ABSI CAB Meeting July 2022

Fishery dependent and Fishery Independent Data

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Notes and Disclosures

- Ed Camp, Assistant professor at UF
    - PI on a FWC-UF oyster mgmt. & restoration project
    - Tasked with helping ABSI with modeling
    - Analyzing data as described in funded project
    - Data made available through FWC
    - Initial data aggregation approved by FWC

    - No uniquely identifiable harvest information shown (fishery depedent)

Outline

- Background
  - Why data so important for models
- Data
  - Fisheries data (FWC)
  - Fisheries independent data (FDACS/FWC)
- Data we wish we had but don’t
  - Reef height/amount of shell

Background: My Role

- Guide development of oyster models
  - Oyster populations, fisheries
  - Models should be based on data

Background: overview of what models are

1. Oysters and fisheries assumptions

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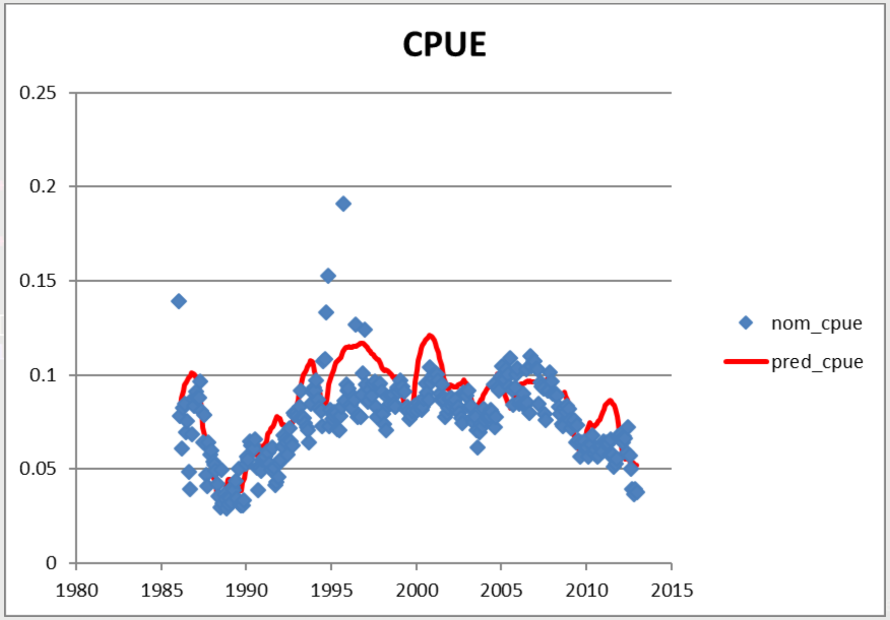
4. Fit to data



Background: overview of what models are

1. Oysters and fisheries assumptions
2. Translate to math and statistical equations
3. Revise with CAB input
4. Fit to data
5. Repeat 3-4

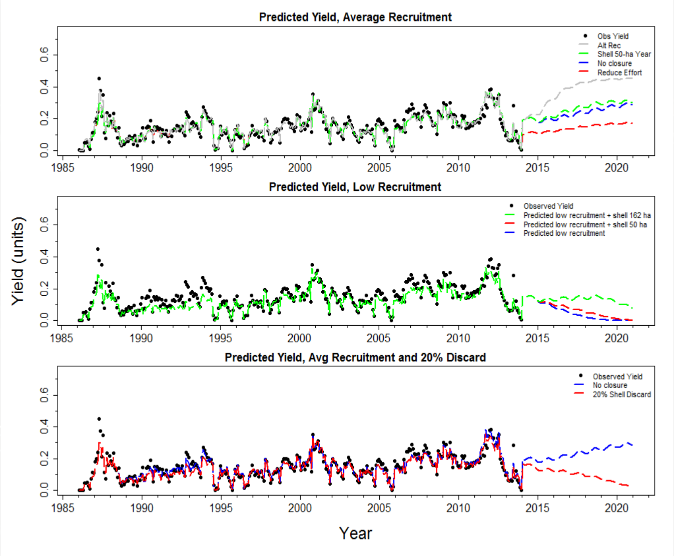
Background: overview of what models are

1. Oysters and fisheries assumptions
2. Translate to math and statistical equations
3. Revise with CAB input
4. Fit to data
5. Repeat 3-4
6. Make predictions

   -Environment

   -Management

   -Restoration



Why are we talking about data now?

Data we have are…

1. making some models challenging to fit
2. causing some simulations to seem unrealistic

As we begin to talk about what we should do (mgmt and restoration), concerned we not realize where the system is.

