Summer Flounder Retention Rate Analysis – Preliminary Steps

Data Caveats

- The TC is very interested and appreciative of the Boards intent with this analysis

- However, the TC does not know whether this particular analysis is the best course of action

- The following 6 slides will describe some of the issues associated with the analysis given the datasets available for use

Data Caveats

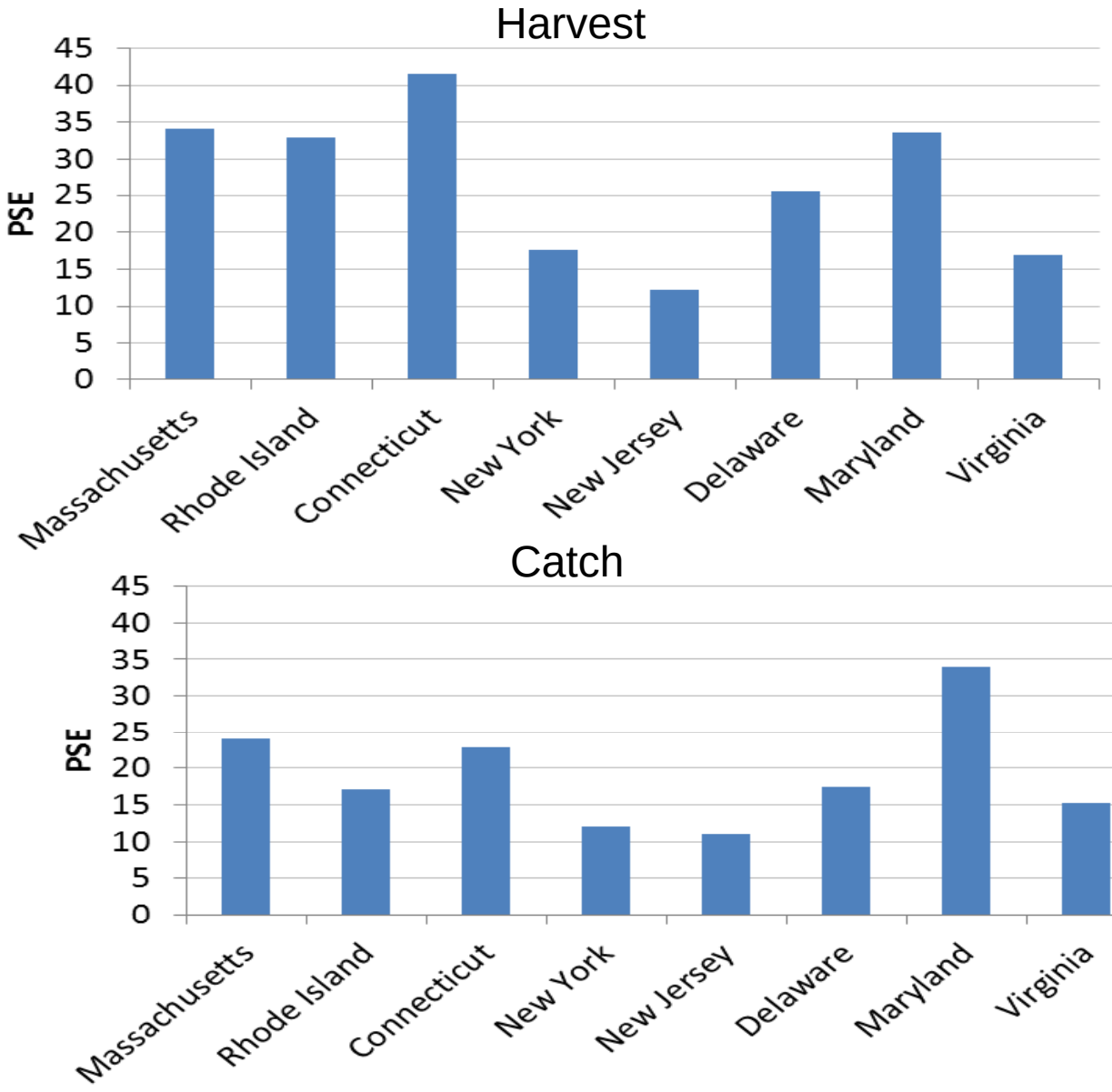
- Any management strategy using North Carolina retention rates should be aware of the high degree of uncertainty associated with the available data due to the confounding of species
- Some states have small fluke fisheries that are not adequately sampled by MRIP – ie. precision of the catch and harvest estimates is potentially biased, particularly for states at ends of the range or states with both estuarine and ocean fisheries
- The proportion of all marine recreational fishing trips that target fluke is an important consideration

    Example: MD has a low retention rate but only ~7.5% of trips target (primary and secondary) fluke whereas 25% of trips in DE target fluke and recent retention in DE has averaged less than 10% (2008-2012)

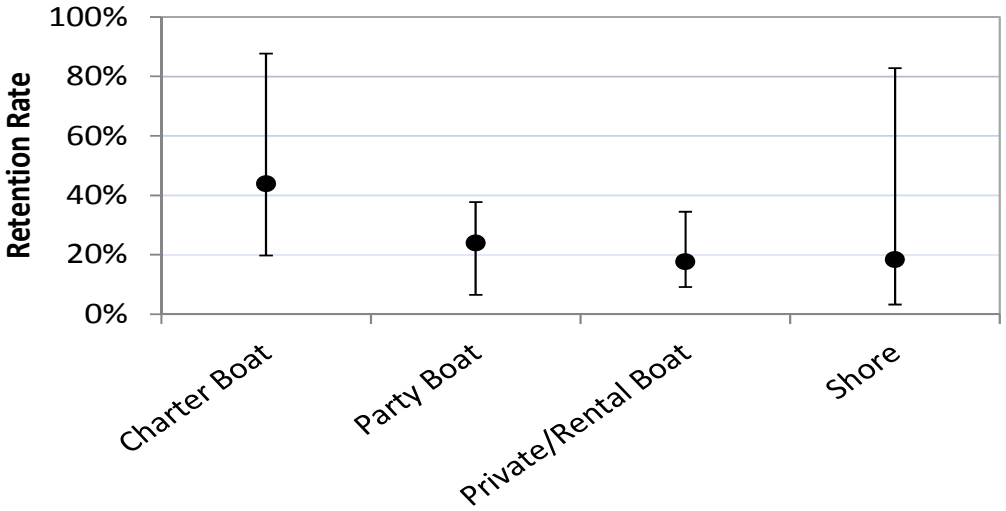
Data Caveats

- Needed to calculate retention rates are estimates of *both* total catch and harvest, doubling data requirements relative to current need for just observed harvest data for size-bag-season reductions
- Calculating a retention rate for a given state based on its aggregated total harvest and aggregated total catch assumes that the retention rate is uniform across modes, waves, and areas
- However, retention rates are clearly a function of the type of recreational fisheries that exist within a state and when/where they occur
- Clear differences in retention rates between fishery modes, waves, areas, and between combinations of mode, wave, and area

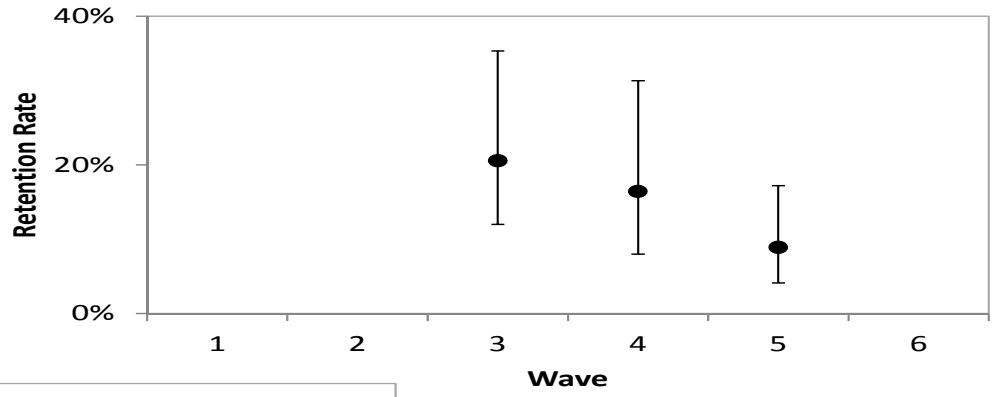
Data Caveats

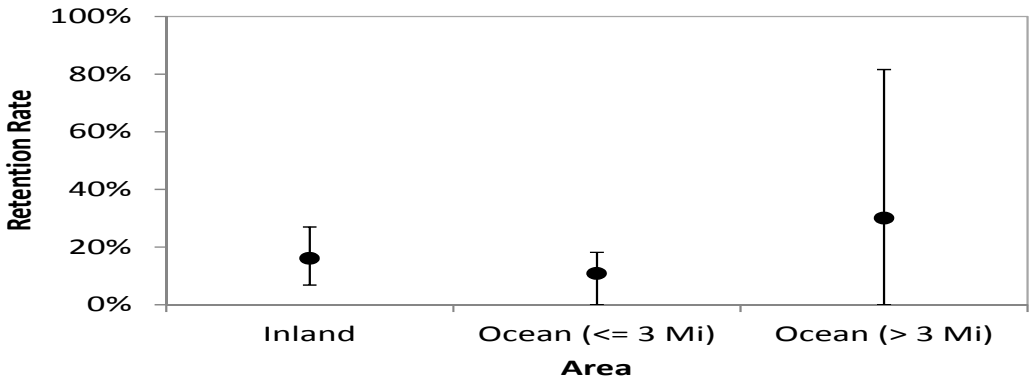


Data Caveats



Note: Data presented as a mean and range of values





Data Caveats

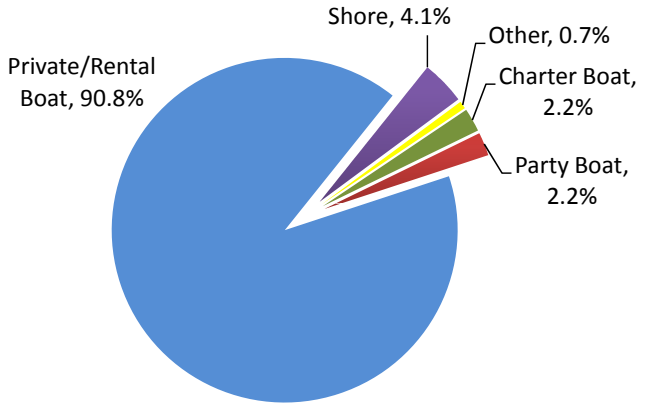
- Currently, we cannot satisfactorily estimate both catch and harvest at the mode, wave, and area level for most states, either due to very high PSEs or no collection of data

- Aggregating to the state level does reduce the PSE for catch and harvest, but using aggregated retention rates assumes that the retention rate is uniform across modes, waves, and areas for a given state

- Total catch estimates are based solely on angler reported catch rates that are ‘unobserved’ by agents, which may introduce further uncertainty

Data Caveats

- Length compositions considerations
- Season and area greatly influence size composition and availability
- Fishery mode affects harvest retention rates through fishery-specific variations in angler skill level and target species sought
- Observed discard size data from the MRIP survey are solely collected from the Party Boat mode
- Party boat mode accounted for 2.2% of the 2012 coastwide harvest
- It is unlikely that the discard rates and size compositions from the party boat mode are the same as in other mode



Massachusetts – Fishery Description

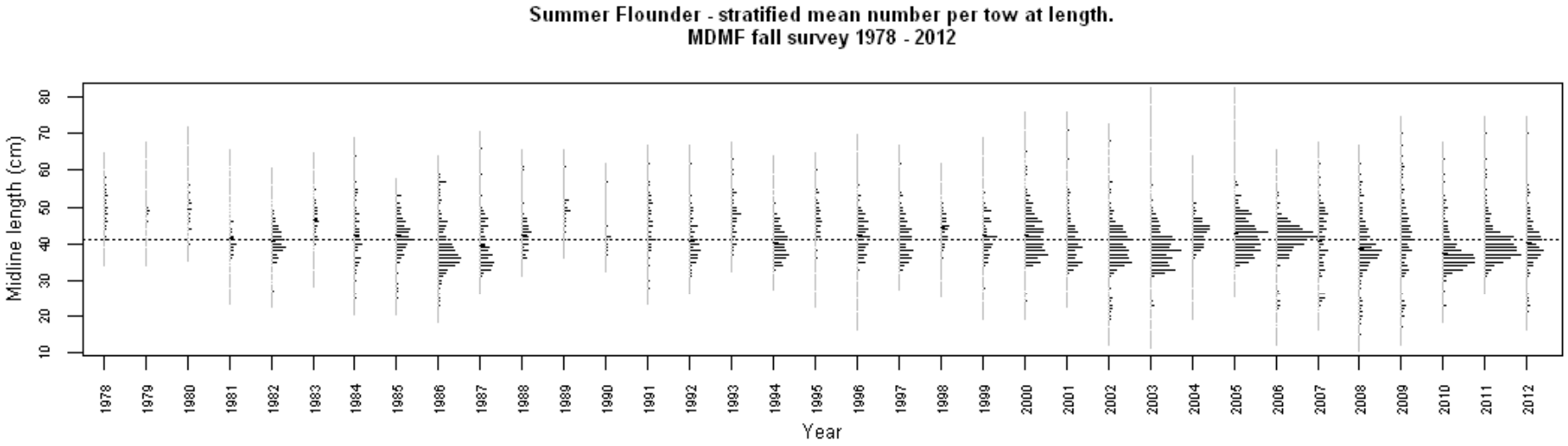
- MA rec fluke fishery small relative to total state recreational fishery
- Primarily occurs June – August
- Is geographically restricted to waters south of Cape Cod
    - Shallow, warmer waters of Vineyard Sound, Nantucket Sound and Buzzards Bay
    - Deeper, colder waters where larger fish can be harvested are far from mainland ports and too exposed for small boat fleet
- Harvest and catch almost exclusively from PR mode
- One or two party boats and approx. dozen charter boats target fluke
- Size of fish available is smaller than in neighboring states to the west and south

