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James Sulikowski, Ph.D.
Marine Science Center
University of New England
11 Hills Beach Rd.
Biddeford, ME 04005
jsulikowski@une.edu



Dismissing Dogma: Using satellite tag technology to gain new insights into the horizontal and vertical movement patterns of spiny dogfish.

Dogfish Along the U.S. Atlantic Coast

- Segregation
- voracious and opportunistic
- Highly piscivorous, but maintains broad diet
- Potentially makes extended North -South migrations



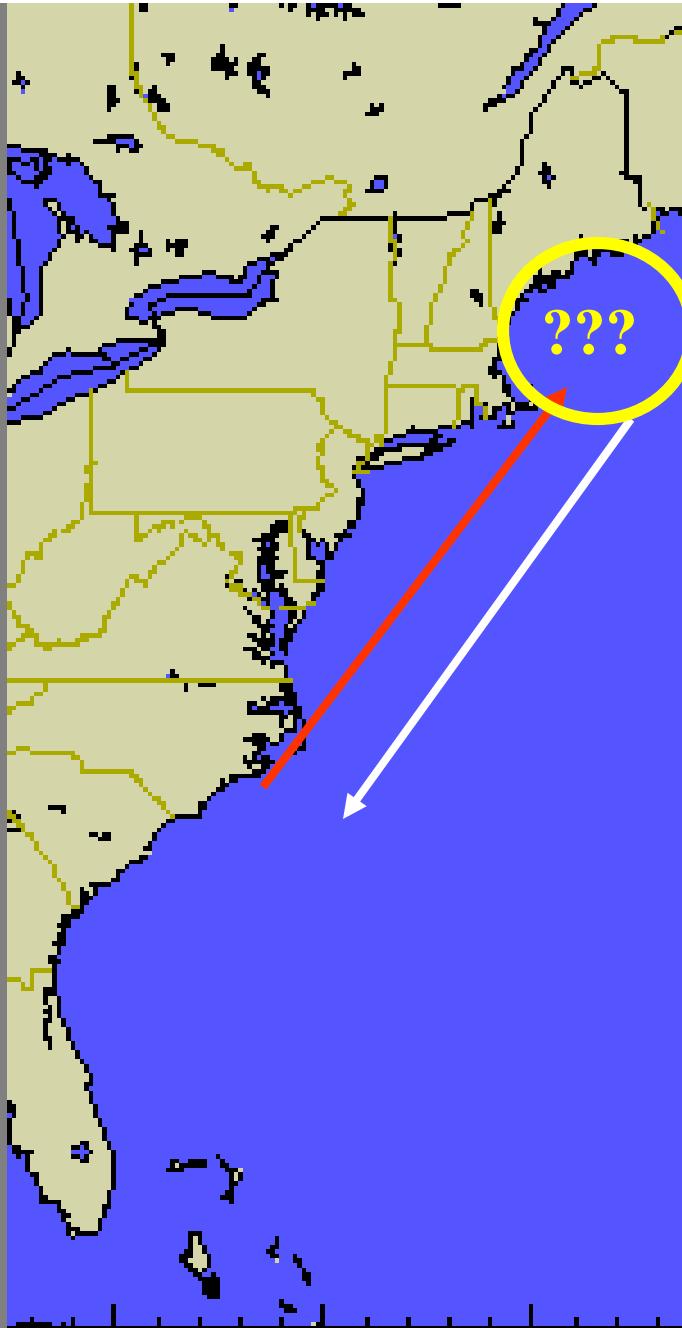
Contentious topic



NMFS Spring Survey

- Three year moving averages
 - SSB (2005) ~ 53,600 mt
 - SSB (2007) 155,800 mt

Biologically does not make sense

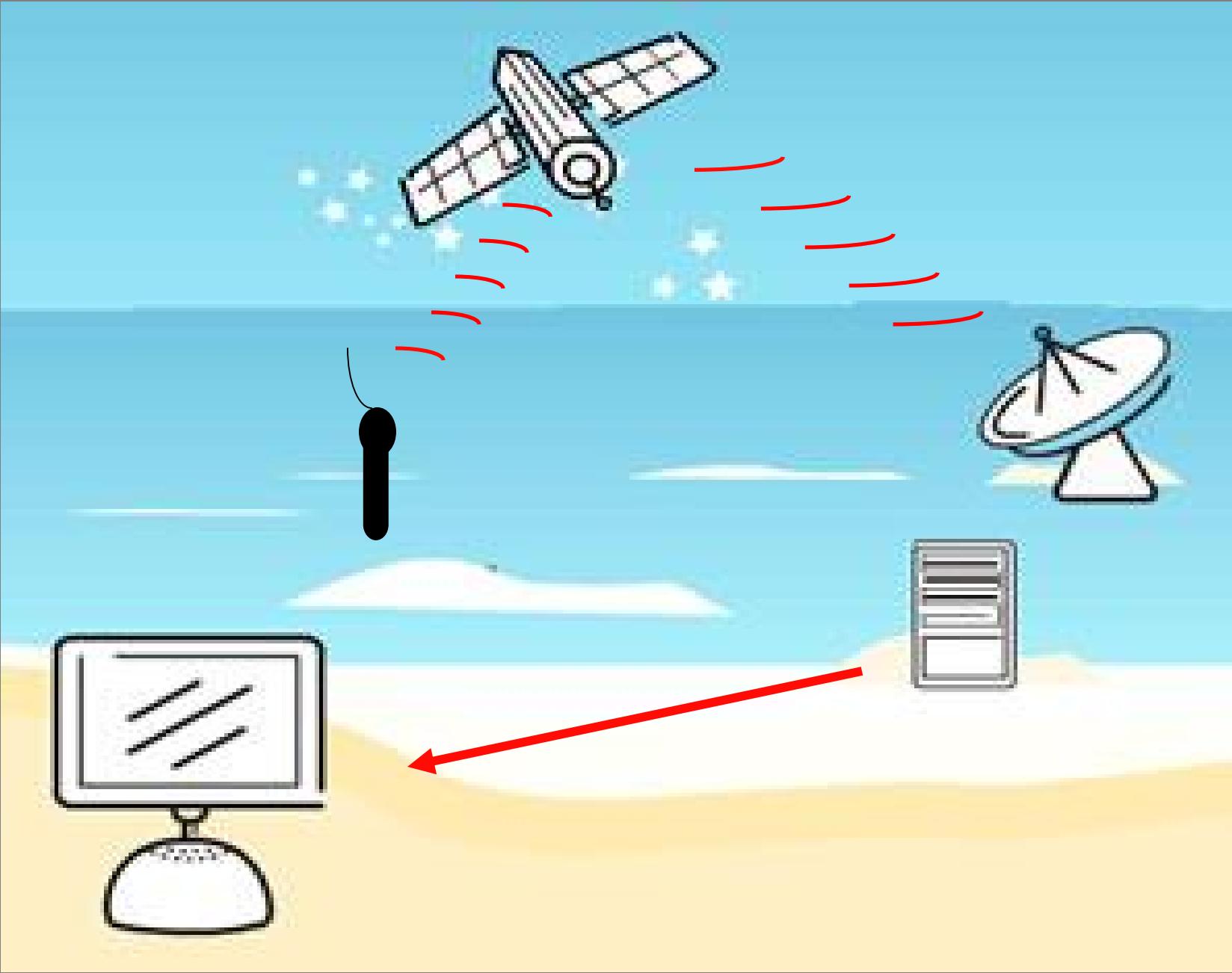




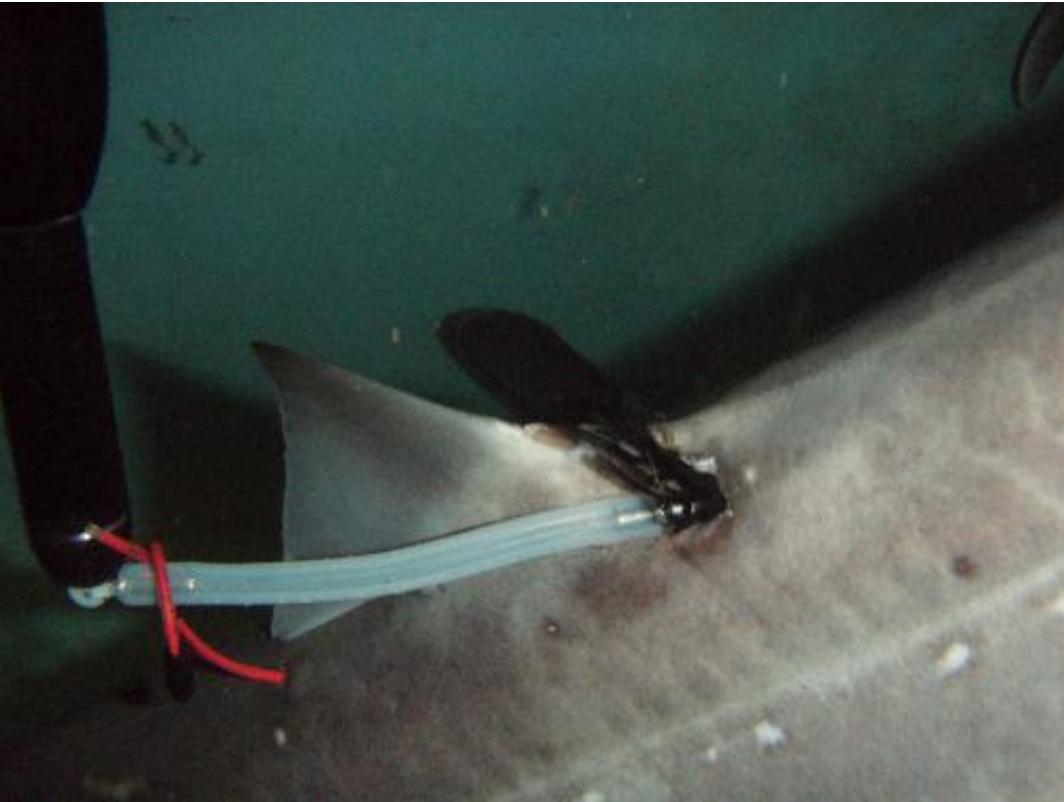
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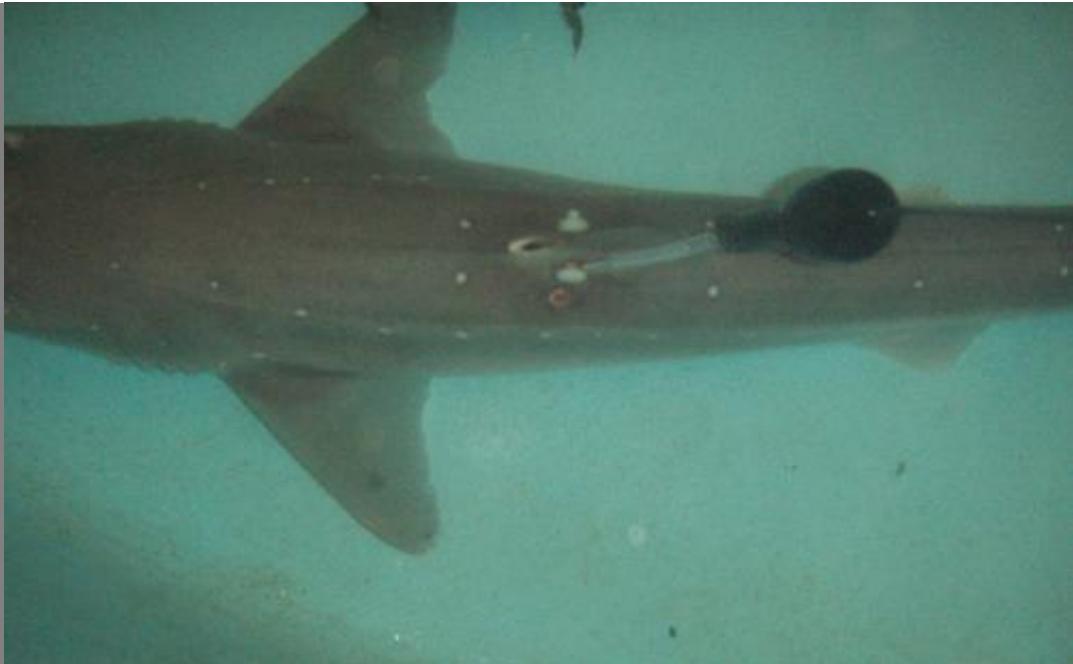


