# LIMITED ACCESS GENERAL CATEGORY IFQ TRIP LIMIT CONSIDERATION DRAFT DISCUSSION DOCUMENT

At their December 2017 meeting, the Council moved to include 'consideration of increasing of General Category trip limits' as a 2018 work priority. This document describes the general management timeline of the limited access general category (LAGC IFQ) component, how the LAGC IFQ fishery operates, and fishery data to inform discussion relevant to this work priority.

**KEY ISSUES**:

- If the Council wishes to modify the LAGC IFQ trip limit, will the proposed increase(s) fundamentally change the nature of the IFQ fishery such that it is not consistent with the vision statement developed by the Council in A11?
    - Potential Approach: Identify a range of trip limits (ex: 1,200 lbs proposed in FW29 process; 1,000 lbs proposed in A15 process).
    - Once trip/possession limits are proposed, the Council can work with NOAA General Council to sort out what can be done in a FW vs. what would require an amendment.

## 1.1 SUMMARY OF LAGC MANAGEMENT

### 1.1.1 Amendment 4 (1994)

The open access general category permit was established through Amendment 4 to the Scallop FMP (1994) as part of an overall effort to reduce fishing mortality and eliminate overfishing. This open access fishery was established to allow vessels fishing in non-scallop fisheries to catch scallops as incidental catch, and to allow a small-scale scallop fishery to continue outside of the limited access effort control programs that applied to the large-scale scallop fishery. There were no qualification criteria for open access general category permits, meaning any vessel could apply. Vessels that were issued a general category permit could land no more than 400 lbs of shucked scallops per trip. 1,992 general category permits were issued in 1994, of which, 181 landed scallops that year.

### 1.1.2 Amendment 11 (2008)

Amendment 11 (2008) established the LAGC IFQ program in order to control fleet capacity of the open access general category component. Vessels that met the qualifying criteria were issued an annual allocation in pounds, which was a percentage of the overall LAGC IFQ allocation (5.5% of the annual projected landings by the scallop fishery). Individual allocations varied based on the 'contribution factor' of a given vessel (i.e. if you fished longer and landed more during the qualification period, you received a higher allocation). All LAGC IFQ participants were subject to a possession limit of 400 lbs (same as Amendment 4). The Council vision of the general category fishery after implementation of Amendment 11 was "a fleet made up of relatively small vessels, with possession limits to maintain the historical character of this fleet and provide opportunities to various participants including vessels from smaller coastal communities."

During the development of Amendment 11, the Scallop Committee recommended an alternative that changed the 400 lb. trip limit to a 400 lb. per 24-hour day restriction, with cap of no more than 5 days to be landed at once (2,000 lbs maximum trip at a time). This alternative was rejected because the Council was uncomfortable with the potential unintended consequences, including: 1) possibly changing nature of the 'dayboat fleet', and 2) an increase in price and demand could incentivize limited access vessels to fish under LAGC rules.

### 1.1.3 Amendment 15 (2011)

Amendment 15 (2011) implemented changes which brought the scallop fishery into compliance with the re-authorized M-S Act and made the fishery more effective overall. One of the outcomes of Amendment 15 was an increase in the LAGC IFQ trip limit from 400 lbs to 600 lbs following concerns from industry members that the previous possession limit was not economically feasible due to increased operating costs. The trip limit increase was not expected to change the nature of the "dayboat" fishery and would keep the LAGC IFQ component consistent with the vision statement laid out by the Council in Amendment 11.

The Council's initial preferred alternative was to increase the trip limit up to 1,000 lbs but was changed to 600 lbs following public comment of the Amendment 15 proposed rule period. The Council and members of the public expressed concern that raising the trip limit to 1,000 lbs would compromise the small-boat nature of the fishery and would lead to the LAGC fleet resembling the limited access fleet.

The Council also considered an alternative which would eliminate the LAGC IFQ possession limit. This alternative was included in Amendment 15 at the of request of some industry members who felt that the 400 pounds possession limit was not economically feasible due to increased costs. Some industry members felt that moving to an IFQ and operating under hard overall quotas negated the need for possession limits.

Other adjustments to LAGC management in Amendment 15 included:

- Allow LAGC IFQ permit holders to carry forward up to 15% of quota to the proceeding fishing year.
- The maximum quota per vessel restriction was changed from 2% to 2.5% of the total LAGC allocation.
- Allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation to another permit holder while retaining the permit itself.

## 1.2 FUNCTION OF LAGC FISHERY

### 1.2.1 LAGC IFQ allocation

The LAGC IFQ component is allocated 5.5% of annual projected catch (APL) through the annual specification setting process (5% to vessels with only LAGC IFQ permit; 0.5% to limited access vessels with LAGC IFQ permit). LAGC IFQ permit holders may lease or permanently transfer quota to other LAGC IFQ permit holders. Combination vessels (limited access vessels that also hold an LAGC IFQ permit) are prohibited from leasing or transferring quota to other permit holders. LAGC IFQ vessels are allowed to rollover up to 15% of their quota to the

following fishing year. Table 1 displays the annual LAGC IFQ allocation, LAGC IFQ landings, and unfished quota carried over into the following fishing year from FY2011-FY2016.

**Table 1. Annual LAGC IFQ allocation, LAGC IFQ landings, and unfished quota carried over into the following fishing year (source: year-end reports of the scallop fishery, GARFO).**

| FY | Allocated | Landed | LAGC IFQ carryover (lbs) | percent of allocation carried over |
|---|---|---|---|---|
| 2011 | 2,910,800 | 2,773,744 | 193,622 | 7% |
| 2012* | 3,095,450 | N/A | N/A | N/A |
| 2013 | 2,227,142 | 2,261,389 | 301,354 | 14% |
| 2014 | 2,202,859 | 1,894,232 | 209,897 | 10% |
| 2015 | 2,700,665 | 2,133,306 | 243,041 | 9% |
| 2016 | 4,067,529 | 3,135,800 | 356,536 | 9% |
| *FY2012 report did not include LAGC IFQ landings or carryover pounds. | | | | |

### 1.2.2 Quota accumulation restrictions

An individual LAGC vessel may not accumulate more than 2.5% of quota allocated to the LAGC fishery. Ownership entities are prohibited from having ownership interest in vessels that are collectively allocated more than 5% of the LAGC fleet allocation. An example: the quota caps could be met by one person who owns two LAGC IFQ vessels; if each vessel held the 2.5% maximum quota allowed per individual vessel, the owner would be in compliance with the 5% maximum ownership cap. Note that quota cap restrictions do not include quota that is carried over from the previous fishing year. Voluntary sectors are allowed to pool quota and are prohibited from holding 20% or more of quota allocated to the entire fleet; it is worth noting that there are currently no voluntary sectors established in the LAGC IFQ program. Sector participants are subject to the same quota accumulation restrictions for individual vessels and ownership entities mentioned previously. Table 2 displays LAGC IFQ allocations and quota accumulation caps for individual vessels, ownership entities, and voluntary sectors, from FY2011-FY2018.

**Table 2. Annual LAGC IFQ allocation (excluding LA vessels with LAGC permit) from FY2011-FY2018. The right columns show quota accumulation caps for individual vessels, ownership entities, and sectors for each year.**

| | | quota cap restriction | | |
|---|---|---|---|---|
| FY | LAGC sub-ACL (5% of APL/ACL) | *individual vessel* (2.5% of sub-ACL) | *ownership entity* (5% of sub-ACL) | *IFQ scallop sector* (20% of sub-ACL) |
| 2011 | 2,910,102 | 72,753 | 145,505 | 582,020 |
| 2012 | 3,095,450 | 77,386 | 154,773 | 619,090 |
| 2013 | 2,227,142 | 55,679 | 111,357 | 445,428 |
| 2014 | 2,202,859 | 55,071 | 110,143 | 440,572 |
| 2015 | 2,700,663 | 67,517 | 135,033 | 540,133 |
| 2016 | 4,067,529 | 101,688 | 203,376 | 813,506 |
| 2017 | 2,261,943 | 56,549 | 113,097 | 452,389 |
| 2018 | 2,805,500 | 70,138 | 140,275 | 561,100 |

**Table 3. Expected harvest per vessel in FY2018 for full-time and part-time limited access vessels relative to the maximum quota an individual LAGC IFQ vessel could hold (2.5% of LAGC IFQ allocation).**

| LA FT | | | LA PT | | | LAGC IFQ | | | |
|---|---|---|---|---|---|---|---|---|---|
| AA | OPEN (DAS * projected LPUE) | TOTAL | AA | OPEN (DAS * projected LPUE) | TOTAL | 2.5% of LAGC IFQ allocation (vessel quota cap) | 2% of LAGC IFQ allocation | 1.5% of LAGC IFQ allocation | 1% of LAGC IFQ allocation |
| 108,000 | 61,944 | 169,944 | 43,200 | 24,778 | 67,978 | 70,138 | 56,110 | 42,083 | 28,055 |

### 1.2.3 Operation of LAGC fishery

Quota may be fished in open areas or available access areas, at a possession limit of 600 lbs per trip. Open trips must be fished within scallop dredge exemption areas (i.e. Gulf of Maine, Great South Channel, Southern New England, and Mid-Atlantic; see Figure 1). GARFO is currently considering the expansion or removal of scallop dredge exemption areas.

Unlike the LA component, LAGC access area trips are not allocated at the individual vessel level, meaning LAGC vessels may elect to fish in access areas but are not required to do so. A fixed number of access area trips are allocated to the LAGC fishery each year; when in-season monitoring efforts estimate that the allocated number of trips to an access area have been taken, that access area closes to all LAGC vessels for the remainder of the fishing year.

### 1.2.4 Reporting requirements

LAGC vessels are required to have an active VMS unit and must declare all vessel activity including fishing trips and transiting.

LAGC vessels participate in the industry-funded scallop observer program and are required to notify the program of intentions to make a trip the following week. For FY 2017, vessels that are selected to carry an observer onboard can catch an additional 200 lbs per trip (total possession limit of 800 lbs) to pay for the cost of having an observer onboard. The 200 lb. compensation rate applies to all declared LAGC trips carrying an observer, regardless of trip length.

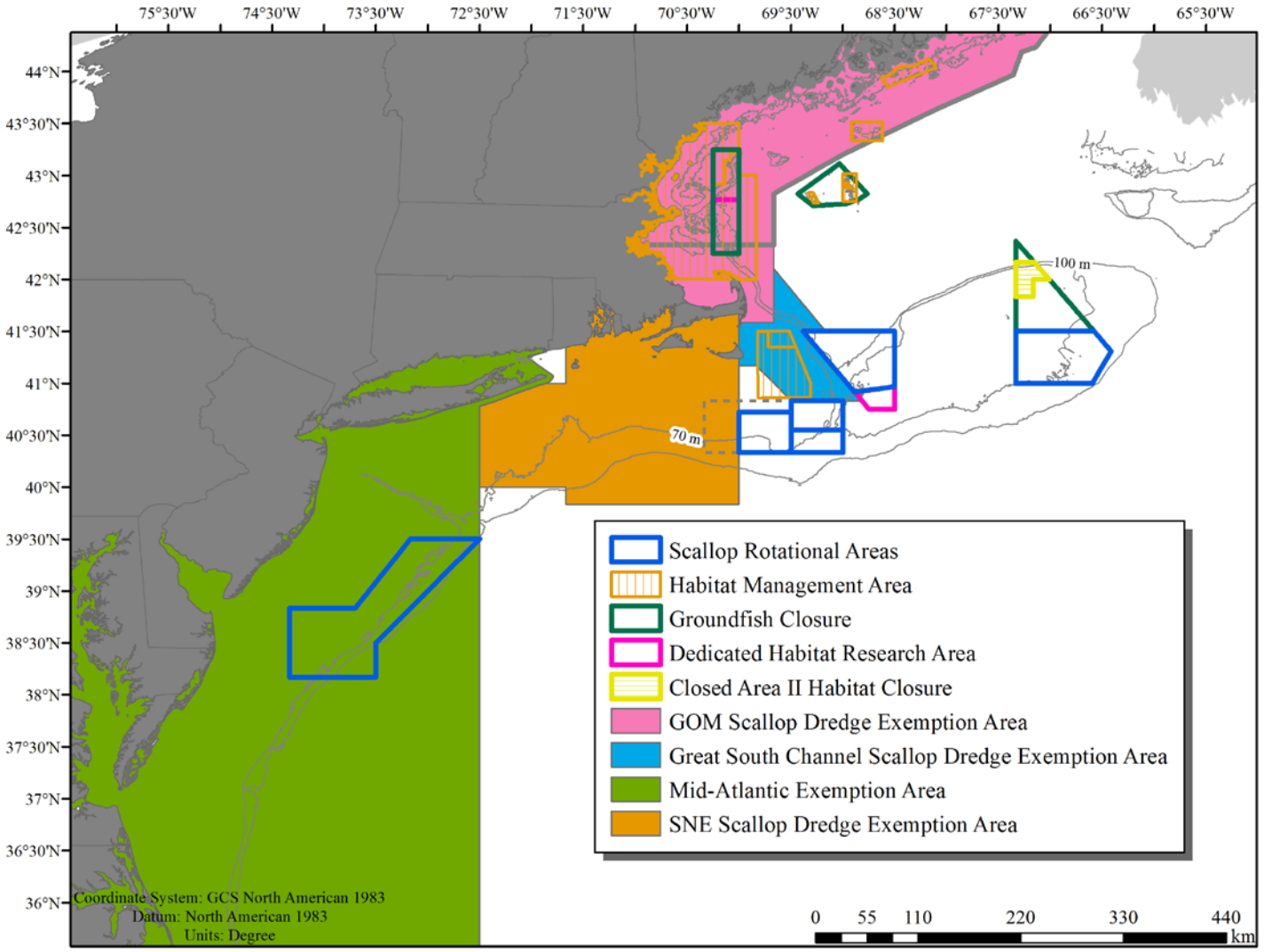
LAGC vessels must submit daily catch reports which log the total pounds of scallop meats kept and the total pounds of other fish kept. Pre-landing notifications, which specify the amount of scallops that will be landed and where the vessel will be offloading, must be submitted 6 hours before landing, or, if less than 6 hours from port, immediately after fishing activity ends.

