

# Status and Conservation of the Relict Leopard Frog, *Rana onca*



Drake 2007

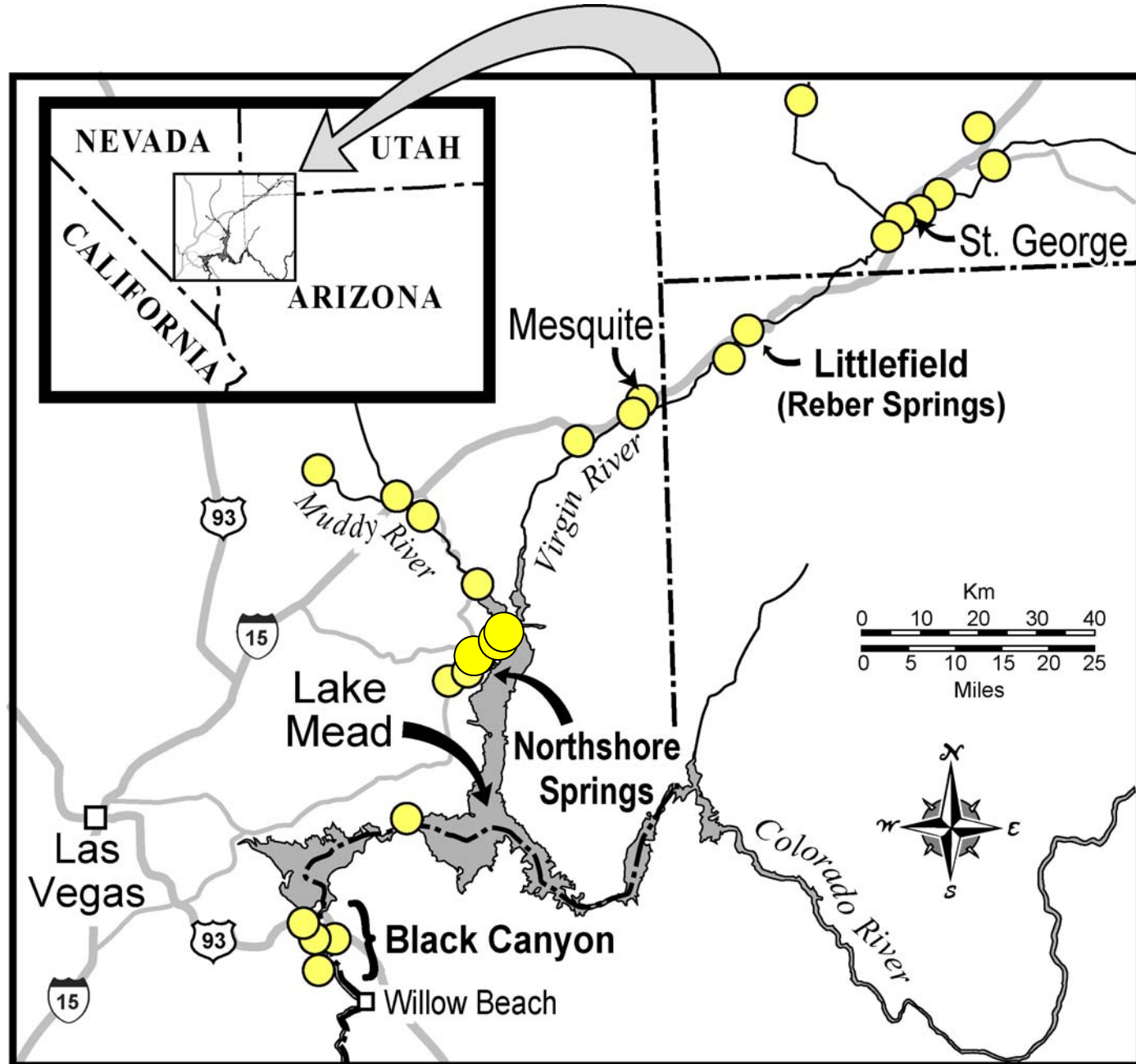
Dana Drake, Jef Jaeger, Matthew Graham, Ross Haley



