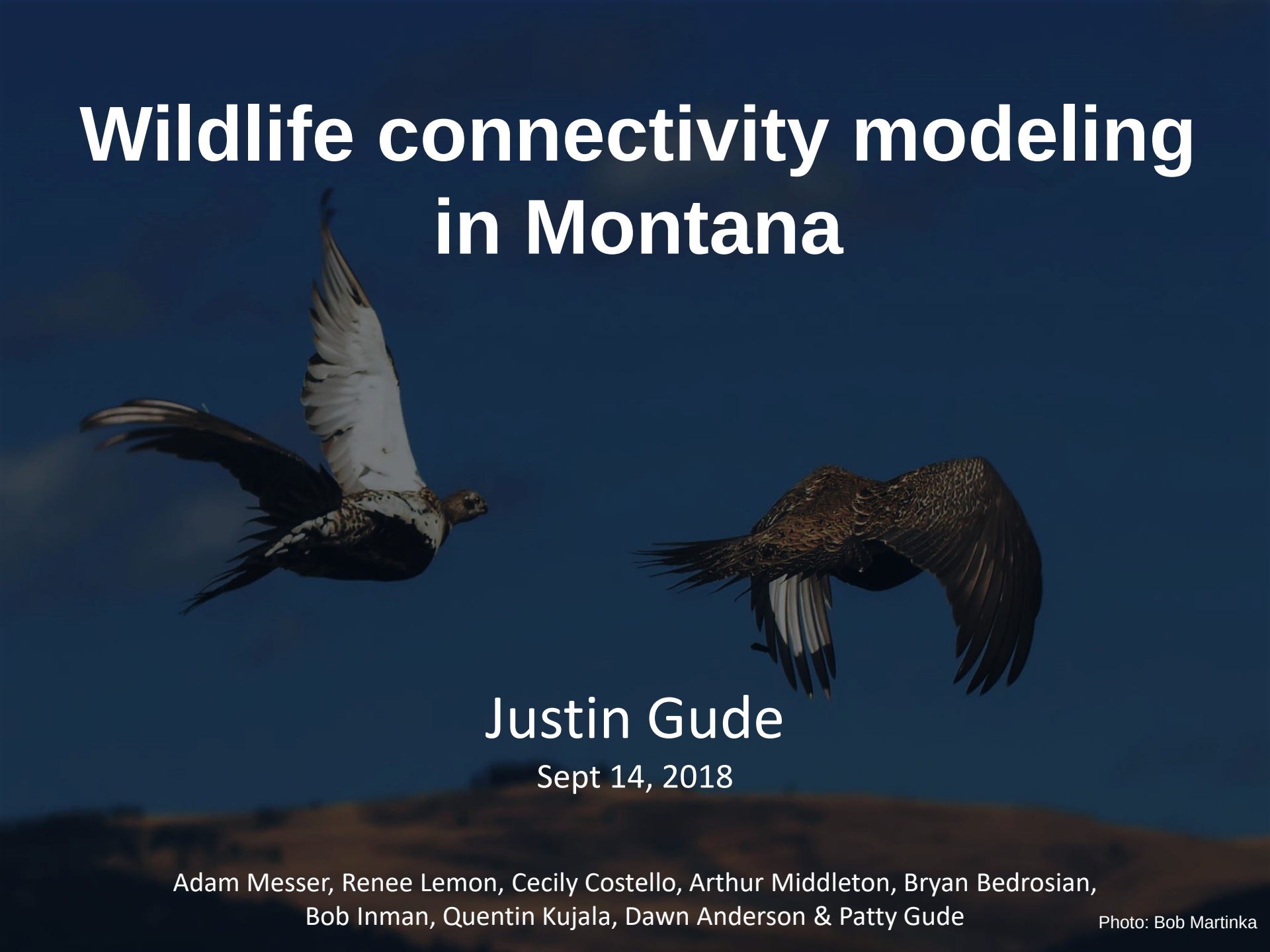
Wildlife connectivity modeling in Montana



Justin Gude

Sept 14, 2018

Adam Messer, Renee Lemon, Cecily Costello, Arthur Middleton, Bryan Bedrosian, Bob Inman, Quentin Kujala, Dawn Anderson & Patty Gude

Photo: Bob Martinka

Presentation Outline

1. MFWP Crucial Areas Planning System
2. Specific wildlife examples
3. Relevance to Custer-Gallatin Forest Planning

Crucial Areas Planning System

- Montana Implementation of Western Governors' Crucial Habitat Assessment Tool
- Developed over 2008-2011
- Montana Connectivity Project
  - Connectivity working group
  - Focal species selection group
  - Species/ connectivity expert committee

Connectivity results: issues

1. What kind of connectivity?

- Within range movements
- Seasonal migration
- Dispersal
- Gene flow
- Range shifts

