

Northeast Skate Complex Fishery Management Plan 2022 – 2023 Specifications



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**2022-2023 SPECIFICATIONS FOR THE NORTHEAST SKATE COMPLEX
FISHERY MANAGEMENT PLAN**

Proposed Action: Propose skate specifications for fishing years 2020 and 2021 and skate possession limits.

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Abstract: [to be completed]

1.0 EXECUTIVE SUMMARY

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. Amendment 3 to the FMP established a control rule for setting the skate acceptable biological catch (ABC) based on survey biomass indices and median exploitation ratios; the annual catch limit (ACL) is set to the ABC.

[to be completed]

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3.0 BACKGROUND AND PURPOSE

3.1 BACKGROUND

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 including possession limits for the skate wing and bait fisheries. These fisheries have different seasonal management structures and are subject to effort controls and accountability measures (AM).

Principally due to problems with species identification in commercial catches, the Original Skate FMP (implemented in 2003) did not derive or propose an absolute Maximum Sustainable Yield (MSY) estimate for skate species or for the skate complex. Catch histories for individual species were unreliable and probably underreported. Furthermore, the population dynamics of skates was largely unknown, so measures of carrying capacity or productivity were not available on which to base estimates of MSY. Likewise, an OFL is undetermined in the Skate FMP. In their February 11, 2009 report, the SSC recommended that an OFL “cannot be determined, because overfishing reference points are survey proxies, and estimates of fishing mortality or fishing mortality reference points are not available.” These issues are largely why skate specifications apply to the entire complex and are not set for individual species.

Indices of relative abundance (stratified mean weight/tow) have been developed from Northeast Fisheries Science Center’s (NEFSC) bottom trawl surveys for the seven species in the skate complex. These indices and their rates of change form the basis for all the conclusions about the status of the complex. The spring NEFSC survey data is used for little skate and the fall NEFSC survey data is used for the other managed skate species.

For all skate species except barndoor, $B_{MSY_{proxy}} = B_{target}$ = the 75th percentile of its survey biomass index. For barndoor skate, $B_{MSY_{proxy}} = B_{target}$ = the average of its survey biomass index. The survey biomass index is measured in kg/tow during a specific set of years for each species (Table 8).

The skate complex MSY_{proxy} is the median of catch/biomass over the time series multiplied by the $B_{MSY_{proxy}}$. Here, “catch” is total landings from dealer data, vessel to vessel transfers from VTR data and dead discards (kg), and “biomass” is the survey biomass index (kg/tow). For each species, the median of that ratio across the entire time series is multiplied by its B_{target} (kg/tow). The MSY_{proxy} for each species is then summed over all seven skate species in the management unit.

[NOTE: in 2019, for the FY 2020-2021 specifications setting (Framework 8), the MSY_{proxy} was unchanged from the level set in 2017 for the FY 2018-2019 specifications, because the catch/biomass medians were the same as estimated for the FY 2018-2019 specifications (36,794 mt). The MSY_{proxy} in 2020 has yet to be determined.]

This action sets fishery specifications for fishing years (FY) 2022 and 2023 according to the formula (Figure 1) established through Amendment 3 (NEFMC 2009).

Acceptable Biological Catch (ABC). The control rule established through Amendment 3 sets the skate ABC at the median ratio of catch/biomass as explained above of each of the seven skate species multiplied by its three-year moving average stratified mean biomass (weight/tow) for skates, summed over the seven skate species in the management unit. This method is considered an interim proxy until an OFL and its uncertainty can be quantified.

[NOTE: in 2019, for the FY 2020-2021 specifications setting (Framework 8), gaps in survey coverage precluded the exact application of this control rule. Ideally, spring survey data for 2017-

2019 would have been used for little skate and fall 2016-2018 data would have been used for all other species. In the 2017 fall survey, southern stations were missed resulting in no survey indices for rosette or clearnose skate that year, and a two-year average (2016 and 2018) was used instead. To a lesser degree, the missed stations in 2017 also impacted the time series for barndoor, thorny, smooth, and winter skate, and there were missed stations in the 2018 fall survey that impacted the time series for these species as well. For these species, a three-year average (2017-2019) was used, but the surveys were adjusted to account for the missing strata using an average of the ratio between the series with all strata and the series with the missing strata dropped. This was consistent with how missing data in the 2017 fall survey was handled for these species in the 2018 stock status update.

