

Peregrine Falcon Monitoring and Modeling



Joseph Barnes and Jef Jaeger
Public Lands Institute, University of Nevada, Las Vegas
under Task Agreement with NPS

Ross Haley
Lake Mead National Recreation Area, National Park Service



Background Information



- Population impacted heavily by biocontaminants (i.e., DDT)
- Breeding population in Nevada considered extirpated in 1950s
- Federally listed as Endangered in 1973
- First Nevada breeding pair discovered in 1985 within LMNRA
- Delisted from ESA in 1999
- USFWS coordinating post-delisting monitoring through 2015

Project Goals and Objectives



Peregrine Falcon Monitoring

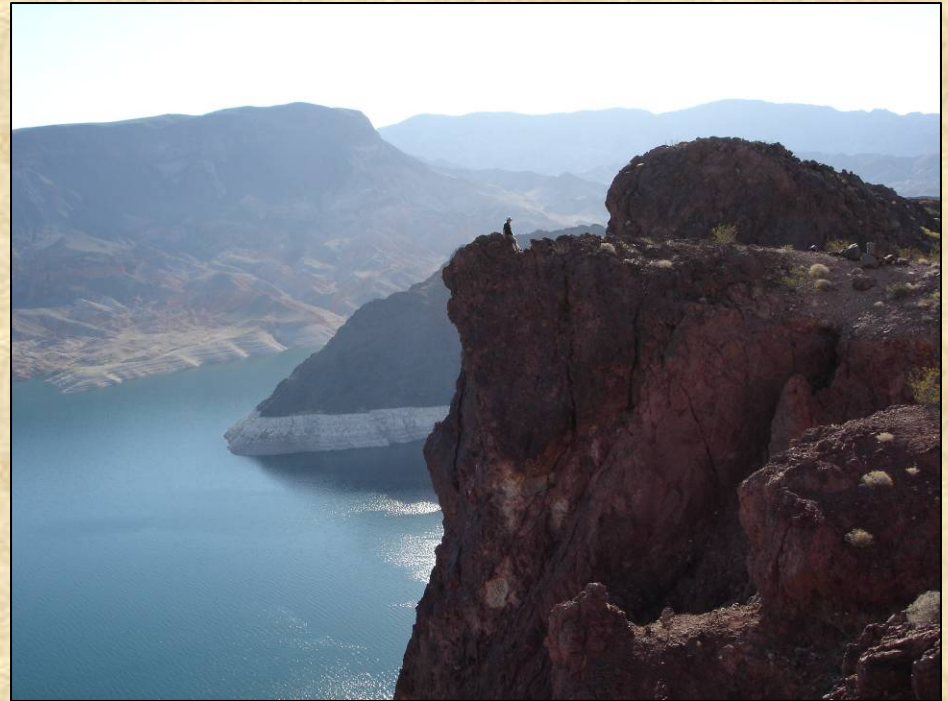
- Document status of known nesting territories
- Document number of breeding adults
- Document reproduction and success of young
- Survey for new/undocumented nesting territories

Peregrine Falcon Modeling

- Develop conceptual model
- Develop habitat suitability model based on survey results
- Create habitat suitability map based on model

Historical Research Efforts at LMNRA

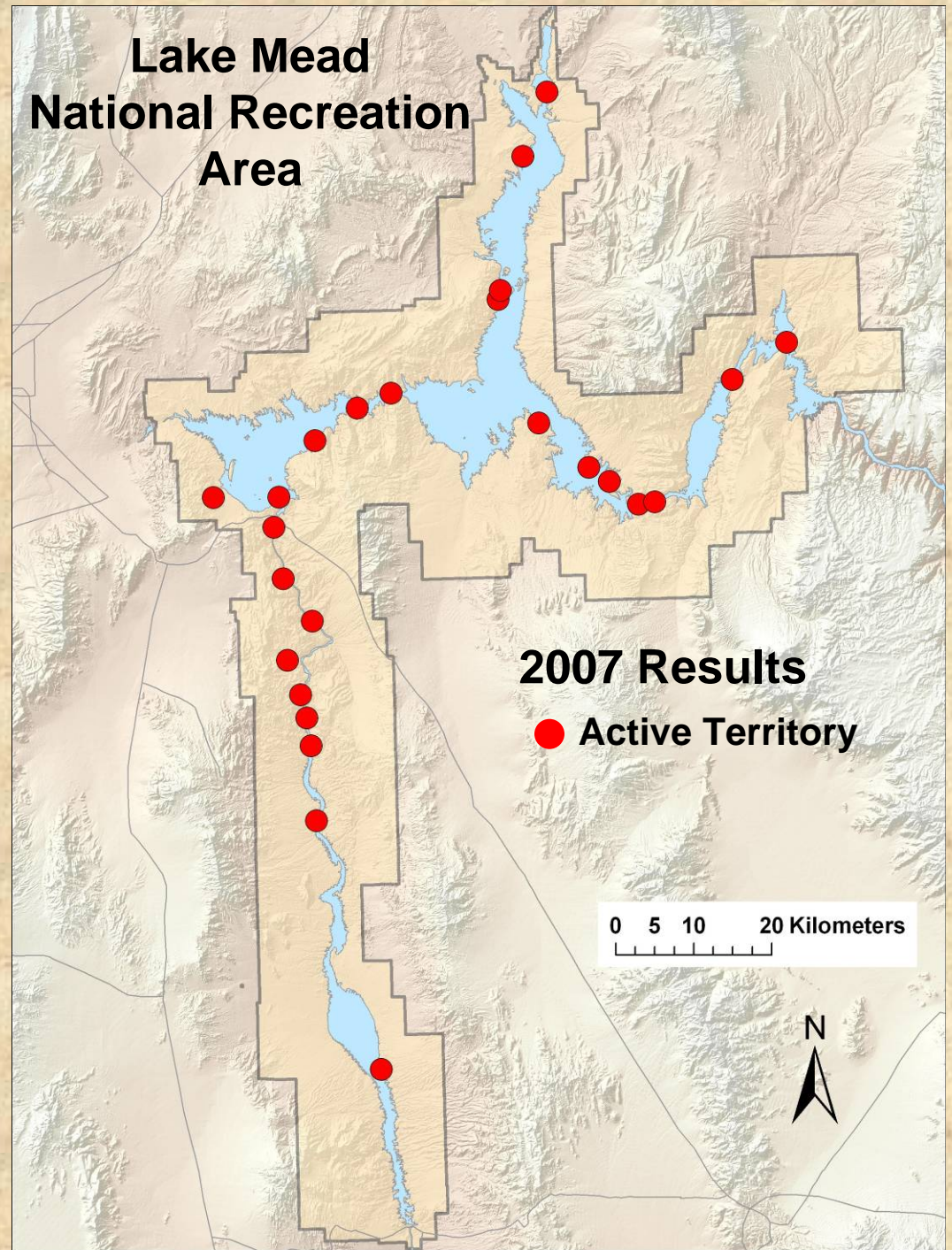
- Annual monitoring of known territories with varying intensity ongoing since 1985
- Rigorous searching of potential habitat begun in 2006



