Least Cost Path Exercise
&
Assessing Future Road Crossing Needs

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Least Cost Path Exercise

- Model/Predict Important Road Crossing Locations

- Cost surface classification

  - Grouping of cover classes

  - Valuation

- Hubs and stepping stones (sources/destinations)

  - Conservation lands and WMAs

  - Conservation easements

  - Private lands
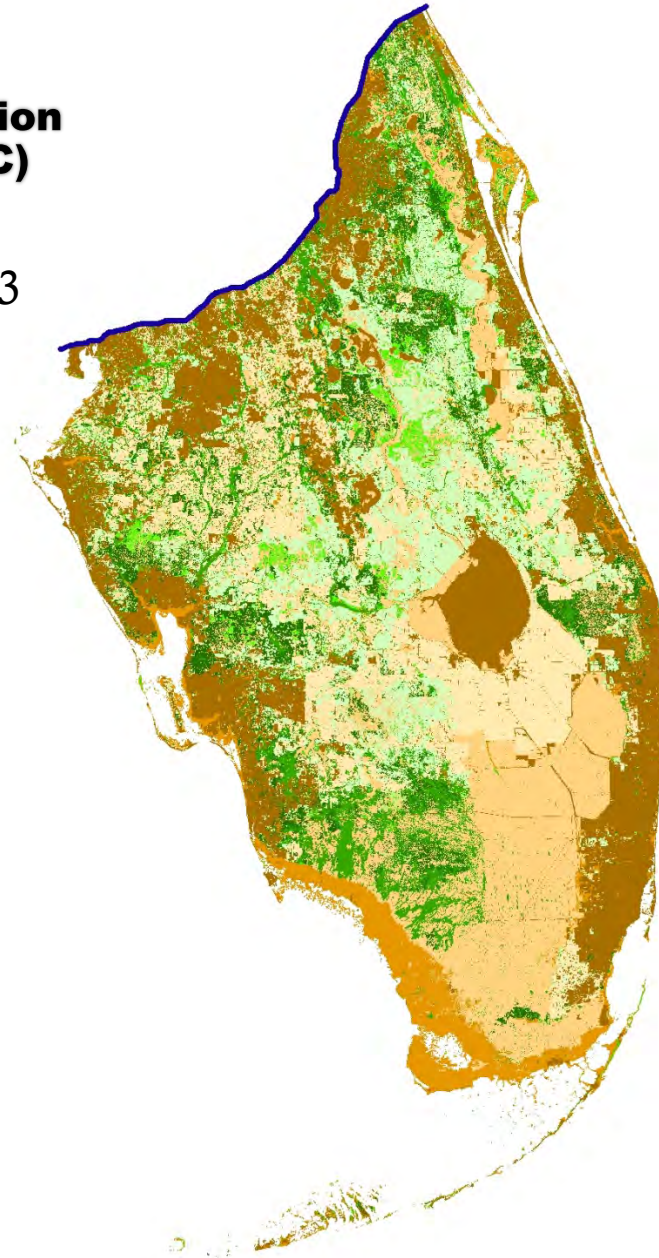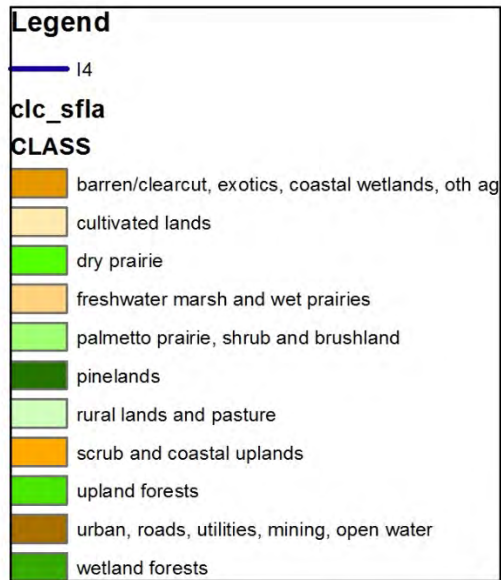
2012 class averaged scores (derived from Kautz et al. 2006, Cox et al. 2006 and Land et al. 2008)				2006 original class scores	
Category	Habitats	Average	Adjusted Values*	Land Cover Type	Value
1	Pineland	9.5		Hardwood forest	10
2	Cypress swamp	9.2		Xeric oak scrub	10
2	Hardwood swamp	9.2		Bay swamp	9
3	Upland forest	9		Bottomland hardwood	9
4	Dry prairie	6.3		Cypress swamp	9
5	Unimproved pasture	5.7		Freshwater marsh	9
6	Shrub and brush	5.5		Hardwood swamp	9
7	Improved pasture	5.2		Hardwood-Pine forest	9
8	Citrus	4.8		Pine forest	9
8	Cropland	4.8		Sand pine scrub	9
9	Marsh	4.7		Sandhill	9
10	Xeric scrub	4.5		Grassland/pasture	7
11	Barren	5.2	3	Dry prairie	6
11	Coastal wetlands	1	3	Shrub and brush	5
11	Exotic plants		3	Shrub swamp	5
12	Urban	5	0	STA	4.5
12	Open water	3.3	0	Cropland	4
12	Reservoir		0	Orchards/groves	4
nd	STA		nd	Exotic/nuisance plants	3
				Mangrove swamp	2
				Salt marsh	2
Notes:				Reservoir	1.5
habitat selection 7,8,9,10				Coastal strand	1
neither selected nor avoided 4,5,6				Urban	0
habitat avoidance 0,1,2,3				Water	0

