Northeast Skate Complex

Fishery Management Plan

Amendment 5
Discussion Document

DRAFT

Updated August 31, 2020

Prepared by the

New England Fishery Management Council

In consultation with the

National Marine Fisheries Service

1.0 PRELIMINARY NOTE

The New England Fishery Management Council (NEFMC) is charged with developing management plans that meet the requirements of the Magnuson-Stevens Act (MSA). The Northeast Skate Complex Fishery Management Plan (FMP) contains the management measures for seven skate species (barndoor, clearnose, little, rosette, smooth, thorny and winter skates) off the New England and Mid-Atlantic coasts. The FMP has been updated through a series of amendments, framework adjustments and specification packages.

This Discussion Document encapsulates the work of the Council to date on Amendment 5 to the Northeast Skate Complex FMP, an amendment to consider measures related to limited access in the fishery. Though the Council has been discussing the potential development of a skate limited access for some time, the Skate Committee (Committee) has been specifically working to develop this action since the spring of 2019. More information is available at the Council's website.

Key additions since June 2020 Council meeting:

- Plan Development Team comments on the Skate FMP goal and objectives, Section 3.1.
- Previously identified ideas to define a problem statement, goals, objectives and alternatives from the March 11, 2020 PDT memo, Section 3.7.
- Added a definition of Federal and state landings, Section 5.6.1.2.
- Added information on trip declarations from the March 13, 2020 PDT memo, Section 5.6.1.4.
- Added FY 2018 revenue by gear type, Section 5.6.1.5.
- Added FY 2018 revenue by species of vessels landing skate, Section 5.6.1.5.

Key additions since August 6, 2020 Committee meeting:

- Added a summary of the analysis of potential landings under FY 2020 possession limits from the March 11, 2020 PDT memo, Sections 4.1 and 4.2.

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ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
AM	Accountability Measure
AP	Advisory Panel
ASMFC	Atlantic States Marine Fisheries Commission
B_{MSY}	Biomass that would allow for catches equal to Maximum Sustainable Yield when fished at the overfishing threshold (F_{MSY})
CPUE	Catch per unit of effort
DAS	Day(s)-at-sea
DMF	Division of Marine Fisheries (Massachusetts)
DMR	Department of Marine Resources (Maine)
EA	Environmental Assessment
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EIS	Environmental Impact Statement
F	Fishing mortality rate
FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FW	Framework
FY	Fishing year
GARFO	Greater Atlantic Regional Fisheries Office
GB	Georges Bank
GOM	Gulf of Maine
IFQ	Individual fishing quota
ITQ	Individual transferable quota
LOA	Letter of authorization
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum Sustainable Yield
NEFMC	New England Fishery Management Council
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OBDBS	Observer database system
OFL	Overfishing Limit
OY	Optimum yield
PDT	Plan Development Team
SA	Statistical Area
SAFE	Stock Assessment and Fishery Evaluation
SNE	Southern New England
SNE/MA	Southern New England-Mid-Atlantic
SSB	Spawning stock biomass
SSC	Scientific and Statistical Committee
TAL	Total allowable landings
TMS	Ten-minute square
USCG	United States Coast Guard
VMS	Vessel monitoring system
VEC	Valued ecosystem component
VTR	Vessel trip report
WGOM	Western Gulf of Maine
YPR	Yield per recruit

3.0 INTRODUCTION

3.1 GOAL AND OBJECTIVES OF NORTHEAST SKATE COMPLEX FMP

The goal and objectives of the Northeast Skate Complex Fishery Management Plan are unchanged since the original FMP was adopted in 2003.

Goal: Consistent with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable laws, to develop a Fishery Management Plan to research and manage the Northeast Skate Complex at long-term sustainable levels.

> *Objective 1:* Collect information critical for substantially improving knowledge of skate fisheries by species and for monitoring: (a) the status of skate fisheries, resources, and related markets and (b) the effectiveness of skate management approaches.
>
> *Objective 2:* Implement measures to: protect the two currently overfished species of skates (barndoor and thorny) and increase their biomass to target levels, reduce fishing mortality on winter skate, and prevent overfishing of the other species in the Northeast skate complex – this may be accomplished through management measures in other FMPs (groundfish, monkfish, scallops), skate-specific management measures, or a combination of both as necessary.
>
> *Objective 3:* Develop a skate permit system, coordinate data collection with appropriate state agencies for vessels fishing for skates or catching skates as bycatch only in state waters, and work with the fishing industry to establish a catch reporting system consistent with industry capabilities, including the use of study fleets.
>
> *Objective 4:* Minimize the bycatch and discard mortality rates for skates caught in both directed and non-directed fisheries through the promotion and encouragement of experimentation, conservation engineering, and gear development.
>
> *Objective 5:* Promote and encourage research for critical biological, ecological, and fishery information based on the research needs identified in the Skate SAFE Report and scoping document, including the development and dissemination of a skate species identification guide.
>
> *Objective 6:* Minimize, to the extent possible, the impacts of skate management approaches on fisheries for other species on which New England and Mid-Atlantic fishermen depend (for example, groundfish, monkfish, scallops, and fluke), recognizing the interconnected nature of skate and other fisheries in the Northeast Region.
>
> *Objective 7:* To the extent possible, manage clearnose and rosette skates separately from the other five species in the skate complex, recognizing that these two species are distributed primarily in the Mid-Atlantic and South Atlantic regions.

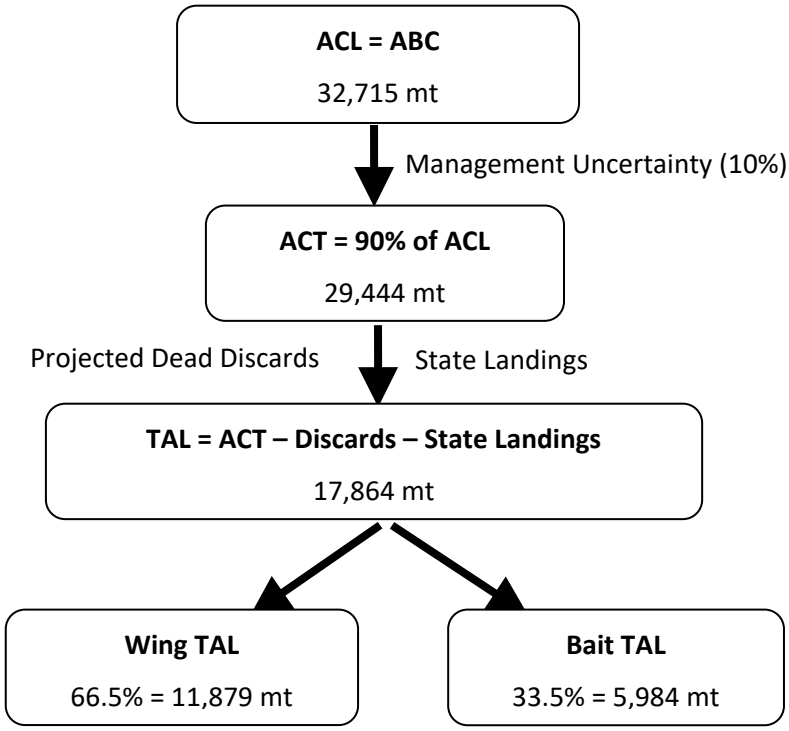
PDT Comment:
Some of the objectives are now outdated or should be made broader:

- Objective 2 - This should be updated or made less specific. Thorny skate is the only skate species that is overfished. Barndoor was declared rebuilt in 2016. Winter skate is the most caught species in the wing fishery, and it is a stable stock.
- Objective 3 – A skate permit system and a catch reporting system have been developed. Catch reporting could continue to improve.
- Objective 5 – The scoping document referred to is likely the one for the original FMP. This should be updated or made less specific to refer to the latest research priorities approved by the Council.
- Objective 7 - There are no measures that address this objective. Clearnose and rosette skates make up a small percentage of overall skate catch.

3.2 Existing Management System

The Northeast Skate Complex Fishery Management Plan (Skate FMP) specifies the management measures for seven skate species (barndoor, clearnose, little, rosette, smooth, thorny, and winter skate) off the New England and Mid-Atlantic coasts. The New England Fishery Management Council (Council) sets specifications every two years for the skate complex with possession limits for the skate wing and bait fisheries. Fishery-specific (skate wing and bait) Total Allowable Landings (TAL) and possession limits are set as part of specifications according to the formula (Figure 1) established in Amendment 3 (NEFMC 2009). The fisheries have different seasonal management structures and are subject to possession limits and accountability measures (AMs). Recent fishery TALs, possession limits and catches are in Section 5.6.1.

Figure 1. Formula for skate specifications setting used since Amendment 3, with FY 2020 values.



Thus, for FY 2020, the Wing TAL is 11,879 mt (26,188,705 live lb or 11,536,874 landed lb). The Bait TAL is 5,984 mt (13,192,458 live and landed lb).

More information on skate wing fishery regulations is at: https://www.fisheries.noaa.gov/species/northeast-skate-complex#commercial.

More information on skate bait fishery regulations is at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/resources-fishing/skate-bait-fishery.

3.3 Steps of Amendment Development/Timeline

The Council has been considering developing limited access in the skate fishery since at least 2009. A brief history is in Table 1, and more information is in a March 2020 Skate PDT memo. The Council is developing this action assuming that preparing an Environmental Impact Statement will be necessary. A formal determination on the type of NEPA document needed will be made once the range of alternatives is identified and analyzed.

Table 1. Typical Council steps in developing an EIS, noting where Amendment 5 is in the process.

Step		Amendment 5 timeline	Discussion Doc.
1	Identify a need, set an action as a priority, potentially set control dates	July 2009: NMFS set bait control date March 2014: NMFS set wing control date Dec. 2015: Council set amendment as a management priority	Sect. 3.4
2	Hold public scoping period	Early 2017	Sect. 3.5
3	Review public scoping comments	April 2017	Sect. 3.5
4	Set problem statement, goals, and objectives	June 2019: Council set two objectives March-September 2020: Cte develops problem statement, goals and objectives TBD: Final Council approval	Sect. 3.6
5	Develop alternatives	April 2017 – October 2019: AP developing ideas, Cte tasking PDT with providing background information, generally and about AP ideas	Sects. 1.0, 5.6.1
6	Approve range of alternatives	TBD	
7	Conduct impact analysis, prepare Draft EIS	TBD	
8	Approve DEIS, can identify preliminary preferred alternatives	TBD	
9	Hold public comment period on DEIS	TBD	
10	Consider public comments and identify final preferred alternatives	TBD	
11	Prepare DEIS for submission to NMFS	TBD	

Additional steps are necessary beyond Step 11 in Table 1 to translate the Council recommendations into implemented regulations. In part, it involves NMFS reviewing the DEIS, Council staff preparing a Final EIS, NMFS holding a comment period on a proposed rule and decision-making.

3.4 Control Dates

Bait Control Date. At the February 19, 2009 joint meeting of the Skate Advisory Panel and Committee (there was no quorum for either body), the Committee members present agreed to bring forward at the

April Council meeting the Advisory Panel's request for a skate bait fishery control date. From the meeting summary (p. 5):

> *"Advisors were concerned that new entrants into the skate bait fishery could have a negative impact on current participants, especially with the fishery being managed by quotas. Several industry members recommended that the Council set a control date for the skate bait fishery. The Oversight Committee recalled that a control date had been discussed before, but action was not taken because it could be a long time before the Council could consider and develop a limited access program."*

This was the same meeting in which final alternatives were recommended for Amendment 3, the action that implemented an annual catch limit framework with accountability measures to account for any excess catch, or overages, and prevent overfishing. Other measures included a three-season quota allocation, a 20,000 lb whole skate possession limit and a 1,900 lb skate wing (4,313 lb whole) possession limit. For both fisheries, the Council approved triggers that would automatically reduce the possession limits to an incidental limit of 500 lb of skate wings (1,135 pounds whole) once landings reach 80-90% of the amount allocated to each fishery. The new measures were intended to reduce landings and the total catch of skate and promote increased biomass to rebuild smooth and thorny skates, which were overfished. It also addressed the concern that winter skate could become overfished if high catches continue.

At the April 7-9, 2009 Council meeting, after taking final action on Skate Amendment 3, the Council approved a motion "to request NMFS to publish a control date for the skate bait fishery." The maker of the motion was concerned that considering limited access was necessary since the Council "just cranked down the landing limits to draconian levels." There was some discussion about whether a certain amount of bait landings would be used to qualify vessels for limited access or simply if a vessel had a Letter of Authorization for Skate Bait (LOA). At the February Committee meeting, the idea had been discussed to use a certain weight of landings from the previous 10 years to qualify vessels, generally consistent with the criteria for other limited access programs.[1] One skate bait dealer from the public stated that the bait fishery supports a control date to "best manage the future of the fishery." After a Council member suggested that a discussion about criteria could occur in the future, the Council approved the motion (15/0/1). NMFS published the bait control date on July 30, 2009.

Wing (non-bait) Control Date. Following a lengthy discussion at the December 2013 Council meeting on establishing limited access for the skate fishery, it was not prioritized for 2014. At a January 9, 2014 joint Skate AP-Committee meeting, the Committee selected preferred alternatives for Framework Adjustment 2 (with final action by the Council in January). Framework 2 set specifications for FY 2014 and 2015 and revised the VTR and dealer reporting codes for the bait and wing fishery (made species-specific codes). At this meeting, the Committee passed a motion "that the Council request NMFS publish a control date for the skate fishery for uses other than bait" (4/0/2).

The intent was not to change Council priorities or initiate an amendment for limited access but to take the first step towards achieving that priority. The intent was also to not revise the skate bait control date but cover all components of the skate fishery other than bait. The AP and Committee did not generally support changing the bait control date. The term "for uses other than bait" was approved so that species-specific control dates would not have to be established if a use other than wing and bait was developed. The Committee wanted to restrict future uses of skates especially if currently prohibited species rebuild. The Council Chair noted that this has been listed as a priority for several years but because of overall workload has not been prioritized. It was hoped that this could be prioritized for 2015. The Committee motion passed at the January 2014 Council meeting (15/0/1) with no discussion. NMFS published the control date on March 31, 2014. In November 2014, the Council did not approve developing amendment

[1] Landings data ten years before 2009 may not be differentiated by species, and possibly disposition (bait/wing).

to consider limited access in the skate fishery as a 2015 management priority. In December 2015, the Council approved this as a 2016 management priority.

3.5 PUBLIC SCOPING

At the October 11, 2016 Skate AP meeting (no quorum), AP members present approved the Amendment 5 public scoping document. There was general agreement that limited access was favorable and beneficial to the bait and wing fisheries. The Skate Committee approved the scoping document on October 19, 2016. The Council approved the Amendment 5 public scoping document in November 2016.

On Page 4 of the scoping document, the Council stated the following reason for why it intended to develop Amendment 5:

> *"The Northeast Skate Complex fishery remains an open access fishery – any vessel can join or leave the fishery at any time. In contrast, the majority of fisheries in the New England region have adopted limited access. Limited access in the skate fisheries would prevent unrestrained increases in fishing effort by new entrants to the fishery."*

Concerns were described on Page 5:

> *"Participants in both skate fisheries are concerned that increasingly strict regulations in other fisheries, particularly in the Northeast multispecies fishery where several stocks are overfished and subject to strict catch restrictions, might cause these fishermen to switch over to fishing for skates. An increase in effort in the skate fishery could trigger reduced skate trip limits and have other negative economic impacts on current participants because skate markets are still developing and therefore an influx of product could reduce price."*

Additional rationale was provided on Page 7:

> *"New measures to establish limited access permits are being considered because the Northeast Skate Complex fishery remains one of the few open access fisheries in New England. Until access to the fishery is limited, the bait and non-bait (wing) fisheries are at risk from overcapacity problems. Limited access measures may differ for the bait and skate fisheries to reflect the distinct operations of each fishery. The amendment's objective would be to establish qualification criteria for skate (bait and non-bait [wing]) fishing permits and possibly different qualification criteria or catch limits for each fishery, considering how they operate differently. For example, in the wing fishery, it may be desirable to have different tiers that distinguish between vessels that target skate, vessels that historically targeted skate, and vessels that catch and land smaller quantities of skate. Having different categories of limited access vessels may treat vessels differently based on their individual history, distinguishing those that have targeted skate from those that catch and land skate while fishing for other species. Landing limits for qualifiers and non-qualifiers could therefore be more consistent with the type of fishing that these vessels conduct in order to minimize discarding and economic effects. Some historic participants in the Northeast Skate Complex fisheries may also feel entitled to some limited access privileges."*

The scoping hearings occurred in January-February 2017. The PDT summarized comments (see March 20, 2017 PDT meeting summary). There were 17 written comments and 34 oral comments. There was mixed support for limited access, with no discernable trend among bait and wing fishermen or by geography or other affiliation. The written comments suggested a slight preference for limited access; however, the spoken comments indicated more opposition to limited access. Stock status and abundance were a factor in several public comments. If the quota were to increase, then support for limited access

may change for some participants. Some comments supported updating the bait control date. In April 2017, the Skate Advisory Panel, Committee, and Council reviewed the scoping comments.

3.6 Amendment 5 Problem Statement, Goals and Objectives

Generally, a goal is a desired result or outcome that would solve a problem. A goal is typically broad and long-term in scope. An objective is a specific, measurable action that would help achieve a goal.

In June 2019, the Council approved two objectives developed by the Skate Committee. In March 2020, the Committee developed a problem statement and an additional objective. Neither the Skate Committee nor the Council have developed goals per se for Amendment 5, though there is some language in the problem statement and objectives that articulates desired outcomes. The Council should settle on its problem statement, goal(s), and objective(s) prior to proceeding much further with this action.

To assist, the PDT has color-coded the problem statement and objectives, as developed to date:

BLUE = problem **GREEN = goal** **PURPLE = objective**

Problem Statement:

> "There is considerable latent effort in both fisheries - a relatively small portion of vessels account for the majority of landings in most years, and the Council is concerned that **activation of latent permits could lead to shortened seasons, as well as increased catch of non-target species if racing to fish increases. This could cause unrestrained increases in fishing effort by new entrants to the fishery.** Therefore, **further restricting access** will help to **ensure access to the quota for participants that have participated on a regular basis and therefore have some degree of dependency**. **Additional effort could also increase daily landings, making it difficult to close the fishery in a timely fashion, which could negatively impact the skate resource**." [implied goal: **remain within landing limits**; Committee approved March 2020]

Goals: [yet to be developed]

Objectives:

1. Any management measure adopted in this limited access action **minimizes the impact on any other fisheries that have interactions with skates**. [Council approved June 2019, like FMP Objective 6]
2. To identify the various fishery components that use the skate resources and to **preserve, to the extent possible**, **through limited access ongoing participation the fishery consistent with how past utilization has occurred.** [Council approved June 2019]
3. Consider the **appropriate number of vessels in the directed and incidental skate wing and skate bait fisheries and design appropriate management measures** for **permitted vessels to avoid more frequent and disruptive fishery closures due to additional effort from vessels that have not substantively participated in the fishery in recent history.** [Committee approved March 2020]

NOTE: In June 2020, the Council rejected the above problem statement and objective # 3 above was not considered. The Skate Committee met on August 6 and again on September 10. It is expected that the Committee will bring new recommendations to the September Council meeting. This section will be updated after the September Council meeting.

3.7 PREVIOUSLY IDENTIFIED IDEAS

To support the Skate Committee in its tasking by the Council in December 2019 to define a clear problem statement, goals, and objectives for this action, the PDT compiles here (Table 2) ideas that have been previously identified through establishing control dates, the scoping process, and through discussions by the PDT, AP, and Committee. Some of the ideas overlap. In this review, the PDT noted where ideas for alternatives have also been raised (Table 4). There have been concerns about the potential for new entrants and fishermen switching from other fisheries. Committee should deliberate on whether any/which of the concerns raised through this process are still relevant and identify why the concern is a problem. For more information and further details, refer to March 11, 2020 PDT memo on A5 progress.

Table 2. Previously raised ideas for a problem statement, goals, and objectives.

Issue	Where raised				
	Setting control date	Public scoping	PDT	AP	Cte
Prevent new entrants from having a negative impact on current participants[1]	√				
Prevent unrestrained increases in fishing effort by new entrants to the fishery		√			
Prevent fishermen from switching from fisheries with increasingly strict regulations into the skate fishery		√			
Prevent overcapacity problems		√			
Recognizes the de facto separation of bait and non-bait, established with two separate control dates	√			√	√
Do not directly impact other fisheries/user groups					√
Develop an ITQ for the wing fishery[2]				√	
Keep the skate wing and bait fisheries open year-round				√	
Manage the skate and monkfish fisheries in harmony				√	
Promote efficiency, profitability, and sustainability				√	
Freeze the footprint of the wing and bait fisheries					√
To preserve, to the extent possible, through LA, ongoing participation in the fishery consistent with how past utilization has occurred					√
Prevent overfishing and exceeding ABC			√		
Increase efficiency of qualifying participants to minimize discarding of skates			√		
Minimize negative economic impacts on current participants if overcapacity results in overfishing or the incidental possession limit being implemented and prevents optimum yield being achieved			√		

[1] "New entrants" would need to be defined (e.g., never caught skates, never exceeded an incidental limit, new vessel build, vessels that never fished in the Northeast Region).
[2] This idea was tabled in May 2019 by the Committee until Framework 8 is finished.

Table 3 - Previously raised ideas for alternatives.

Issue	Where raised				
	Setting control date	Public scoping	PDT	AP	Cte
Use a certain weight of landings from the previous 10 years to qualify vessels	√			√	
Qualify for bait limited access on whether the vessel had a LOA	√			√	
Create limited access for bait and for “non-bait” to include all other uses (incl. wing)	√				
For the wing fishery, have tiers that distinguish between vessels that target skate, vessels that historically targeted skate, and vessels that catch and land smaller quantities of skate		√		√	√
Create landing limits for qualifiers and non-qualifiers to be more consistent with the type of fishing that these vessels conduct		√			
Establish qualification criteria for skate (bait and non-bait [wing]) fishing permits and possibly different qualification criteria or catch limits for each fishery, considering how they operate differently		√		√	√

4.0 POTENTIAL QUALIFICATION TIERS

The Skate Advisory Panel drafted alternatives for limited access in 2019.