Background: what models depend on

DATA

1. Fisheries data
    - How much oyster was removed by fishery
    - Let us see what the effect of removals were on future production (recruitment)

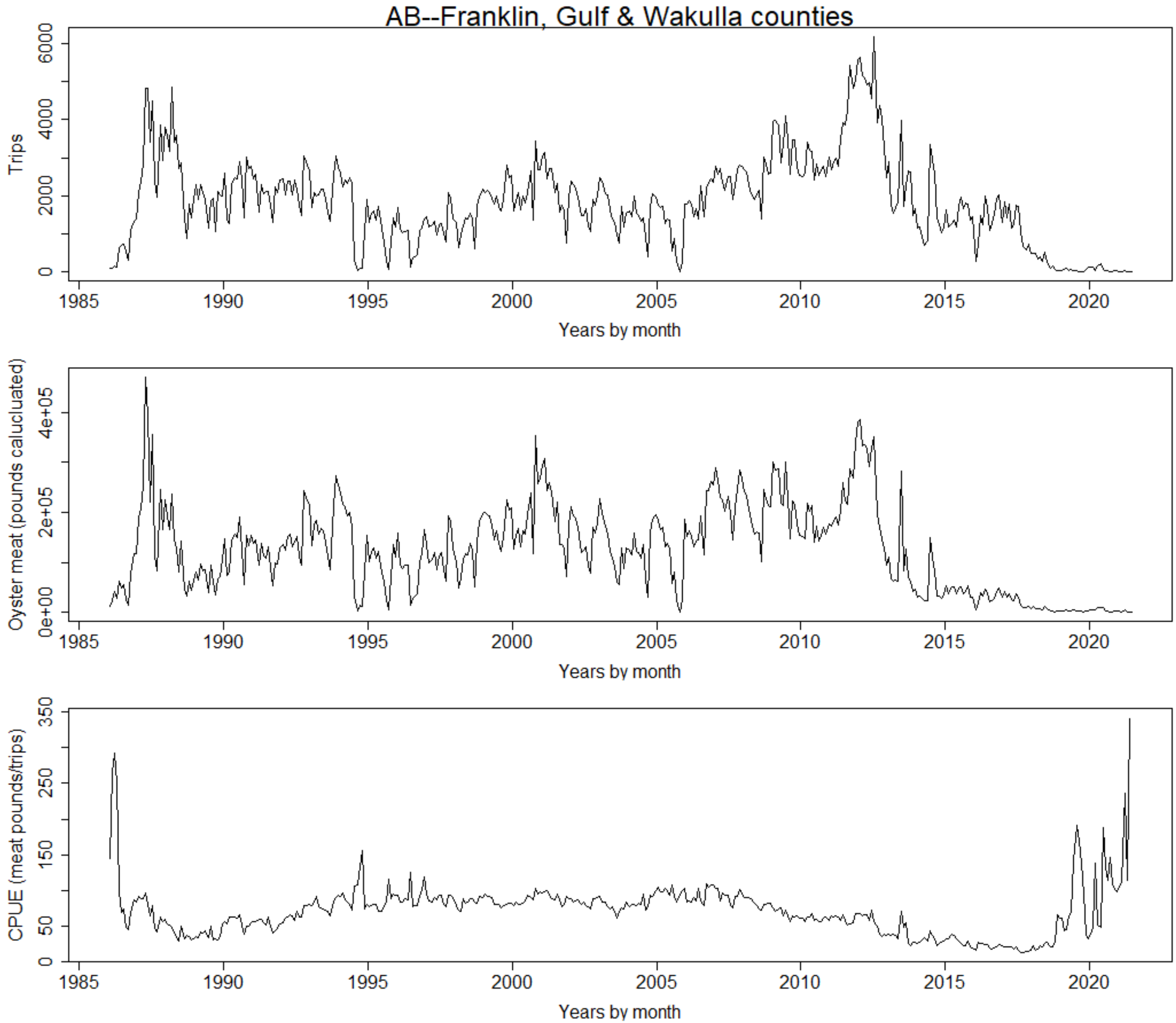
2. Fisheries independent data
    - Track oyster population rather than fishery
    - Matters a lot when fishers are good at finding fish (hyperstability)
    - In our case the only size-specific data

