Development of An Experimental Purse Seine Fishery for Atlantic Thread Herring (*Opisthonema oglinum*)

Exempted Fishery Permit Application from:

Lund's Fisheries, Inc / H&L Axelsson, Inc

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Axelsson Seiner, Inc, Port of Cape May, NJ

LUND'S FISHERIES

Wild caught product of USA

Jeff Kaelin, Lund's Fisheries

&

Dr. Eleanor Bochenek, Consultant

Life History

- Range in Western Atlantic from southern Brazil to Gulf of Maine
  - Primarily tropical and subtropical
- Coastal pelagic schooling species occurs most often at depths from 35-90 m
- Exhibits seasonal north-south migrations

- Oldest thread herring captured off of North Carolina was 8 years old
- Spawning occurs in May and June off North Carolina and from April-September in Gulf of Mexico

- This species is one of several emerging species in the region, with centers of distribution in the south
  - Increasingly encountered in local waters
  - Likely due to warming water temperatures
- More Atlantic Thread herring are expected to migrate north in the spring to the Mid-Atlantic and south in the fall
- These herring have a higher protein content than Atlantic menhaden and are a valuable recreational bait source. Purse seine-harvested Atlantic Thread herring are in the marketplace, from the Florida Gulf and Mexico coasts.

Current Fishery

- An Atlantic fishery has not taken place for several years:
  - Purse seine restrictions in several southern states
  - A purse seine fishery operated in Atlantic coastal waters off of Florida and then was banned
  - A purse seine fishery operated off of North Carolina for a few years and, also, in late summer and fall late 1980s and early 1990s
    - These herring were harvested for processing into meal and oil and it became clear that the thread herring resource was not likely to replace Atlantic menhaden in that fishery (Smith, 1977; Houde, 1977)
- Recreational anglers utilize these herring, off the Atlantic Coast and in the Gulf of Mexico, as a valuable recreational bait source

Exempted Fishing Permit

- **The exempted fishing permit application went to GARFO, April 2021 to:**
  - **Demonstrate the potential for a federal EEZ commercial purse seine fishery for Atlantic thread herring**
  - **With a May 1 through November 1 season**
  - **A 6.6 million pound catch limit**
  - **Requesting a multi-year EFP to maximize biological data gathering, to estimate stock size potential , and allow investments in gear to be recovered from the new fishery**
- Consistent with MAFMC's Forage Amendment; providing the opportunity for experimental fishing in the development of new or existing fisheries.

Experimental Fishery

- Purse seine fishery will operate 3-30 miles offshore
  - Depths <30 fathoms
  - Between Ocean City, MD and Montauk, NY
- Up to 4 purse seine and 4 carrier vessels will harvest the herring and land at Lund's Cape May plant
  - Each of these vessels is permitted to catch and land menhaden in the NJ-managed limited access, ITQ fishery
- Purse Seine
  - 2,000 feet long and 180 feet deep with 1 inch mesh
    - Fishermen said that the thread herring occur at 30 fathoms and the menhaden are usually found in 10 fathoms during May to November
    - NJ Menhaden rules restrict seine size to 900 feet, too small to fish in deeper waters offshore, so larger nets will be built this winter, if the request is approved