### 1.2.5 RSA compensation fishing

LAGC vessels participating in the Scallop Research Set-Aside (RSA) are exempt from the 600-pound possession limit when compensation fishing. LAGC vessels are permitted to fish RSA compensation pounds and commercial quota on the same trip; however, only RSA pounds are exempt from the possession limit on combination trips, meaning any commercial quota fished on a combination trip may not exceed the 600-pound possession limit. Observers are not assigned to vessels conducting any form of RSA compensation fishing, including combination RSA/commercial trips. The reason for not assigning observer coverage to RSA/commercial combination trips is because the amount of time spent fishing under each quota is unclear, meaning vessels would only be compensated for the time spent commercial fishing but the observer provider would charge the vessel for the entire time the observer is at sea.

RSA allocations are not specific to permit type so an LA/LAGC IFQ combination vessel can declare a trip in either fishery to harvest compensation pounds.

**Figure 1. Scallop dredge exemption areas in relation to scallop rotational management areas, habitat management areas, dedicated habitat research areas, groundfish mortality closures, and habitat closures.**



## 1.3 FISHERY TRENDS

Analysis presented in the following sections intends to describe recent trends in the LAGC IFQ fishery and inform discussion around modifying the LAGC possession limit. The analysis sections incorporated data from two sources:

1) GARFO's data management and imputation system (DMIS) was used to pool VMS, VTR, and dealer reports at the trip level for all declared LAGC IFQ scallop trips from FY2010-FY2017. Trip level data included reports from LAGC IFQ vessels only (fishery data from LA/LAGC IFQ combination vessels were not included). Note that FY2017 data is reported through May 30th, 2017.
2) Pooled observer data from standard observer trips on LAGC IFQ and LA vessels between FY2010 and FY2017.

### 1.3.1 Annual trends at vessel level

Though the allocation to the LAGC IFQ fleet has been variable since FY2012, fleetwide landings have generally followed the same pattern as allocations (Table 4). Landings by LAGC vessels have ranged from 86-99% of what was allocated between FY2012 and FY2016. As shown in Figure 2, pounds landed per LAGC trip have also remained relatively consistent over time period and consistent with the timing of management measures which changed the possession limit. For example, the transition of the possession limit from 400 lbs to 600 lbs was evident in the shift in mostly 400 lb. trips in FY2010 to mostly 600 lbs in FY2012. In recent years (i.e. FY2012 and on) the majority of LAGC trips reported landings in the 600 lb. range. While the majority of trips have been in the 600 lb. range recently, the LAGC fishery has landed an array of trips at each level throughout the time series.

**Table 4. Annual LAGC IFQ allocation, landings, and the percent of allocated pounds that were landed from FY2012-FY2017.**

| FY | LAGC sub-ACL | LAGC landings | % of allocation landed |
|---|---|---|---|
| 2012 | 3,095,450 | 2,755,566 | 89% |
| 2013 | 2,227,142 | 2,212,446 | 99% |
| 2014 | 2,202,859 | 2,039,714 | 93% |
| 2015 | 2,700,663 | 2,324,577 | 86% |
| 2016 | 4,067,529 | 3,518,787 | 87% |
| *2017 | 2,261,943 | **2,574,968 | 114% |
| 2018 | 2,805,500 | N/A | N/A |

*includes data reported through 24-Jan-2018
** does not include roughly 400,000 pounds of carryover from FY2016.

**Figure 2. The number of LAGC IFQ trips binned by pounds landed (bin size = 100 lbs) from FY2010-FY2016. NGOM and research trips are not included.**

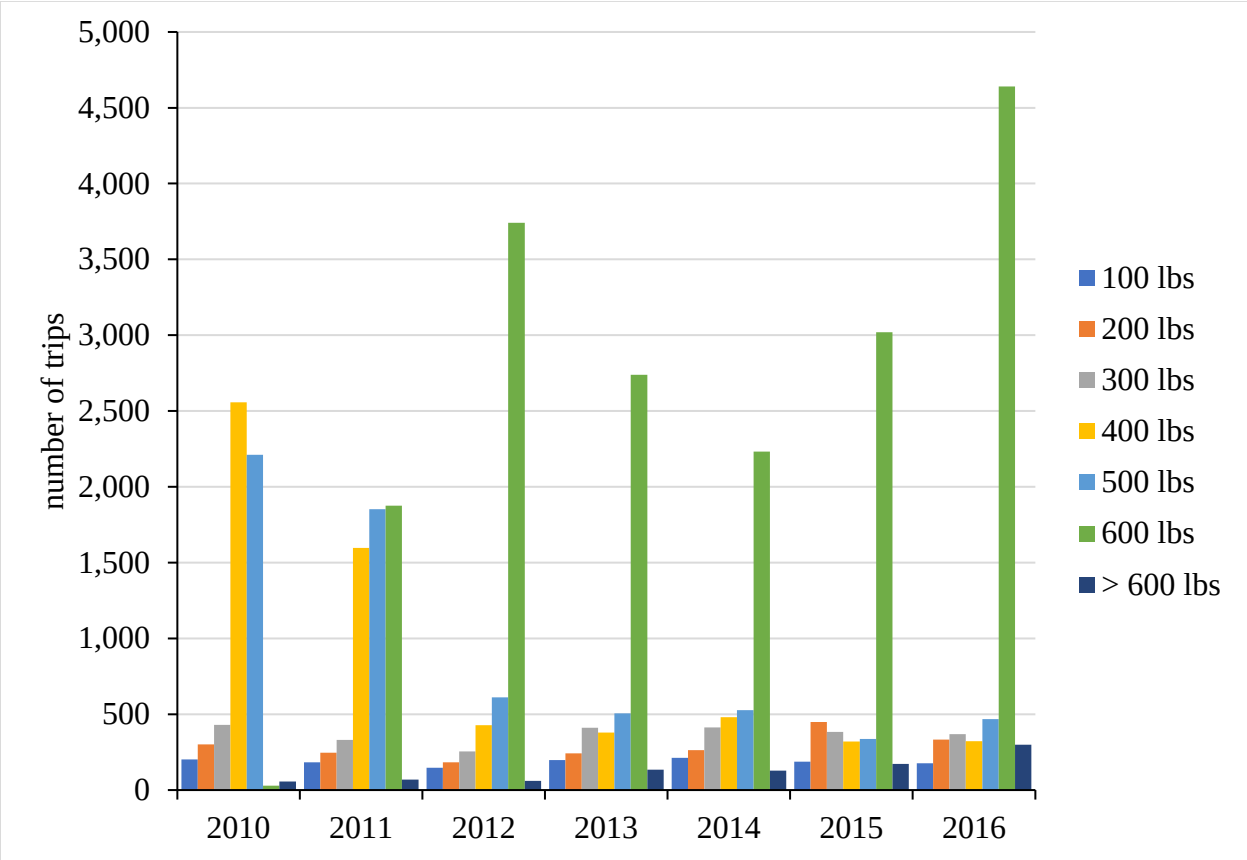



Figure 3 displays the proportion of trips landed per state by pounds landed (in 100 lb. increments); fishery data included were from FY2012 to FY2016 to be representative of the current possession limit. Pounds landed per trip appears to vary by state. For example, the two states with the most overall trips (i.e. NJ and MA) have mostly seen 600 lb. trips. States with fewer active vessels and trips landed have maintained a range of trip sizes, such as RI, where the majority of trips have landed between 100 and 300 lbs. Overall, Figure 3 further suggests that LAGC vessels maintain a range of landings per trip, and that trends in trip sizes vary by state.

**Figure 3. The proportion of trips landed per state by trip size from FY2012-FY2016. Trips are binned by 100 lb. increments and do not include NGOM or research trips. States are listed in descending order from left (most trips landed) to right (least trips landed).**

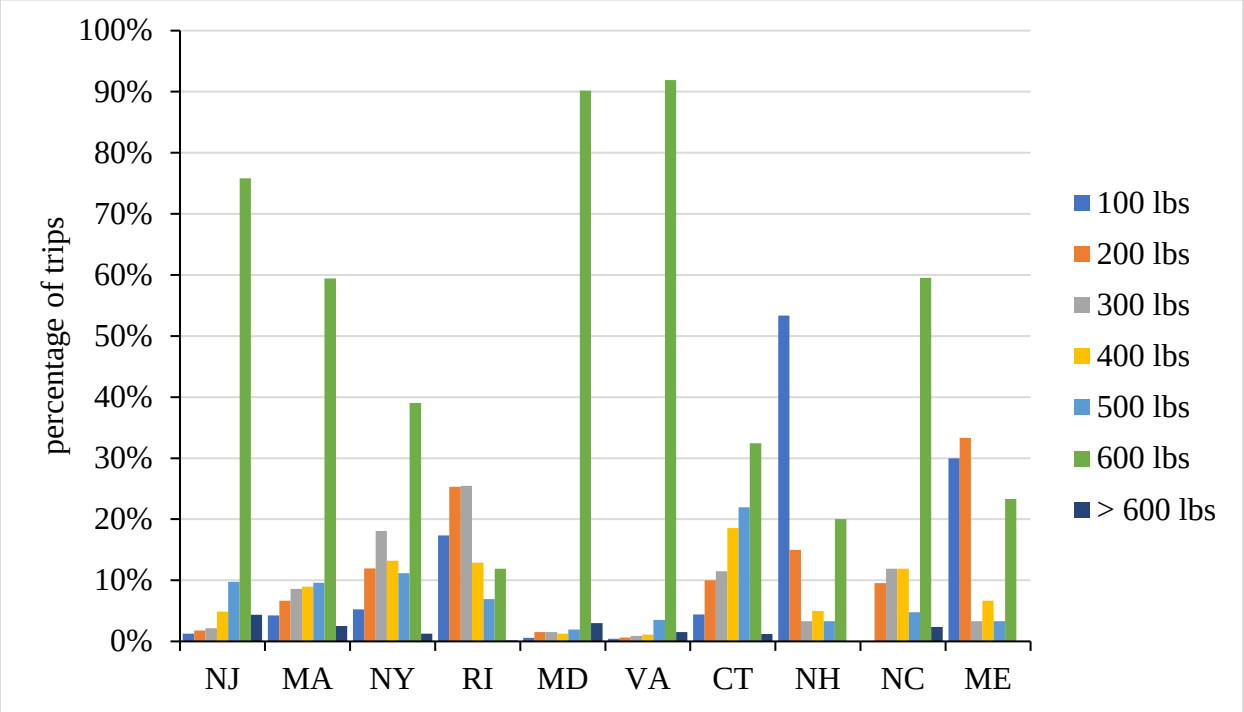



Table 5 summarizes the number of active LAGC IFQ only vessels, the number of active LAGC vessels including LA vessels that also have an LAGC permit, and the total number of LAGC IFQ permits from FY2010 to FY2016. The number of active vessels generally declined between FY2010 and FY2013, and then increased at a similar rate from FY2014 to FY2016. Over the time series there have been roughly 15 LA/LAGC combination vessels active in the LAGC fishery.

