



*Sean Matthews – Hoopa Tribal Forestry*

## The Fisher Story in Oregon

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Sean M. Matthews • David S. Green • Katie M. Moriarty





*Kerry Rennie - Hoopa Tribal Forestry*



*Cale Meyers – Hoopa Tribal Forestry*



*Kevin Smith – North Carolina State University*



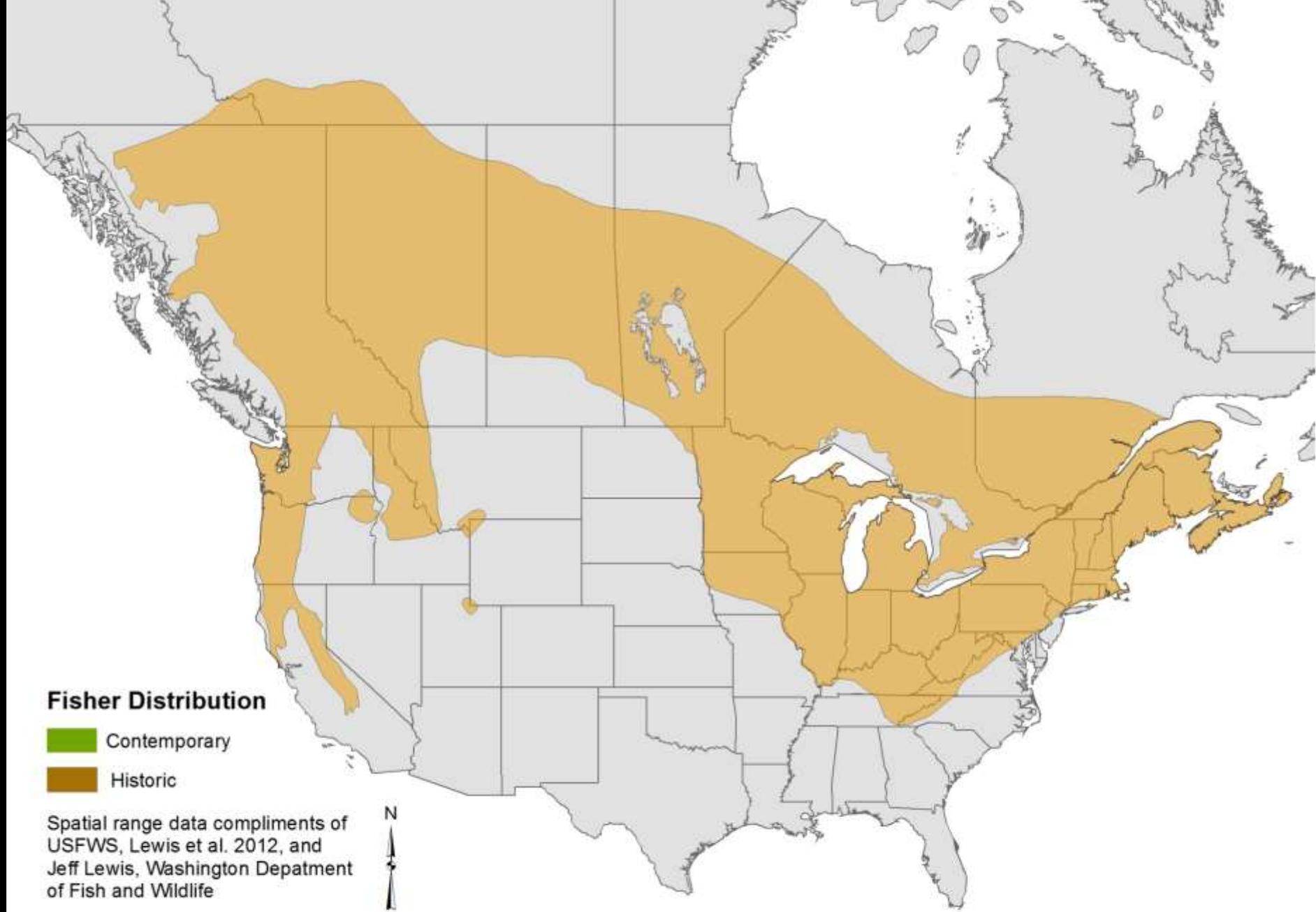
*Mattnad*



*Mattnad*



*Roger Powell*



### Fisher Distribution

- Contemporary
- Historic

Spatial range data compliments of USFWS, Lewis et al. 2012, and Jeff Lewis, Washington Department of Fish and Wildlife

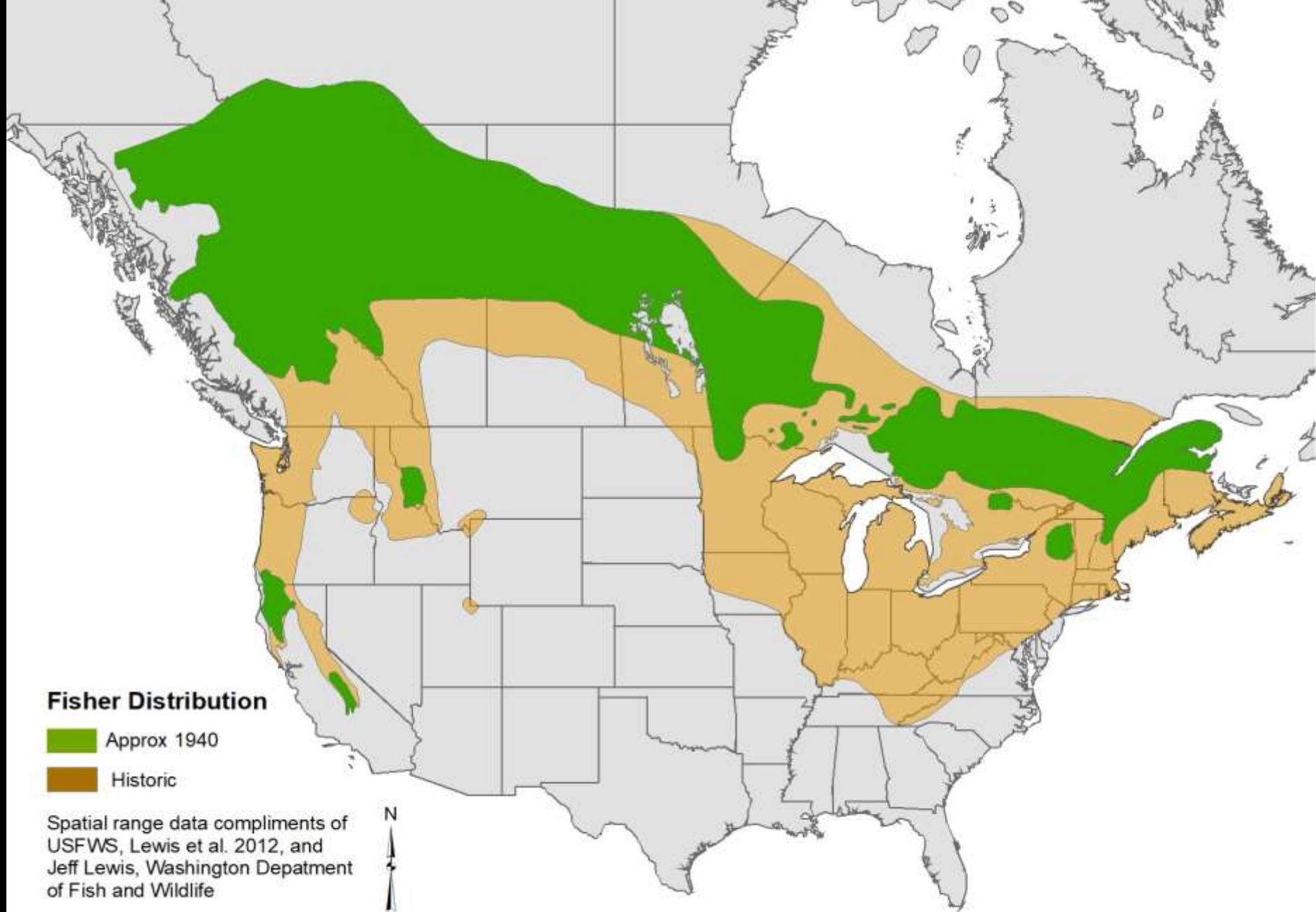




*Adirondack Reflections*



*U.S. Forest Service*



### Fisher Distribution

- Approx 1940
- Historic

Spatial range data compliments of USFWS, Lewis et al. 2012, and Jeff Lewis, Washington Department of Fish and Wildlife

