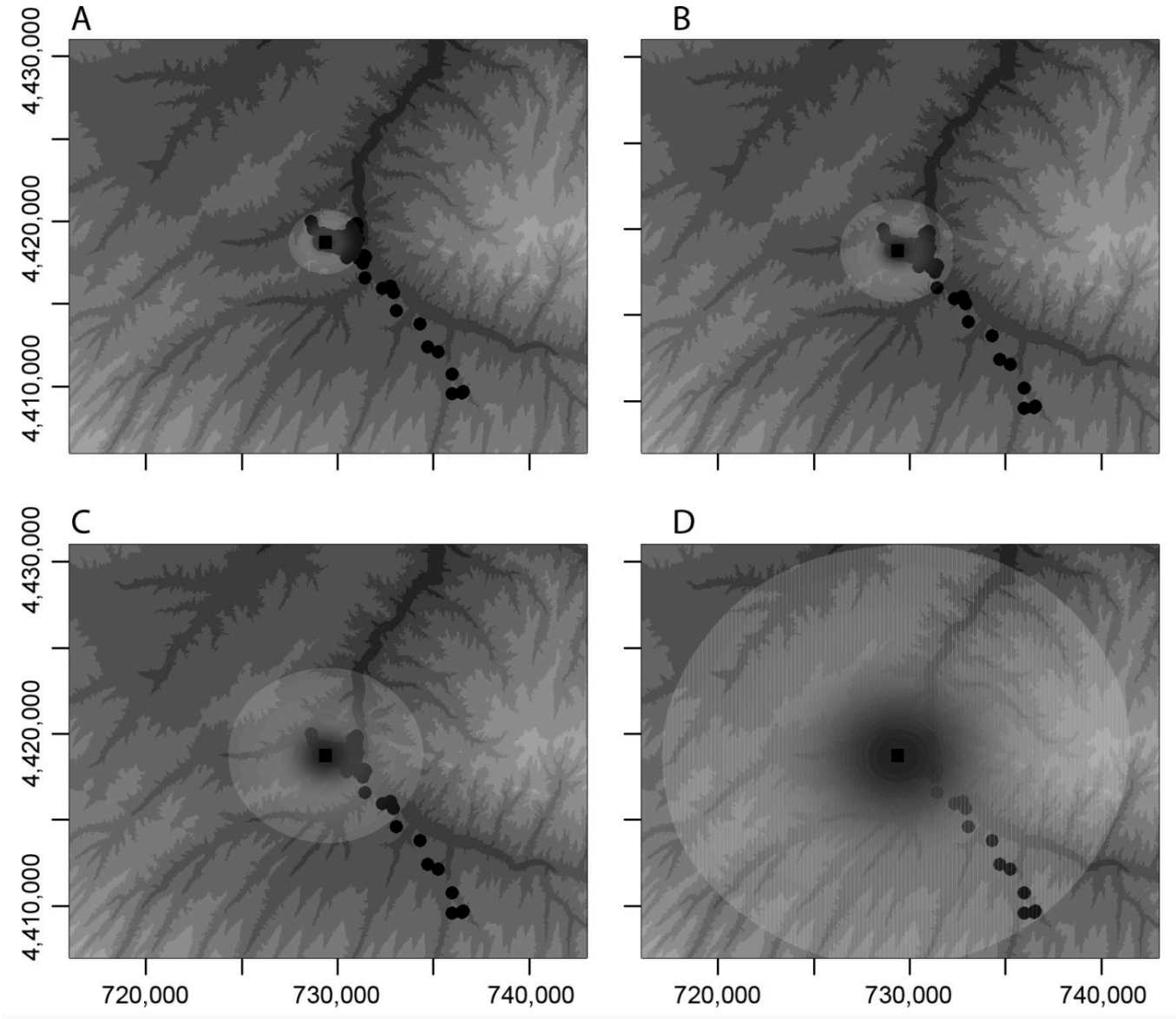
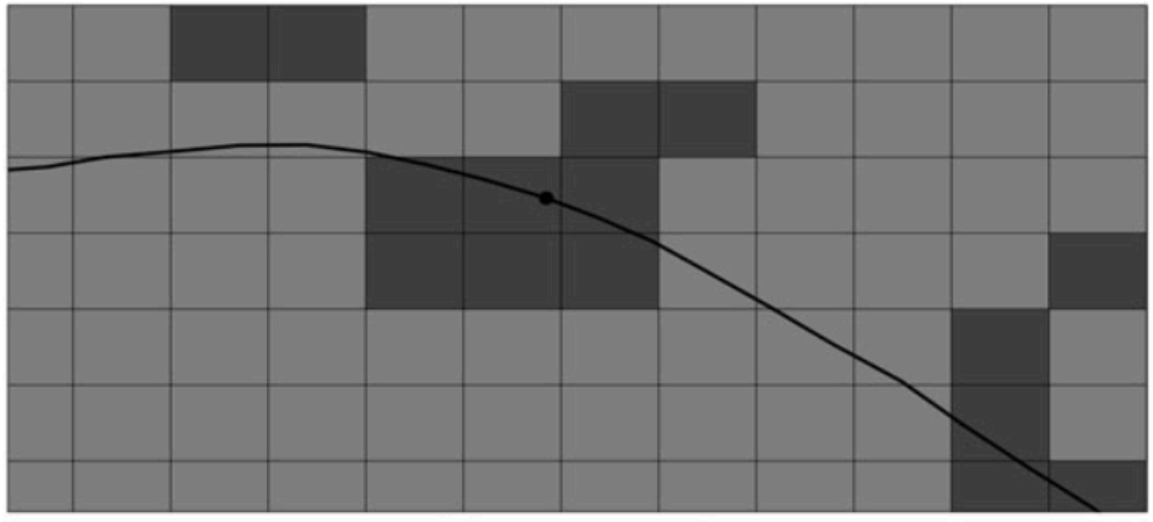
How do we account for spatial-scale in resource selection?