Figure 4 is a histogram of the number LAGC vessels binned by the total number of trips taken in a year from FY2010 to FY2017. In terms of the number of trips per year, the level of participation by active LAGC vessels appears to vary in concert with the level of allocation (i.e. years with more pounds allocated generally see an increase in trips per vessel and vice versa). The majority of active vessels have generally taken ≤ 50 trips per year over the time series; however, participants appear to have become more active in in FY2015 and FY2016 compared to previous years.

**Table 5. The number of active LAGC IFQ only permits, active LAGC permits including LA/LAGC combo vessels, and the total number of LAGC permits from FY2010 to FY2016.**

| FY | Active permits (LAGC only) | Active (including combo vessels) | Total permits |
|---|---|---|---|
| 2010 | 131 | 151 | 330 |
| 2011 | 124 | 138 | 330 |
| 2012 | 109 | 123 | 318 |
| 2013 | 108 | 118 | 316 |
| 2014 | 113 | 131 | 316 |
| 2015 | 115 | 128 | 313 |
| 2016 | 130 | 141 | 314 |

**Figure 4. The number of LAGC vessels binned by number of trips taken from FY2010 to FY2017 (bin size = 10 trips; FY2017 data reported through May 30, 2017). Note that the y-axis starts at 4.**

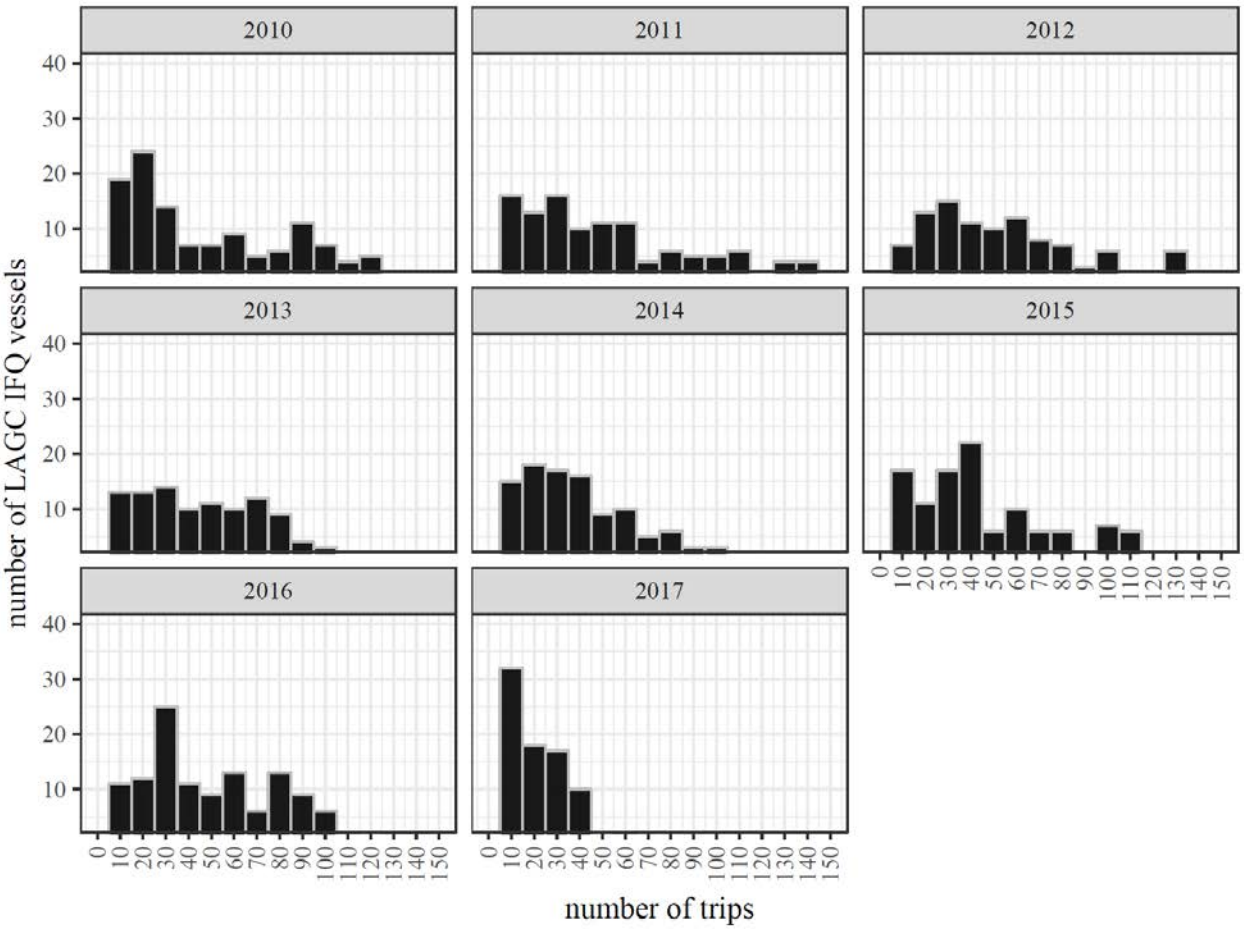



Figure 5 displays the average reported trip length (in days) for open and access area trips from FY2010 to FY2016. Table 8 shows the average hours spent fishing vs. transiting on observed

open and access area trips during the same time period and is represented as a ratio of time spent fishing to time spent transiting in Figure 6 (i.e. higher ratios represent a greater proportion of the trip with gear in the water and a lesser proportion of the trip transiting, and vice versa). Unsurprisingly, access area trips have generally been longer than open trips because access area fishing requires vessels to transit farther than when fishing open trips. In years that the quality of fishing in access areas was better than in open areas, the tradeoff of longer transit times to reach improved fishing conditions was worthwhile. For example, in FY2016, despite the NLS and MAAA being farther from port than available open bottom, vessels elected to fish there because the quality of fishing was much greater than in open bottom. Also, though average trip times were similar for open, NLS, and MAAA trips (Figure 5), the ratio of time spent fishing was notably less than the time spent transiting during trips to the NLS and MAAA compared to open trips (Figure 6), meaning vessels were willing to travel farther to fish in areas with high LPUE.

The data also shows examples of when this tradeoff of distance and time vs. quality of fishing was not worth it, such as the Nantucket Lightship in FY2014, where average trip times were the longest of all trip types and vessels spent over 3.5 times more time fishing than transiting. Increased overall trip times and more time spent fishing as a result of low LPUE removed the incentive to fish the NLS in FY2014 and left roughly 99% of allocated NLS trips unfished that year (Table 7).

These annual trends broadly suggest the LAGC fishery adapts to changing resource conditions, and that vessels will elect to fish in areas with favorable fishing conditions regardless of distance from port.

**Table 6. The proportion of LAGC IFQ trips taken each year by trip type from FY2010 to FY2016. The percent of access area (AA) trips shown are only for years where trips were allocated to that area.**

| FY | **CAI AA** Trips Taken | **NLS AA** Trips Taken | **DMV AA** Trips Taken | **ET AA** Trips Taken | **HC AA** Trips Taken | **MA AA** Trips Taken | **Open** Trips Taken |
|---|---|---|---|---|---|---|---|
| 2010 | | 7.5% | 10.5% | 0.9% | | | 81.1% |
| 2011 | 0.7% | | 1.0% | 0.2% | 9.0% | | 89.1% |
| 2012 | | 0.6% | 0.1% | | 2.1% | | 97.2% |
| 2013 | | 1.2% | | | 0.2% | | 98.6% |
| 2014 | | 0.1% | 8.4% | | 0.0% | | 91.5% |
| 2015 | | | | | | 38.3% | 61.7% |
| 2016 | | 6.5% | | | | 28.0% | 65.5% |

**Table 7. The percent of allocated access area trips taken by LAGC IFQ vessels from FY2010 to FY2016. Data used in the table also includes RSA compensation trips.**

| | CAI AA | NLS AA | DMV AA | ET AA | HC AA | MA AA |
|---|---|---|---|---|---|---|
| FY | Trips Taken | Trips Taken | Trips Taken | Trips Taken | Trips Taken | Trips Taken |
| 2010 | | 69.5% | 96.6% | 4.3% | | |
| 2011 | 5.5% | | 11.8% | 0.8% | 103.9% | |
| 2012 | | 12.8% | 1.7% | | 14.2% | |
| 2013 | | 31.1% | | | 2.8% | |
| 2014 | | 1.2% | 79.3% | | | |
| 2015 | | | | | | 101.5% |
| 2016 | | 100.0% | | | | 100.2% |

**Figure 5. The average trip length (days) of LAGC IFQ vessels fishing open trips and trips in Nantucket Lightship AA, Delmarva AA, Elephant Trunk AA, Hudson Canyon AA, Mid-Atlantic AA, and Closed Area I AA from FY2010 to FY2016. The dashed red line shows the annual combined average trip length.**

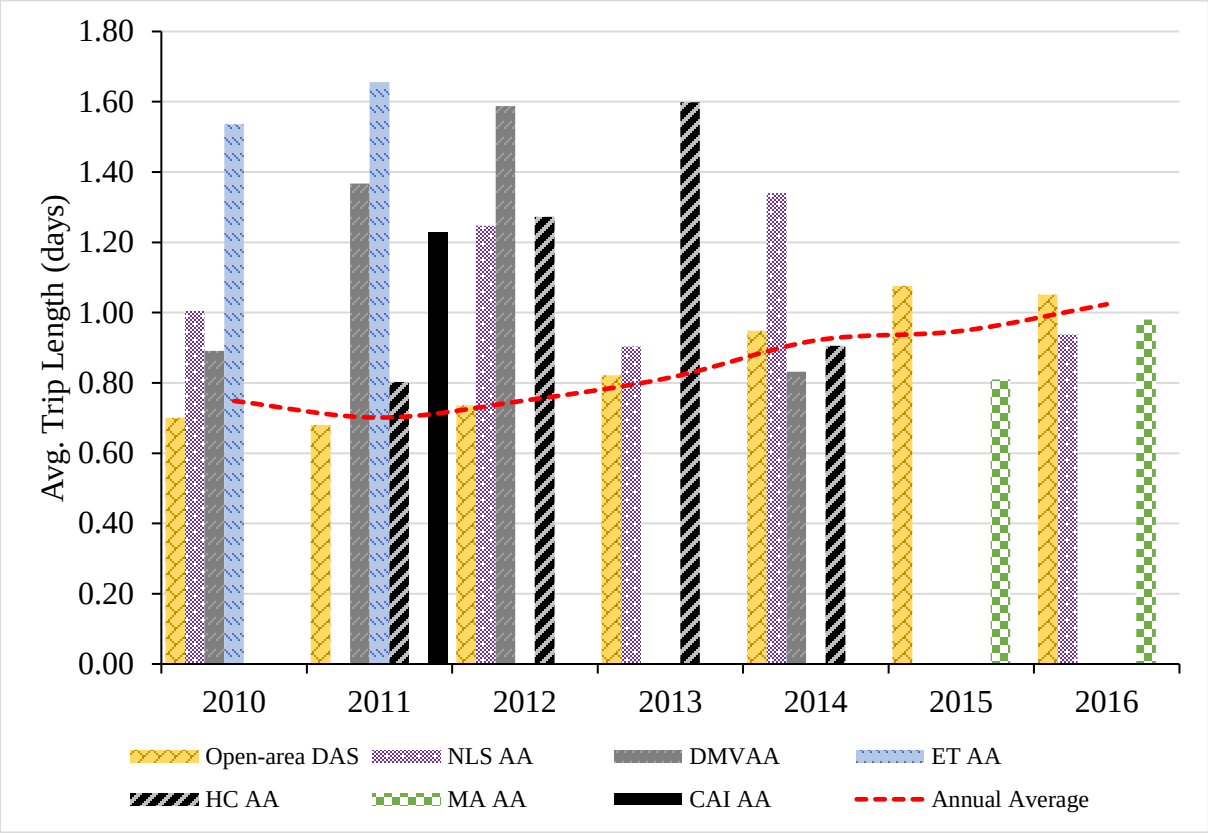
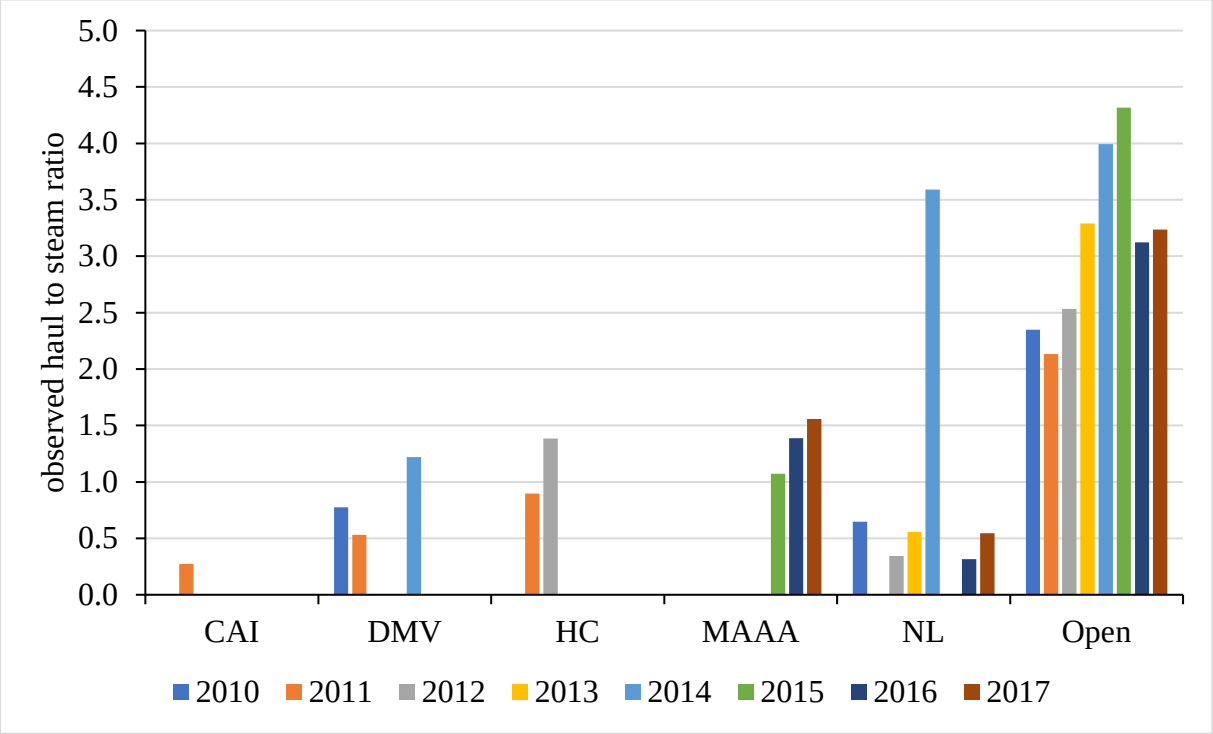


