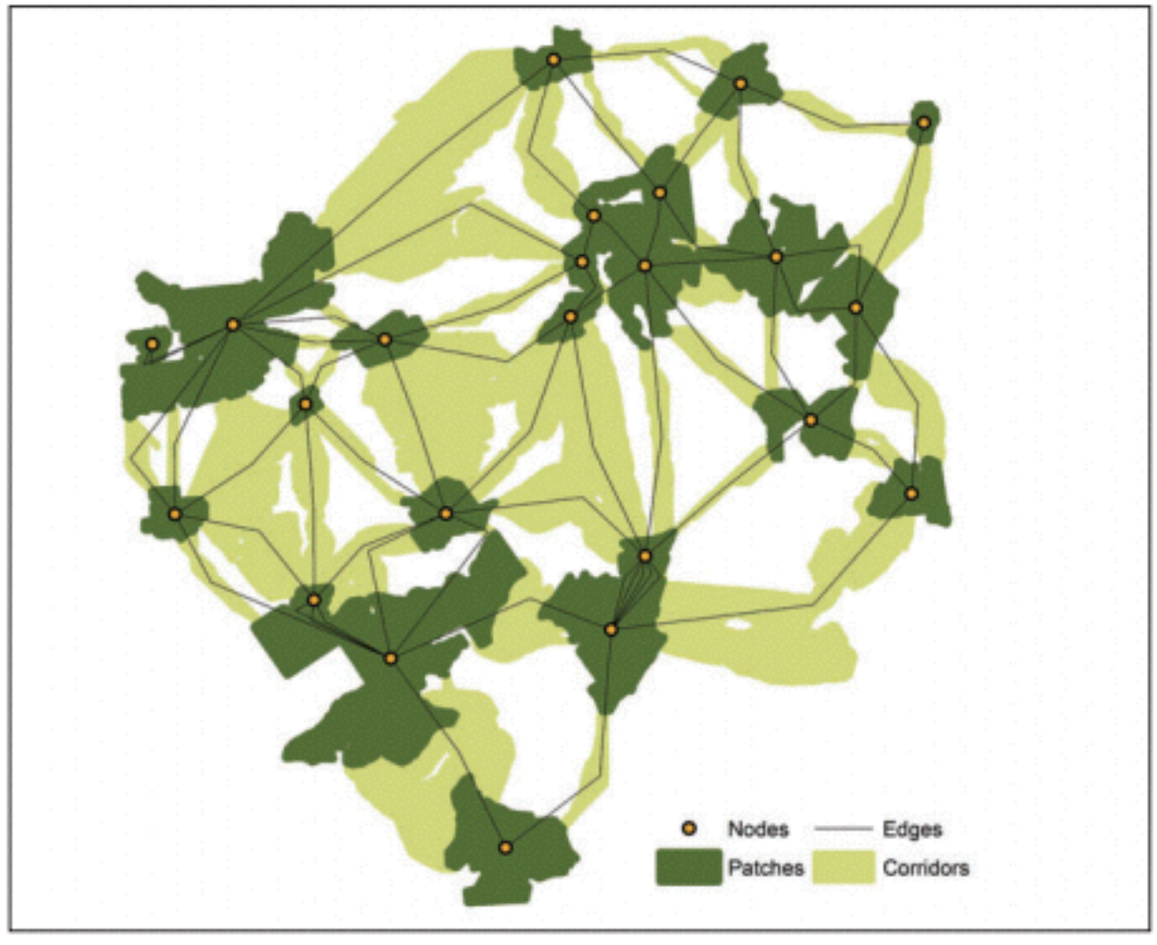
Landscape Connectivity Analysis using CircuitScape, R and QGIS

