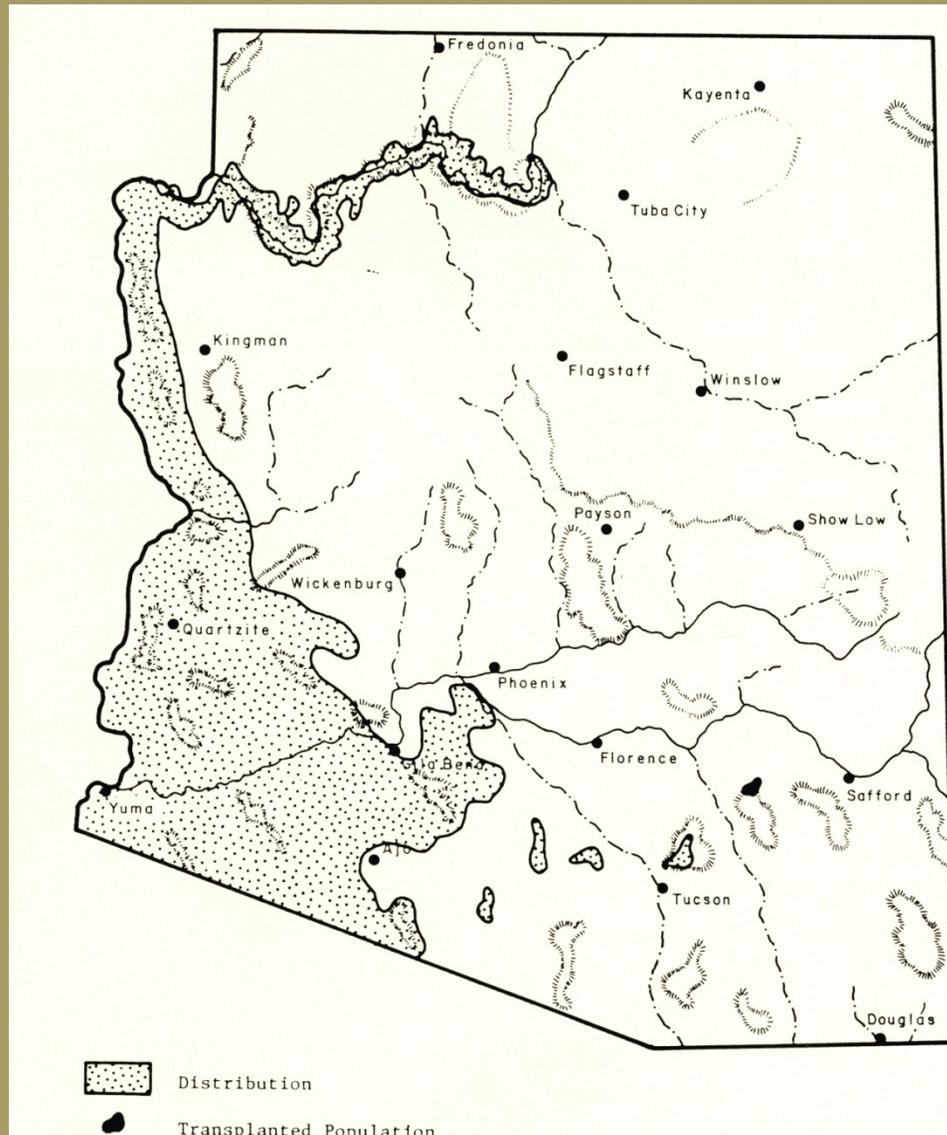
# KOFA E.A. Update

## Bighorn Sheep Distribution 1900

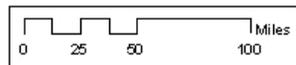
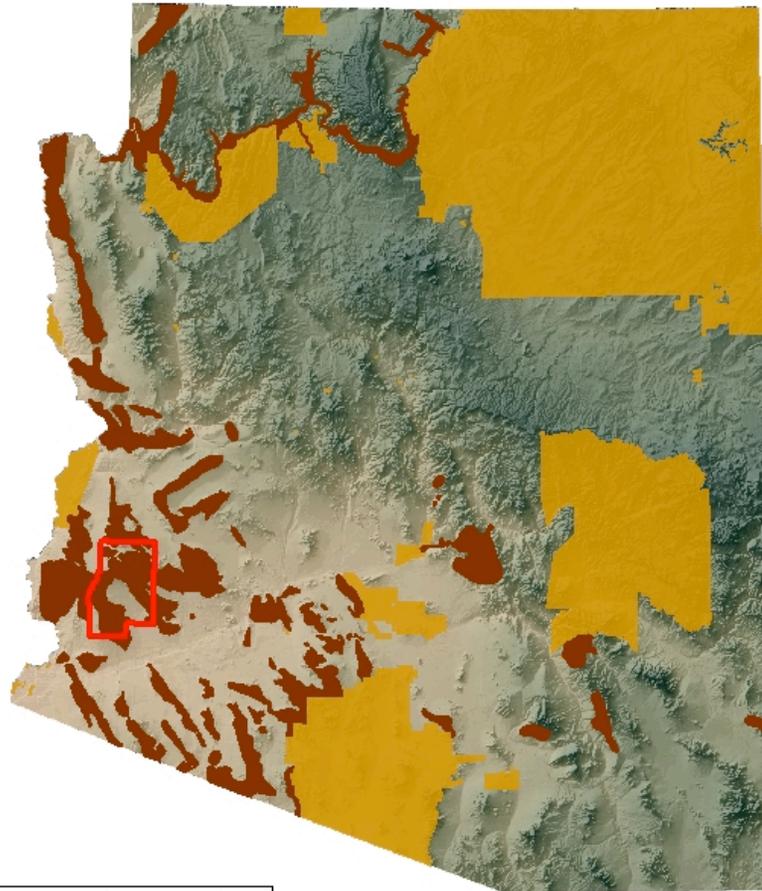