Massachusetts – Available Data

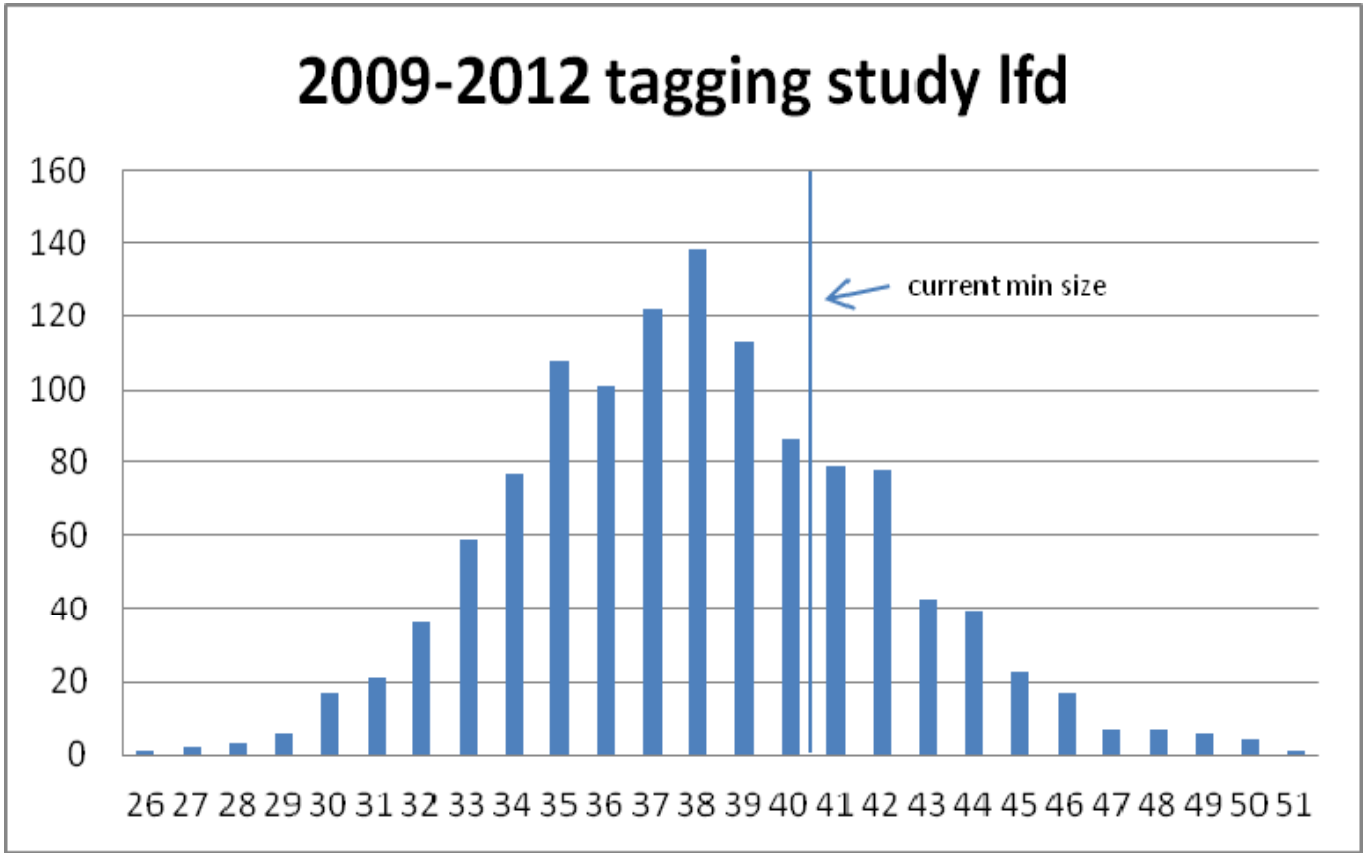
- Did not use MRIP data
  - Head boat sampling only for discards
  - Infrequent sampling of other modes

- Propose using two FI sources
  - Fall trawl survey (total n = 635)
  - Tagging study (total n = 864, 2011 n = 285, 2012 n = 188)

Massachusetts – Trawl Data



Massachusetts – Tagging Data



Rhode Island – Fishery Description

- RI rec fluke fishery is a significant fishery for the state

- Primarily occurs May – August

- Harvest and catch predominately from PR mode

- Many party and charter boats target fluke in RI

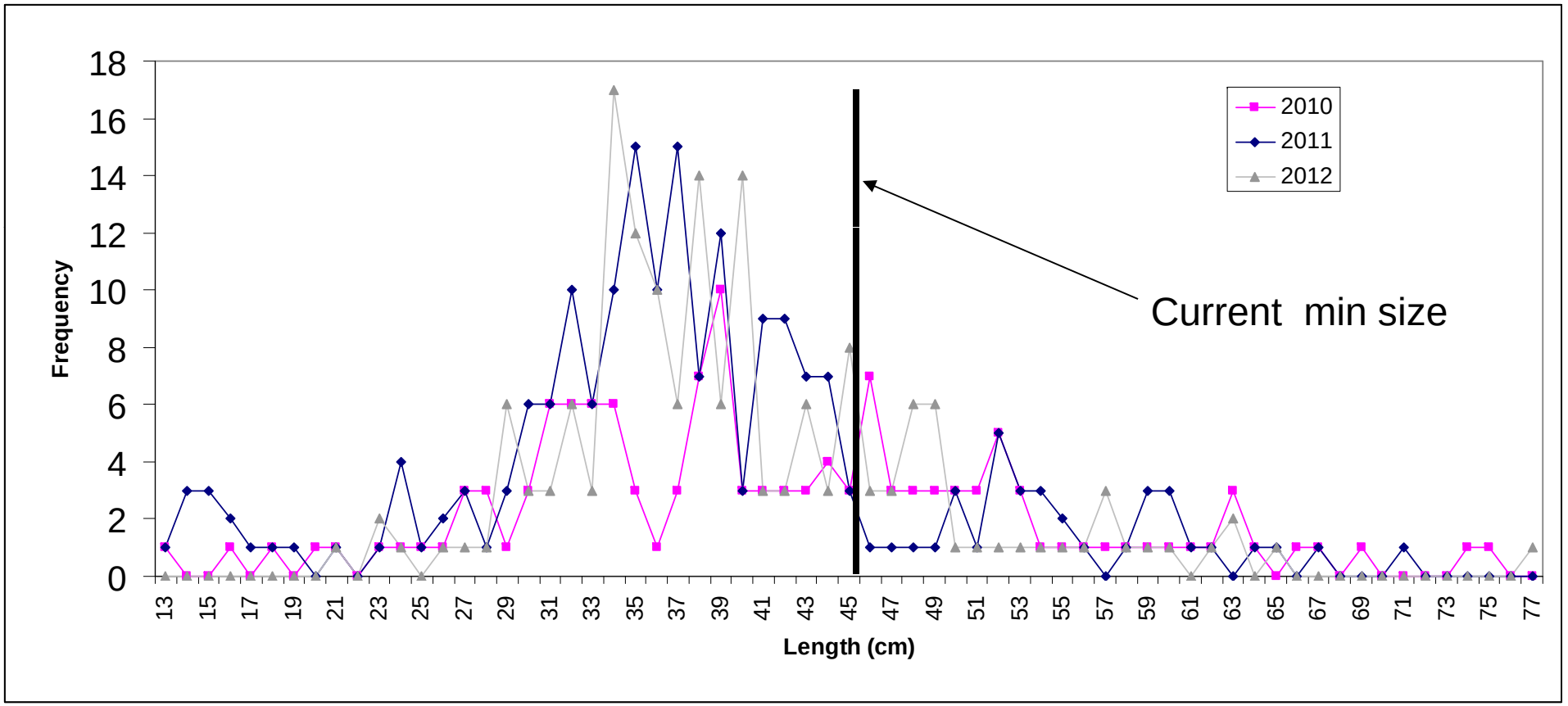
- Majority of fishing occurs inshore (Narr Bay) and off the south coast, with some harvest occurring in federal waters

Rhode Island – Available Data

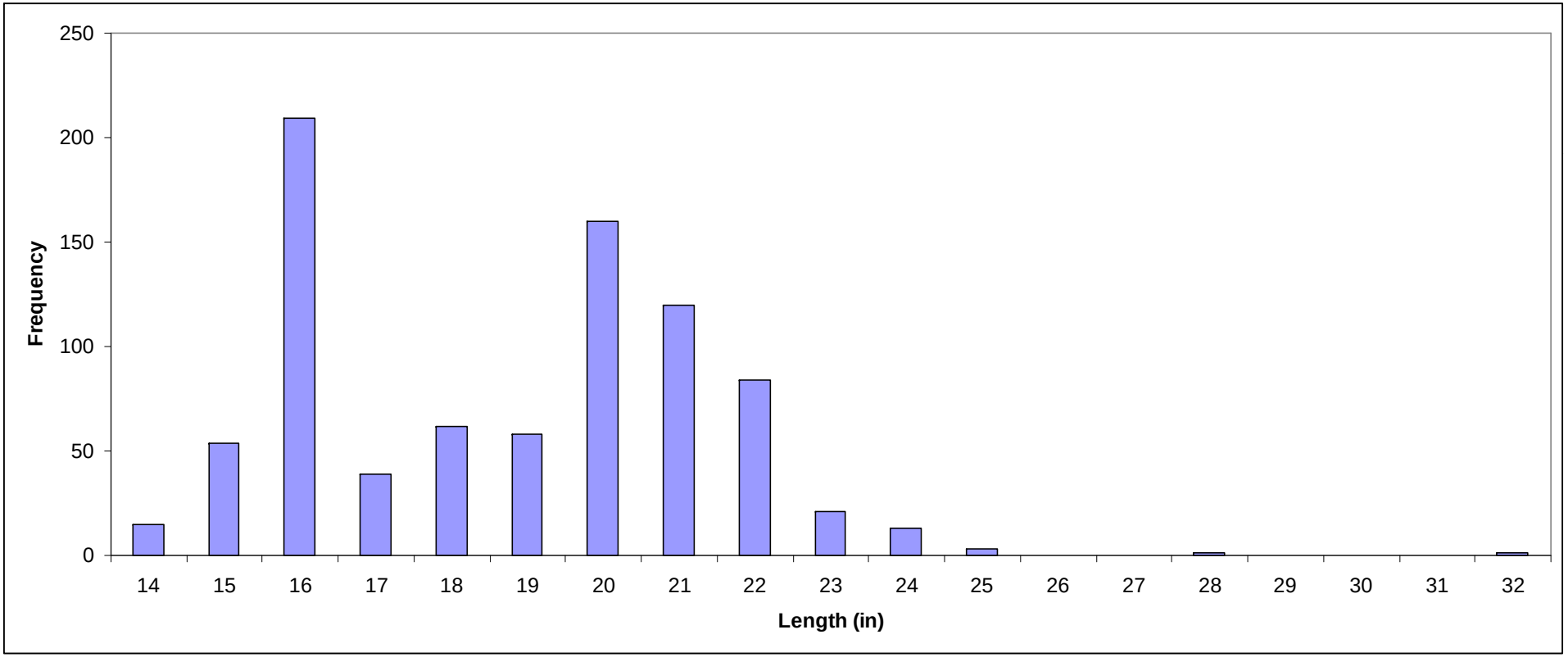
- Did not use MRIP data
  - Head boat sampling only for discards
  - Infrequent sampling of other modes

- Propose using two sources, one FI and one FD
  - RI trawl survey (2010 n = 134, 2011 n = 198, 2012 n = 166)
  - Volunteer Angler survey (2012 n = 1,199)

Rhode Island – Trawl Data



Rhode Island – Volunteer Angler Data



Connecticut – Fishery Description

- Rec fluke fishing in CT May – Sept
- Spring fishery - larger vessels from in the eastern portion of the state head into NY and RI waters near Block Island and Montauk Point
- July - Aug is peak wave, fluke available throughout the Sound
    - Harvest rates and availability vary by depth and along the coast
- Sept, fish migrate off-shore and no longer available to CT anglers
- Most harvest from targeted trips
- CT LIS Trawl Survey indicates larger fluke > 60 ft depth
    - Limits access for shore anglers and anglers with smaller vessels

