

Developing the Resistance Surface



To create the resistance surface, we acquired datasets that represent aspects of marten habitat and their ability to move across the landscape.

For each component of each dataset (e.g. every type of road in the roads dataset), we assigned a resistance value to represent the difficulty or likelihood that a marten would move through it (e.g. a highway is 10x more difficult to cross than a primary road).

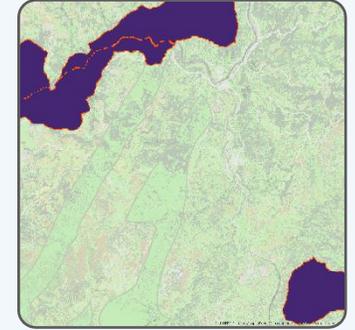
We then stacked all of these weighted datasets on top of each other and selected the highest resistance value for each pixel.



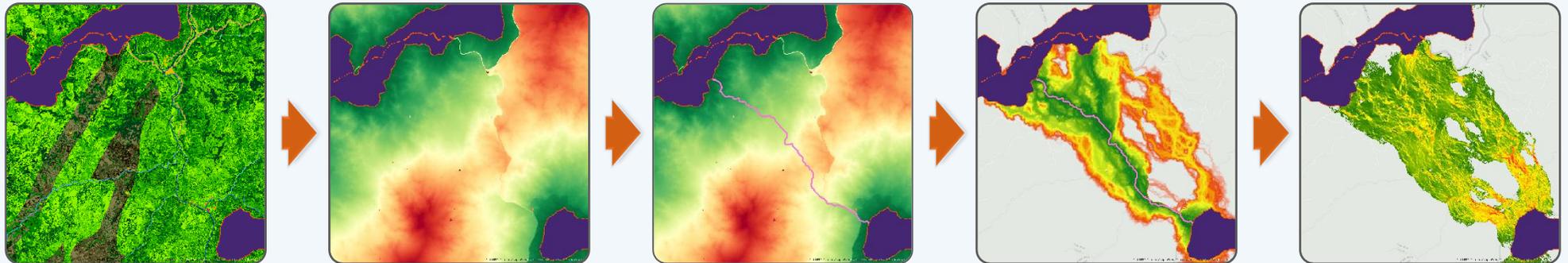
Delineating Habitat Cores



1. To create habitat cores, we started with the Old Growth Structural Index, which assigns a value between 0-100 to each pixel based on its old growth characteristics.
2. For treed areas in serpentine soils near the coast, we adjusted the habitat values to reflect marten use of these habitats and their associated dense shrub cover.
3. We then used a moving window the size of 1 female home range to identify core habitat. For more detail on this step, see our methods section.
4. Finally, cores that were smaller than 5 female home ranges (1500 ha) were eliminated.



Mapping Movement Corridors in Linkage Mapper



Feed Cores and Resistance Surface into Linkage Mapper

With the habitat cores and resistance surface in place, we ran Linkage Mapper, a tool that can be used to find the "cheapest" path to connect cores through our resistance surface.

Create Cost Surface (CS)

The first product of Linkage Mapper is a series of cost surfaces (one per core), which shows the accumulative cost of the resistance surface radiating outward from each core. These are combined to create one large CS.

Derive Least-Cost Path (LCP)

From this CS, we derived the cheapest path to connect each pair of cores.

Derive Least-Cost Corridor (LCC)

If we know the cost of the cheapest path between two cores, we can look at the cost of all other paths between those cores. If we subtract the cost of the LCP from those paths, and combine the paths that are nearly as cheap, we get a corridor.

Run Additional Linkage Mapper Tools

Other tools associated with Linkage Mapper (e.g. Pinchpoint Mapper) could be used to identify narrow bottlenecks or areas of high resistance in least-cost corridors where habitat restoration might be targeted to improve connectivity.