New England Fishery Management Council's

Risk Policy Statement and Concept

Statement and Concept

Version 2

Approved June XX, 2026

DRAFT – FOR REVIEW BY RISK POLICY WORKING GROUP

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2.0 RISK POLICY STATEMENT

New England Fishery Management Council (Council) Risk Policy Statement

The goal of the Council's Risk Policy is to implement a process by which the Council, and its subordinate bodies, accounts for the fact that all fishery management is based on uncertain information, fisheries and the surveys used to monitor marine resources are taking place in a changing environment, and that the decisions of the Council have social and economic impacts on fishing communities.

The purpose of the Council's Risk Policy is to:

1. Provide guidance to the Council and its subordinate bodies on taking account of risk and uncertainty in Fishery Management Plans and specification-setting;
2. Clearly communicate the priorities and preferences of the Council regarding risk and uncertainty, including using a common set of terms and definitions so it is accessible to a wide variety of audiences; and
3. Make the discussion of risk tolerance in the Council's decisions a more forward and fundamental aspect of the management process to support its consistent application.

The application of the Council's Risk Policy will be supported by the following strategic initiatives:

1. Clearly identify sources of uncertainty in management decisions. These could include environmental changes, imperfect fishery independent and dependent data, and unknown stock status.
2. Consider risk at all levels of the fishery management process. This Risk Policy provides overarching guidance to the Council's application of Fishery Management Plan (FMP)-specific Acceptable Biological Catch (ABC) control rules and/or harvest control rules.
3. Consider stability in the face of uncertain information and inherent variability in ecosystems. This can be achieved by:
    a. Ensuring all rebuilding plans have at least a 50% probability of success, while also acknowledging socio-economic stability.
    b. Minimizing large swings in annual specifications (both high and low) to the extent practicable, acknowledging the requirements of the Magnuson Stevens Act (MSA) and ongoing challenges with variable stock assessments.
    c. Promoting rebuilding within timeframes that allow functioning fisheries.
4. Provide a direct avenue to discuss the implications of ecosystem changes and socio-economic impacts throughout a Council management decision. This includes:
    a. Identifying topics for the Council and its subordinate bodies to consider for incorporating the risk policy early in the decision-making process.
    b. Outlining a process that works within available resources, including the resources of staff, the Council, and its subordinate bodies.

3.0 RISK POLICY

3.1.1 Need and Benefits of a Revised Risk Policy

The Risk Policy aims to:

1) Better integrate changing environmental conditions into the Council's assessment of risk.
    a. Factors in the revised risk policy allow for consideration of climate change and the dynamic environment in the Council decision process.
2) Develop a clear path to incorporate social and economic considerations.
    a. Factors in the revised risk policy allow for consideration of socioeconomic concepts in the Council decision process.
        - Establish a process that integrates the consideration of risk throughout the Council's decision-making process, rather than at the end.
        - A clear policy on risk tolerance can guide the development of catch advice and management measures before final decisions. A scoring and weighting method increases transparency in how the Council assesses risk, increases efficiency, and reduces time delays resulting from remands.
3) Support implementation of a revised risk policy with available Council resources.
        - The 2016 Risk Policy Roadmap relied on management strategy evaluations (MSE) to quantify risk. This approach was not successful due to the limited resources and the time-intensive nature of completing MSEs. The Council believes that the revised Risk Policy is a better match with available resources.
        - The Council remains supportive of the application of MSEs, as resources allow, as a tested method to identify common goals, evaluate performance, and analyze potential results of decision making.

3.1.2 Stability

The Council defines stability in the following way:

Stability can mean several things in fisheries management such as stability of the resource, stability in the management measures, or stability in the economics of the fishery. When assessing stability, baselines matter. Stability can also be considered as an absolute value or as a rate of change.

Given that the ecosystem is inherently dynamic, the Council is focused on considering stability to harvesters primarily by avoiding abrupt shifts in fisheries management. The Council notes that abrupt shifts can happen in both directions, leading to significant increases in harvest limits or very restrictive measures, both of which can have negative impacts on the fishing industry. Accounting for stability in decision making will be done in compliance with applicable laws and the ten National Standards. For example, as outlined in National Standard 1, phased-in changes to ABCs can occur over a time period (not to exceed three years) if overfishing is prevented each year. This strategic approach could provide a level of stability to the industry as they adapt to the short-term effects of large swings in catch advice.

3.1.3 Risk Policy Concept

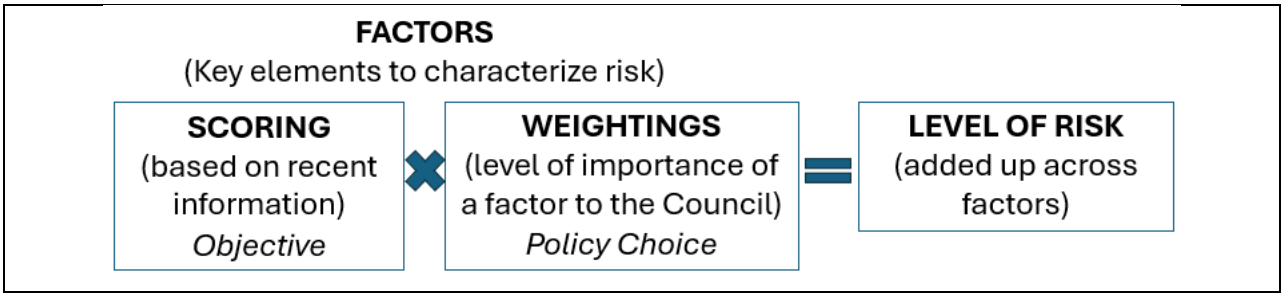
At its core, the Risk Policy aims to systematically account for risk using factors (e.g. climate vulnerability, stock status) that the Council deems important to determine how risk tolerant it wants to be in decision making.

The Council sees value in both a quantitative and qualitative assessment of its risk tolerance. A quantitative assessment of risk may be particularly helpful in discussions surrounding specifications (e.g. appropriate level of risk tolerance for Gulf of Maine haddock ABCs). A qualitative assessment of risk could be useful when considering a range of management measures (e.g. appropriate number of scallop days-at-sea).