**Table 8. Average hours spent fishing ('haul') and average hours of steam time to fishing grounds ('steam') on observed LAGC IFQ trips from FY2010 to FY2017. Averages are shown by trip type (open trips and access area trips). FY2017 data is reported through December 30, 2017.**

| | CAI | | DMV | | HC | | MAAA | | NL | | Open | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FY | haul | steam | haul | steam | haul | steam | haul | steam | haul | steam | haul | steam |
| **2010** | | | 5.6 | 7.2 | | | | | 6.5 | 10.0 | 6.9 | 3.0 |
| **2011** | 2.7 | 9.7 | 7.5 | 14.1 | 7.7 | 8.6 | | | | | 6.8 | 3.2 |
| **2012** | | | | | 7.2 | 5.2 | | | 4.4 | 12.6 | 8.0 | 3.2 |
| **2013** | | | | | | | | | 5.0 | 8.9 | 13.1 | 4.0 |
| **2014** | | | 7.7 | 6.3 | | | | | 29.8 | 8.3 | 15.6 | 3.9 |
| **2015** | | | | | | | 7.2 | 6.7 | | | 18.1 | 4.2 |
| **2016** | | | | | | | 10.5 | 7.6 | 3.0 | 9.5 | 15.9 | 5.1 |
| **2017** | | | | | | | 12.2 | 7.8 | 5.3 | 9.8 | 16.1 | 5.0 |

**Figure 6. The ratio of average hours spent fishing ('haul') to average hours transiting to fishing grounds ('steam') on observed open and access area LAGC trips from FY2010 to FY2017. FY2017 data is reported through December 30, 2017.**



### 1.3.2 Monthly trends in LAGC IFQ fishery

The number of active LAGC vessels has varied by month from FY2010 to FY2016, with the most vessels being active in the summer months (Figure 7). The number of vessels active per month but appears to be consistent from year to year (Figure 7). LAGC vessels fish year round, although the majority of trips seem to be taken during the summer months (Figure 8, Figure 9).