LAKE MEAD  
NATIONAL  
RECREATION  
AREA

# History

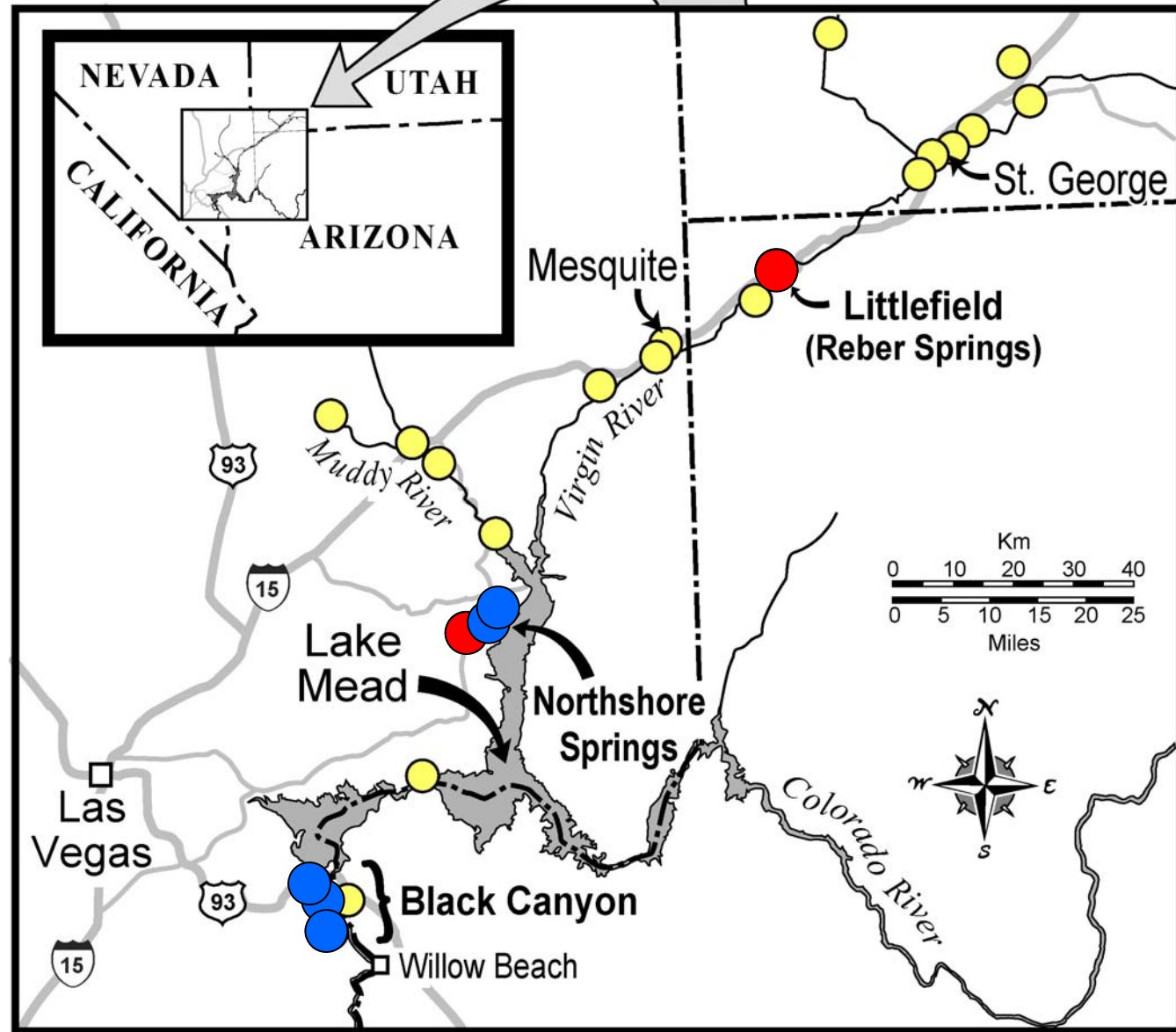
- *Rana onca* was thought to be extinct in the 1950s
- In 1991, rediscovered at springs within Lake Mead NRA (Jaeger *et al.* 2001)



Minimum Historical Locations after Bradford *et al.* 2004

# History

- By the late 1990s, extant *Rana onca* populations found in 3 areas (7 spring sites)
- Extirpated at Reber and Corral Springs
- In 2001, estimated population of 1100 adults within 5 known spring sites



(Jaeger *et al.* 2001; Bradford *et al.* 2004)

# History

Petition to list as endangered filed in 2002

CAS signed in 2005

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

CONSERVATION AGREEMENT AND  
RANGEWIDE CONSERVATION ASSESSMENT AND  
STRATEGY FOR THE RELICT LEOPARD FROG (*RANA ONCA*)

