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| **FMP** | **XXX** | **Complete this table with information about current conditions for the stock/fishery based on the most recent assessment and round of fishery specifications. This is an inventory of current conditions - not a "wish list."* |
| **STOCK(S)** | **XXX** | |
| **LAST ASSESSMENT** | **Assessment/Meeting, Year** | *Information provided in the cells should relate specifically to evaluating the risks to the resource and net benefits to the Nation, with consideration/acknowledgement of consequences to the fishery, ecosystem, and other consequences.* |

| Assessment Model, Terminal Year | Description of Assessment Model | Overfishing? Overfished? | In Rebuilding Program? | OFL | ABC/ABC CR | ACL | ACT |
|---|---|---|---|---|---|---|---|
| Name of most recent model used in assessment and terminal year of data | General description of assessment model | Most recent F/B status determinations | Yes/No; Year x of y (if yes) | OFL definition/formula and most recent specification (x lbs, year) | ABC and ABC CR/formula and most recent specification (x lbs, year) | Most recent (year) fishery ACL(s), sub-ACL(s) | Most recent (year) ACTs, if applicable |

| | MSY/OY | AMs | Discards | State Waters |
|---|---|---|---|---|
| ***Summarize major fisheries management issues/challenges here, in a few words.** | MSY/OY definitions/formulas and most recent specifications (values, year) | Briefly summarize accountability measures in FMP | Summarize how discards are treated for stock assessment and quota monitoring | Summarize state waters catch and how it is treated for stock assessment and quota monitoring |

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| **Availability of Biological and Assessment Data** | *Used in Assessment:* ID biological data used in assessment (time period)<br>*Other Biological Data:* ID other biological data that may be available but not used in assessment<br>ID any significant biological/stock data elements that are missing |
| **Recent Performance Against Harvest Control Rule** | *For the most recent three years-*<br>Summarize utilization of available yield (% of total ACL harvested)<br>Summarize how control rule affected the stock? Has stock status and/or fishing mortality changed (improved/declined)? |
| **Current Management Program** | Briefly summarize major elements of current management program; include summary of Federal and State management, as appropriate |
| **Catch, Revenues, and Variability** | *For the most recent three years-* Provide average catch, revenues;<br>Characterize trends and variability *over 10 to 15 years* , depending on data availability, using avg., min. and max. values. |
| **Data - Vessels, Permits, Dealers, Processors, Employment** | *For the most recent three years* - Number of vessels by permit and/or gear (and % of active/inactive), and percentage of catch taken by each category;<br>Briefly summarize shoreside components- number of active dealers, processors/plants; ID and summarize any available employment information;<br>Characterize trends and variability *over 10 to 15 years* , depending on data availability, using avg., min. and max. values. |
| **% Food, % Recreational** | *For the most recent three years* - Information about percentage landed/sold for food/recreational;<br>Also include general summary of markets and ID any major factors that influence/change market conditions (ex., availability of other product) |
| **Fishing Communities** | *ID Top Fishing Communities for last 3-5 years based on:* (RQ) = Revenue of that species in a port/total revenue fishery-wide; and<br>(LQ) = Revenue of that species in a port/total revenue in that port. Characterize trends.<br>*Identify any vulnerable communities that may incur significant economic risk from resource decline* |
| **Other Economic/Social Factors** | Identify any other economies/industries that may be dependent on the resource (other than directed fishery);<br>Describe the potential impacts of variability and size composition of resource/catch on market share and prices. |
| **Major Sources of Scientific Uncertainty** | Summarize the sources of uncertainty identified in the stock assessment;<br>Identify/summarize other sources of scientific uncertainty |
| **Major Sources of Management Uncertainty** | Summarize the sources of management uncertainty that were explicitly accounted for during last round of fishery specifications;<br>Identify and summarize any new/additional sources of management uncertainty |
| **How is the probability of overfishing addressed?** | What is the process and/or formula used to specify catch levels to prevent overfishing?<br>How was the probability of overfishing addressed during the last round of fishery specifications? |
| **What is the consequence of overfishing?** | Given the current status of the stock (biomass), what are the short-term impacts of overfishing?<br>What are the long-term impacts of overfishing the stock (if it were to continue)? |
| **How are expected net benefits to the Nation currently measured/evaluated?** | What tools/data are currently available to measure and evaluate net benefits to the Nation?<br>How were net benefits to the Nation evaluated during the last round of fishery specifications? |
| **Interactions with Other Fisheries/Stocks, Bycatch Issues** | Describe most significant interactions with other fisheries/stocks, including stocks for which there may be catch/bycatch caps or sub-ACLs;<br>Identify any overlapping fisheries with significant interactions |
| **Ecosystem Considerations: Trophic Interactions** | Describe any important trophic interactions related to the role of the stock in the ecosystem; Summarize important predator-prey interactions<br>Discuss trends/variability over the last 10-15 years, and identify any new related data/analyses |
| **Ecosystem Considerations: Habitat** | ID habitat sensitivity/vulnerability issues for the stock; Describe any recent changes to important habitat for stock and/or changes to fisheries that impact stock habitat; Discuss trends/variability over the last 10-15 years, and identify any new related data/analyses |
| **Ecosystem Considerations: Climate** | Does the stock exhibit strong response to temperature? Has climate change affected the distribution of the stock?<br>Discuss trends/variability over the last 10-15 years, and identify any new related data/analyses |
| **Other Important Considerations/Notes** | Discuss any other important considerations for evaluating risk to the resource and net benefits to the Nation. |

