



North Carolina Landings and Harvest Trends

Presented to: Marine Fisheries Commission

DEPARTMENT OF ENVIRONMENTAL QUALITY

Marine Fisheries

Stephanie McInerny | License and Statistics Section | November 16, 2018



Data Sources

Commercial Landings

Trip Ticket Program

~140,000 trip tickets/year

Recreational Harvest

Coastal Angling Program

~23,000 interviews/year, 24,000 surveys/year

- Marine Recreational Fisheries Statistics Survey
- Marine Recreational Information Program
- Central Southern Management Area Creel Survey
- For-Hire Survey
- Highly Migratory Species Census (catch card)
- Mail Surveys (gigging, castnet/seine, crab/shellfish)
- Specialty Surveys (grandfathered/lifetime license, socioec, etc.)



Outline

Commercial

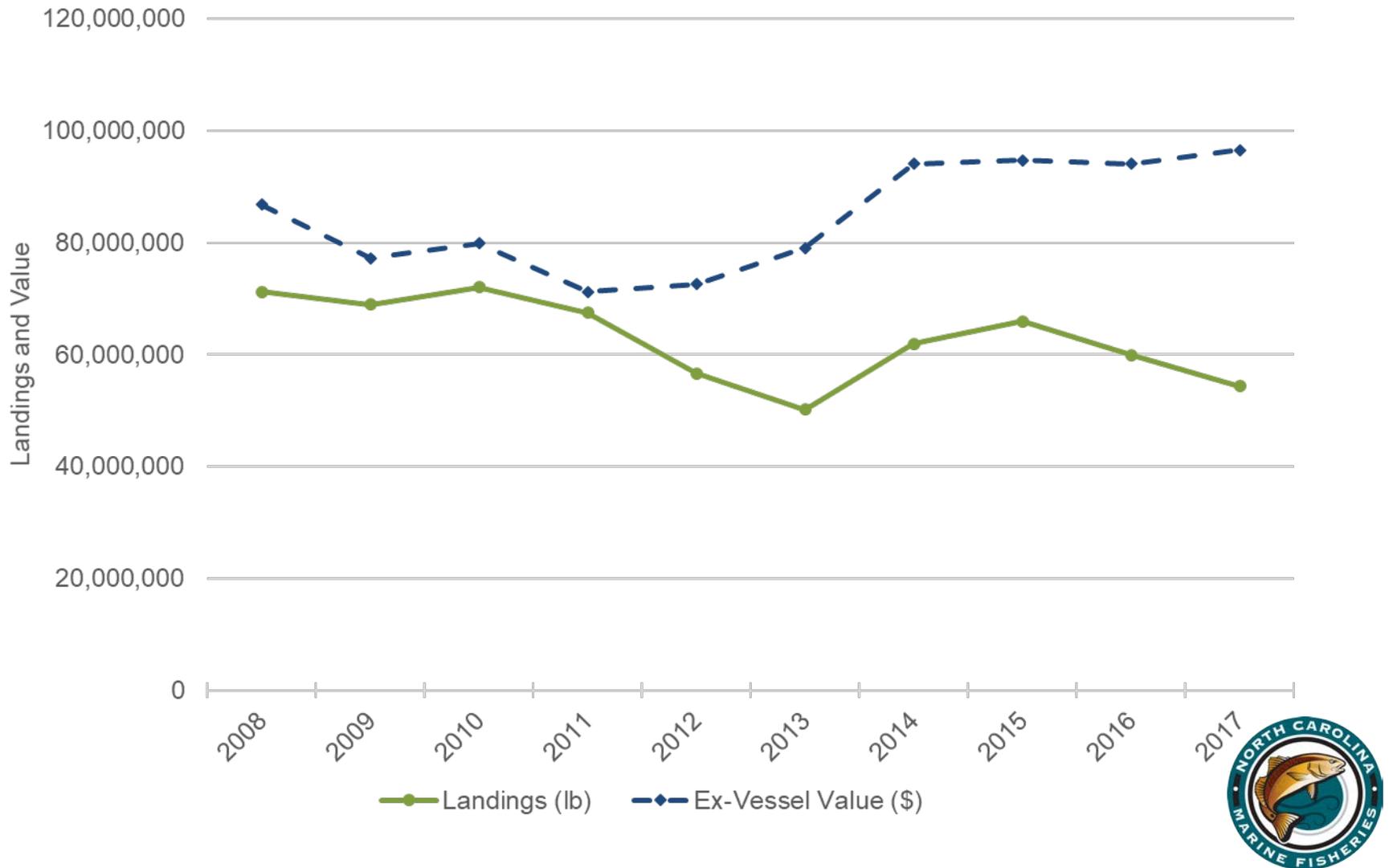
- Statewide Landings Trends
- Top 5 species for 2017
 - Pounds and Value
- 10-year landings history for top 5 species
- Other notable species

Recreational

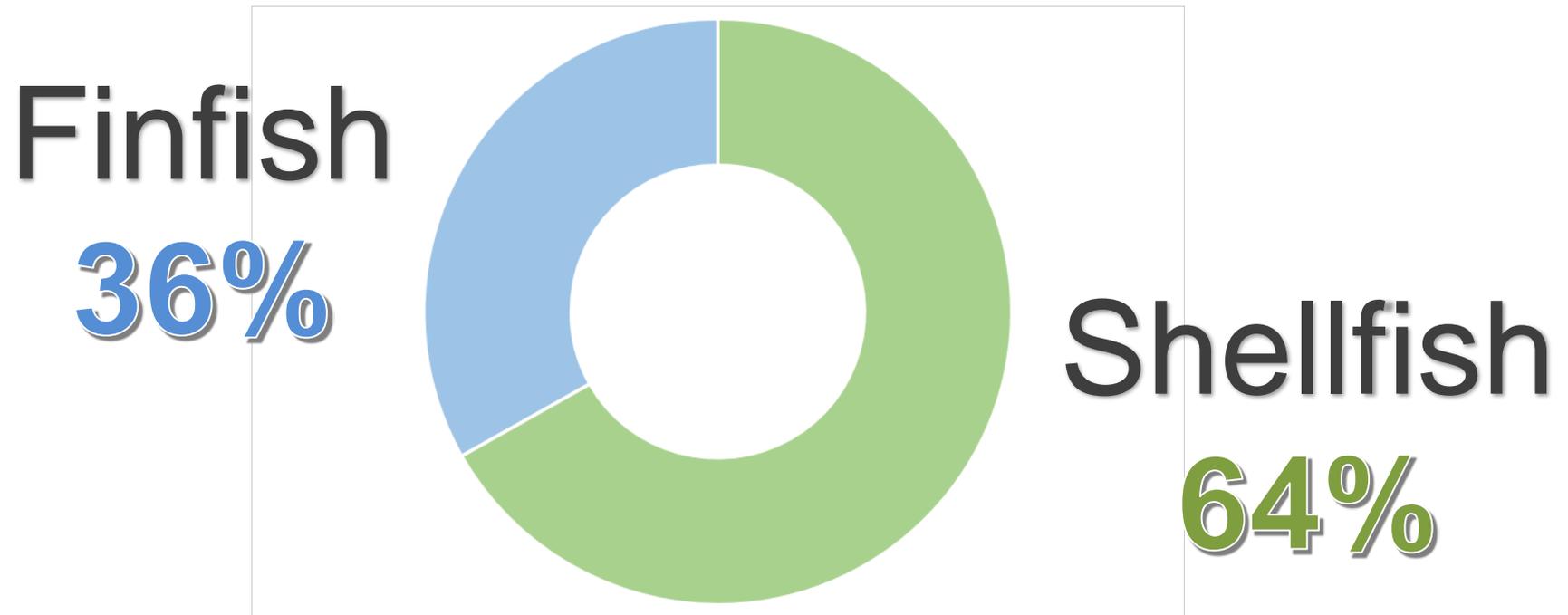
- Effort Survey Transition
- Statewide Harvest Trends
- Top 5 species for 2017
 - Weight and Numbers
- 10-year history for top 5 species
- Other notable species



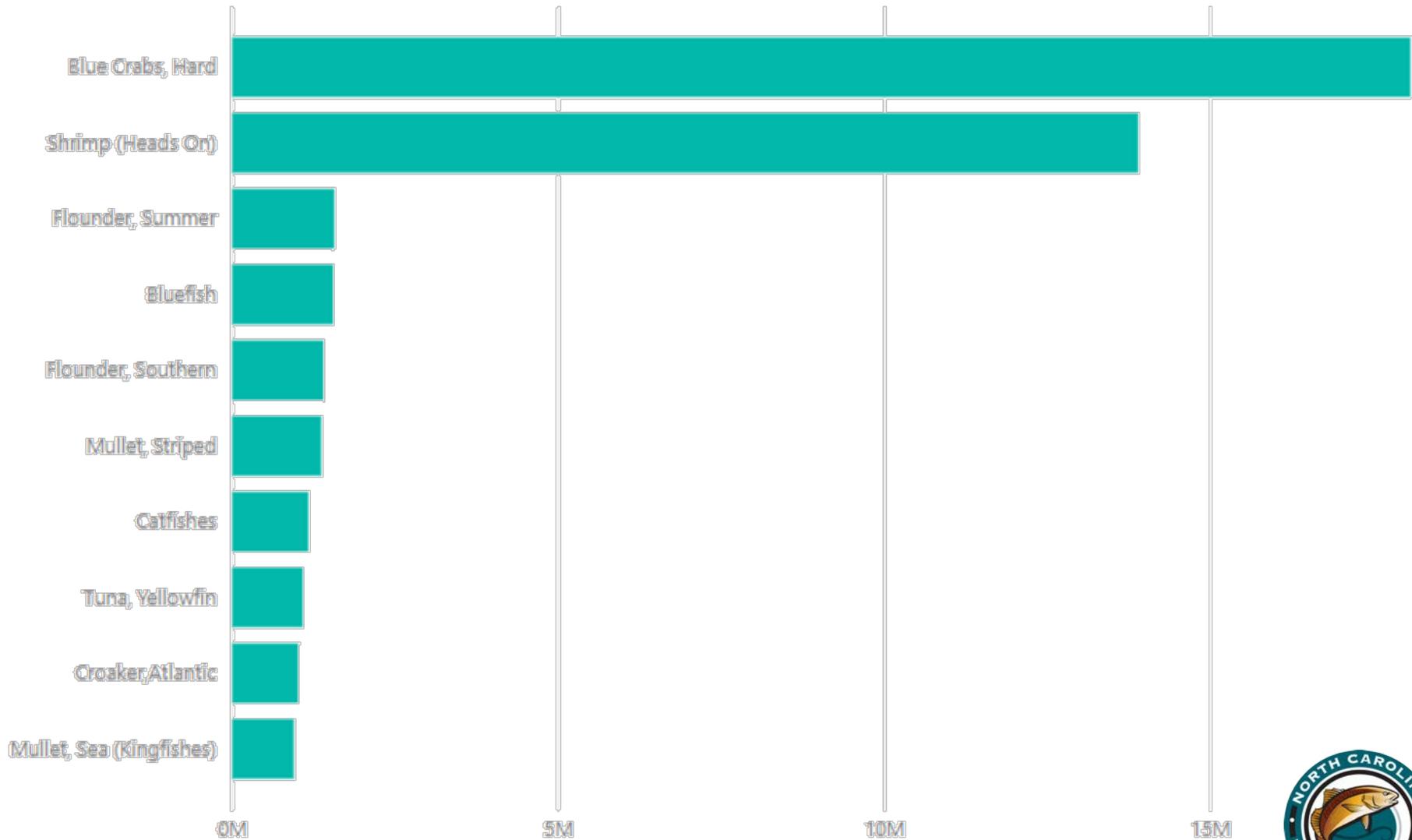
North Carolina Commercial Landings (pounds and value)



North Carolina Commercial Landings *(pounds - 2017)*



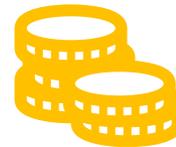
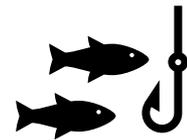
Top 10 Commercial Species Landed



Effort Drives Landings and Harvest

Several factors impact effort such as:

- Weather
- Availability of the target species
- Price
- Market demand
- Stock abundance
- Regulations





**2017 Total
Commercial
Fisheries Landings**

54.3 million lb

-7.8 % from 5-year average*

INCREASES

↑ 83%

Shrimp (heads on)

13.9 million lb

TOP 5

DECREASES

↓ 30%

Blue Crabs (hard)

18.1 million lb

↑ 31%

Bluefish

1.5 million lb

↓ 8%

Southern Flounder

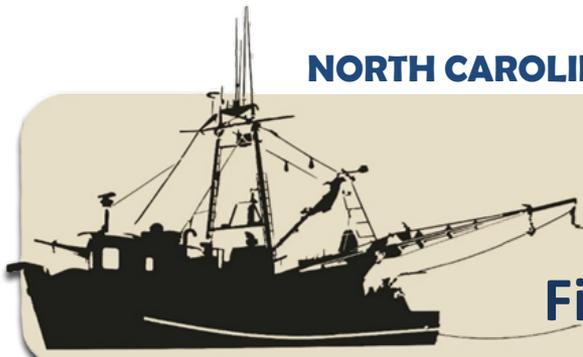
1.4 million lb

↓ 18%

Summer Flounder

1.6 million lb

**All percentage changes shown for 2017 from 5-year average (2012 to 2016)*

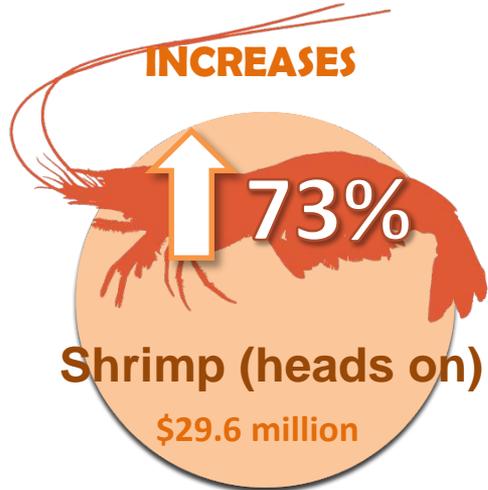


**2017 Total
Commercial
Fisheries Landings**

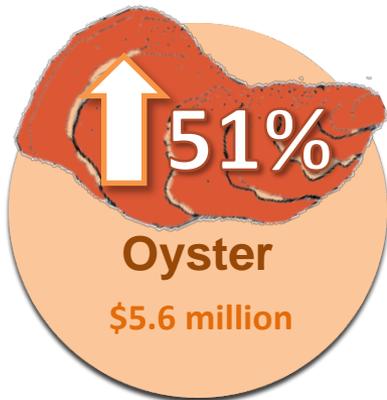
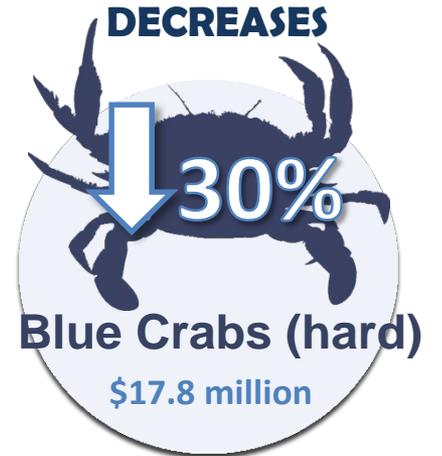
\$96.5 million

