UF | IFAS Extension
UNIVERSITY of FLORIDA

# ENDANGERED SPECIES OF FLORIDA IN THE FACE OF CLIMATE CHANGE

FOR THE #GATORGOOD


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# A CHANGING WORLD

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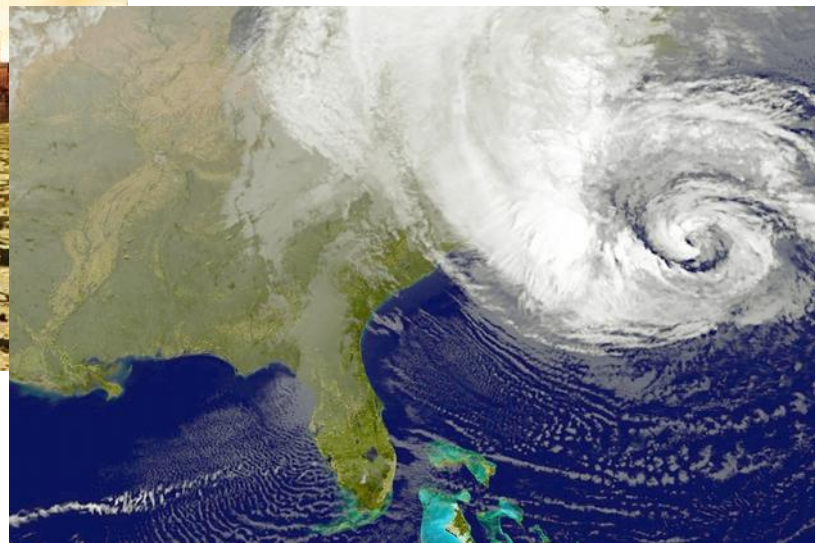
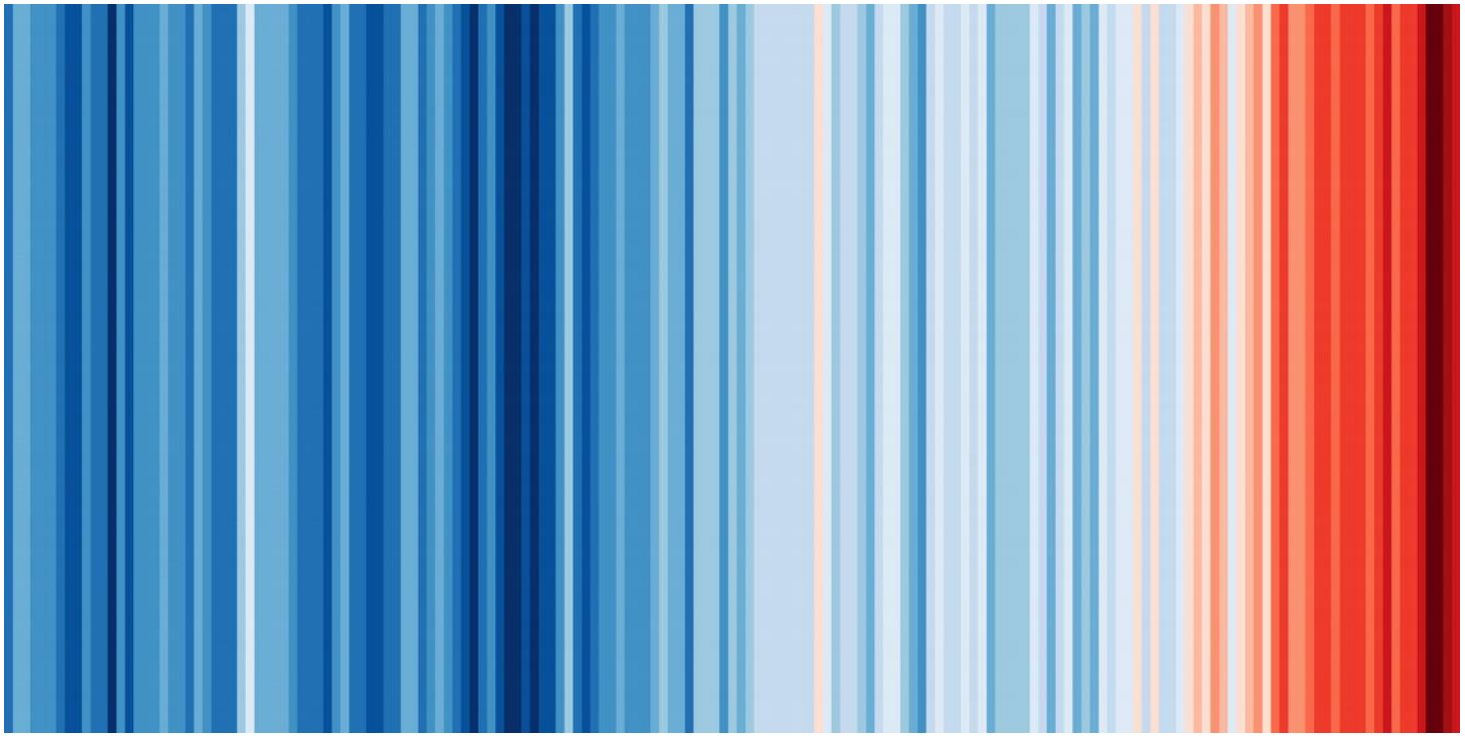
Global change is a major change on a geological timescale



# WARMER



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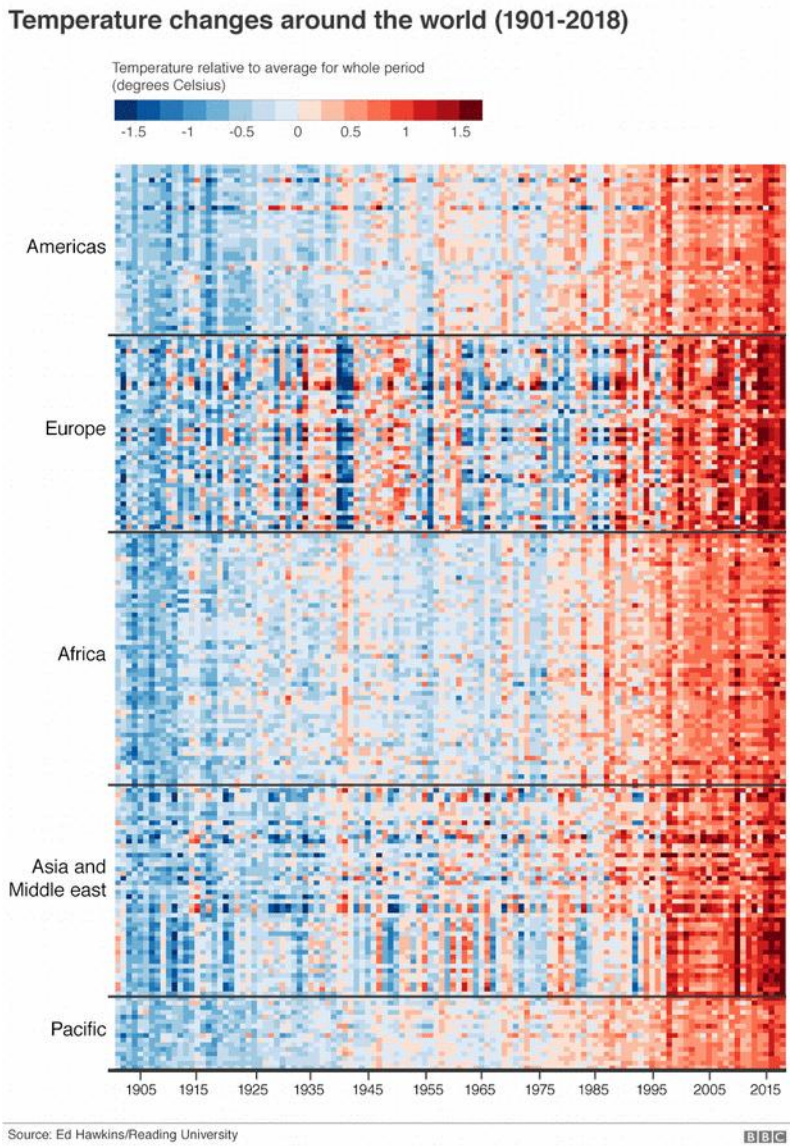
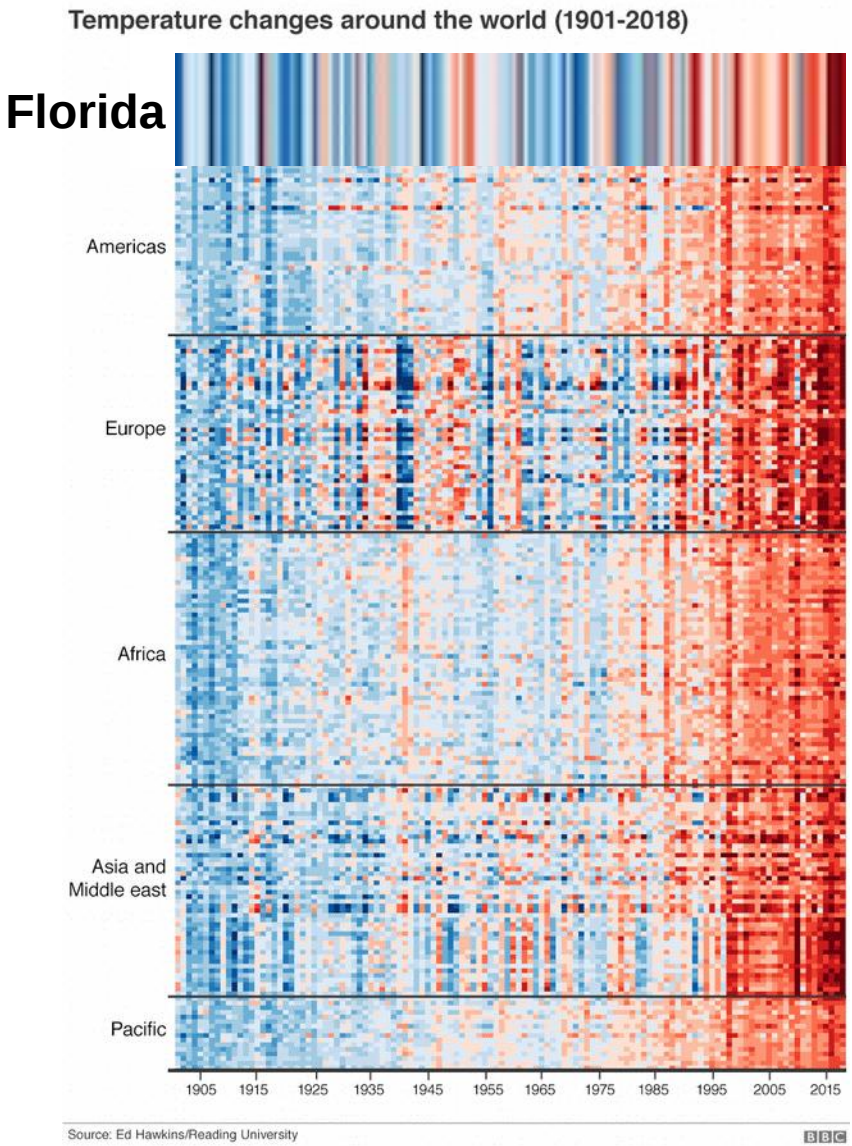
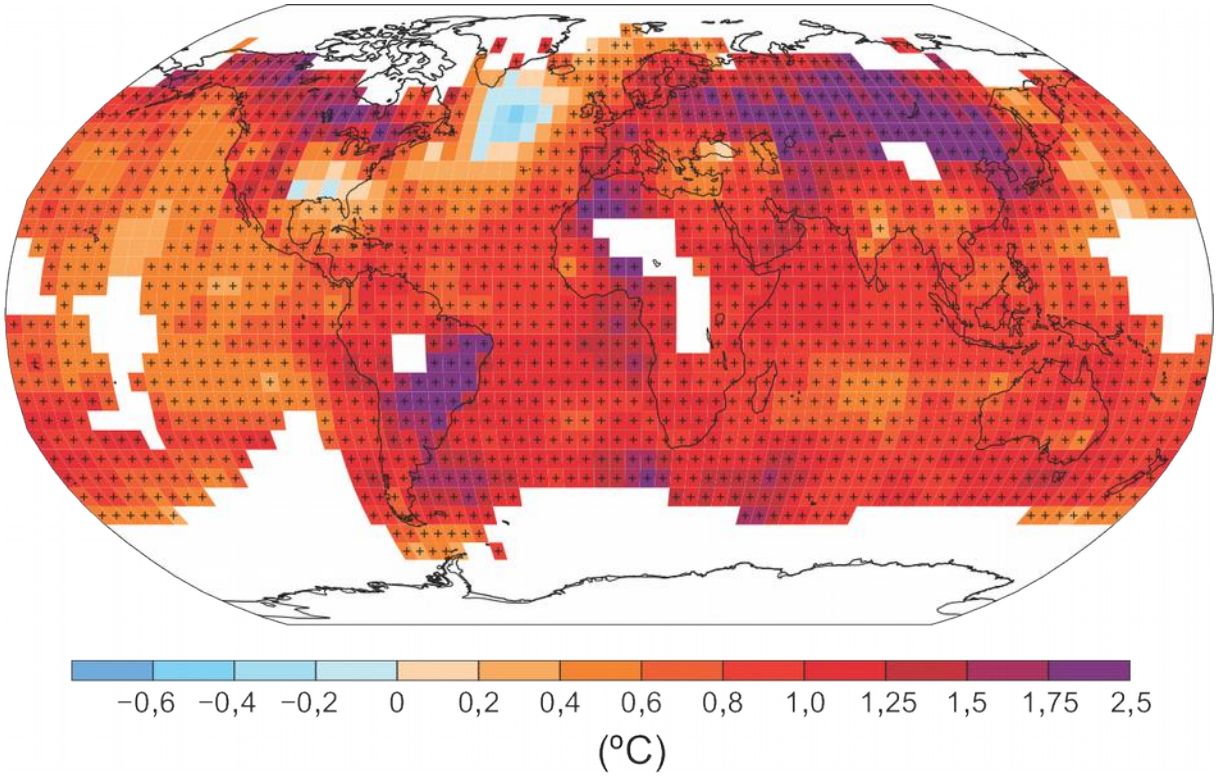

Temperature changes around the world (1901-2018)
Temperature relative to average for whole period
(degrees Celsius)
-1.5
-1
-0.5
0
0.5
1
1.5
Americas
Europe
Africa
Asia and
Middle east
Pacific
1905
1915
1925
1935
1945
1955
1965
1975
1985
1995
2005
2015
Source: Ed Hawkins/Reading University
BBC

# WARMER


Temperature changes around the world (1901-2018)
Florida
Americas
Europe
Africa
Asia and Middle east
Pacific
1905
1915
1925
1935
1945
1955
1965
1975
1985
1995
2005
2015
Source: Ed Hawkins/Reading University
BBC

# WARMER

## Observed change in surface temperature 1901-2012



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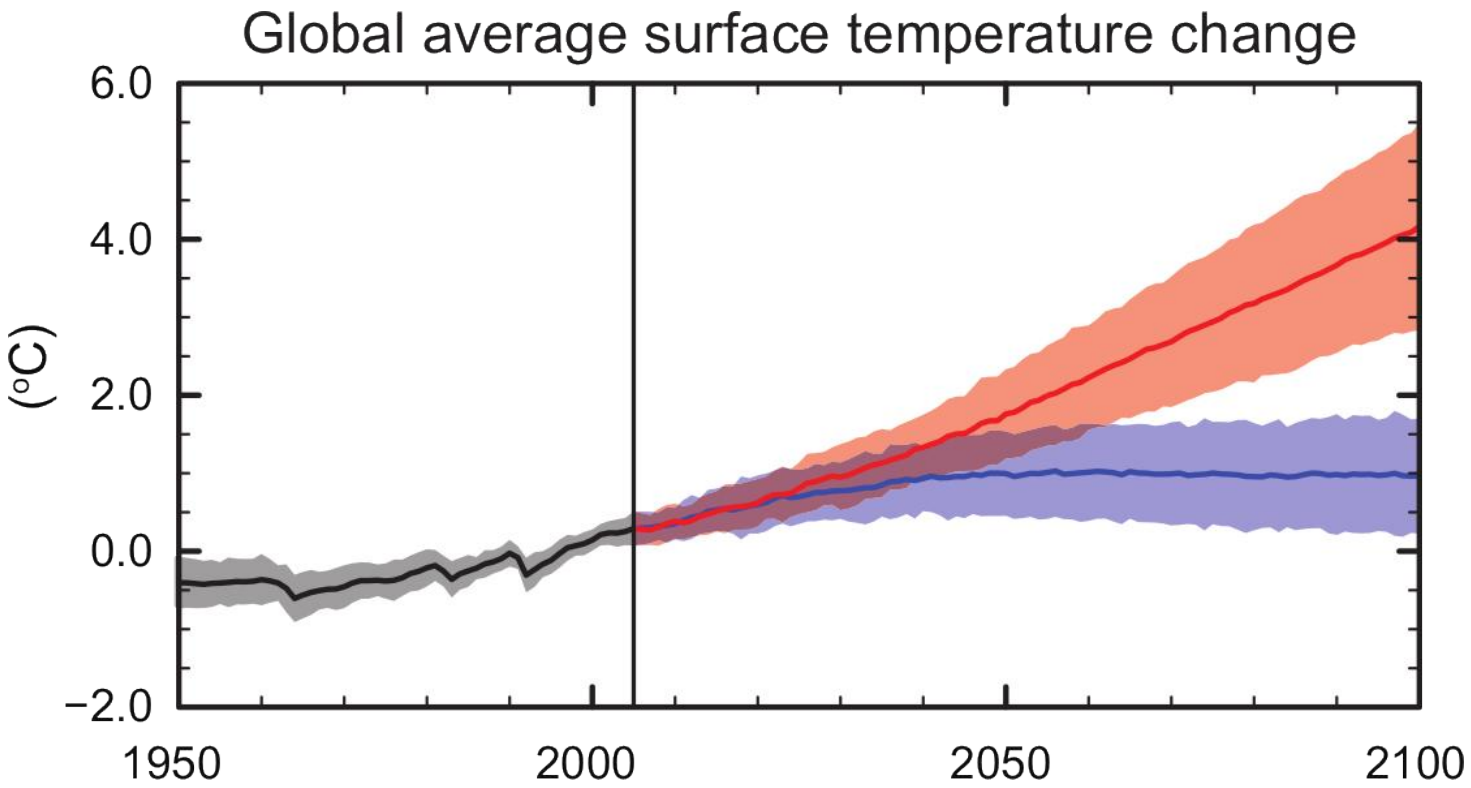
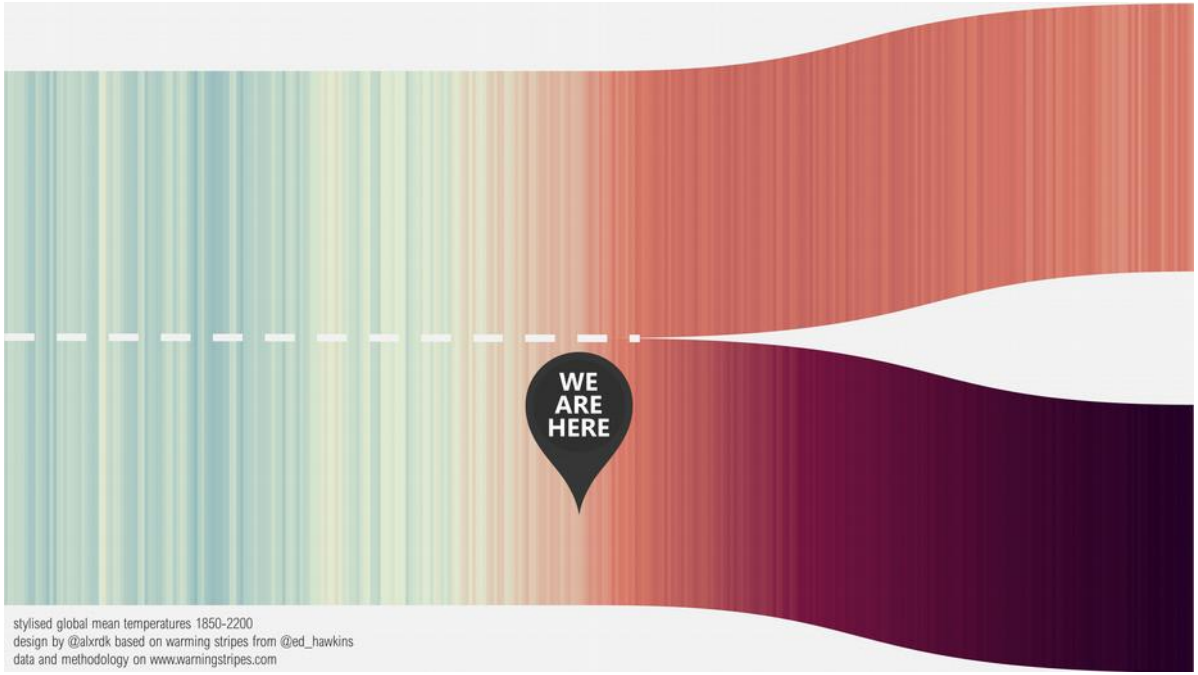