# KOFA E.A. Update

## Bighorn Sheep Distribution 1960



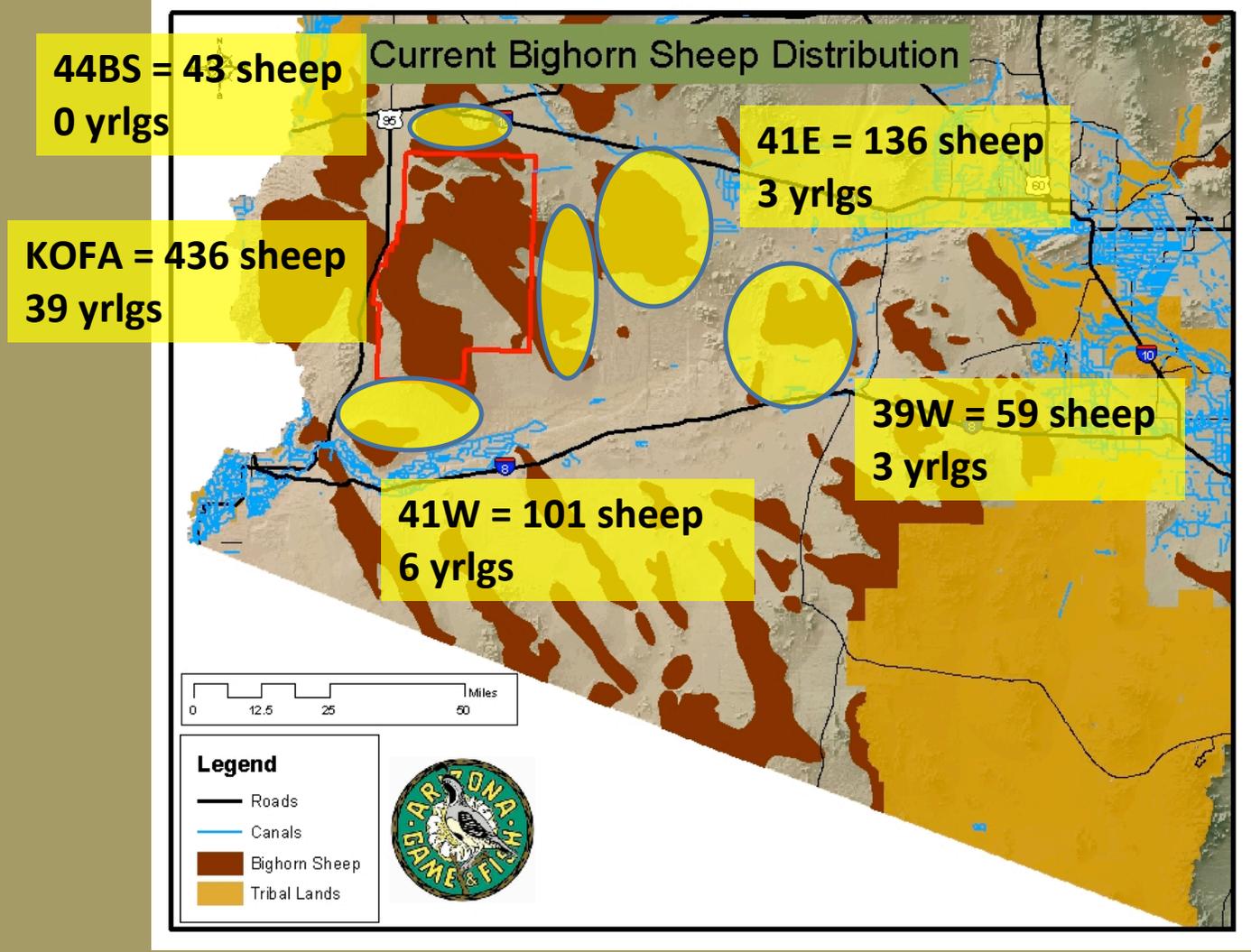
## Current Bighorn Sheep Distribution



