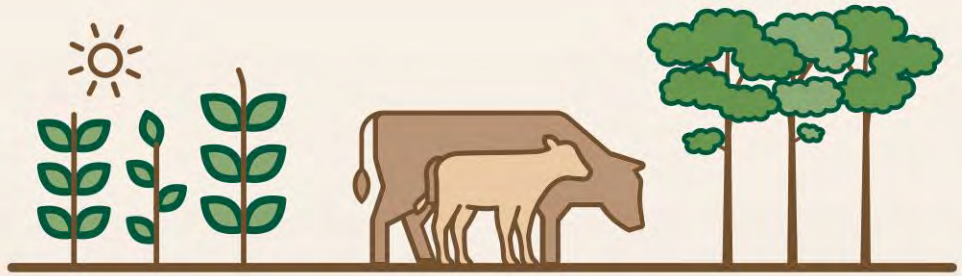
FLORIDA

AGRICULTURE 2040 2070



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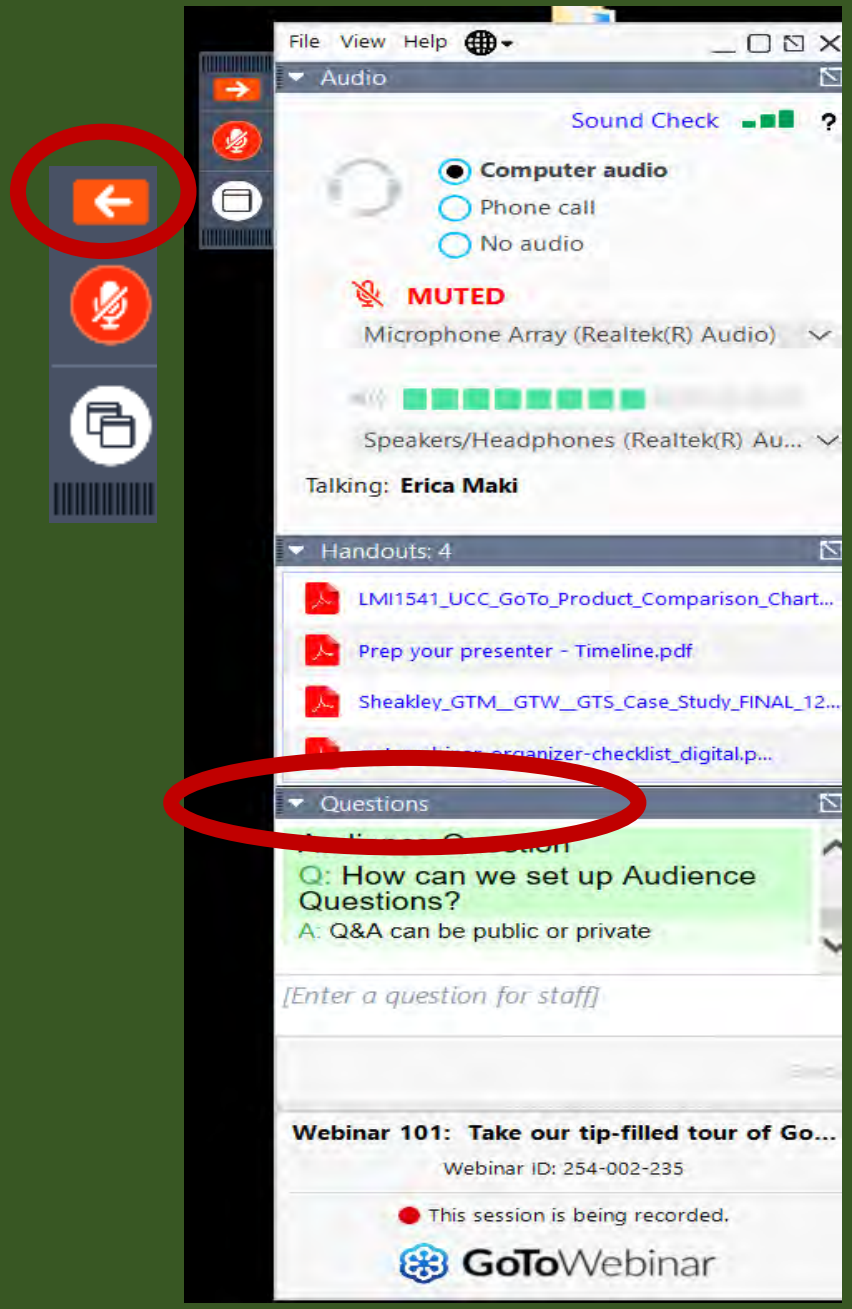

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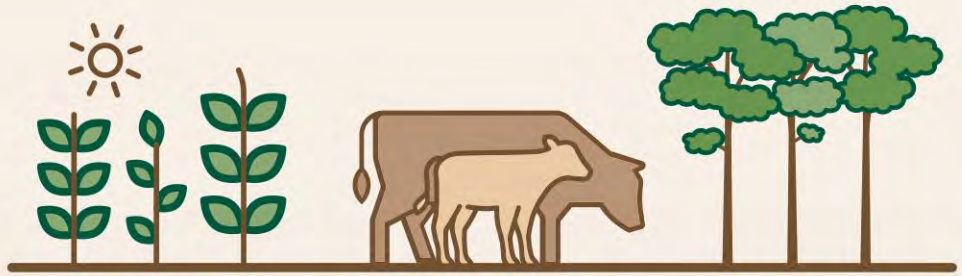

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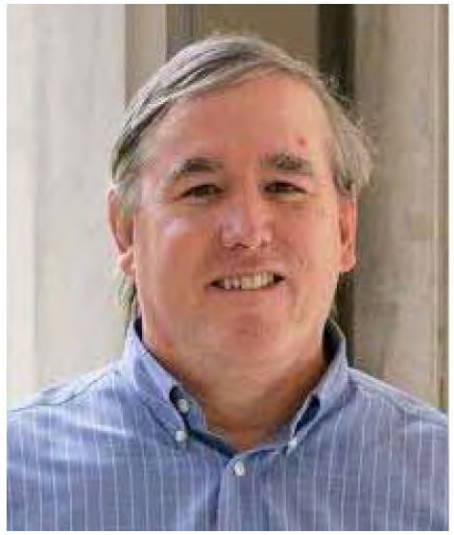
Outline:

- Agriculture in Florida
- Agriculture 2040/2070
- Projected Impact of Future Development
- Projected Impact of Sea Level Rise
- Future Land Use Maps
- Ecosystem Services
- Opportunities to Protect Florida's Agricultural Land
- Agriculture Policy and Planning Recommendations
- Conclusion

Presenters

Jim Strickland, Owner
Strickland Ranch

Michael Volk,
Associate Director
University of Florida Center for
Landscape Conservation Planning



Tom Hoctor,
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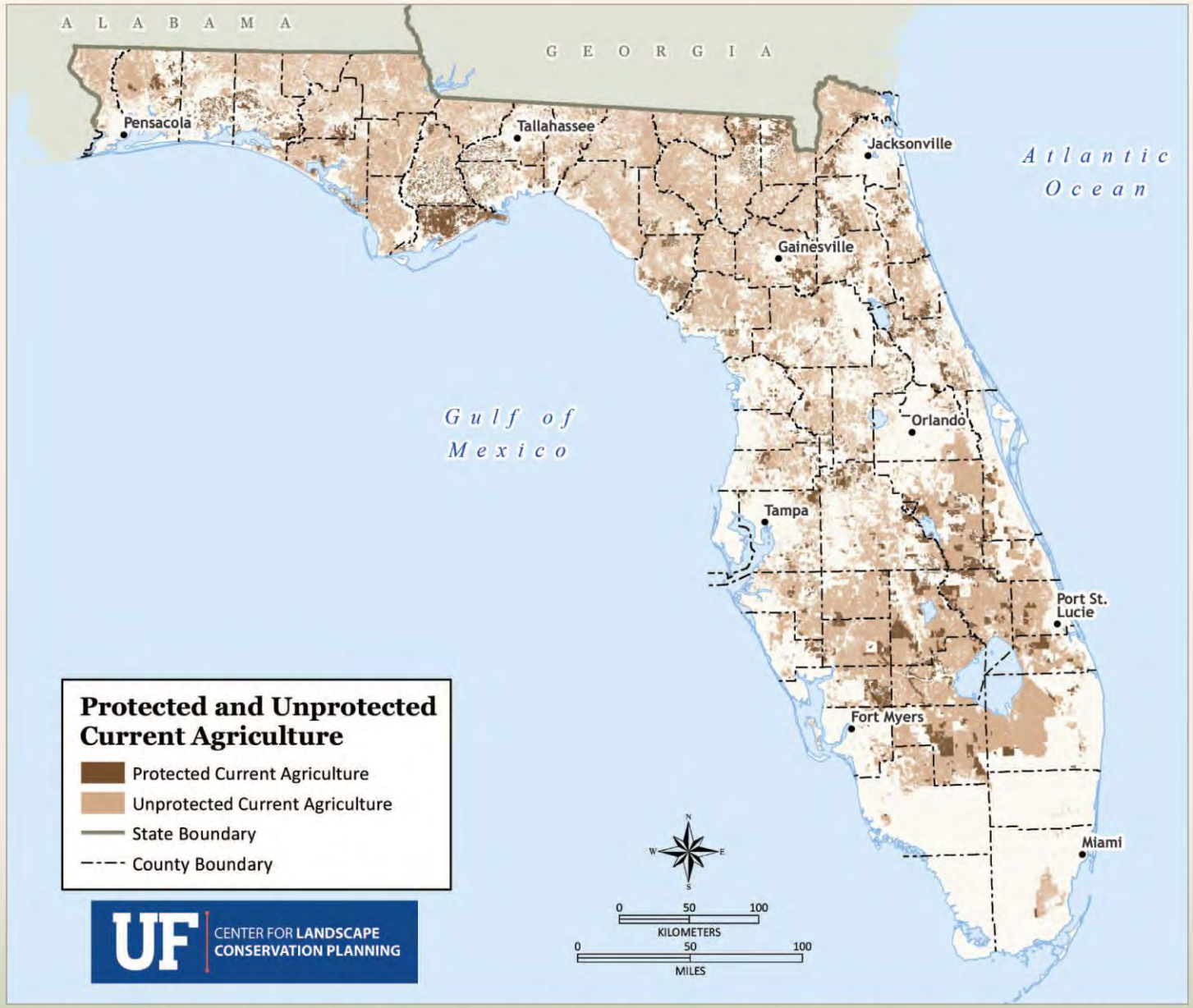
Agriculture in Florida



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Agriculture and the lands that support it provide an integral contribution to Florida's economy, culture, and quality of life.

According to the University of Florida Institute of Food and Agricultural Science (IFAS), the direct economic contributions of the agriculture, natural resource, and food industries in 2019 included $106 billion in sales and 1,279,638 jobs.

Maintaining Florida's agricultural land and production are also essential to sustain and improve food security and nutritional outcomes for us and future generations.

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Agriculture 2040/2070 is a GIS-based analysis that focuses specifically on the impacts of sea level rise and population growth and associated development on Florida's agricultural lands and their conservation values.

This study does not address issues related to farming practices or water quality and supply.

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Florida's agricultural lands have an important role in protecting and providing ecosystem services including:

- Protecting water supply quality
- Providing flood control
- Supporting climate resilience
- Sequestering carbon
- Harboring wildlife
- Promoting outdoor recreation, and more.

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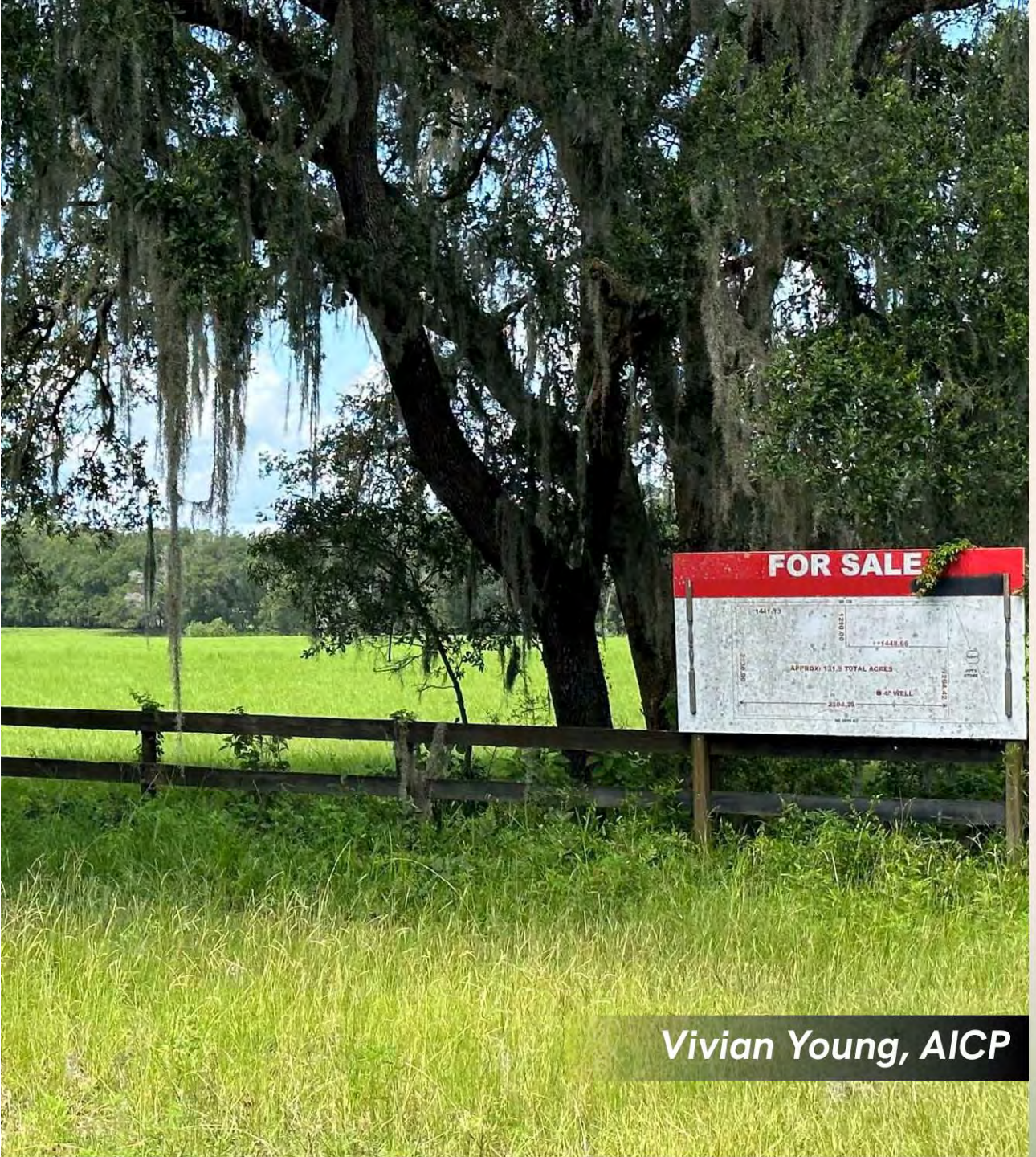

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But as Florida continues to face unrelenting sea level rise and population growth, agricultural land and the services it provides are increasingly threatened.