Sampling Protocol

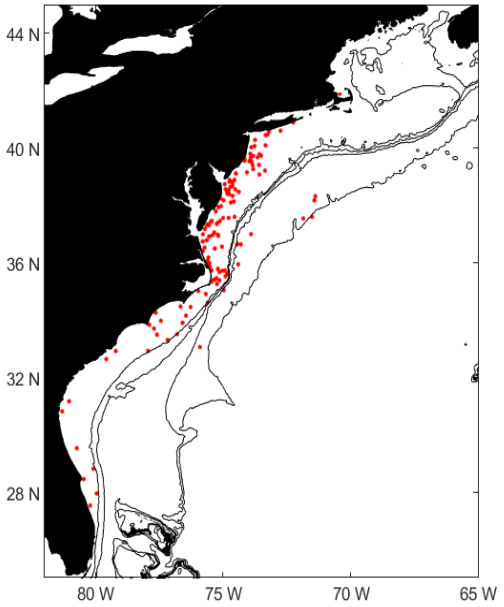
- Dr. Robert Leaf, USM, developed a sampling protocol to collect data on this fishery, mirroring that used to monitor chub mackerel catches
  - A primary feature of this approach is over sampling initially to establish targets for sample sufficiency at set and landings level
- Will describe length-at-age and weight-at-length relationship of thread herring
  - The utility of alternative ageing structures will be examined (otoliths and scales)
- Will evaluate length- and age-specific maturity
- Frequency and diversity of bycatch at trip level will be monitored in the processing plant before the catch is frozen

Fish Surveys

- Larval fish survey conducted for over 24 years in a NJ estuary (by Dr. Ken Able of Rutgers Univ.) found that Atlantic thread herring larvae have been increasing
  - Mean density of 0.561/1000 m^3

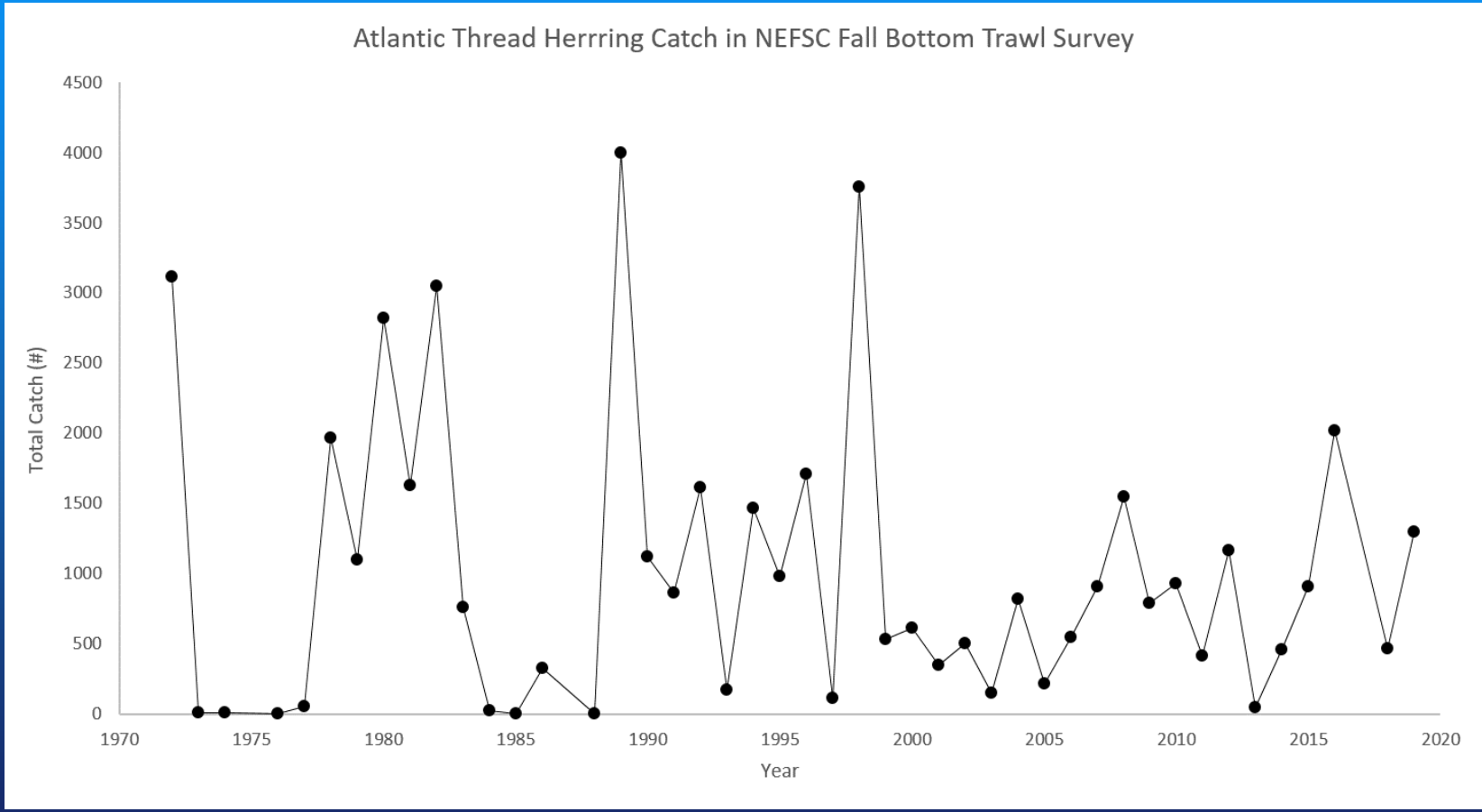
- NEFSC larval survey (ECOMON)
  - Thread herring larvae caught in April-December