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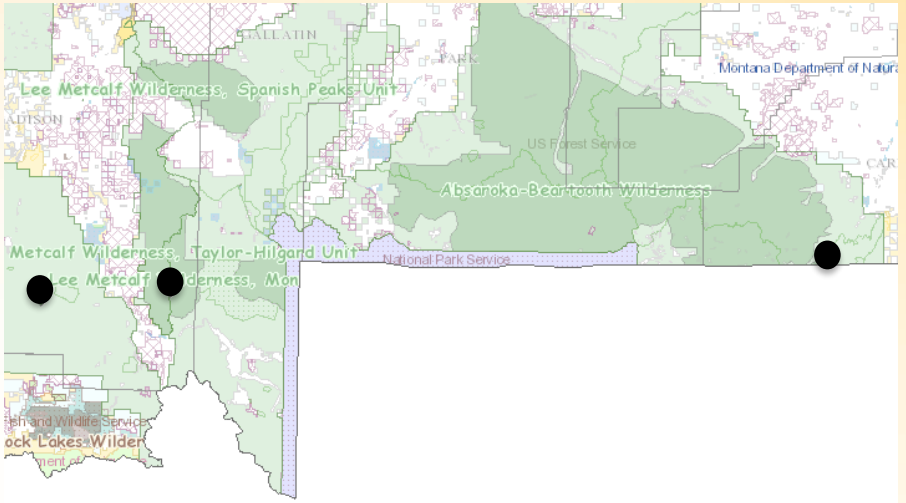
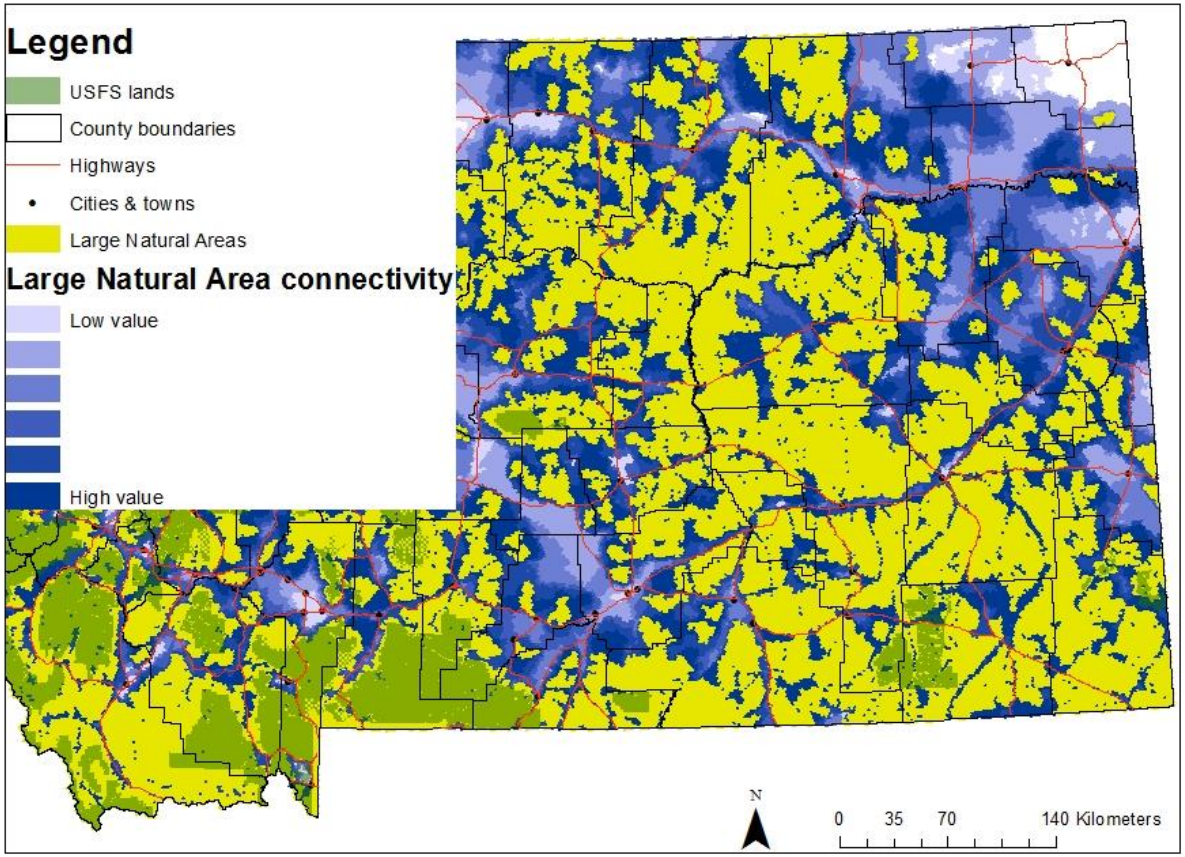
2. Data limitations



Black rosy-finch breeding observations pre-2011

Large Natural Area Connectivity



http://fwp.mt.gov/gis/maps/caps/

2017-18 CAPS Evaluation

Not really used much:

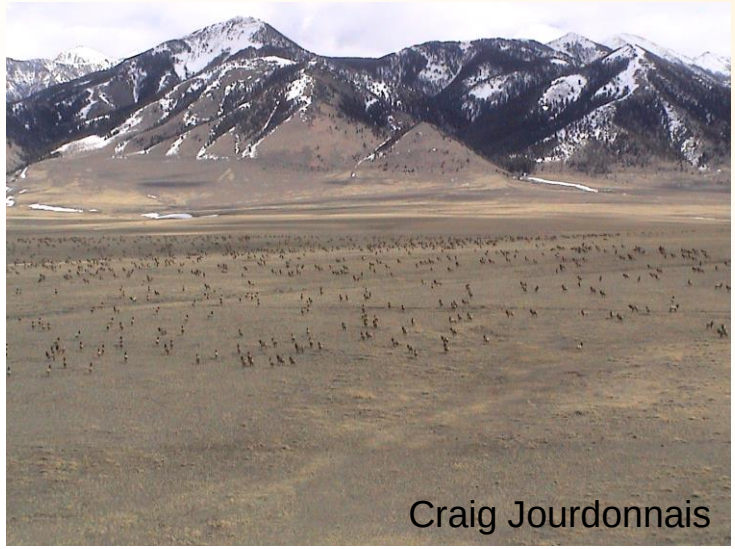
- Not intuitive
- Lacks sincere prioritization
- Too coarse
- Missing specific data layers
- Difficult to access & use