Global average surface temperature change
6.0
4.0
2.0
0.0
−2.0
(°C)
1950
2000
2050
2100

# WARMER

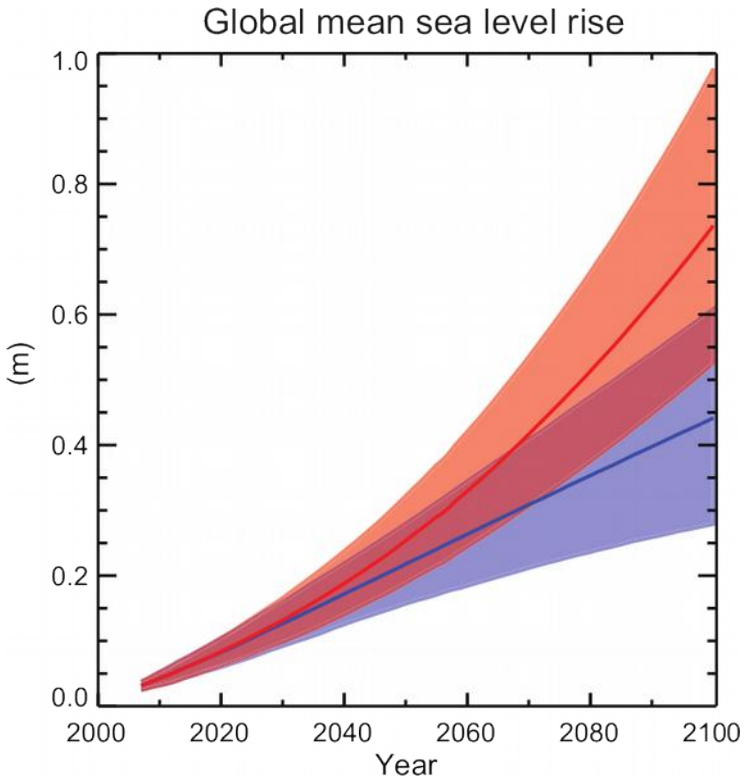



**Best-case scenario**

**Worst-case scenario**

→ **Climate switchboard**

# WETTER

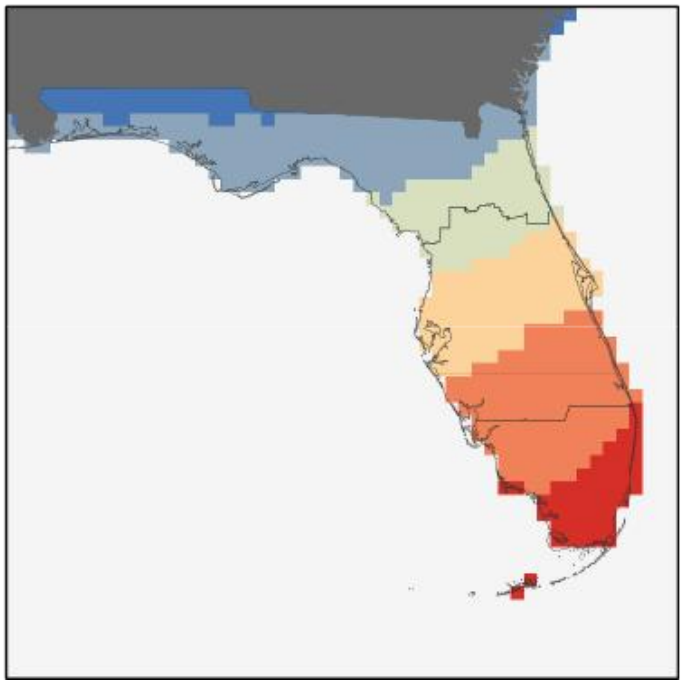

Global mean sea level rise
1.0
0.8
0.6
0.4
0.2
0.0
(m)
2000
2020
2040
2060
2080
2100
Year

# FLORIDA IN A CHANGING WORLD

# WELCOME TO THE TROPICS

Present

2050



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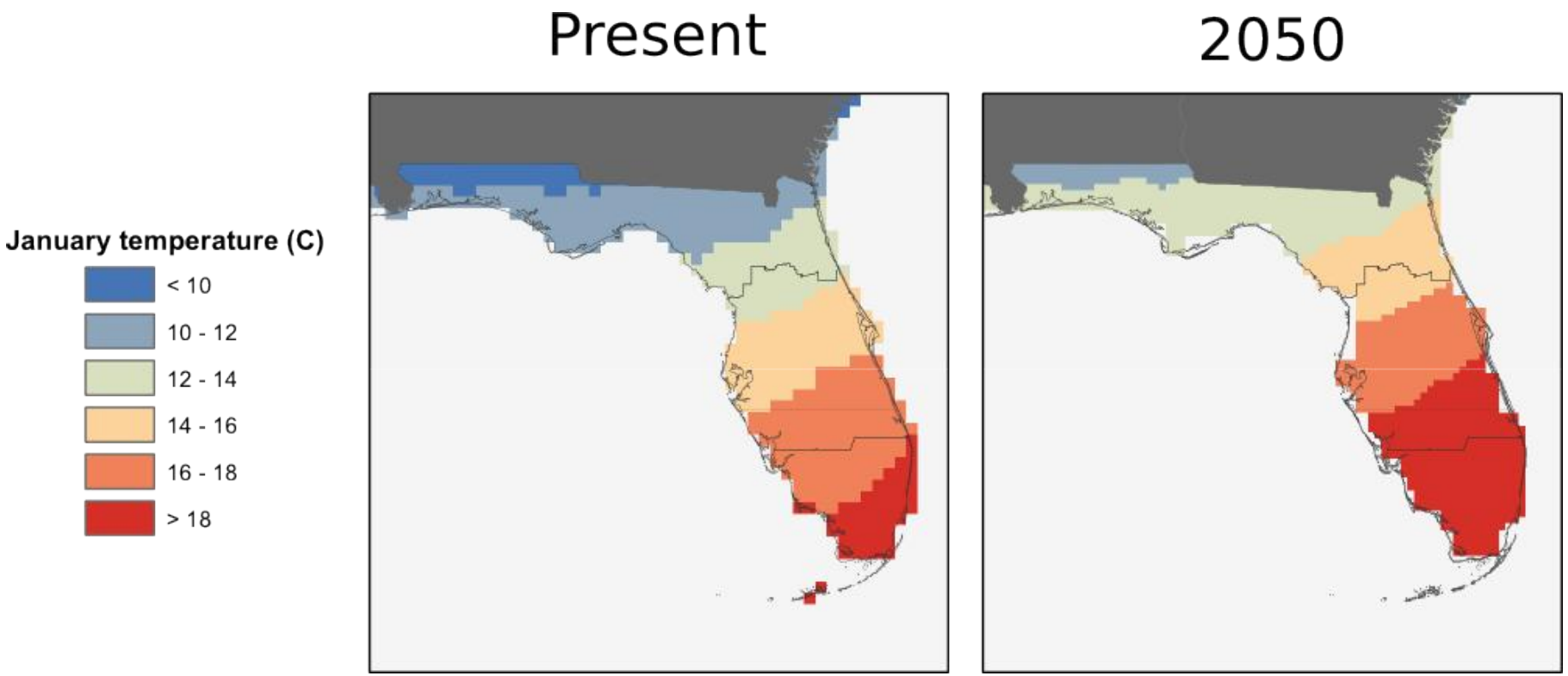

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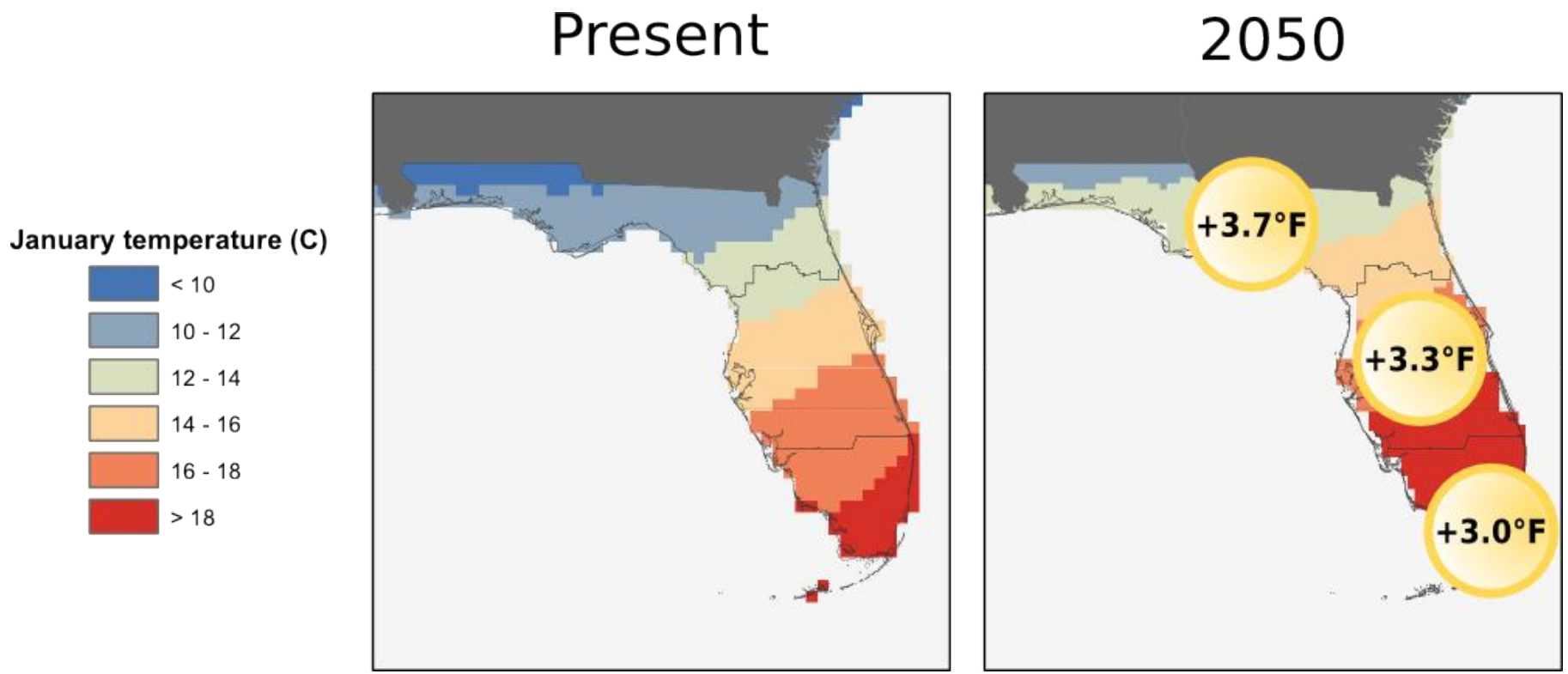
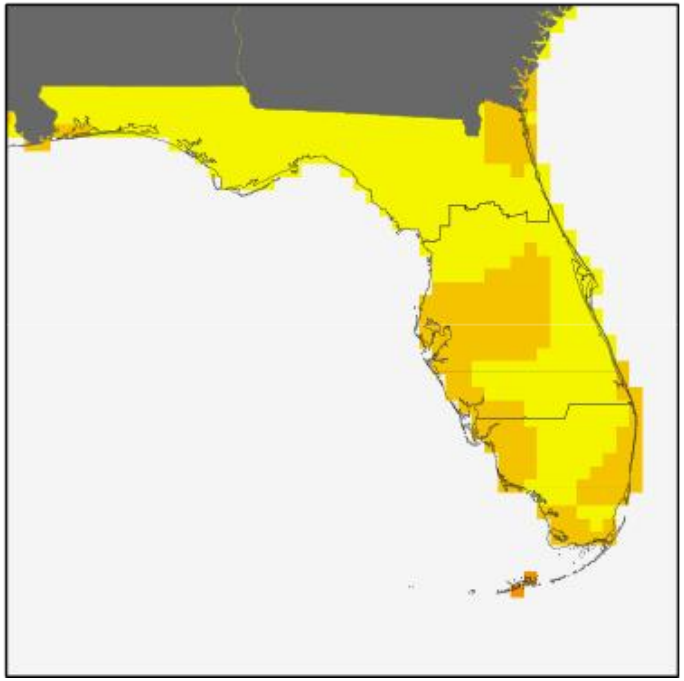


# WELCOME TO THE TROPICS

Present

2050



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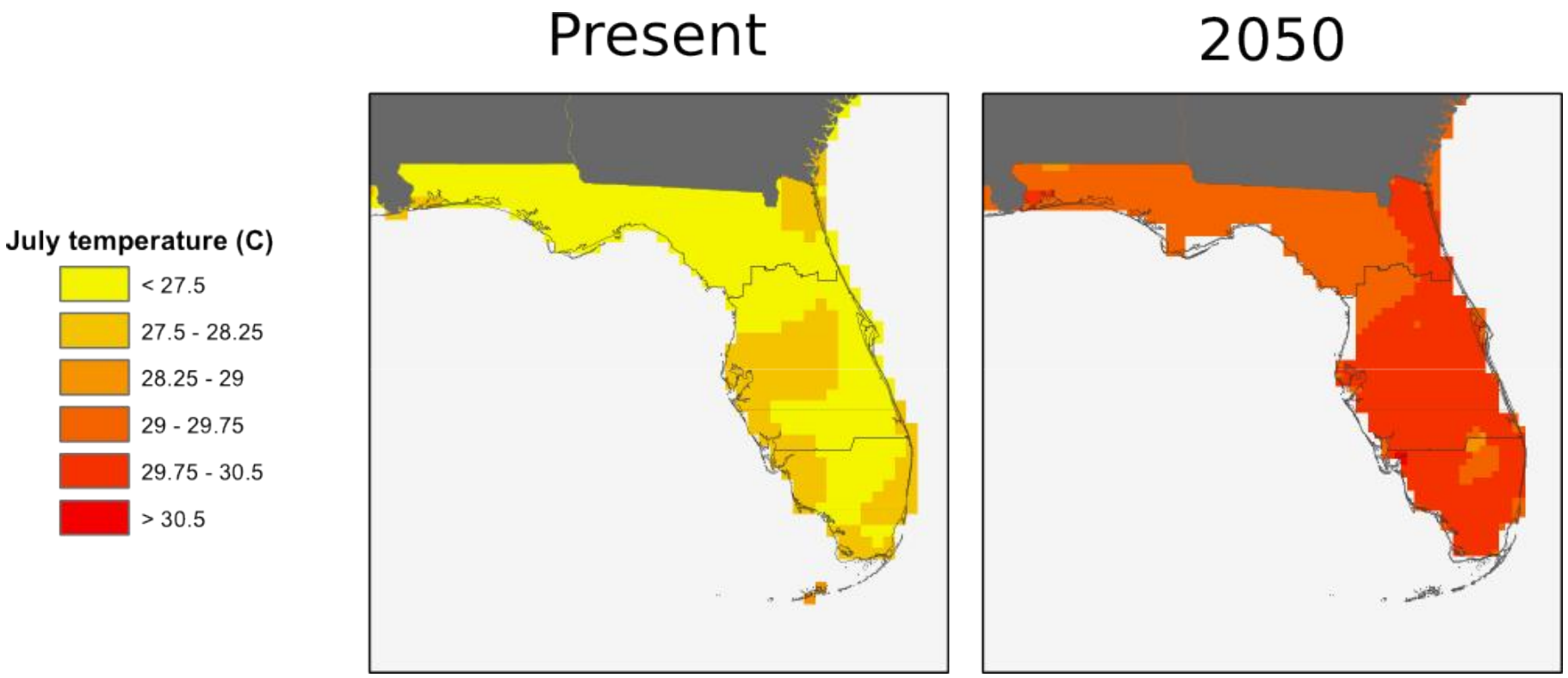