**Figure 7. The number of active LAGC IFQ vessels by month in FY2010 to FY2016.**

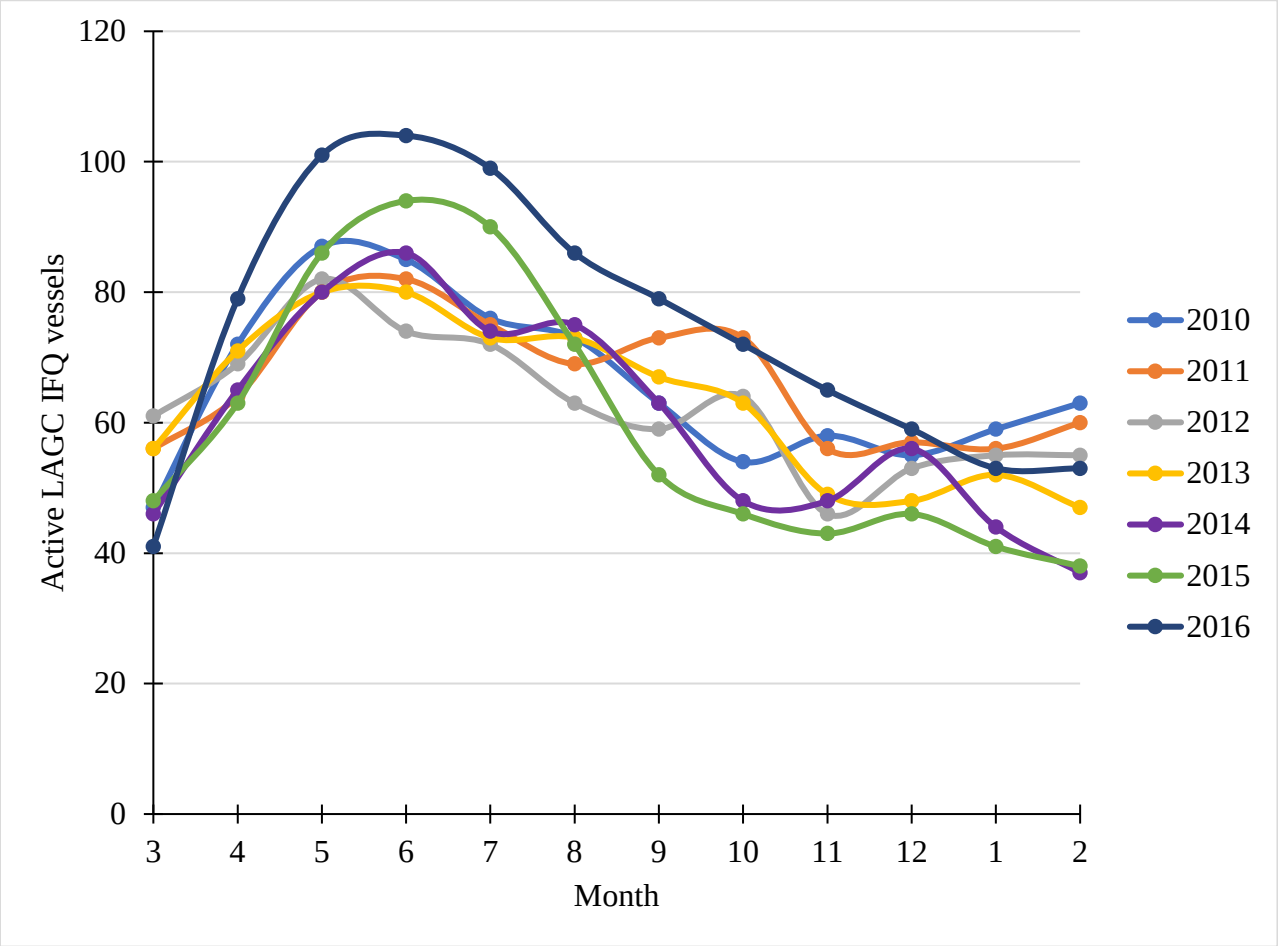


**Figure 8. The number of LAGC IFQ trips taken by month from FY2010 to FY2016.**

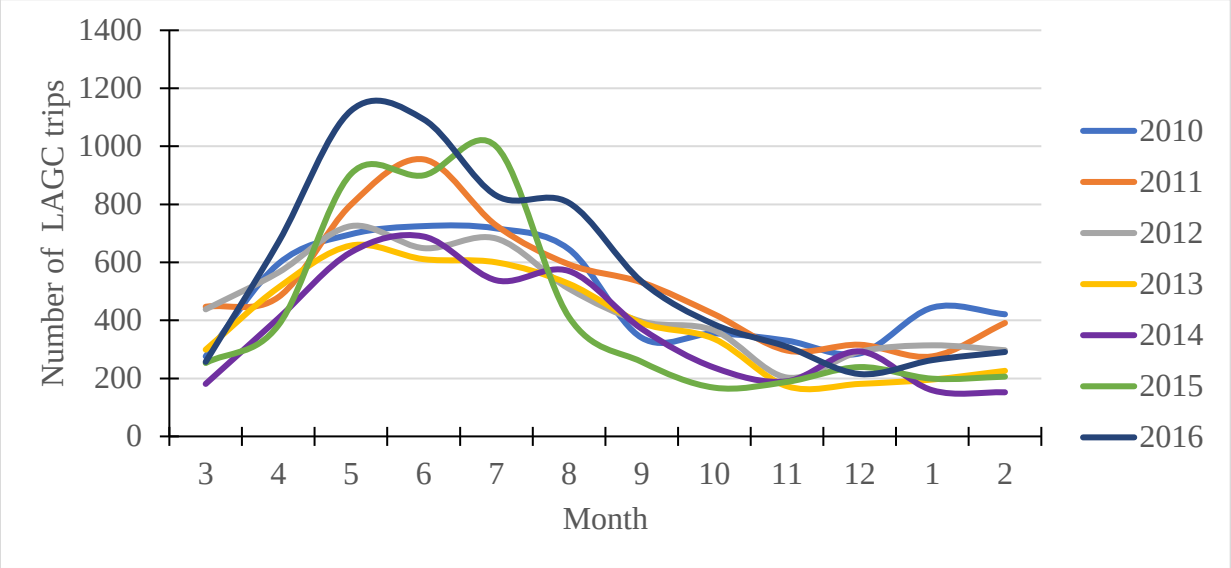



**Figure 9. The percentage of LAGC IFQ trips taken by month in FY2010 to FY2016.**

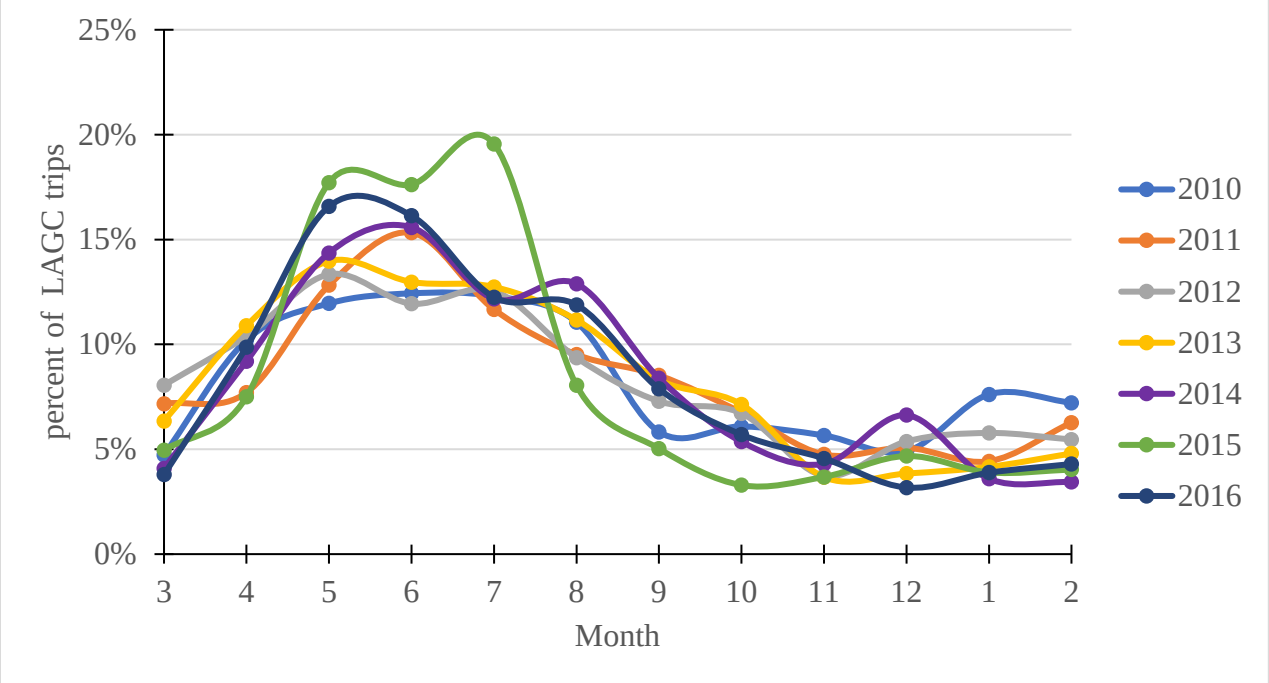
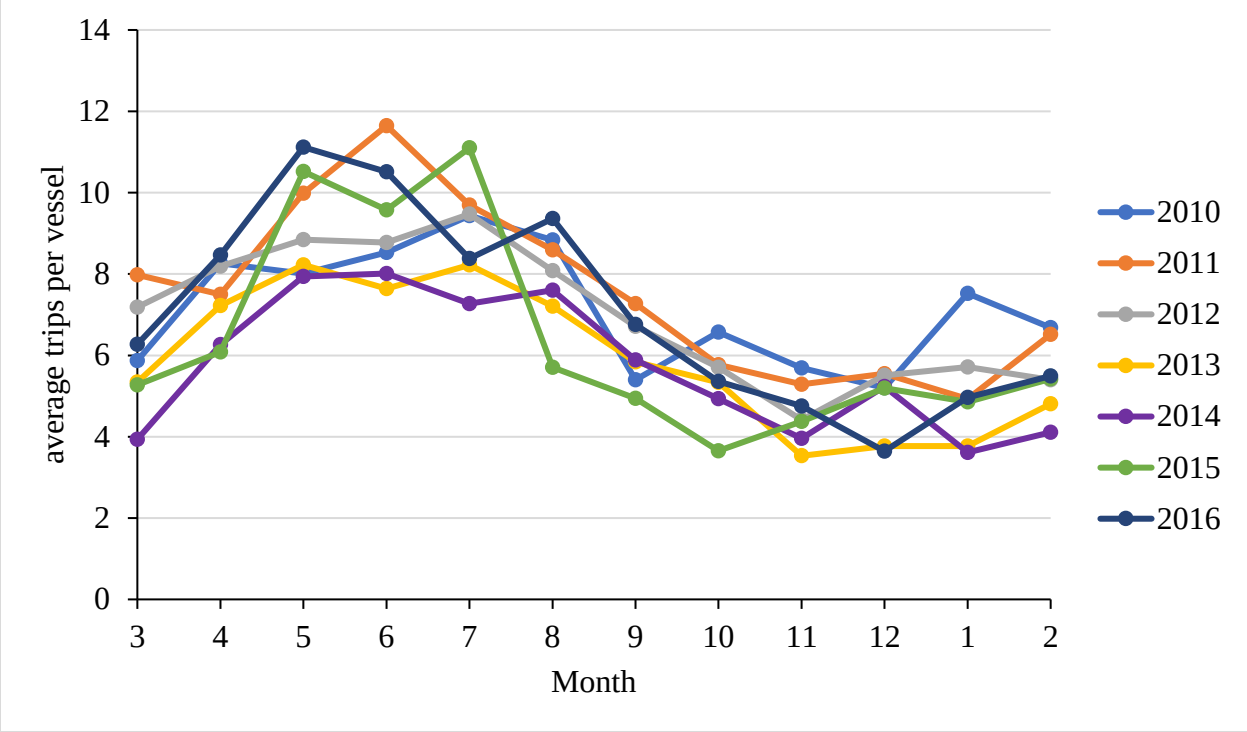


**Figure 10. The average number of trips taken by LAGC IFQ vessels per month from FY2010 to FY2016. Monthly averages were calculated using data from active vessels only.**




### 1.3.3 LAGC IFQ vessel activity in other fisheries

#### 1.3.3.1 IFQ landings on non-scallop trips

LAGC IFQ vessels can land scallops using their IFQ while operating in other federal fisheries; it is worth noting that the LAGC IFQ possession applies to IFQ landings from non-scallop trips. Table 9 shows these landings on an annual basis, the proportion of fleet wide allocation that was landed on non-scallop trips, and the number of permits these landings were attributed to, from FY2011 to FY2016. Generally, IFQ landings from non-scallop trips have been minimal, amounting to 2% or less of the overall allocation in each year except for FY2014, where landings were only slightly greater compared to other years. These landings were attributed to roughly 20-30% of all active LAGC IFQ participants during the time series.

The majority of IFQ landings from non-scallop trips were reported from the groundfish and surfclam fisheries (Figure 11); minimal landings were also reported in the fluke, monkfish, scup, squid, and whiting fisheries. There do not appear to be any consistent trends when considering IFQ landings in other fisheries on a monthly basis (Figure 12); however, the substantially higher allocation in FY2016 could explain increased landings between December and February of FY2016, as vessels were motivated to fish outstanding quota before the beginning of the 2017 fishing year.

**Table 9. Annual IFQ landings by LAGC vessels on non-scallop trips (FY2010-FY2016) in lbs (left column) and as a percentage of LAGC IFQ allocation (middle column). The right column shows the number of permits landings were attributed to. Data included were from vessels that were active in the LAGC fishery.**

| FY | scallop landings (lbs) | perc. of allocation | number of permits |
|---|---|---|---|
| 2011 | 47,100 | 1.6% | 36 |
| 2012 | 49,796 | 1.6% | 25 |
| 2013 | 44,041 | 2.0% | 23 |
| 2014 | 88,204 | 4.0% | 30 |
| 2015 | 37,246 | 1.4% | 25 |
| 2016 | 78,019 | 1.9% | 22 |

**Figure 11. Annual IFQ landings by vessels on declared groundfish and surfclam trips (FY2010-FY2016).**

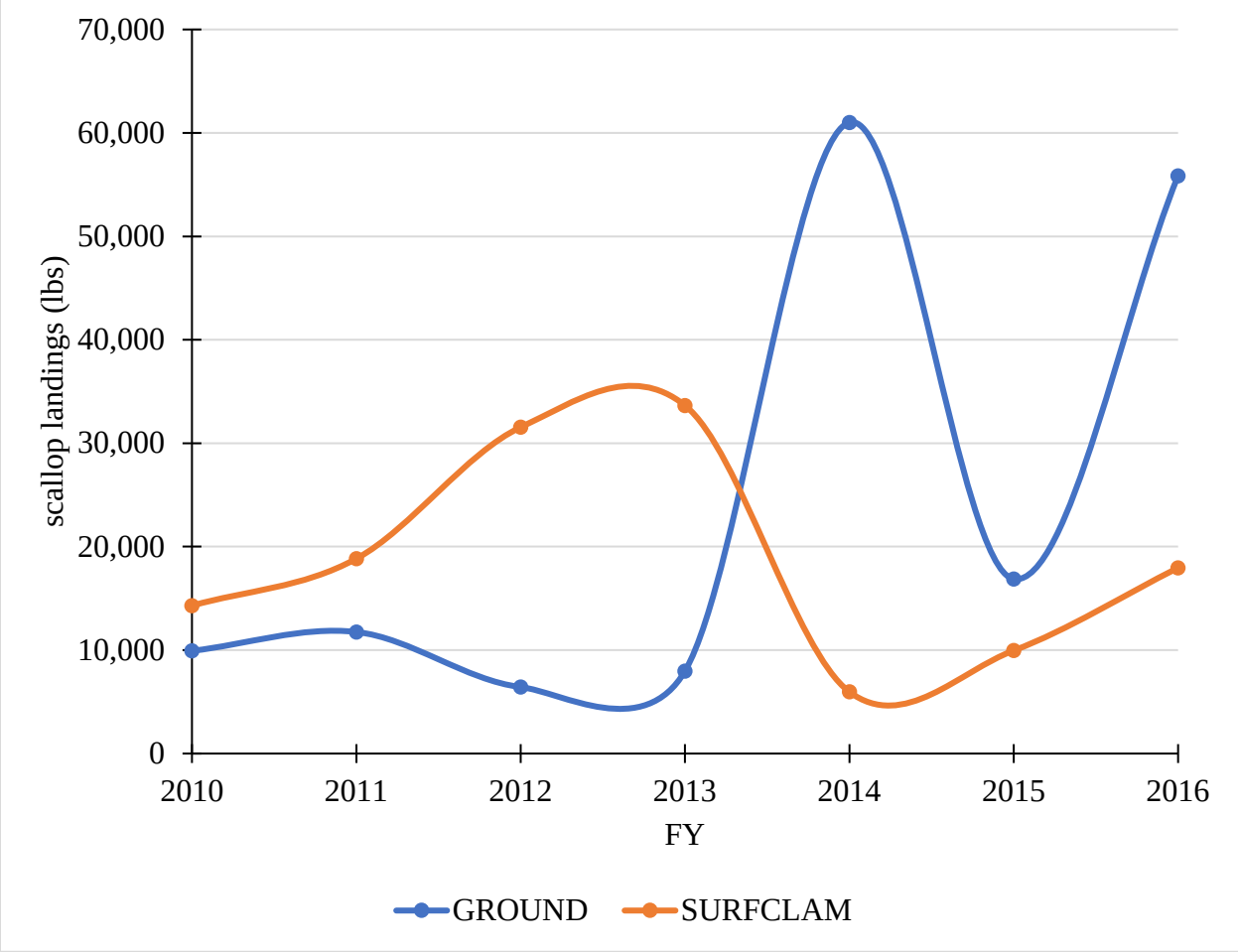
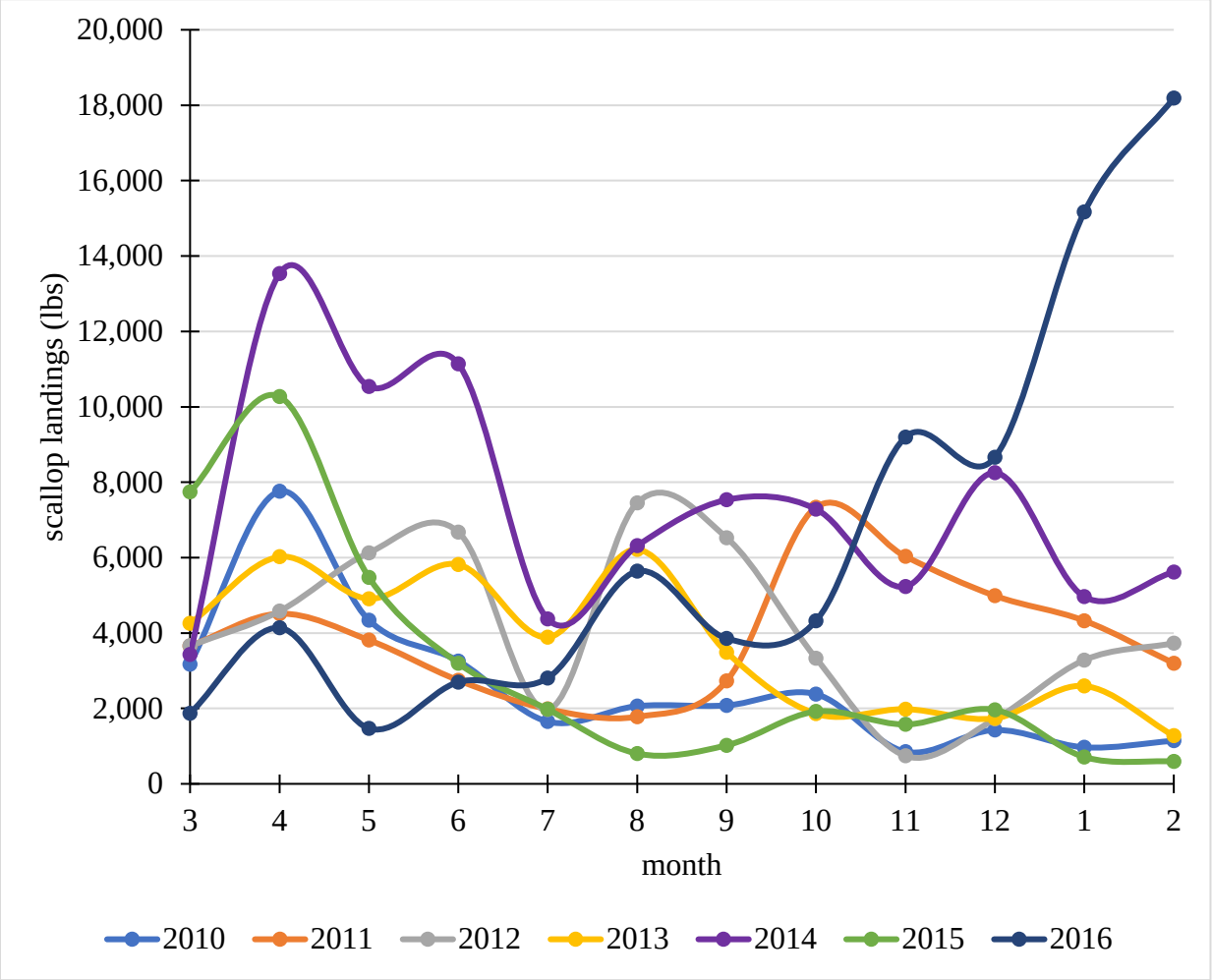