-11 % from 5-year average*

INCREASES

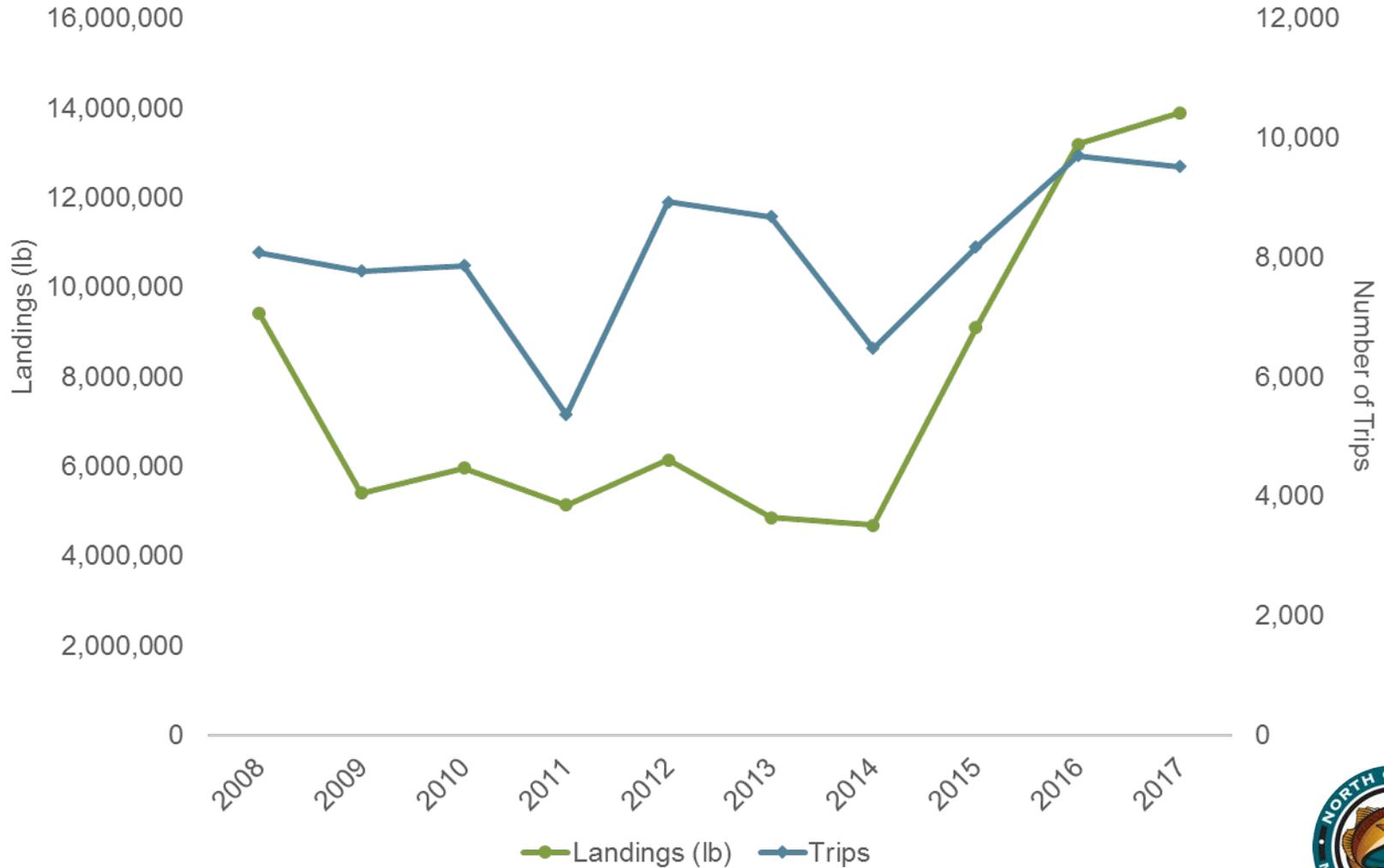


DECREASES

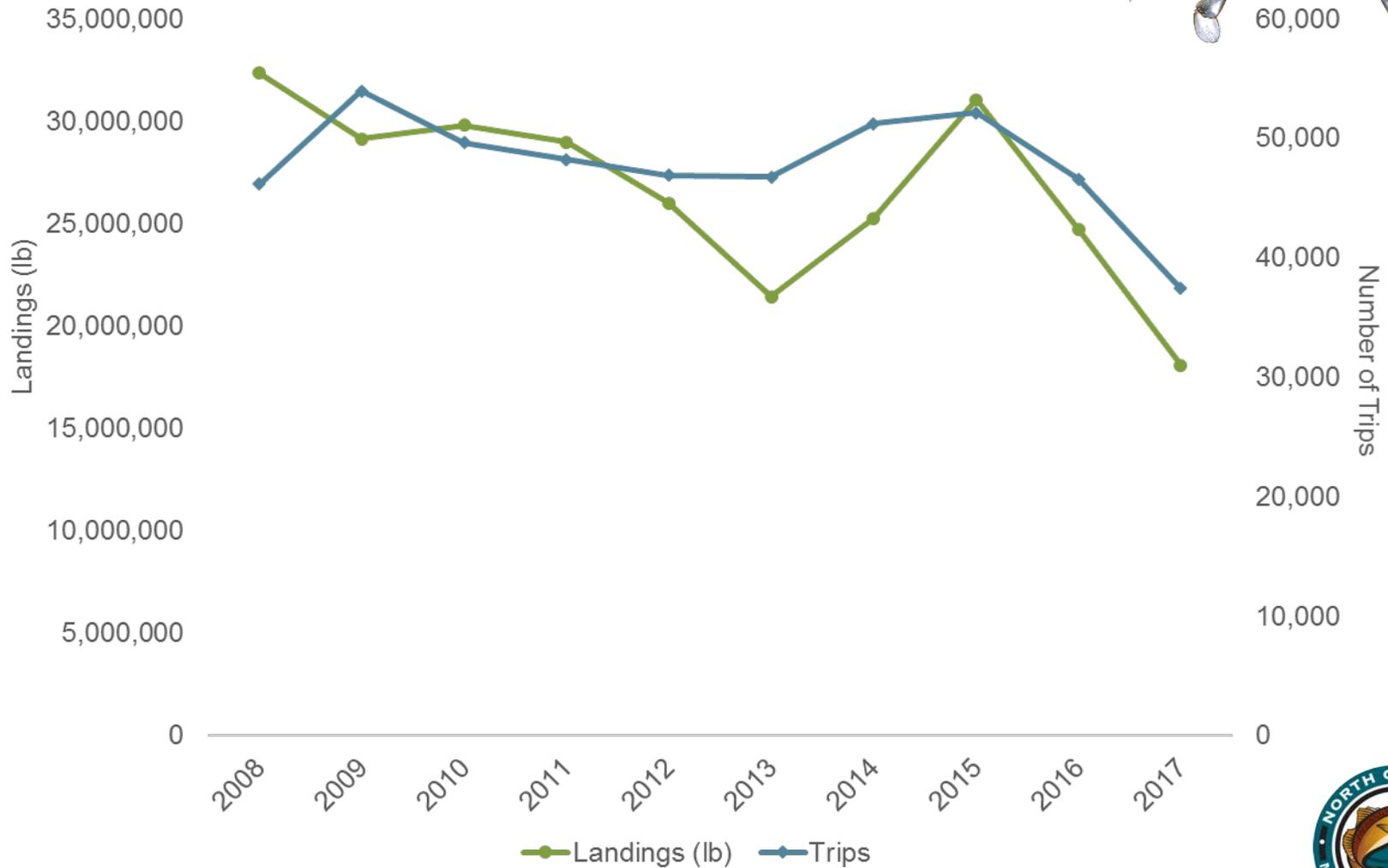


**All percentage changes shown for 2017 from 5-year average (2012 to 2016)*

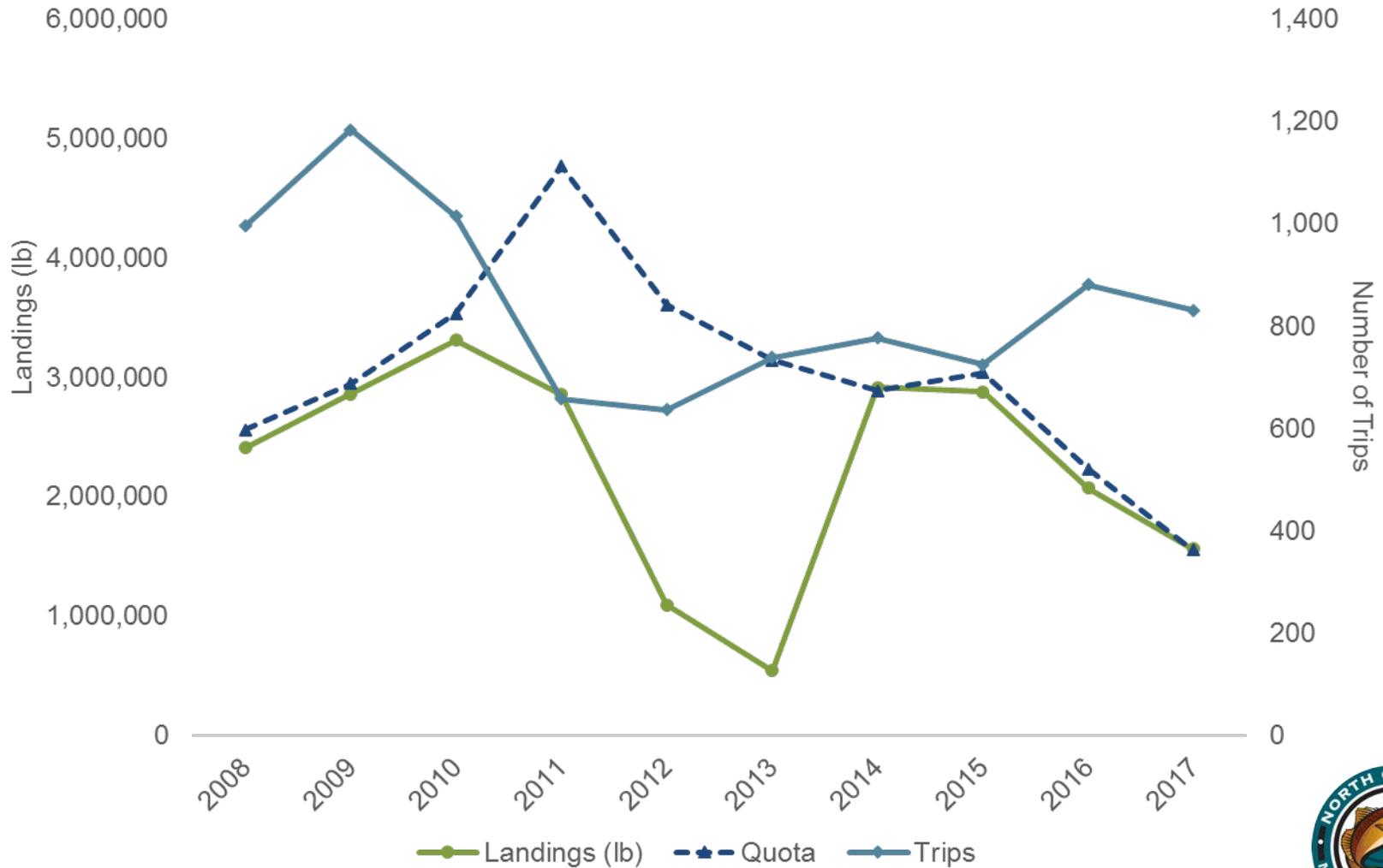
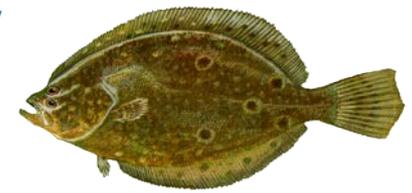
Top Five Species – Commercial Penaeid Shrimp



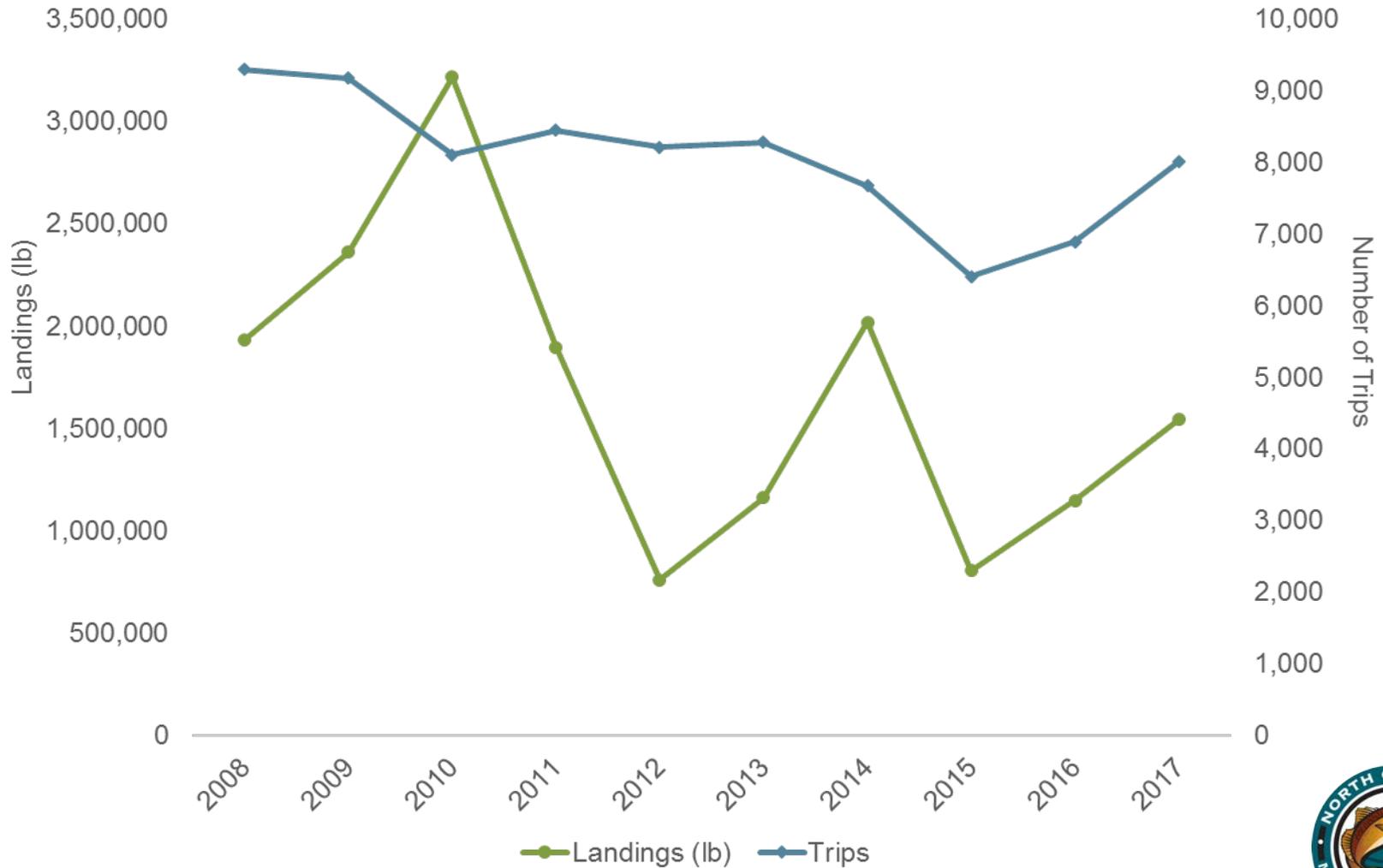
Top Five Species – Commercial Hard Blue Crab



