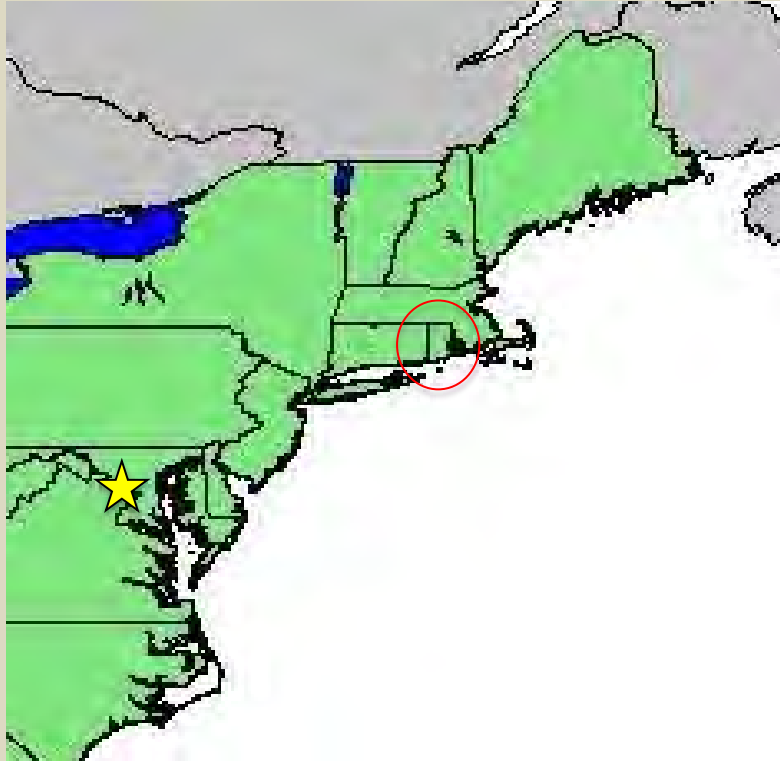


## Resilient Fisheries RI:

A stakeholder-led process to design climate resilience strategies for wild-harvest commercial fisheries in Rhode Island, USA



# Context: Rhode Island commercial fisheries



# Outline

1. Resilient Fisheries RI project: methods
2. Fishermen's observations
3. Current adaptations
4. Attitudes towards climate change
5. The vulnerability context
6. Resilience and adaptation strategies for the future
7. Lessons learned for other places

# The Resilient Fisheries RI Project

1

Semi-structured interviews  
(3 months)

48 participants

All gear types,  
ports; shore-  
side; supply  
chain





# The Resilient Fisheries RI Project

1

2

10 evening seminars  
(3 months)

80 participants

Topics: science of fisheries  
ecosystem change; ocean  
acidification; water quality;  
next generation; seaweed;  
squid; black sea bass;  
socio-ecological  
vulnerability; diversity vs.  
specialization



# The Resilient Fisheries RI Project

1

2

3

1 facilitated scenarios  
process  
(1 day)

45 participants

4 alternative future scenarios:  
Anthropogenic warming &  
“The Long Plateau”; Natural  
Warming & “The Next Big  
Thing”; Global cooling &  
“Second Wind”; Global  
weirding, “Do It Yourself”