The Skate Committee or NEFMC have NOT approved these for inclusion in Amendment 5.

PDT comment: If the Council develops alternatives that are specific to wing and bait, it should be clarified how the landings using other disposition codes would be treated (e.g., bait and non-bait).

4.1 DRAFT WING CRITERIA – NOT YET APPROVED BY CTE OR COUNCIL

The Skate Advisory Panel proposed wing limited access permit qualification criteria in May 2019 (Table 4). The Skate Committee has not moved this proposal as an alternative for Amendment 5 but tasked the PDT with identifying the vessels, landings and revenue that would fit within these criteria (Table 5).

Table 4. AP-developed qualification criteria for limited access in the skate wing fishery.

Qualifications (wing landings in any one FY)			
Wing Group	**FY 2003 to Control date**	**Group**	**Control date to FY 2018**
1a	≥100,000 lb	**1b**	≥100,000 lb
2a	75,000 to <100,000 lb	**2b**	75,000 to <100,000 lb
3a	50,000 to <75,000 lb	**3b**	50,000 to <75,000 lb
4a	25,000 to <50,000 lb	**4b**	25,000 to <50,000 lb
Note: Developed at the May 21, 2019 AP meeting (the wing control date is March 31, 2014).			

Table 5. Qualifying vessels under draft wing LA permit criteria.

Wing Group	Number of Vessels	FY 2003-2013		
		Live Landings (lb)	**Total Revenue**	**Revenue/Vessel**
Qualifying years: FY 2003 through CD				
1a	103	261,024,631	$55,702,491	$540,801
2a	40	27,593,638	$6,140,314	$153,508
3a	46	25,546,244	$5,816,982	$126,456
4a	105	30,819,069	$7,283,967	$69,371
Note: these data are through the end of FY 2013 (April 30, 2014), not March 31, 2014, the CD. There could be a few vessels that fished in April 2014 that would qualify.				
Qualifying years: CD through FY 2018				
1b	12	14,208,406	$3,622,457	$301,871
2b	7	5,846,558	$1,294,169	$184,881
3b	12	4,825,303	$1,139,982	$94,999
4b	23	4,826,426	$1,122,872	$48,821
Note: these data are FY 2014-2018, not after March 31, 2014. There could be a few vessels that fished in April 2014 and would not qualify. Source: Includes all Federal landings, where vessels had a Federal permit at any time in the year.				

PDT comment: If the Committee wants to develop these qualification criteria further, the PDT recommends considering the 999 vessels that do not qualify under Groups 1-4, described in Table 6. These 999 vessels can be broken down into two groups: 5.1) those that landed at least one trip above the 500 incidental limit for wings but never landed more than 25,000 lb in any fishing year (e.g., Group 5.1 in Table 6), and 5.2) those that never landed above the incidental limit (under 500 lb, Group 5.2). The average wing revenue per vessel of Group 5.1 is over 20 times greater than Group 5.2 over FY 2003-2018.

Table 6. Vessels NOT qualifying under draft wing LA permit criteria.

Wing Group	Number of Vessels	FY 2003-2018		
		Live Landings (lb)	Total Revenue	Revenue/Vessel
5.1 (500-25,000 lb)	469	28,753,197	$7,384,494	$15,745
5.2 (<500 lb)	530	1,488,778	$384,298	$725
5 (Total Non-qualifiers)	**999**	**30,241,975**	**$7,768,792**	**$7,776**

Analysis of Potential Wing Landings with FY 2020 Possession Limits: In April 2017, the Skate Committee tasked the PDT to review "whether or not there is justification for limited access for each of the two fisheries." In the March 11, 2020 PDT memo, the PDT provided an example of the potential landings at the current (FY 2020) possession limits to better fulfil this task. It is briefly described here. Qualifiers were examined using the landings for wings (consistent with the possession limits). The above vessel groups were used. Groups 1a through 4b (8 groups) annualized landings for the 16-year period were summed (from Table 5) and converted to landed weight, equaling 11,401,837 landed pounds (live weight divided by 2.27). This equals 99% of the FY 2020 wing TAL (11,536,874 landed pounds (11,879 mt * 2204.622, from Figure 1, divided by 2.27).

If all 469 vessels in Group 5.1 landed one trip at the wing possession limit in each season, the total landings by that group would be 3.75M pounds. If each of the 530 vessels in Group 5.2 had one trip at the incidental limit, the group would land 265,000 pounds.

Thus, the total potential landings under this example would be 15.4M lb., far exceeding the 11.5M lb TAL.

Alternatively, the number of trips at the wing possession limit by Group 5.1 vessels that it would take to exceed the wing TAL could be examined. Assuming Groups 1a through 4b landed 11.4M lb, there would be 135,038 lb remaining within the TAL:

- In season 1, only 45 trips by any of the Group 5.1 vessels, at the possession limit, would result in the TAL being exceeded (135,038/3,000=45)
- In season 2, only 27 trips by Group 5.1 vessels would result in the TAL being exceeded (135,038/5,000=27)

4.2 DRAFT BAIT CRITERIA - NOT YET APPROVED BY CTE OR COUNCIL

Bait limited access permit qualification criteria were drafted by members of the Skate Advisory Panel in April 2019 (no quorum at meeting; Table 7). The Skate Committee has not moved this proposal as an alternative for Amendment 5 but tasked the PDT with identifying the vessels, landings, and revenue that would fit within these criteria (Table 8).

Table 7. Bait fishery qualification criteria and structure of a limited access program as proposed by AP members present at the April 23, 2019 meeting.

Bait Group	Qualification	Trip Limit
1	LOA prior to CD and active (>1 live lb) 2014 - 2018	25,000 lb
2	Had LOA after CD and ≥50,000 live lb in any 1 year, 2009-2018	10,000 lb
3 (Non-qualifier)	Other	1,200 lb
Note: bait control date is July 30, 2009.		

Table 8. Qualifying vessels under draft bait LA permit criteria.

Bait Group	Number of Vessels	Live Landings (lb)	Total Revenue	Revenue/Vessel
1	30	72,987,252	$6,778,947	$225,965
2	24	63,406,247	$6,298,055	$262,419
3 (Non-qualifier)	330	31,952,626	$2,819,759	$8,545

PDT comment: If the Committee wants to develop these qualification criteria further, the PDT recommends considering the 330 vessels that do not qualify under Groups 1 and 2, described in Table 9. These 350 vessels can be broken down into two groups: 3.1) those that landed at least one trip above the incidental limit for bait, but never totaled over 50,000 landed lb in any fishing year or acquired an LOA, and 3.2) those that never landed bait above the incidental landings (under 1,135 live lb) on a trip in any fishing year. The average bait revenue per vessel of Group 3.1 is over 60 times greater than Group 3.2 over FY 2003-2018.

Table 9. Vessels NOT qualifying under draft bait LA permit criteria.

Bait Group	Number of Vessels	FY 2003-2018		
		Live Landings (lb)	Total Revenue	Revenue/Vessel
3.1 (1,135-50,000 lb)	172	31,455,085	$2,779.348	$16,159
3.2 (<1,135 lb)	158	497,541	$40,411	$256
3 (Total Non-qualifiers)	**330**	**31,952,626**	**$2,819,759**	**$8,545**

Analysis of Potential Bait Landings with FY 2020 Possession Limits: As with wings described above, here is an example of the potential landings at the current (FY 2020) possession limits. Details are in the March 11, 2020 PDT memo. Qualifiers were examined using the landings in live pounds for bait (consistent with the possession limits). The above vessel groups were used. Following the same calculation as for wings, the historical landings capability of Group 1 and 2 is 9.1M lb. Adding the 'potential' bait landings by Group 3.1 (each one of the 172 non-qualifying vessels land one trip at the 25,000 possession limit), 4.3M lb yields a total of 13.4 M lb, slightly over the 13.2 M lb bait TAL for FY 2020.

5.0 AFFECTED ENVIRONMENT

5.1 INTRODUCTION

The Affected Environment is described in this action based on valued ecosystem components (VEC), including target species, non-target species, physical environment and Essential Fish Habitat (EFH), protected resources, and human communities. VECs represent the resources, areas and human communities that may be affected by the alternatives under consideration in this amendment. VECs are the focus since they are the "place" where the impacts of management actions occur.

5.2 TARGET SPECIES (NORTHEAST SKATE COMPLEX)

The following species of skates comprise the NE skate complex: winter skate, barndoor skate, thorny skate, smooth skate, little skate, clearnose skate, and rosette skate.

5.2.1 Species Distribution

Skates are not known to undertake large-scale migrations but move seasonally with changing water temperature, moving offshore in summer and early autumn and returning inshore during winter and spring. Skates lay eggs that are enclosed in a hard, leathery case commonly called a mermaid's purse. Incubation time is six to twelve months. The young have an adult form at the time of hatching (Bigelow & Schroeder 1953).

Barndoor skate are generally found along the deeper portions of the Southern New England continental shelf and the southern portion of Georges Bank, extending into Canadian waters (<150 - 750 m). The NEFSC surveys catch them far south as NJ during the spring. The survey catches **clearnose** skate in shallower water along the Mid-Atlantic coastline but are known to extend into non-surveyed shallower areas and into the estuaries, particularly in Chesapeake and Delaware Bays. These inshore areas are surveyed by state surveys and the Mid-Atlantic NEAMAP Survey. **Little skate** are found along the Mid-Atlantic, Southern New England, and Gulf of Maine coastline, in shallower waters than barndoor, rosette, smooth, thorny, and winter skates. **Rosette** (590-5,905 m)**, smooth (**46 - 914 m**), and thorny** skate (20-1,000 m) are typically deep-water species. The survey catches rosette skate along the shelf edge in the Mid-Atlantic region, while smooth and thorny are found in the Gulf of Maine and along the northern edge of Georges Bank. **Winter** skate are found on the continental shelf of the Mid-Atlantic and Southern New England regions, as well as Georges Bank and into Canadian waters. Winter skate are typically caught in deeper waters than little skate (both found typically <90 m), but partially overlap the distributions of little and barndoor skates.

5.2.2 Stock Status

The last benchmark assessment for skate was in 2007 (SAW 44; NEFSC 2007a; b). Because the analytic models did not produce reliable results, the skate stock status determinations rely entirely on the annual NMFS trawl survey, based on the rate of change in the three-year moving average for the survey biomass index. Thresholds vary by species due to normal inter-annual survey variability. Details about the overfishing reference points and how they were chosen are given in NEFSC (2000).

The fishing mortality reference points are based on changes in survey biomass indices. If the three-year moving average of the survey biomass index for a skate species declines by more than the average coefficient of variation (CV) of the survey time series (Table 10), then fishing mortality is assumed to be greater than F_{MSY}, and it is concluded that overfishing is occurring for that species (NEFSC 2007a).

Except for little skates, the abundance and biomass trends are best represented by the fall survey, which has been updated through 2018. Little skate abundance and biomass trends are best represented by the spring survey, which has been updated through 2019. Details about long term trends in abundance and biomass are in the SAW 44 Report (NEFSC 2007a) and in the Amendment 3 FEIS (Section 7.1.2).

Based on survey data updated through spring 2019, only thorny skate remains overfished (Table 10).[2]

Barndoor: For barndoor skate, the 2016-2018 NEFSC autumn average survey biomass index of 1.81 kg/tow is above the biomass threshold reference point (0.78 kg/tow) and the B_{MSY} proxy (1.57 kg/tow, Table 10). The 2016-2018 average index is above the 2015-2017 index by 15.3%. It is recommended that this stock is not overfished, and overfishing is not occurring.

Clearnose: For clearnose skate, the 2016 and 2018 NEFSC autumn average biomass index of 0.61 kg/tow is above the biomass threshold reference point (0.33 kg/tow) but below the B_{MSY} proxy (0.66 kg/tow, Table 10). The 2016 and 2018 two-year average index is below the 2014-2016 index by 3.1% which is less than the threshold percent change of 40%. It is recommended that this stock is not overfished, and overfishing is not occurring.

Little: For little skate, the 2017-2019 NEFSC spring average biomass index of 5.32 kg/tow is above the biomass threshold reference point (3.07 kg/tow) but below the B_{MSY} proxy (6.15 kg/tow, Table 10). The 2017-2019 average index is above the 2016-2018 average by 13.4%. It is recommended that this stock is not overfished, and overfishing is not occurring.

Rosette: For rosette skate, the 2016 and 2018 NEFSC autumn average biomass index of 0.047 kg/tow is above the biomass threshold reference point (0.024 kg/tow) but below the B_{MSY} proxy (0.048 kg/tow, Table 10). The 2016 and 2018 two-year average index is above the 2014-2016 index by 0.1%. It is recommended that this stock is not overfished, and overfishing is not occurring.

Smooth: For smooth skate, the 2016-2018 NEFSC autumn average biomass index of 0.27 kg/tow is above the biomass threshold reference point (0.134 kg/tow) and equal to the B_{MSY} proxy (0.27 kg/tow; Table 10). The 2016-2018 index is above the 2015-2017 index by 0.2%. It is recommended that this stock is not overfished, and overfishing is not occurring.

Thorny: For thorny skate, the 2016-2018 NEFSC autumn average biomass index of 0.16 kg/tow is well below the biomass threshold reference point (2.06 kg/tow; Table 10). The 2016-2018 index is higher than the 2015-2017 index by 8.4%. It is recommended that this stock is **overfished** but overfishing is not occurring.

Winter: For winter skate, the 2016-2018 NEFSC autumn average biomass index of 7.22 kg/tow is above the biomass threshold reference point (2.83 kg/tow) and above the B_{MSY} proxy (5.66 kg/tow, Table 10). The 2016-2018 average index is above the 2015-2017 index by 1.2%. It is recommended that this stock is not overfished, and overfishing is not occurring.

[2] Once the Annual Monitoring Report for FY 2019 is finalized in late summer/early fall 2020, the stock status for each of the skate species will be updated accordingly.

Table 10. Recent survey indices, survey strata used and biomass reference points of skate species.

	BARNDOOR	CLEARNOSE	LITTLE	ROSETTE	SMOOTH	THORNY	WINTER
Survey (kg/tow)	**Autumn**	**Autumn**	**Spring**	**Autumn**	**Autumn**	**Autumn**	**Autumn**
Time Series	**1963-1966**	**1975-2007**	**1982-2008**	**1967-2007**	**1963-2007**	**1963-2007**	**1967-2007**
Strata Set	**Offshore 1-30, 34-40**	**Offshore 61-76; Inshore 17,20,23,26,29,32,35,38,41,44**	**Offshore 1-30, 34-40, 61-76; Inshore 2,5,8,11,14,17,20,23,26,29,32,35,38,41,44-46,56,59-61,64-66**	**Offshore 61-76**	**Offshore 1-30, 34-40**	**Offshore 1-30, 34-40**	**Offshore 1-30, 34-40, 61-76**
2012	1.54	0.93	7.54	0.040	0.21	0.08	5.29
2013	1.07	0.77	6.90	0.056	0.14	0.11	2.95
2014	1.62	0.61	6.54[a]	0.053	0.22	0.21	6.95
2015	2.08	0.82	6.82	0.045	0.25	0.19	6.15
2016	1.09	0.34	3.56[b]	0.044	0.27	0.13	6.84
2017	1.54[c]	[c]	6.09	[c]	0.34[c]	0.21[c]	8.40[c]
2018	2.80[e]	0.88	4.41	0.051	0.25[e]	0.14[e]	6.41[e]
2019			5.45				
2012-2014 3-year average	1.41	0.77	6.99[a]	0.048	0.19	0.13	5.06
2013-2015 3-year average	1.59	0.73	6.75[a]	0.051	0.21	0.17	5.35
2014-2016 3-year average	1.60	0.59	5.64[b]	0.047	0.23	0.176	6.65
2015-2017 3-year average	1.57[c]	[c]	5.49[b]	[c]	0.27[c]	0.18[c]	7.13[c]
2016-2018 3-year average	1.81[c,e]	0.61[d]	4.69[b]	.047[d]	0.27[c,e]	0.16[c,e]	7.22[c,e]
2017-2019 3-year average			5.32				
% change 2013-2015 compared to 2012-2014	+12.9	-4.8	-3.4	+6.0	+6.8	+26.3	+5.7
% change 2014-2016 compared to 2013-2015	+0.5	-19.5	-16.8	-7.9	+13.2	+3.7	+24.2
% change 2015-2017 compared to 2014-2016	-0.1.5		-2.6		+16.3	-0.6	+7.3
% change 2016-2018 compared to 2015-2017	+15.3	+3.1 [d]	-14.6	+0.1	-0.2	-8.4	+1.2
% change 2017-2019 compared to 2016-2018			+13.4				
% change for overfishing status determination in FMP	-30	-40	-20	-60	-30	-20	-20
Biomass Target	1.57	0.66	6.15	0.048	0.27	4.13	5.66
Biomass Threshold	0.78	0.33	3.07	0.024	0.13	2.06	2.83

a. No survey tows completed south of Delaware in spring 2014. Values for 2014 were adjusted for missing strata (Offshore 61-68, inshore 32,35,38,41,44) but may not be fully comparable to other surveys which sampled all strata.
b. The 2016 spring survey was later than usual.
c. No survey tows completed south of Georges Bank in fall 2017. Values were adjusted for missing strata (Offshore 1-12, 61-76).
d. Two-year average due to missing 2017 survey. e. Offshore strata 30, 34 and 35 not sampled but no adjustments were made.

5.2.3 Uncertainty Buffer

Amendment 3 established the annual catch limit framework currently used to set specifications for the NE Skate Complex (NEFMC 2009). The uncertainty buffer was set at 25% through Amendment 3 but was decreased to 10% through Framework Adjustment 6 (NEFMC 2018b). Additional sources of uncertainty have not been identified; see Table 5 in Framework 6 for the full list of the sources of uncertainty, both management and scientific, considered to affect the NE Skate Complex and any improvements made since Amendment 3 was implemented.

5.2.4 Biological and Life History Characteristics

The Northeast Fisheries Science Center (NEFSC) prepared the Essential Fish Habitat Source Documents for each of the seven skate species provide most available biological and habitat information on skates. These technical documents are available at http://www.nefsc.noaa.gov/nefsc/habitat/efh/ and contain the following information for each skate species in the Northeast complex:

- Life history, including a description of the eggs and reproductive habits
- Average size, maximum size, and size at maturity
- Feeding habits
- Predators and species associations
- Geographical distribution for each life history stage
- Habitat characteristics for each life history stage
- Status of the stock (in general terms, based on the Massachusetts inshore and NEFSC trawl surveys)
- A description of research needs for the stock
- Graphical representations of stock abundance from NEFSC trawl survey and Massachusetts inshore trawl survey data
- Graphical representations of percent occurrence of prey from NEFSC trawl survey data

The seven species of the northeast skate complex follow a similar life history strategy but differ in their biological characteristics. A detailed summary of the biological and life history characteristics was in the FEIS for Amendment 3 (NEFMC 2009). Framework 5 (NEFMC 2018a) also contains updated life history information on the seven skate species.

5.2.5 Discards

Discard estimation method: Skate discards are estimated for a calendar year, rather than the fishing year, because they rely on the NMFS area allocation landings tables to expand observed skate discard/kept-all ratios to total based on landings by gear, area, and quarter. The observed D/K-all ratios are derived from the Northeast Fisheries Observer Program and the At Sea Monitoring program data and include both sector and non-sector vessels but are not stratified on that basis. The discard rate is calculated using a three-year average of the discards of skates divided by the landings of all species.

Estimates of total skate catch are sensitive to the discard mortality rate assumption (Table 11) and have direct implications for allowable landings in the skate fisheries. Based on the weighted average discard mortality across gear types (Table 12), dead discards are estimated (Table 13). Data on immediate- and delayed (i.e., post-release) mortality rates of discarded skates and rays is extremely limited. Benoit (2006) estimated acute discard mortality rates of winter skates caught in Canadian bottom trawl surveys, the SSC in 2009 decided to use a 50% discard mortality rate assumption for all skates and gears for setting the Skate ACL, based on this paper.

This mortality rate continues to be used, unless research has improved our understanding of discard mortality for the specific skate species in various gear types (Table 11). Mandelman *et al.* (2013) examined the immediate and short-term discard mortality rate of little, smooth, thorny and winter skates in the Gulf of Maine for otter trawl gear. The SSC approved revising the discard mortality rate estimates for little (22%), smooth (60%), thorny (23%) and winter (9%) skates for otter trawl. Knotek (2018) examined the immediate and short-term discard mortality rate of little, winter, and barndoor skates in scallop dredge gear by evaluating reflex impairment and injury indexes. The SSC approved revising the discard mortality rate estimates for only little (48%) and winter skate (34%) for scallop dredge gear based on this study, as the researchers considered the sample size was insufficient for an accurate estimate for barndoor skate. Sulikowski *et al.* (2018) estimated the discard mortality of winter skate in commercial sink gillnets, and SSC approved revising the discard mortality rate estimate for winter skate (14%) for sink gillnet gear based on this study.

Table 11. Assumed and estimated discard mortality rates of the seven skate species by gear type.

Gear Type	Barndoor	Clearnose	Little	Rosette	Smooth	Thorny	Winter
Gillnet	50%	50%	50%	50%	50%	50%	14%
Longline	50%	50%	50%	50%	50%	50%	50%
Otter Trawl	50%	50%	22%	50%	60%	23%	9%
Scallop Dredge	50%	50%	48%	50%	50%	50%	34%

Over the past few decades, skate discards have decreased substantially (Table 13). Between 2013 and 2018, total and dead skate discards peaked in 2014 and have declining since despite no large changes occurring in the distribution of pounds of skate landed in recent fishing years. Total discards for 2018 were 23,000 mt, a decrease by 11% from 2017.