### Legend

-  Bighorn Sheep
-  Tribal Lands

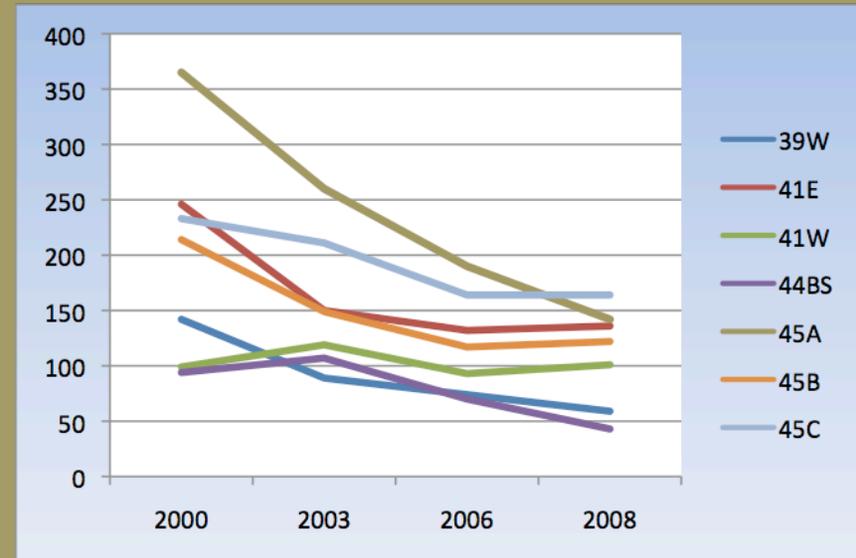
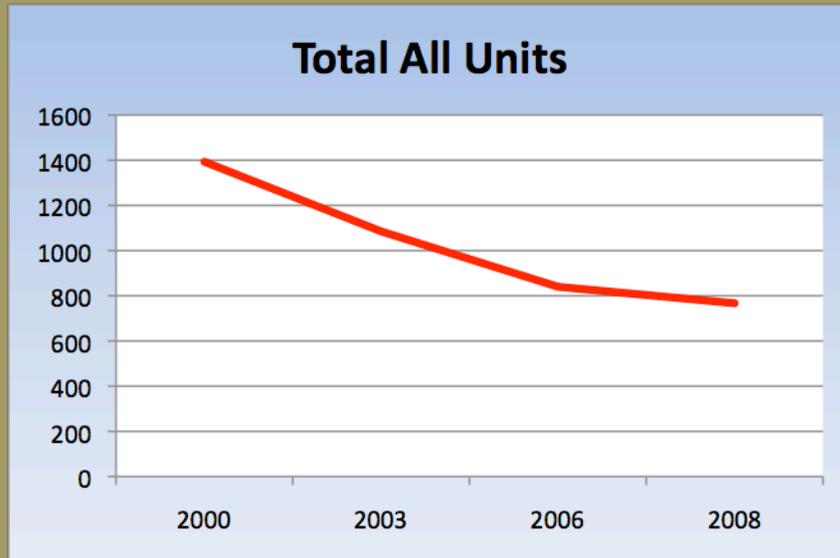




