

The Role of Ecological System Mapping for Assessment and Stewardship Applications in Texas

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Texas Ecological Systems Classification Project



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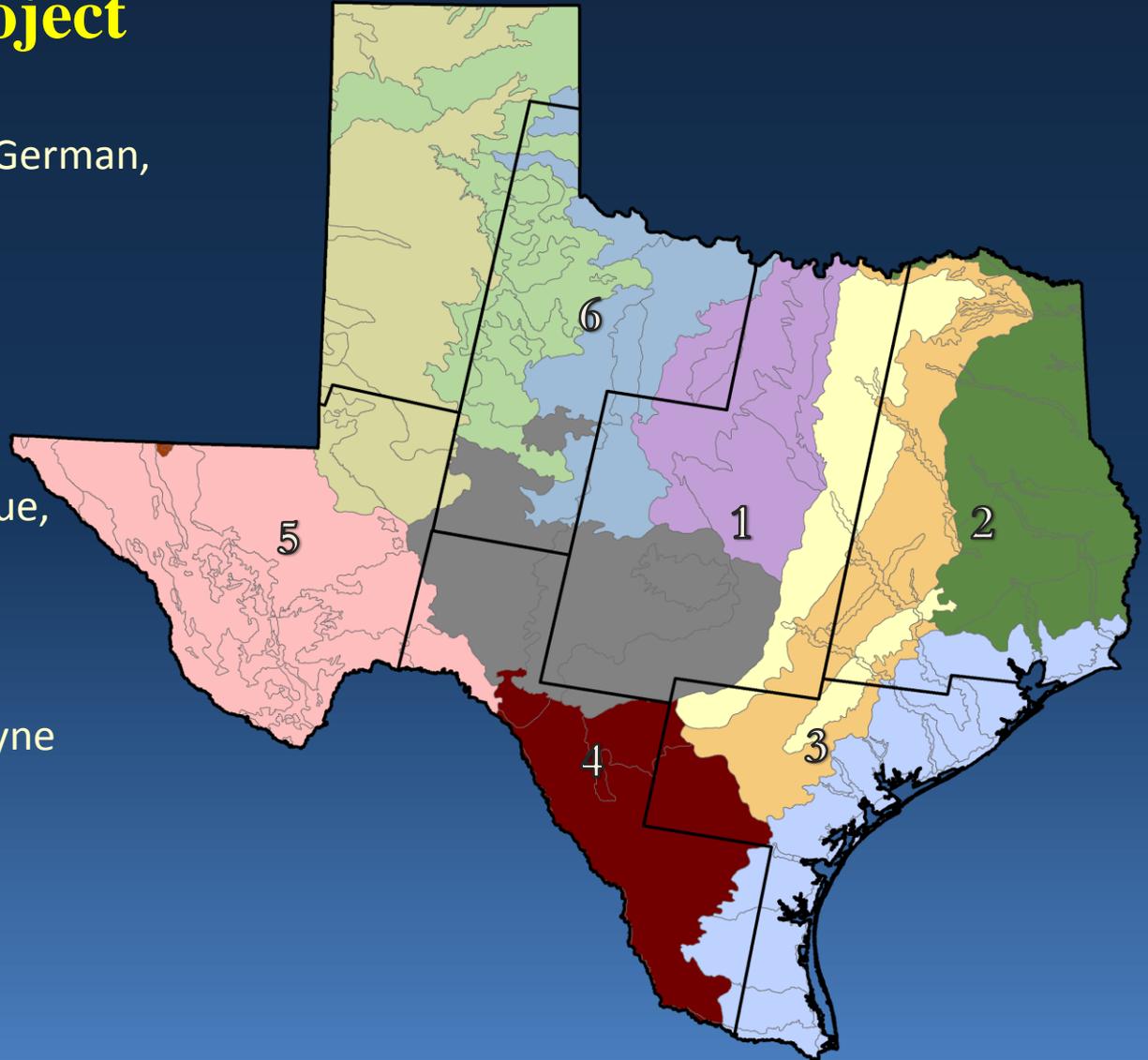
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Dyan Pursell



Judy Teague, Milo Pyne



Bill Carr



Classify Land Cover

Model Abiotic Site Types

Satellite TM Data for 3 Dates (30 m)
% Slope, Solar Insolation, Land Position

SSURGO Soil (ESD) Groups
Geographic Location
Land Position
% Slope, Solar Insolation

NAIP Photos Define “objects”

Modeling: Assign final mapped vegetation from land cover & abiotic site type (“Modeling”)

