NOAA FISHERIES

Science & Technology

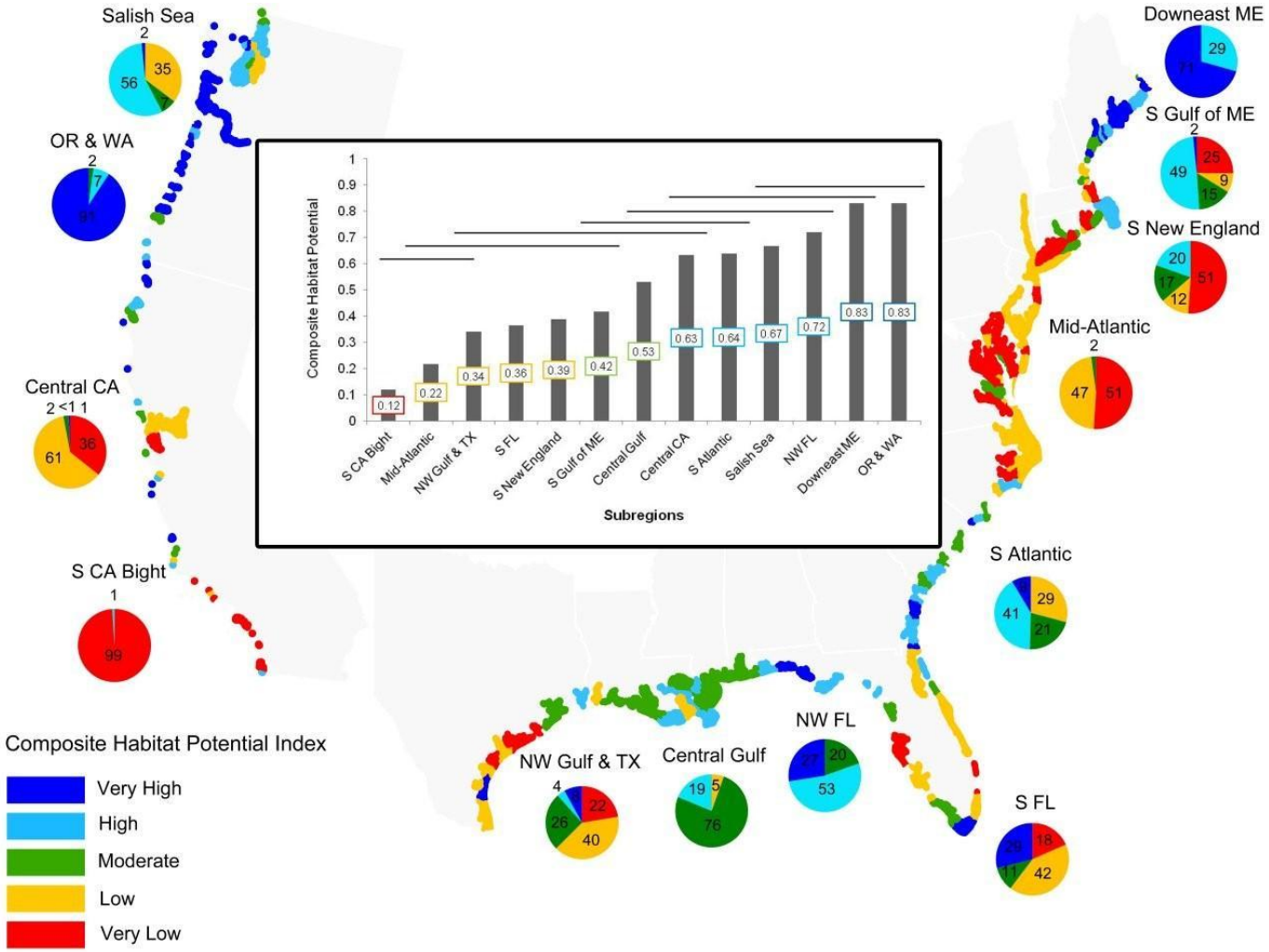
NFHP National Marine Assessment

Gulf of Mexico Demonstration Project

Lessons Learned and Next Steps

NFHP Science and Data Committee
February 11, 2014

2010 National Estuary Assessment



2015 Marine Assessment Tasks

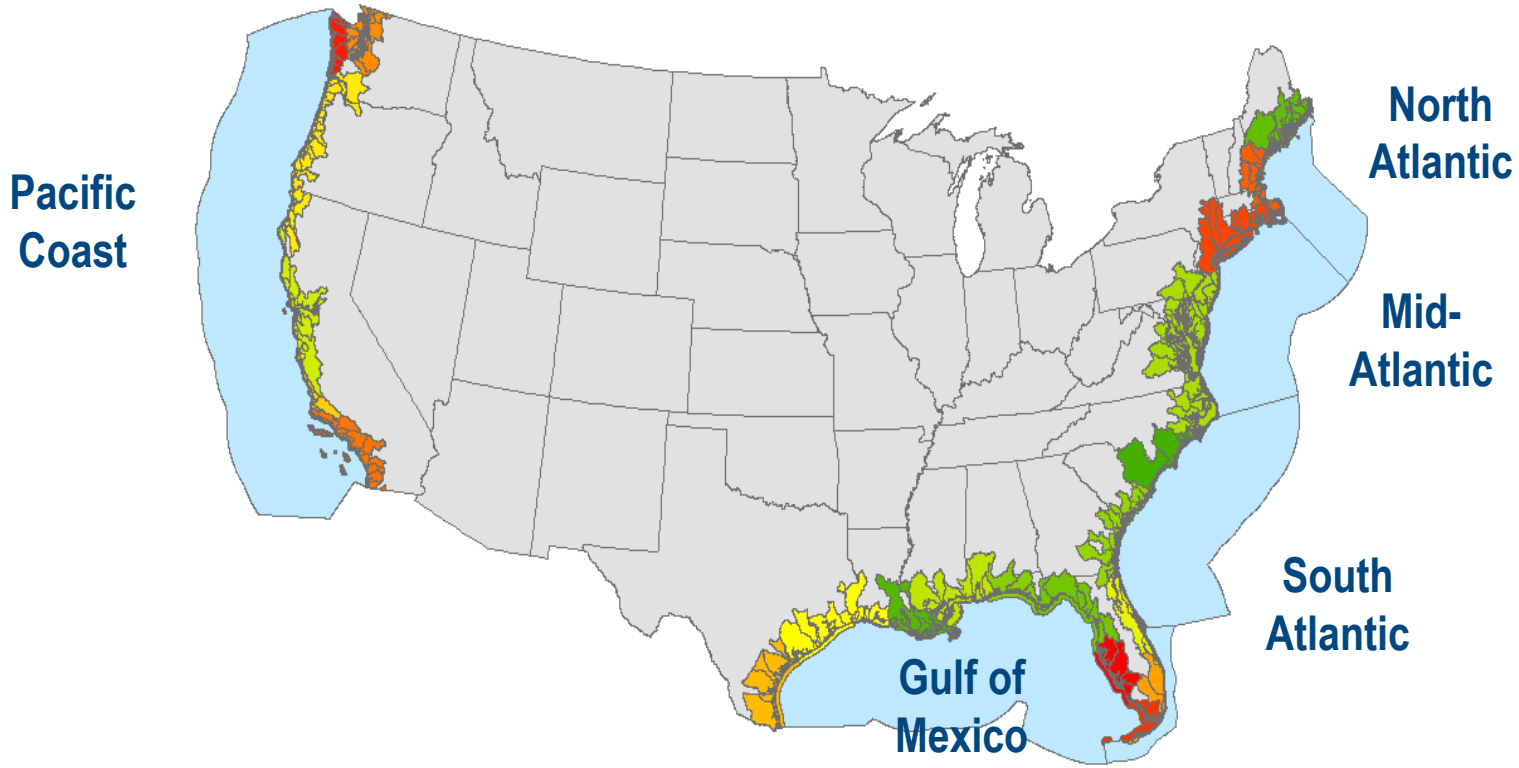
1. Catalog all FHP assessments completed or underway
2. Improve analytical basis of marine assessment to inland standards by incorporating all available fish and shellfish data and stressor relationships and addressing additional gaps
3. Incorporate additional spatial framework information for estuaries in Alaska
4. Incorporate additional spatial framework information for estuaries and nearshore-marine habitats in Hawaii
5. Develop an initial assessment of nearshore-marine habitats