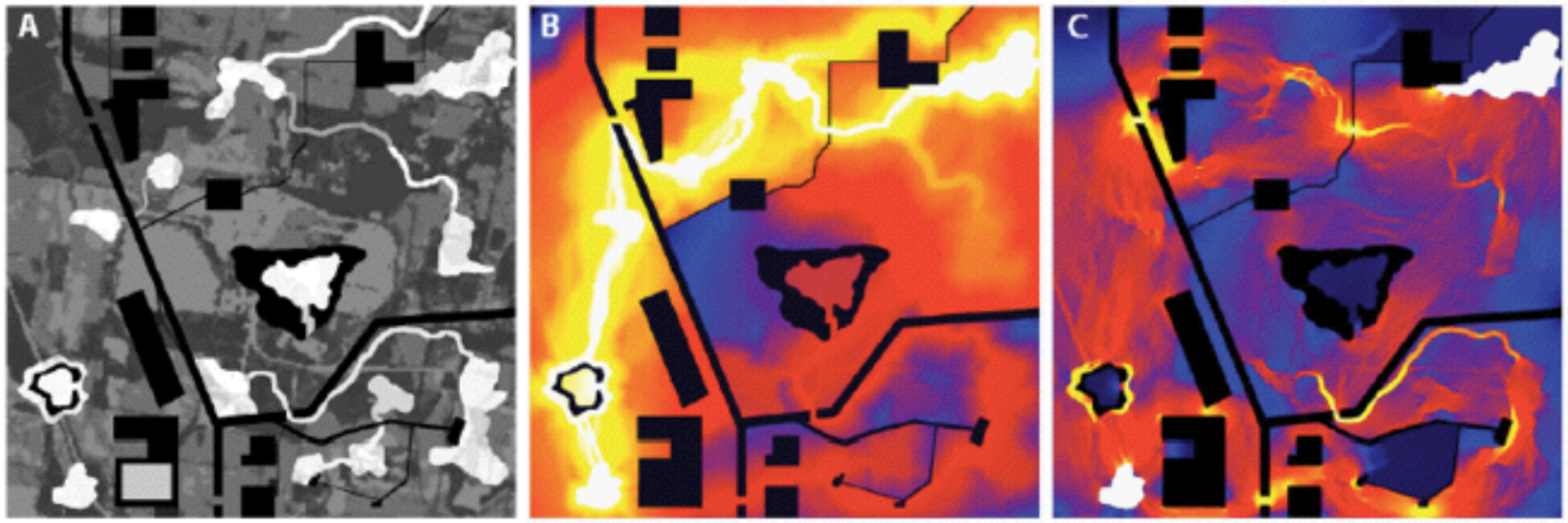
Please Download and Unzip:
https://github.com/patchdynamics/LandscapeConnectivityWorkshop/archive/v.2.zip

Modeling Landscape Connectivity



Rudnick et al. 2012
http://www.esa.org/esa/wp-content/uploads/2013/03/issuesinecology16.pdf