# The Resilient Fisheries RI Project

1

2

3

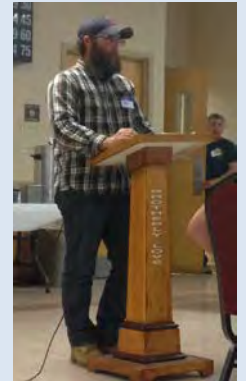
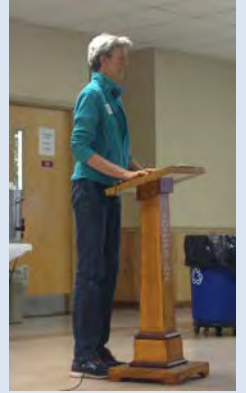
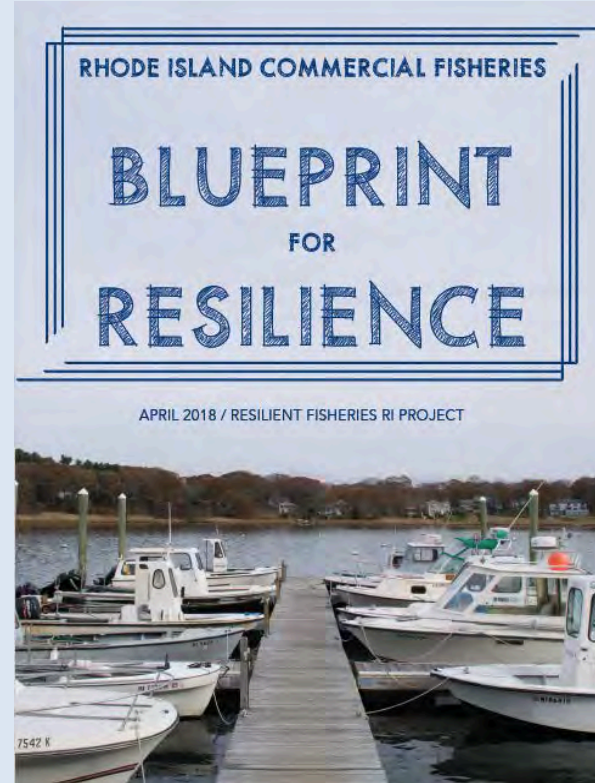
4

Draft review &  
publication  
(3 months)

3-month draft  
review process

40-page  
document &  
executive  
summary

Public launch  
event



# What are fisheries participants observing?



24 species shifting and/or changing in abundance

19 “southern” species appearing in local waters

16 species changing in migration timing

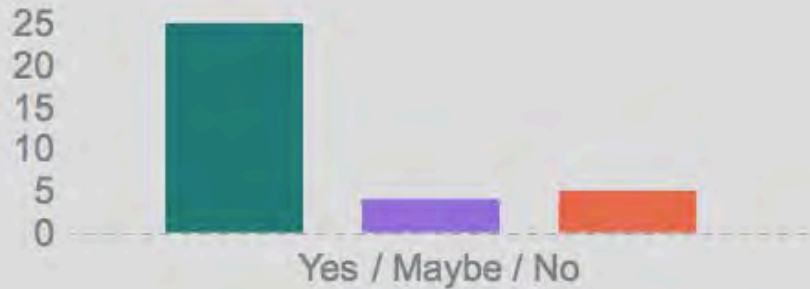


# How are fisheries participants adapting?



- Shifting from groundfish to squid
- Shifting from lobster to...
  - Retirement
  - Gillnetting
  - Conching
  - Jonah crab
  - Scalloping
  - Still lobstering
- Following the fish
- Landing fluke (summer flounder) in North Carolina
- Harvesting southern species locally
- Innovative marketing
- Collaborative research

# How do they feel about it?



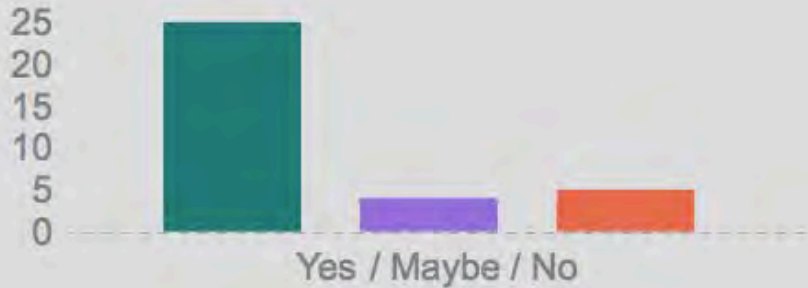
Waters in Southern New England are getting warmer.