- Thread herring adults were caught in NEFSC and NEAMAP surveys

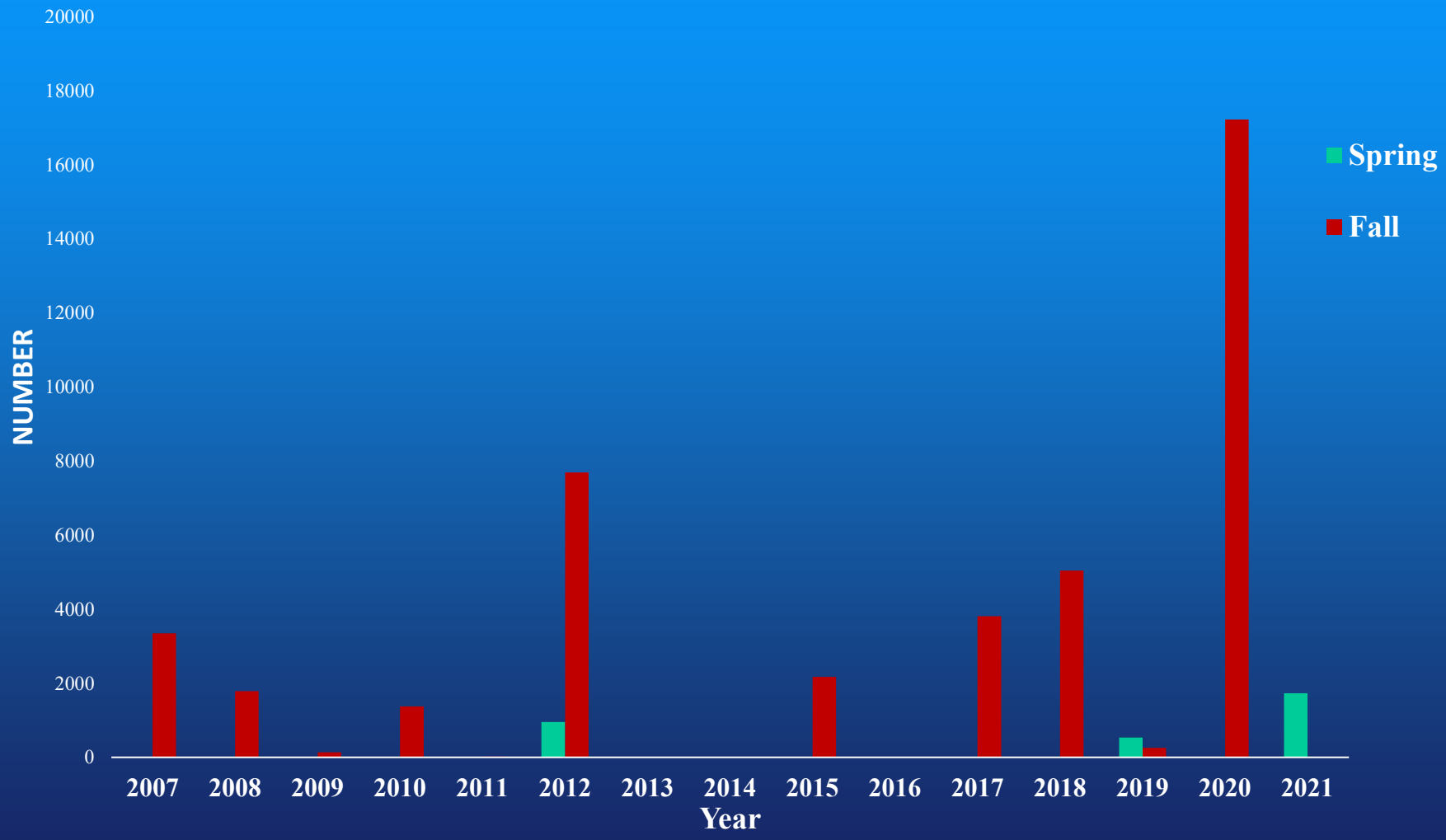


Tows caught Atlantic thread herring larvae. Some larvae may be misidentified in the database from ECOMON survey.
***Data from NEFSC**

Total catch (#) of Atlantic thread herring in the NEFSC fall bottom trawl survey from 1972-2019.
***Data provided by NEFSC.**