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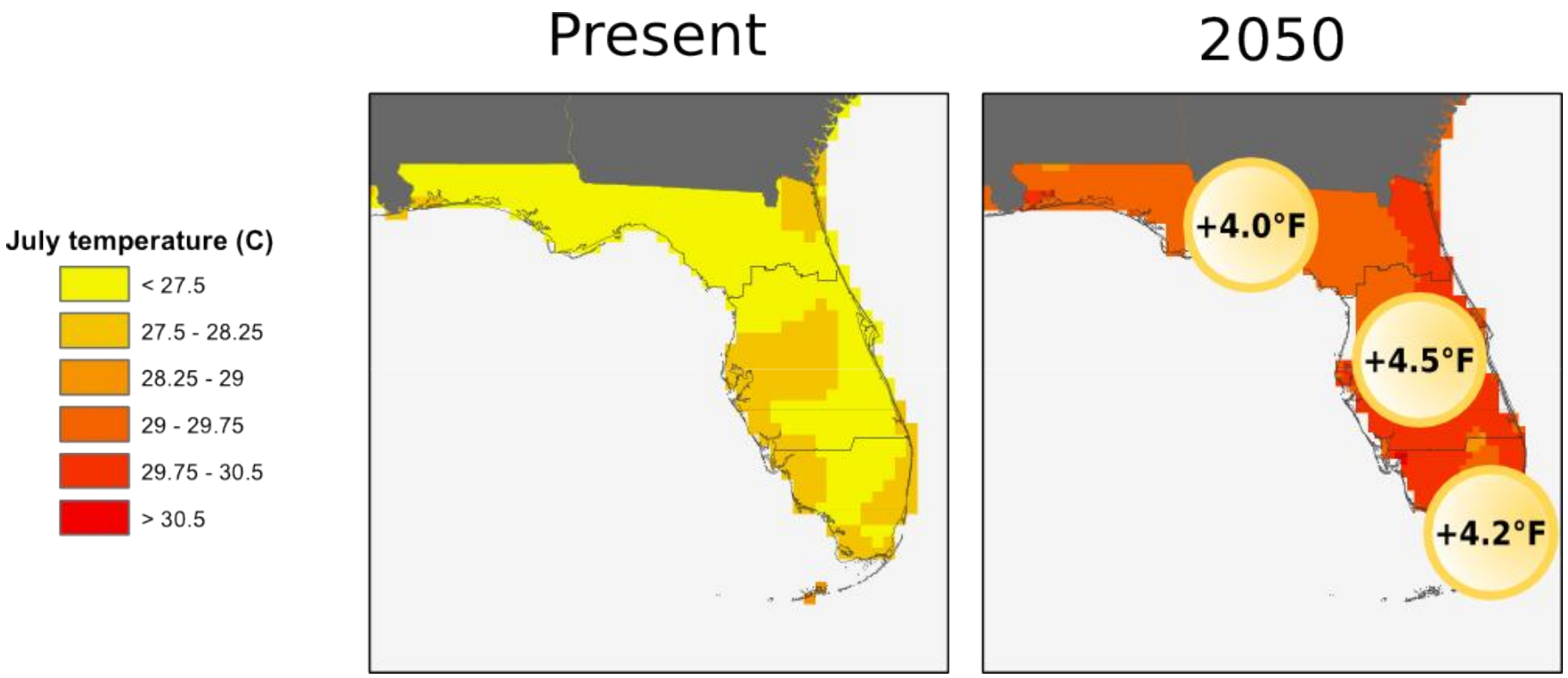
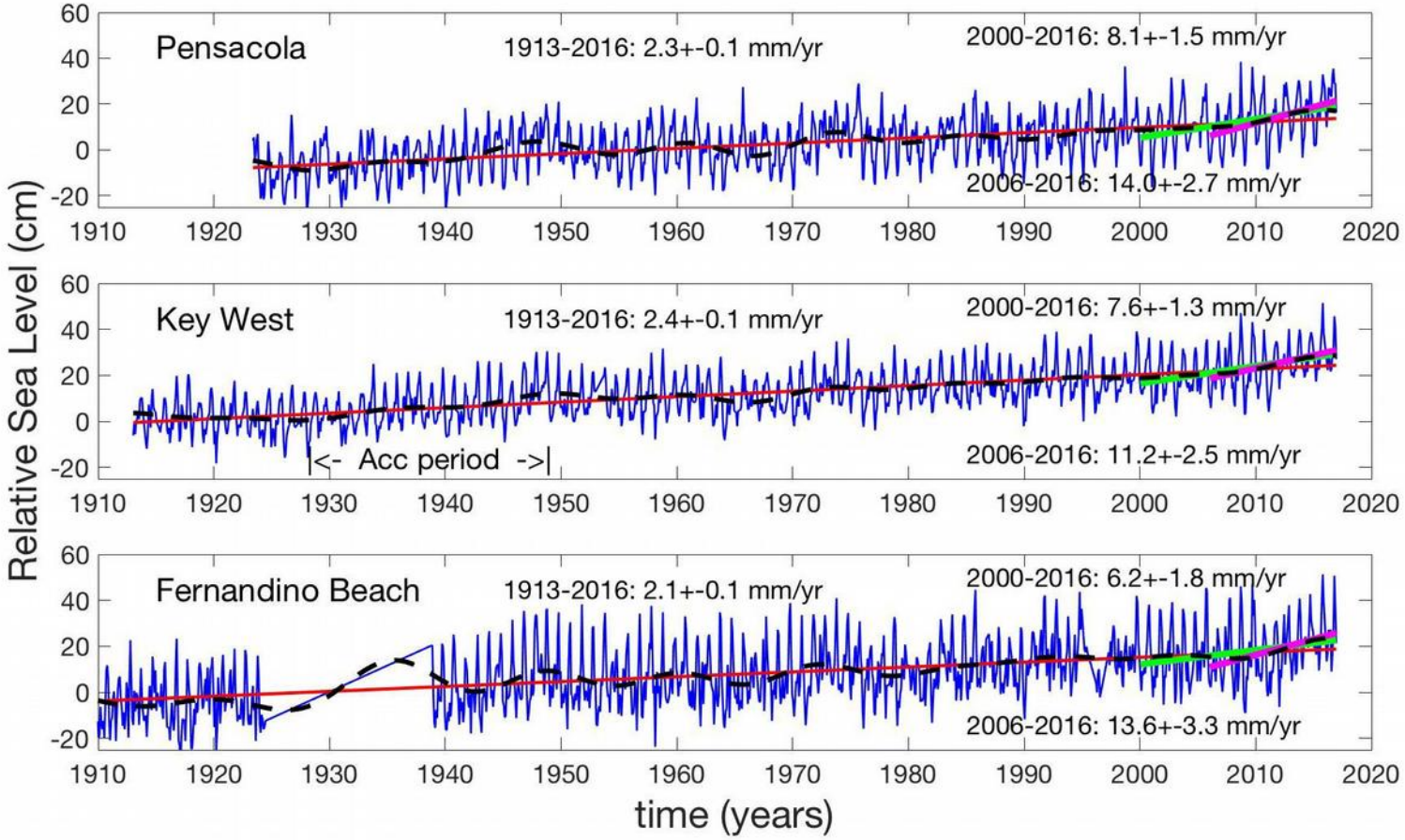


# FLORIDA IS DROWNING LITTLE BY LITTLE...



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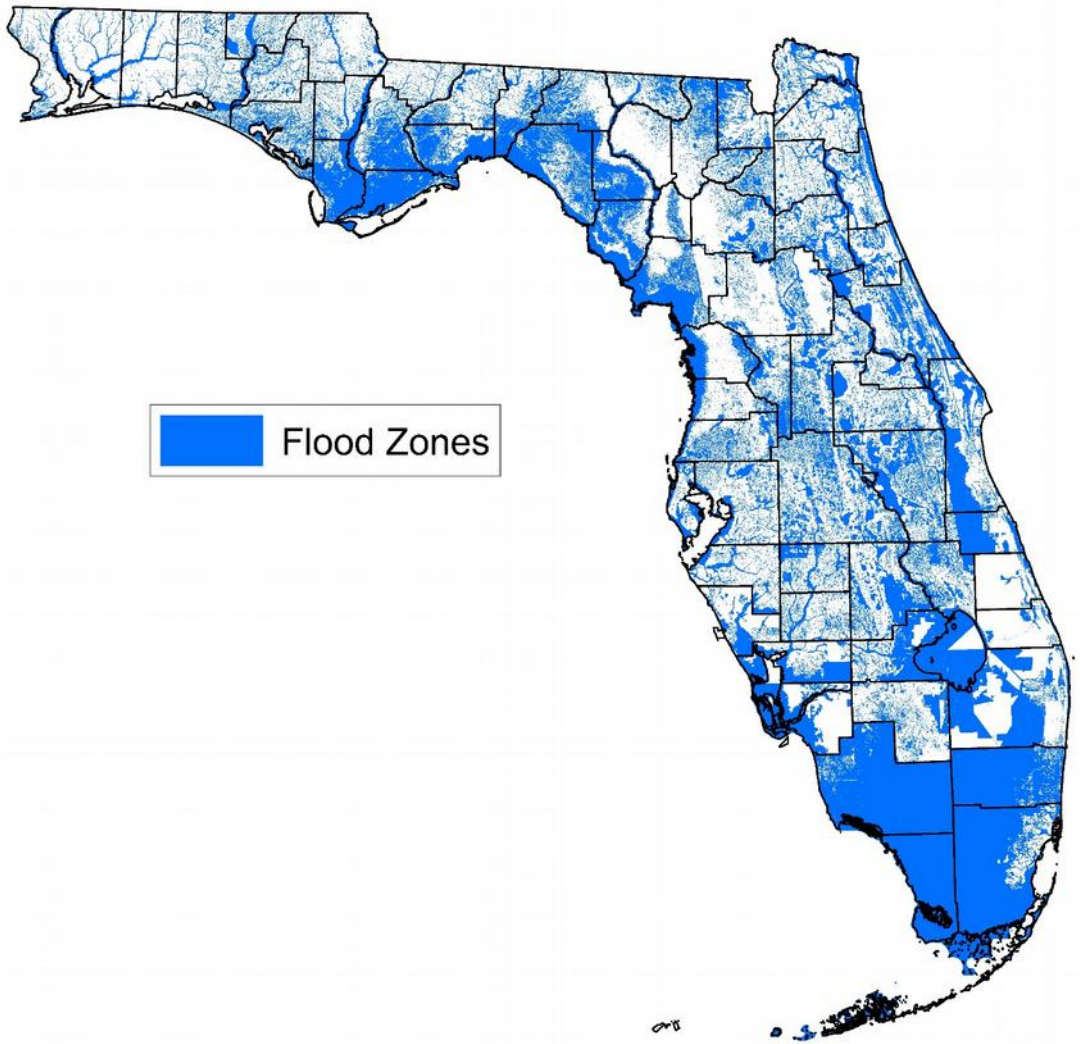

# FLORIDA IS DROWNING LITTLE BY LITTLE...

## Top 30 Cities with the Most People on Affected Land

Values based on 2010 U.S. Census and map analysis of extreme sea level projections

| | | |
|---|---|---|
| 1. | New York | 832,000 |
| 2. | Miami, Fla. | 296,000 |
| 3. | Hialeah, Fla. | 225,000 |
| 4. | Virginia Beach, Va. | 222,000 |
| 5. | Norfolk, Va. | 201,000 |
| 6. | Boston, MA | 172,000 |
| 7. | Fort Lauderdale, Fla. | 159,000 |
| 8. | Hollywood, Fla. | 130,000 |
| 9. | Stockton, CA | 126,000 |
| 10. | Pembroke, Fla. | 123,000 |
| 11. | Cape Coral, Fla. | 109,000 |
| 12. | Miramar, Fla. | 107,000 |
| 13. | Miami Gardens, Fla. | 104,000 |
| 14. | St. Petersburg, Fla. | 102,000 |
| 15. | Charleston, SC | 92,000 |
| 16. | Jacksonville, Fla. | 91,000 |
| 17. | Hampton, Va. | 91,000 |
| 18. | Davie, Fla. | 90,000 |
| 19. | Chesapeake, Va. | 88,000 |
| 20. | Miami Beach, Fla. | 87,000 |
| 21. | Plantation, Fla. | 84,000 |
| 22. | Sunrise, Fla. | 79,000 |
| 23. | Urban Honolulu, HI | 77,000 |
| 24. | Kendall, Fla. | 66,000 |
| 25. | Huntington Beach, CA | 66,000 |
| 26. | Portsmouth, Va. | 66,000 |
| 27. | Lauderhill, Fla. | 65,000 |
| 28. | Tampa, Fla. | 64,000 |
| 29. | Fountainebleau, Fla. | 60,000 |
| 30. | Homestead, Fla. | 59,000 |

CLIMATE CENTRAL

UF

# FLORIDA IS DROWNING LITTLE BY LITTLE...

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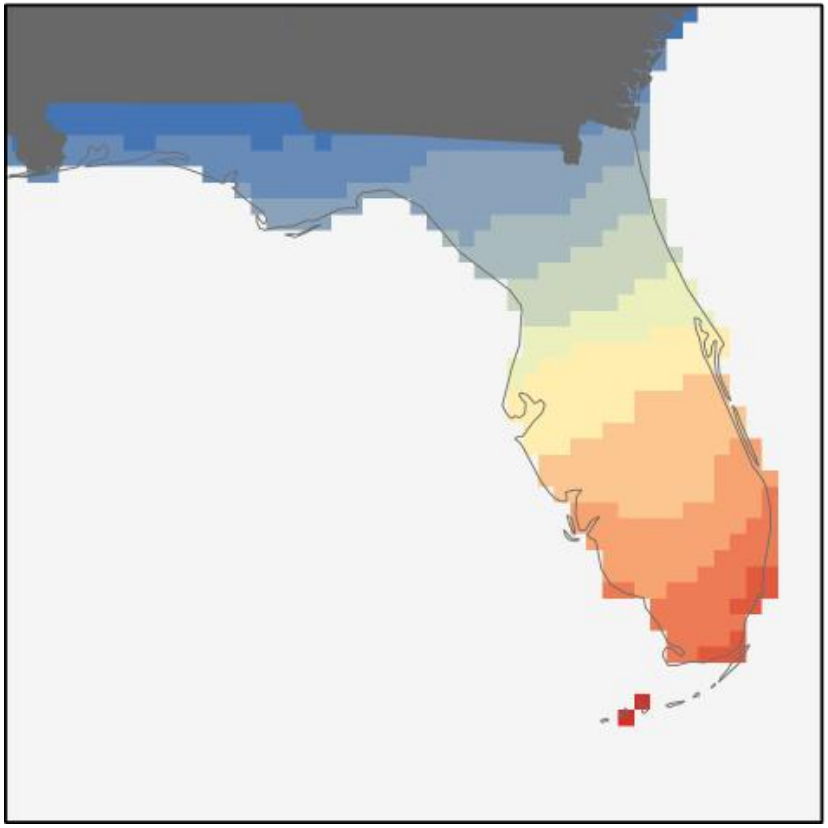
# WHY DO WE CARE?

- 54 federally threatened and endangered terrestrial (T&E) vertebrate species
- 111 imperiled vertebrate species in Florida (State)

# THREATENED AND ENDANGERED SPECIES IN THE EVERGLADES

# SPECIES DISTRIBUTION MODELS

Present



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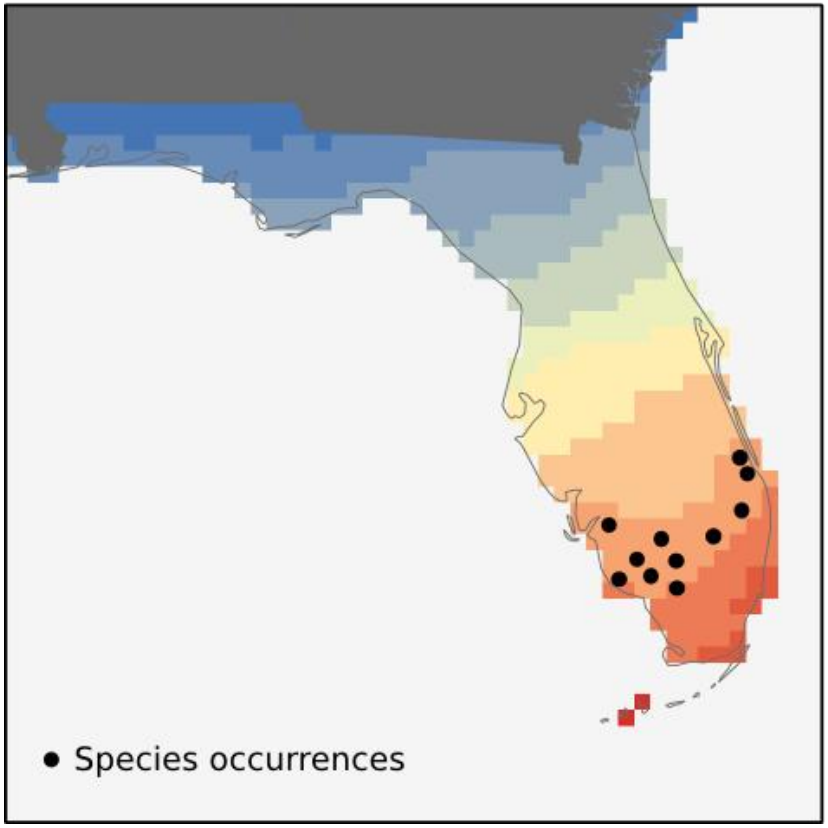