Data: fisheries dependent data

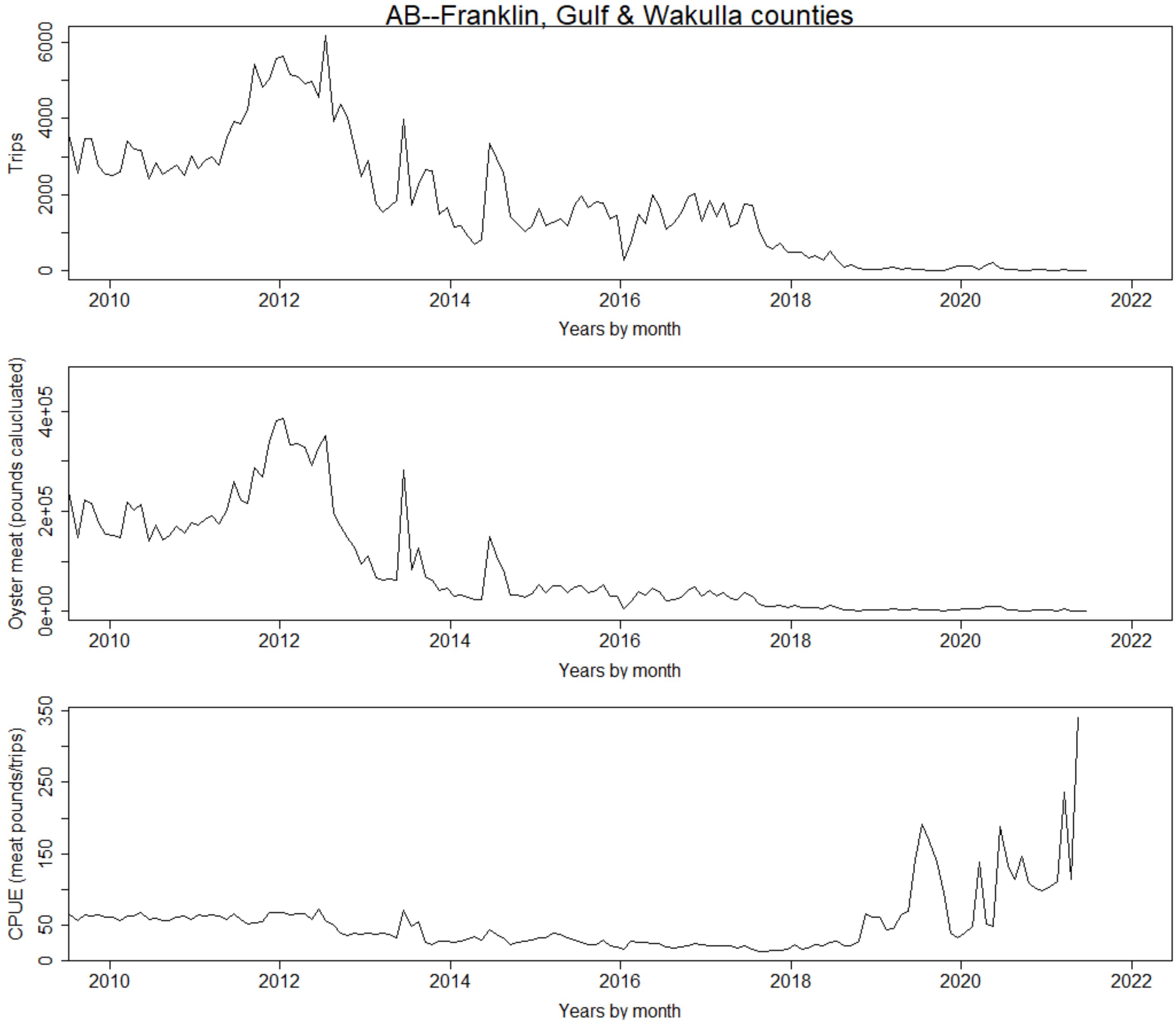
- Oyster AB Fisheries data
  - Collected by FWC
  - Available by year and month
  - Spatially grouped by county
  - NOT identifiable to the reef/bar (as far as I know)

- Going to show data by
  - Apalachicola Bay in general (Franklin, Gulf, Wakulla)
  - Plotting by month
  - Nothing identified to individual license number

Data: fisheries dependent data



Data: fisheries dependent data (2010 forward)



Data: fisheries dependent data

- Take home points
  - Harvest declined sharply after 2012
  - Effort did not decline as sharply, remained substantial until ~2018
  - Very high CPUE in recent years a bit odd, *probably* not going to affect models too much

  - The amount of effort before the collapse was higher/more than "historically" (post 1986)
  - The amount of harvest prior to collapse was not really remarkable

  - **<u>This confuses (fisheries) models</u>**—how could similar harvest be fine 1990-2010 and then cause a big decline after 2010?
    - Also leads to ideas about environmental causes (water), but these were not well supported by Fisch and Pine 2016.
    - Also consistent with idea that it was shell or habitat that was "overfished" as much as live oysters (Pine et al. 2015)

Data: fisheries dependent data (2010 forward)