3.1.3.1 Factors

The Risk Policy will be implemented by identifying factors, which are inputs the Council believes are important to determine its level of risk aversion in decision making. Each factor is scored using guidance that is applied by Plan Development Teams (PDTs). Factors also undergo a weightings process, which is used to signify the level of importance of a particular factor by the Council. Weightings are a policy choice determined by the Council, while the scoring by the PDTs is an objective assessment of agreed upon data.

Figure 1 – Outline of overarching risk policy concept, where factors are scored by PDTs and weighted by the Council to identify the Council's level of risk.



3.1.3.2 List of Risk Policy Factors

The Council has identified several factors foruse in applying the revised Risk Policy. Five factors were binned into three groupings:

Stock Status and Uncertainty

- Biomass (SSB) / Stock Status
- Recruitment

Climate and Ecosystem Considerations

- Climate vulnerability

Economic and Community Importance

- Commercial fishery characterization
- Recreational fishery characterization

This list may evolve as the Risk Policy is revisited.

3.1.3.3 Scoring Factors

Scores for each factor will be determined for a particular stock, species, or species complex (finest resolution of management). The scoring process is an objective assessment of agreed upon data conducted by the Council's PDTs. The score for each factor reflects the condition of the resource and fishery and is not a policy choice. Scores may range from -4 to 4, though the range and direction is specific to each factor. Positive scores are associated with more risk tolerance, and negative scores confer less risk tolerance.

The range of scores for different factors may vary, and all scores will not necessarily lead to a more risk tolerant outcome. The ranges of scores for a particular factor may be adjusted by the Council.

Instructions for scoring factors and data sources for completing the scoring are provided in Appendix XX. It is the Council's policy that revisions to factors and the underlying data may continue to occur. The Council envisions utilizing the State of the Ecosystem report and other products from the Northeast Fishery Science Center to support and streamline the application of the Risk Policy.

3.1.3.4 Weighting Factors

Weightings are a policy decision made by the Council that signifies the level of importance of a particular factor by the Council. Weightings are determined by the Council only, and are not developed through the Advisory Panel and Committee structure. It is recommended the weighting process take place at the April Council meeting.The weighting process is described in Appendix XX.

The Council will determine the following details of its weighting process and may adjust the process as it deems necessary. Specifically, the Council will:

- Set guidelines around the participation of Council members in the weightings process. Only voting members are eligible to complete the weightings, and participation is compulsory for eligible Council members.
- Set guidelines on how many times a weight can be assigned to the factors. For example, the Council can determine how many times a Council member can weight factors as "very important."
- Set guidelines on the frequency of the Council setting weights. It is currently recommended that weightings occur every three years.
- If weightings are not completed by paper ballot, determine appropriate technology/software to support the polling process.

3.1.3.4.1 Scale of Weightings

The scale of weightings does not necessarily need to mirror the scale at which factors are scored. Factors are to be scored at the level at which the stock assessment occurs (finest management resolution). An exception to this is skates, which would be best scored at the complex level given a single ABC is set for the multiple skate species. In contrast, weightings can occur at a higher order. The Council will weight each factor generally, to be applied across all FMPs ("global" approach). It is the policy of the Council that it may revisit this approach to weighting in the Risk Policy.

3.1.3.4.2 Identification of Weightings at a Council Meeting

Identifying weightings is recommended to occur in conjunction with the April Council meeting. This Council meeting typically has fewer items scheduled for final action, which is important to minimize bias between management decisions and the identification of weightings. Further, the State of the Ecosystem

report is typically presented at the April Council meeting and would provide useful context, particularly as it directly supports the scoring of factors.

It is recommended that the Council complete the weightings process every three years. It is not expected that weightings would dramatically change from year to year. Conducting weightings every 3 years also balances the time the Council spends on the revised risk policy versus other important priorities.

3.1.3.5 Measure of Risk Tolerance

A combination of the scores and weights for each factor are used to measure risk tolerance (Figure 1). The outputs from the scoring and weighting processes can be interpreted both qualitatively and quantitatively. For qualitative applications of the Risk Policy, the Council can develop and use thresholds to distinguish between levels of high, medium/neutral, and low risk tolerance (). Stability can also be accounted for in this application.

3.1.3.6 Connection to ABC Control Rules

The Council is unique nationally among other fishery management councils in that it has different ABC CRs for each of its fishery management plans. Over time, the Council aims to incorporate the quantitative application of the Risk Policy into its ABC CRs.

When integrating and updating ABC CRs, the Council aims to assess the use of the Risk Policy to adjust the buffer between the OFL and ABC. The National Standards specifically mention a Council's risk policy when determining a stock or stock complex's ABC (see definitions at end of document). Therefore, there is a clear connection between the risk policy and the ABC. An advantage of using the quantitative output of the risk policy to inform the ABC is that it allows for consideration of a more dynamic buffer between the OFL and ABC. This approach could provide clearer and more timely guidance to the SSC on the Council's risk tolerance.

As noted above, having an ABC CR that can receive the quantitative output of the revised risk policy will require modifications to existing control rules. As a result, a phased approach to integrating the quantitative output of the revised risk policy with the Council's various ABC control rules is needed. Because both a qualitative and quantitative assessment of risk is possible under this risk policy, qualitative assessments of risk tolerance can be more quickly and broadly applied to Council decision-making going forward.

The Council does not currently recommend changes to the herring ABC control rule to integrate the quantitative outputs of the revised risk policy. The existing herring ABC control rule was developed through an extensive MSE process and is already accounting for many factors that the Council is including in the risk policy.

3.1.3.7 Process, Roles and Responsibilities

This section outlines roles and responsibilities for implementing the Council's Risk Policy.

3.1.3.7.1 Plan Development Teams

PDTs are responsible for the scoring of factors and following guidelines provided in Appendix XX. This may include procuring the information needed to complete scoring. PDTs should follow the steps for scoring factors outlined By scoring the factors, the PDTs are contributing to the goal of integrating discussions of risk throughout the Council's decision-making process.