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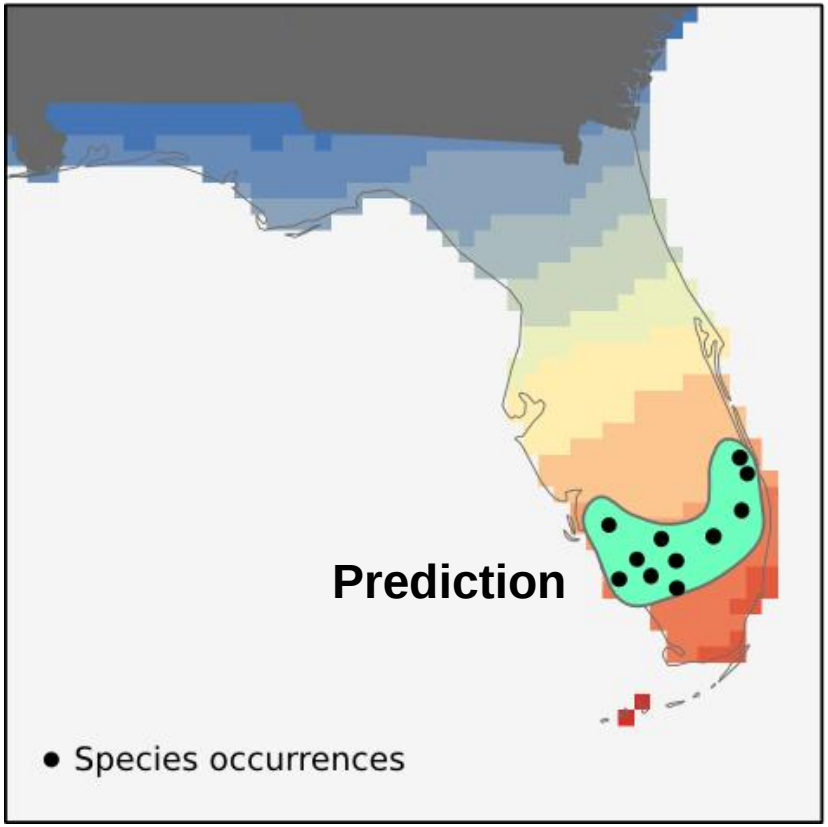

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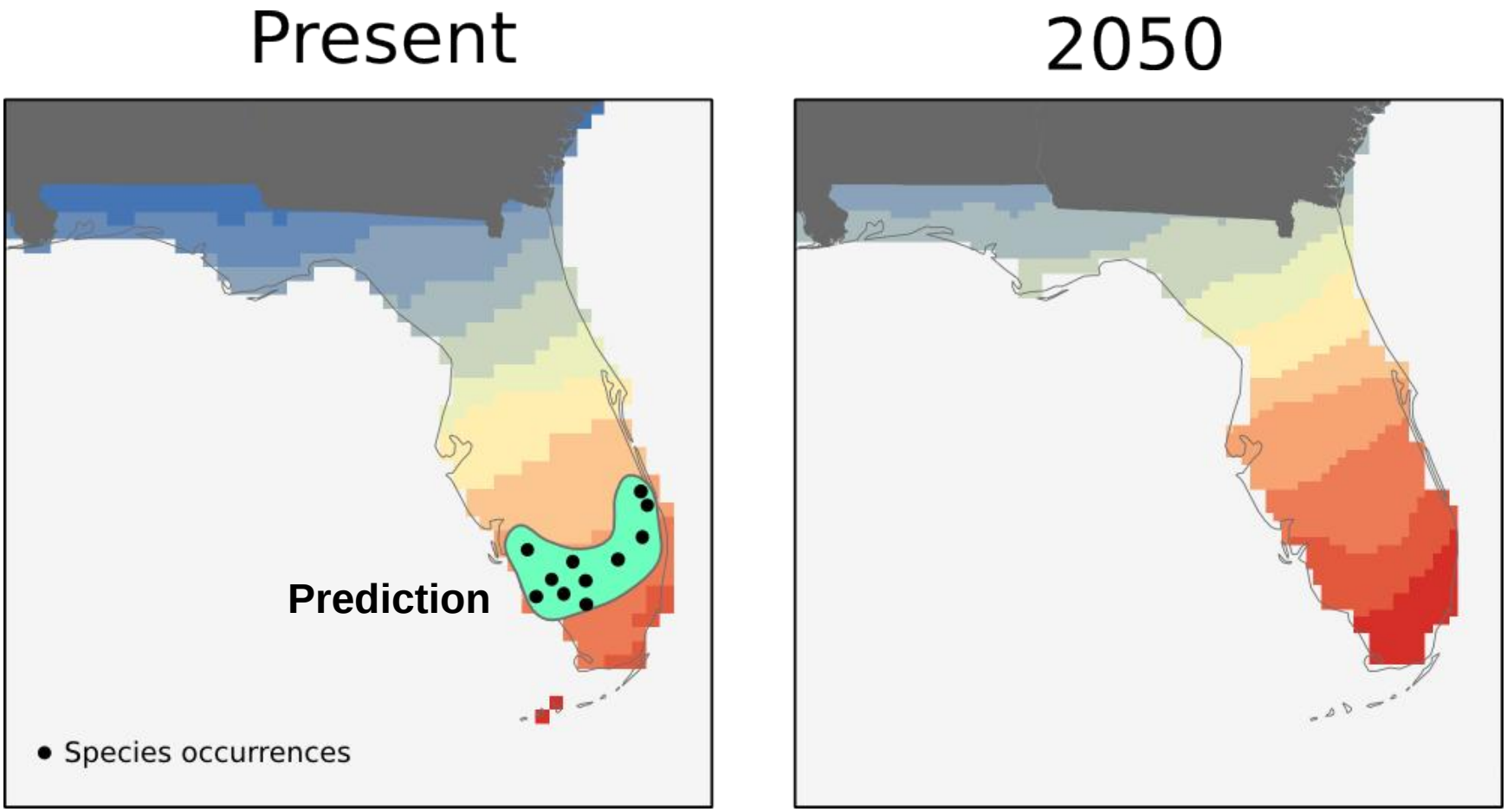

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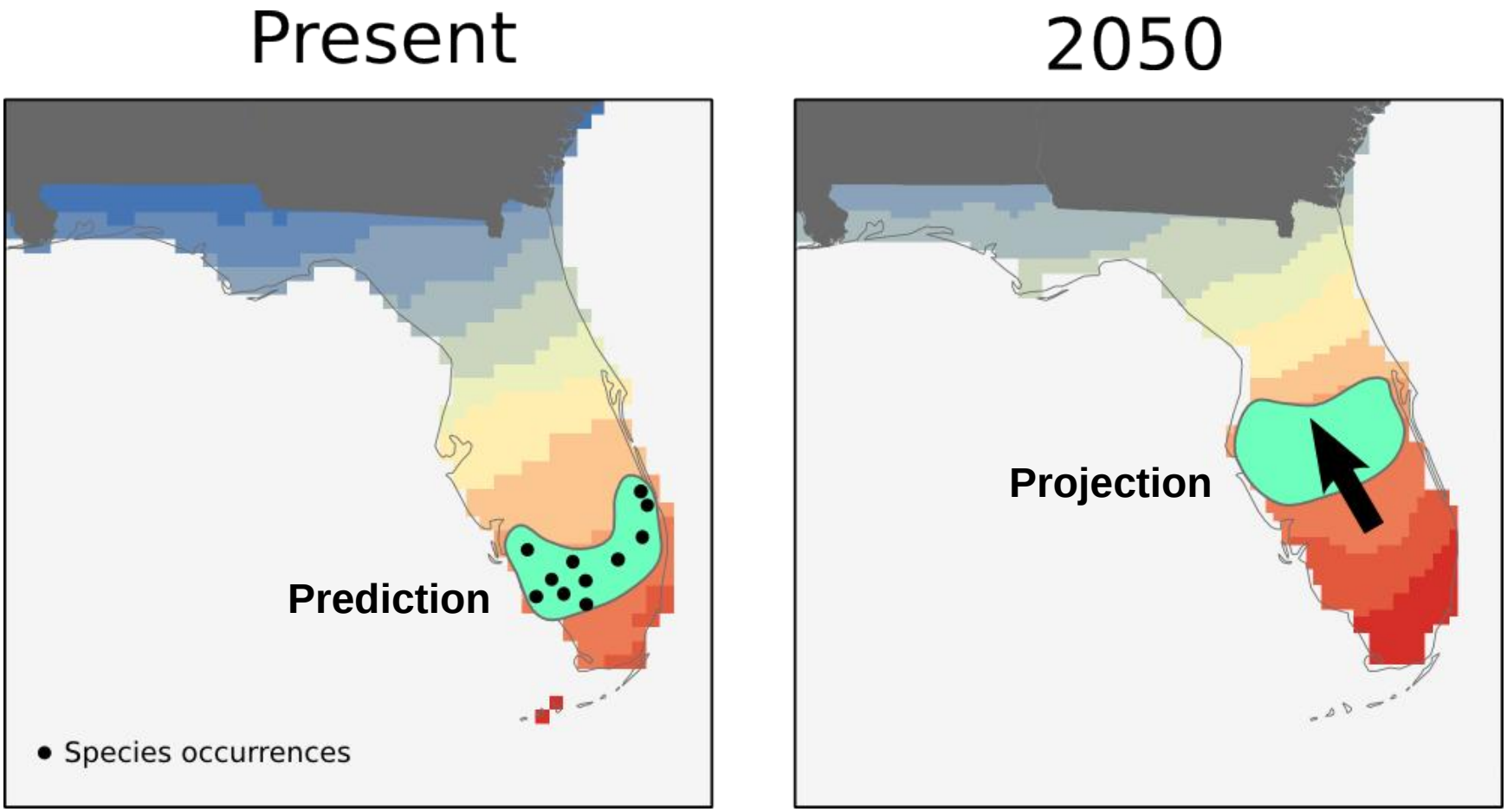
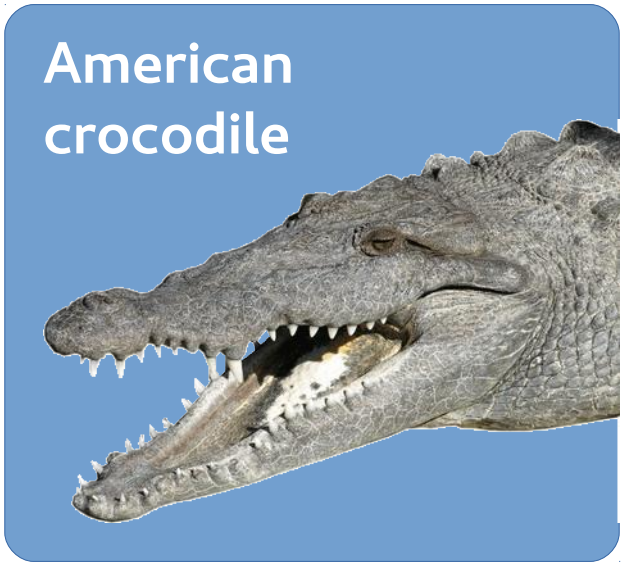
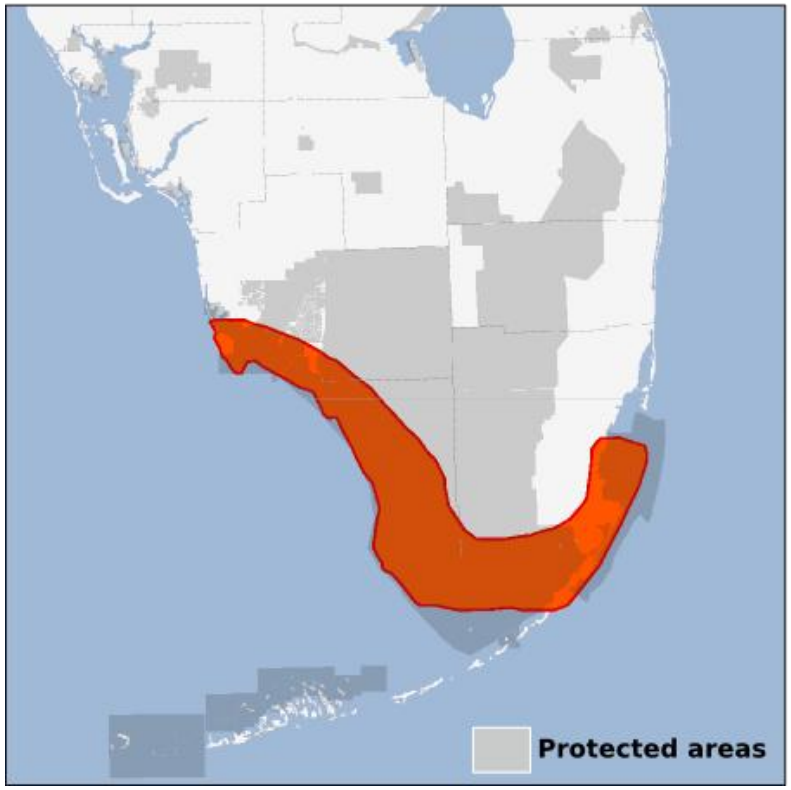


# WILDLIFE IN SOUTH FLORIDA



# WILDLIFE IN SOUTH FLORIDA

Current range



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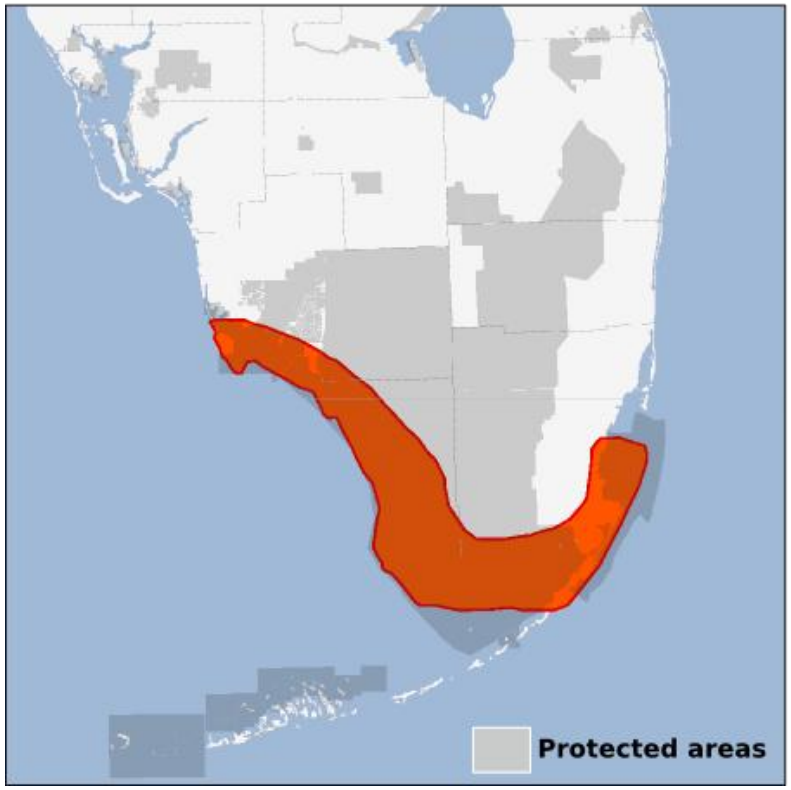
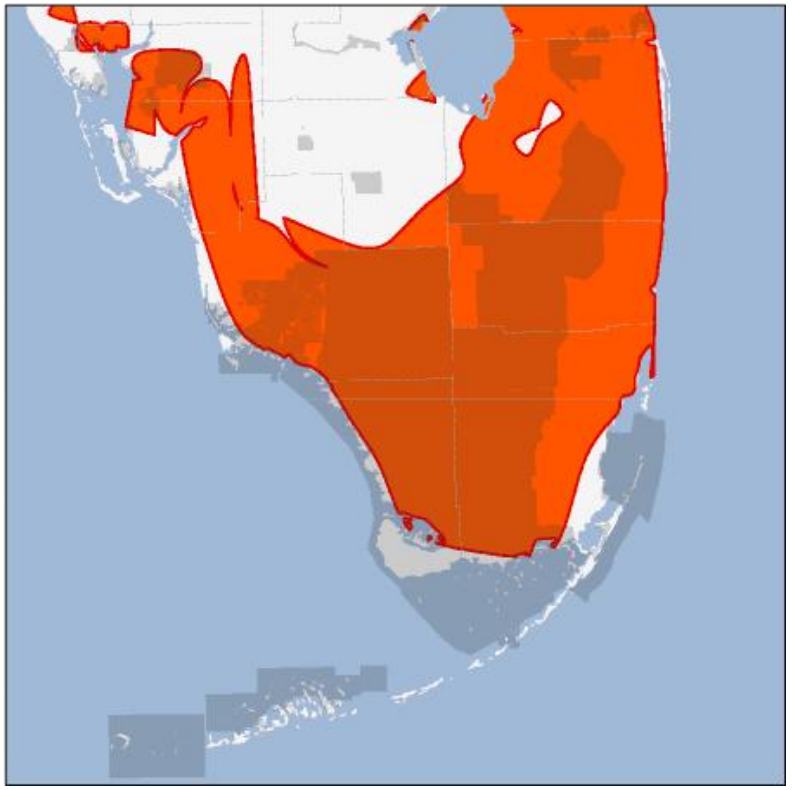



2060



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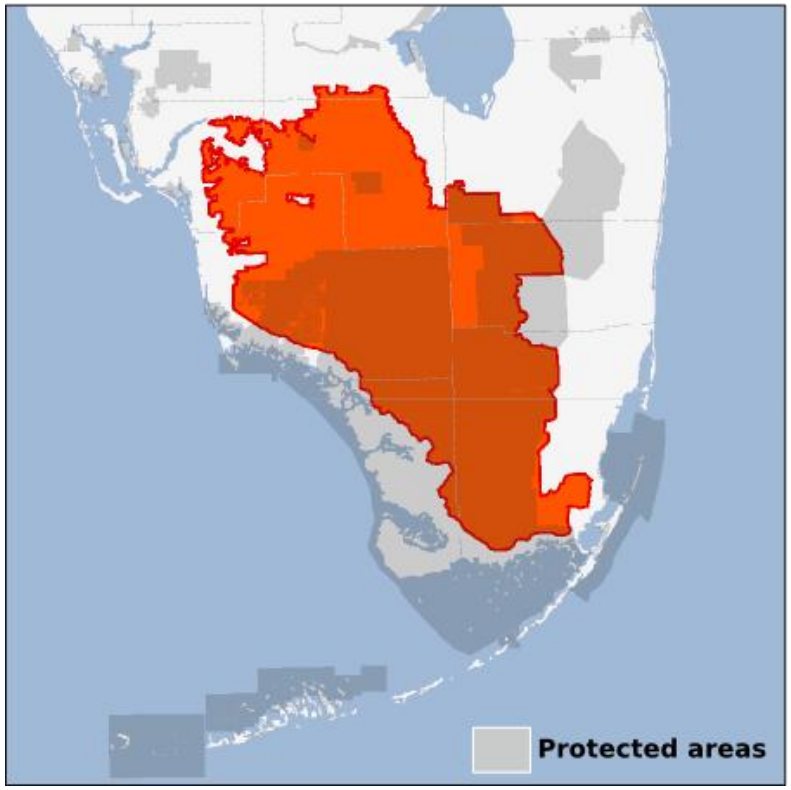