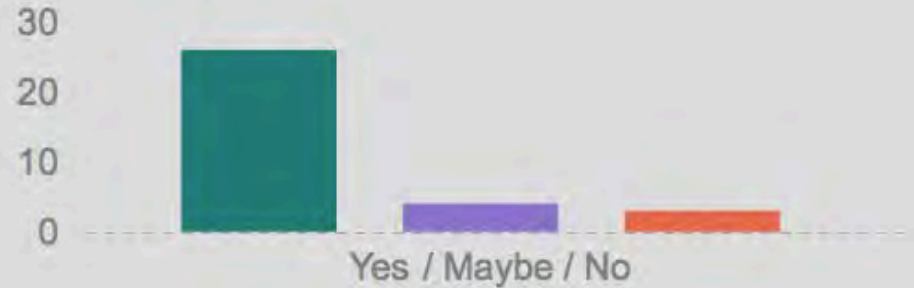
Warming waters are affecting distribution of some species.

# How do they feel about it?

Climate change is a distraction from other issues (7)



Waters in Southern New England are getting warmer.



Warming waters are affecting distribution of some species.

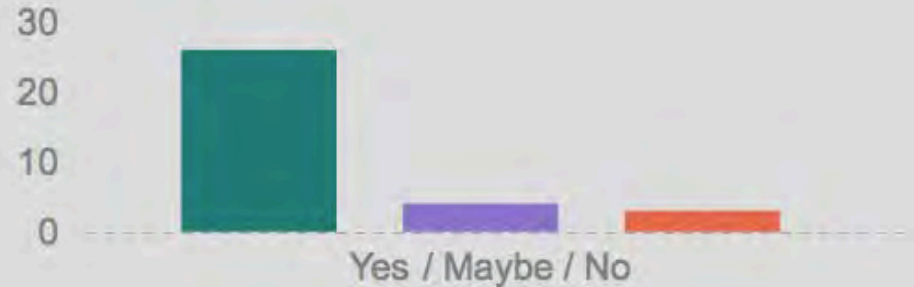
# How do they feel about it?

Climate change is a distraction from other issues (7)

I am far more worried about the impact of regulations than I am about climate change (4)



Waters in Southern New England are getting warmer.



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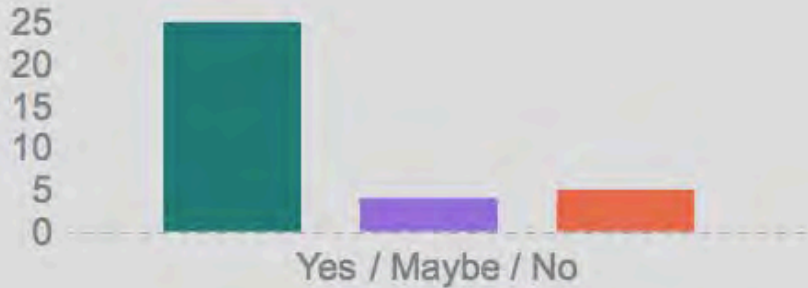


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You can't fix climate change; it would be better to focus on things we can fix (2)



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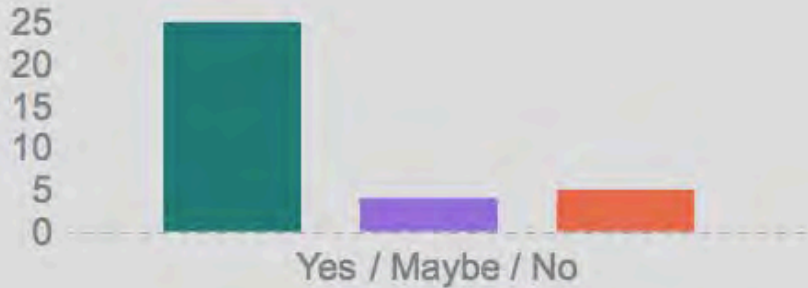
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# How do they feel about it?