Table 12. Discards (mt) of skates (all species) by gear type from all areas combined, calendar year 1964 – 2018.

	Half 1							Half 2							
Year	Line Trawl	Otter Trawl	Shrimp Trawl	Sink Gill Net	Scallop Dredge	Total Half 1		Line Trawl	Otter Trawl	Shrimp Trawl	Sink Gill Net	Scallop Dredge	Total Half 2		Grand Total
1964	361	53,514	0	12	6,434	60,321		402	37,992	0	7	8,288	46,690		107,011
1965	425	58,644	0	17	5,029	64,115		491	41,212	0	5	8,940	50,647		114,762
1966	311	62,821	0	26	5,543	68,701		625	35,869	0	7	6,524	43,025		111,726
1967	319	56,872	0	22	2,882	60,095		470	35,053	0	8	4,735	40,267		100,362
1968	224	56,209	0	37	3,672	60,142		414	34,010	0	10	4,890	39,324		99,466
1969	296	54,979	0	32	2,294	57,602		669	29,299	0	6	3,017	32,991		90,593
1970	331	43,878	0	22	1,838	46,069		584	26,802	0	7	2,742	30,135		76,204
1971	519	34,509	0	21	1,916	36,965		769	20,097	0	8	2,552	23,426		60,391
1972	525	32,161	0	31	2,000	34,718		711	17,965	0	13	2,559	21,248		55,966
1973	618	34,382	0	31	2,103	37,134		724	19,738	0	15	1,846	22,323		59,457
1974	697	36,349	0	58	1,994	39,099		778	17,754	0	24	2,845	21,401		60,499
1975	727	25,197	283	61	2,615	28,883		744	17,313	36	26	4,757	22,875		51,758
1976	514	22,435	66	99	4,086	27,200		441	19,650	0	37	8,313	28,441		55,641
1977	329	26,817	39	169	7,210	34,564		314	21,679	0	47	10,106	32,146		66,710
1978	829	35,094	0	190	9,048	45,161		661	23,484	0	66	14,452	38,662		83,823
1979	1,019	38,530	26	157	9,186	48,918		971	27,982	0	67	13,540	42,560		91,478
1980	1,056	39,819	23	195	9,900	50,993		354	29,633	0	96	11,104	41,186		92,179
1981	503	43,186	92	264	9,502	53,547		257	26,460	0	93	12,818	39,628		93,175
1982	400	43,461	117	95	7,779	51,853		197	37,880	7	84	12,572	50,740		102,593
1983	471	49,354	116	118	8,655	58,714		226	33,711	22	70	11,965	45,994		104,708
1984	378	48,449	152	126	8,337	57,442		87	31,261	53	94	9,903	41,398		98,840
1985	321	40,153	214	119	6,821	47,628		173	23,506	70	81	9,483	33,314		80,941
1986	406	36,913	256	173	7,821	45,569		171	25,517	83	88	12,080	37,938		83,508
1987	692	36,141	264	143	12,687	49,927		364	21,178	46	86	18,953	40,627		90,554
1988	638	35,353	158	166	13,791	50,106		341	21,180	46	91	19,077	40,734		90,840
1989	542	37,663	73	74	18,206	56,558		264	20,260	17	111	19,452	40,104		96,661
1990	390	49,863	223	347	17,162	67,986		273	39,008	71	73	23,458	62,883		130,869
1991	839	22,882	232	99	19,314	43,366		297	17,478	44	113	18,812	36,744		80,110
1992	2,050	13,819	255	269	13,679	30,072		1,270	19,609	0	107	22,823	43,809		73,881
1993	42	7,886	35	211	11,268	19,442		28	26,825	1	110	12,700	39,663		59,105
1994	33	57,447	11	190	6,484	64,165		28	17,856	1	230	5,621	23,735		87,900
1995	30	21,980	8	443	7,385	29,846		30	11,215	1	350	19,481	31,077		60,922
1996	28	16,222	26	414	8,376	25,066		27	30,622	8	125	11,258	42,039		67,105
1997	30	7,584	34	388	10,130	18,166		30	7,398	4	90	6,059	13,581		31,747
1998	25	6,103	9	218	9,069	15,425		30	10,488	1	252	8,543	19,314		34,739
1999	23	2,655	4	598	8,542	11,823		24	9,857	0	261	6,149	16,291		28,113
2000	14	6,783	6	181	9,024	16,009		26	18,175	0	791	4,959	23,951		39,960
2001	20	20,075	0	404	3,615	24,114		22	8,449	0	207	3,249	11,927		36,040
2002	21	12,168	1	392	6,655	19,237		25	10,067	0	2,718	8,046	20,857		40,094
2003	38	18,258	8	522	7,222	26,048		18	17,728	0	442	7,965	26,154		52,203
2004	9	14,324	4	450	5,544	20,331		16	21,736	0	503	4,236	26,491		46,822
2005	88	14,304	2	1,041	6,412	21,848		51	19,269	0	559	4,746	24,626		46,473
2006	55	10,552	0	854	4,779	16,241		18	12,368	1	362	5,574	18,323		34,564
2007	70	14,566	0	990	5,812	21,438		22	16,214	0	756	6,488	23,481		44,919
2008	119	10,391	2	1,232	4,810	16,553		56	13,138	0	744	4,539	18,478		35,030
2009	164	11,054	1	1,634	4,903	17,756		185	14,698	0	609	4,193	19,685		37,441
2010	269	9,461	0	1,058	7,655	18,443		209	11,872	0	1,344	4,896	18,322		36,765
2011	172	11,768	3	1,976	5,063	18,982		171	14,760	0	1,205	3,642	19,777		38,759
2012	46	9,941	3	1,657	4,215	15,861		53	13,386	0	825	4,149	18,412		34,274
2013	308	14,444	0	1,401	3,647	19,800		454	16,940	0	523	4,957	22,874		42,673
2014	14	12,634	0	1,675	7,514	21,837		111	14,427	0	880	5,502	20,919		42,757
2015	60	11,596	0	976	6,099	18,731		307	14,605	0	696	3,556	19,164		37,895
2016	86	8,090	0	1,248	4,821	14,245		132	12,228	0	614	6,051	19,025		33,270
2017	55	5,505	0	1,000	4,929	11,489		76	7,606	0	684	5,509	13,876		25,365
2018	34	4,124	0	1,316	4,588	10,063		31	6,937	0	564	5,404	12,936		22,999

Table 13. Landings, and total and dead discards (mt) of skates (all species) for all gear types, calendar year 1968 – 2018.

Year	Landings (mt)	Discards (mt)				Year	Landings (mt)	Discards (mt)		
		Total	Dead	% Dead				Total	Dead	% Dead
1968	6,483	99,466	21,620	22%		1994	9,463	87,903	21,565	25%
1969	9,462	90,593	18,453	20%		1995	7,978	60,924	19,568	32%
1970	4,128	76,204	15,914	21%		1996	15,539	67,107	18,593	28%
1971	5,905	60,391	13,715	23%		1997	12,630	31,748	10,366	33%
1972	8,823	55,966	12,101	22%		1998	16,250	34,740	11,316	33%
1973	7,963	59,457	12,888	22%		1999	15,148	28,154	9,608	34%
1974	3,651	60,499	13,357	22%		2000	16,012	39,961	12,369	31%
1975	3,968	51,758	12,224	24%		2001	15,888	36,041	8,475	24%
1976	1,212	55,641	14,480	26%		2002	14,740	40,094	12,132	30%
1977	1,418	66,710	16,573	25%		2003	16,254	52,204	14,283	27%
1978	1,353	83,823	21,348	25%		2004	17,063	46,823	11,249	24%
1979	1,423	91,478	22,348	24%		2005	14,885	46,474	12,866	28%
1980	1,650	92,179	21,110	23%		2006	17,168	34,565	10,134	29%
1981	847	93,175	20,538	22%		2007	20,342	44,920	13,182	29%
1982	878	102,593	21,499	21%		2008	20,191	35,031	10,160	29%
1983	3,603	104,708	22,205	21%		2009	19,731	37,441	10,070	27%
1984	4,156	98,840	20,832	21%		2010	18,683	36,766	10,523	29%
1985	3,984	80,941	16,918	21%		2011	16,963	38,760	10,508	27%
1986	4,253	83,508	18,471	22%		2012	17,144	34,274	10,087	29%
1987	5,078	90,554	23,581	26%		2013	14,698	42,674	11,551	27%
1988	7,264	90,840	22,952	25%		2014	15,904	42,758	12,673	30%
1989	6,483	96,661	25,701	27%		2015	15,532	37,894	10,417	27%
1990	9,462	130,869	32,887	25%		2016	15,799	33,271	10,435	31%
1991	4,128	80,110	24,445	31%		2017	14,470	25,884	8,544	33%
1992	5,905	73,881	24,159	33%		2018	14,341	23,000	7,580	33%
1993	8,823	59,105	17,622	30%						

5.3 Non-target Species (Bycatch)

The skate wing fishery is largely an incidental fishery, with a small portion of the fishery directing on skate wings (Section 5.6.1.5); fishing effort is expended targeting more profitable species managed under separate FMPs, e.g. NE multispecies and Monkfish FMPs. These fisheries have ACLs, effort controls (DAS), possession limits, gear restrictions, and other measures that indirectly constrain overall effort on skates. Framework 58 to the NE Multispecies FMP (NEFMC 2019) and Framework 10 of the Monkfish FMP (NEFMC 2017b) have full descriptions of the fishing impacts on trips targeting NE multispecies and monkfish (www.nefmc.org). A small number of trips could be described as targeting skates; bycatch on these trips is limited. Monkfish and dogfish comprise most of this bycatch and are described below.

Section 5.6 further discusses the relationship of the skate fisheries with the NE multispecies and monkfish fisheries. Table 23 has the amount of skate bait and wings landed on various DAS declarations.

NE Multispecies

The Northeast Multispecies FMP manages twenty stocks under a dual management system which breaks the fishery into two components: sectors and the common pool. For stocks that permit fishing, each sector is allotted a share of each stock's ACL that consists of the sum of individual sector member's potential sector contribution based on their annual catch entitlements. Sector allocations are strictly controlled as hard total allowable catch limits and retention is required for all stocks managed under an ACL. Overages are subject to accountability measures including payback from the sector's allocation for the following year. Common pool vessels are allocated a number of days at sea (DAS) and their effort further is controlled by a variety of measures including trip limits, closed areas, minimum fish size and gear restrictions varying between stocks. Only a very small portion of the ACL is allotted to the common pool. For more detail regarding control of fishing effort on NE Multispecies, see Framework 58 to the NE Multispecies FMP.

Monkfish

NMFS implemented the Monkfish FMP in 1999 (NEFMC & MAFMC 1998). The FMP included measures to stop overfishing and rebuild the stocks through several measures: limiting the number of vessels with access to the fishery and allocating DAS to those vessels; setting trip limits for vessels fishing for monkfish; minimum fish size limits; gear restrictions; mandatory time out of the fishery during the spawning season; and a framework adjustment process.

The Monkfish FMP defines two management areas for monkfish (northern and southern), divided roughly by an east-west line bisecting Georges Bank. Monkfish in both management regions are not overfished and overfishing is not occurring. In recent years, the monkfish fishery has fallen far short of reaching its TAL (except for FY 2017 in the NFMA), despite a healthy stock status. In 2017, limited access monkfish vessels were allocated 45.2 DAS, of which 37 could be used in the southern management area (NEFMC 2017b). Additional information on monkfish management is at: http://www.nefmc.org/management-plans/monkfish.

Dogfish

Based upon the NEFSC 2018 updated stock assessment, spiny dogfish stock is presently not overfished, and overfishing is not occurring. The spiny dogfish fishery is managed with an ACL, commercial quota, and possession limits (currently 6,000 lb per trip). Like skates, there is a large degree of spatial overlap between spiny dogfish and NE Multispecies trips where dogfish are landed incidentally to groundfish.

5.4 Protected Species

[Section to be completed. See Framework 8 for latest available.]

5.5 Physical Environment and Essential Fish Habitat

[Section to be completed. See Framework 8 for latest available.]

5.6 HUMAN COMMUNITIES

This action evaluates the effect management alternatives may have on the economy, way of life, and traditions of human communities. These social and economic impacts may be driven by changes in fishery flexibility, opportunity, stability, certainty, safety, and/or other factors. While social and economic impacts could be solely experienced by individuals, it is more likely that impacts would be experienced across communities, gear types, and/or vessel size classes. Summarized here are the fisheries and human communities most likely to be impacted by the Alternatives under Consideration. Social, economic and fishery information herein helps describe the response of the fishery to past management actions and predicting how the Amendment 5 alternatives may affect human communities. Also, this section establishes a descriptive baseline to compare predicted and actual changes resulting from management. Additional information is contained in Framework 8 (NEFMC 2020c).

MSA Section 402(b), 16 U.S.C. 1881a(b) states that no information gathered in compliance with the Act can be disclosed, unless aggregated to a level that obfuscates the identity of individual submitters. The fishery data in this framework are thus aggregated to at least three reporting units, to preserve confidentiality. Additional standards are applied to reporting the fishing activity of specific states or fishing communities. To report landings activity to a specific geographic location, the landings have been attributed to at least three fishing permit numbers and the landings must be sold to three or more dealer numbers. However, the dealers do not necessarily have to be in the same specific geographic location.

5.6.1 Commercial Skate Fishery

Skates are harvested in two very different fisheries, one for bait and one for human consumption. As bait, skates are used primarily for the American lobster (*Homarus americanus*) fishery, which prefers small, whole skates. The skate bait fishery is more historic and directed relative to the fishery for human consumption, which harvests skates for their wings. Since 2003, with the implementation of the original Skate FMP, all vessels landing skate above incidental amounts (500 lb of wings) must be on a groundfish, monkfish or scallop Day-at-Sea (DAS).

Bait fishery: Vessels involved in the bait fishery are primarily from Southern New England ports and target little skates (>90%) and, to a much lesser extent, juvenile winter skates (<10%). Juvenile winter skates and little skates are difficult to differentiate due to their nearly identical appearance. Bait skate is primarily landed by trawlers (Table 26), often as a secondary species while targeting monkfish or groundfish.

The bait fishery, based on FY 2010-2018 averages, is largely based out of Rhode Island (primarily Pt. Judith, also Newport, Tiverton and Block Island) with other ports in Massachusetts (Fall River, New Bedford, Bourne and Provincetown), Connecticut (New London, Stonington), New York (Long Island), and New Jersey (Belford, Sea Isle City) also active in the directed bait fishery. The directed skate fishery by Rhode Island vessels occurs primarily in Federal waters less than 40 fathoms from the Rhode Island/Connecticut/New York state waters boundary east to the waters south of Martha's Vineyard and Nantucket out to about 69°W. The most landings are caught south of Block Island in Federal waters. Effort on skates increases in state waters seasonally to supply increased market demand from the lobster fishery in the spring through fall. Skates caught for lobster bait are landed whole by otter trawlers and either sold 1) fresh, 2) fresh salted, or 3) salted and strung or bagged for bait by the barrel. Inshore lobster boats usually use 2 – 3 skates per string, while offshore boats may use 3 – 5 per string. Offshore boats may actually "double bait" the pots during the winter months when anticipated weather conditions prevent the gear from being regularly tended. The presence of sand fleas and parasites, water temperature, and anticipated soak time between trips determine the amount of bait per pot. Within the directed monkfish gillnet fishery, there is also a seasonal gillnet incidental skate fishery, in which mostly winter skates are sold for lobster bait and as cut wings for processing.

Fishermen have indicated that the market for skates as lobster bait has been relatively consistent. Size is a factor that drives the dockside price for bait skates. For the lobster bait market, a "dinner plate" is the preferable size to be strung and placed inside lobster pots. Little and winter skates are rarely sorted prior to landing, as fishermen acknowledge that species identification between little skates and small winter skates is very difficult. Quality and cleanliness of the skate also determine the price paid by the dealer, rather than just supply and demand. The quantity of skates landed in a day has little effect on price, because there has been ready supply of skates available for bait from the major dealers, and the demand for lobster bait has been relatively consistent. Numerous draggers and lobster vessels have historically worked out seasonal cooperative business arrangements with a stable pricing agreement for skates.

Lobster bait usage varies regionally and from port to port, based upon preference and availability (Section 5.6.3). Some lobstermen in the northern area (north of Cape Cod) prefer herring, mackerel, menhaden and hakes (whiting and red hake) for bait, which hold up in colder water temperatures; however, the larger offshore lobster vessels still indicate a preference for skates and Acadian redfish in their pots. Some offshore boats have indicated they will use soft bait during the summer months when their soak time is shorter. The Gulf of Maine vessels use skates caught by vessels fishing in the southern New England area.

Wing fishery: The other primary market for skates in the region is the wing market, caught mostly in gillnets (Table 26). Larger skates, mostly captured by trawl gear, have their pectoral flaps, or wings, cut off and sold into this market. The fishery for skate wings evolved in the 1990s as skates were promoted as "underutilized species," and fishermen shifted effort from groundfish and other troubled fisheries to skates and dogfish. Attempts to develop domestic markets were short-lived, and the bulk of the skate wing market remains overseas. Winter, thorny, and barndoor skates are large enough for processing of wings, but due to their overfished status, possession and landing of thorny skates has been prohibited since 2003. Following a rebuilt determination, limited landings of barndoor skate was allowed following FW5 (NEFMC 2018). Winter skate remains the dominant component of the wing fishery, but illegal thorny wings still occasionally occur in landings. The assumed effectiveness of prohibition regulations is thought to be 98% based on recent work that examined port sampling data (90 day finding for thorny skate). That means 98% or more of the skates being landed for the wing market are winter skates, so regulations for the wing fishery primarily have an impact on that species.

The wing fishery is a more incidental fishery than bait and involves a larger number of vessels located throughout the region. Vessels tend to catch skates when targeting other species like groundfish, monkfish, and scallops and land them if the price is high enough.

The southern New England sink gillnet fishery targets winter skates seasonally along with monkfish. Highest catch rates are in the early spring and late fall when the boats are targeting monkfish, at about a 5:1 average ratio of numbers of skates to monkfish. Little skate is usually caught incidentally year-round in gillnets, as well, and sold for bait. Several gillnetters indicated that they keep the bodies of the winter skates cut for wings and salt them for bait. Gillnetters have become more dependent upon incidental skate catch due to cutbacks in their fishery mandated by both the Monkfish and Multispecies FMPs. Gillnet vessels use 12-inch mesh when fishing for monkfish and catch larger skates. Southern New England fishermen have reported increased catches of barndoor skates in the last few years.

In 2004, dealers started reporting landings by disposition (wing and bait) and the data on landings by disposition have been improving. Landed skate wings are seldom identified by species by dealers. Skate processors buy whole, hand-cut, and/or onboard machine-cut skates from vessels primarily out of Massachusetts and Rhode Island. Because of the need to cut the wings, it is relatively labor-intensive to fish for skates. Participation in the skate wing fishery, however, has recently grown due to increasing restrictions on other, more profitable groundfish species. It is assumed that more vessels land skate wings as an incidental catch in mixed fisheries than as a targeted species.

New Bedford emerged early-on as the leader in production, both in landed and processed skate wings, although skate wings are landed in ports throughout the Gulf of Maine and extending down into the Mid-

Atlantic. Today, Chatham is one of the major ports for skate wings and food skate. Skate wings are also landed significantly in Point Judith and New Bedford. Vessels landing skate wings in ports like Portland, ME; Portsmouth, NH; and Gloucester, MA are likely to land them incidentally while fishing for species like groundfish and monkfish.

The current market for skate wings remains primarily an export market. France, Korea, and Greece are the leading importers. There is a limited domestic demand for processed skate wings from the white tablecloth restaurant business. Winter skates landed by gillnet vessels are reported to go almost exclusively to the wing market. Fishermen indicate that dealers prefer large-sized winter skates for the wing market (over three pounds live weight). Bodies from skates landed for the wing fishery are used as bait in the lobster and Jonah crab fisheries.

5.6.1.1 Permits and Vessels

There is only one type of Federal skate permit (endorsement), an open-access permit. Anyone with a valid Federal fishing permit can obtain a Federal skate permit. Doing so would enable participation in the Federal skate fishery and land wing or bait, and to land the higher bait possession limit, also needing a Letter of Authorization for bait. Vessels with a Federal skate permit may commercially fish for, possess, or land skate caught in Federal waters.

If a vessel has a Federal fishing permit but does not have a Federal skate permit (endorsement), it must fish for skate in state waters under state regulations. If the landings are sold to a Federal dealer, they are Federal landings and contribute to the Federal quota monitoring.

From FY 2003 to 2019 (data from the last few years may be subject to future corrections), permit activity for skate landings had the following trends (Table 14 to Table 17, Figure 2 to Figure 4):

- The number of Federal fishing permits with a Federal skate permit (endorsement) peaked in FY 2007 (2,686) and has declined by up to 3% annually ever since (2,028 in FY 2019; Table 16).
- The number of Federal skate permits active each year has declined since FY 2011 (567) to 357 in FY 2019 (Table 15).
- Each year, 73-99% of the active vessels have landed only non-bait (wing), 0-4% have landed only bait, and 1-22% have landed non-bait and bait (Table 14).
- The number of vessels landing bait-only or non-bait and bait has generally increased over time, while the non-bait-only vessels have decreased (Table 14, Figure 2).
- The percent of vessels that took at least one trip over the incidental limit has been 50-65% annually (Table 14).
- Each year since FY 2008, the number of Federal skate permits exiting the fishery for the last time has been more than the number of new Federal skate permits issued (Table 16).
- The number of new active Federal permits landing skate has generally been <10 annually since FY 2012, mostly landing non-bait (Table 17).
- FY 2016 and 2017, the years in which incidental limits were triggered, were not particularly unusual in terms of permit activity (Table 15, Table 16, Table 17, Figure 2, Figure 3, Figure 4).