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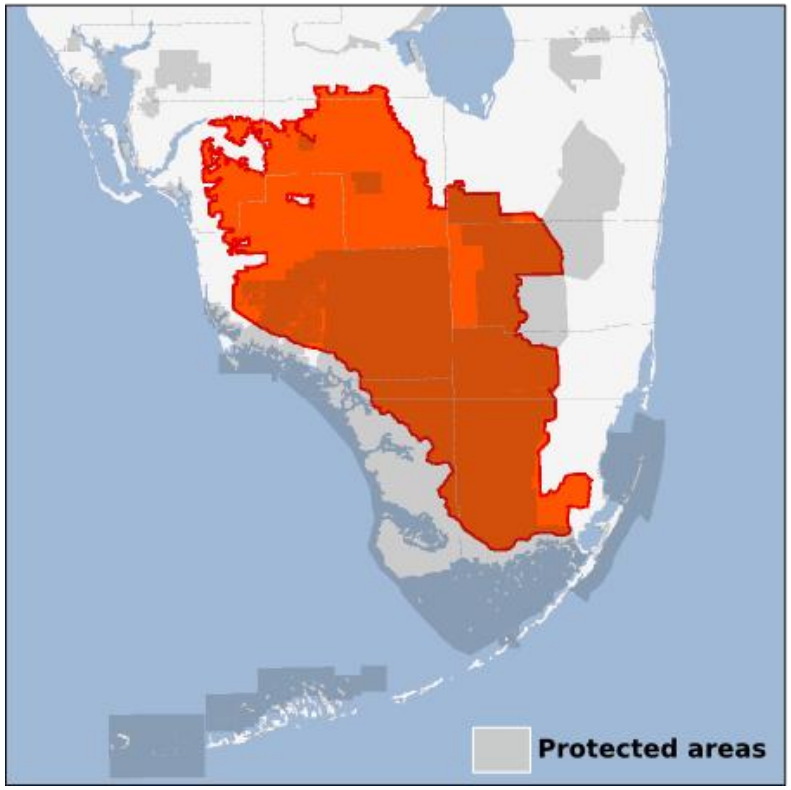


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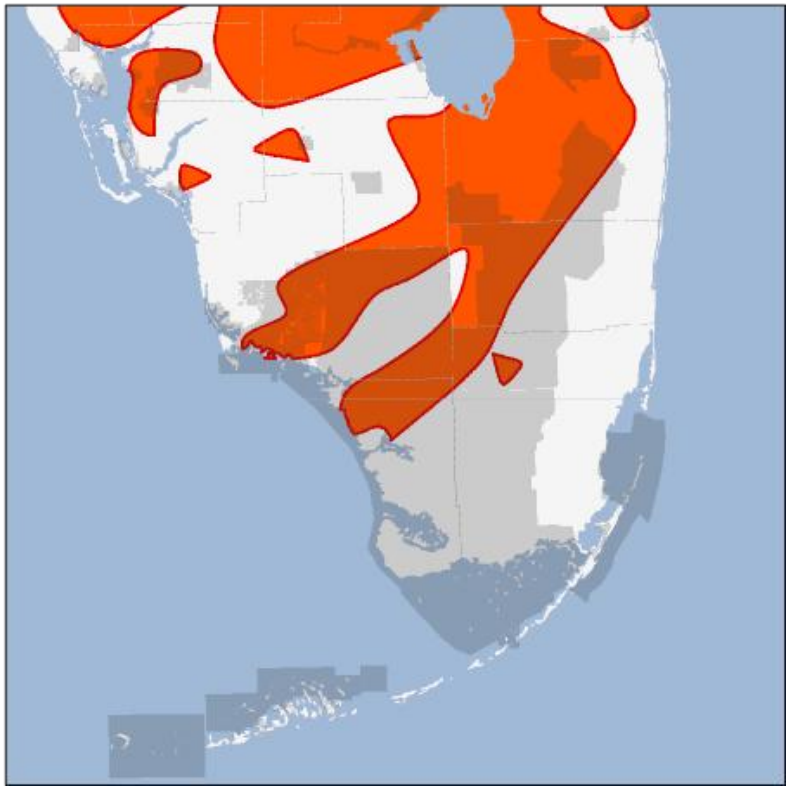

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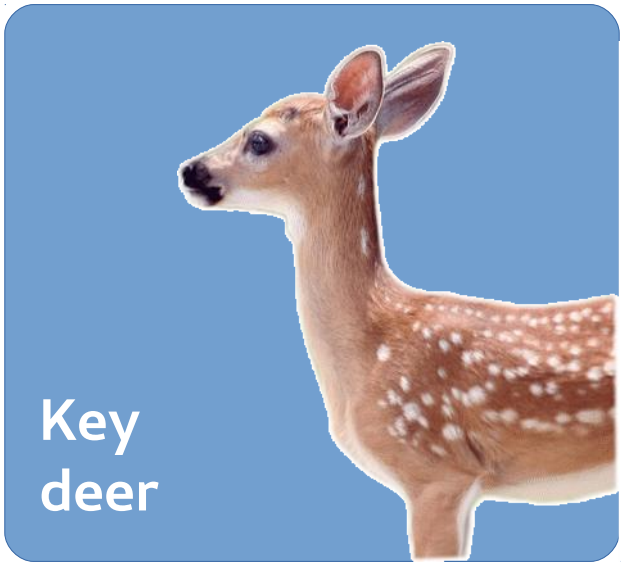

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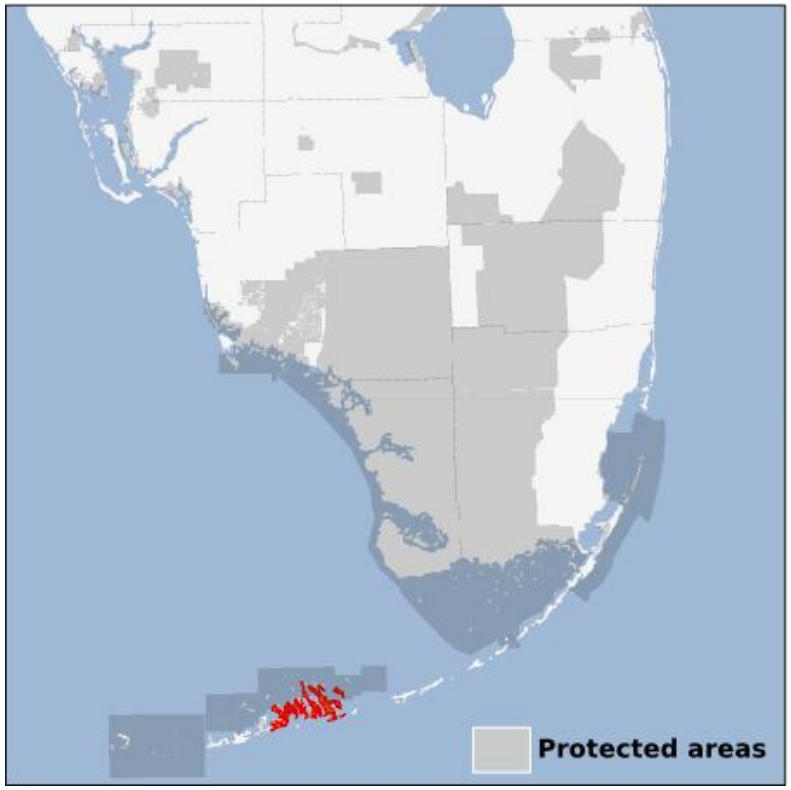

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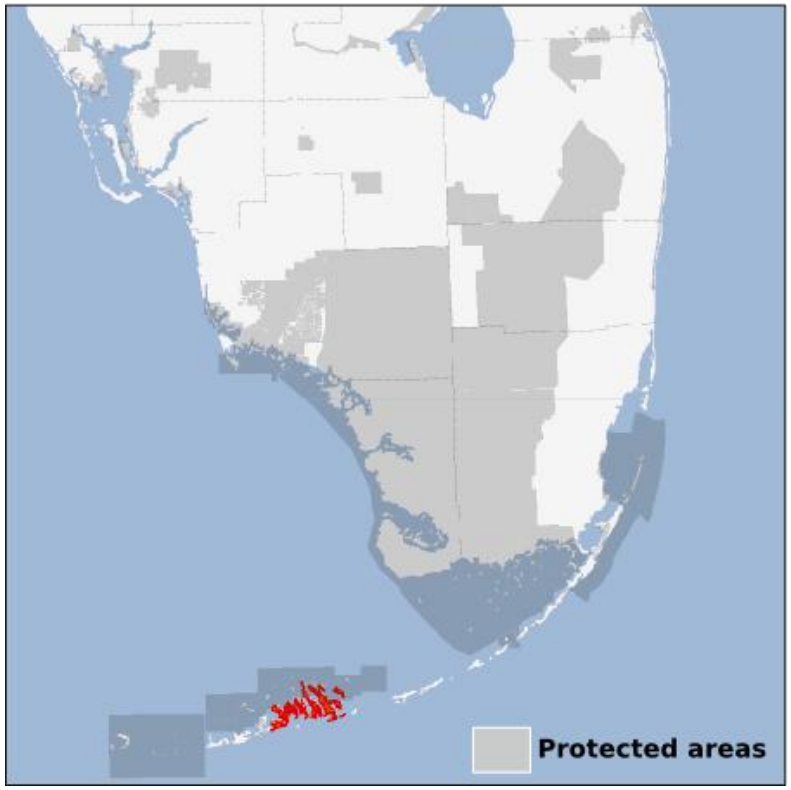


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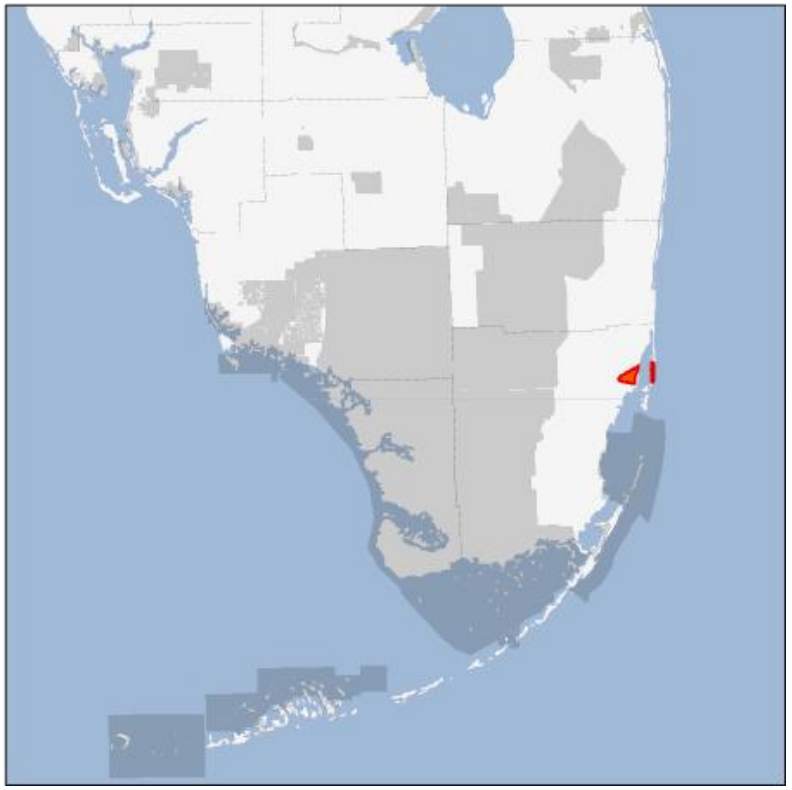


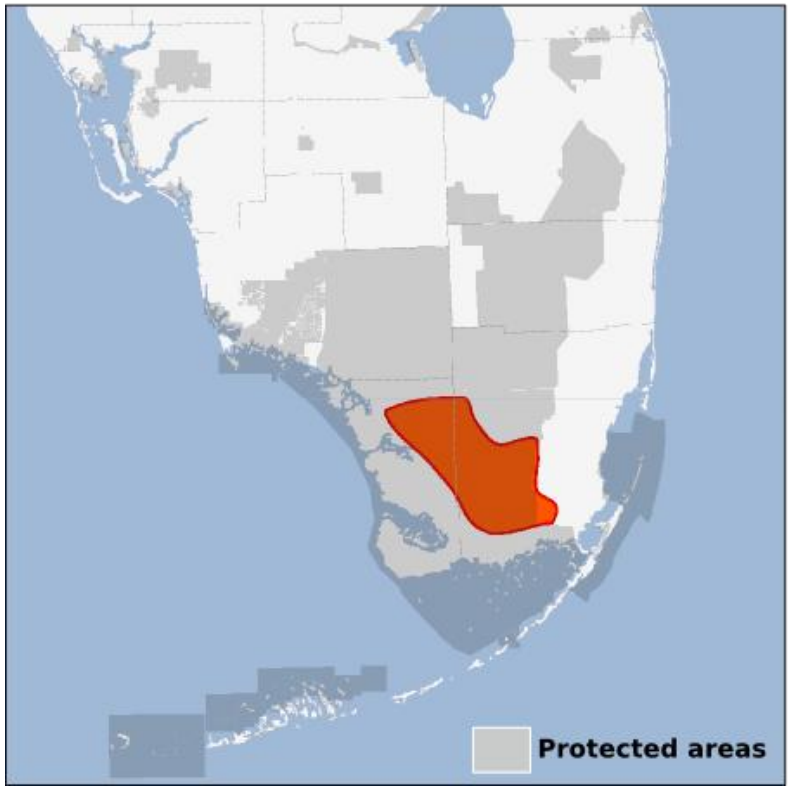
UF

# WILDLIFE IN SOUTH FLORIDA

Cape Sable
seaside sparrow

# WILDLIFE IN SOUTH FLORIDA

Current range



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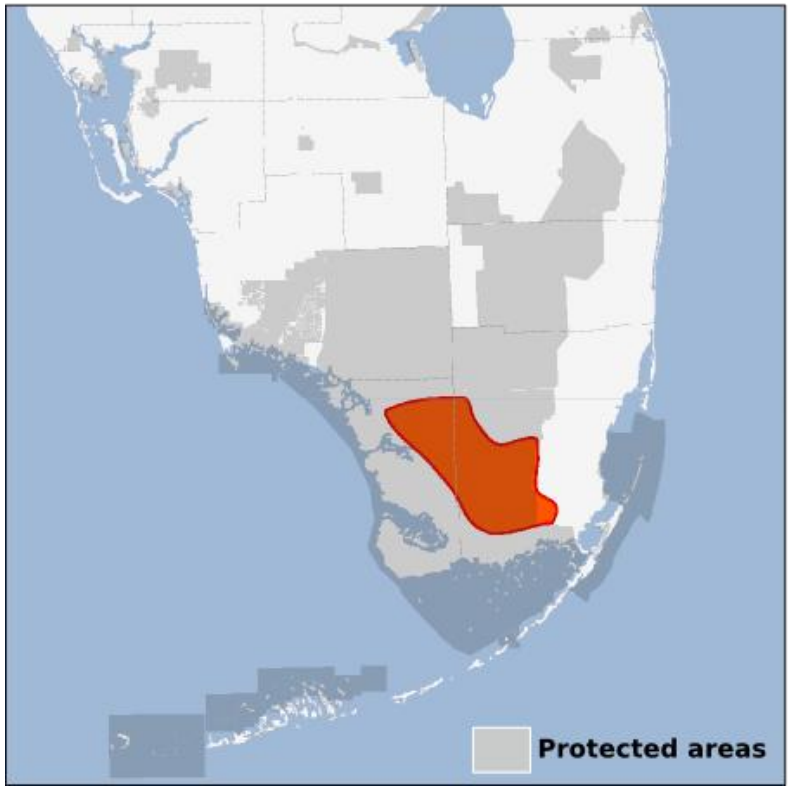