Connecticut – Available Data

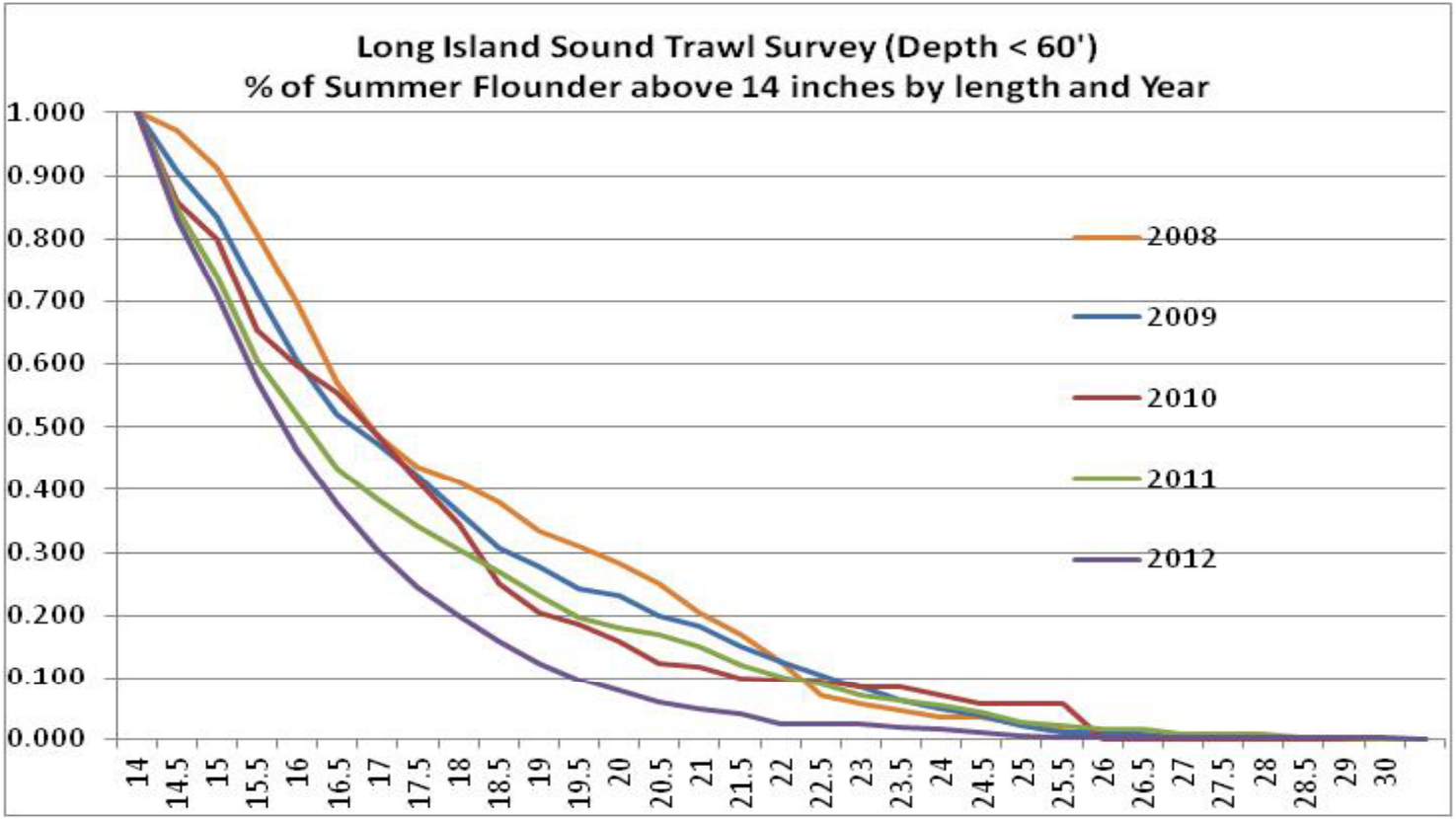
- Did not use MRIP data (2012 n = 31)
  - Head boat sampling only for discards
  - Infrequent sampling of other modes

- Propose using two sources, one FD and one FI
  - LIS trawl survey (total n = 2,203)
  - CT Volunteer Angler Survey (total n = approximately 1,000/yr)

Connecticut– Trawl Data

Connecticut Long Island Sound Trawl Survey (LISTS)
Percent of Summer Flounder above Length for fish over 14 inches.
(Depths 60 feet and less)

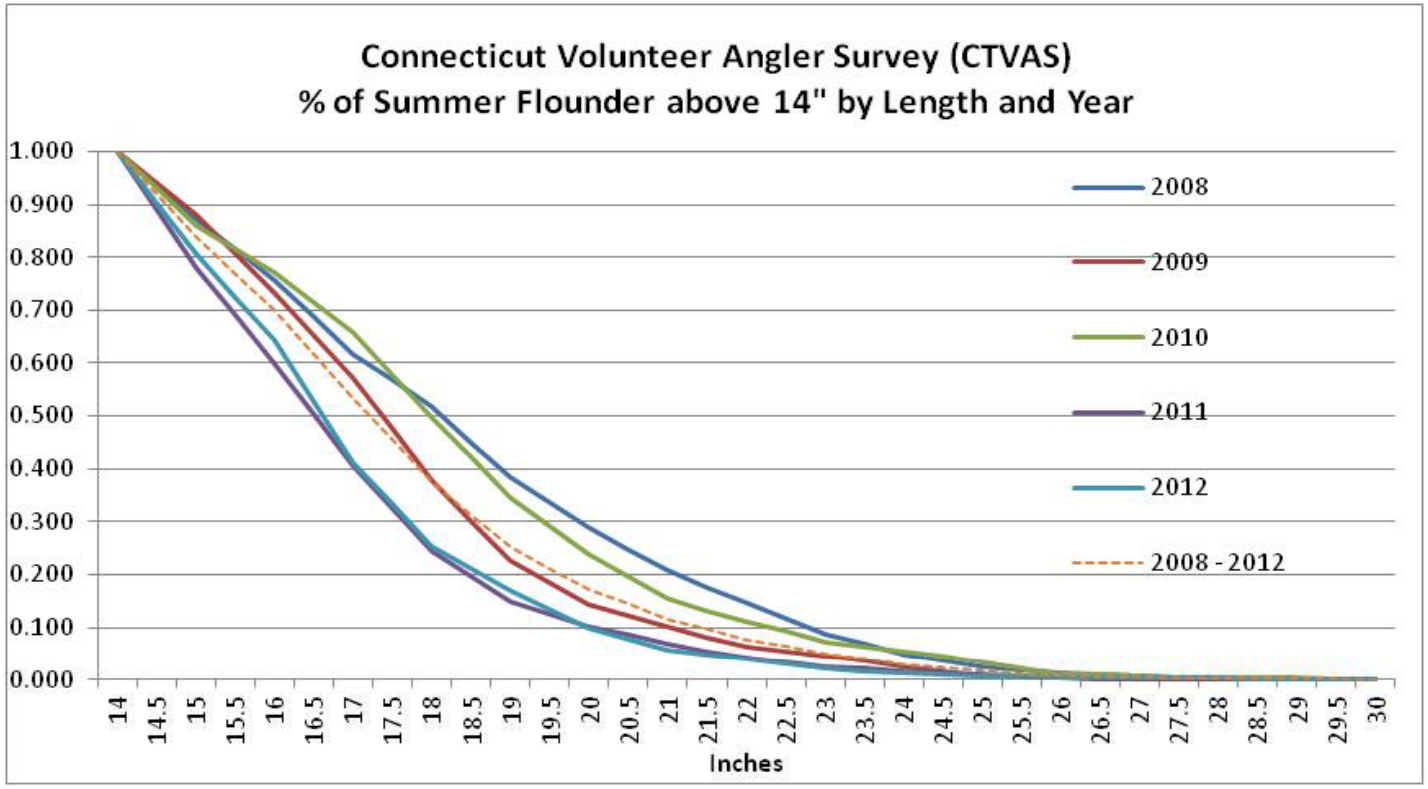
Year	16"	16.5”	17”	17.5”	18”	18.5"	19.0"	19.5”	20”	20.5”	21"	21.5"
2008	70%	57%	49%	44%	41%	38%	34%	31%	28%	25%	21%	17%
2009	61%	52%	47%	42%	36%	31%	28%	24%	23%	20%	18%	15%
2010	60%	55%	49%	41%	35%	25%	20%	19%	16%	12%	12%	10%
2011	52%	43%	39%	34%	31%	27%	23%	20%	18%	17%	15%	12%
2012	46%	38%	30%	24%	20%	16%	12%	10%	8%	6%	5%	4%



Connecticut – VAS Data

CT Volunteer Angler Survey (CTVAS)
Percent of Summer Flounder Lengths by size for fish over 14 inches.

Year	16"	16.5”	17”	17.5”	18”	18.5"	19.0"	19.5”	20”	20.5”	21"	21.5"
2008	76%	69%	62%	57%	52%	45%	38%	34%	29%	25%	21%	18%
2009	73%	65%	57%	48%	38%	30%	23%	19%	14%	12%	10%	8%
2010	77%	71%	66%	58%	50%	42%	35%	29%	24%	20%	16%	13%
2011	60%	50%	41%	33%	25%	20%	15%	13%	10%	9%	7%	6%
2012	64%	53%	41%	33%	25%	21%	17%	13%	10%	8%	6%	5%



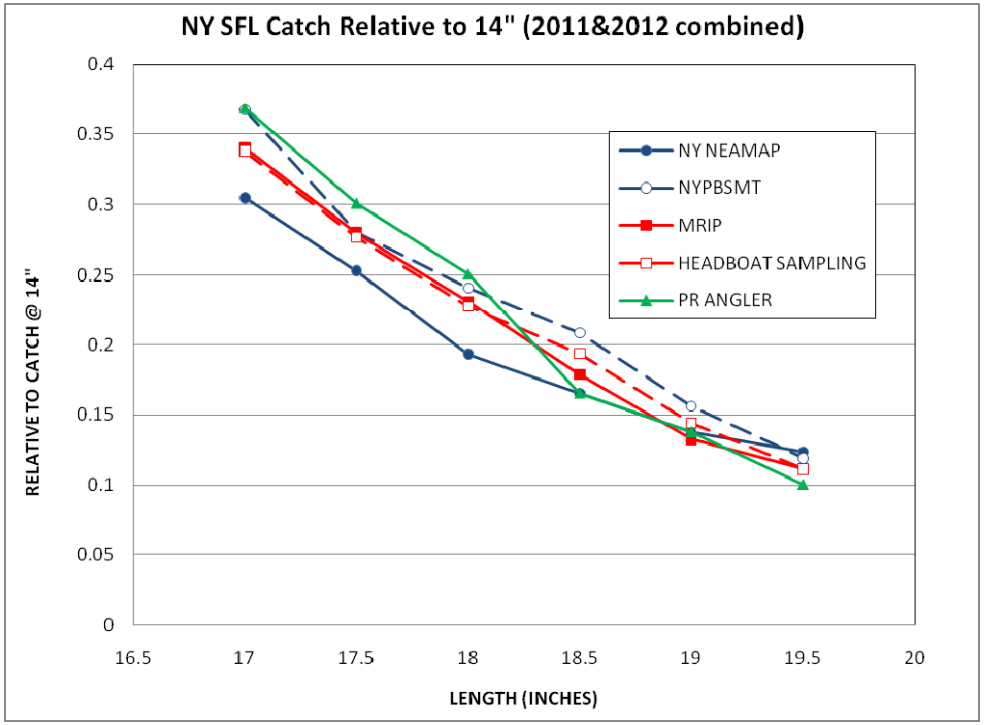
New York – Fishery Description

- Fluke is a very popular marine recreational fishery in NY
- 2008 - 2012, 29.5% rec trips targeted fluke (prim or sec species)
    - During the same time period, only 17.5% of these targeted trips were successful (fish kept).
- Likely reason for lack of success is high minimum size limits (5 yr avg = 20.5”) NY has used to not exceed its RHL
- Fluke harvested in both bays and ocean
    - Ocean fishery has increased in prevalence in recent years
- Harvestable fluke caught in water depths 2 to 40m
- Possession limits have been low (2-4 fish) and the season shortened in some years.
    - General fluke fishing season in NY is May thru September
    - The peak occurs during Waves 3&4
    - Many would fish in April and Oct if the season were open
- Seasonal cuts unpopular because they do not affect all anglers and businesses equally due to variability in local fisheries in time and space

New York– Available Data

- Potentially could use five sources depending on years needed to review, three FD and two FI
  - NY strata NEAMAP trawl survey (2008 – 2012 total n = 4,206)
  - NY Peconic Bay trawl survey (2008 – 2012 total n = 1,441)
  - MRIP (2011 – 2012 total n = 1,847, more years potentially available)
  - Private Angler Log (2011 – 2012 total n = 399)
  - Head Boat Sampling (2011 – 2012 total n = 1,095)

