TESTING NEW METHODS FOR DETECTING MOHAVE GROUND SQUIRRELS

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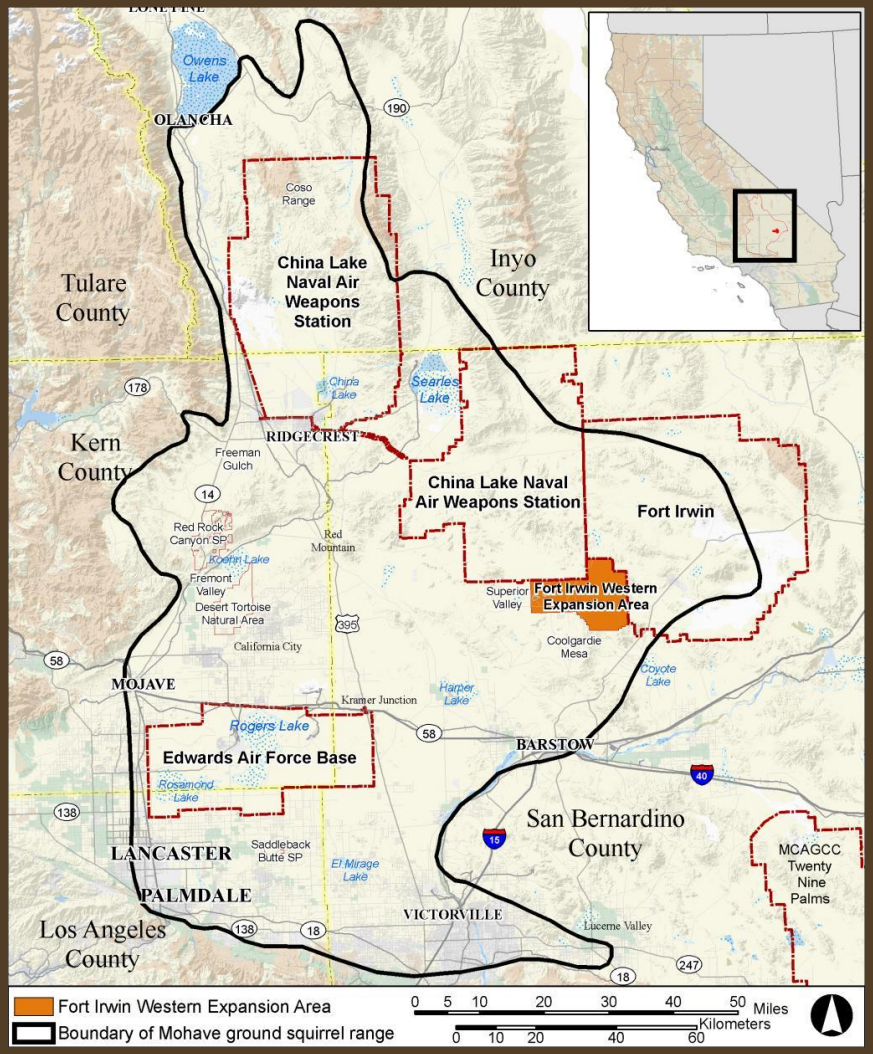
2009 STUDIES AT FORT IRWIN WEA