Historical Distribution at Lake Mead NRA



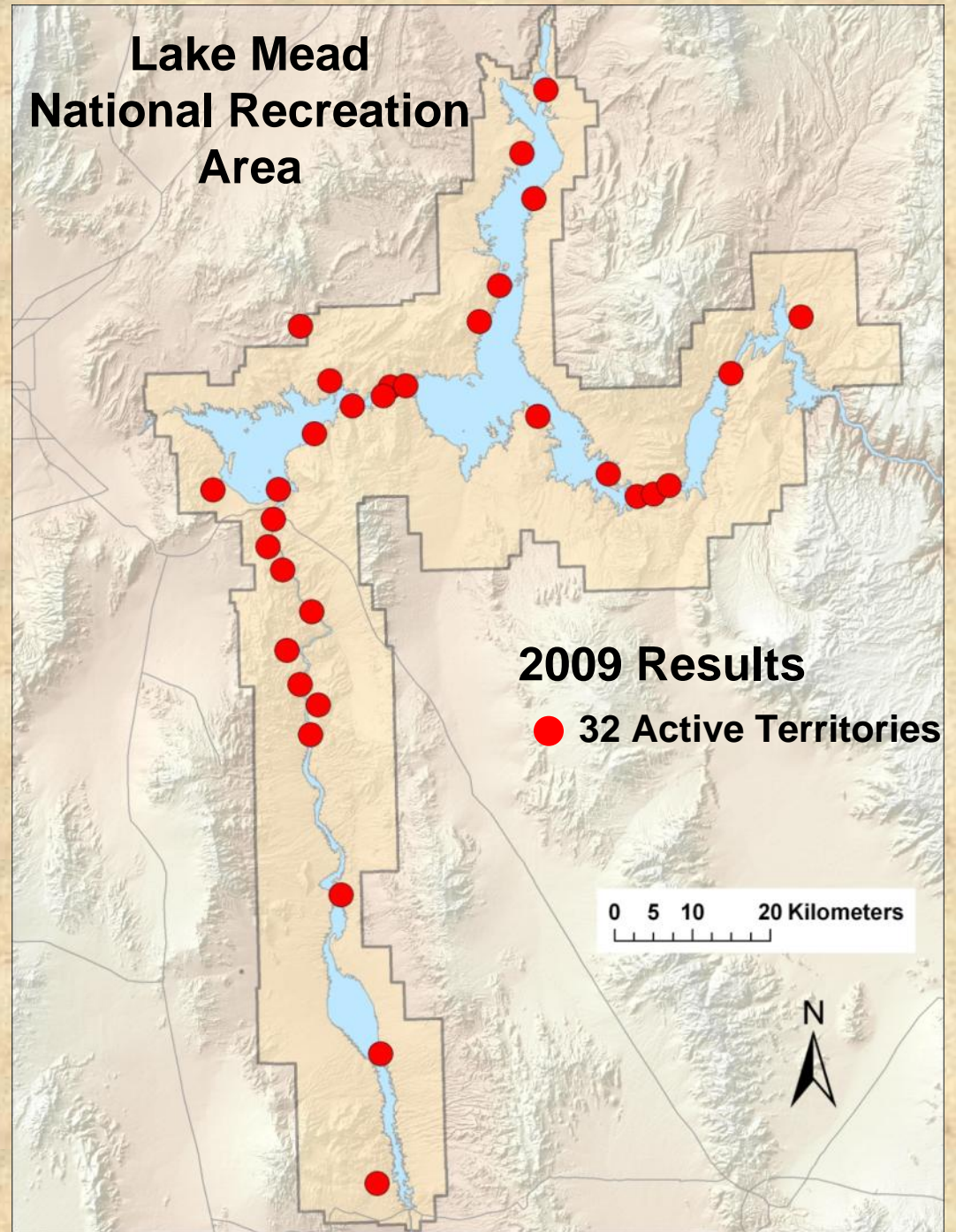
* Active territory defined here as a territory with at least one resident adult.