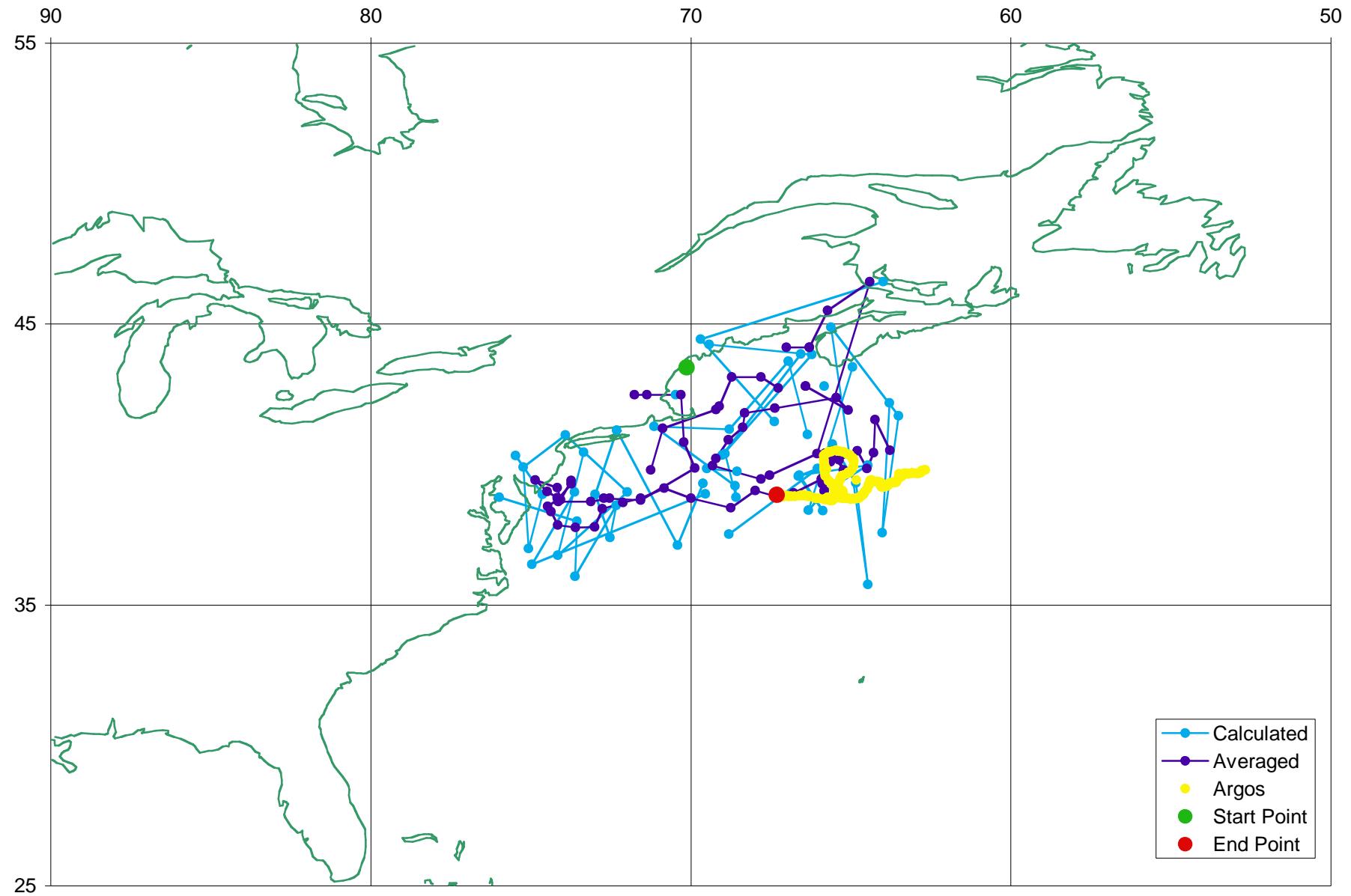






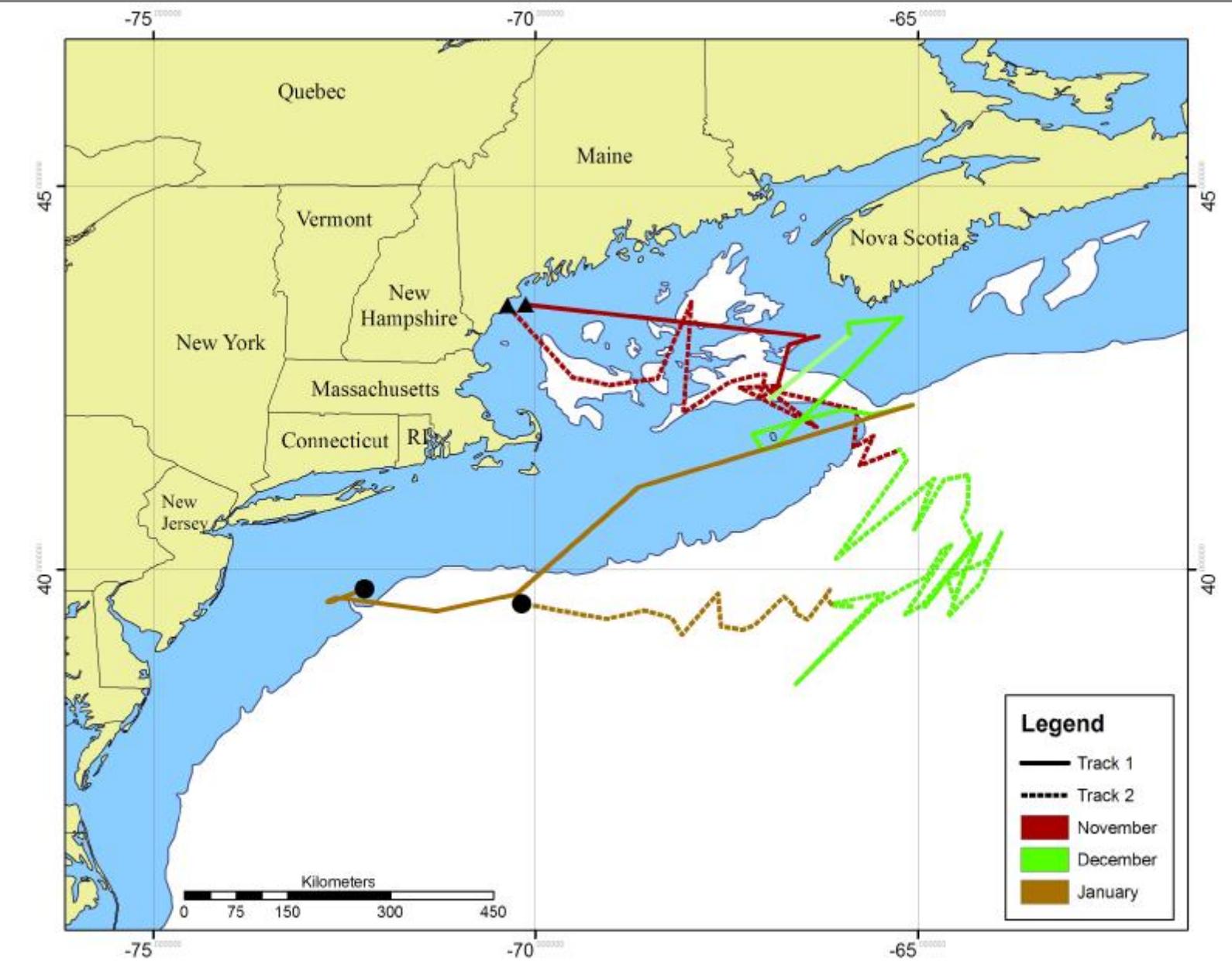


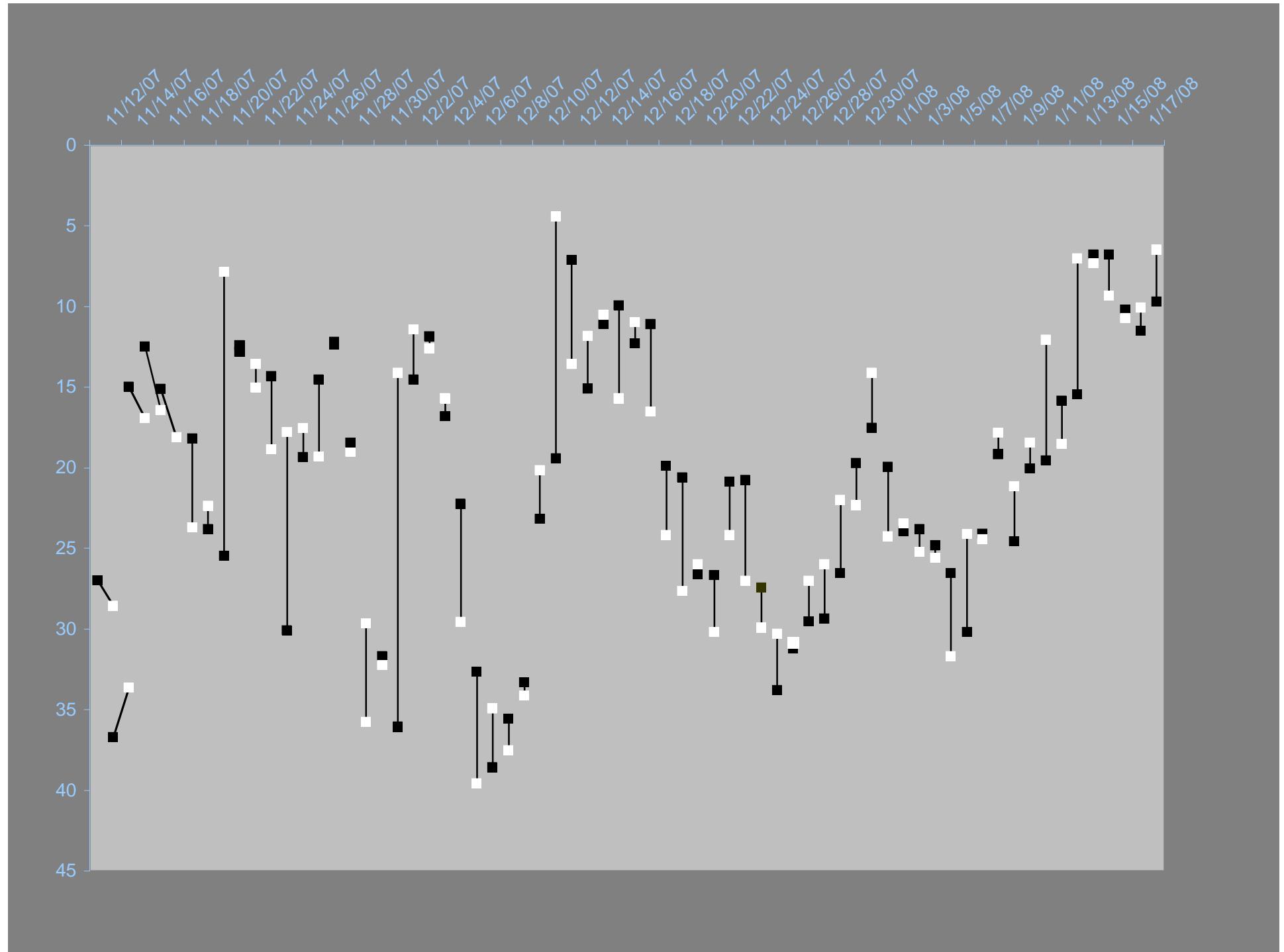