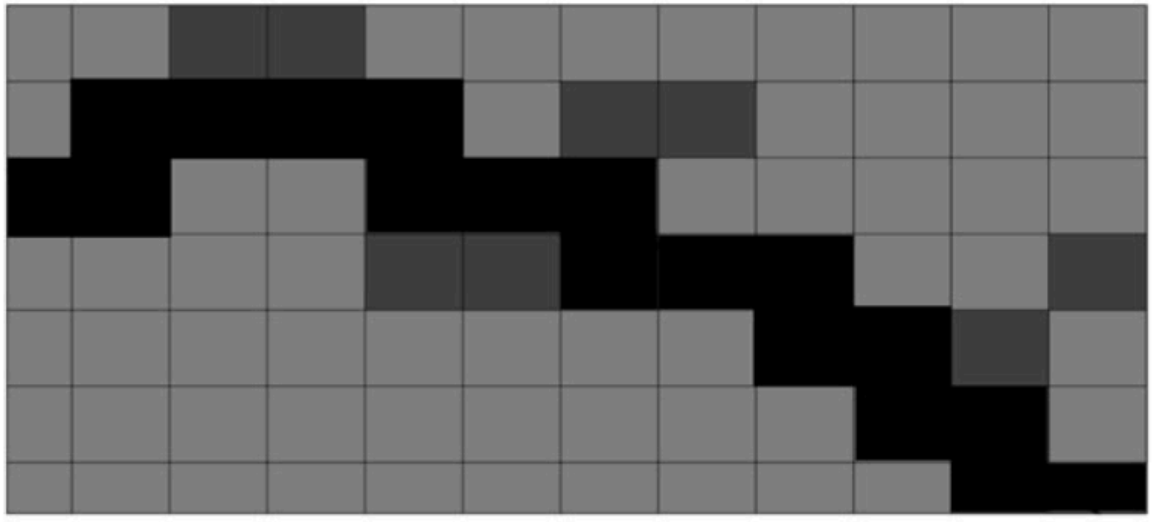


Northrup et al. 2016, *Eco. App.*

How do we account for spatial-scale in resource selection?