Total population (2008) = 767 sheep,  
51 yearlings

Kofa NWR = 57% of population, 76% of recruitment

# KOFA E.A. Update

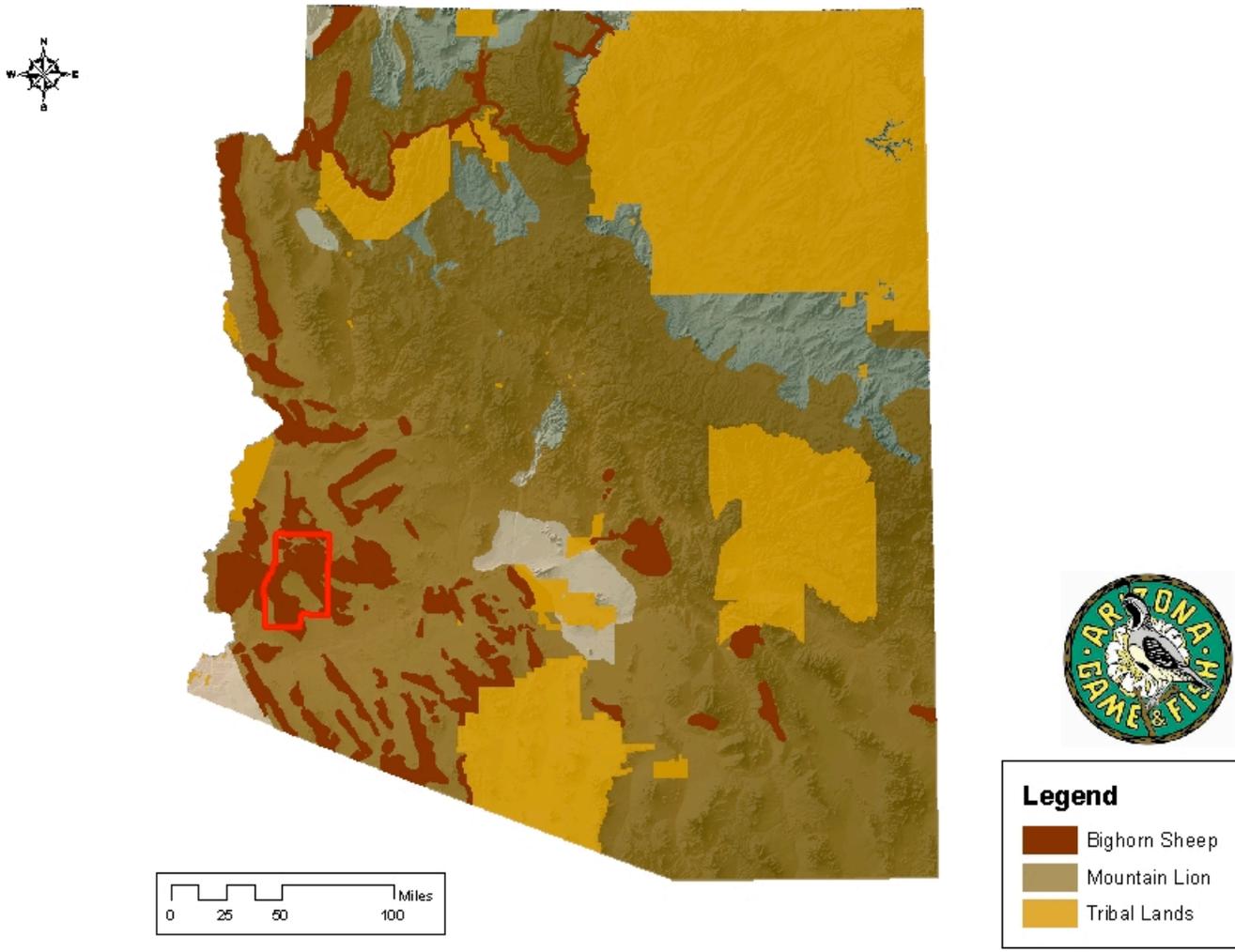


- 49% decline from 2000 to 2008
- Total number declined, Kofa units are the core of this population and account for a large part of the decline
- But there has been a decline across all these units since 2000

