

Southern Sierra Nevada Fishers Working Group Winter Meeting
Santa Rosa, CA

Thursday, February 8, 2017 3:15-5:45

Attending in person:

Sue Sutton-Mazzocco, Eric McGregor, Greg Schroer, Ben Solvesky, Sarah Sawyer, Jordan Heiman, Isaac Cortes, Steve Brink, Steven Mitchell, Brad Smith, Juliann Schamel, Ryan Kalinowski, Sarah Stock, Dan Fidler, Reg Barrett, Kim Sorini, Jody Tucker, Wayne Spencer, Ann Roberts, Dave Graber, Brock Ortega, Emily Hamben, Katie Moriarty, Andria Townsend, Wes Watts, David Green, Sean Matthews, Rebecca Green, Jeff Pierini, Becky Kirby, Kathie Jermstad, John Buckley, Steve Byrd, Esther Burkett, Sue Sniado, Dan Hansen, Laura Burkholder, Craig Thompson, Pam Flick, Kathryn Purcell

Attending via phone:

Heather Rustigian-Romsos, Jill Seymour, Ian Vogel, Rick Kuyper, Sue Britting, Justin Augustine

Tree Mortality Mapping- McGregor

Objectives-

- Mapping tree mortality and land cover at useful spatial and temporal scales
 - 5-meter pixel resolution
 - Cost effective method

Study area-

- 3k-7k elevation
- RapidEye imagery
 - 5 spectral bands
 - 5.5-day revisit
 - 25x25 km tile
 - August 2015,16,17
 - Used NAIP imagery
 - Digital aerial photos with 1 meter pixel

Methods-

- Preprocessing- Using clipped images
- Created training data
 - Digitized polygons into classes- Bare, Healthy forest, tree mortality, shrub, and wet meadow
 - In 2015-16 there was no NAIP imagery available
 - Used a combination of RapidEye red-green ratio and NAIP imagery
 - Land cover classification
 - Random forest decision tree classification
 - Percentage of polygons used for training were randomly sampled
 - Mainly detected dead trees with needles

- Added 2016 and 2017 mortality then subtracted Bare ground

Results-

- Tree mortality increased thought 2015-2017
- 80-83% chance of tree mortality pixel has a dead tree

Next steps-

- Map fractional tree mortality cover at 30-meter pixel resolution using Landsat 8 bands
 - May be more compatible with other maps
- Look at change over time
- Look at other areas

Questions (Paraphrased)-

Q: What is the resolution of this methodology?

A: Polygons around stands of trees

Q: Can dead objects be misclassified as bare ground?

A: At present it is hard to tell the difference.

Q: Are their plans to use this to detect and quantify resting/ denning habitat?

A: That is not the intended purpose of this methodology. Others will look into that.

Q: Will this be useful above 7k feet?

A: It may be useful with adjustments

Q: Will this be useful in oak woodland habitats?

A: Perhaps with the right data

Preliminary Results on Fisher and/or Fisher Habitat Response to Tree Mortality on the Kings River Project; GPS Collars Experiences to Date- Green/Purcell

Tree mortality and GPS collars-

- Goals- Assess how individuals are responding to tree mortality and provide data on habitat to support conservation efforts

Repo and mortality-

- No drastic changes- slight increase in female mortality from .68 to .72-.81.
- Captured many juveniles
- Need survival analysis

Changes in habitat vs fisher response to change-

- M59 is still resting in a black oak

What to prioritize-

- Changes to habitat vs fisher response to change
- Spatial scale- fine, home range and intermediate scale
- New tools- tree mort maps GPS collars, etc.

Observations-

- Observed fishers using dead trees that were previously used while alive
- Live trees around den trees have decreased 80%-30%
- Fishers seem to be using trees closer to streams

Update: transition to GPS collars-

- Worried about size,
 - Are using Lotek LiteTrack RF4045Grams Swift fix RF
 - 60-63grams in weight
 - Makes GPS collars smaller for females
- Has been successful so far
 - External and internal antennas, can adapt collars to break away devices
 - Collects 6 points a day
 - Collars have good coverage but does miss days

Conclusions-

- Tracking fishers is important to assess changes in reproduction and survival
- GPS data will help assess what habitat characteristic fisher are using
- There is a need to look into prey surveys

Questions (Paraphrased)-

Q: What difference will trees having their needles on or off make? What about microclimate and temperature issues?

A: Not sure how much a difference it will make as trees decompose. The habitat will change more as time goes on. Perhaps using data loggers for temp will be useful?

Q: How precise are the GPS locations

A: The collars have been good within 100-50m. Topography may affect this accuracy.

Fisher response to tree mortality- Purcell

Tree Mortality over the last three years-

- 2015- 12% of total 20% of forest

- 2016- 33% of total 53% of forest
- 2017- 41% of total 64% of forest

Habitat selection analysis-

- Preliminary analysis based on the 2016 map
- Compared fisher random locations against:
 - Denning sites
 - Resting sites
 - Mortality sites
 - Dropped collars
- Used Telemetry locations and Random locations
 - Created a circular buffer centered on centroid of individual
 - Based on average home range size
 - Female- N=17, 2190 m radius
 - Male-N=___, 4551 m radius

Modeling-

- Males and females were combined
- Dependent variables- fisher or random
- Covariates- individual, cover type, canopy cover, curvature, surface area, distance from stream, edge and patch size

Results-

- Fisher were more likely to be found close to stream
- Fishers were more likely to be found in areas of high canopy cover
- Bare ground and wet meadow had a higher probability of detection with small patch size
- Green forest had higher probability of detection in large patches
- Dead forest had no clear avoidance by fisher

So what does this mean-

- Fisher are close to streams with high canopy cover
- We find fishers in drainages- this may have always been the case
- Fishers are avoiding large patches of bare ground and wet meadow

Next steps-

- Fine tune models and examine new variables
- Examine edge density and how to define edge
- Fragmentation and landscape shape index
- Look at distance to dead patch and distance to live patch
- Selection across years/ over time

Questions (paraphrased)-

Q: What is the significance of patch size? Are they correlated?