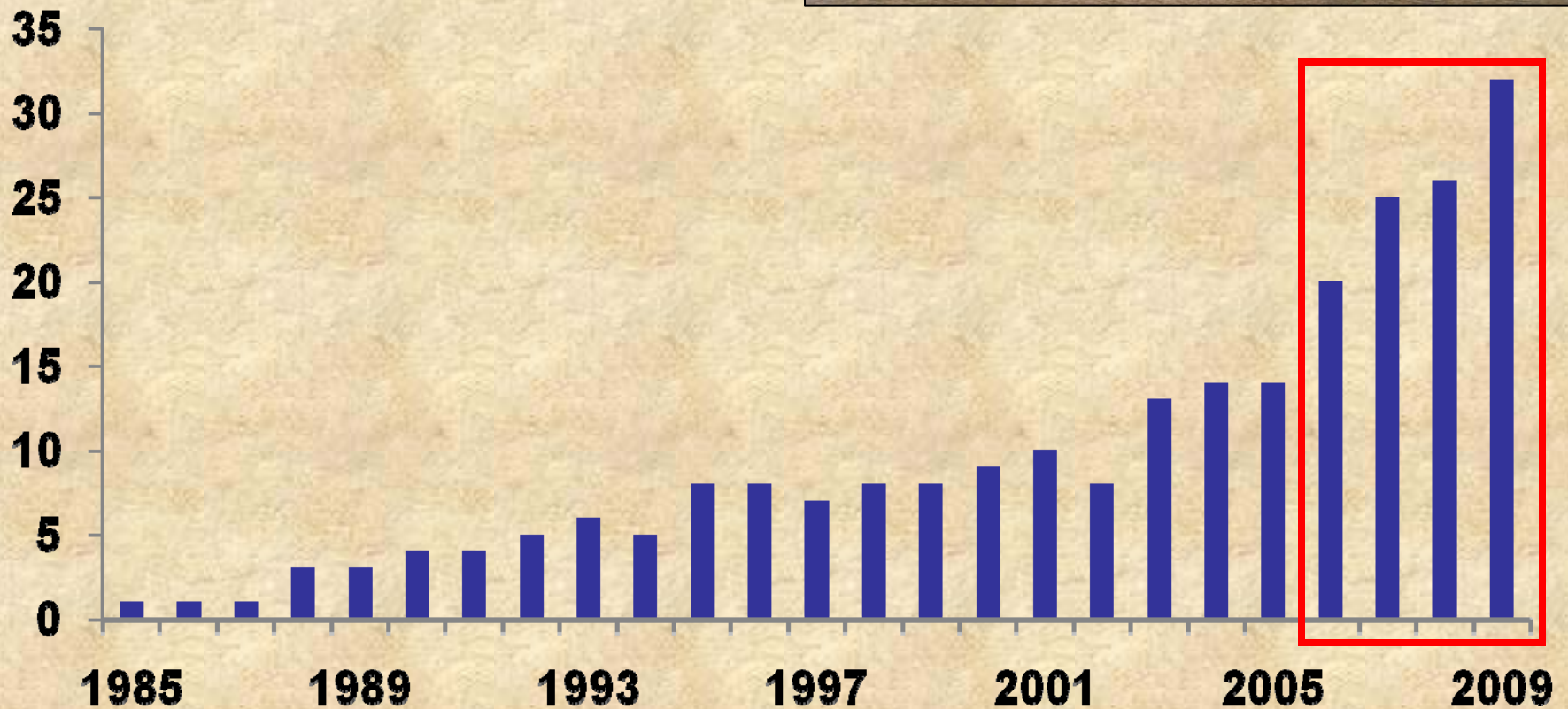
Historical Distribution at Lake Mead NRA



* Active territory defined here as a territory with at least one resident adult.



Number of Known Active Territories in Lake Mead NRA



* Active territory defined here as a territory with at least one resident adult.

Recent Peregrine Breeding Results in Lake Mead NRA

	2006	2007	2008	2009
Active territories	20	25	26	32
Confirmed breeding territories*	11	19	24	26
Successful breeding pairs	9	7	16	19
Total successful young	21	22	38	53
Young/successful pair	2.3	3.1	2.4	2.8
Total adults	37	44	52	61

* Confirmed breeding territories contain a pair of adult birds early in season or other evidence of a breeding attempt (provisional data)

Monitoring and Survey Methods

Passive Survey Method

- Designated method for USFWS post-delisting monitoring
- Requires up to 4 hours of observation at territories



Call-broadcast Survey Method

- Protocol developed at Lake Mead NRA
- Allows for rapid occupancy assessment with high detection rates

Peregrine Monitoring Effort

2008

- Total number of surveys: 241
- Total number of sites surveyed: 49

2009

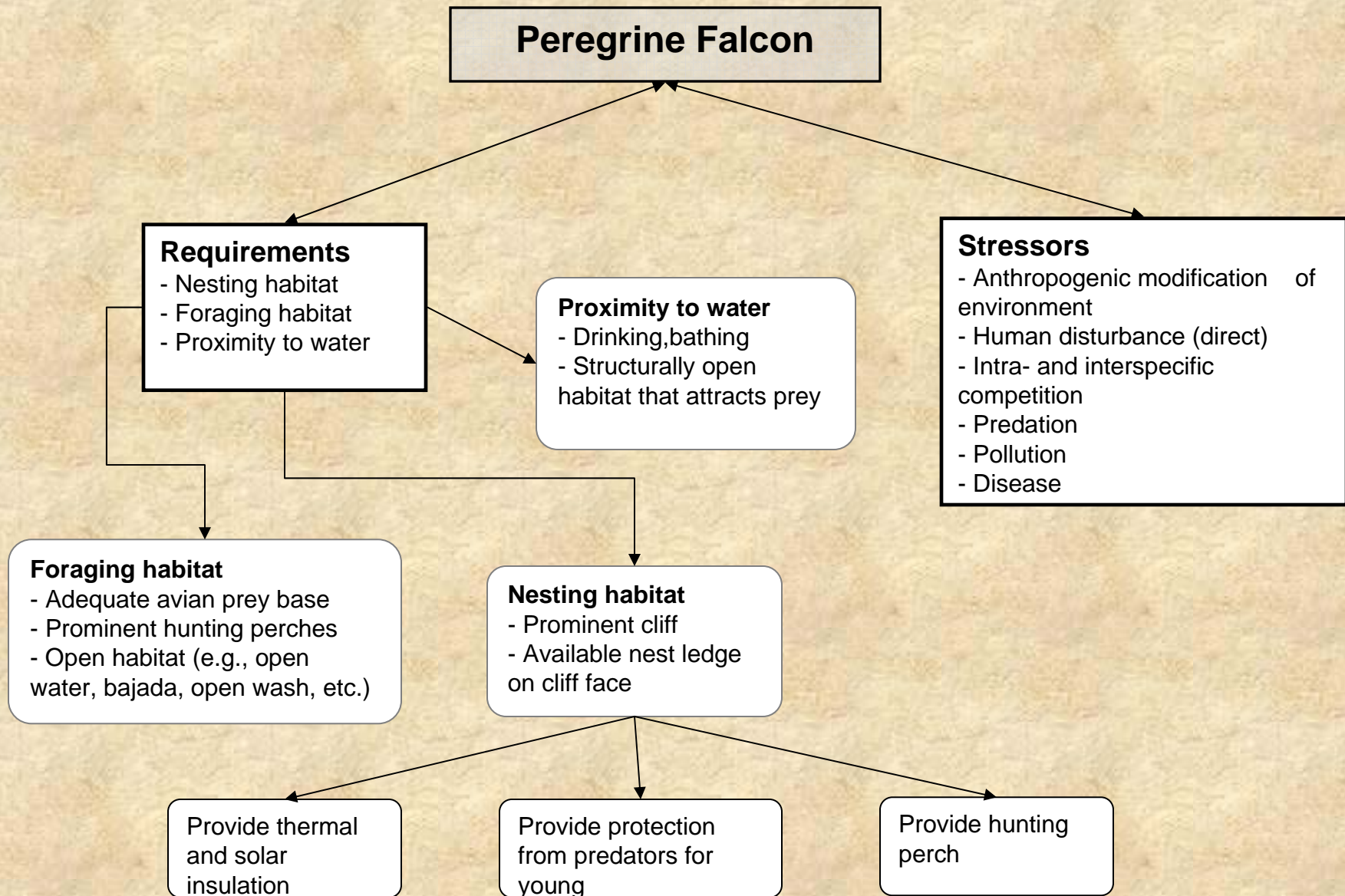
- Total number of surveys: 372
- Total number of sites surveyed: 147
- Exploratory surveys: 111