Specific connectivity considerations

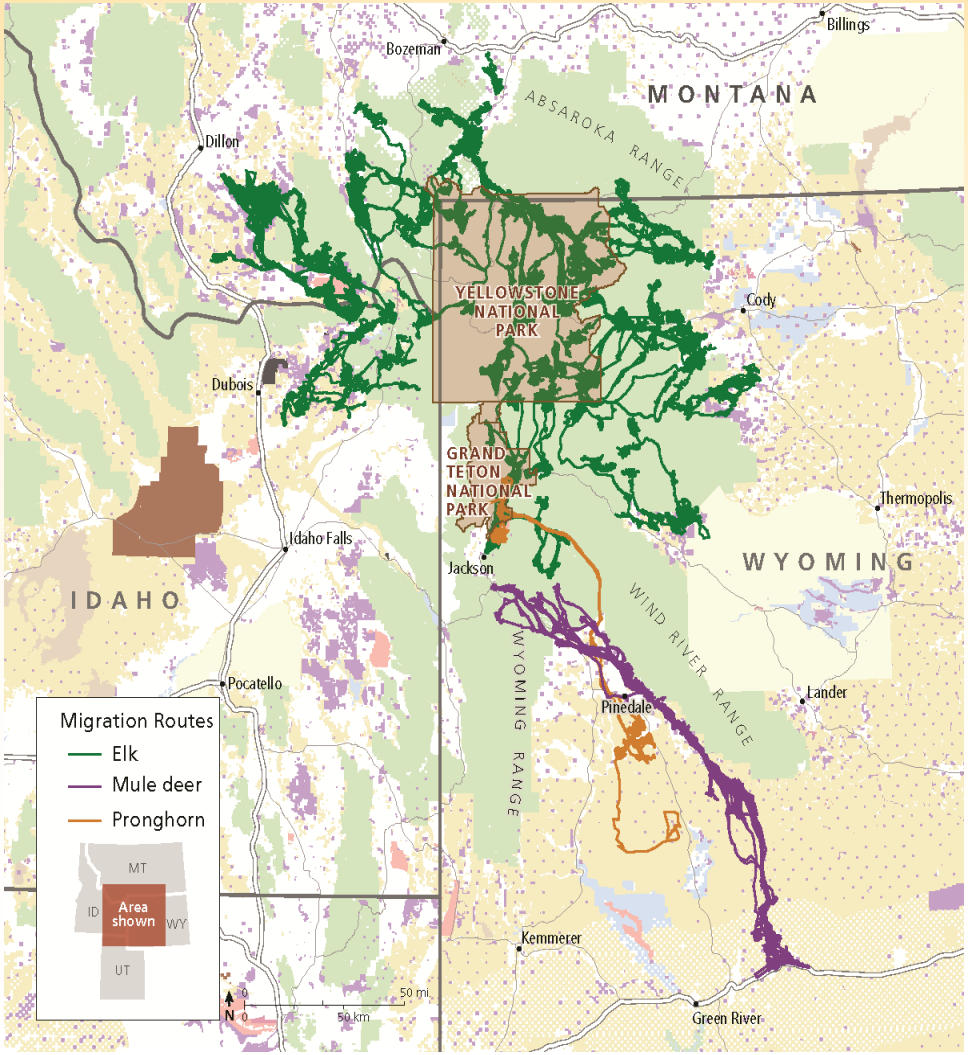

Diane Boyd


Kristi DuBois

- Seasonal movements
- Dispersal movements
- Foraging movements
- Disease issues

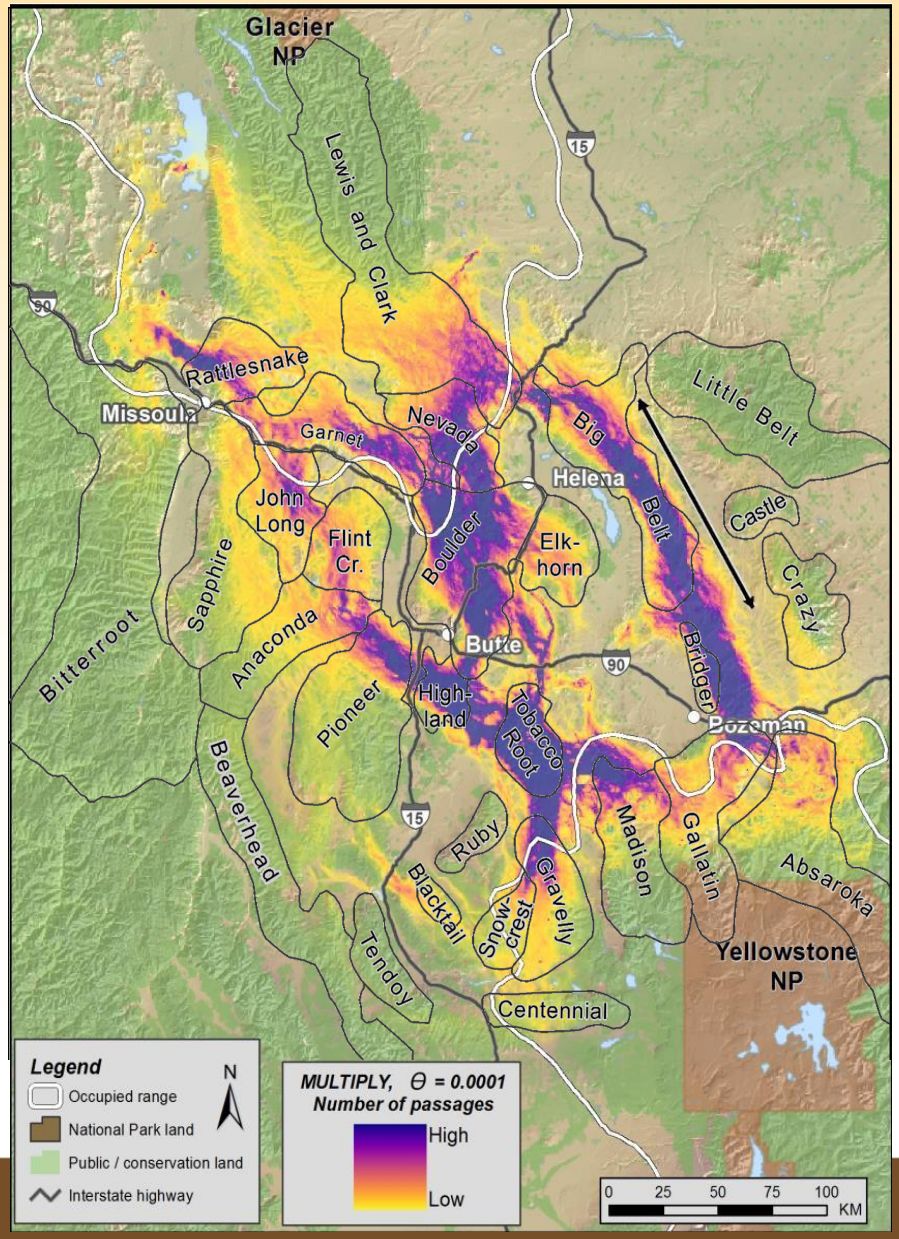

Craig Jourdonnais

Connectivity: Seasonal movements



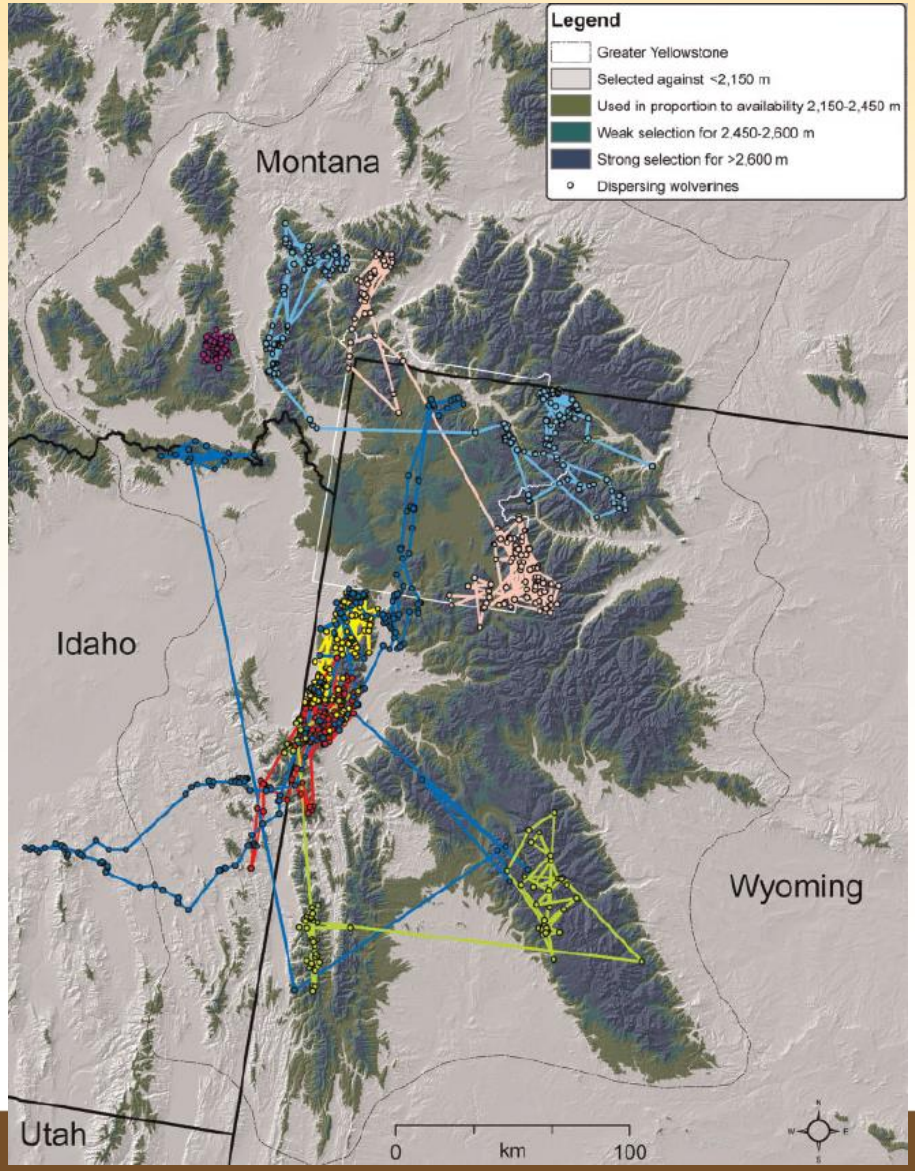
Middleton, A. L., et al. *In review.* Conserving **migratory ungulates** requires transboundary science, policy, and management.

