



**NOAA
FISHERIES**

Poor recruitment of reef fishes in the southeast United States Atlantic: preliminary findings and implications for management

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Acknowledgements

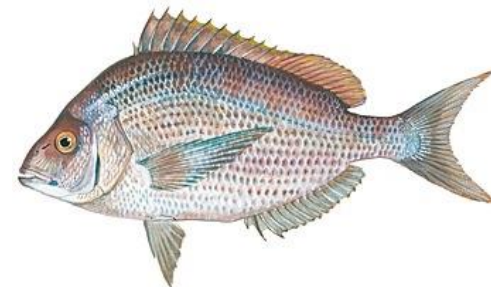
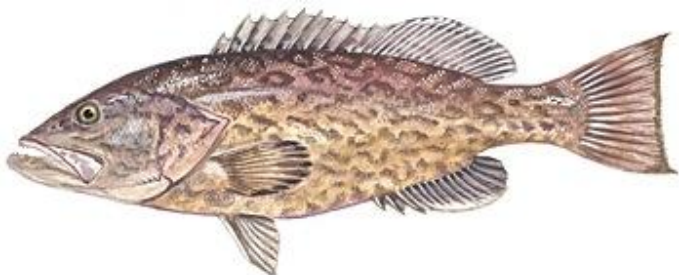
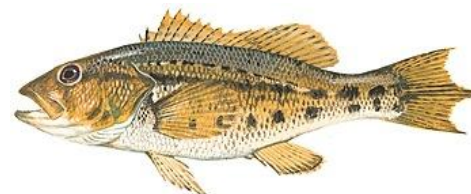
- Wally Bublely, Christina Schobernd, Michelle Willis, Marcel Reichert, Nikolai Klibansky, Rob Cheshire
- NOAA Office of Education NERTO Summer Fellowship (K. Wade)



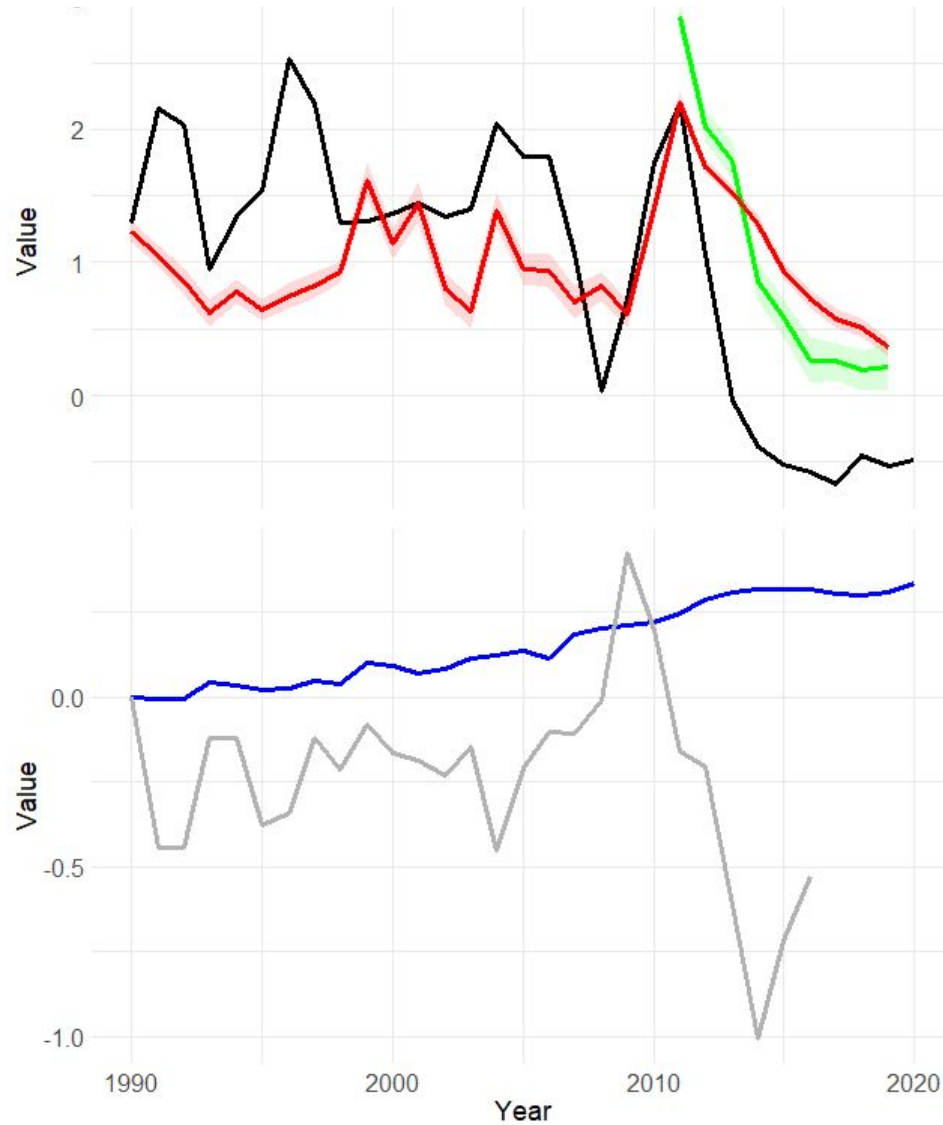
What's happening?