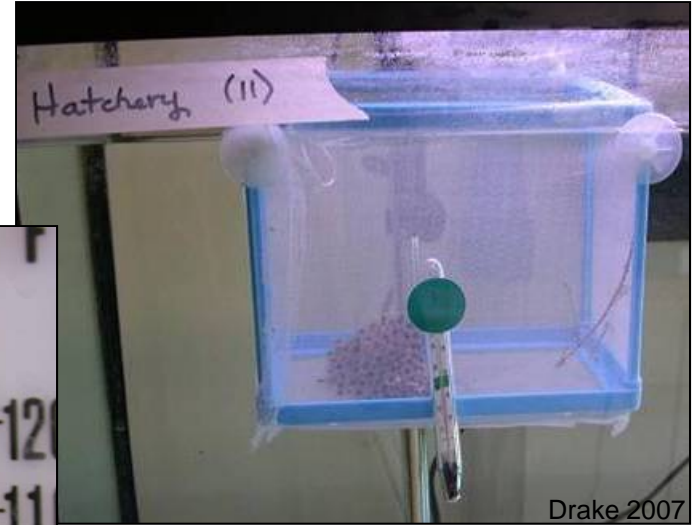


**FINAL**

Prepared by the Relict Leopard Frog Conservation Team

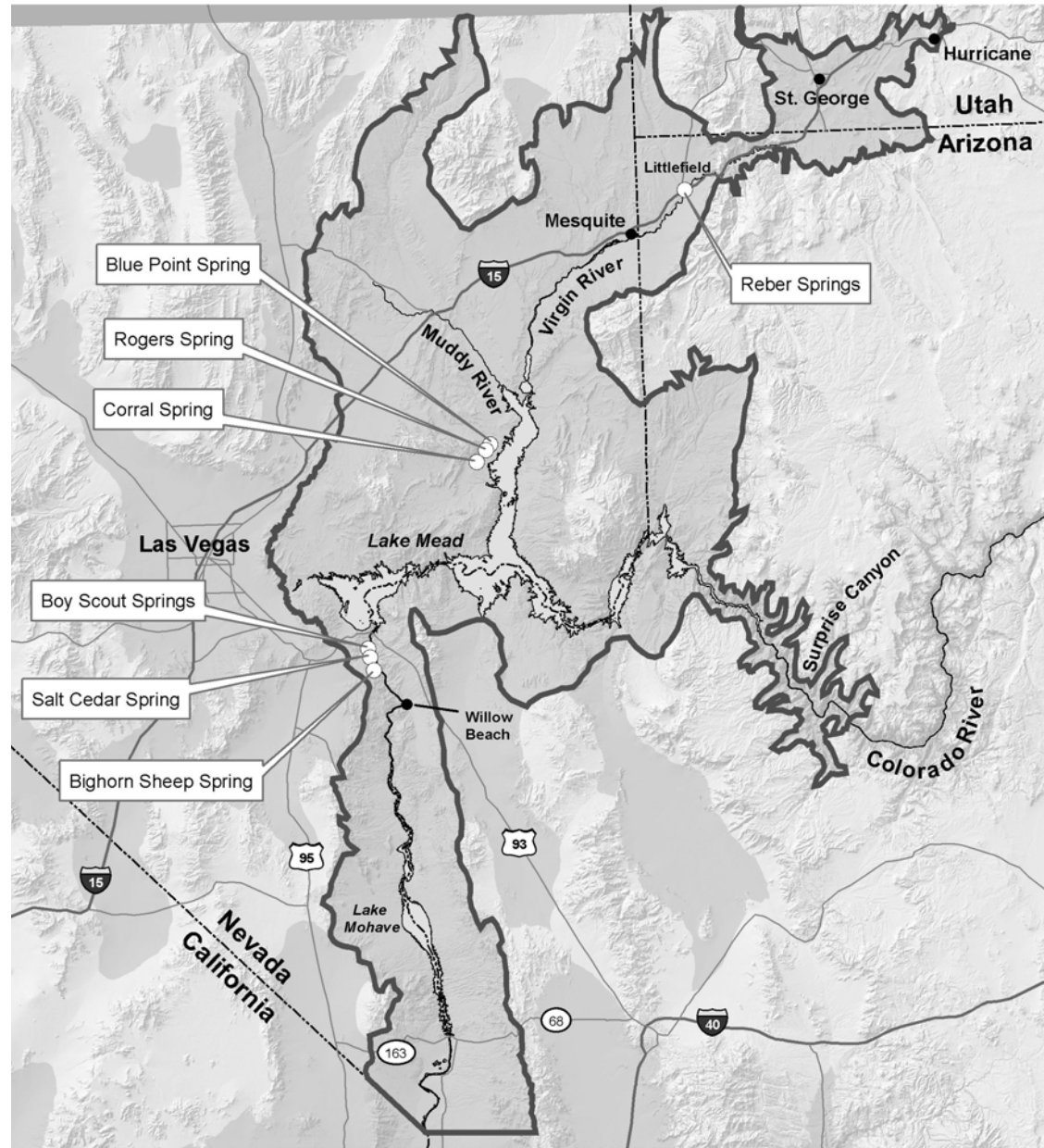
July 2005

# Meeting Conservation Objectives Headstarting and Translocation Program



# Potential Management Zone

- Area that represents