3.1.3.7.2 Science and Statistical Committee

The SSC is responsible for using the Risk Policy and considering risk tolerance, which is a combination of the scoring and weighting of the factors, during its deliberations. This is particularly pertinent when considering ABCs for Council managed species.

3.1.3.7.3 Council

Voting Council members are responsible for weighting the importance of factors through polling. In this process, the Council should consider comments from the public and the fishery industry. Council members are also responsible for integrating the consideration of risk throughout its decision-making process.

3.1.3.7.4 Northeast Fisheries Science Center (NEFSC)

The Council anticipates that the NEFSC will continue to provide timely updates to the State of the Ecosystem report and stock assessment products for use by Plan Development Teams in the completion of factor scoring. The Council also encourages increased collaboration with the NEFSC on Risk Policy data needs and the development of data products that can directly assist with the Risk Policy's implementation. This could include clearer identification of factors (i.e., climate change impacts, recruitment assumptions) in stock assessment reports.

3.1.3.7.5. Stakeholders

Stakeholders are encouraged to build familiarity with the revised risk policy as it is implemented across the Council's FMPs. Stakeholders are also responsible for providing written or oral comments during the Council weighting process and integrating the discussion of risk into Advisory Panel discussions.

4.0 DEFINITIONS

Acceptable biological catch (ABC) - a level of a stock or stock complex's annual catch, which is based on an ABC control rule that accounts for the scientific uncertainty in the estimate of OFL, any other scientific uncertainty, and the Council's risk policy. [from eCFR]

Factors – Broad categories which are relevant to characterizing risk and uncertainty for a stock or stock complex, such as 'Recruitment' and 'Commercial Fishery Characterization'.

Measure of risk tolerance – The output metric resulting from application of the risk policy, as a product of plotting the Z-score on the Risk Policy curve. .

Scores – The stock specific (or stock, complex) answer to factors. Scores are not policy choices but reflect the stock status, assessment, or other pertinent data sources. Scoring is completed by the Council's Plan Development Teams.

Weightings – A measure of how important each factor is to the managers when assessing risk. Weightings are a policy decision and completed by the Council.

DRAFT RISK POLICY SCORING INSTRUCTIONS

March 23, 2026 /Version

NOTE FOR SSC: Scoring Guidance for the Commercial and Recreational Fishery Characterization Factors is in development.

Scoring Instructions:

Responsibility for Scoring and Guidance

All scoring shall be conducted by the relevant Plan Development Team (PDT). Scoring should be objective, evidence-based, and applied consistently by PDTs. PDTs are required to follow the procedures, criteria, and guidance outlined in this document when conducting scoring.

Use of Best Available Information

PDTs shall begin the scoring process with data and procedures identified for each factor. In most cases, this includes the newest stock assessment, the State of the Ecosystem reports, and information from the most recent fishing year. However, data may not be consistently available across all stocks. The scoring guidance acknowledges these scenarios and outlines the supplemental criteria needed to complete the scoring.

Documentation of Deviations in PDT Scoring

If during the scoring process a PDT determines that deviation from the scoring guidelines is necessary (e.g. lack of information, a data point falls between two scores, or available information is at the species level and not the stock level), the PDT should use what it deems to be the best available information to complete the risk policy scoring for that factor, and the deviation from the scoring procedures must be clearly documented. Such documentation shall be provided in a memorandum to the appropriate Council body (e.g., the Scientific and Statistical Committee (SSC)), including a justification for the deviation and an explanation of its potential implications.