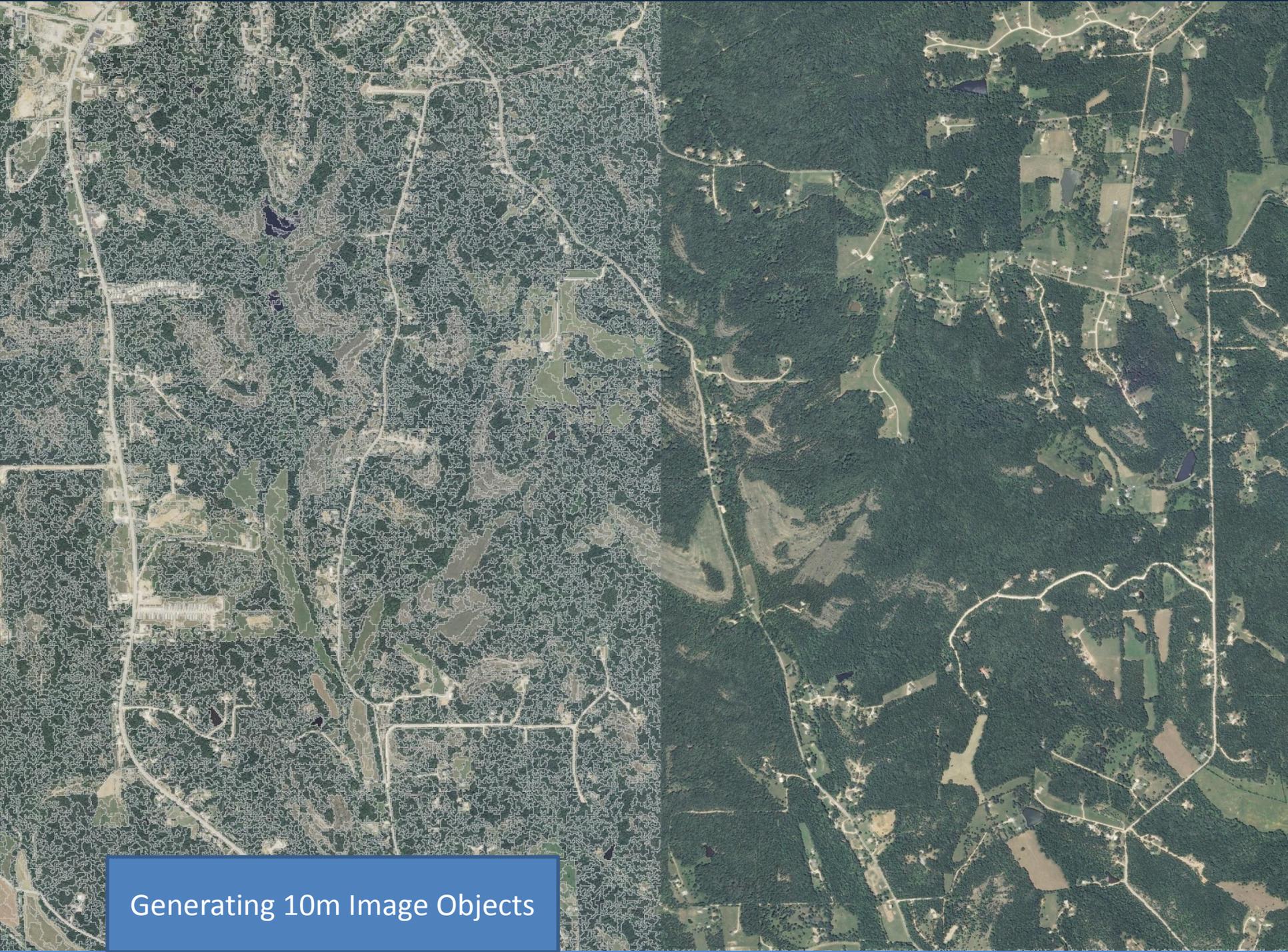
**Final Mapped
Vegetation Types**



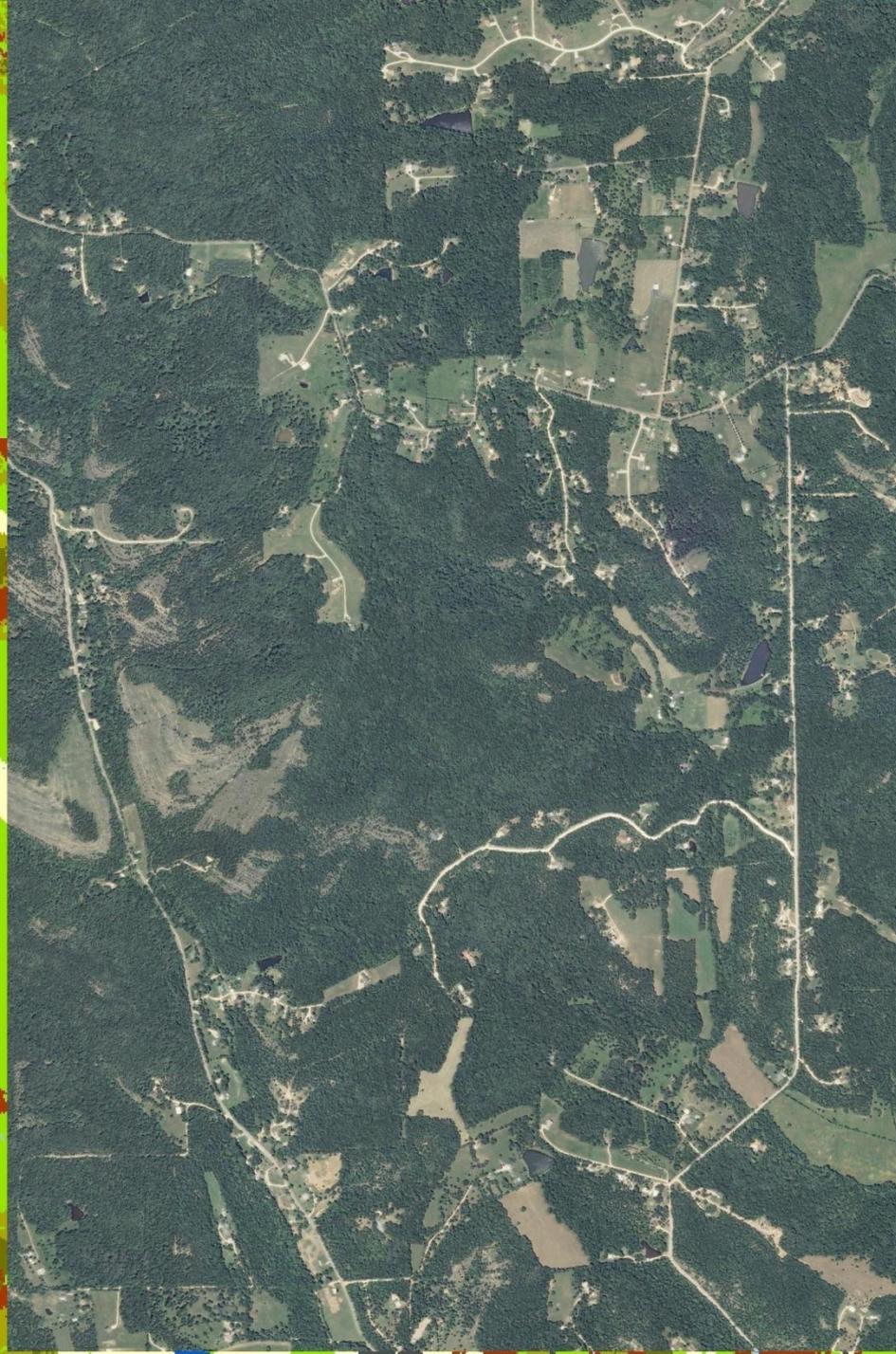
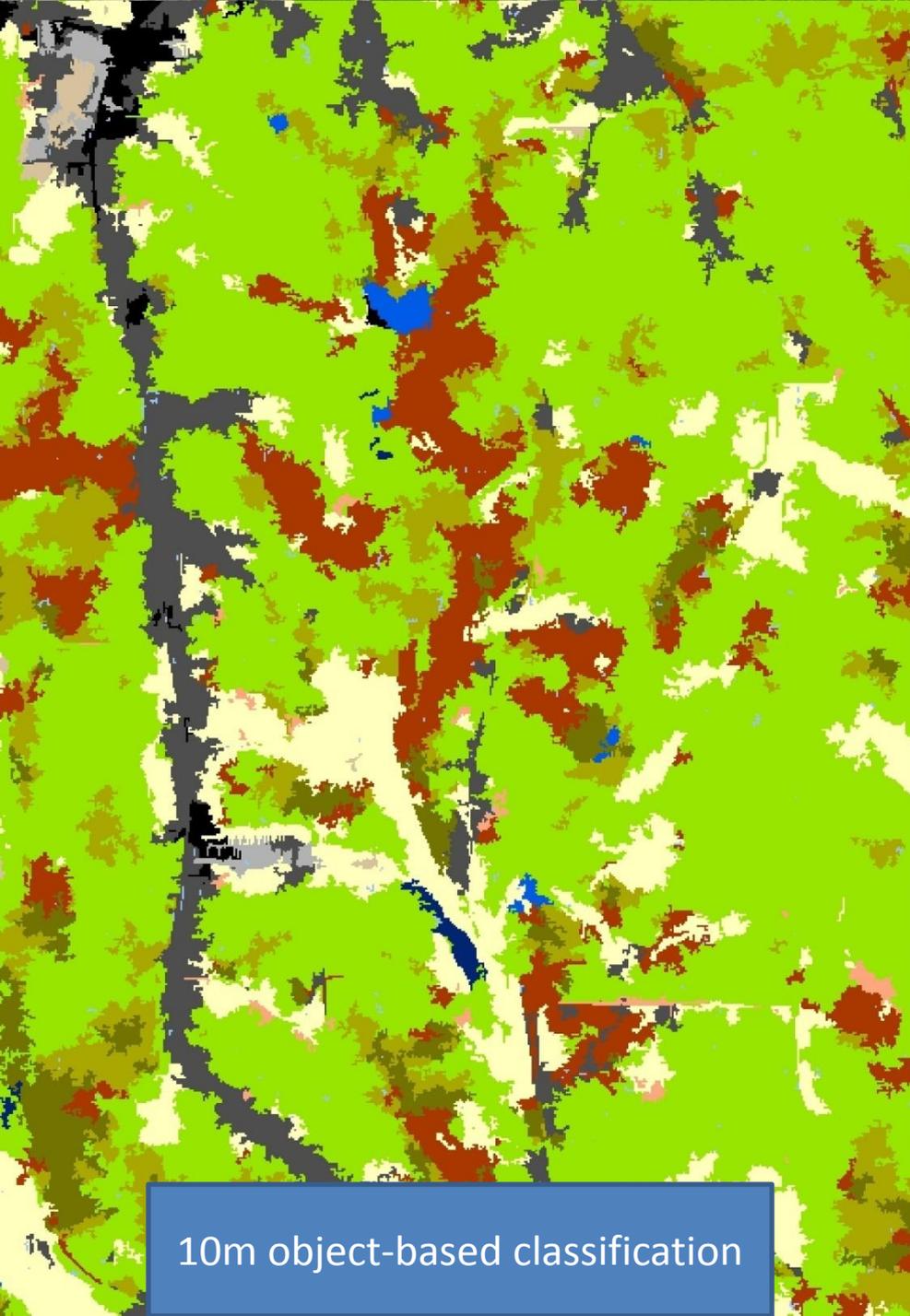
Remote Sensing Product will be from Decision Tree Classification using Primarily Photo-based Training