a feasible estimate of where *Rana onca* may have existed
- Contains sufficient potential habitat for conservation actions



(CAS 2005)

# Current Status

## 7 Extant Natural Sites

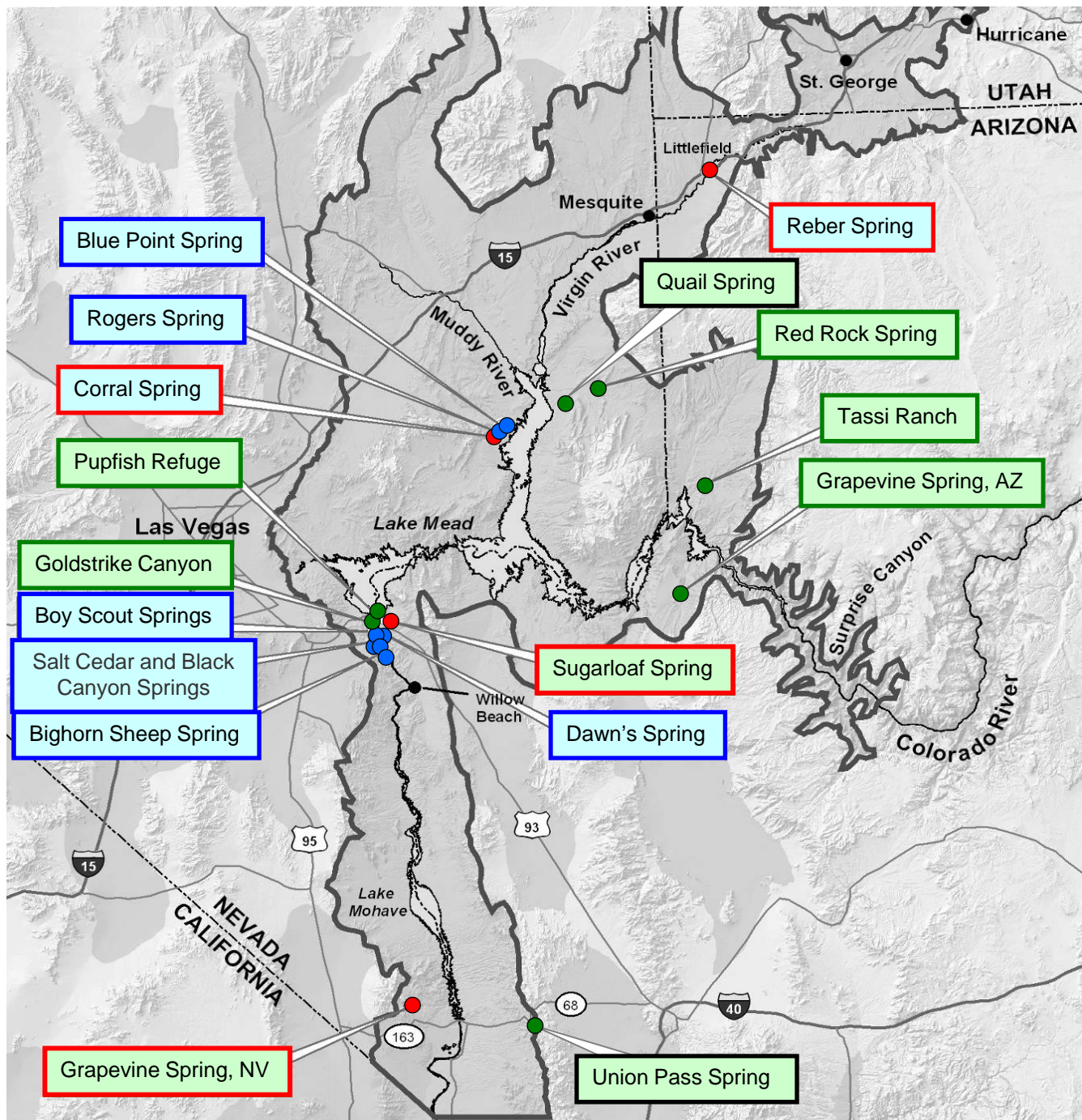
Including two “new” sites associated with known locations

