DUDEK

USGS/SDMMP Game Camera Workshop
Varied Implementation of Game Cameras as a Tool

PRESENTED on October 30, 2018

BROCK ORTEGA

HISTORY

- First game camera – Hand built, film, RadioShack parts
- CuddeBack
- Reconyx
- Performed low-level comparative study of cameras in garage
  - Variety
- Bushnell (0.3s trigger speed, 30m detection dist., low-glow LEDs, 20mp, still/movie)
- Researched methods using Zielinski and Kucera (1995), Gompper et al (2006), Long et al (2008)
- Reviewed old trapper literature, species' life history, etc. to understand best set locations

GENERAL METHODS

- **Evaluate type of study (goal, data needs)**
- **Determine constraints (security, cattle, solid mount, access, etc.)**
- **Mounting**
  - Mount in most secure locations feasible
  - Set 3 feet high
  - Set 5-30 feet of focal area
  - Point away from direct sun if possible
  - Trim immediate vegetation
- **Camera set-up**
  - Ensure that date/time stamp is accurate
  - Charge batteries/formatted memory card (use the largest), read manual as some high speed HD cards or capacity may not be supported.
  - Settings: wide-screen image format, 3-5 photos/trigger, High LED fire, smallest delay between triggers (0.6s), Auto trigger sensitivity/shutter speed, 24 hr use
  - Other features: Time Lapse, coordinates, sound, video, temperature
  - Test the trigger and be sure to turn it ON after set-up!
- **Analysis Process**
  - File Structure: Site loc; Session #; Camera #; Date (multiple data dumps)
  - Review: intern; 2 independent biologists; Sr. Biologist review
  - Data Management: large server; Excel database; study required data

WILDLIFE MOVEMENT

- Wide area so need to use topography/features to enhance chances of detection
- Bait with small dollops (1/8tsp) of Gusto (scent lure)
- Place dollop on obvious item in field of view (rock)
- Ideally set cameras at intersections of dirt trails/streams
- Solid mount necessary