# Endangered Isolated Populations

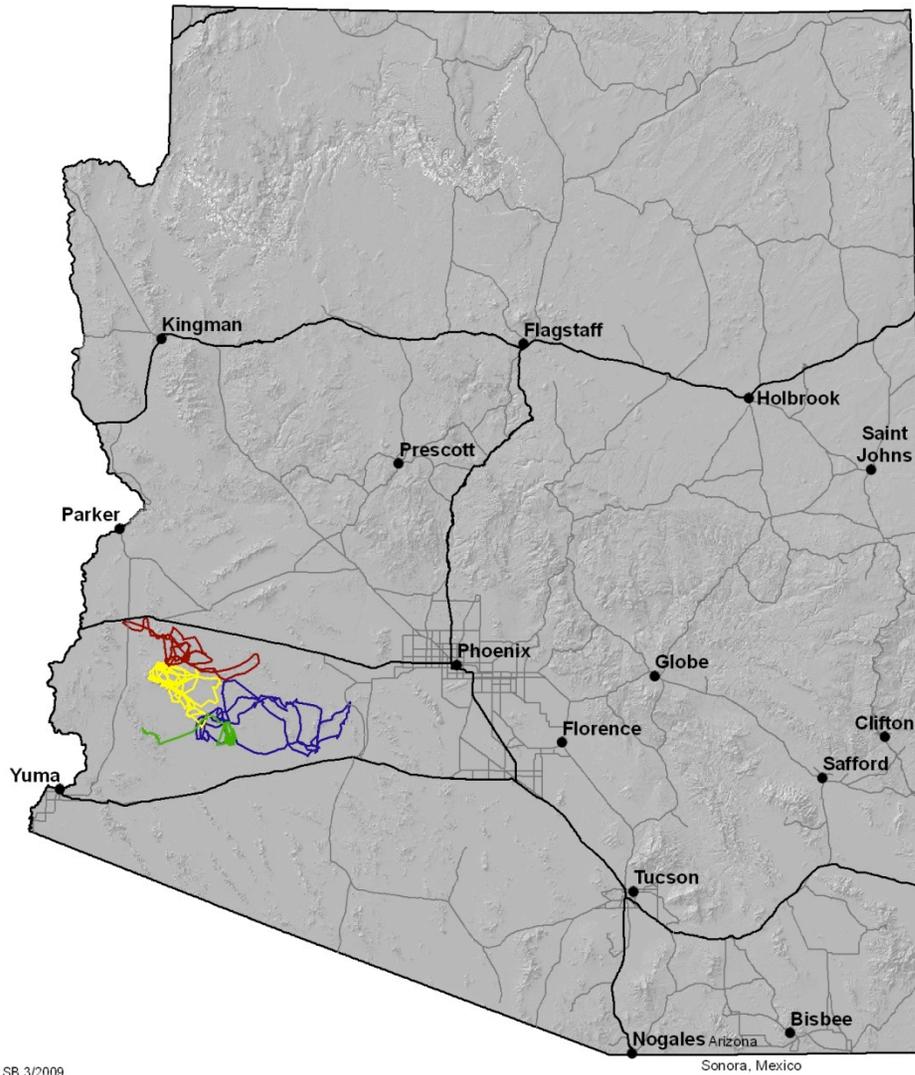
- Sierra Nevada sheep in California
  - Distinct, isolated population
  - Endangered
  - 2007 recovery plan to cost \$21.7 million/10 years
- Peninsular sheep in California
  - Distinct, isolated population
  - Endangered
  - 2000 recovery plan to cost \$73.253 million

## Current Mountain Lion and Bighorn Sheep Distributions

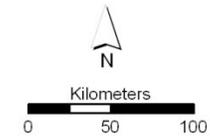


## Movements from GPS Collared Lions

Lines indicate movements  
of individual animals.



SB 3/2009  
AGFD, Research Branch



Data Sources:  
AGFD, Kofa NWR

# Bighorn Sheep predation rates by radio collared lions

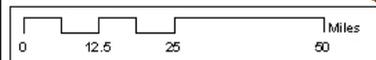
- KM01 = 1 BHS every 19 days.
- KM02 = 1 BHS every 52 days.
- KM03 = 1 BHS every 26.5 days.
- KM04 = 1 BHS every 10.5 days.
- RM01 = 1 BHS every 56 days.
- Estimated average rate = 1 BHS per adult male lion every 32.8 days.