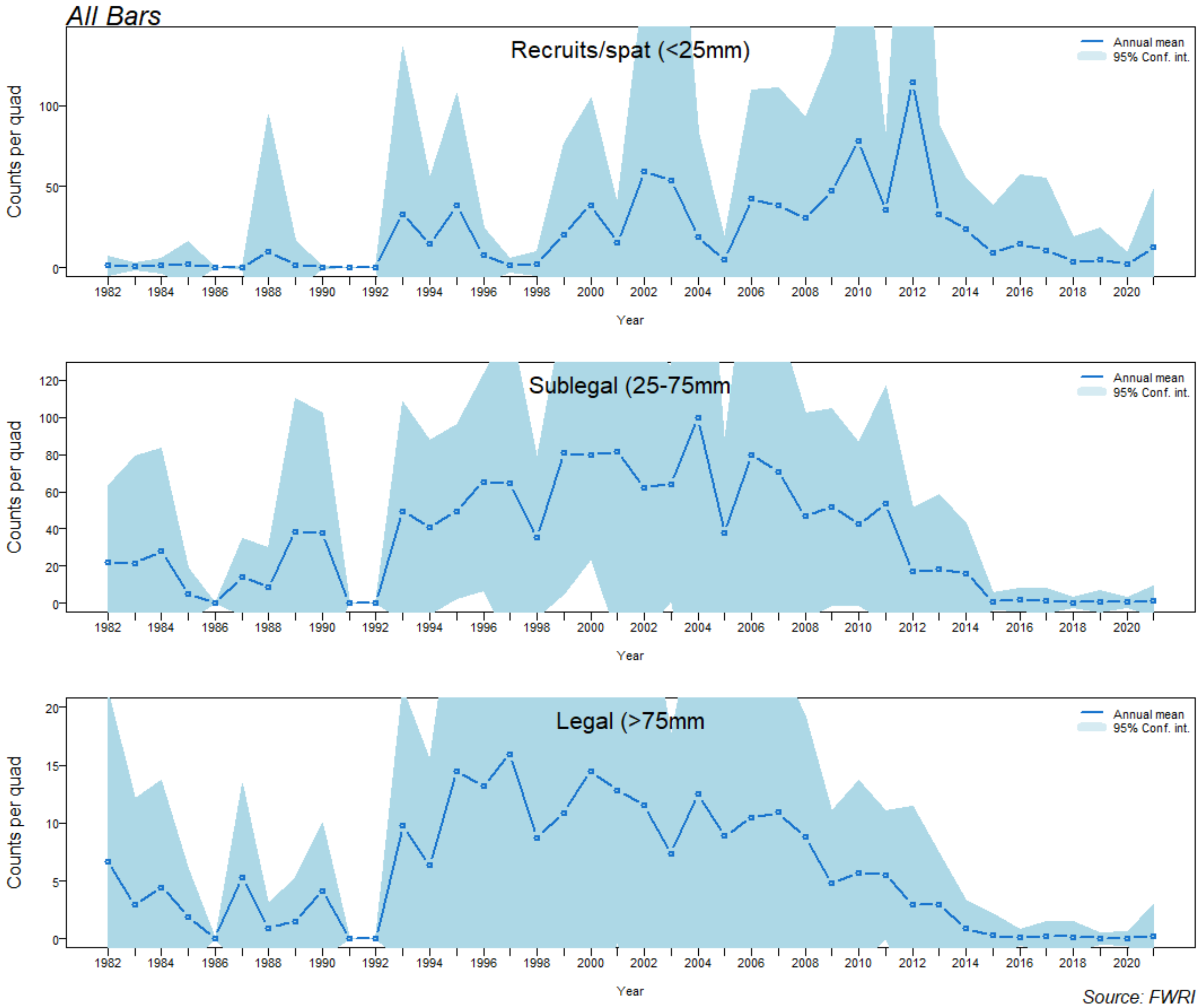
- Anything else that you would like to see?
  - Different counties?
  - Different groupings of counties?