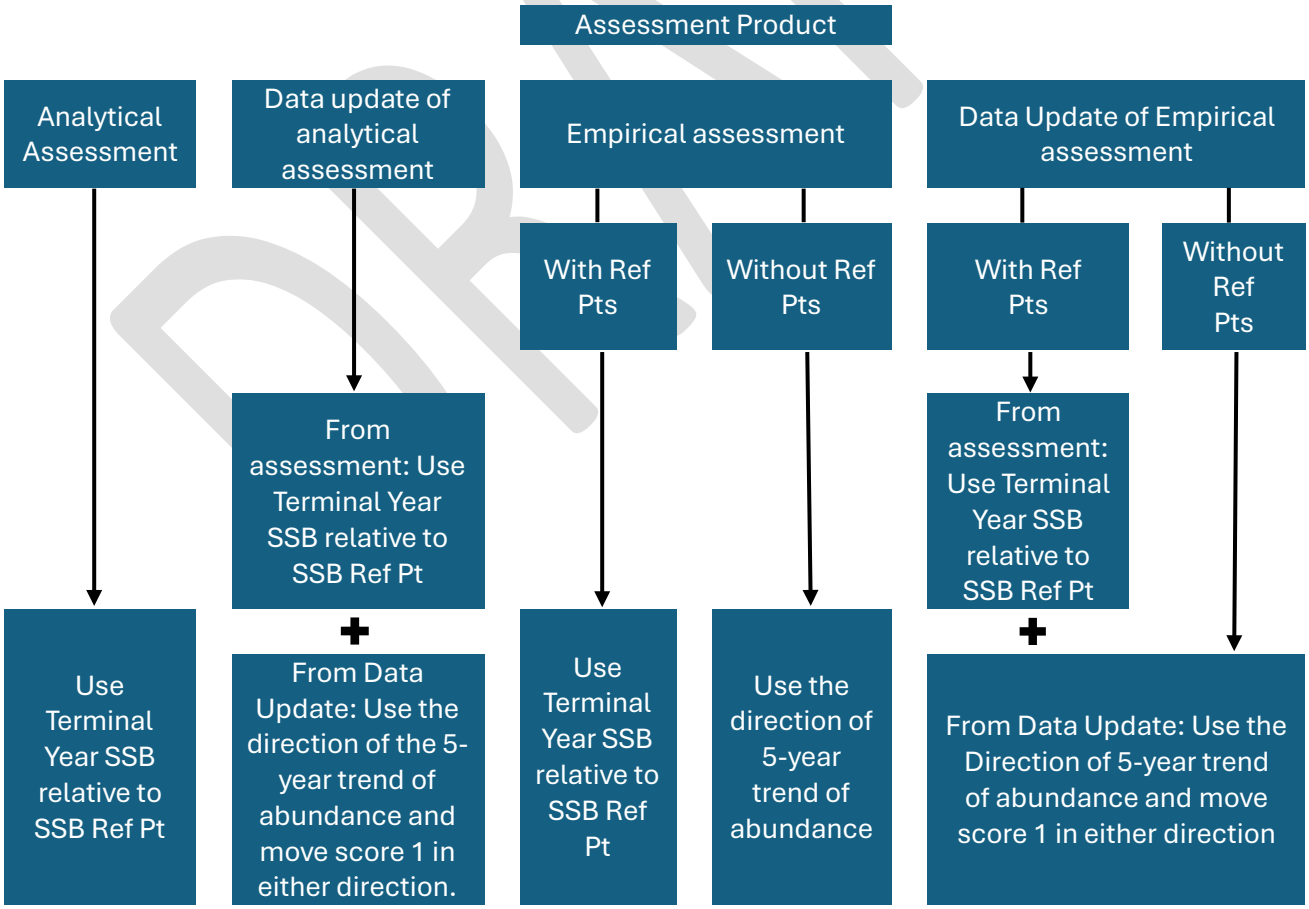
Biomass (SSB) / Stock Status

Goal: To determine the acceptable level of risk based on the current productivity of a stock.

Relationship to risk tolerance: As stock size increases relative to reference points (i.e. SSB/SSB_{MSY}), risk tolerance increases. Lower stock levels correspond to reduced risk tolerance, indicating a need for more cautious management.

How to score: Use the most recent stock assessment, the assessment product flow chart (Figure 1), and the scoring criteria (Figure 2) provided below. When scoring stocks with an analytical assessment or where there is an empirical assessment that estimates reference points, base the factor score on the terminal year SSB relative to the SSB reference point. When stock status is unknown and there is a lack of reference points, base the factor score on the directionality (slope of a linear regressions) of a 5-year trend of abundance indices. Data updates should be used to supplement the score for an analytical or empirical assessment in any case; factor scores based on the assessments are shifted by 1 in either direction depending on the direction of the 5-year trend of abundance.

Figure.7¡.A.flow.chart.for.which.data.products.to.use.and.how.when.scoring.SSB.–.Stock.Status¡



SSB / Stock Status Scoring Rubric (Figure 2):

Analytical assessments – Empirical assessments with reference points (score in parenthesis)

- **Well above target. (-4)** The terminal year SSB is greater than 150% of the SSB target (SSB_{MSY}).
- **Rebuilt. (-2)** The terminal year SSB is greater than the SSB target but not more than 150% of the SSB target.
- **Neutral. (0)** The analytical assessment estimated a terminal year SSB that is greater than 75% but less than 100% of the SSB target
- **Less than 75% but above threshold. (2)** The analytical assessment estimated a terminal year SSB that is less than 75% of the SSB target.
- **Below threshold. (4)** The analytical assessment estimated a terminal year SSB below the SSB threshold ($0.5*SSB_{MSY}$).

Empirical assessments without reference points (not to exceed a score of 6)

- **Neutral. (0)** The stock status is unknown and there is a positive trend over the most recent 5 years of abundance indices.
- **Less than 75% but above threshold. (2)** The stock status is unknown and there is either no trend or a neutral trend over the most recent 5 years of abundance indices.
- **Below threshold. (4)** The stock status is unknown and there is a negative trend over the most recent 5 years of abundance indices.

DRAFT - Data Updates - Under Consideration.

- **Shift left one score. (-1)** There is a positive trend over the most recent 5 years of abundance indices.
- **Shift right one score. (+1)** There is a negative trend over the most recent 5 years of abundance indices.
- For data updates of empirical assessments, the score range is confined to 0-4, following the scoring rubric available for empirical assessments.

Figure 8¡ The scoring rubric for the SSB – Stock Status Factor¡ Gray boxes within a numerical score column are unavailable to use when scoring SSB – Stock Status¡.

Numerical Score	-4	-3	-2	-1	0	1	2	3	4
Categorical Score	**Below threshold**		**<75% but above Threshold**		**Neutral**		**Rebuilt**		**Well Above Target**
Analytical or Empirical assessments with ref pts	Below SSB threshold		< 75% SSB target		≥75% SSB target but < 100% SSB target		≥ SSB target but < 150% SSB target		≥ 150% SSB target
Data updates of analytical or empirical assessments with ref pts	Move right one score if there is a negative trend; Move left one score if there is a positive trend; Cannot go above or below the range of -4 to 4								
Empirical assessments without ref pts					Unknown status and positive 5-year trend		Unknown status and 5-year trend is neutral / no trend		Unknown Status and negative 5-year trend
Data updates of analytical or empirical assessments without ref pts					Move right one score if there is a negative trend; Move left one score if there is a positive trend; Cannot go above or below the range of 0 to 4				

Recruitment

Goal: To identify the risk to the population associated with uncertainty in future recruitment and how that interacts with the fishery.

Relationship to risk tolerance: As recruitment increases, risk tolerance increases. Lower recruitment corresponds to reduced risk tolerance, indicating a need for more cautious management.

How to score: The baseline for recruitment will be defined by either the estimated recruitment time series from the most recent analytical stock assessment or the survey time series of abundance indices from the most recent empirical stock assessment or data update.

1. Compute the **lower quantile (e.g., 0.25 or 25th percentile)** and **upper quantile (e.g., 0.75 or 75th percentile)** based on the baseline time series. The quantiles serve as thresholds to define recruitment regimes:
    i. **Below-average recruitment**: recruitment < 25th percentile
    ii. **Average recruitment**: between 25th and 75th percentiles
    iii. **Above-average recruitment**: recruitment > 75th percentile
2. Translate each of the last 5 years of the recruitment or survey index time series to quantile ranks based on the definitions above.
3. Summarize the 5-year period as a recruitment "state" based on the scoring rubric in Figure 3.