- Signs of recent low recruitment for assessed and unassessed species

Which fish?



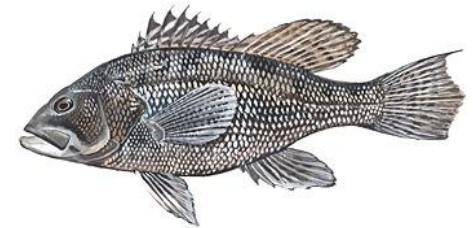
Black sea bass



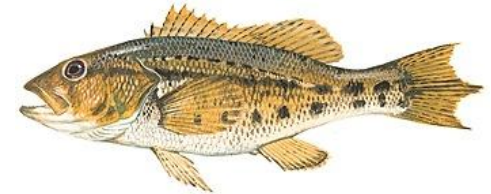
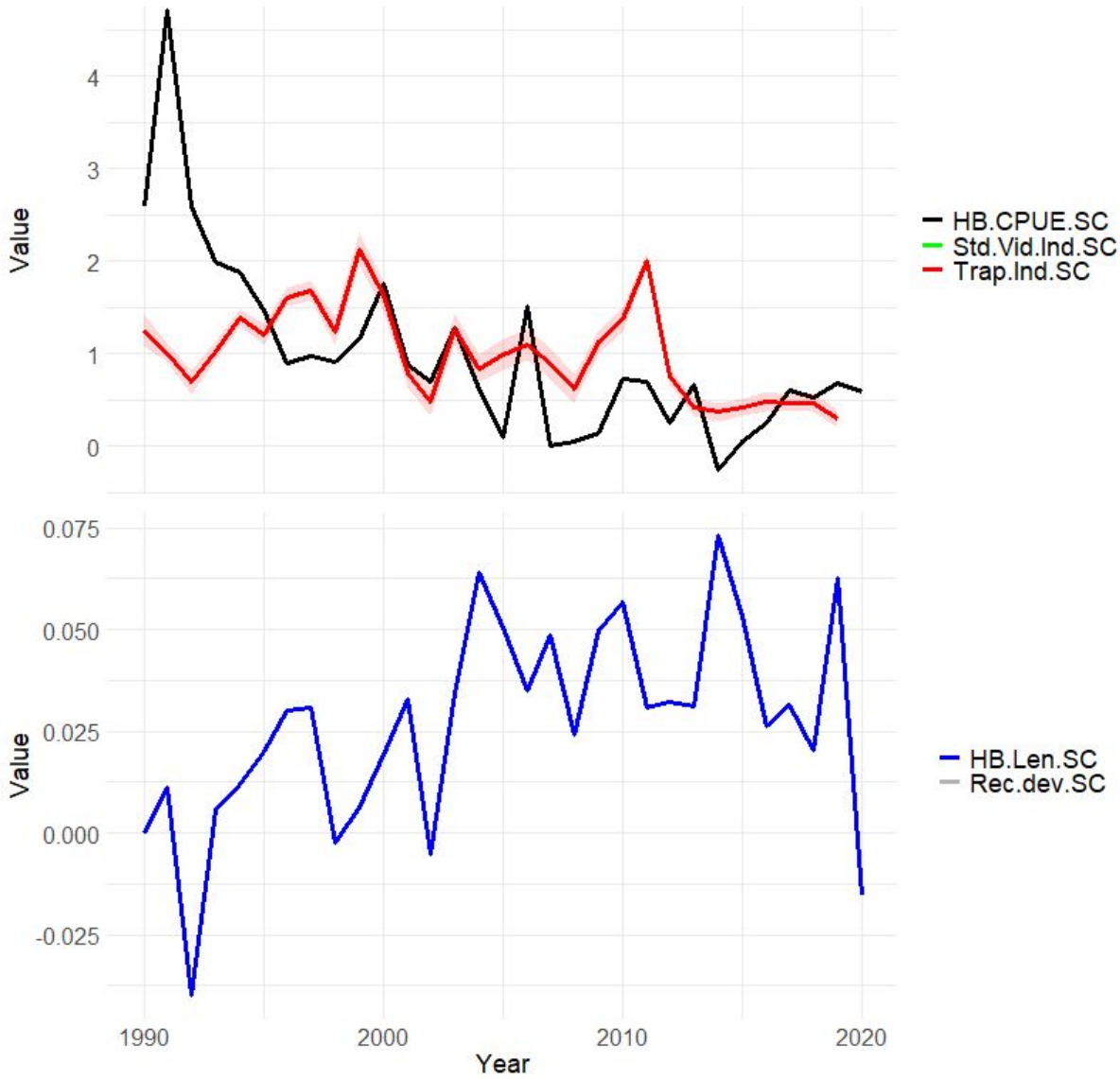
Scaled & Centered