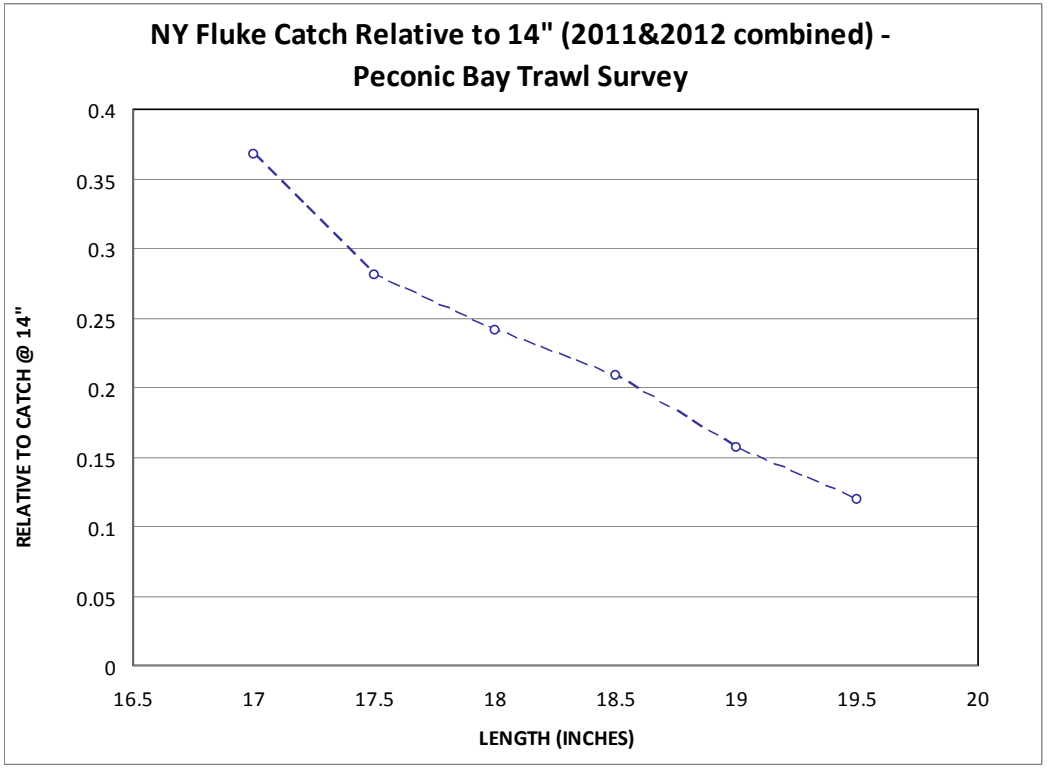
Variability across surveys and years still needs to be assessed.



New York – Peconic Bay Trawl Data

Peconic Bay Trawl Survey

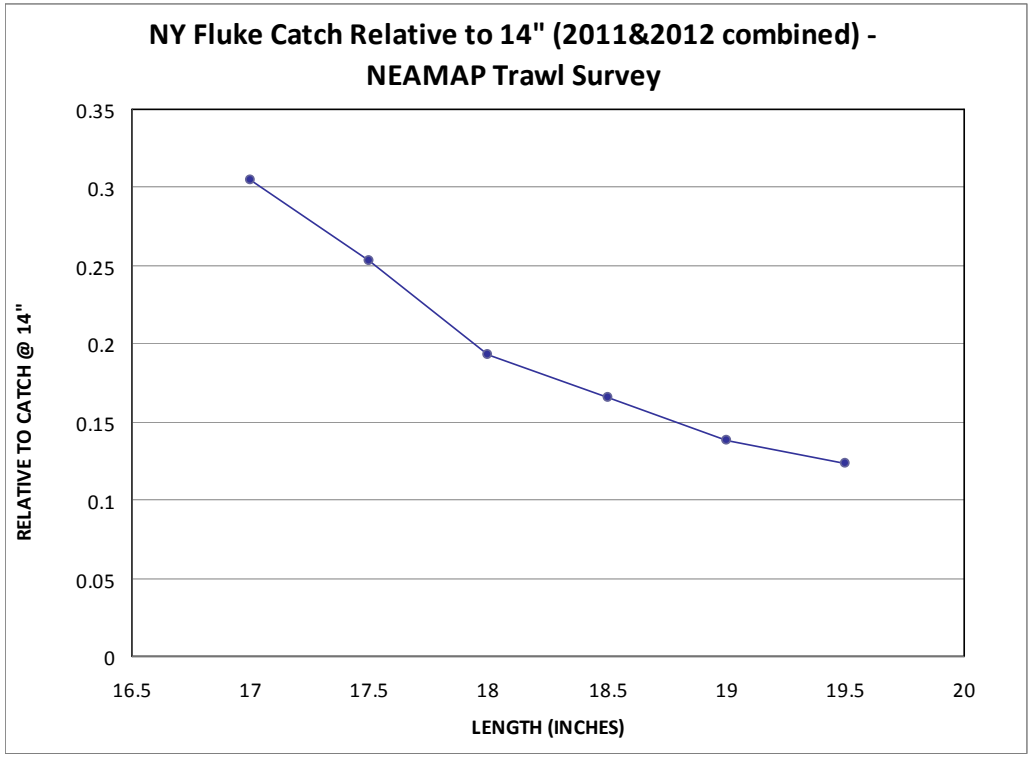
LENGTH (IN)	2008	2009	2010	2011	2012
14	100%	100%	100%	100%	100%
14.5	93%	94%	90%	87%	87%
15	88%	84%	83%	79%	76%
15.5	68%	75%	71%	66%	66%
16	46%	62%	60%	54%	55%
16.5	27%	54%	54%	49%	48%
17	19%	49%	41%	40%	34%
17.5	15%	40%	29%	30%	27%
18	14%	30%	26%	25%	23%
18.5	8%	21%	21%	21%	20%
19	5%	18%	16%	15%	16%
19.5	5%	15%	11%	12%	12%
20	5%	15%	9%	10%	9%
20.5	3%	11%	6%	8%	5%
21	2%	6%	4%	5%	4%
21.5	2%	6%	4%	4%	2%
22	2%	5%	3%	4%	0%
22.5	0%	4%	0%	4%	0%
23	0%	3%	0%	3%	0%
23.5	0%	1%	0%	2%	0%
24	0%	1%	0%	1%	0%
24.5	0%	0%	0%	1%	0%
25	0%	0%	0%	1%	0%
26	0%	0%	0%	0%	0%



New York – NEAMAP Trawl Data

NEAMAP Trawl Survey

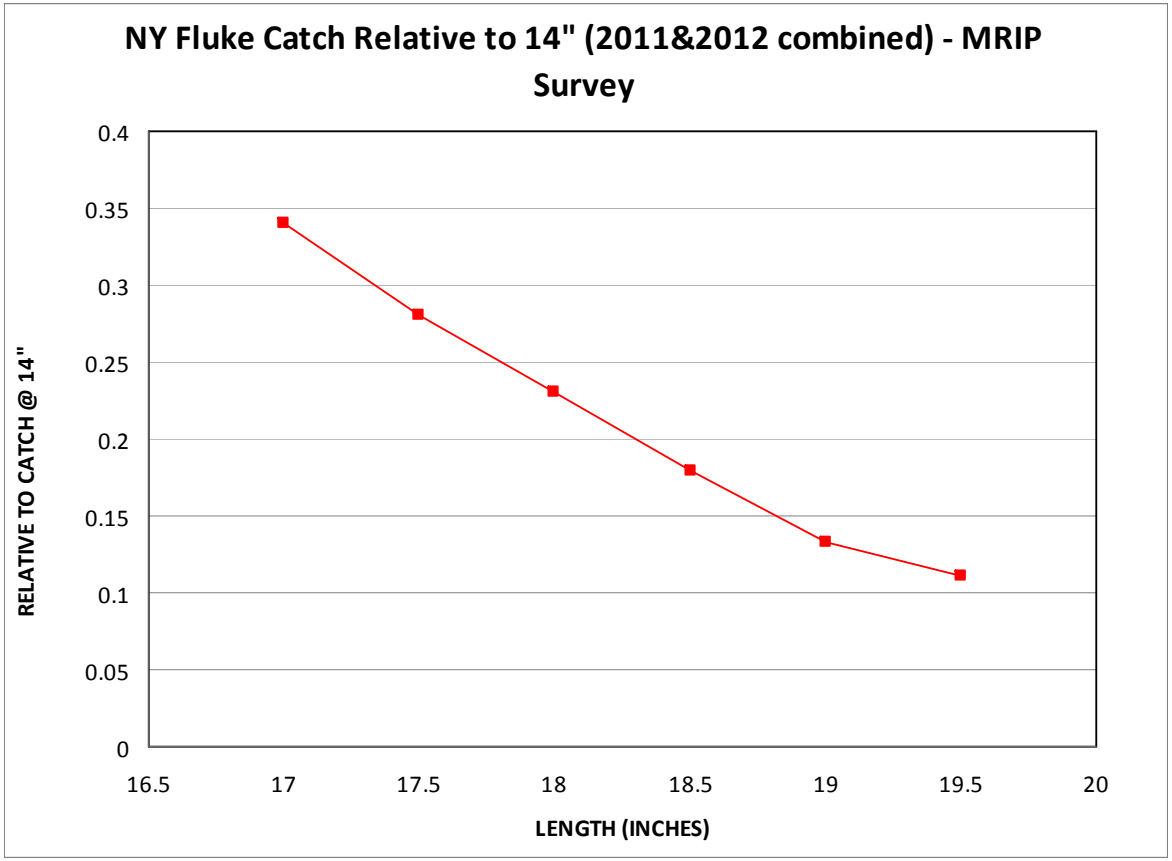
LENGTH (IN)	2008	2009	2010	2011	2012
14	100%	100%	100%	100%	100%
14.5	89%	83%	90%	82%	86%
15	75%	71%	70%	55%	79%
15.5	62%	61%	65%	44%	75%
16	53%	49%	53%	30%	61%
16.5	42%	42%	49%	25%	56%
17	38%	33%	44%	19%	44%
17.5	31%	29%	41%	14%	39%
18	27%	23%	36%	9%	32%
18.5	23%	21%	30%	8%	27%
19	18%	20%	28%	7%	22%
19.5	15%	16%	20%	6%	20%
20	12%	13%	18%	6%	17%
20.5	10%	12%	14%	5%	12%
21	8%	10%	12%	5%	11%
21.5	6%	8%	11%	4%	9%
22	5%	6%	8%	3%	8%
22.5	3%	4%	6%	3%	6%
23	2%	3%	6%	3%	5%
23.5	1%	3%	5%	3%	4%
24	1%	2%	4%	2%	3%
24.5	1%	1%	3%	1%	2%
25	1%	1%	2%	1%	1%
25.5	1%	1%	1%	1%	1%
26	0%	1%	1%	1%	1%
26.5	0%	0%	1%	0%	1%
27	0%	0%	1%	0%	0%
27.5	0%	0%	1%	0%	0%



New York – MRIP Data

MRIP

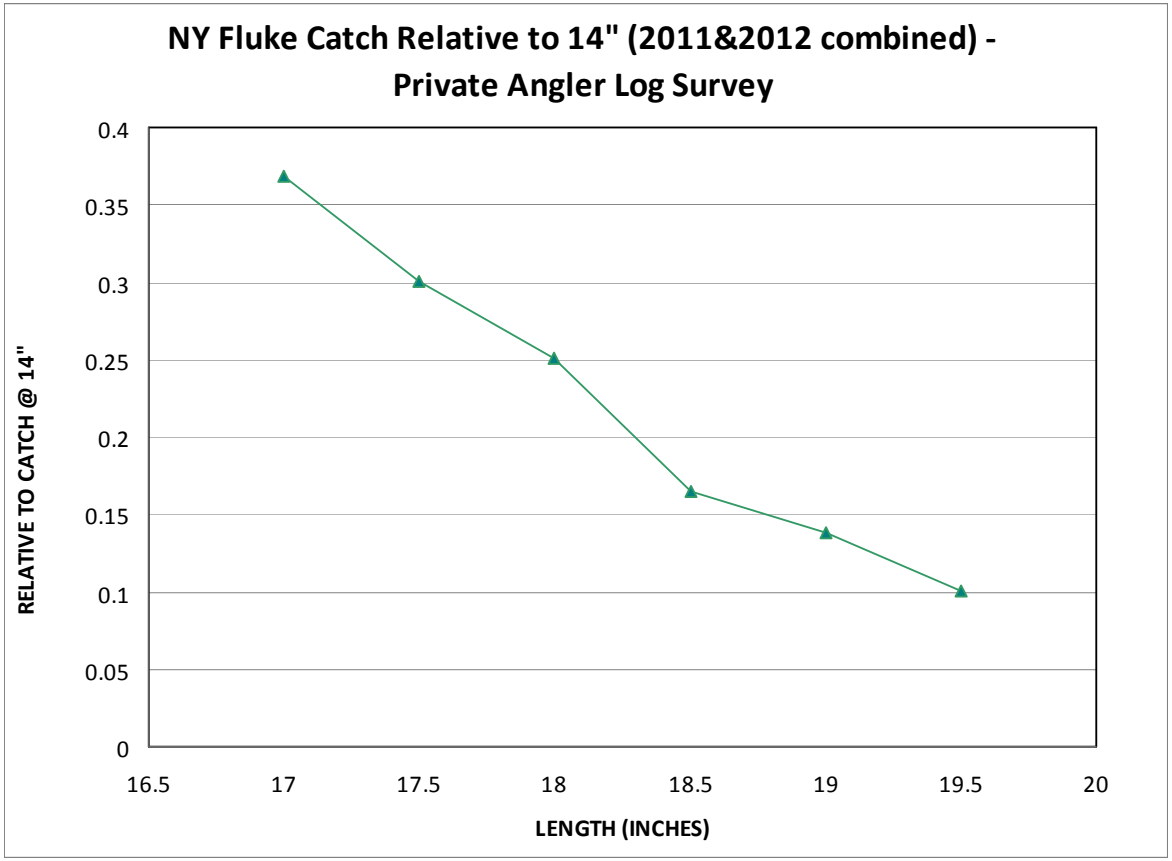
LENGTH(IN)	2011	2012
17	33%	36%
17.5	27%	29%
18	22%	24%
18.5	17%	19%
19	12%	15%
19.5	10%	13%