MOHAVE GROUND SQUIRREL SURVEYS

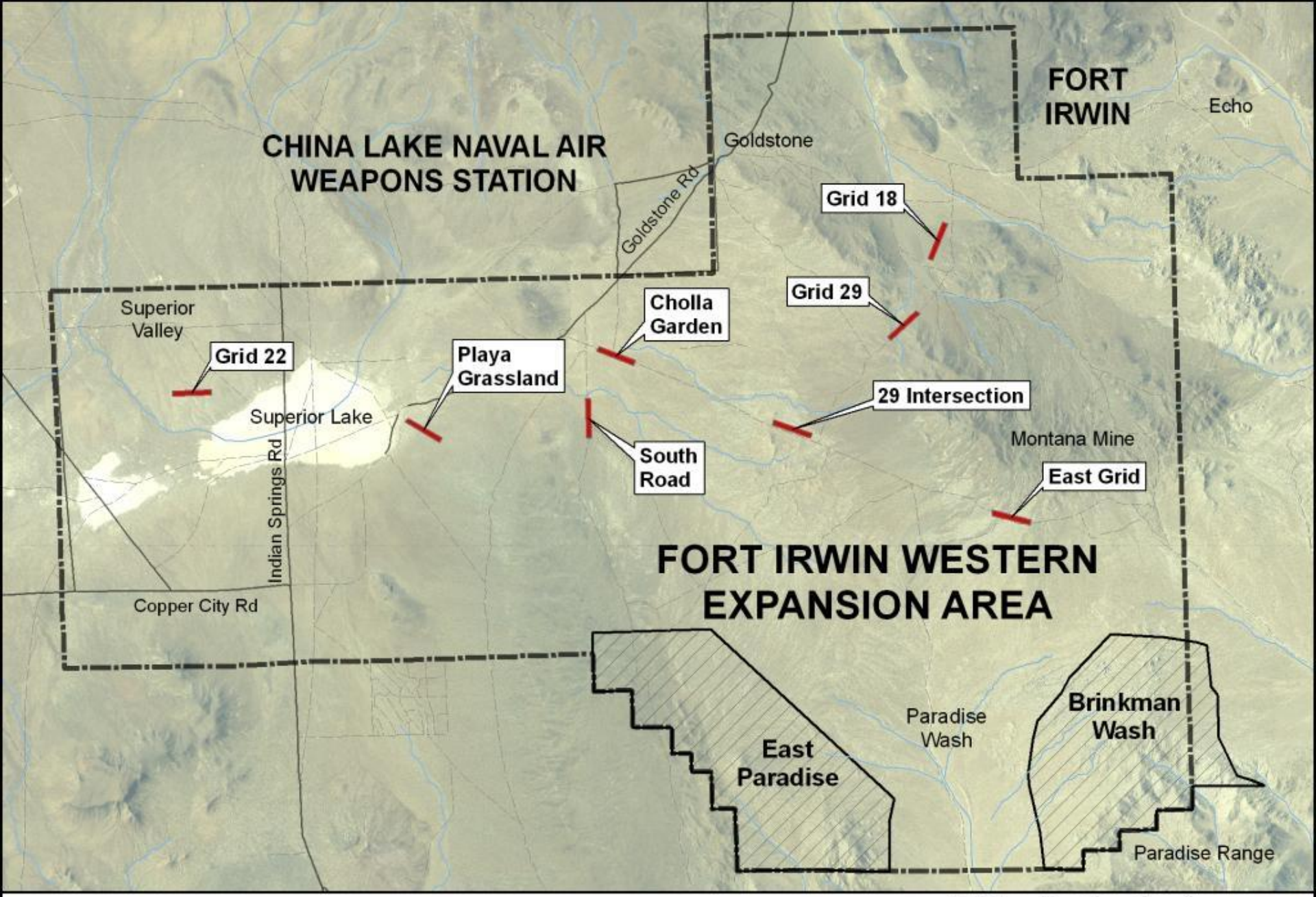
- Standard technique is live-trapping
- Several disadvantages include:
  - Labor-intensive and costly
  - Requires experienced personnel
  - Hot weather cuts trapping time
  - Danger of injury to listed species
- Alternative survey methods
  - Trail cameras
  - Recording vocalizations
  - Track stations
  - Scent dogs

FORT IRWIN WEA

- Excellent study site
  - Known population
  - Previous studies in 2006-07
  - Military lands are secure
- Compare results from live-trap technique with audio and video technology
  - Use audio/video on same study sites before and after trapping

8 STUDY SITES IN 2009

- Selected 3 sites sampled in 2006 study
  - They had highest number of MGS captures that year
- Remaining 5 sites were new in 2009
- The 8 sites were geographically well-distributed across the WEA
- They sampled all major vegetation communities


FORT IRWIN
Echo
CHINA LAKE NAVAL AIR WEAPONS STATION
Goldstone
Goldstone Rd
Grid 18
Grid 29
Cholla Garden
Superior Valley
Grid 22
Playa Grassland
29 Intersection
Superior Lake
Indian Springs Rd
South Road
Montana Mine
East Grid
FORT IRWIN WESTERN EXPANSION AREA
Copper City Rd
East Paradise
Paradise Wash
Brinkman Wash
Paradise Range
Trapping grids (2009)
0 0.5 1 2 3 4 5
Kilometers
0 0.5 1 2 3
Miles