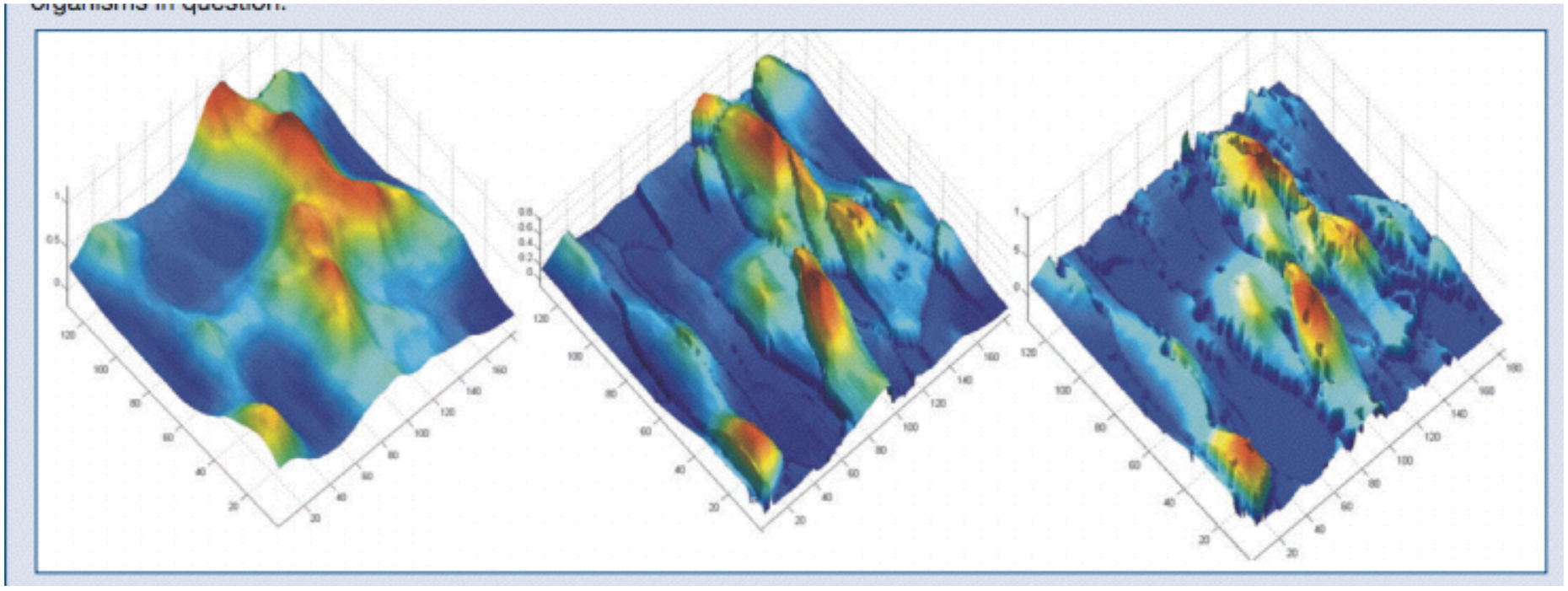
Landscape Flow is one way to analyze connectivity