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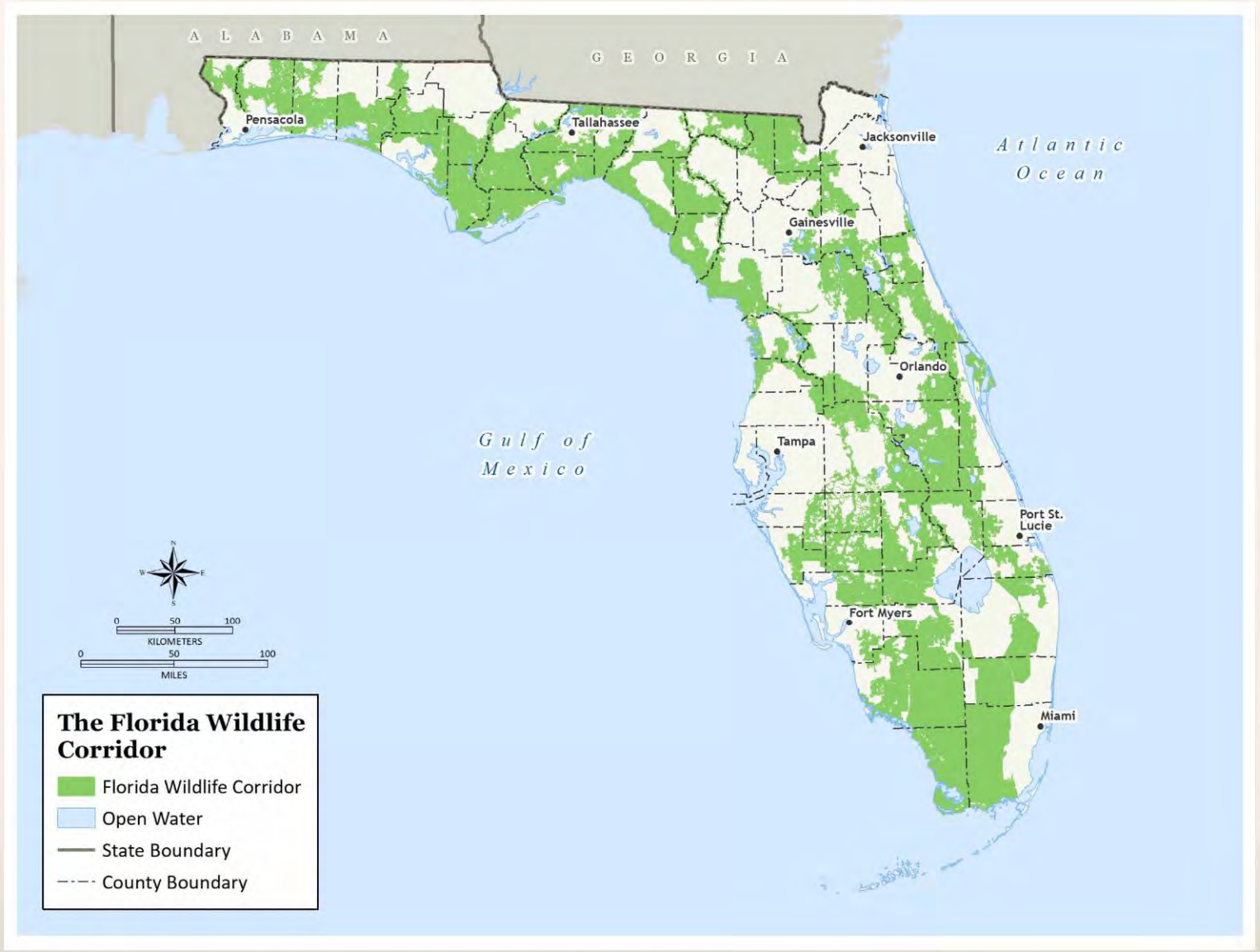

The Florida Wildlife Corridor (FWC)

Maintaining Florida's agricultural land is especially critical in a time when our changing climate brings increasing challenges to agriculture.

As will be discussed in this presentation, Florida's agriculture can also have a significant role in facilitating climate resiliency.

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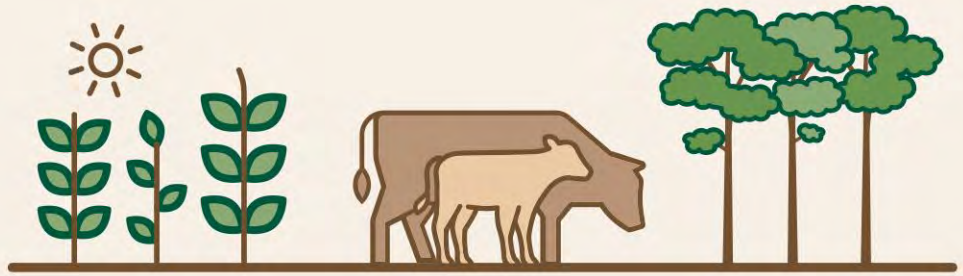

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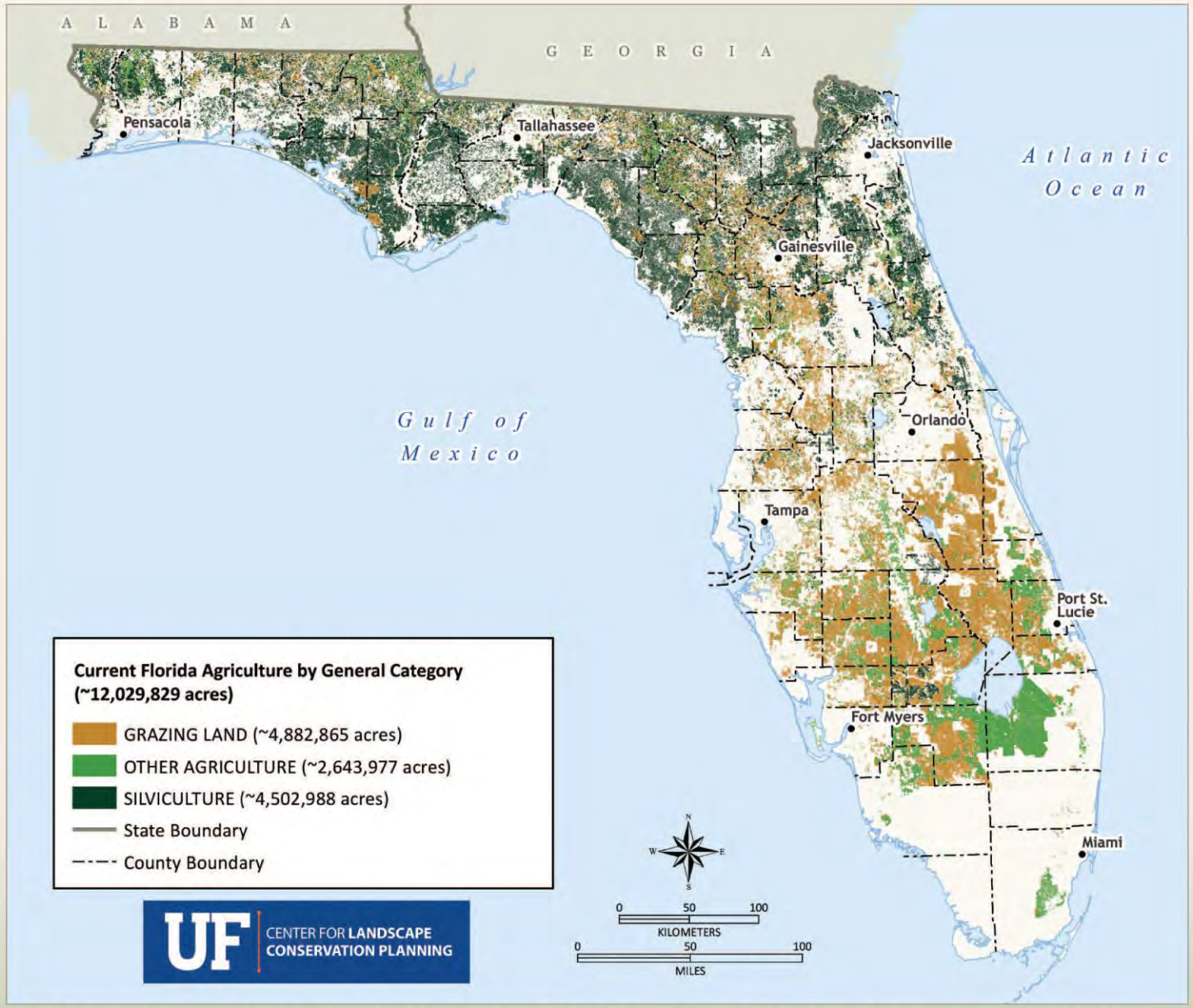
SEA LEVEL 2040 SEA LEVEL 2070

FLORIDA'S RISING SEAS

Mapping Florida's Future



Date: 11/2023. Data: Balmoral Group, Environmental Systems Research Institute, Florida Department of Agriculture and Consumer Services, Florida Fish and Wildlife Conservation Commission, Florida Geographic Data Library, Florida Natural Areas Inventory, University of Florida Center for Landscape Conservation Planning, U.S. Census Bureau, U.S. Geological Survey. Projection: Albers Conical Equal Area

Agriculture 2040/2070 **includes more refined data and analyses compared to the earlier** *Sea Level 2040/2070*.

It identifies a higher total of agricultural lands than in the earlier Sea Level 2040/2070 studies because the current analysis includes silviculture as agriculture and relies on more detailed data from the Florida Department of Agriculture and Consumer Services (FDACS) and other sources.

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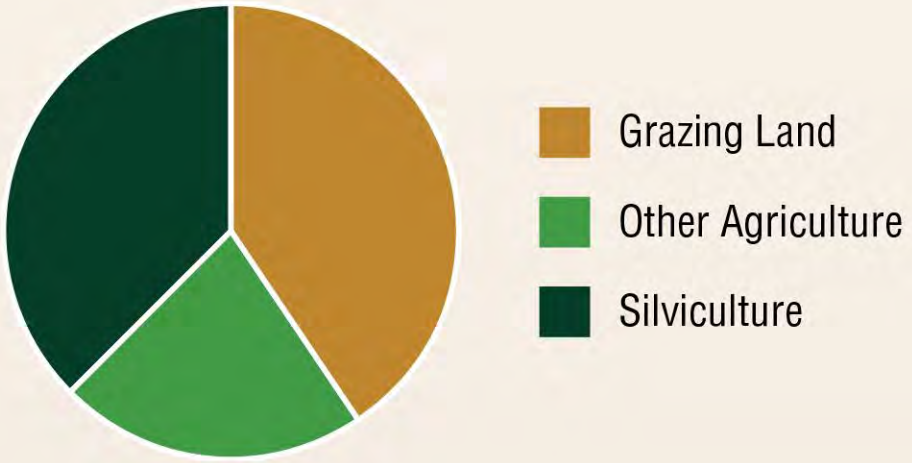
Current Florida Agriculture by General Category

General Category	Acres	Percent
Grazing Land	4,882,865	40.6%
Other Agriculture	2,643,977	22.0%
Silviculture	4,502,988	37.4%
TOTAL	**12,029,829**	**100.0%**



With these refined calculations about 12 million acres – close to a third of Florida's 36.6 million acres of land – is in agriculture.

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Approximately 41% of Florida's agricultural land – close to 4.9 million acres – is in grazing, primarily in ranches in south-central and southwest Florida.

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Silviculture represents more than 37% of Florida's agricultural lands – about 4.5 million acres – with the majority north of Orlando.

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Other agriculture includes row crops, groves, ornamentals, vegetables, and more, encompassing 2.6 million acres, or roughly 22% of Florida's agricultural land.

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But over the coming decades Florida's agricultural lands will face increasing pressure from the loss of land, particularly associated with population growth.

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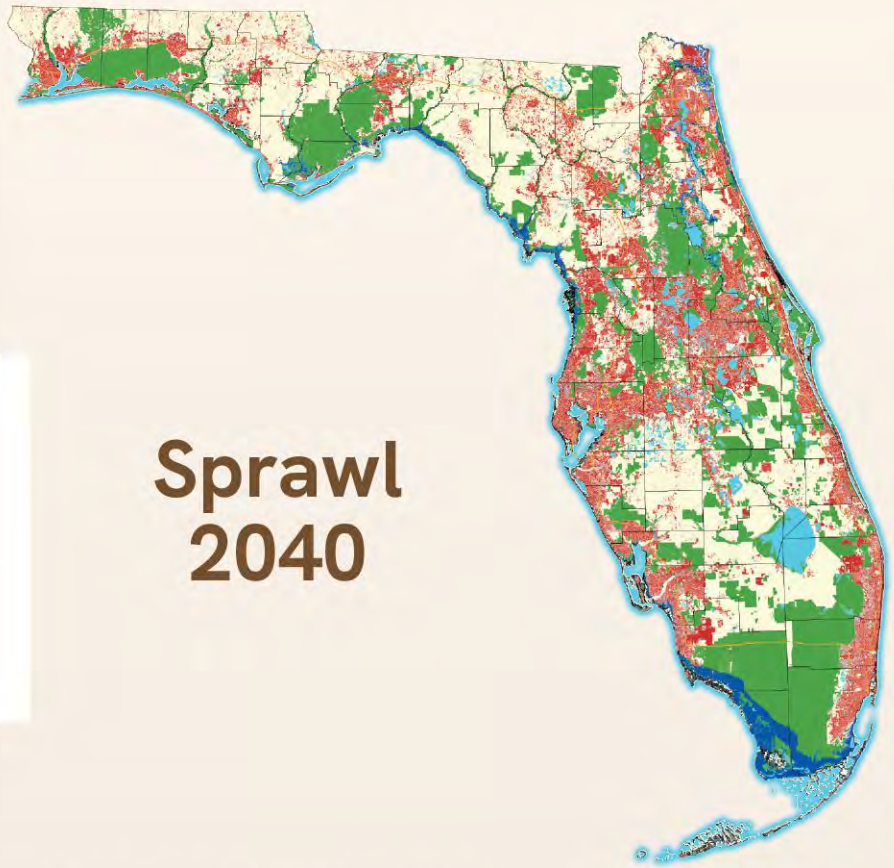
Projected Impact of Future Development

Sprawl 2040



Conservation 2040

Both Sea Level 2040 and Sea Level 2070 include two Future Scenarios which accommodate future population growth and account for the projected loss of land due to sea level rise.

These scenarios are planning tools for envisioning potential futures based on reasonable assumptions, and help in evaluating potential impacts of trends and policy decisions.

The 2040 and 2070 Sprawl Scenarios reflect future development following current patterns of development.

The 2040 and 2070 Conservation Scenarios show more compact future development patterns and the avoidance of future development on priority natural land.