New York – Private Angler Log Data

PRIVATE ANGLER

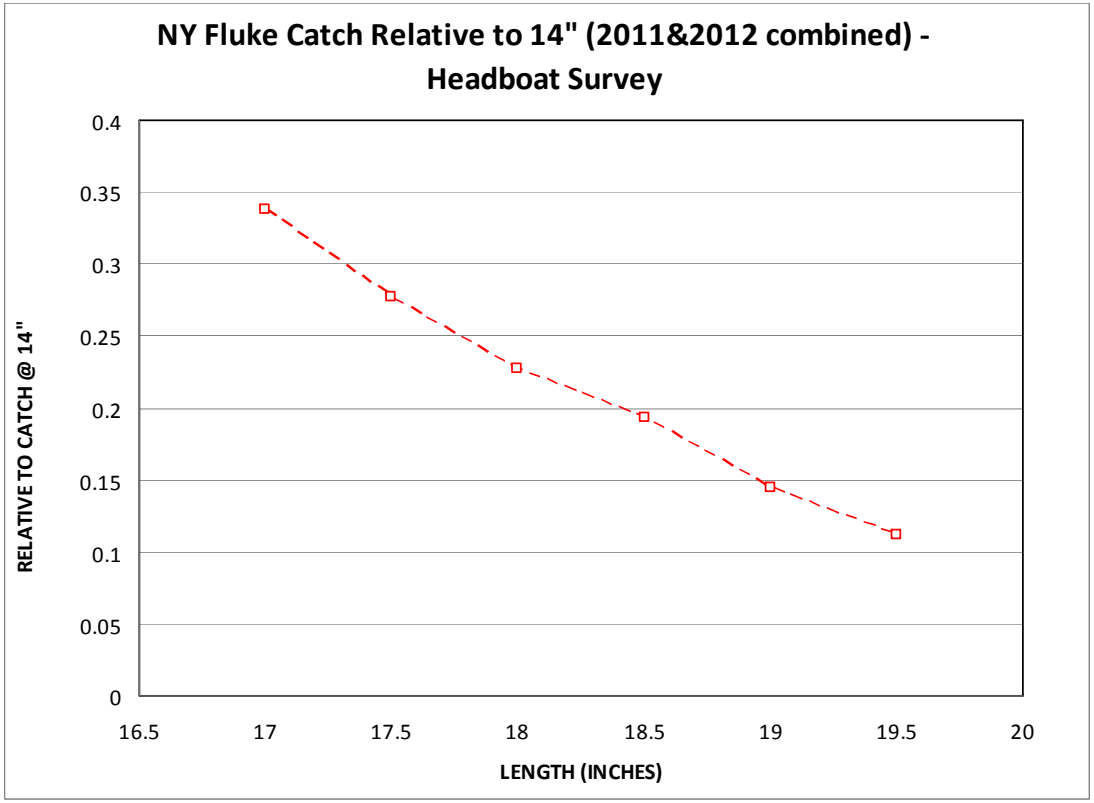
LENGTH(IN)	2011	2012
17	39%	32%
17.5	34%	23%
18	28%	19%
18.5	18%	13%
19	16%	10%
19.5	11%	7%



New York – Headboat Data

HEADBOAT SAMPLING

LENGTH(IN)	2011	2012
17	34%	33%
17.5	27%	28%
18	22%	24%
18.5	19%	21%
19	13%	17%
19.5	11%	12%



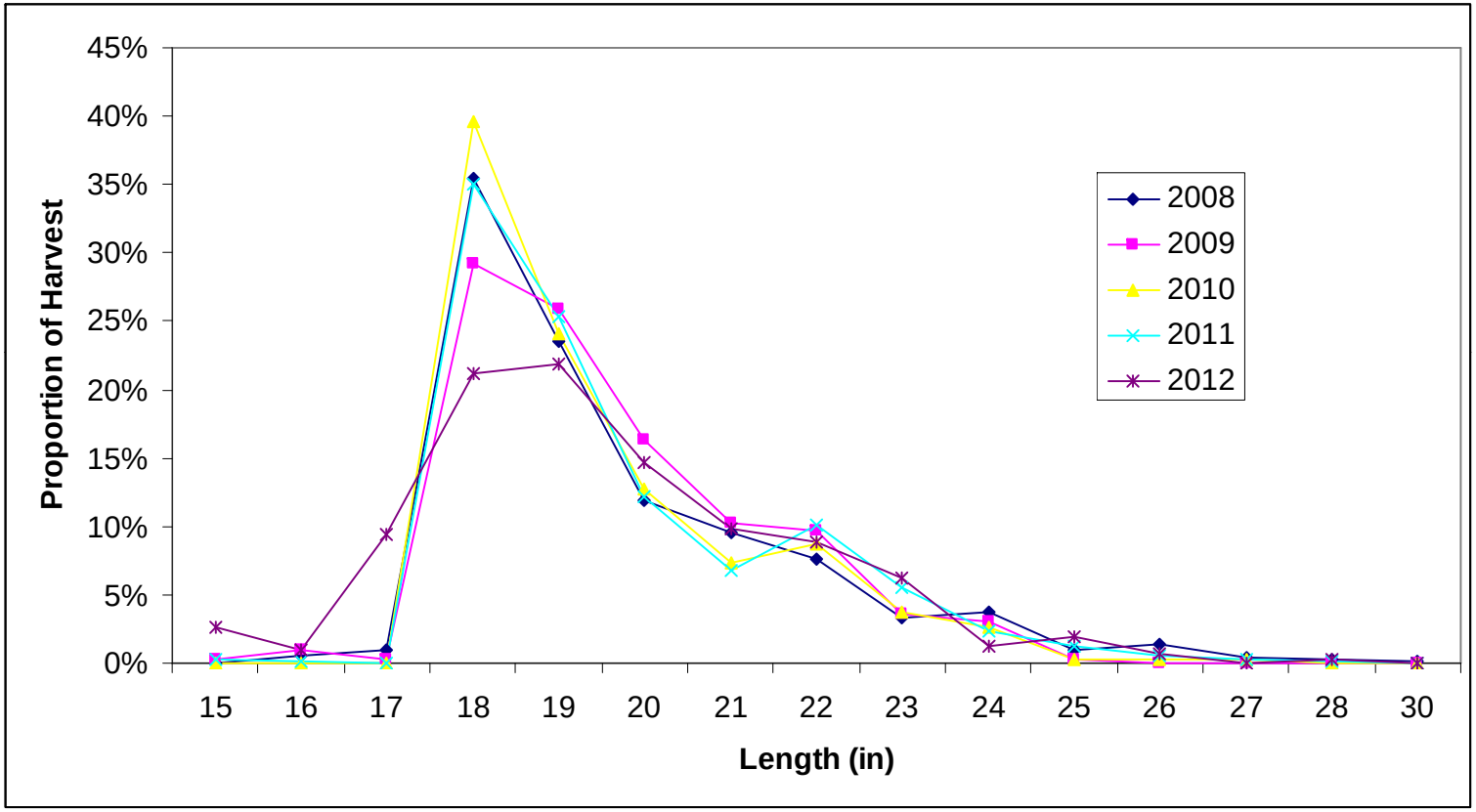
New Jersey – Fishery Description

- NJ has 4 distinct fisheries within 2 zones; Northern=North of Barnegat Inlet into Sandy Hook/Raritan Bay, and Southern=Barnegat Inlet south into Delaware Bay
- Northern Ocean: June-Sept, peak in July/Aug/Sept. Fish tend to be larger in size, fleet consists of private, charter and party.
- Northern Bays: May – July, peak in June/July. Fish are smaller in size, and consists of private and charter/party.
- South ocean: July – August. Fish are medium in size, consists of private and charter
- South bays: May - July, peak in June/July. Fish are small, mostly private sector
- Northern region are almost an even split from bays to ocean
- Southern region are predominately from the bays
- Timing of peaks and sizes may vary quite a bit if the season was elongated in either direction, earlier start and/or later end.

New Jersey – Available Data

- Potentially could use three sources of data, two FD and one FI
  - MRIP
  - NJ Volunteer Angler Survey
  - NJ Ocean Trawl Survey

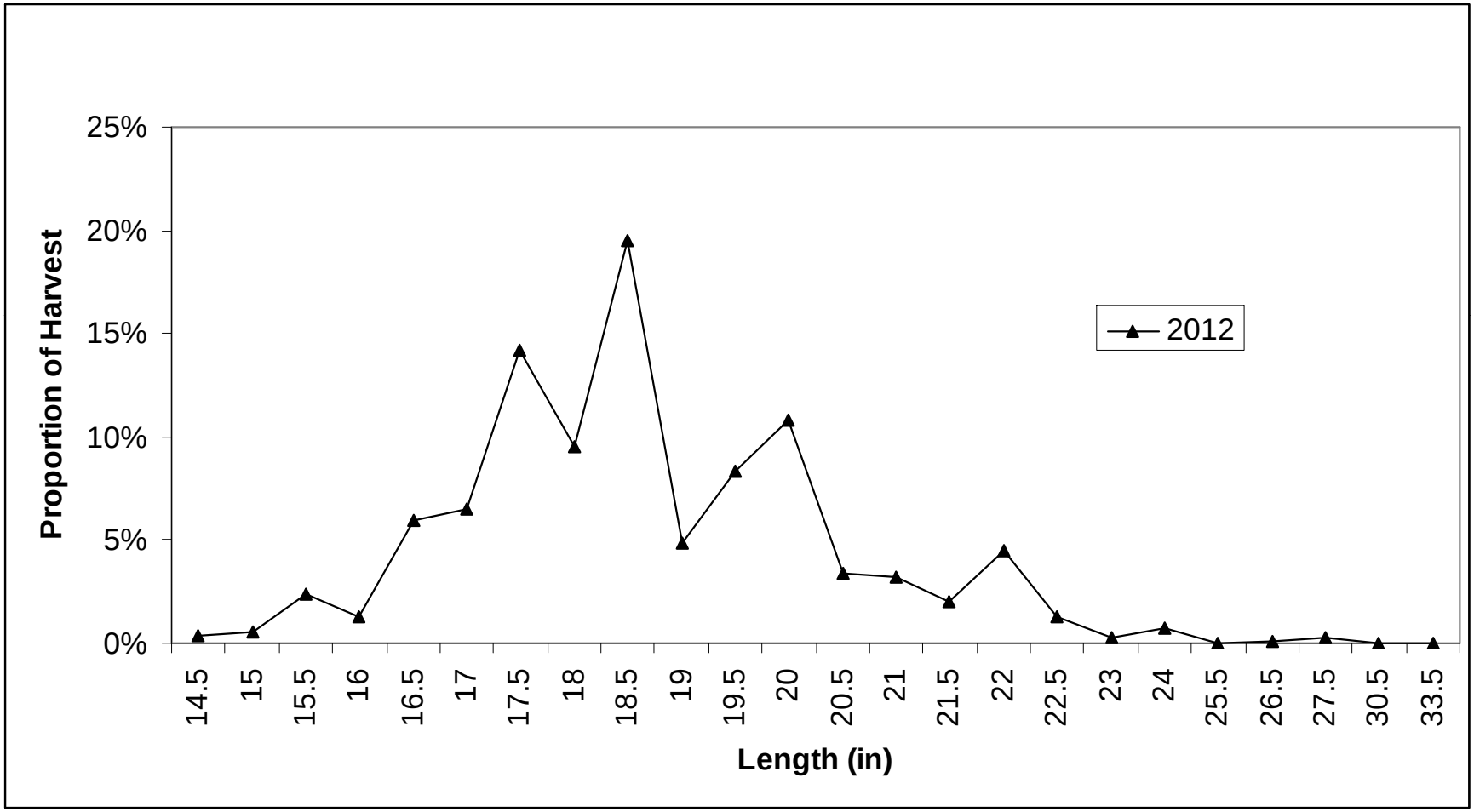
New Jersey – Volunteer Angler Survey Data