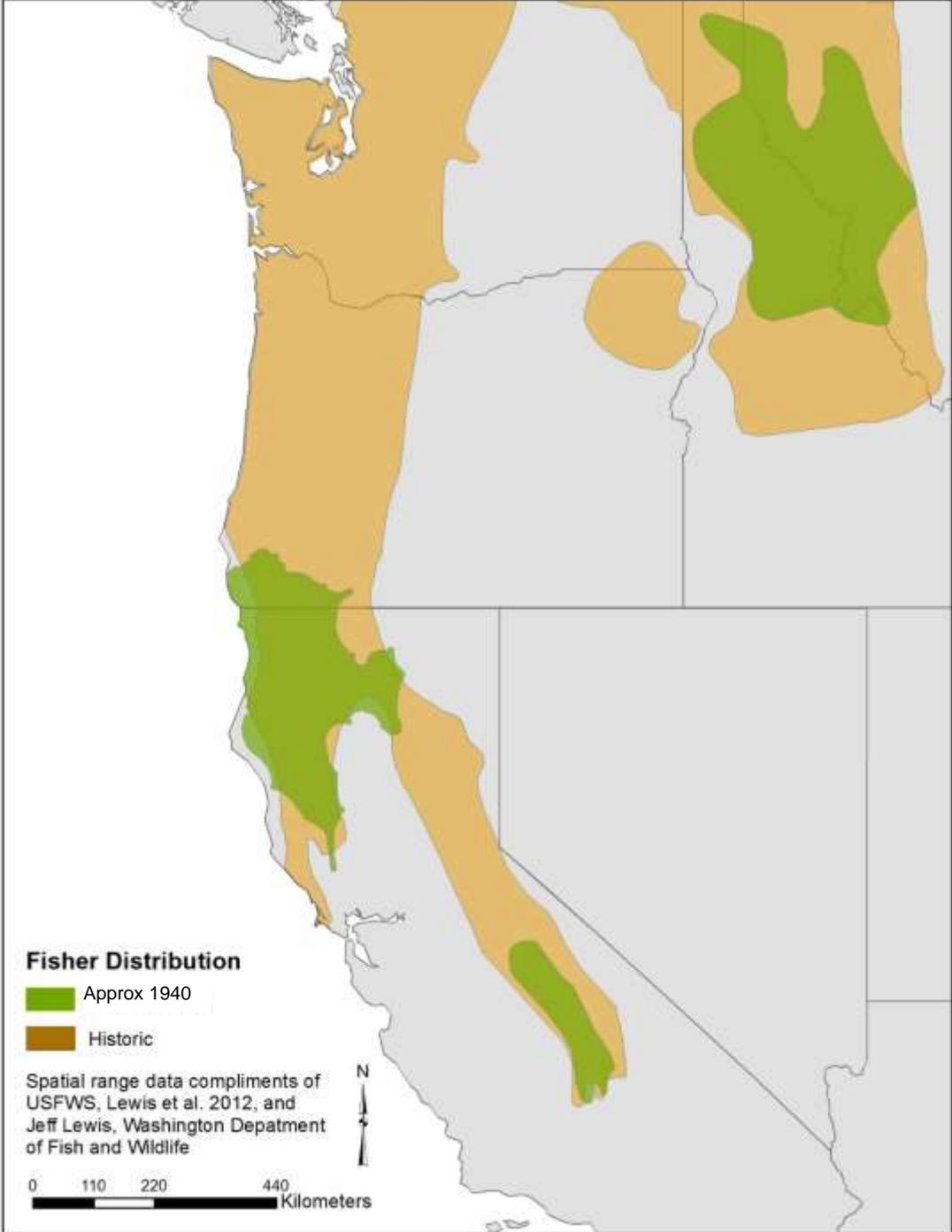


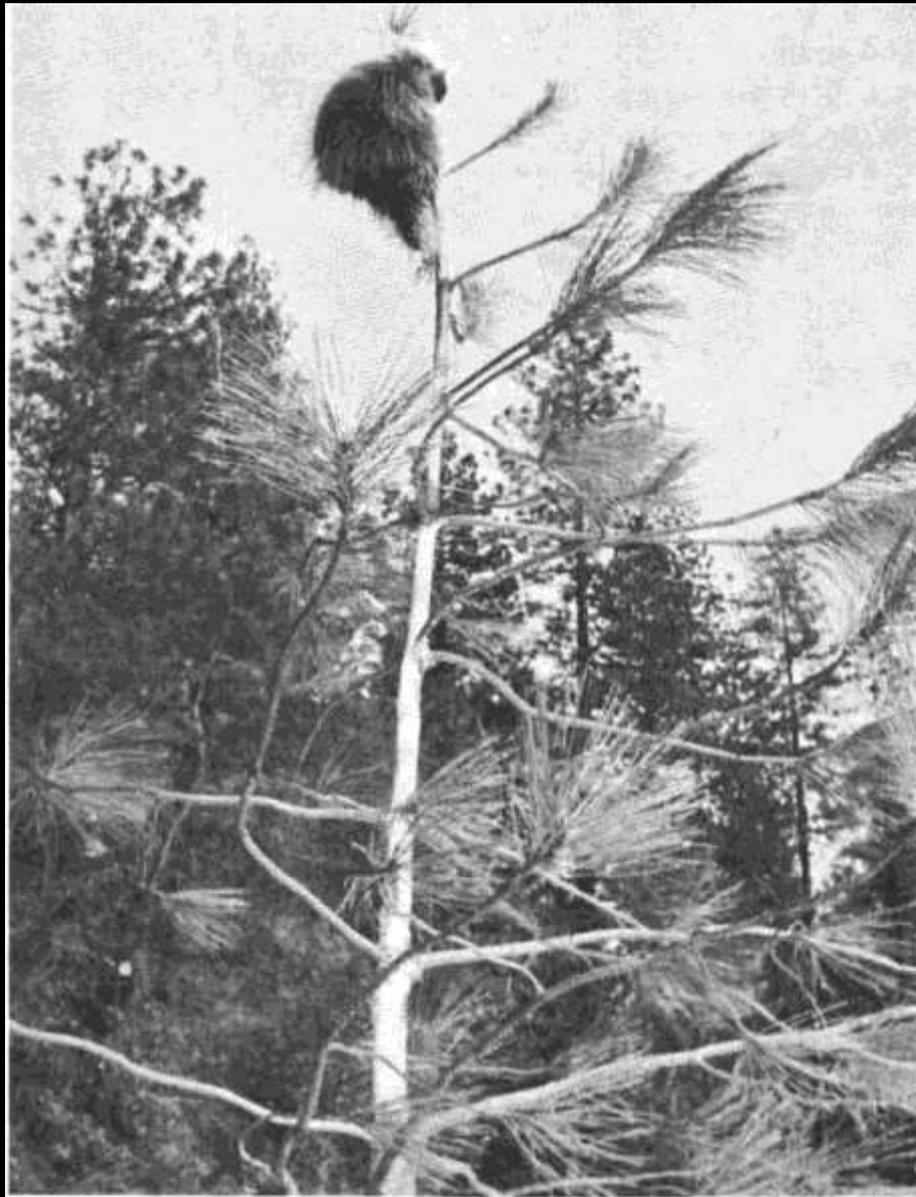
# Regulatory History

- Closure of fisher harvest seasons:
  - Washington 1934
  - Oregon 1937
  - California 1946
  - Idaho unknown date
  - Montana 1930
  - Portions of B.C. 1982, 2003



