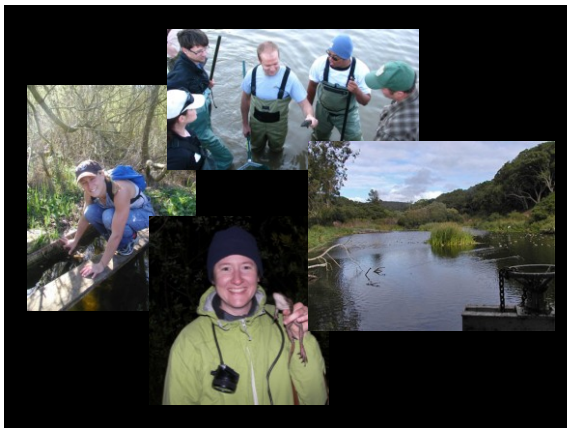
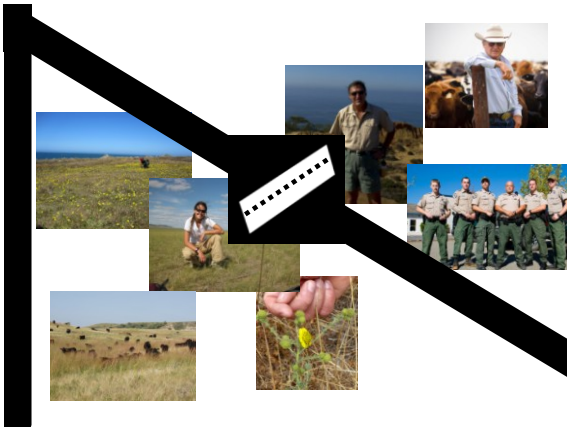
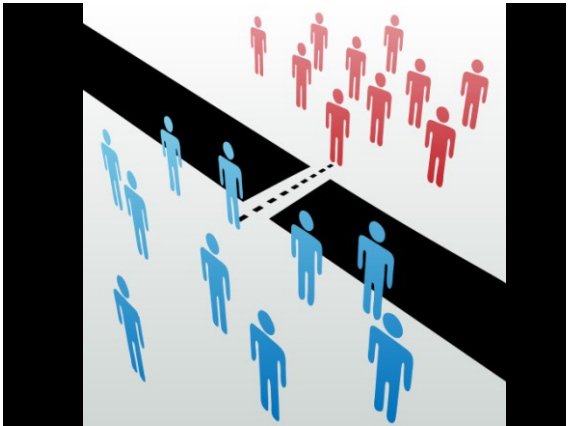


Priority California red-legged  
frog decision maker information  
needs, research priorities

Data from Elkhorn Slough Coastal Training  
  
Grey Hayes, PhD  
Director of Coastal Training  
Elkhorn Slough National Estuarine Research Reserve



Goal

Improve your understanding of priorities  
for research and decision makers in order  
to aid in the recovery of California red-  
legged frog

### Objectives

- Improve your understanding of...
- Coastal Training role and methods of working with California red-legged frog
  - Research priorities
  - Decision maker information needs
  - Priority next steps for research/information transfer to recover of the species

### Who Are You?

- Conservation lands managers (12)
- Agency land management advisors (9)
- Environmental compliance/regulators (8)
- Private consultants (5)
- Researchers (4)
- Educators (2)
- Funders (2)

### FOR (THE RIGHT) RESEARCH TO GET DONE...

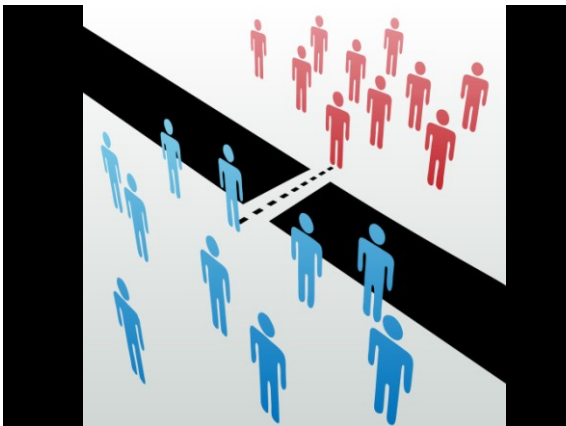
(AUDIENCE PARTICIPATION AND RESPONSE)