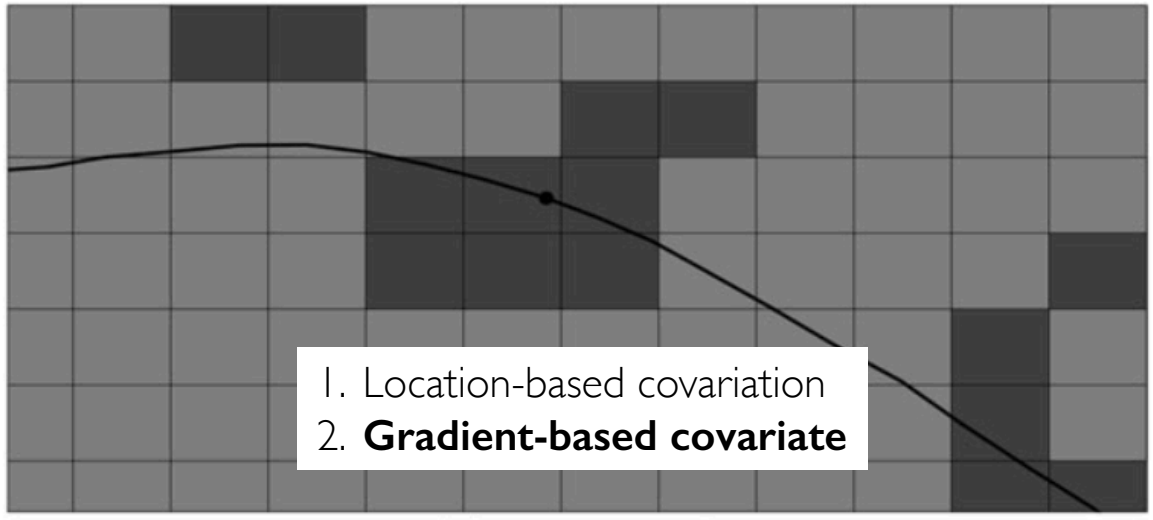


(a) continuous path

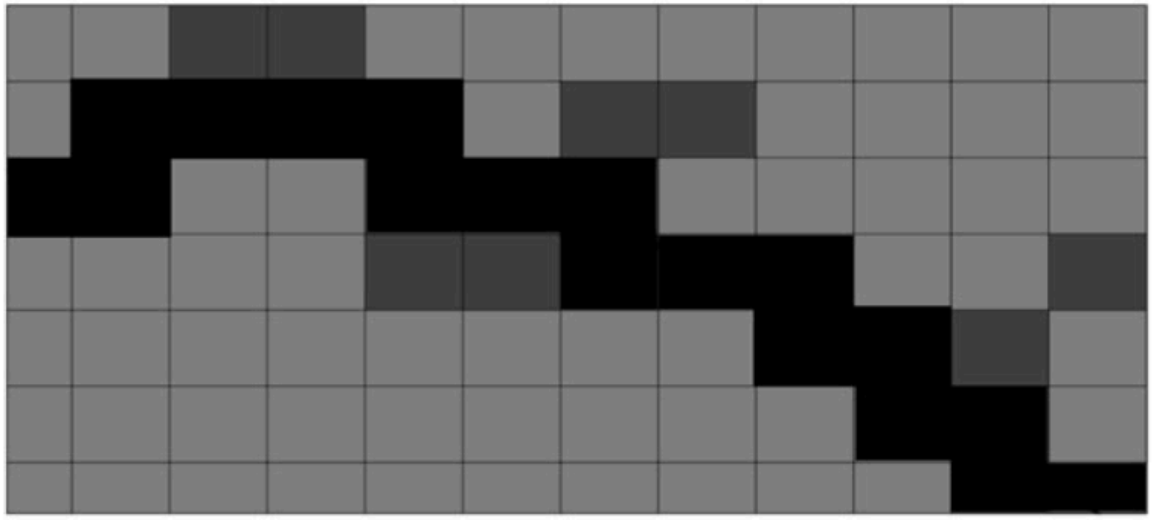


(b) discrete path

How do we account for spatial-scale in resource selection?