*Mark Higley – Hoopa Tribal Forestry*

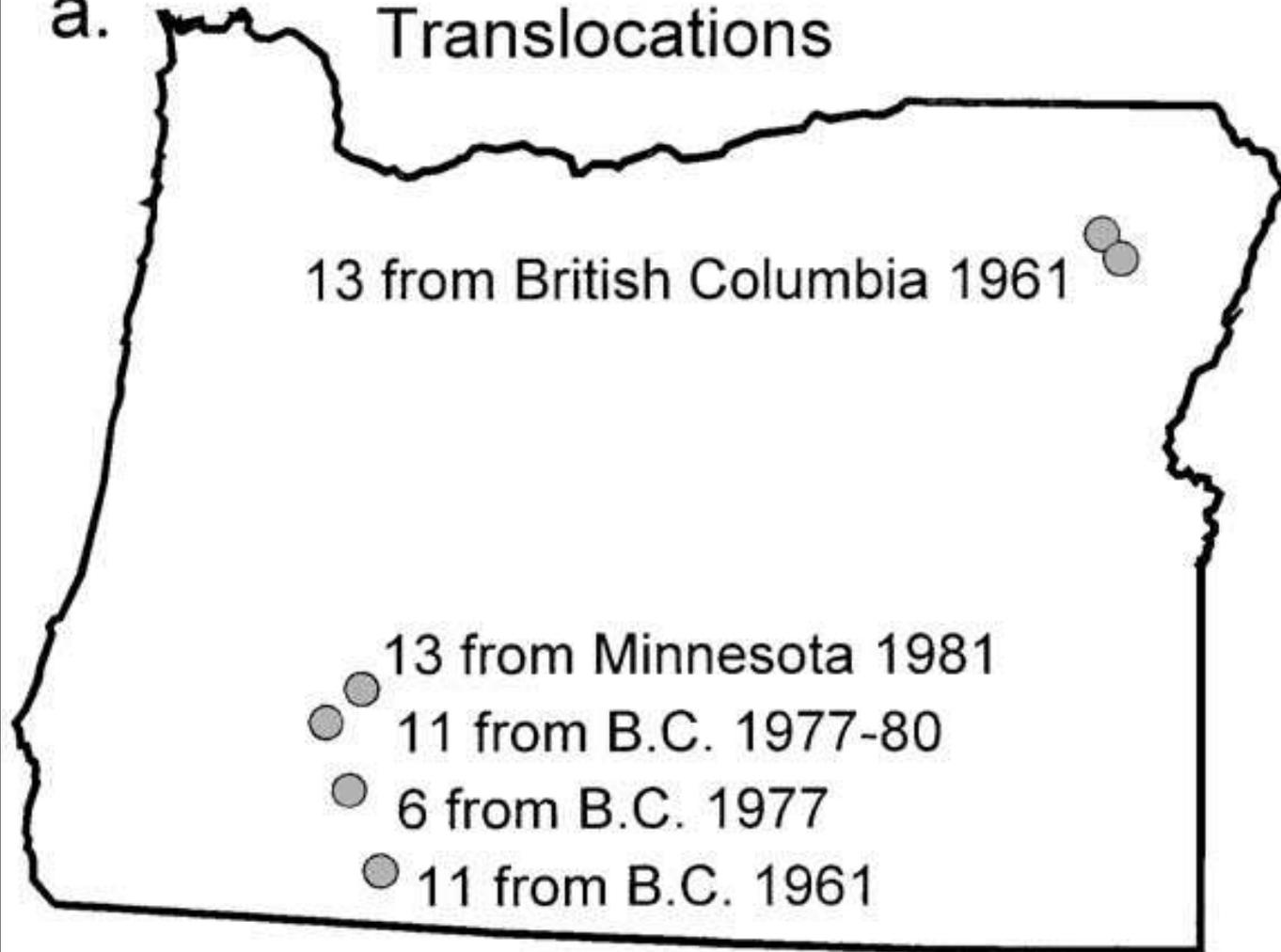




*Jack Thomson and William A. Neitro, Bureau of Land Management*

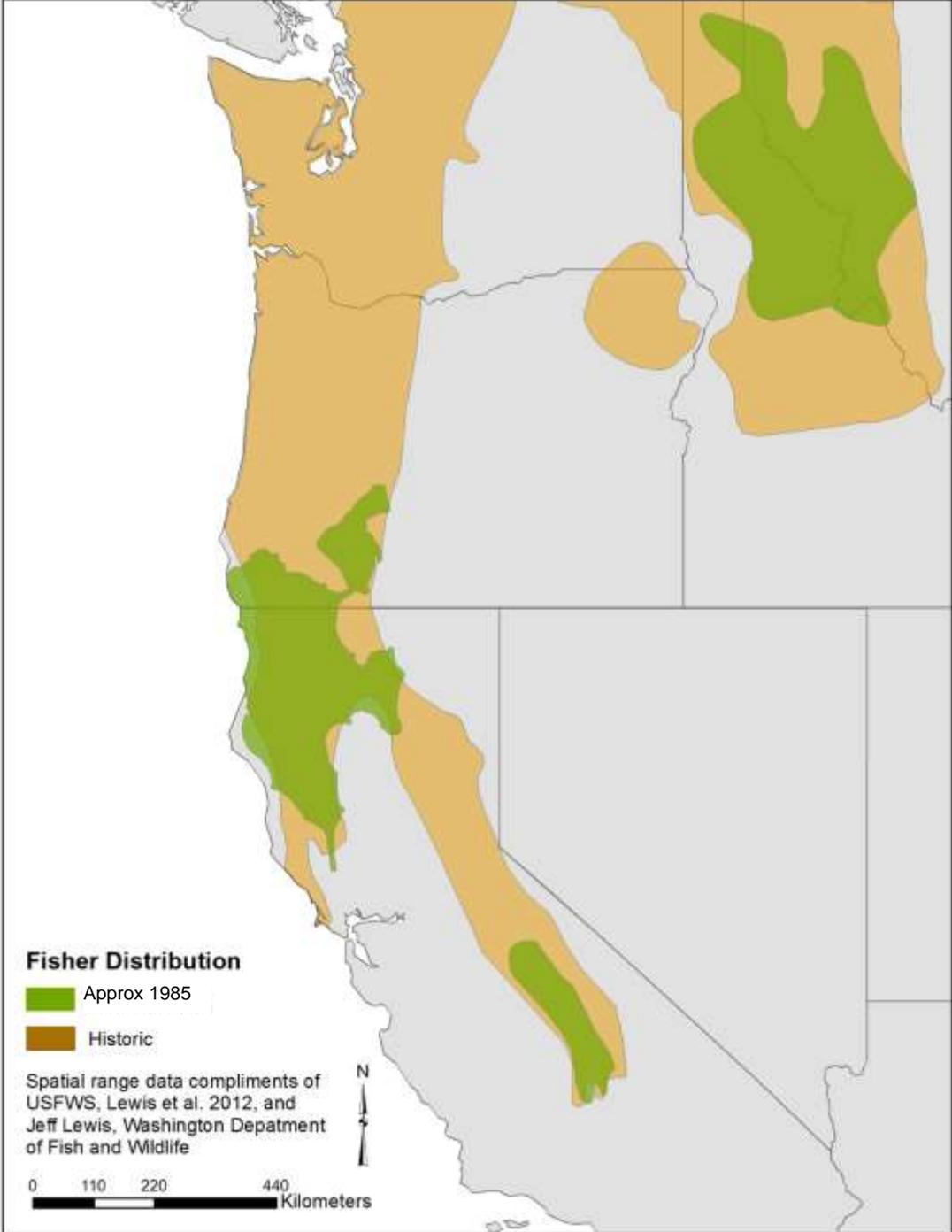
a.

## Translocations



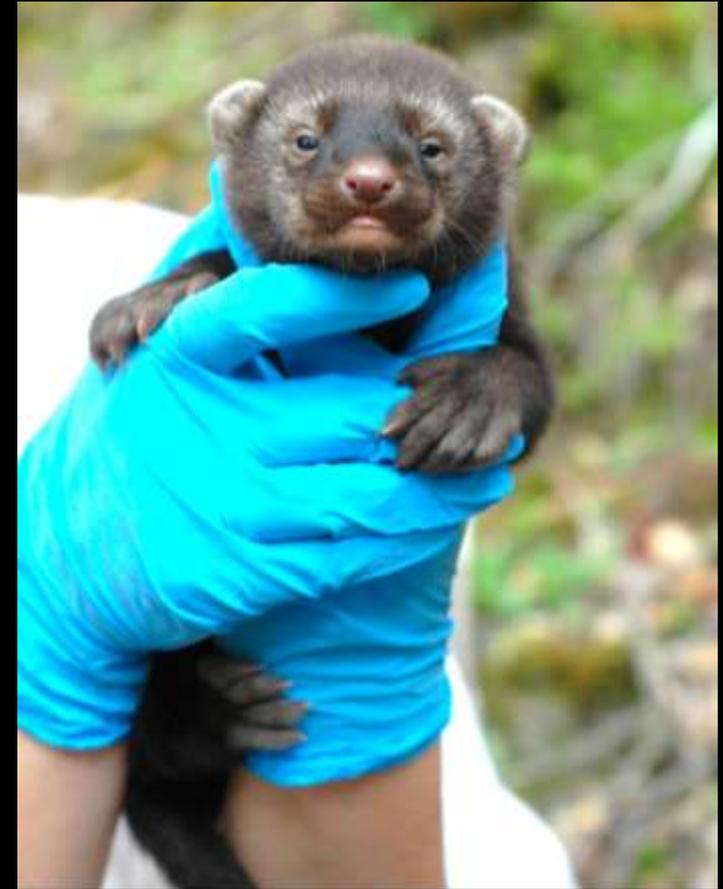


*Oregon Department of Fish and Wildlife*



# Regulatory History

- Petitions to list fisher 1990, 1994, 2000
- April 2004 USFWS published 12-month finding of warranted, but precluded
- October 2014 USFWS published a proposed rule to list the West Coast DPS as threatened
- April 2016 USFWS withdrew the proposed rule to list
- Challenge in U.S. District Court



*Mark Higley – Hoopa Tribal Forestry*

# Regulatory History

- U.S. Forest Service: Sensitive Species
- Bureau of Land Management: Sensitive Species
- Washington: Endangered
- Oregon: Protected, non-game species
- California: Southern Sierra threatened, Species of Special Concern



*Rebecca Green – Hoopa Tribal Forestry*

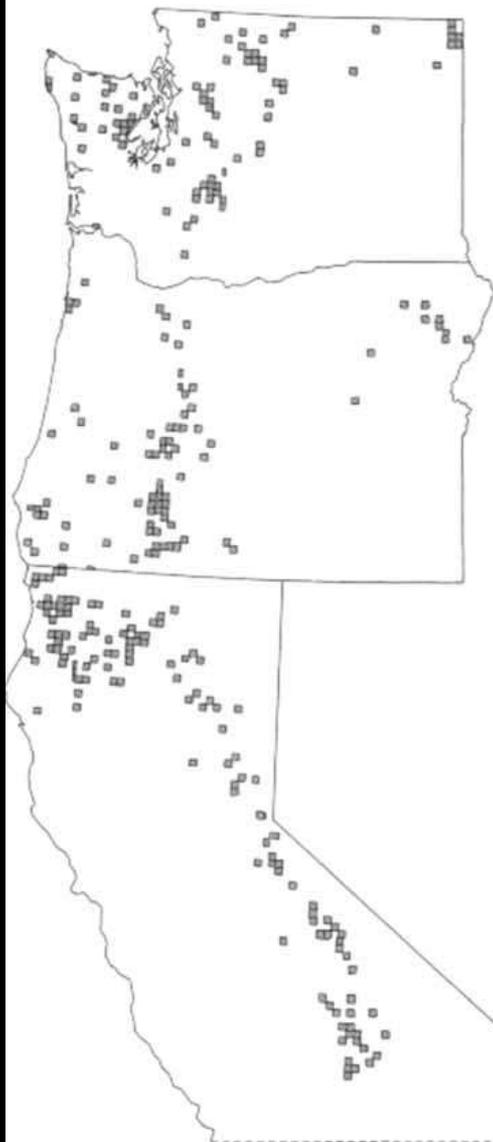
# Fisher Ecology

- Distribution
- Population sizes
- Habitat selection
- Reproduction
- Survival
- Sources of mortality
- Limiting factors
- Reintroduction

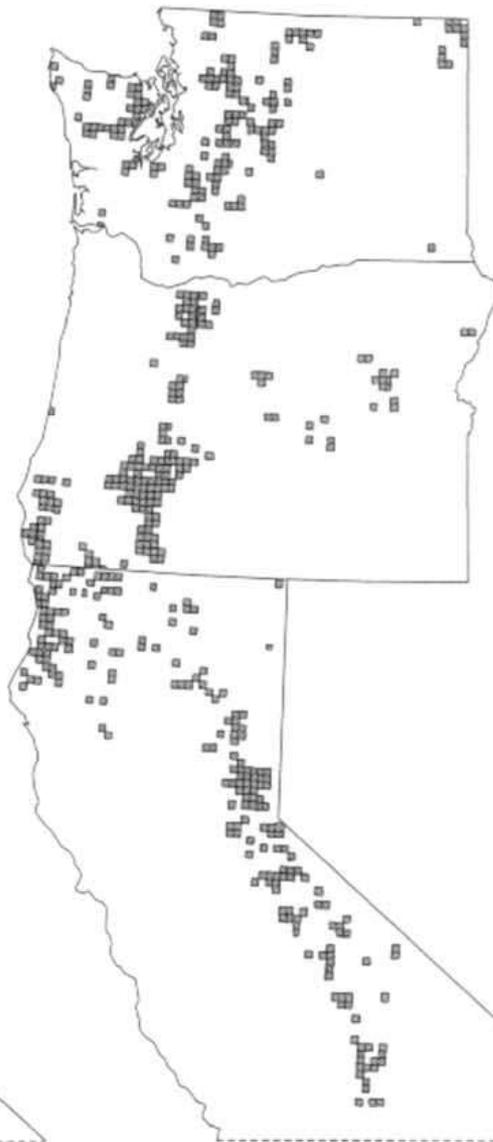


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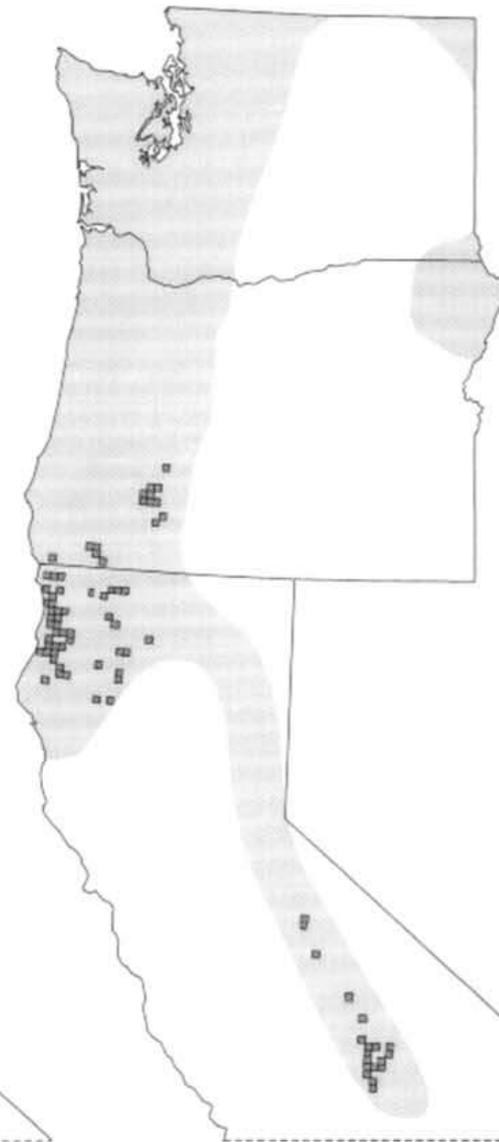
a. Unscreened fisher occurrence records



