

THE IMPACT OF BULLFROGS ON THE DEMOGRAPHICS OF NORTHERN LEOPARD FROGS

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Significance

- Bullfrogs are considered one of the 100 worst invasive species in the world
- Standard management practices have yet to be developed for invasive Bullfrogs.
- There is a lack of studies documenting the direct and indirect impacts of Bullfrogs on Leopard Frogs in the Southwest.
- The deviation from the accepted invasive predator prey relationship needs further investigation.

Impacts of Invasive Bullfrogs on Natives

- Predation
- Competition exclusion
- Niche displacement
 - Replace Natives in the food web
- Reduce prey availability
 - Direct predation
 - Bullfrog tadpoles decrease primary production available to native species.
- D'Amoure et al.(2009) found that Red Legs Frogs shifted habitat utilization based on Bullfrog presence.



Is it Different With Invasive Bullfrogs and Northern Leopard Frogs?



Bullfrogs are Cannibals and Leopard frogs also **EAT** Smaller frogs.

Hypotheses

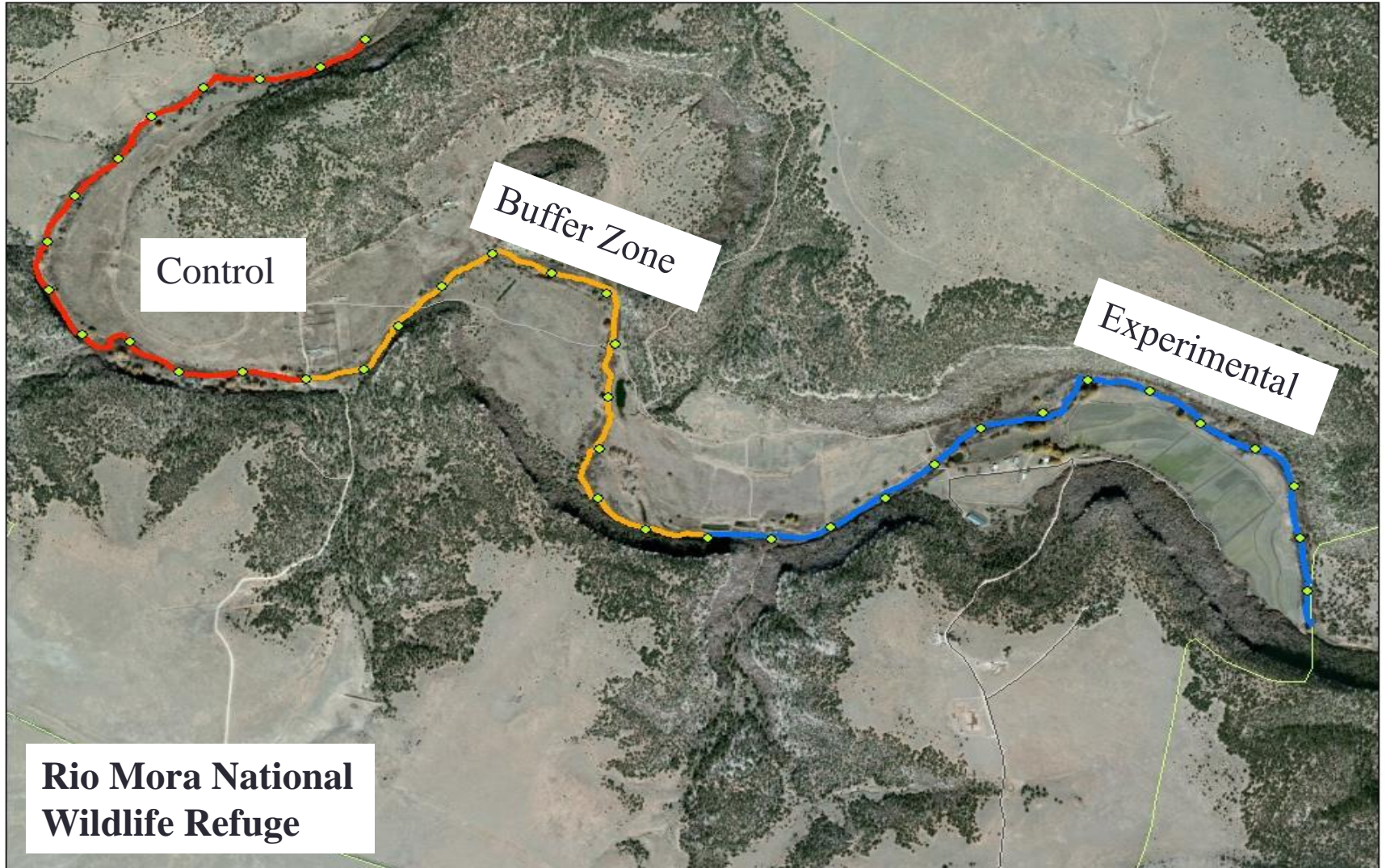
- **Questions:**

- Are bullfrogs affecting the population of Northern Leopard frogs?
- Are Leopard frogs changing the habitat they use to avoid Bullfrogs?

- **Hypotheses:**

- The presence of Bullfrogs is negatively impacting the demographics of the Northern Leopard frog.
- The presence of Bullfrogs will alter the habitat utilization of Northern Leopard frogs.

Site Map



Amphibian Methods

Surveys of Relative Abundance of Amphibians

1. Visual transects (Day/Night) of each 200 Meter reach
 - Two people counting the number and species of frogs seen.
2. Call surveys every 200 Meters
 - One person walking to each reach point, and waiting for two minutes quietly. The Surveyor then listened for five minutes counting calling amphibian's in the reach.

Telemetry Surveys

- One person locating six frogs with radio transmitters utilizing a radio receiver.