Table 14. Federal fishing permits with and without Federal skate permit (endorsements) and relative skate fishery participation, FY 2003-2019.

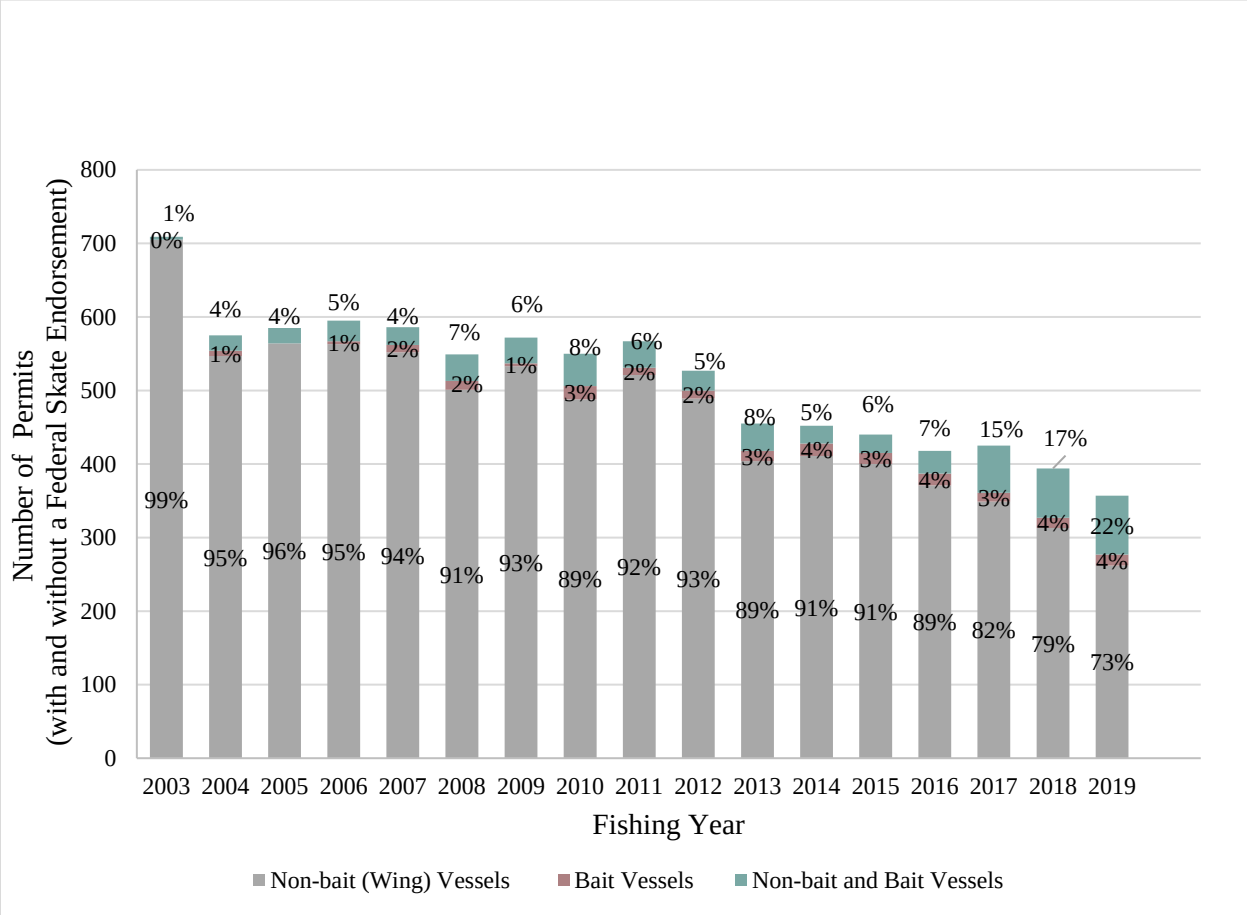
Fishing Year	Federal Permits with or without a Federal Skate Endorsement		All Active Federal Fishing Permits Landing Skate with or without a Federal Skate Endorsement																
			Total Active	Non-bait (Wing) Vessels				Bait Vessels				Non-bait and Bait Vessels						% Vessels that took one trip > incidental limit
	Total	% Active		Total		Landings > incidental limit at least once		Total		Landings > incidental limit at least once		Total		Landings > incidental limit while on a mixed trip at least once		All other vessels landing > incidental limit at least once		
2003	2,082	30%	709	705	99%	352	50%	0	0%	0	0%	4	1%	≤3	~75%	≤3	~75%	50%
2004	2,443	22%	575	547	95%	280	51%	7	1%	4	57%	21	4%	11	52%	6	29%	52%
2005	2,686	20%	585	564	96%	293	52%	--	--	--	--	21	4%	11	58%	4	19%	53%
2006	2,727	20%	595	563	95%	280	50%	4	1%	≤3	~75%	28	5%	17	61%	10	36%	52%
2007	2,738	20%	586	552	94%	307	56%	10	2%	6	60%	24	4%	17	71%	7	29%	58%
2008	2,673	19%	549	501	91%	295	59%	12	2%	8	67%	36	7%	21	58%	12	33%	61%
2009	2,632	20%	572	533	93%	335	63%	4	1%	≤3	~75%	35	6%	24	69%	9	26%	65%
2010	2,557	20%	550	488	89%	234	48%	18	3%	12	67%	44	8%	20	45%	15	34%	51%
2011	2,390	22%	567	521	92%	295	57%	10	2%	7	70%	36	6%	22	61%	7	19%	58%
2012	2,322	21%	527	489	93%	265	54%	11	2%	8	73%	27	5%	18	67%	5	19%	56%
2013	2,246	19%	455	404	89%	232	57%	14	3%	12	86%	37	8%	21	57%	12	32%	61%
2014	2,187	19%	452	411	91%	248	60%	17	4%	16	94%	24	5%	15	63%	7	29%	63%
2015	2,131	19%	440	400	91%	246	62%	15	3%	14	93%	25	6%	16	64%	7	28%	64%
2016	2,114	18%	418	371	89%	205	55%	16	4%	14	88%	31	7%	21	68%	8	26%	59%
2017	2,093	19%	425	349	82%	182	52%	12	3%	9	75%	64	15%	32	50%	22	34%	58%
2018	2,079	17%	394	313	79%	144	46%	14	4%	10	71%	67	17%	33	49%	24	36%	54%
2019	2,062	16%	357	262	73%	123	47%	15	4%	9	60%	80	22%	43	54%	23	29%	55%

Source: Total permits from PERMIT database and permit activity from CFDERS tables, accessed 04/22/2020. 2019 data are preliminary.

Total Federal Fishing Permits with or without a Federal Skate permit (Endorsement) are all permits which had a Federal Skater permit/endorsement such that they are in the PERMIT database under PLAN "SKT" and permits which landed and sold skate under a Federal permit (I.e., A permit number not equal to "000000") but were not listed as possessing a Federal Skate endorsement at the time of landing. **All Active Federal Permits Landing Skate with or without a Federal Skate Endorsement** are permits which landed and sold at least one lb of skate under a Federal endorsement such that it was recorded in the CFDERS database. This includes permits identified in the CFDERS database (i.e., landed and sold skate species to a Federal dealer) but were not listed as possessing a Federal Skate endorsement for that specific fishing year. **Non-bait (wing) vessels** are vessels which only landed wings or other disposition codes. **Bait vessels** are vessels which only landed bait. **Non-bait and bait vessels** are vessels which landed both bait and non-bait on a single trip or on separate trips within the fishing year. **All other vessels landing > incidental limit** are vessels that landed wing and bait during the fishing year and exceeded the incidental limit on at least one trip.

Notes: The bait trips in FY 2005 were grouped into the bait and non-bait vessels to avoid issues with confidentiality. The incidental limit is 500 lb for non-bait (1,135 lb whole weight) and 1,135 for bait (whole weight). On trips landing both wing and bait, the whole weight calculation was used, and the incidental limit is equal to 1,135 lb.

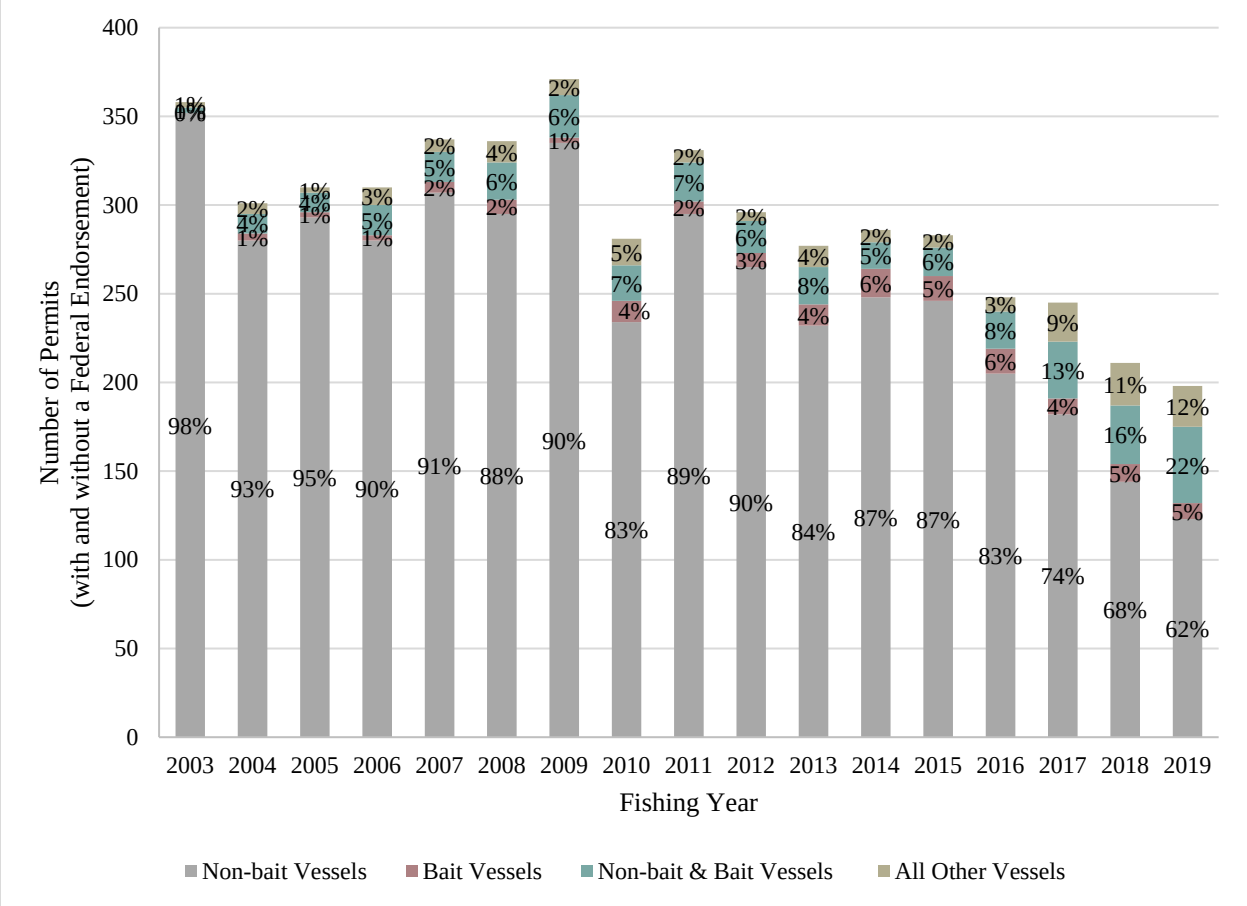
Figure 2. Number of active Federal fishing permits with and without a Federal skate permit (endorsement), FY 2003-2019.



Note: In FY 2005, bait and bait+non-bait vessels were combined to avoid confidentiality issues. Additionally, in cases where the number of permits was three or less, the value was changed to three to avoid confidentiality violations. The years 2003-2006 had sporadic reporting by disposition code. Active permits are vessels that landed skate during that fishing year.
Source: CFDERS tables, accessed 04/22/2020. 2019 data are preliminary.

The number of active Federal permits landing skate (both with and without a Federal endorsement) follows an overall decreasing trend from FY 2003 to 2019 (Table 14, Figure 2). Most active permits fished solely for non-bait (wings, 73-99%) while bait-only vessels make up a much smaller proportion of active permits (0-4%). Vessels that land both bait and wing comprise 1-22% of the active fleet over the time series. The proportion of non-bait/bait permits increases in the latter half of the time series, jumping from 7% in 2016 to 22% by 2019. Though incidental limits were triggered in FY 2016 and 2017, there are no striking differences in the activity of permits landings skate during this period which could indicate that external factors, such as environmental and or economic, may have played a larger role in the activation of these triggers.

Figure 3. Number and percent of active Federal fishing permits (with and without a Federal Skate Endorsement) landing above the incidental limit at least once per fishing year, 2003-2019.



Note: Non-bait (wing) vessels are vessels which only landed wings or other disposition codes. Bait vessels are vessels which only landed bait. Non-bait and bait vessels are vessels which landed both bait and non-bait on a single trip or on separate trips within the fishing year. All other vessels landing > incidental limit are vessels that landed wing and bait during the fishing year and exceeded the incidental limit on at least one trip.
Note: The bait trips in FY 2005 were grouped into the bait and non-bait vessels to avoid issues with confidentiality. The incidental limit is 500 lb for non-bait (1,135 lb whole weight) and 1,135 for bait (whole weight). On trips landing both wing and bait, the whole weight calculation was used, and the incidental limit is equal to 1,135 lb.
Source: CFDERS tables, accessed 04/22/2020. 2019 data are preliminary.

About half of the permits landing skate landed over the incidental limit at least once, ranging from 50% to 65% of permits over the time series (Table 14, Figure 3). Of the vessels that landed over the incidental limit, most landed only non-bait (62-98%). Bait-only vessels and the vessels landing both bait and non-bait comprise a smaller proportion, 0-6% for bait-only and 2-33% for bait and non-bait landings. The number of vessels landing above the incidental limit (at least once) fluctuates from FY 2003 to 2011 and mostly declines from FY 2011 to 2019. In the latter years in the time series, the proportion of vessels landing above the incidental limit also shifts to higher percentages of bait-only and vessels landing both

non-bait and non-bait. In FY 2010, there is a sharp decline in the total number of vessels landing above the incidental limit which may, in part, be due to regulatory changes in the groundfish fishery.

Table 15. Federal fishing permits landing skate, FY 2003-2019.

Fishing Year	Total Federal Permits with or without a Federal Skate Endorsement	Total Federal Permits WITH a Skate Endorsement	All Active Federal Permits Landing Skate with or without a Federal Skate Endorsement		
			Total Active	Active With Skate Endorsement	Active Without Skate Endorsement
2003	2,082	1,967	709	594	115
2004	2,443	2,391	575	523	52
2005	2,686	2,629	585	528	57
2006	2,727	2,669	595	537	58
2007	2,738	2,686	586	534	52
2008	2,673	2,630	549	506	43
2009	2,632	2,576	572	516	56
2010	2,557	2,503	550	496	54
2011	2,390	2,326	567	503	64
2012	2,322	2,263	527	468	59
2013	2,246	2,202	455	411	44
2014	2,187	2,147	452	412	40
2015	2,131	2,084	440	393	47
2016	2,114	2,075	418	379	39
2017	2,093	2,049	425	381	44
2018	2,079	2,033	394	348	46
2019	2,062	2,028	357	323	34

All Active Federal Permits Landing Skate with or without a Federal Skate Endorsement are as defined in Table 14 (All Federal fishing permits landing skate with or without a Federal skate endorsement).
Without Skate Endorsement are Federal fishing permits that landed and sold skates to a Federal dealer but did not have a Federal skate endorsement at the time of landing.
Source: CFDERS tables, accessed 04/22/2020. 2019 data are preliminary.

Table 16. Federal skate permit entry and exit trends, FY 2003-2019.

Fishing Year	Total Federal Permits WITH a Skate Endorsement	Change in Number of Permits with a Federal Endorsement	Percent Change in Number of Permits with a Federal Endorsement	Number of New Permits with a Federal Endorsement	Number of Permits with a Federal Endorsement Exiting the Fishery	Net Gain/Loss in Permits with a Federal Endorsement
2003	1,967	--	--	--	--	--
2004	2,391	+424	+22%	525	77	+448
2005	2,629	+238	+10%	427	164	+263
2006	2,669	+40	+2%	302	234	+68
2007	2,686	+17	+1%	252	220	+32
2008	2,630	-56	-2%	180	230	-50
2009	2,576	-54	-2%	202	251	-49
2010	2,503	-73	-3%	149	202	-53
2011	2,326	-177	-7%	113	278	-165
2012	2,263	-63	-3%	131	204	-73
2013	2,202	-61	-3%	109	190	-81
2014	2,147	-55	-2%	98	151	-53
2015	2,084	-63	-3%	125	192	-67
2016	2,075	-9	0%	119	148	-29
2017	2,049	-26	-1%	117	161	-44
2018	2,033	-16	-1%	108	142	-34
2019	2,028	-5	0%	114	162	-48

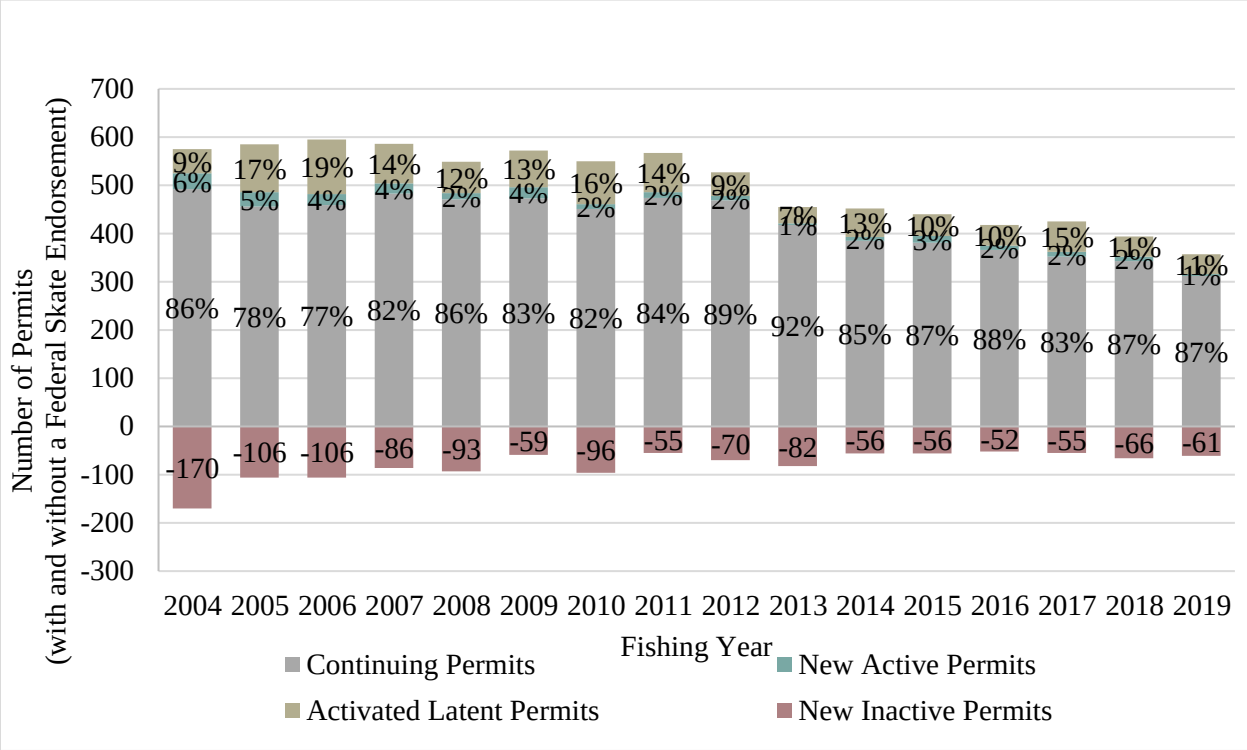
Number of new permits with a Federal endorsement are permits identified in the time series for the first time. This does not include permits which exited the fishery and reentered.
The Number of Permits with a Federal Endorsement Exiting the Fishery are permits which were within the fishery in the previous year but were not in the current and future fishing years. This does not include vessels that exited and reentered the fishery, only the final exit of permits is included.
Note: The analysis base fishing year is 2003, such that no change can be calculated from FY 2002-2003.
Source: PERMIT database, accessed 04/22/2020.

Table 17. Trends in Federal fishing permits with and without Federal endorsements activity in the skate fishery, FY 2003-2019.