Barnes 07

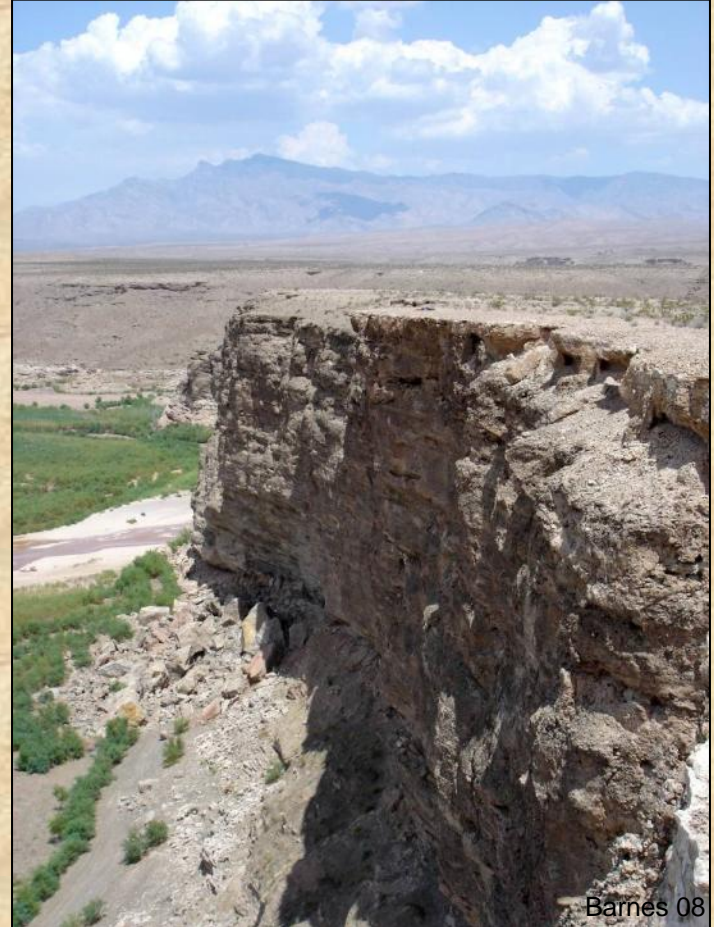


Draft Conceptual Model



Peregrine Falcon Modeling

- Data from 2006-2008 was used to develop preliminary (Maxent) predictive habitat model for nest sites
- Preliminary model/map used to direct exploratory surveys during the courtship stage of 2009 breeding season
- Further analyses are being conducted using 2009 survey results