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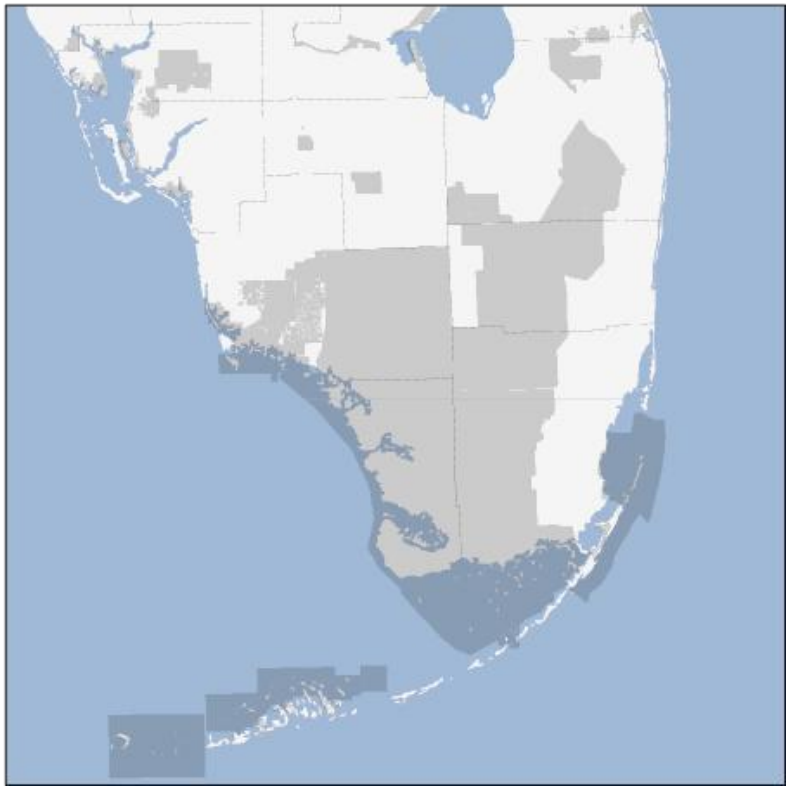
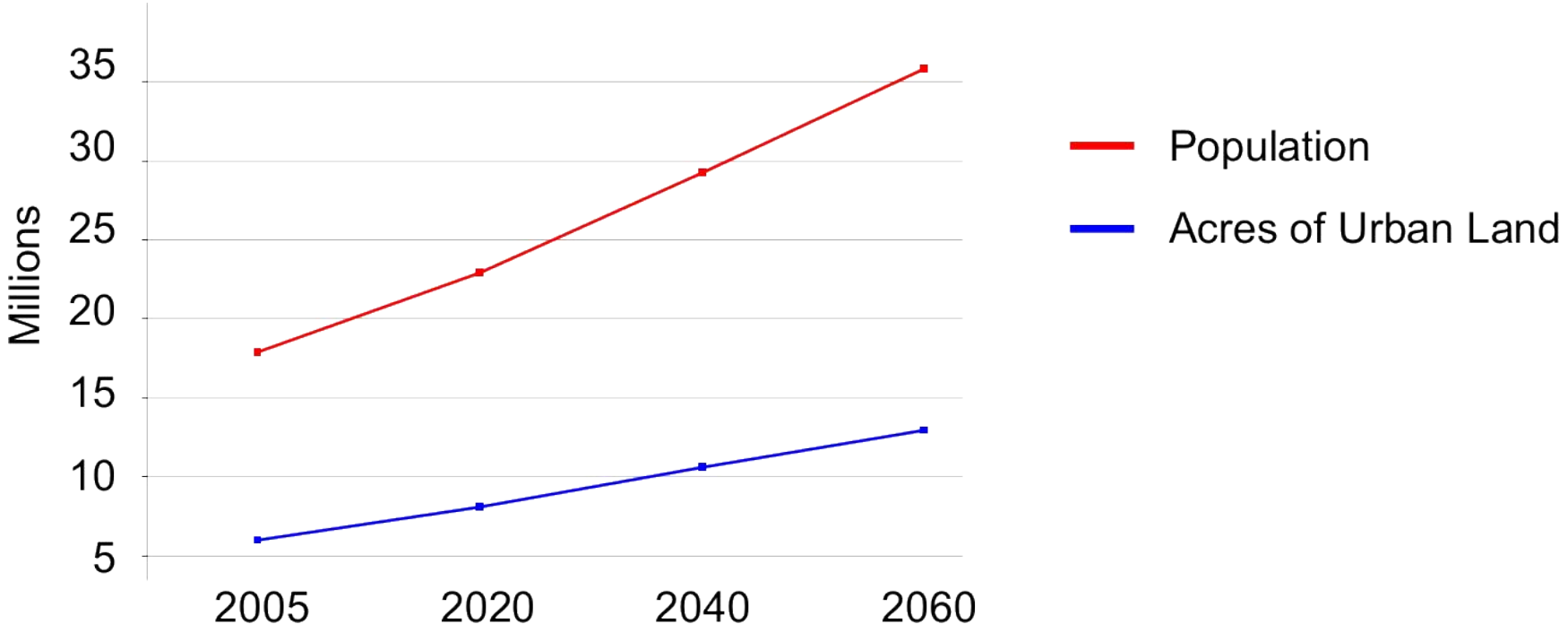


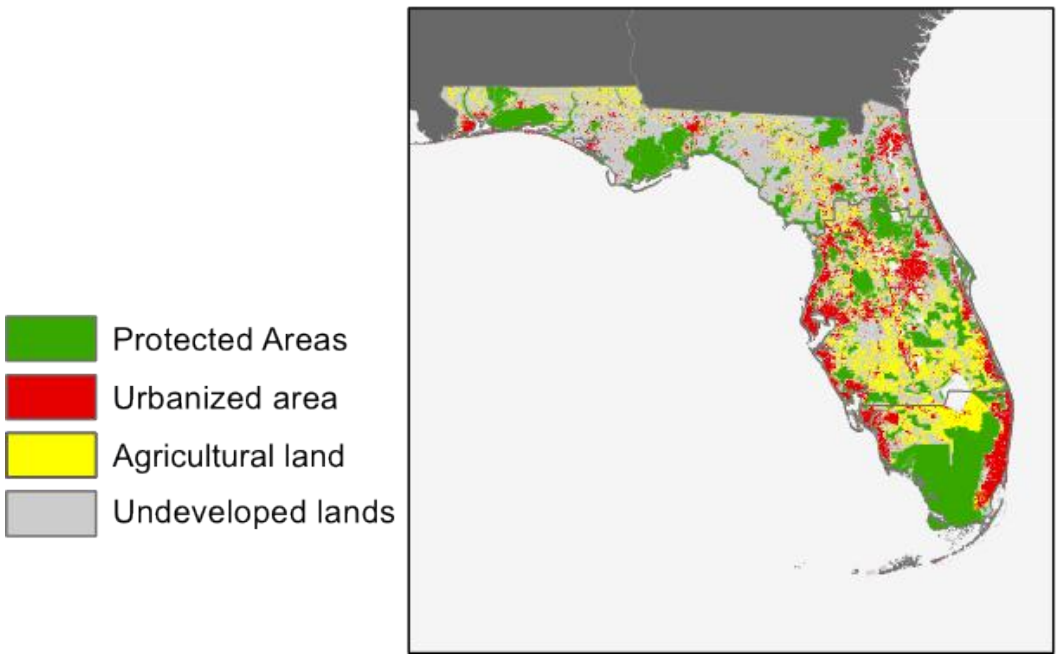
# CLIMATE ONLY?

# FLORIDA POPULATION IS GROWING FAST



# SO IS URBANIZATION…

Present



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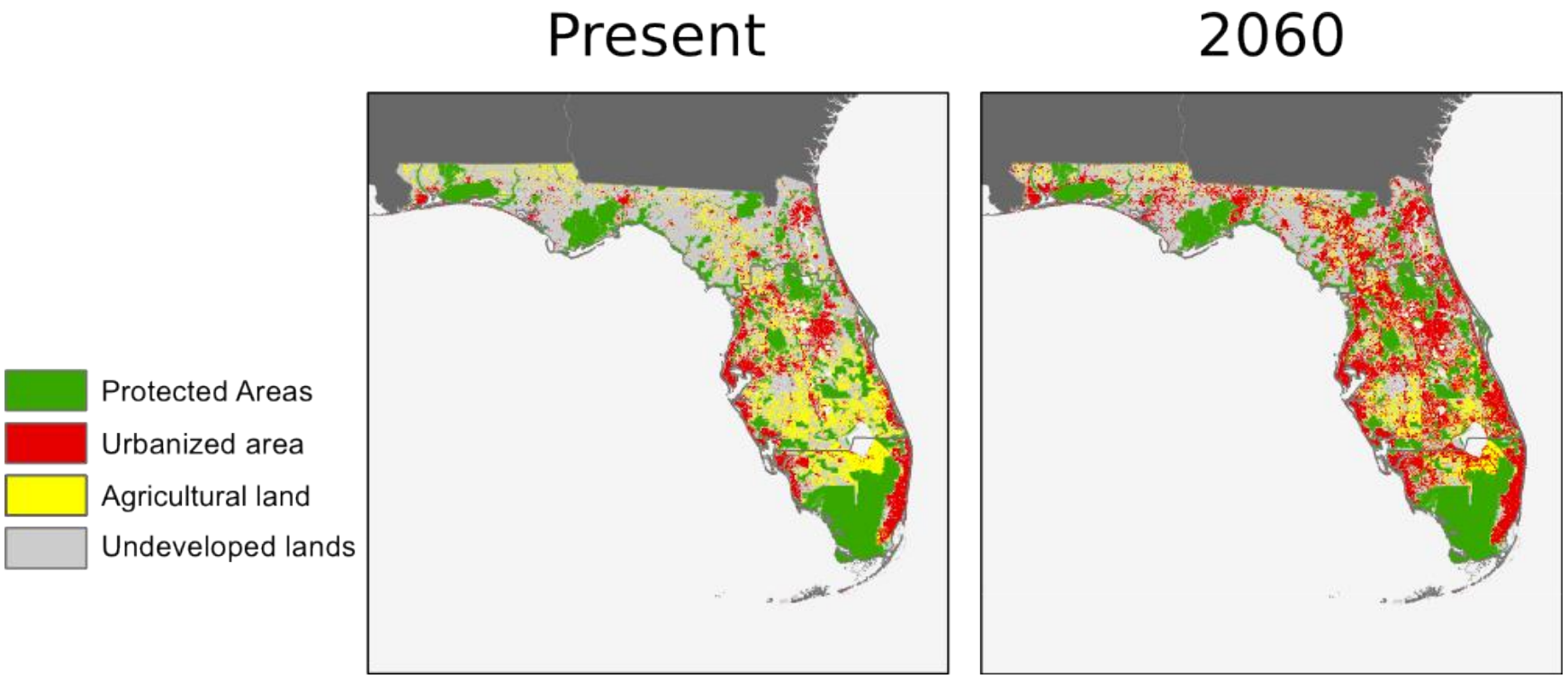

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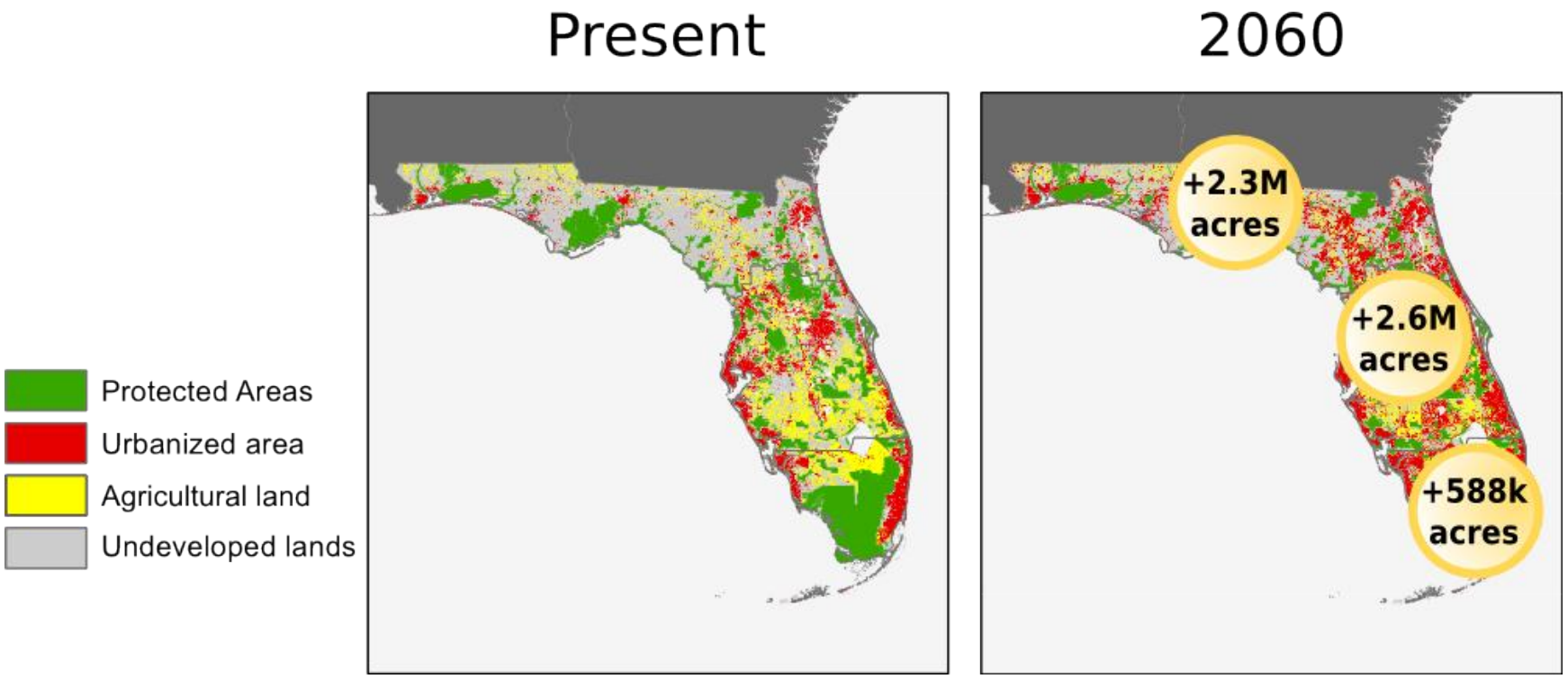

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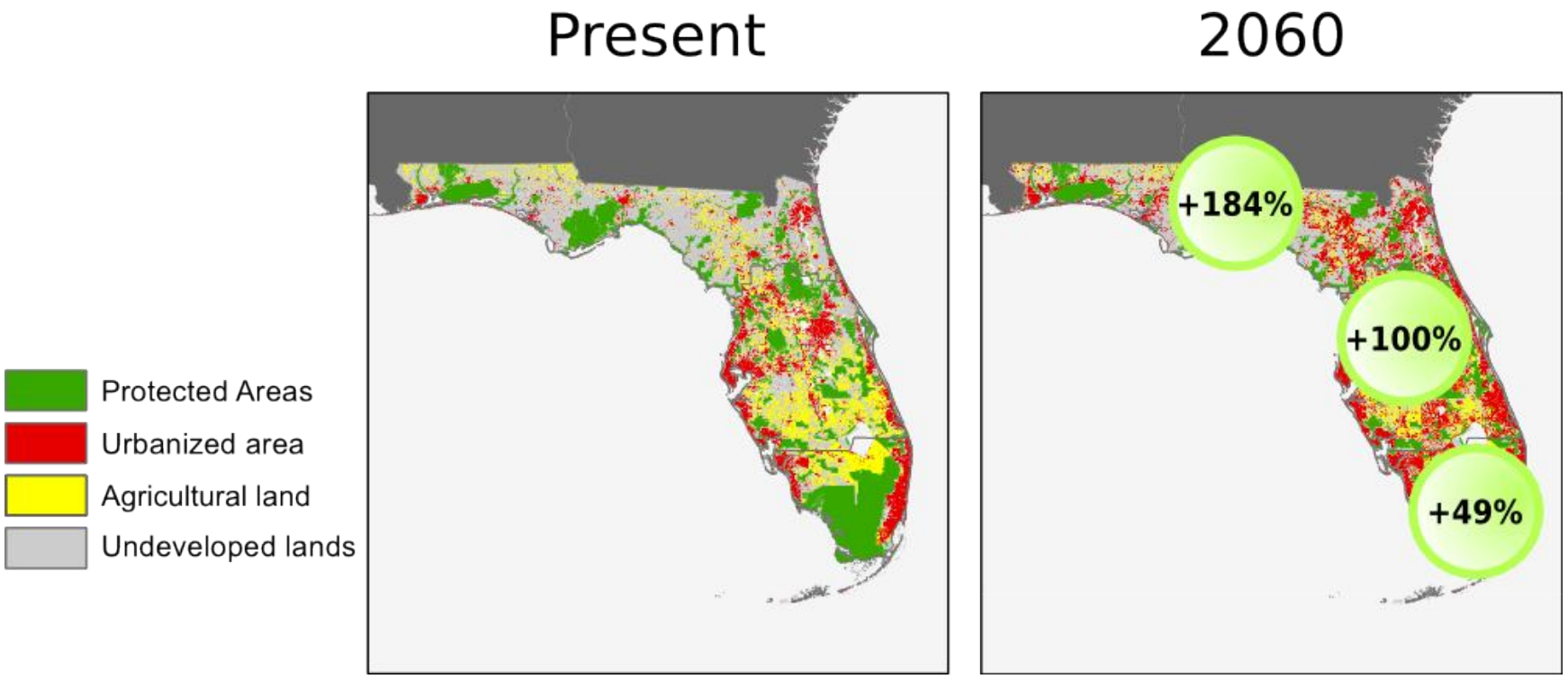

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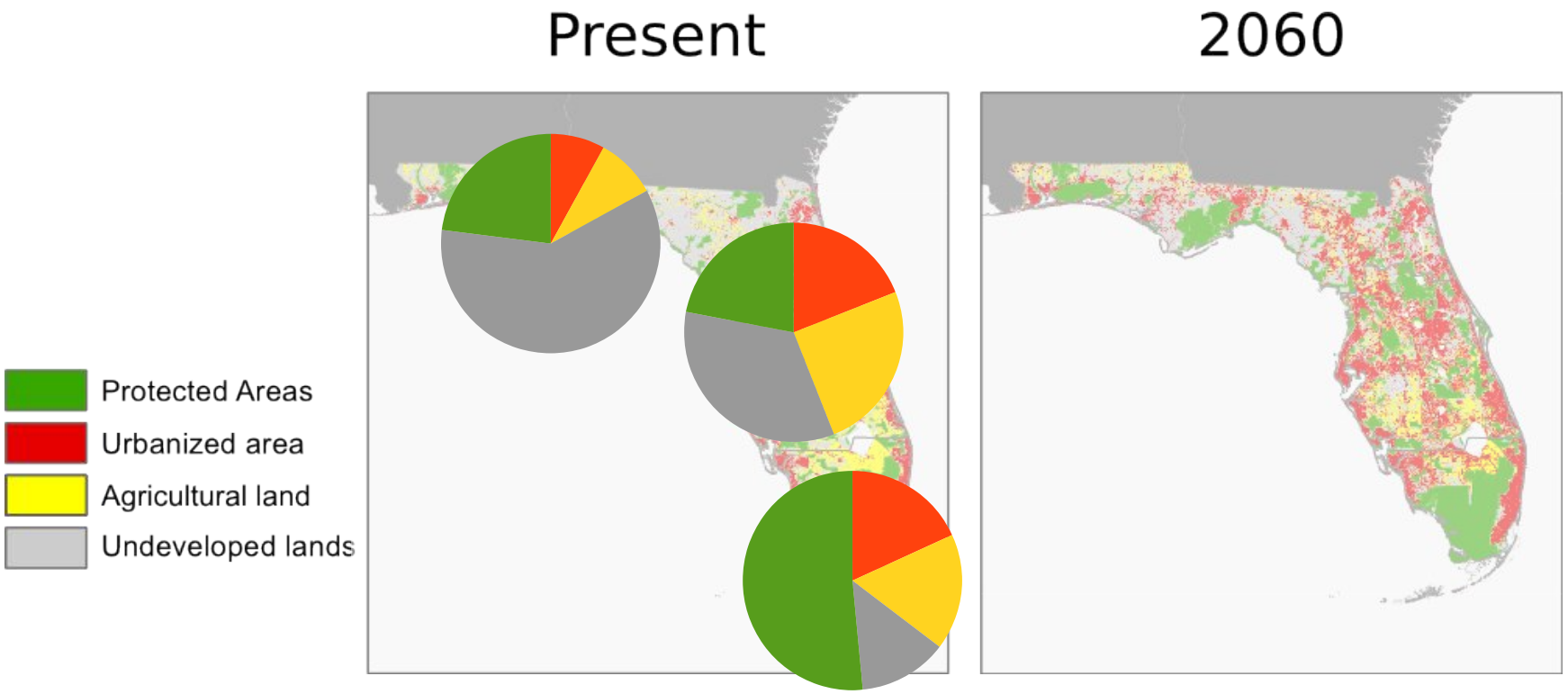