6. Develop an initial assessment of offshore-marine habitats
7. Determine how to incorporate process data using FHP demonstration projects
8. Add socioeconomic data to spatial framework
9. Incorporate available fisheries management and FHP objectives into the spatial framework
10. Develop inland-marine system scoring linkages
11. Incorporate the final Great Lakes assessment into overall Assessment
12. Attribute additional water quality data
13. Attribute additional mining and energy development data

Assessment Challenges

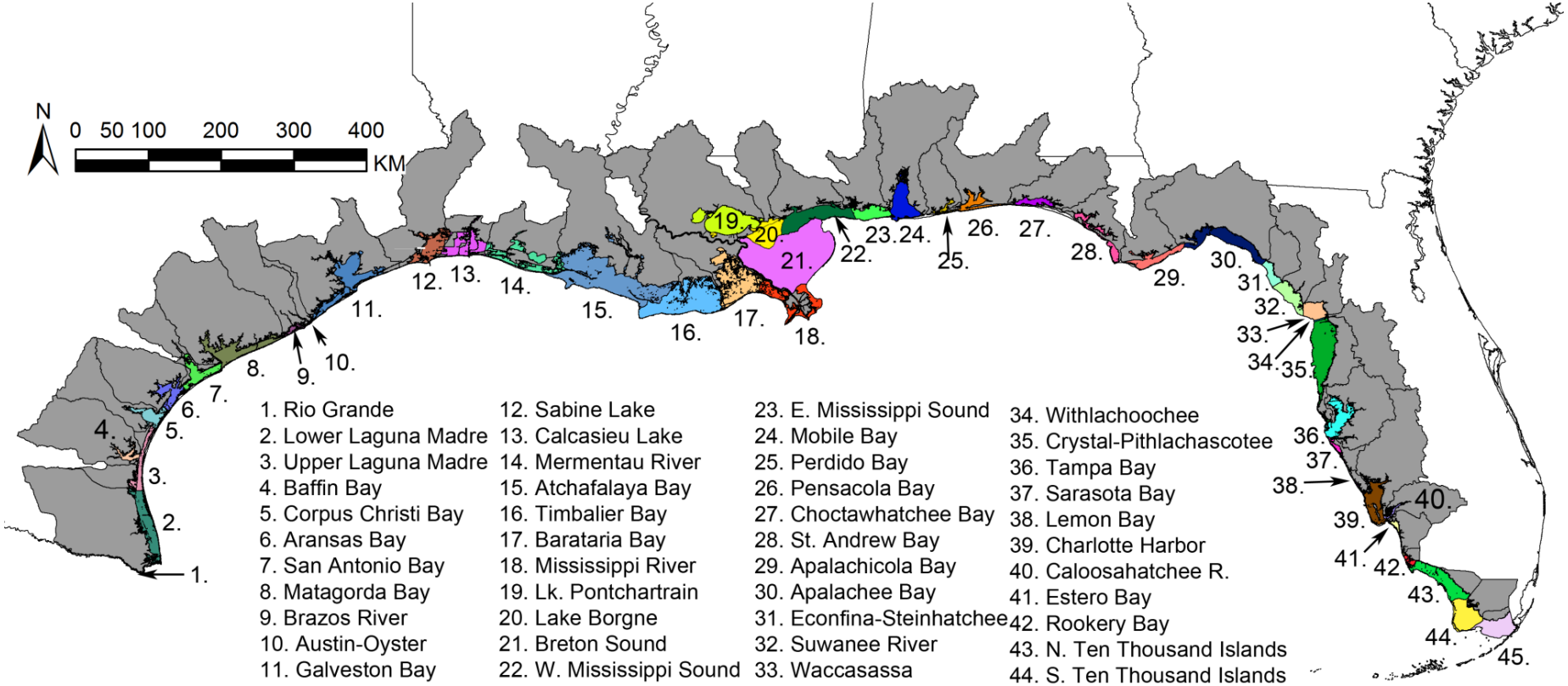
1. Selecting appropriate indicators
2. Simple vs. robust methods
3. Data “noise”
4. Sampling effort
5. Hierarchical relationships

Assessment Approach

- Regional scale
- Add fish/shellfish data
- Use robust models
- Active FHP participation