b. Remote camera and trackplate surveys

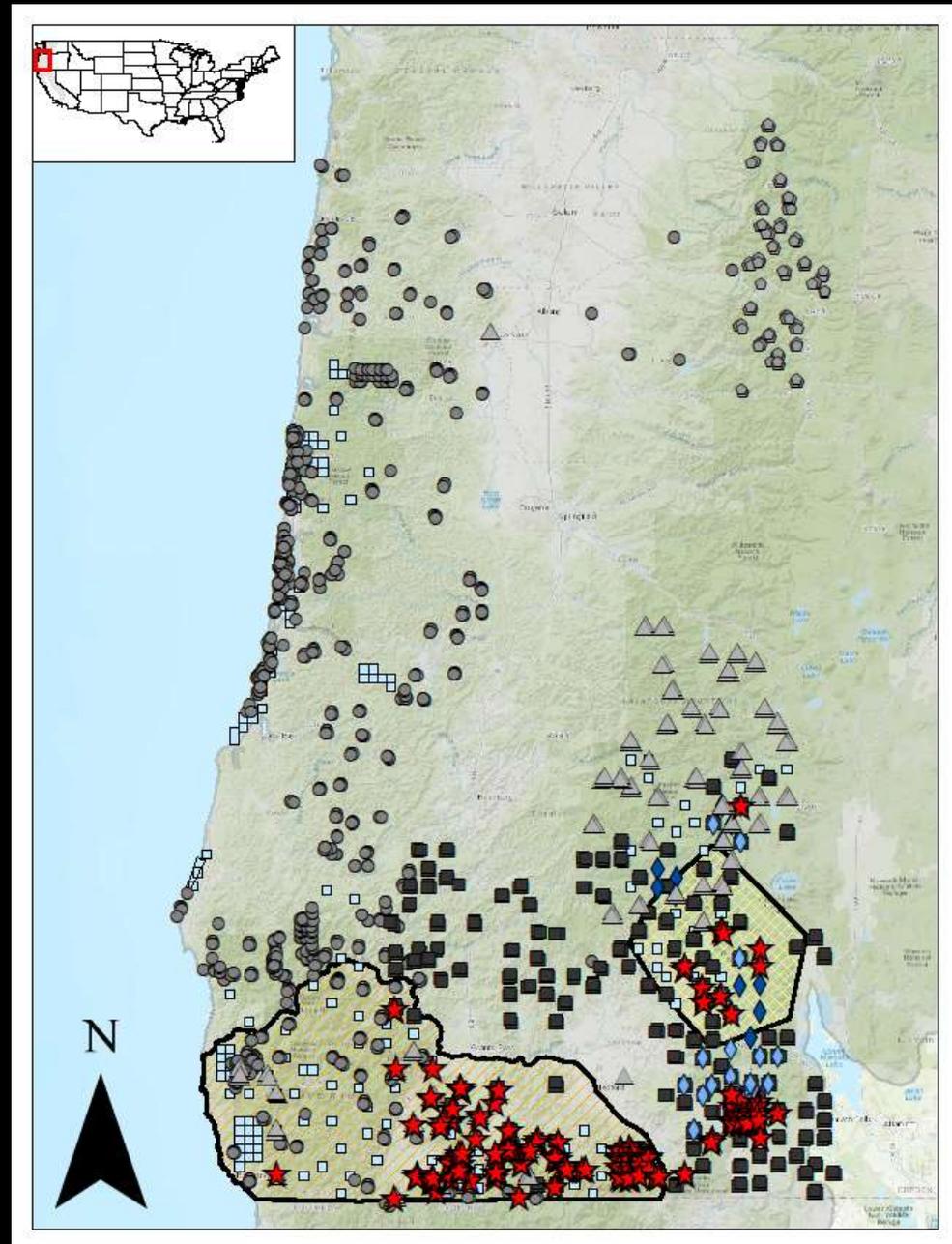


c. Resulting fisher detections



# Oregon Surveys

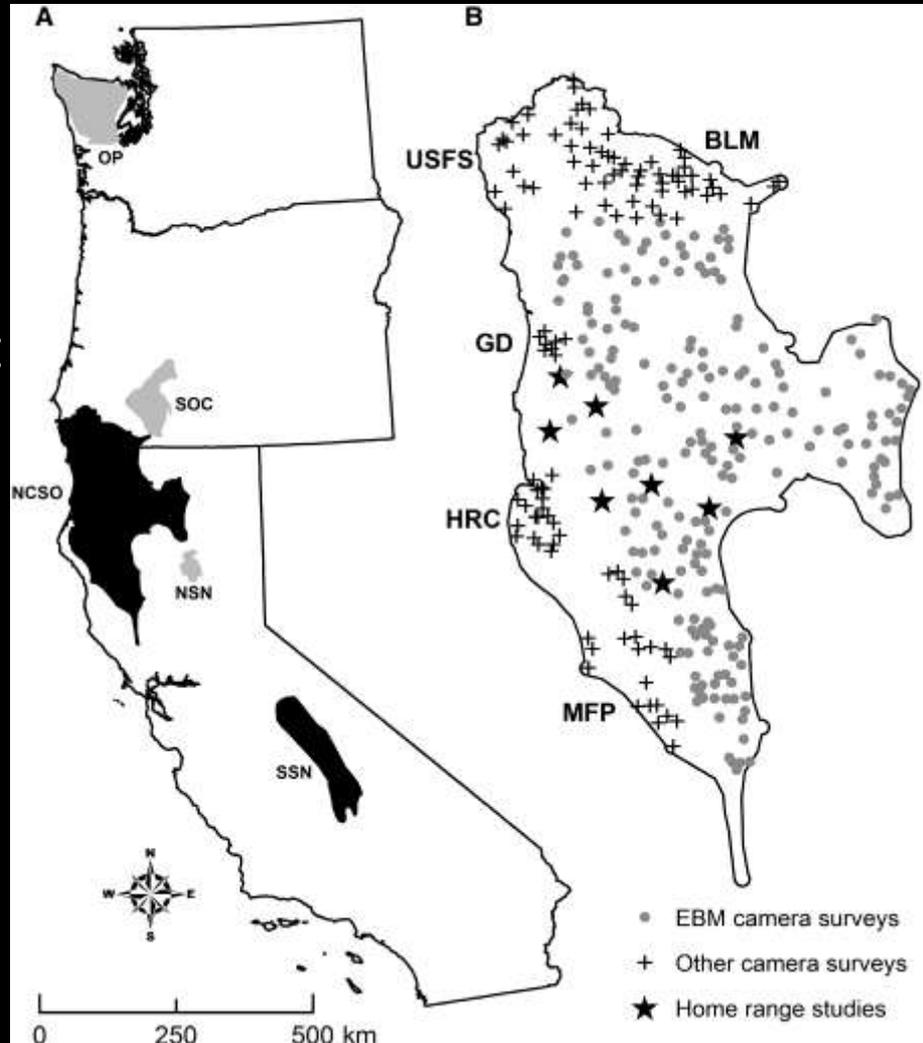
- Remote cameras
- Scat-detection dogs
- Each symbol represents survey effort
- Red stars indicate fisher detection



# NCSO Population Estimate

CDFW baited camera stations

- Fall 2010-2014
- Random placement
- Paired stations 1.6 km apart
- 14-30 days
- $n = 462$  stations



# NCSO Population Estimate

Total population size

3,196 fishers (95% CI 2,507-4,184)

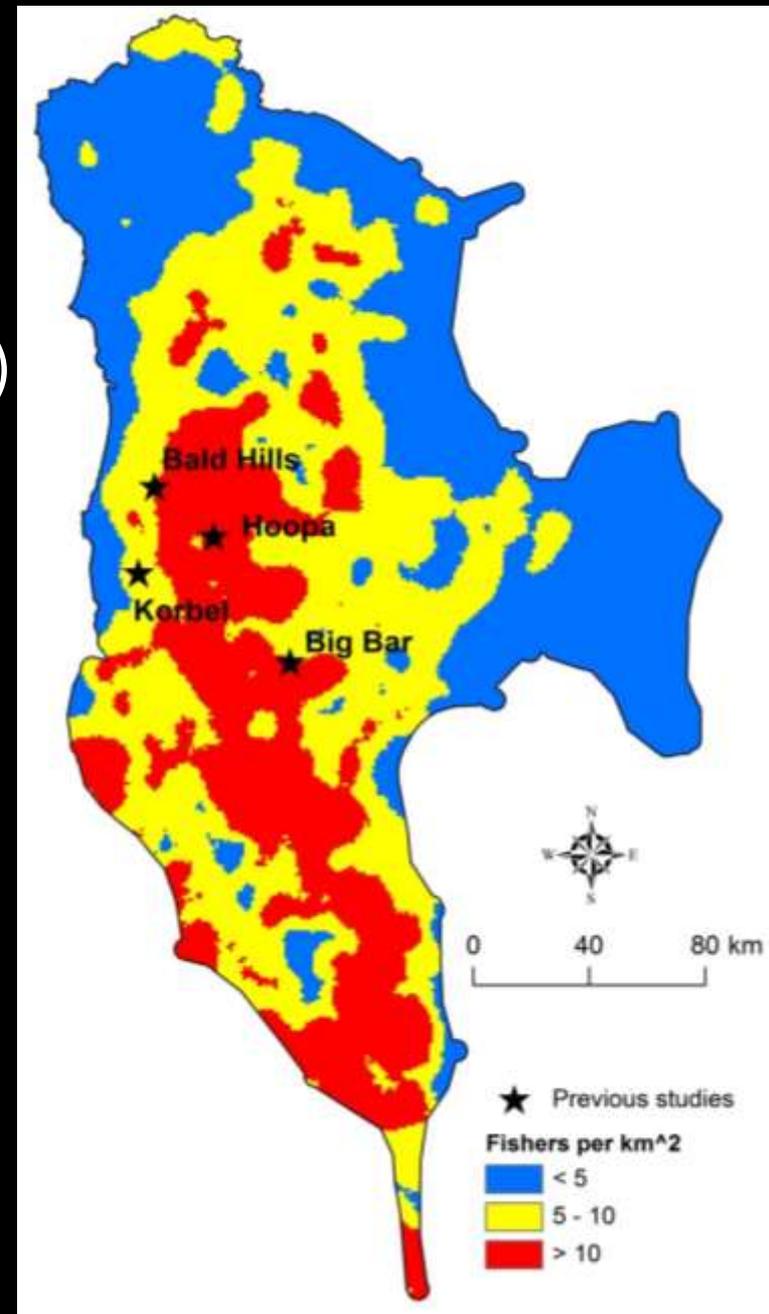
Average density

6.6 fishers/100 km<sup>2</sup>

(95% CI 5.1 – 8.6)