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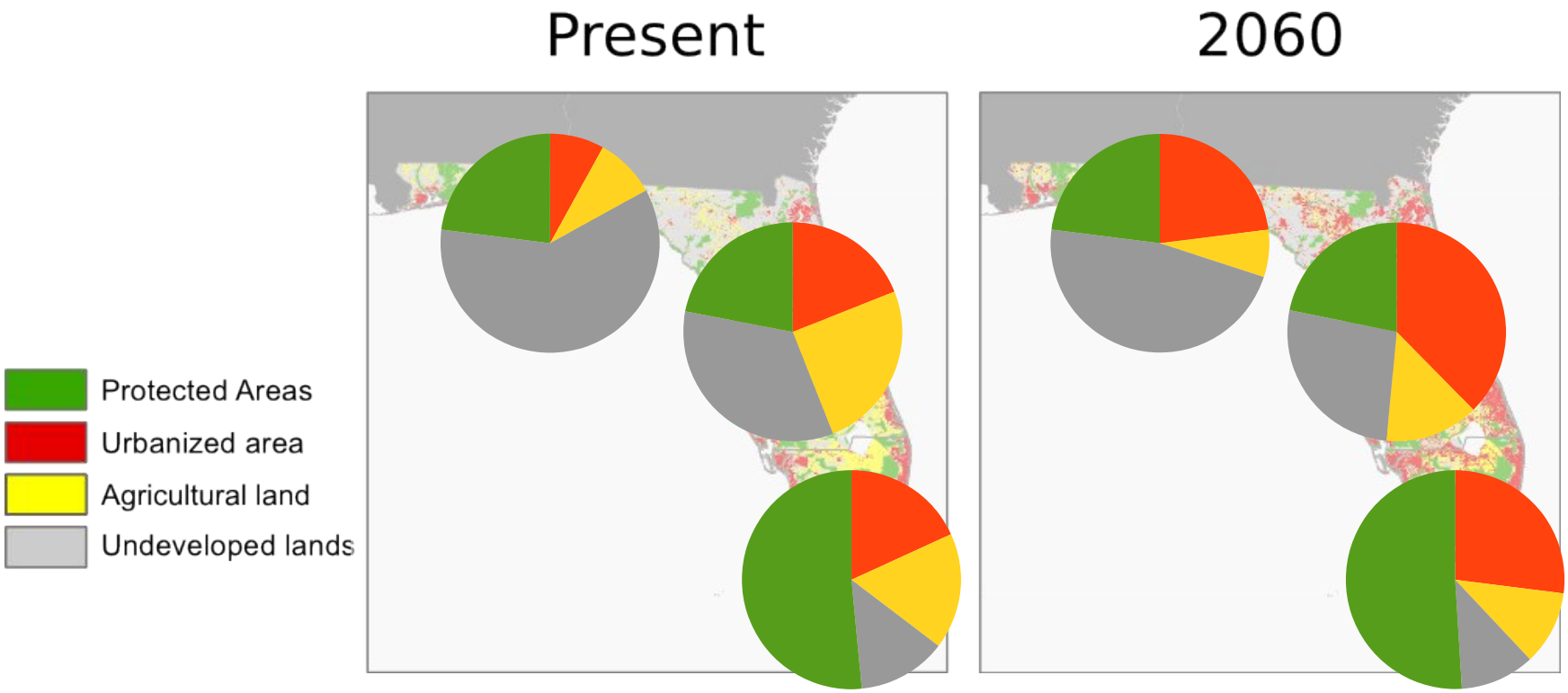

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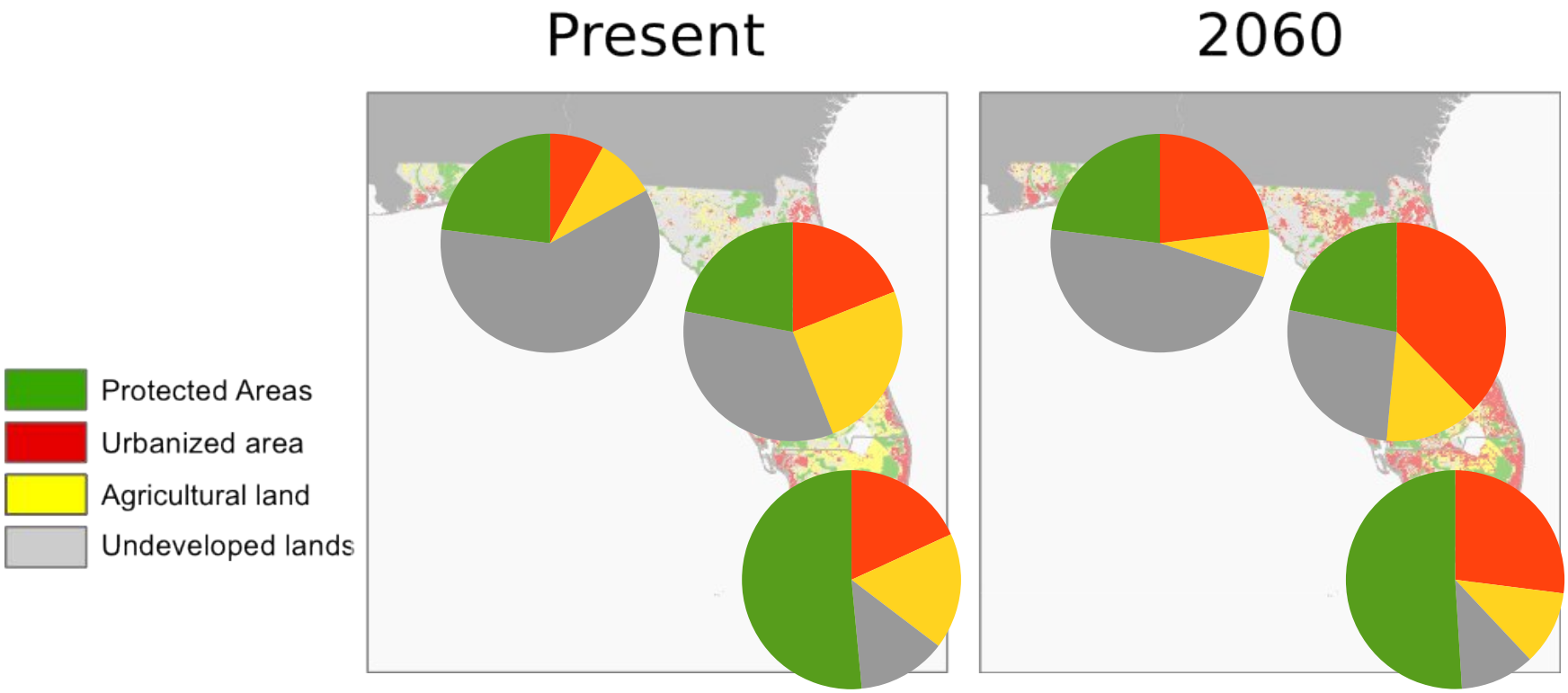
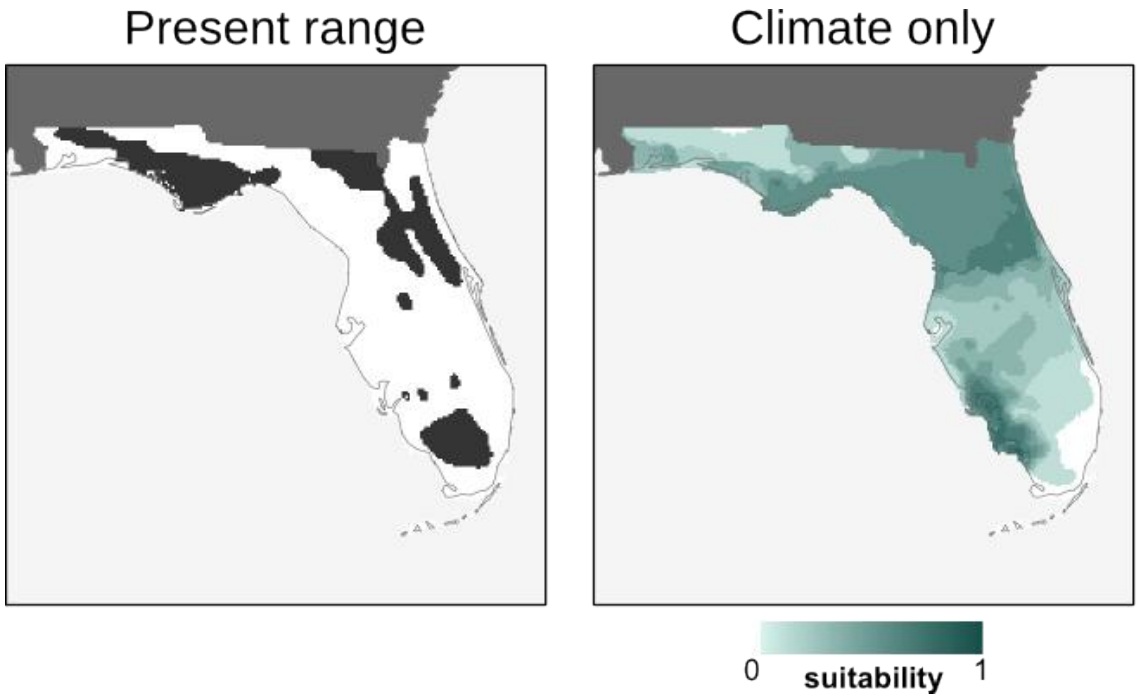


# WILDLIFE IN FLORIDA

# WILDLIFE IN FLORIDA

Present range

# WILDLIFE IN FLORIDA



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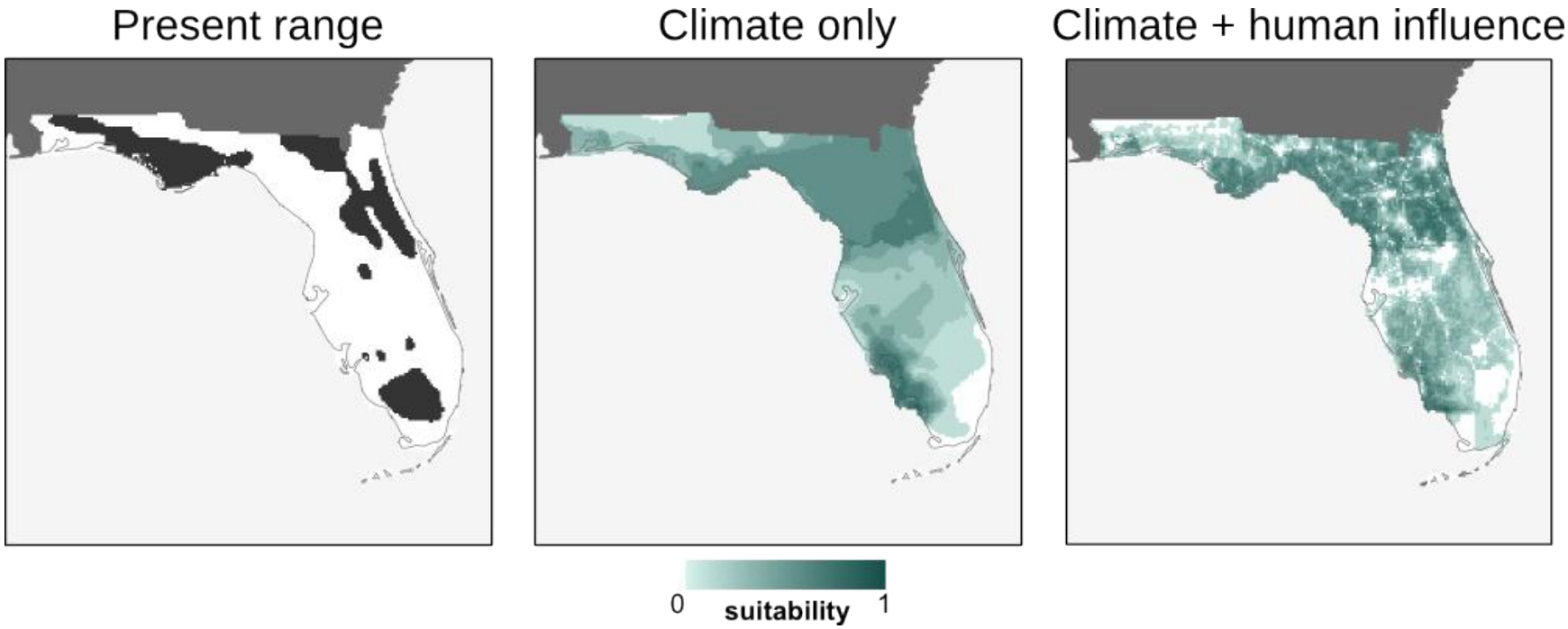
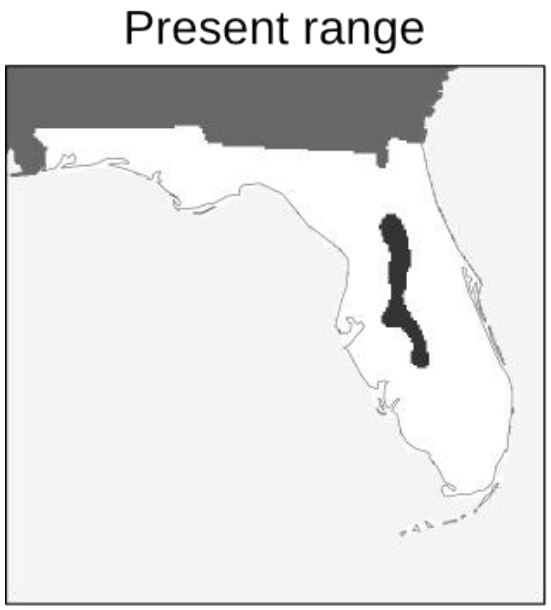


# WILDLIFE IN FLORIDA

Florida
sand skink

# WILDLIFE IN FLORIDA



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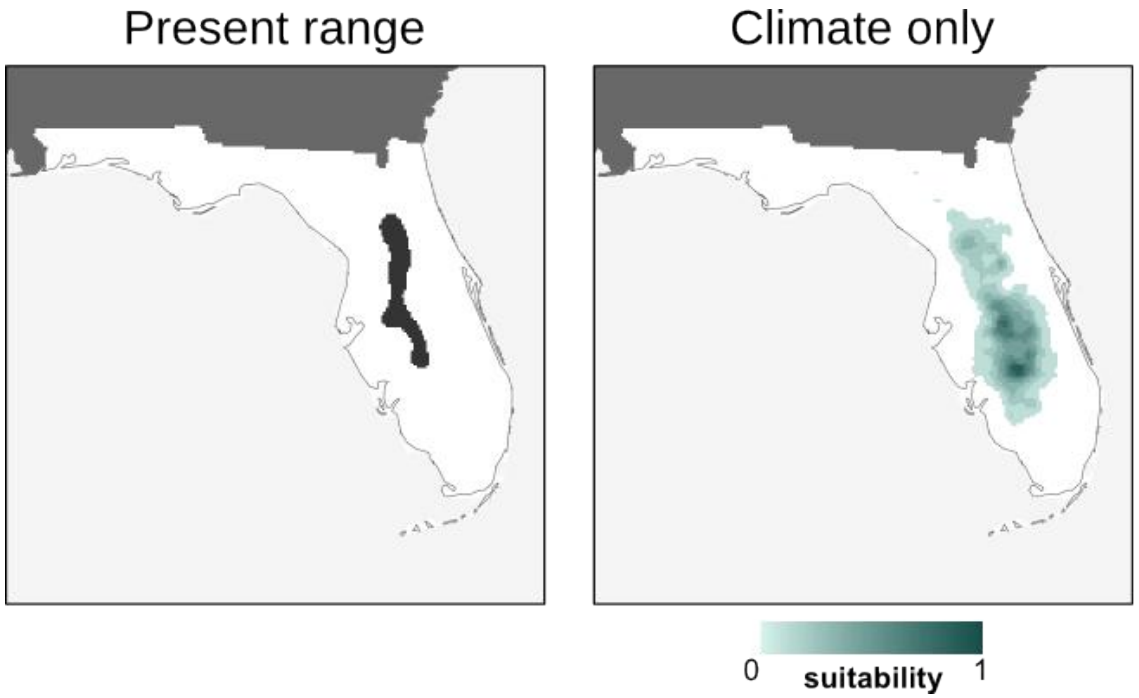