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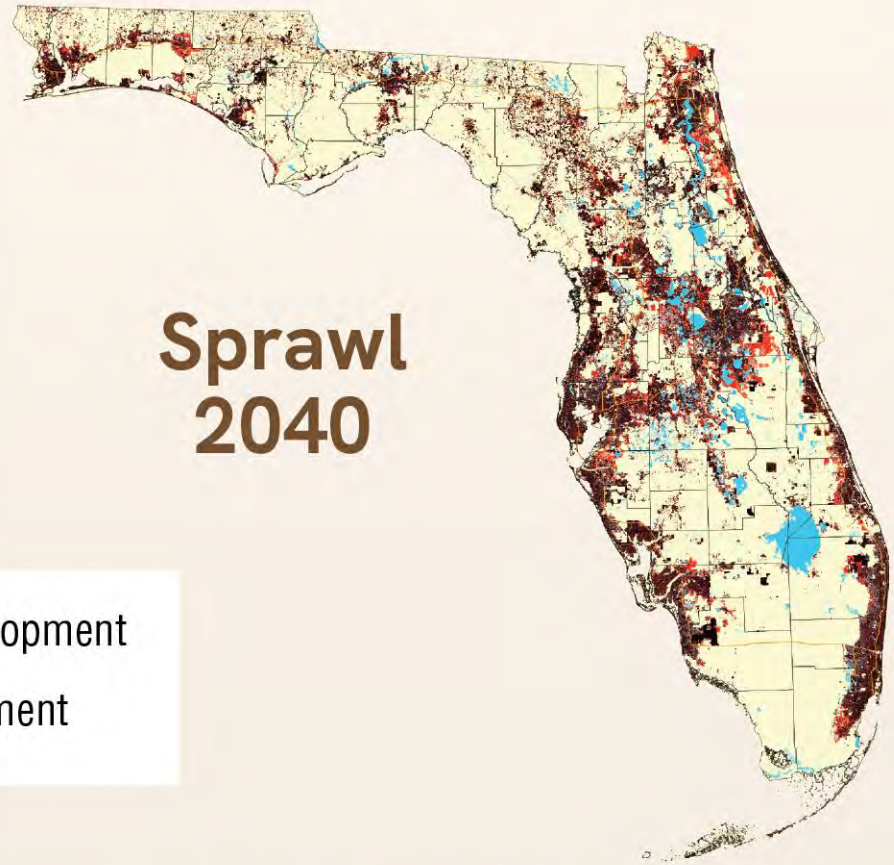

Sprawl 2040

Conservation 2040

Existing Development

New Development

Sea Level 2040 assumes that Florida's population will increase by 23% by 2040, with 4.9 million more residents than in 2019. *

Close to a million acres of land could be lost to development under the Sprawl Scenario

About 270,000 fewer acres of land could be lost under the Conservation Scenario when compared with the Sprawl Scenario

** Based on moderate projections by the Florida Bureau of Economic and Business Research (BEBR)*

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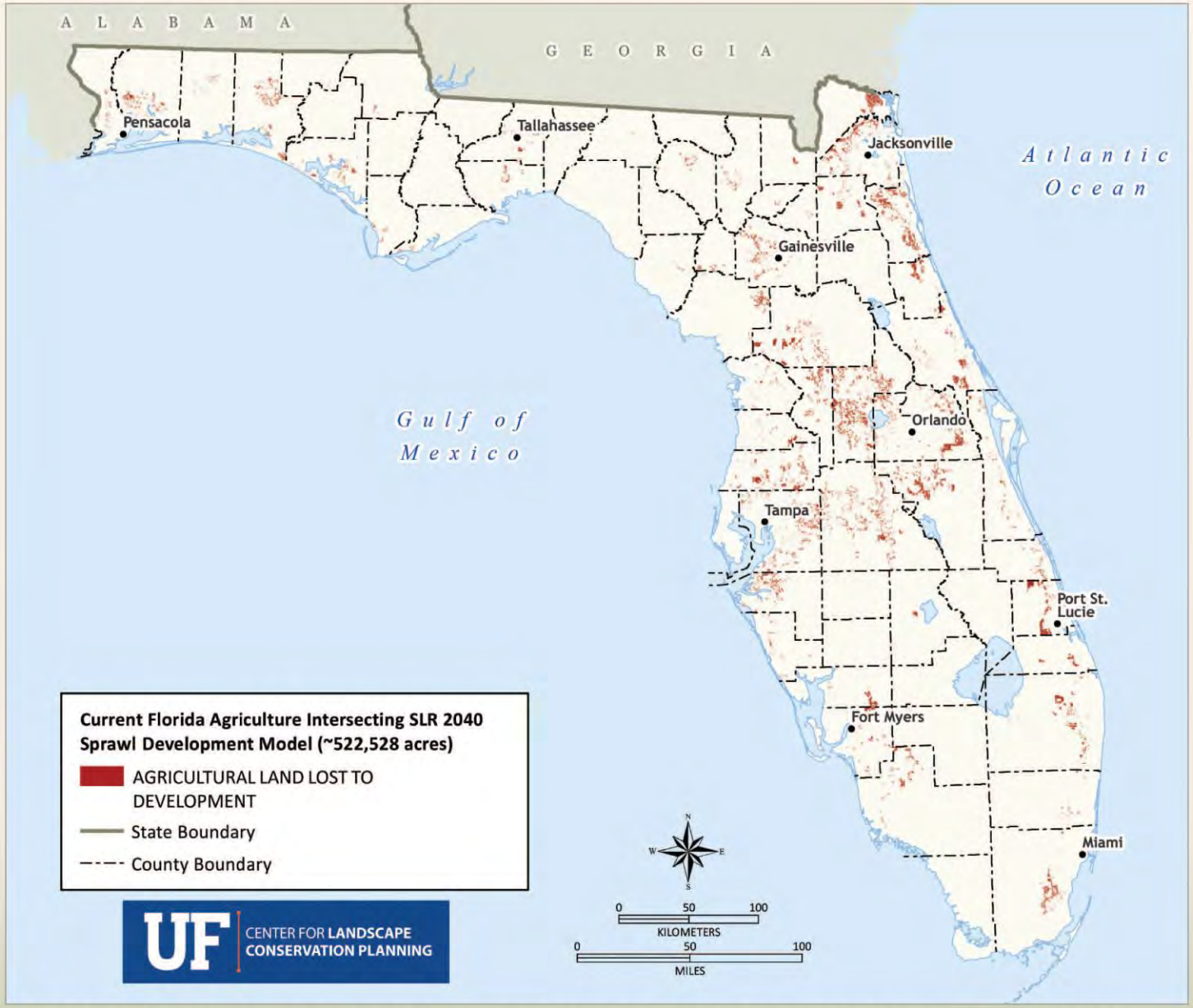

Date: 11/2023. Data: Balmoral Group, Environmental Systems Research Institute, Florida Department of Agriculture and Consumer Services, Florida Fish and Wildlife Conservation Commission, Florida Geographic Data Library, Florida Natural Areas Inventory, University of Florida Center for Landscape Conservation Planning, U.S. Census Bureau, U.S. Geological Survey. Projection: Albers Conical Equal Area

Using refined data on agriculture, by 2040, about 523,000 acres of the land lost to development under the Sprawl Scenario will be agricultural land.

- **Grazing Land** – Almost 250,000 acres (48%) of total agricultural land lost
- **Silviculture** – Approximately 145,000 acres (28%) of total land lost
- **Other Agriculture** – 129,000 acres (25%) lost

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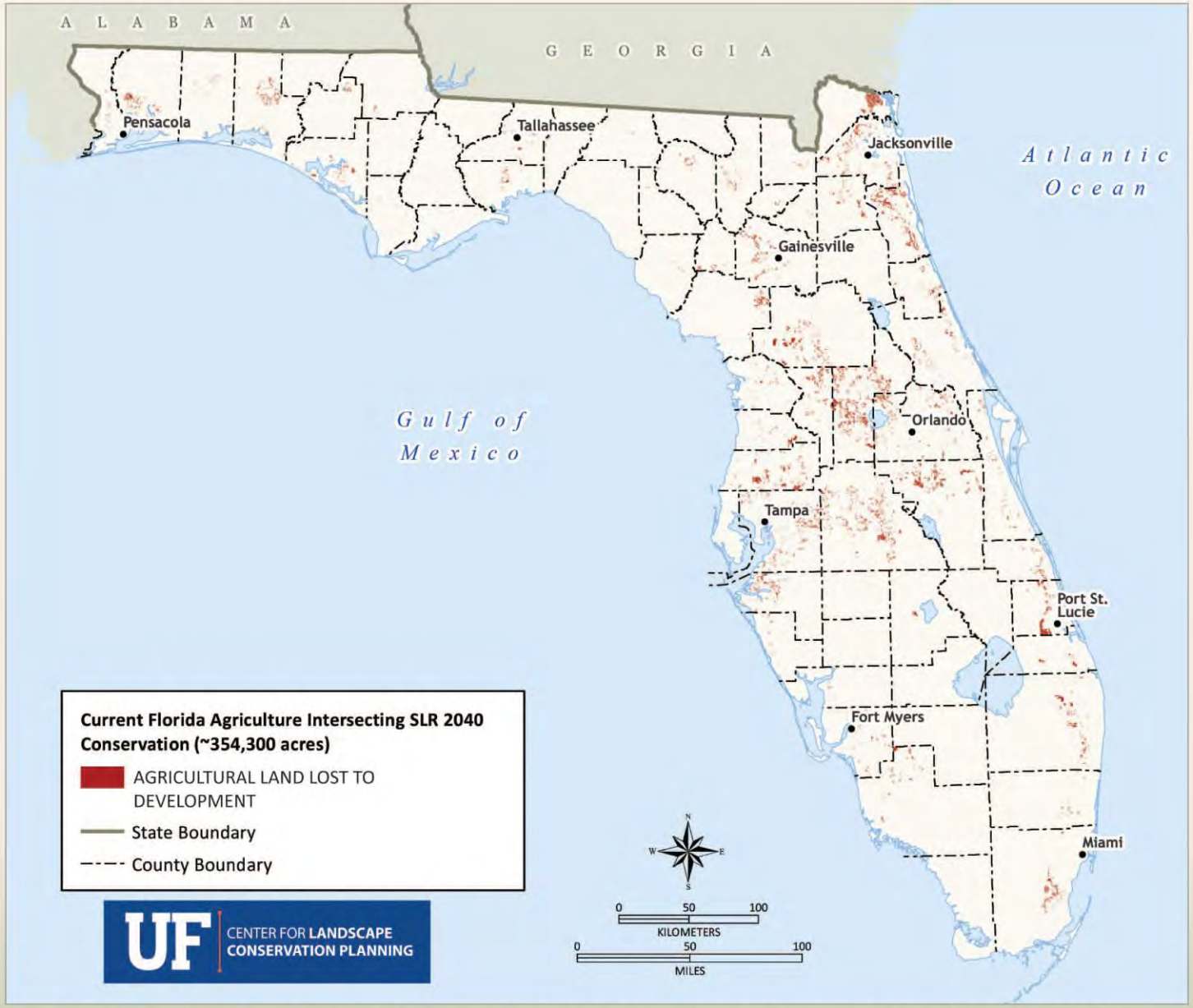

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The Conservation 2040 Scenario would save approximately 168,000 acres of agricultural land compared with the Sprawl Scenario.

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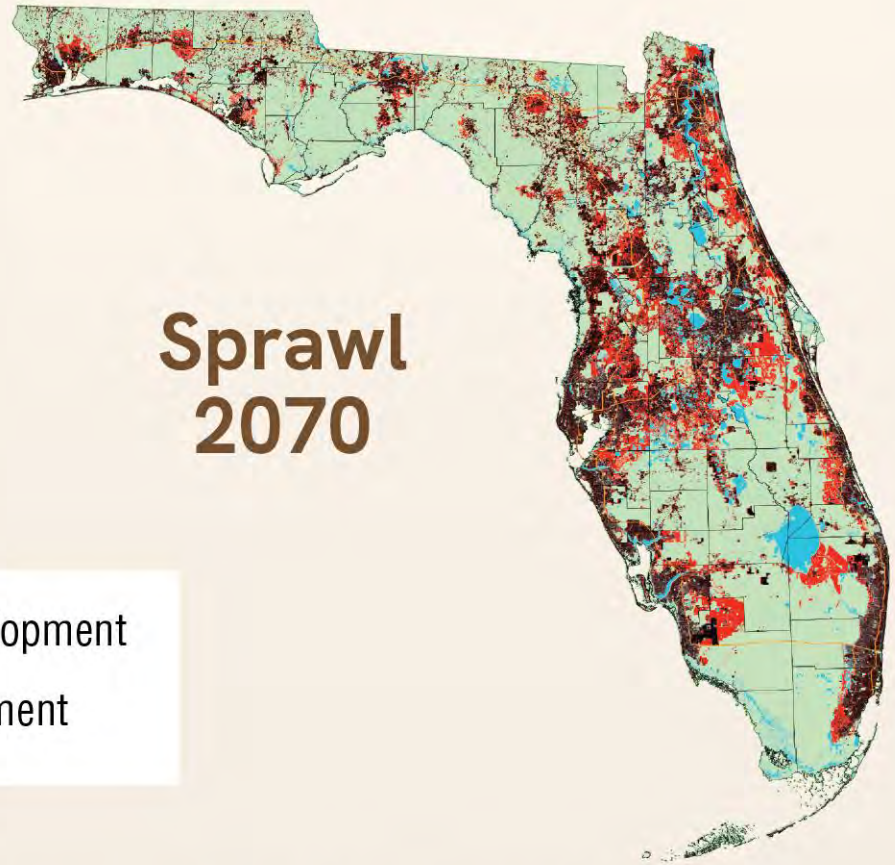

Sprawl 2070

Conservation 2070

Existing Development

New Development

Sea Level 2070 assumes that Florida will experience a 57% increase in population over 2019, with 12.2 million more residents. *

Close to 3.5 million acres of land could be lost to development under the Sprawl Scenario

About 1.3 million fewer acres of land could be lost under the Conservation Scenario when compared with the Sprawl Scenario

** Based on moderate projections by the Florida Bureau of Economic and Business Research (BEBR)*

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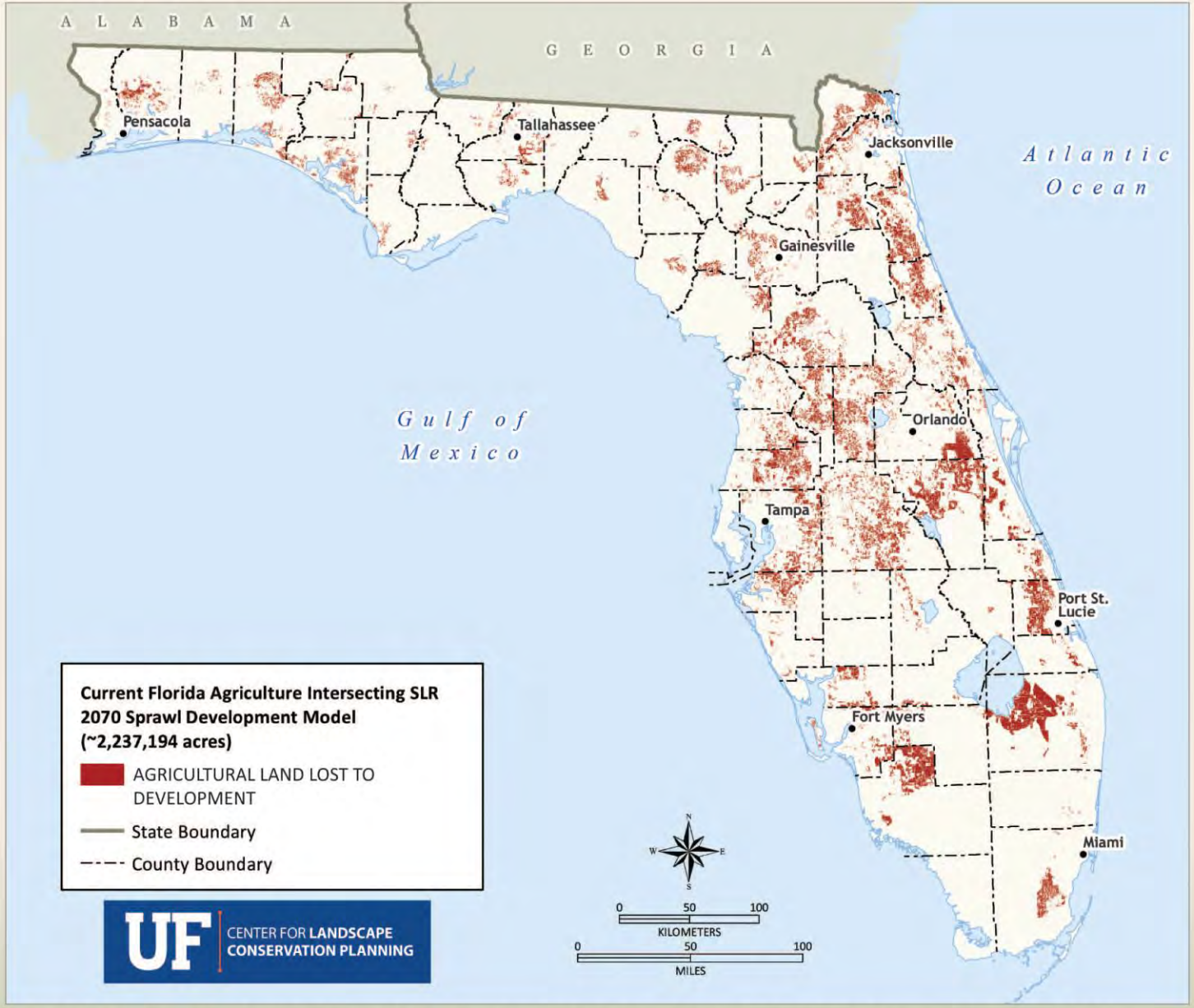

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Under the Sprawl 2070 Scenario with refined agricultural data, assuming current patterns of development continue, about 2.2 million of the 3.5 million acres of land lost to development would be agricultural land.