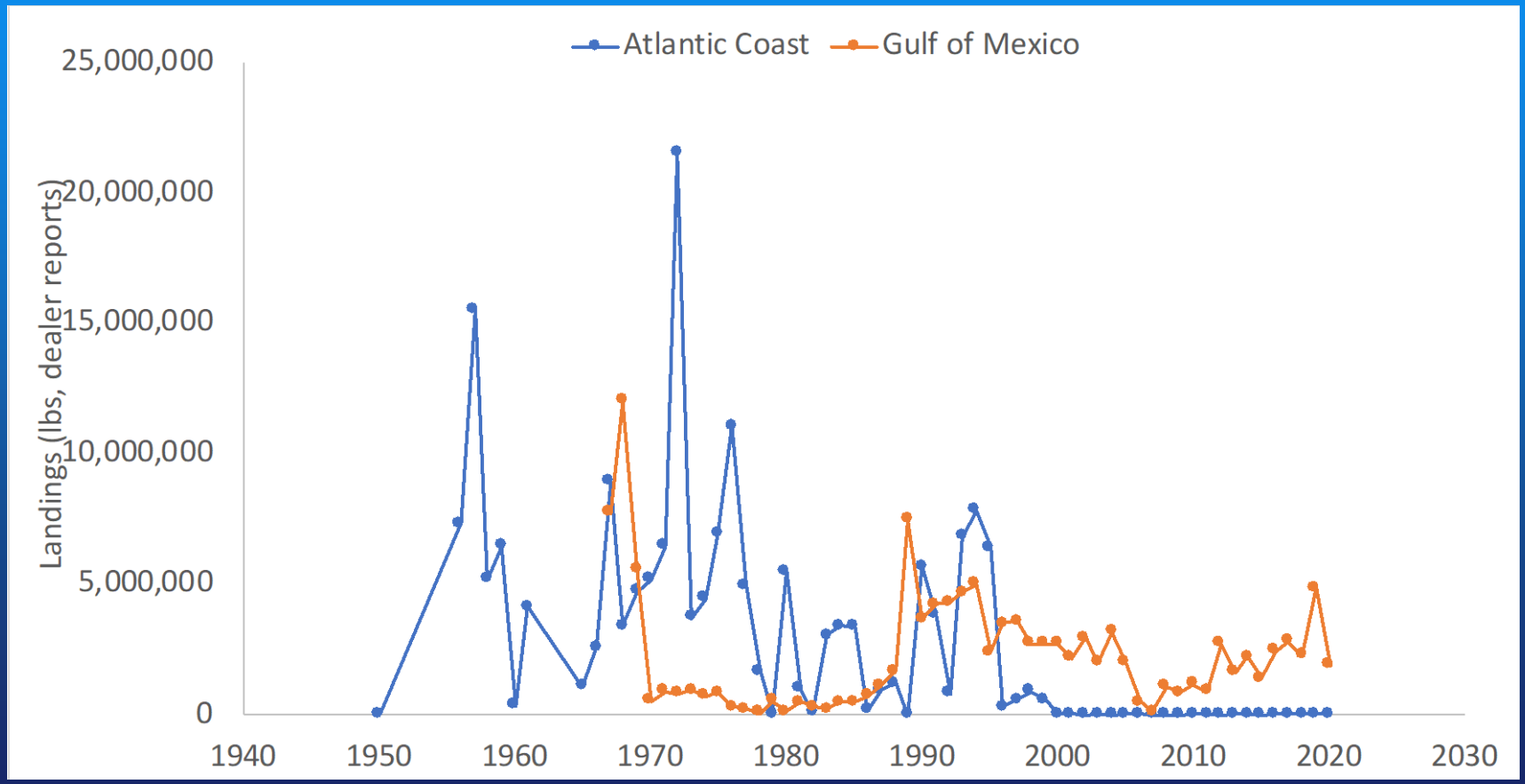


Total number of Atlantic thread herring caught in NEAMAP Spring and Fall Survey by year for all regions. No data were collected in spring 2020. Depth Strata 20-60 ft.
Data provided by VIMS.