Recruitment Scoring Rubric (Figure 3):

- **Multiple large year classes.** Four years or more are within the "Above-average recruitment regime".
- **Recent large year classes.** Three years are within the "Above-average recruitment regime".
- **Average, no trend**. Three years are within the "Average recruitment regime" or if quantiles are variable among years. If there is no recruitment information, score as a neutral state (score = 0).
- **Recent low recruitment.** Three years are within the "Below-average recruitment regime".
- **Persistent low recruitment.** Four years or more years are within the "Below-average recruitment regime".

Figure.9¡..The.scoring.rubric.for.the.Recruitment.Factor¡.Gray.boxes.within.a.numerical.score.column.are.unavailable.to.use.when.scoring.Recruitment¡

Numerical score	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
Categorical score	**Persistent Low Recruitment**		**Recent Low Recruitment**		**Average, No Trend**		**Recent Large Year Classes**		**Multiple Large Year Classes**
Analytical Assessments and Empirical Assessments	Four years or more are within the “Below-average recruitment regime”.		Three years are within the “Below-average recruitment regime”.		Three years are within the “Average recruitment regime” or if quantiles are variable among years. If there is no recruitment information, score as a neutral state (score = 0).		Three years are within the “Above-average recruitment regime”.		Four years or more years are within the “Above-average recruitment regime”.

Climate Vulnerability

Goal: To assess the risk associated with climate change.

Relationship to risk tolerance: As climate vulnerability increases, risk tolerance decreases, indicating a need for more precautionary management for stocks that are more sensitive to climate-driven changes.

How to score at the species level: Use the results presented in Figure 3 and Figure 5 from Hare et al. 2016 to bin species. This has been done in Table 1. For each species:

1. Assign the vulnerability criteria based on the Biological Sensitivity and Climate Exposure classifications.
    - **Low vulnerability:** When Climate Exposure is Low, moderate, or high, and the biological sensitivity column is Low.
    - **Moderate vulnerability:** When Climate Exposure is very high and biological sensitivity is low, or if biological sensitivity is moderate and climate exposure is high.
    - **High vulnerability:** When Climate Exposure is very high and biological sensitivity is moderate, or if climate exposure is high and biological sensitivity is high.
    - **Very High vulnerability:** When Climate Exposure is very high and biological sensitivity is high or very high, or if climate exposure is high and biological sensitivity is very high.
2. Identify the directional effect.
3. Apply the scoring rubric in Figure 4.

How to score at the stock level (interim approach): PDTs should use expert opinion and recent bodies of literature to score at the stock level. PDTs should also use the Climate and Ecosystem Consideration indicators identified and produced by the Ecosystem Dynamics and Assessment Branch (EDAB)[1,2] or the regional State of the Ecosystem reports to assist with scoring at the stock level where appropriate. In either case, strong rationale and justification should be provided alongside the stock-level score.

[1] NEFSC EDAB Indicators to Support Risk Policy Presentation | August 2025 RPWG Meeting
[2] NEFSC EDAB Risk Policy Technical Brief | August 2025 RPWG Meeting

Climate Vulnerability Scoring Rubric (Figure 4):

- **Low Vulnerability.** Climate vulnerability is low, ignoring the directional effect column.
- **Moderate Vulnerability.** Climate vulnerability is moderate, ignoring the directional effect column; OR Climate vulnerability is low and the directional effect is negative.
- **Moderate Vulnerability, Negative Direction.** Climate vulnerability is moderate and the directional effect is negative.
- **High Vulnerability.** Climate vulnerability is high or very high, ignoring the directional effect column.
- **High Vulnerability, Negative Direction.** Climate vulnerability is high or very high, and directional effect is negative.

Figure.0¡.The.scoring.rubric.for.the.Climate.Vulnerability.factor¡.Gray.boxes.within.a.numerical.score.column.are.unavailable.to.use.when.scoring.Climate.Vulnerability¡

Numerical score	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**
Categorical score	**High Negative Direction**	**High**	**Moderate, Negative Direction**	**Moderate**	**Low**				
Description	Climate vulnerability is high or very high, and the directional effect is negative.	Climate vulnerability is high or very high, ignoring the directional effect column.	Climate vulnerability is moderate and the directional effect is negative.	Climate vulnerability is moderate and ignoring the directional effect column; OR Climate vulnerability is low and the directional effect is negative	Climate vulnerability is low and ignoring the directional effect				

Table.7._Climate.Vulnerability.scores.by.species¡

FMP	Fish Stock	Biological Sensitivity	Climate Exposure	Climate Vulnerability	Directional Effect	Score	Score Cat
Scallops	Atlantic Sea Scallop	High	High	High	Negative	4	High Vulnerability, Negative Direction
Groundfish	Atlantic Halibut	High	High	High	Negative	4	High Vulnerability, Negative Direction
Groundfish	Ocean Pout	High	High	High	Negative	4	High Vulnerability, Negative Direction
Groundfish	Atlantic Wolffish	High	High	High	Negative	4	High Vulnerability, Negative Direction
Groundfish	Witch Flounder	High	High	High	Negative	4	High Vulnerability, Negative Direction
Groundfish	Cusk	High	High	High	Negative	4	High Vulnerability, Negative Direction
Groundfish	Winter Flounder	High	Very High	Very High	Negative	4	High Vulnerability, Negative Direction
Groundfish	Acadian Redfish	Moderate	High	Moderate	Negative	2	Moderate Vulnerability, Negative Direction
Groundfish	Atlantic Cod	Moderate	High	Moderate	Negative	2	Moderate Vulnerability, Negative Direction
Groundfish	White Hake	Moderate	High	Moderate	Negative	2	Moderate Vulnerability, Negative Direction
Groundfish	Pollock	Moderate	High	Moderate	Negative	2	Moderate Vulnerability, Negative Direction
Groundfish	Haddock	Low	High	Low	Negative	1	Moderate Vulnerability
Groundfish	Yellowtail Flounder	Low	High	Low	Negative	1	Moderate Vulnerability
Groundfish	American Plaice	Low	High	Low	Negative	1	Moderate Vulnerability
Groundfish	Windowpane	Low	High	Low	Neutral	0	Low Vulnerability
Herring	Atlantic Herring	Low	High	Low	Negative	1	Moderate Vulnerability
Monkfish	Monkfish	Low	High	Low	Neutral	0	Low Vulnerability
Skates	Thorny Skate	High	High	High	Negative	4	High Vulnerability, Negative Direction
Skates	Barndoor Skate	Moderate	High	Moderate	Negative	2	Moderate Vulnerability, Negative Direction
Skates	Smooth Skate	Moderate	High	Moderate	Negative	2	Moderate Vulnerability, Negative Direction
Skates	Rosette Skate	Moderate	High	Moderate	Neutral	1	Moderate Vulnerability
Skates	Winter Skate	Low	High	Low	Negative	1	Moderate Vulnerability
Skates	Little Skate	Low	High	Low	Negative	1	Moderate Vulnerability
Skates	Clearnose Skate	Low	High	Low	Neutral	0	Low Vulnerability
Small Mesh	Silver Hake	Low	High	Low	Negative	1	Moderate Vulnerability
Small Mesh	Offshore Hake	Low	High	Low	Negative	1	Moderate Vulnerability
Small Mesh	Red Hake	Low	High	Low	Neutral	0	Low Vulnerability
Red Crab	Deep-sea Red Crab	Low	High	Low	Neutral	0	Low Vulnerability
Salmon	Atlantic Salmon	Very High	Very High	Very High	Negative	4	High Vulnerability, Negative Direction
Dogfish	Spiny Dogfish	Low	High	Low	Neutral	0	Low Vulnerability

