

Proposed Project – White Mountain Wolf/Livestock Interactions

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Impetus for Project

- Wolf depredation causes hardship for producers
- Non-lethal effects can also lead to negative effects
- Existing programs can financially compensate for depredations
 - Underestimate losses

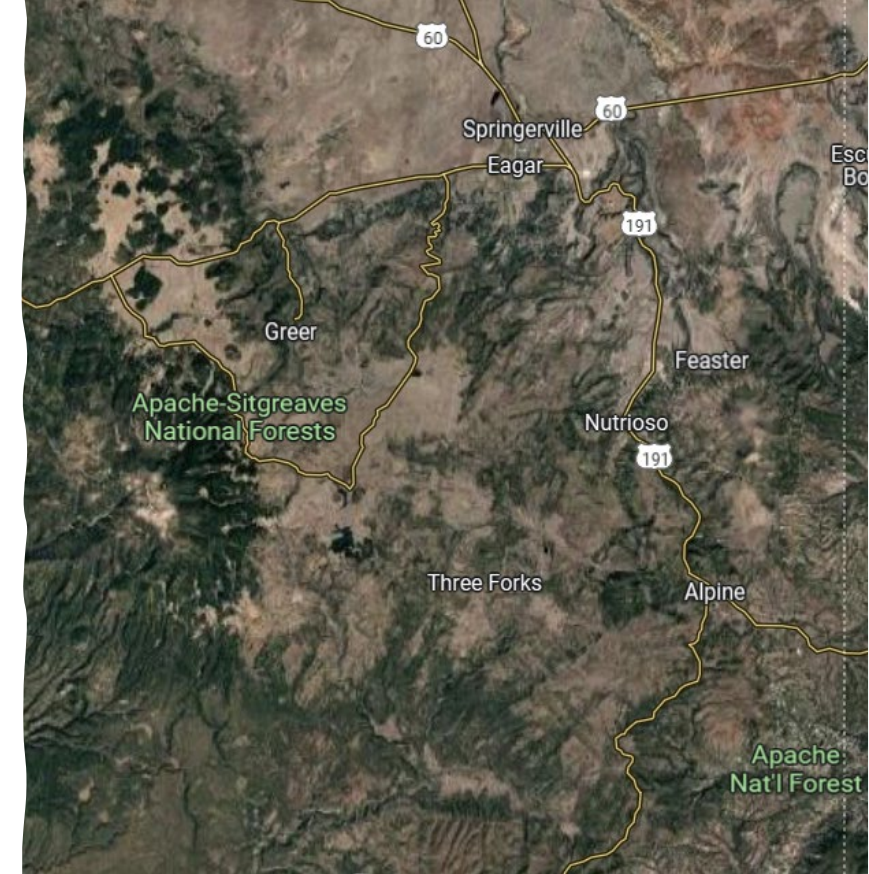


Goal of project – Pay for Presence Model

- Collect data on non-lethal effects of wolf presence
- Put numbers to these losses
- Inform model to proactively compensate producers for wolf presence

Study Area – White Mountains

- White Mountain region has greatest density of wolves in Arizona
- Many livestock operations utilize high mountain summer forage and low elevation winter pasture



Wolf Location Data

- Hierarchical dataset of wolf presence
 - GPS location data
 - Camera grid system
 - Range rider data