Data: fisheries independent data

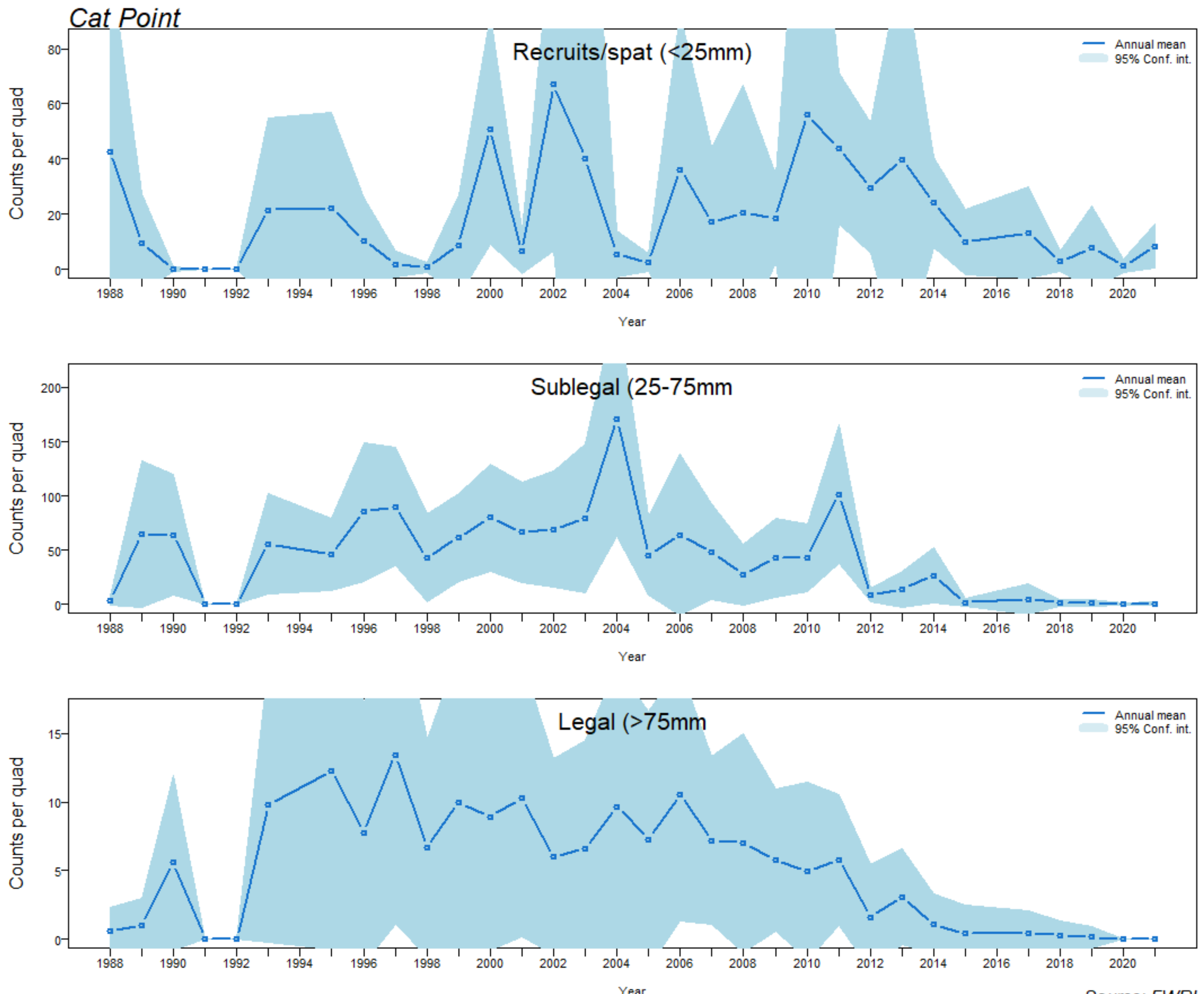
- Oyster AB monitoring data
  - Originally collected by FDACS (198X-2012)
  - Then (I think) collected by FDACS for FWC (2013-2015)
  - Then collected by FWRI (2016-current)
    - Melanie Parker and Matt Davis
  - By reef or region of reef *names are tricky over time*
  - More or less done seasonally (winter/summer)

- Going to show data by
  - All, then some specific reefs
  - Plotting by year, showing fall/winter sampling
  - Showing mean and uncertainty