Demonstration Project



1. Rio Grande
2. Lower Laguna Madre
3. Upper Laguna Madre
4. Baffin Bay
5. Corpus Christi Bay
6. Aransas Bay
7. San Antonio Bay
8. Matagorda Bay
9. Brazos River
10. Austin-Oyster
11. Galveston Bay
12. Sabine Lake
13. Calcasieu Lake
14. Mermentau River
15. Atchafalaya Bay
16. Timbalier Bay
17. Barataria Bay
18. Mississippi River
19. Lk. Pontchartrain
20. Lake Borgne
21. Breton Sound
22. W. Mississippi Sound
23. E. Mississippi Sound
24. Mobile Bay
25. Perdido Bay
26. Pensacola Bay
27. Choctawhatchee Bay
28. St. Andrew Bay
29. Apalachicola Bay
30. Apalachee Bay
31. Econfina-Steinhatchee
32. Suwanee River
33. Waccasassa
34. Withlachoochee
35. Crystal-Pithlachascotee
36. Tampa Bay
37. Sarasota Bay
38. Lemon Bay
39. Charlotte Harbor
40. Caloosahatchee R.
41. Estero Bay
42. Rookery Bay
43. N. Ten Thousand Islands
44. S. Ten Thousand Islands
45. Floriday Keys