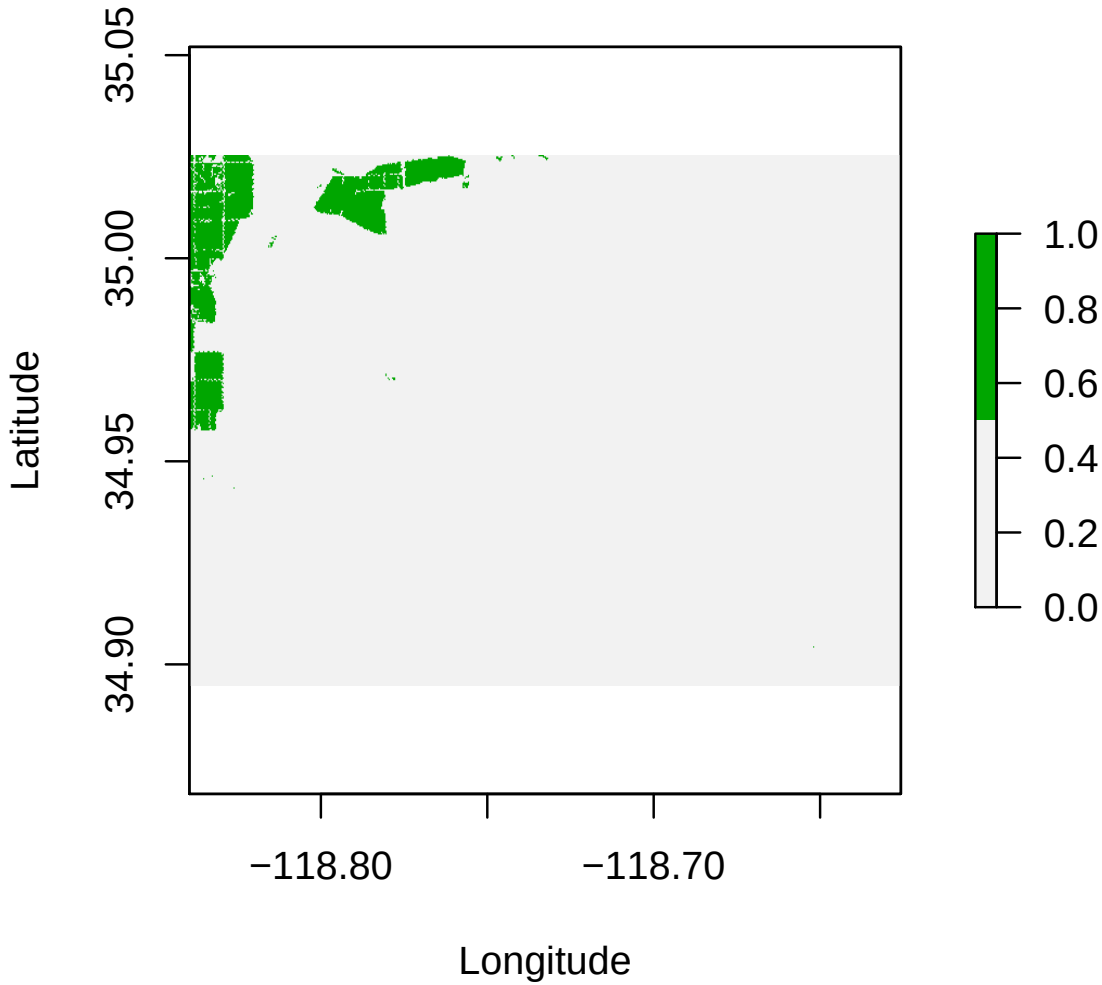


(a) continuous path



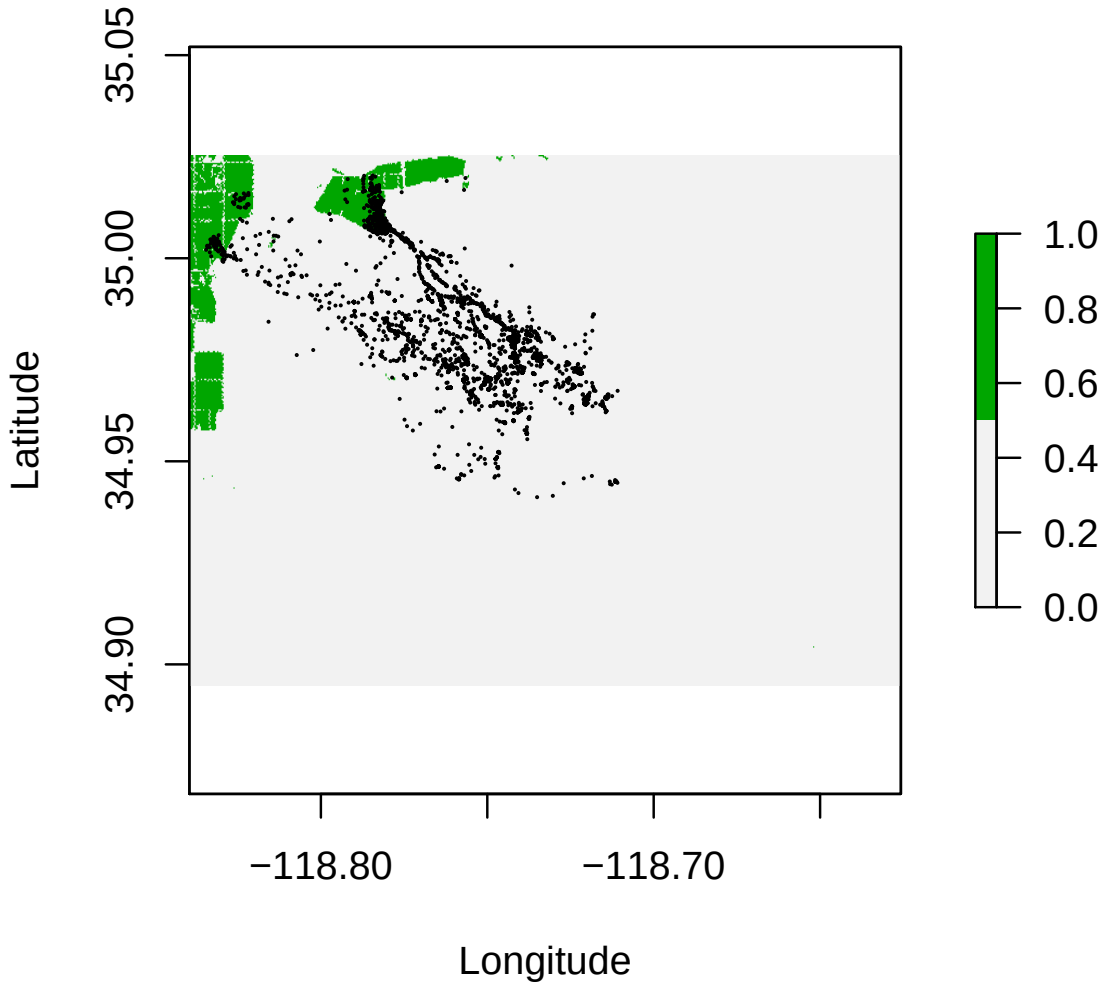
(b) discrete path

Example: A pig from Tejon Ranch