A: They are not sure yet

Update on Fisher "Habitat Resilience Modeling- Spencer/ Sawyer

Background-

- Developed and finalized the fisher strategy in 2016
- Tree mortality has had an effect of recommendations- need to find a new suitable
- Working on new resiliency models,
 - EEMS draft model structure- lots of variables, waiting on contributors
- Optimization testing
- Downscaled climate data acquired- from flint lab, evaluating it,
- Additional fire risk modeling underway-Maxent-using large fire
- Awaiting final FastEMap data- need good updateable standardized veg data- hope to have soon
- In the meantime, there are simplistic means to look at resilience- stand density, fire risk, etc.

Protocol for establishing Female presence/ absence- Purcell/Moriarty/Green/Tucker

Goals-

- Detecting denning females in treatment area in LOPs-
 - Overlapping LOPs hampering forest management treatments
 - Problems: need to be done that year- takes time during the LOP
 - Scat and camera surveys could be effective

Camera and scat methodology issues/ questions-

- Need to be able to distinguish sex
 - Measuring strips are effective
- Need to determine effective survey distance
 - Validation study
 - Both dogs and cameras have false detections
 - Fisher within 40m of camera 50% chance of detection
- Implementation issues
 - Something that can be done by a district biologist
 - Scat, dogs and time restraints all present issues
 - Is a collaborative study an option?
 - GPS collared females and known den locations can be useful
 - Camera grid 1km apart during denning season
 - How effective are we at detecting females at distance from cameras, sex, individual ID/ genetics/ collar markings?
- What aspects of denning ecology might influence survey design?
 - Dates of parturition, other activities during denning season, time that females stay away from den, variation by date, distance between dens, etc.
- Survey protocol Questions

- Best times, how long, camera grid arrangement, what areas to cover, how many cameras, bait type, lure?
- Implications and response to detections
 - When and where should surveys be conducted?
 - If detected what size area?
 - Establish a buffer, based on habitat, home range?

Comments/ Questions (Paraphrased):

- The multi-species protocol is due in October
- Q: How hard will it be to determine males from females?
A: Easy if you have good pic and measuring strip.
- Q: How big a sampling area and how big a buffer?
A: Depends on the area and project.
- 500m sampling area might be more comparable
- Recommend that this information be presented to forest leadership team and get a list of forest activities to coordinate.

Latest Orphan Efforts Update- Green/ Purcell/ Pierini

Background-

- 14 orphaned kits have been rescued over the years
- 11 of the 14 survived into rehab and release
- 6 survived for more than 2 months
- 1 female is known to have survived and denned

Recently orphaned kits-

- F48 went on mortality in May 2017. Two kits were rescued
- Kits were transferred to the Fresno Chaffee Zoo through June of 2017
- Kits were transferred to wildlife pens in Oakhurst through September 2017
- A soft release site north of shaver lake on SCE property was proposed
- Soft release pen constructed-
 - Framed and fenced walls, 10-16 feet tall
 - Constructed around 6-7 trees
 - Electric fencing around perimeter,
 - Den cubby boxes and climbing structure.
- Fishers were moved into soft release pens on Oct 9th 2017
- Fishers were processed again to refit collars on Oct 23rd 2017
- Holes were cut into pen to allow outside access on Oct 30th 2017
- November- Kits were observed coming back to pen periodically
- December- Kits were still returning, kept putting food out periodically
- January 2018- A martin is observed at pens
- M72 observed with what might be a slight injury to its foot.

- Kits (M71 and m72) are currently 1-2 km from pens during the day

Lessons learned-

- Towel blinds are a good tool to observe hunting behavior
- Fishers need trees, structure and good boxes. Live prey is helpful.

Box schematics and construction-

- Made from rough cut lumber
- 15-50 feet in the tree
- Cedar bark on outside
- Hinge on top to open with overlap
- Ratchet strapped to tree
- Silicone gaps
- Dimensions are about 1-foot-wide x 1-foot-deep x 2 feet tall
- Entrance hole at the top of forward facing panel

Tracking Yosemite Fisher North of the Merced River- Tucker/ Stock/ Green/ Eyes/ Heiman

Background-

- There are early detections of fisher north of the Merced river. Last one was around 1920
- Has been surveyed in 1992-95, and during the carnivore monitoring project recently
- SSNF conservation strategy recommended monitoring/ sentinel surveys

Recent discovery-

- Monitored 4 units in Stanislaus NF and 10 on YNP using the standard carnivore protocol
- Got a detection of a fisher in the Merced grove unit in YNP on September 17th, 2017
- Genetic samples were taken and the species was confirmed as a Southern Sierra Fisher
- Placed 10 traps near camera detections on Nov 17-22, 2017
- Trapped a sub-adult male (weight 3.67 kg) on November 22nd 2017
- Currently spends a lot of time in Neds Gulch, which is vegetated with dense shrub and small oaks

Moving forward-

- Need to access car collision threats
- Continued monitoring for fisher and predators