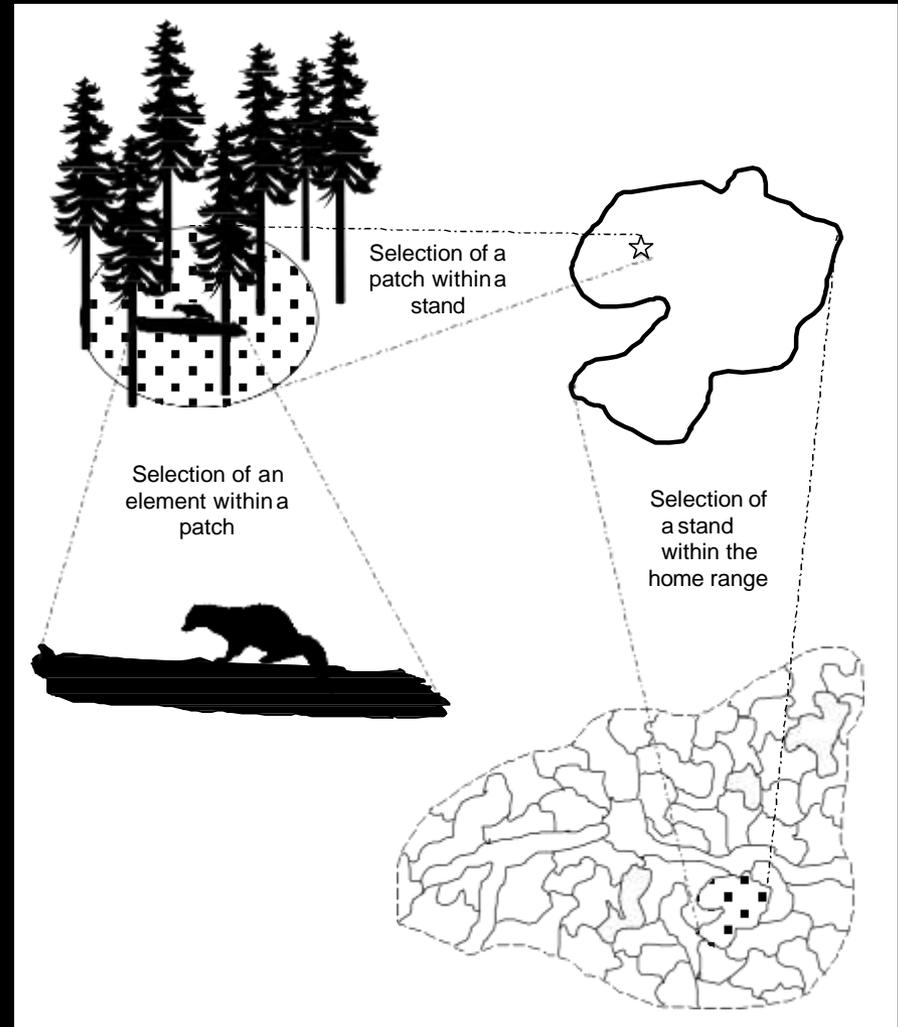
Density (fishers/100km<sup>2</sup>)

<u>Location</u>	<u>Current</u>	<u>Previous</u>
Bald Hills	9.6	10.0
Korbel	7.7	8.5
Hoopa	13.3	14.0
Big Bar	11.0	8.0
Average	10.4	10.1



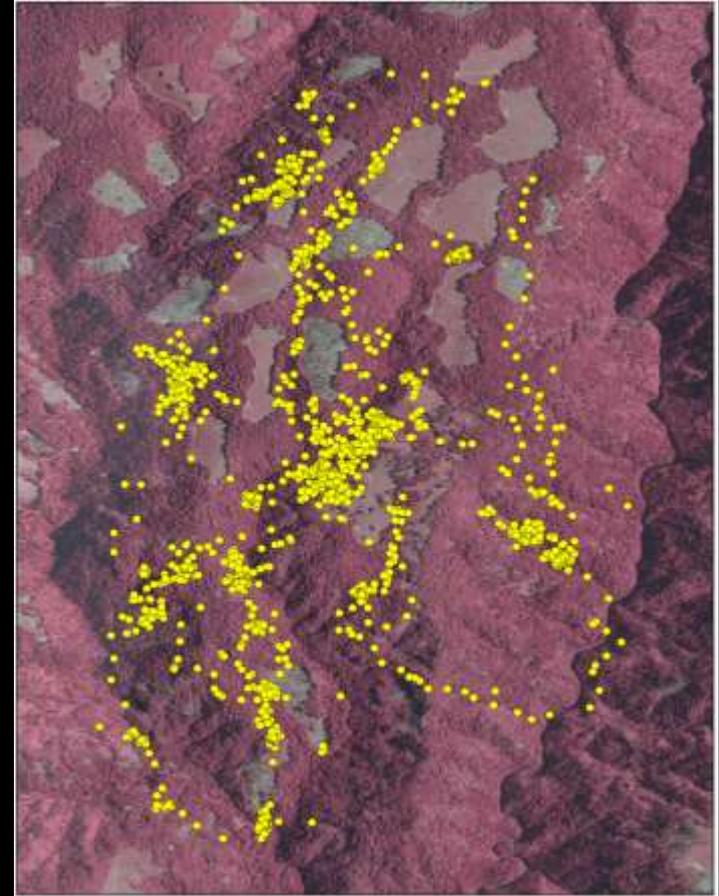
# Resource Selection

- Fishers select resources at multiple spatial scales
- Home range
- Stand
- Patch
- Element



# Home Range Selection and Movement

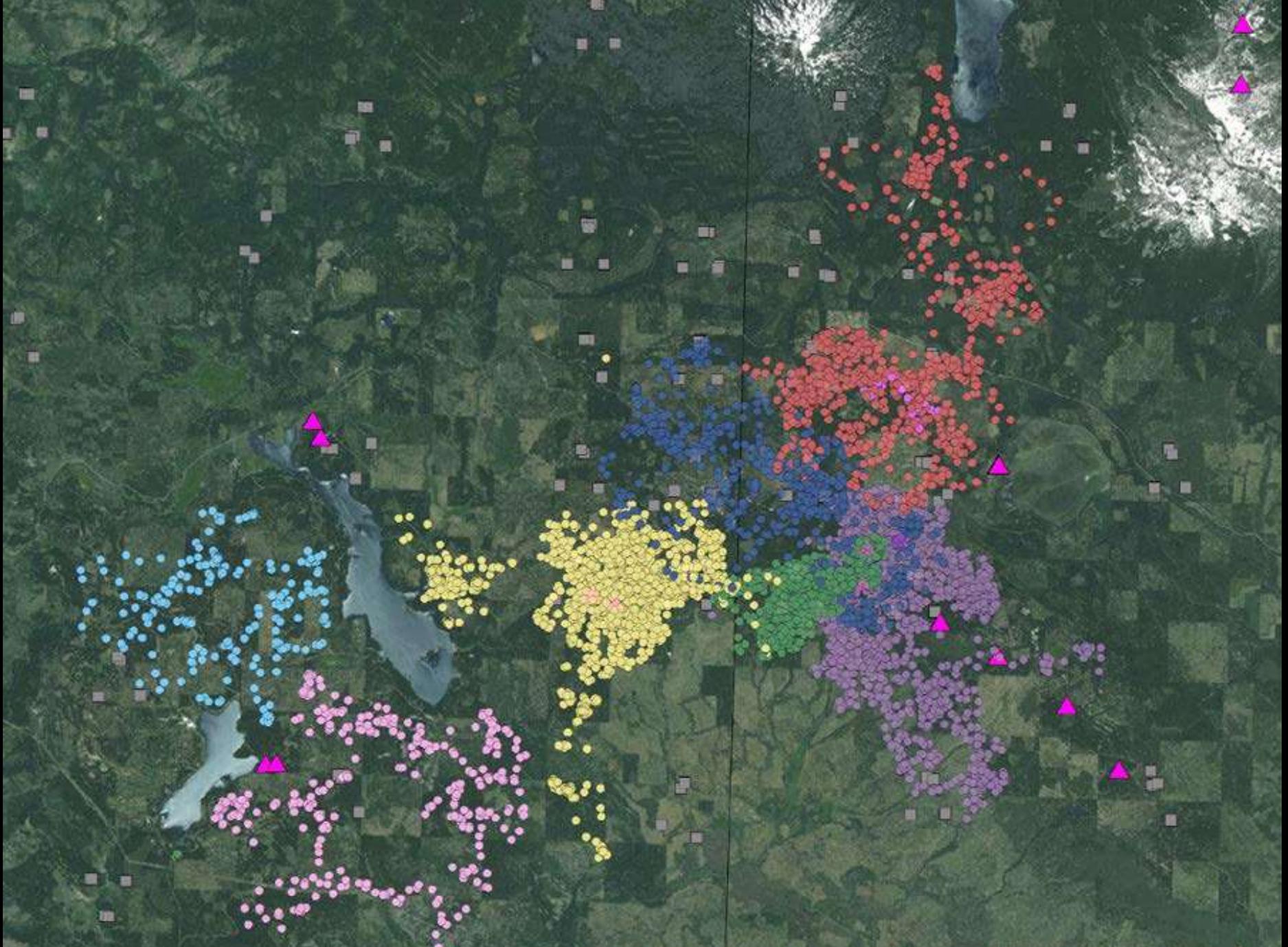
- Home range occupancy decreased as with increasing area of wetlands and logging
- Home range cores had intermediate amounts of landscape edge and high canopy cover forest