Connectivity: Dispersal movements



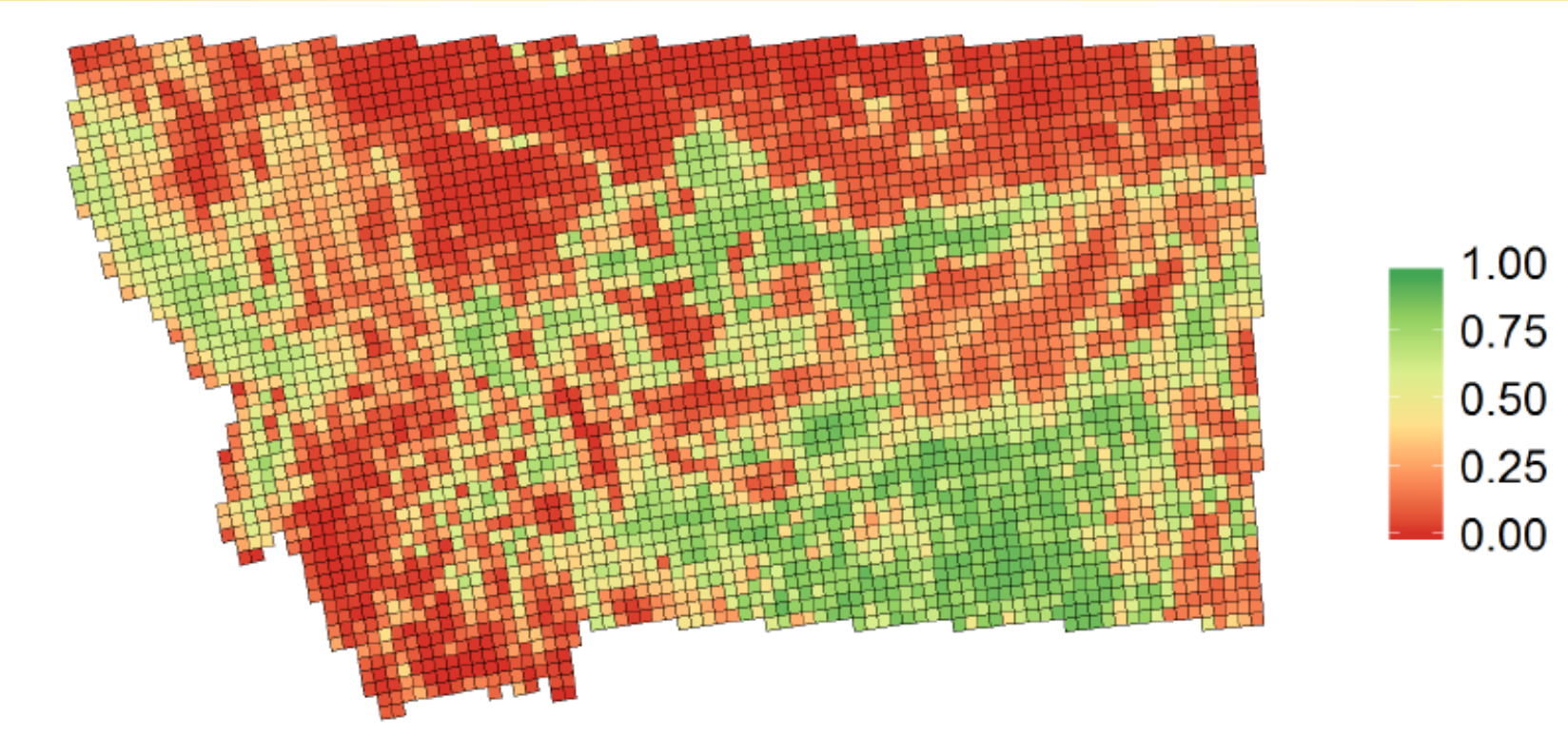
Peck, C. P., et al. 2017. Potential paths for male-mediated gene flow to and from an isolated **grizzly bear** population. Ecosphere 8(10):e01969.

