

7.0 GLOSSARY

Annual fishing mortality target – a rate of removals that when applied over a fishing year is consistent with the objectives of the FMP.

Annual potential increase – the percent increase in total or relative biomass that would occur during a one-year interval if no fishing occurs (i.e. zero fishing mortality). Projection models take into account the size frequency distribution of the population, the expected growth of individuals at each size class, and natural mortality.

Area based management – in contrast to resource wide allocations of TAC or days, vessels would receive authorization to fish in specific areas, consistent with that area's status, productivity, and environmental characteristics. Area based management does not have to rotate closures to be effective.

Area rotation – a management system that selectively closes areas to fishing for short to medium durations to protect small scallops from capture by commercial fishing until the scallops reach a more optimum size. Closed areas would later re-open under special management rules until the resource in that area is similar to other open fishing areas. Area rotation is a special subset of area based management that relies on an area closure strategy to achieve the desired results when there are sufficient differences in the status of the management areas.

B_{max} – a theoretical value when the scallop stock with median recruitment is fished at F_{max}. For a stock without a stock-recruitment relationship, like sea scallops, this stock biomass produces MSY when fished at F_{max}.

Biological Opinion – an ESA document prepared by either the NMFS or USFWS describing the impacts of a specific Federal action, including an FMP, on endangered or threatened species. The Biological Opinion concludes whether or not the NMFS/USFWS believe that the actions are likely to jeopardize the continued existence of any of the protected species, and provides recommendations for avoiding those adverse impacts.

Closed rotation area – an area that is temporarily closed to postpone mortality on abundant, small scallops.

Consumer surplus - The net benefit consumers gain from consuming fish based on the price they would be willing to pay for them. Consumer surplus will increase when fish prices decline and/or landings go up.

Contagious recruitment – similar amounts of scallop settlement in related areas. When scallop settlement is above average in one area, it tends to be above average in neighboring areas.

Controlled access – a program that allows fishing in a specified area under rules that differ from the normal fishery management rules that apply to normal, open fishing areas. Often controlled access areas have a scallop TAC, a scallop possession limit, and area-specific trip and DAS allocations. Other regulations may apply to achieve certain conservation objectives.

Critical habitat – an area that has been specifically designated under the ESA as an area within the overall geographical region occupied by an endangered or threatened species on which are found the physical or biological features essential to conservation of the species.

Day-at-sea (DAS) – is each 24-hour period that a vessel is on a scallop trip (i.e. not declared out of the day-at-sea program) while seaward of the Colregs line.

Day-at-sea tradeoff – the number of days automatically charged for fishing for scallops in designated areas, regardless of the time actually fished.

Day-at-sea use – the amount of time that a vessel spends seaward of the Colregs line on a scallop trip.

Days-at-sea accumulated – days charged against a vessel's annual day-at-sea allocations, including day-at-sea tradeoffs. Trips in controlled access areas are often charged a pre-established amount of DAS, regardless of the actual duration of the trip.

Endangered species – a species that is in danger of extinction throughout all or a significant portion of its range.

ESA - Endangered Species Act of 1973 as amended.

Exploitable biomass - the total meat weight of scallops that are selected by fishing, accounting for gear and cull size, at the beginning of the fishing year⁴⁸.

F_{max} – a fishing mortality rate that under equilibrium conditions produces maximum yield-per-recruit. This parameter serves as a proxy for F_{msy} for stocks that do not exhibit a stock-recruitment relationship, i.e. recruitment levels are driven mostly by environmental conditions.

Fixed costs - These costs include expenses that are generally independent of the level of fishing activity, i.e., DAS-used, such as insurance, license, half of repairs, office expenses, professional fees, dues, utility, interest, dock expenses, bank, rent, store, auto, travel, and employee benefits.

Fixed duration closure – a rotational closure that would be closed for a pre-determined length of time.

Fixed rotational management area boundaries – pre-defined specifications of areas to be used to manage area rotation.

FMP – Fishery Management Plan.

Heterogeneity – spatial differences in the scallop resource, life history, or the marine environment.

Incidental Take Statement – a section of a Biological Opinion that allows the take of a specific number of endangered species without threat of prosecution under the ESA. For the Scallop FMP, an incidental take statement has been issued for a limited number of sea turtles to be taken by permitted scallop vessels.

⁴⁸ The **average exploitable biomass** is different and is defined as the total meat weight of scallops that are selected by fishing averaged over the fishing year, accounting growth, natural mortality, fishing mortality, and gear and cull size.

IWC – International Whaling Commission; an international group that sets international quotas and/or establishes moratoria on harvesting of whales.

Localized overfishing – a pattern of fishing that locally exceeds the optimum rate, considering the age structure of the population, recruitment, growth, and natural mortality. This effect may cause mortality that is higher than appropriate on small scallops while under-fishing other areas with large scallops (assuming that the overall amount of effort achieves the mortality target for the entire stock). The combined effect is to reduce the yield from the fishery through the loss of fast-growing small scallops and the loss of biomass from natural mortality on very large scallops.

