Update on Monitoring and Management of the Relict Leopard Frog

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2013 Colorado River Terrestrial and Riparian Meeting
31 January 2013
History

- Extirpated in 1950
- Taxonomic controversy
History

- Extirpated ? in 1950
- Taxonomic controversy

*Copita, 2001(2), pp. 339–354*

**Rediscovering Rana onca: Evidence for Frogs from the Border**

_Jef R. Jaeger, Brett R. Riddle_

From Platz 1988
History

- Extirpated in 1950
- Taxonomic controversy
- “Rediscovered” in 1991
- Since then, two sites have been extirpated
- Petition for listing as endangered in 2002
Voluntary Conservation and Agreement Strategy

Conservation Agreement and Rangewide Conservation Assessment and Strategy for the Relict Leopard Frog (Rana onca)

Final

Prepared by the Relict Leopard Frog Conservation Team
July 2005

desert conservation program
respect, protect and enjoy our desert!
Voluntary Conservation and Agreement Strategy

Main objectives

- Monitor populations
- Manage populations & habitats to promote sustainability
- Establish additional populations in existing or created habitat
- Enhance or create habitat
- Investigate species biology & apply findings to management
Outline

- Monitoring efforts
  - Visual Encounter Surveys
  - Mark-Recapture Population Estimation

- Headstarting and Translocation
  - Facilities and rearing
  - New sites
  - Status of experimental sites

- Habitat management

- Investigate species biology
  - Perkins Pond release experiment
Monitoring Efforts

11 Active experimental
7 Active ‘natural’ sites
Monitoring Efforts
Natural sites

Maximum count (VES) of adult & juvenile frogs

Flooding Event
Monitoring Efforts
Experimental Sites

Maximum count (VES) of adult & juvenile frogs

- Union Pass Spring
- Perkins Pond
- Quail
- Tassi
- Red Rock
- Grapevine, AZ
- Pupfish
- Goldstrike

Spr Fall Spr Fall Spr Fall Spr Fall Spr Fall Spr Fall Spr Fall Spr Fall
04 04 05 05 06 06 07 07 08 08 09 09 10 10 11 11 12 12
Monitoring Efforts

Summary (2004–2012) Natural & Experimental Sites
Adult & juvenile frog high counts (VES)
## Mark-recapture Population Estimates

<table>
<thead>
<tr>
<th>Site</th>
<th>2012 Estimate</th>
<th>C.I.</th>
<th>Handled</th>
<th>2012 VES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Point</td>
<td>51</td>
<td>41-68</td>
<td>49</td>
<td>26</td>
</tr>
<tr>
<td>Red Rock</td>
<td>19</td>
<td>16-23</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Pupfish Refuge</td>
<td>81</td>
<td>71-94</td>
<td>70</td>
<td>47</td>
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<tr>
<td>Grapevine, AZ</td>
<td>358</td>
<td>318-410</td>
<td>299</td>
<td>189</td>
</tr>
</tbody>
</table>

All data is provisional

UNLV crew conducting mark-recapture survey at Grapevine AZ, April 2012
Headstarting and Translocation

Eggs collected from wild, reared to late-stage tadpoles or small frogs, then released.
Headstarting and Translocation

Rearing Facilities

Raceways at Lake Mead State Fish Hatchery, 2012

Raceways at Willow Beach National Fish Hatchery, 2012

NPS facility, 2011
Headstarting and Translocation

Three new experimental sites added by BLM:

- Bearpaw Poppy Spring
- Horse Spring
- Lime Spring

Created pool and fence at Horse prior to releases.

Fence and pools near springhead at Bearpaw prior to releases.
## Status of Experimental Sites

Experimental sites of active augmentations in 2012

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Release Years</th>
<th>Larva</th>
<th>Frogs</th>
<th>Total</th>
<th>Over-Winter</th>
<th>Breeding</th>
<th>Current Status</th>
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<tr>
<td>Bearpaw</td>
<td>2012</td>
<td>0</td>
<td>359</td>
<td>359</td>
<td>-</td>
<td>-</td>
<td>Active</td>
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<tr>
<td>Horse</td>
<td>2012</td>
<td>243</td>
<td>0</td>
<td>243</td>
<td>-</td>
<td>-</td>
<td>Active</td>
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<tr>
<td>Lime</td>
<td>2012</td>
<td>231</td>
<td>68</td>
<td>299</td>
<td>-</td>
<td>-</td>
<td>Active</td>
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<tr>
<td>Union Pass</td>
<td>2011-12</td>
<td>424</td>
<td>240</td>
<td>664</td>
<td>Yes</td>
<td>Yes</td>
<td>Active</td>
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<tr>
<td>Perkins</td>
<td>2010-12</td>
<td>1144</td>
<td>410</td>
<td>1554</td>
<td>No</td>
<td>-</td>
<td>Active</td>
</tr>
<tr>
<td>Quail</td>
<td>2008-12</td>
<td>324</td>
<td>273</td>
<td>597</td>
<td>Yes</td>
<td>Yes</td>
<td>Probably Recruiting</td>
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</tbody>
</table>
## Status of Experimental Sites

### Experimental sites where augmentations are completed

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Release Years</th>
<th>Larva</th>
<th>Frogs</th>
<th>Total</th>
<th>Over-Winter</th>
<th>Breeding</th>
<th>Current Status</th>
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<tr>
<td>Tassi</td>
<td>2006-10</td>
<td>479</td>
<td>719</td>
<td>1198</td>
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<td>Yes</td>
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<td>Grapevine, NV</td>
<td>2006-07</td>
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<td>250</td>
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<td>Red Rock</td>
<td>2005-10</td>
<td>109</td>
<td>511</td>
<td>620</td>
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<td>Yes</td>
<td>Active</td>
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<td>Goldstrike</td>
<td>2004-09</td>
<td>2185</td>
<td>0</td>
<td>2185</td>
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<td>Yes</td>
<td>Recruiting</td>
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<tr>
<td>Grapevine, AZ</td>
<td>2004-09</td>
<td>4640</td>
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<td>Yes</td>
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<tr>
<td>Pupfish</td>
<td>2003-08</td>
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<td>541</td>
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<td>Yes</td>
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<tr>
<td>Sugarloaf</td>
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<td>426</td>
<td>426</td>
<td>Yes</td>
<td>Yes</td>
<td>Failed</td>
</tr>
</tbody>
</table>
Habitat Management

*Rana onca* does well in early successional stage habitat

- Third-year completed on a BOR led project to replace tamarisk dominated vegetation
Habitat Management

Blue Point

- Maintaining and creating fish-free breeding pools

Vegetation reduction along stream, January 2012
Perkins Pond Experiment

- No overwintering. Concerns about water quality.
- Late-stage tadpoles released into containers
  - conducted late June – early July
- All successfully metamorphosed into frogs
Acknowledgments

Special Mention 2012:

✓ D. Tyler Harrison
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✓ Alex Jones
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✓ Paul van Els
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✓ Lake Mead State Fish Hatchery
✓ Relict Leopard Frog Conservation Team
✓ …and many others…

Photos: Jef Jaeger or Rebeca Rivera