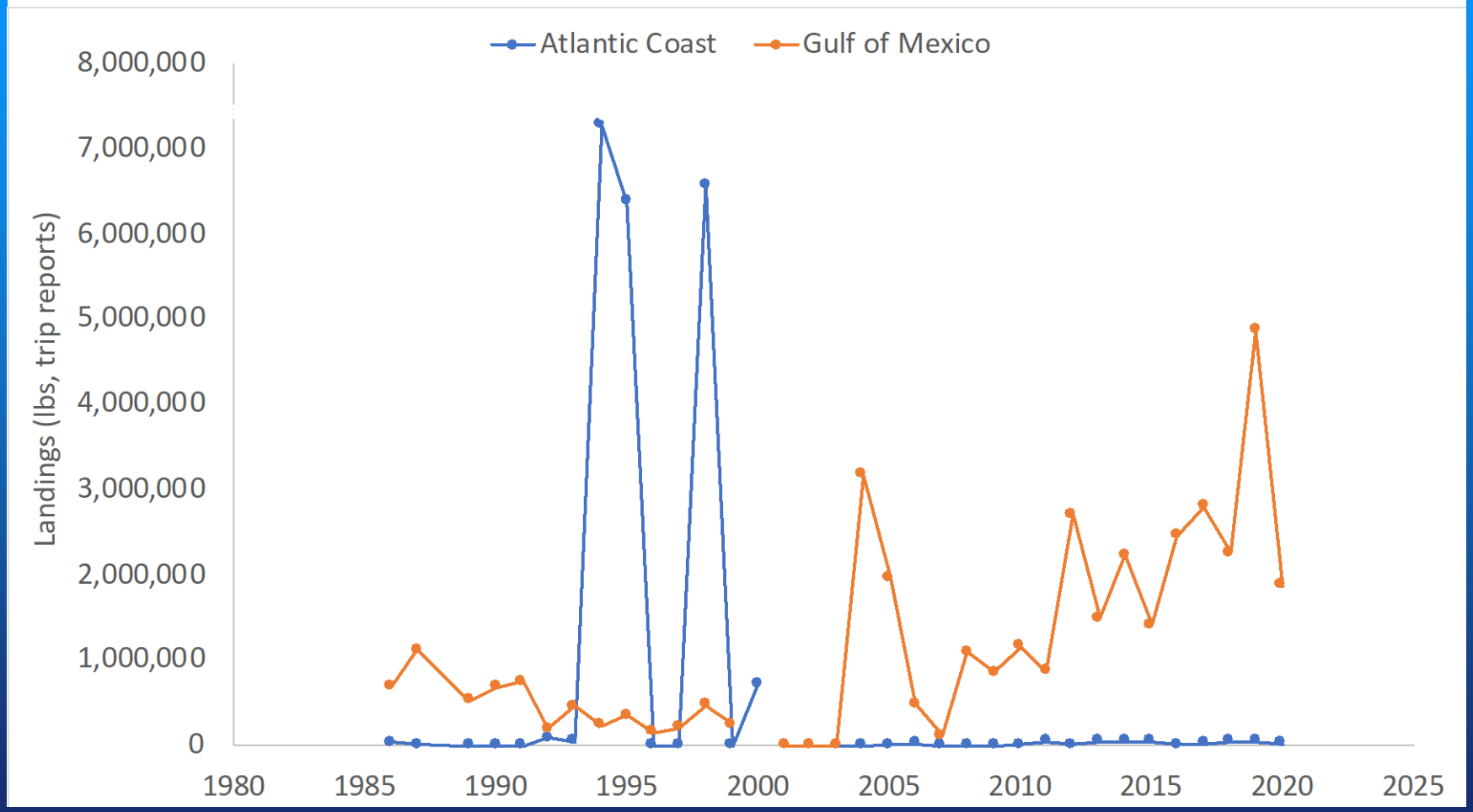


Commercial and Recreational Catch of Atlantic Thread Herring

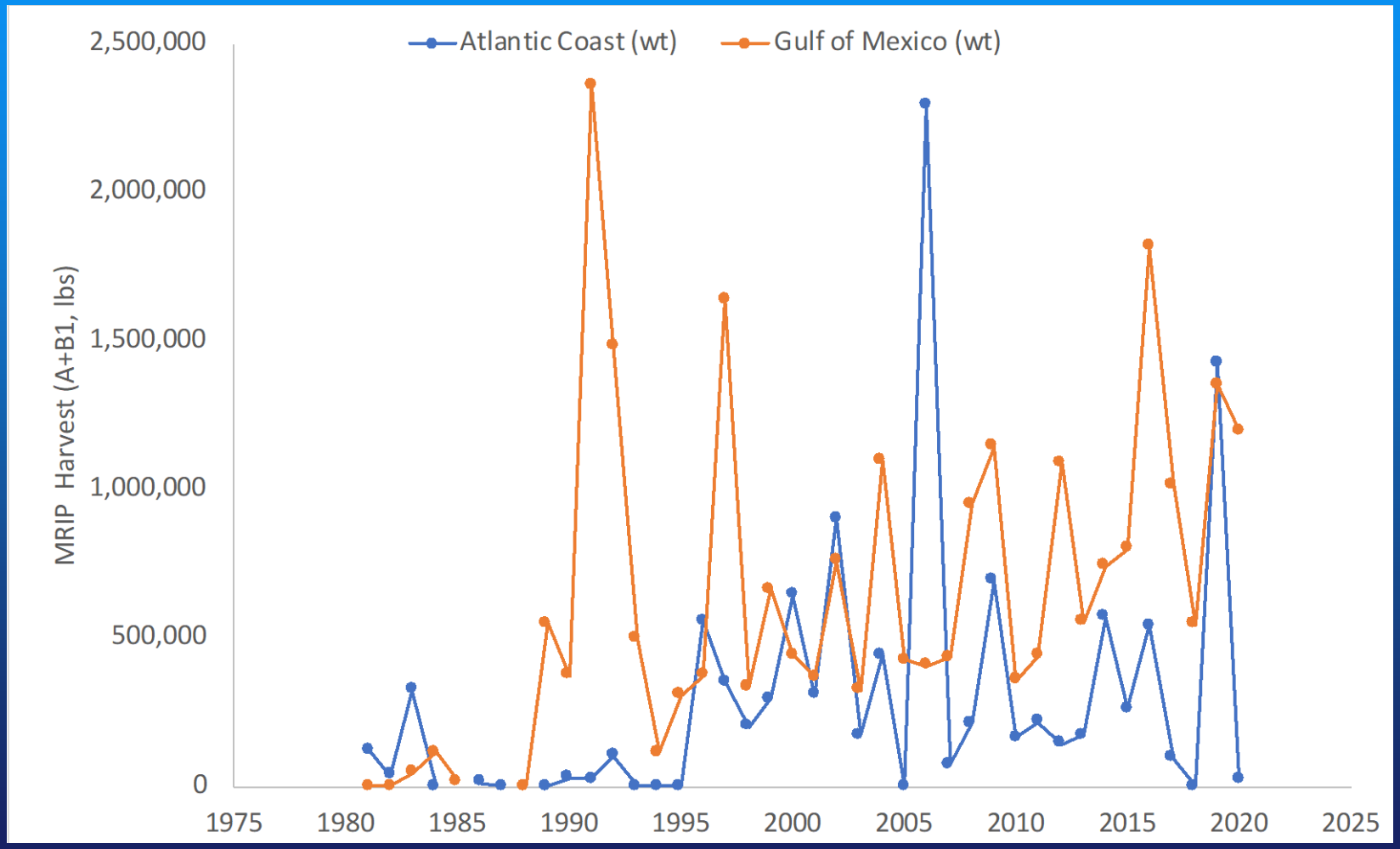
Commercial landings of Atlantic thread herring from non-confidential dealer reports from 1950-2020 for the Atlantic Coast and Gulf of Mexico from the ACCSP