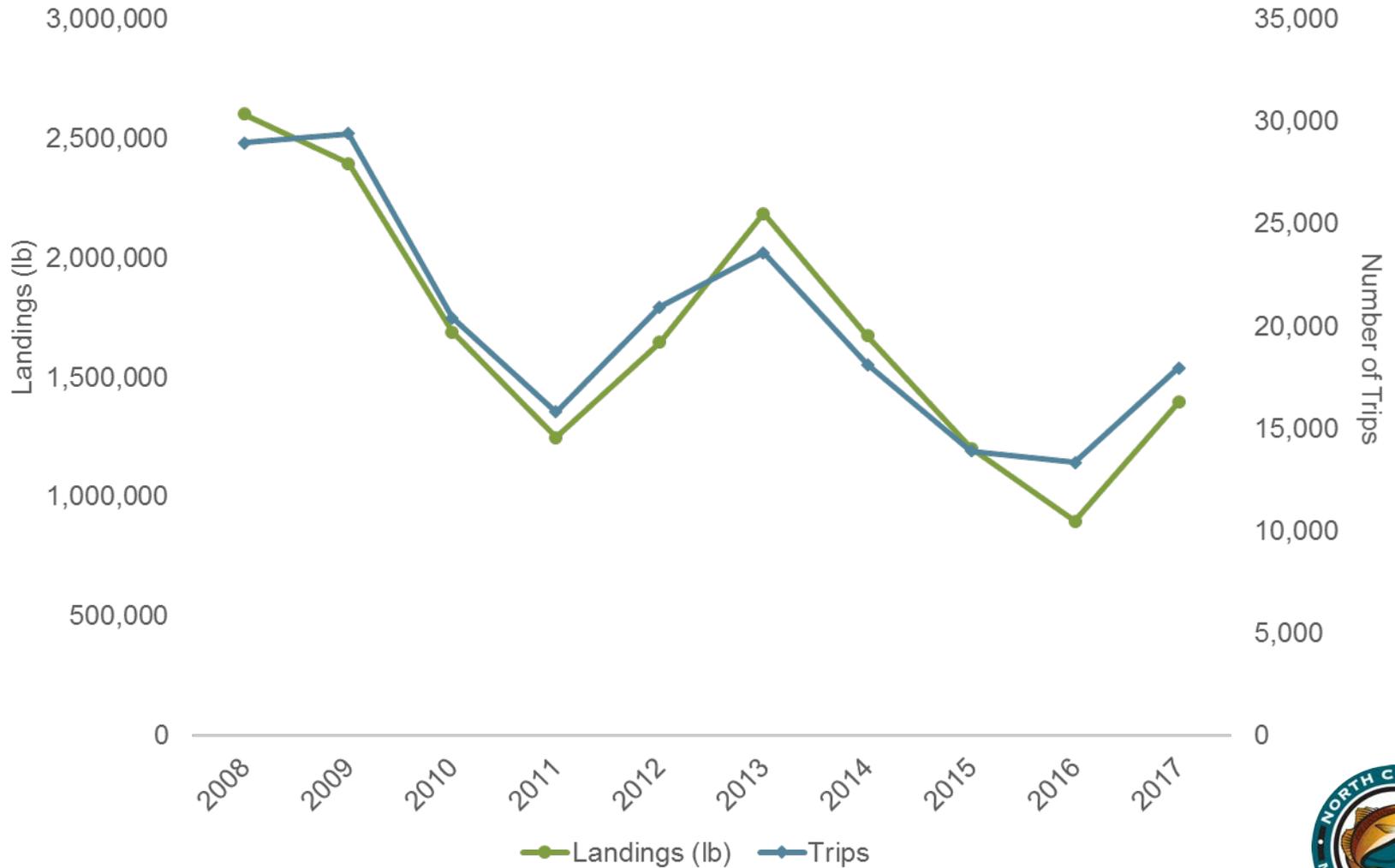
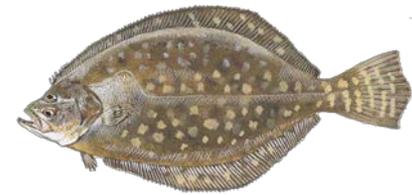
Top Five Species – Commercial Summer Flounder



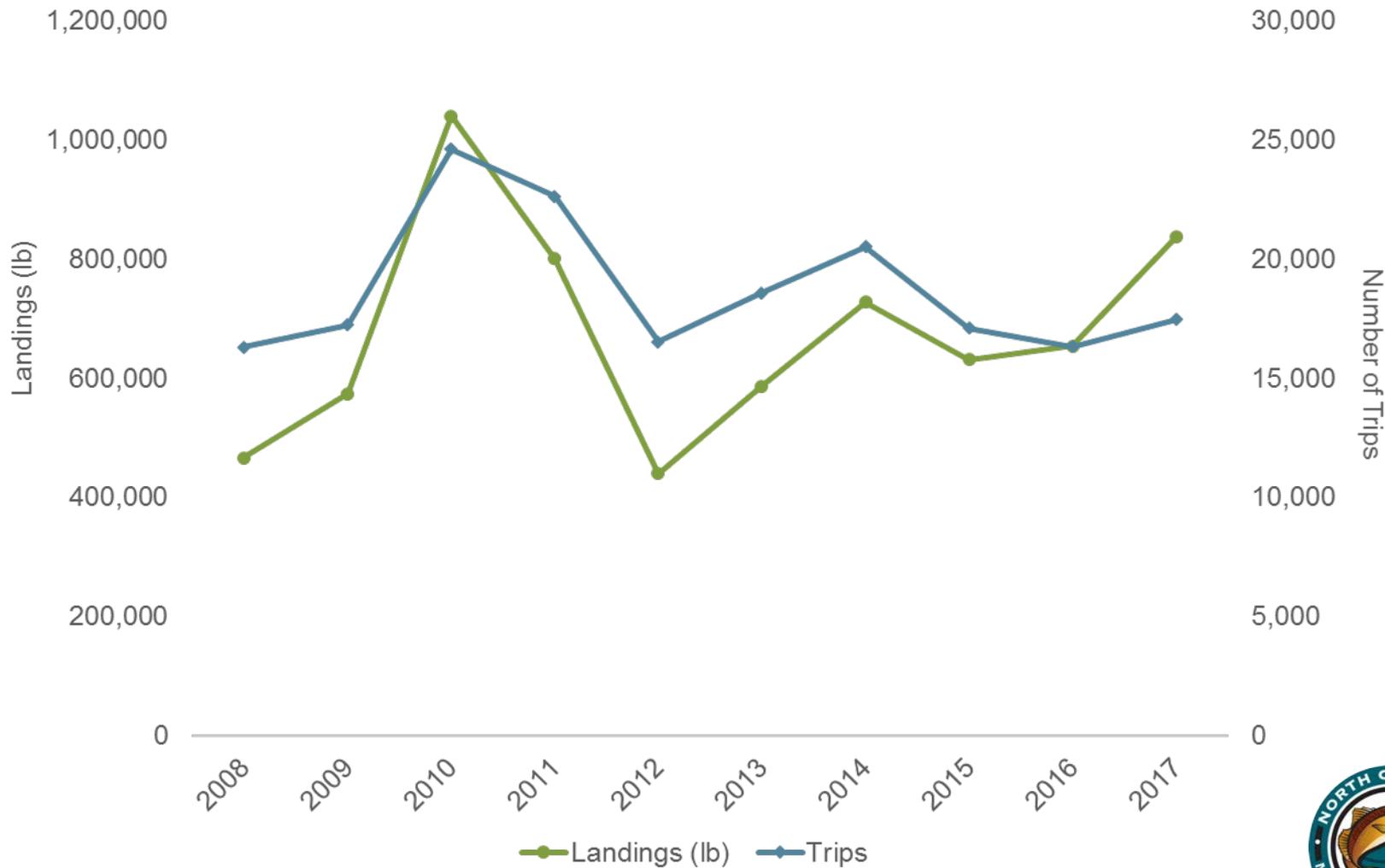
Top Five Species – Commercial Bluefish



Top Five Species – Commercial Southern Flounder

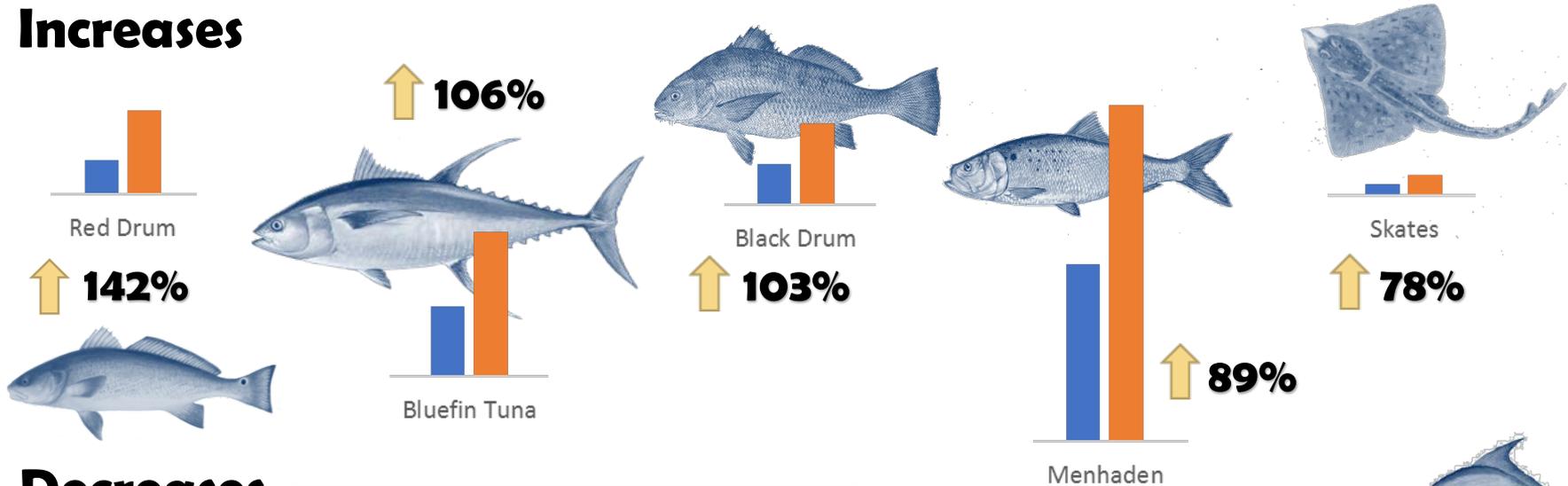


Top Five Species – Commercial Oyster

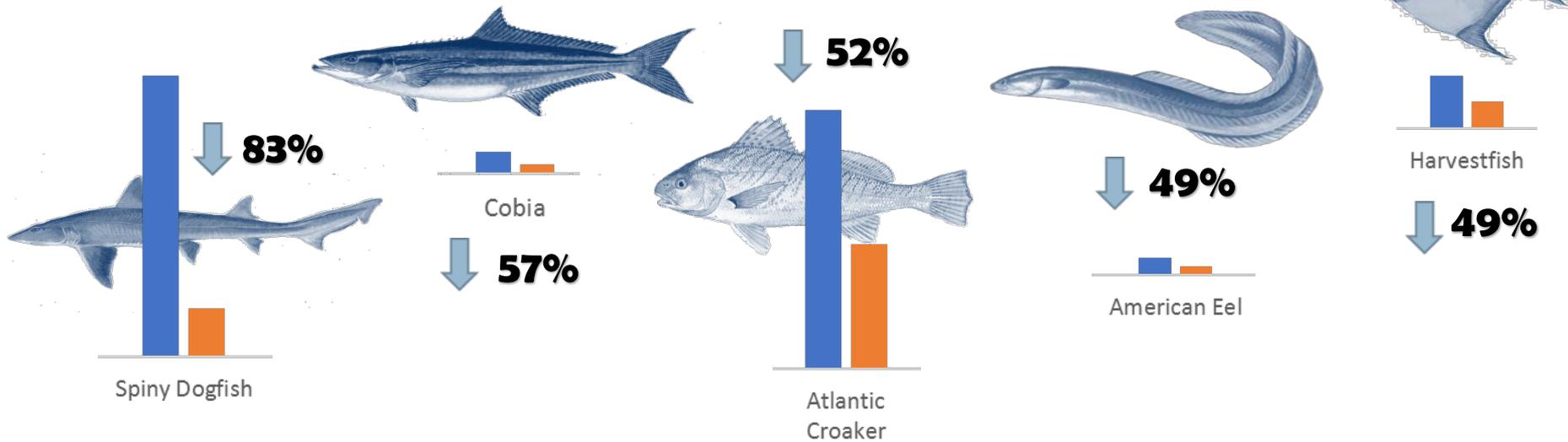


Other Notable Changes* – Commercial

Increases



Decreases



■ 2016 ■ 2017

*Landings in pounds; Percent change in pounds from 2016 to 2017

Commercial vs. Recreational Data

Commercial data collection:

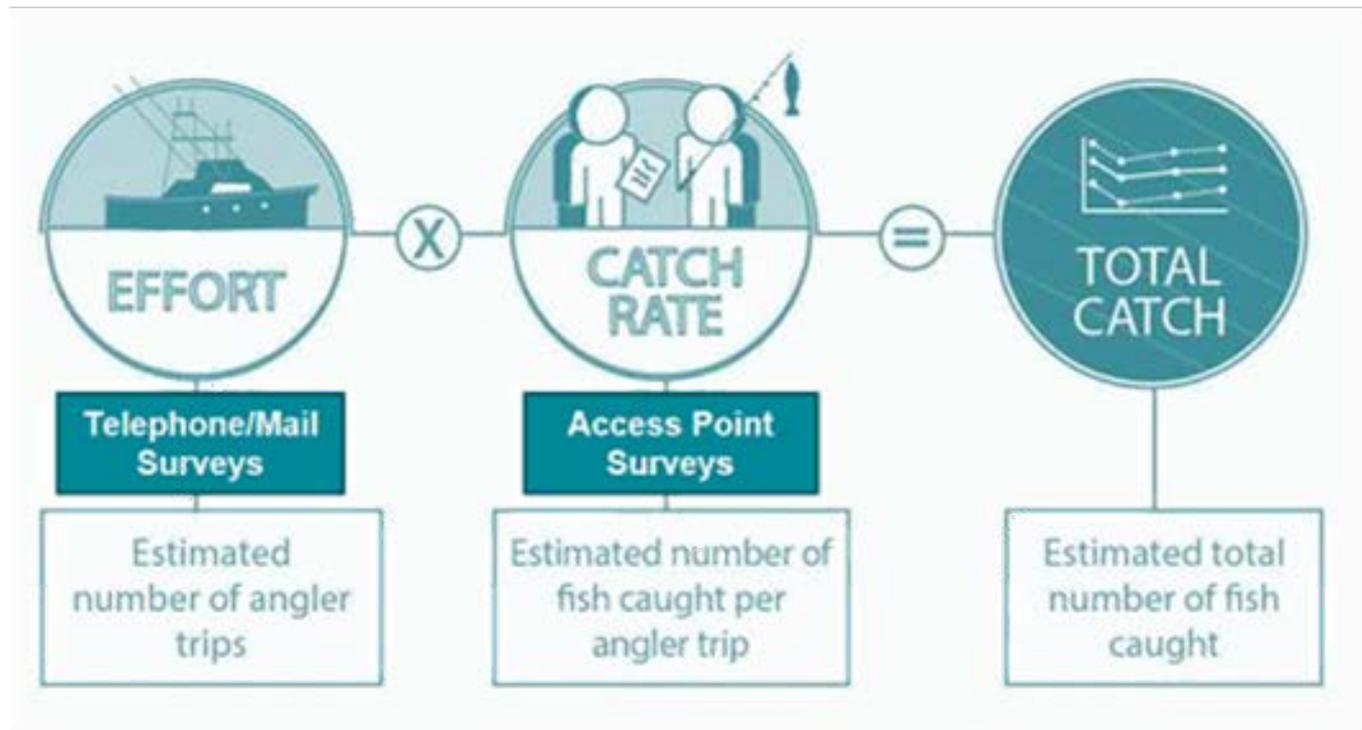
- Designed to be a census
- Data are provided by dealers
- Results are the summed **total** of reported landings