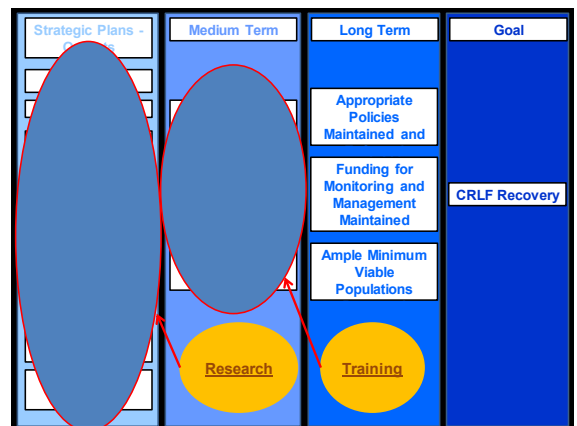
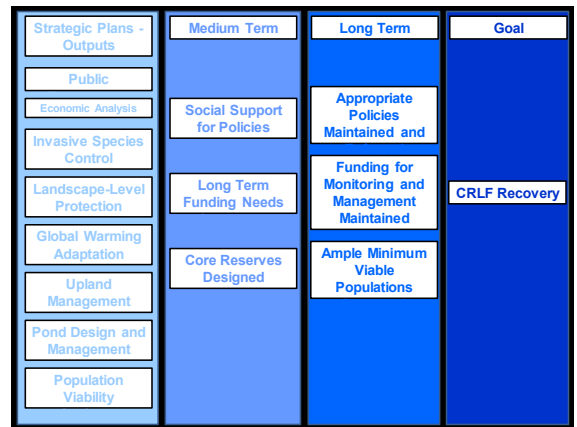
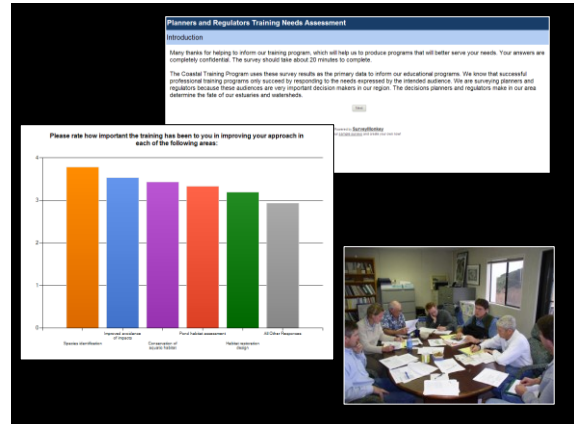
### FOR (THE RIGHT) TRAINING TO GET DONE...

(AUDIENCE PARTICIPATION AND RESPONSE)

### How Coastal Training Works

(At Elkhorn & Throughout the Nation)





For the Past 7 Years...

Elkhorn Coastal Training and CRLF

Evaluations

1) After each event  
2) After a while...long term application

Workshops

Yearly since 2007  
340 trained professionals

Website

50+ publications  
Hundreds/day

Meetings

Scientific Advisory for Improved Training

Publications

Bibliography  
Presentations  
Guidelines

2007 – present  
Basic biology, ecology, and conservation

2013 – present  
Habitat management

Managing Rangelands to Benefit California Red-Legged Frogs  
California Tiger Salamanders



2011: Elkhorn Convenes  
California Red-legged Frog Expert  
Focus Group

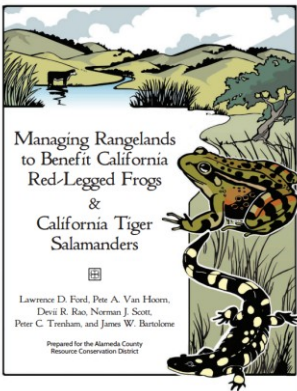
Mark Allaback
Jeff Alvarez
Nina D'Amore
Valentine Hemingway
Bert Mulchaey
Tom Newcomb
Galen Rathbun
Dawn Reiss
Norm Scott
Trish Tatarian

Goal

- Improve and direct Coastal Training work to help recover CRLF
- workshops
  - publications
  - inform researchers and funders

Objectives

- List management factors affecting CRLF
- Rank management factors
  - Importance to the CRLF
  - Importance for new research
- Develop details for top research priorities



Science Review

Bert Mulchaey
Jessica Purificato
Trish Tatarian
Sara Kuperberg
Mary Shea
Bryan Mori
Dana Bland
Mark Allaback
Maureen Ryan
Nina D'Amore
Sue Oriaff
Sam Sweet
Jeff Alvarez
Steve Bobzien
Patrick Kleeman
Mark Jennings
Michael Van Hattem
Chris Searcy

Research Needs
<b>Barriers</b> What are the characteristics of plant communities (species, density or ground level, canopy cover) that would pose a significant barrier to movement of CRL or CRLF?
<b>Dispersal by Juvenile CRLF</b> Little is known about the dispersal patterns of juveniles (CRL or CRLF) or how their needs may differ from adults when moving across the landscape.
<b>Grazing and Grassland Characteristics</b> What combinations of excessive or inefficient grazing result in inadequate habitat quality for CRLF or CTF, or for their predators and prey? Are there generally optimal approaches for control to related areas? What are the targeted areas a best model for assessing and monitoring habitat quality, including heterogeneity of species and resources?
<b>Disturbance</b> How do disturbances to upland habitat—such as fire, landslides, and drought—affect CRLF and CTF?
<b>Maintenance Operations Effects</b> Do any activities related to property maintenance, road management, vehicle operation, and other management operations negatively impact CRLF or CTF or the quality of their upland habitat? If so, what best management practices would decrease or avoid the effect? Should the maintenance or maintenance of these or popular fire water tanks and rougher be a concern to CTF habitat? If so, how can any impacts be minimized to a level acceptable to CTF and regulatory entities?
<b>Barriers</b> How many habitat barriers within dispersal distance of a given pond are enough to provide a sufficient or optimal amount of upland habitat for a population of CTF? How does grazing influence the number of barriers?
<b>Ground Squirrel Control</b> Do commonly used rodenticides have direct impacts on CRLF, CTF, or their prey?