For the FY 2022-2023 specifications, if following the control rule exactly, spring survey data for 2019-2021 would be used for little skate and fall 2018-2020 data would be used for all other species. However, due to missed surveys in 2020, the NEFSC has determined that only survey data through 2019 may be used. Also, the missed stations in the fall 2018 survey would still be impacting the calculations. Historically, the PDT has decided how to address survey gaps when developing ABC recommendations that are reviewed by the Scientific and Statistical Committee. As the data gaps are unusually large this time, the PDT is currently seeking additional scientific advice of the NEFSC before proceeding to develop potential ABCs.]

Annual Catch Limit (ACL). The skate ACL is equal to the ABC. The ACL is a limit that will trigger accountability measures if catch exceeds this amount.

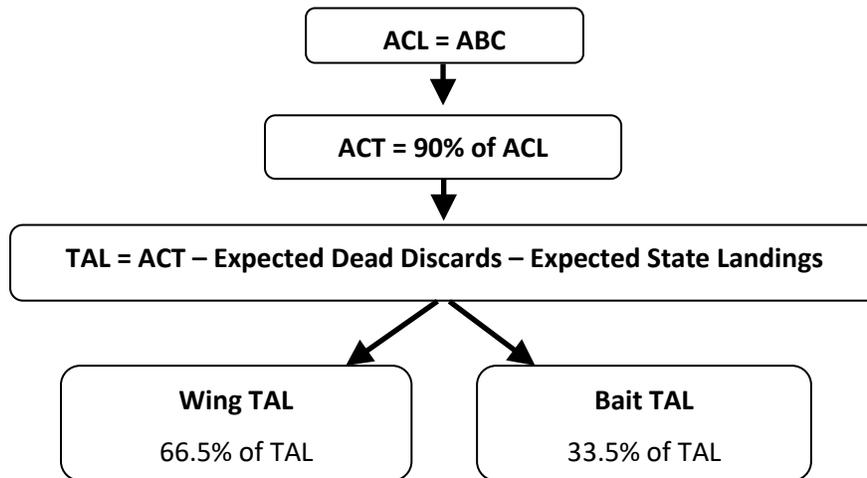
Annual Catch Target (ACT). The skate ACT is 90% of the ACL. There is a 10% uncertainty buffer between the ACL and ACT to account for scientific and management uncertainty (NEFMC 2018). This buffer is further explained in Section 5.2.4.

Total Allowable Landings (TAL). The skate TALs is set by subtracting expected dead discards and expected state landings from the ACT. These values are calculated as follows:

- Expected dead discards are calculated by applying the weighted discard mortality rate to the average discards from the most recent three years (using observer and ASM data).
- Expected state landings is equal to the average of the most recent three years of landings by vessels that have never had a federal fishing permit (permit # = 0) from data reported to the federal database. The landings from these vessels are the “state-permitted only vessel landings” in the year-end ACL accounting (Table 9).

Wing and Bait TALs. The Wing and Bait TALs are set at 66.5% and 33.5% of the TAL, respectively.

Figure 1. Formula for skate specifications setting used since Amendment 3.



3.2 PURPOSE AND NEED

The purpose for this action (Table 1) is to set specifications for FY 2022 and 2023 for the skate fishery including the ABC, ACL, and resultant landing limits as well as possession limits consistent with the Magnuson-Stevens Act and the [goal and objectives of the Skate FMP](#). This action is needed to meet regulatory requirements to prevent overfishing, ensure rebuilding, and achieve optimum yield.

Table 1. Purpose and need for 2022-2023 Specifications.

Purpose	Need
Specify ABC, ACL, and resultant landing limits as well as possession limits for the skate fishery for FY 2022-2023, consistent with the MSA and the FMP goal and objectives.	To meet regulatory requirements needed to prevent overfishing, ensure rebuilding, and to achieve optimum yield.

4.0 ALTERNATIVES UNDER CONSIDERATION

4.1 ACTION 1 – SPECIFICATIONS

This action sets fishery specifications for fishing years (FY) 2022 and 2023 according to the formula (Figure 1) established through Amendment 3 (NEFMC 2009).