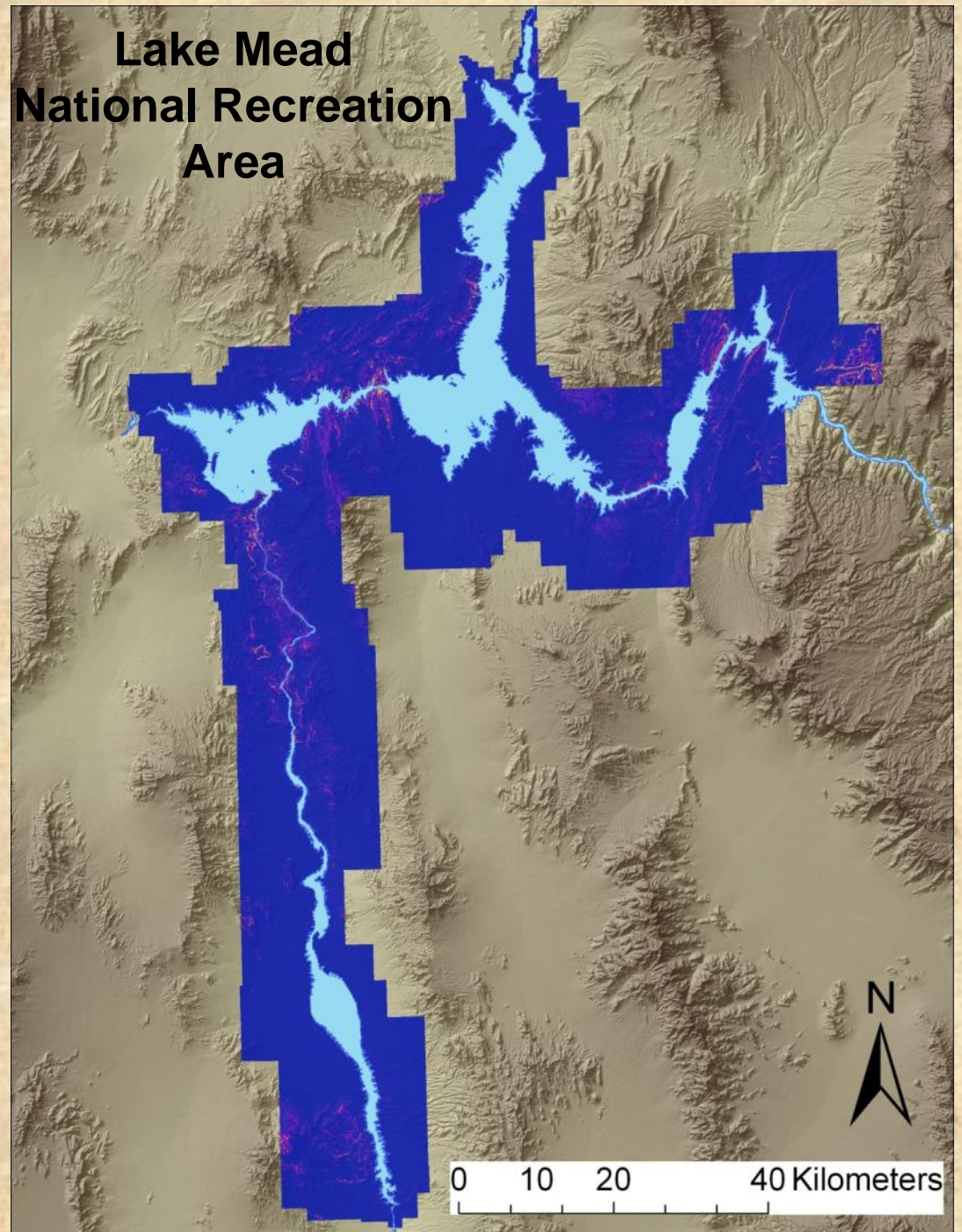


Predictive Habitat Model

- Model generated from 33 eyrie locations
- Predictive variables: slope, solar radiation, and distance to water
- Areas of high predictability driven by high degree of slope*

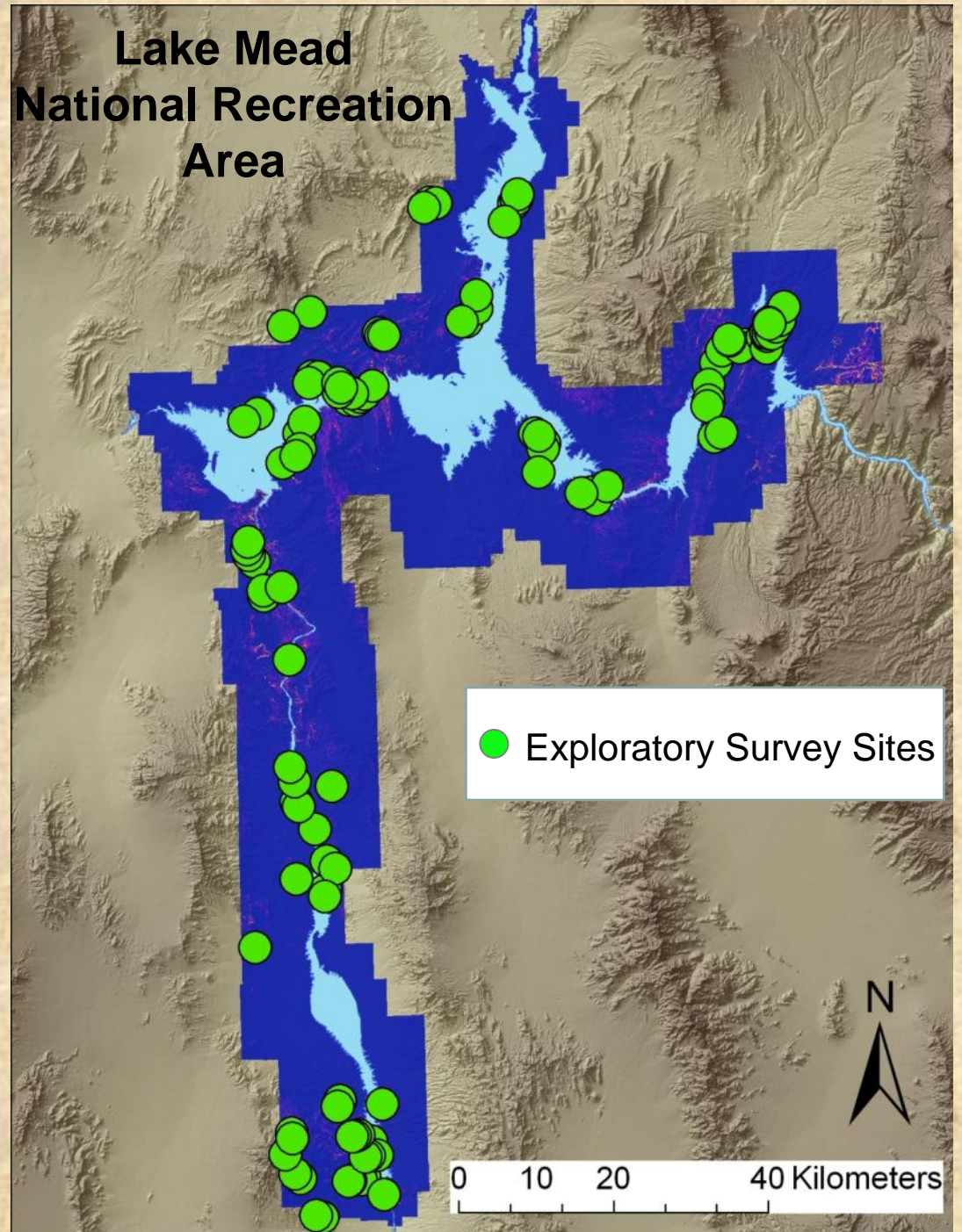
* Slope appears to be highly correlated with solar radiation