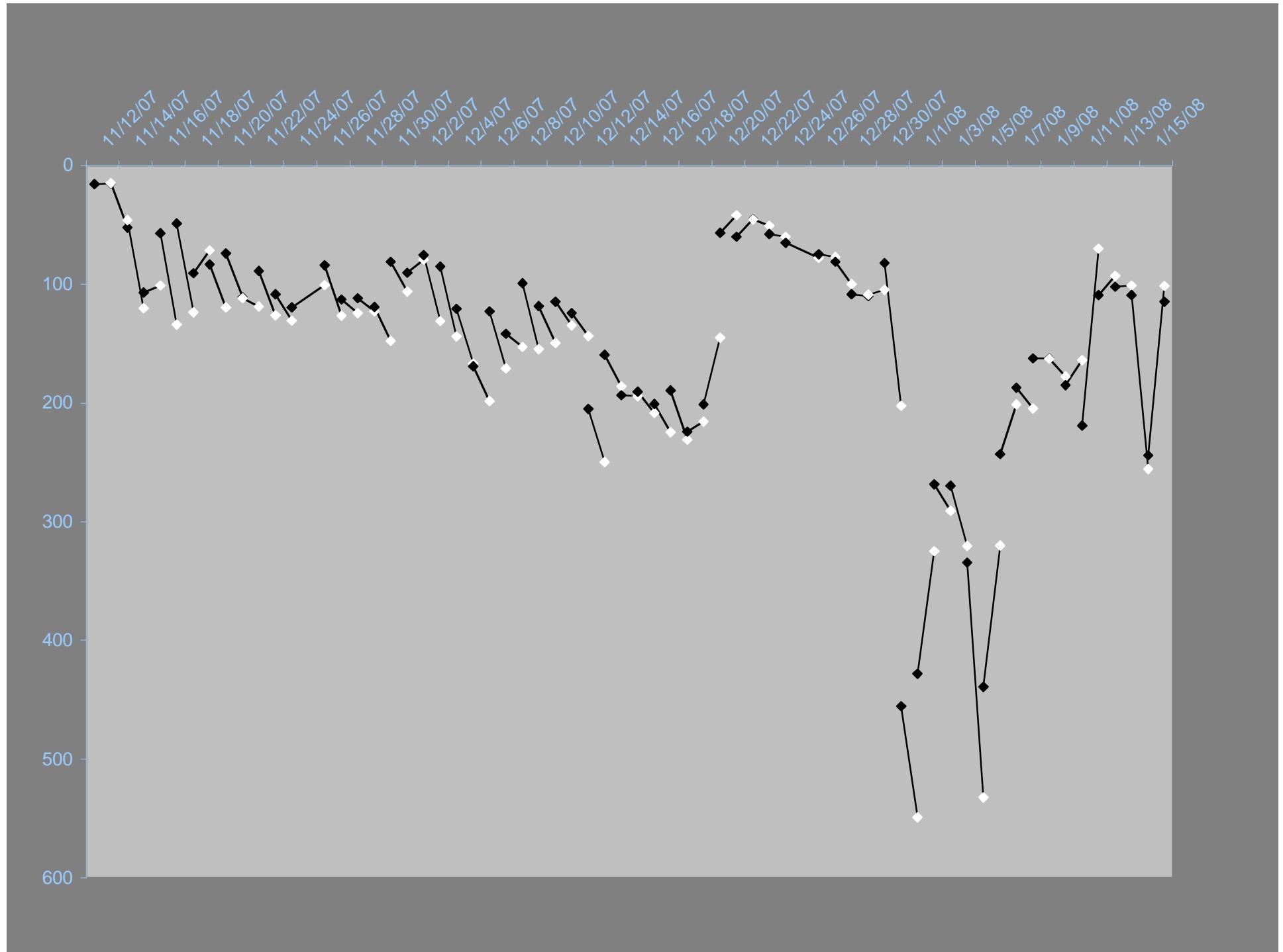


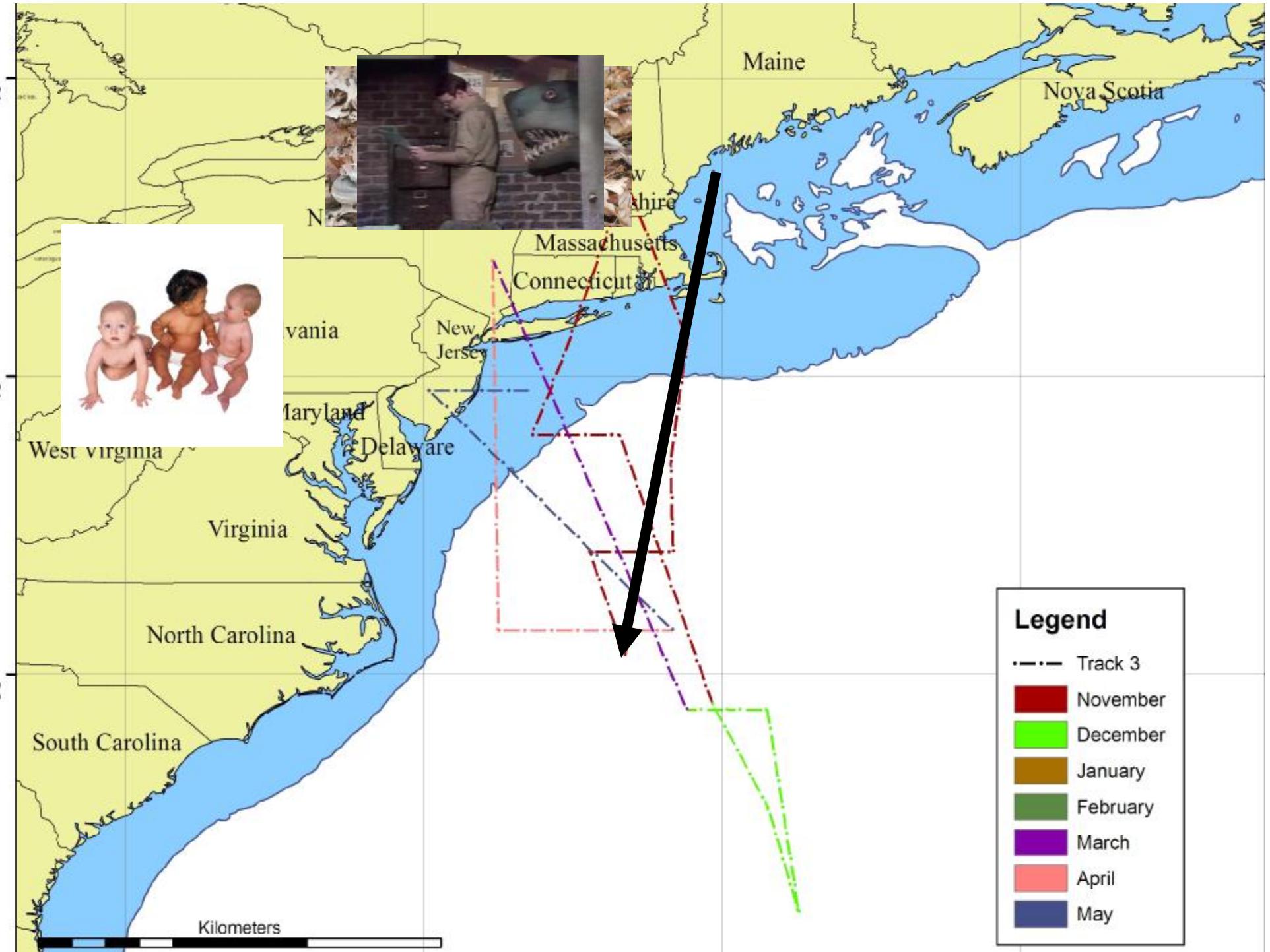
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are needed to see this picture.