4.1.1 Alternative 1 - No Action

Under Alternative 1 (No Action), the ACL specifications for FY 2022-2023 would be unchanged from the ACL specifications for FY 2020-2021 since specifications in the Skate FMP remain in place until replaced by a future action. The specifications for FY 2020-2021 were derived from the median

catch/biomass exploitation ratio for the NMFS bottom trawl time series up to 2019 and the three-year average stratified mean biomass for skates, using the 2017-2019 spring NEFSC survey data for little skate and the 2016-2018 fall NEFSC survey data for the other managed skate species (with modifications due to some missed fall survey stations in 2017 and 2018).

Table 2. Specification alternatives for FY 2022-2023.

	Alternative 1	Alternative 2
ABC = ACL	32,715 mt	[TBD]
ACT (90% of ACL)	29,444 mt	
TAL = ACT – discards – state landings	17,864 mt	
Wing TAL (66.5% of TAL)	11,879 mt	
Bait TAL (33.5% of TAL)	5,984 mt	

[NOTE: The PDT will develop ABC recommendations pending additional scientific input from the NEFSC. See notes above.]

4.1.2 Alternative 2 - ???

Under Alternative 2, ...

4.2 ACTION 2 – SKATE POSSESSION LIMITS

The Wing TAL is managed in two seasons and the Bait TAL is managed in three seasons (Table 3). Season 1 for the wing fishery (May 1 – August 31) receives 57% of the Wing TAL and the remainder is allocated to Season 2. Season 1 for the bait fishery (May 1 – July 31) receives 30.8% of the Bait TAL, Season 2 (August 1 – October 31) receives 37.1% and the remainder is allocated to Season 3.

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.

[Note: Possession limits increased in FY 2020-2021. It should be considered whether the current approach should be maintained or whether adjustments are warranted.]

Table 3. Skate seasonal management with FY 2020-2021 possession limits.

Fishery	Season	Dates	% of TAL	Possession Limit	Trigger	Incidental Limit
Wing	1	May 1 – Aug 31	57%	3,000 lb wing weight (6,810 lb whole weight)	85% of seasonal TAL	500 lb wing weight (1,135 lb whole weight)
	2	Sept 1 – Apr 30	remainder	5,000 lb wing weight (11,350 lb whole weight)	85% of annual TAL	
Bait	1	May 1 – Jul 31	30.8%	25,000 lb whole weight	90% of seasonal TAL	8,000 lb whole weight
	2	Aug 1 - Oct 31	37.1%		90% of seasonal TAL	
	3	Nov 1 – Apr 30	remainder		80% of annual TAL	

4.2.1 Skate Wing Possession Limits

These alternatives would set the skate wing possession limits. Under any of these alternatives, the formula for setting the barndoor skate possession limit would be unchanged (25% of the total limit). Barndoor skate possession limits are within the overall skate possession limit for each trip, not in addition to it. Also unchanged would be the trigger for the 500 lb incidental possession limit, remaining at 85% of the Wing TAL.

[Note: The prohibition on barndoor skate was lifted through Framework 5 and a possession limit was created as a percentage of the wing limit. At the time, the intent was to potentially adjust this in the future as barndoor becomes part of the fishery. It should be considered whether this approach should be maintained or if adjustments are warranted. Perhaps this issue could be considered after the 2023 management track assessment.]

4.2.1.1 Alternative 1 – No Action

Under Alternative 1 (No Action), the skate wing possession limits would remain at 3,000 lb for Season 1 (May 1 to August 31) and 5,000 lb for Season 2 (September 1 to April 30). The barndoor skate possession limit would remain a 750 lb in Season 1 and 1,250 lb in Season 2 (set proportional at 25% of the limits).

4.2.1.2 Alternative 2 - ???

Under Alternative 2, ...

4.2.2 Skate Bait Possession Limits

These alternatives would set skate bait possession limits. None of these alternatives would adjust the seasonal incidental possession limit triggers (90% in Seasons 1 and 2; 80% in Season 3), revise the incidental possession limit (8,000 lb), or modify the regulation that the bait fishery is closed once 100% of the TAL is reached. Vessels that obtain a Skate Bait Letter of Authorization (LOA) from GARFO could retain whole skates up to the possession limit in all three seasons if they comply with related rules and size limits. No possession of barndoor skate is permitted for vessels fishing with a Skate Bait LOA.