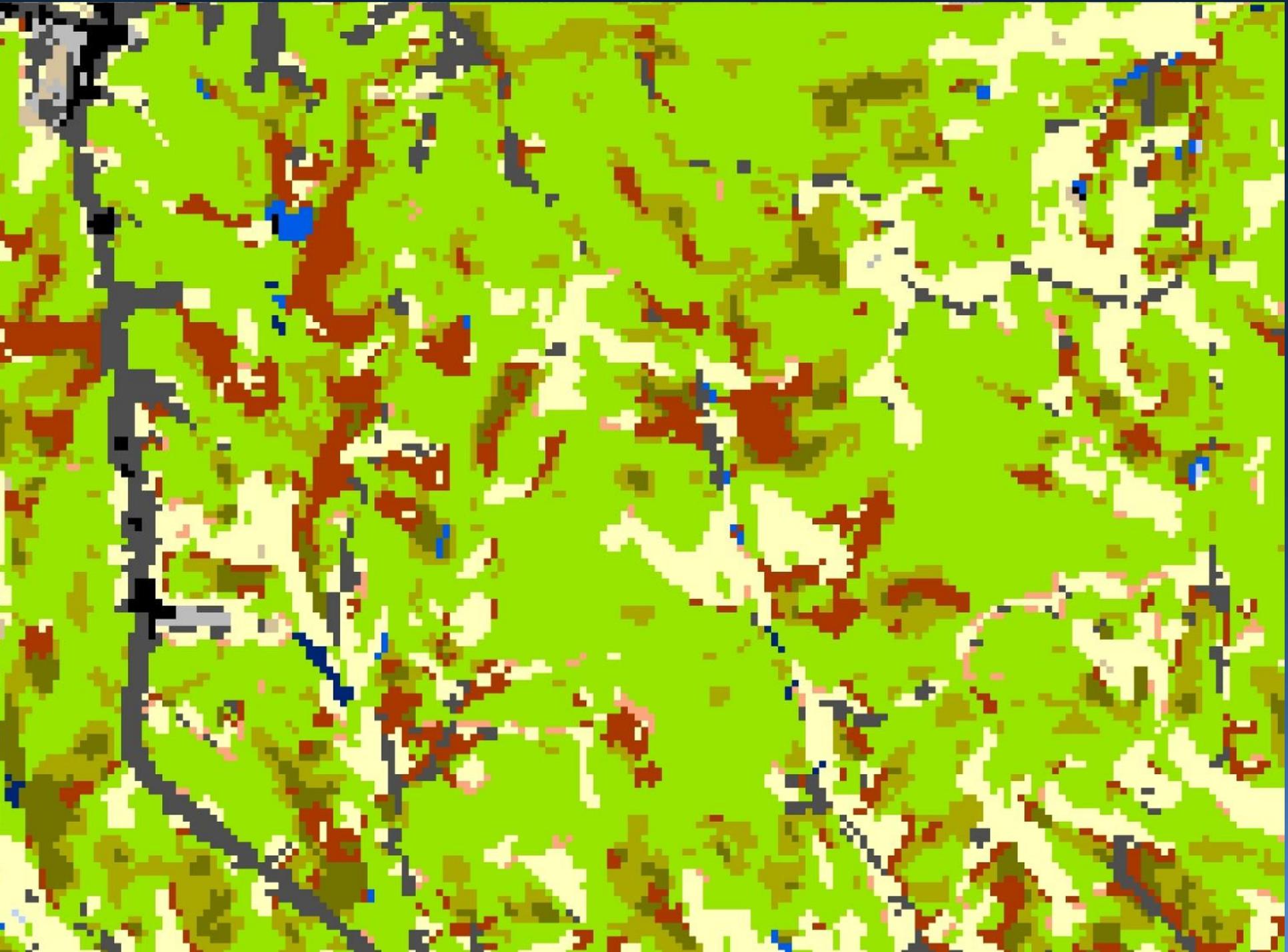
30 m pixel-based classification

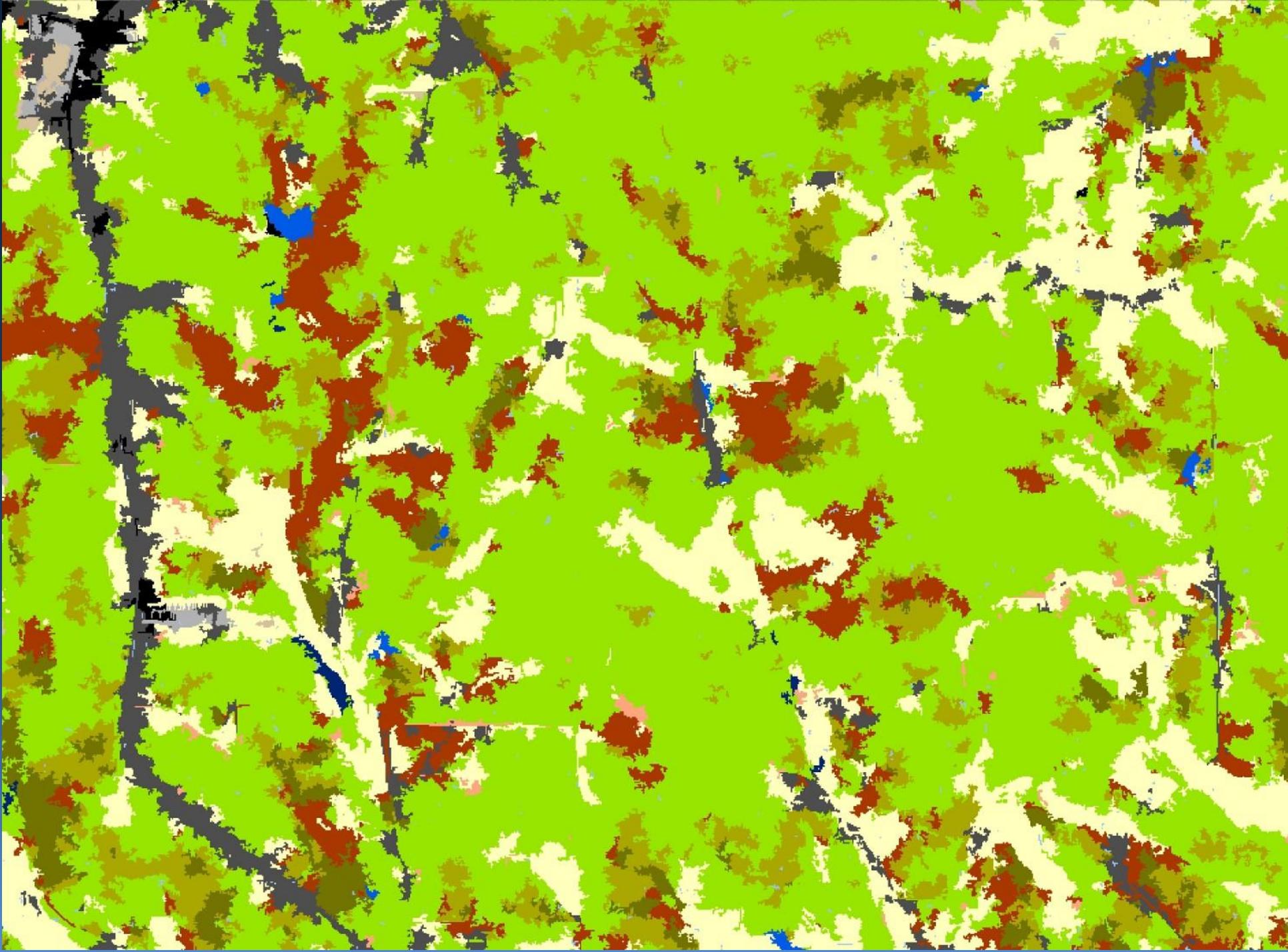


Generating 10m Image Objects

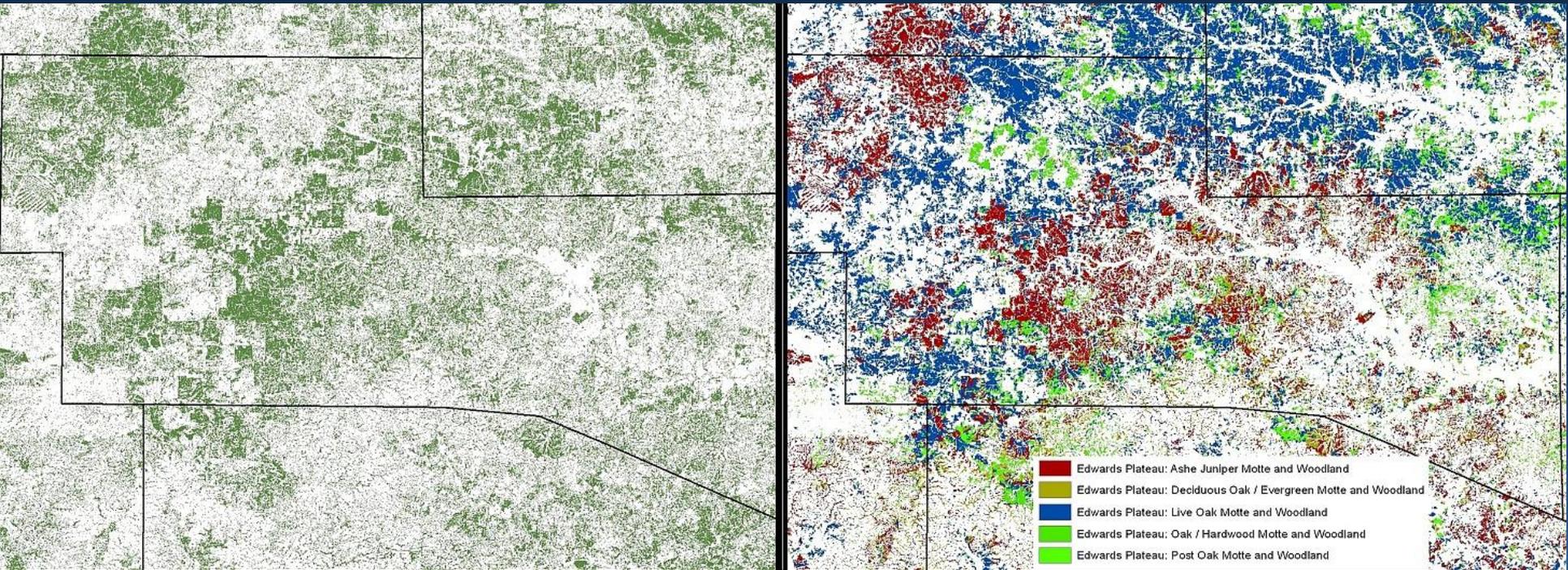


10m object-based classification

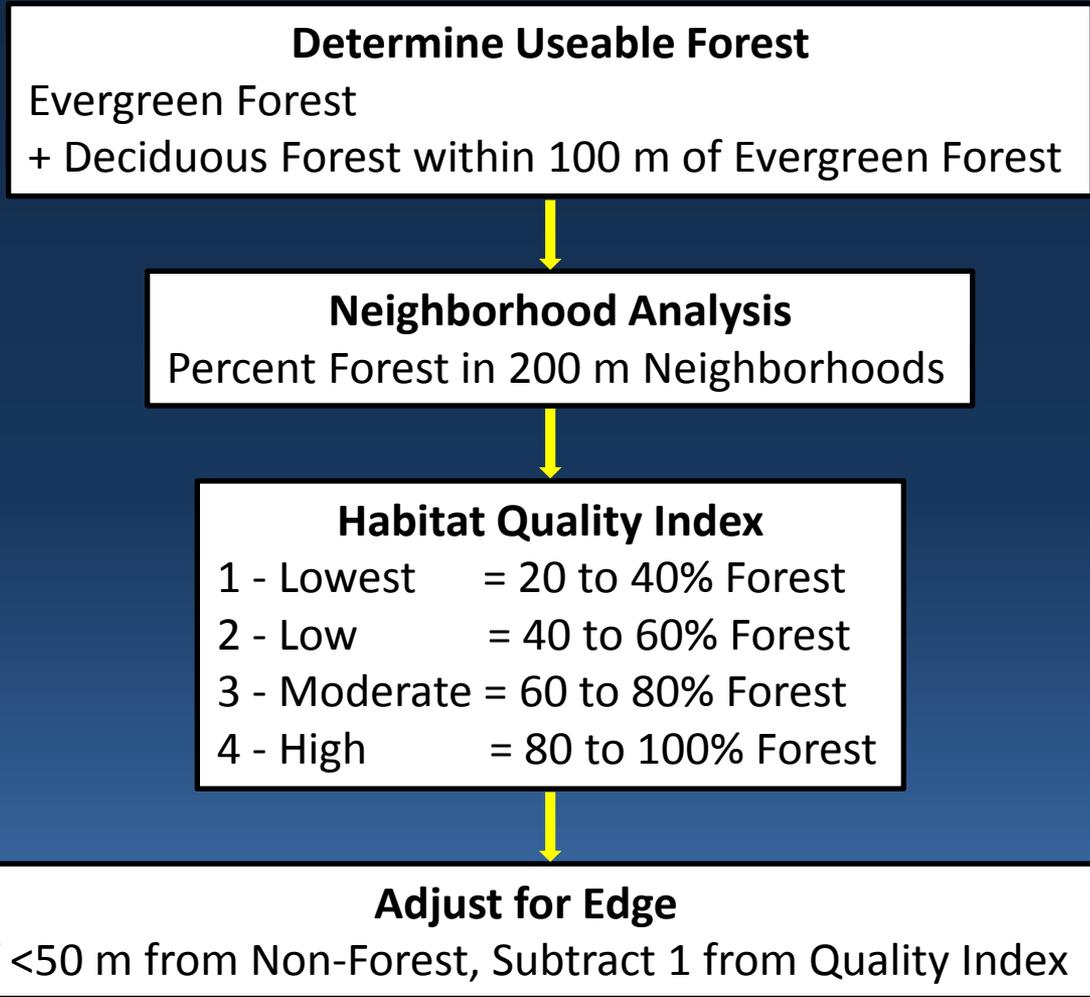




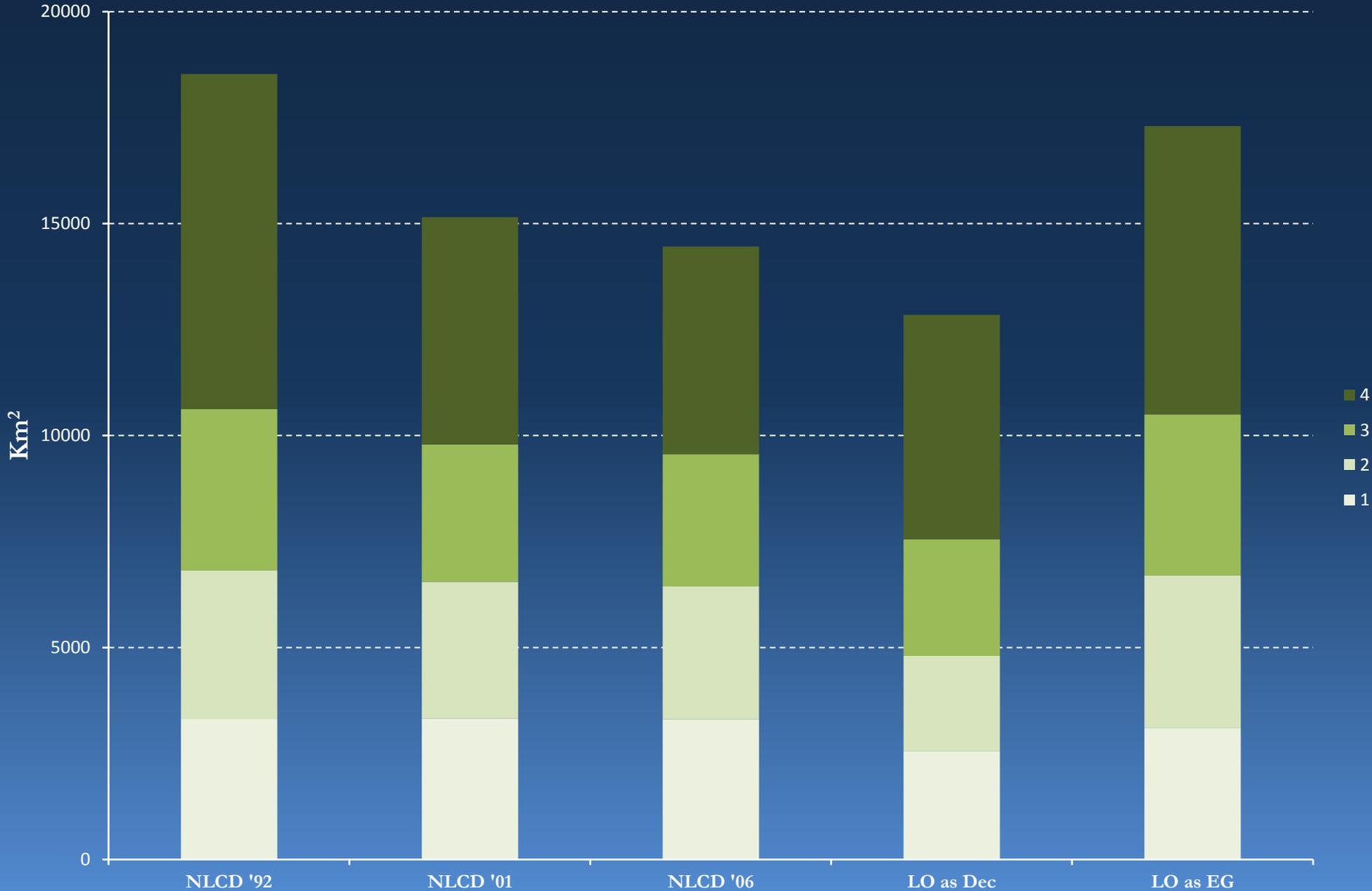
Finer Spatial and Thematic Resolution



Deductive Golden-Cheeked Warbler Habitat Model



Habitat Quality Index



Golden-cheeked Warbler Habitat Loss Between ~2007 and 2010 in Kerr County, Texas

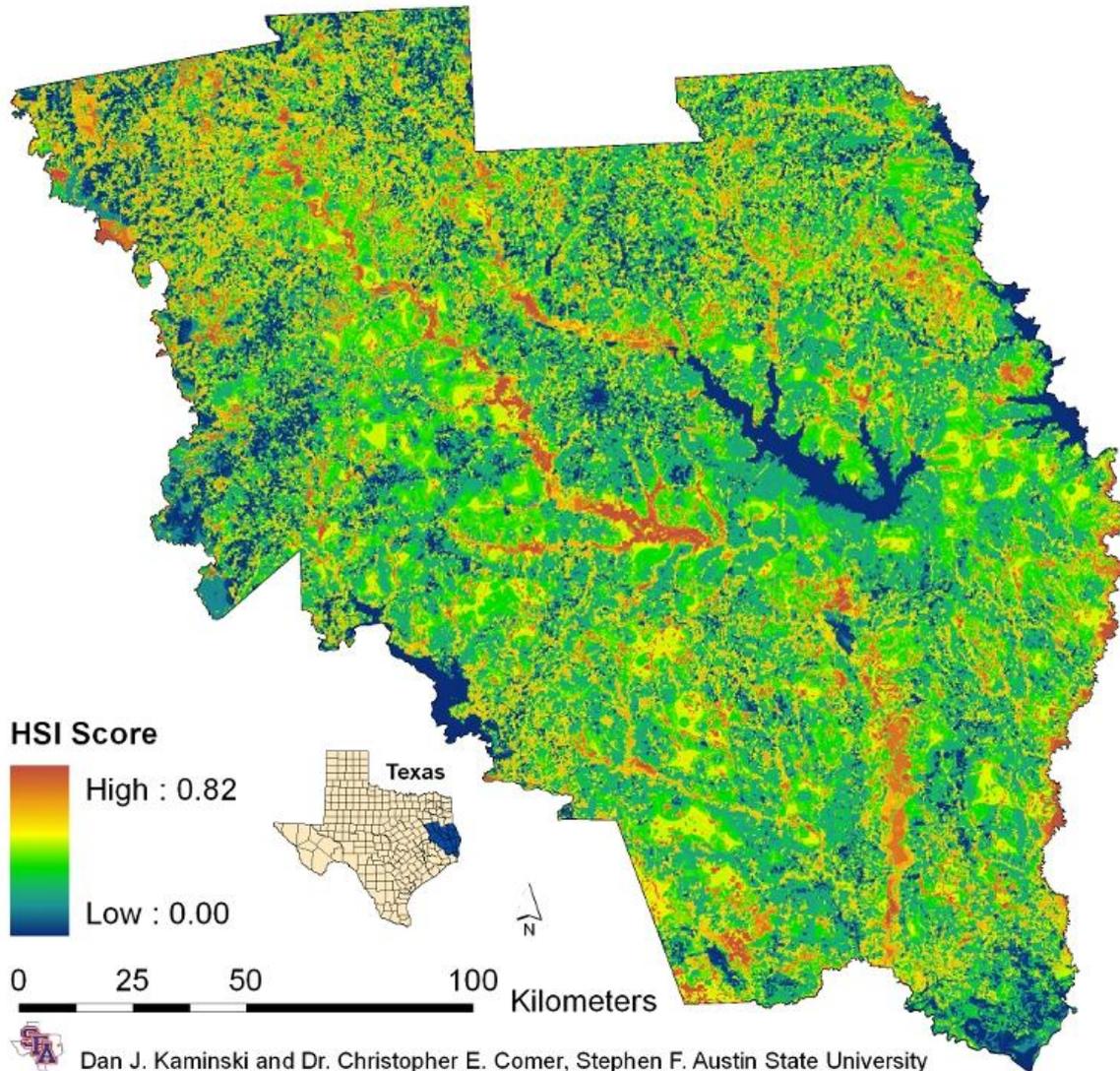


Legend