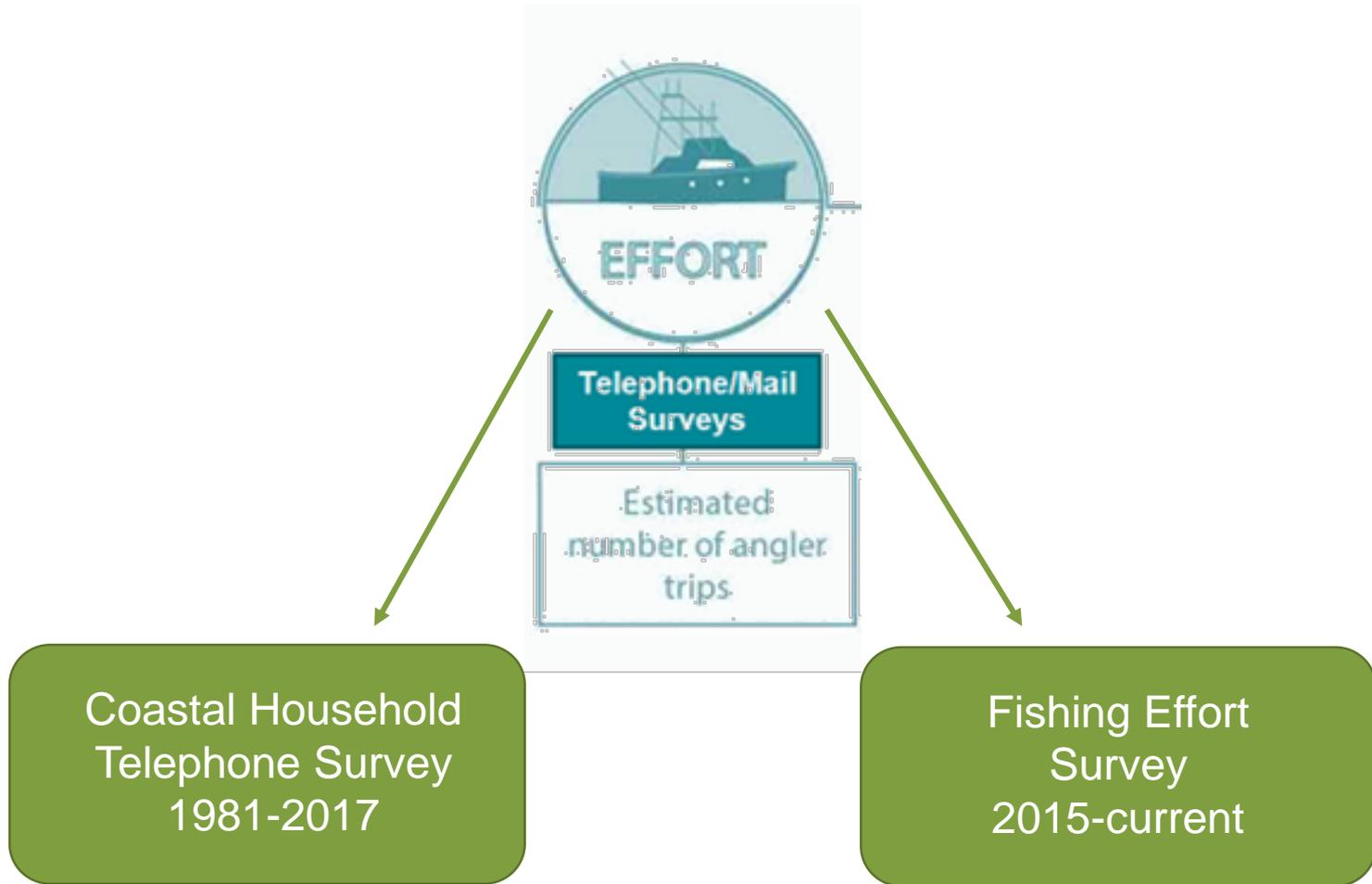
Recreational data collection:

- Data are collected through surveys
 - Due to high level of participation (millions of anglers and trips)
- Results are presented as **estimates**
- Percent Standard Error (PSE) for each estimate



Estimating Total Recreational Catch





2015 to 2017 – side by side comparison completed

Starting in 2018, solely using **Fishing Effort Survey**



Coastal Household Telephone Survey, 1981-2017

- Random digit dialing within coastal counties (15,000 households called per year) – only sample frame
 - Coastal Counties (up to 100 miles inland)
 - Random calls to identify saltwater fishing households
 - When Fishing Household Identified
 - Number anglers and trips taken per household
 - Expanded using Census Data
 - Results in **total number of angler trips**
 - Adjustments made for out-of-state/non-coastal anglers
 - Modes: Private Boat and Shore (Pier, Beach, and Bank)

Reviewed by National Research Council in 2006 and considered biased and inadequate



Fishing Effort Survey, 2015 forward

- Mail based survey (8,000 mailings per year)
 - Two Sample Frames
 - National Saltwater Angling Registry (NSAR; includes all recreational saltwater licenses)
 - United States Post Office mailable address lists
 - Stratified for efficiency
 - Coastal counties, noncoastal counties, NSAR match, NSAR nonmatch
 - Designed as “Weather and Outdoor Activity Survey” to reduce bias
 - Incentivized \$2 USD
 - Results in **total number of angler trips**

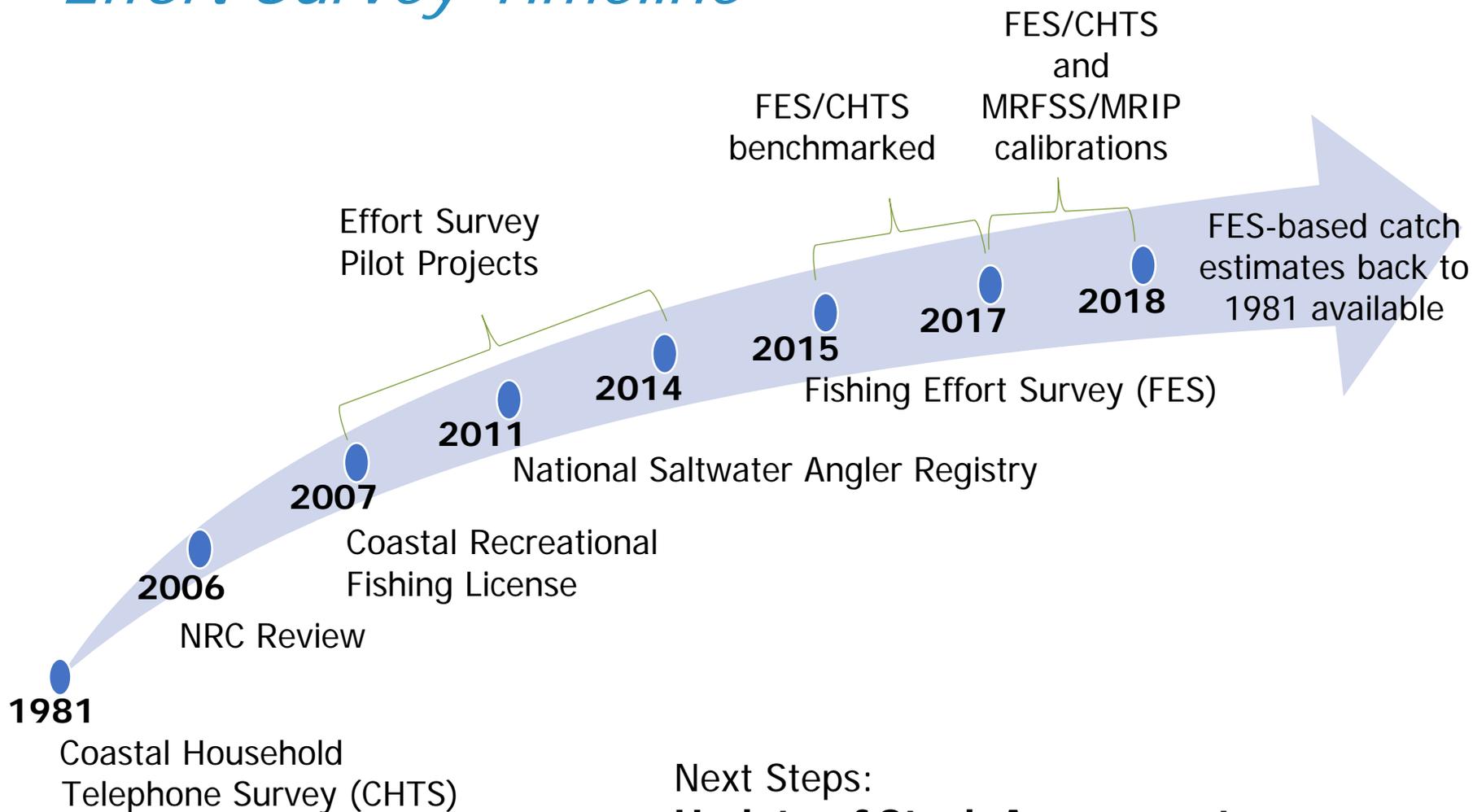
Reviewed by National Research Council in 2017, impressive improvement over CHTS



Advantages of Fishing Effort Survey over Coastal Household Telephone Survey

Coastal Household Telephone Survey	Fishing Effort Survey
<ul style="list-style-type: none">• Random-digit dialing resulted in low rate of saltwater angler participation from the general population• Coverage bias; limited to coastal county residences• Decreased use of landline telephone service (low response ~9%)• Questionnaire focused solely on fishing (potential avidity bias)• Gatekeeper effect• Recall failure• May feel rushed to recall information over the phone	<ul style="list-style-type: none">• More complete sampling frame using saltwater license files and USPS mailable address files• Includes all counties and states (with license holders)• Higher response rate ~35%• Weather and Outdoor Activity Survey (reduces avidity bias)• Reaches individual anglers (no gatekeeper)• Responses to survey do not have to be immediately recalled (more time to complete survey – reduces recall bias)

Effort Survey Timeline



Next Steps:
**Update of Stock Assessments
and Catch Limits**



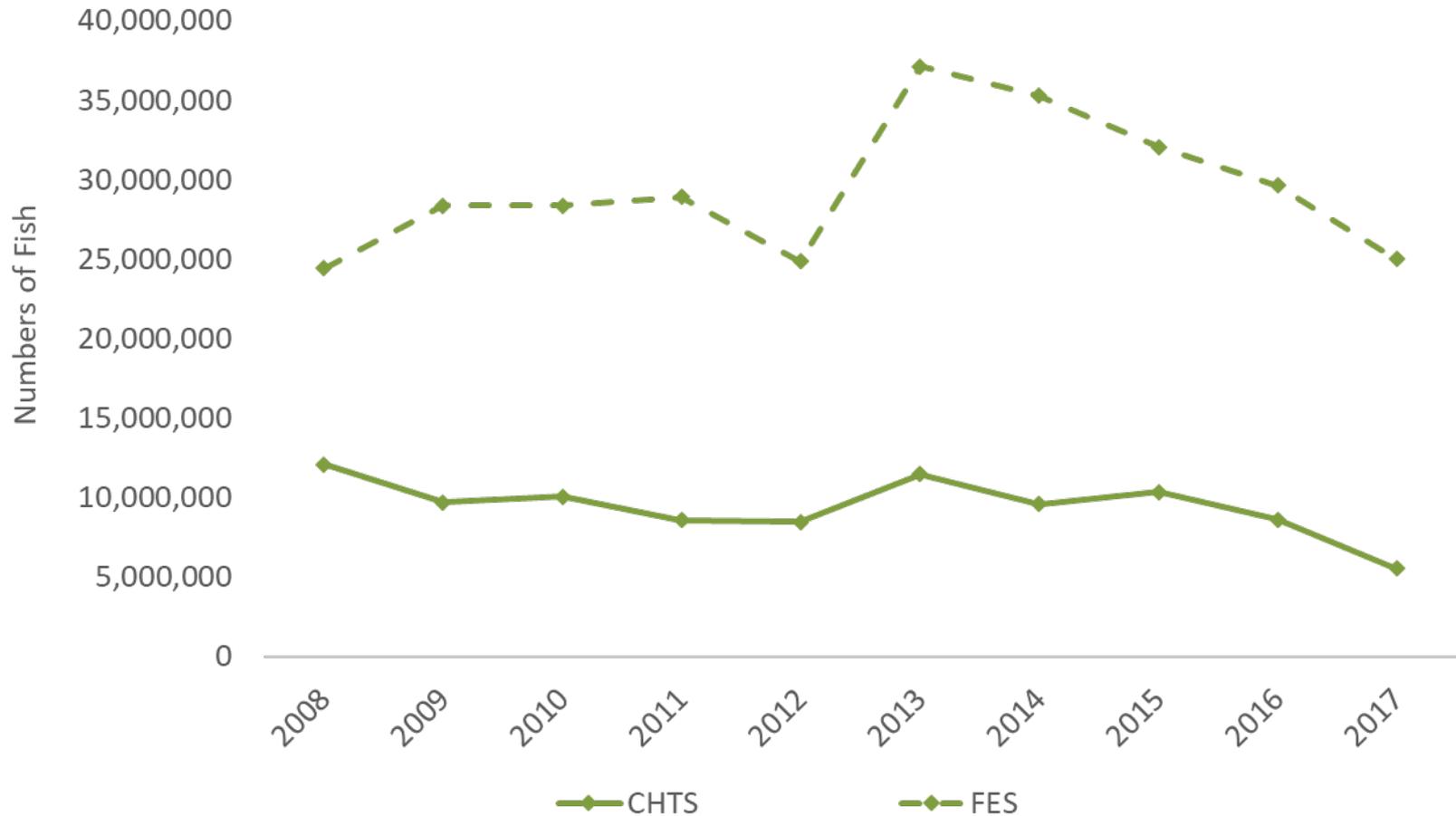
North Carolina Recreational Harvest (pounds – CHTS vs. FES)



Fishing Effort Survey (FES) estimates are 1.5 to 3 times higher



North Carolina Recreational Harvest (numbers – CHTS vs. FES)