DRAFT Weighting Guidance

Weightings are a policy decision made by the Council that signifies the level of importance of a particular factor by the Council. It is the Council's policy to utilize the following guidance to conduct weightings for the Risk Policy, unless otherwise specified.

1. Eligibility to participate in weightings

It is the Council's policy that only voting Council members (members) will be eligible to participate in the Risk Policy weighting process, and participation is compulsory.

2. Process for weighting

A polling process at a meeting of the Council will be used to identify the importance of factors. At the Council meeting, identification of the weightings would occur during a dedicated agenda item. The Council will be supplied with meeting materials to support the weightings process. These materials may include risk policy matrices, the State of the Ecosystem report, MSA National Standards, and annual performance reports for applicable stocks. In addition, a template of the poll will be provided to Council members in materials to encourage consideration of the weights prior to the meeting

Each voting member will weight all factors on a scale of 0-4.

- A weight of "0" indicates the factor is not important at all, while a weight of "4" indicates the factor is very important.
- The weights provided by each Council member will be counted equally.
- Responses from Council members will be averaged for each factor, and then divided by the sum of the averages to calculate the weighting for each factor. This ensures that the weightings add up to 1.
- A full description of how weights are combined with factor scores to determine a Z-score can be found in Appendix XX.

3. Public Input

Like other agenda items, written comments from the public will be accepted and provided to the Council as part of meeting materials. The agenda item on weightings will start with an opportunity for oral public comment, followed by an opportunity for discussion between Council members. This is an opportunity for Council members to express thoughts on specific weightings but would not be an opportunity for motions regarding the weightings. Following the discussion, Council members will be polled on the weightings. Following closure of the poll, results will be displayed during the Council meeting, keeping individual responses anonymous. The purpose of allowing for Council discussion before

polling and the display of results after polling is to provide greater transparency to the public.

4. Frequency of Weightings

It is recommended that the Council complete the weightings process every three years. It is not expected that weightings would dramatically change from year to year. Conducting weightings every 3 years also balances the time the Council spends on the revised risk policy versus other important priorities.

The New England Fishery Management Council's Risk Policy utilizes data and Council member input to characterize the Council's risk tolerance for its managed resources.

In this exercise, voting Council members will be assigning *weights* to each factors. Unlike the scoring of factors, which is conducted by the PDT and based on objective data, weightings are a policy choice. Weightings signify the level of importance of a factor in the Council's assessment of risk. For example, for the factor "Climate Vulnerability", the weighting process is not asking whether a species is vulnerable to climate change impacts; this is the purpose of scoring. Instead, the weighting process is asking how important the topic of 'climate change impacts' is to the Council's risk tolerance for that species or stock.

The table below lists the factors you will weight. It also outlines the goal of each factor, and differences between what is evaluated during the objective PDT scoring process and what you should consider as a council member when weighting each factor, which is a policy choice.

Factor / Goal	**Scoring – Objective** *Completed by the PDT*	**Weighting – Policy Choice** *Completed by Voting Council Members*
Biomass/Stock Status: acceptable level of risk based on the current productivity of a stock	Considers SSB relative to SSB targets, and direction of stock trends (5-years) when stock status is unknown.	Consider how important the level of spawning stock biomass and stock trends are to your risk tolerance for a managed resource.
Recruitment: the risk to the population associated with uncertainty in future recruitment	Considers recruitment over the last five years.	Consider how important recruitment trends are to your risk tolerance for a managed resource.
Climate Vulnerability: to assess the risk associated with climate change	Considers climate vulnerability of the stock/species and expected directional effect of climate change from Hare et al (2016).	Consider how important climate change impacts are to your risk tolerance for a managed resource.
Recreational Fishery Characterization: to assess the socioeconomic health of the recreational fishery	Considers recreational fleet diversity from SOE report, trends in angler trips, level of percent standard error (PSE) in total catch estimates, and changes in recreational regulations, AP input.	Consider how important recreational fishing considerations are to your risk tolerance for a managed resource.
Commercial Fishery Characterization: to assess the socioeconomic health of the commercial fishery	Considers quota usage, fishing communities, revenue trends, operational constraints, AP input	Consider how important commercial fishing considerations are to your risk tolerance for a managed resource.

When assessing weights for the factors, it may be helpful for you to think about the relative importance of the factors compared to one another. Some questions to help you think about weighting are:

- Is there a factor that you feel should have the most influence on the Council's decision making? Is there a factor that you feel is least important?
- When you have made past decisions at the Council, what has been the primary driver of whether you were willing to accept an option of higher or lower risk? And what had little influence on your decision?
- When considering a factor's level of importance, it may be helpful to consider whether it is already being accounted for in a stock assessment or existing management process. For example, are climate change impacts via environmental covariates already being accounted for in the stock assessment?