-  Forest and Woodland 2007 & 2010
-  Forest and Woodland 2007 but not in 2010



Regional Habitat Assessment and Suitability for Louisiana Black Bear (*Ursus americanus luteolus*) In East Texas



Catahoula Barrens

Element Type	Name	% < 50m (n)
Barrens		37% (51)
Watch Plant	<i>Phemeranthus parviflorum</i>	100% (1)
Watch Plant	<i>Gratiola flava</i>	100% (5)
Sensitive Plant	<i>Schoenolirion wrightii</i>	94% (16)
Sensitive Plant	<i>Spiranthes parksii</i>	100% (1)

Ravines

Element Type	Name	% < 50 m (n)
Sensitive Plant	<i>Amorpha paniculata</i>	100% (6)
Sensitive Plant	<i>Apteria aphylla</i>	73% (62)
Watch Plant	<i>Brachyelytrum erectum</i>	83% (30)
Watch Plant	<i>Calopogon tuberosus</i>	80% (10)
Sensitive Plant	<i>Cypripedium kentuckiense</i>	73% (63)
Watch Plant	<i>Erythronium rostratum</i>	78% (9)
Watch Plant	<i>Isotria verticillata</i>	100% (10)
Sensitive Plant	<i>Prenanthes barbata</i>	86% (15)
Watch Plant	<i>Sanguinaria canadensis</i>	100% (22)
Sensitive Plant	<i>Silene subciliata</i>	82% (11)
Watch Plant	<i>Thaspium trifoliatum</i>	81% (21)
Sensitive Plant	<i>Trillium texanum</i>	86% (42)
Watch Plant	<i>Uvularia perfoliata</i>	90% (21)

