MGS Monitoring 2016

Coso, Core Areas, Hybrid Zone



COSO MONITORING

- Cactus Peak and Coso Basin Grids
- Mar 27-Apr 2, 2016 so captured adults only
- Three dry years (2012, 2013, 2014) with no reproduction at Coso sites
- Enough winter rain (>80 mm) for reproduction in 2015
- This year (2016) saw 106 mm winter rain and females were pregnant again

Here are the numbers

- Coso Basin 2015 Zero; 2016 One
- Cactus Peak 2015 Four; 2016 Seven



2016 BLM MONITORING

- Funding provided by BLM to support DRECP conservation for MGS
- Live trapping carried out in 2 "core areas"
- Field work also in the "hybrid zone" west of Hinkley
 - Live trapping to determine MGS/RTGS distribution
 - Tissue samples taken for genetic analysis



LITTLE DIXIE WASH and COOLGARDIE MESA

- Live trapping at 2 "core areas"
- Freeman Gulch grid / March 2016
- Coolgardie Mesa grid / April 2016
- 500 x 500 m grids with 225 traps at 35 m centers
- Both grids had been surveyed previously and in the past had supported good MGS populations

Trapping Results

Grid Name	Survey Year	Male MGS	Female MGS
Freeman Gulch	1994	6	3
	2002	0	5
	2005	8	7
	2006	1	8
	2007	1	4
	2010	0	0
	2016	0	1
Coolgardie Mesa	2002	3	4
	2016	0	0

Hybrid Zone W of Hinkley

• Two Objectives:

- Explore distribution of both MGS and RTGS in this region
- Collect tissue samples for genetic analysis
- Total of 7 grids trapped in May and June 2016 on the BLM monitoring project
- Thanks to Steven Chen, Mark Allaback, and David Laabs for their help
- Sharon Dougherty also trapped 1 grid in hybrid zone



• 2016 contact zone trapping sites



Hybrid Zone Trapping Results 2015-2016

- Volunteer trapping in 2015 on 6 grids
- MGS were detected at 3/6 sites

- There was trapping in 2016 on 8 grids
- MGS were captured at 2/8 sites

• No RTGS captured in either year



- \triangle 2016, no detections \checkmark
- V 2015, MGS present
 - 2016, MGS present $~~ \bigtriangledown$
- 2015, no detections

CAMERA TRAPPING IN HYBRID ZONE

- In 2012, camera trapping at 23 sites between Kramer Junction and Hinkley
- MGS detected at 17 sites, MGS and RTGS at 1 site
- This was just after several good rainfall years with adult ground squirrel numbers at their peak



2012 contact zone camera sites

Camera both MGS and RTGS present

Camera MGS present



Camera no detections



LIVE TRAPPING IN HYBRID ZONE 2012-2014

- Good data for Hinkley Valley 2012-2013
 - Most captures were genetically RTGS
 - At least 2 were mixed ancestry
- Volunteer trapping W of Hinkley in 2014
 - Genetic analysis detected animals at 2 sites that showed mixed ancestry
 - MGS were present at 4 sites all 4 had MGS back in 2012
 - Several sites had no captures, including 3 camera sites with positive results in 2012



2012-2014 contact zone trapping sites

- MGS present 🛆 Mixed ancestry
- \blacktriangle RTGS present \triangle MGS & RTGS absent

CONCLUSIONS ABOUT HYBRID ZONE

- *Xerospermophilus* distribution has shrunken significantly since 2012
- Re-trapping certain sites has shown that local populations have apparently disappeared
- There was some evidence of RTGS fairly far W in 2012 and 2014
- However, it doesn't look like RTGS are moving W to replace MGS at this point
- Why are MGS populations so unstable here?