** Only 2.5% of the land area of LMNRA has > 40 degrees slope

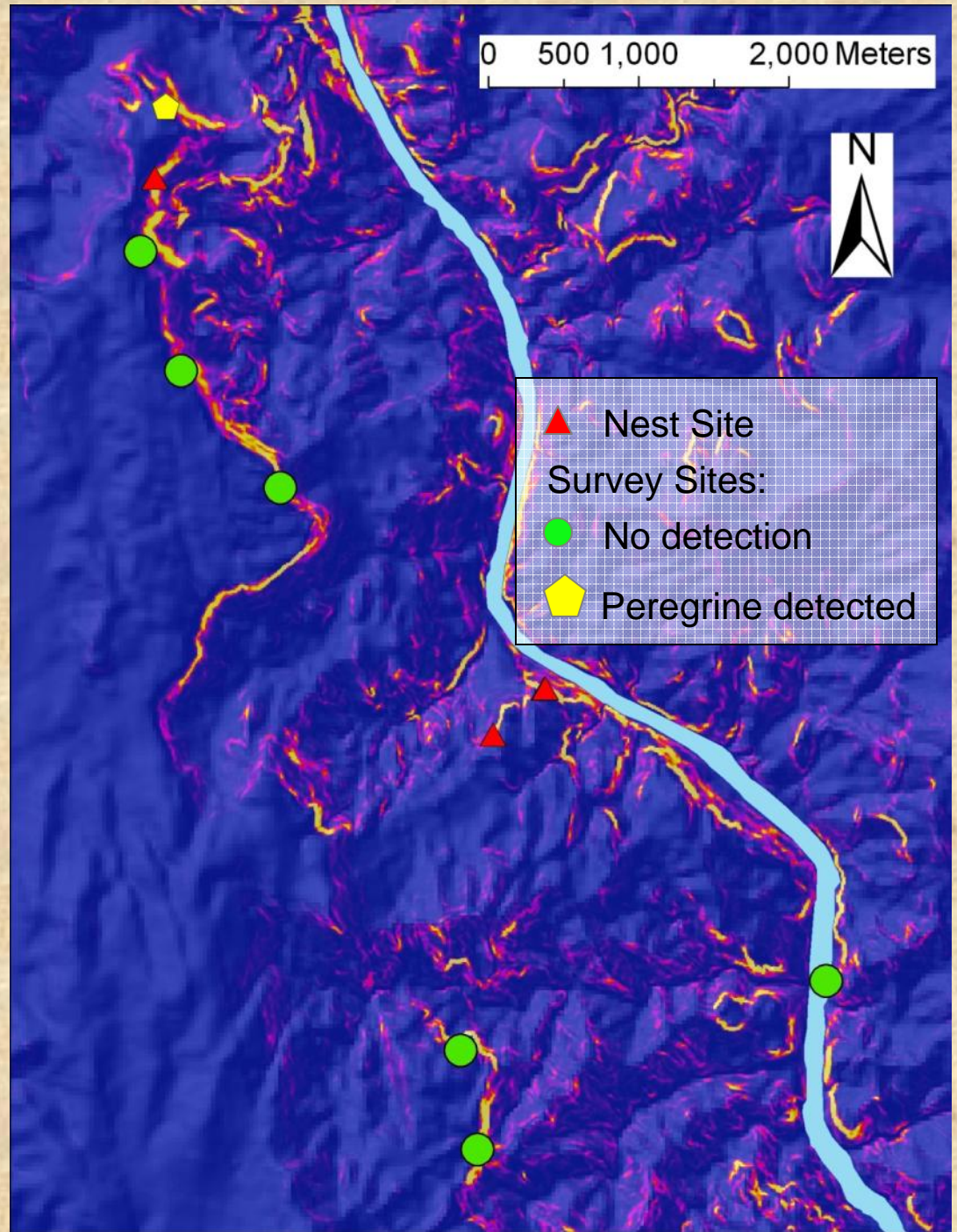


Predictive Habitat Model

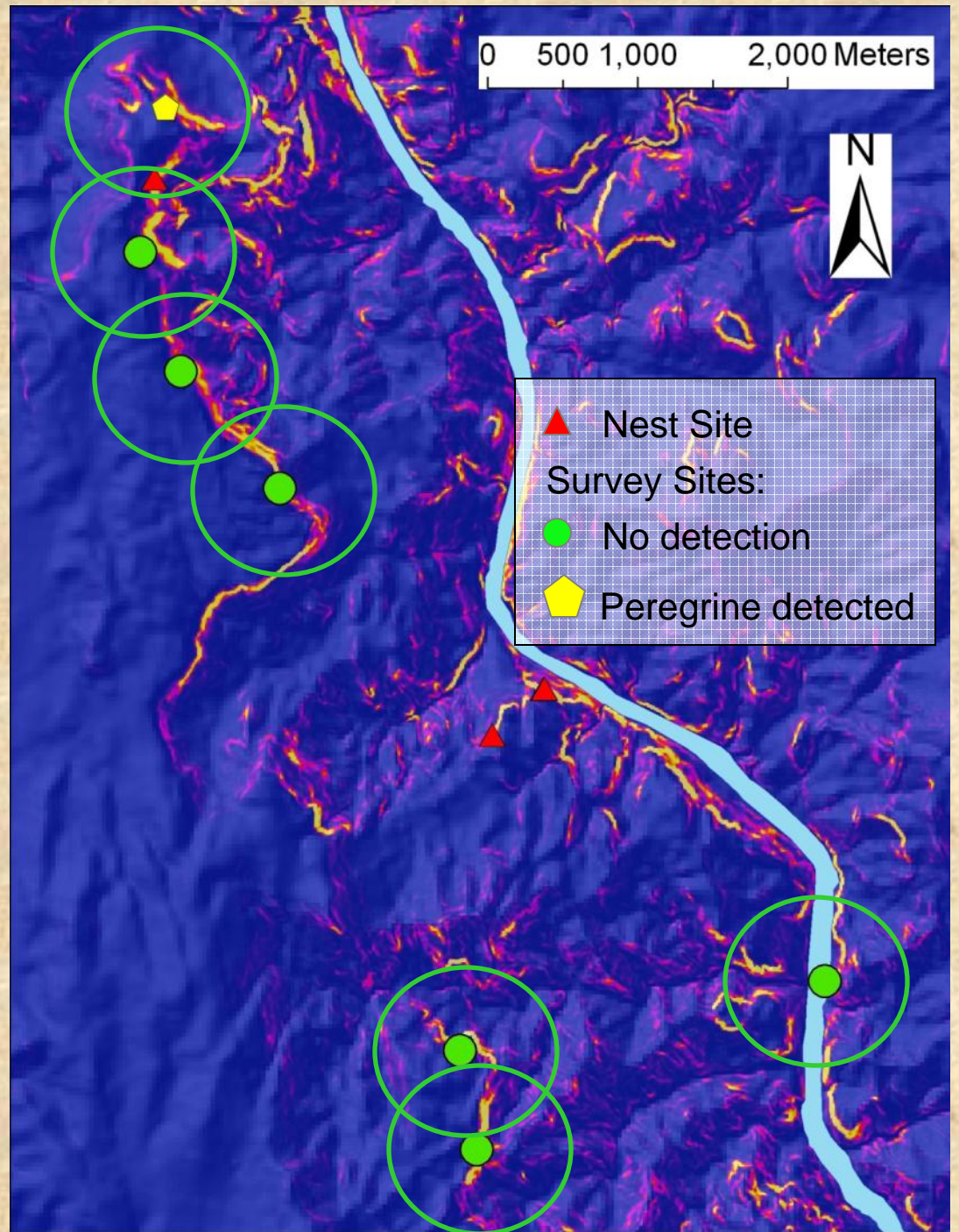
- Exploratory surveys focused on areas of high predictability
- 111 exploratory surveys conducted in 2009