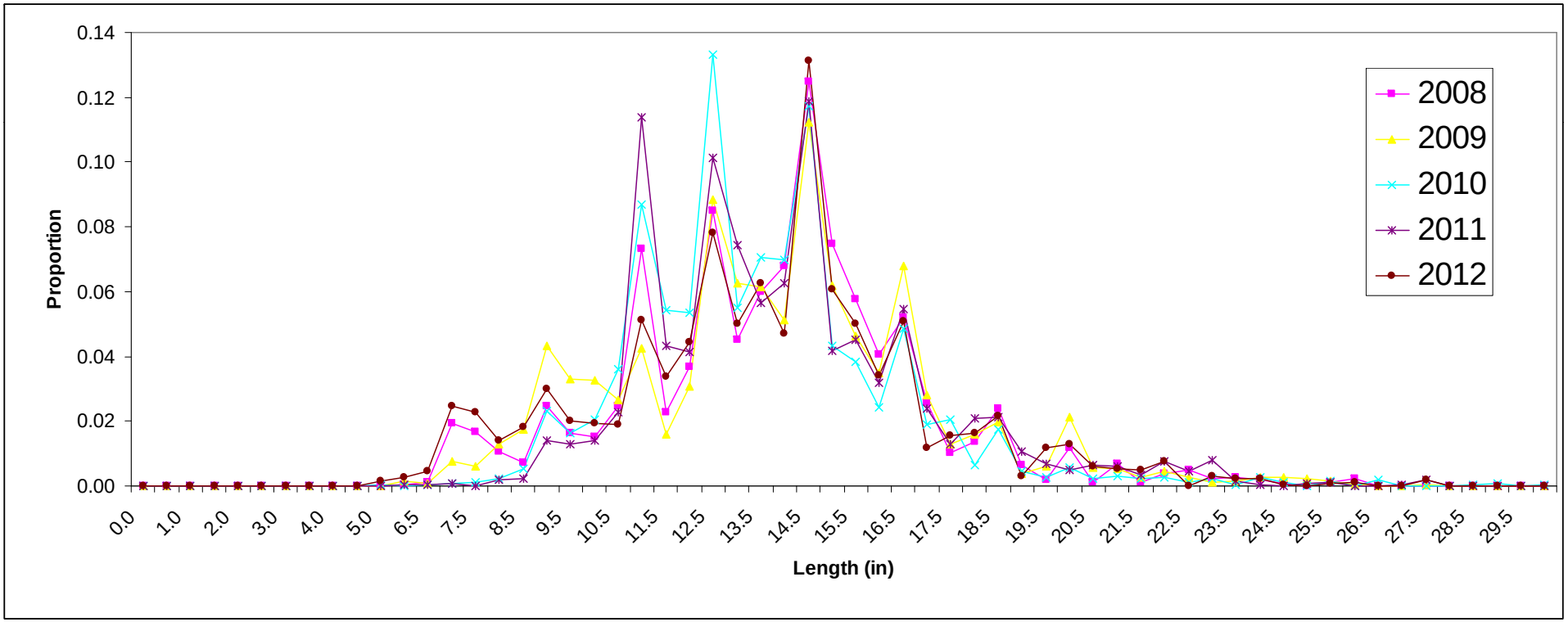
NJ Volunteer Angler Survey

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
2008	0%	1%	1%	35%	24%	12%	10%	8%	3%	4%	1%	1%	0%	0%	0%
2009	0%	1%	0%	29%	26%	16%	10%	10%	4%	3%	0%	0%	0%	0%	0%
2010	0%	0%	0%	40%	24%	13%	7%	9%	4%	3%	0%	0%	0%	0%	0%
2011	0%	0%	0%	35%	25%	12%	7%	10%	6%	2%	1%	1%	0%	0%	0%
2012	3%	1%	9%	21%	22%	15%	10%	9%	6%	1%	2%	1%	0%	0%	0%

New Jersey – MRIP Data



New Jersey – Ocean Trawl Data



Delaware – Fishery Description

- In DE, fluke fishery is predominately a bay fishery
- Estimates of percentage of harvest from each location:
    - 85.5% is inland (bay)
    - 13% is offshore (>3 mi)
    - remaining 1.5% is from offshore less than 3 miles
- The peak harvest waves are waves 3 and 4 (88.7%), though there is some harvest in waves 2 – 6
- Main mode of harvest is the private/rental mode (88.8%)

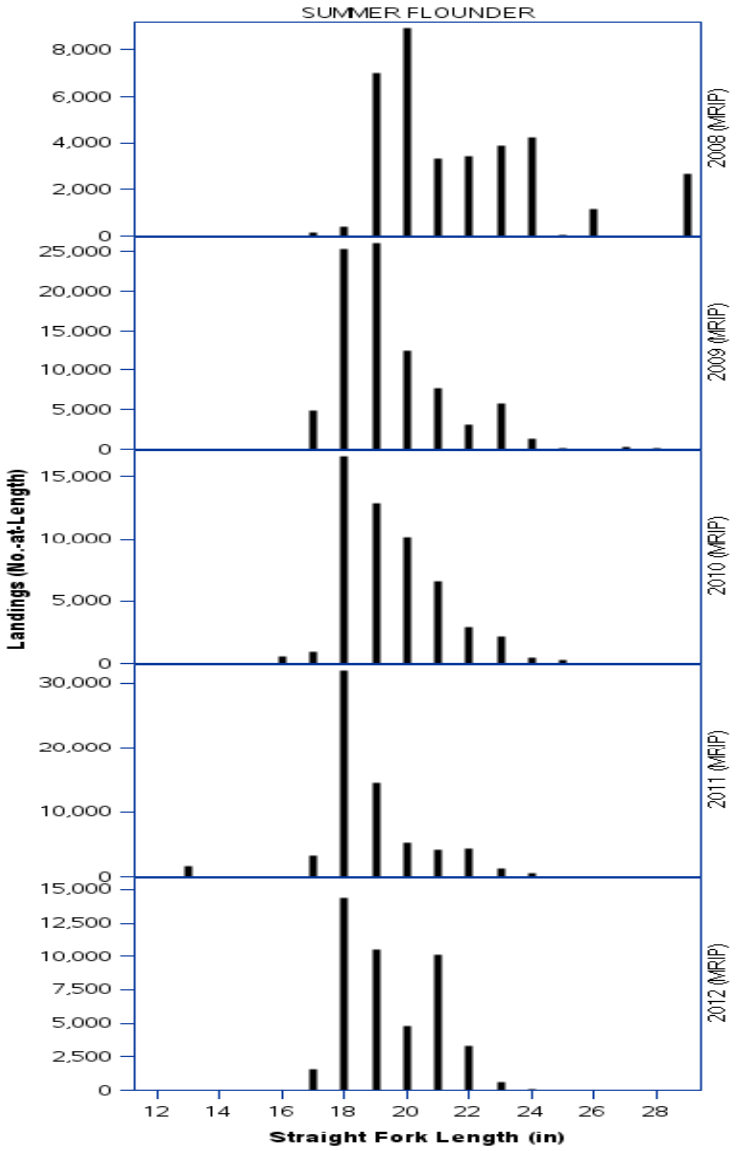
Delaware – Available Data

- Only one source of data available to DE:
  - MRIP

Delaware – MRIP

Sum of Landings (No.-at-Length)	Year			
Straight Fork Length (in)	2010	2011	2012	Grand Total
13		1591.72		1591.72
14			2.67	2.67
16	528.74	16.74	769.15	1314.63
17	941.56	3280.63	1268.43	5490.62
18	16620.09	31901.2	16593.12	65114.41
19	12876.51	14345.29	8392.08	35613.88
20	10145.09	5175.77	5098.33	20419.19
21	6551.58	4232.03	3676.28	14459.89
22	2932.78	4415.55	2523.23	9871.56
23	2114.31	1262.52	142.28	3519.11
24	493.78	594.09		1087.87
25	307.63	4.14	4.1	315.87
Grand Total	**53512.07**	**66819.68**	**38469.67**	**158801.42**

Delaware – MRIP



Maryland – Fishery Description

- In MD, fluke fishery is in Coastal Bays, near shore wrecks, and in the Ches Bay
- No reliable estimates of percentage of harvest from each location but best estimate:
    - 10% is near shore and offshore wrecks
    - 10% to 30% is Chesapeake Bay
    - remaining 40% to 70% is from the MD Coastal Bays.
- Fish in the Coastal Bays are smaller than the offshore fish
- Almost all fishing that targets flounder is either drifting or bottom fishing

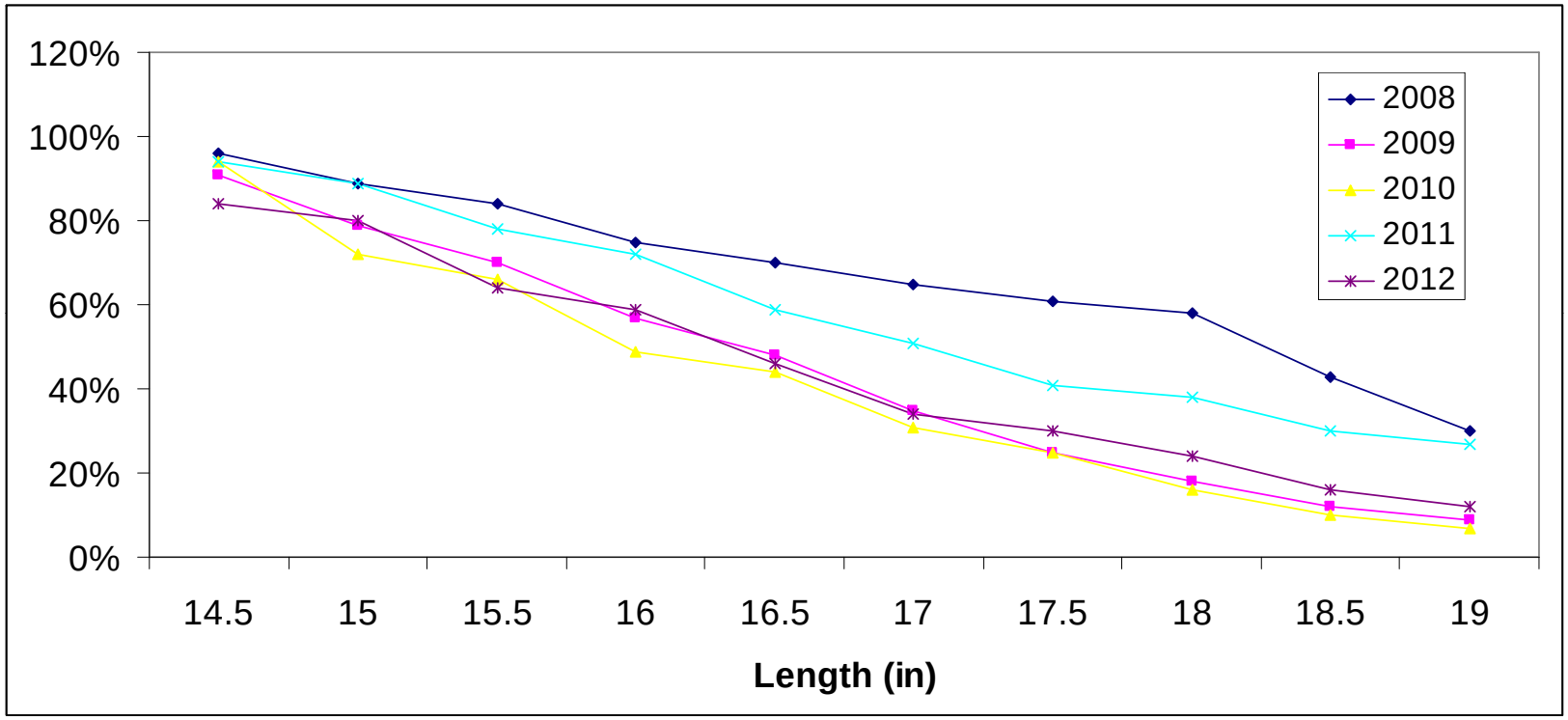
Maryland – Available Data

- Potentially could use two sources depending on years needed to review, one FD, one FI

  - MD Offshore Trawl Survey (2008 n = 253; 2009 n = 207; 2010 n = 295; 2011 n = 155; 2012 n = 79)

  - MD Volunteer Angler Survey (2008 n = 7,304; 2009 n = 5,875; 2010 n = 1,183; 2011 n = 3,067; 2012 n = 166)