Edwards Plateau Dry-Mesic Slope Forest and Woodland

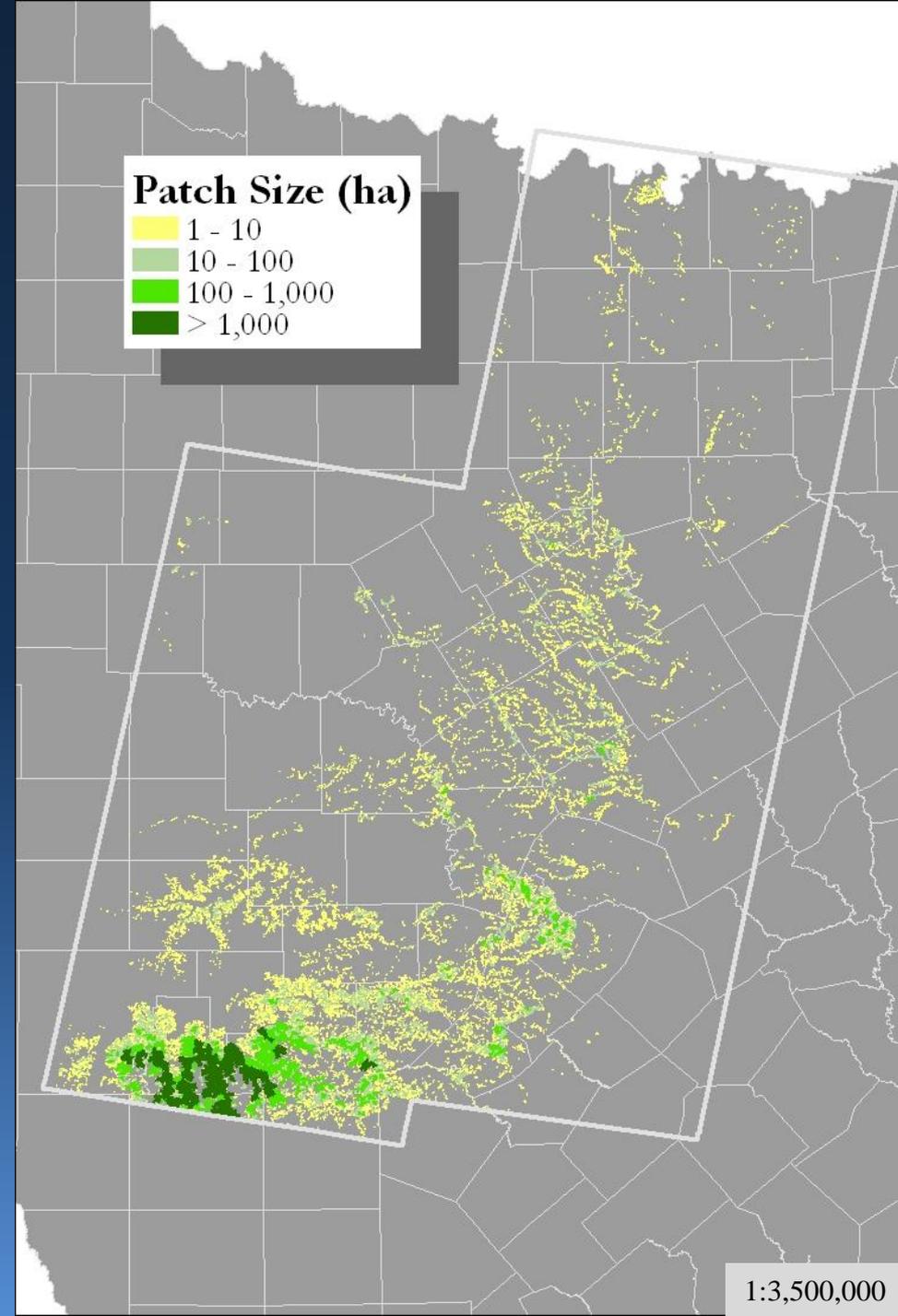


Identify large patches of slope forest

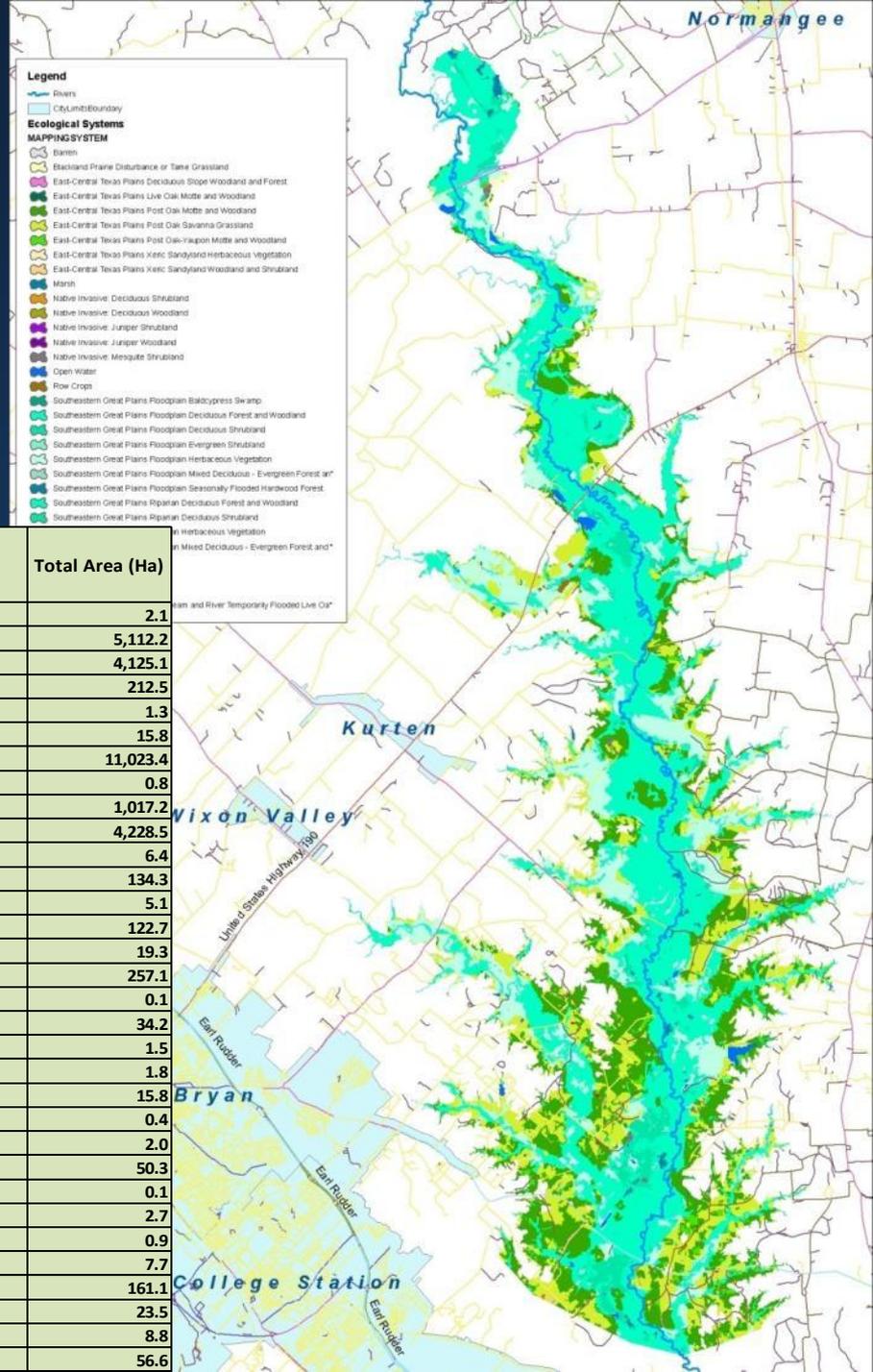
- 75,000 ha in small patches
- 80,000 ha in moderate patches
- 65,000 ha in large patches
- 65,000 ha in very large patches
- 285,000 ha identified (patches > 1 ha)

16 species of rare plant species (G3 or rarer) associated with this System

Able to differentiate cover types
(deciduous, juniper, live oak, mixed)