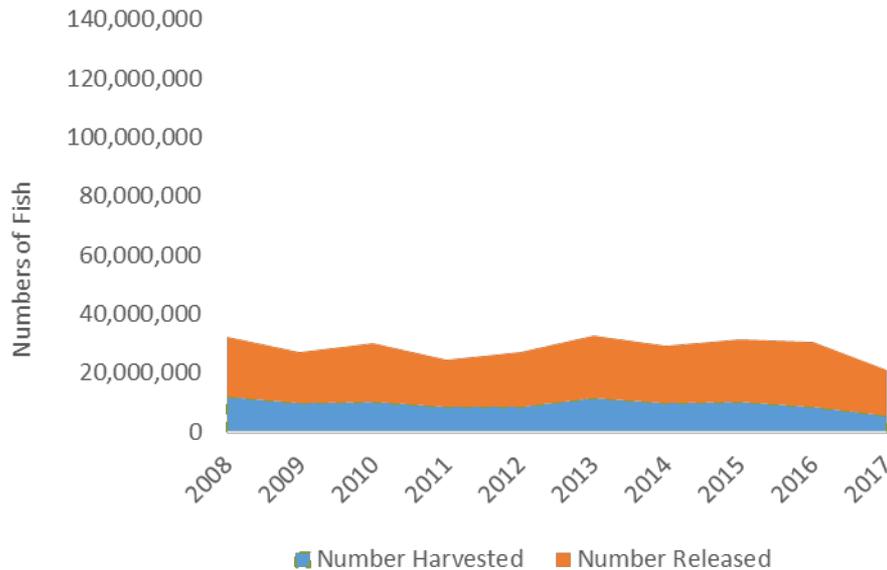


Fishing Effort Survey (FES) estimates are 2 to 4.5 times higher

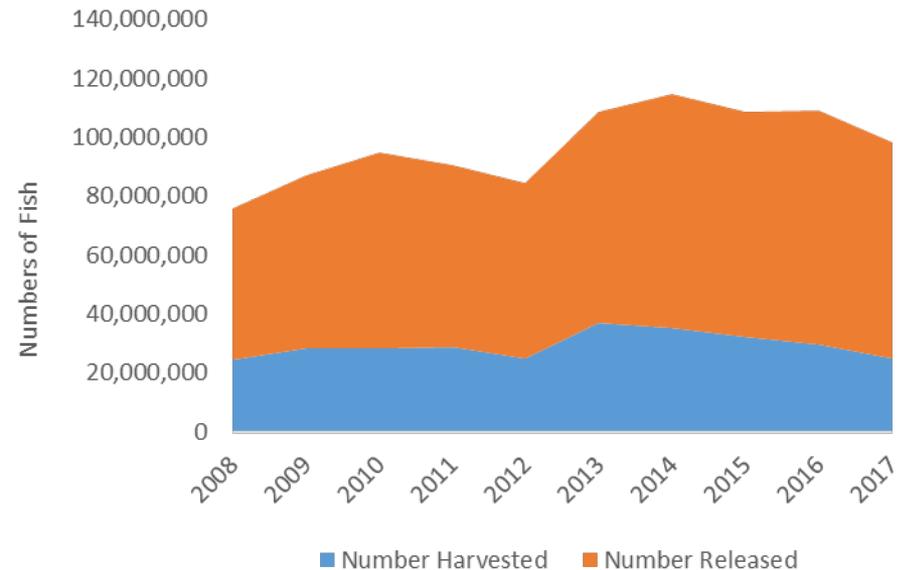


North Carolina Recreational Catch (harvest & releases)

Coastal Household Telephone Survey



Fishing Effort Survey

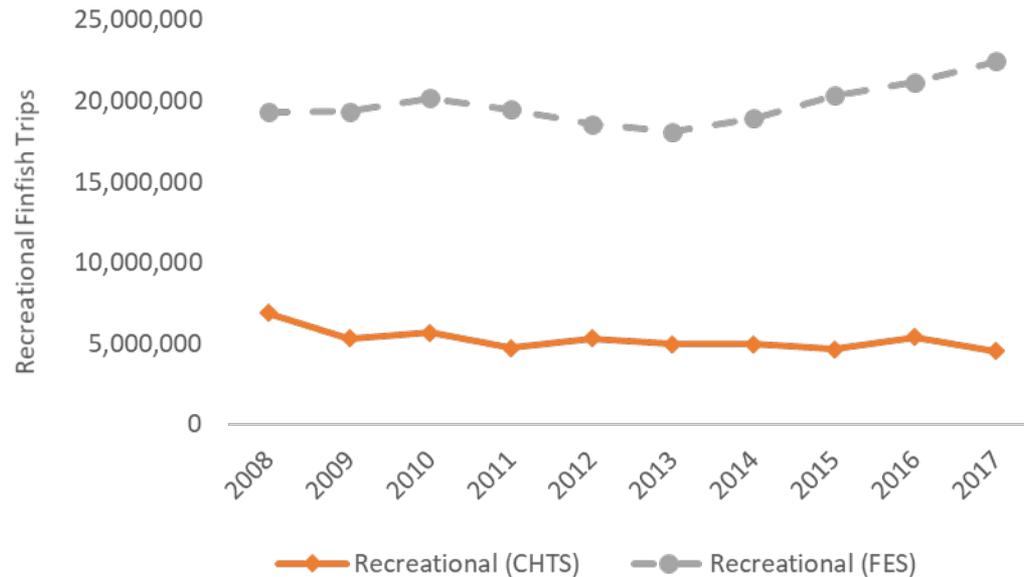
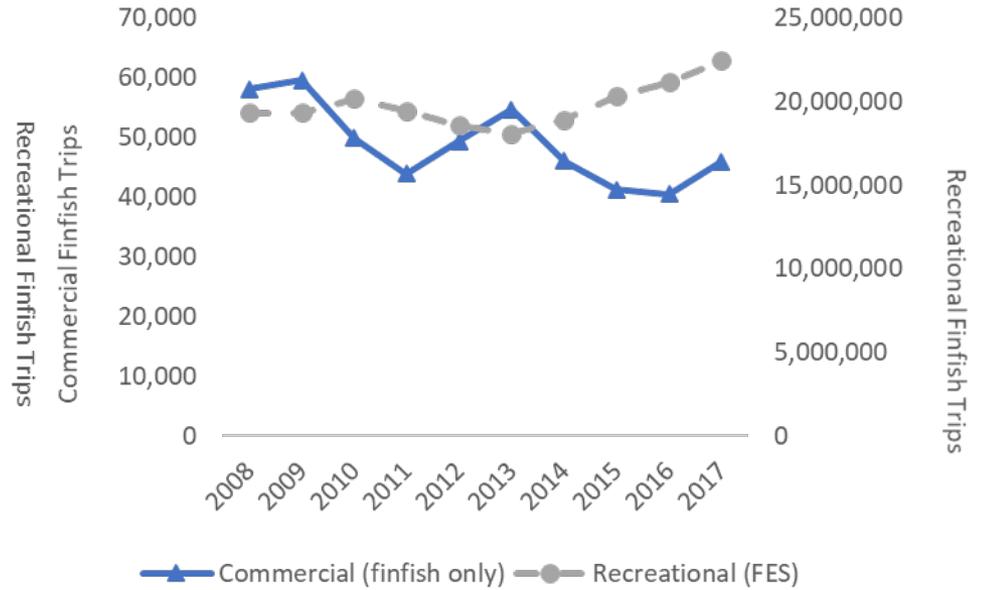
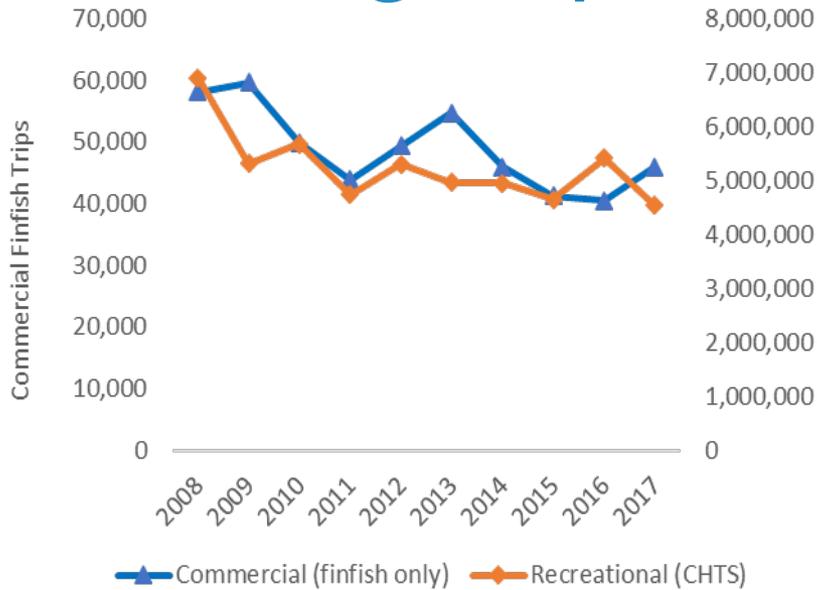


Fishing Effort Survey estimates of discards are 2.6 to 4.8 times higher

Total catch shifts from 20.9 million fish to 98.3 million fish



Fishing Trips





**2017 Total Marine
Recreational
Fisheries Harvest**

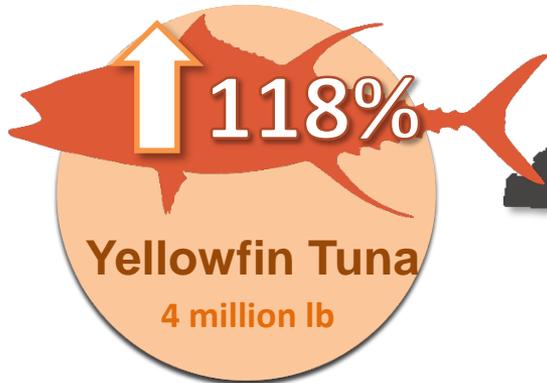
HARVEST
27.4
million pounds

-0.05 % from 5-year average*

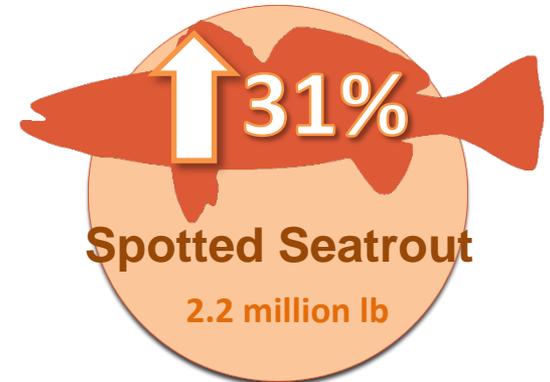
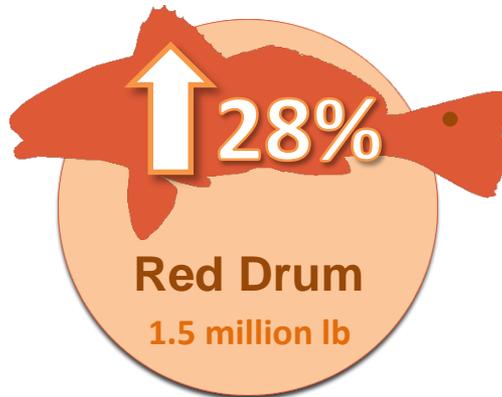
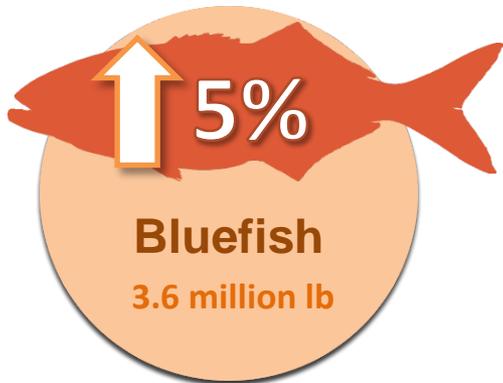
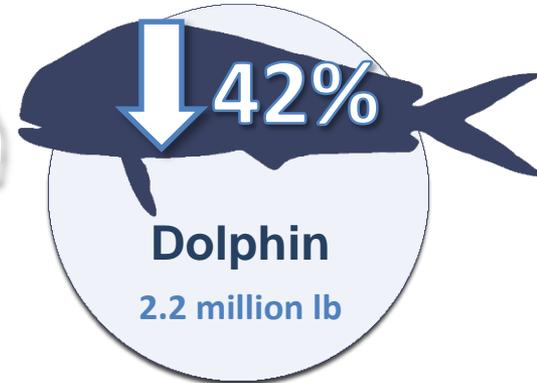
of FISH
24.9
million

- 21% from 5-year average*

INCREASES



DECREASES



**Based on FES; All percentage changes shown for 2017 from 5-year average (2012 to 2016)*



**2017 Total Marine
Recreational
Fisheries Harvest**

HARVEST
27.4
million pounds

-0.05 % from 5-year average*

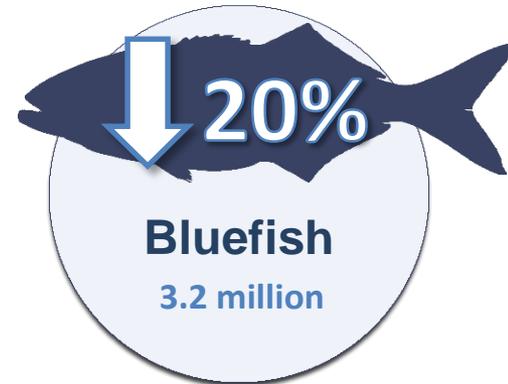
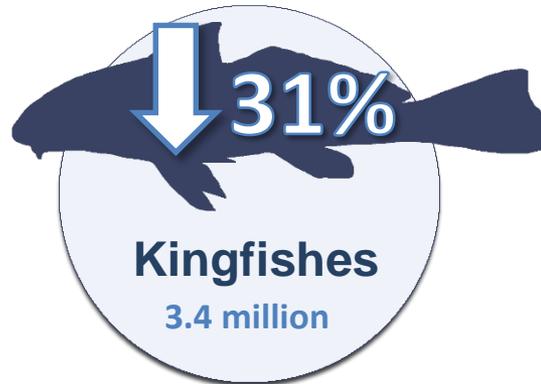
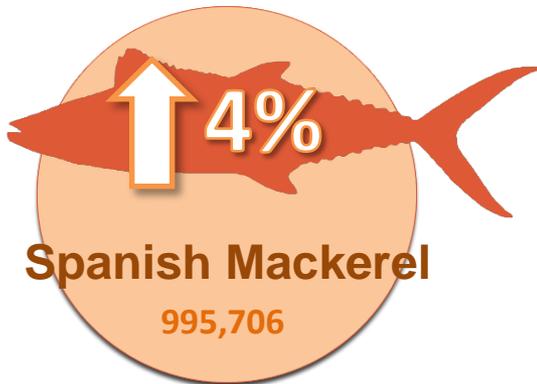
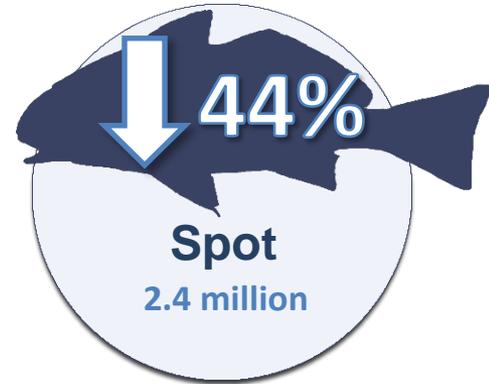
of FISH
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INCREASES