Following the weighting exercise, the average of the Council members' weightings for each factor are combined with each factor's score. Scores and weights from all factors as used to calculate a Z-score to assess a level of risk tolerance.

Weighting Exercise

Complete the grid below by assigning a weight for each factor. You can choose any whole number between 0 and 4. A weighting of 0 means you believe the factor is not important in determining the Council's risk tolerance for that managed resource. A weighting of 4 you believe the factor is critically important in determining the Council's risk tolerance for that managed resource. Do not use a weight of "*Critically Important -4*" more than three times.

Factor	***Least Important*** **0**	***Slightly Important*** **1**	***Important*** **2**	***Highly Important*** **3**	***Critically Important*** **4**
Biomass/Stock					
Recruitment					
Climate Vulnerability					
Recreational Fishery Characterization					
Commercial Fishery Characterization					

DRAFT RISK POLICY MECHANICS

Each factor within the Council's Risk Policy receives a weight and a score, which is used to calculate a Z-score that is translated through a logistic function to derive a recommended probability of management success. The mechanics for each step are described in detail below.

1. Normalize Council weightings

Voting Council members (Members) will complete a weighting form that identifies their individual judgement on the importance of each of the factors to the Council's decision-making. Members will assign a weight to each factor ranging from 0 to 4, where "0" signals that a factor is not important to decision-making and "4" signals that a factor is very important to decision-making.

Once each member has submitted their weightings, the average weight for each factor, $\overline{w_f}$, is calculated given the following:

$$\overline{w_f} = \frac{1}{n}\sum_{i=1}^{n} w_{i,f} \quad \text{.....Equation.7}$$

where $w_{f,i}$ is the weight of an individual Council member, i, for a given factor, f, and n is the total number of Council members that submitted weights. The average weight for a given factor is then normalized, W_f, so that the data can be assumed as normally distributed and is given by:

$$W_f = \frac{\overline{w_f}}{\sum_{f=1}^{5} \overline{w_f}} \quad \text{...Equation.8}$$

where $\sum_{f=1}^{5} \overline{w_f}$ is the sum of averages across the five factors. The total of the normalized weight across the five factors should equal 1.

2. Standardize stock-level factor scores

Plan Development Teams will use the best available information and the Scoring Guidance document to assign a numerical score to each factor for a particular species, stock, or stock complex. The score aims to reflect the condition of the resource and fishery with values ranging from -4 to 4 for the Spawning Stock Biomass (SSB) / Stock Status and Recruitment factors, -4 to 0 for the Climate Vulnerability factor, or 0 to 4 for the Commercial and Recreational Fishery Characterization factors.

After scores are submitted by the PDT, the scores are scaled to a range from 0 to 1 to allow for equal comparison between factors. A scaled factor score, $X_{j,f}$, is calculated by:

$$X_{j,f} = \frac{x_{j,f}}{4}. \quad \text{.....Equation.9}$$

where $x_{j,f}$, is the score for a given species, stock, or stock complex, j, and factor, f.

3. Calculate the stock-level Z-Score

The z-score (z_j) represents the Council's measure of risk aversion for a given species, stock or stock complex (j). It is the sum product of the normalized weights (W_f) and standardized scores ($X_{j,f}$), and is given by:

$$z_j = \sum_{f=1}^{5} W_f \times X_{j,f} \quad \text{.....Equation.0}$$

4. Plot the stock-level Z-Score

To find the recommended probability of management success, $p(Z_j)$, for a given species, stock, or stock complex (j), input the calculated z-score into the logistic function given by:

$$p(Z_j) = \frac{0.5}{1+e^{z_j}} + 0.5. \quad \text{....Equation.1}$$

To illustrate the level of risk aversion qualitatively, the z-score value and recommended probability value should be plotted along the logistic curve generated by Equation 5 and shown in Figure 1.