- **Grazing Land** – More than 1 million acres lost
- **Other Agriculture** – Approximately 723,000 acres lost
- **Silviculture** – 490,000 acres lost

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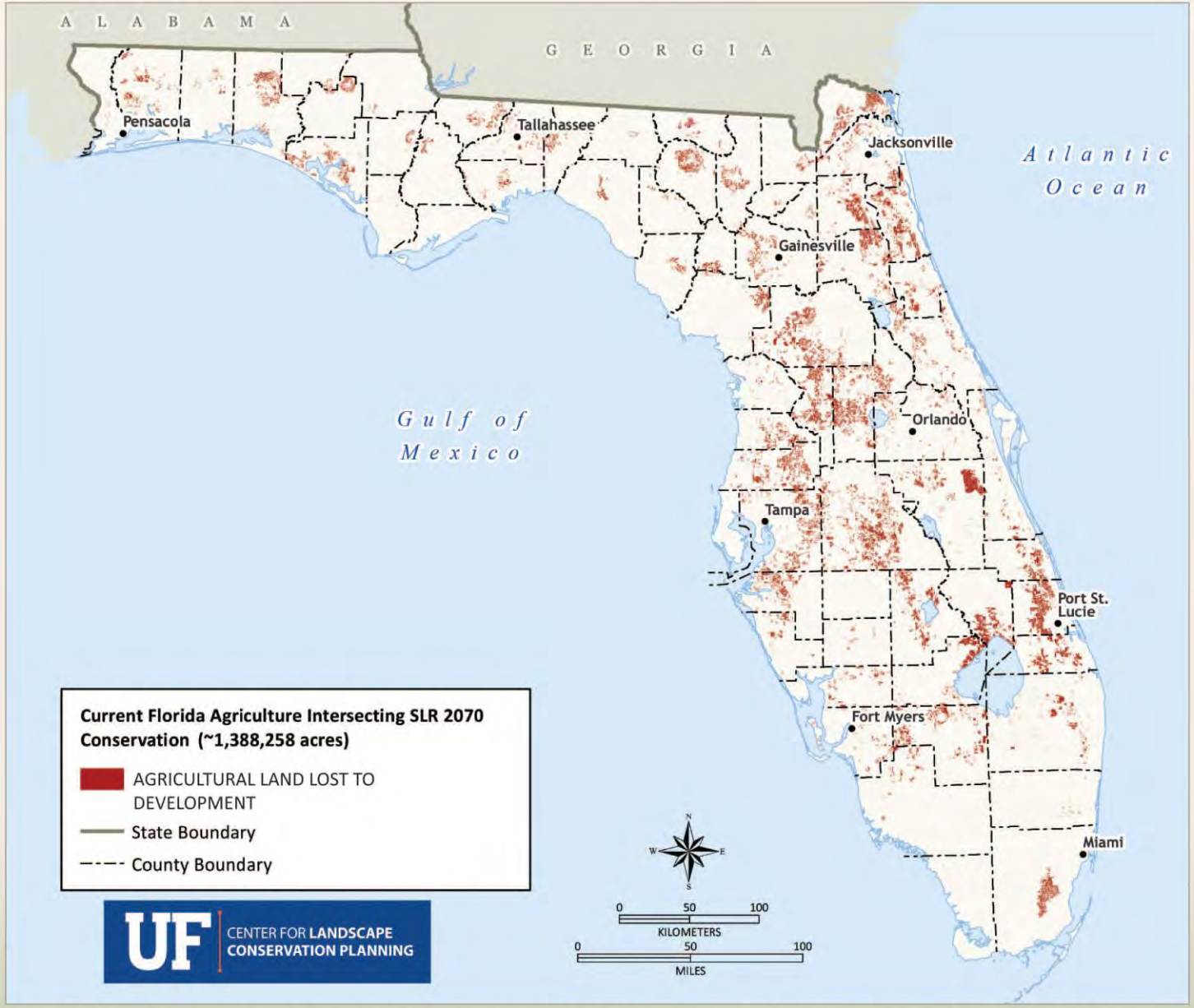

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The Conservation 2070 Scenario — which assumes that development of priority natural lands is avoided, new development is 20% more compact, and some redevelopment occurs — would result in saving close to 850,000 acres of agricultural land from development when compared with the Sprawl Scenario.

- **Grazing Land** – Approximately 334,000 fewer acres lost compared to Sprawl 2070 Scenario
- **Other Agriculture** – 324,000 fewer acres lost
- **Silviculture** – 190,000 fewer acres lost than under Sprawl 2070 Scenario

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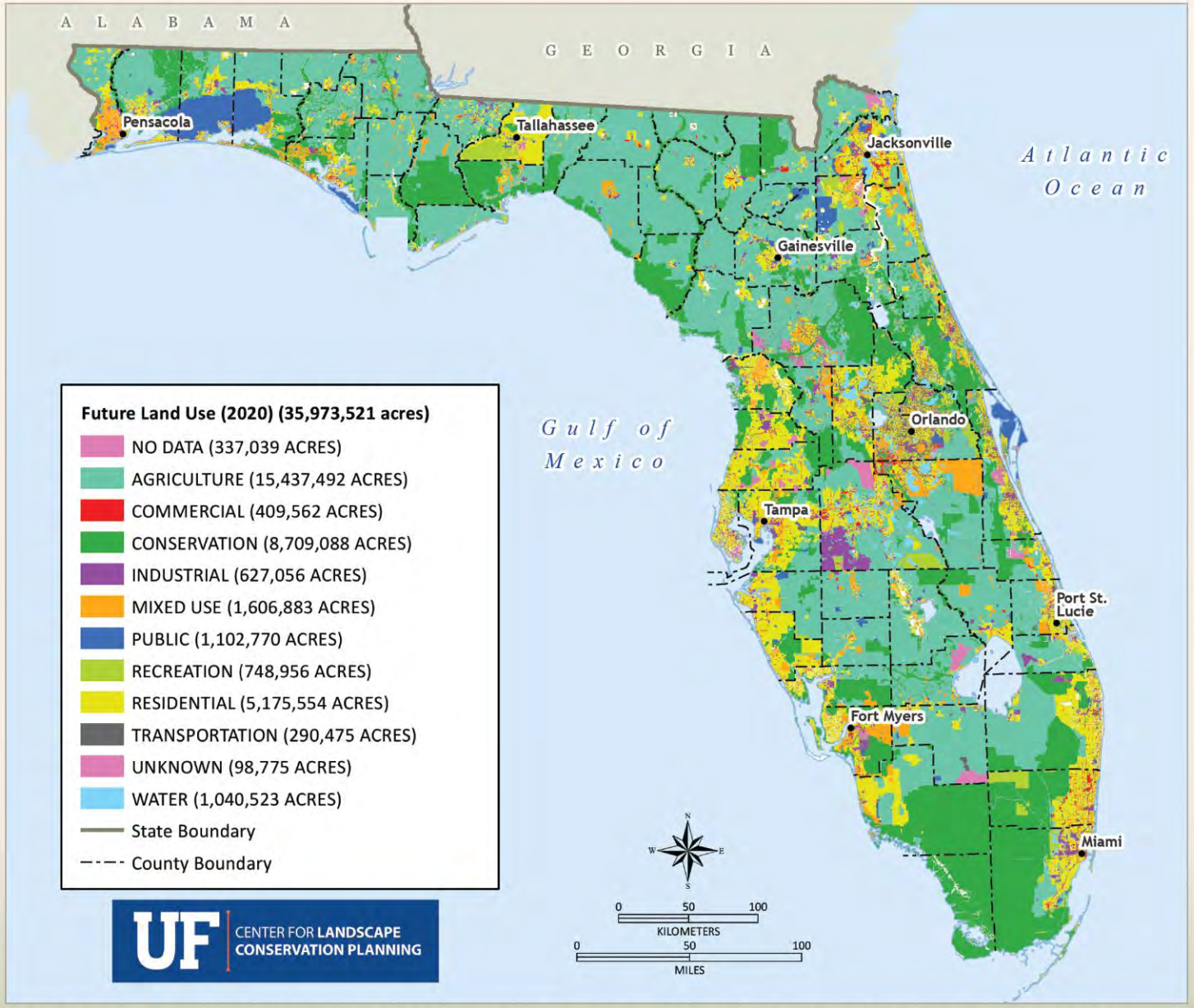
FUTURE LAND USE MAPS



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Each County and Municipality in Florida is required to adopt a local comprehensive plan, including a Future Land Use Map (FLUM) that that shows the "proposed distribution, location, and extent of the various categories of land" that the community has included in its plan.

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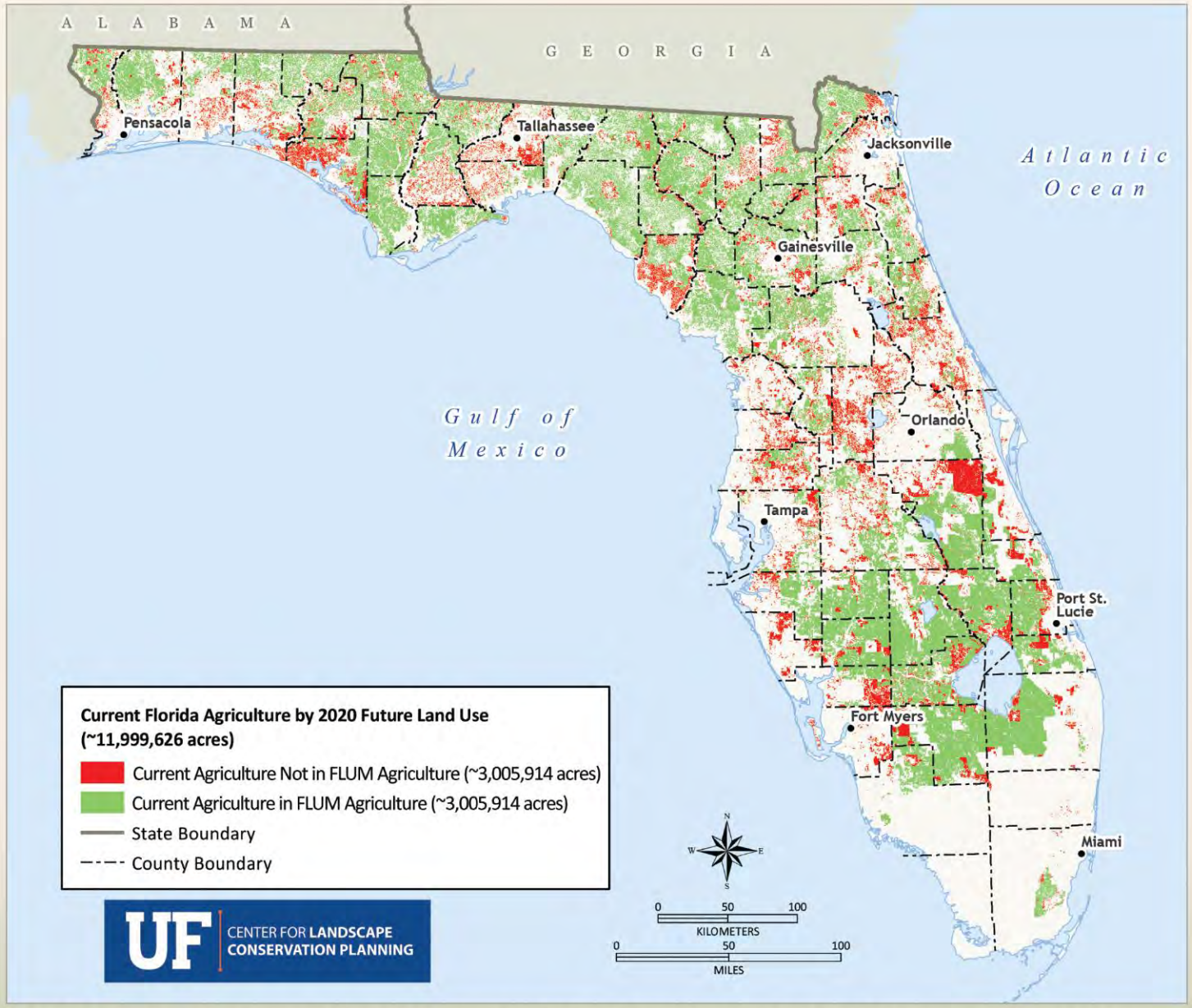

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But when comparing current agriculture with statewide generalized Future Land Use Maps (FLUM), only about 58% of current agricultural lands are actually designated as agricultural in FLUMs.

More than 2 million acres of current agriculture have non-agricultural FLUM designations, including Mixed Use (32%), Industrial (17%), and Residential (17%).

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This reflects a significant disconnect between local government FLUMs and existing agriculture, potentially accelerating the development potential of some agricultural land.