**Figure 12. Monthly IFQ landings by vessels on non-scallop trips (FY2010-FY2016).**




### 1.3.3.2 Landings and revenue from other fisheries

To better understand the reliance of LAGC IFQ vessels on the scallop fishery compared to other fisheries, annual landings and revenue of active vessels from FY2010 to FY2016 were categorized as follows:

1. Scallop landings/revenue from scallop trips
2. Non-scallop landings/revenue from non-scallop trips
3. Scallop landings/revenue from non-scallop trips
4. Non-scallop landings/revenue from scallop trips

Figure 13 shows categorized landings of active LAGC IFQ vessels from FY2010 to FY2016. The considerable difference in scallop landings from scallop trips and non-scallop landings from non-scallop trips is in part due to the difference in how scallops are landed compared to other species (i.e. shucked scallops are landed while many fish species are landed whole). Regardless, of this caveat, Figure 13 suggests that landings outside of the scallop fishery make up a

substantial portion of total pounds landed by LAGC IFQ vessels in a given year. This figure also suggests that landings from other fisheries have decreased over the FY2010 to FY2016 period.

In FY2010, the value of the directed scallop fishery and value of other fisheries that LAGC IFQ vessels participate in were roughly the same (Figure 14). From FY2011 on, revenue from the scallop fishery generally increased while the revenue generated in other fisheries decreased. In FY2016, revenue generated from the scallop fishery was almost three times greater than revenue from other fisheries that LAGC IFQ vessels participate in. Despite the substantially lower scallop landings compared to landings from other fisheries, Figure 14 suggests that revenue generated from the directed scallop fishery makes up a much greater portion of overall revenue compared to other fisheries.

**Figure 13. Categorized landings by active LAGC IFQ vessels from FY2010 to FY2016.**

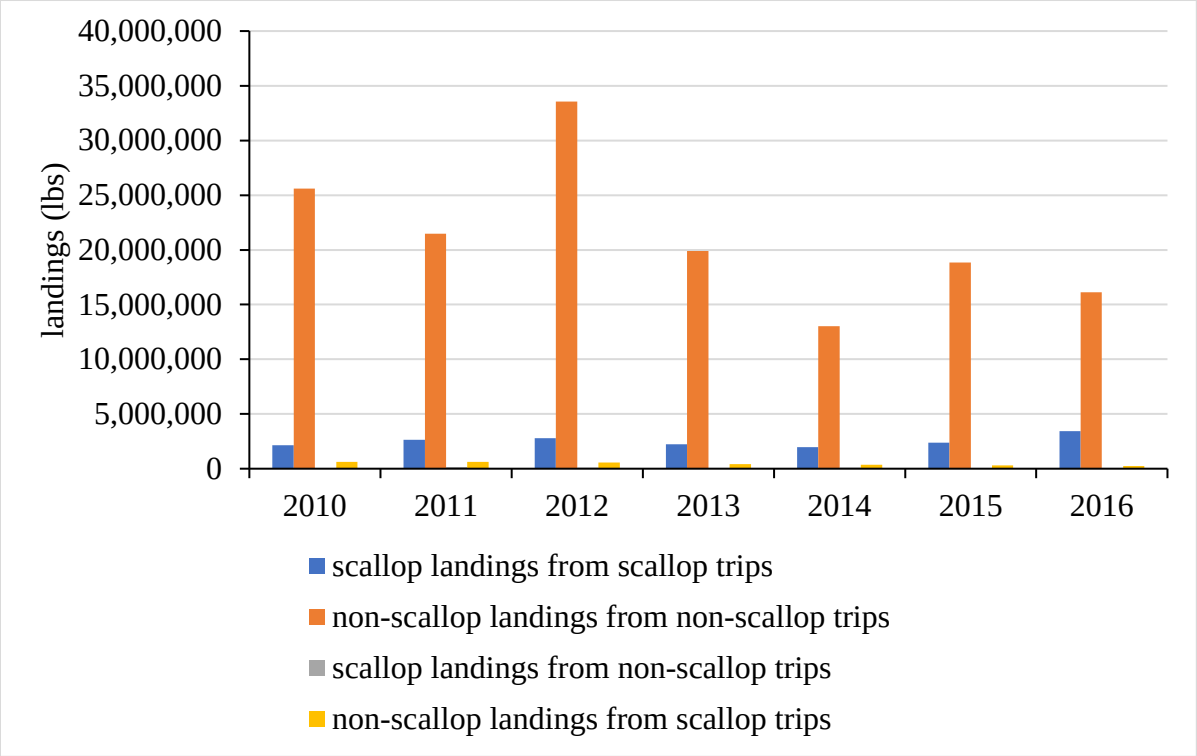
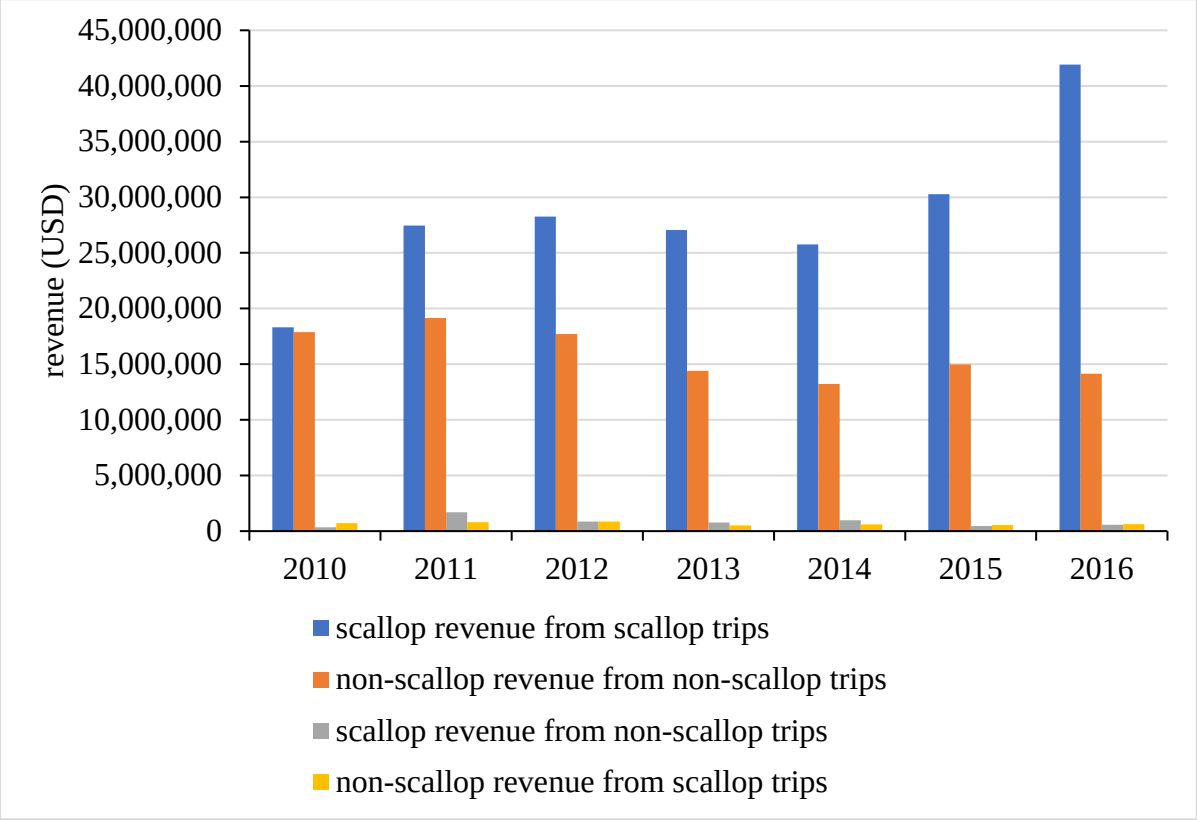


**Figure 14. Categorized revenue by active LAGC IFQ vessels from FY2010 to FY2016.**




### 1.3.4 Vessel characteristics and trends in comparison to LA fleet

Overall, active LAGC IFQ vessels were smaller compared to limited access vessels (Table 10, Table 11). Along with the number of active vessels in the fleet, the average HP, GRT, and vessel length of active LAGC IFQ vessels fluctuated annually from FY2010 to FY2016 (Table 10). Because fishing power (i.e. HP, GRT, and vessel length) varied annually at the individual vessel level, an index was used to describe trends in capacity across the entire fleet. The fleet capacity index is defined here as the weighted average HP, GRT, and vessel length by the total number of active vessels for each year in comparison to values from FY2010.

Figure 15 shows index values in relation to annual scallop landings of LAGC IFQ vessels from FY2010 to FY2016. From FY2010 to FY2016, fleet capacity decreased by approximately 27%, suggesting that active vessels were decreasing in HP, GRT, and vessel length during this time period. However, this decrease in fleet capacity was not directly correlated with a decrease in annual scallop landings; for example, from FY2010 to FY2012, fleet capacity decreased by 24.6% while scallop landings during this time increased by 30.5%. Furthermore, fleet capacity was 33.2% less in FY2015 compared to FY2010, while scallop landings were 8.5% greater in FY2015 compared to FY2010.

When compared to the fleet capacity of full-time, double dredge LA vessels (Figure 16), the reduction of LAGC IFQ fleet capacity becomes much more evident. Though trends in LA and LAGC IFQ annual landings were proportionally similar from FY2010 to FY2016, LA fleet

capacity increased by less than 1% during this time while LAGC IFQ fleet capacity decreased by 33.2%. Assuming that LA and LAGC IFQ vessels were targeting a relatively similar resource and that landings trends were proportional to the number and size of active vessels in each component, these findings suggest that reduction in capacity of the LAGC IFQ fleet did not severely impact annual landings. In other words, LAGC IFQ fleet capacity adjusts to the available quota.

