Welcome to the Conservation Lecture Series

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Questions? Contact margaret.mantor@wildlife.ca.gov
Managing California Red-legged Frogs and California Tiger Salamanders in Landscape-scale Habitats

Jeff Alvarez, The Wildlife Project
Natural History Overview
Natural History Overview
Natural History Overview
Natural History Similarities

- Biphasic reproductive pattern;
- Congregate in aquatic breeding sites in late fall and winter;
- Lay eggs in shallow water;
- Both may have early metamorphosing or overwintering larvae;
- Adults highly adapted to dry uplands;
- May utilize similar aquatic breeding habitat.
An Important Similarity…

CA tiger salamander
CA red-legged frog
Overlapping range
Perennial and ephemeral creeks
Created wetlands
Ephemeral ponds
Management Activities

Aquatic breeding habitat:
- invasive species management
- vegetation and silt removal
- pond construction/repair/removal

Upland habitat:
- grazing
- vehicular travel
- rodent control (passive and active)
- ground disturbance

Other:
- “dry” ponds
- atypical habitat
- good projects
Numbers of egg masses relative to dredging

Number of egg masses

Timing

3 years prior to dredging
2 years prior to dredging
1 year prior to dredging
1st year after dredging
2nd year after dredging
3rd year after dredging
Between 2002 and 2010:

- We conducted 3,240 pond surveys on 90 individual ponds,
Results of Surveys at Aquatic Breeding Habitat

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- CTS were found in 76 different ponds (not in one year),
- Up to 44 ponds had CTS breeding in a single season,
- CTS bred in perennial and ephemeral systems with turbid to clear water,
- CTS were sympatric with California red-legged frog 100% of the time.
Numbers of ponds with observed CTS breeding

![Bar chart showing numbers of ponds with observed CTS breeding from 2002 to 2010. The number of ponds varies each year, with a peak in 2002 and 2008.]
Numbers of ponds with CTS breeding observed

Year

- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010

Numbers of ponds / inches of rain

Annual rainfall
Numbers of ponds with CTS breeding observed

- **Annual rainfall**

<table>
<thead>
<tr>
<th>Year</th>
<th>Numbers of ponds / inches of rain</th>
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<tbody>
<tr>
<td>2002</td>
<td>High</td>
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<tr>
<td>2003</td>
<td>High</td>
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<tr>
<td>2004</td>
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<td>Low</td>
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<tr>
<td>2010</td>
<td>High</td>
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Numbers of ponds with CTS breeding observed

Where are the rest of the CTS?
But what about…

projects that have little to do with CRLF and CTS, but will likely provide a benefit to them?
Considerations:

- Sympatry is common in CRLF/CTS;
- Grazing, or upland vegetation management is critical for CTS;
- Observed CTS breeding is sporadic;
- CRLF require uplands for nocturnal foraging;
- “Dry” ponds are not always dry and may still be suitable for CRLF/CTS;
- CRLF/CTS can respond quickly to predator control efforts;
- Aquatic breeding habitat can be manipulated to the benefit of CRLF/CTS;
- Nearly all sites will require management over time.
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