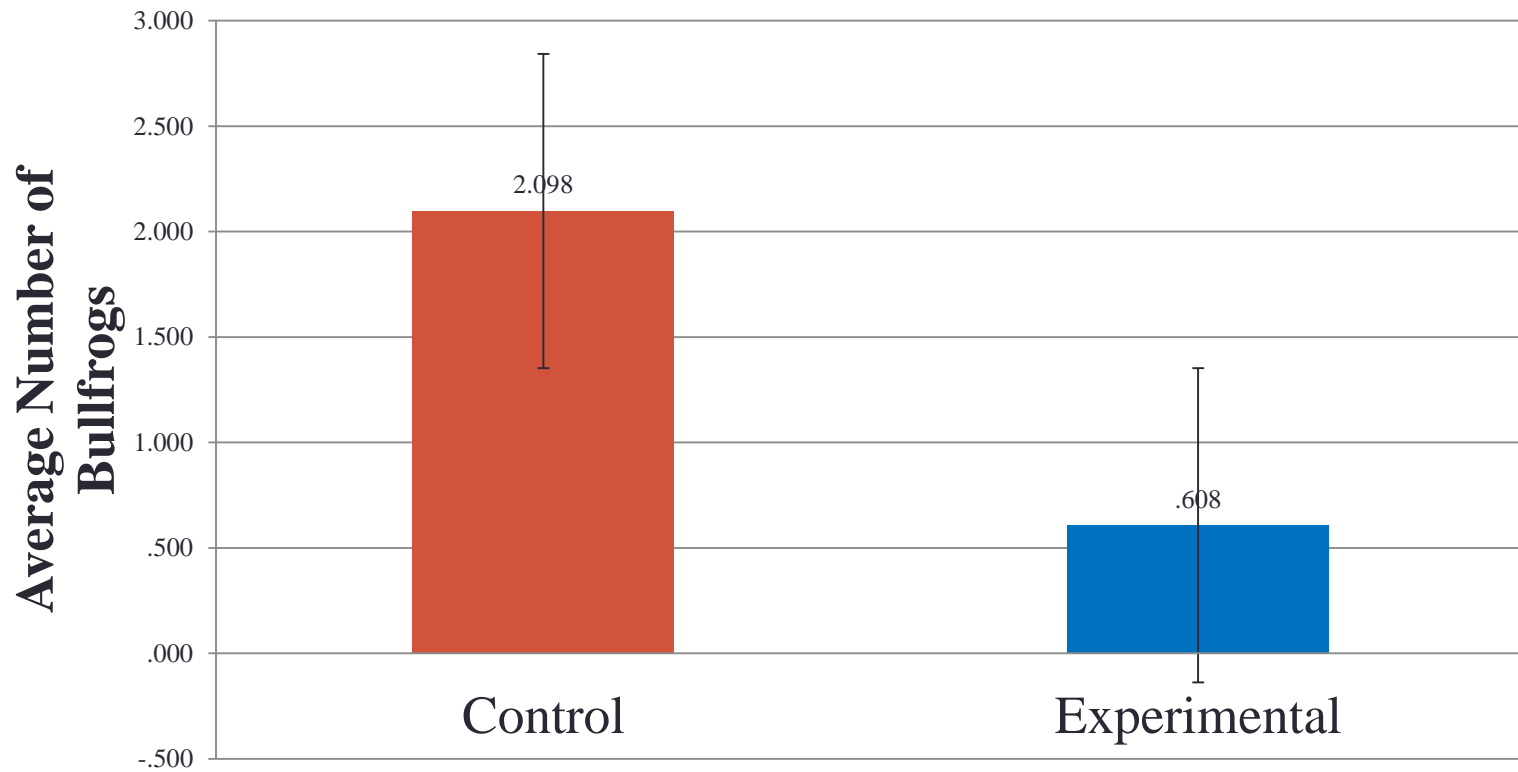


Frog Processing for Demographic

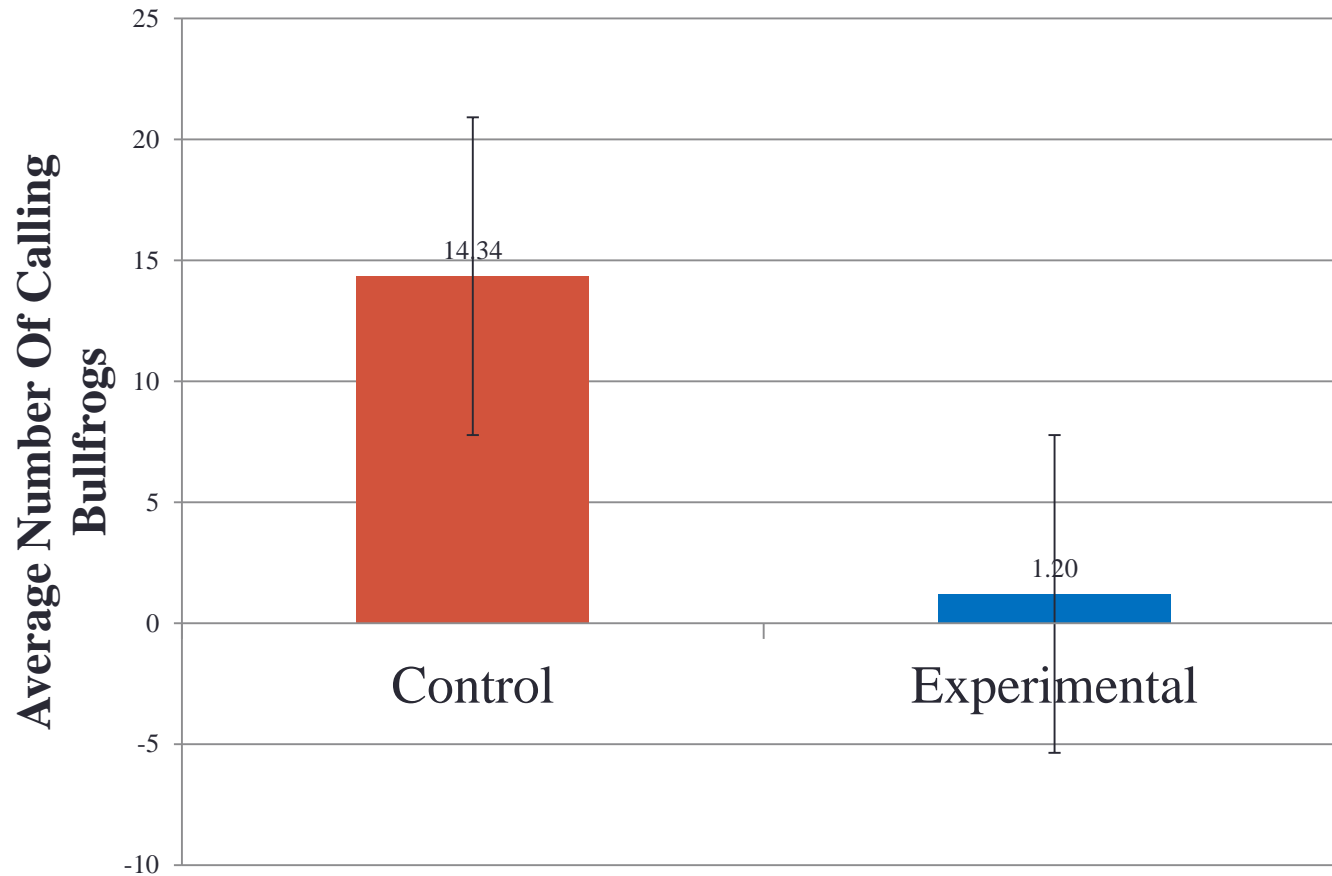
- Variables recorded or processes conducted during frog processing:
 - Process
 - Pit tagged
 - Variables
 - Pit tag number
 - Weight
 - Snout vent length
 - Left hind leg length
 - GPS Coordinates recorded
 - Nearest Aquatic habitat type
 - Nearest Vegetation type