Fishing Year	All Active Federal Permits Landing Skate with or without a Federal Skate Endorsement	Change in Number of Active Permits	Percent Change in Number of Active Permits	New Active Permits			Activated Latent Permits			Newly Inactive Permits		
				Total			Total			Total		
					Number of Non-bait (Wing) Vessels	Percent of Non-bait (Wing) Vessels		Number of Non-bait (Wing) Vessels	Percent of Non-bait (Wing) Vessels		Number of Non-bait (Wing) Vessels	Percent of Non-bait (Wing) Vessels
2003	709	--	--	--	--	--	--	--	--	--	--	--
2004	575	-134	-19%	33	32	97%	50	50	100%	170	170	100%
2005	585	+10	+2%	30	30	100%	99	95	96%	106	101	95%
2006	595	+10	+2%	23	23	100%	113	106	94%	106	104	98%
2007	586	-9	-2%	21	19	90%	82	75	91%	86	83	97%
2008	549	-37	-6%	13	10	77%	65	58	89%	93	90	97%
2009	572	+23	+4%	23	22	96%	76	72	95%	59	55	93%
2010	550	-22	-4%	10	8	80%	89	82	92%	96	94	98%
2011	567	+17	+3%	12	12	100%	81	78	96%	55	52	95%
2012	527	-40	-7%	9	7	78%	49	47	96%	70	66	94%
2013	455	-72	-14%	3	3	100%	34	32	94%	82	80	98%
2014	452	-3	-1%	8	8	100%	59	56	95%	56	54	96%
2015	440	-12	-3%	14	12	86%	45	44	98%	56	53	95%
2016	418	-22	-5%	9	9	100%	43	41	95%	52	51	98%
2017	425	+7	+2%	10	8	80%	63	54	86%	55	51	93%
2018	394	-31	-7%	9	6	67%	42	37	88%	66	60	91%
2019	357	-37	-9%	4	4	100%	41	34	83%	61	51	84%

All Active Federal Permits Landing Skate with or without a Federal Skate Endorsement defined in the same manner as in Table 14.
New active permit is a permit which entered the fishery for the first time and was active in the specified fishing year.
Activated latent permit is a permit that was inactive in previous fishing years but became active in the current fishing year.
Newly inactive permit is a permit that was active in previous fishing years but became inactive in the current fishing year. This does not include permits which exited the fishery entirely.
Notes: The analysis base fishing year is 2003 such that no change can be calculated from FY 2002-2003. Only non-bait vessels are shown as they represent the most fluctuation in permit activity.
Source: Skate permit activity data from CDFERS data tables, accessed on 04/22/2020.

Figure 4. Skate-landing permit (with and without a Federal Skate Endorsement) activity and inactivity by fishing year, 2004-2019.



Note: The positive values are equal to the total number of active permits such that their combined percentages equal 100%. Inactive permits (shown as negative values) are not included in the total percentage of active permits and, therefore, are only represented by the number of newly inactive permits rather than a percentage.

Source: CFDERS tables, accessed 04/22/2020. FY 2019 data are preliminary.

Overall, the number of active permits in the skate fishery (both with and without a federal endorsement) has declined over the time series, decreasing from 575 to 357 permits from FY 2003 to 2019 (Table 17, Figure 4). Of the active permits, only 1-6% entered the fishery for the first time each year as a "new permit", leveling off in the latter half of the time series with only 1-3% of permits. The number of permits which became active after being inactive in a previous year fluctuated across the time series, ranging from 7-19% of active permits. An average of 81 permits became inactive in each fishing year, from 52 to 170 newly inactive permits across the time series. This category does not include permits that completely exited the fishery to highlight latent permit activity. The fluctuation in the activity and inactivity of permits demonstrates the variation in annual vessel activity within the skate fishery.

5.6.1.2 Catch Limits, Catch and Landings

Skates have been reported in New England fishery landings since the late 1800s. However, commercial fishery landings never exceeded several hundred metric tons until the advent of distant-water fleets during the 1960s (a full description of historic landings is in Amendment 3, NEFMC, 2009).

Methods for In-season Quota Monitoring and Year-end Catch Accounting: During the fishing year, the Greater Atlantic Regional Fisheries Office (GARFO) monitors skate landings against the wing and bait TALs, which are managed in season, and produces weekly landing reports on-line (Table 18). This in-

season skate landings tally includes skate landings sold to a Federal dealer or reported solely via VTRs from commercial trips (i.e., vessel-to-vessel transfers). These landings must be made by vessels with a Federal fishing permit on the day of landing. Skate landings are excluded from TAL monitoring if a vessel does not have a Federal fishing permit on the day of landing. Landings from research and recreational trips are also excluded.

At the end of the fishing year, GARFO tabulates skate catches and compares to the annual catch limit (ACL, Table 19). This includes all skate landings by a vessel with a Federal fishing permit at any time of the year. Thus, the landings sold to a Federal dealer that are excluded from the in-season tally could be included in the year-end accounting if the vessel had a Federal fishing permit at another time in the year. Included in the year-end accounting are catches from state permitted only vessels, dead discards, recreational (private angler and party/charter) skate fishery (landings and dead discards) and research landings. Excluded from the year-end accounting are the vessel-to-vessel transfers reported via VTRs. The year-end calculation of dead discards are estimated on a fishing year basis, with different methods than those used to estimate the calendar year discards for stock assessment purposes (Section 5.2.5).

NMFS estimates Federal commercial skate landings from the dealer weigh-out database and reports total skate landings according to live weight (i.e., the weight of the whole skate). This means that a conversion factor (most commonly 2.27) is applied to all wing landings so that the estimated weight of the entire skate is reported and not just the wings. While live weight must be considered from a biological and stock assessment perspective, vessel revenue from skate landings are for landed weight (vessels in the wing fishery only make money for the weight of wings they sell, not the weight of the entire skate from which the wings came).

Federal landings are landings sold to a Federal dealer and can be from fishing in state or federal waters. If a vessel has a Federal fishing permit, it must sell to a Federal dealer. State landings are landings from vessels without a Federal fishing permit, fishing in state waters, and sold to a state dealer. The March 13, 2020 PDT memo has more information on regulations important to understanding skate fishery data, particularly under what scenarios may skate landings from trips without a Federal declaration ("undeclared") be permissible. For FY 2018, landings inconsistent with regulations were 224,459 lb (2.4% of total FY 2018 wing landings; March 14, 2020 PDT memo).

The skate fishery caught 24,128 mt in FY 2018, or 78% of the ACL, a slight decrease from FY 2017 landings (25,294 mt, Table 18). The wing fishery caught 75% of its TAL and the bait fishery caught 64% of its TAL. State landings in FY 2018 were 576 mt, recreational landings and dead discards were 1,088 mt, and dead discards were 7,879 mt (Table 19). Once the Annual Monitoring Report for FY 2019 is finalized, Table 18 and Table 19 will be updated accordingly.

Total skate landings have fluctuated between FY 2010 and 2018, largely attributable to the wing fishery as landings in the bait fishery have been more stable (Table 20, Figure 5). It is unclear what is driving the trend in wing landings as quota is likely not limiting the fishery. A potential explanation is the decrease in winter skate survey index that suggests fewer winter skate were available to the fishery. Skate landings relative to TALs have also fluctuated during this time. In FY 2016 and 2017, when in-season incidental possession limits were triggered, TALs had been lowered by 23% relative to FY 2014 and 2015. Landings were also lower, but not by that much.

Table 18. Year-end total catch and in-season landings of skates compared to management specifications.

Management Specification	Specification Amount (mt)	Catch or Landings (mt)	Percent Caught or Landed
FY 2017			
ABC/ACL	31,081	*25,294	81.4%
ACT (75% of ABC)	23,311		104%
Assumed Dead Discards + State Landings	10,721	9,318	n/a
TAL Bait	4,218	**3,978	94.3%
TAL Wings	8,372	**8,465	101.1%
FY 2018			
ABC/ACL	31,327	*24,128	77.6%
ACT (75% of ABC)	28,194		85.6%
Assumed Dead Discards + State Landings	12,406	8,455	n/a
TAL Bait	5,289	**3,356	63.5%
TAL Wings	10,499	**7,837	74.6%

*Total catch includes catch not reported in this table. See Table 19.
**Includes the skate landings sold to a Federal dealer or reported solely via VTRs (this includes vessel-to-vessel transfers) and excludes: 1) all commercial landings from vessels without a Federal fishing permit on the day of landing and 2) research landings.
Source: Northeast Skate Complex 2018 (for FY 2017) Annual Monitoring Report, Sept. 2018; Northeast Skate Complex 2019 (for FY 2018) Annual Monitoring Report, Sept. 2019.

Table 19. Year-end Northeast skate complex annual catch limit (ACL) accounting.

Catch accounting element	Pounds	Metric tons	% of ACL
FY 2017 (ACL = 31,081 mt)			
Commercial landings	31,854,574	14,449	46.5%
State-permitted only vessel landings	1,752,206	795	2.6%
Estimated dead discards	18,790,080	8,523	27.4%
Recreational catch (MRIP landings and dead discards)	3,367,634	1,528	4.9%
Total Northeast skate catch	**55,764,494**	**25,294**	**81.4%**
FY 2018 (ACL = 31,327 mt)			
Commercial landings	32,155,182	14,585	46.9%
State-permitted only vessel landings	1,268,820	576	1.9%
Estimated dead discards	17,369,954	7,879	25.3%
Recreational catch (MRIP landings and dead discards)	2,398,508	1,088	3.5%
Total Northeast skate catch	**53,192,464**	**24,128**	**77.6%**

Note:
- "Commercial landings" are landings by vessels that had a Federal permit any time during the fishing year (including landings by vessels without a Federal permit on the day of landing but who

later picked up a Federal permit at some point in the fishing year). These commercial landings also include research landings.

- "Northeast skate state-permitted only vessel landings" are landings sold to a Federal dealer by vessels without a Federal fishing permit at any time during the year. This may include state permitted landings from state-only dealers provided to GARFO from states.
- "Northeast skate estimated dead discards" is based on observed skate discards in FY 2019 extrapolated to all FY 2019 commercial landings of all species (weighted by area, gear, etc.). Then, a discard mortality rate is applied to the calculated total skate discards (discard estimation method differs from how discards are estimated during specifications setting, which uses the NEFSC method).
- "Northeast skate recreational catch" is private angler and party/charter catch.
- Not included in the year-end ACL accounting:
  - Vessel-to-vessel skate transfers (reported via VTRs).
  - Skate for personal use/home consumption.
  - Skate landings by state-only permitted vessels not reported to the Federal database.

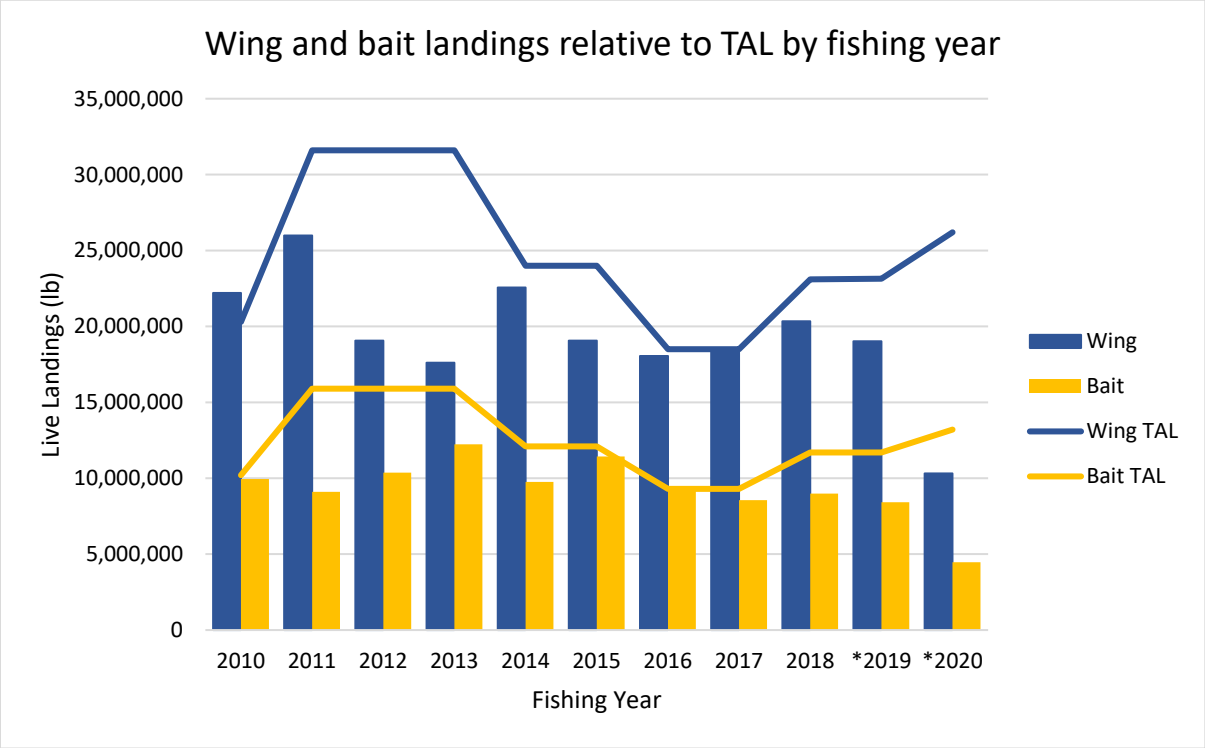
Source: Commercial fisheries dealer and NEFOP databases and MRIP reports. FY 2017 data accessed August 2018. FY 2018 data, accessed August 2019.

Table 20. Total allowable landings (TAL) (pounds), live landings, and percent of TAL achieved for the wing and bait fisheries by fishing year, 2010-2020.

FY	Wing			Bait		
	TAL	Landings (Live lb)	% TAL achieved	TAL	Landings (Live lb)	% TAL achieved
2010	20.3 M	22,200,790	109%	10.2 M	9,949,098	97%
2011	31.6 M	25,992,579	82%	15.9 M	9,108,500	57%
2012	31.6 M	19,060,914	60%	15.9 M	10,368,251	65%
2013	31.6 M	17,611,487	56%	15.9 M	12,230,497	77%
2014	24.0 M	22,558,411	94%	12.1 M	9,760,925	81%
2015	24.0 M	19,065,405	79%	12.1 M	11,434,945	94%
2016	18.5 M	18,057,360	98%	9.3 M	9,379,919	101%
2017	18.5 M	18,577,059	100%	9.3 M	8,557,568	91%
2018	23.1 M	20,334,407	88%	11.7 M	8,992,742	77%
*2019	23.1 M	19,019,727	82%	11.7 M	8,424,659	72%
*2020	26.2 M	10,315,403	39%	13.2 M	4,468,490	34%

Source: GARFO Quota Monitoring Archive, accessed August 31, 2020.
*2019 and 2020 data reported as of August 26, 2020.

Figure 5. Skate wing and bait landings relative to total allowable landings (TAL), FY 2010 – 2020*.



Source: GARFO Quota Monitoring Archive, accessed August 31, 2020.
*2019 and 2020 data reported as of August 26, 2020.

5.6.1.3 Possession Limits

The wing and bait fisheries have differing seasonal possession limits and triggers for when an incidental limit may be implemented under the discretion of the Regional Administrator. If for either skate fishery, at the end of a fishing year, it is calculated that the TAL was exceeded by more than 5%, an automatic adjustment to that fishery's TAL trigger would occur for the next fishing year. A straight one-for-one percent reduction in a TAL trigger for prior overages reduces the likelihood that future landings would exceed that TAL. This increases the buffer between the TAL and trigger to account for incidental landings in a skate fishery when the skate possession limit declines to the incidental limit. An overage of less than 5% would not be alarming and might be offset by reductions in skate discards.

Wing Fishery: The wing possession limits for both seasons have remained relatively constant since annual catch limits and accountability measures were implemented in 2010, with seasonal possession limit increases effective beginning in FY 2020 (Table 21). There is an incidental possession limit that the Regional Administrator has the discretion to implement when a certain amount of the wing TAL is projected to be landed, 85% of the TAL, since FY 2010 (80% previously). The Regional Administrator may opt to not implement the incidental limit if the fishery is not projected to exceed 90% of the seasonal or annual TAL.

Both the wing and bait fisheries have landed over 85% of their TAL a few times in other years since FY 2014 (Table 20). The incidental possession limit has only been triggered in FY 2016 and FY 2017, resulting in an incidental limit of 500 lb for both skate wing and bait fisheries.

Table 21. Skate wing possession limits by season and fishing year.

FY	Season	Dates	Possession Limit	Barndoor Skate Wing Possession Limit	Incidental Limit Regulations
2003 – Northeast Skate Complex FMP implemented			10,000 lb/ <24 hours (i.e. day) & 20,000 lb/ > 24 hours (i.e. trip)		
FY 2009	n/a	Jul. 16, 2009	5,000 lb	0	500 lb (if 80% of wing TAL is landed)
FY 2010	n/a	May 1 – May 16	5,000 lb		
		May 17 – Aug. 31	2,600 lb		
		Sept. 1 – Apr. 30	4,100 lb		
FY 2011 – 2015	1	May 1 – Aug. 31	2,600 lb		500 lb (if 85% of wing TAL is landed)
	2	Sept. 1 – Apr. 30	4,100 lb		
FY 2016	1	May 1 – Aug. 31	2,600 lb		
	2	Sept. 1 – Jan. 29	4,100 lb		
		Jan. 30 – Apr. 30	500 lb		
FY 2017	1	May 1 – Aug. 31	2,600 lb		
	2	Sept. 1 – Dec. 26	4,100 lb		
		Dec. 27 – Apr. 8	500 lb	*	
		Apr. 9 – Apr. 30	4,100 lb	1,025 lb	
FY 2018 - 2019	1	May 1 – Aug. 31	2,600 lb	650 lb	
	2	Sept. 1 – Apr. 30	4,100 lb	1,025 lb	
FY 2020	1	May 1 – Aug. 31	3,000 lb	750 lb	
	2	Sept. 1 – Apr. 30	5,000 lb	1,250 lb	
*From February 13 – April 8, 2018 the barndoor skate possession limit was 125 lb due to the soft closure.					

Bait Fishery. The bait possession limits have varied since annual catch limits and accountability measures were implemented in 2010, with Season 3 possession limit increases effective beginning in FY 2020 (Table 20). The incidental limit trigger and incidental possession limit have also changed over time. The in-season adjustments to possession limits have been linked between the bait and wing fisheries through March 15, 2018, which was problematic in FY 2016. The wing fishery reached its TAL threshold trigger of 85% in FY 2016 and effectively closed the bait fishery when fishermen were only able to land 1,135 lb (wing incidental limit, live weight equivalent). A separate skate bait incidental possession limit, a reduction in the Season 3 bait skate TAL threshold trigger from 90% to 80%, and a reduction in Season 3 bait skate possession limit were established to prevent another lengthy in-season closure. The Season 3 bait possession limit was raised back to 25,000 lb, however, in FY2020.

Table 22. Skate bait possession limits by season and fishing year.

FY	Season	Dates	Possession Limit	Incidental Limit Regulations
2003 – Northeast Skate Complex FMP implemented, Skate Bait LOA requirement				
FY 2010 - 2011	1	May 1 – Jul. 31	20,000 lb	5,902 lb (Season 1) and 9,307 lb (Season 2) (if 90% of bait season's TAL or annual TAL is landed) or 1,135 lb (if 85% of wing TAL is also landed)[1]
	2	Aug. 1 – Oct. 31		
	3	Nov. 1 – Apr. 30		
FY 2012 - 2015	1	May 1 – Jul. 31	25,000 lb	
	2	Aug. 1 – Oct. 31		
	3	Nov. 1 – Apr. 30		
FY 2016	1	May 1 – Aug. 31	25,000 lb	
	2	Sep. 1 – Oct. 17	25,000 lb	
		Oct. 18 – Oct. 31	9,307 lb	
	3	Nov. 1 – Jan. 29	25,000 lb	
		Jan. 30 – Apr. 30	1,135 lb	
FY 2017	1	May 1 – Jul. 31	25,000 lb	
	2	Aug. 1 – Oct. 31		
	3	Nov. 1 – Mar. 14	25,000 lb	
		Mar. 15 – Apr. 30	12,000 lb	8,000 lb (if 80% of bait TAL is landed in a season)
FY 2018 - 2019	1	May 1 – Jul. 31	25,000 lb	8,000 lb (if 90% of bait TAL is landed in a season)
	2	Aug. 1 – Oct. 31		
	3	Nov. 1 – Apr. 30	12,000 lb	8,000 lb (if 80% of bait TAL is landed in a season)
FY 2020 - 2021	1	May 1 – Jul. 31	25,000 lb	8,000 lb (if 90% of bait TAL is landed in a season)
	2	Aug. 1 – Oct. 31		
	3	Nov. 1 – Apr. 30		8,000 lb (if 80% of bait TAL is landed in a season)

[1] The bait fishery was only held to the wing incidental limit if BOTH the bait AND wing triggers were reached. If only the wing fishery trigger was reached, the bait fishery would still operate at normal limits until it hits its 90% trigger.

5.6.1.4 Declarations

In the years FY 2012, FY 2015, FY 2017, and FY 2018, most of the skate wing landings were either from declared Northeast multispecies trips (41-49% of wing landings) or from declared monkfish trips (36-45% of wing landings) followed by undeclared trips (6-15% of wing landings; Table 23; March 14, 2020 PDT memo). Most skate bait landings were from declared Northeast multispecies trips (29-63% of bait landings) and on undeclared trips (20-44% of bait landings).

Table 23. Skate landings by VMS declaration and skate fishery disposition, FY 2017-2018, combined.

	Live lb		Landed lb		Trips (#)		Vessels (#)	
WING landings by declaration (plan) code								
SES	6,832	0%	3,009	0%	54	1%	14	2%
SMB	371,279	2%	168,815	2%	722	7%	75	12%
DOF	892,153	4%	415,506	4%	1,791	17%	115	19%
Undeclared	1,167,012	6%	550,717	6%	1,952	19%	176	28%
MNK	8,027,842	39%	3,781,546	40%	2,582	25%	100	16%
NMS	10,128,637	49%	4,496,04	48%	3,208	31%	139	22%
TOTAL	**20,593,755**	**100%**	**9,415,633**	**100%**	**10,309**	**100%**	**370** [a]	100%
BAIT landings by declaration (plan) code								
SMB	36,270	0%	36,270	0%	14	1%	7	7%
MNK	411,532	4%	411,532	4%	126	6%	9	8%
Undeclared	2,014,406	20%	2,012,566	20%	719	36%	35	33%
DOF	2,747,799	28%	2,747,799	28%	365	18%	22	21%
NMS	4,672,338	47%	4,672,133	47%	789	39%	34	32%
TOTAL	**9,882,345**	**100%**	**9,880,300**	**100%**	**2,013**	**100%**	**74** [a]	100%

[a] The number of unique vessels, not the column total.
Source: CFDERS and DMIS data, accessed March 2020.

