

MSC Fisheries Standard Toolbox



Version 2.0, DD Month YYYY

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The official language of this standard is English. The definitive version is maintained on the MSC website ([msc.org](https://www.msc.org)). Any discrepancy between copies, versions or translations shall be resolved by reference to the definitive English version.

The MSC prohibits any modification of part or all of the contents in any form.

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Responsibility for these requirements

The Marine Stewardship Council (MSC) is responsible for these requirements.

Readers should verify that they are using the latest copy of this and other documents. Updated documents, together with a master list of all available MSC documents, can be found on the MSC website ([msc.org](https://www.msc.org)).

Versions published

Version no.	Date	Description of amendment
1.0	26 October 2022	New document
1.1	17 March 2023	Minor amendments to Tool D and clarification to implementation timeframes.
1.2	22 July 2024	Version issued incorporating amendments to Tool A and Tool B to address specific issues following feedback from the publication of v3.0 of the MSC Fisheries Standard.
2.0	TBC	

The Marine Stewardship Council

Vision

Our vision is of the world's oceans teeming with life, and seafood supplies safeguarded for this and future generations.

Mission

Our mission is to use our ecolabel and fishery certification program to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices, influencing the choices people make when buying seafood, and working with our partners to transform the seafood market to a sustainable basis.

General introduction

Fisheries certification

With international consultation with stakeholders, the MSC has developed standards for sustainable fishing and seafood traceability. These standards ensure that MSC labelled seafood comes from, and can be traced back to, a sustainable fishery.

The MSC standards and requirements meet global best practice guidelines for certification and ecolabelling programs.

The [MSC Fisheries Standard](#) sets out requirements that a fishery must meet to enable it to claim that its fish come from a well-managed and sustainable source.

Throughout the world, fisheries are using good management practices to safeguard jobs, secure fish stocks for the future, and help protect the marine environment. The science-based MSC environmental standard for sustainable fishing offers fisheries a way to confirm sustainability, using a credible, independent, third-party assessment process. It means sustainable fisheries can be recognised and rewarded in the marketplace, and gives an assurance to consumers that their seafood comes from a well-managed and sustainable source.

The [MSC Fisheries Standard](#) applies to wild-capture fisheries that meet the scope requirements provided in [MSC Fisheries Standard Section 1](#).

The [MSC Fisheries Standard](#) is comprised of the following core Principles:

Principle 1: Sustainable target fish stocks

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.

Principle 2: Environmental impact of fishing

Fishing operations should allow for the maintenance of the structure, productivity, function, and diversity of the ecosystem on which the fishery depends. The ecosystem includes habitat and associated dependent and ecologically related species.

Principle 3: Effective management

The fishery is subject to an effective management system that respects local, national, and international laws and standards, and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

Implementation timeframes

Effective date of the MSC Fisheries Standard Toolbox v2.0

Publication date: DD Month YYYY

Conformity Assessment Bodies (CABs) shall only use the MSC Fisheries Standard Toolbox v2.0 when conducting any assessment process (initial assessment, surveillance audit, scope extension, expedited audit, or reassessment) on the [MSC Fisheries Standard v4.0](#) and the [MSC Fisheries Certification Process v4.0](#) (or later versions).

CABs shall also refer to the effective dates of each tool housed in the MSC Fisheries Standard Toolbox set out in Table 1.

Table 1: Implementation timeframes for each tool

MSC Fisheries Standard Toolbox component	Effective version	Publication date	Effective date
Risk-Based Framework	v4.0	DD Month YYYY	DD Month YYYY
Evidence Requirements Framework	v2.0	DD Month YYYY	DD Month YYYY
Benthic Impacts Tool	v1.0	26 October 2022	1 July 2026
Early or Voluntary Application of Section SE	V1.2	DD Month YYYY	DD Month YYYY

Review

The MSC welcomes comments on the MSC Fisheries Standard Toolbox. Comments will be considered as part of the next review process. Reviews will take place at least every 5 years. Please submit comments to standards@msc.org.

Revisions of the MSC Fisheries Standard Toolbox may be restricted in some cases and the MSC will communicate outputs of the revisions to CABs and affected stakeholders when necessary.

Table 2 shows the MSC process for the update and addition of tools and for the update of the MSC Fisheries Standard Toolbox.

Table 2: Process for the update and addition of tools and for the update of the MSC Fisheries Standard Toolbox.

Action	Mandatory tools	Optional tools	MSC Fisheries Standard Toolbox
Updates	Major¹ updates are part of a Fisheries Standard Review and result in new versions of the MSC Fisheries Standard Toolbox being released. Minor² updates are logged by the MSC and addressed outside of the Fisheries Standard Review.	Major updates are logged by the MSC and are addressed as part of a Fisheries Certification Process Review. Minor updates are logged by the MSC and addressed outside of a Fisheries Standard Review.	Major changes in any tool result in a new version of the MSC Fisheries Standard Toolbox (e.g. version numbers change by 0.1 for minor changes, 1.0 for major changes).
Inclusion of new tools	New tools are part of a Fisheries Standard Review to ensure impact testing.	New tools can be developed and implemented outside of a Fisheries Standard Review. Impact testing is conducted by the MSC.	The addition of new tools constitutes a major change.

More information about the MSC policy development process and MSC Standard Setting Procedure can be found on the MSC website ([msc.org](https://www.msc.org)).

¹ Revision to a tool or the MSC Fisheries Standard Toolbox which is expected to significantly change the CAB assessment process, and/or may change resulting PI scores.