Connectivity: foraging movements



Inman et al. 2012. Spatial ecology of **wolverines** at the southern periphery of distribution. Journal of Wildlife Management 76:778-792.

Connectivity: disease



Wright, W. E. et al. 2018. Estimating occupancy for **Montana bat species** prior to the arrival of white-nose syndrome. Montana FWP, Helena, MT. 47 pp. http://fwp.mt.gov/fishAndWildlife/diseasesAndResearch/research/nongame/batWhiteNoseSyndrome/

Custer-Gallatin NF Proposed Action and Wildlife Connectivity

- Wildlife connectivity is more than conditions on Custer-Gallatin NF.

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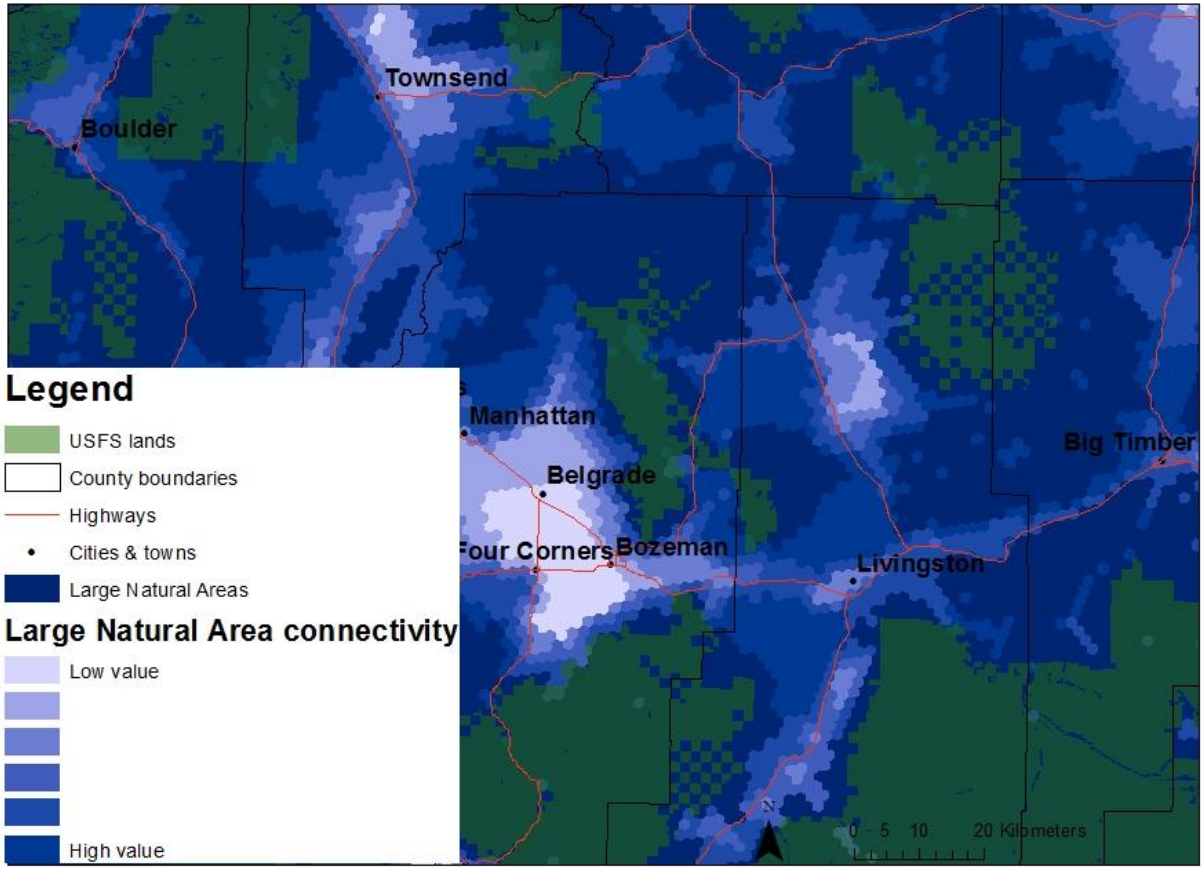
- General connectivity modeling is easier, *BUT* specific connectivity issues gain traction.