ACCSP non-confidential commercial trip report landings of Atlantic thread herring from the Atlantic Coast and Gulf of Mexico from 1986 -2020



Atlantic thread herring harvest (A+B1) (lbs) from the MRIP data for the Atlantic Coast and Gulf of Mexico from 1981-2021. A=Thread herring that were caught and brought back to dock and identified by a sampler. B1= Thread herring that were caught and killed but not available for identification by the sampler



Review of Scientific Literature

- Houde et al. (1977) collected eggs and larvae from eastern Gulf of Mexico and estimated that a potential annual yield of thread herring of 60,300 to 120,600 metric tons in eastern Gulf
- Morson et al (2019) conducted a larval fish survey in a southern New Jersey estuary. As the estuarine waters have warmed over time, reporting an increase in Atlantic thread larvae
- Smith (1994) collected Atlantic thread herring from directed purse seine catches unloading in Beaufort, NC (1985-1990) primarily in the fall. Sex ratio was 179 males:299 females. Landings averaged about 1.9 million kg.
- Pristas and Cheek (1974) noted that a menhaden purse seine fishery operated in the South Atlantic from 1968-1970 and caught Atlantic thread hearing in the fall with an average catch of 2,000 metric tons. Tagged the herring and estimated the population size of about 45,000$\pm$23,000 metric tons

Bycatch in Purse Seine Fisheries

- Chuenpagdee et al. (2003) ranked purse seines as having very low collateral impacts
- Baker and Hamilton (2016) noted that there was limited evidence of seabird bycatch in purse seine gear except for a purse seine fishery targeting pilchards in Western Australia. The fleet caught flesh-footed shearwaters. This fishery was operating near a bird breeding ground.
- Moore et al. (2008) stated that purse seines in the Atlantic Ocean and Gulf of Mexico did not have bycatch of turtles or seabirds

Summary

- Atlantic thread herring have been a persistent species in our region
  - Positive trends in their availability
- A market for this species exists, as a high quality recreational fishing bait
- If it is possible to develop a fishery for Atlantic thread herring in the Mid-Atlantic, this would benefit the Cape May purse seine vessels by augmenting their income
  - These vessels are not fishing as frequently as in the past (prior to 2012), due to the shortened menhaden season required by ASFMC quota restrictions