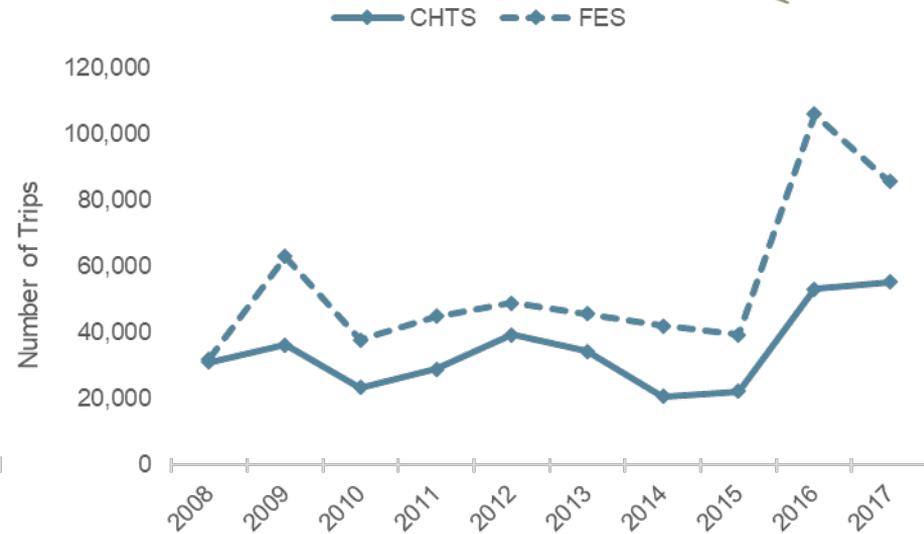
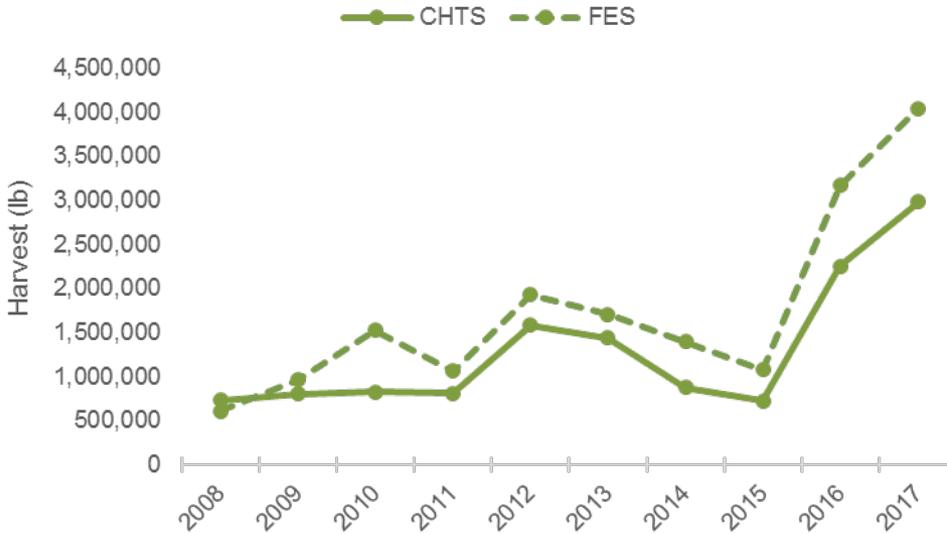
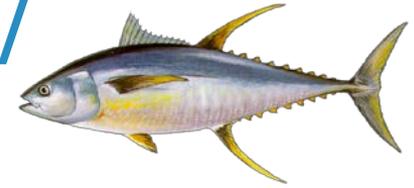


DECREASES

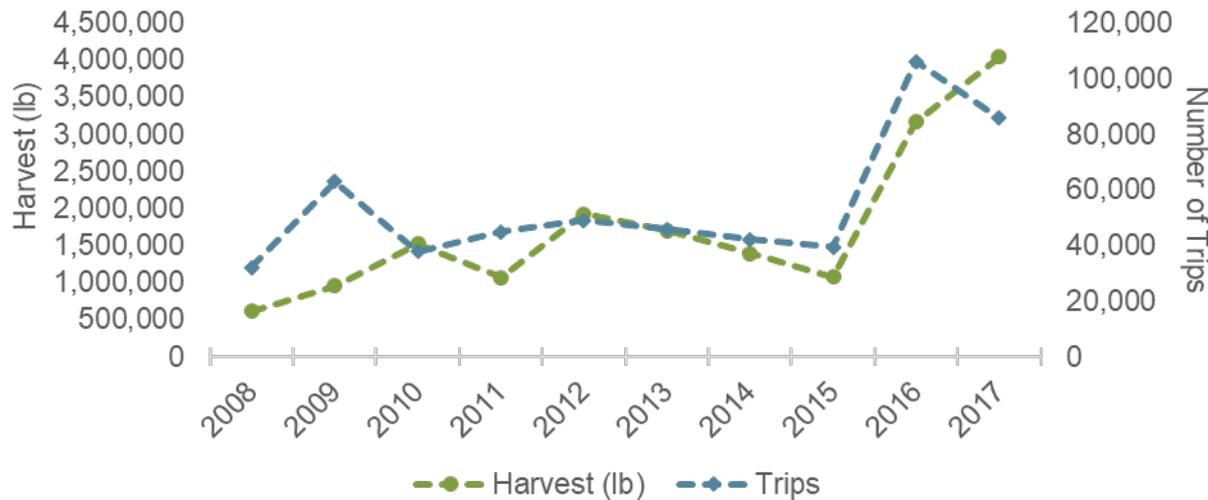


**Based on FES; All percentage changes shown for 2017 from 5-year average (2012 to 2016)*

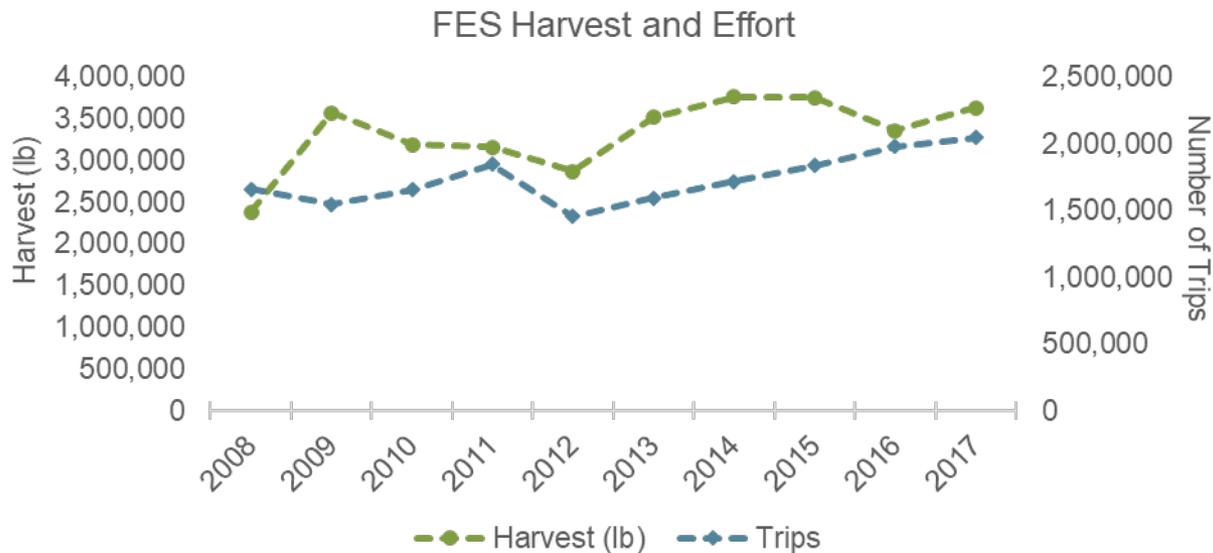
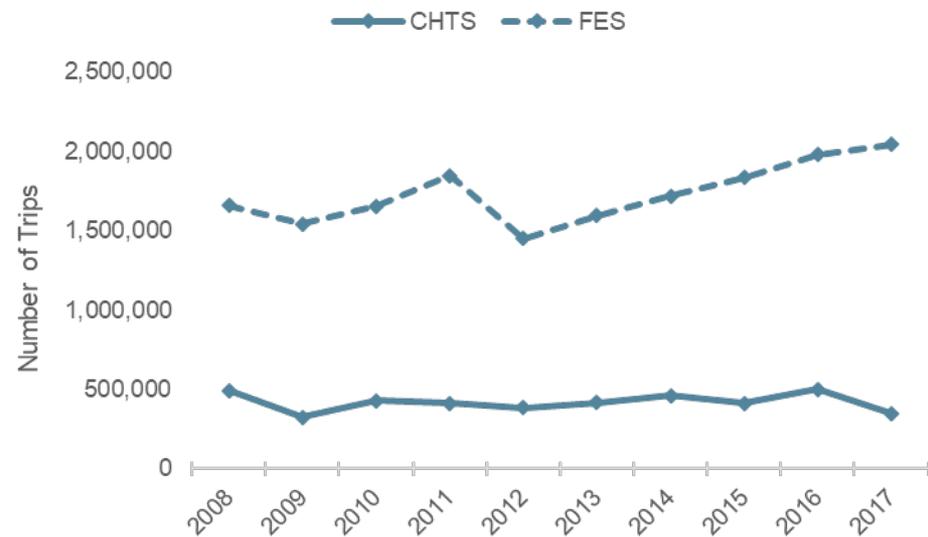
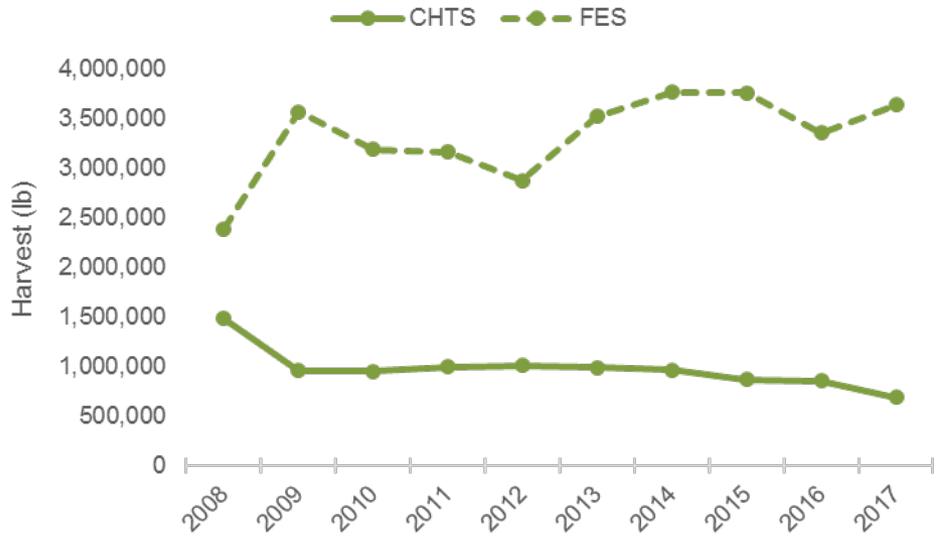
Top Five Species – Recreational Yellowfin Tuna



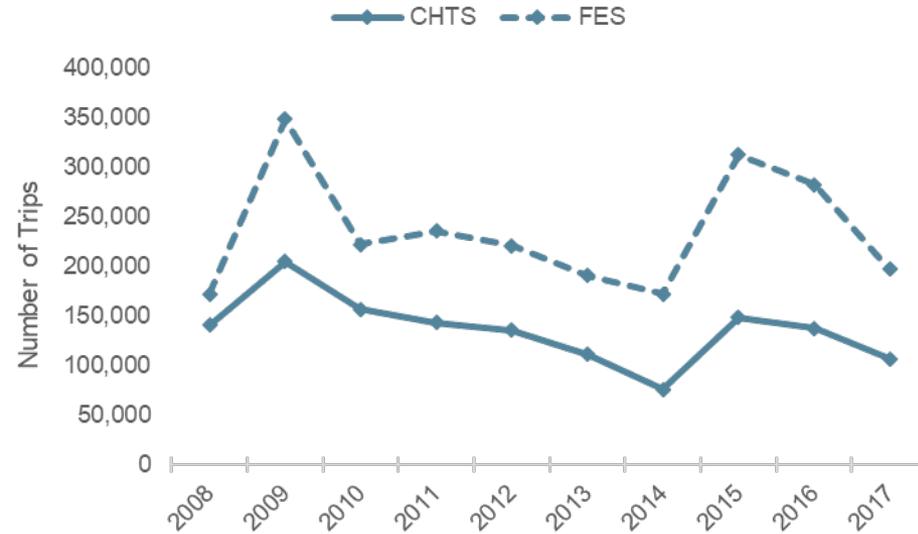
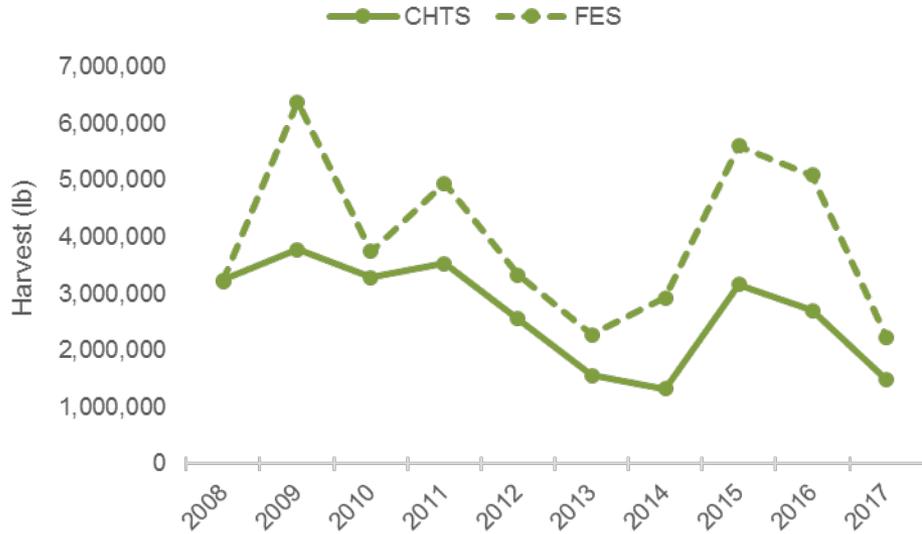
FES Harvest and Effort



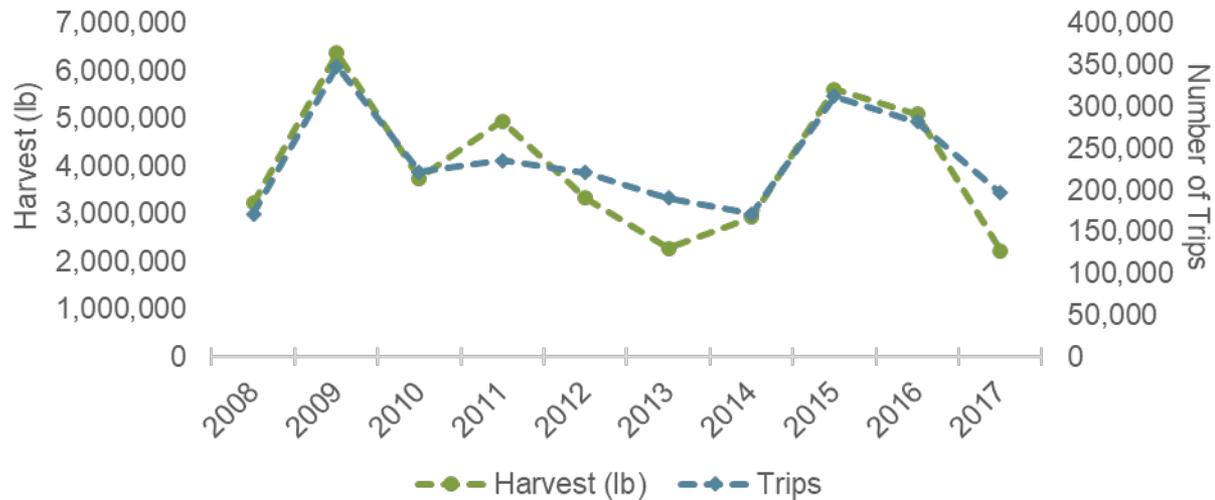
Top Five Species – Recreational Bluefish