General assessment steps

Step 1: Refine geospatial framework

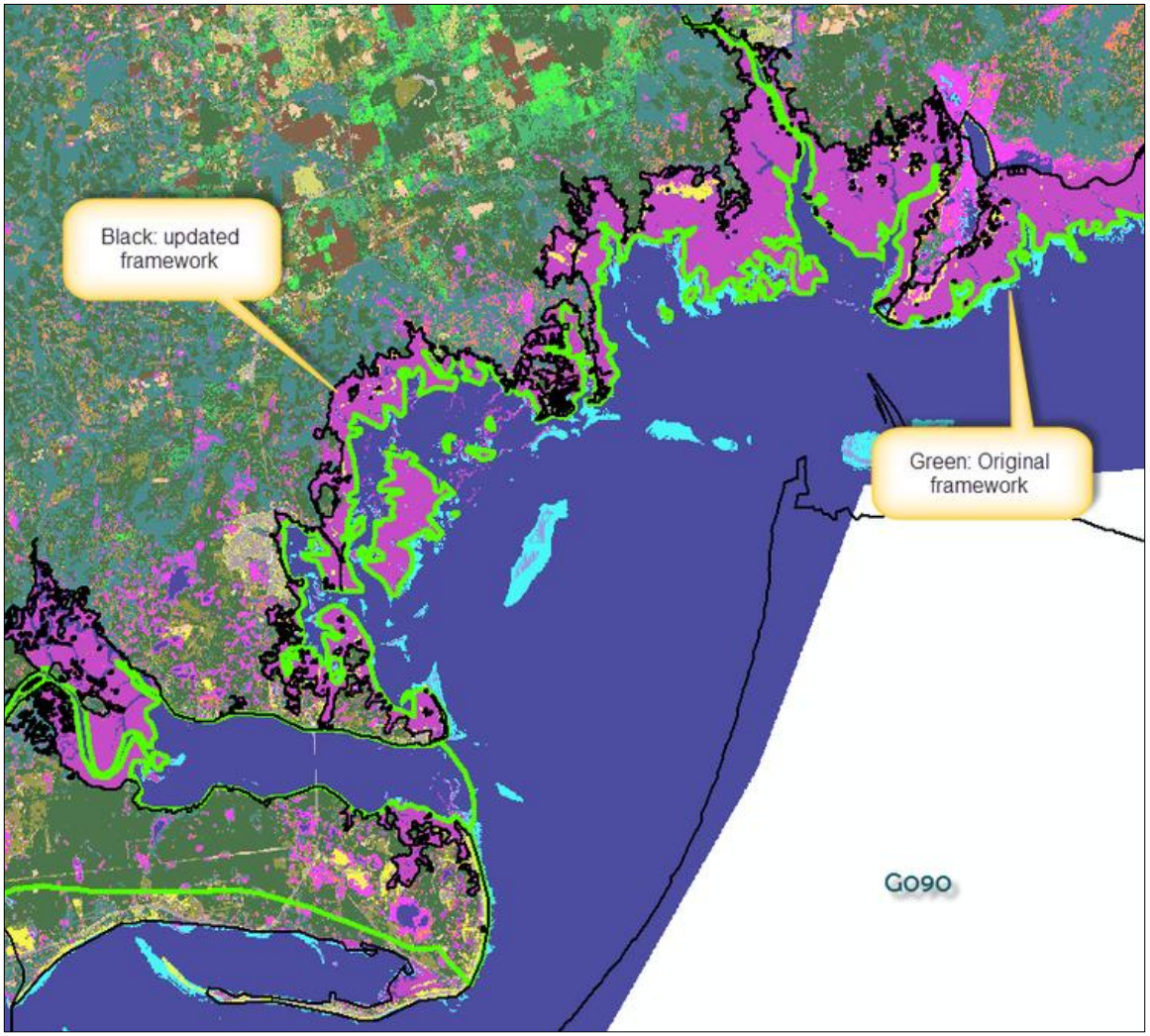
Step 2: Assemble and evaluate data

Step 3: Rapid screening

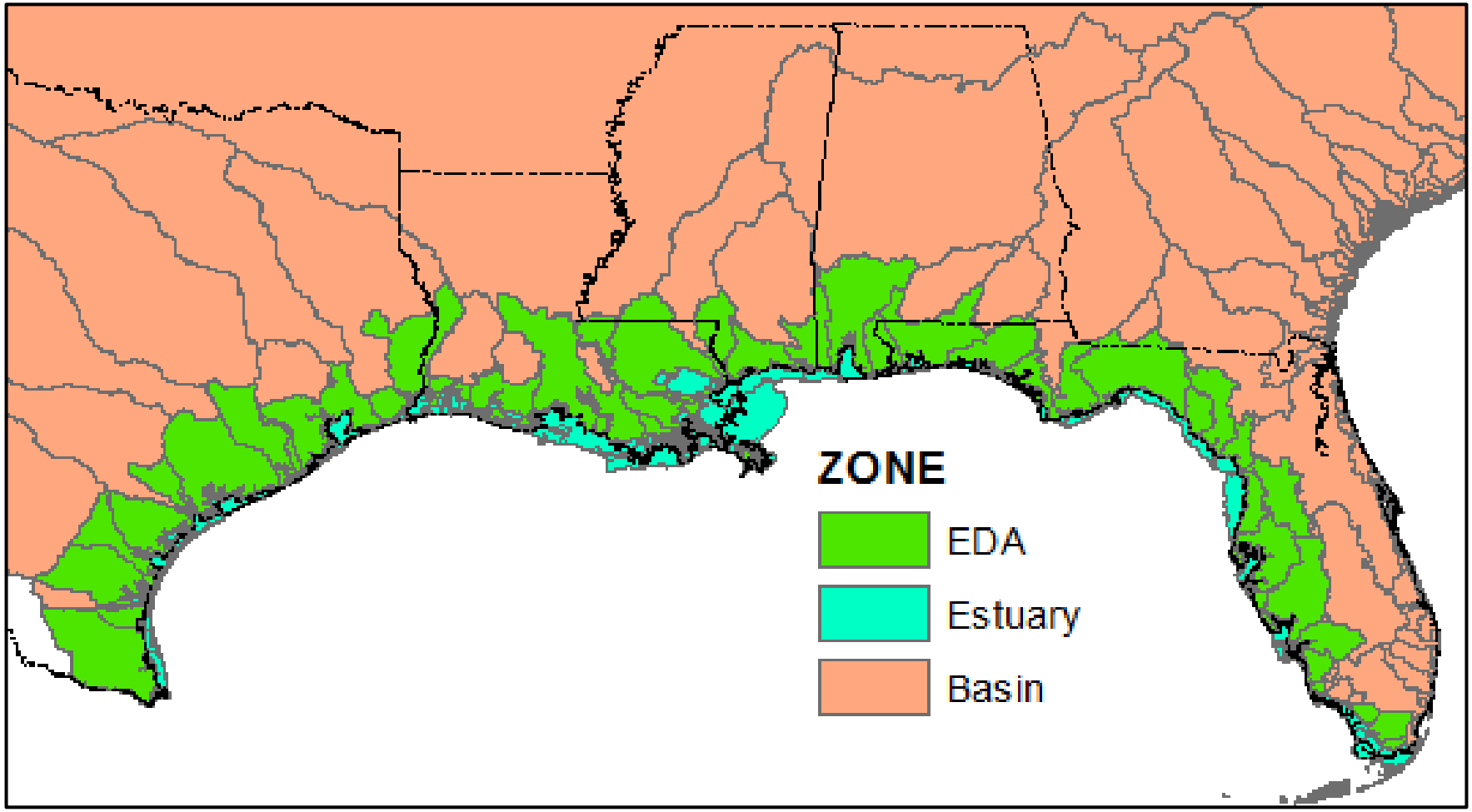
Step 4: Species and community modeling

Step 5: Synthesize and map results

Step 1: Geospatial Framework



Step 1: Geospatial Framework



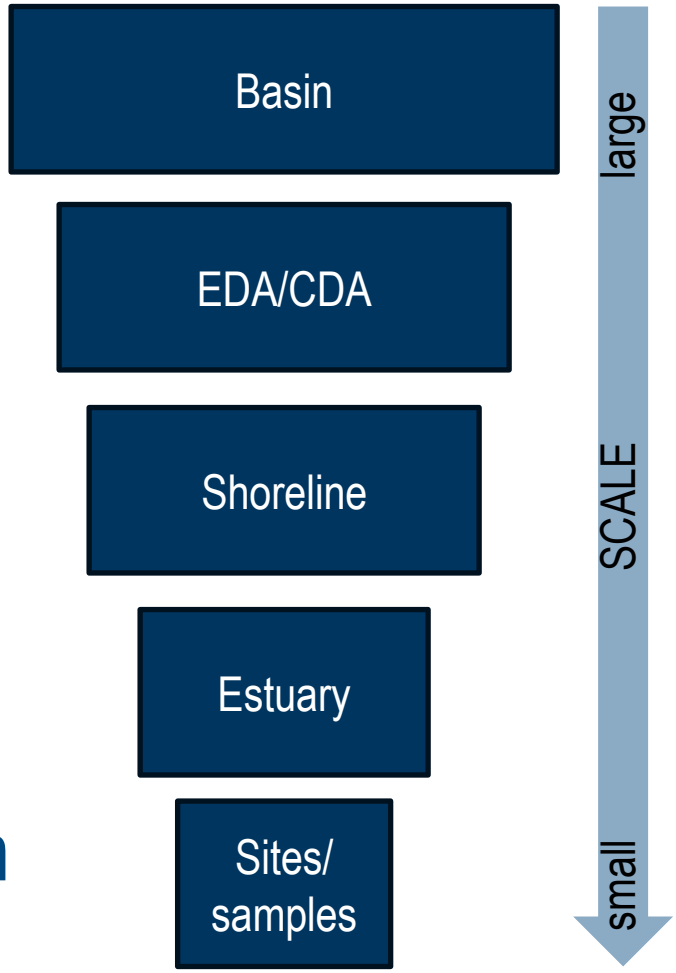
Step 2: Assemble data

Landscape stressors

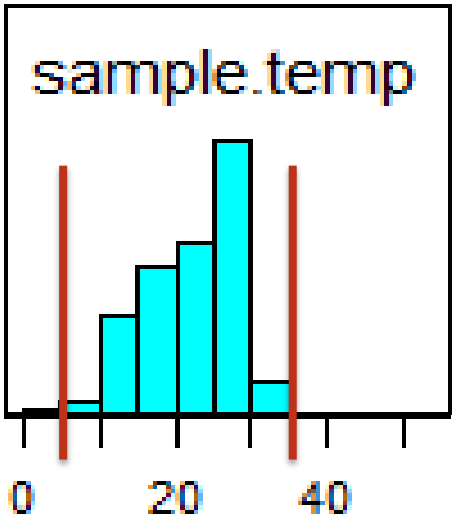
Local habitat disturbance

Fish community

Natural environmental variation



Step 2: Evaluate Data



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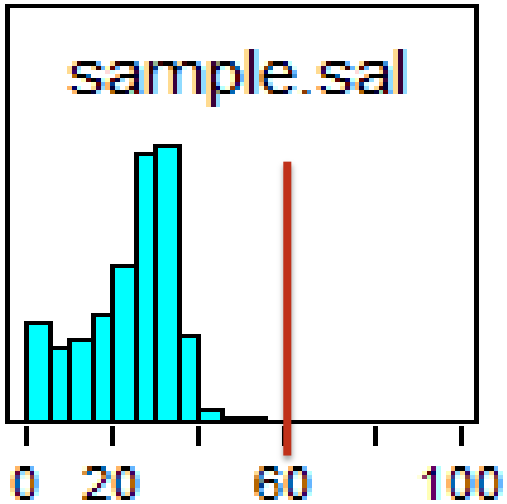