Data: fisheries independent data: all bars

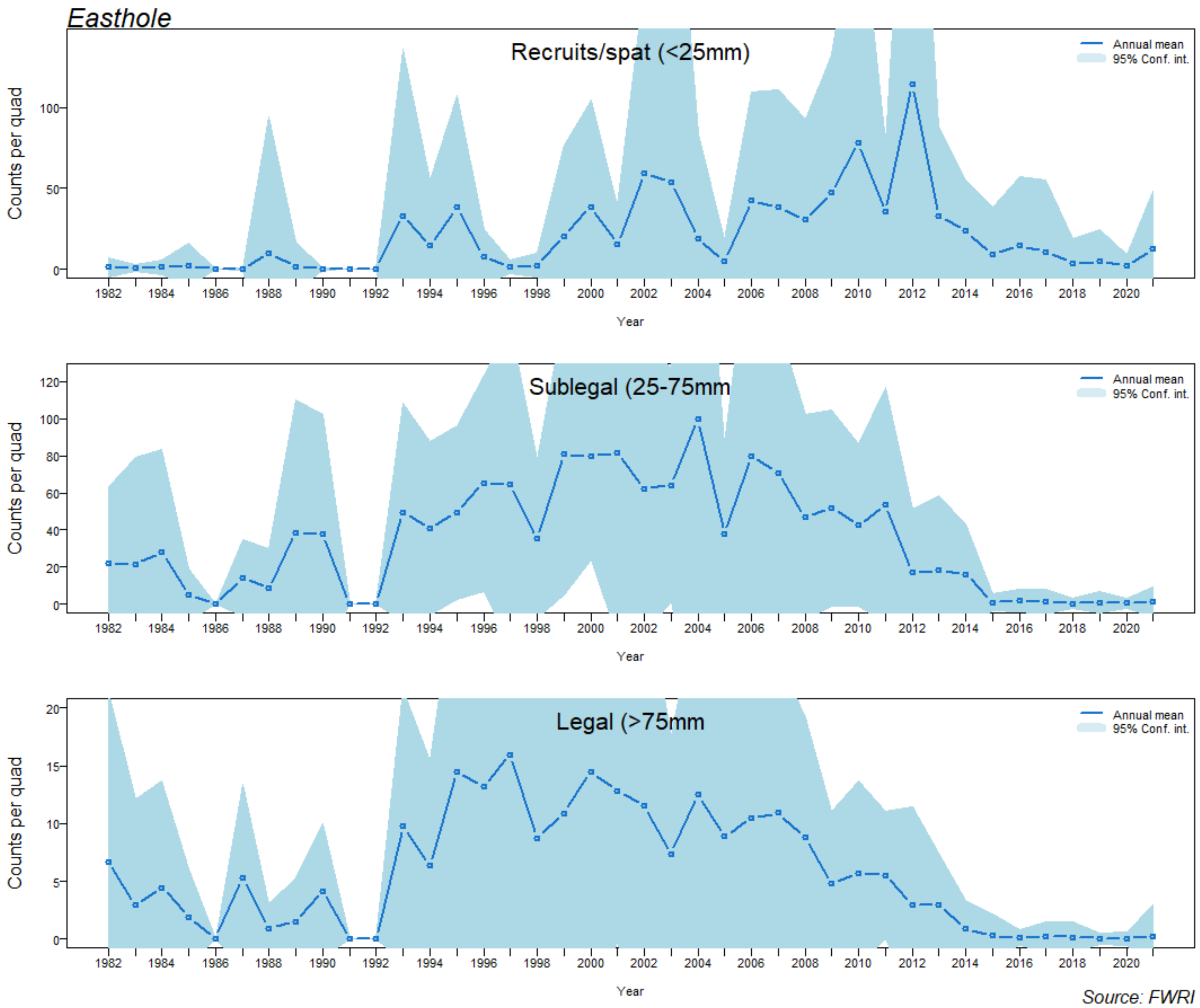


Data: fisheries independent data: Cat Point