*Aaron Facka – North Carolina State University*

Weir and Corbould. 2010. Journal of Wildlife Management

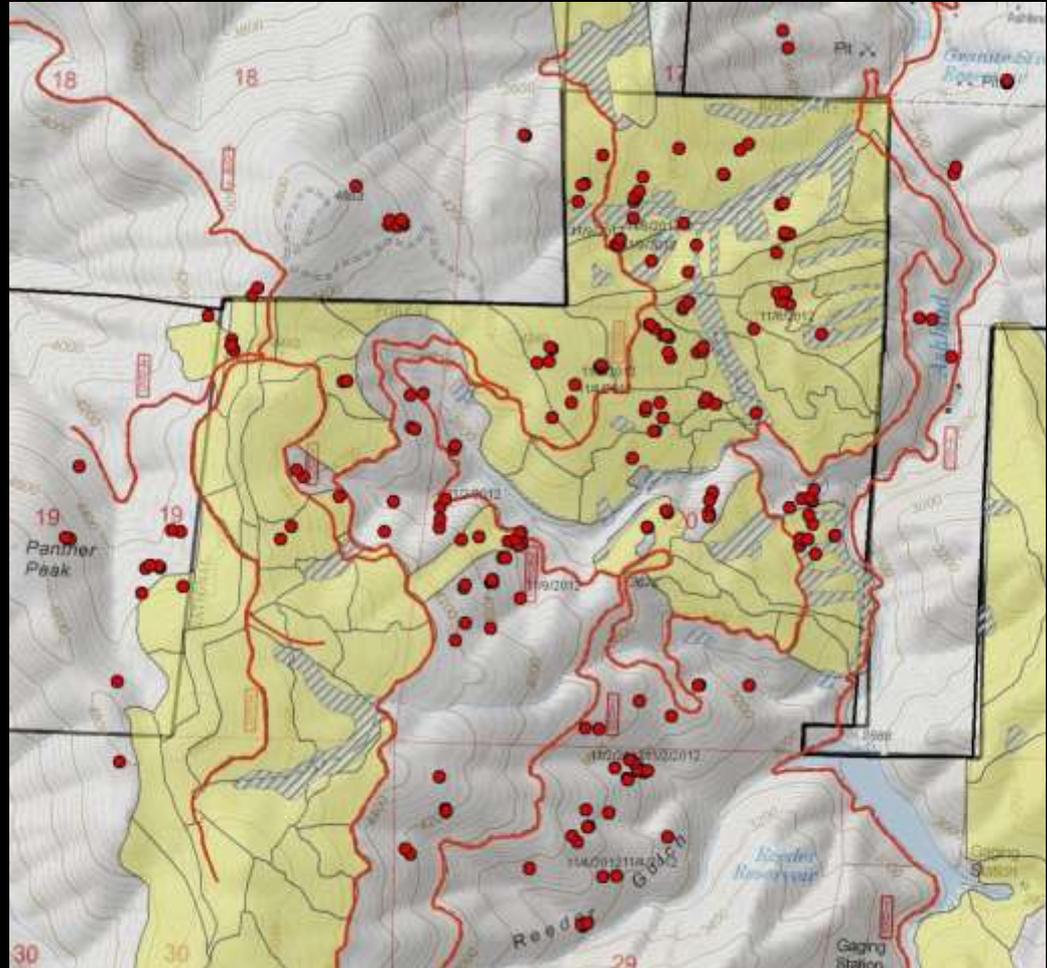
Sauder and Rachlow. 2015. Forest Ecology and Management



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroX, Getmapping, Aerotri, IGN, IGP, swisstopo, and the GIS User Community

# Ashland Watershed

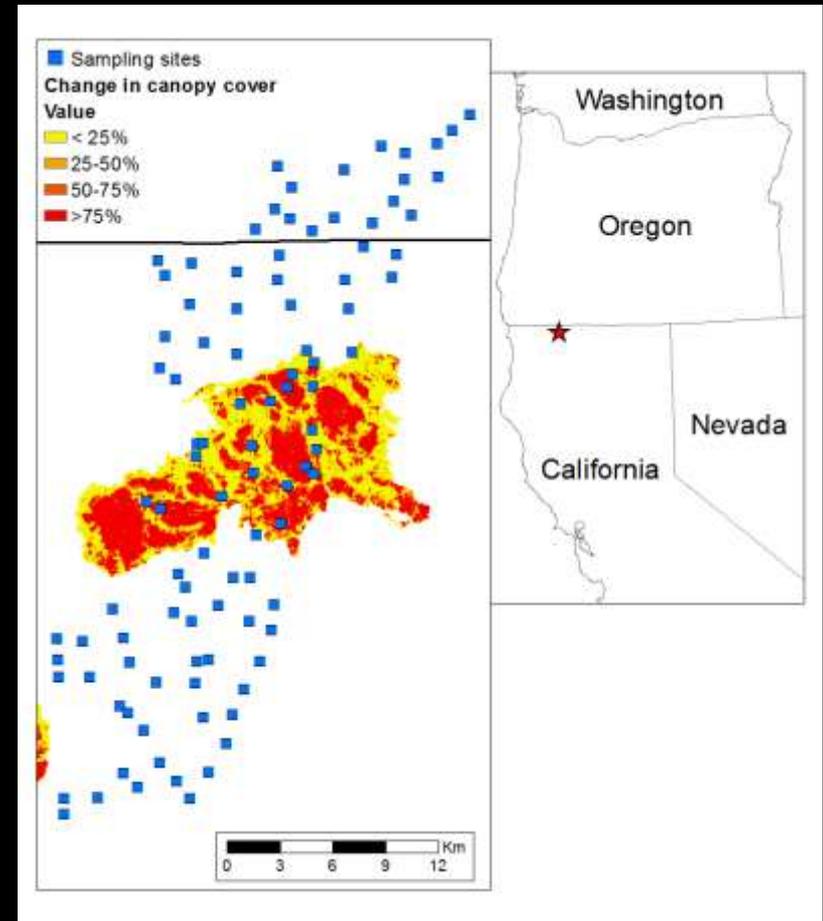
- 2010 - 2017
- Filling regional information gaps
- Fisher response to fuels treatments
- Monitored fishers using VHF and GPS telemetry



Clayton 2013. Unpublished report

# Klamath-Siskiyou Carnivore Project

- Monitoring fishers with industry partners annually since 2006
- Impacts of reintroduction to source population
- Meso-predator community dynamics
- Impacts of mixed-severity wildfire
- 2017 expansion with ODFW



*Green et al. In prep.*

# Rest Site Selection

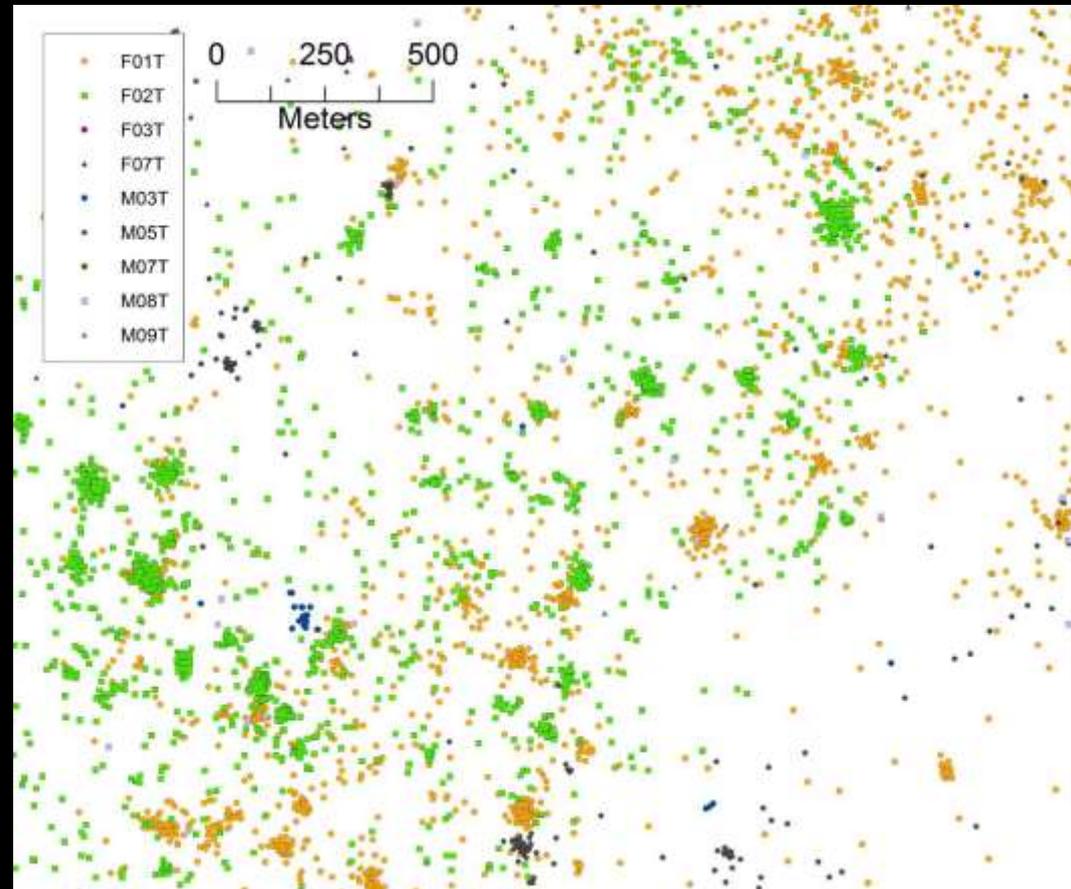
- Select stands with large diameter trees, dense canopy cover, generally in drainage bottoms
- Select cavities and platforms in the largest live trees
- Steep slopes
- Greater log volume
- Hardwoods used more than expected



*Kerry Rennie - Hoopa Tribal Forestry*

# Rest Zone Identification and Reuse

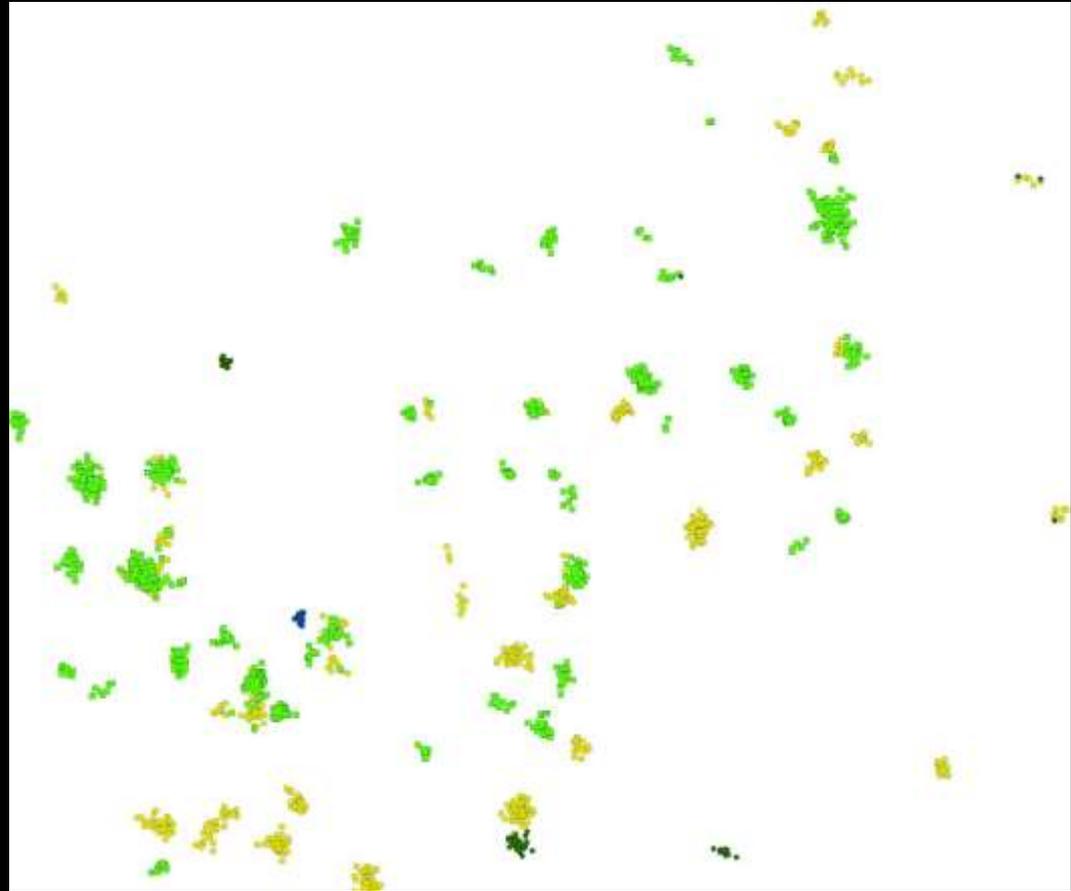
- Southern Oregon Cascades
- GPS collars
- 9 fishers (4F,5M)
- 2015-2017



Moriarty et al. In prep.