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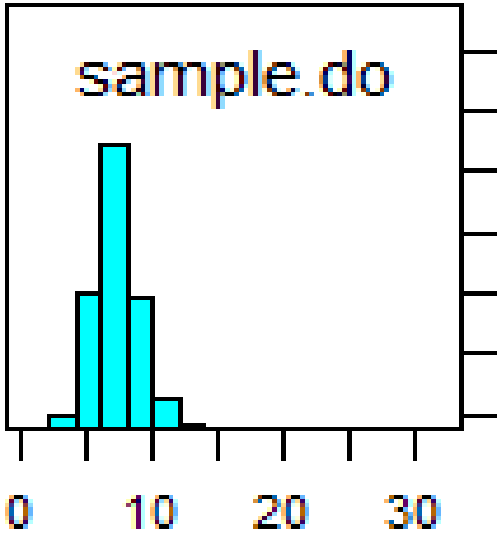

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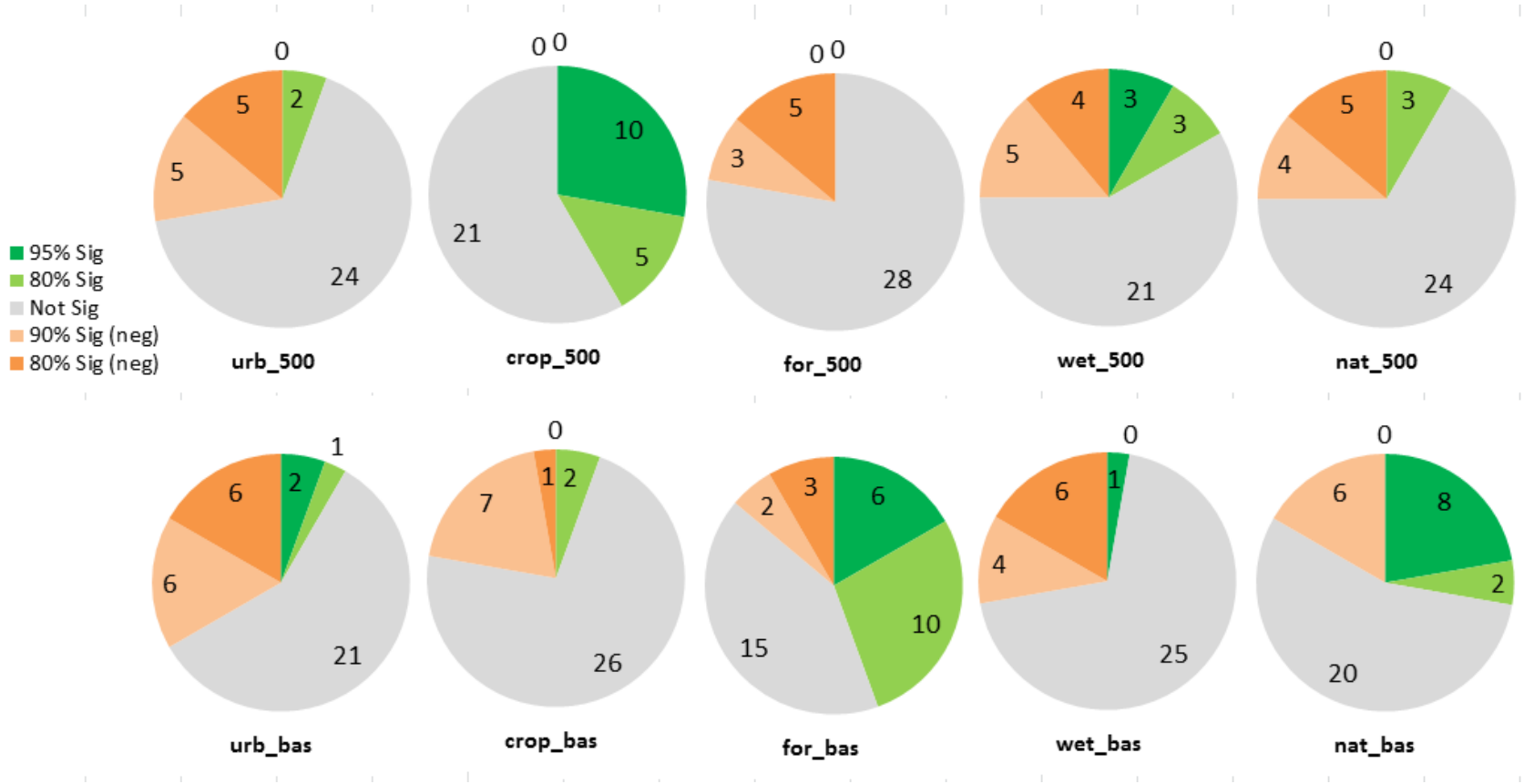
Step 3: Rapid Screening