Long-term closure area – an area closed to scallop fishing for reasons other than achieving area rotation objectives. These areas may be closed to minimize habitat impacts, avoid bycatch, or for other reasons.

LPUE – Similar to catch per unit effort (CPUE), commonly used terminology in fisheries, LPUE in the Scallop FMP refers to the amount of landings per DAS a vessel achieves. This value is dependent on the scallop abundance and catch rate, but also depends on the shucking capacity of the crew and vessel, since most of the scallop catch must be shucked at sea. Since discard mortality for sea scallops is low, discards are not included as a measure of catch in the calculation of LPUE.

Magnuson Act – Magnuson Stevens Act of 1976 as amended.

Meat yield – the weight of a scallop meat in proportion to the total weight or size of a scallop. Scallops of similar size often have different meat yields due to energy going into spawning activity or due to the availability of food.

MMPA - Marine Mammal Protection Act of 1972 as amended.

NAAA - The Northwest Atlantic Analysis Area was a geographic area used in the habitat metric analysis. Its boundary to the North is the Hague line, the NC/SC border to the South, the coastline to the West, and the 500 fathom depth contour to the East.

NEPA – National Environmental Policy Act of 1972 as amended.

Net economic benefits - Total economic benefits measure the benefits both to the consumers and producers and are estimated by summing consumer and producer surpluses. Net economic benefits show, however, the change in total economic benefits net of no action.

NMFS – National Marine Fisheries Service.

Nominal versus real economic values - The nominal value of fishing revenues, prices, costs and economic benefits are simply their current monetary values unadjusted for inflation. Real values are obtained, however, by correcting the current values for the inflation.

Open area – a scallop fishing area that is open to regular scallop fishing rules. The target fishing mortality rate is the resource-wide target.

Operating expenses or variable costs - The operating costs measures the expenses that vary with the level of the fishing activity including food, ice, water, fuel, gear, supplies and half of the annual repairs.

Opportunity cost - The cost of forgoing the next best opportunity. For example, if a fisher's next best income alternative is to work in construction, the wage he would receive from construction work is his opportunity cost.

PDT – Scallop plan Development Team; a committee of experts that contributed to and developed the technical analysis and evaluation of alternatives.

Potential biomass increase - the annual change in the total biomass of scallop meats if no fishing occurs.

Producer surplus -Producer surplus for a particular fishery shows the net benefits to harvesters, including vessel owners and the crew, and is measured by the difference between total revenue and operating costs.

Recently re-opened area – an area that has recently re-opened to scallop fishing following a period of closure that postponed mortality on small scallops. The annual TAC and target fishing mortality rate is defined by time-averaged fishing mortality that allows the area-specific target to deviate from the norm. Special rules (i.e. day-at-sea allocations or trips with possession limits and day-at-sea tradeoffs) may apply.

Recruitment – a new year class of scallops measured by the resource survey. Scallop larvae are pelagic and settle to the bottom after 30-45 days after spawning. The resource survey, using a lined dredge, is able to capture scallops between 20 – 40 mm, but more reliably at between 40 and 60 mm. Recruitment in this document refers to a new year class that is observable in the survey, at around two years after the eggs had been fertilized and spawned.

Recruitment overfishing – a high level of fishing mortality that causes spawning stock biomass to decline to levels that significantly depresses recruitment. Because sea scallops are very productive, this mortality rate is substantially higher than F_{max} and the biomass where recruitment is threatened is much lower than the present biomass target.

SAFE Report – A Stock Assessment and Fishery Evaluation Report, required by the Sustainable Fisheries Act. This report describes the present condition of the resource and managed fisheries, and in New England it is prepared by the Council through its Plan Development Teams (PDT) or Monitoring Committees (MC). The Scallop PDT is the MC for the Atlantic Sea Scallop FMP and prepares this report.

SMAST – School for Marine Science and Technology, University of Massachusetts Dartmouth

Scallop productivity – the maximum average amount of biomass that can be taken from a defined area.

Shucking – a manual process of cutting scallop meats from the shell and viscera.

Size selection – in the scallop fishery, size selection occurs at two points: when the fishing gear captures the scallop and when the crew culls the catch before shucking. At the first point, size selection depends on escapement through the dredge rings, twine top, or trawl meshes. At the second point, size selection depends on the size of the catch and marketability. Small scallops are less valuable and more time consuming to shuck a pound of meats. These factors influence whether the crew retains scallops at a smaller or larger size. Size selection by the fishery is the combined effect of mortality from landed scallops, from discard mortality, and from non-catch mortality from the fishing gear. Except under certain rare conditions, most of the mortality has been associated with the landed portion of the catch.

TAC – Total allowable catch is an estimate of the weight of scallops that may be captured by fishing at a target fishing mortality rate. The TAC could apply to specific areas under area based management rules.

Take – a term under the MMPA and ESA that means to harass, harm , pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct with respect to either a marine mammal or endangered species.

Ten-minute square – an approximate rectangle with the dimensions of 10-minutes of longitude and 10-minutes of latitude.

Threatened species – any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

8.0 LITERATURE CITED

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