**FMP** ATLANTIC HERRING FMP
**STOCK(S)** ATLANTIC HERRING
**LAST ASSESSMENT** Management Track, June 2020

| Assessment Model, Terminal Year | Description of Assessment Model | Overfishing?/ Overfished? | In Rebuilding Program? | OFL | ABC/ABC CR | ACL | ACT |
|---|---|---|---|---|---|---|---|
| ASAP Model, 2019 | Statistical Age-Structured Model | No/Yes | No, likely soon | **Fmax x $B_{CURRENT}$** ($F_{MAX}$ = $F_{MSY}$ or FMSY proxy or $F_{REB}$, depending on stock status)<br>23,423 mt in 2021<br>26,292 mt in 2022<br>44,600 mt in 2023 | **When biomass is >0.5 for the ratio of SSB/SSBMSY, Fmax is 80% of FMSY. As B declines, F declines linearly, and if B falls below 0.1, then ABC is set to zero**.<br>9,483 mt in 2021<br>8,767 mt in 2022<br>11,025 mt in 2023 | **ABC - Management Uncertainty,** as determined by Council;<br>Stockwide ACL = U.S. OY<br>TBD in Framework 8 | N/A;<br>In-season AMs close directed fishery at 92% of sub-ACLs and 95% of stockwide ACL |

| | MSY/OY | AMs | Discards | State Waters |
|---|---|---|---|---|
| ***Fishery prosecuted primarily with midwater trawls (single/paired), purse seines, and small mesh bottom trawls; there is also a small fixed gear fishery in state waters. Most significant management challenges include minimizing interactions with non-target species like river herring, shad (RH/S) and some groundfish (haddock). The role of herring as a forage species and importance of herring to the ecosystem are also important managment considerations.** | MSY defined by assessment (99,400 mt in 2020 assessment);<br>OY = Stockwide ACL | Closure of management areas at 92% sub-ACL; closure of directed fishery at 95% total ACL; overage deductions and carryover provisions; AM to close large areas when haddock sub-ACL or RH/S catch caps are reached | Less than 1% of total catch; added to landings for assessment; counted against management area sub-ACLs | Deducted from ABC as part of management uncertainty, if necessary (currently no deduction) |