- HB.CPUE.SC
- Std.Vid.Ind.SC
- Trap.Ind.SC

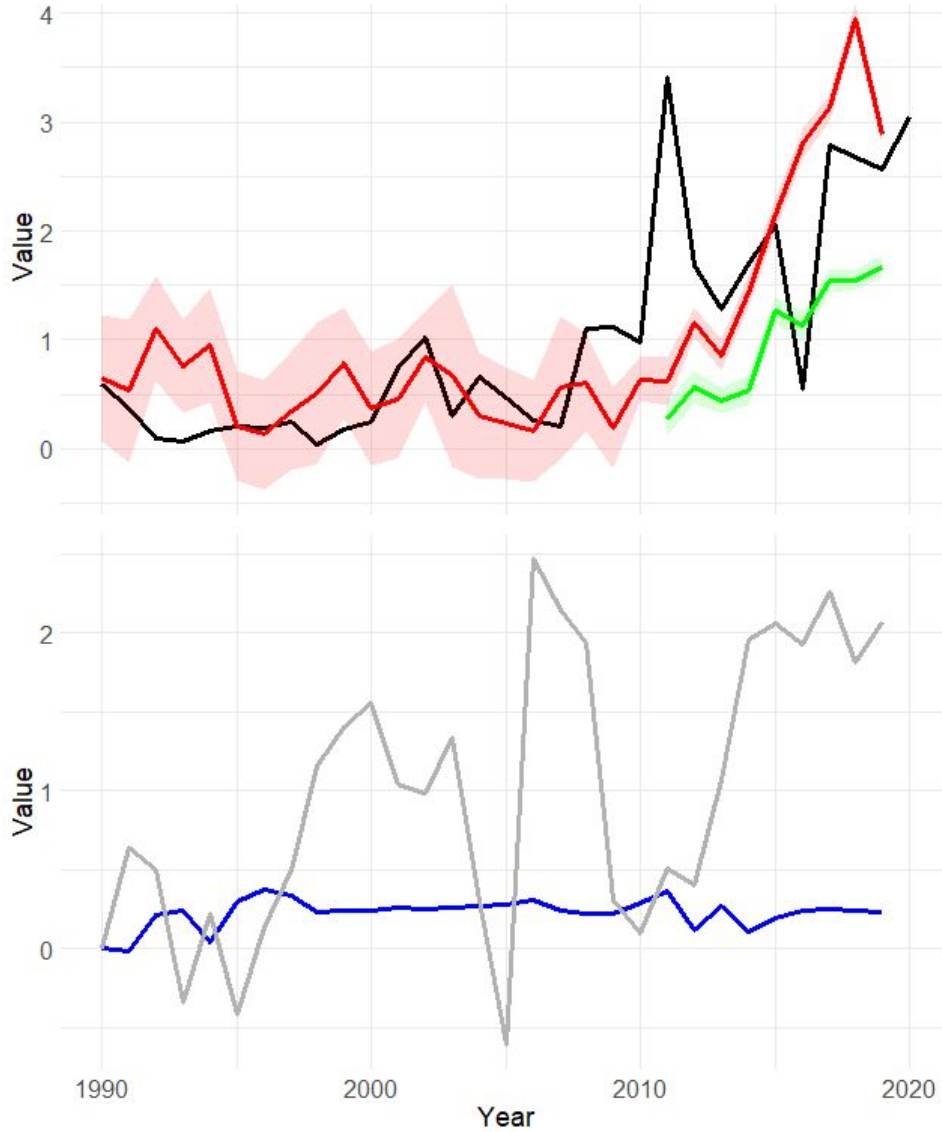
- HB.Len.SC
- Rec.dev.SC



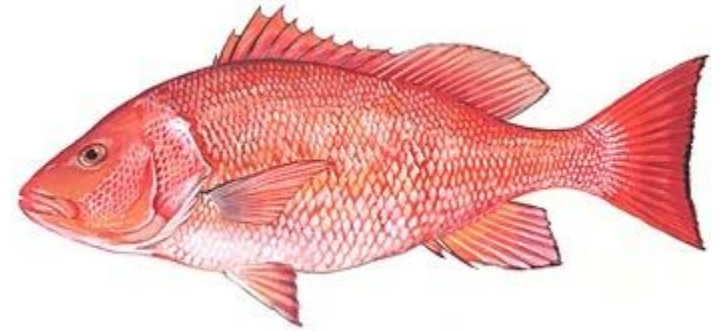
Bank sea bass