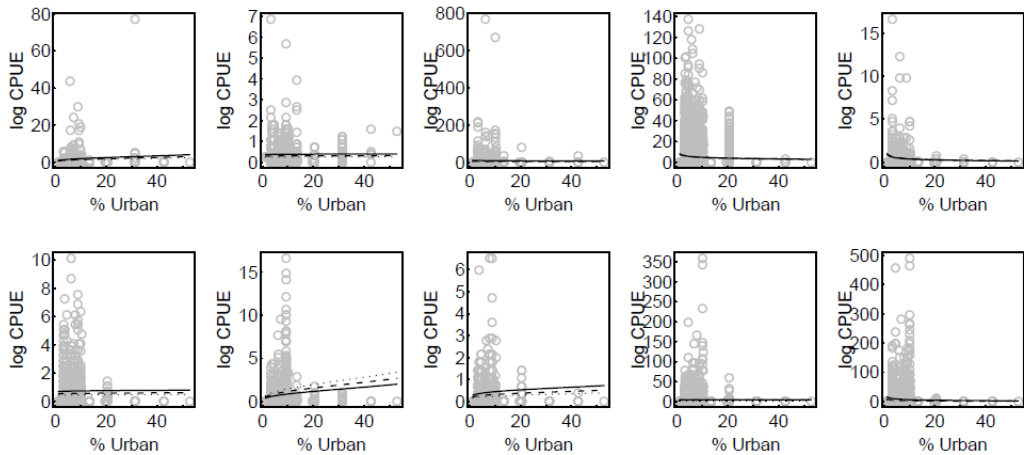


Step 3: Rapid Screening

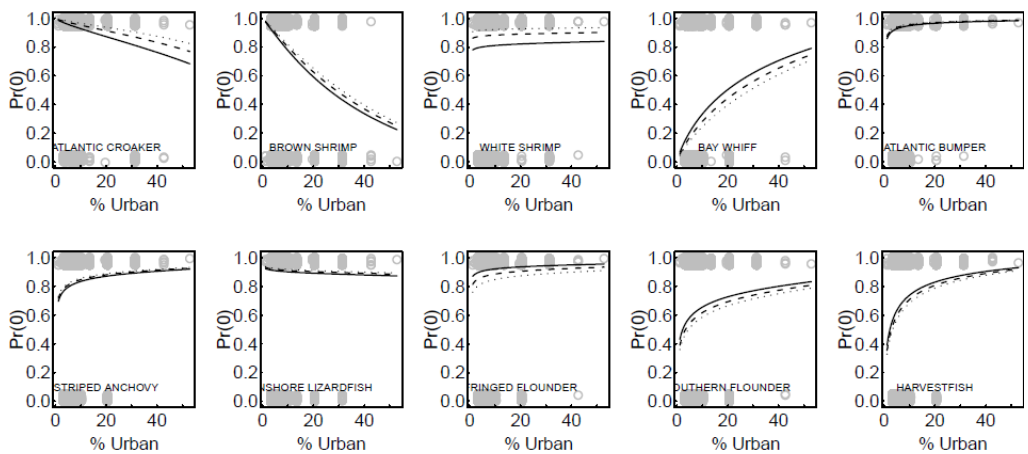
Species Name	Scientific Name	urb_500	crop_500	for_500	wet_500	urb_bas	crop_bas	for_bas	wet_bas	nat_500
ATLANTIC CROAKER	*Micropogonias undulatus*	-16%	14%	-5%	4%	-41%	13%	18%	-22%	1%
BAY ANCHOVY	*Anchoa mitchilli*	-1%	1%	-5%	5%	-7%	1%	6%	-5%	2%
BROWN SHRIMP	*Farfantepenaeus aztecus*	-19%	11%	-5%	-3%	-36%	7%	13%	-20%	-7%
SPOT	*Leiostomus xanthurus*	-7%	11%	0%	-8%	-12%	-1%	13%	-15%	-8%
BLUE CRAB	*Callinectes sapidus*	3%	7%	-9%	-7%	9%	2%	-7%	2%	-13%
HARDHEAD CATFISH	*Ariopsis felis*	0%	11%	-6%	-6%	-4%	3%	7%	-12%	-10%
SAND SEATROUT	*Cynoscion arenarius*	8%	0%	-10%	6%	-3%	-3%	4%	-5%	0%
WHITE SHRIMP	*Litopenaeus setiferus*	-18%	14%	-5%	-3%	-47%	5%	14%	-18%	-6%
PINFISH	*Lagodon rhomboides*	-5%	2%	4%	-10%	-2%	-3%	5%	-7%	-8%
GULF MENHADEN	*Brevoortia patronus*	0%	4%	-4%	2%	-3%	-3%	2%	0%	0%
SILVER PERCH	*Bairdiella chrysoura*	-5%	7%	3%	-9%	-2%	1%	4%	-9%	-6%
GAFFTOP CATFISH	*Bagre marinus*	1%	8%	-4%	-1%	-3%	-3%	3%	-2%	-3%
BAY WHIFF	*Citharichthys spilopterus*	-7%	6%	0%	0%	-15%	-2%	6%	-4%	0%
LEAST PUFFER	*Sphoeroides parvus*	-2%	1%	-1%	3%	-4%	-2%	3%	0%	3%
ATLANTIC SPADEFISH	*Chaetodipterus faber*	0%	2%	-4%	5%	-2%	-3%	0%	1%	2%
ATLANTIC BUMPER	*Chloroscombrus chrysurus*	-1%	4%	-3%	5%	-9%	-3%	4%	1%	3%
STRIPED ANCHOVY	*Anchoa hepsetus*	-1%	1%	-1%	2%	-4%	-3%	3%	1%	2%
INSHORE LIZARDFISH	*Synodus foetens*	0%	0%	0%	1%	0%	-3%	1%	1%	1%
FRINGED FLOUNDER	*Etropus crossotus*	-3%	2%	1%	2%	-8%	-2%	3%	-1%	3%
SOUTHERN FLOUNDER	*Paralichthys lethostigma*	-4%	1%	0%	1%	-7%	0%	2%	-2%	1%
ATLANTIC STINGRAY	*Dasyatis sabina*	0%	2%	1%	-3%	0%	1%	0%	-2%	-2%
HOG CHOKER	*Trinectes maculatus*	1%	1%	0%	-2%	0%	1%	-1%	0%	-2%
CREVALLE JACK	*Caranx hippos*	-1%	2%	-4%	2%	-4%	-1%	1%	0%	0%