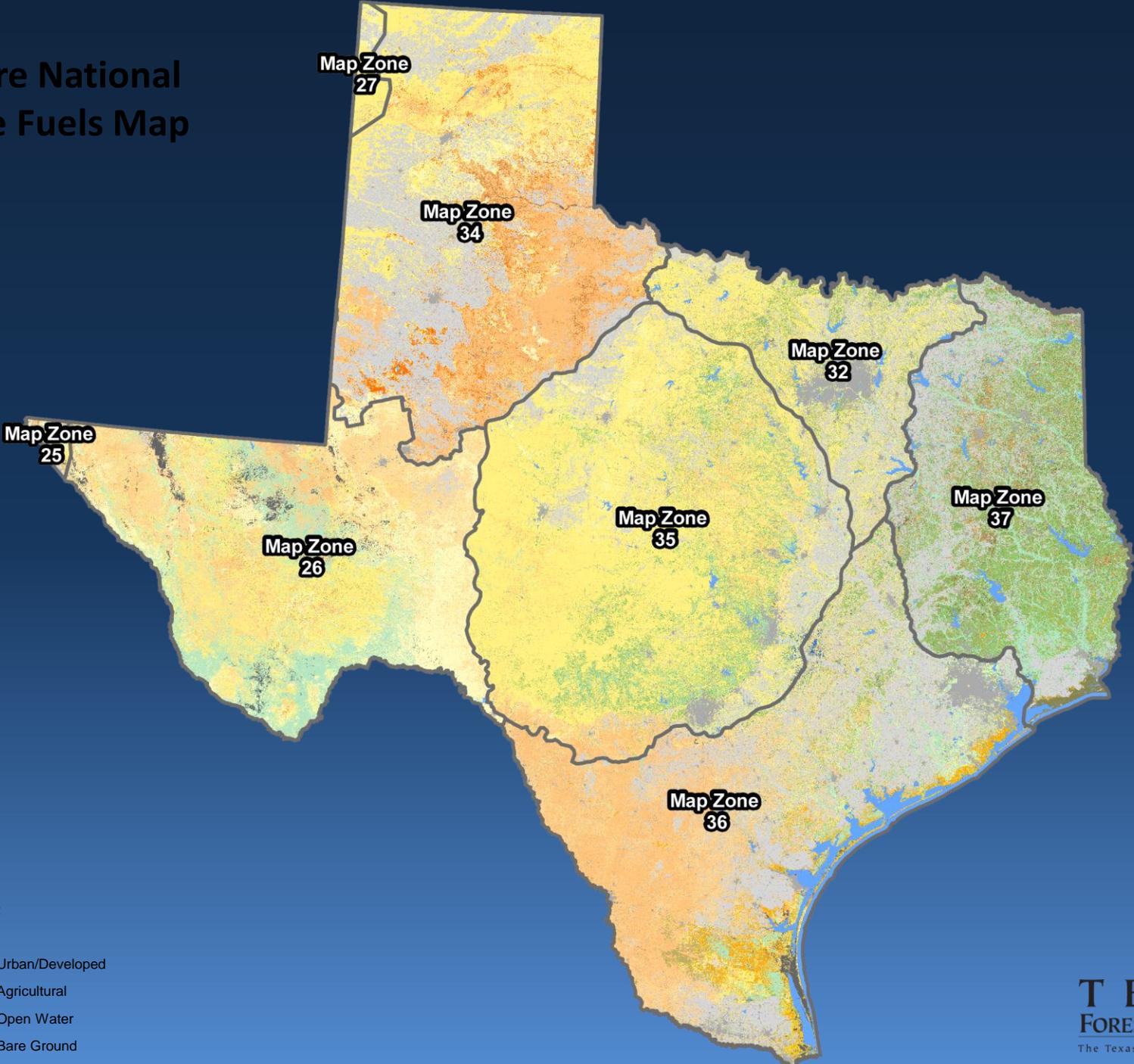


Rapid Analysis of Potential Impact Site



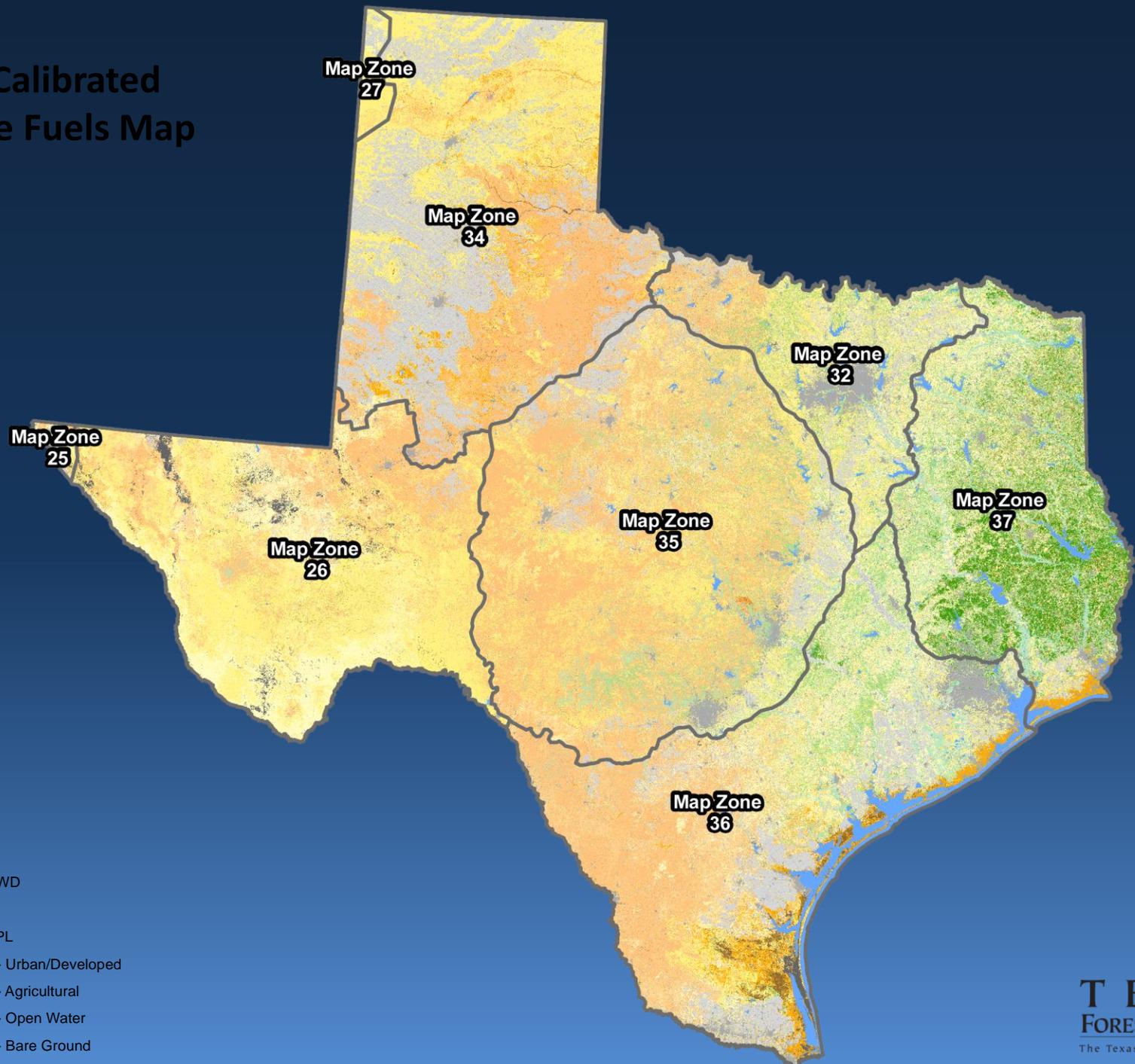
Number of Pixels	Mapping Sub-System	Total Area (Ha)
212	Post Oak Savanna: Live Oak Motte and Woodland	2.1
511,217	Post Oak Savanna: Post Oak Motte and Woodland	5,112.2
412,505	Post Oak Savanna: Post Oak Savanna Grassland	4,125.1
21,252	Post Oak Savanna: Post Oak-Yaupon Motte and Woodland	212.5
132	Post Oak Savanna: Deciduous Slope Woodland and Forest	1.3
1,579	Southeastern Great Plains Floodplain Mixed Deciduous - Evergreen Forest an*	15.8
1,102,338	Southeastern Great Plains Floodplain Deciduous Forest and Woodland	11,023.4
75	Southeastern Great Plains Floodplain Evergreen Shrubland	0.8
101,717	Southeastern Great Plains Floodplain Deciduous Shrubland	1,017.2
422,848	Southeastern Great Plains Floodplain Herbaceous Vegetation	4,228.5
636	Southeastern Great Plains Floodplain Baldcypress Swamp	6.4
13,429	Southeastern Great Plains Floodplain Seasonally Flooded Hardwood Forest	134.3
506	Southeastern Great Plains Riparian Mixed Deciduous - Evergreen Forest and *	5.1
12,268	Southeastern Great Plains Riparian Deciduous Forest and Woodland	122.7
1,925	Southeastern Great Plains Riparian Deciduous Shrubland	19.3
25,711	Southeastern Great Plains Riparian Herbaceous Vegetation	257.1
11	Pineywoods: Riparian Temporarily Flooded Live Oak Forest	0.1
3,423	Blackland Prairie Disturbance or Tame Grassland	34.2
149	Post Oak Savanna: Xeric Sandyland Woodland and Shrubland	1.5
179	Post Oak Savanna: Xeric Sandyland Herbaceous Vegetation	1.8
1,578	Native Invasive: Deciduous Woodland	15.8
36	Native Invasive: Juniper Woodland	0.4
203	Native Invasive: Juniper Shrubland	2.0
5,034	Native Invasive: Mesquite Shrubland	50.3
13	Native Invasive: Deciduous Shrubland	0.1
273	Marsh	2.7
85	Swamp	0.9
770	Barren	7.7
16,114	Open Water	161.1
2,345	Row Crops	23.5
879	Urban High Intensity	8.8
5,655	Urban Low Intensity	56.6