# Rest Zone Identification and Reuse

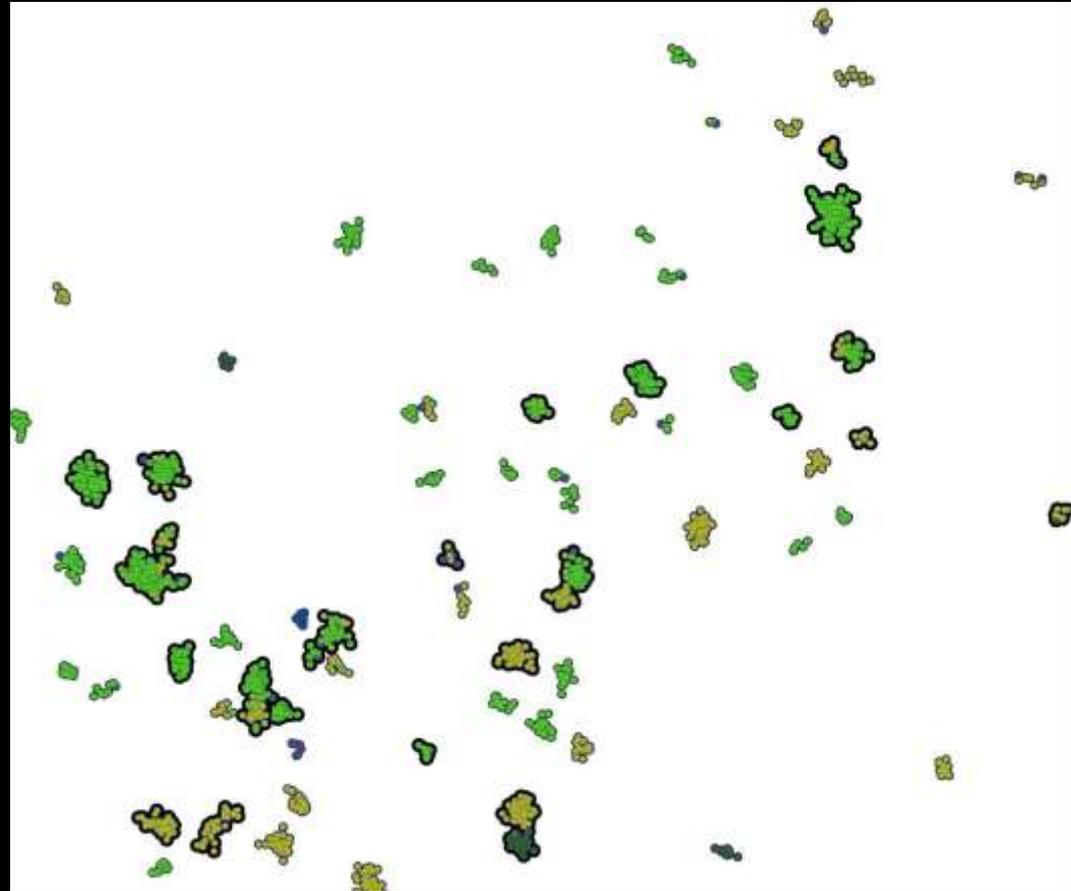
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- Cluster algorithm



Moriarty et al. In prep.

# Rest Zone Identification and Reuse

- Southern Oregon Cascades
- GPS collars
- 9 fishers (4F,5M)
- 2015-2017
- Cluster algorithm
- Rest zone identification



# Reproduction and Dispersal

- 71% of adult females give birth
- Parturition occurs 25 Mar (3 Mar – 17 Apr)
- 65% weaned offspring
- Younger adult females are less successful
- Average litter size 2.3
- Mean female dispersal distance was 4.0 km



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Matthews et al. 2013. *Journal of Mammalogy*  
Green et al. In review. *Journal of Mammalogy*

# Sources of Mortality

- 70% predation
- 16% disease
- 10% toxicant poisoning
- 2% vehicle strike
- 2% other anthropogenic causes



*Hoopa Tribal Forestry*

Wengert. 2012. Dissertation. University of California, Davis

Gabriel et al. 2015. PLoS ONE

Wengert et al. 2013. Wildlife Society Bulletin

Wengert et al. 2014. Journal of Wildlife Management

Gabriel et al. 2015. PLoS ONE

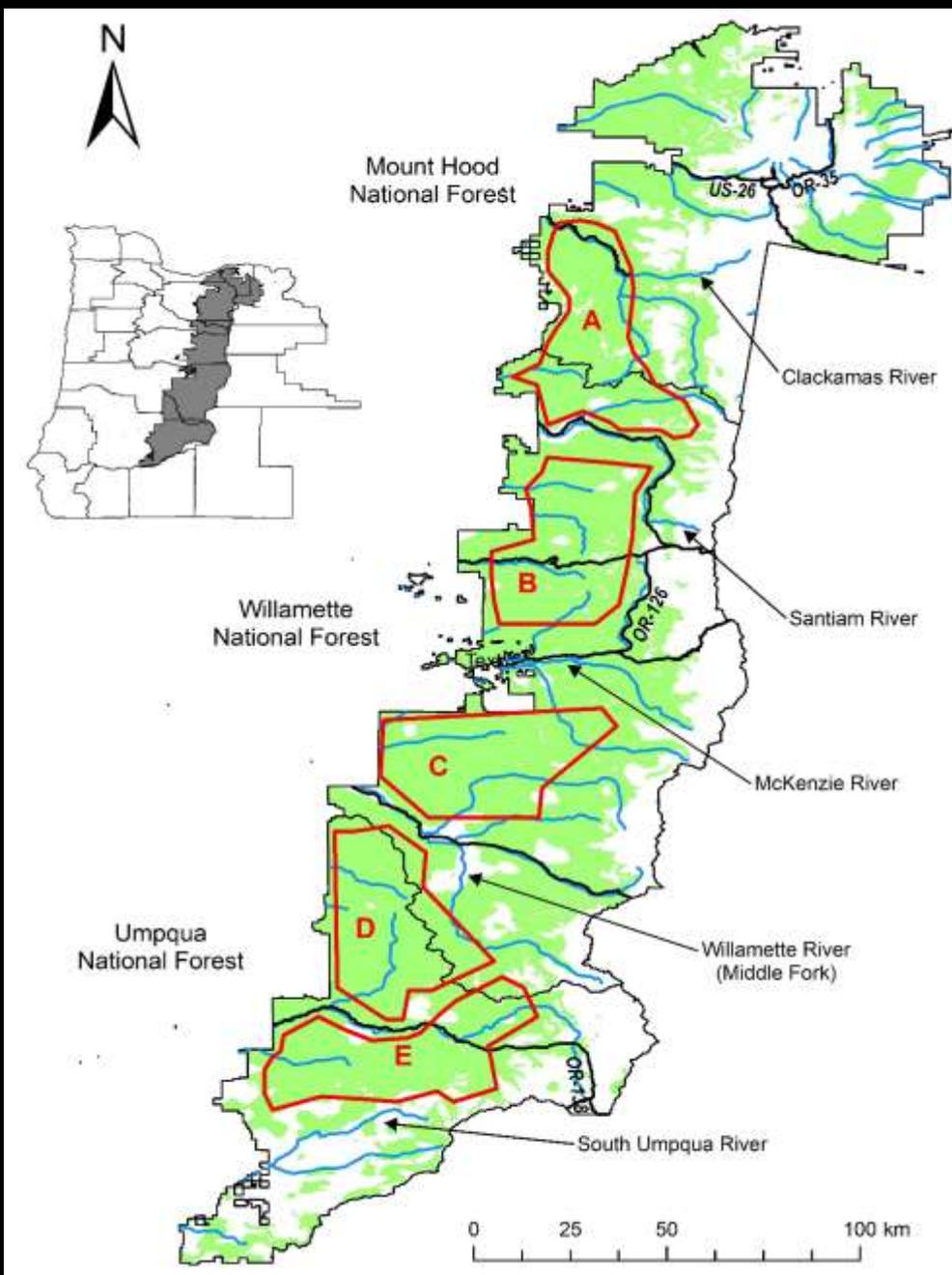
# Limiting Factors

- Evaluate the influences of ecological factors on survival and reproduction
  - Forest composition and configuration
  - Prey and predator abundances
  - Direct and indirect competition
  - Rodenticides



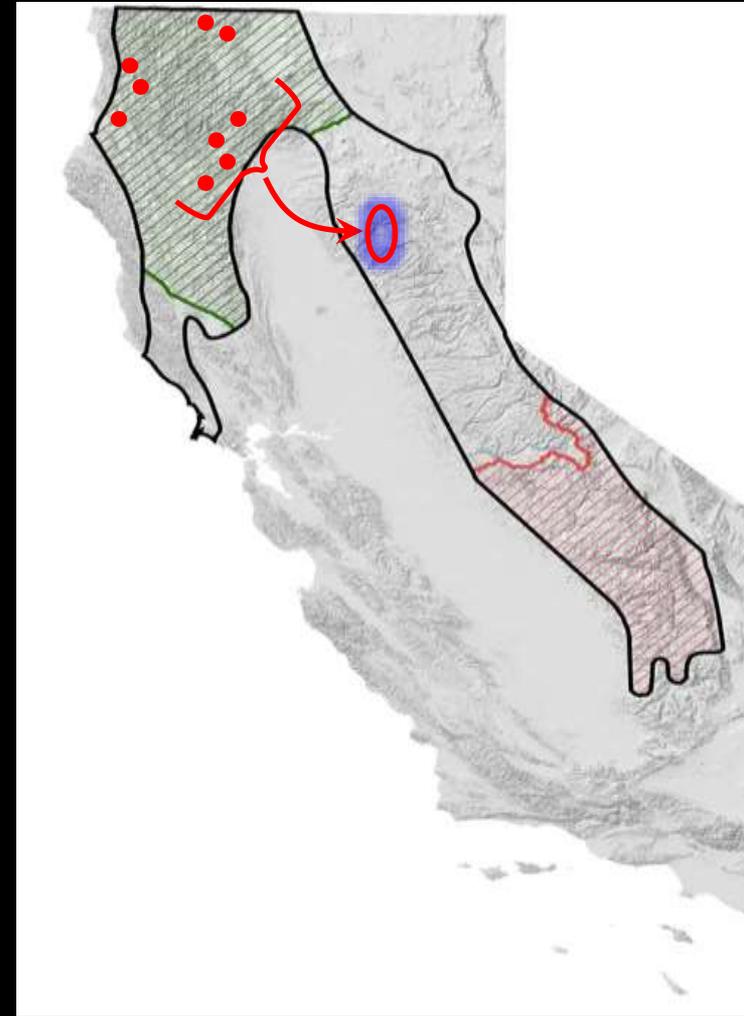
*USGS*

Matthews, Green, et al. In prep.