Step 4: Species Modeling

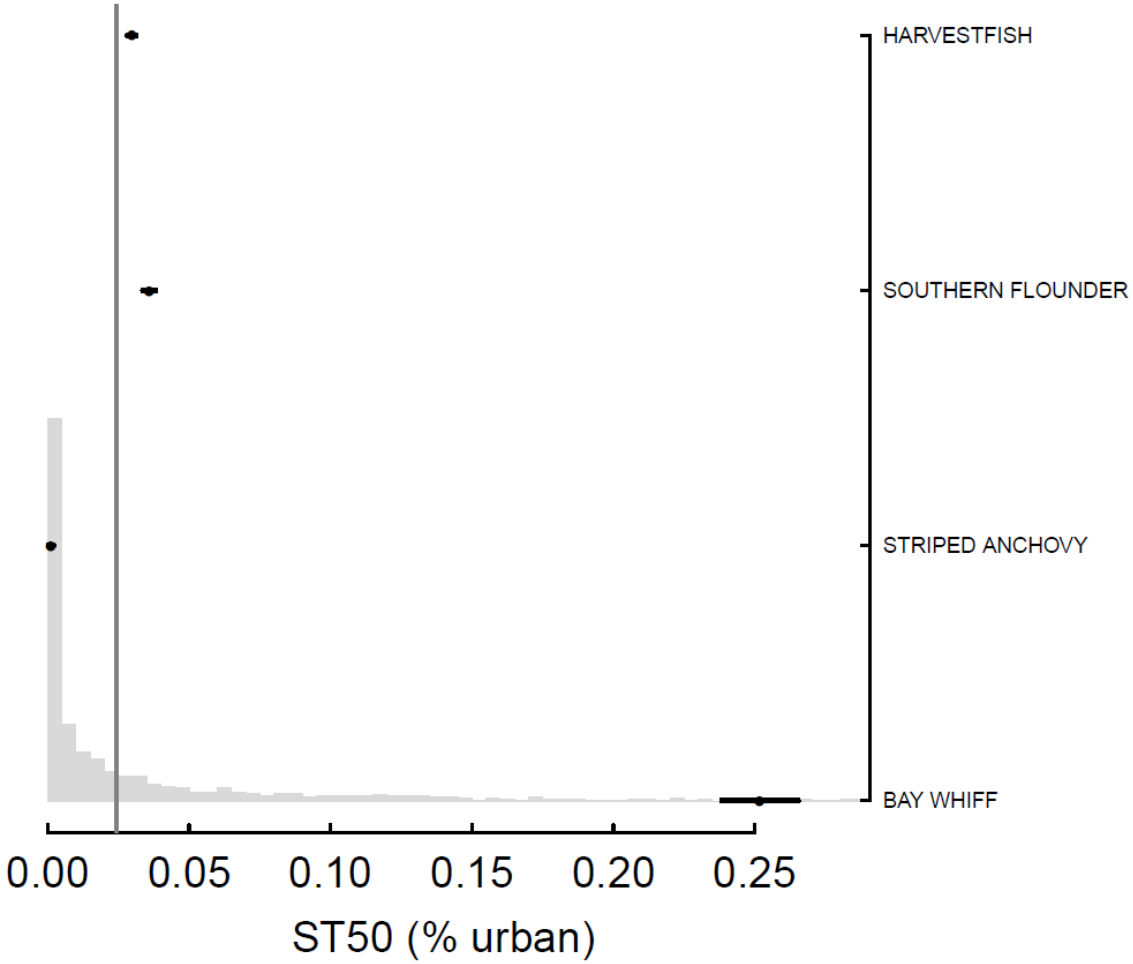
Abundance Model



Zero Model



Step 4: Species Modeling

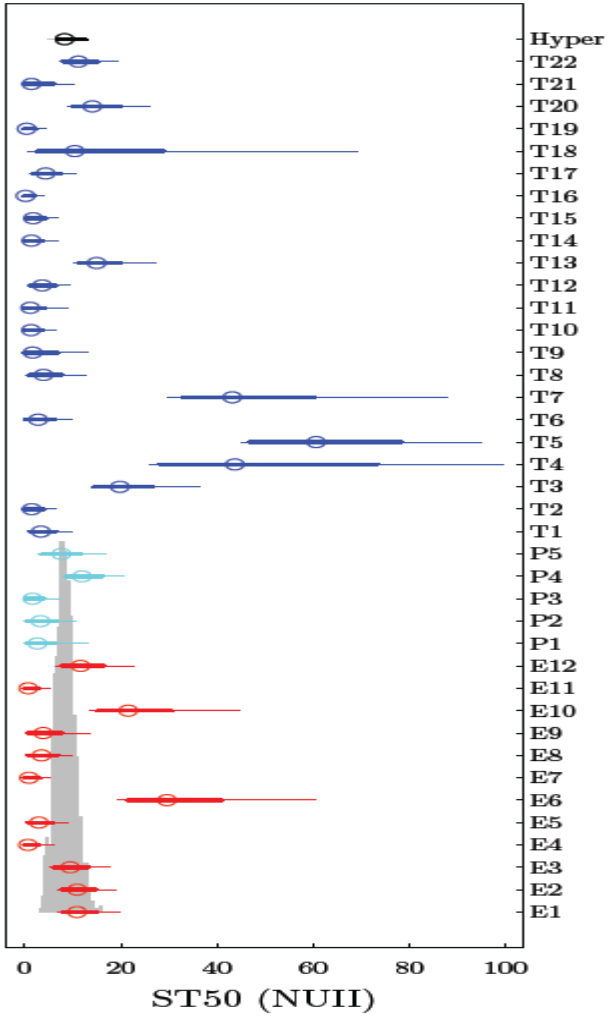


Step 4: Species Modeling

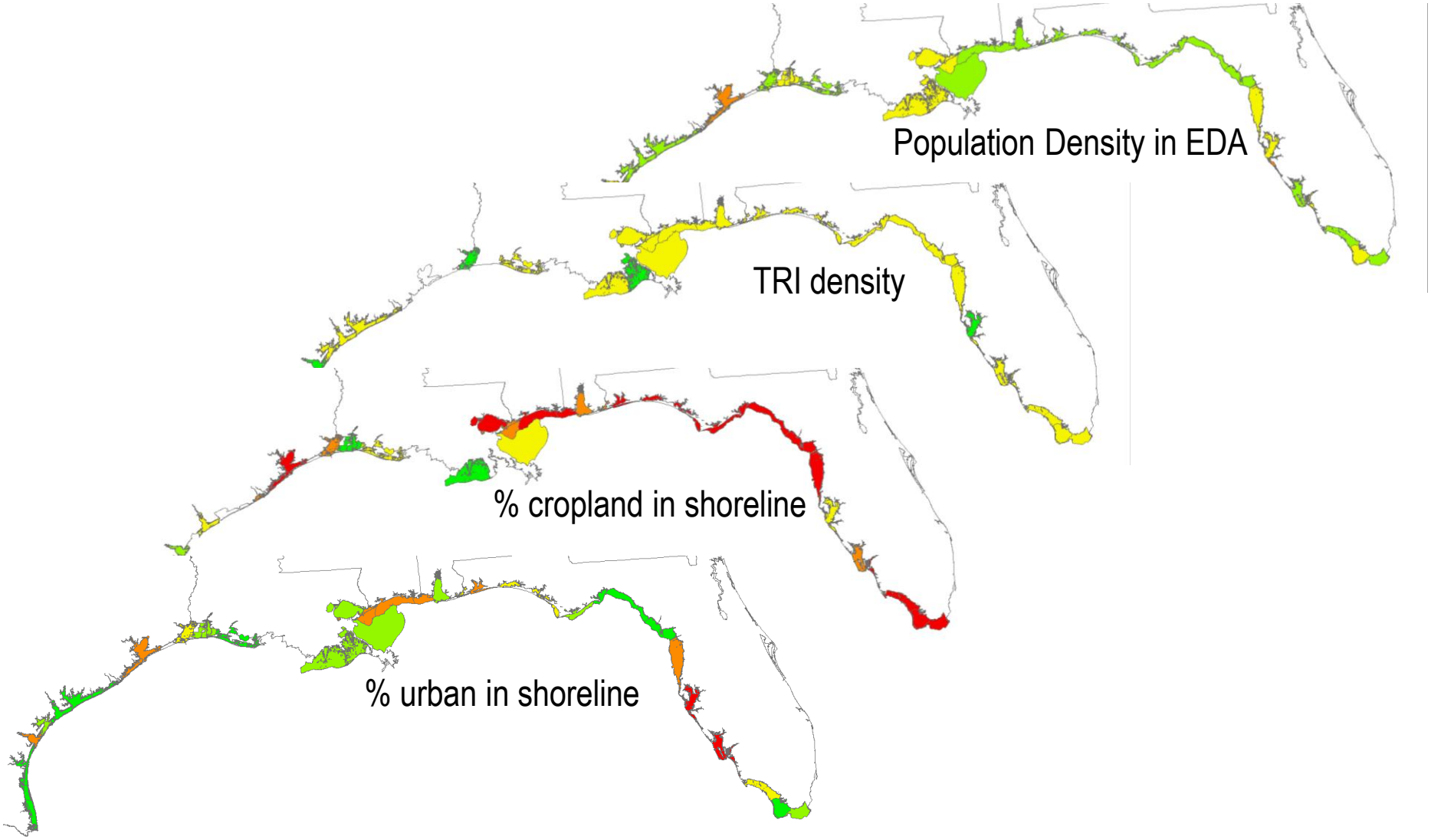
Species	Zero model		Count model	
Stressor	Basin agriculture	Basin urban	Basin agriculture	Basin urban
Harvestfish	-0.07	0.67	-0.35	-0.43
Southern flounder	-0.08	0.41	-0.09	-0.003
Striped anchovy	0.35	0.05	-0.13	0.03
Bay whiff	-0.12	0.88	0	-0.23