Large Natural Area Connectivity



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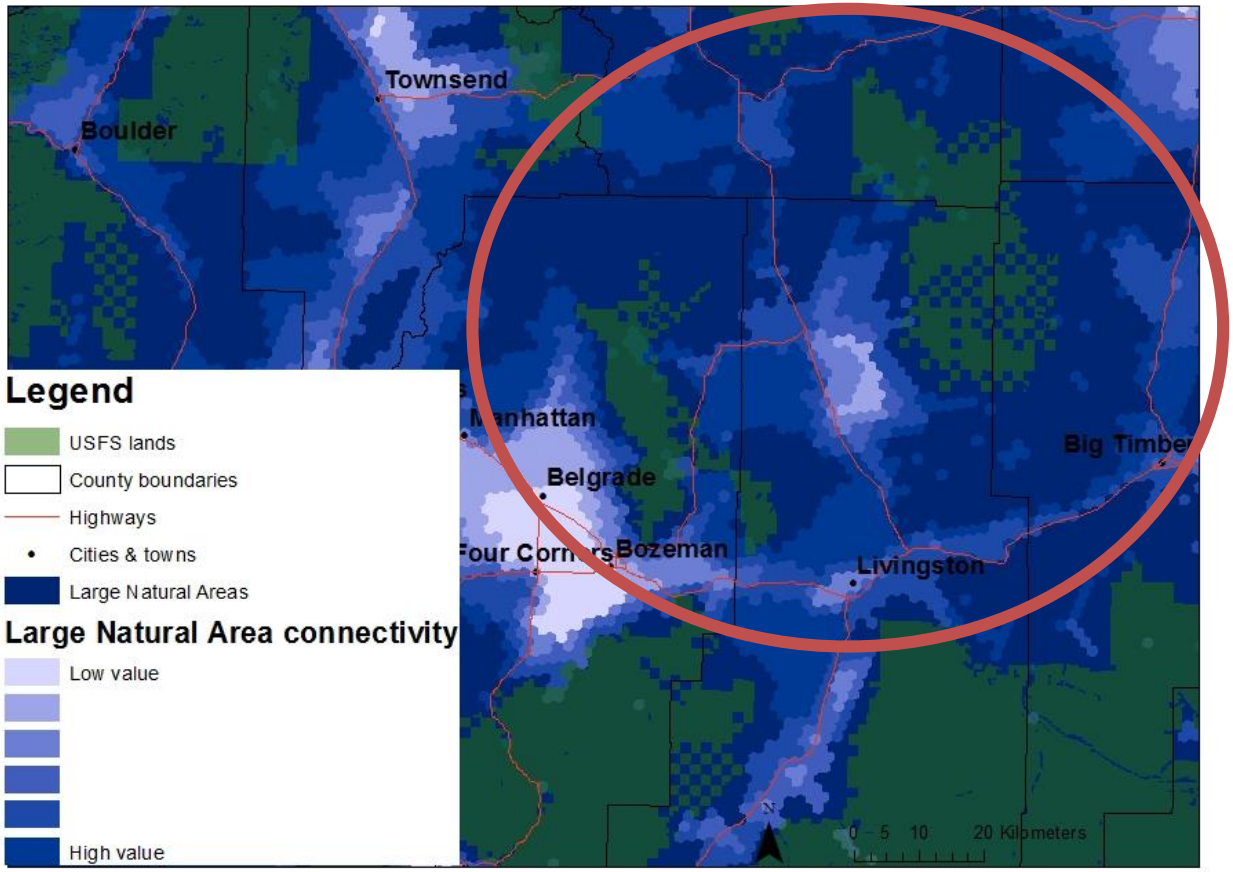
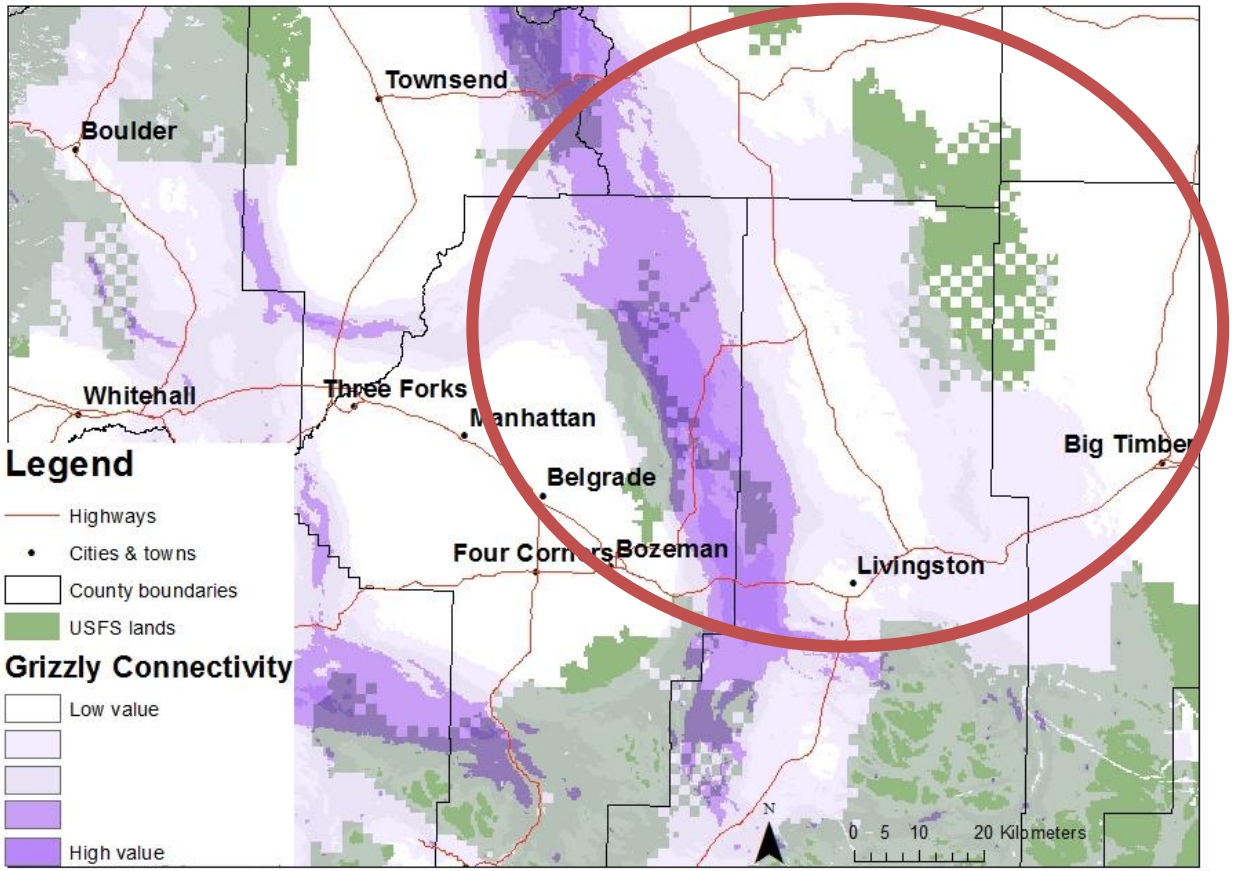