Fruit and nut fields in the proximity of Tejon ranch pigs

Example: A pig from Tejon Ranch



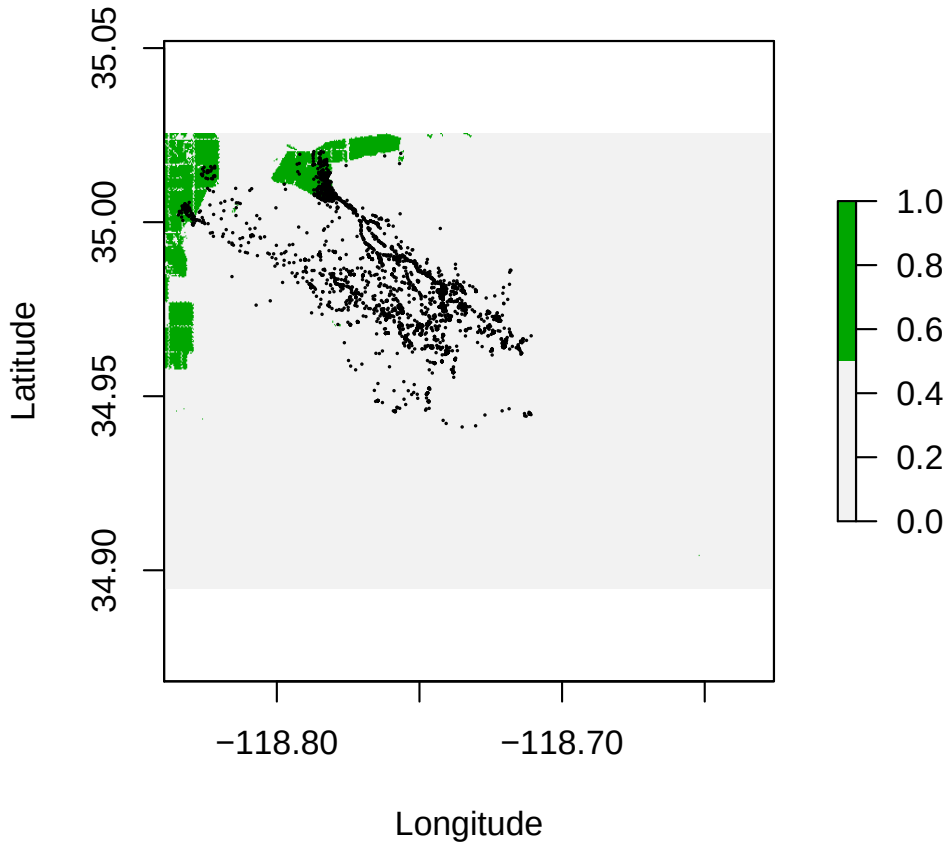
How is pig movement affected by resource when not in the resource?