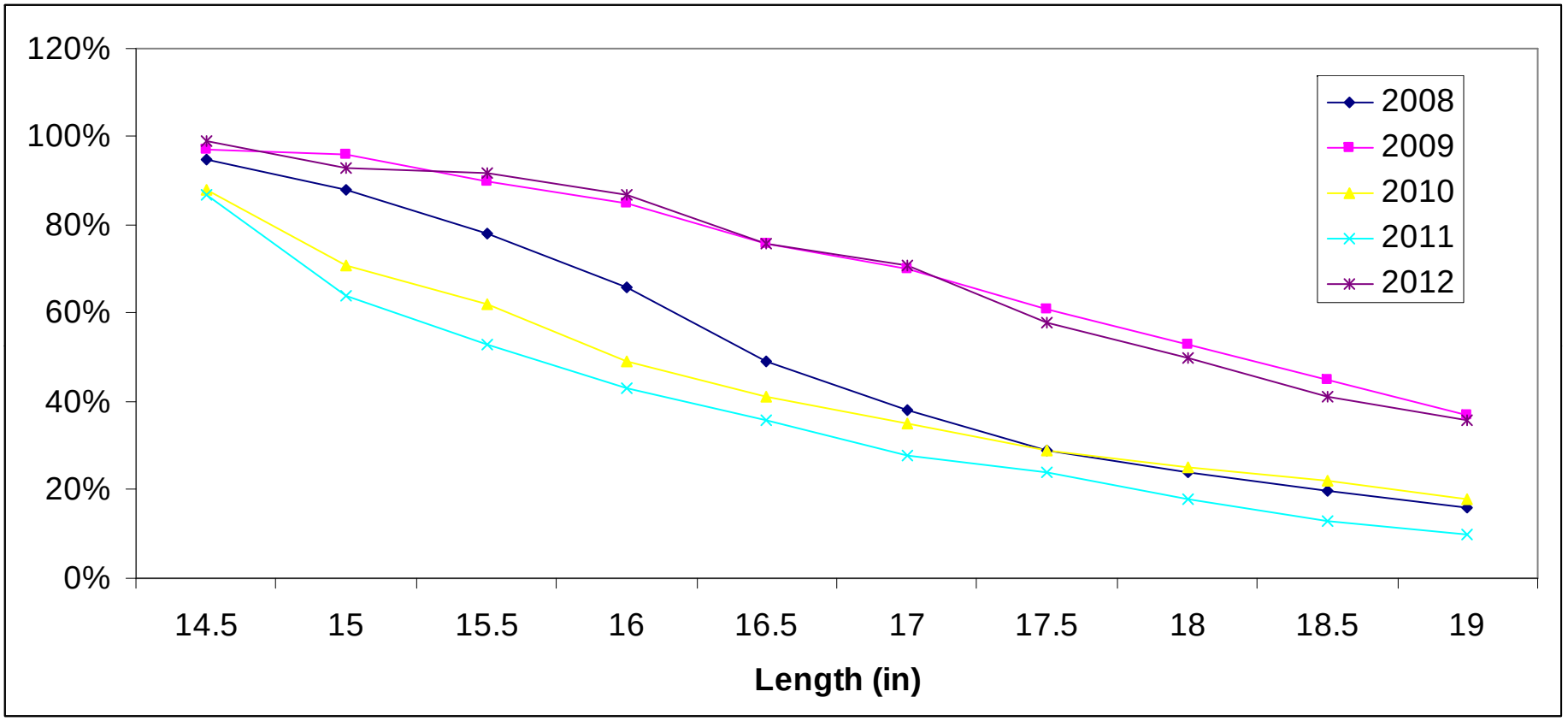
Maryland – Volunteer Angler Survey Data



MD Volunteer Angler Survey

	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19
2008		96%	89%	84%	75%	70%	65%	61%	58%	43%	30%
2009		91%	79%	70%	57%	48%	35%	25%	18%	12%	9%
2010		94%	72%	66%	49%	44%	31%	25%	16%	10%	7%
2011		94%	89%	78%	72%	59%	51%	41%	38%	30%	27%
2012		84%	80%	64%	59%	46%	34%	30%	24%	16%	12%

Maryland – Offshore Trawl Survey Data



Offshore Commercial Trawl

	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19
2008		95%	88%	78%	66%	49%	38%	29%	24%	20%	16%
2009		97%	96%	90%	85%	76%	70%	61%	53%	45%	37%
2010		88%	71%	62%	49%	41%	35%	29%	25%	22%	18%
2011		87%	64%	53%	43%	36%	28%	24%	18%	13%	10%
2012		99%	93%	92%	87%	76%	71%	58%	50%	41%	36%

Virginia – Fishery Description

- The majority of recreational summer flounder landings occur from mid-April through August. MRIP estimates that waves 3 and 4 account for 80% of the harvest on average over the last decade (2003-2012)

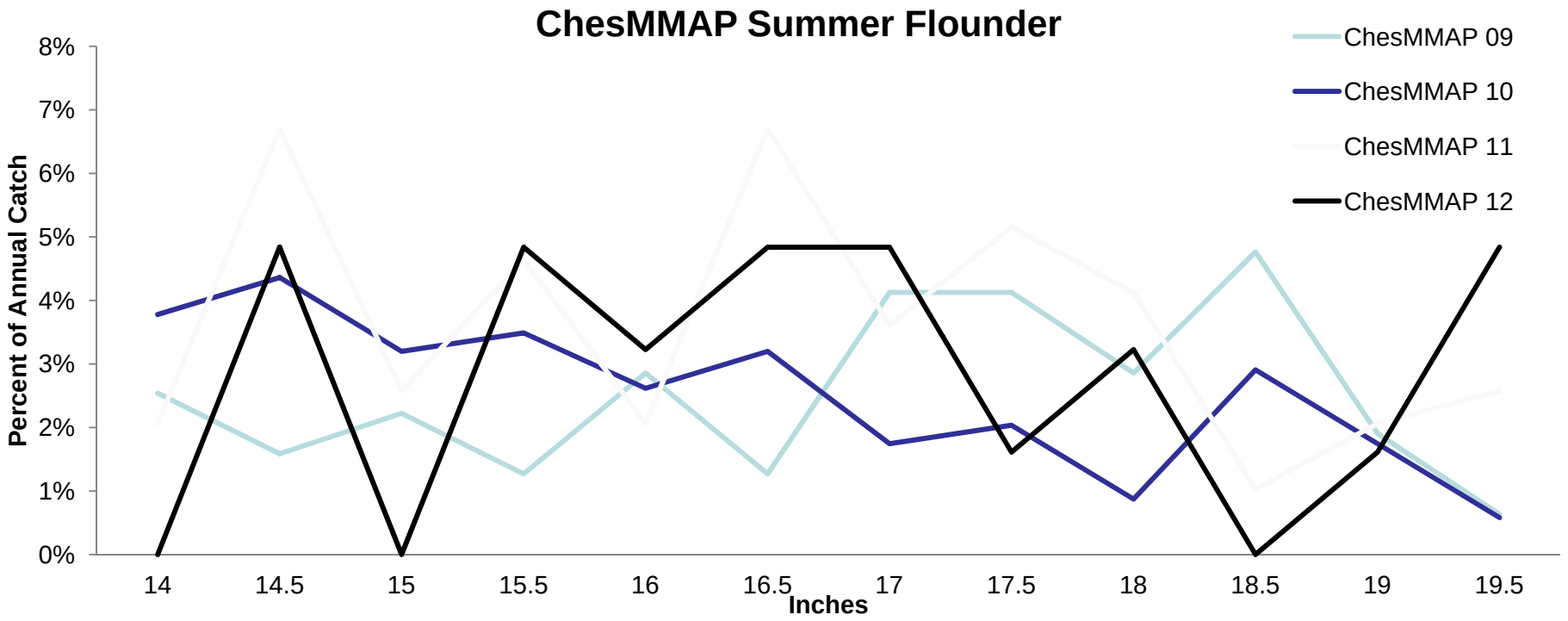
- 80% of the harvest is also estimated to come from the private/rental mode for the last decade. 15% from shore mode

- MRIP estimates that 60-99% of the rec harvest comes from inland, averaging 87% for the 2003-2012 period

Virginia – Available Data

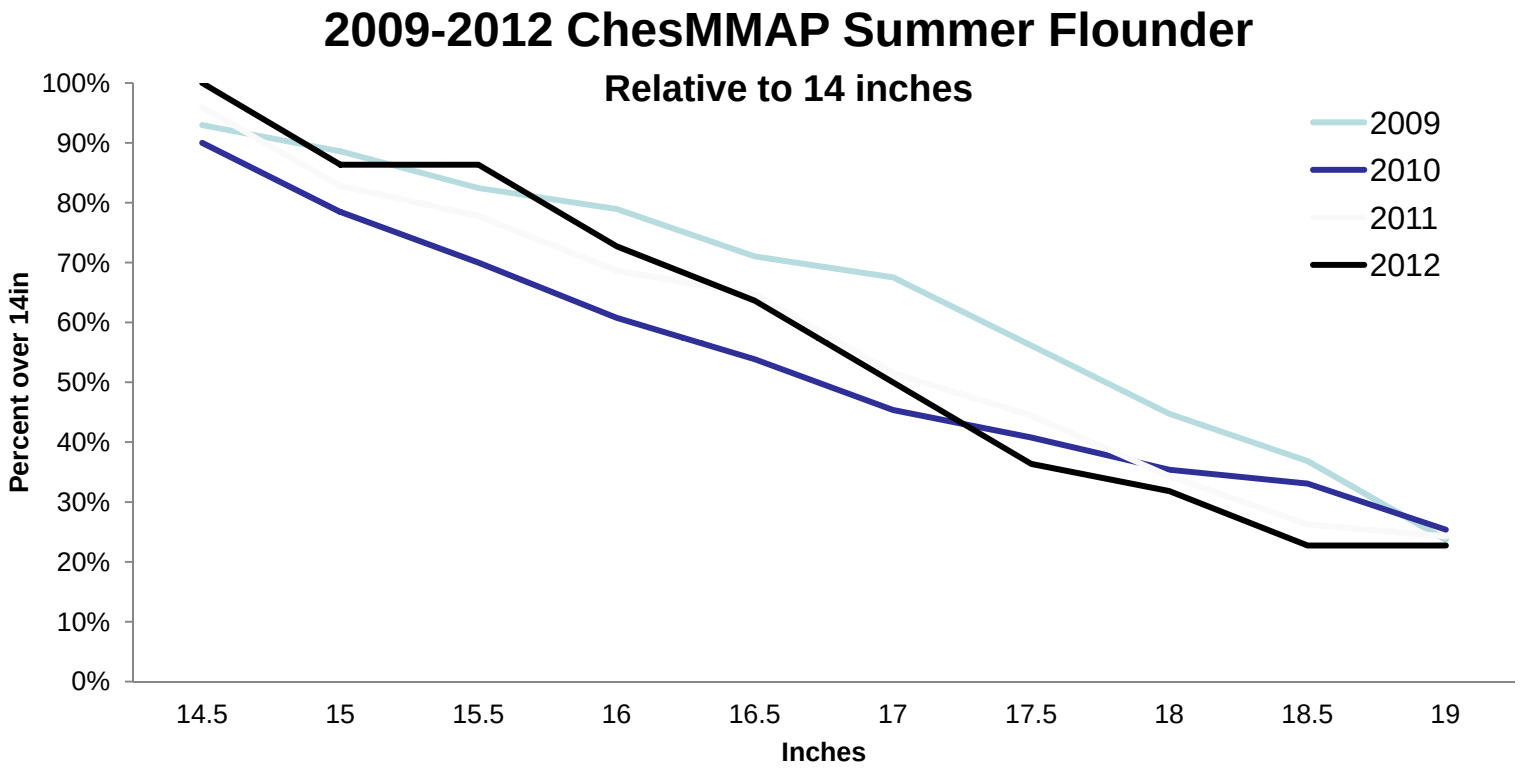
- Three sources available to VA, one FD and two FI:
    - Volunteer Angler Survey data are provided to VMRC through online reporting
    - ChesMMAP and NEAMAP surveys
    - VIMS Juvenile Trawl data can be lagged (2,3 or 4 years) to estimate availability