Step 4: Community Modeling

- Poisson GLMs
- Still under development



Step 5: Map Results



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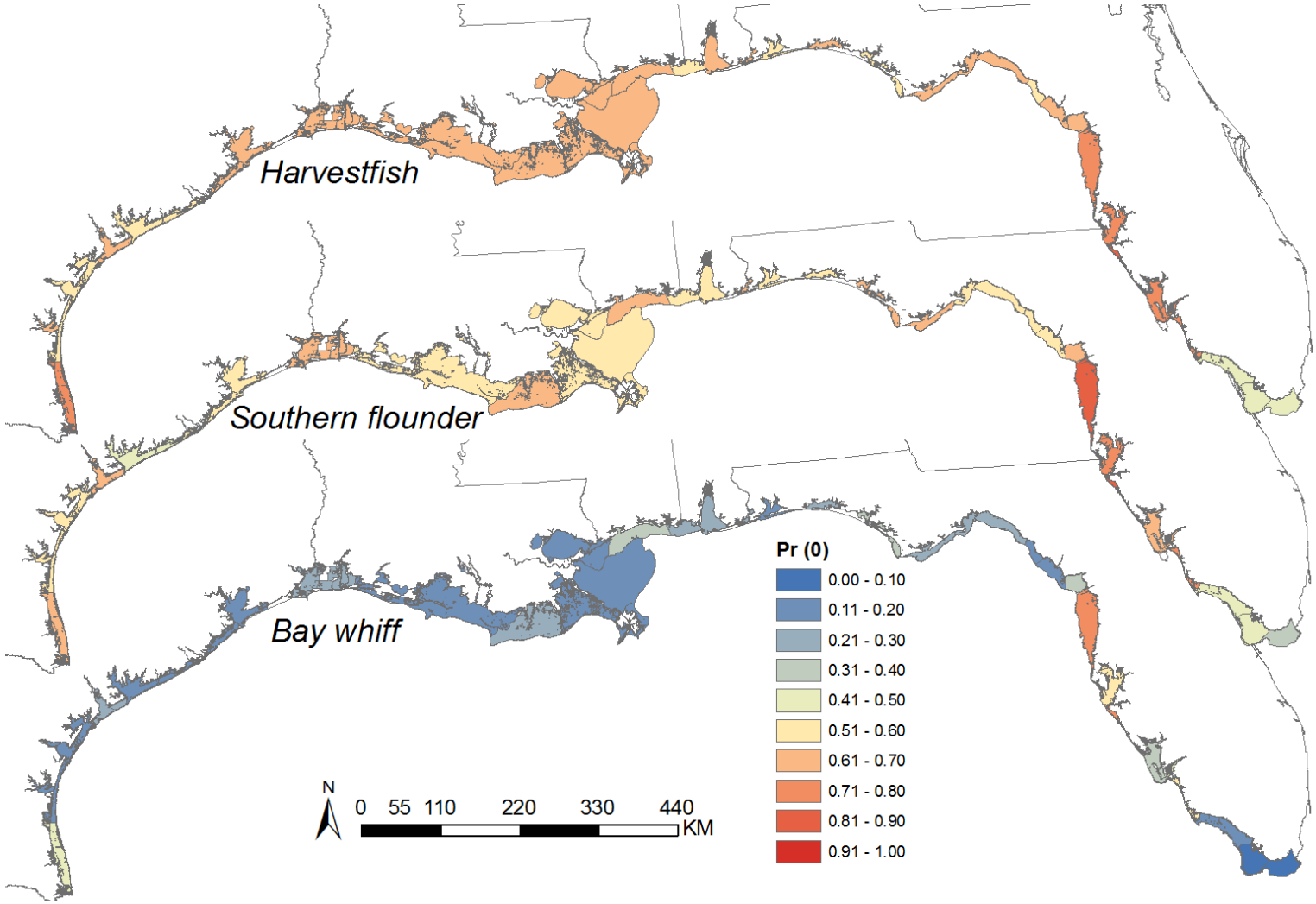

Pilot assessment: Lessons learned

1. Time investment
2. Data issues
3. Stakeholder involvement
4. Computational requirements
5. Scale

Next Steps

1. PMEP assessments
2. NALCC assessment
3. Additional Gulf analyses?
4. South Atlantic?
5. Alaska & Hawaii?
6. Inland-marine linkages?

West Coast Assessments

	Nursery Habitat Assessment	NFHP National Assessment	Forage Fish Assessment
Lead	PMEP	NMFS	NMFS
Focus	Nursery functions for juvenile fish in West Coast estuaries	Condition and key threats to estuary habitats (nearshore?)	Habitat-related changes over time for forage fish

North and Mid-Atlantic Assessment

Atlantic Coastal Fish Habitat Partnership

Working together to conserve coastal, estuarine-dependent, and diadromous fish habitat

Downstream Strategies

SDC Input

1. Timeline?
2. 2015 report
3. Funding
4. Priorities