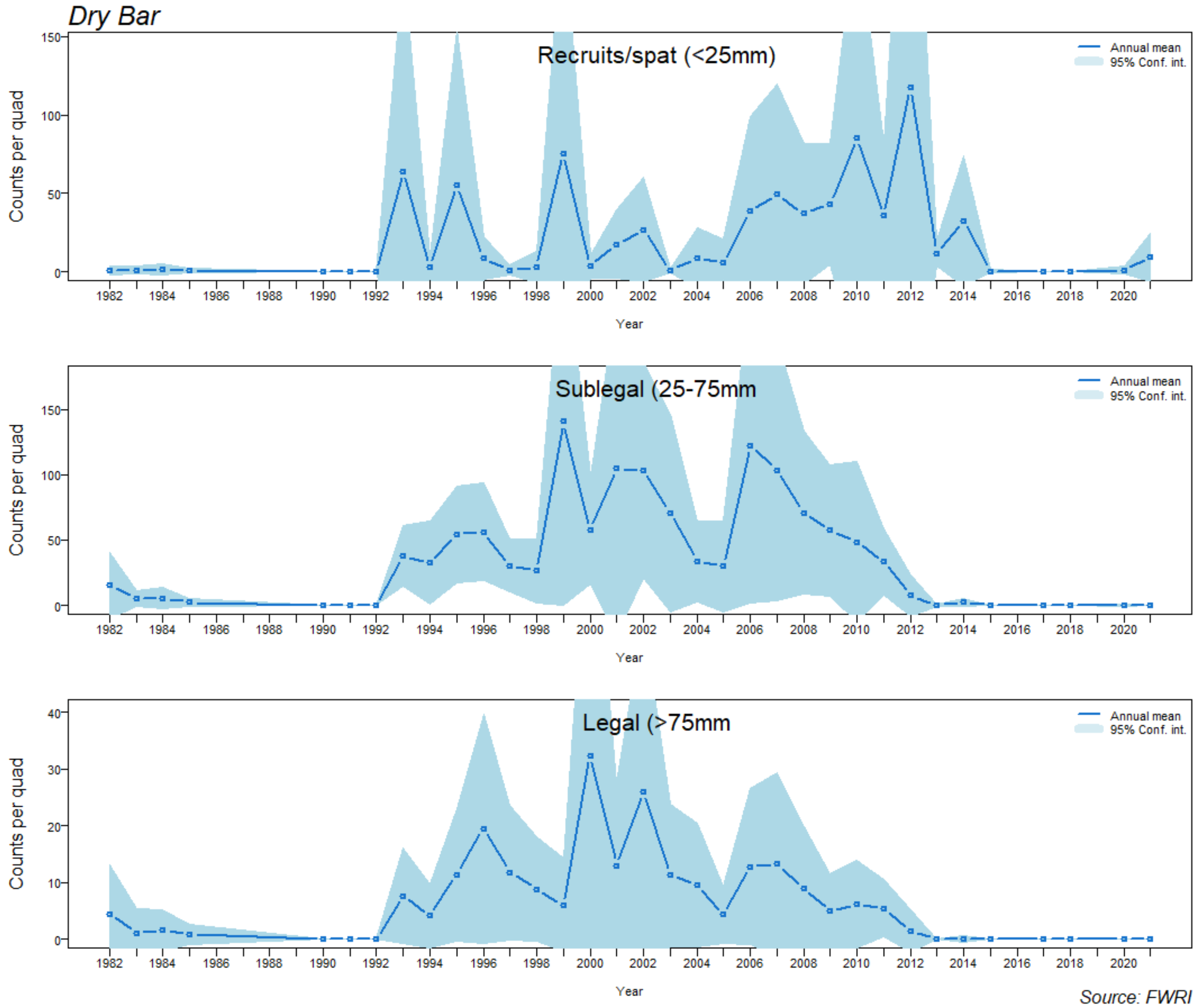


Source: FWRI

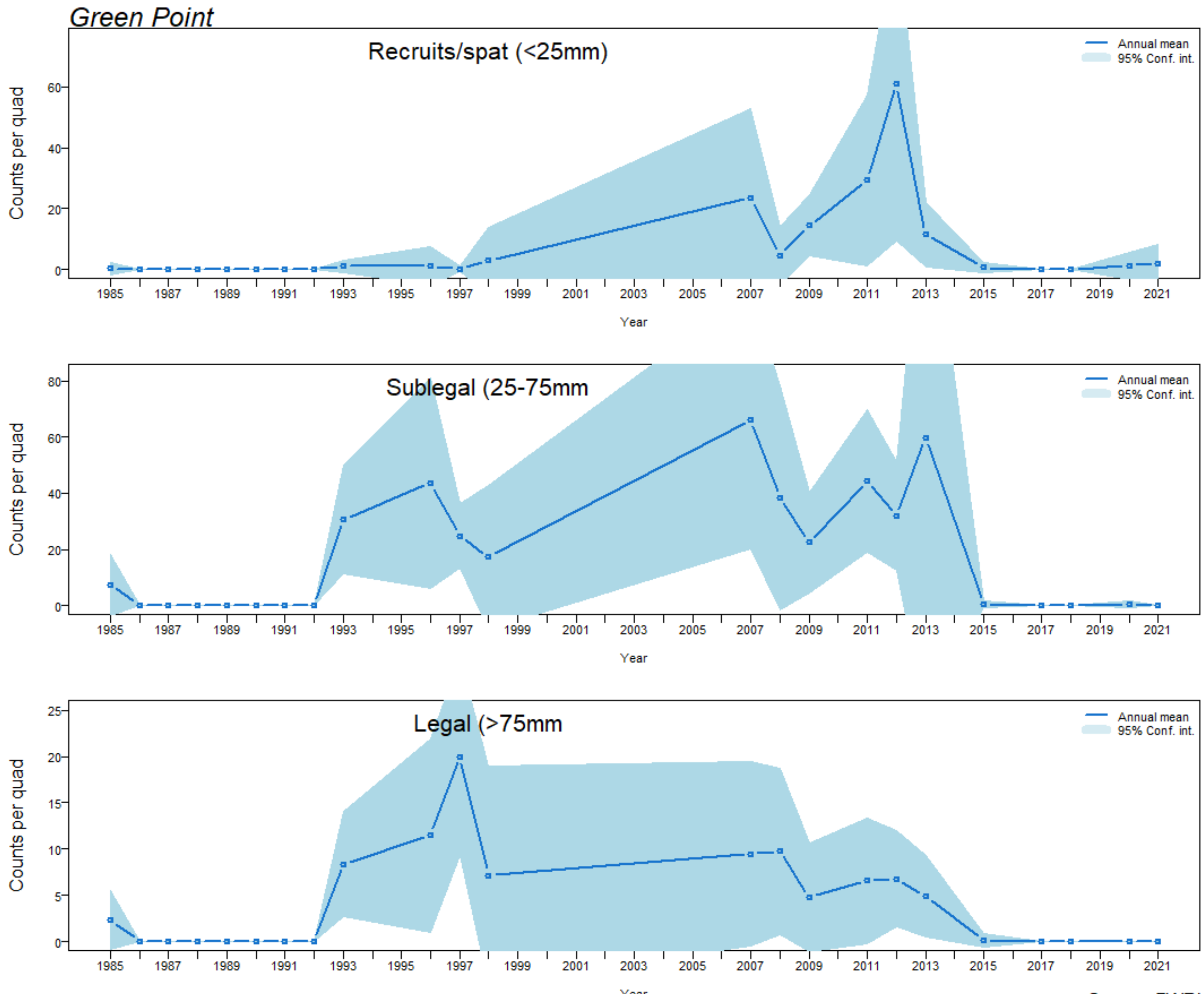
Data: fisheries independent data: Easthole