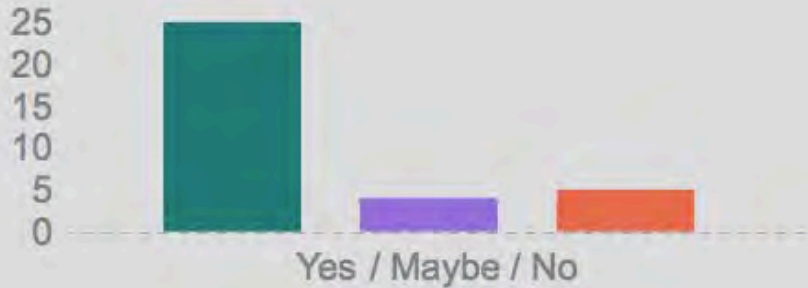
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I am far more worried about the impact of regulations than I am about climate change (4)

You can't fix climate change; it would be better to focus on things we can fix (2)

Climate is naturally cyclical (6)

Climate change seems like a 'cash cow' for scientists (5)



Waters in Southern New England are getting warmer.



Warming waters are affecting distribution of some species.

# How do they feel about it?

## Drivers of vulnerability (1 = low concern, 5 = high concern)

Median	Driver
5	Out-migration or consolidation of federal fishing permits
5	Low entry of new fishermen: Not enough "young blood"
5	Catch regulations
5	Stock assessment science
4	Ocean development, such as energy infrastructure
4	Price of your catch / seafood
4	Waterfront gentrification
3	Warming water temperatures
3	Ocean acidification
3	Price of fuel
3	Low market demand for your catch
3	Conflicts/competition with recreational fishing industry
2	Conflicts/competition within/between sectors of the commercial fishing industry
1	Conflicts/competition with aquaculture