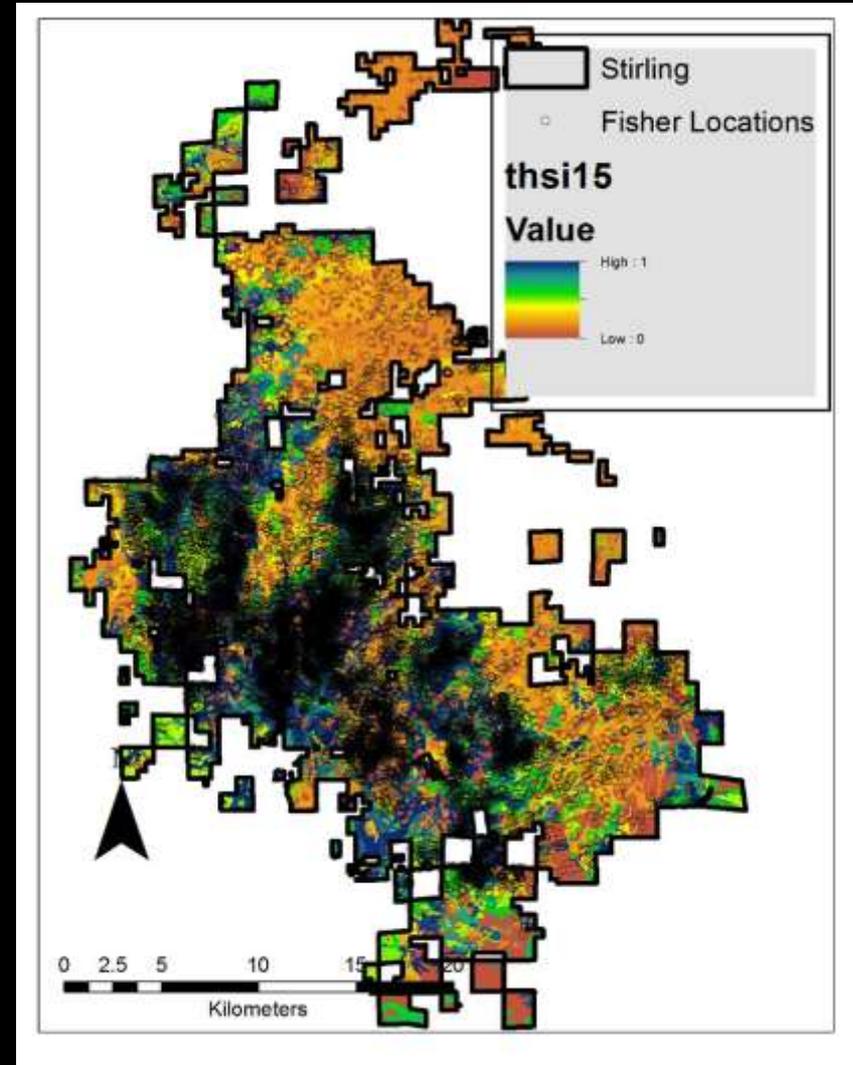
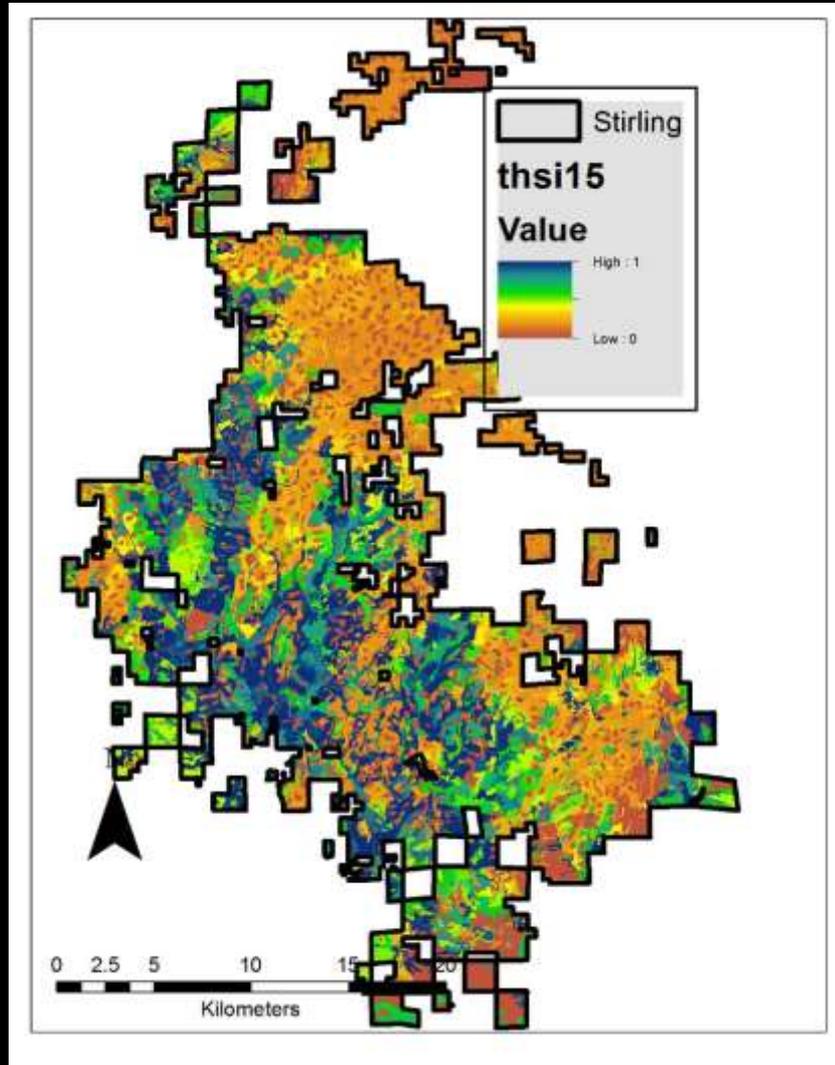


# Northern Sierra Fisher Reintroduction

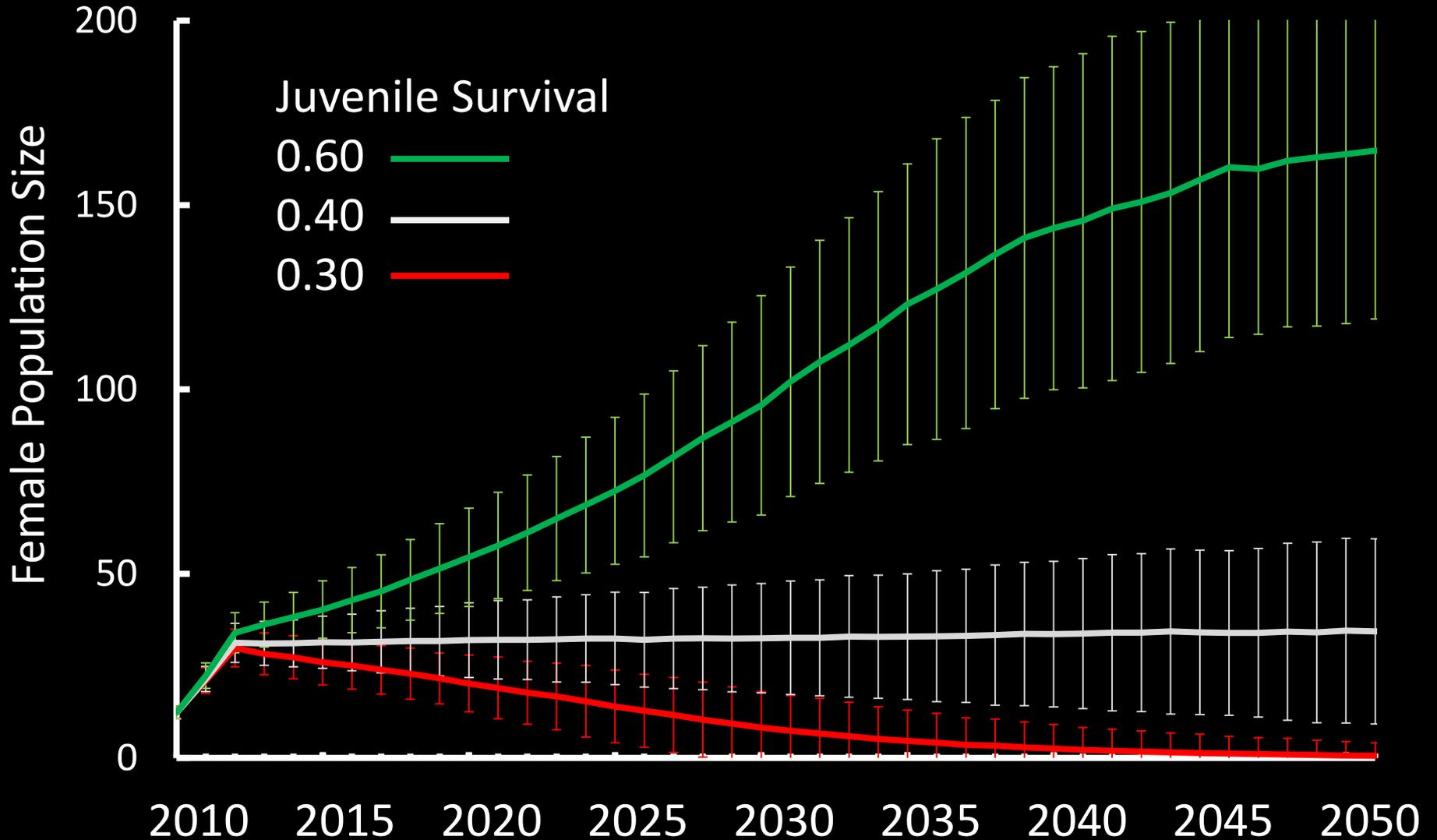
- Experimental
- Investigate fisher ecology on an commercially-managed landscape
- Establish a new population
- 2009-2011 reintroduced 40 fishers
- 2009-2017 intensive monitoring
- 2018-2026 noninvasive monitoring



# Habitat Selection



# Population Viability



# Summary

- Pending litigation
- Distribution
- Population sizes
- Habitat selection
- Reproduction
- Survival
- Sources of mortality
- Limiting factors
- Reintroduction



*Coquille Tribe*



For More Information:

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