Data: fisheries independent data: Dry Bar

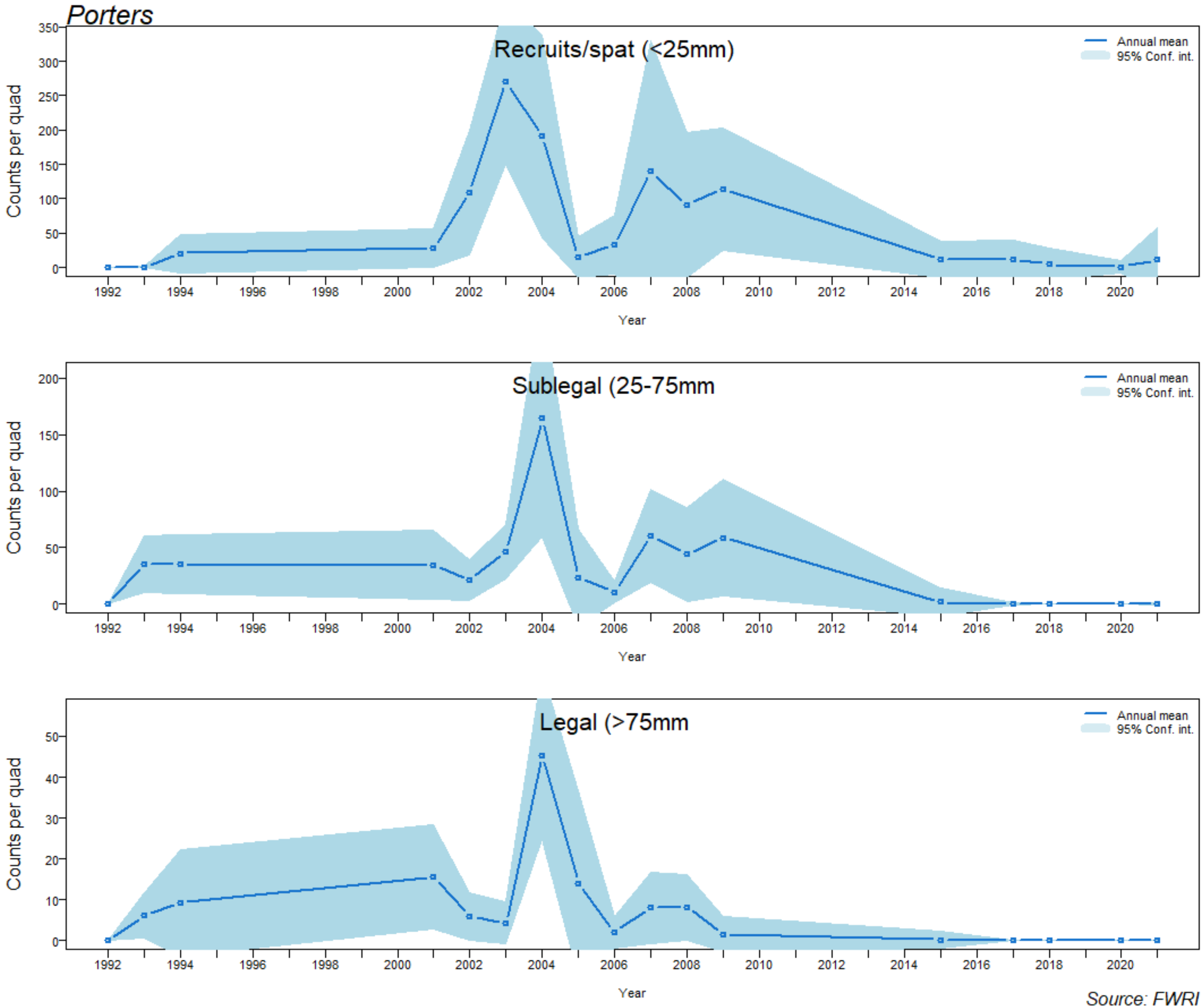


Data: fisheries independent data: Green Point



Source: FWRI

Data: fisheries independent data: Porters



Data: fisheries independent data

- Anything else that you would like to see?
  - Different bars? Possibly (if I can code it) different combinations of bars?

Data: fisheries dependent data

- Take home points
  - There is not many oysters in AB right now.
  - This is the longest, lowest density of oysters we have record of
  - There is no sign of sublegal or legal improvement
  - Very slight increase <u>**over last few years**</u> in spat/recruits (<25mm), but still well below average

Data: fisheries dependent data

- What this means for models
  - No evidence of sustainable oyster populations with **no** fishery
  - How do we model (simulate) sustainable management actions on effectively no oysters/current unsustainable population?
    - Assume average recruitment happens…soon?
    - Make a lot of assumptions about “shell budget”/habitat suitable for recruitment (allows the model to “make sense” of why there aren’t oysters now but might be more later, like after more restoration)
    - *May* be able to estimate shell parameters with re-done stock assessment

- No easy answers here and the clock is ticking

Data we wish we had but don’t

- Long term shell or reef height data
  - Does not exist, I just wish it did

- Some experimental evidence that oysters will survive
  - If reefs are heigh enough
  - If substrate is different
  - If anything that we can reasonably restore to

Questions and concerns

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