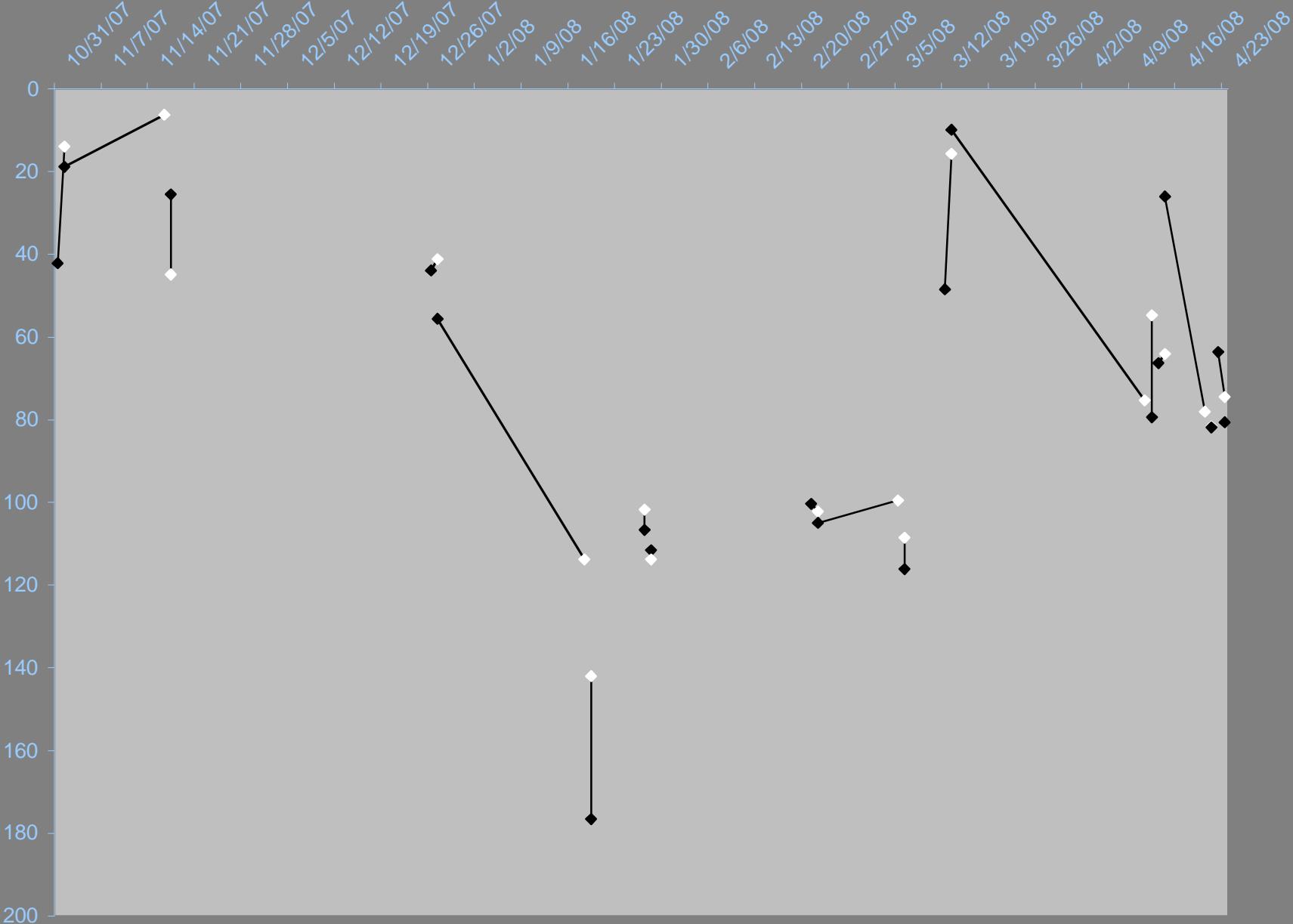
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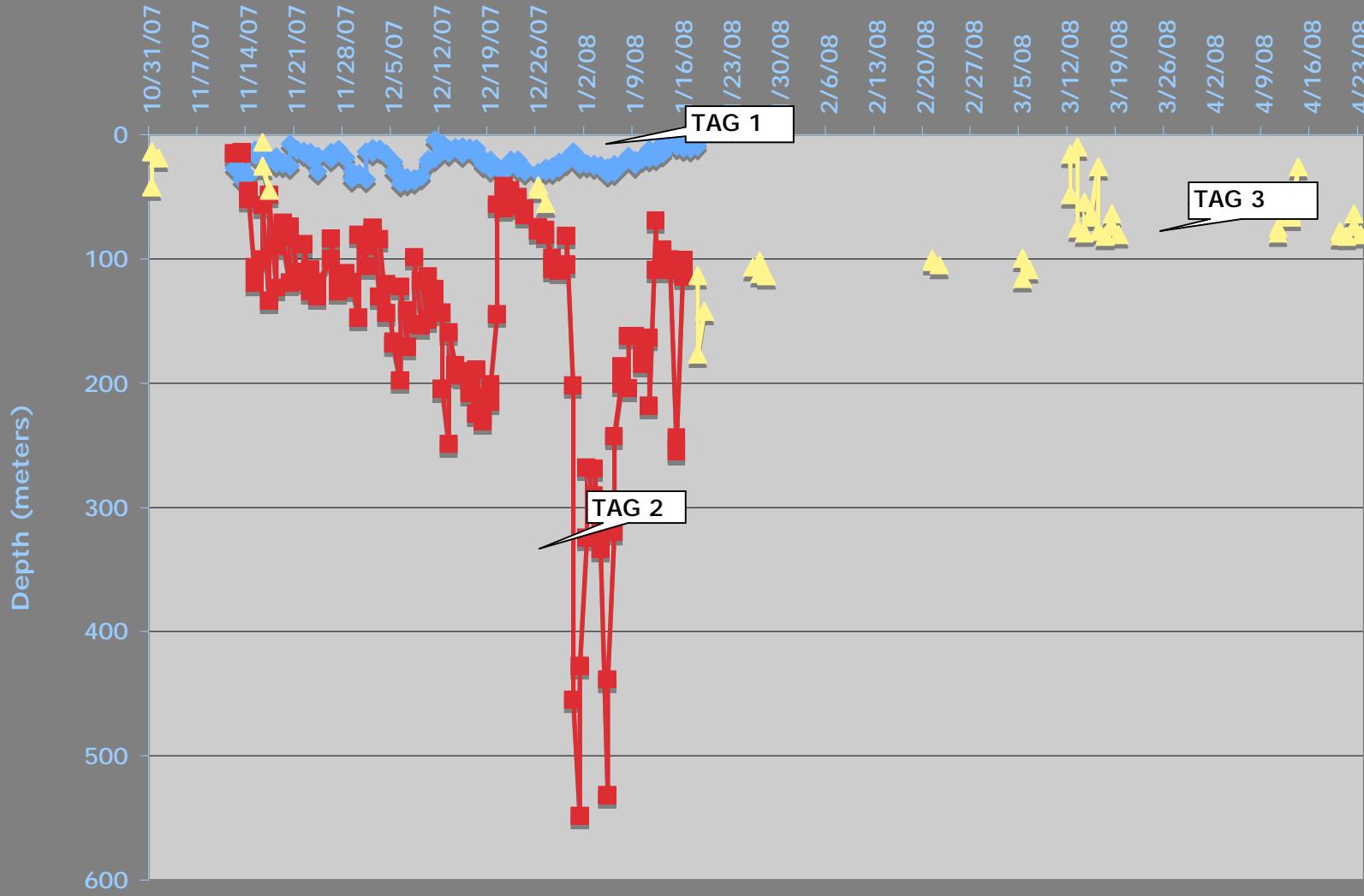