Applying 2012 PHU classification scores to the current FWC LC)

78 categories aggregated into 13

Legend

I4

clc_sfla

CLASS

- barren/clearcut, exotics, coastal wetlands, oth ag
- cultivated lands
- dry prairie
- freshwater marsh and wet prairies
- palmetto prairie, shrub and brushland
- pinelands
- rural lands and pasture
- scrub and coastal uplands
- upland forests
- urban, roads, utilities, mining, open water
- wetland forests

Methodology (LCPM)

- Create Cost (Friction) Surface

- Select Source/Destination

- Plot alternative Least Cost Paths

- Explore effects of two possible Scoring Algorithms

  - Standard valuation (x), values from 0 to 20

  - Inverse valuation (1/x), values from 0 to 1

Legend

destinations
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

sources
- 1
- 2
- 3
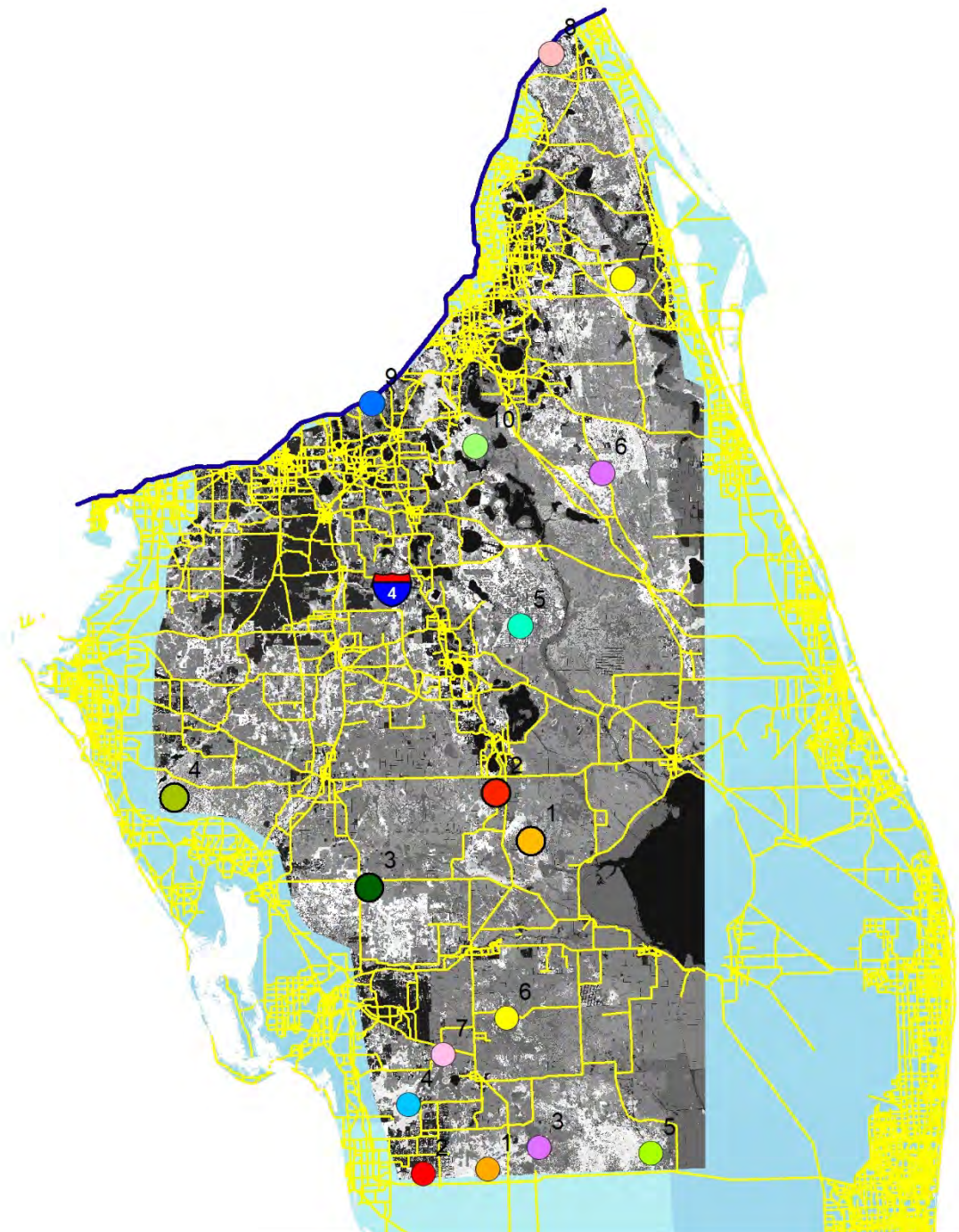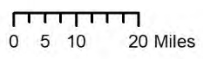- 4
- 5
- 6
- 7

— major roads

Value
- 1
- 3
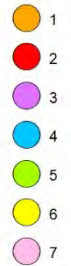- 5
- 32
- 40
- 43
- 47
- 48
- 50
- 65
- 150
- 200
- 400