4.2.2.1 Alternative 1 – No Action

Under Alternative 1 (No Action), the skate bait possession limit would remain at 25,000 lb in all three seasons.

4.2.2.2 Alternative 2 - ???

Under Alternative 2, ...

5.0 AFFECTED ENVIRONMENT

5.1 INTRODUCTION

The Affected Environment is described in this action based on valued ecosystem components (VECs), including target species, non-target species, predator 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. [NOTE: To be developed. See Amendment 5 Discussion Document for more information.]

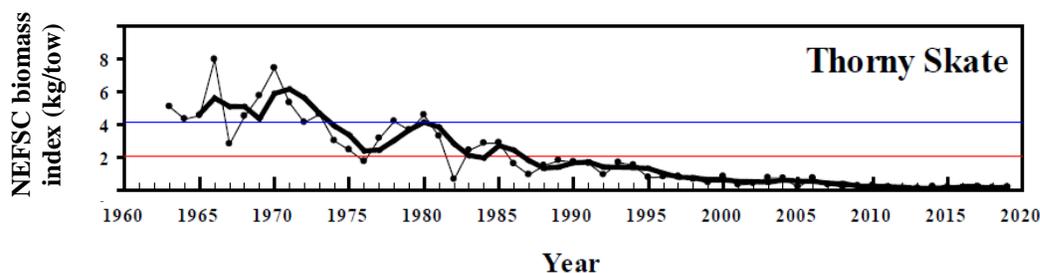
5.1.1 Thorny Skate Rebuilding Plan

Thorny skate is the one species in the Northeast Skate Complex which remains overfished. The Original Skate FMP (implemented in 2003) established a rebuilding plan for thorny skate but did not adopt a rebuilding schedule due to the lack of critical life history information. Through Amendment 3 (implemented in 2010), based on new life history parameter estimates, it was estimated that thorny skate would take longer than 10 years to rebuild; the Council estimated that it takes a female thorny skate 15 years to replace its own spawning capacity, i.e., its mean generation time. The maximum rebuilding period allowed by the MSA was 25 years (10 years plus one mean generation time). Amendment 3 established a 25-year rebuilding period for thorny skate, or by 2028 when counted from the start of the rebuilding period in 2003. It was estimated in Amendment 3 that, based on biomass at the time (0.42 kg/tow in 2007), it would take an average annual increase of 13.2% to rebuild to the B_{MSY} target of 4.41 kg/tow by 2028 (the target since changed to 4.13). At the time, the PDT advised that the best estimate of the maximum intrinsic rate of population growth was 0.17, so achieving the biomass target within the rebuilding schedule seemed achievable.

The rebuilding plan is to prohibit possession of thorny skate throughout the management unit. Additionally, if the 3-year moving average of the appropriate survey mean weight per tow declines below the average for the previous three years, then the Council must take management action to ensure that stock rebuilding will achieve target levels.

The Annual Catch Limit is set for skates as a complex; there is no ACL set for thorny skate. However, the ACL has never been exceeded. As of the 2020 Annual Monitoring Report, 17 years into the rebuilding period, the survey biomass has continued to be low overall for thorny skate with no significant signs of rebuilding. The stock had a small uptick in biomass index from 0.14 in FY 2018 to 0.18 in FY 2019, but this is just 4% of B_{MSY} .

Figure 2. Thorny skate NEFSC survey biomass indices (kg/tow), 1963 - 2019.



Note: Thin lines with symbols are annual indices, thick lines are three-year moving averages, and the thin horizontal lines are the biomass thresholds and targets developed through 2007/2008 with consistent strata sets.

5.1.2 Uncertainty Buffer

There is a buffer between the ACL and the ACT to account for scientific and management uncertainty. It was set at 10% through Framework Adjustment 6 (implemented February 2019; NEFMC 2018), reduced from 25%, the level originally set through Amendment 3. For FY 2020-2021, the buffer was 3,271 mt.