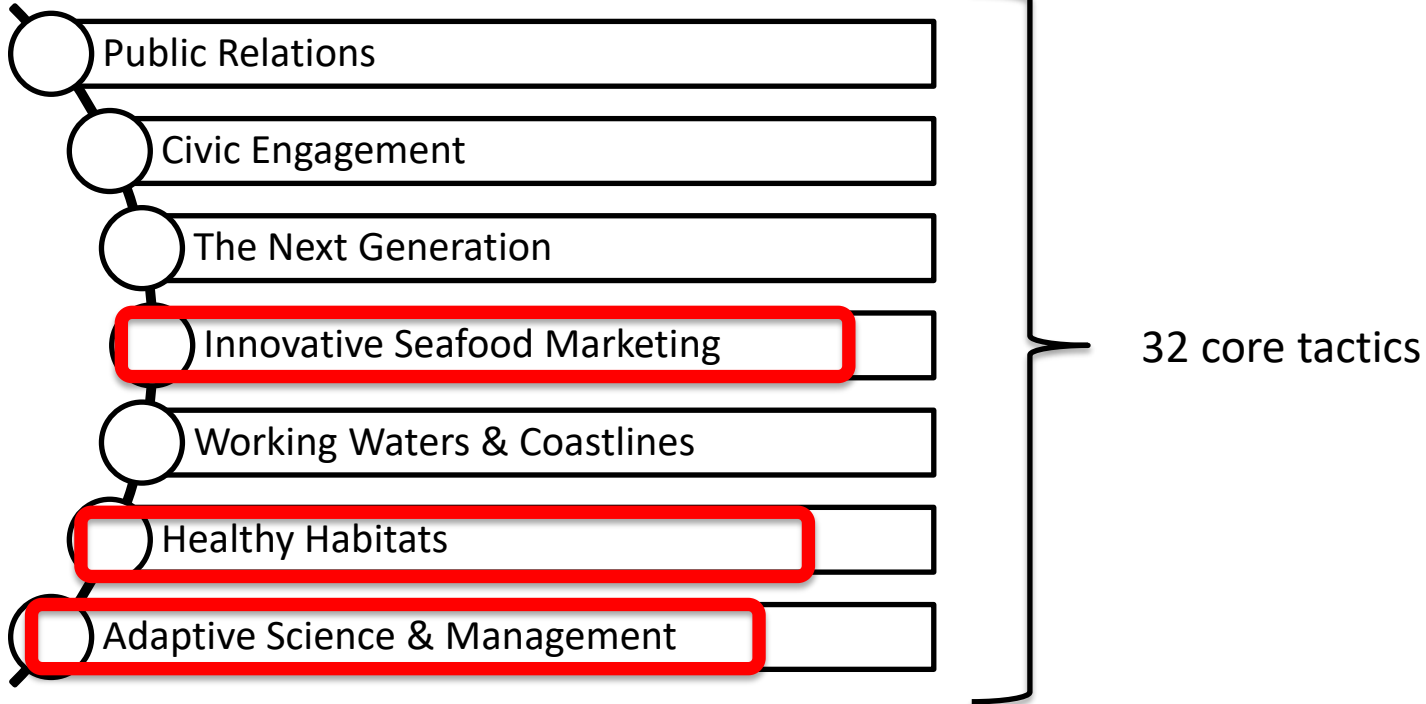








# 7 Resilience Strategy Areas



## Direct climate change adaptation

- Increase the pace of science and management

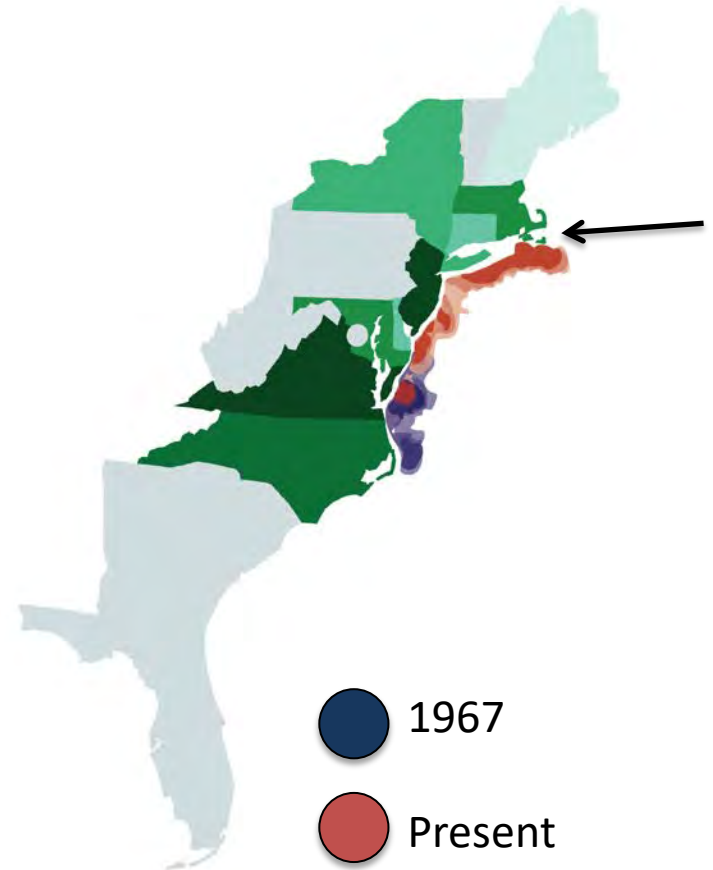
## Direct climate change adaptation

- Increase the pace of science and management
- Align allocations

# Align allocations



Black sea bass  
*Centropristis striata*

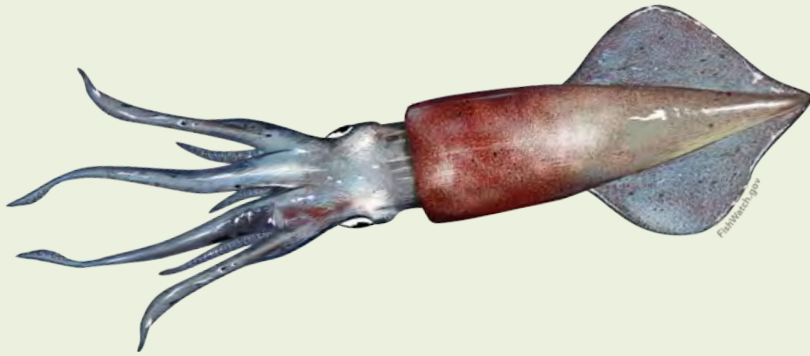


# Direct climate change adaptation

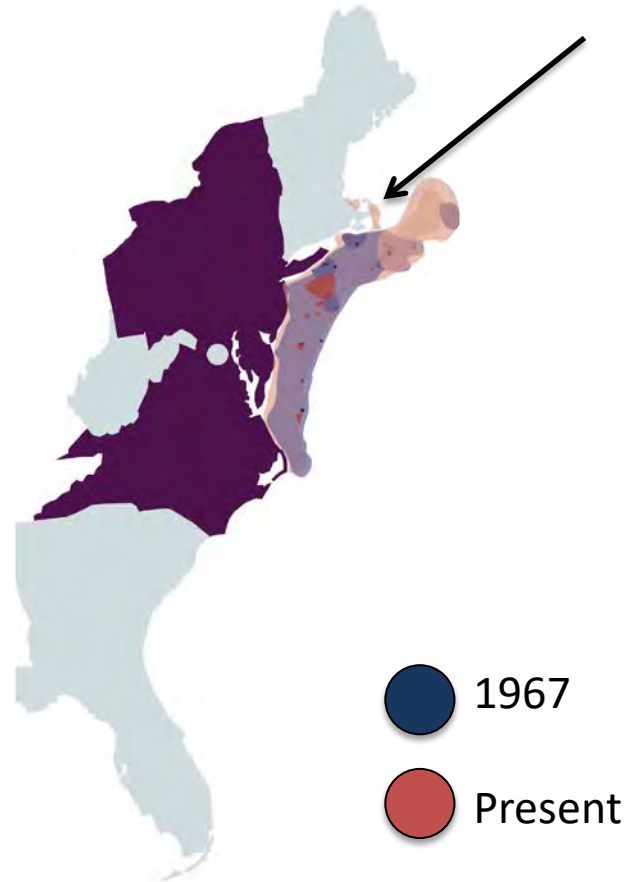
- Increase the pace of science and management
- Align allocations
- Align jurisdictions



# Align jurisdictions



Longfin squid  
*Doryteuthis pealeii*



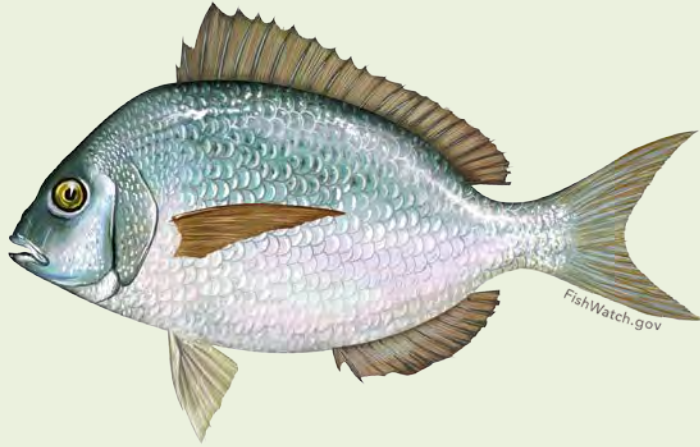
## Direct climate change adaptation

- Increase the pace of science and management
- Align allocations
- Align jurisdictions
- Enable diversification at the business level

## Direct climate change adaptation

- Increase the pace of science and management
- Align allocations
- Align jurisdictions
- Enable diversification at the business level
- Support markets for emerging species

# Support markets for emerging/increasing species



Scup / Porgy  
*Stenotomus chrysops*



## Direct climate change adaptation

- Increase the pace of science and management
- Align allocations
- Align jurisdictions
- Enable diversification at the business level
- Support markets for emerging species
- Address cumulative stressors to habitats

# Address cumulative stressors to habitats



# Lessons for fisheries climate adaptation projects

- Meet your audience where they're at
- Situate climate within general resilience
- Frame the issue to fit the audience
- Climate change is a wake-up call
- Identify adaptation blockers