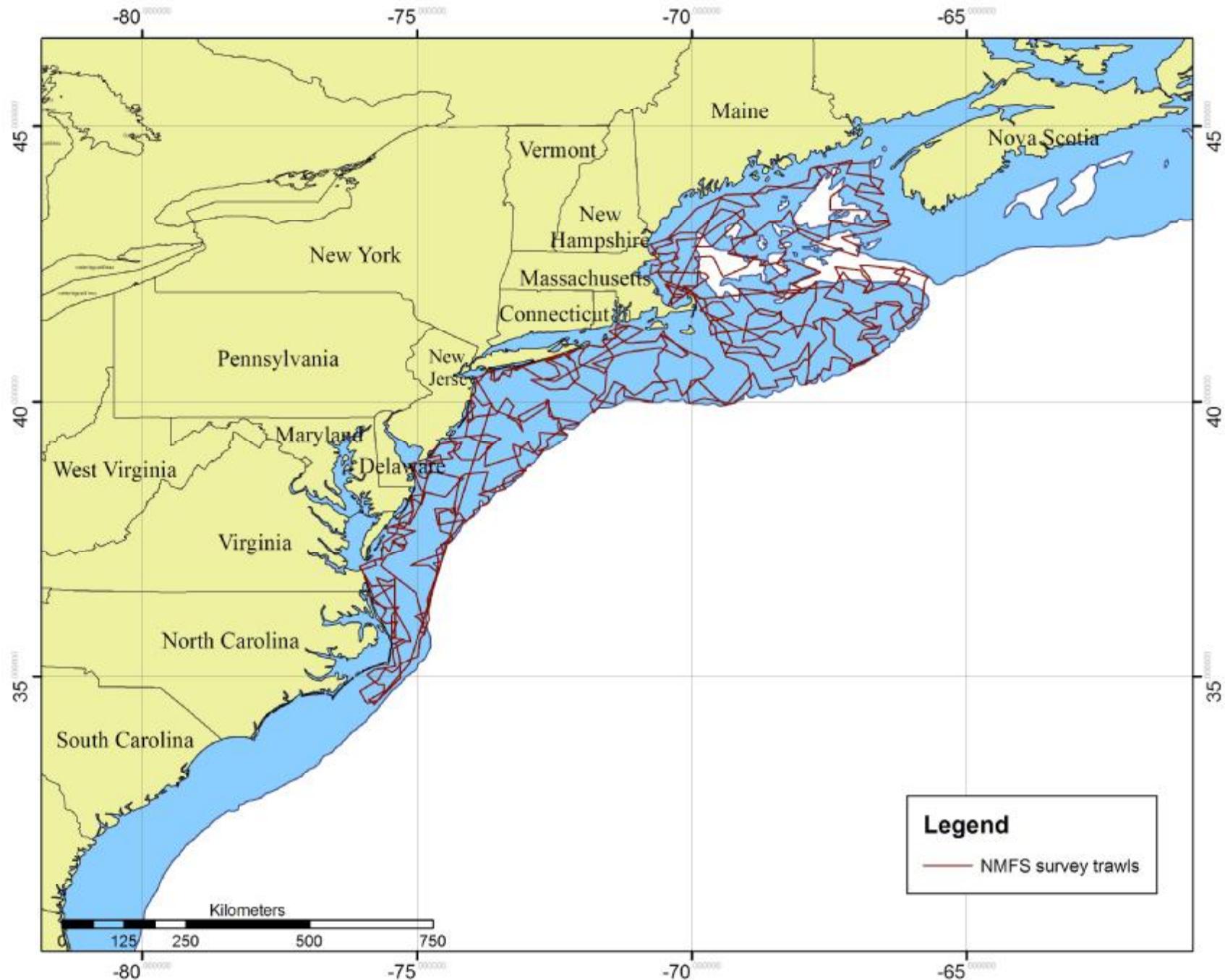


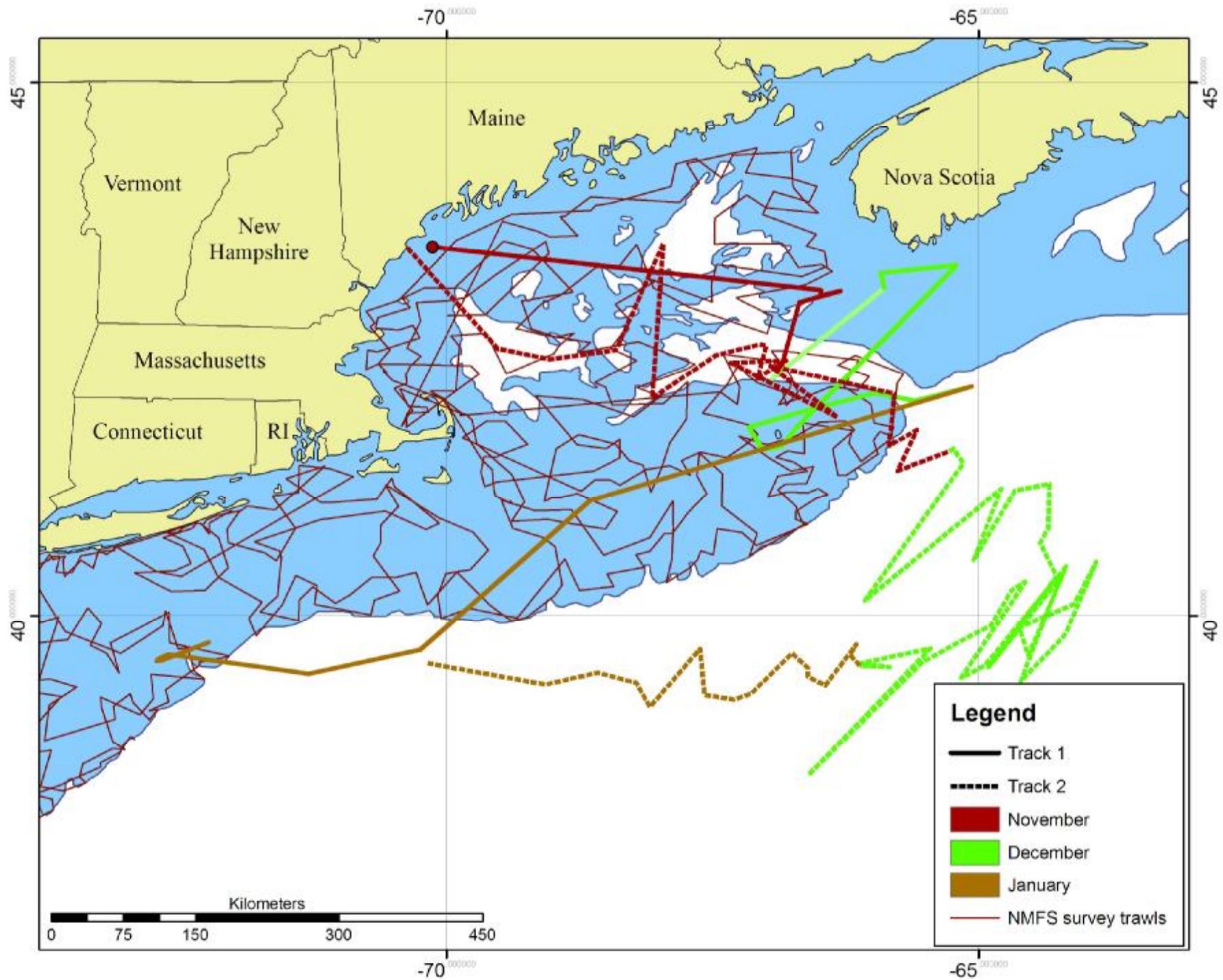


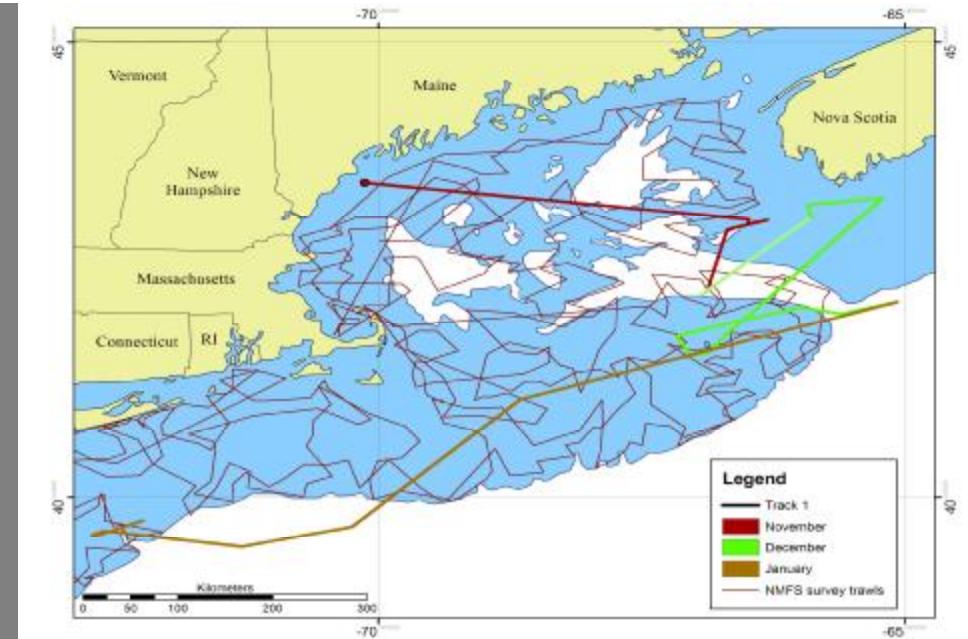




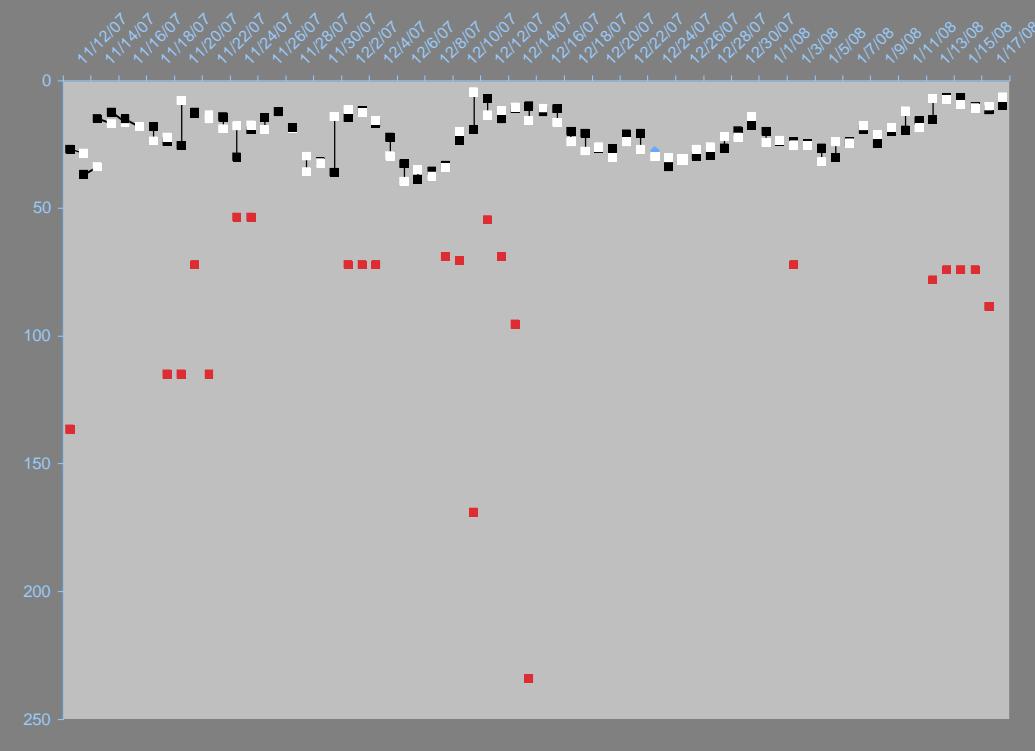




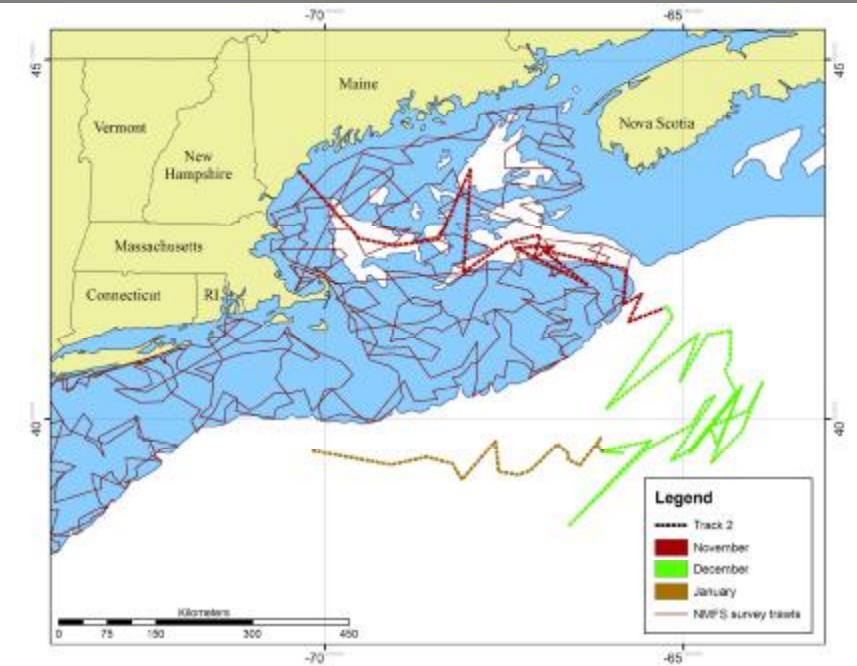




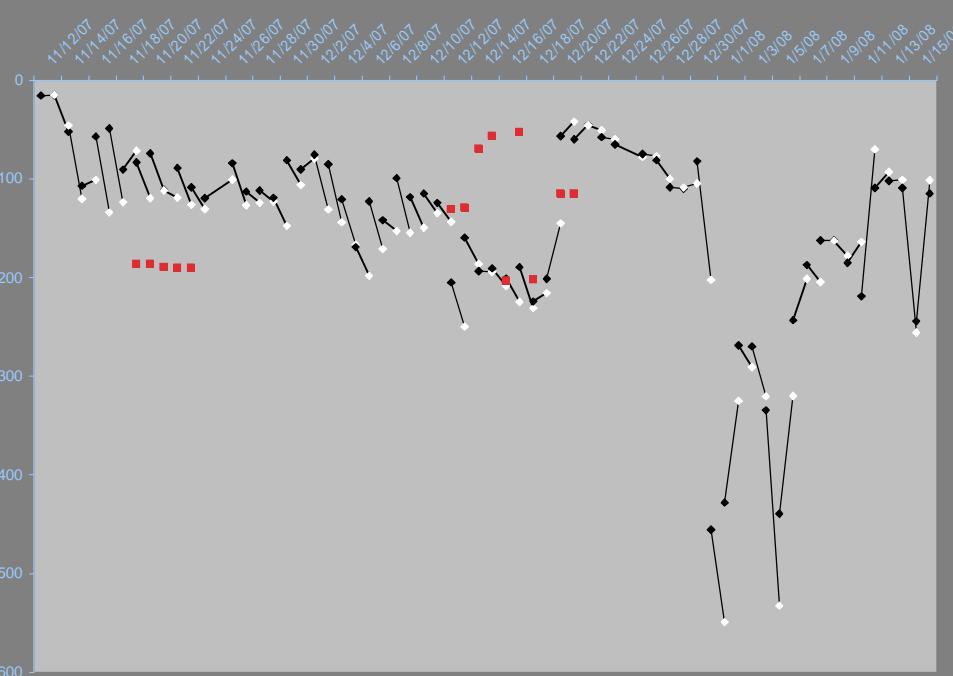
90% in survey area



0% at a catch able depth



35% of time in survey area



24% at a catch able depth

- SSB (2007) 155,800mt
- SSB tag (2007) 623,200mt
- Total biomass (2007) 478,600
- Total biomass tag (2007) 1,914,400

Anomalies ?????

- SSB (2005) ~ 53,000mt
- SSB (2007) 155,800mt

NEFSC male to female ratio is 4-1

East Carolina male to female ratio is 1-11

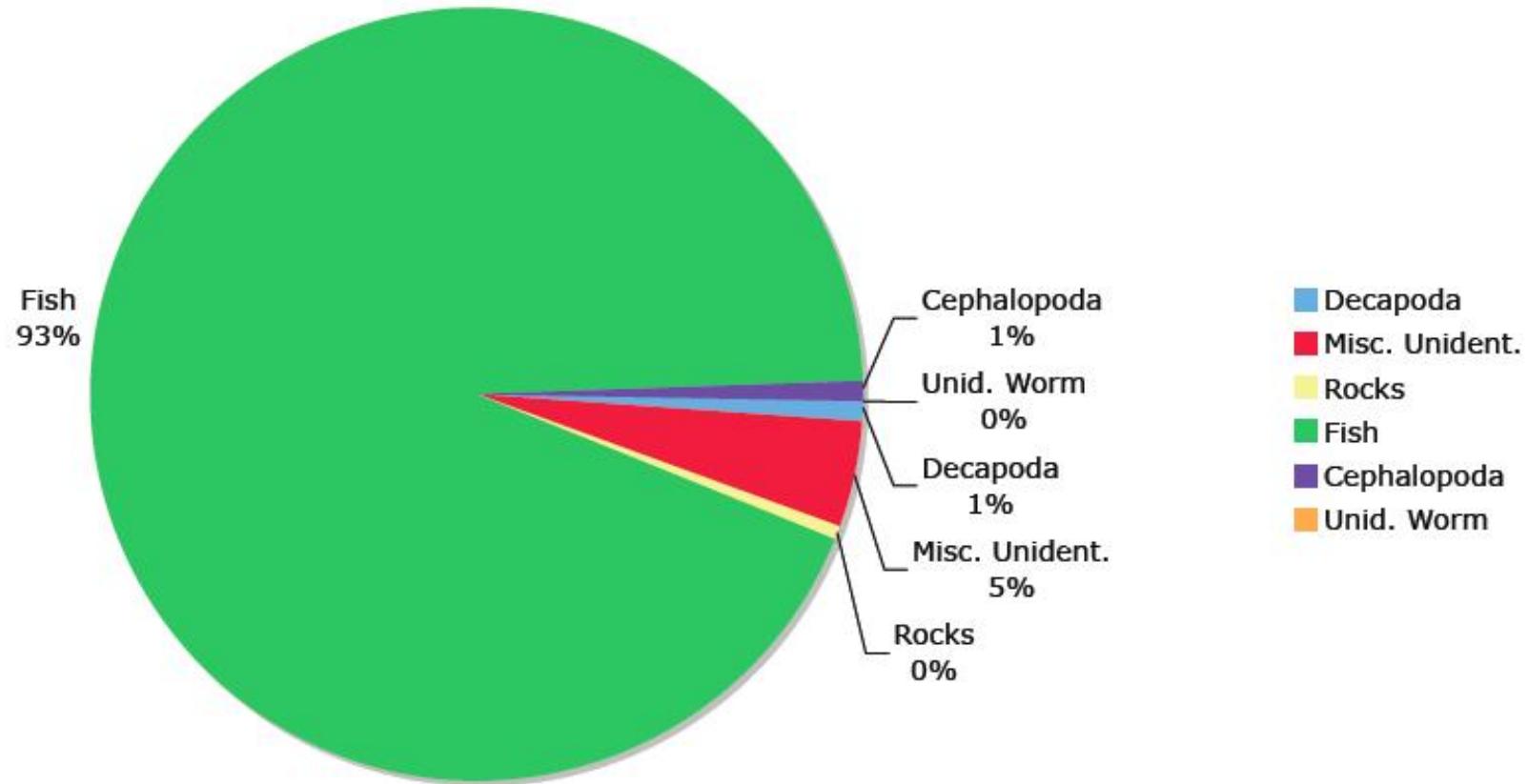
Gulf of Maine male to female ratio was 1-7

Groundfish to dogfish ratio was 1-30

Trophic perspective

- SSB= 155,800 mt
- 478,000 metric ton biomass estimates from NEFSC trawl surveys in 2007 (males + females)
- Dogfish consume about 1.5% of their body weight per day.
- Dogfish eats 6x it's body weight every year
- 2.8 million metric tons of prey were needed to support last years biomass estimate of spiny dogfish





Gadoids, herring, sand lance

Trophic perspective

- 1.9 million metric ton biomass estimates from Sat Tag data
- Dogfish consume about 1.5% of their body weight per day.
- Dogfish eats 6x it's body weight every year
- 11.5 million metric tons of prey were needed to support last years biomass estimate of spiny dogfish

Where do we go from here...

- 1. Quantify sex-specific horizontal and vertical movements patterns of spiny dogfish in the northwest Atlantic ocean.
- 2. Compare the vertical and horizontal movement patterns of satellite tagged dogfish to the NEFSC bottom trawl survey over the same temporal time period for anomalies in “catchability.”
- 3. Compare movement patterns of males and females within the northwest Atlantic ocean to ascertain the true sex ratio of the population.



Ben Galuardi Large Pelagics Research Center

UNE Marine Science Center

All my undergrads

NEC





Genetic Studies

- **6 Locations**
 - 50 fin clips each
- **DNA extracted**
 - 50 North Cape Cod
 - 50 South Cape Cod