Cattle Location Data



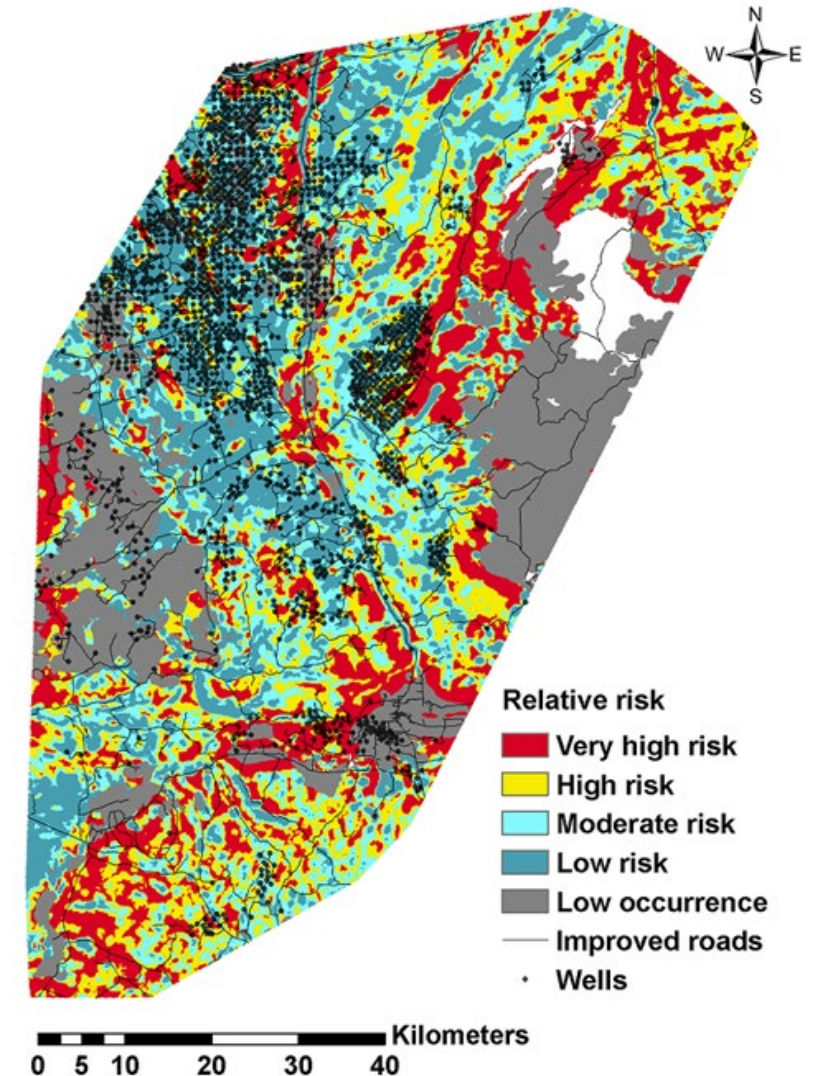
Ear tags

Virtual fence
collars



Behavioral Responses

- Regional livestock habitat analysis to compliment wolf habitat predation work (AZGFD)
 - Map high risk areas
 - Use areas of lower forage quality?
- Herd dynamics
 - Form groups to decrease predation risk
 - Suboptimal distribution and overuse of range
- Movement dynamics
 - Flight events - increased speed, decreased sinuosity
 - Can reduce foraging efficiency



Example habitat risk analysis map from Smith et al. 2014

Behavioral Responses

- Fear of predation can lead to lower feeding efficiency
- Vigilance
 - Reduces foraging time -> lower feed efficiency
- Increased bite rate of lower quality forage to compensate for reduced foraging time
 - Reduce ingestion of nutrients

Physiological Responses

- Behavior responses can lead to negative physiological effects that influence the bottom line
- Collect data on:
 - Conception rate
 - Birth/weaning weights
 - Body condition
 - Stress levels (fecal cortisol)
 - Can affect meat quality

Resource Responses

- Behavioral changes due to wolf presence may affect range condition
- Overuse of “safer” areas or suboptimal habitat
 - Lower carrying capacity of pasture
 - Reduced animal productivity
- Measure range condition
- Quantify amount of forage lost



Economic Impact Analysis



UA Agricultural Resource
Economics Team



Put dollars to data



Explore viability of a pay for
presence model

Current Project Status

- Aiming to submit proposal to UDSA NIFA Risk Management Education Grant (November)
 - Depends on federal funding status
- Looking for more ranches to participate in project
 - Increase sample size and broader scope
 - Would require monitoring of livestock
 - May require management shifts to facilitate proper study design
 - Information gained may not immediately alter livestock or predator management activities

Questions?

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