Potential source data errors. In examining the data from undeclared trips closely, the PDT has discovered that there are likely errors in the source data (March 14, 2020 PDT memo, Section 4.1):

1. There are trips in which the landings disposition code is likely miscoded, i.e., trips in which the landings were recorded as wing but are more likely to be bait (the lower price is more akin to expected bait prices and landed and live weight are equivalent).
2. There are trips in which the wing landed weight is greater than the live weight.

The magnitude of these potential data errors is small relative to the total undeclared landings (e.g., 0.9% in FY 2017; 0.1% in FY 2018 for the undeclared data). Thus, a minor weight of undeclared landings that were likely bait may be accounted for under the wing TALs.

Undeclared wing landings over the incidental limit. In October, the Committee was concerned that the FY 2017 draft data provided was showing that there was a large weight (850,084 lb) of wing landings on undeclared trips over the incidental limit. Correcting the data query method reduced this number to 584,936 lb (March 14, 2020 PDT memo, Section 5). Removing trips by vessels with a Federal fishing permit but no Federal endorsements (potentially fishing with state fishing permits) and potential data errors reduced the number further to 205,936 lb (2.4% of total FY 2017 wing landings,). These landings are inconsistent with regulations and occurred from 128 trips landing 504-5,372 lb each trip by 35 unique permit numbers (three permits account for most of these trips). For FY 2018, landings similarly inconsistent with regulations were 224,459 lb (2.4% of total FY 2018 wing landings).

Wing landings exceeding possession limits. In October, the Committee was concerned about the number of trips in the FY 2017 draft data that appeared to have wing landings exceeding possession limits. Correcting the data query method (duplicate trips and doubled landings removed) has reduced the number of trips and the weight of overage (March 14, 2020 PDT memo, Section 6), though comparison is difficult, because the data provided in October were not presented by season and excluded some trips. With the query method corrections, total wing landings (all declaration codes) that exceed the seasonal possession limits were under 300,000 lb (65 vessels, 155 trips) in FY 2017 and under 200,000 lb (20 vessels, 113 trips) in FY 2018. However, this includes potentially miscoded data and skate landings by vessels with a Federal fishing permit but no Federal endorsement. Accounting for all potential data issues (including miscodings) for undeclared landings with a Federal endorsement, the weight more than possession limits is about 7,000 and 18,000 lb in FY 2017 and 2018, respectively.

5.6.1.5 Revenue and Dependence on Skates

Skate revenue was been $5.4-$9.3M annually from FY 2010 to 2018 (Table 24). The fluctuations in skate revenue are largely attributable to changes in wing revenue and landings, ranging from $4.3-7.8M annually. Revenue from the skate bait fishery is at a much lower level, $1.1-1.7M annually. Total revenue peaked in FY 2011; the wing fishery had its top revenue year in FY 2014, while the bait fishery had its top year in FY 2011.

Table 24. Skate wing and bait landings and revenue, FY 2010 – 2018.

FY	WING			BAIT			Total $
	Landings		Revenue ($)	Landings		Revenue ($)	
	Live lb.	Landed lb.		Live lb.	Landed lb.		
2010	23,000,058	11,200,786	$5,137,637	9,698,695	9,365,792	$1,161,331	$6.3M
2011	30,465,414	14,465,048	$7,626,898	10,837,172	10,818,390	$1,711,431	$9.3M
2012	22,427,119	10,552,047	$6,163,933	10,766,626	10,754,534	$1,391,065	$7.6M
2013	19,720,311	9,352,410	$6,394,396	11,176,451	11,176,413	$1,199,273	$7.6M
2014	24,704,030	11,673,430	$7,830,322	9,386,666	9,375,820	$1,161,520	$9.0M
2015	22,943,092	11,660,851	$5,141,071	10,513,990	10,508,860	$1,091,415	$6.2M
2016	20,228,685	10,347,571	$4,323,596	10,148,571	10,184,091	$1,120,607	$5.4M
2017	20,057,874	10,097,647	$4,713,440	12,495,542	12,960,835	$1,653,560	$6.4M
2018	21,164,021	10,414,699	$5,904,030	10,625,319	11,033,972	$1,544,838	$7.4M
Source: APSD data, accessed October 2019.							

Given the diversity of participation in the skate fishery, vessel dependence is summarized here by the vessels that land only skate for bait, only skate for food, or skate for bait and food. Within each of these categories, vessels were divided here by those with less than or equal to, or greater than, 10% of their revenue from skate. Vessels fitting this third category may have any combination of skate trips over the course of a fishing year:

- All trips landing skate landed skate for food and bait,
- Some trips landing skate landed:
    - Food only and the other trips landed bait only,
    - Bait only and the other trips landed food and bait, or
    - Food only and the other trips landed food and bait.

As of May 2020, data for FY 2018 is the latest available from the data source and is provided here along with FY 2016 and FY 2017 for comparison (Table 25). There are two years that an in-season incidental possession limit was triggered (Jan 30 – April 30 in FY 2016, December 27 – April 8 in FY 2017; Table 21). Just FY 2018 is explained here, but the FY 2016 and 2017 dependence data are very similar but differ because of the incidental possession limit being triggered.

Table 25. Skate vessels by dependence on skate revenue, FY 2016-2018.

Number of vessels			Total. revenue	Bait revenue	Avg. bait percent of total revenue	Food revenue	Avg. food percent of total revenue
FY 2016							
Bait only	**<10%**	17	$2,896,445	$28,737	1.0%	0	0%
	>10%	4	$416,805	$243,055	58%	0	0%
Food only	**<10%**	289	$156,300,389	$0	0%	$1,159,023	0.7%
	>10%	49	$8,005,756	$0	0%	$2,135,117	27%
Bait & food	**<10%**	35	$12,657,999	$95,387	0.8%	$188,408	1.5%
	>10%	19	$4,070,952	$834,353	21%	$512,655	13%
FY 2017							
Bait only	**<10%**	16	$2,982,106	$21,335	0.7%	0	0%
	>10%	4	$538,533	$240,070	45%	0	0%
Food only	**<10%**	271	$140,529,735	$0	0%	$1,086,486	0.8%
	>10%	50	$7,193,247	$0	0%	$2,328,689	32%
Bait & food	**<10%**	51	$16,266,980	$131,152	0.8%	$220,815	1.4%
	>10%	34	$5,962,976	$1,018,993	17%	$825,892	14%
FY 2018							
Bait only	**<10%**	20	**$6,487,342**	$33,325	0.5%	$0	0%
	>10%	4	**$522,699**	$204,714	39%	$0	0%
Food only	**<10%**	239	**$136,133,675**	$0	0%	$997,307	0.7%
	>10%	51	**$7,515,671**	$0	0%	$2,613,190	35%
Bait & food	**<10%**	48	**$15,779,810**	$180,301	1.1%	$169,033	1.1%
	>10%	35	**$8,543,159**	$904,510	11%	$2,085,404	24%

Source: CFDETT/CFDETS, April 24, 2020. Data from VTR records supplemented the CFDBS data if no dealer was involved in the fishing trip. This added skate landings to those vessels transferring bait to other vessels. Revenues for these bait 'landings' were calculated using a flat ten cents per pound rate.

Revenue Dependence, FY 2018: During fishing year 2018, twenty-four vessels landed or transferred skate as bait only (they did not land any skate for food). Two hundred and ninety vessels landed skate for food only (they did not land any skate for bait). Eighty-three vessels landed skate for both food and bait during this fishing year.

Bait only: For the 24 vessels that landed only skate bait during FY 2018 (Table 25), the 20 vessels with <10% of their annual fishing revenues from skate bait had very low revenue dependence, 0.5% on average. The four vessels with >10% revenue from skate, had much higher revenue dependence, averaging 39% or $204,700 ($51,175 per vessel).

Food only: For the 290 vessels that landed only skate for food during FY 2018 (Table 25), the 239 vessels with <10% of their annual fishing revenues from skate for food had very low dependence, 0.7% on average. The 51 vessels with >10% revenue from skate had higher revenue dependence, averaging 35%

or $2.6M per vessel. This group had the highest absolute level of skate for food revenues, $2.6M ($51,239 per vessel).

Bait and food: For the 83 vessels that landed skate for both food and bait during FY 2018 (Table 25), the 48 vessels with <10% of their annual fishing revenues from skate, had very low dependence on both bait (1.1%) and food (1.1%). The 35 vessels with >10% revenue from skate had important amounts from bait (11%) and food (24%), for a total of 35% of their revenues depending on skate. Note that this last group had the highest absolute level of revenue from skate bait, $0.9M.

Revenue by Gear, FY 2018: During FY 2018, gillnets accounted for over twice as much skate revenue as otter trawls for all trips landing skate (Table 26). On trips where skates were landed for food only, gillnets are the overwhelming revenue source, with otter trawls a distant second. Quite the reverse is true of the bait only fishery, where otter trawls accounted for most of the skate revenue. On trips where skates were landed as both food and bait, the pattern is like the food only fishery, though at reduced levels.

Table 26. Skate revenue by gear, FY 2018.

	Food Only	Bait Only	Food and Bait	Total
Otter Trawl	$978,224 (17%)	$1,246,291 (99%)	$43,074 (37%)	$2,267,589 (32%)
Gillnet	$4,657,582 (81%)	$7,702 (1%)	$72,464 (63%)	$4,737,748 (66%)
Other	$143,994 (3%)	$4,602 (0%)	$205 (0%)	$148,801 (2%)

Note: The percentages shown in parentheses are the proportion of skate revenue accounted for within each of the following disposition groups: food only, bait only, and food and bait (i.e. not the percentage of skate revenue by gear type across those three disposition groups).
Source: CFDETT/CFDETS, July 2020.

Species Dependence, FY 2018: Skate fishery dependence can also be understood by examining the other species that are landed by vessels in which skates constitute over or under 10% of their annual revenue and by whether the vessel landed just skate for bait, just skate for food or skate for bait and food within a given fishing year. Here FY 2018 was examined in this manner (Table 27).

Bait only: Like in FY 2017, the bait only fishery had four vessels in FY 2018 with over 10% of their annual revenue from skates, averaging 39%. Fluke and blackback (winter) flounder comprised 49% of their revenue. For the 20 vessels with under 10% of their total revenue from only skate bait, 76% of their revenue was from scallops.

Food only: Like in FY 2017, the largest number of vessels landed skates only for food. The number of vessels changes slightly for the over 10% group, 50 to 51 from 2017 to 2018, but more so for the under 10% group, 271 to 239. The over 10% group has stable percent skate landings (44% and 42%) and skate revenues (32% and 35%) for FY 2017 and 2018, respectively. Monkfish comprised 41% of other species landed followed by dogfish (8%). Groundfish comprised under 1%. For the 239 vessels with under 10% of their total revenue from only skate for food, the species dependence is more diverse, with 23% Loligo squid, 23% from the groundfish complex, and 14% scallops.

Bait and food: Of the 83 vessels that landed skate for bait and food in FY 2018, 35 had over 10% of their annual revenue from skates, averaging 35%. Fluke and monkfish comprised 36% of their revenue. For the 48 vessels with under 10% of their total revenue from skates, 25% of their revenue was from Loligo squid, 21% from fluke, 14% from the groundfish complex, and 11% from scup. For this group, the scallop fishery was 16.1% of annual revenues in 2017, but that fell to 6.7% in 2018.

Table 27. FY 2018 revenue by species of vessels landing skate.

	BAIT and FOOD					FOOD ONLY					BAIT ONLY			
	Under 10% skate		Over 10% skate			Under 10%		Over 10%			Under 10%		Over 10%	
Vessels	48		35			239		51			20		4	
Skate Revenue														
Skate bait	180,301	1.1%	904,510	10.6%		0	0.0%	0	0.0%		33,325	0.5%	204,714	39.2%
Skate wings	169,033	1.1%	2,085,404	24.4%		997,307	0.7%	2,613,190	34.8%		0	0.0%	0	0.0%
Groundfish Revenue														
Am plaice	161,211	1.0%	33,437	0.4%		2,734,198	2.0%	136	0.0%		14,420	0.2%	0	0.0%
Blackback	532,050	3.4%	190,650	2.2%		3,694,918	2.7%	84	0.0%		175,061	2.7%	78,687	15.1%
Cod	260,104	1.6%	196,610	2.3%		3,271,935	2.4%	39,801	0.5%		24,268	0.4%	514	0.1%
Flounder	534,720	3.4%	34,465	0.4%		2,060,217	1.5%	30	0.0%		24,881	0.4%	573	0.1%
Haddock	221,486	1.4%	52,922	0.6%		9,015,843	6.6%	1,449	0.0%		223,967	3.5%	1,571	0.3%
Other Groundfish	482,901	3.1%	62,384	0.7%		10,471,983	7.7%	25,937	0.3%		9,967	0.2%	606	0.1%
Other Species Revenue														
Blk sea bass	1,075,434	6.8%	149,552	1.8%		2,889,829	2.1%	43,848	0.6%		78,152	1.2%	15,266	2.9%
Dogfish	53,754	0.3%	360,539	4.2%		777,757	0.6%	573,180	7.6%		51	0.0%	30	0.0%
Fluke	3,341,019	21.2%	1,092,471	12.8%		9,738,012	7.2%	99,535	1.3%		279,064	4.3%	176,193	33.7%
Loligo	3,875,573	24.6%	435,048	5.1%		31,162,527	22.9%	0	0.0%		194,714	3.0%	8,186	1.6%
Monkfish	334,089	2.1%	1,977,148	23.1%		7,180,979	5.3%	3,081,168	41.0%		14,528	0.2%	11,709	2.2%
Scallop	1,059,560	6.7%	5,548	0.1%		19,586,460	14.4%	0	0.0%		4,920,545	75.8%	3,632	0.7%
Scup	1,798,840	11.4%	163,582	1.9%		4,973,508	3.7%	24,480	0.3%		18,845	0.3%	16,816	3.2%
Whiting	696,989	4.4%	161,457	1.9%		7,189,511	5.3%	801	0.0%		3,296	0.1%	1,446	0.3%
Other	1,008,510	6.4%	662,613	7.8%		20,388,691	15.0%	1,012,032	13.5%		474,959	7.3%	2,756	0.5%
Total Revenue														
Total	**15,779,810**	**100%**	**8,543,159**	**100%**		**136,133,675**	**100%**	**7,515,671**	**100%**		**6,487,342**	**100%**	**522,699**	**100%**

Note: Vessels are grouped in columns by whether their annual revenue from skate is under or over 10% of all fishing revenue.
Source: CFDETT/CFDETS 2018-2019, accessed July 2020.

5.6.1.6 Market and Substitute Goods

[Should add in uses as bait by lobster and crab fishery (also uses herring and other), uses as food. Some content is in Sect. 5.6.3.1]

5.6.1.7 Skate Dealers and Processors

[Should add in number of dealers over time. Where they are located? Are dealers of bait and wing the same?]

5.6.2 Recreational Skate Fishery

Skates have little to no recreational value and are primarily discarded in recreational fisheries. Between calendar year 2010 and 2018, recreational skate landings has fluctuated, with a high of 307,907 lb (140 mt) in 2015 (Table 28). Landings by species varied by region. In FY 2018, recreational landings (248,353 lb) were 10% of landings and dead discards (2.4M lb, Table 19).Reliability of skate recreational catch estimates from MRFSS is a concern. Total catch estimates (A+B1+B2), however, appear to be more reliable than harvest estimates (A+B1 only). Since skates are not a valuable or heavily fished recreational species, the number of MRFSS intercepts from which these estimates are derived is likely to have been very low. The fewer intercepts from which to extrapolate total catch estimates there are, the less reliable the total catch estimates will be. Due to the relative absence of recreational skate fisheries, virtually all skate landings are derived from commercial fisheries.

Table 28. Estimated recreational skate landings by species, 2012-2018.

	Winter (lb)	Clearnose (lb)	Little (lb)	Total (lb)	Total (mt)
2012	2,184	115,168	0	**117,352**	**53**
2013	854	88,419	110,771	**200,044**	**91**
2014	82	35,279	213,091	**248,452**	**113**
2015	102,979	162,808	42,120	**307,907**	**140**
2016	52,233	215,191	414	**267,838**	**121**
2017	4,248	42,008	30,077	**76,333**	**35**
2018	1,631	246,633	89	**248,353**	**113**

Source: NMFS/MRIP (PSE >50 for all values indicating imprecise estimates)
http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index
Note: Species not listed have no reported harvest.

5.6.3 Other Managed Resources and Fisheries

In addition to skates, other fisheries could be impacted by the Alternatives under Consideration. The groundfish and monkfish fisheries are often prosecuted in conjunction with skates and the lobster fishery is dependent on skate as bait.

5.6.3.1 American Lobster Fishery

Population status: The 2015 peer-reviewed stock assessment report (ASMFC 2015) indicated a mixed picture of the American lobster resource. The assessment found the GOM/GBK stock was experiencing

record stock abundance and recruitment (not overfished, not experiencing overfishing), though population indicators show young-of-year estimates are trending downward. This indicates a potential decline in recruitment in the coming years, and the Panel recommended that the ASMFC be prepared to impose restrictions should recruitment decline. Conversely, the assessment found the SNE stock is severely depleted, though overfishing was not occurring, with abundance indices at or near time-series lows. Recruitment indices show the stock has continued to decline and is in recruitment failure.

Management: The Atlantic States Marine Fisheries Commission and NMFS jointly manage lobster. The fishery occurs within the three stock units: Gulf of Maine, Georges Bank, and Southern New England, each with an inshore and offshore component. The fishery is managed using minimum and maximum carapace length; limits on the number and configuration of traps; possession prohibitions on egg-bearing (berried) and v-notched female lobsters, lobster meat, or lobster parts; prohibitions on spearing lobsters; and limits on non-trap landings and entry into the fishery (ASMFC 2015). The most recent addendum, Addendum XVIII, reduces trap allocations by 50% for LCMA 2 and 25% for LCMA 3.

Fishery: The American lobster fishery has seen incredible expansion in effort and landings over the last 40 years and is now one of the top fisheries on the U.S. Atlantic coast. In the 1920s, lobster landings were about 11M lb. Landings were stable from 1950 to 1975, around 30M pounds; however, from 1976 to 2008, landings tripled, reaching 92M pounds in 2006. Landings continued to increase and peaked in 2013 at over 150M pounds. Landings leveled off but remained high at 147M pounds in both 2014 and 2015 (Table 29), but again jumped to over 158M pounds (over $660 M) in 2016. Recently, most landings have been attributed to Maine (83%) and Massachusetts (11%). Landings, in descending order, also occurred in New Hampshire, Rhode Island, New Jersey, Connecticut, New York, Maryland, Delaware, and Virginia (ASMFC 2018).

Table 29. Total lobster landings (lb) by state, 2009-2015.

	ME	NH	MA	RI	CT	NY	NJ + South[a]	Total
2009	81,175,847	2,985,166	11,781,490	3,174,618	451,156	731,811	238,267	**100,538,355**
2010	95,506,383	3,658,894	12,768,448	3,258,221	432,491	813,513	692,480	**117,130,430**
2011	104,693,316	3,917,461	13,717,192	2,513,255	191,594	344,232	689,000	**126,066,050**
2012	125,759,424	4,236,740	14,917,238	2,932,388	236,846	275,220	978,767	**149,336,623**
2013	127,773,264	3,822,844	15,738,792	2,149,266	133,008	248,267	756,494	**150,621,935**
2014	124,440,799	4,939,310	15,060,352	2,387,321	141,988	216,630	619,565	**147,805,965**
2015	122,212,133	4,716,084	16,418,796	2,879,874	158,354	146,624	505,985	**147,037,850**
Average	**111,651,595 (83%)**	**4,039,500 (3.0%)**	**14,343,187 (11%)**	**2,756,420 (2.1%)**	**249,348 (0.19%)**	**396,614 (0.30%)**	**640,080 (0.48%)**	**134,076,744 (100%)**

Source: ASMFC lobster data warehouse (M. Cieri, pers. comm., 2017).
[a] "South" includes Delaware, Maryland and Virginia.

In Maine, the fishery is most active during the months of July to November. For the years 2004-2016, about 85% of the pounds landed were landed in those months. Just 4% of landings occurred in the months of January to April (www.maine.gov).

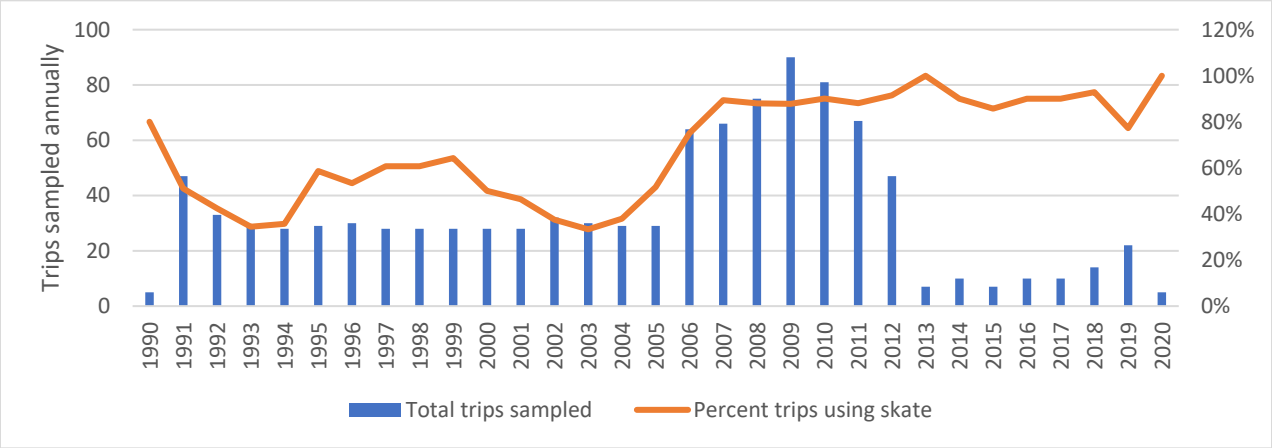
There was an average of 8,315 vessels issued commercial lobster permits for the fishery in state waters each year from 2009 to 2013, and 3,080 vessels were issued federal permits, though in most cases, a vessel holding a federal permit also holds a state permit. Thus, there are about 8,300 vessels in the lobster fishery. The State of Maine has issued the largest number of state permits, recently averaging 5,163 (62%). For Maine, about 85% of the permits are active (~4,400). For New Hampshire, about 70% of the permits issued were active during 2009-2013 ASMFC (2015).