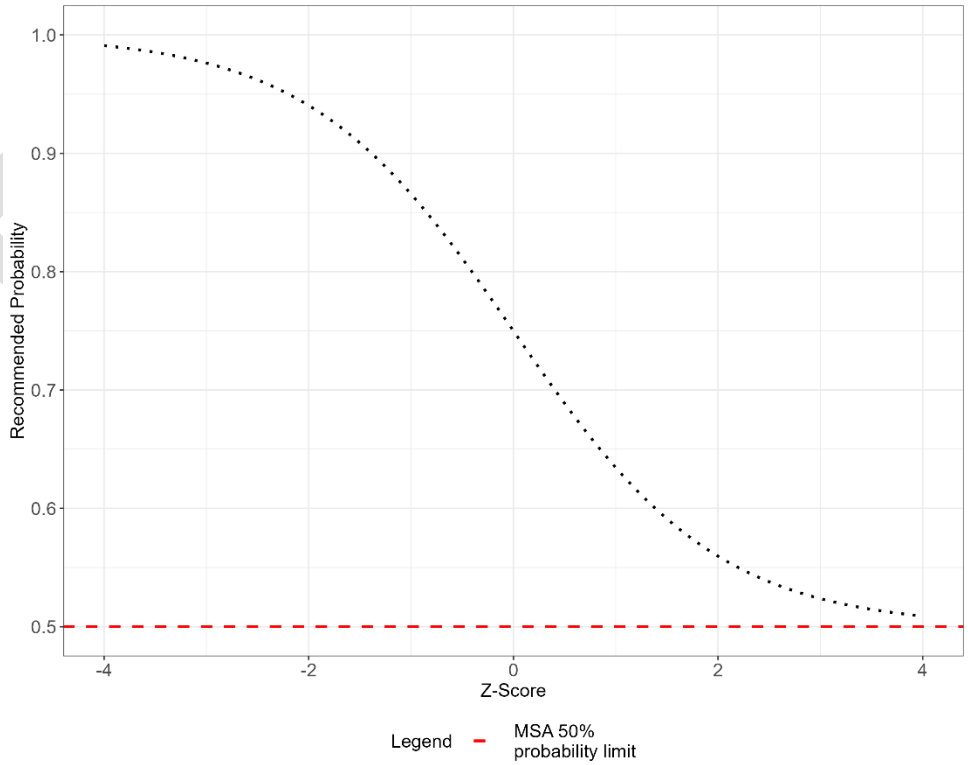


Figure 1. Inverted logistic function

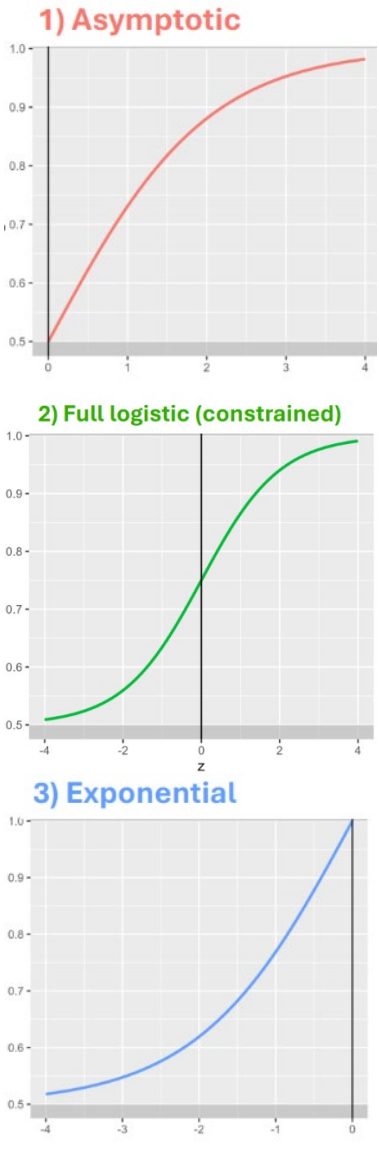
DRAFT Risk Policy Decision Catalog

I. Factors

	Meeting(s)	Decision / Rationale
Assessment and Uncertainty	• January 13, 2026 Stock Assessment Sub-group Meeting • January 23, 2026 RPWG Meeting	Do not use this factor for June 2026 implementation date. Continue to develop this factor for future use. Potential to evaluate based on the last stock assessment, but needs to consider changes to stock assessment process and how to handle data updates in Risk Policy.
Fish Condition	• December 17, 2025 Fish Condition and Ecosystem Sub-group Meeting • January 23, 2026 RPWG Meeting	Do not use this factor for June 2026 implementation date. Instead consider a factor for ecosystem characterization (EC). The EC factor should capture risks related to changes in habitat, current habitat conditions, and trophic relationships that are not addressed in other assessment processes (i.e., stock assessments or climate vulnerability assessments).
Biomass (SSB) / Stock Status	March 9, 2026 RPWG Meeting	Maintain factor scoring based on analytical and empirical assessments; consider incorporating information of data updates to modify score based on SSC feedback.
Climate Vulnerability	March 9, 2026 RPWG Meeting	Maintain factor for June 2026 implementation date. Continue using Hare et al. 2016 to score at species level; allow PDT expert opinion and bodies of literature to score at stock-level. Future iteration of the factor could consider the updated Climate Vulnerability Assessment tentatively scheduled for release in Fall 2026.
Recruitment	January 23, 2026 RPWG Meeting	Maintain factor for June 2026 implementation date; revise to use a quantile approach to score which uses the recruitment or survey index time series and bins into quantile regimes.
Commercial Fishery Characterization	January 23, 2026 RPWG Meeting	Maintain factor for June 2026 implementation date. Simplify to five inputs; consider definitions of primary and secondary ports and two-way directionality in the score; future iterations should consider leasing.
	March 25, 2026 Commercial Fishery Characterization Sub-group Meeting	

	Meeting(s)	Decision / Rationale
Recreational Fishery Characterization	January 23, 2026 RPWG Meeting	Maintain factor for June 2026 implementation date. Add a RAP-like question; consider two-way directionality in the score.
	March 9, 2026 RPWG Meeting	Maintain question around PSEs and uncertainty, but consider data at the level that is utilized in management decisions; develop questions around quota utilization for June 2026 implementation; future iterations of the factor could include questions around participation, engagement, and choke stocks dynamics.

II. Mechanics

	Meeting(s)	Decision / Rationale
Types of shapes of the logistic curve 	• March 4, 2026 Risk Policy Technical Sub-Group • March 9, 2026 RPWG Meeting	The three curves differ in how quickly the resulting probability of management success changes in areas of high/neutral/low risk tolerance. Do not use asymptotic curve (1) for June 2026 implementation date; replace with full logistic (s-shaped curve, 2). Future iterations could consider exponential curve (3) but would need additional development.
Directionality of scoring rubric	• March 4, 2026 Risk Policy Technical Sub-Group • March 9, 2026 RPWG Meeting	Invert the scoring rubrics so that positive values represent increased risk tolerance; inverted rubric also inverts the full logistic (s-shaped curve) recommended above.
Score ranges and increments	March 4, 2026 Risk Policy Technical Sub-Group	Maintain existing ranges and incremental steps between scores for the respective factors. Future iterations could consider changes as needed.

	Meeting(s)	Decision / Rationale
SSC Use and Application	March 9, 2026 RPWG Meeting	Working group supports the following approaches for SSC application: 1) “Adjustments of ‘Probability of Success’, unconstrained”: movement along the curve in terms of the y-axis and probability of success; 2) “Adjustments of ‘Probability of Success’ within Risk Zones”: movement along the curve but constrained to the implicit risk zones or areas of inflection of the S-shaped curve; and 3) “Advisory ABC”: Risk Policy and calculated z-score are a starting point for specification deliberations

III. Data Needs and Wants

	Meeting(s)	Decision / Rationale
Age-1 indices and age-length keys	March 9, 2026 RPWG Meeting	Would assist in scoring the factor when recruitment estimates are not readily available from assessments or data updates.