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Vivian Young, AICP

Communities should consider:

- Avoiding the future designation of current agricultural land to non-agricultural categories
- Adopting an optional agricultural element in their comprehensive plans with goals, objectives, and policies to better protect agricultural land
- Designating a farmland overlay and incorporating it into the Future Land Use Map

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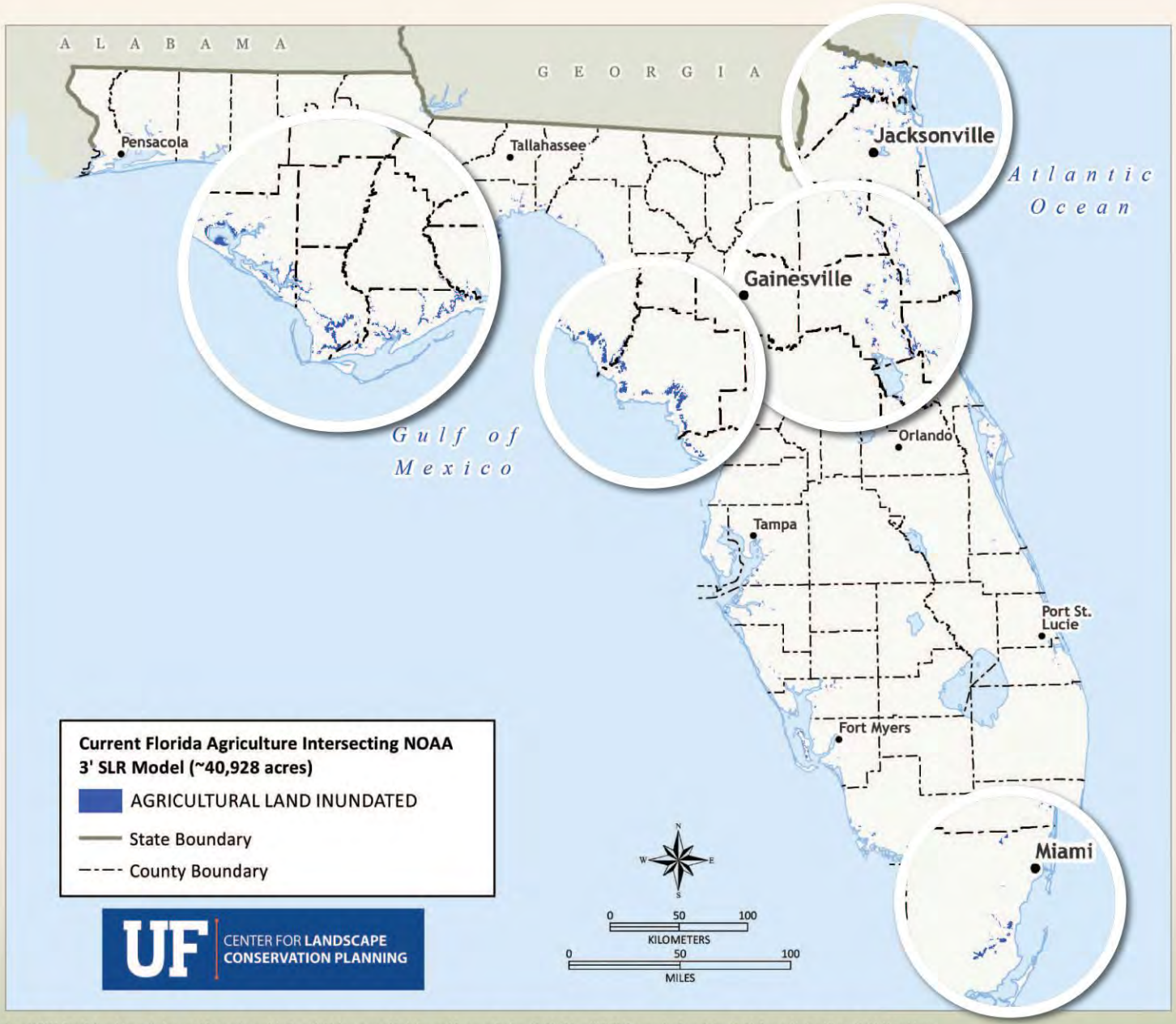
Projected Impact of Sea Level Rise



Date: 11/2023. Data: Balmoral Group, Environmental Systems Research Institute, Florida Department of Agriculture and Consumer Services, Florida Fish and Wildlife Conservation Commission, Florida Geographic Data Library, Florida Natural Areas Inventory, University of Florida Center for Landscape Conservation Planning, U.S. Census Bureau, U.S. Geological Survey. Projection: Albers Conical Equal Area

Sea level rise is not projected to have a major direct impact on Florida's agricultural lands, with total land lost projected to be a relatively modest 41,000 acres by 2070.

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This includes direct inundation but does not consider impacts related to the broader impacts of climate change including:

- Saltwater intrusion (including increased storm surge)
- The migration of wetlands further inland
- Possible additional human migration inland
- Other inland flooding (such as within inland floodplains)
- Other impacts

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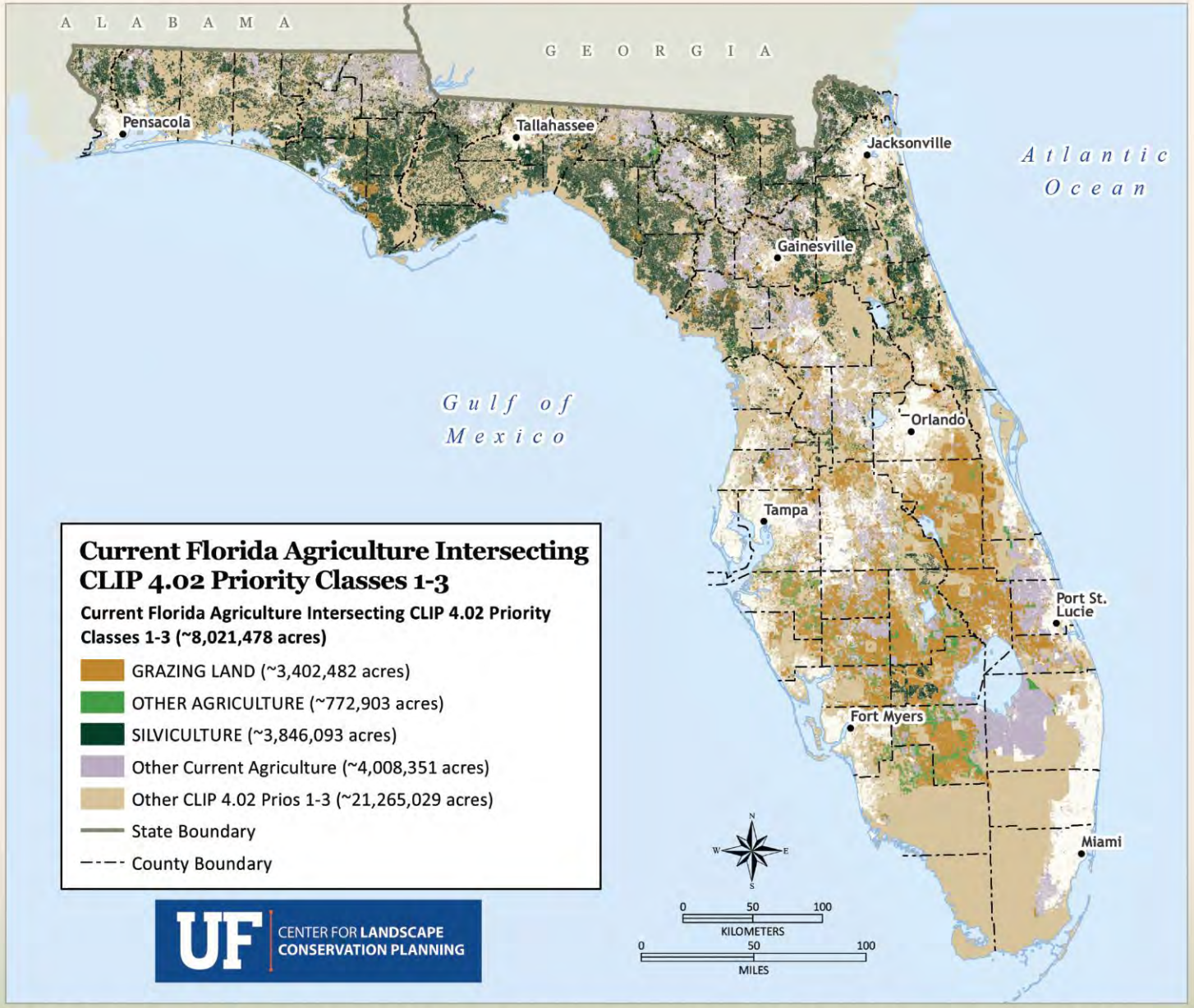
The Intersection Between Agricultural and Conservation Priorities

Current Florida Agriculture in Statewide Conservation GIS Databases

Summary Statistics for Agriculture and Conservation Priorities		
Element	**Acres**	**Percent of Total**
Current Florida Agriculture	12,029,829	NA
Grazing Land	4,822,865	40.1%
Other Agriculture	2,643,977	22.0%
Silviculture	4,502,988	37.4%
Florida Ecological Greenways Network	23,096,916	NA
In Current Florida Agriculture	7,825,482	33.9%
Florida Wildlife Corridor	17,677,290	NA
In Current Florida Agriculture	5,813,682	32.9%
CLIP 4.0 Priority Classes 1-3	29,292,690	NA
In Current Florida Agriculture	8,021,685	27.4%
State Land-Protection Projects	4,121,948	NA
In Current Florida Agriculture	1,856,728	45.0%

There is a significant relationship between agricultural and priority conservation areas in Florida. This is reflected in the following series of state GIS-based databases and programs.



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The Critical Lands and Waters Identification Project (CLIP) is a statewide GIS database of priority land and water identifying conservation values related to biodiversity, landscape function, surface water, groundwater, and aggregated conservation priorities.

Approximately eight million acres (27.5%) of CLIP 4.02 priority classes 1-3 (the highest priorities from an ecological perspective) overlap with agricultural lands.

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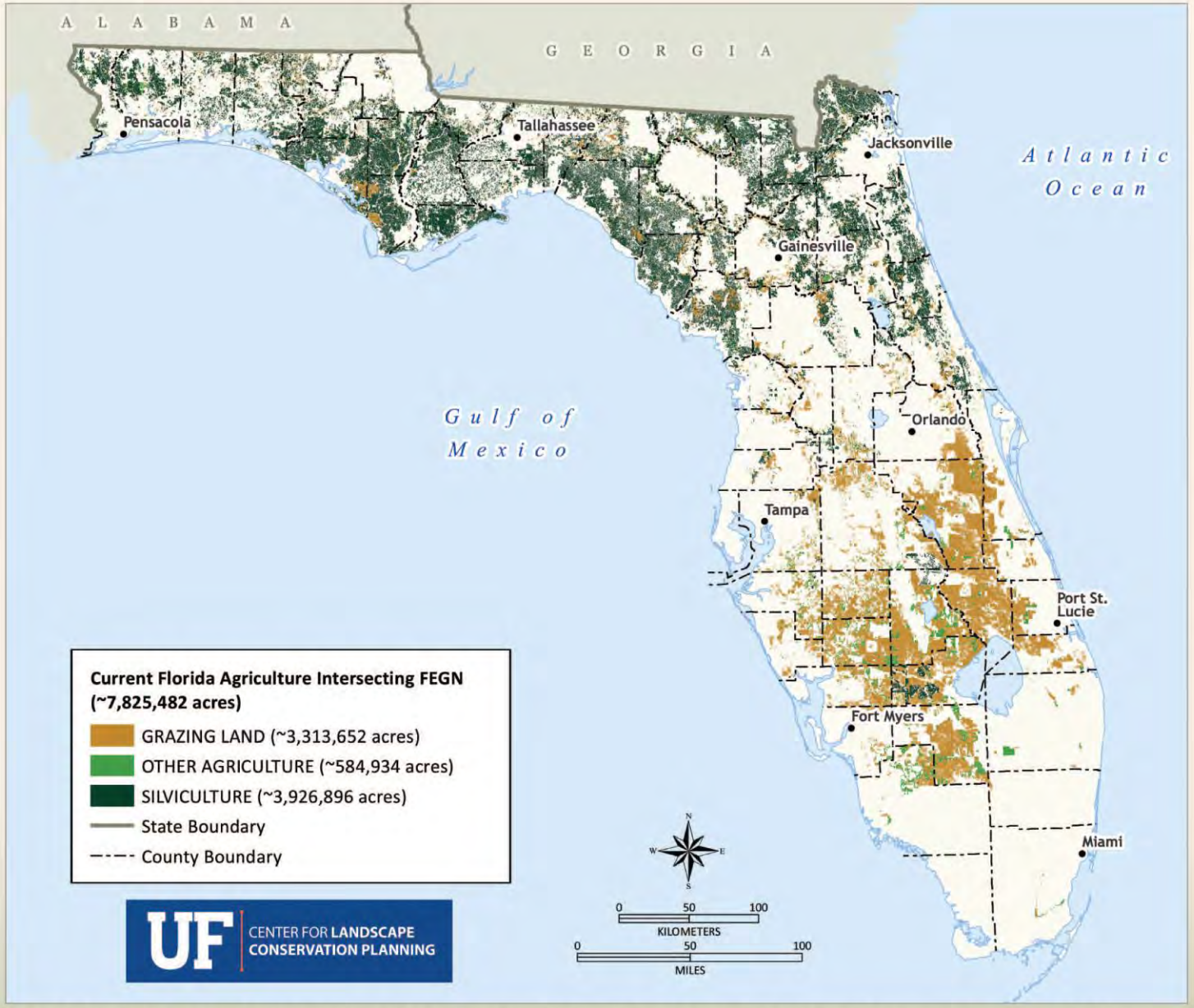

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The Florida Ecological Greenways Network (FEGN) "identifies and prioritizes a functionally connected statewide ecological network of public and private conservation lands" across the state, with Priority 1 the most important.

Close to 8 million acres of current agricultural lands are included in the FEGN .

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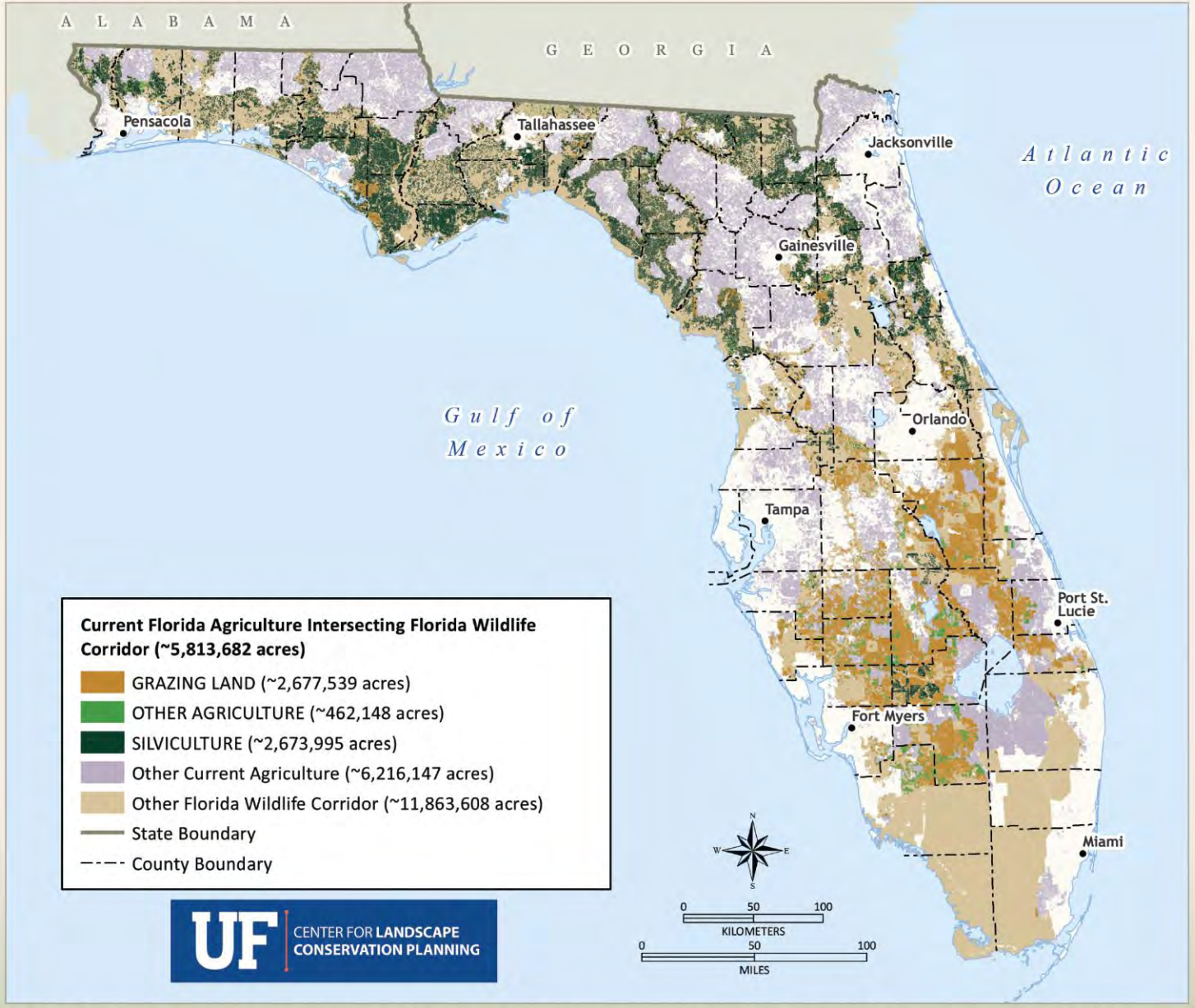

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The Florida Wildlife Corridor (Corridor) includes Priorities 1, 2, and 3 of the FEGN.