**Table 10. Average GRT, HP, and length for active LAGC IFQ vessels from FY2010 to FY2016.**

| FY | GRT | HP | Length |
|---|---|---|---|
| 2010 | 64 | 435 | 58 |
| 2011 | 62 | 437 | 56 |
| 2012 | 59 | 445 | 55 |
| 2013 | 57 | 437 | 55 |
| 2014 | 57 | 441 | 54 |
| 2015 | 54 | 436 | 53 |
| 2016 | 55 | 435 | 55 |

**Table 11. Average GRT, HP, and length for active LA vessels from FY2010 to FY2016. Table does not include LA vessels that also have an LAGC IFQ permit.**

| FY | GRT | HP | LEN |
|---|---|---|---|
| 2010 | 155 | 808 | 83 |
| 2011 | 155 | 808 | 82 |
| 2012 | 155 | 812 | 82 |
| 2013 | 156 | 835 | 82 |
| 2014 | 156 | 853 | 82 |
| 2015 | 156 | 852 | 82 |
| 2016 | 156 | 831 | 82 |

**Figure 15. LAGC IFQ fleet capacity index of average HP, GRT, and vessel length weighted by the number of active vessels. The secondary access displays annual scallop landings (lb.) from the LAGC IFQ fleet (red dashed line).**

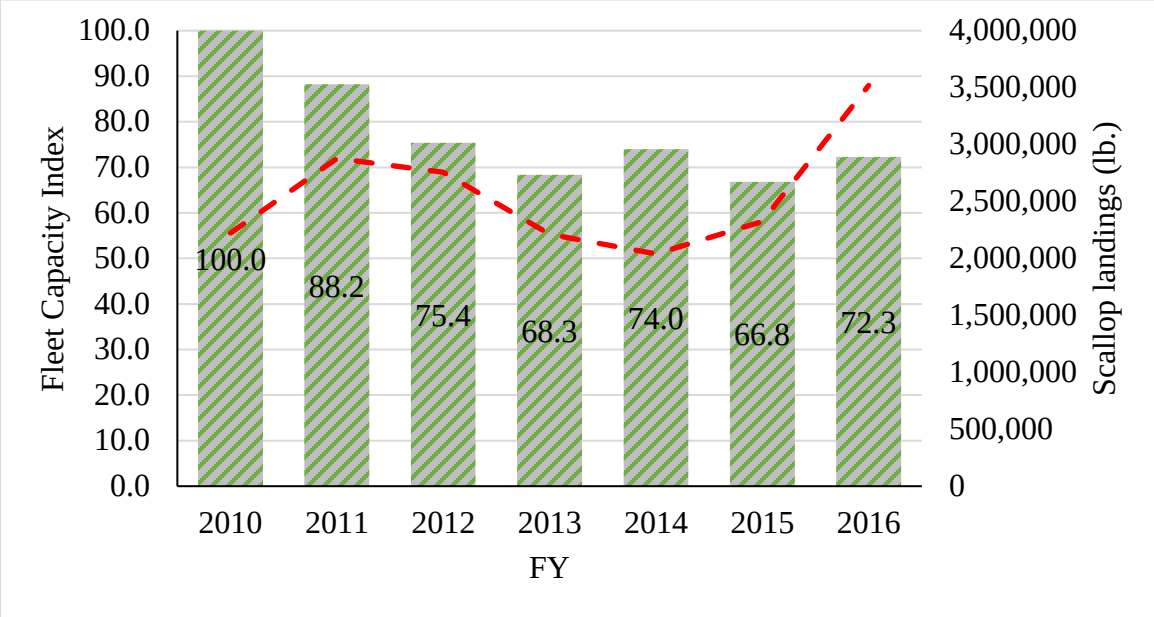
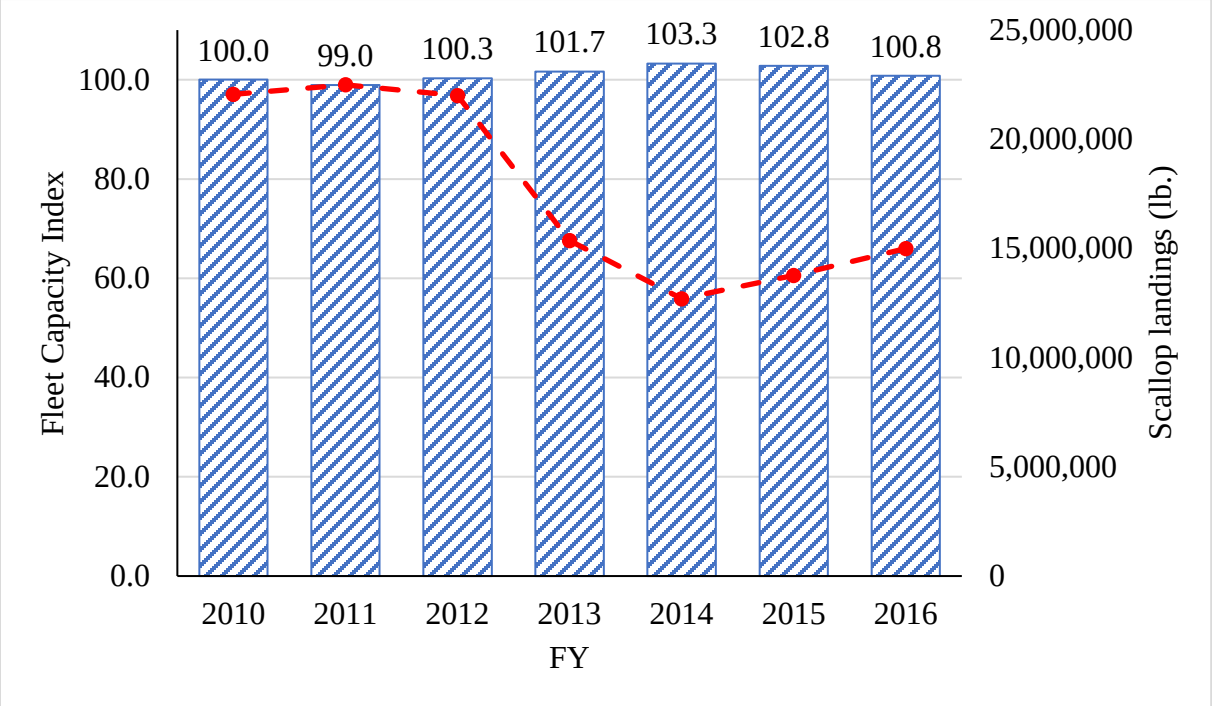



**Figure 16. Full-time, double dredge LA fleet capacity index of average HP, GRT, and vessel length weighted by the number of active vessels. The secondary access displays annual scallop landings (lb.) from the full-time, double dredge LA fleet (red dashed line). Values shown exclude full-time, double dredge LA vessels that also held a LAGC IFQ permit.**



### 1.3.5 Catch rates and observed LPUE

Observer data from standard observer trips on LAGC IFQ and LA vessels between FY2010 and FY2017[1] were used to estimate average annual landings per unit of effort (LPUE). This approach measured LPUE at the haul level to determine weight of kept scallops per hour using the equation:

$$\frac{1}{n}\sum_{i=1}^{n}\frac{K_{obs}}{t_{obs}}$$

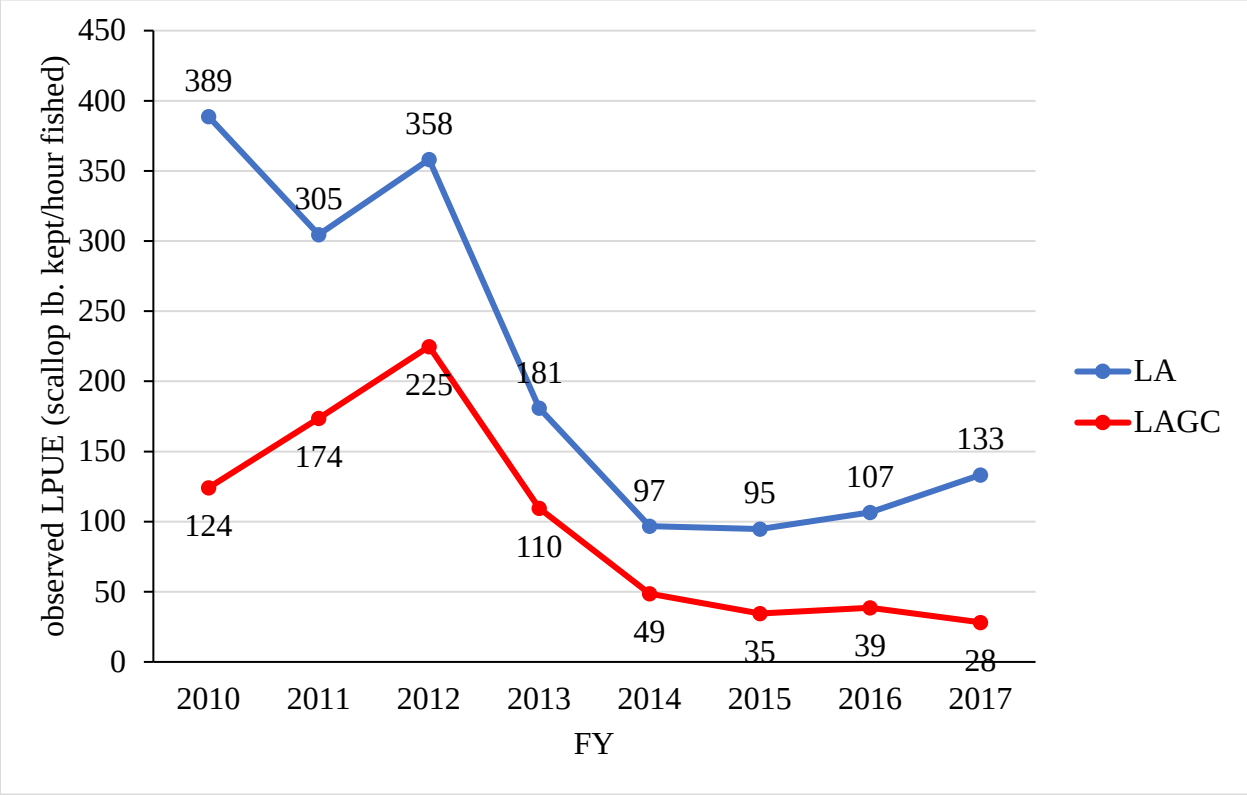
Where $n$ = the total number of observed hauls per fishing year, $K_{obs}$ = the weight of scallops kept per observed haul (lbs), and $t_{obs}$ = time the dredge(s) were in the water per haul (hours).

The average open-area LPUE (scallop lb. per hour fished) of LA and LAGC IFQ vessels fishing on Georges Bank is shown in Figure 20. Overall, average LA LPUE was higher than LAGC IFQ LPUE, corresponding to LA vessels having more fishing power (i.e. larger vessels, more horsepower, more and larger dredges than LAGC IFQ vessels). Between FY2010 and FY2012, LAGC IFQ LPUE increased 81% while LA LPUE decreased approximately 8%. From FY2010 to FY2015, LPUE decreased in both LAGC IFQ and LA components of the fishery by approximately 23% and 50%, respectively. Observed catch rates between FY2015 and FY2017 remained relatively stable, slightly increasing for the LA component and slightly decreasing for the LAGC IFQ component.

Figure 21 displays observed LPUE for the LAGC IFQ and LA components of the fleet fishing open-area in the Mid-Atlantic from FY2010 to FY2017[1]. As was seen for Georges Bank, average open area LPUE of vessels fishing in the Mid-Atlantic was higher for the LA component than the LAGC IFQ component. For LAGC IFQ vessels, average Mid-Atlantic LPUE was lower than open area LPUE for Georges Bank during the same time period; however, Mid-Atlantic LPUE was < 1% less than Georges Bank LPUE in FY2014, and approximately 6.7% less than Georges Bank LPUE in FY2015. FY2012 saw the highest LAGC IFQ open area LPUE in the Mid-Atlantic (82.1 scallop lb. per hour fished) and decreased each year after that. From FY2012 to FY2015, average LAGC IFQ open area LPUE in the Mid-Atlantic decreased approximately 60.7%. Observed Mid-Atlantic catch rates in FY2017 were approximately 2.5 times greater than FY2015 for both the LA and LAGC IFQ components.

[1] FY2017 observer data used were reported through December 30th, 2017.

**Figure 17. The average observed open-area LPUE (scallop lb./hour fished) for LA (blue line) and LAGC (red line) vessels fishing on Georges Bank. Note that FY2017 observer data were reported through December 30th, 2017.**




The data also displays the percent of allocated trips actually taken by LAGC IFQ vessels, and Figure 5 describes average trip length (in days) of access area trips and open trips. Average trip length seemed to be an indicator of the quality of fishing for LAGC IFQ vessels. For example, very few (< 1%) allocated trips were taken in the Elephant Trunk access area in FY2011 while average trip length was more than double the overall average for that year, and higher than any other area from FY2010 to FY2015. In instances where fishing was better, a greater proportion of allocated trips were taken to a specific area while average trip length would be decreased compared to other areas. For example, all allocated Mid-Atlantic access area trips were taken in FY2015, and the average trip length was approximately 15% less than the average for that year and approximately 25% less than for open trips.