## 7 Experimental Sites

Two sites have failed due to lack of persistent water

Two experimental sites to be added annually

= Extirpated



# *Rana onca* Translocation Efforts and Status

Site Name	Release Years	Numbers Released	Over-Winter	Breeding & Recruit to Tadpoles	Recruit to Adult Stages	Current Status
Goldstrike Canyon	2004-07	1989 Tadpoles	Yes	Yes	Yes	Repeated Breeding
Grapevine Spring, AZ	2003-07	3015 Tadpoles	Yes	Yes	Yes	Repeated Breeding
Grapevine Spring, NV	2006-07	895 Tadpoles 250 Frogs	Yes	?	?	Failed (water loss)
Pupfish Refuge	2003-07	465 Frogs	Yes	Yes	Yes	Repeated Breeding
Red Rock Spring	2005-07	311 Frogs	Yes	Yes	?	Extant
Sugarloaf Spring	2003-05	372 Frogs	Yes	Yes	Yes	Failed (water loss)
Tassi Spring	2006-07	401 Frogs	Yes	Yes	?	Extant



# Status of Natural Populations – Black Canyon



A hiker wearing a blue jacket, dark pants, and a hat, carrying a green backpack, is walking away from the camera on a dirt trail. The trail is surrounded by red rock walls and sparse vegetation, including green shrubs and dry, brown brush. The scene is set in a canyon with a clear sky.