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| **Availability of Biological and Assessment Data** | Used in Assessment: spring/summer/fall NEFSC trawl surveys (highly variable for herring); catch data from VTRs; observer data; age data for catches (port samples) and trawl surveys (not summer); diet/consumption data (imprecise); catch-at-age data from port samples and survey - ageing fish is an ongoing source of uncertainty;<br>Other Data: Hydroacoustic surveys recently added into assessment; larval surveys, state surveys, other sources of data are identified in assessment literature but not used in assessment model |
| **Recent Performance Against Harvest Control Rule** | ABC Control rule relatively new, catch has remained under quotas since ACLs implemented, overfishing not occurring. Catch has declined dramatically in recent years (2018 and 2019) as a result of lower biomass. Catch about 85% of ACL for 2018 and 2019. |
| **Current Management Program** | Limited access fishery (4 limited access categories, 2 open access categories); Catch quotas (TACs/ACLs), divided by management area since 2000; 3-year specifications; AMs to prevent ACLs/sub-ACLs from being exceeded and to address overages; carryovers (up to 10%) for sub-ACL underage; catch caps to manage interactions haddock and river herring/shad; seasonal gear restrictions (mwt) in the inshore GOM; seasonal availablility of management area sub-ACLs (1A and 1B); observer coverage and other monitoring/reporting requirements; measures to address net slippage, relatively large inshore gear restricted area for MWT vessels (approved in Amendment 8 - not effective yet). |
| **Catch, Revenues, and Variability** | Total catch averaged 69,000 mt from 2010-2019, with a high of 95,700 mt in 2013 and low of 13,000 mt in 2019. From 2007 to 2018, the annual average price of Atlantic herring has ranged from $226 - $550 per metric ton, generally increasing through time. |
| **Data - Vessels, Permits, Dealers, Processors, Employment** | ~20 Cat. A/B (LA directed fishery) vessels were active in recent years - these vessels landed >98% of the total catch;<br>~10 Cat. C vessels (LA incidental catch) are active; over 1,700 open access (Cat. D) permits that land <1% of total<br>~100 active dealers, mostly bait; |
| **% Food, % Recreational** | 100% commercial fishery, no recreational fishery<br>70% commercial fishery utilized for lobster bait (and recreational fishery bait); 30% for food and other uses including aquaculture feed, canned pet food, livestock food, and industrial and biomedical purposes.<br>Primary market is for lobster bait (June - November), food export is primarily for overseas markets. |
| **Fishing Communities** | The top five primary ports based on several criteria are: Gloucester, MA, Portland, ME, New Bedford, MA, Rockland, ME and Point Judith, RI. |
| **Other Economic/Social Factors** | Direct linkage between lobster fishery and herring (utilization of herring for bait); linkage between herring and recreational fishing industry; linkage between herring and eco-tourism industry |
| **Major Sources of Scientific Uncertainty** | From the 2020 Assessment - 1) natural mortality; 2) stock-recruit relationship; and 3) stock structure. |
| **Major Sources of Management Uncertainty** | Canadian catch (NB weir fishery) currently the only source of management uncertainty accounted for in buffer between ABC and stockwide ACL (uncertainty re. discards and state waters catch also considered, but not accounted for recently since catches very low and accounted for in fixed gear set-aside and part of catch) |
| **How is the probability of overfishing addressed?** | Currently, the FMP focuses on reducing the risk of overfishing - metrics available include OFL distribution, probability of exceeding OFL (assessment); MSE completed in Amendment 8 evaluated the probability of overfishing under various control rule alternatives. |
| **What is the consequence of overfishing?** | If F exceeds the target F or F MSY, legal mandates apply. If overfishing occurs, fishery yield would be reduced in the following year(s). In the short-term, B would be reduced. Long-term impacts on other species/ecosystem of prolonged overfishing was examined in MSE in Amendment 8. |
| **How are expected net benefits to the Nation currently measured/evaluated?** | Yield (mt and $); limited data on costs |
| **Interactions with Other Fisheries/Stocks, Bycatch Issues** | -Atlantic Mackerel (southern New England/Mid-Atlantic fishery overlap);<br>-Northeast Multispecies, especially haddock (GOM and GB haddock catch caps for midwater trawl vessels);<br>-River Herring and Shad (RH/S catch caps by gear type and area)<br>-Direct linkage to lobster fishery (bait) and othersubstitute bait fisheries like menhaden |
| **Ecosystem Considerations: Trophic Interactions** | Important forage for fish, mammals, seabirds; Diet and consumption considered in M assumption in stock assessment;<br>-Herring's role as a consumer and competitor in the ecosystem<br>-Concerns about localized depletion of herring schools, addressed in Amendment 8 |
| **Ecosystem Considerations: Habitat** | OHA2 evaluated risks on herring EFH- spawning measures in place in GOM and under consideration in FW7<br>-MSA language re. habitat of prey species (EFH) |
| **Ecosystem Considerations: Climate** | Climate change may be affecting important prey/forage species for herring (calanus); vulnerability considered low to temperature change; distribution of species does not appear to be changing significantly due to climate change |
| **Other Important Considerations/Notes** | -Sub-ACLs are allocated to reduce the risk of overfishing one of the stock components (inshore/offshore)<br>-Important overlap with Canadian (New Brunswick) weir fishery - all catch assumed to come from inshore component of Atlantic herring stock, accounted for in management uncertainty buffer between ABC and ACL.<br>-ASFMC Spawning Restrictions apply seasonally in inshore GOM to reduce risk of impacting spawning herring, and days out and weekly landing limits used to spread effort over season. |