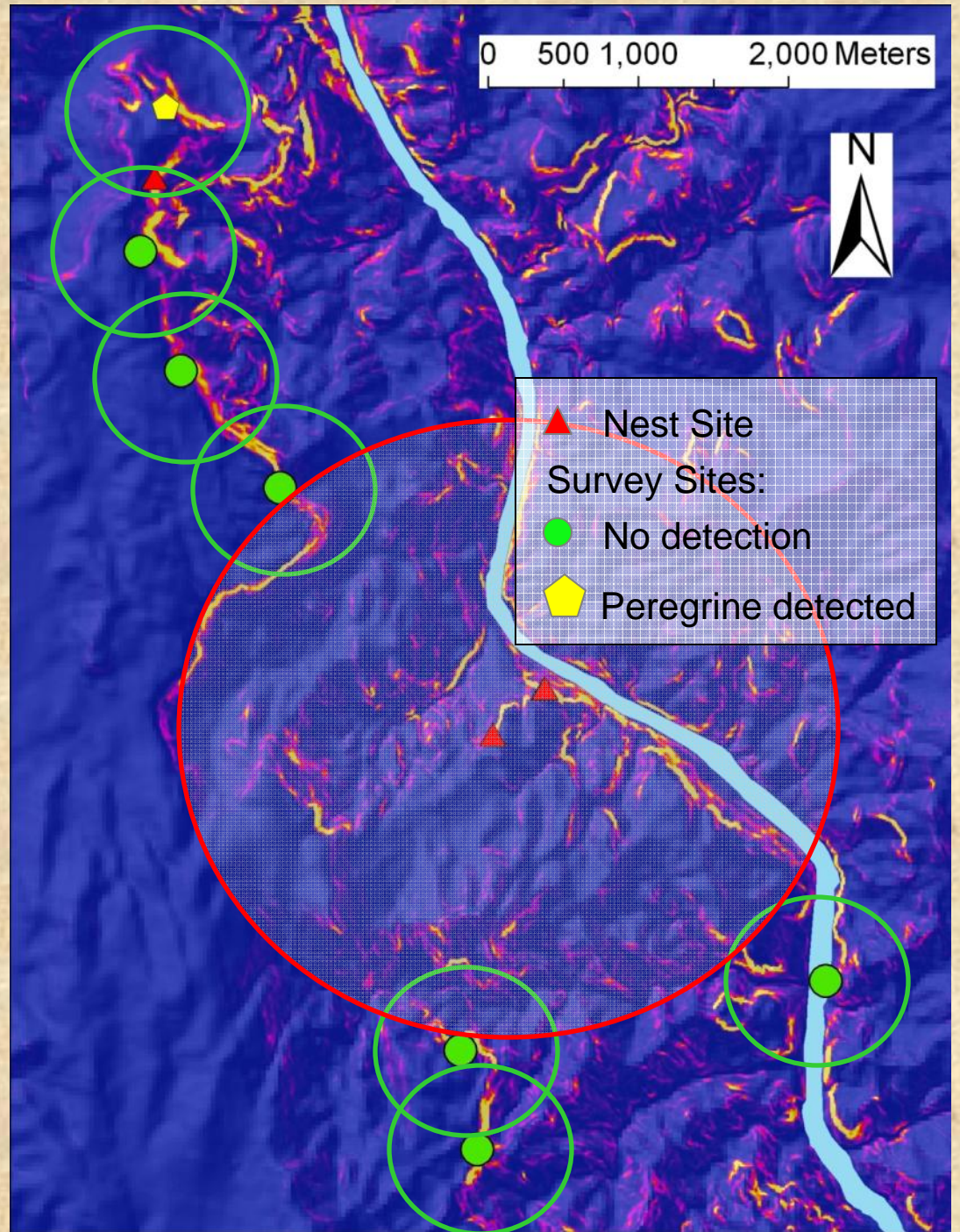
Example of Exploratory Survey Effort: Black Canyon Area