Red snapper



— HB.CPUE.SC
— Std.Vid.Ind.SC
— Trap.Ind.SC



— HB.Len.SC
— Rec.dev.SC

Trends across species

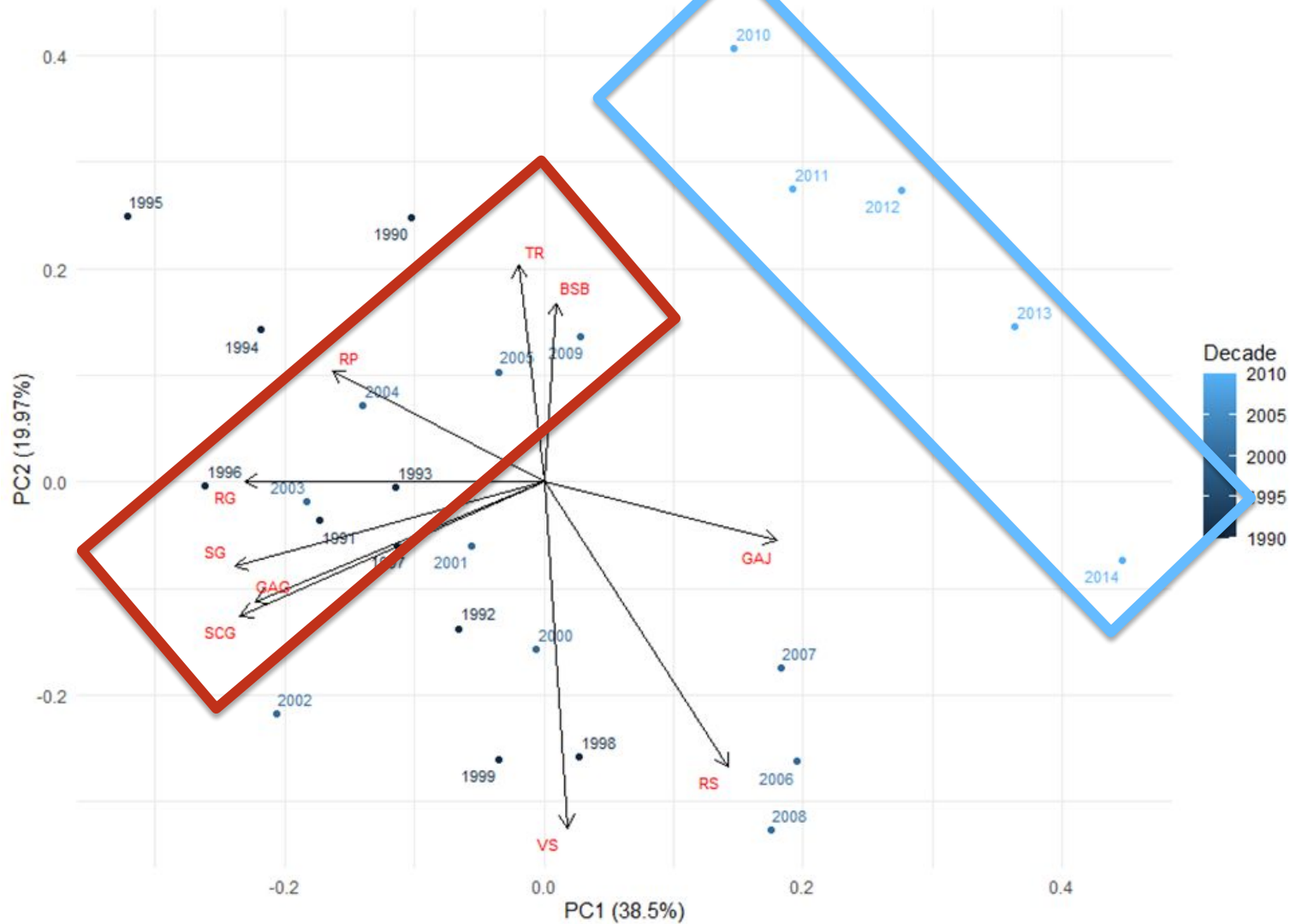
- Abundance down:

- Black sea bass
- Bank sea bass
- Scamp grouper
- Red grouper
- Gag
- Red porgy
- Scup/Longspine porgy

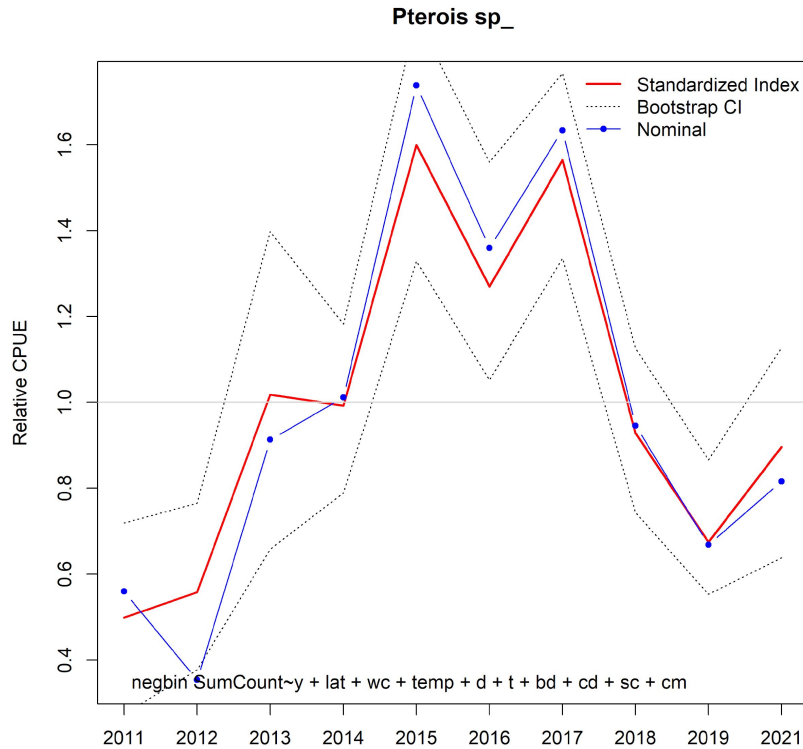
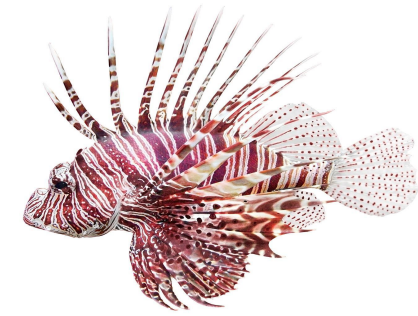
- Abundance up:

- Red snapper
- Vermilion snapper
- Lane snapper
- Mutton snapper
- White grunt
- Greater amberjack
- Almaco jack

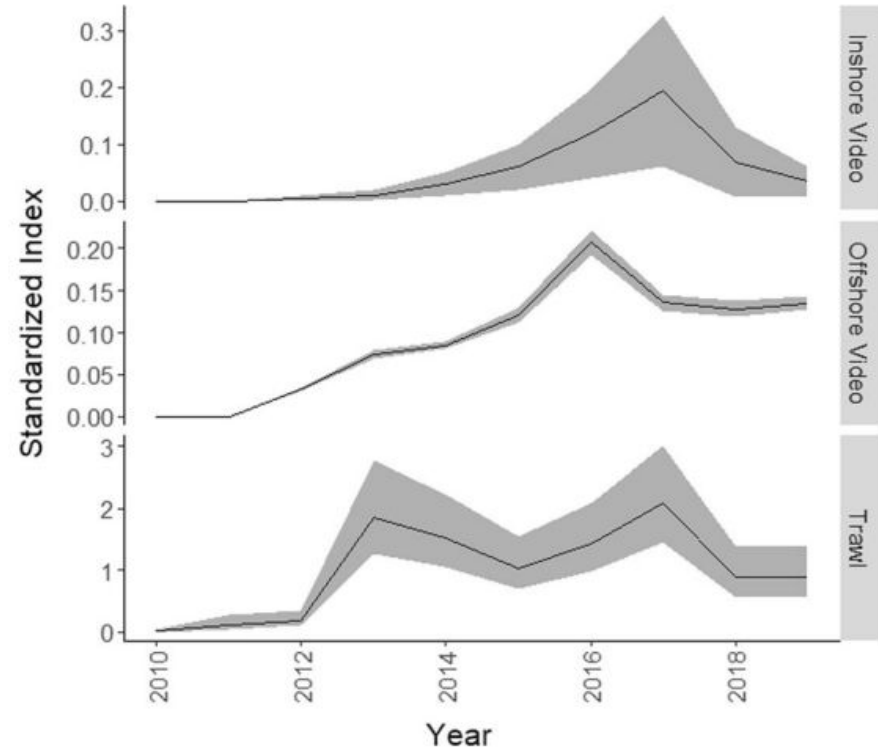
PCA investigating correlation among assessed species rec devs