Male Grizzly Bear Dispersal Corridors



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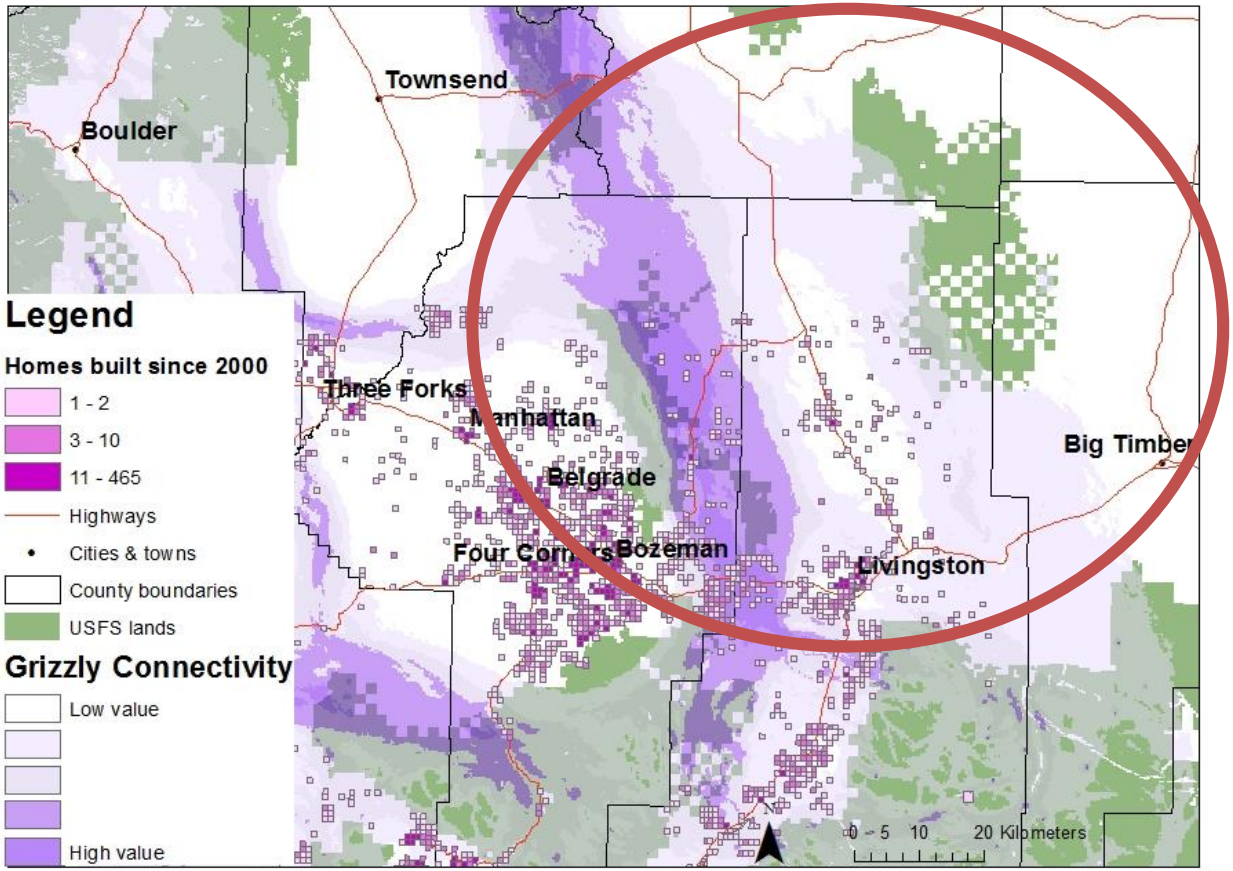

Data courtesy of Headwaters Economics

Custer-Gallatin NF Proposed Action and Wildlife Connectivity

- Wildlife connectivity is more than conditions on Custer-Gallatin NF.
- General connectivity modeling is easier, *BUT* specific connectivity issues gain traction.
- Connectivity may need to be limited for disease concerns.

Thank You

Justin Gude