CORRIDOR STUDIES


Camera 12 Set-up


Camera 11 Set-up

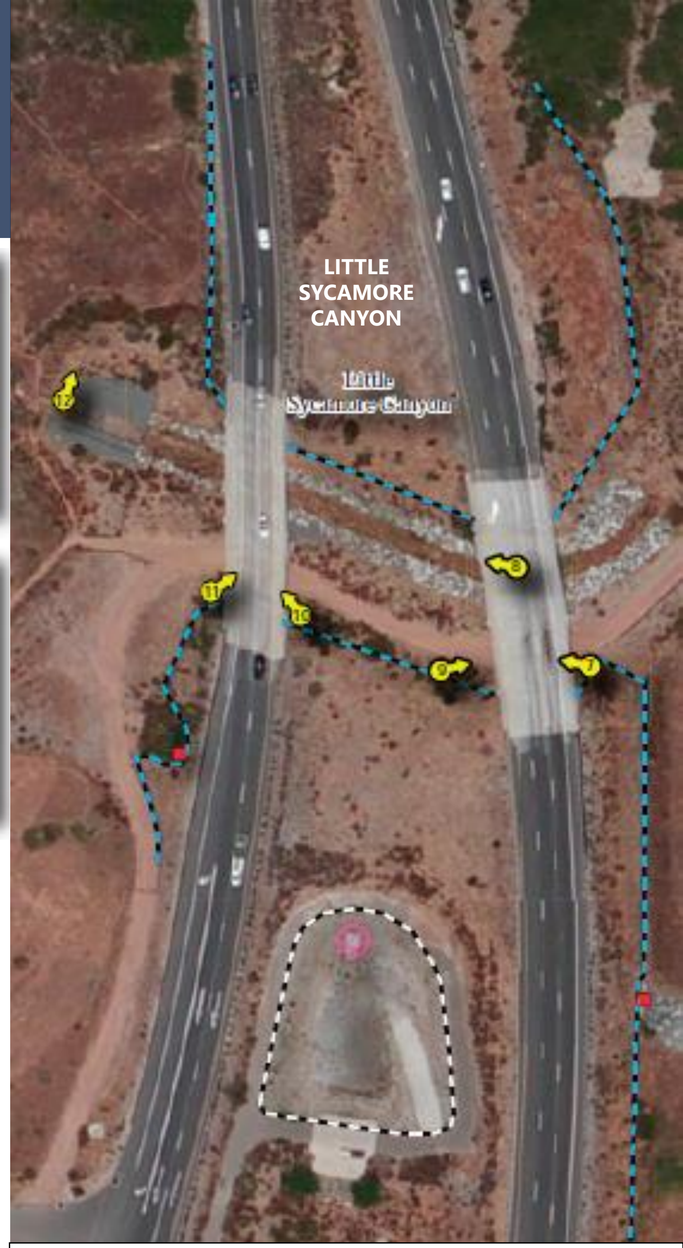

Camera 10 Set-up


Wildlife Photo taken by Camera 12


Wildlife Photo taken by Camera 11


Wildlife Photo taken by Camera 10

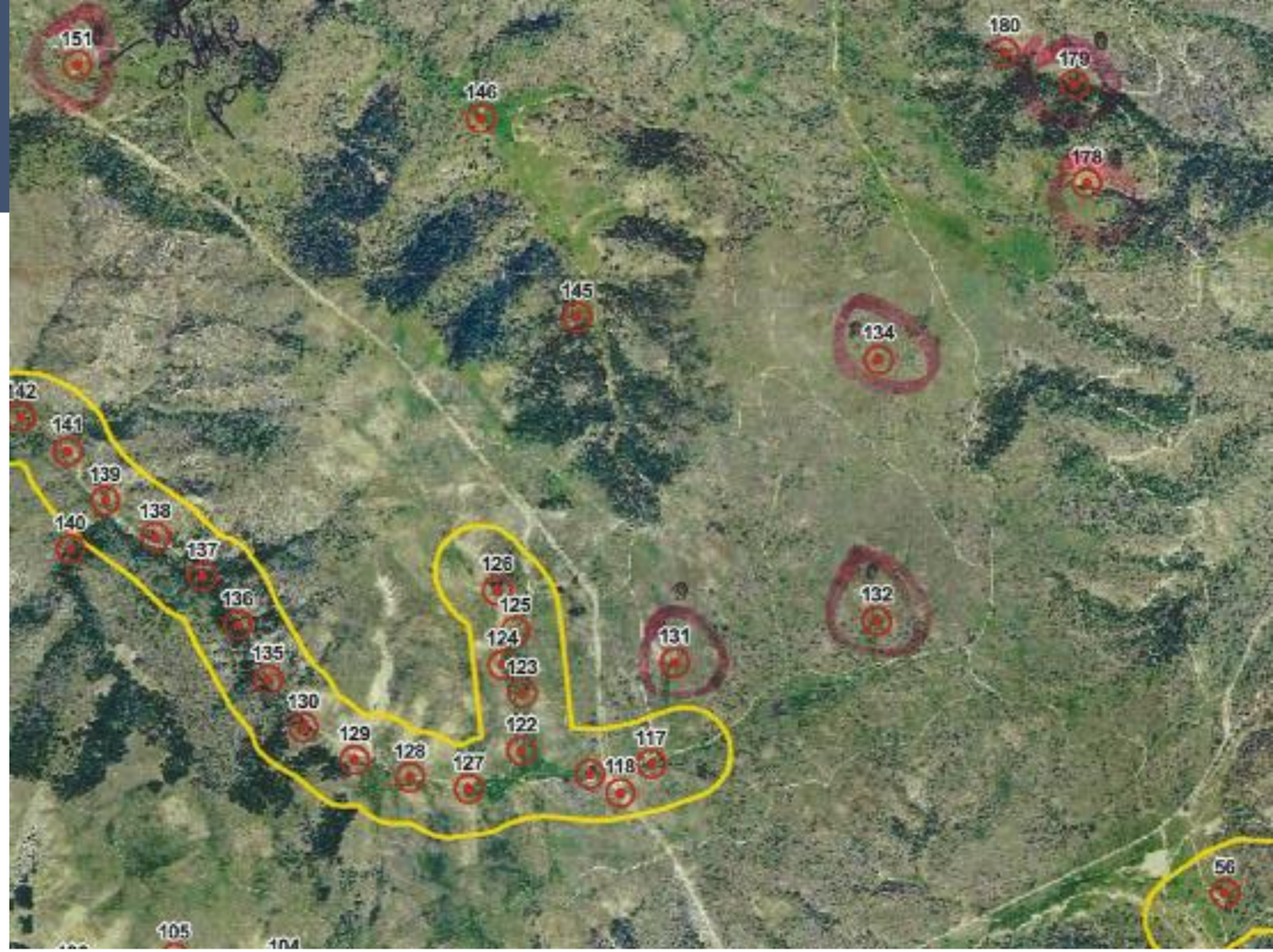
- Primarily to determine wildlife usage of constrained features
- Don't bait unless too wide an area to capture (e.g., wide bridge underpasses)
- Use multiple cameras to fully capture both sides/ends of corridor
- Collect data on actual usage (or not)



SPECIES FOCUSED SURVEYS

Intended to identify if a particular species is present

- Need to understand the biology of the focal species
  - Ringtail – bait (Strawberry Jam/Catfood– David Wyatt) and scent lure, 0.3km
  - Desert kit fox – bait (cat food, fish) and scent lure
  - San Joaquin kit fox – (cat food, fish) bait and scent lure
  - American badger – (cat food, fish) bait and scent lure
  - Peninsular bighorn sheep – likely movement areas, water sources
- Understand protocols (if any)
- Increase trigger interval to 1 to 5 minutes if using bait
- For climbing species – enclose bait in a wire mesh wrap and secure to tree
- For ground species – drive a long stake or nail through can/ground. Only “pop” lid.