Major Habitat Modifications *ala* Mother Nature  
October Storms 2006

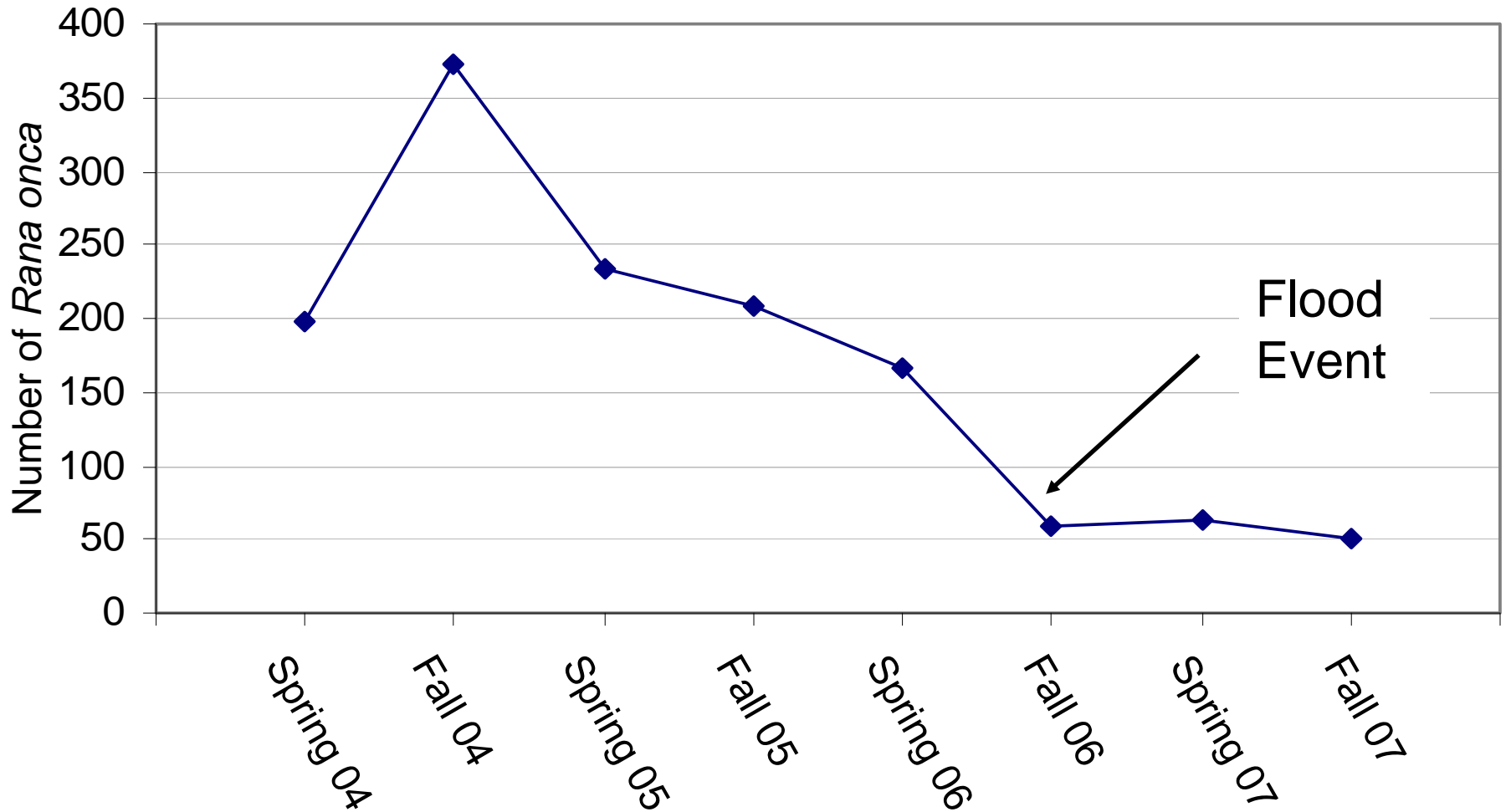
Bighorn Sheep Spring, November 2006

# Natural Sites – Black Canyon

Where once there was  
abundant *Rana onca*  
habitat...