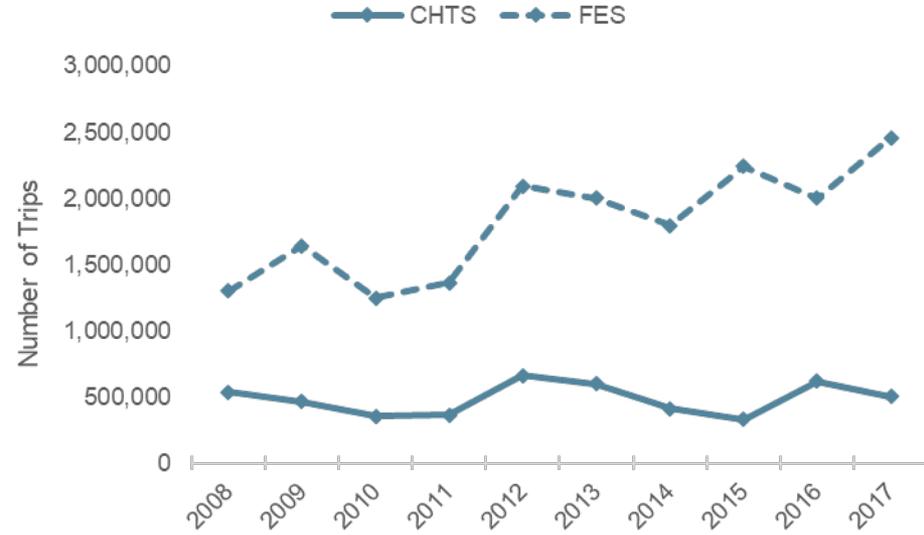
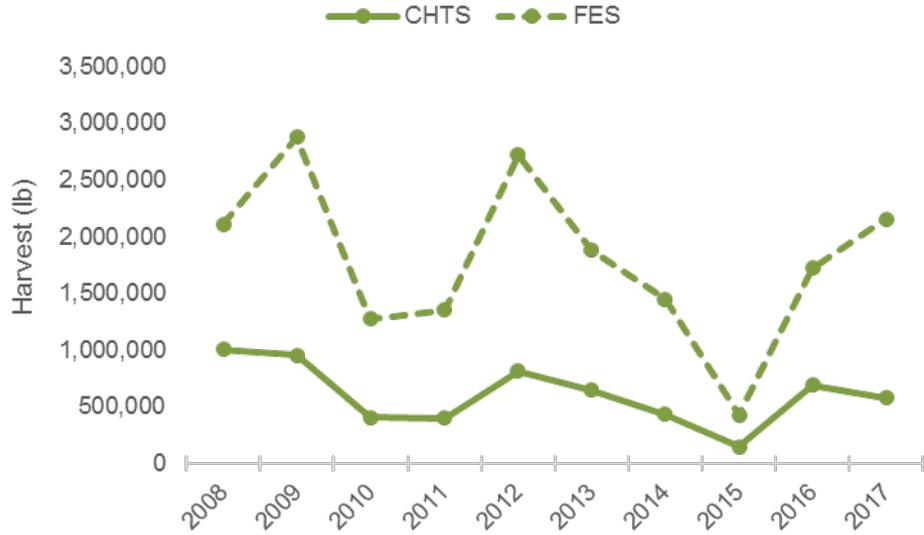
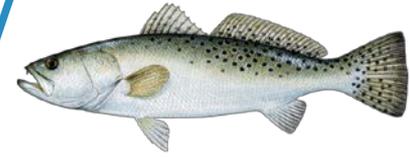
Top Five Species – Recreational Dolphin



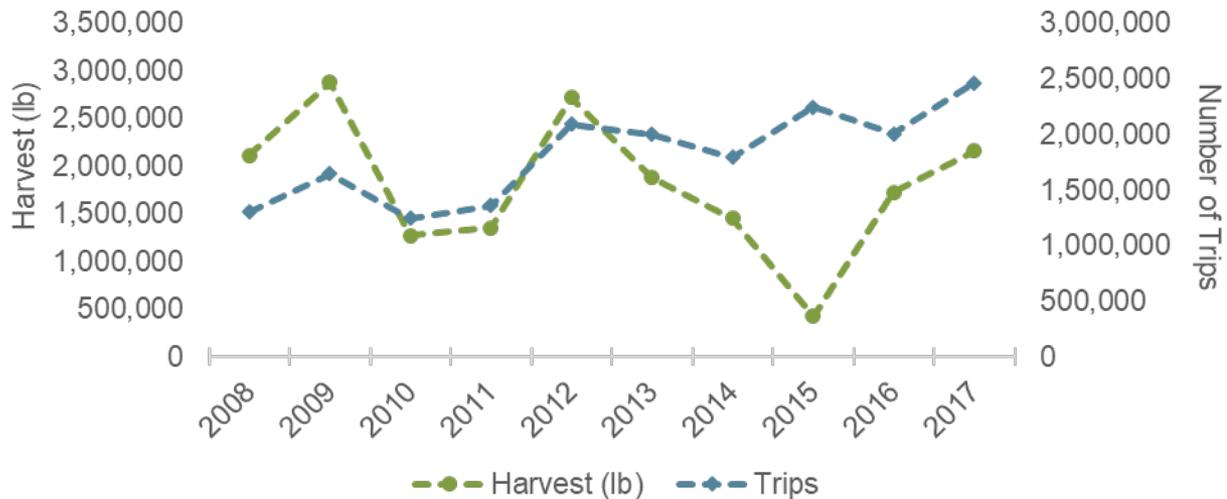
FES Harvest and Effort



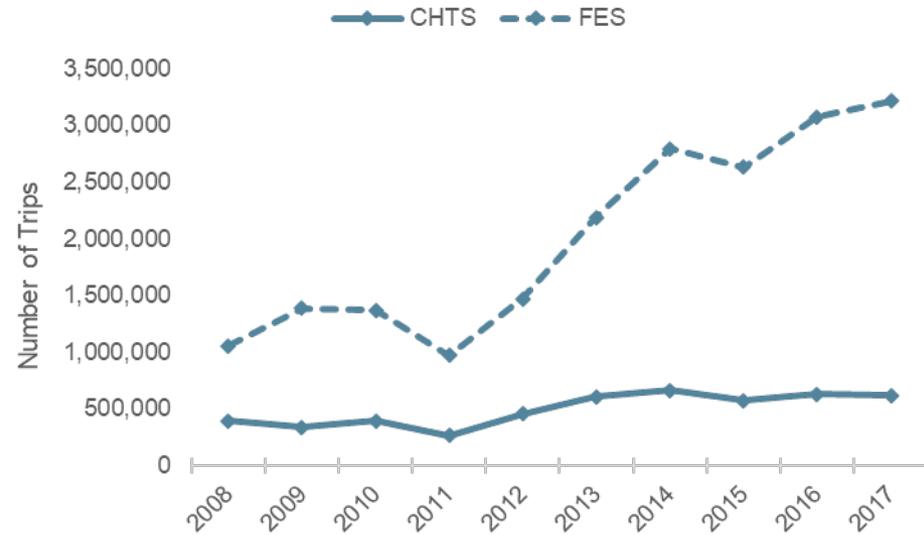
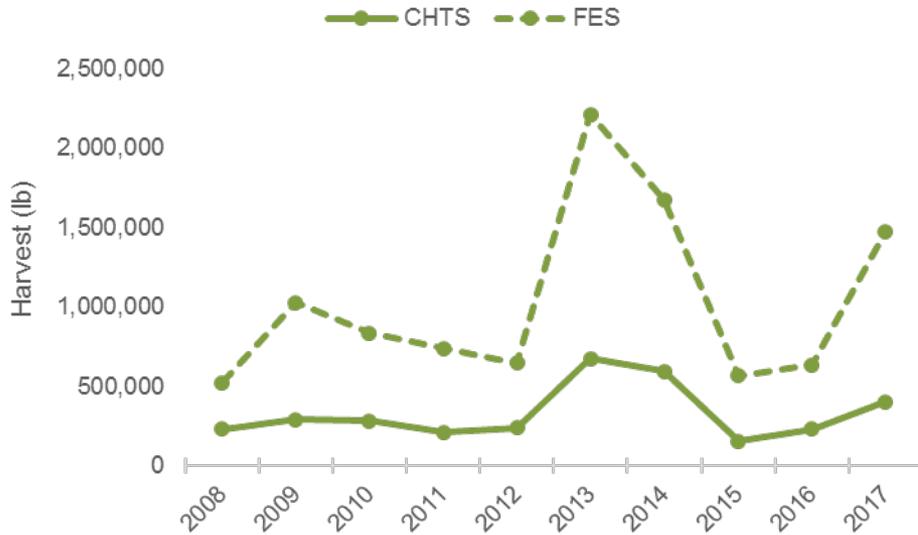
Top Five Species – Recreational Spotted Seatrout



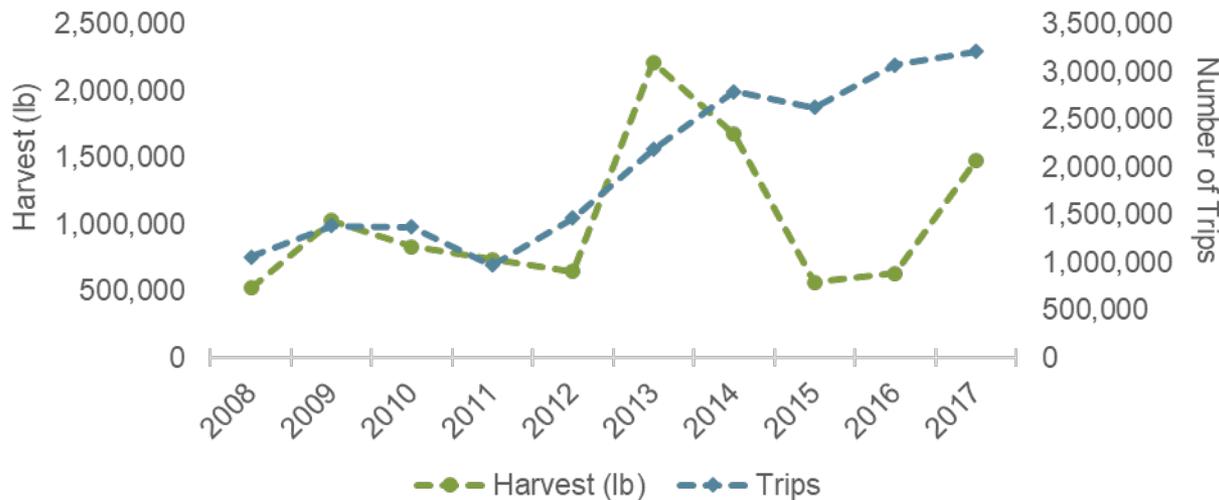
FES Harvest and Effort



Top Five Species – Recreational Red Drum



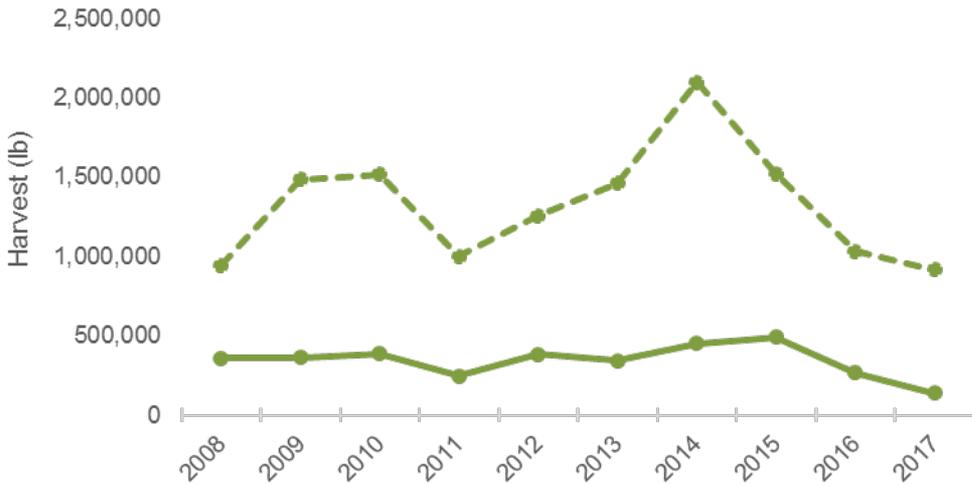
FES Harvest and Effort



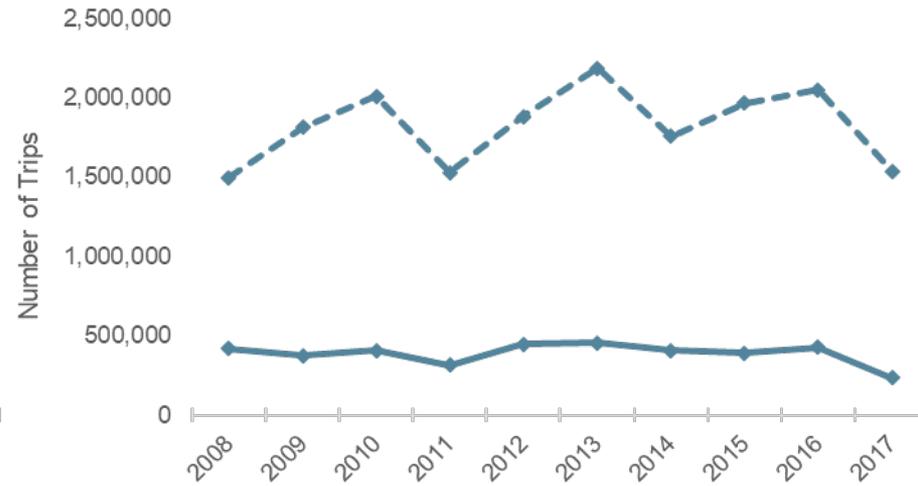
Top Five Species – Recreational Kingfishes