Landscape Least cost Path Landscape Flow

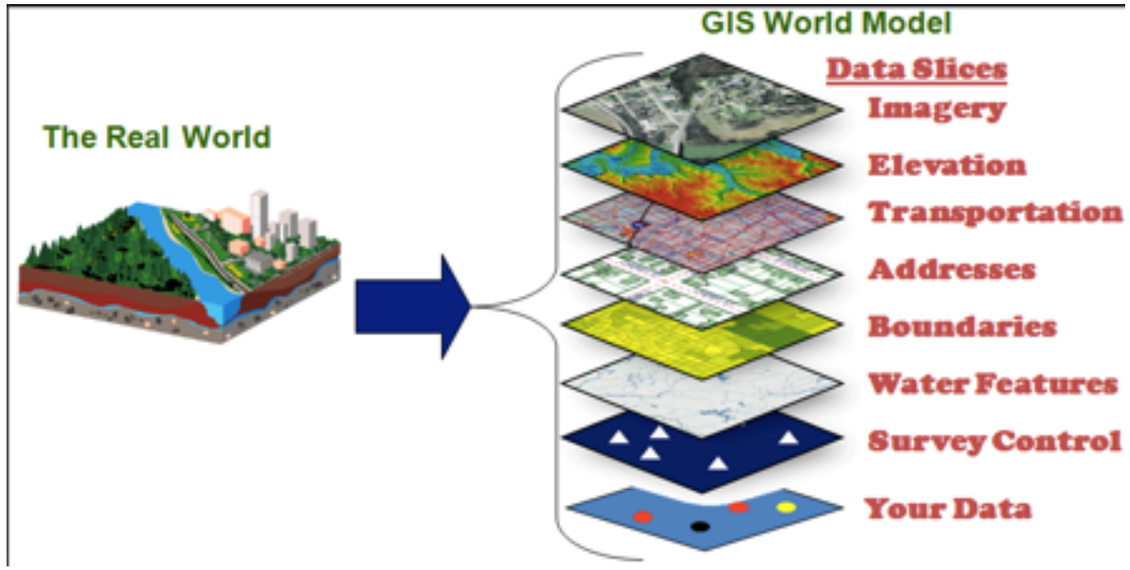
McRae et al. 2008

To characterize flow,
we need to create a *resistance surface*



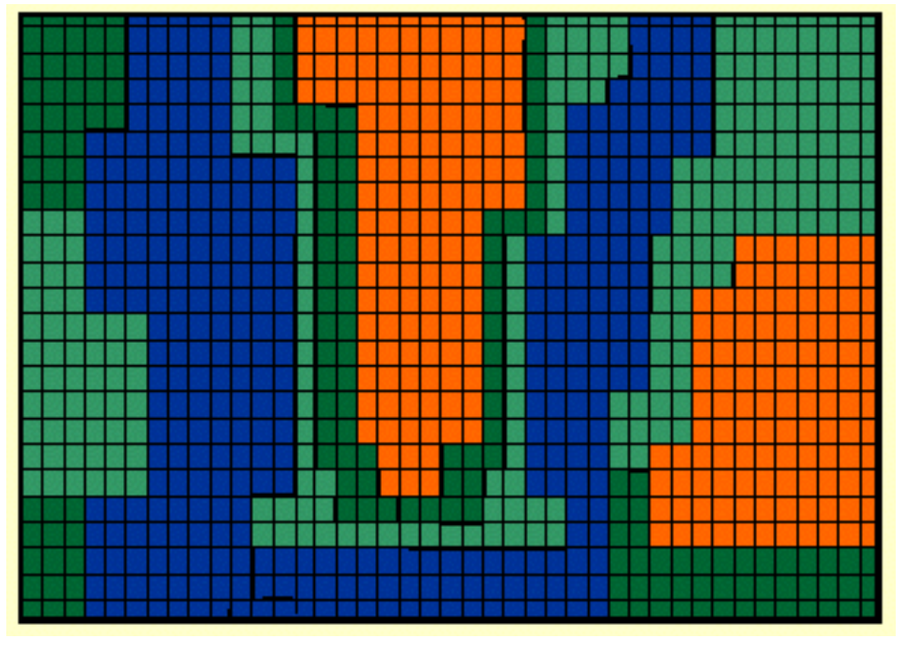
Red = Difficult to to cross
Blue = Easy to cross

GIS Layers



Raster Brick

Map Algebra
‘Raster Calculator’
‘Reclassification’