Virginia – CHESMMAP Data



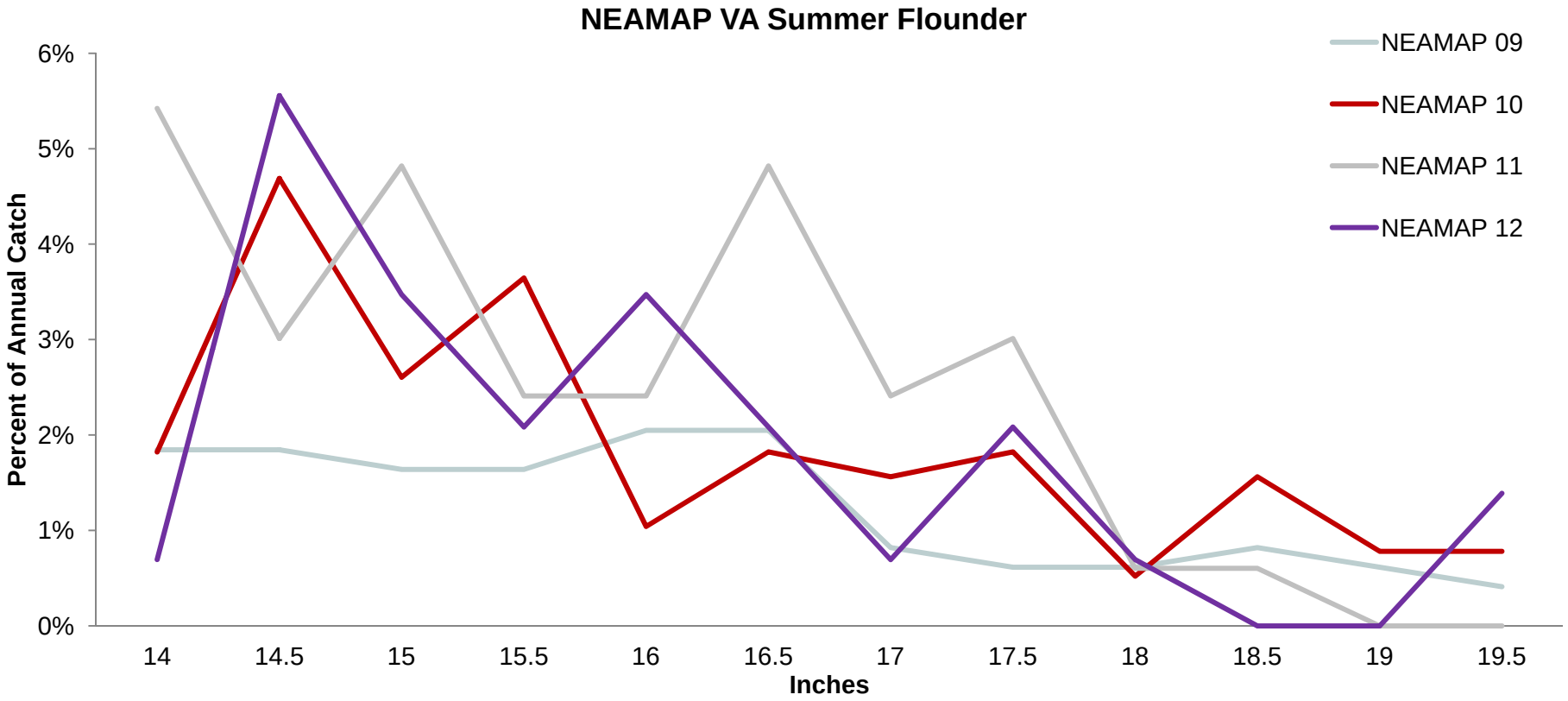
Year	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19	19.5
2009	3%	2%	2%	1%	3%	1%	4%	4%	3%	5%	2%	1%
2010	4%	4%	3%	3%	3%	3%	2%	2%	1%	3%	2%	1%
2011	2%	7%	3%	5%	2%	7%	4%	5%	4%	1%	2%	3%
2012	0%	5%	0%	5%	3%	5%	5%	2%	3%	0%	2%	5%

Virginia – CHESMMAP Data



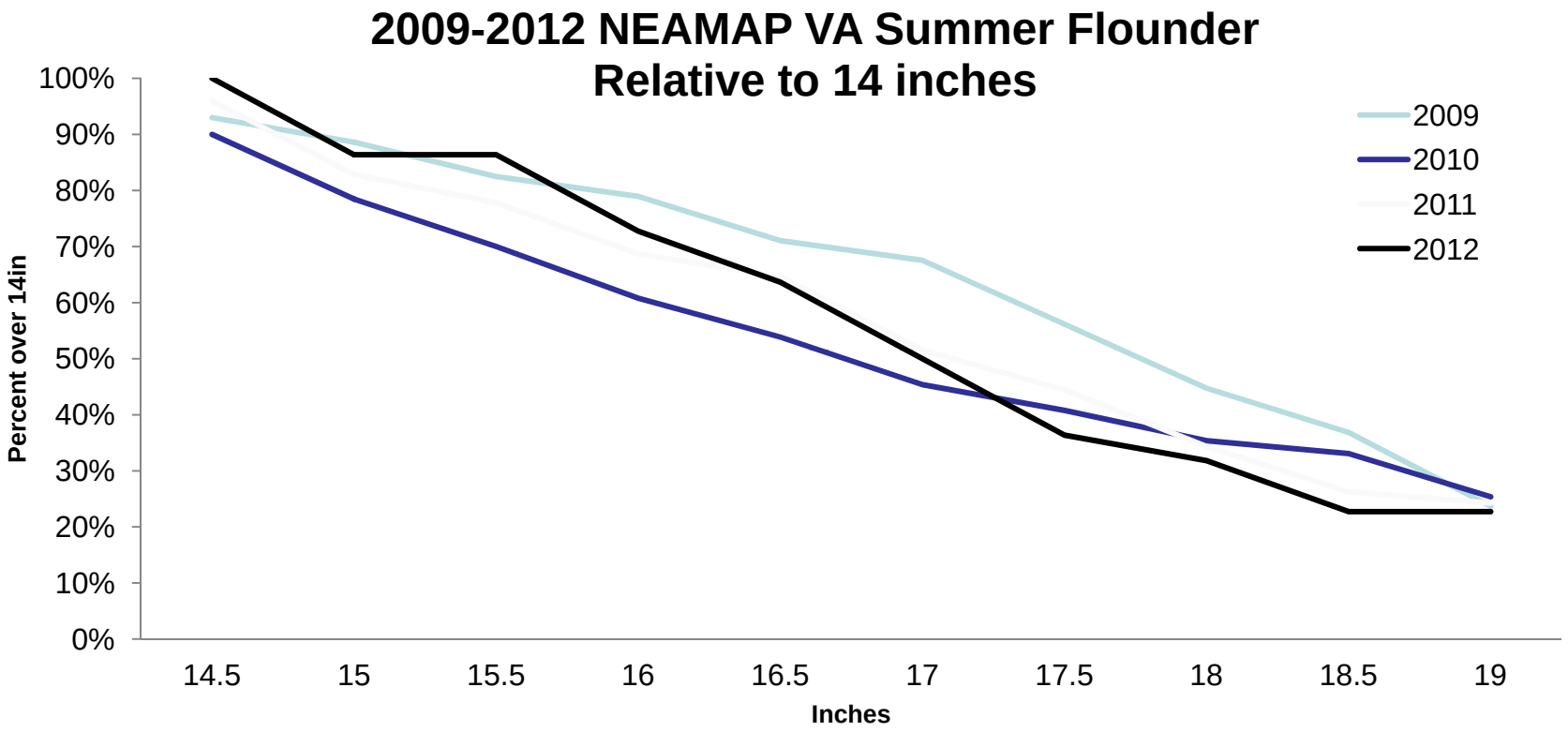
Year	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19
2009	93%	89%	82%	79%	71%	68%	56%	45%	37%	24%
2010	90%	78%	70%	61%	54%	45%	41%	35%	33%	25%
2011	96%	83%	78%	69%	65%	52%	44%	34%	26%	24%
2012	100%	86%	86%	73%	64%	50%	36%	32%	23%	23%

Virginia – NEAMAP Data



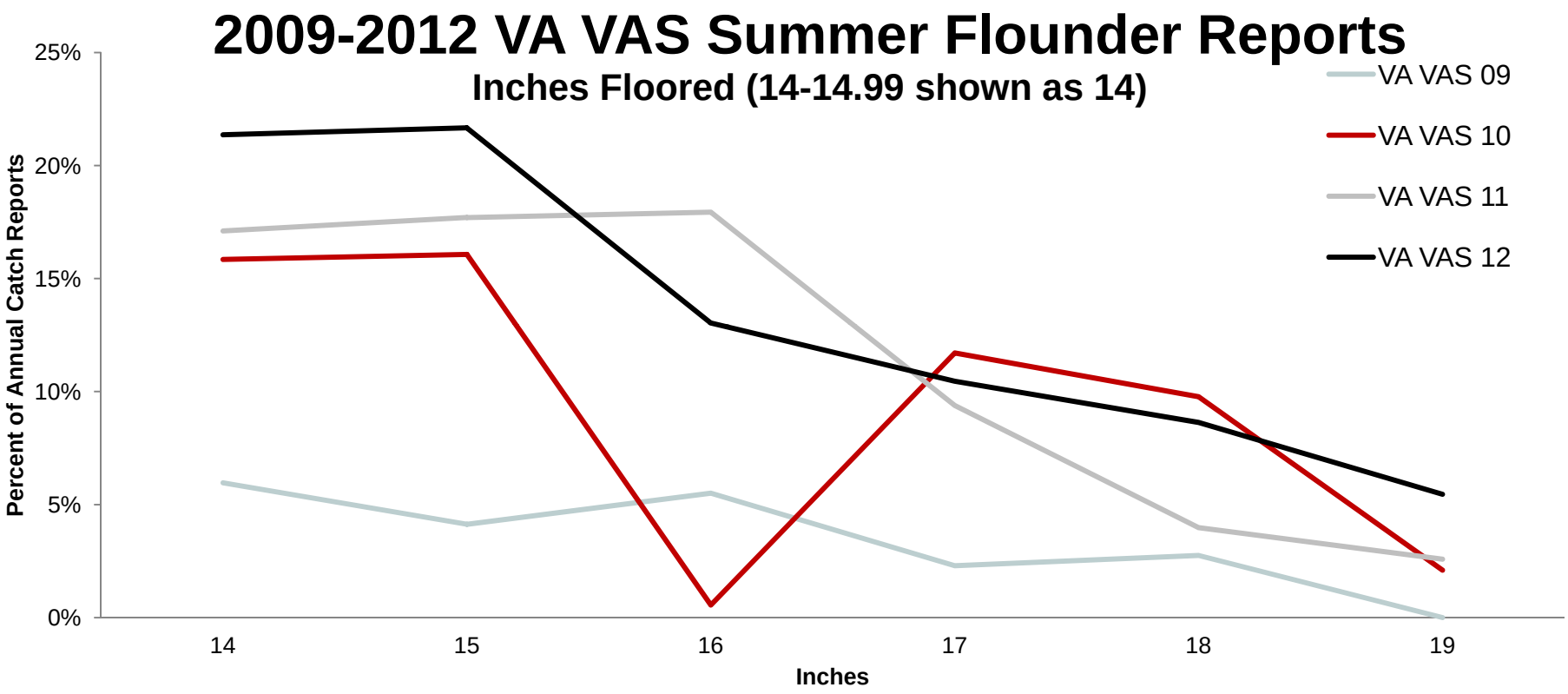
Year	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19	19.5
2009	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	0%
2010	2%	5%	3%	4%	1%	2%	2%	2%	1%	2%	1%	1%
2011	5%	3%	5%	2%	2%	5%	2%	3%	1%	1%	0%	0%
2012	1%	6%	3%	2%	3%	2%	1%	2%	1%	0%	0%	1%

Virginia – NEAMAP Data



Year	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19
2009	89%	78%	68%	58%	45%	33%	28%	24%	20%	15%
2010	92%	72%	61%	46%	41%	33%	27%	19%	17%	10%
2011	83%	74%	58%	51%	43%	28%	21%	11%	9%	8%
2012	97%	75%	61%	53%	39%	31%	28%	19%	17%	17%

Virginia – Volunteer Angler Data



Year	14	15	16	17	18	19
2009	6%	4%	6%	2%	3%	0%
2010	16%	16%	1%	12%	10%	2%
2011	17%	18%	18%	9%	4%	3%
2012	21%	22%	13%	10%	9%	5%

North Carolina – Fishery Description

- The North Carolina rec flounder fishery catches three flounder species
- 1981-2001, over 50% of the flounder harvested were fluke
- 2002-12, southern flounder made up the majority of the harvest in most years and in 2009-12 an average of 28% of flounder harvested were fluke
- The three species have fairly similar morphologies and anglers are usually unable to distinguish amongst them in the discards reported to MRIP samplers
- Harvest is higher in northern portions of the state, but caught throughout
- Percentage caught in inshore vs. ocean waters has varied from year to year
- Small percentage of the total harvest is from ocean areas beyond three miles

North Carolina – Available Data

- Only one source available and it is FD:
  - MRIP (2009 n = 166; 2010 n = 262; 2011 n = 235; 2012 n = 228)

North Carolina – MRIP

Year	<15	15	16	17	18	19	20	21	23	Summer flounder measured
2009	27.8	35.9	23.9	7.4	2.2	2.6	0.3			166
2010	40.0	33.4	15.1	5.9	2.5	1.8	0.2	1.2		262
2011	12.5	37.8	24.7	17.7	4.3	2.4	0.2		0.5	235
2012	15.9	40.8	18.7	12.0	8.2	2.4	0.5	1.6	0.1	228

Next Steps

- The TC can continue working on this analysis if the Board wishes
- The next step in the analysis would be to:
    - begin to analyze each individual states chosen datasets
    - using similar methodology to the normal management setting specifications, the TC will begin to develop a set of management metrics that meet:
        -a pre-chosen retention rate (currently working with 14.7)
        -begin with a reasonable minimum size based on the LF review
        -that will together remain within the bounds of the coastwide RHL
- The TC can also develop a list of alternative approaches if the Board wishes