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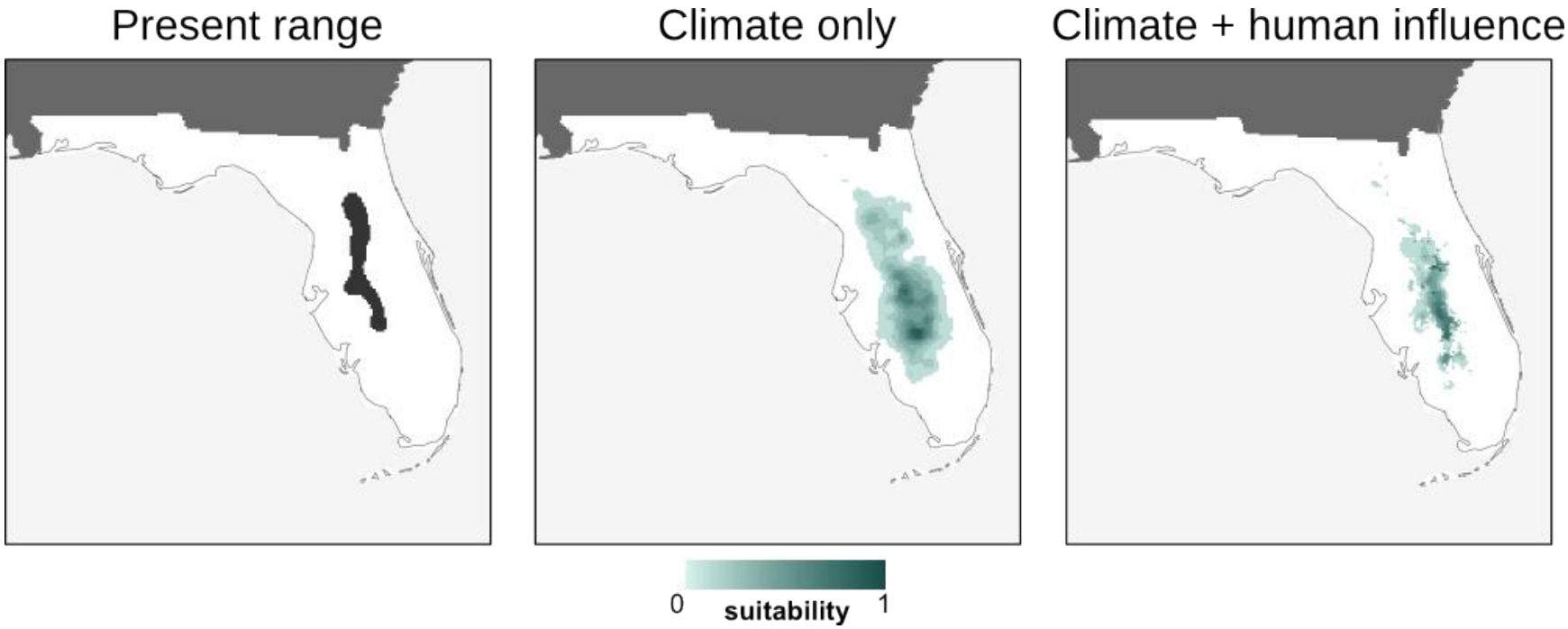
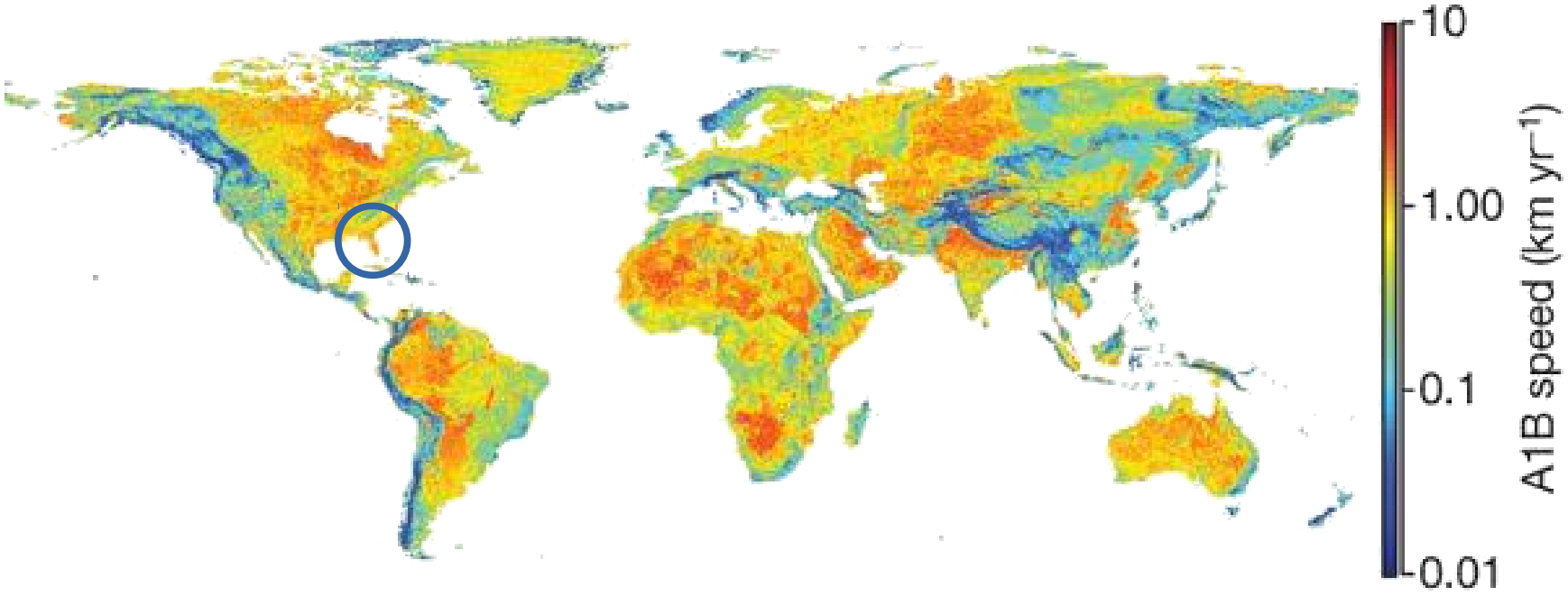


UF

# IS CLIMATE CHANGING MORE RAPIDLY THAN SPECIES CAN ADAPT?

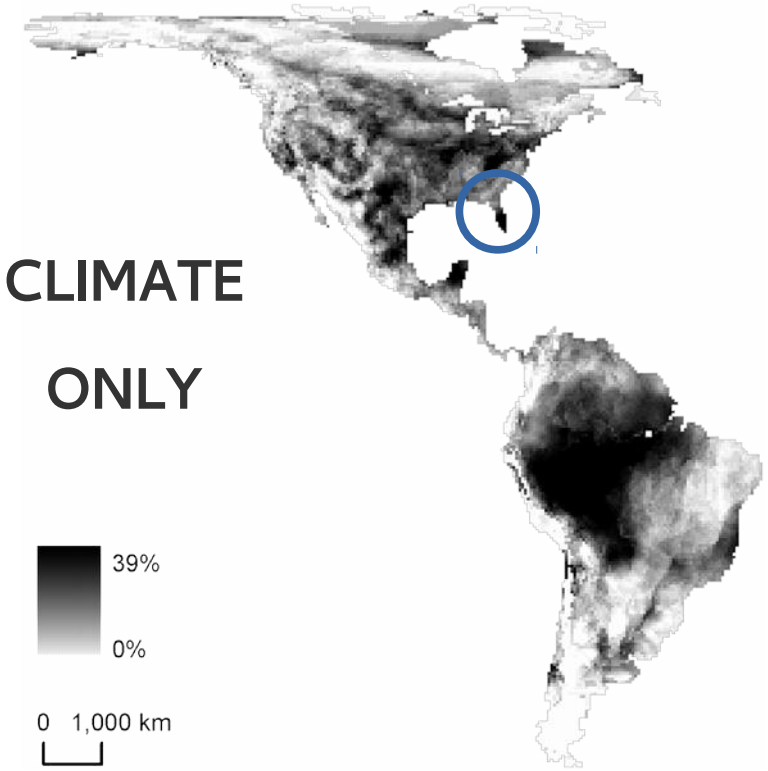
# CLIMATE VELOCITY

2000-2100



# DISPERSAL VS. GLOBAL CHANGE

## Mammals' inability to keep up with change



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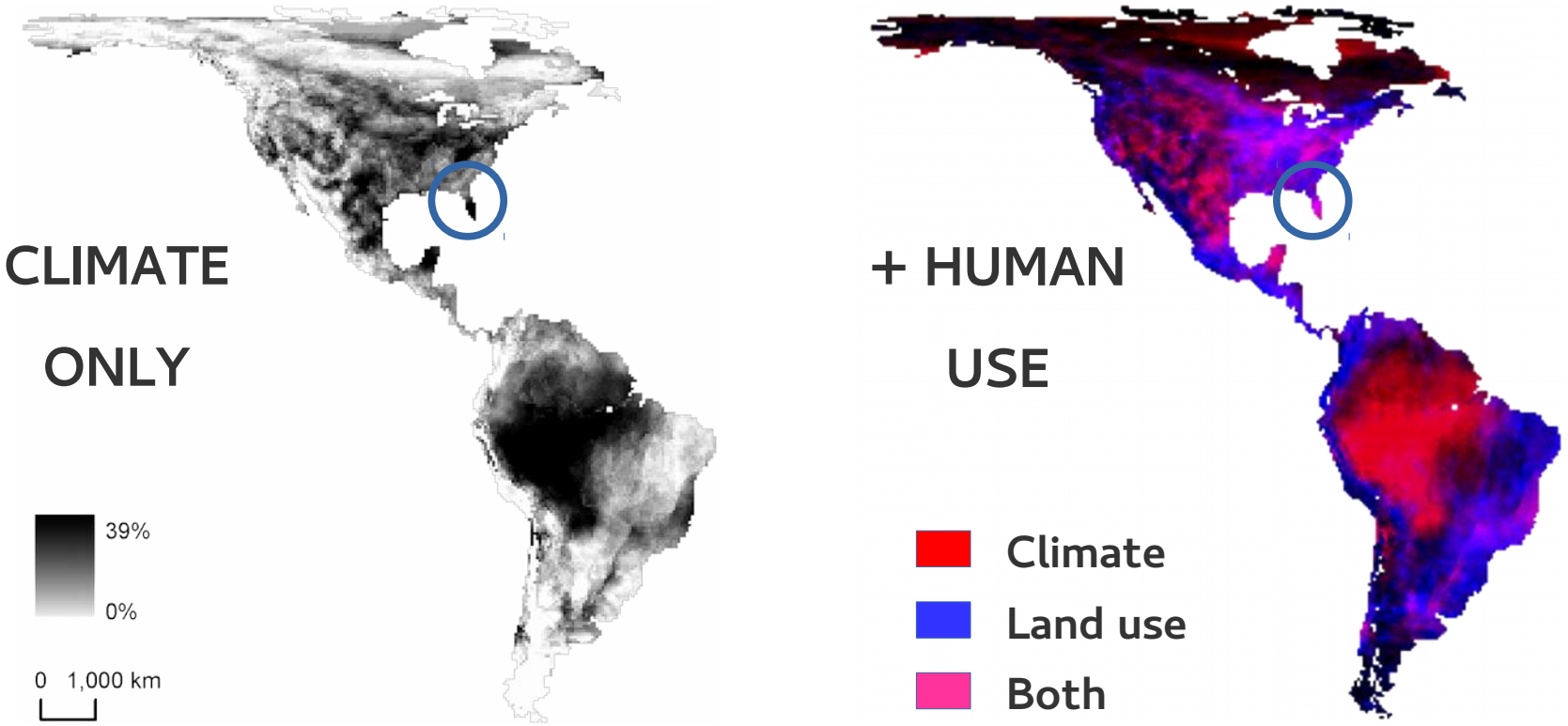
## Mammals' inability to keep up with change



# MOVEMENT CORRIDORS?

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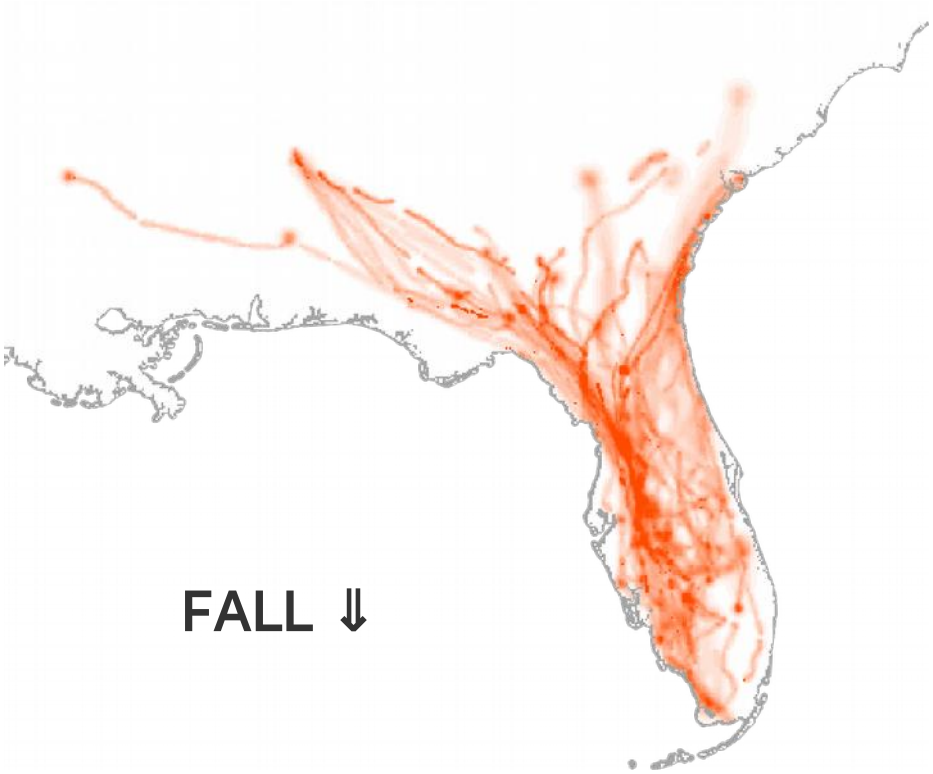
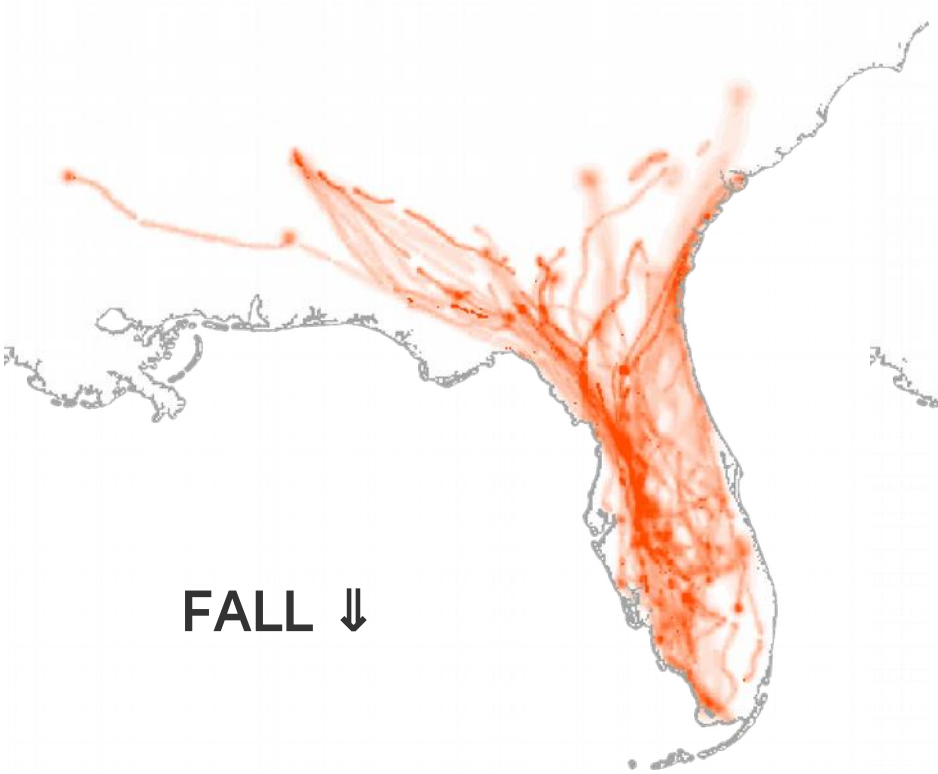
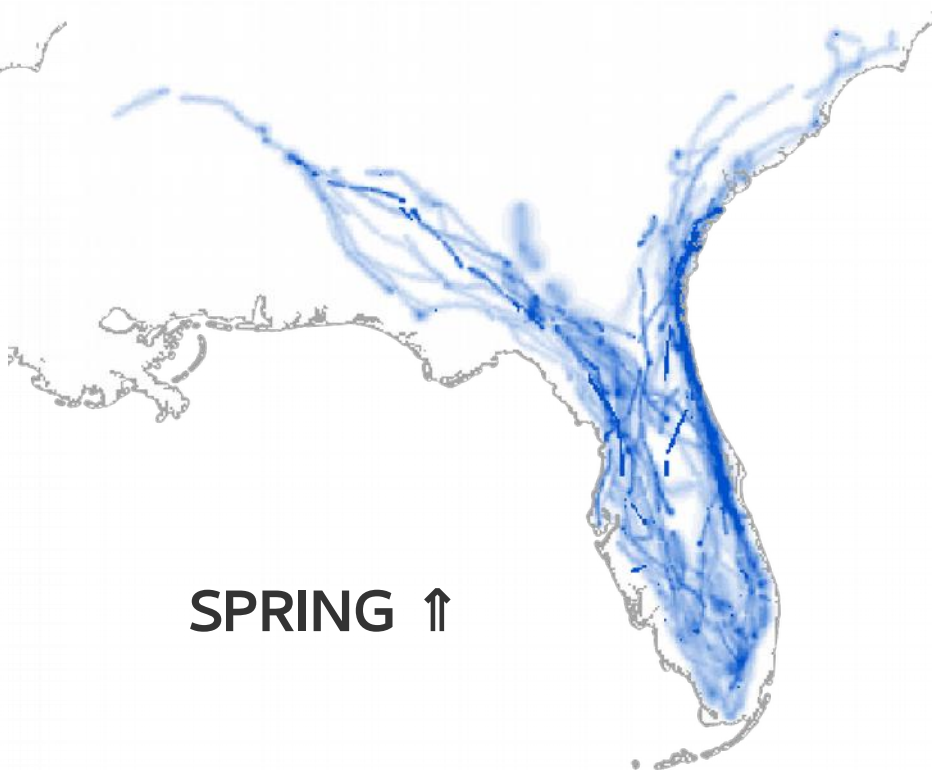


FALL ⇓

# MOVEMENT CORRIDORS?



FALL ⇓



SPRING ⇑

# MOVEMENT CORRIDORS?

**Florida Wildlife Corridor**

http://floridawildlifecorridor.org/

# BROWARD BIOBLITZ

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- November 2018: Tree Tops Park
- March 2019: Quiet Waters Park
- April 2020: Long Key Nature Center?
- …and more to come!

*Contact us!*

*Thanks for your attention!*

Contact me: basille@ufl.edu