Some options for accounting for spatial scale

1. Sum of global distance-to-resource pixel vectors
2. Distance-to-nearest resource
3. Some combination of the two?

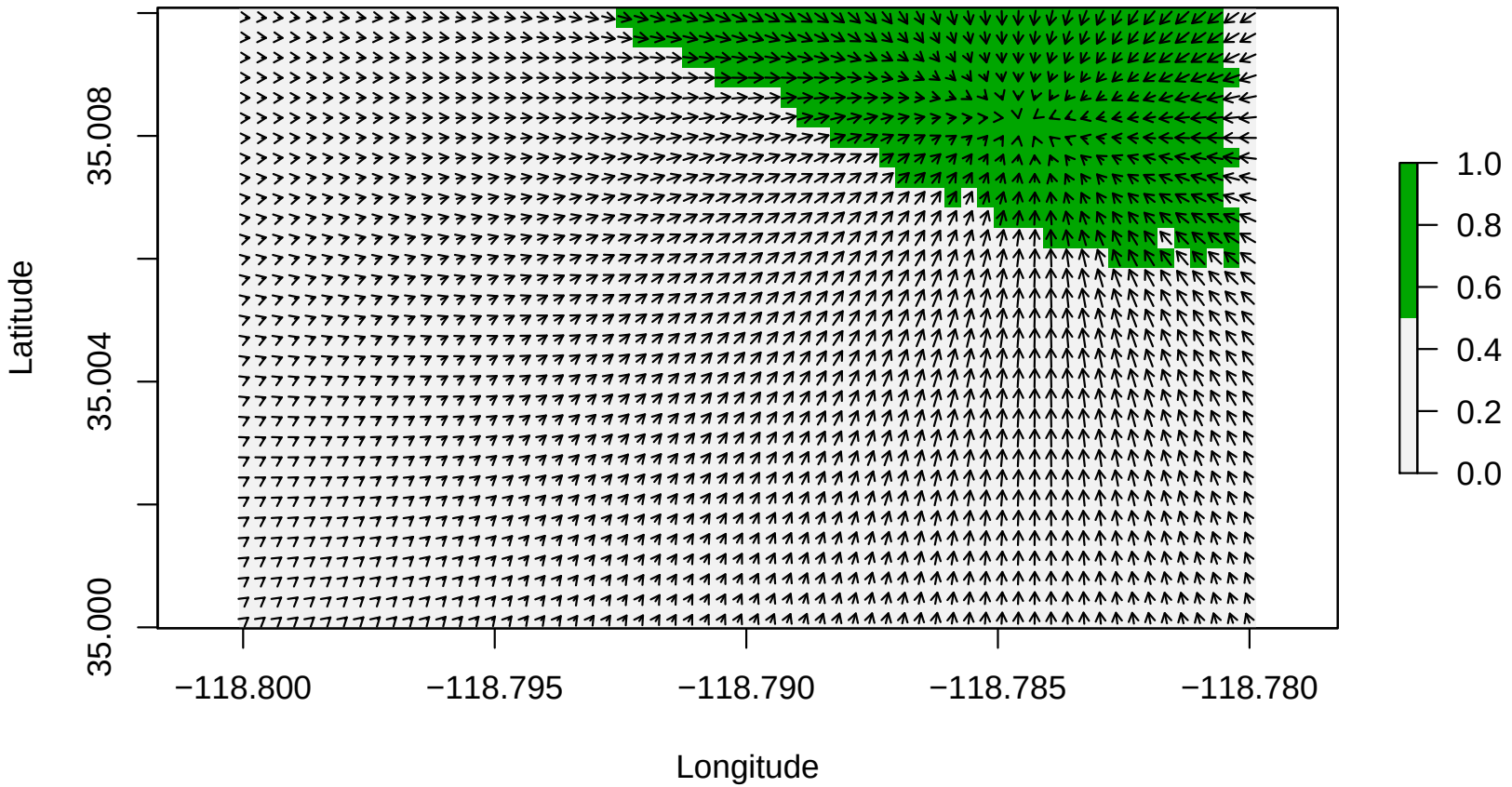
Some options for accounting for spatial scale