Lionfish?



South Atlantic (Runde, unpub data)

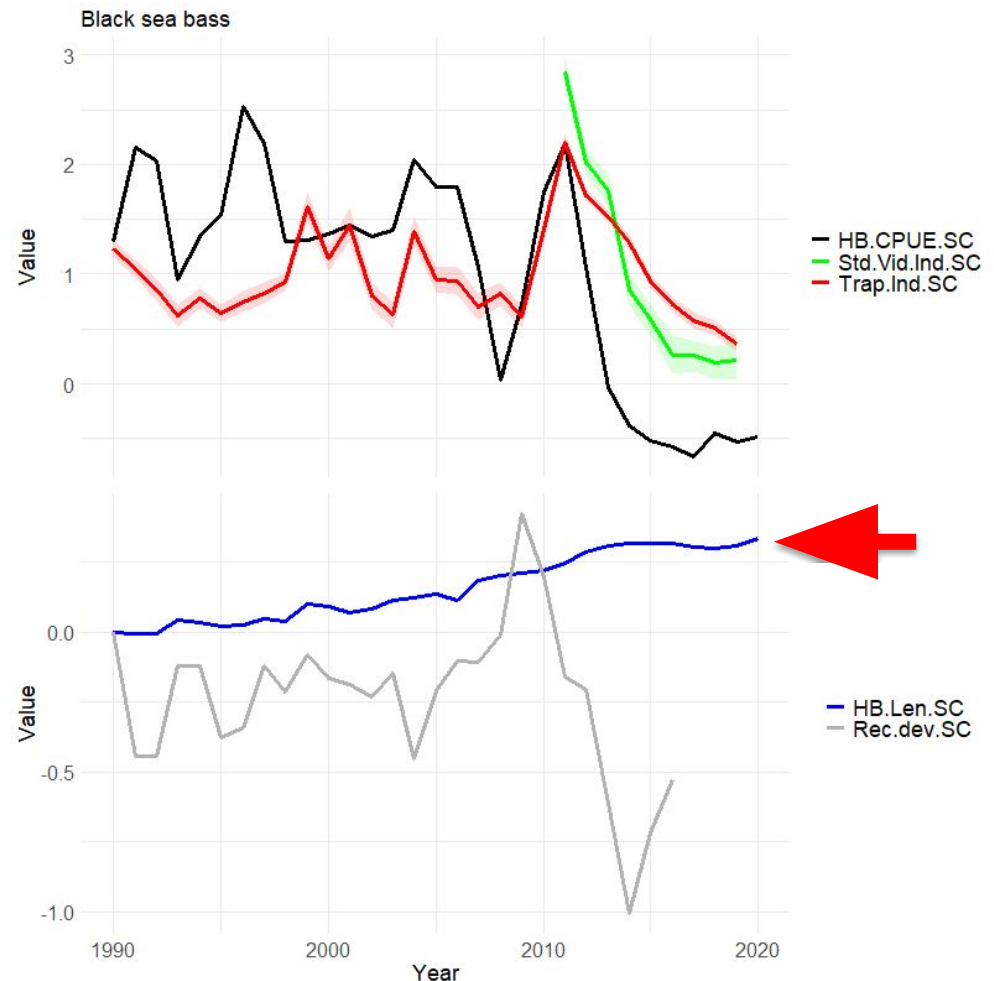


Gulf of Mexico
Campbell et al. 2021

<https://doi.org/10.1007/s10530-021-02625-1>

Overfishing?