Grid 22


Playa Grassland


Cholla Garden


South Road


East Grid

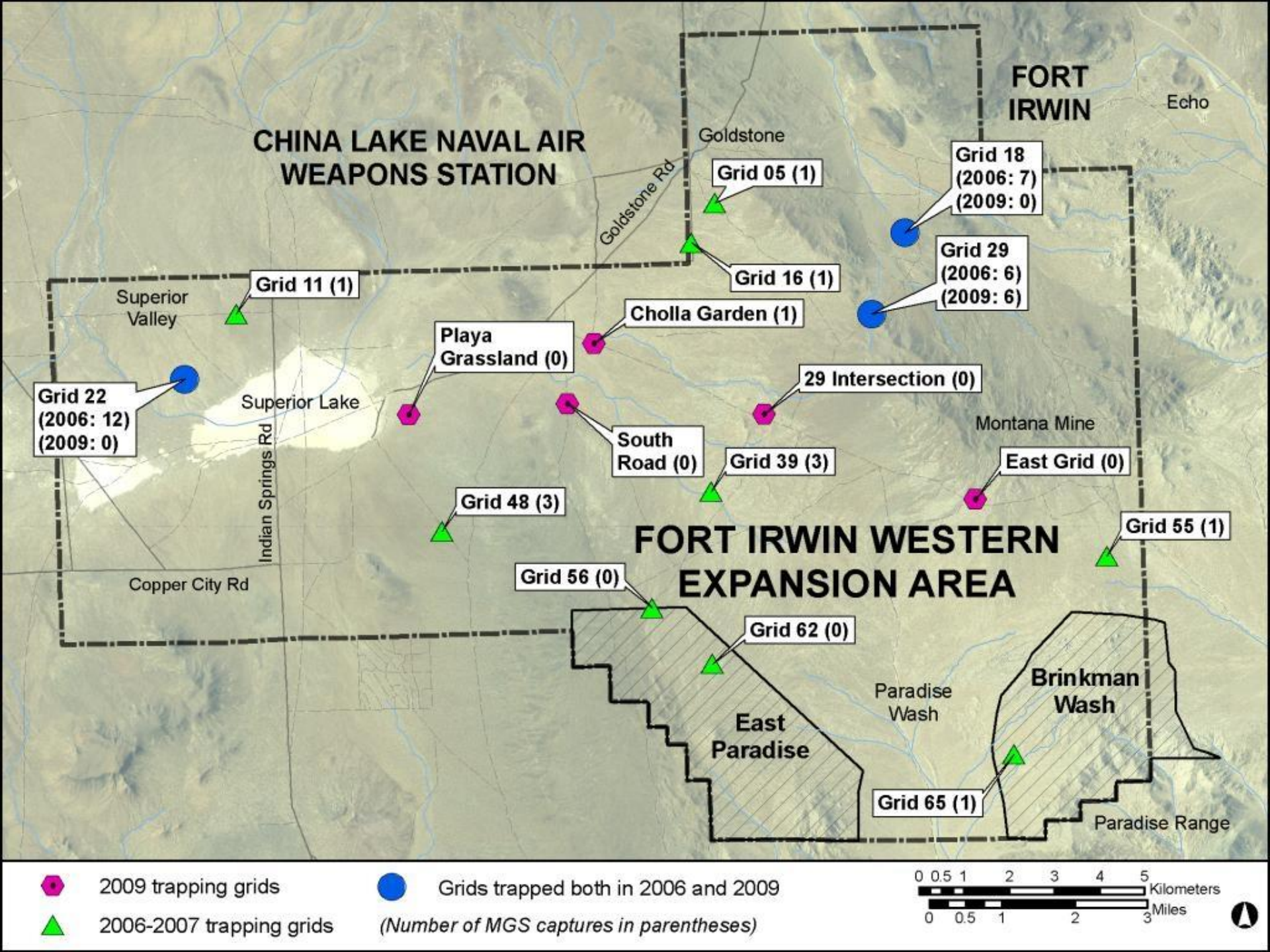

Grid 18


Grid 29


29 Intersection

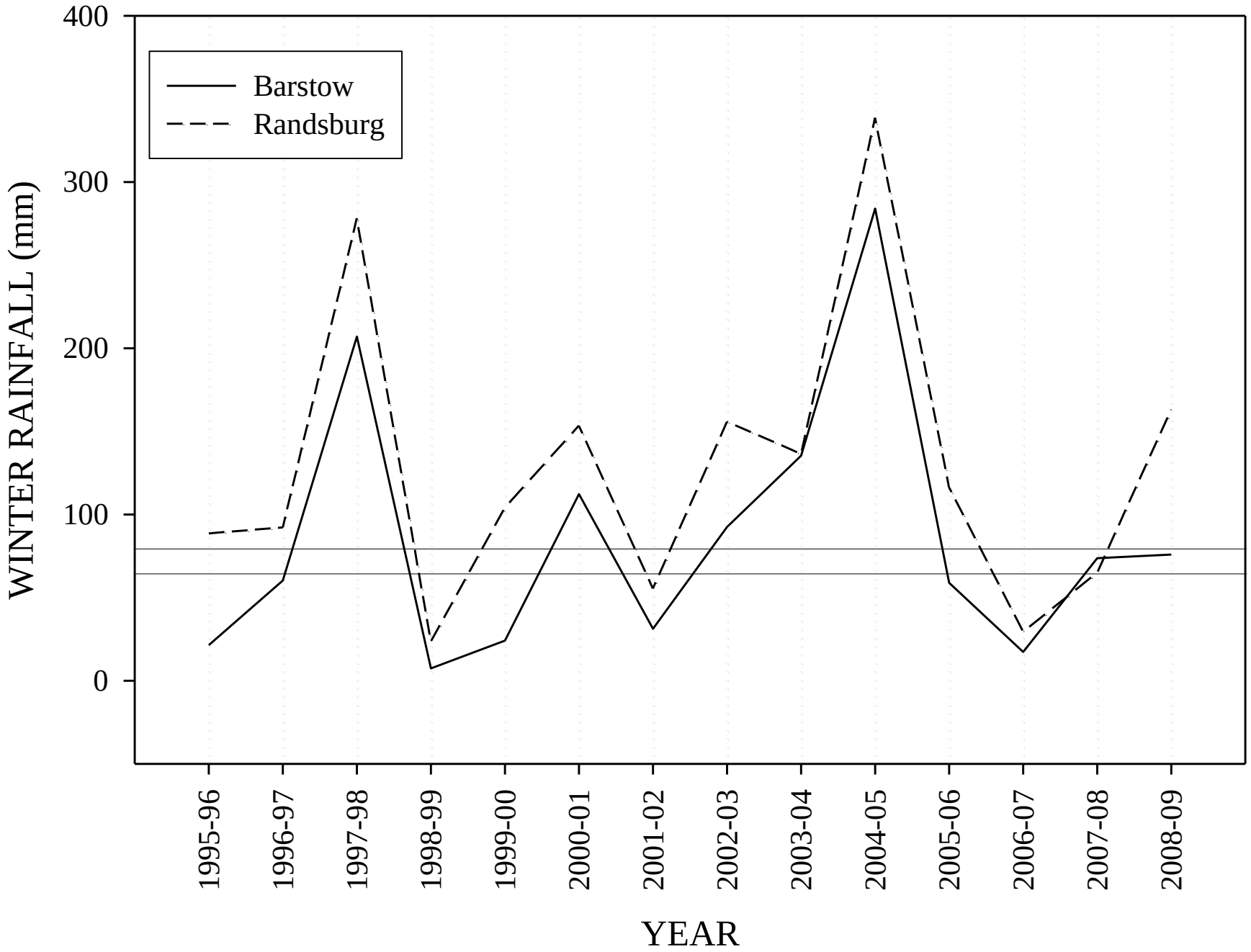
TRAPPING RESULTS 2009

Study Site	Dates	Habitat	MGS Captures
Grid 22	Apr 10-14	Saltbush	0
Playa Grassland	Apr 10-14	Saltbush & Shrub Steppe	0
South Road	Apr 11-15	Creosote Bush & Shrub Steppe	0
Cholla Garden	Apr 11-15	Shrub Steppe	1
Grid 18	May 5-9	Creosote Bush	0
Grid 29	May 5-9	Creosote Bush	6
29 Intersection	May 4-8	Creosote Bush	0
East Grid	May 4-8	Creosote Bush	0


CHINA LAKE NAVAL AIR WEAPONS STATION
FORT IRWIN
Echo
Goldstone
Goldstone Rd
Grid 05 (1)
Grid 18 (2006: 7) (2009: 0)
Grid 16 (1)
Grid 29 (2006: 6) (2009: 6)
Grid 11 (1)
Superior Valley
Cholla Garden (1)
Playa Grassland (0)
Grid 22 (2006: 12) (2009: 0)
Superior Lake
29 Intersection (0)
Indian Springs Rd
South Road (0)
Montana Mine
Grid 39 (3)
East Grid (0)
Grid 48 (3)
Grid 55 (1)
FORT IRWIN WESTERN EXPANSION AREA
Copper City Rd
Grid 56 (0)
Grid 62 (0)
Paradise Wash
Brinkman Wash
East Paradise
Grid 65 (1)
Paradise Range
2009 trapping grids
2006-2007 trapping grids
Grids trapped both in 2006 and 2009
(Number of MGS captures in parentheses)
0 0.5 1 2 3 4 5 Kilometers
0 0.5 1 2 3 Miles

WINTER RAINFALL

- 2004-05 winter rainfall was highest of the decade, resulting in MGS reproduction
- 2006 populations were at a high point
- 2006 and 2007 rainfall was low, no MGS reproduction in WEA
- No data for MGS reproduction in 2008
- 2008-09 rainfall sufficient for 2009 reproduction


Barstow
Randsburg
WINTER RAINFALL (mm)
400
300
200
100
0
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
YEAR

2009
A Lot of Trapping, Not Many MGS

- This was a good year to try alternative survey methods
- MGS populations were down and distribution was patchy
- Next – we'll show how the audio/video detection approach worked