Reliance on skate as bait: Use of skate by the lobster fishery has varied with geography and market conditions. The Maine lobster industry typically prefers herring as bait, though it depends on price and availability. South of Maine, lobstermen tend to use skate or other bait, as herring tends to break down in warmer water. For lobstermen surveyed in 2010 from Maine, New Hampshire and Massachusetts who harvest in Lobster Conservation Management Area A (inshore Gulf of Maine), skate was a minor bait source (Table 30). It is anecdotally known that most of the lobstermen in Rhode Island currently use skates for bait. Though the number of lobster and Jonah crab trips sampled over time has varied, from 1991-2005, the percent of trips where skate was used as used as bait was generally ≤60%. Since 2006, skate was a bait source on 75-100% of trips sampled (Figure 6). This suggests that skate has become a more important bait source over time.

Table 30. Bait use in the inshore Gulf of Maine lobster fishery, in 2010.

	Maine							NH	MA
	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G		
Herring	90%	86%	73%	73%	84%	37%	75%	60%	76%
Pogies	3%	2%	0%	15%	14%	39%	11%	4%	13%
Redfish	1%	8%	12%	4%	1%	19%	8%	0%	0%
Racks	1%	2%	1%	2%	0%	1%	1%	26%	6%
Alewives	1%	1%	0%	1%	0%	0%	0%	0%	0%
Other	4%	2%	13%	5%	0%	4%	4%	9%	4%
Source: Dayton *et al.* (2014). "Racks" are the skeletal remains of fish.									

Figure 6. Use of skate as bait on lobster and Jonah crab trips sampled by RI DEM, calendar year 1990-2020.



Source: RI DEM, May 2020. *Note:* 2020 data are for a partial year.
Note: The number of trips sampled was low in 2013-2018 due to staffing limitations.

5.6.3.2 Large Mesh Multispecies (Groundfish)

The overall trend since the start of sector management through 2014 has been a decline in groundfish landings and revenue ($55M in FY 2014) and the number of vessels with revenue from at least one groundfish trip (273 in FY 2014). The groundfish fishery has had a diverse fleet of vessels sizes and gear types. Over the years, as vessels entered and exited the fishery, the typical characteristics defining the fleet changed as well. The decline in active vessels has occurred across all vessel size categories. Since FY 2009, the 30' to < 50' vessel size category, which has the largest number of active groundfish vessels, experienced a decline from 305 to 145 active vessels. The <30' vessel size category, containing the least number of active groundfish vessels, experienced the largest reduction since FY 2009 (34 to 14 vessels; Murphy et al. 2015; NEFMC 2017a).

5.6.3.3 Monkfish

Life History. Monkfish, *Lophius americanus*, (i.e., "goosefish"), occur in the western North Atlantic from the Grand Banks and northern Gulf of St. Lawrence south to Cape Hatteras, North Carolina. Monkfish occur from inshore areas to depths of at least 2,953 ft (900 m). Monkfish undergo seasonal onshore-offshore migrations, which may relate to spawning or possibly to food availability. Female monkfish begin to mature at age 4 with 50% of females maturing by age 5 (~17 in [43 cm]). Males generally mature at slightly younger ages and smaller sizes (50% maturity at age 4.2 or 14 in [36 cm]). Spawning takes place from spring through early autumn. It progresses from south to north, with most spawning occurring during the spring and early summer. Females lay a buoyant egg raft or veil that can be as large as 39 ft (12 m) long and 5 ft (1.5 m) wide, and only a few mm thick. The larvae hatch after 1 - 3 weeks, depending on water temperature. The larvae and juveniles spend several months in a pelagic phase before settling to a benthic existence at a size of ~3 in (8 cm; NEFSC 2011).

Population and Management Status. NMFS implemented the Monkfish FMP in 1999 (NEFMC & MAFMC 1998) and NEFMC and MAFMC jointly managed the fishery. The FMP included measures to stop overfishing and rebuild the stocks through measures such as: limiting the number of vessels with access to the fishery and allocating DAS to those vessels; setting trip limits for vessels fishing for monkfish; minimum fish size limits; gear restrictions; mandatory time out of the fishery during the spawning season; and a framework adjustment process.

The Monkfish FMP defines two management areas for monkfish (northern and southern), divided roughly by an east-west line bisecting Georges Bank. As of 2013 data, monkfish in both management areas are not overfished and overfishing is not occurring (NEFSC 2013). Operational assessments for monkfish were conducted in 2016 and 2019, but it was recommended that stock status not be updated during these data updates due to a lack of biological reference points (NEFSC 2020; Richards 2016). According to the 2019 assessment, strong recruitment in 2015 fueled an increase in stock biomass in 2016-2018, though abundance has since declined as recruitment returned to average levels. Biomass increases were greater in the northern area than in the southern area, and biomass has declined somewhat in the south, as abundance of the 2015-year class declined. In the north, landings and catch have fluctuated around a steady level since 2009, but increased after 2015, with discards increasing only slightly. In the south, catch and landings had been declining since around 2000, but catch increased after 2015 due to discarding of a strong 2015-year class, with almost a doubling of the discard rate.

5.6.4 Fishing Communities

Consideration of the economic and social impacts on fishing communities from proposed fishery regulations is required under the National Environmental Policy Act (NEPA) and the Magnuson Stevens Fishery Conservation and Management Act, particularly, National Standard 8 which defines a "fishing community" as "a community which is substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community" (16 U.S.C. § 1802(17)). Determining which fishing communities are "substantially dependent" on, and "substantially engaged" in a fishery can be difficult. For skates, they are widely used as bait for the lobster fishery, and it is impractical to identify every community with substantial involvement in the lobster fishery (and consequently some dependence on the skate fishery) for assessment in this document.

Determining the engagement in and reliance on the skate fishery: The NMFS Community Vulnerability Indicators give a broader view of the degree of involvement of communities in fisheries than simply using pounds or revenue of landed fish (Jepson & Colburn 2013). The indicators portray the importance or level of dependence of commercial or recreational fishing to coastal communities and are used here to help identify primary ports for a fishery. The degree of engagement in or reliance on the skate fishery is based on multiple sources of information, averaged over five-year time periods, using NMFS dealer and U.S. Census data.

- *The engagement index* incorporates the pounds and value of landed skates, the number of Northeast skate commercial fishing permits with that community identified as the homeport, and the number of skate dealers buying fish in that community.
- *The reliance index* is a per capita measure using the same data as the engagement index but divided by total population of the community.

Using a principal component and single solution factor analysis, each community receives a factor score, which is translated into a ranking of low, medium, medium-high, or high. A score of 1.0 or more places the community at 1 standard deviation above the mean (or average) and is considered highly engaged or reliant. Communities with negative scores (i.e., below the mean) have low engagement. More information about the indicators may be found at: http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index.

5.6.4.1 Skate Fishing Communities

There are over 400 communities that have been a homeport or landing port to one or more active Northeast skate vessels since 2010 (more homeports than landing ports landing). These ports occur throughout the coastal northeast and mid-Atlantic, primarily from Maine to New Jersey. The level of activity in the skate fishery has varied across time. This section identifies the communities for which skates are particularly important. While the involvement of communities in the skate fishery is described, individual vessel participation may vary. Communities dependent on the skate resource are categorized into primary and secondary port groups. Metrics were calculated using the annual average over a recent nine-year period for which landings data are available, here (FY 2010-2018). Because geographical shifts in the distribution of Northeast skate fishing activity have occurred, the characterization of some ports as "primary" or "secondary" may not reflect their historical participation in and dependence on the skate fishery. The Community Vulnerability Indicators reveal that there are over 480 communities that have a skate fishery engagement and reliance index in the range of low to high, using 2014-2018 data. Reported in Table 31 are the 28 communities that have a ranking of at least medium-high for either engagement or reliance.

Primary Port Criteria. The skate fishery primary ports are those that are substantially engaged in the fishery, and which are likely to be the most impacted by the alternatives under consideration. The primary ports meet at least one of the following criteria:

1. At least $1M average annual revenue of skates during 2010-2018 (Table 32), or
2. A ranking of high for engagement in and reliance on the skate fishery on average in 2014-2018 according to the NMFS Community Vulnerability Indicators (Table 31).

Secondary Port Criteria. The skate fishery secondary ports are those that may not be as dependent or engaged in the fishery as the primary ports but are involved to a lesser extent. Because of the size and diversity of the skate fishery, it is unpractical to examine each secondary port individually. However, they are listed here to provide a broader scope of potential communities impacted by skate management measures. The secondary ports meet at least one of the following criteria:

1. At least $100,000 average annual revenue of skates, 2010-2018, or
2. A ranking of at least medium-high for engagement in or reliance on the skate fishery on average in 2014-2018 according to the NMFS Community Vulnerability Indicators (Table 32).

Skate Primary and Secondary Ports. Based on these criteria, there are eight primary ports in the Northeast skate fishery (Table 33). Of these, the highest revenue ports are Chatham and New Bedford, Massachusetts and Point Judith, Rhode Island. There are 21 secondary ports from Massachusetts to North Carolina. The primary and secondary ports comprised 72% and 24% of total fishery revenue, respectively, during 2010-2018. There are 87 other ports that have had more minor participation (4%) in the fishery recently.

Of the primary ports, Chatham had the highest average revenue between 2010 and 2018, $1.7M, or 15% of total revenue in Chatham for all fisheries (Table 32). There were 59 active skate vessels during that time. Point Judith and New Bedford each had an average over $1.2M. The percent of total revenue was lower, just 0.3% and 2.8%, respectively. However, a much larger number of skate vessels landed in these ports, 167 and 178, respectively. Thus, although these three ports are important for the skate fishery, other fisheries dominate their overall fishing activity. For most of the secondary ports, the percent revenue from skates is also very low, from 0.3-12%, except for Sea Isle City, New Jersey (18%). Montauk, New York and Gloucester, Massachusetts had 106 and 152 active skate vessels during 2010-2018, higher than the other secondary ports, 5-96. Community profiles are available from the NEFSC Social Sciences Branch website (Clay et al. 2007).

Table 31. Skate fishing community engagement and reliance indicators, 2014-2018 average.

State	Community	Community Index	
		Engagement 2014-2018	Reliance 2014-2018
ME	Monhegan	Low	High
	Portland	Medium-High	Low
MA	Gloucester	High	Medium
	Boston	Medium-High	Low
	Scituate	Medium-High	Low
	Chatham	High	High
	Harwichport	Medium-High	Medium-High
	Woods Hole	Medium	Medium-High
	New Bedford	High	Medium
	Westport	High	Medium
	Chilmark	Medium	High
RI	Little Compton	High	High
	Newport	High	Medium
	Narragansett/Pt. Judith	High	High
CT	Stonington/Mystic/Pawcatuc	High	Medium
	New London	High	Medium
NY	Montauk	High	High
	Amagansett	Medium	High
	Wainscott	Low	Medium-High
	Hampton Bays/Shinnecock	High	Medium-High
	Oak Beach-Captree	Low	High
NJ	Belford	High	High
	Point Pleasant	High	Medium
	Barnegat Light/Long Beach	High	High
	Cape May	High	High
MD	Ocean City	Medium-High	Medium
VA	Newport News	Medium-High	Low
NC	Wanchese	Medium-High	Medium-High

Notes: This list includes those communities that have a ranking of at least medium-high for engagement or reliance.
Source: http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index.

Table 32. Fishing revenue (unadjusted for inflation) and vessels in top skate ports by revenue, calendar years 2010-2018.

Port	Average revenue, 2010-2018			Total active skate vessels, 2010-2018
	All fisheries	Skates only	% Skates	
Chatham, MA	$11,724,737	$1,704,647	15%	59
Point Judith, RI	$45,995,459	$1,294,973	2.8%	167
New Bedford, MA	$359,807,372	$1,229,694	0.3%	178
Newport, RI	$8,310,603	$411,274	4.9%	25
Little Compton, RI	$2,345,325	$280,600	12%	30
Long Beach, NJ	$26,247,037	$247,347	0.9%	59
Montauk, NY	$17,262,945	$230,299	1.3%	106
New London, CT	$5,030,350	$226,059	4.5%	30
Pt. Pleasant, NJ	$26,975,369	$175,347	0.7%	96
Sea Isle City, NJ	$879,404	$161,499	18%	5
Gloucester, MA	$47,936,941	$155,971	0.3%	152
Stonington, CT	$7,241,146	$136,587	1.9%	33
Hampton Bay, NY	$5,777,526	$133,139	2.3%	59
Westport, MA	$1,427,621	$101,323	7.1%	10
Other (n=103)	$290,196,969	$582,207	0.2%	
Total	**$857,158,805**	**$7,070,932**	**0.8%**	
Source: NMFS Commercial Fisheries Database, accessed September 2019.				

Table 33. Primary and secondary ports in the Northeast skate fishery.

State	Port	Average revenue, 2010-2018		Fishing Engagement or Reliance Indicator		Primary/ Secondary
		>$100K	>$1M	Med-High	High	
ME	Monhegan			√		Secondary
	Portland			√		Secondary
MA	Gloucester	√		√		Secondary
	Boston			√		Secondary
	Scituate			√		Secondary
	Chatham	√	√		√	Primary
	Harwichport			√		Secondary
	Woods Hole			√		Secondary
	New Bedford	√	√		√	Primary
	Westport	√		√		Secondary
	Chilmark			√		Secondary
RI	Little Compton	√			√	Primary
	Newport	√		√		Secondary
	Narragansett/Point Judith	√	√		√	Primary
CT	Stonington/Mystic/Pawcatuck	√		√		Secondary
	New London	√		√		Secondary
NY	Montauk	√			√	Primary
	Amagansett			√		Secondary
	Wainscott			√		Secondary
	Hampton Bays/ Shinnecock	√		√		Secondary
	Oak Beach - Captree			√		Secondary
NJ	Belford				√	Primary
	Point Pleasant	√		√		Secondary
	Barnegat Light/Long Beach	√			√	Primary
	Sea Isle City	√				Secondary
	Cape May				√	Primary
MD	Ocean City			√		Secondary
VA	Newport News			√		Secondary
NC	Wanchese			√		Secondary

The Engagement Index can be used to determine trends in a fishery over time. Those ports with high skate engagement in 2014-2018, generally had high engagement in 2004-2008 and 2019-2013, except for Westport, MA; Stonington and New London, CT; and Belford NJ (Table 34). There are 11 ports that have had high engagement during the three time series, indicating a stable presence in those communities.

Table 34. Changes in engagement over time (all primary and secondary ports, plus any port with Medium-High or High over time series).

State	Community	Engagement Index			
		2004-2008	2009-2013	2014-2018	2018 only
ME	Monhegan	Low	Low	Low	Low
	Portland	Med.-High	Med.-High	Med.-High	Medium-
NH	Portsmouth	Med.-High	Med.-High	Low	Low
MA	Gloucester	High	High	High	High
	Boston	High	High	Med.-High	Med.-High
	Scituate	High	High	Med.-High	Med.-High
	Marshfield	Med.-High	Medium	Medium	Medium
	Plymouth	Med.-High	Medium	Medium	Medium
	Provincetown	High	Med.-High	Medium	Medium
	Chatham	High	High	High	High
	Harwichport	Medium	Medium	Med.-High	Medium
	Woods Hole	Medium	Medium	Medium	Medium
	Fall River	Medium	High	Low	Low
	New Bedford	High	High	High	High
	Westport	Med.-High	Med.-High	High	Med.-High
	Chilmark	Low	Medium	Medium	Medium
RI	Tiverton	High	Medium	Medium	Medium
	Little Compton	High	High	High	High
	Newport	High	High	High	High
	Narragansett/Pt. Judith	High	High	High	High
CT	Stonington/Mystic/Pawcatuck	Med.-High	Medium	High	High
	New London	Medium	High	High	High
NY	Mattituck	Med.-High	Med.-High	Medium	Medium
	Montauk	High	High	High	High
	Amagansett	Medium	Medium	Medium	Medium
	Wainscott	Medium	Low	Low	Low
	Hampton Bays/Shinnecock	High	High	High	High
	Oak Beach-Captree	Low	Low	Low	Low
NJ	Belford	Med.-High	Med.-High	High	High
	Point Pleasant	High	High	High	High
	Barnegat Light/Long Beach	High	High	High	High
	Cape May	High	High	High	High
MD	Ocean City	Med.-High	Med.-High	Med.-High	Med.-High
VA	Newport News	Medium	Medium	Med.-High	Med.-High
NC	Wanchese	Medium	Med.-High	Med.-High	Medium

Notes: This list includes those communities that have a ranking of at least medium-high for engagement or reliance.
Source: http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index.

5.6.4.1.1 Ports by fishery (wing and bait)

Wing fishery: During 2010-2018, skate wings (food) were landed in over 115 ports. Skate wing revenue was highest in Chatham and New Bedford, MA; and Point Judith and Little Compton, RI during that time (Table 35). In 2018, the top wing ports were Chatham and New Bedford, MA; Point Judith, RI, and Point Pleasant, NJ. The total skate wing revenue for 2018 ($5.6M) was slightly lower than the average for 2010-2018 ($5.8M). The top port for skate wing revenue has been Chatham, averaging $1.7M for 2010-2018, accounting for 29% of wing revenue. The second highest port for skate wings is now Point Judith, but the revenue in 2018 ($539K) was down 27% from the nine-year average ($741K). New Bedford skate wing revenues were $467K in 2018, much less than half that port's 2010-2018 average of $1.2 million.

Trawl and gillnet vessels land skate wings. Some trawlers target skate; others catching skate incidentally. Most of the gillnet vessels targeting skate are based largely in Chatham but also in New Bedford. There is a very small skate wing fleet in Virginia, though it has dramatically declined in recent years. Most of these are monkfish gillnets though some draggers caught skate incidentally at the height of the fishery.

Bait fishery: During 2010-2018, skate bait was landed in over 35 ports with bait revenue highest in Point Judith and Newport, RI during that time (Table 35). In 2018, the top bait ports were Point Judith, RI, and New London, CT. The total skate bait revenue for 2018 ($1.4M) was slightly higher than the average for 2010-2018 ($1.3M). The top port for skate bait revenue has been Point Judith, RI, averaging $554K for 2010-2018, accounting for 43% of bait revenue. The second highest port for skate wings is now New London, CT, with revenue in 2018 ($280K) up 204% from the nine-year average ($137K). These revenues are those reported by Federal dealers. Ports such as Montauk, NY have individual vessels which sell skate directly to lobster and other pot fishermen for bait.

Table 35. Skate revenue by disposition and port, for calendar years 2010-2018.

Port	Avg. 2010-2018	2018 only
Wing (food)	**$5,779,373**	**$5,617,183**
Chatham, MA	$1,689,116	$2,793,625
New Bedford, MA	$1,194,233	$467,668
Point Judith, RI	$740,775	$538,917
Little Compton, RI	$280,600	$173,131
Barnegat Light, NJ	$241,332	$202,637
Montauk, NY	$230,277	$246,397
Newport, RI	$181,871	$126,719
Point Pleasant, NJ	$174,092	$275,422
Gloucester, MA	$133,104	$82,331
Hampton Bay, NY	$154,923	$119,707
Stonington, CT	$124,995	$126,753
Westport, RI	$100,355	$55,057
Other Ports (n=104)	*$533,701*	*$408,819*
Bait	**$1,291,559**	**$1,403,155**
Point Judith, RI	$554,199	$714,467
Newport, RI	$229,402	$144,862
Sea Isle City, NJ	$148,630	$0
New London, CT	$137,160	$280,434
Other Ports (n=32)	*$222,168*	*$263,392*
Grand Total	**$7,070,932**	**$7,020,338**

5.6.4.1.2 Fishery by states

During 2010-2018, skates were landed in ten states, mostly in Massachusetts and Rhode Island (Table 36). The bait fishery is primarily located in Rhode Island, and the wing fishery in Massachusetts. The skate fishery is a small contribution (0.0-2.8%) to overall fishing revenue to these ten states.

Table 36. Skate landings and revenue by fishery and state, calendar year 2010-2018.

	Average revenue 2010-2018				
	Skates			All fisheries	% skates
	Bait	Food	Total		
ME	$72	$1,245	$1,316	$305,515,928	0.0%
NH	$5,737	$12,477	$18,214	$25,595,733	0.1%
MA	$139,232	$3,304,615	$3,443,847	$502,369,095	0.7%
RI	$785,590	$1,221,570	$2,007,160	$71,733,848	2.8%
CT	$155,177	$229,162	$384,338	$14,564,035	2.6%
NY	$156	$416,687	$416,843	$27,840,035	1.5%
NJ	$204,560	$494,964	$699,524	$159,086,127	0.4%
MD	$601	$21,258	$21,859	$7,065,590	0.3%
VA	$435	$71,943	$72,378	$60,801,601	0.1%
NC	$0	$5,345	$5,345	$18,558,375	0.0%

5.6.4.2 Communities for Other Fisheries

There are several other fisheries that are potentially impacted by this action. Summarized below are the key port communities that are important to each of these fisheries, as identified by the lead management entity for each. Where the management entity has not previously identified the relevant communities, a method was developed through an earlier NEFMC action and explained below. Many ports have coexisting fisheries, including the skate fishery. In all, about 50 communities have been identified as potentially impacted (Table 38). Section 5.6.3 contains more information about these fisheries.