- Recruitment decline precedes increase in F (for assessed spp.)
- Phenomenon appears in some untargeted spp. (e.g. bank sea bass)
- Length compositions increasing



What gives?

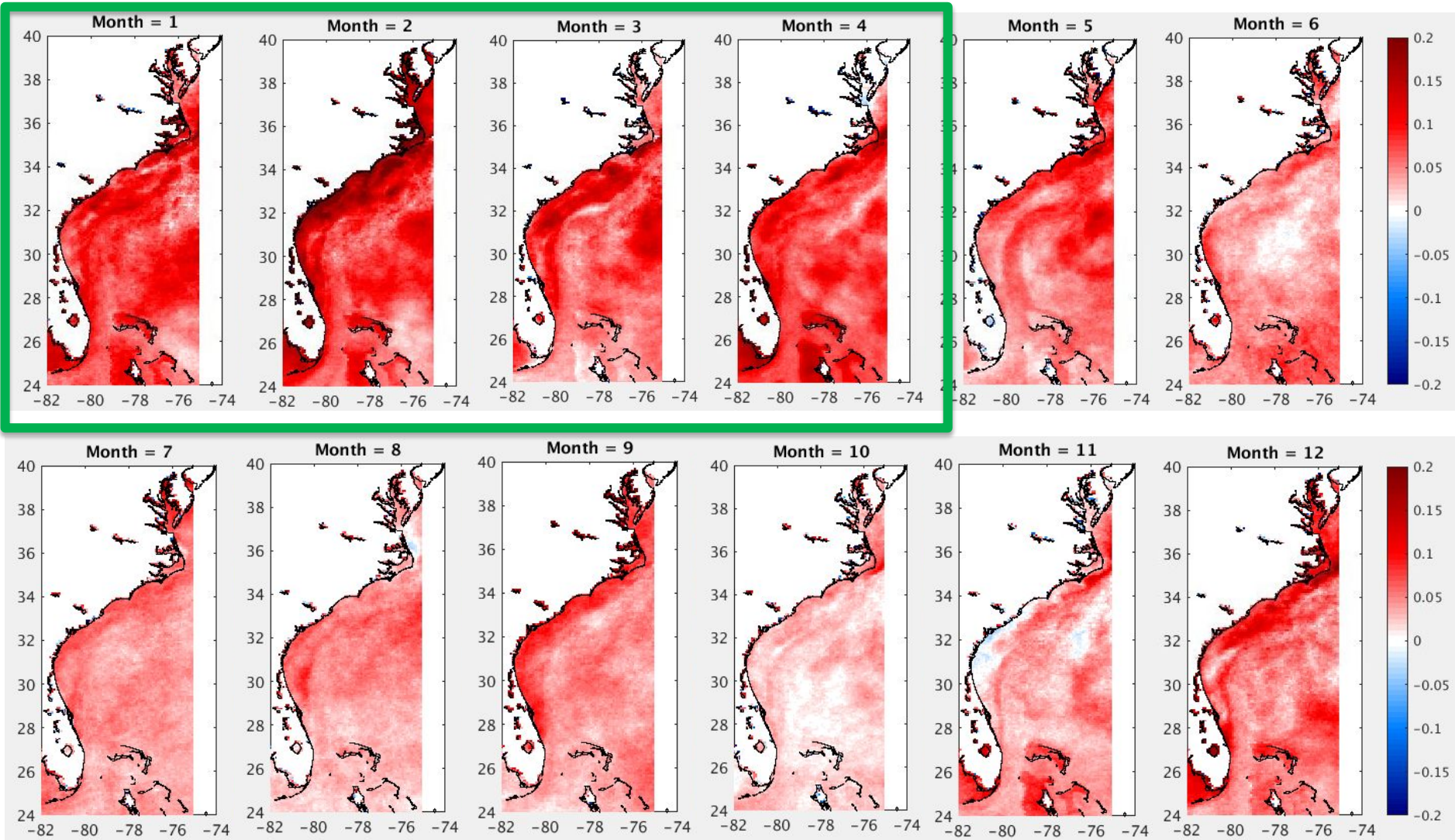
XXX = peak spawning

Abundance decrease,
Evident low recruitment

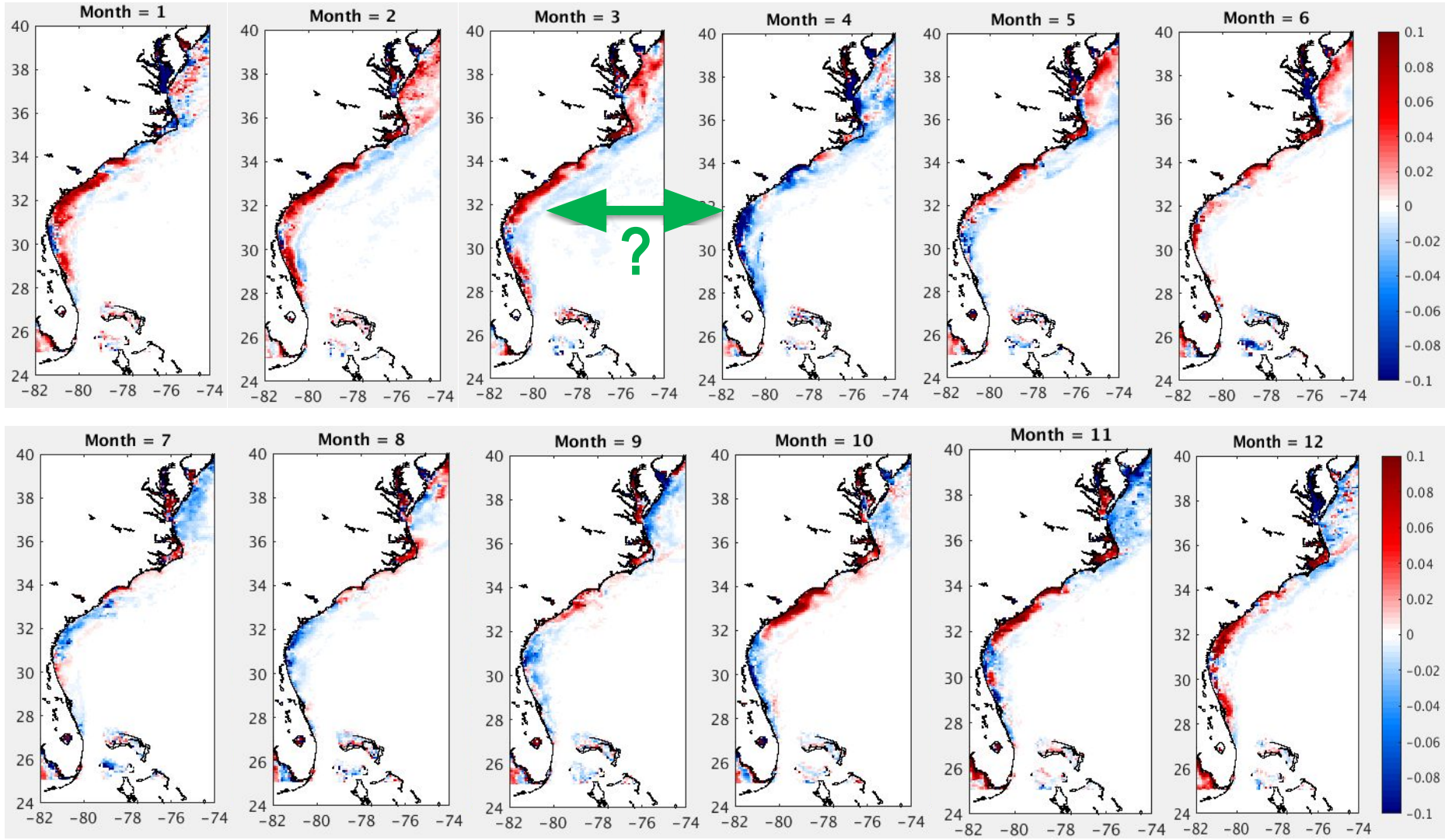
Abundance increase,
No signs of low
recruitment

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Black sea bass		XXX	XXX	XXX								
Gag		XXX	XXX	XXX								
Stenotomous spp.		XXX	XXX									
Red grouper	XXX	XXX	XXX	XXX	XXX							
Red pogy	XXX	XXX	XXX								XXX	XXX
Scamp			XXX	XXX	XXX							
Sand perch					XXX	XXX	XXX					
Almaco jack							XXX					
Lane snapper						XXX	XXX	XXX				
Red snapper						XXX	XXX	XXX	XXX	XXX		
Vermilion snapper						XXX	XXX	XXX				
White grunt					XXX	XXX						
Mutton snapper					XXX	XXX	XXX					
Gray snapper						XXX	XXX					

MODIS SST 2002-2020



MODIS Chl 2002-2020



Implications

- If environmental changes are to blame, ecosystem may be non-stationary
 - Stock assessments assume stationarity
 - New challenges require new methods for assessment and management
- Future work: spatial models examining correlation between environmental conditions and species distributions

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