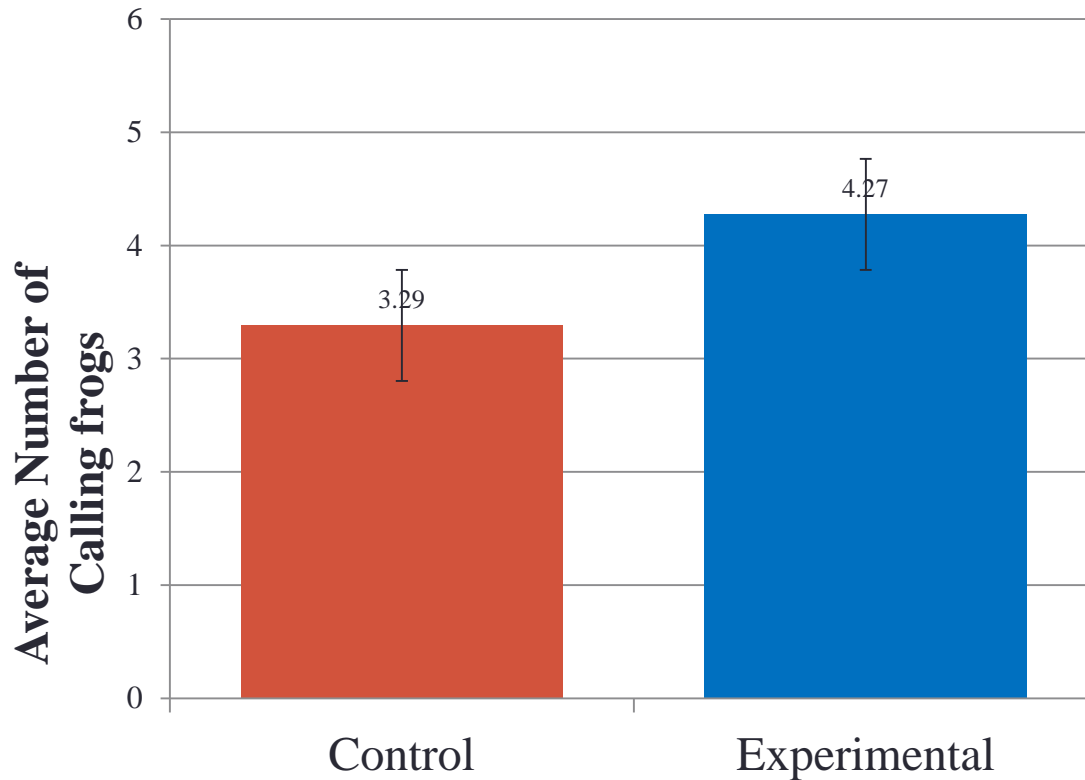
Results: Bullfrog Visual Surveys



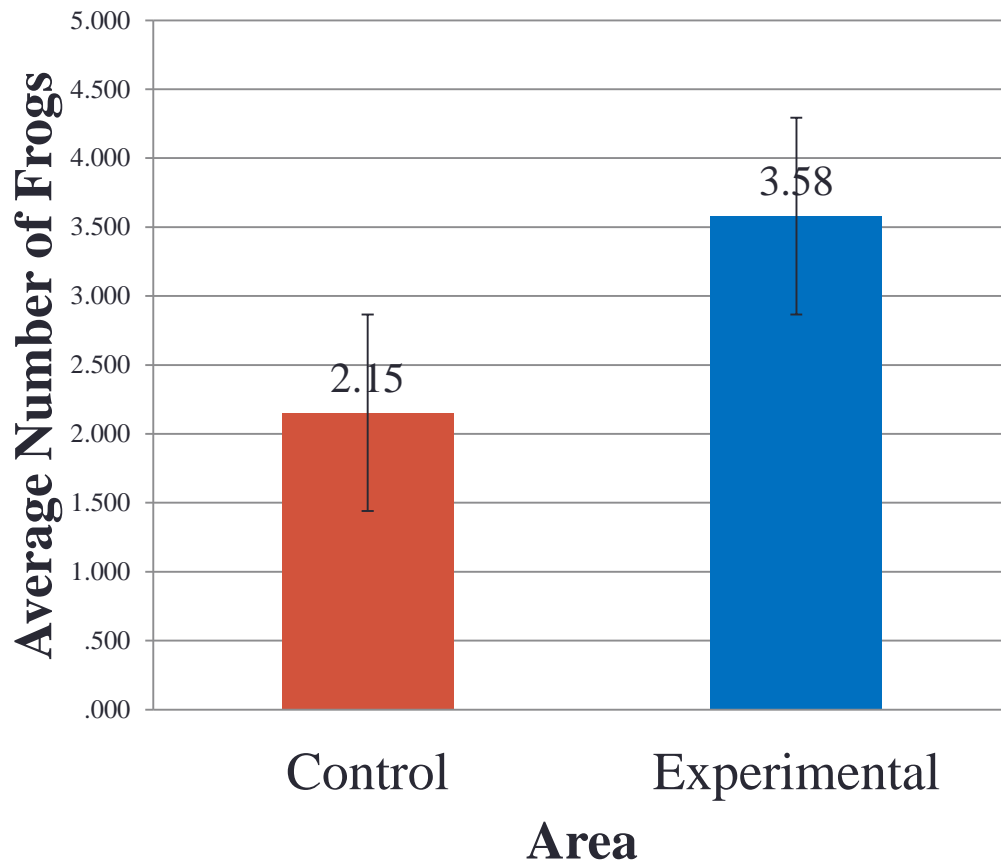
Results: Bullfrogs Call Surveys



Average Number of Leopard Frogs seen per 200 meter reach was not significant



Average Number of Leopard Frogs Calling per 200 Meter Reach



Results: Average Home Range Size



Frog	Home Range Area in m ²
1	897.69
2	567.88
3	347.23
4	314.10

Average Size 531.7 M²

Summary of Current Results

- Eradication efforts are keeping Bullfrog population in the experimental area significantly lower than in the control area.
- Leopard frogs are not showing a significant difference between the control and experimental areas.
 - Behavioral?
 - We were not able to answer this using telemetry because of detectability larger frogs, and key leopard frog ecology
 - Average home range size is 531.7 square meters



Take Home Message

- Bullfrogs have been shown to alter the interactions between Northern Leopard Frogs and their ecosystem and management practices need to be researched and developed for their control.



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Questions?