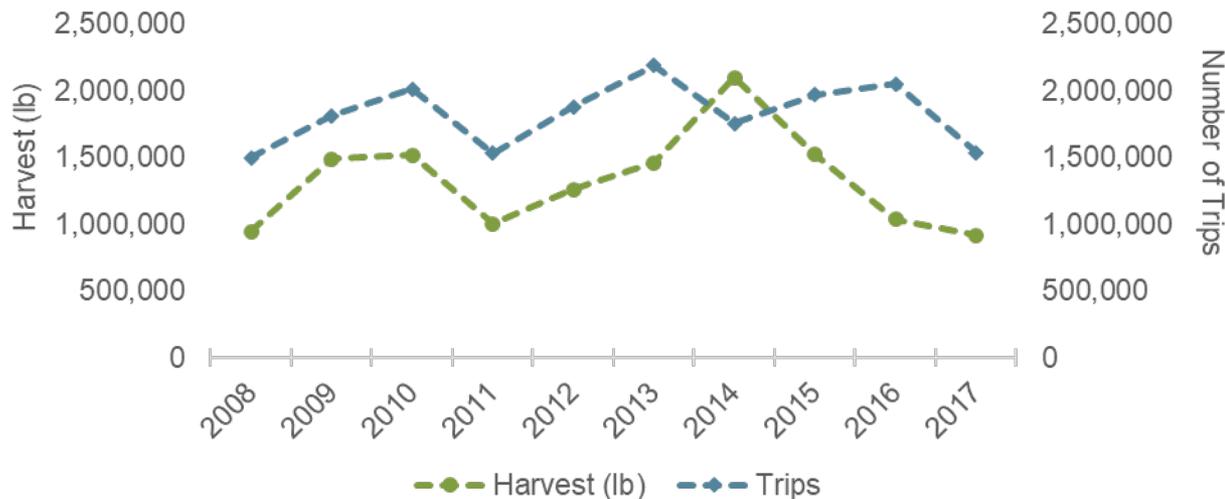
—●— CHTS -●- FES



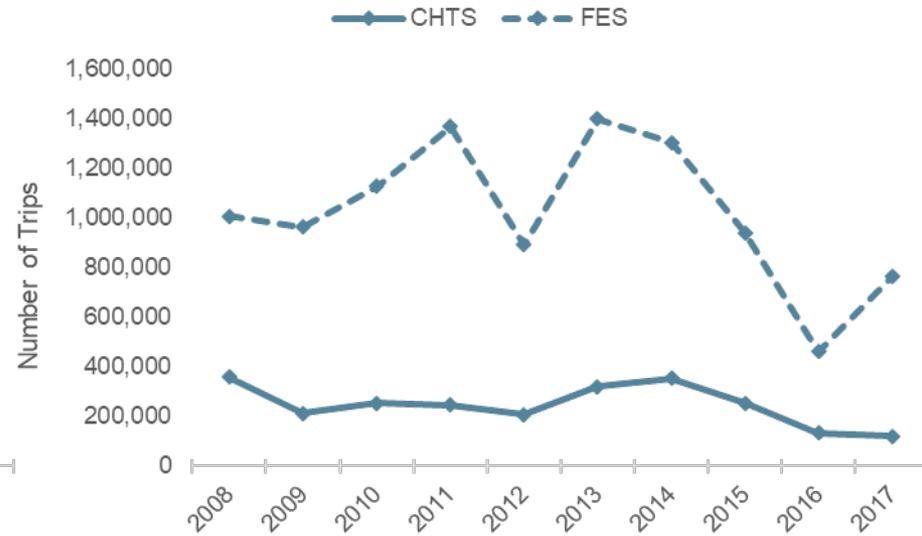
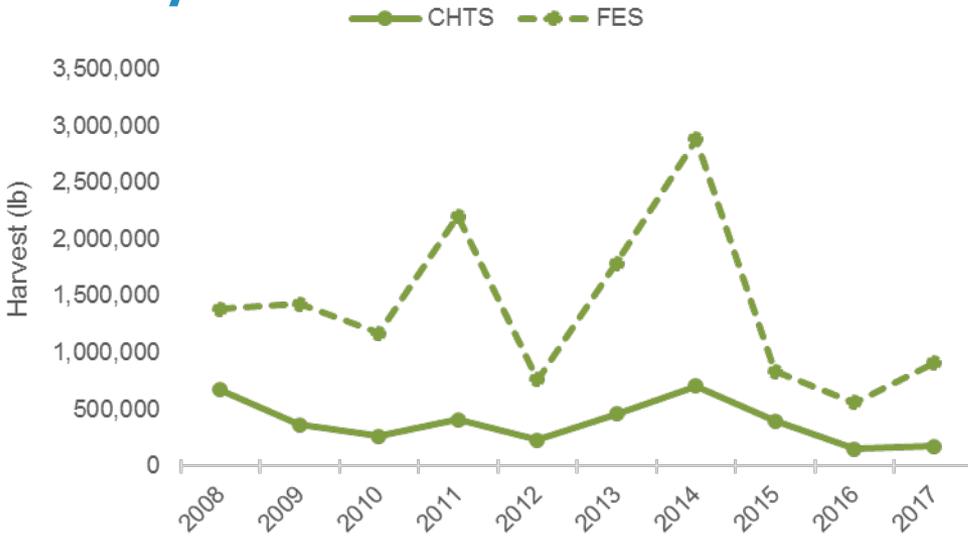
—◆— CHTS -◆- FES



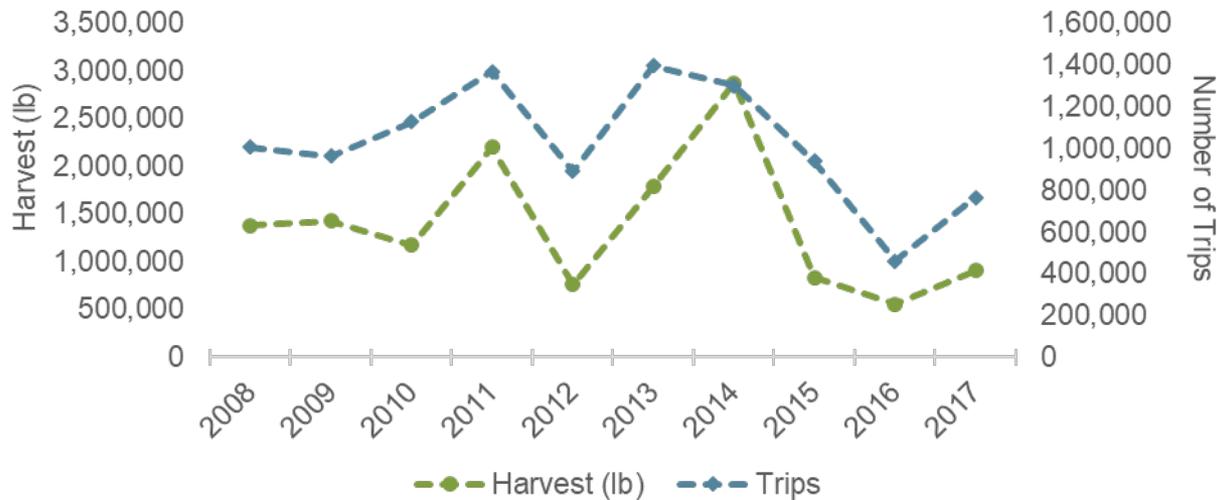
FES Harvest and Effort



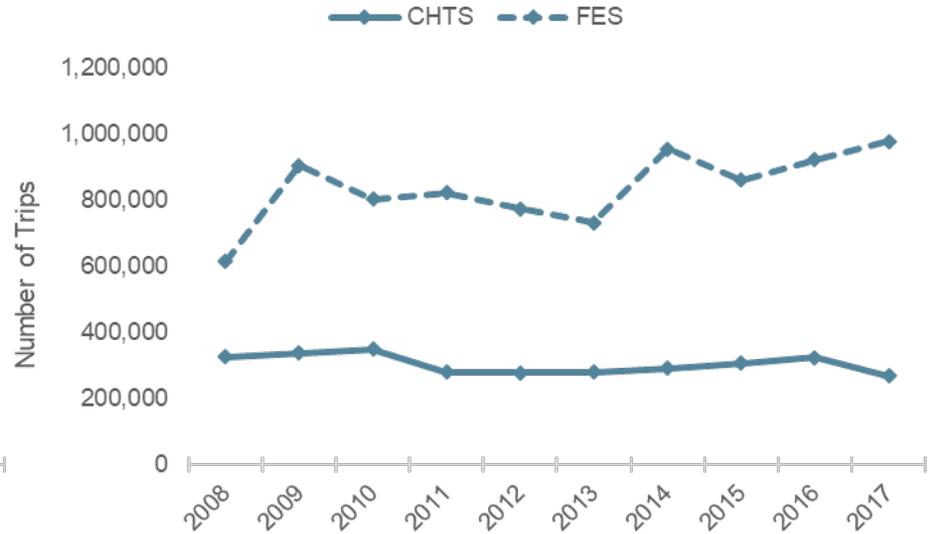
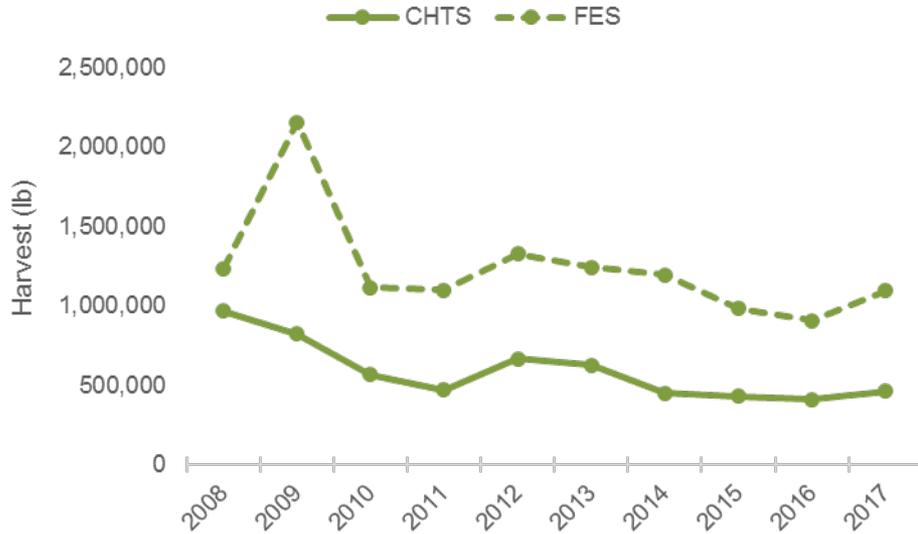
Top Five Species – Recreational Spot



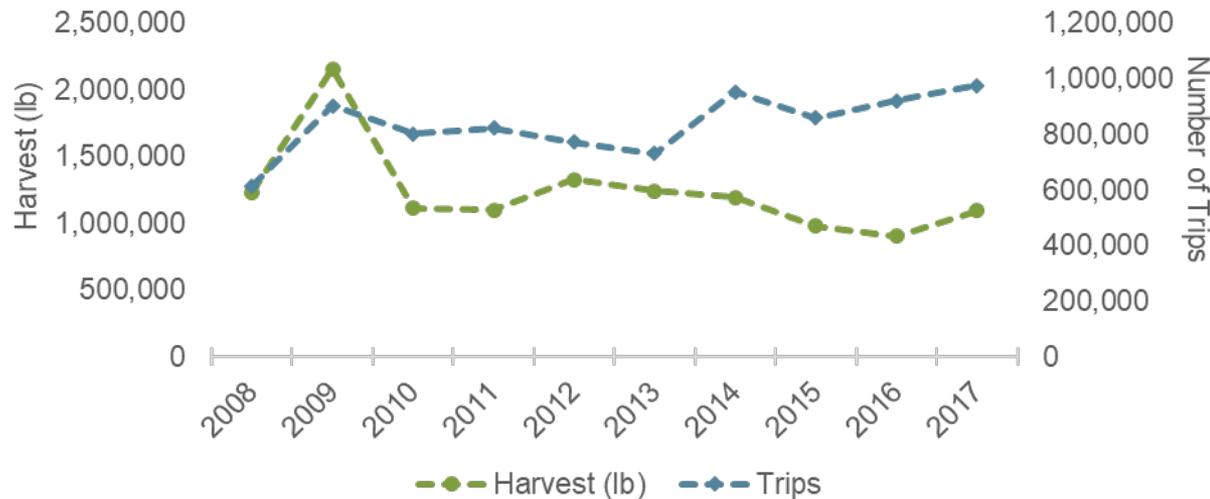
FES Harvest and Effort



Top Five Species – Recreational Spanish Mackerel

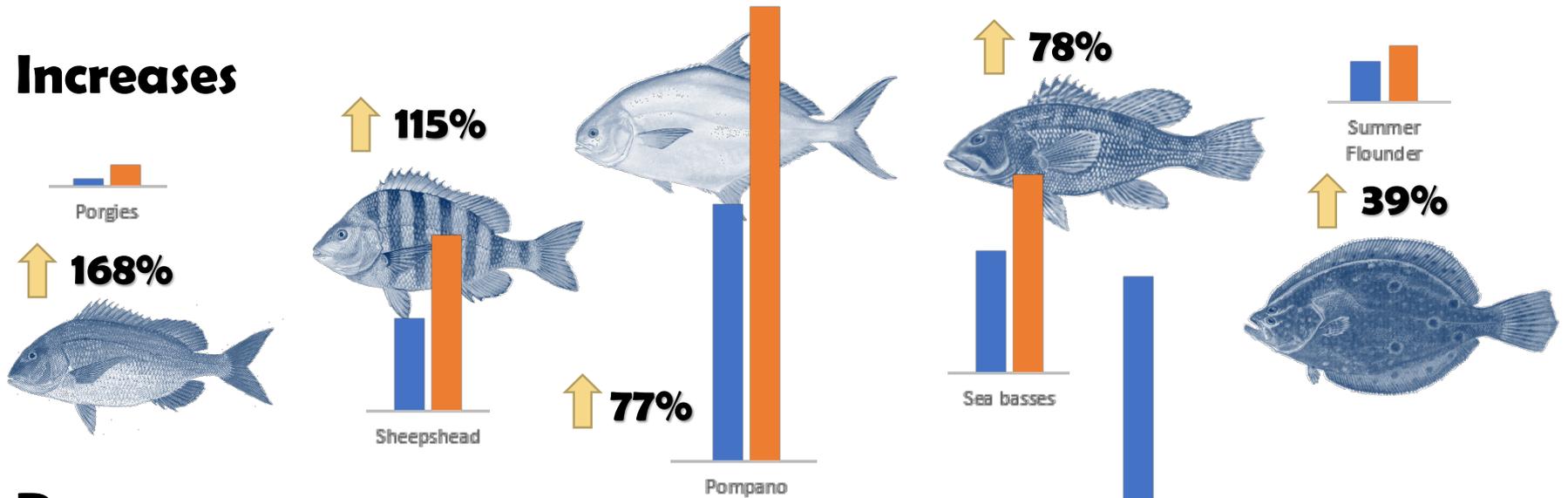


FES Harvest and Effort

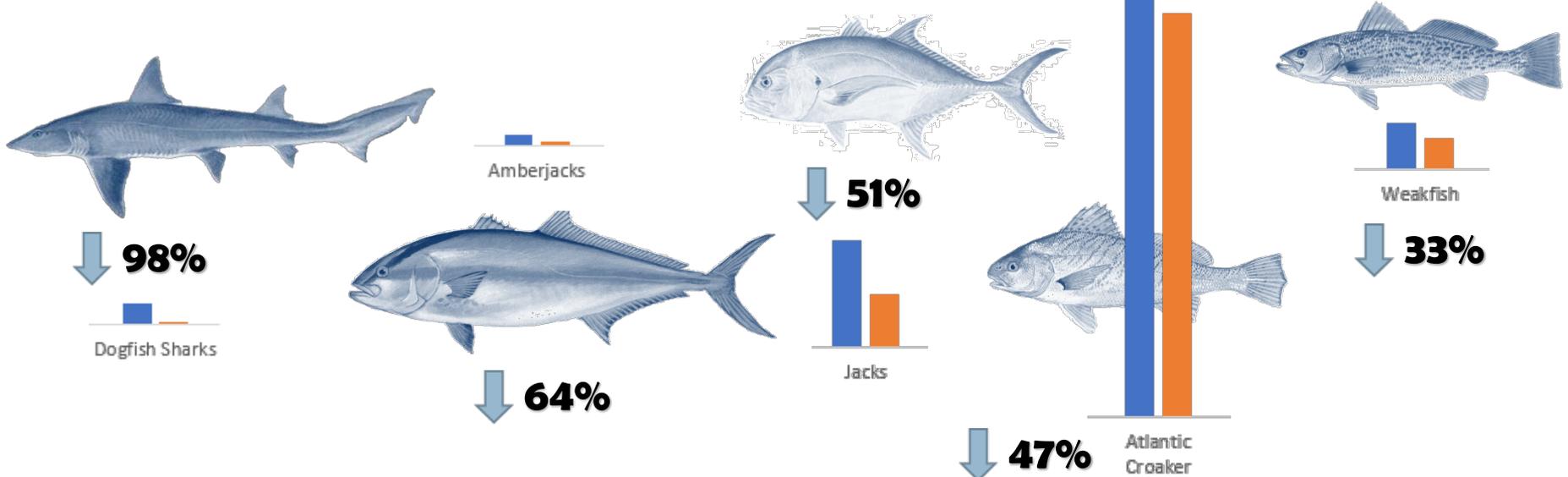


Other Notable Changes* – Recreational

Increases



Decreases



*Harvest in numbers; Percent change in numbers from 2016 to 2017

Species Leads

SPECIES	LEAD BIOLOGIST	SPECIES	LEAD BIOLOGIST
Shrimp	Chris.Stewart@ncdenr.gov	Tunas	Randy.Gregory@ncdenr.gov
Blue Crabs	Jason.Rock@ncdenr.gov	Dolphin	Tracey.Bauer@ncdenr.gov
Summer Flounder	Todd.vanMiddlesworth@ncdenr.gov	Spotted Seatrout	Tracey.Bauer@ncdenr.gov
Bluefish	Lisa.Hollensead@ncdenr.gov	Red Drum	Lee.Paramore@ncdenr.gov
Southern Flounder	Michael.Loeffler@ncdenr.gov	Kingfishes	Kevin.H.Brown@ncdenr.gov
Oysters	Joe.Facendola@ncdenr.gov	Spot	Dan.Zapf@ncdenr.gov
		Spanish Mackerel	Randy.Gregory@ncdenr.gov



Questions