LAGC IFQ vessels have fished predominantly open trips from FY2010 to FY2015. From FY2010 to FY2014, between 81.1% and 98.6% of trips taken were open trips. A notable decrease in the proportion of open trips taken occurred in FY2015 (from 91.5% in FY2014 to 61.7% in FY2015), as an increased proportion of trips were taken in the Mid-Atlantic access area (38.3% in FY2015). This redirected effort could be attributed to FY2015 being the first year the Mid-Atlantic access area was incorporated into management, offering participants a broader area to fish compared to the smaller, previously sectioned Mid-Atlantic access areas (i.e. DelMarVa, Elephant Trunk, Hudson Canyon). The pulse of effort in the MAAA in FY2015 was also likely due to improved fishing in the area compared to previous years, and improved fishing compared to open-area Mid-Atlantic LPUE in FY2015 (Figure 21).

LPUE generally declined for the LAGC IFQ component between 2010 and 2015 on Georges Bank and in the Mid-Atlantic, though the reduction on Georges Bank was more pronounced over this time period.

**Figure 18. The average observed open-area LPUE (scallop lb./hour fished) for LA (blue line) and LAGC (red line) vessels fishing in the Mid-Atlantic. Note that FY2017 observer data were reported through December 30th, 2017.**

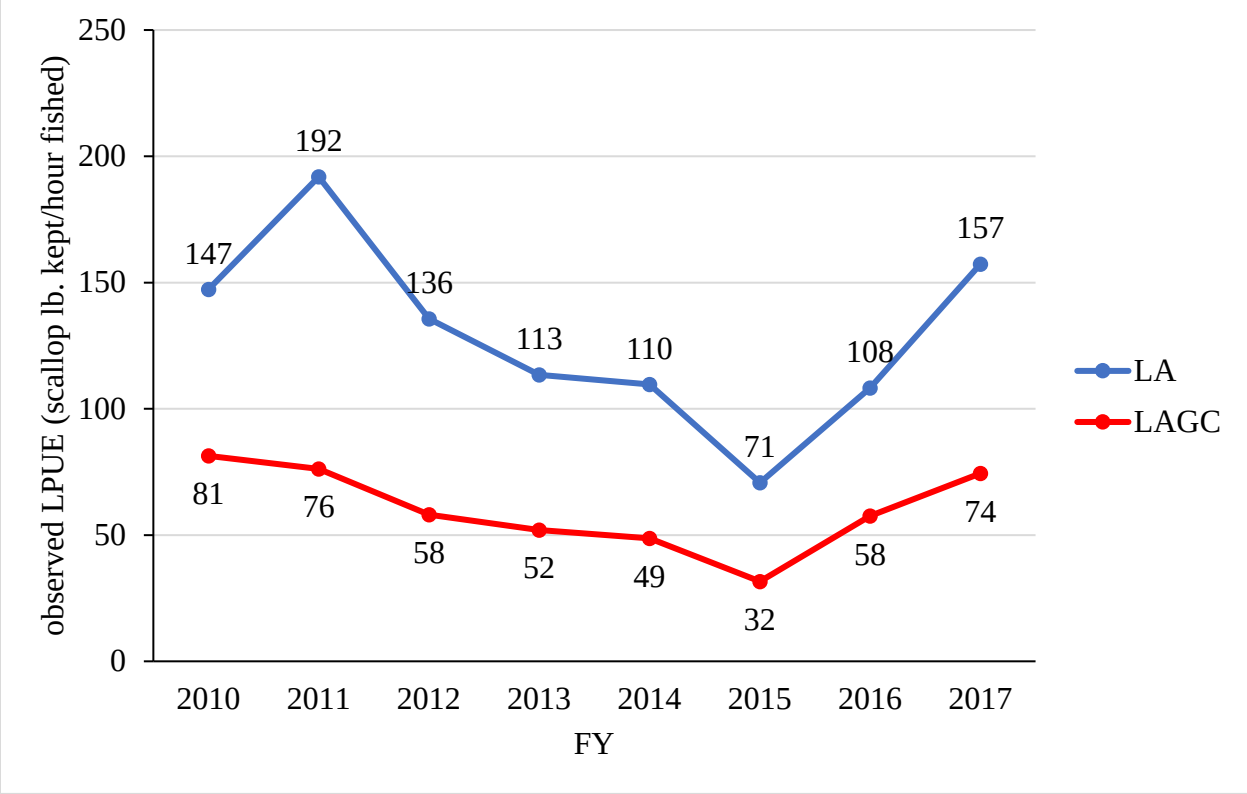



Figure 22 displays the average pounds of scallops landed per day absent from port for LAGC IFQ vessels, limited access full time vessels, limited access full time small dredge vessels, and limited access part time small dredge vessels from FY2010-FY2016. Average daily catch rates include all types of fishing (i.e. access area, open, NGOM) during the time period. Pounds landed per day fished in rank order from greatest to least are LA FT, LA FT small dredge, LA PT small dredge, and LAGC IFQ. Despite the difference in magnitude of catch rates, all permit types seem to follow similar a trend over the time series. LAGC IFQ and LA PT small dredge appear to be mostly closely related.

Figure 23 describes the average pounds of scallops landed per day for trips in the Nantucket Lightship Access Area by LAGC IFQ vessels, limited access full time vessels, limited access full time small dredge vessels, and limited access part time small dredge vessels from FY2010 to FY2016. The ranked order by permit type of average daily landings is same as the overall comparison shown in Figure 22. NLS catch rates by LAGC vessels appear to be consistent over the time period ranging between 500 and 700 lbs per day. Also, LAGC catch rates in the NLS seem to be most stable compared to the other permit types.

**Figure 19. Average pounds of scallops landed per day for LAGC IFQ vessels (blue), limited access full time vessels (orange), limited access full time small dredge vessels (grey), and limited access part time small dredge vessels (yellow), from FY2010-FY2016.**

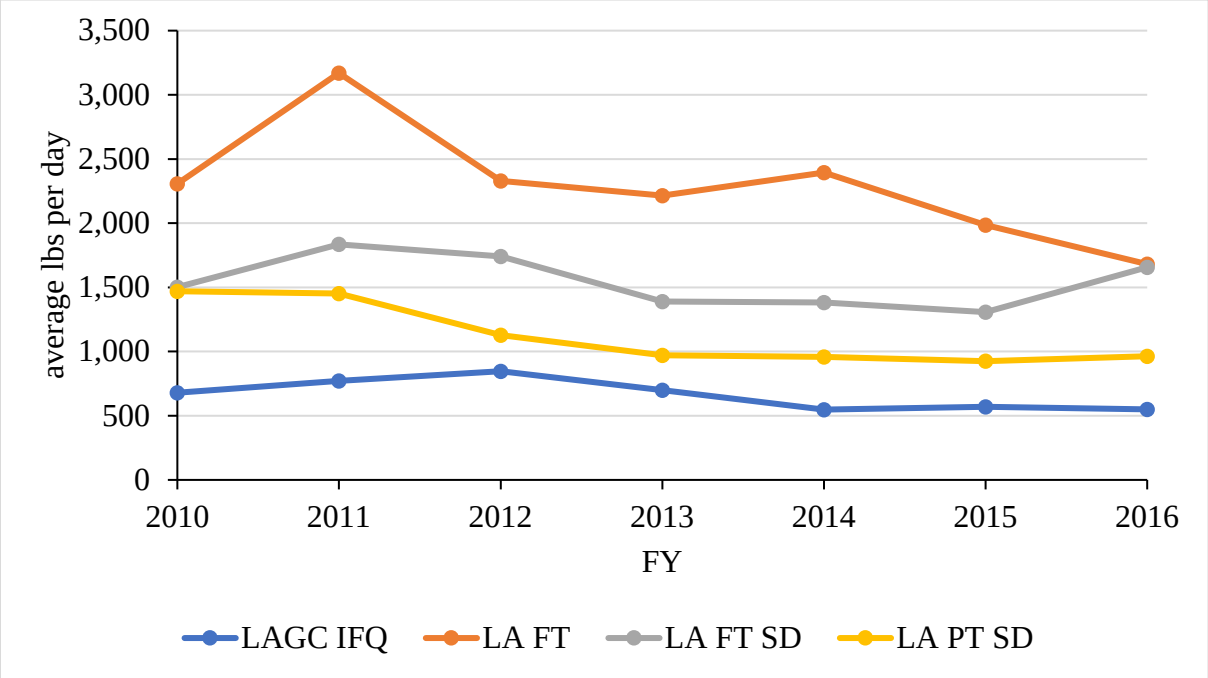
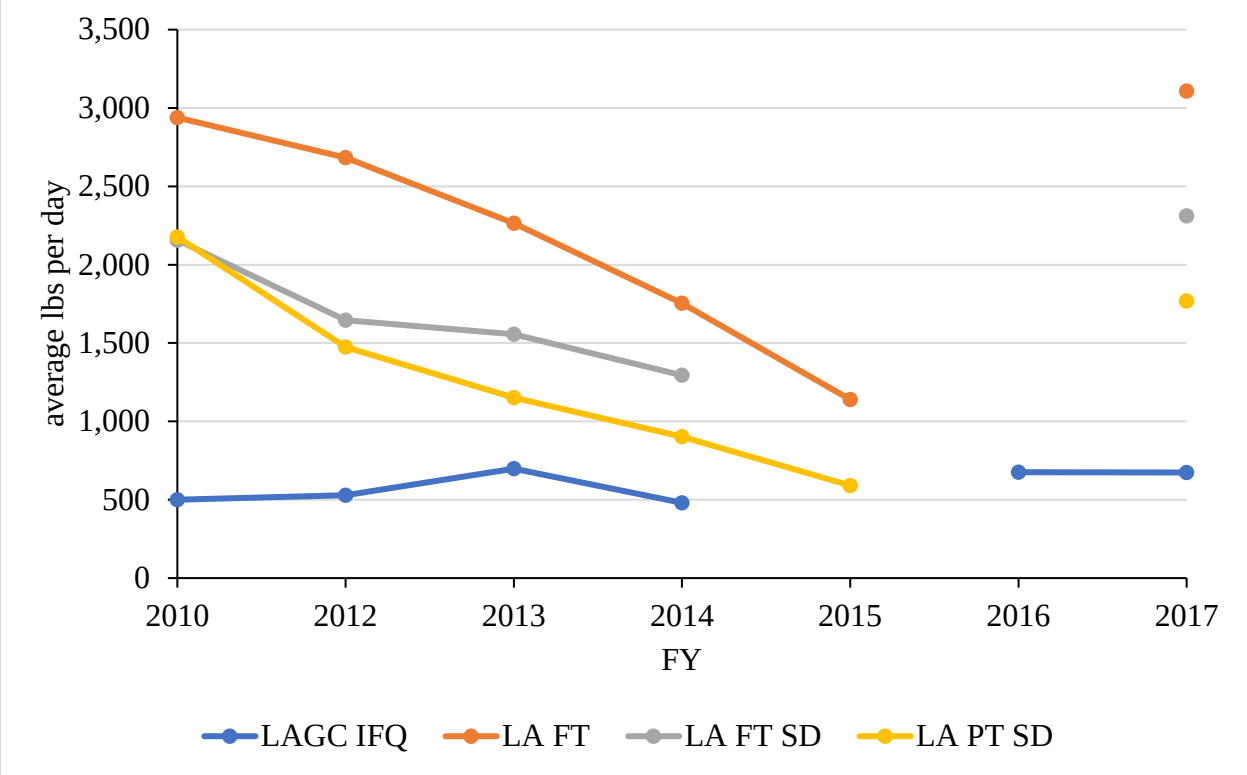



**Figure 20. Average pounds of scallops landed per day for trips in the Nantucket Lightship Access Area by LAGC IFQ vessels (blue), limited access full time vessels (orange), limited access full time small dredge vessels (grey), and limited access part time small dredge vessels (yellow), from FY2010-FY2016.**



### 1.3.6 Considering impact of trip limit on rate of harvest

Figure 24 displays the rate of harvest by LAGC IFQ vessels fishing in the NLS AA in FY2017 compared to a theoretical harvest rate if the possession limit was 1,200 lbs. The red line shows the NLS trip quota to the LAGC fleet in lbs (837 trips allocated * 600 lbs per trip). Note that the NLS AA trip quota was met by the LAGC component after approximately 2 months of the area being open to fishing (closed May 31st, 2017). The theoretical harvest rate is provided to visualize how doubling the possession limit could impact the duration of time an access area is available to be fished by LAGC vessels.

**Figure 21. The rate of harvest by LAGC IFQ vessels fishing in the NLS AA in FY2017 (green line) compared to a theoretical harvest rate if the possession limit was 1,200 lbs (blue line). The red line shows the NLS trip quota in lbs (837 trips * 600 lbs). Note that data included were reported through May 30, 2017.**