MONITORING STUDIES

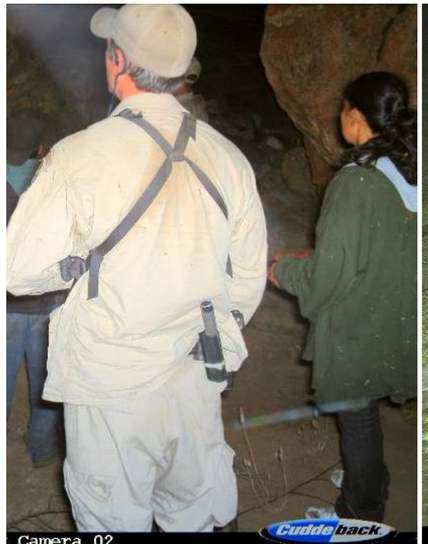
- Species impact monitoring associated with construction projects
- BBCS Carcass removal trials (min 15%)
- Baseline wildlife usage studies for preserves
- Methods
  - Unbaited stations, No delay, Multiple pictures
  - Multiple cameras, “fake cameras”

RESULTS – SELECT DATA

Location Number	Study Type	Number of Cameras	Camera Make	Period of Use	Trap nights per session	Sessions	Total Trap Nights	Season	Number of Photos	Wildlife Photos	Wildlife/ Trap Night	Wildlife/ Photo
10	Corridor	5-3	Cuddeback	1/2010	21	3	252	winter	289	10	0.040	0.035
12	Corridor	14	Cuddeback	10/2012 to 6/2014	14	8	1568	4 season survey x 2 yrs	32686	587	0.374	0.018
19	Corridor/Species	66	Bushnell IR	9/2013 to 10/2013	28	1	1848	summer, fall	29152	7959	4.307	0.273
2	Species	3	Cuddeback	7/2009 to 8/2009	12	2	72		252	0	0.000	0.000
3	Species	2	Cuddeback	7/2009 to 8/2009	12	2	48		704	0	0.000	0.000
1	Species	3	Cuddeback	7/2009 to 8/2010	12	2	72		157	10	0.139	0.064
18	Species	233	Cuddeback	3/2007 - 11/2007	18	1	4194	Year-round	12543	1707	0.407	0.136
20	Species	28	Reconyx, Bushnell IR	4/2013 to 5/2013	14	1	392	summer, spring	14732	964	2.459	0.065
24	Movement	5	Cuddeback		18	4	360	spring, summer	2906	116	0.322	0.040
25	Movement	2	Bushnell IR	6/2012 to 8/2012	14	3	84	summer	1591	29	0.345	0.018
30	Movement	3	Cuddeback	2/2013 to 3/2013	14	3	84	spring	1999	29	0.345	0.015
15	Movement	17	Bushnell IR	10/2016 to 6/2017	14	2	476	fall, summer	107516	433	0.910	0.004
26	Movement	2	Bushnell IR	6/2013 to 8/2013	14	3	84	summer	293	77	0.917	0.263
13	Movement	10	Cuddeback	6/2006 to 12/2007	14	5	700	seasonal	8684	642	0.917	0.074
27	Movement	2	Bushnell IR	6/2014 to 8/2014	14	3	84	summer	2172	85	1.012	0.039
28	Movement	3	Cuddeback	2/2012 to 3/2012	14	3	126	spring	2951	139	1.103	0.047
29	Movement	2	Cuddeback	2/2011 to 3/2012	14	3	84	spring	346	133	1.583	0.384
8	Movement	28	Bushnell IR	12/2016 to 1/2017	21	1	588	winter	49781	2609	4.437	0.052
16	Movement/Corridor	8	Cuddeback	10/2008 to 11/2008	42	1	336	fall	6336	26	0.077	0.004
17	Movement/Corridor	30	Bushnell IR	9/2013 to 7/2014	28	2	1680	fall, summer	169884	805	0.479	0.005

LESSONS LEARNED

- Cameras, baits, methods evolved over time
- Data is cheap – so use it!
- People, raccoons, squirrels, cows, ants, tumbleweeds are a problem
- Bucket design – concrete and T-post
- Internal tech team evaluating AI tech to help weed out extraneous photos
- Other uses – wildlife health, pest monitoring (pigs), anthropogenic use, time lapse monitoring, seasonal variation



SINGLE LOCATION – MULTIPLE SPECIES SEQUENCES

LITERATURE CITED

- Zielinski, W.J. and T.E. Kucera. 1995. American Marten, fisher, lynx, and wolverine: survey methods for their detection. USDA Forest Service Pacific Southwest Research Station General Technical Report PSW-GTR-157. Albany, CA.
- Gompper, M.E, R.W. Kays, J.C. Ray, S.D. Lapoint, D.A. Bogen, and J.R. Cryan. 2006. A comparison of noninvasive techniques to survey carnivore communities in northeastern North America. Wildlife Society Bulletin 34:1142-1151.
- Long, R.A., P. MacKay, J. Ray, W.J. Zielinski. 2008. Noninvasive Survey Methods for Carnivores. 2008. Island Press. Washington, D.C., USA. 400 pp.

Questions and Closing

Thank you for your time

Contact Us

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