Resistance Surface

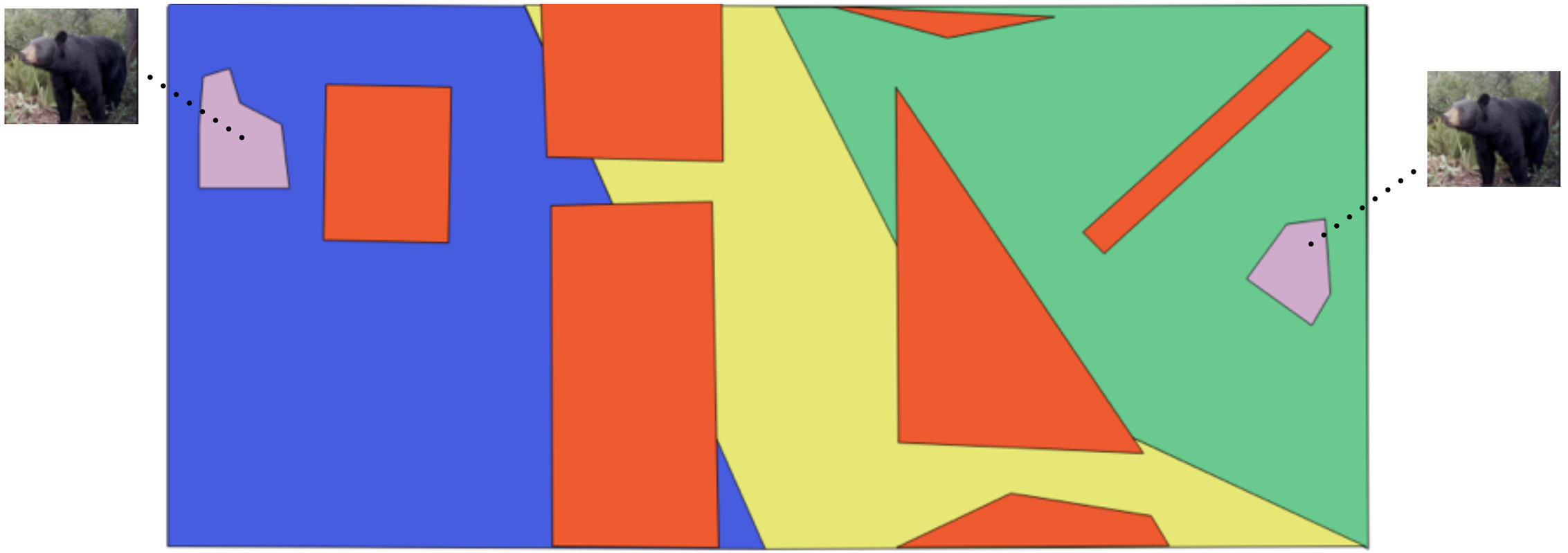
The Process

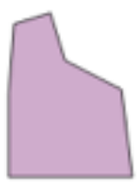
1. Identify GIS factors that affect flow of your species
2. Assemble GIS data for the identified factors
3. Compile a resistance surface from GIS data
4. Identify and delineate focal areas of species habitat
5. Run data through CircuitScape
6. Visualize and analyse the results

#1 requires knowledge of species' interaction with landscape
#2 and #3 are the most time consuming
#3 requires data to be in the same projection and extents
#4 and #5 are easy
#6 is the fun part