0 5 10   20 Miles
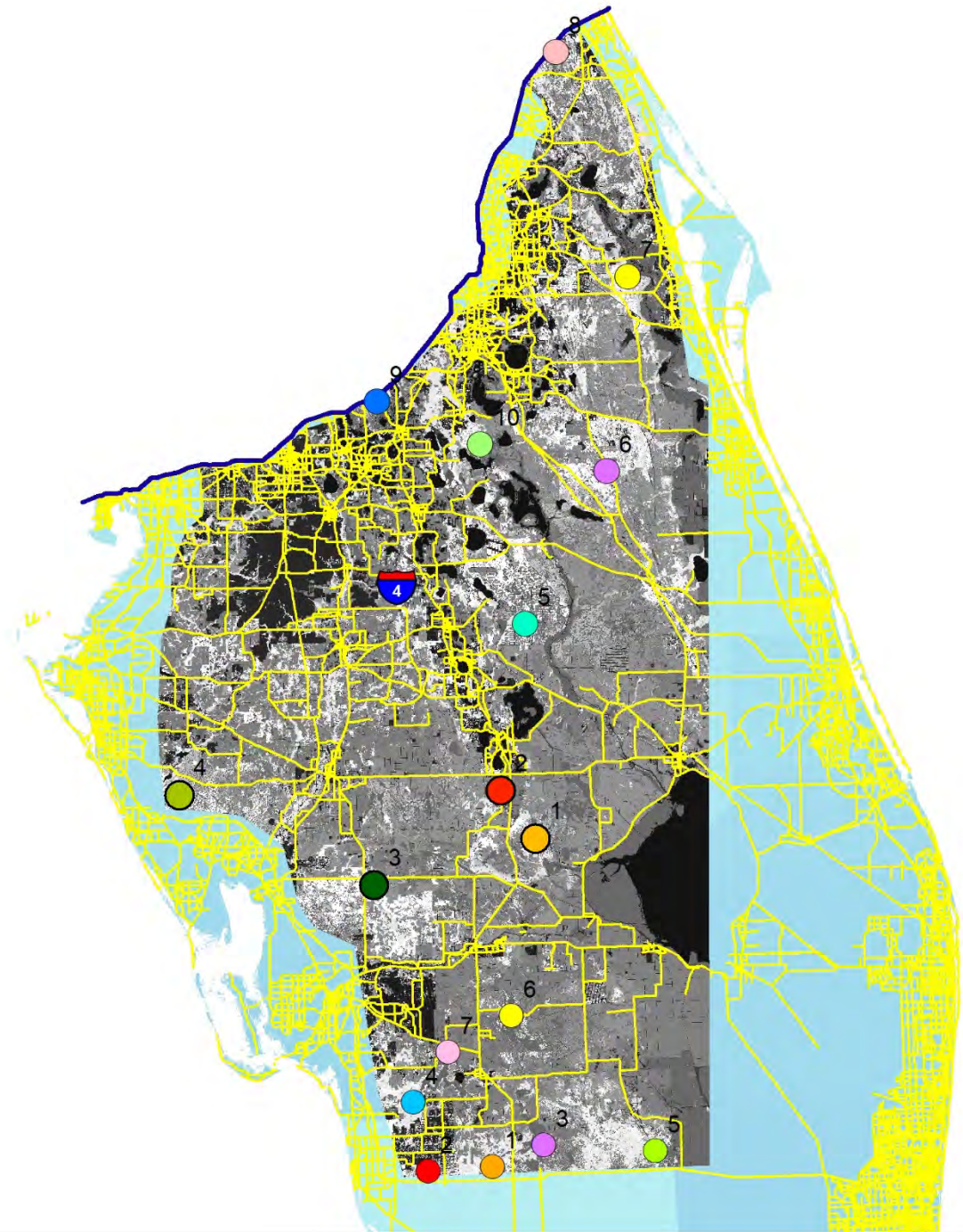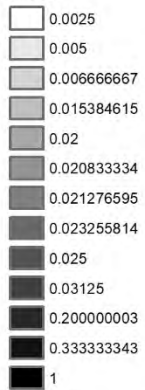
N

Legend

destinations
1
2
3
4
5
6
7
8
9
10

sources
1
2
3
4
5
6
7

— major roads

inverse scores
Value
0.0025
0.005
0.006666667
0.015384615
0.02
0.020833334
0.021276595
0.023255814
0.025
0.03125
0.200000003
0.333333343
1

0 5 10   20 Miles

N

Evaluating Priority for Mitigation Based on Severity of Barrier Effect and Probability of Mortality

- Road classification
  - Speed
  - Width/# of lanes
  - Traffic volume threshholds
- Adjustments for existing mitigation measures
  - Apply wildlife crossing structure layer/fenced road sections

Further Investigation

- Explore more locations

- Verify results against telemetry, mortality and sighting data

- Destination site prey densities???

- Other methods/modeling platforms

  - Circuitscape

  - Corridordesigner

  - Gflow

  - Resistent Kernel Density