1. Sum of global distance-to-resource pixel vectors



Some options for accounting for spatial scale

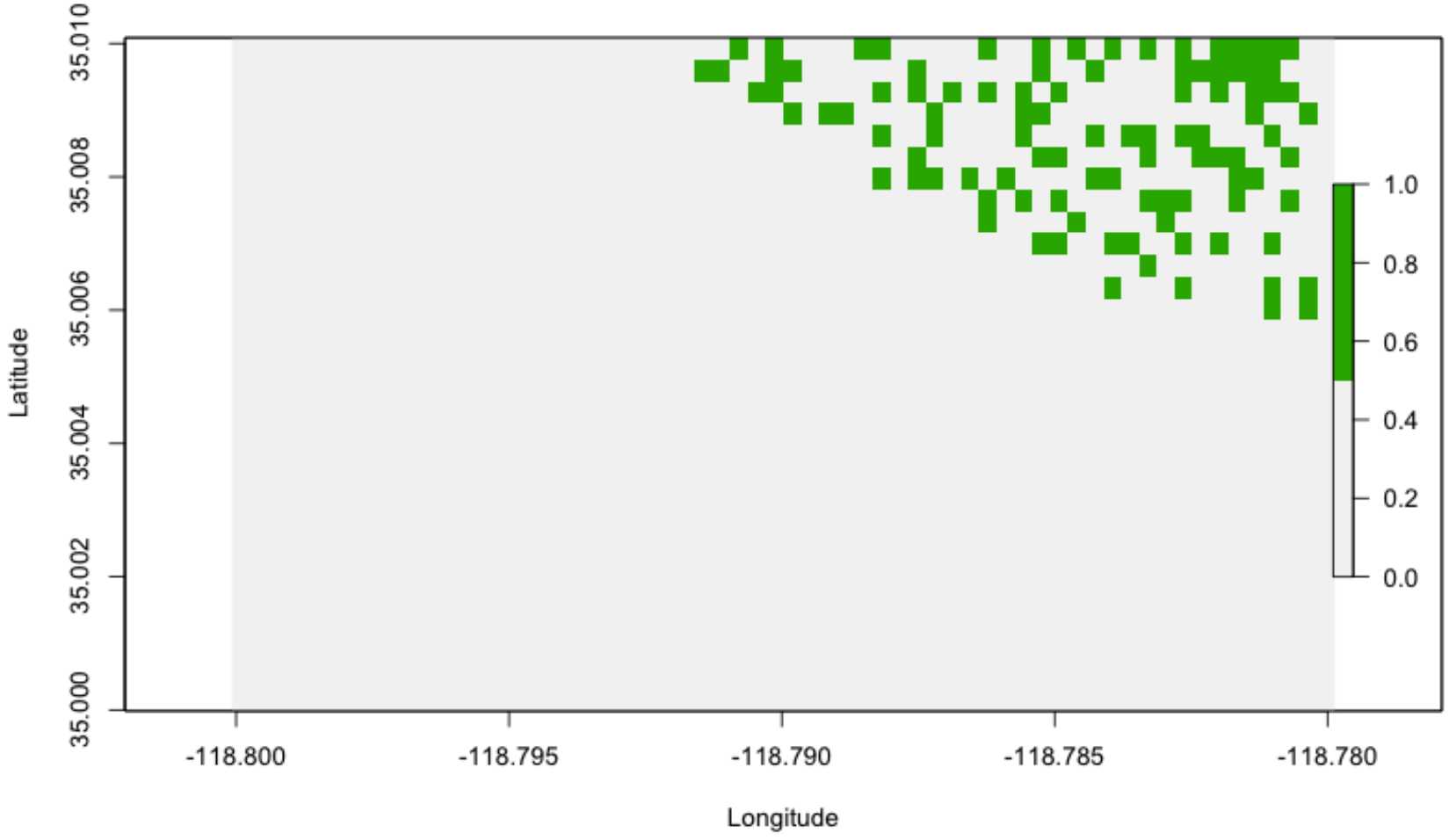
1. Sum of global distance-to-resource pixel vectors



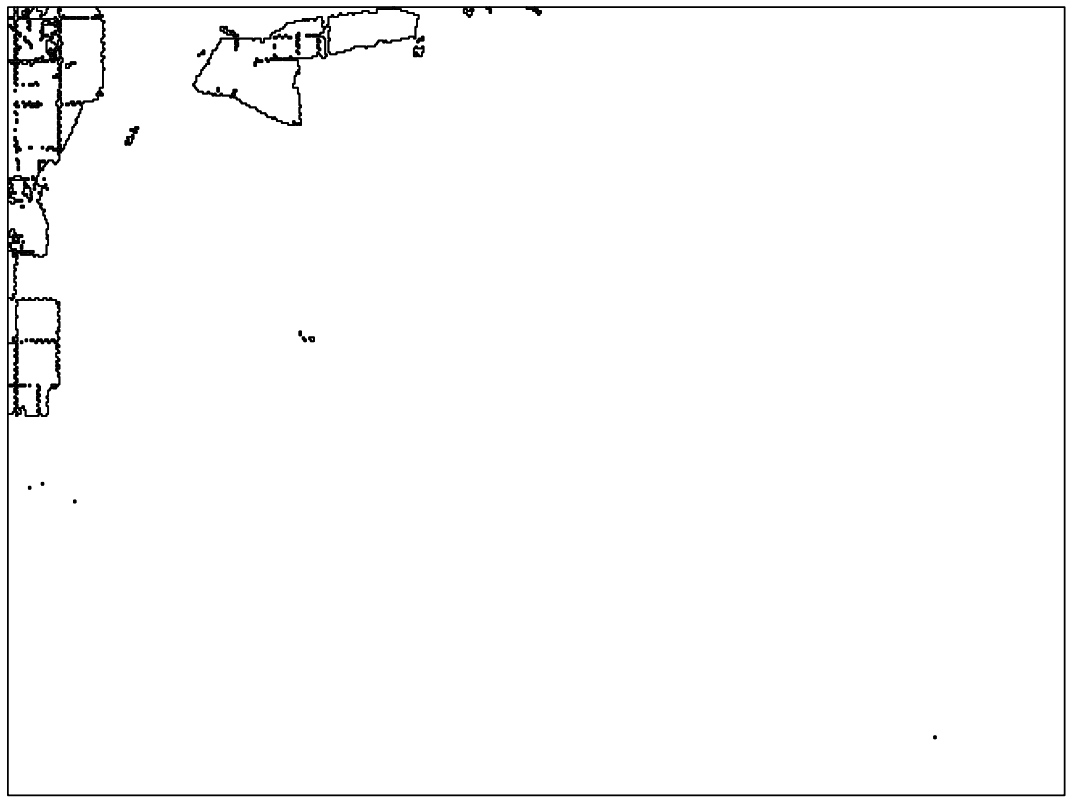
Some options for accounting for spatial scale

