Results of Camera Studies on Three Sites in 2018

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Purpose

● Implement requirements of Cuddeback-Kramer Preserve Management Plan (March 2016)
15 cameras on 322 acres

24 cameras on 602 acres

25 cameras on 645 acres
+/- 20 hrs set up, +/- 14 hrs check 64 cameras on 3 sites
Kramer/Cuddeback Methods

<table>
<thead>
<tr>
<th>2016 Plan</th>
<th>2017 Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 camera/25 acres</td>
<td>1 camera/25 acres</td>
</tr>
<tr>
<td>5 consecutive days</td>
<td>49 consecutive days</td>
</tr>
<tr>
<td>Daily checks</td>
<td>9, 9, and 10 days</td>
</tr>
<tr>
<td>$5 \times 64 = 320 \text{ CD}^*$</td>
<td>$2,358 \text{ actual CD}$</td>
</tr>
<tr>
<td>$460,960/2,358 \text{ CD} = 195 \text{ images/day}$</td>
<td></td>
</tr>
<tr>
<td>So, $320 \text{ CD} = 62,400 \text{ images vs 460,960 images}$</td>
<td></td>
</tr>
</tbody>
</table>

*CD = Camera Days
<table>
<thead>
<tr>
<th>Year</th>
<th>Dates</th>
<th>Days</th>
<th>Cameras</th>
<th>Images</th>
<th>Camera Days</th>
<th>Images/CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>April 15-June 2</td>
<td>49</td>
<td>64</td>
<td>460,960 Images</td>
<td>2,358 Camera Days</td>
<td>195</td>
</tr>
<tr>
<td>2018</td>
<td>April 30-May 31</td>
<td>32</td>
<td>34</td>
<td>272,510 Images</td>
<td>809 Camera Days</td>
<td>337</td>
</tr>
</tbody>
</table>
Camera Days Concept

No images on May 16, 17, or 31

5,674 images on 29 of 32 days = 29 Camera Days

5,674 Images/29 Camera Days = 195 Images/Camera Day
Camera Days Concept

No images on May 11 or 12 or after May 19

7,164 images on 18 of 32 days = 18 Camera Days

7,164 Images/18 Camera Days = 398 Images/Camera Day
Environmental Factors Affecting Bait Attraction?

2017 wet, MGS reproductive year

Need to measure rainfall and annual plant growth

2018 dry, non-reproductive year
<table>
<thead>
<tr>
<th>Year</th>
<th>AGS</th>
<th>Cameras/Days</th>
<th>Camera Days</th>
<th>AGS/CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>3,873</td>
<td>64/49</td>
<td>2,358</td>
<td>1.64</td>
</tr>
<tr>
<td>2018</td>
<td>124,751</td>
<td>34/32</td>
<td>809</td>
<td>154.20</td>
</tr>
</tbody>
</table>
AGS Results

2017 = 3,922 AGS
1.64 AGS/CD

2018 = 124,751 AGS
154.2 AGS/CD
## MGS Results

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGS</td>
<td>2 MGS</td>
<td>2,578 MGS</td>
</tr>
<tr>
<td>Camera</td>
<td>1 Camera Cuddeback</td>
<td>5 Cameras Cuddeback</td>
</tr>
<tr>
<td></td>
<td>64 Cameras/49 days</td>
<td>34 Cameras/32 days</td>
</tr>
<tr>
<td></td>
<td>2,358 Camera Days</td>
<td>809 Camera Days</td>
</tr>
<tr>
<td></td>
<td>0.0008 MGS/CD</td>
<td>3.19 MGS/CD</td>
</tr>
</tbody>
</table>
2018 = 2,578 MGS

MGS Results
2018 = 2,578 MGS

2018 = 124,751 AGS
Raven Results

2017
6,041 Ravens
64 Cameras/49 days
2,358 Camera Days
2.56 Ravens/CD

2018
3,928 Ravens
34 Cameras/32 days
809 Camera Days
4.85 Ravens/CD
2017 = 3,879 Ravens
2.56/Camera Day

2018 = 6,041 Ravens
4.58/Camera Day
Results per 25-acre grids

Kramer East

Map Produced by Circle Mountain Biological Consultants, Inc. on 7/9/2017

Map Produced by Circle Mountain Biological Consultants, Inc. on 1/18/2018
Results per 25-acre grids

Cuddeback
Environmental Factors Affecting Camera Function?

2017 wet, abundant annual growth

2018 dry, no annual growth
<table>
<thead>
<tr>
<th>Year</th>
<th>Images</th>
<th>Empty day</th>
<th>Empty</th>
<th>Night</th>
<th>Total Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>460,960</td>
<td>369,537</td>
<td>80%</td>
<td>79,425</td>
<td>17%</td>
</tr>
<tr>
<td>2018</td>
<td>272,510</td>
<td>62,497</td>
<td>23%</td>
<td>76,516</td>
<td>28%</td>
</tr>
</tbody>
</table>
2019

- Same 64 camera stations
- Photos copied to TWO hard drives
- Feed blocks and sandwich boxes
- Live trap 1 grid Palmdale
- Live trap 3 5-day grids in Bowling Alley