Several sources of uncertainty have been identified. The skate complex has proven unsuitable for traditional stock assessment models to be used, resulting in an empirical assessment based on the NEFSC trawl survey indices that are used as biomass proxies. This contributes to the uncertainty surrounding the specifications process. The calculation of ABC uses the median C/B, which is risk-averse relative to using a higher percentile. This helps account for the scientific uncertainty in the catch/biomass relationship. Other sources of uncertainty within the ABC calculation include species-specific landings, species-specific estimates of discards, estimates of discards, discard mortality rates, the relationship between survey catch and biomass, recreational catch, and skate landings by state-only permitted vessels not reported to the Federal database. Skates are encountered by many fisheries and gear types, and a large portion of biomass is set aside to account for expected dead discards.

It is difficult to quantify the level of uncertainty each source causes relative to a buffer percentage. However, some sources are more quantifiable than others.

[PDT expects to include some quantification of sources of uncertainty (e.g., recreational catch)].

6.0 GLOSSARY

Acceptable Biological Catch (ABC) – A level of a stock or stock complex’s annual catch that accounts for the scientific uncertainty in the estimate of OFL.

Adverse effect – Any impact that reduces quality and/or quantity of EFH. May include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and or quantity of EFH. Adverse effects to EFH may result from actions occurring within or outside of EFH and may include sites-specific or habitat wide impacts, including individual, cumulative, or synergistic consequences of actions.

Annual Catch Limit (ACL) – The level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures (AMs).

Annual Catch Target (ACT) – An amount of annual catch of a stock or stock complex that is the management target of the fishery.

Accountability Measure (AM) – A management control that prevents ACLs from being exceeded, where possible, and correct or mitigate overages if they occur.

Biological Reference Points – Specific values for the variables that describe the state of a fishery system which are used to evaluate its status. Reference points are most often specified in terms of fishing mortality rate and/or spawning stock biomass.

Biomass – The total mass of living matter in a unit area or the weight of a fish stock or portion thereof. Biomass can be listed by age group (numbers at age * average weight at age) or summarized by groupings (e.g., age 1+, ages 4+ 5, etc.).

B_{MSY} – The stock biomass that would produce maximum sustainable yield (MSY) when fished at a level equal to F_{MSY}. For most stocks, B_{MSY} is about ½ of the carrying capacity.

B_{target} – A desirable biomass to maintain fishery stocks, usually equivalent to B_{MSY} or its proxy, as in the Skate FMP. For each skate species except barndoor, B_{MSY} proxy = B_{target} = the 75th percentile (average of the first four years for barndoor) of its survey biomass index (kg/tow; for a set period). For barndoor skate, B_{MSY} proxy = B_{target} = the average of its survey biomass index.

B_{threshold} – 1) A limit reference point for biomass that defines an unacceptably low biomass i.e., puts a stock at high risk (recruitment failure, depensation, collapse, reduced long term yields, etc). 2) A biomass threshold that the MSA requires for defining when a stock is overfished. A stock is overfished if its biomass is below B_{threshold}. A determination of overfished triggers the requirement for a rebuilding plan to achieve B_{target} as soon as possible, usually not to exceed 10 years except certain requirements are met.

Bycatch – (v.) The capture of nontarget species in directed fisheries which occurs because fishing gear and methods are not selective enough to catch only target species; (n.) fish which are harvested in a fishery but are not sold or kept for personal use, including economic discards and regulatory discards but not fish released alive under a recreational catch and release fishery management program.

Catch – The total of fish killed in a fishery in a period. Catch is given in either weight or number of fish and may include landings, unreported landings, discards, and incidental deaths.

DAS – A day-at-sea is an allocation of time that a vessel may be at-sea on a fishing trip. For vessels with VMS equipment, it is the cumulative time that a vessel is seaward of the VMS demarcation line. For vessels without VMS equipment, it is the cumulative time between when a fisherman calls in to leave port to the time that the fisherman calls in to report that the vessel has returned to port.

Discards – Animals returned to sea after being caught; see Bycatch (n.)

Essential Fish Habitat (EFH) – Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The EFH designation for most managed species in this region is based on a legal text definition and geographical area that are described in the Habitat Omnibus Amendment 2 (NEFMC 2016).

Exempted fisheries – Any fishery determined by the Regional Director to have under 5% regulated species as a bycatch (by weight) of total catch according to 50 CFR 648.80(a)(7).