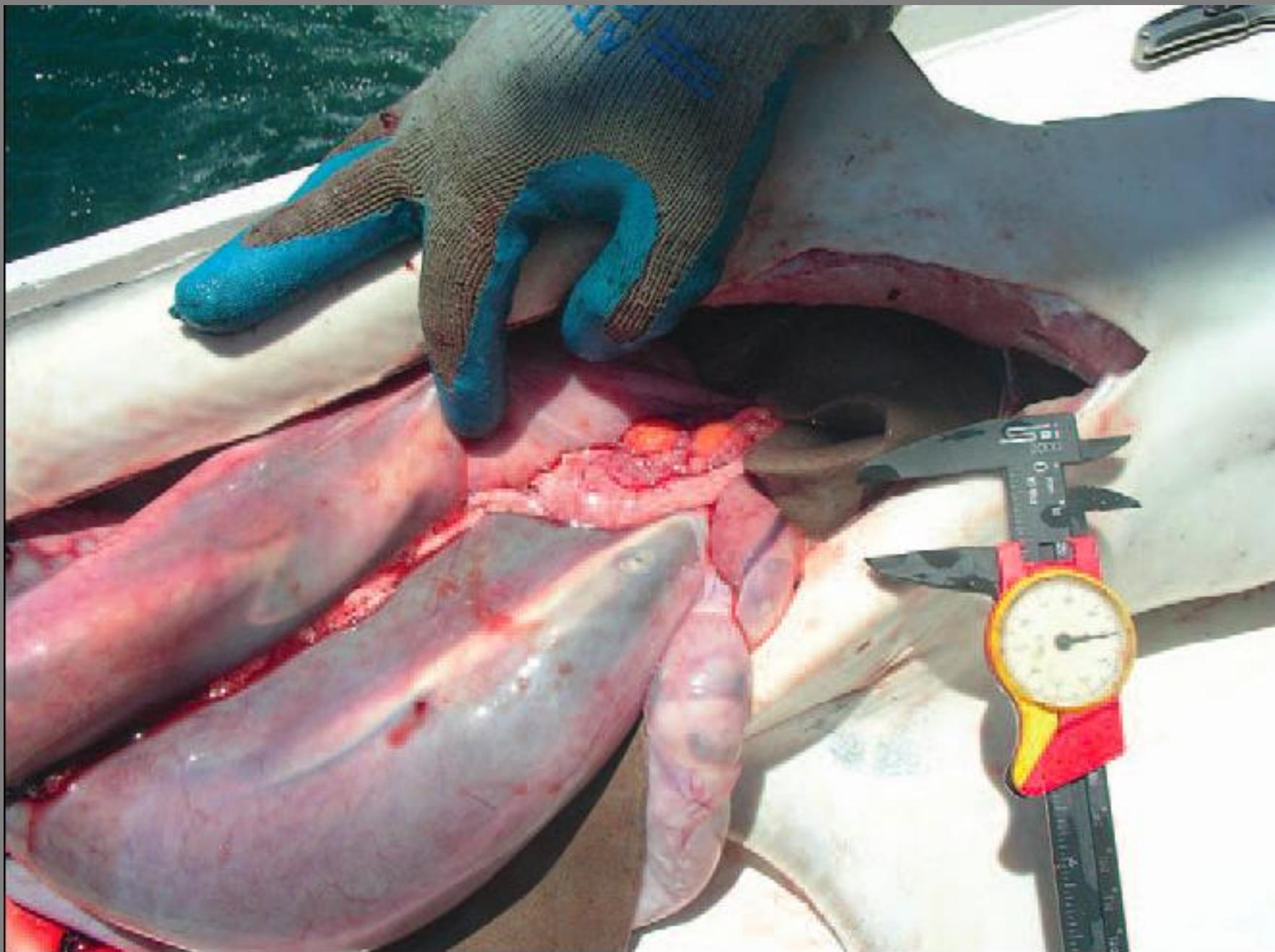
Diet: previous studies

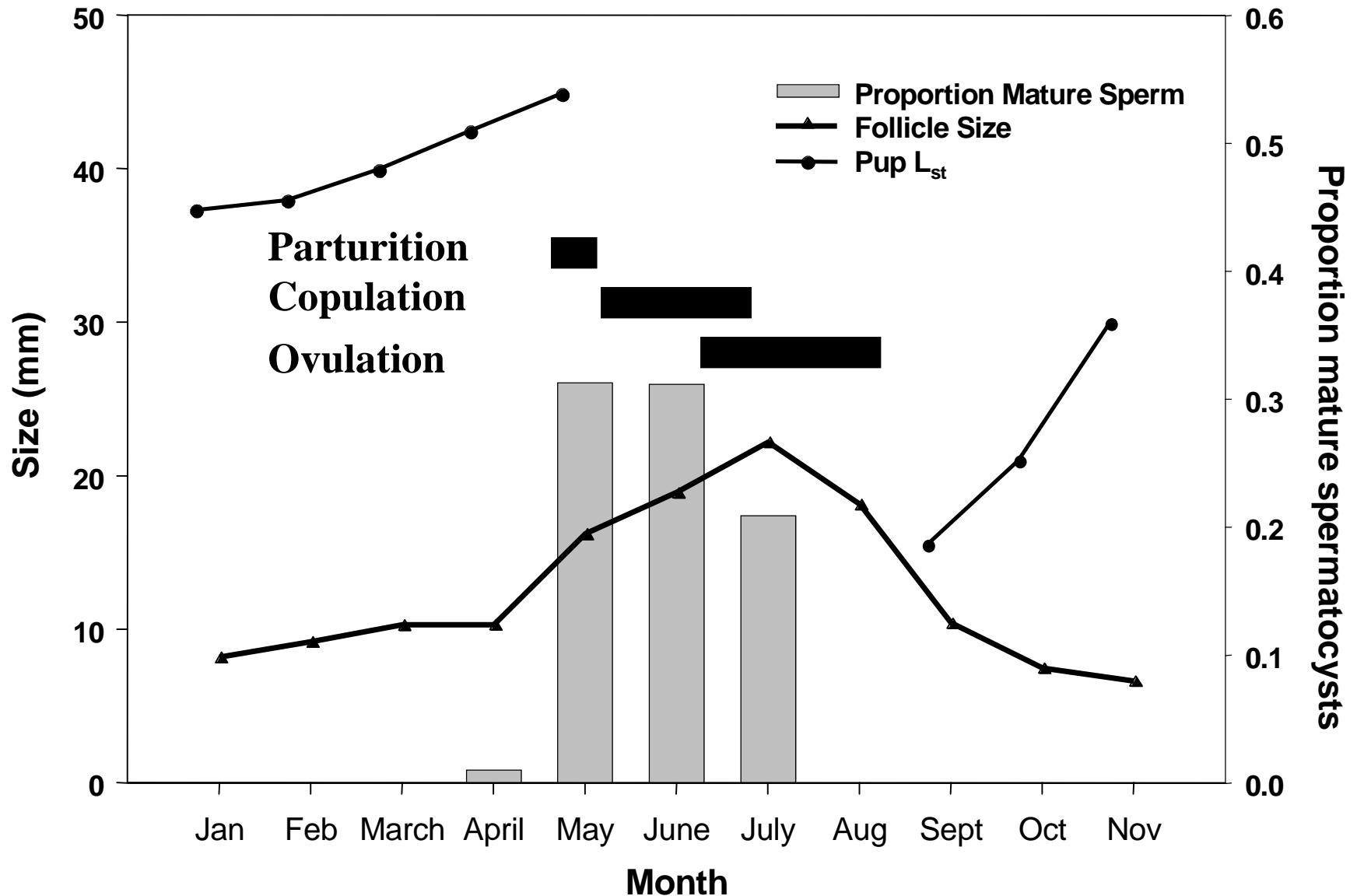
- segregation and packs
- voracious and opportunistic
- highly piscivorous, but maintains broad diet
- diet tracks prey abundance
- Seasonal and ontogenetic shifts
- Potential competition