About one-third (5.8 million acres) of the Corridor's 18 million acres is currently in agriculture.

Currently 10 million acres of land in the corridor are protected, including approximately 1.7 million acres of agricultural land.

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Ecosystem Services Provided by Florida's Agricultural Land

The Center also further examined the importance of agricultural land for supporting Florida's ecosystem services and biodiversity.

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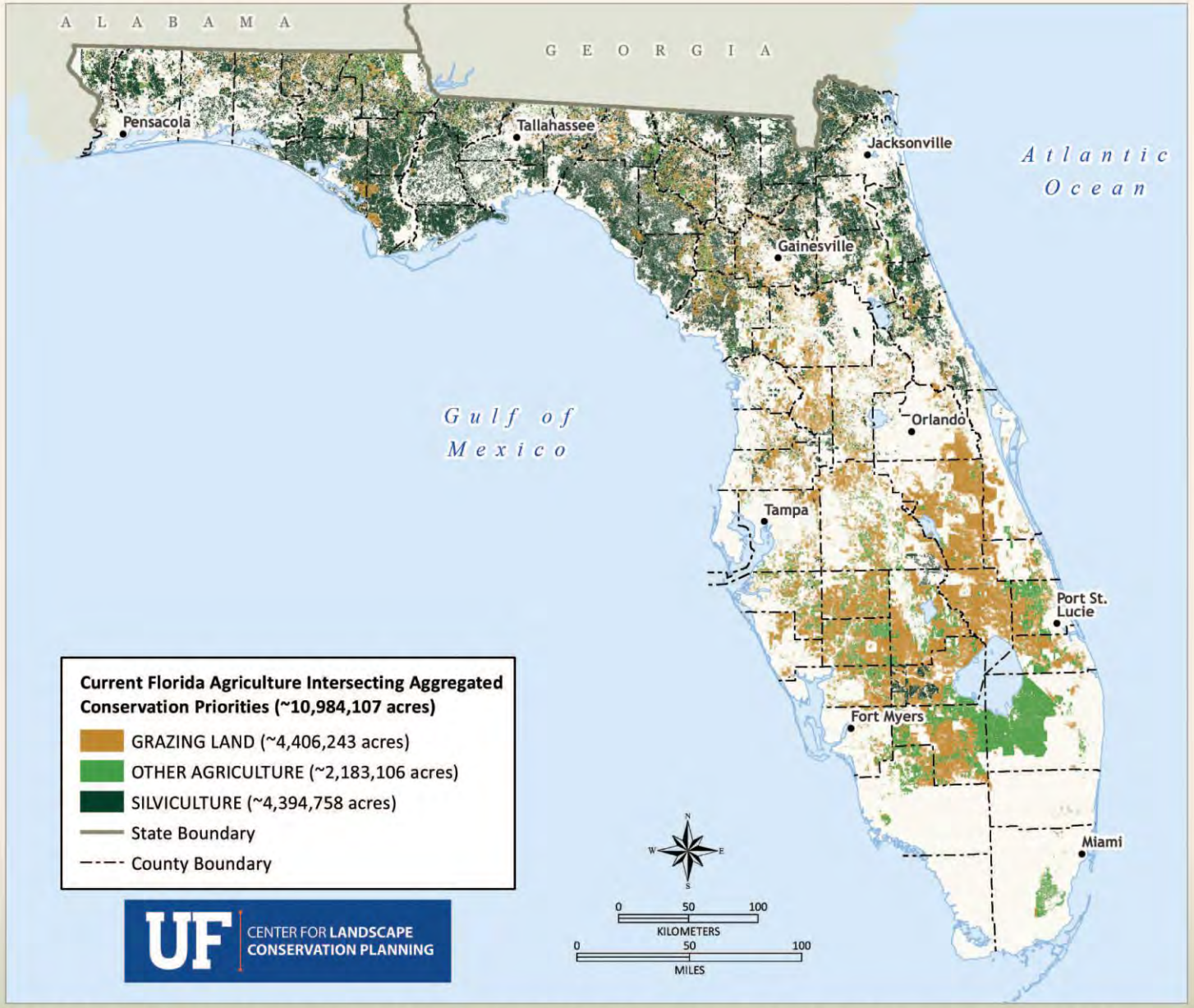

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Roughly 91% of Florida's 12 million agricultural acres provide some degree of conservation benefit including wildlife habitat, ecological connectivity, migration in response to the effects of climate change, water quality protection, flood storage, and protection from coastal storms.

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Water Supply, Water Quality and Flood Control

Agricultural land stores and cleanses Florida's water, playing a major role in both water supply and water quality.

It supports surface water quality in Florida, with 1.3 million acres of CLIP Priority 1 and 2 Significant Surface Waters on agricultural properties.

Approximately 3.4 million acres of Florida's agricultural properties are in floodplains.

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Wetlands provide multiple services including large-scale water storage and purification, flood control, and cleansing of our drinking water.

About 36% – or 13 million acres – of Florida's land is wetlands, with about 8.5 % or more than a million acres of Florida's wetlands on agricultural properties.

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Agricultural lands in Florida also provide opportunities for wetland restoration and related water management efforts including through programs such as the National Resources Conservation Service's Wetland Reserve Easement program.

In addition, better water management on agricultural lands through conservation partnerships and adoption of best management practices is an important part of Florida's BMAP efforts and related work to restore and maintain watershed integrity.

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Artificial Intelligence (AI) appears to be bringing significant innovations to agriculture.

The precision farming concept involves using the latest technology – including GPS, drones, and sensors – to reduce the amount of energy, fertilizer, and water used on agricultural land, as well as potential negative water quality impacts, while increasing productivity. It can also help farmers better adapt to climate change.

Expanding awareness of and access to these cutting-edge but often currently costly tools will benefit both agriculture and the environment.

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It is essential to sustain agriculture and the land that supports it, while making agriculture itself more sustainable.

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Wildlife Habitat

While Florida's agricultural lands are not pristine, they often provide important habitat for many focal species important for conservation, including the fact that agricultural properties often include native ecosystems and use important habitat management tools including prescribed fire.

Therefore, limiting the conversion of agricultural lands to development is another important goal to protect and manage important habitat.

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In many cases, silvicultural and grazing land uses provide habitat for wide-ranging, fragmentation-sensitive, and rural landscape dependent species that are declining or disappearing from landscapes converted to suburban or urban uses.

Approximately 4.3 million acres of Florida black bear priority ecological areas coincide with current agriculture, including 3.2 million acres in silviculture.

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Priority ecological areas for the Florida panther share approximately 4.6 million acres with current agriculture, including significant silvicultural and grazing acreage.

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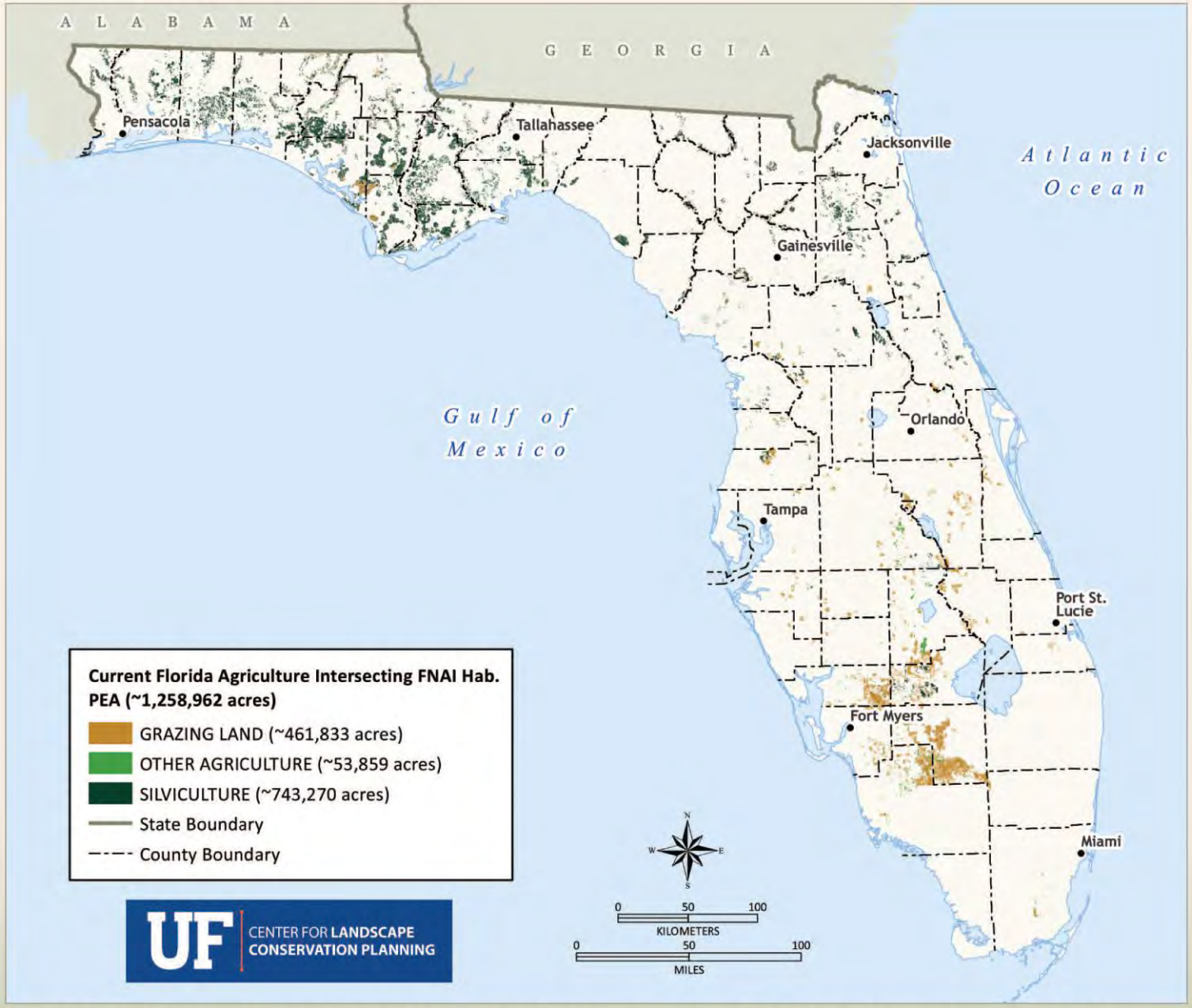

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Current agriculture also shares millions of acres with other rare species habitat.

Florida Natural Areas Inventory's Rare Species Habitat priority ecological areas include 1.3 million acres of current agriculture.

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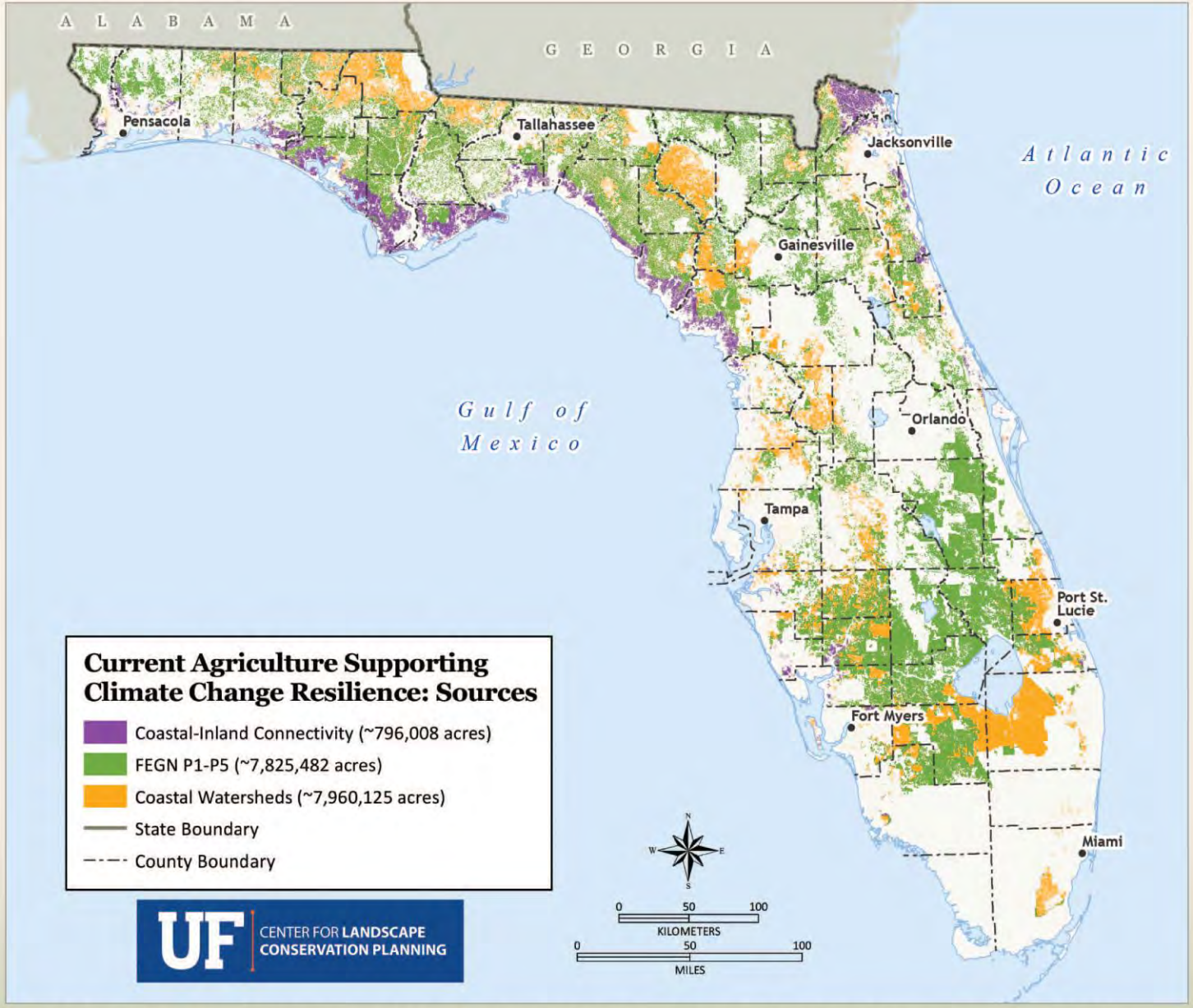

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Climate Resilience

The Center also evaluated current agriculture for potential contributions to climate-change resilience.

These include the facilitation of biotic migration (either inland or northward) brought about by changing temperatures, hydrology, or other impacts including functional south to north wildlife corridors and coastal to inland connectivity.

It also could include protection of important coastal waterbodies that support coastal wetlands which, in turn, support community resilience.