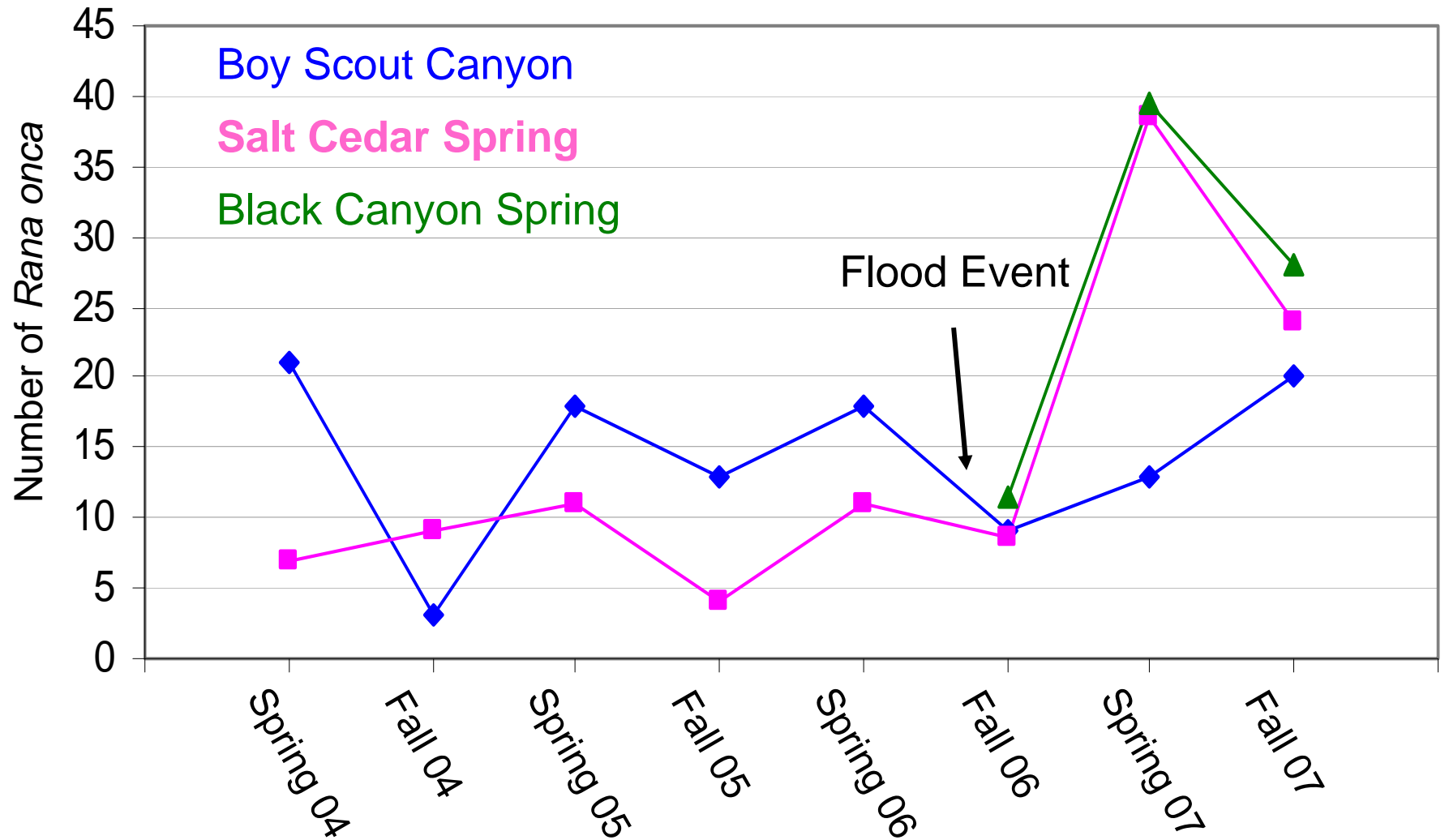


# Nocturnal VES for *Rana onca* at Bighorn Sheep Spring



Population estimate of **637** adults of *Rana onca* using mark-recapture (2001)

# Nocturnal VES for *Rana onca* at other Black Canyon Sites



# Status of Natural Populations Northshore Springs

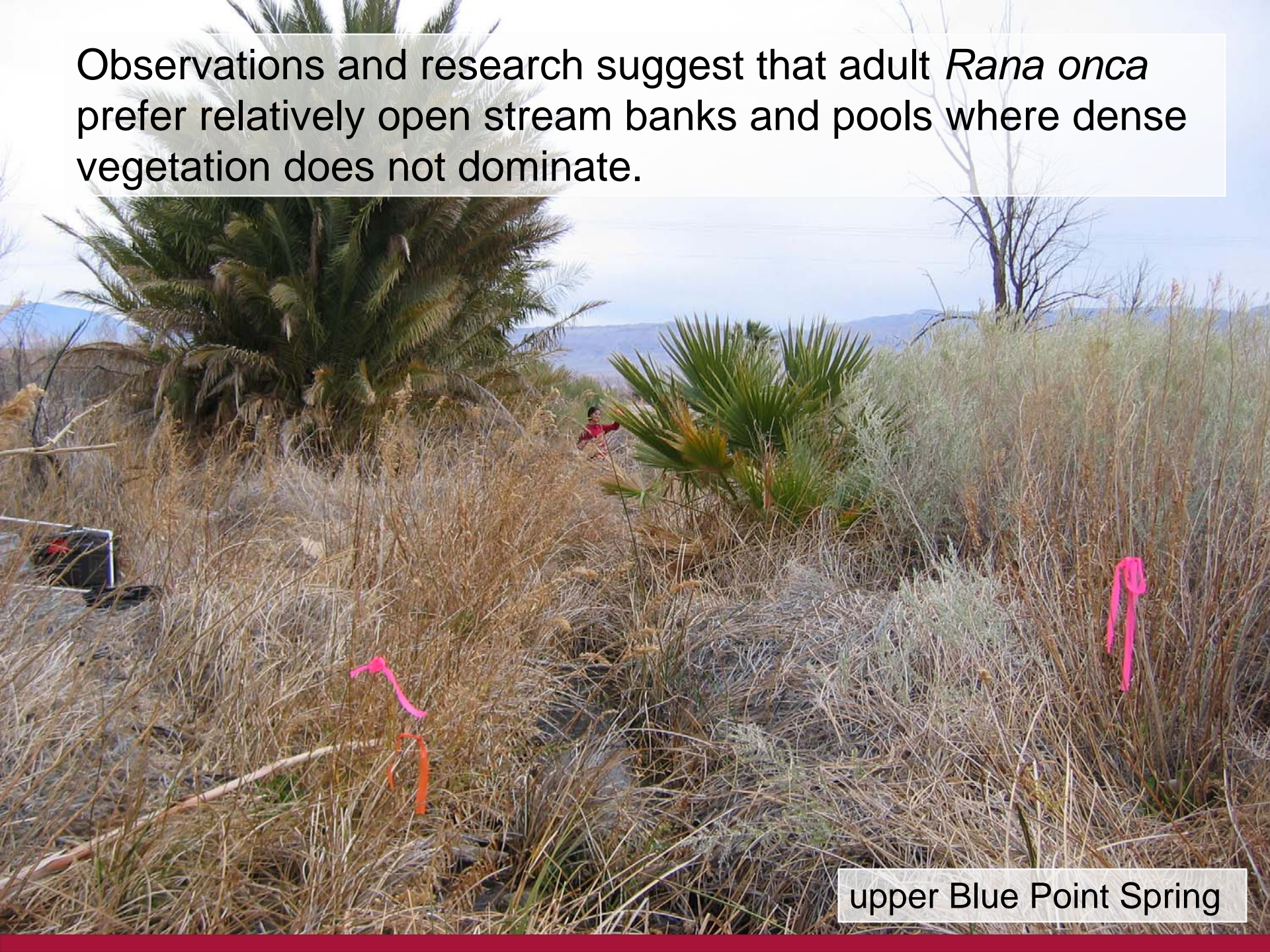


## Nocturnal VES for *Rana onca* at Northshore Springs Sites

Site	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007
Upper Blue Point	10	7	4	2	7	4	2-6*	2-6*
Lower Blue Point	18	28	18	1	8	1	0	2
Rogers	5	1	1	1	0	1	0	0