American Lobster: The American lobster fishery is the primary end user of skate bait. Lobster is landed in many port communities on the Atlantic coast. The ASMFC does not identify key ports in the FMP for this fishery. In 2019, 17 of the top 20 ports for lobster landed value were in Maine (primarily Mid-Coast to eastern Maine), with one in New Hampshire and two in Massachusetts (Table 37). For purposes of this action, these 20 top ports are considered the primary lobster ports (Table 37). There are over 200 other ports that are the primary landing port or homeport to lobster vessels in about 15 states. Since about 8,000 state waters-only lobster licenses are issued annually, the fishery likely occurs in many other ports.

Northeast Multispecies: Skates are important incidentally to the commercial groundfish fishery and are a bait source for the recreational bait fishery. There are over 400 communities that have been the homeport or landing port to one or more commercial Northeast groundfish fishing vessels since 2008. Ports highly engaged in the groundfish fishery were identified in Framework 59 and Amendment 23 to the Northeast Multispecies FMP (NEFMC 2020a; b). Primary and secondary ports were identified in earlier actions (e.g., NEFMC 2019). For purposes of this action, the highly engaged ports are considered the primary groundfish ports and others identified are secondary (Table 38).

Monkfish: Skates are important incidentally to the monkfish fishery and are a bait source for the recreational bait fishery. The primary and secondary monkfish ports (Table 38), using data in Framework 10 to the Monkfish FMP, are identified as:

- Primary ports: very high engagement in the fishery (score = 5-20) or having at least $1M of monkfish revenue on average from 2009-2013.
- Secondary ports: high engagement in the fishery (score = 1-4.99) or having at least $50K of monkfish revenue on average from 2009-2013.

Table 37. Top 20 (non-confidential) landing ports by lobster revenue, 2019, Maine to New Jersey.

State	Port	Top 20 landing port for lobster revenue		
		Revenue	# of vessels	# of dealers
ME	Jonesport	$10M	148	4
	Beals	$22M	283	5
	Harrington	$10M	57	4
	Milbridge	$12M	99	8
	Southwest Harbor	$11M	128	8
	Bass Harbor	$13M	130	7
	Swans Island	$9M	84	3
	Stonington	$49M	368	7
	Vinalhaven	$39M	219	5
	Owls Head	$13M	72	2
	S. Thomaston/Spruce Head	$18M	142	11
	Tenants Harbor	$8M	79	6
	Cushing	$11M	74	4
	Friendship	$24M	136	10
	Cundys Harbor	$11M	111	6
	Harpswell	$12M	109	12
	Portland	$15M	221	19
NH	Portsmouth/Newington	$33M	90	11
MA	Gloucester	$22M	182	24
	New Bedford	$13M	60	18
Source: ACCSP, accessed April 2020				

Table 38. Key port communities for the skate fishery and other fisheries potentially impacted by Amendment 5.

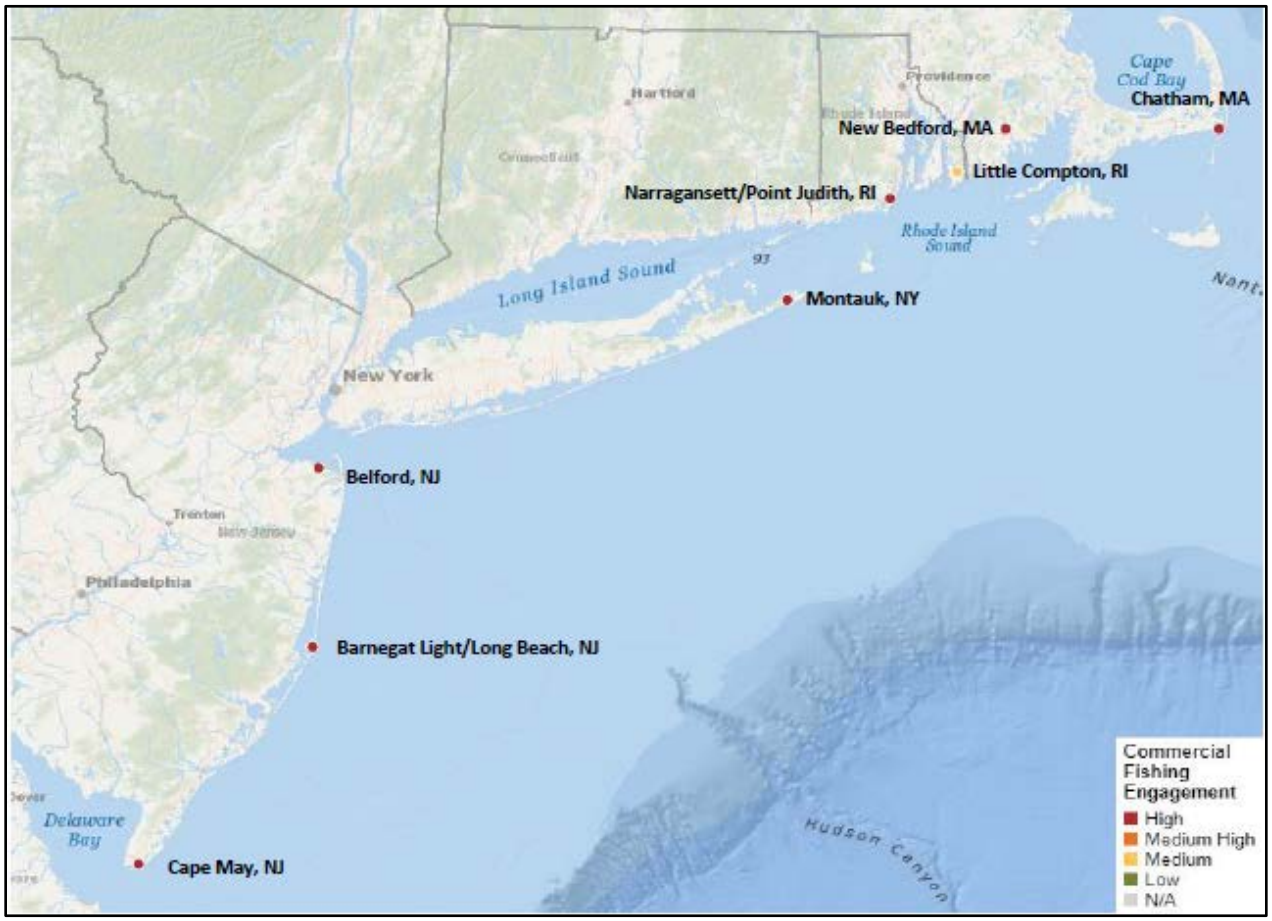
State	Port	Skate	Lobster	Groundfish	Monkfish
ME	Jonesport		L*		
	Beals		L*		
	Harrington		L*		
	Milbridge		L*		
	Southwest Harbor		L*		
	Bass Harbor		L*		
	Swans Island		L*		
	Stonington		L*		
	Vinalhaven		L*		
	Owls Head		L*		
	S. Thomaston/Spruce Head		L*	G	
	Monhegan	S			
	Tenants Harbor/Port Clyde		L*	G	M
	Cushing		L*		
	Friendship		L*		
	Boothbay Harbor			G	
	Cundys Harbor		L*	G	
	Harpswell		L*		
	Portland	S	L*	G*	M
	Saco			G	
	Kennebunkport/Cape Porpoise			G	
NH	All (e.g., Portsmouth, Rye, Hampton		L*	G	M
MA	Newburyport			G	
	Rockport			G	
	Gloucester	S	L*	G*	M*
	Boston	S		G*	M*
	Scituate	S		G*	M
	Marshfield			G	
	Plymouth			G	
	Sandwich			G	
	Barnstable			G	
	Dennis			G	
	Provincetown			G	
	Chatham	S*		G*	M
	Harwichport	S		G	
	Woods Hole	S		G	
	New Bedford/Fairhaven	S*	L*	G*	M*

	Nantucket			G	
	Chilmark	S			M
	Westport	S			M
RI	Tiverton				M
	Little Compton	S*			M
	Newport	S		G	M
	Narragansett/Point Judith	S*		G*	M*
	New Shoreham				M
CT	Stonington/Mystic/Pawcatuck	S		G	M
	New London	S			M
NY	Montauk	S*		G*	M*
	Amagansett	S			
	Wainscott	S			
	Hampton Bays/Shinnecock	S		G*	M
	Oak Beach - Captree	S			
NJ	Belford	S*			M
	Point Pleasant	S			M
	Waretown				M
	Barnegat				M
	Barnegat Light/Long Beach	S*			M*
	Sea Isle City	S			
	Waretown				M
	Cape May	S*			M
MD	Ocean City	S			M
VA	Greenbackville				M
	Chincoteague				M
	Newport News	S			M
NC	Wanchese	S			M
* A primary port for the fishery. Blank cells do not necessarily mean no activity.					

5.6.4.3 Port Descriptions

Described here are the eight fishing communities that are primary ports for the skate fishery (Map 1). Each contains demographic data collected by the U.S. Census, accessed in 2020 at: https://data.census.gov/cedsci/. Fishery data therein are collected by NMFS, much of which are available on the NEFSC website (NEFSC 2017). Clay *et al.* (2007) has a detailed profile of each port, including important social and demographic information.

Map 1. Primary port communities for the skate fishery, with 2016 their commercial fishing engagement indicators.



Source: NOAA Fisheries Social Indicators of Fishing Communities (2020): https://www.st.nmfs.noaa.gov/data-and-tools/social-indicators/.

5.6.4.3.1 Massachusetts Ports

Chatham

General: Chatham is a fishing community in Barnstable County, Massachusetts. In 2017, Chatham had an estimated population of 6,149, a 0.4% increase from the year 2010 (6,125). In 2017, 5% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Chatham; the poverty rate was 10%; and the population was 92% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Chatham in 2016 were both high. In 2019, Chatham was the homeport and primary landing port for 90 and 96 Federal fishing permits (i.e., vessels), respectively. Total landings in Chatham were valued at $16M, 2% of the state-wide total ($680M), landed by 162 vessels and sold to 36 dealers. American lobster ($4.3M) was the highest valued species, accounting for 27% of the total Chatham revenue, landed by 40 vessels and sold to 14 dealers (Table 39). The Chatham Fish Pier is an active offloading facility in Chatham. The Cape Cod Community Supported Fishery is based in West Chatham.

Skate fishery: Chatham is a primary port for the skate fishery, with an average revenue of $1.7M/year from 2010-2018 (highest of all ports), 15% of total revenue in Chatham during that time (Table 32). This

revenue has been primarily from skate wings (Table 35). Skate fishing engagement and reliance indices on average in 2014-2018 were both high (Table 31), and engagement has been high since 2004 (Table 34). In 2019, there was $2.0M in "big skate" revenue (likely winter skate), landed by 27 vessels and sold to 5 dealers and it was the third highest species landed by value in Chatham (Table 39).

Table 39. Top five species landed by value in Chatham MA, calendar year 2019.

Species	Nominal revenue ($)	Vessels	Dealers
American lobster	$4.3M	40	14
Sea scallops	$2.3M	19	11
Big skate (likely winter skate)	$2.0M	27	5
Spiny dogfish	$1.3M	32	3
Softshell clam	$0.8M	6	10
Note: Data are preliminary. *Source:* NEFSC dealer data, accessed March 2020.			

New Bedford

General: New Bedford is a fishing community in Bristol County, Massachusetts. In 2017, New Bedford had an estimated population of 95,125, a 0.06% increase from the year 2010 (95,072). In 2017, 2% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in New Bedford; the poverty rate was 23%; and the population was 64% white, non-Hispanic, 20% Hispanic or Latino, and 5% Black or African American alone.

The commercial fishing engagement and reliance indices for New Bedford in 2016 were high and medium, respectively. In 2019, New Bedford was the homeport and primary landing port for 243 and 262 Federal fishing permits (i.e., vessels), respectively. Total landings in New Bedford were valued at $451M, 66% of the state-wide total ($680M), landed by 483 vessels and sold to 76 dealers. Sea Scallop ($379M) was the highest valued species, accounting for 84% of the total New Bedford revenue, landed by 316 vessels and sold to 32 dealers (Table 40).

Skate fishery: New Bedford is a primary port for the skate fishery, with an average revenue of $1.2M/year from 2010-2018 (3rd highest of all ports), 0.3% of total revenue in New Bedford during that time (Table 32). This revenue has been primarily from skate wings (Table 35). Skate fishing engagement and reliance indices on average in 2014-2018 were high and medium, respectively (Table 31), and engagement has been high since 2004 (Table 34).

Table 40. Top five species landed by value in New Bedford MA, calendar year 2019.

Species	Nominal revenue ($)	Vessels	Dealers
Sea scallop	$379M	316	32
American lobster	$13M	56	17
Atlantic surfclam	$7.4M	16	6
Jonah crab	$6.1M	26	8
Note: Data are preliminary; data for one of the five top species landed are confidential. *Source:* NEFSC dealer data, accessed March 2020.			

5.6.4.3.2 Rhode Island Ports

Little Compton

General: Little Compton is a fishing community in Newport County, Massachusetts. In 2017, Little Compton had an estimated population of 3,521 an 18% increase from the year 2010 (2,879). In 2017, 2% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Little Compton; the poverty rate was 8.5%; and the population was 95% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Little Compton in 2016 were both medium. In 2019, Little Compton was the homeport and primary landing port for 5 and 0 Federal fishing permits (i.e., vessels), respectively. Total landings in Little Compton were valued at $3.4M, 3% of the state-wide total ($108M), landed by 29 vessels and sold to 15 dealers. Monkfish ($1.1M) was the highest valued species, accounting for 32% of the total Little Compton revenue, landed by 29 vessels and sold to 15 dealers (Table 41).

Skate fishery: Little Compton is a primary port for the skate fishery, with an average revenue of $0.28M/year from 2010-2018 (5th highest of all ports), 12% of total revenue in Little Compton during that time (Table 32). This revenue has been primarily from skate wings (Table 35). Skate fishing engagement and reliance indices on average in 2014-2018 were both high (Table 31), and engagement has been high since 2004 (Table 34). In 2019, there was $0.34M in "big skate" revenue (likely winter skate), landed by 11 vessels and sold to 3 dealers and it was the fourth highest species landed by value in Little Compton (Table 41).

Table 41. Top five species landed by value in Little Compton RI, calendar year 2019.

Species	Nominal revenue ($)	Vessels	Dealers
Monkfish	$1.1M	15	4
Lobster	$0.62M	7	5
Jonah crab	$0.42M	6	5
Big skate (likely winter skate)	$0.34M	11	3
Black sea bass	$0.19M	13	4
Note: Data are preliminary. *Source:* NEFSC dealer data, accessed April 2020.			

Narragansett/Point Judith

General: Point Judith is a fishing community in the town of Narragansett, in Washington County, RI. In 2017, Narragansett had an estimated population of 15,601, a 2% decrease from the year 2010 (15,868). In 2017, 2% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Narragansett; the poverty rate was 18%; and the population was 94% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Narragansett/Point Judith in 2016 were high and medium, respectively. In 2019, Narragansett and Point Judith were the homeport and primary landing port for 138 and 153 Federal fishing permits (i.e., vessels), respectively. Total landings in Point Judith were valued at $66M, 60% of the state-wide total ($108M), landed by 238 vessels and sold to 51 dealers. Sea scallop ($20M) was the highest valued species, accounting for 30% of the total Point Judith revenue, landed by 49 vessels and sold to 15 dealers (Table 42).

Skate fishery: Point Judith is a primary port for the skate fishery, with an average revenue of $1.3M/year from 2010-2018 (2nd highest of all ports), 2.8% of total revenue in Point Judith during that time (Table 32). This revenue has been from skate wings (57%) and bait (42%, Table 33). Skate fishing engagement

and reliance indices on average in 2014-2018 were both high (Table 31) and engagement has been high since 2004 (Table 34).

Table 42. Top five species landed by value in Point Judith RI, calendar year 2019.

Species	Nominal revenue ($)	Vessels	Dealers
Sea scallop	$20M	49	15
Lologo squid	$19M	87	16
Lobster	$5.2M	54	9
Summer flounder	$4.8M	120	16
Silver hake	$3.4M	79	13
Note: Data are preliminary. *Source:* NEFSC dealer data, accessed April 2020.			

5.6.4.3.3 New York Ports

Montauk

General: Montauk is a fishing community on Long Island, New York. In 2017, Montauk had an estimated population of 3,662, a 14% increase from the year 2010 (3,157). In 2017, 4% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Montauk; the poverty rate was 5.4%; and the population was 86% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Montauk in 2016 were both high. In 2019, Montauk was the homeport and primary landing port for 120 and 130 Federal fishing permits (i.e., vessels), respectively. Total landings in Montauk were valued at $18M, 15% of the state-wide total ($124M), landed by 133 vessels and sold to 39 dealers. Loligo squid ($4.5M) was the highest valued species, accounting for 30% of the total Montauk revenue, landed by 30 vessels and sold to 19 dealers (Table 43).

Skate fishery: Montauk is a primary port for the skate fishery, with an average revenue of $0.23M/year from 2010-2018 (7th highest of all ports), 1.3% of total revenue in Montauk during that time (Table 32). This revenue has been primarily from skate wings (Table 35). Skate fishing engagement and reliance indices on average in 2014-2018 were both high (Table 31), and engagement has been high since 2004 (Table 34).

Table 43. Top five species landed by value in Montauk NY, calendar year 2019.

Species	Nominal revenue ($)	Vessels	Dealers
Loligo squid	$4.5M	30	19
Tilefish	$3.2M	16	12
Scup	$2.4M	76	18
Summer flounder	$2.0M	68	23
Silver hake	$1.1M	31	16
Note: Data are preliminary. *Source:* NEFSC dealer data, accessed April 2020.			

5.6.4.3.4 New Jersey Ports

Belford

General: Belford is a fishing community in Monmouth County, New Jersey. In 2017, Belford had an estimated population of 1,743, a 20% increase from the year 2010 (1,396). In 2017, 0% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Belford; the poverty rate was 2.2%; and the population was 84% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Belford in 2016 were both low. In 2019, Belford was the homeport and primary landing port for 15 Federal fishing permits (i.e., vessels), respectively. Total landings in Belford were valued at $1.9M, 1% of the state-wide total ($179M), and were landed by 19 vessels sold to three dealers (specific species are confidential).

Skate fishery: Belford is a primary port for the skate fishery, with an average revenue of under $0.1M/year from 2010-2018 (>14th highest of all ports, Table 32). Skate fishing engagement and reliance indices on average in 2014-2018 were both high (Table 31). Skate fishery engagement was medium-high in 2004-2013 and has been high since 2014 (Table 34).

Barnegat Light/LongBeach

General: Barnegat Light on Long Beach island is a fishing community in Ocean County, NJ. In 2017, Barnegat Light had an estimated population of 494, a 14% decrease from the year 2010 (574). In 2017, 5% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Barnegat Light; the poverty rate was 1%; and the population was 98% white, non-Hispanic.

The commercial fishing engagement and reliance indices for Barnegat Light in 2016 were both high. In 2019, Barnegat Light was the homeport and primary landing port for 65 and 69 Federal fishing permits (i.e., vessels), respectively. Total landings in Barnegat Light were valued at $25M, 14% of the state-wide total ($179M), landed by 55 vessels sold to 13 dealers. Sea scallops ($20M) was the highest valued species, accounting for 80% of the total Barnegat Light revenue, landed by 25 vessels and sold to 4 dealers (Table 44).

Skate fishery: Barnegat Light is a primary port for the skate fishery, with an average revenue of $0.25M/year from 2010-2018 (6th highest of all ports), 0.9% of total revenue in Barnegat Light during that time (Table 32). This revenue has been primarily from skate wings (Table 35). Skate fishing engagement and reliance indices on average in 2014-2018 were both high (Table 31), and engagement has been high since 2004 (Table 34).

Table 44. Top five species landed by value in Barnegat Light/Long Beach, calendar year 2019.

Species	Revenue ($)	Vessels	Dealers
Sea scallop	$20M	25	4
Monkfish	$0.96M	41	7
Summer flounder	$0.49M	18	4
Note: Data are preliminary; data for two of the five top species landed are confidential. *Source:* NEFSC dealer data, accessed March 2020.			

Cape May, New Jersey

General: Cape May is a fishing community in Cape May County, NJ. In 2017, Cape May had an estimated population of 3,500, a 3% decrease from the year 2010 (3,607). In 2017, 0.3% of the civilian employed population aged 16 years and over worked in agriculture, forestry, fishing, hunting, and mining occupations in Cape May; the poverty rate was 9%; and the population was 79% white, non-Hispanic and 15% Hispanic or Latino.

The commercial fishing engagement and reliance indices for Cape May in 2016 were both high. In 2019, Cape May was the homeport and primary landing port for 133 and 138 Federal fishing permits (i.e., vessels), respectively (GARFO 2019). Total landings in Cape May were valued at $82M, 46% of the state-wide total ($179M), and were landed by 181 vessels sold to 22 dealers. Sea scallops ($58M) was the highest valued species, accounting for 71% of the total Cape May revenue, landed by 140 vessels and sold to 11 dealers (Table 45).

Skate fishery: Cape May is a primary port for the skate fishery, with an average revenue of under $0.1M/year from 2010-2018 (> 14th highest of all ports), >0.01% of total revenue in Cape May during that time (Table 32). Skate fishing engagement and reliance indices on average in 2014-2018 were both high (Table 31), and engagement has been high since 2004 (Table 34).

Table 45. Top five species landed by value in Cape May, calendar year 2019.

Species	Revenue ($)	Vessels	Dealers
Sea scallop	$58M	140	11
Inshore longfin squid	$9.2M	15	3
Loligo squid	$5.3M	36	7
Note: Data are preliminary; data for two of the five top species landed are confidential. *Source:* NEFSC dealer data, accessed March 2020.			

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