Fishing effort – The amount of time and fishing power used to harvest fish. Fishing power is a function of gear size, boat size and horsepower.

Landings – The portion of the catch that is harvested for personal use or sold.

LPUE – Landings per unit effort. This measure is the same as CPUE but excludes discards.

Limited access – A management system that limits the number of participants in a fishery. Usually, qualification for this system is based on historic participation, and the participants remain constant over time (except for attrition).

Limited-access permit – A permit issued to vessels that met certain qualification criteria by a specified date (the "control date").

Maximum Sustainable Yield (MSY) – The largest average catch that can be taken from a stock under existing environmental conditions. The Skate FMP uses a MSY_{proxy} equal to the median ratio of catch/biomass (i.e., the survey biomass index) of each of the seven skate species (as an estimate of exploitation rate, using the entire survey time series) multiplied by its B_{target}, aggregated over the seven skate species in the management unit.

Minimum biomass level – The minimum stock size (or biomass) below which there is a significantly lower chance that the stock will produce enough new fish to sustain itself over the long term.

Natural Mortality (M) – A measurement of the rate of fish deaths from all causes other than fishing such as predation, cannibalism, disease, starvation, and pollution; the rate of natural mortality may vary from species to species.

Open access – Describes a fishery or permit for which there is no qualification criteria to participate. Open-access permits may be issued with restrictions on fishing (for example, the type of gear that may be used or the amount of fish that may be caught).

Optimum Yield (OY) – The amount of fish which-

- (a) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems;
- (b) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and
- (c) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.

Overfished – A condition defined when stock biomass is below the minimum biomass threshold and the probability of successful spawning production is low.

Overfishing – A level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock complex to produce MSY on a continuing basis.

Overfishing Limit (OFL) - The annual amount of catch that corresponds to the estimate of the maximum fishing mortality threshold applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish.

Rebuilding plan – A plan designed to increase stock biomass to the B_{MSY} level within no more than ten years (or 10 years plus one mean generation period) when a stock has been declared overfished.

Recruitment – The amount of fish added to the fishery each year due to growth and/or migration into the fishing area. For example, the number of fish that grow to become vulnerable to fishing gear in one year would be the recruitment to the fishery. "Recruitment" also refers to new year classes entering the population (prior to recruiting to the fishery).

Recruitment overfishing – Fishing at an exploitation rate that reduces the population biomass to a point where recruitment is substantially reduced.

Relative exploitation – An index of exploitation derived by dividing landings by trawl survey biomass. This variable does not provide an estimate of the proportion of removals from the stock due to fishing but allows for general statements about trends in exploitation.

Spawning stock biomass (SSB) – The total weight of fish in a stock that sexually mature, i.e., are old enough to reproduce.

Status determination criteria – Objective and measurable criteria used to determine if overfishing is occurring or if a stock is in an overfished condition according to the National Standard Guidelines.

Stock assessment – An analysis for determining the number (abundance/biomass) and status (life-history characteristics, including age distribution, natural mortality rate, age at maturity, fecundity as a function of age) of individuals in a stock.

Stock – A grouping of fish usually based on genetic relationship, geographic distribution, and movement patterns. A region may have more than one stock of a species (for example, Gulf of Maine cod and Georges Bank cod). A species, subspecies, geographical grouping, or other category of fish capable of management as a unit.

Total mortality – The rate of mortality from all sources (fishing, natural, pollution) Total mortality can be expressed as an instantaneous rate (called Z and equal to F + M) or Annual rate (called A and calculated as the ratio of total deaths in a year divided by number alive at the beginning of the year)

Yearclass (or cohort) – Fish that were spawned in the same year. By convention, the “birth date” is set to January 1st and a fish must experience a summer before turning 1. For example, winter flounder that were spawned in February-April 1997 are all part of the 1997 cohort (or year-class). They would be considered age 0 in 1997, age 1 in 1998, etc. A summer flounder spawned in October 1997 would have its birth date set to the following January 1 and would be considered age 0 in 1998, age 1 in 1999, etc.

Yield-per-recruit (YPR) – The expected yield (weight) of individual fish calculated for a given fishing mortality rate and exploitation pattern, incorporating the growth characteristics and natural mortality.

7.0 REFERENCES

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