- \* Mark-recapture efforts: 8-10 adult *Rana onca* estimated in spring 2007 and 18 adult *Rana onca* in fall 2007 (recruitment of juveniles noted in late spring and summer)
- \* A total of 15 adult *Rana onca* marked during 2007
- \* Bradford *et al.* (2004) estimated 36 adult *Rana onca* here in 1995-96

Observations and research suggest that adult *Rana onca* prefer relatively open stream banks and pools where dense vegetation does not dominate.



upper Blue Point Spring



# Disturbance of riparian vegetation at the Northshore Springs has declined in recent years



NPS has removed cattle and greatly reduced burro numbers in the area

- Feral burros damage vegetation and soil crusts
- Burros on road are a hazard to night drivers



Grazed area favored by *Rana onca* at upper Blue Point Spring

# Habitat Manipulation: Hard Labor





# Habitat Manipulation: Not-So-Hard Labor



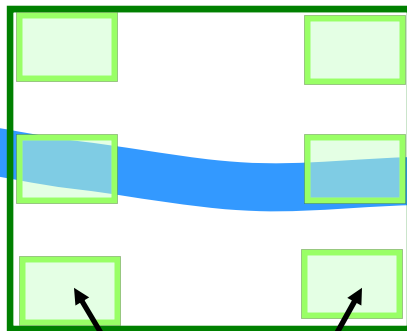


# Vegetation Monitoring

- Species Richness (composition)
- Foliar Cover by Species
- Average Height by Species
- General Biomass



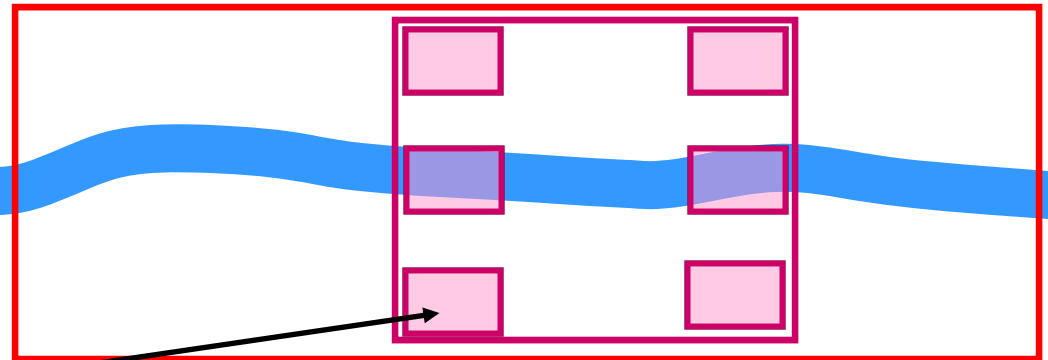
**Control Plot**



Stream

Subplots  
(0.5 m<sup>2</sup>)

**Treatment Plot**



**Treatment Area** - mechanically cut or controlled burn

**Another Management Problem:  
Exotic fish at Blue Point and Rogers Springs**



# Construction of Fish-Free Breeding Habitat

## Blue Point Spring

- Two pre-existing channels cleared of dead plant material
- Water piped into cleared channels from main stream through filter
- Weirs constructed to dam water and keep fish from coming upstream into the pools







# Acknowledgements

Relict Leopard Frog Conservation Team

National Park Service

Public Lands Institute, UNLV

Bureau of Land Management

U.S. Fish & Wildlife Service

Nevada Department of Wildlife

Arizona Game & Fish Department

Southern Nevada Water Authority

Bureau of Reclamation

Clark County

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Joe Barnes

David Bradford

Cristina Velez

Nevada Conservation Crew

NPS fire crew

Willow Beach Fish Hatchery

Lake Mead vegetation crew





Released as tadpoles at Grapevine Spring, AZ



# Fish-free pond design and construction at Blue Point Spring