- Accounts for patch size and distance
- Can easily explore functional form of distance decay
  - e.g. $\exp(-\gamma D_{ij}^2)$ vs. $\exp(-\gamma D_{ij})$
  - How does γ vary w/ resources? Individuals? Populations?
- Computationally infeasible for abundant resources pixels
  - Randomly sub-sample resource pixels?

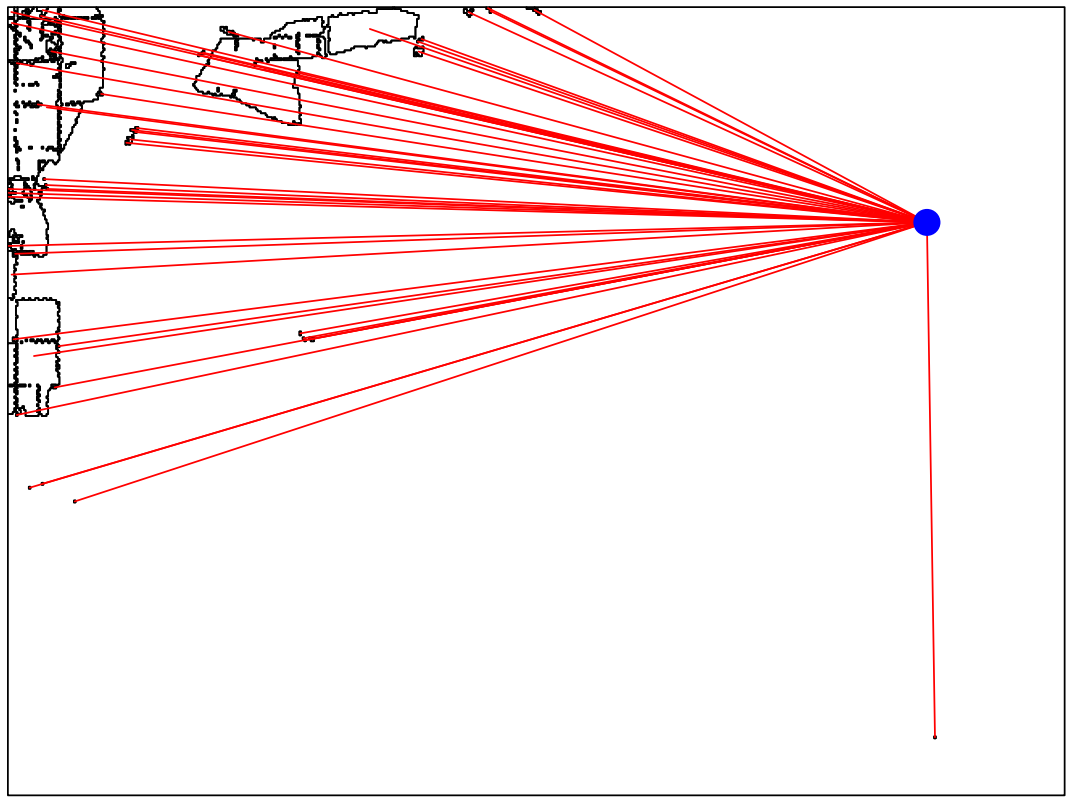
Some options for accounting for spatial scale



Distance-to-nearest resource



Distance-to-nearest resource



Distance-to-nearest resource

- Computationally more feasible
- Distance-to-nearest "X" is commonly used
- Ignores simultaneous influence of multiple patches
- Compromise: Distance to all patches weighted by patch area?