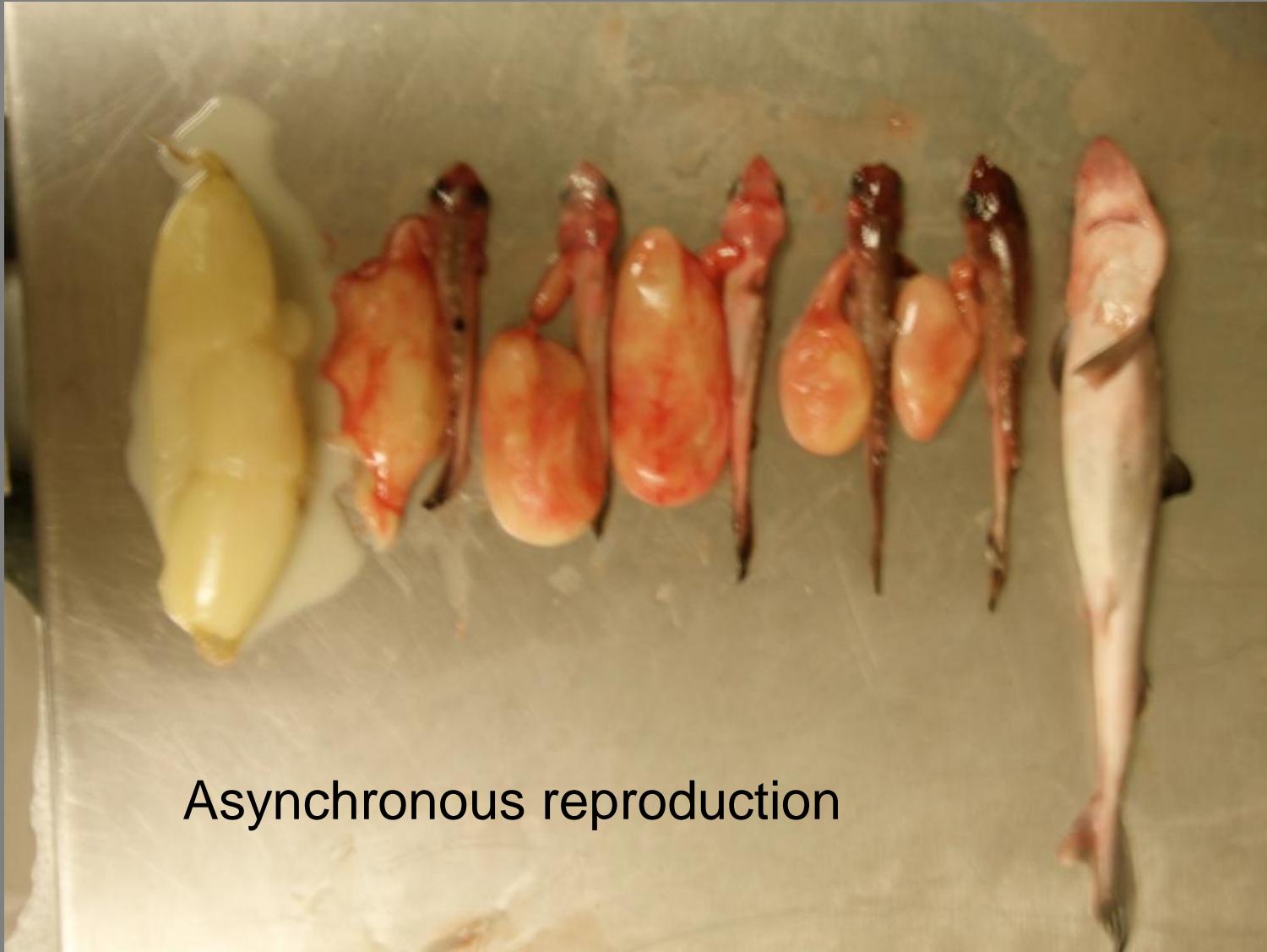


Reproductive Biology







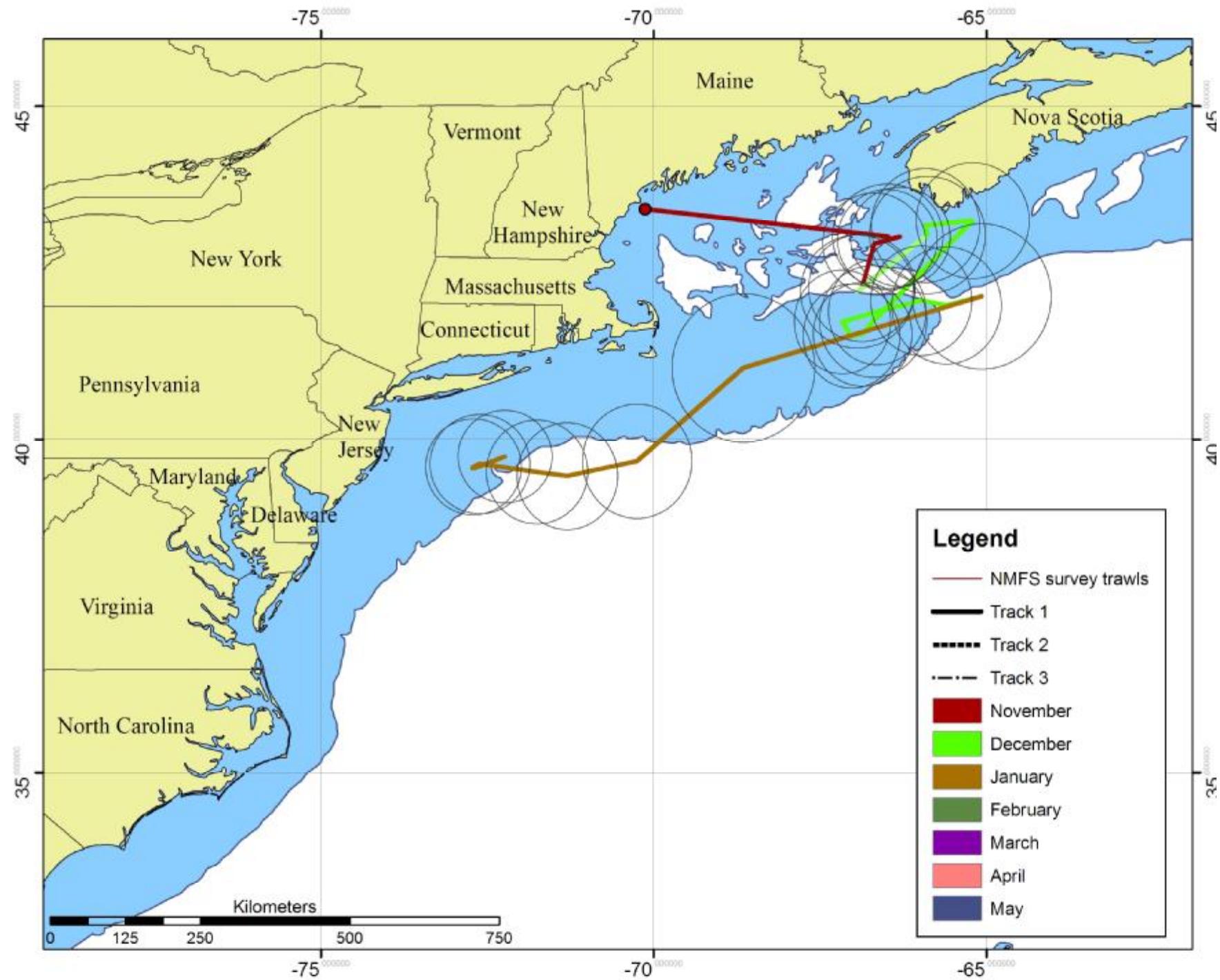


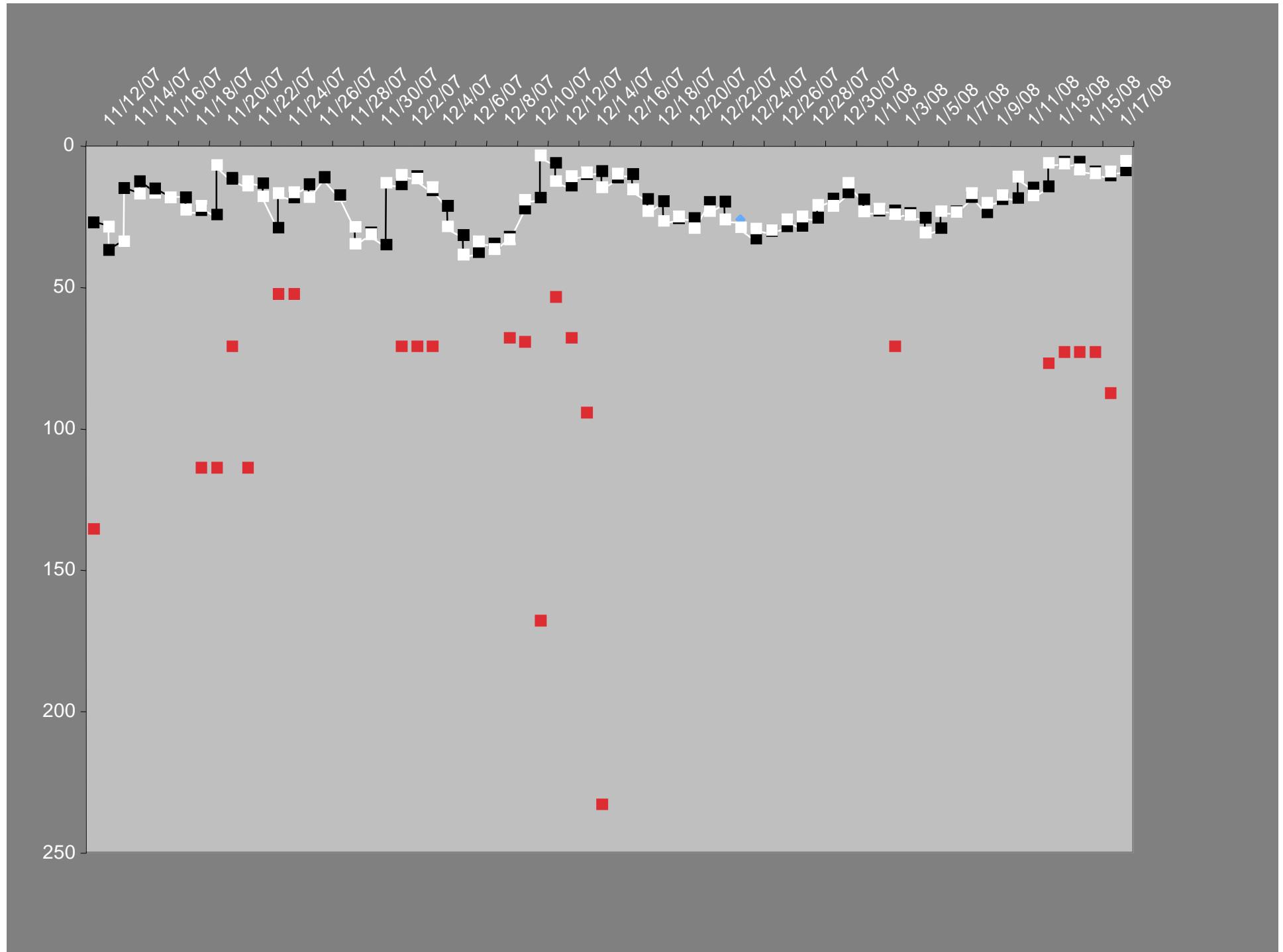
Asynchronous reproduction

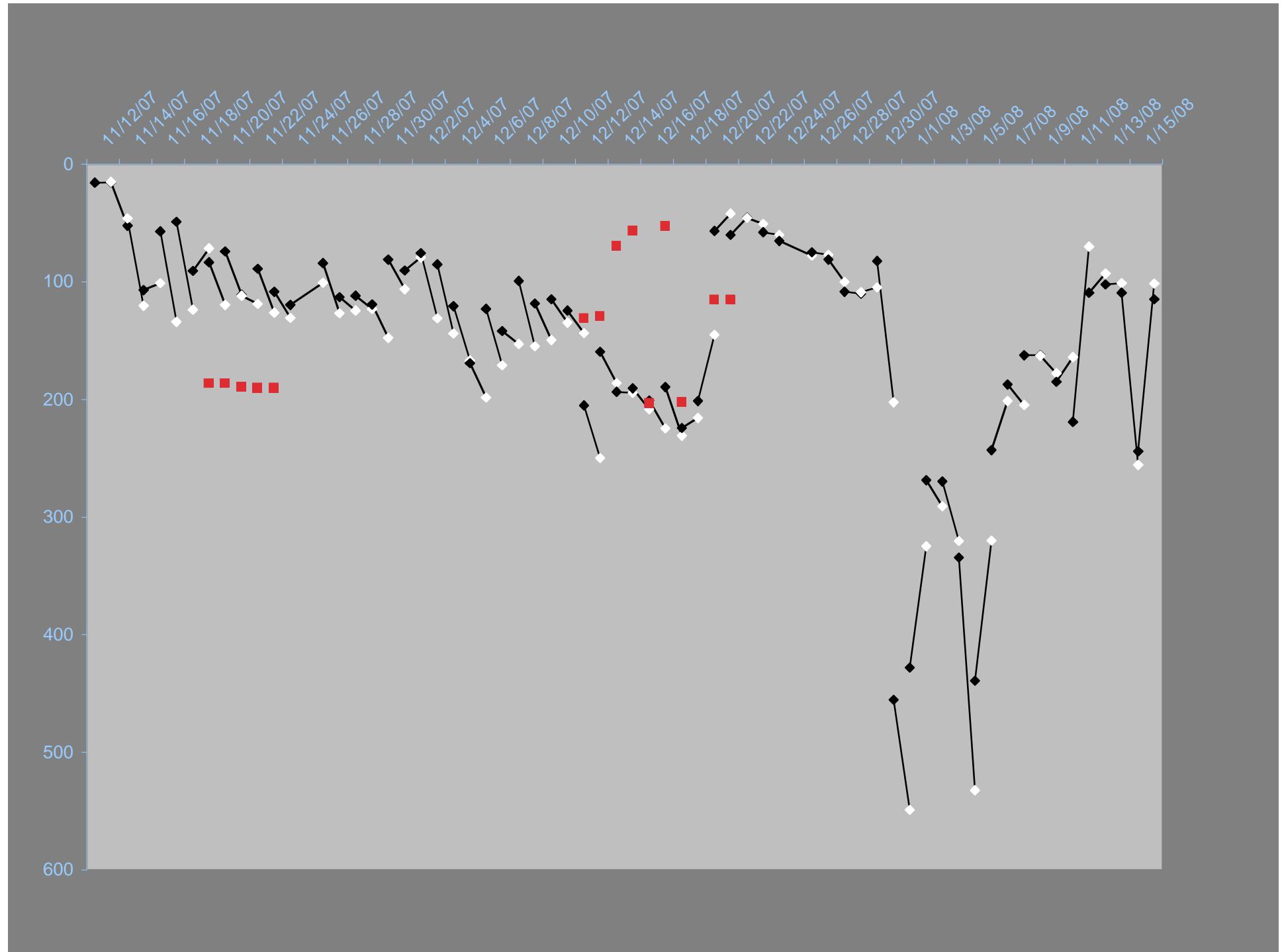
Future Studies

- More Satellite tags
- Mature males vs. females
- Different stocks/ migration
- Competition for resources with local species
- Ontogenetic shifts
- Investigate anomalies in the reproductive cycle









	Nov	Dec	Jan	Feb	March	April
78183 (1)	20.5	22	18.1			
	11.3	10.7	8.517			
78185 (2)	96.3	151	226.9			
	53.8	111	122.7			
78184 (3)	22.2	45.5	125.4	102.4	66.23	70.3
	23.4	12.5	34.92	6.819	47.58	18.4

NEFSC/NMFS

69.05	117
76.38	72