Landfire National Surface Fuels Map



- GR 1
- GR 2
- GR 3
- GR 4
- GS 1
- GS 2
- GS 3
- SH 2
- SH 5
- SH 6
- TL1, TL2
- TL6
- NB 91 - Urban/Developed
- NB 93 - Agricultural
- NB 98 - Open Water
- NB 99 - Bare Ground

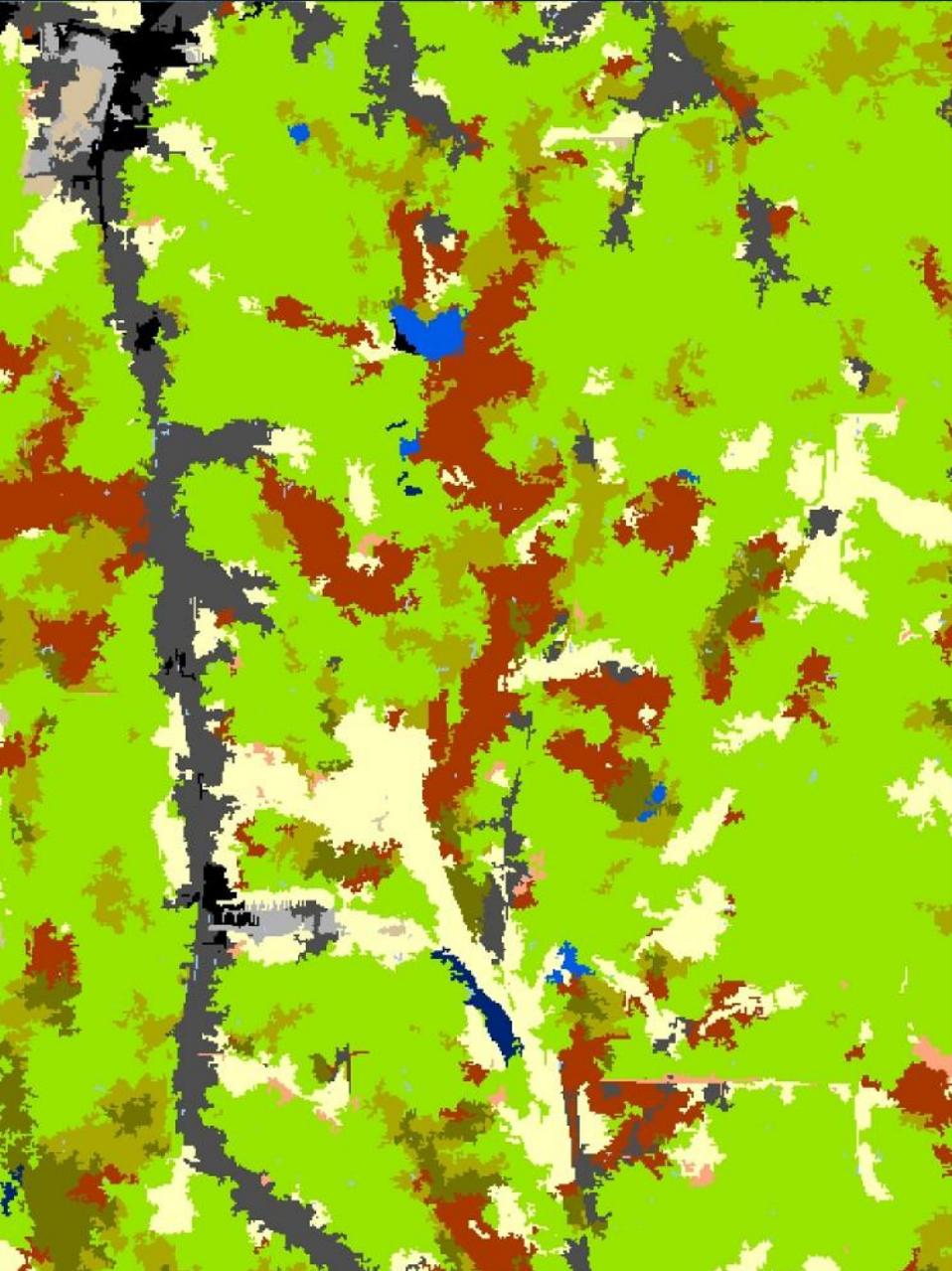
TFS Calibrated Surface Fuels Map



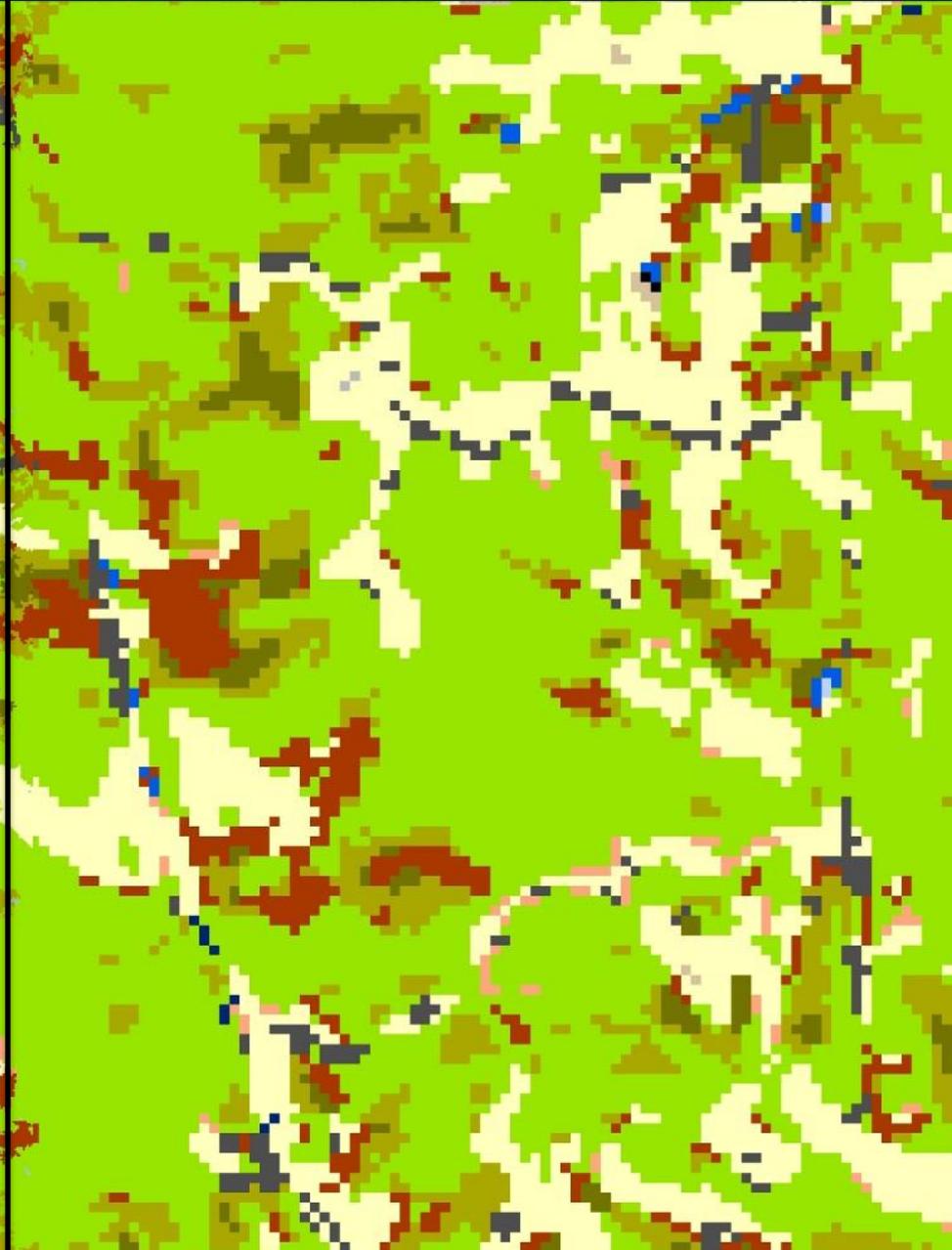
- GR 1
- GR 2
- GR 3
- GR 4
- GS 1
- GS 2
- GS 3
- SH 2
- SH 5
- SH 6
- FM 8
- FM 9HWD
- FM 9
- FM 9PPL
- NB 91 - Urban/Developed
- NB 93 - Agricultural
- NB 98 - Open Water
- NB 99 - Bare Ground



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10m object-based classification



30 m pixel-based classification