Workshop Exercise #1

Experimenting with an artificial landscape





Focal Area

Impassible

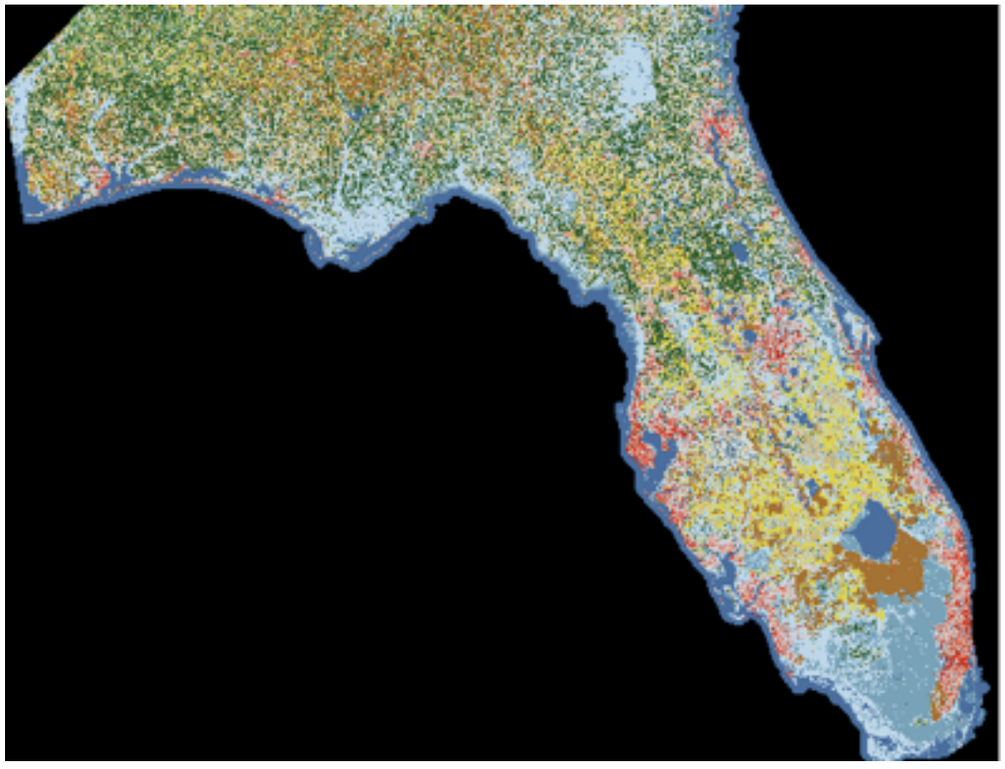
Varying Resistance

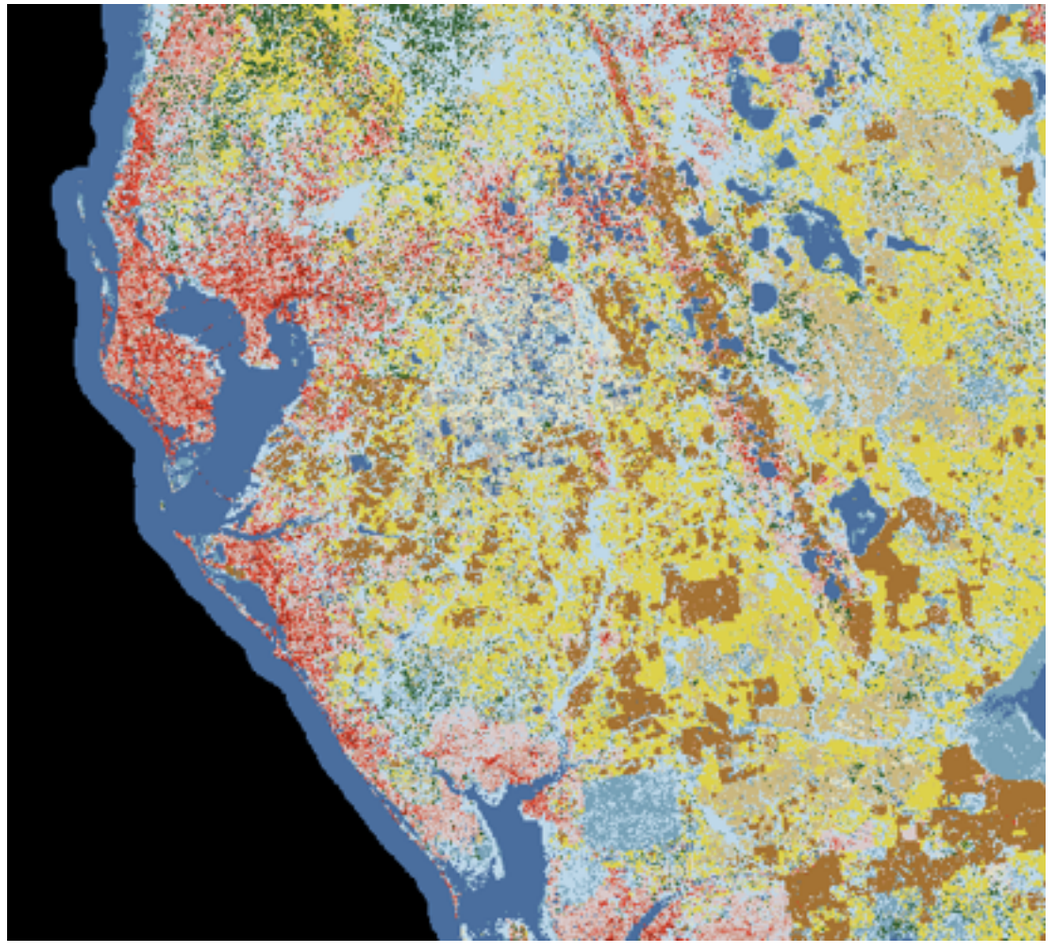
Workshop Exercise #2

Florida Wildlife Corridor

Florida Panther

What can land use tell us about connectivity?





Important Resources

CircuitScape User Guide & Tutorial
http://www.circuitscape.org/userguide

Gnarly Landscape Utilities
http://www.circuitscape.org/gnarly-landscape-utilities

A Practitioners Guide to Habitat Connectivity
http://www.landscope.org/focus/connectivity/

Conceptual Steps for Designing Wildlife Corridors
http://corridordesign.org/designing_corridors