44BS = 43 sheep  
0 yrlds

KOFA = 436 sheep  
39 yrlds

### Current Bighorn Sheep Distribution

41W = 101 sheep  
6 yrlds



#### Legend

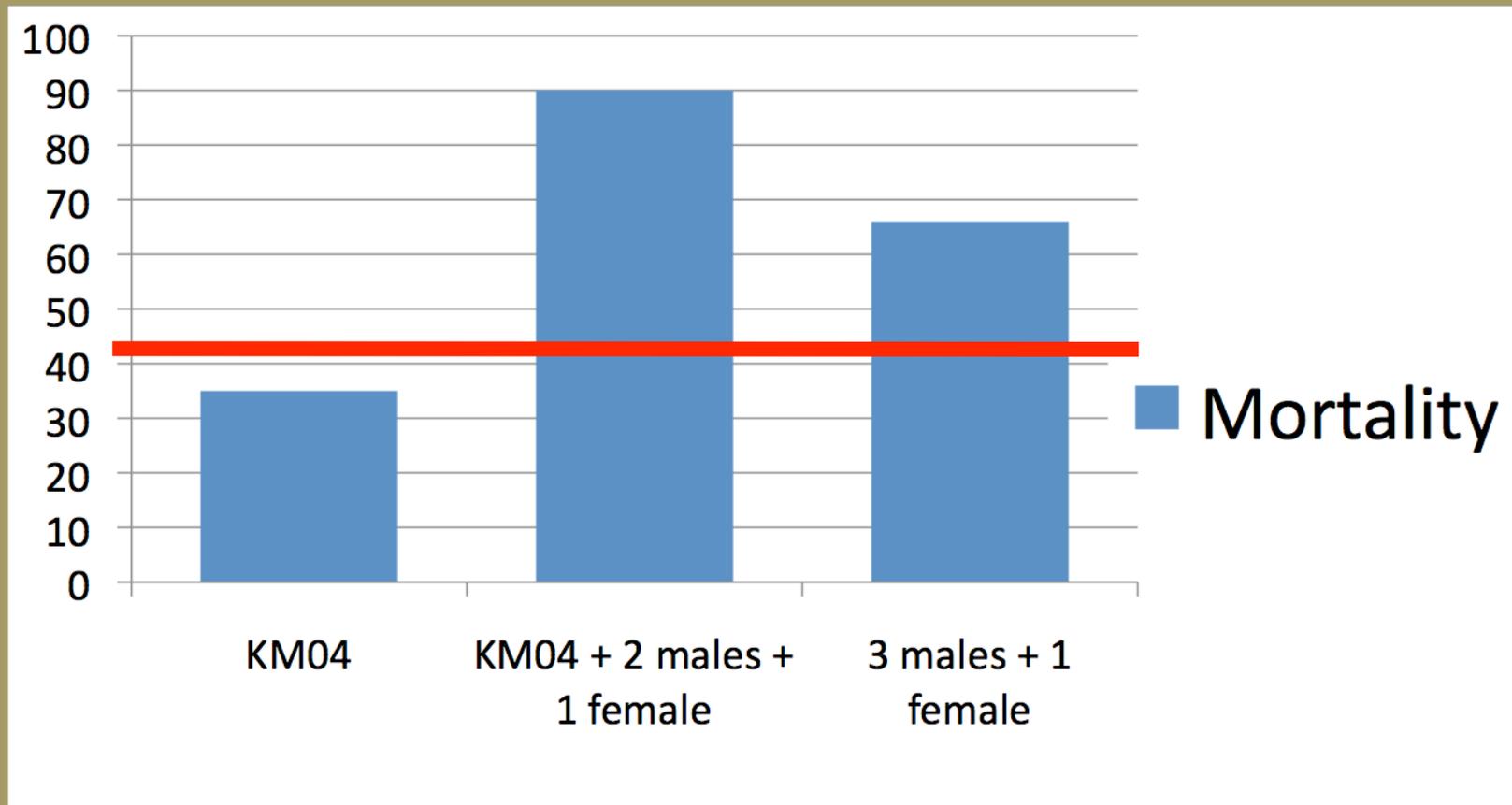
- Roads
- Canals
- Bighorn Sheep
- Tribal Lands



Total population (2008) = 767 sheep,  
51 yearlings

Kofa NWR = 57% of population, 72% of recruitment

# Estimated Annual Bighorn Mortality



— Yearling Recruitment