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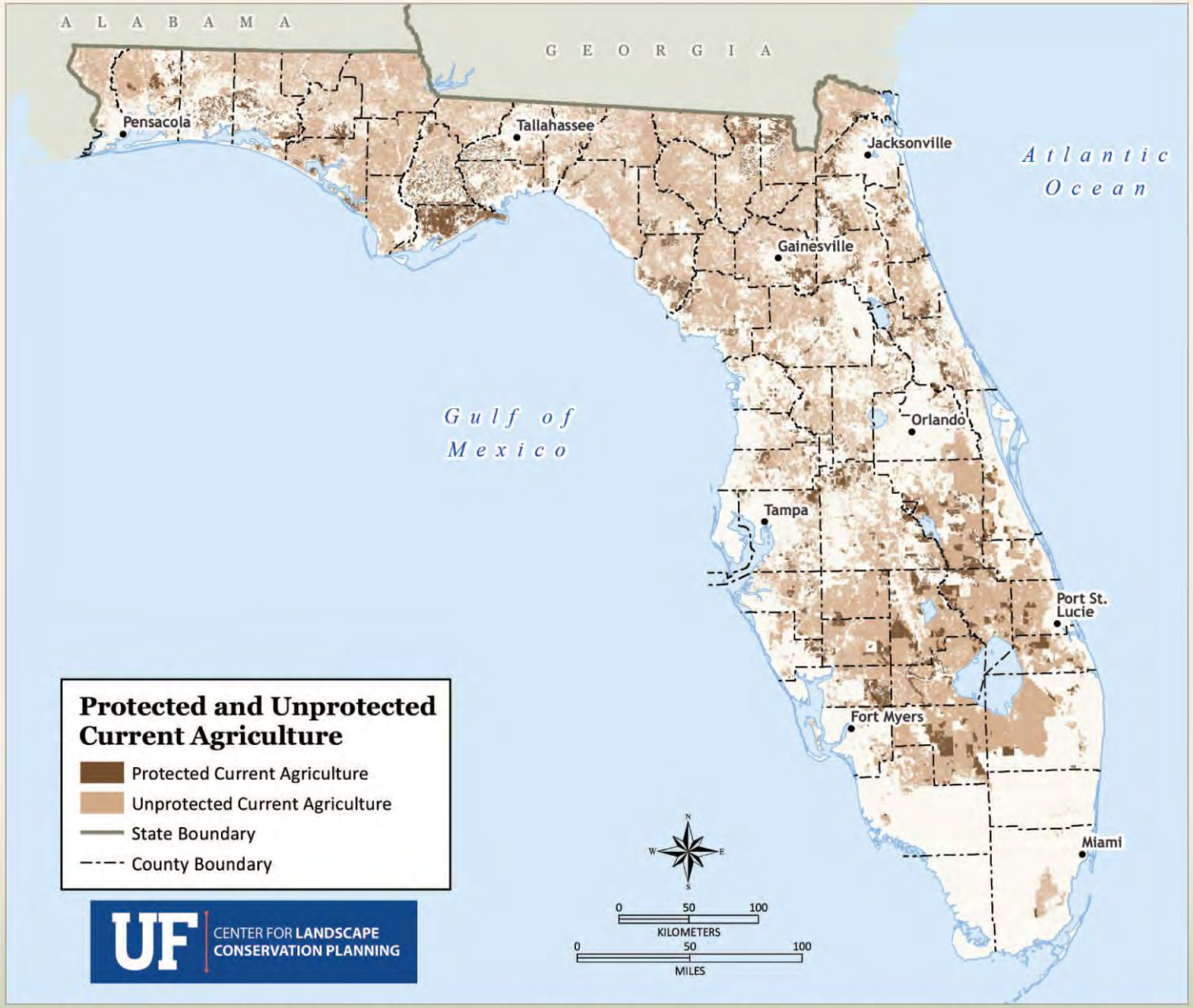
Opportunities to Protect Florida's Agricultural Land



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Only about 1.9 million acres – or 15.8% – of Florida's current agricultural land have been protected through federal, state, local and private programs.

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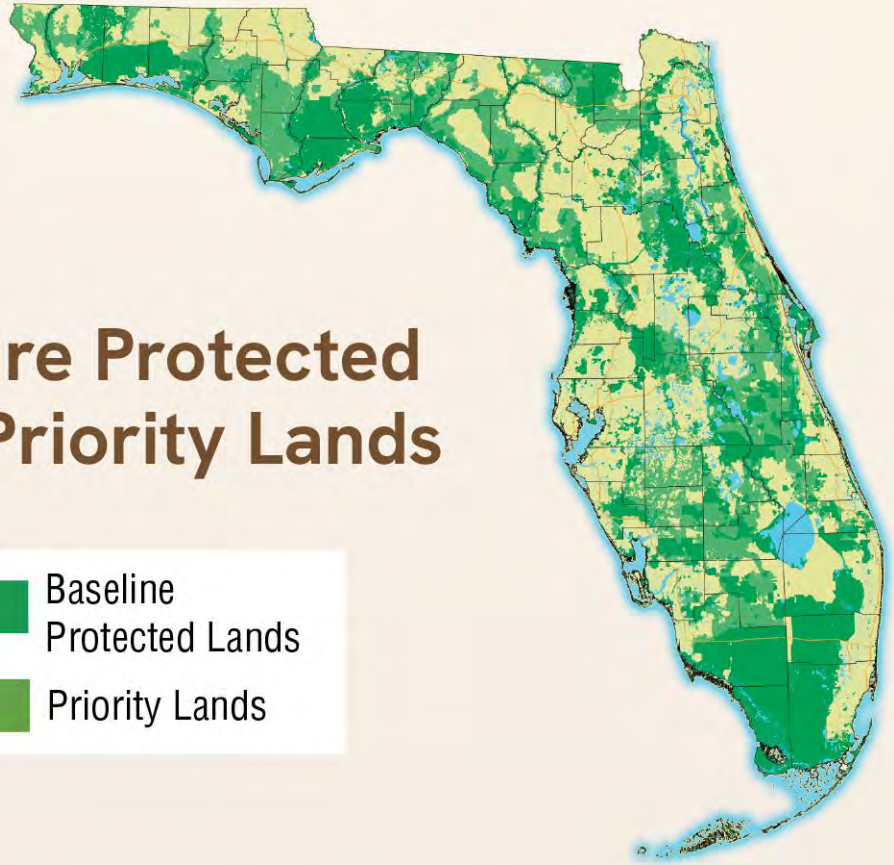
Baseline Protected Lands

Future Protected and Priority Lands



State land-protection programs — including Florida Forever and the Rural and Family Lands Protection Program — are the primary mechanisms by which Florida funds the purchase of full fee and conservation easements to protect priority natural lands throughout Florida.

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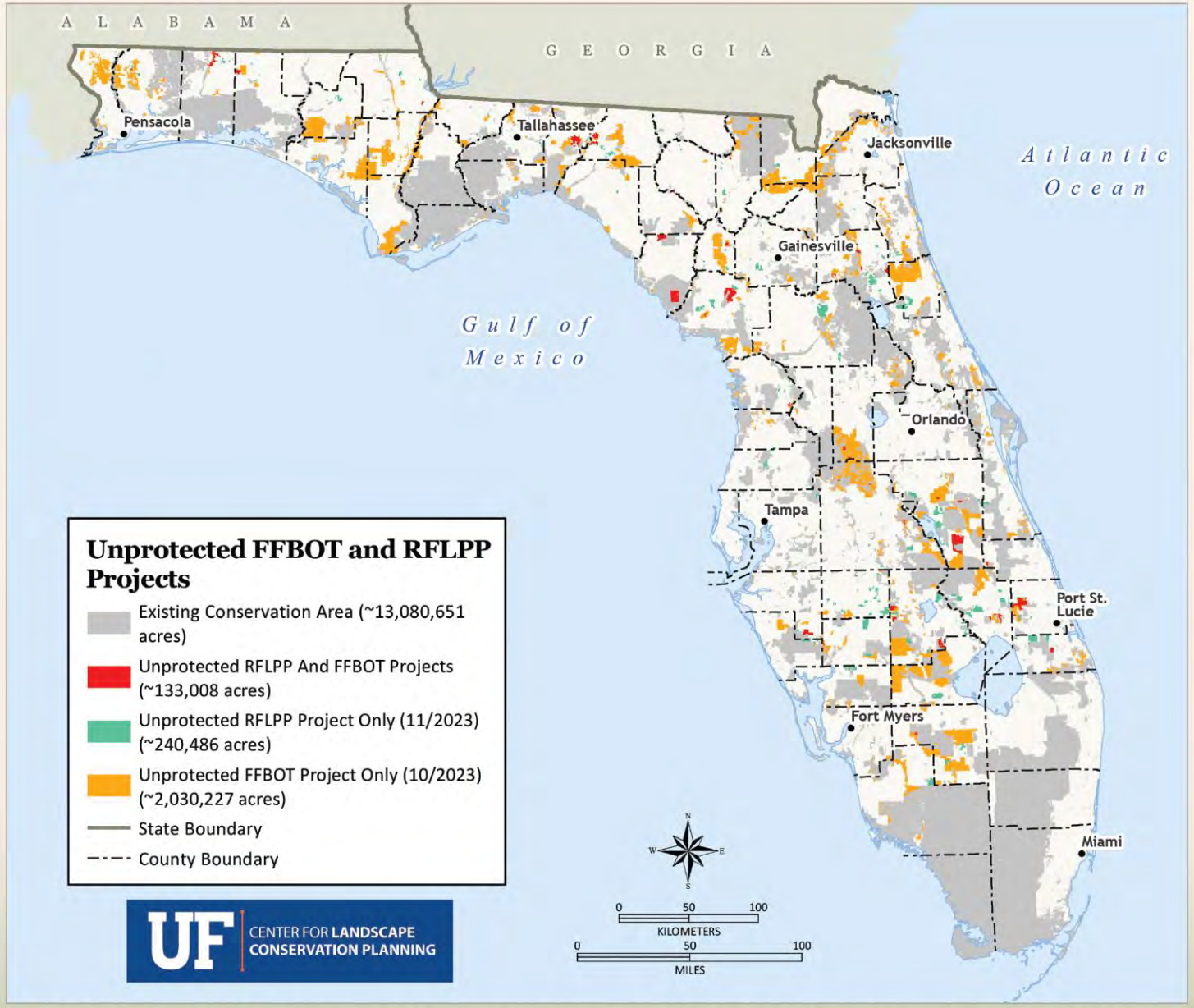

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Efforts to protect Florida's priority natural land also protect agricultural land.

Nearly half (45%) of state land-protection projects – whether through Rural and Family Lands Protection Program (RFLPP) or Florida Forever – consist of agricultural land uses.

Efforts to preserve biodiversity and ecosystem services in Florida often dovetail with efforts to protect agricultural lands.

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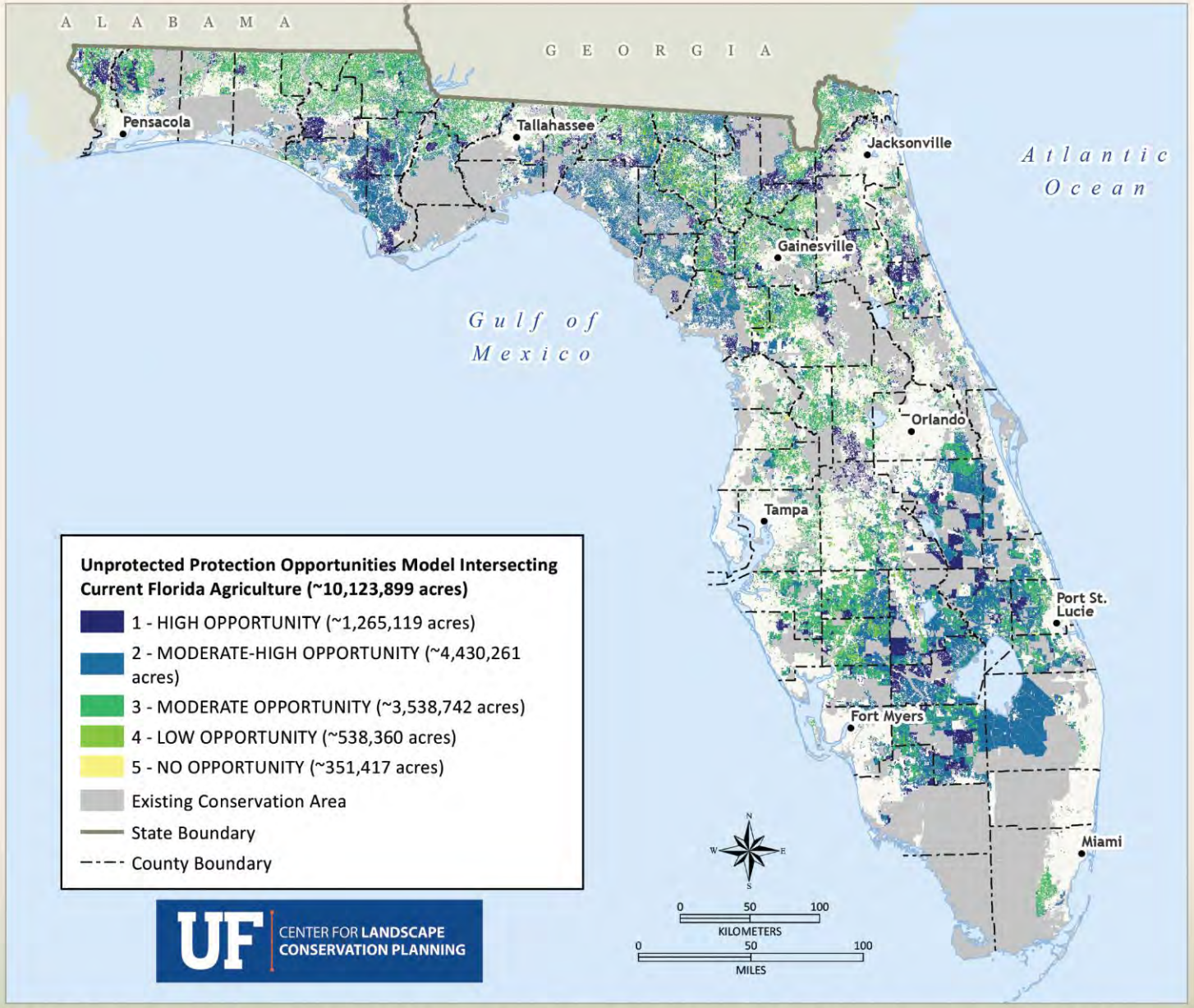

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The Center also created an Opportunities Model by assessing land for compatibility with priority criteria from state and federal conservation and agricultural land protection programs.

The high protection opportunity areas likely represent the best locations for current agricultural land protection efforts given these areas are more likely to rank highly based on state or federal conservation priority criteria.

- **Level 1 (Highest Opportunity)** – Close to 1.3 million acres
- **Level 2 (Moderate-High Opportunity)** – Close to 4.5 million acres
- **Level 3 (Moderate Opportunity)** – More than 3.5 million acres
- **Levels 4 and 5 (Low or No Opportunity)** – Almost 1 million acres

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Federal Conservation Opportunities for Unprotected Land

US Forest Service Forest Legacy Program – Most suitable for large tracts of unprotected forest throughout much of the state and especially the northern half.

USDA Wetland Reserve Easement (WRE) Program – Most suitable for South-Central Florida, especially around Lake Okeechobee. Also, highly suitable for large portions of Gulf County, parts of Flagler County, and sections of Marion and Levy Counties.

USDA Agricultural Land Easement (ALE) Program – Highly suitable for Leon, Osceola, Highlands, and Collier counties (among others).

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Agricultural Policy and Planning Recommendations

Florida must work to further effective public policy, planning, and land management strategies to ensure that agriculture and its many values can flourish over the coming decades.

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Carlton Ward Jr/Wildpath

These strategies should offer multiple options for both landowners and policy makers, include both voluntary and incentive-based strategies, and address both near and long-term planning horizons.