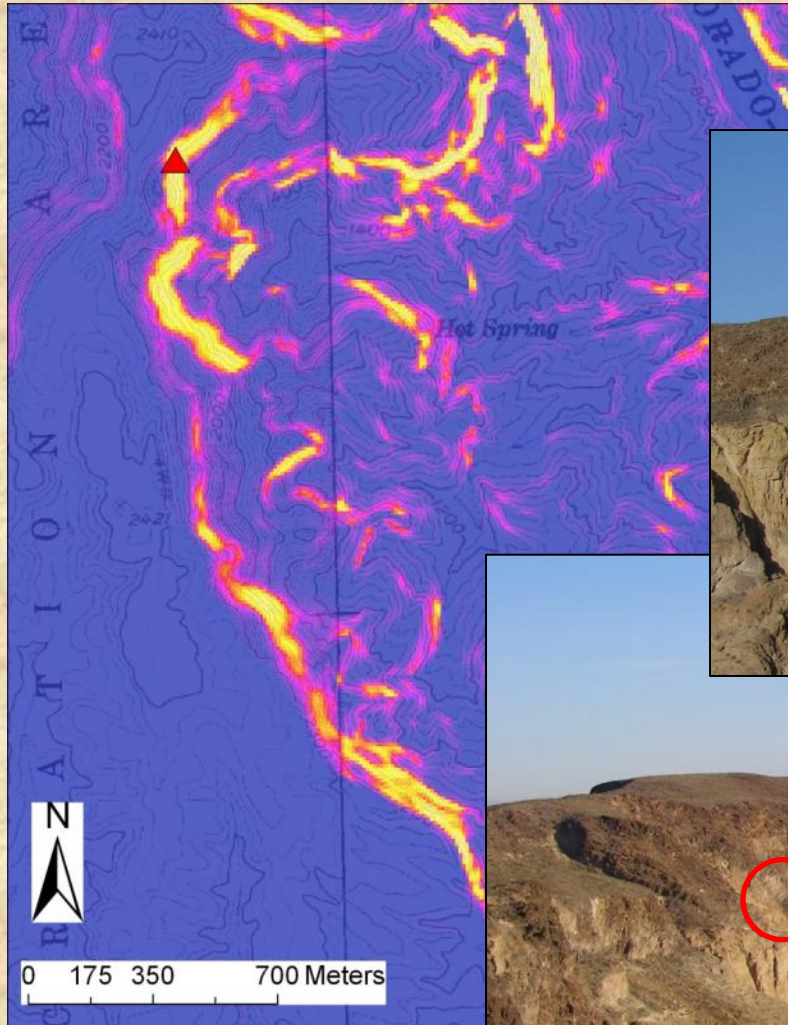
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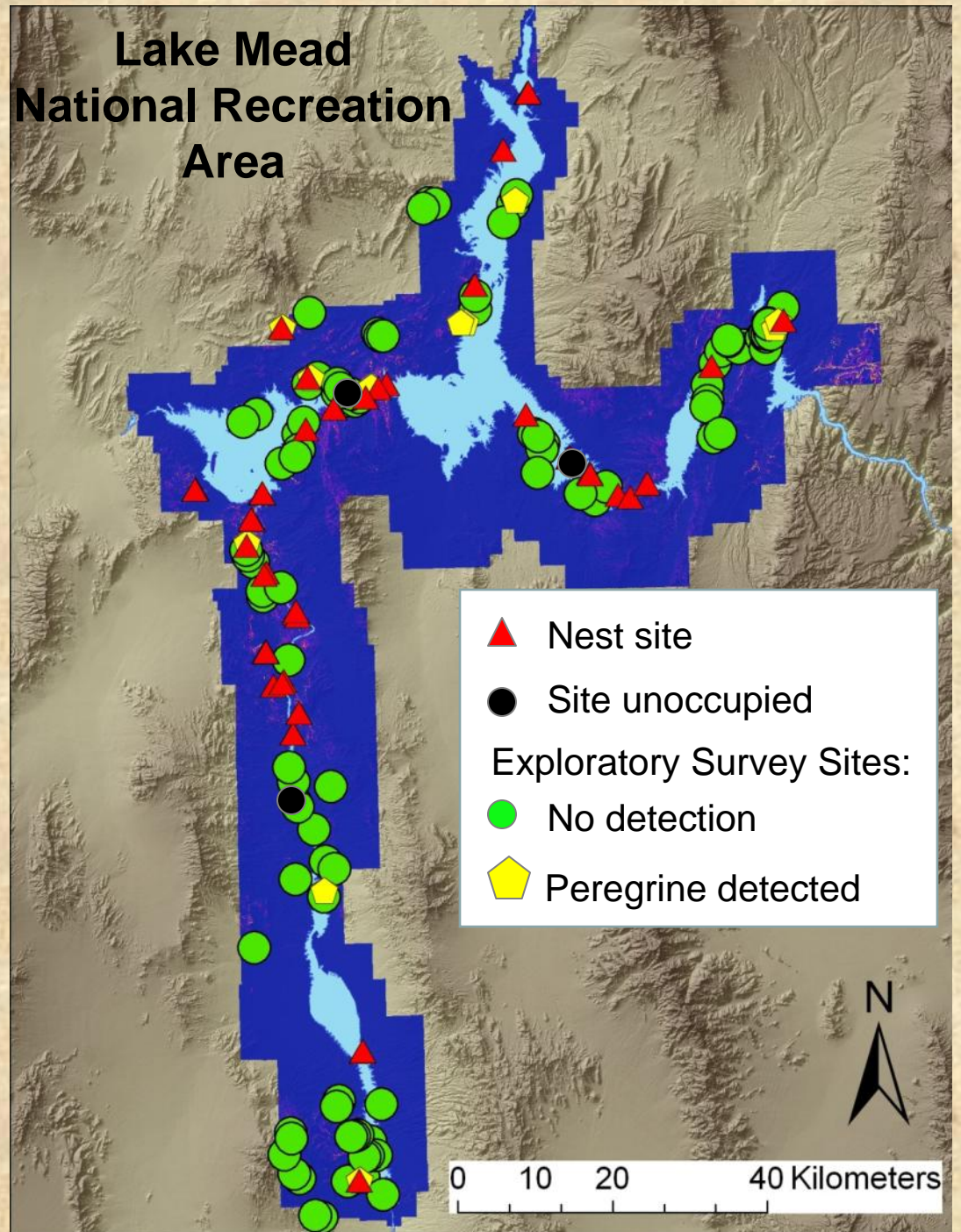
Example of Nesting Habitat



- Cliff height: 157 m
- Nest height: 115 m

Summary of 2009 Survey Efforts and Results

- 10 previously unconfirmed prospective/actual territories detected
- 27 nests detected
- 3 historical territories unoccupied



Peregrine Falcon Monitoring

Milestones

- Contract Award and Mobilization: **completed**
- Project Kick-off Meeting: **completed**
- Begin Peregrine Falcon Monitoring (2008): **completed**
- Complete Peregrine Falcon Monitoring (2008): **completed**
- Complete Peregrine Falcon Monitoring (2009): **completed**

Deliverables

- Work Plan: **completed**
- Detailed Timeline: **completed**
- Data Management Plan: **completed**
- Quarterly Progress Reports: **completed**

Peregrine Falcon Modeling

Milestones

- Contract Award and Mobilization: **completed**

Deliverables

- Detailed Timeline: **completed**
- Data Management Plan: **completed**
- Draft Conceptual Model: **completed**

Remaining Work

Peregrine Falcon Monitoring

- Provide Final Project Report (March 2010)
- Project Close-out Reporting, Final Approval of all Deliverables (June 2010)

Peregrine Falcon Modeling

- Develop Conceptual Model (final version by January 2010)
- Develop Habitat Suitability Model and Map (final version by January 2010)
- Project Close-out Report, Final Approval of all Deliverables (by June 2010)

Acknowledgments



- Public Lands Institute, UNLV
- Clark County
- Nevada Department of Wildlife

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