Priority Research Needs

Score	Research Area
10	Publish existing findings (held by FWS)
7	Metamorph dispersal
7	Pond Design- size, contours, depth, slope and bottom profiling
7	Survivorship of translocation
5	Cattle grazing effects on CRLF
5	Pond maintenance – impacts on population vs individuals
4	Social structure (breeding)
4	Impacts of agriculture runoff on CRLF
3	Tadpole population dynamics
3	Vegetation composition and structure in ponds - managing for diverse species
3	Bullfrog ecology
3	Population management
3	Barriers- e.g., silt fences, K-rail
2	Nutrient levels
2	Population distribution in Sierras
2	Genetics of Sierra population
2	Importance of islands in ponds
2	Ova-position behavior associated with predation
2	Effects of Western Pond Turtle on all life histories
1	Egg mass predation
1	Aeola
0	Algal types

Top Priority Research Needs

Score	Research Area
10	Publish existing findings (held by FWS)
7	Metamorph dispersal
7	Pond Design- size, contours, depth, slope and bottom profiling
7	Survivorship of translocation
5	Cattle grazing effects on CRLF
5	Pond maintenance – impacts on population vs individuals

Metamorph Dispersal: What are the behavioral and physical aspects of metamorph dispersal?

Budget: \$45,000  
Time: 2 year study  
Level of replication- 10 ponds chosen from sampling pool of 90 ponds  
Habitat – isolated grassland ponds and isolated wooded ponds  
Expertise necessary – Permitted biologist  
Extent of research benefits –Inland populations  
Study Design:  
Using drift fences and pit falls  
Tagging and monitoring movement patterns for 4 mos.  
3 ponds in each habitat (randomly selected)  
June – Sept.

**Pond Design: How does one design ponds and how do pond management activities effect CRLF's?**

Budget - \$65,000  
\$60,000 – Salary  
\$5,000 – publishing  
Time: 5 years  
Sites – 20-30 pond survey, randomly selected  
Measure – Water temp., slope, %emergent (1x year), % submergent, depth, size, drain, hydorperiod, islands, presence of metamorphs, maintenance activities.

**Translocation: Can juvenile or adult CRLF be successfully translocated?**

Budget: \$100,000  
Level of Replication:  
15 animals 5 each for testing varying distances  
– must have no intervening suitable habitat  
.5miles, 1.0 miles, 1.5miles  
Study Design:  
Frogs must be individually identifiable  
Pit-tagged juveniles and metamorphs  
Translocated to a similar habitat  
Time of year  
Breeding and non-breeding age  
Success defined as staying in new site 1yr.  
Failure defined as parish or move back  
Time: Two year study

**Decision Maker Needs...Methods**

- 13 post workshop evaluations 2007-2014
  - Basic biology, ecology, and conservation (n = 216; 69%)
    - 2007 (2); 2008; 2009; 2010; 2011 (2); 2012 (2); 2013 (2); 2014
  - Habitat management (n=16; 50%)
    - 2013, only
- Long term evaluation 2014 (n = 54; 23%)
  - 2007-2012 basic biology attendees (n=237)

**Decision Maker Need for Information  
(via exit evaluation)**

- 95% intent to apply information provided in workshops
- 95% learned something new
- 92% increased survey/assessment skills

**Decision Maker Use of Information  
(from long term evaluation n = 49)**

How has the training been important to you?

- Basic biology/life history (13)
- Frog identification (12)
- Survey techniques (9)
- Habitat restoration/improvement (8)
- Site evaluation (7)
- Avoid impacts of projects (6)
- Getting a permit (5)

**What More Do Decision Makers Want?**

- Permit requirements (24)
- General habitat requirements (5)
- Pond management/restoration (5)
- Upland habitat management (4)
- Case studies of what has worked/not worked (4)

### What More Do Decision Makers Want?

- Permit requirements (24)
- General habitat requirements (5)
- Pond management/restoration (5)
- Upland habitat management (4)
- Case studies of what has worked/not worked (4)

Score	Research Area
10	Publish existing findings (held by FWS)
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5	Cattle grazing effects on CRLF
5	Pond maintenance – impacts on population vs individuals

### What Can You Do?

**Permitting authorities**

- Require reporting of data for increased awareness of what works/doesn't work
  - Translocation
  - Pond maintenance
- Present (often) information about permitting requirements

**RCD/NRCS**

- Be aware of what is not known
- Collect data and report case studies

**Conservation planners**

- Strategize for landscapes and metapopulation conservation

### What Can You Do?

**Funders**

- Fund data synthesis publications
- Fund priority research
  - Pond management
  - Metamorph dispersal
  - Cattle grazing effects

**Consultants**

- Publish research!!

**Lands managers**

- Provide case studies, tell those stories with good data
- Collect data on your ponds



Convener



Leader



Facilitator



Flip chart recorder



Presenter



Note taker