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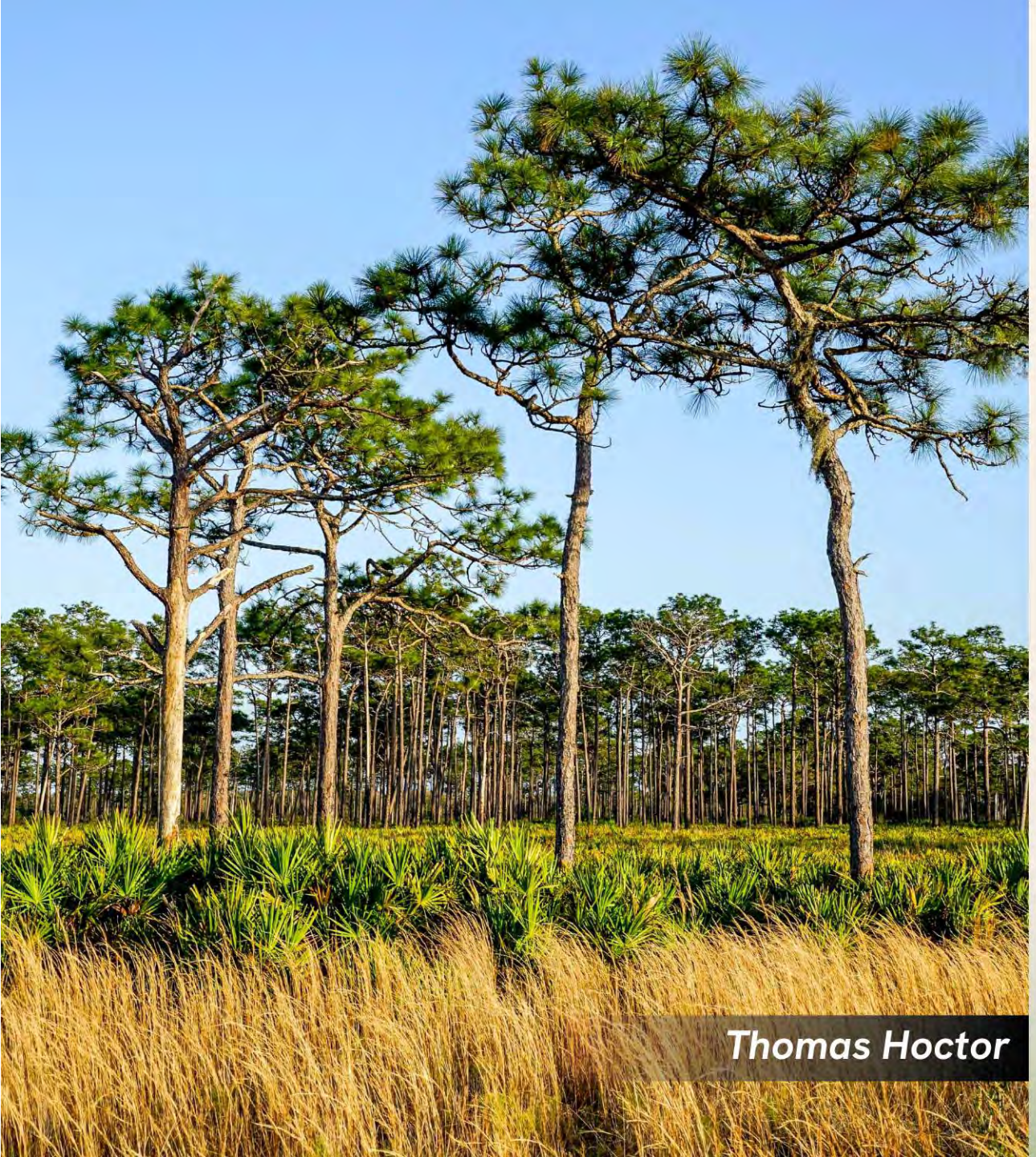

This is essential to maintain and increase the level and range of ecosystem services and the capability of agricultural land use to support our economy and food security.

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To Ensure that Agriculture Maintains its Vital Role, State and Local Public Policy Should Support the Following:

- **Robust funding** at the state, federal and county levels
- **Sound community planning** that promotes the protection of agricultural lands and minimizes fragmentation
- **Science-based decision-making** including public investment in the science necessary to foster sound land management and land use decision-making
- **Market-based solutions** including incentivizing the protection of ecosystem services at scale to ensure the long-term viability of agriculture and the services its land provides

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In Conclusion

Between now and 2070 Florida could add more than 12 million more residents, resulting in the loss of approximately 3.5 million acres of land to development under the Sprawl 2070 Scenario.

Using more refined agricultural data, this would include approximately 2.2 million acres – almost 19% – of Florida's agricultural land.

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Vivian Young, AICP

This breaks down to approximately 250 acres of land a day (or 90,000 acres of land a year), including 120 acres of agricultural land a day or almost 45,000 acres a year.

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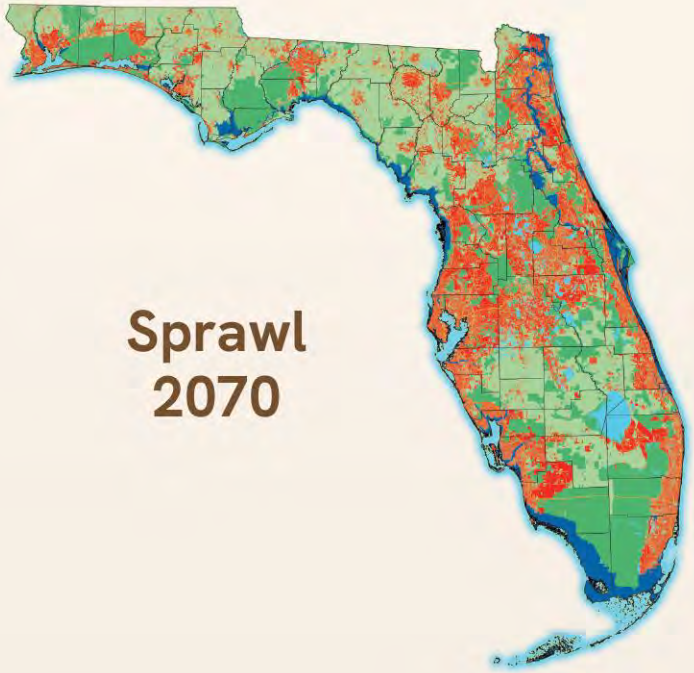
Baseline



Sprawl
2070

Conservation
2070

Developed Protected Sea Level Rise Other

Even with more compact development patterns, some redevelopment, and increased protection of priority natural land as shown in the Conservation 2070 Scenario, our state could still lose approximately 1.4 million agricultural acres by 2070.

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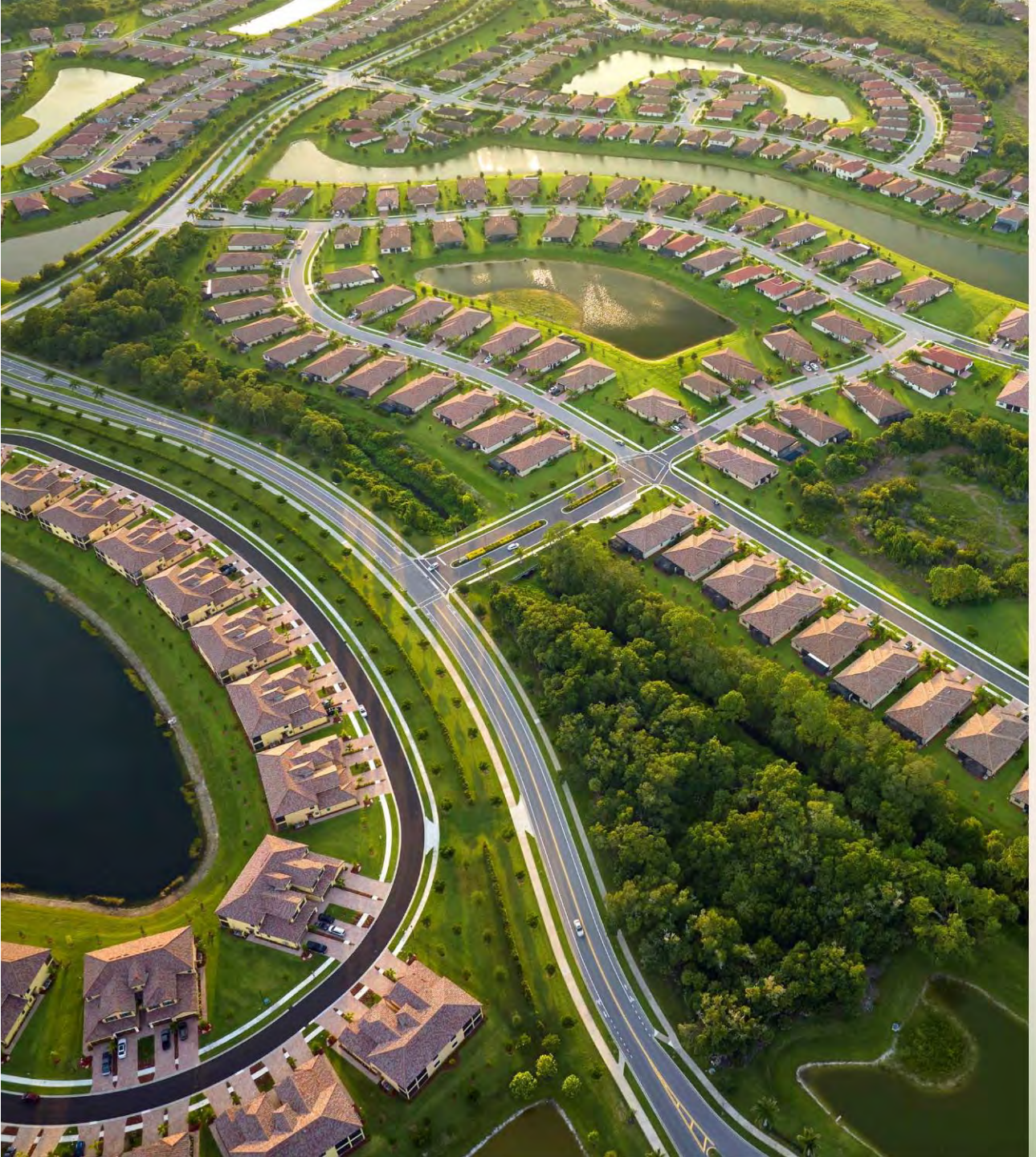

Once land is converted to asphalt and rooftops there is no turning back.

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Significant increases in funding, proactive land use policy and planning options, and close public and private landowner partnerships, are essential to ensure the protection of Florida's agricultural landscapes into the future with a changing climate and shifting economies.

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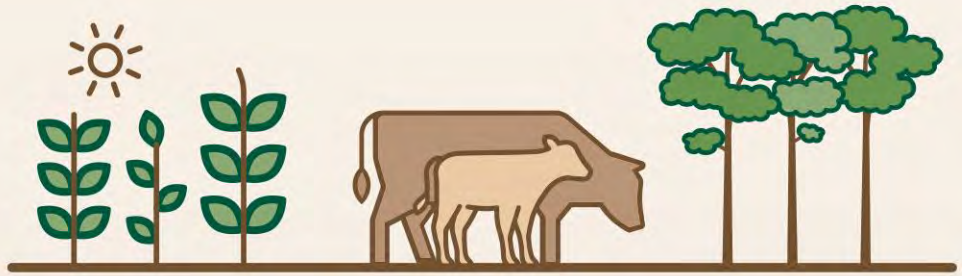
AGRICULTURE 2040 2070



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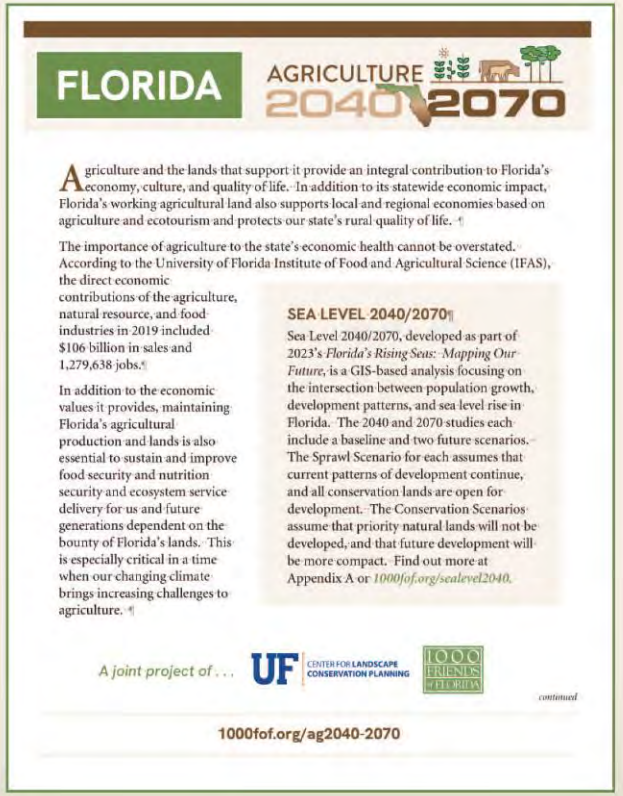
1000fof.org/ag2040-2070

Project Resources

- Agriculture 2040/2070 webpage, report, and downloadable maps at *1000fof.org/ag2040-2070*
- Sea Level 2040/2070 webpage, report, downloadable maps and resources at *1000fof.org/sealevel2040*
- Sea Level 2040/2070 GIS Data at *fgdl.org* or *https://clcp.geoplan.ufl.edu/clcp/data*
- UF Center for Landscape Conservation Planning at *conservation.dcp.ufl.edu*
- 1000 Friends of Florida at *1000fof.org*



FLORIDA AGRICULTURE 2040 2070

Agriculture and the lands that support it provide an integral contribution to Florida's economy, culture, and quality of life. In addition to its statewide economic impact, Florida's working agricultural land also supports local and regional economies based on agriculture and ecotourism and protects our state's rural quality of life.

The importance of agriculture to the state's economic health cannot be overstated. According to the University of Florida Institute of Food and Agricultural Science (IFAS), the direct economic contributions of the agriculture, natural resource, and food industries in 2019 included $106 billion in sales and 1,279,638 jobs.

In addition to the economic values it provides, maintaining Florida's agricultural production and lands is also essential to sustain and improve food security and nutrition security and ecosystem service delivery for us and future generations dependent on the bounty of Florida's lands. This is especially critical in a time when our changing climate brings increasing challenges to agriculture.

SEA LEVEL 2040/2070

Sea Level 2040/2070, developed as part of 2023's *Florida's Rising Seas: Mapping Our Future*, is a GIS-based analysis focusing on the intersection between population growth, development patterns, and sea level rise in Florida. The 2040 and 2070 studies each include a baseline and two future scenarios. The Sprawl Scenario for each assumes that current patterns of development continue, and all conservation lands are open for development. The Conservation Scenarios assume that priority natural lands will not be developed, and that future development will be more compact. Find out more at Appendix A or *1000fof.org/sealevel2040*.

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continued

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Florida Department of Agriculture and Consumer Services (FDACS)

Natural Resources Conservation Service (NRCS)

Cornelia T. Bailey Foundation

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About the Center for Landscape Conservation Planning

University of Florida Dept. of Landscape Architecture
Tom Hoctor, Director
Michael Volk, Associate Director

Mission: Conduct applied research on the relationship between conservation and land use, learning opportunities for students, and expertise on biodiversity and green infrastructure design and planning to facilitate resilience and sustainability of natural, rural, and built environments.

Area of Focus


Image Courtesy of Carlton Ward, Jr. CarltonWard.com

Applied regional conservation planning and research

Urban green infrastructure and climate-wise design

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Upcoming Webinars

- Wednesday, February 14, 2024, noon to 1:30, Eastern
  2024 Florida Legislative Update
- Wednesday, March 20, 2024, noon to 1:30, Eastern
  2024 Florida Legislative Wrap Up

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