² Revision to a tool or the MSC Fisheries Standard Toolbox which is not expected to significantly change the CAB assessment process, nor change resulting PI scores. For example, editorial amendments or software upgrades.

Introduction to this document

The purpose of the MSC Fisheries Standard Toolbox is to house a suite of mandatory and optional MSC-endorsed assessment tools (Table 3) and their associated requirements. These tools and associated requirements are used by assessment teams to score, or inform the score, of Performance Indicators during the assessment of Units of Assessment (UoA) against the [MSC Fisheries Standard](#).

Table 3: Mandatory and optional tools housed in the MSC Fisheries Standard Toolbox and the relevant Performance Indicators.

Tool	Type	Principle 1	Principle 2	Principle 3
A. Risk-Based Framework (RBF)	Mandatory	1.1.1/1.1.1A scored with RBF	2.1.1, 2.2.1, 2.3.1 and 2.4.1 scored with RBF	N/A
B. Evidence Requirements Framework	Mandatory (See Table B1)	1.2.1 SI (e)	2.1.2 SI (e), 2.1.3 SI (a), 2.1.3 SI (b), 2.2.3 SI (a), 2.3.2 SI (c), 2.3.3 SI (b)	3.2.3 SI (c)
C. Benthic Impacts Tool	Optional	N/A	2.3.1 SI (a)	N/A
D. Early or Voluntary Application of Section SE	Optional	PI 1.2.1 SI (a) & (b), PI 1.2.2	N/A	N/A

The team shall use the decision tree in Figure 1 for each Performance Indicator.

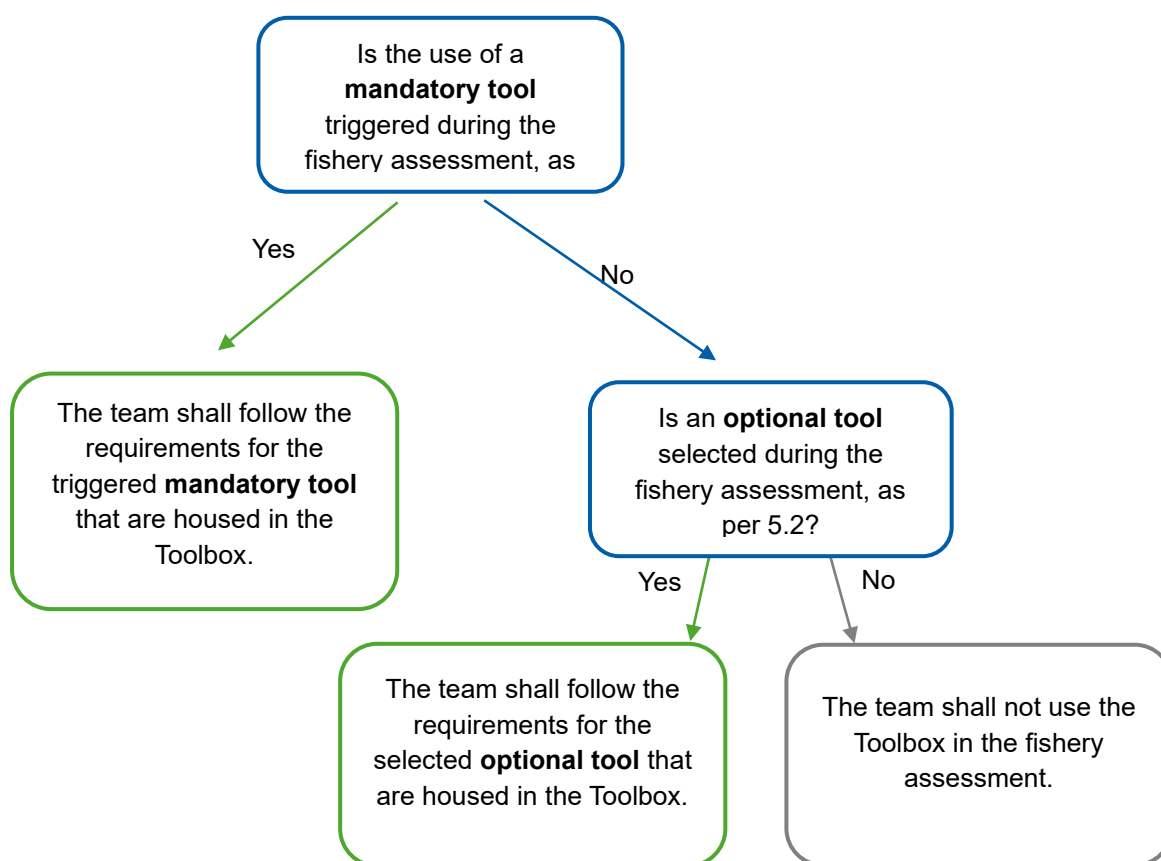


Figure 1: MSC Fisheries Standard Toolbox decision tree

The MSC Guidance to the Fisheries Standard Toolbox

Guidance is provided within this document to help CABs interpret the Fisheries Standard Toolbox. Where guidance is provided that generally relates to the subject of a section, or relates to the content of a specific clause, this icon  appears at the end of the section title or clause. These icons provide hyperlinks to the related guidance within the document.

The MSC Interpretations Log

The MSC occasionally provides additional guidance to CABs and assessment teams via interpretations that are posted on a public [Interpretations Log](#). Interpretations are provided in response to questions about requirements in the MSC Fisheries Standard Toolbox, the [MSC Fisheries Standard](#), the [MSC Fisheries Certification Process \(FCP\)](#) and the [MSC General Certification Requirements \(GCR\)](#). Interpretations help clarify the MSC's intent and provide additional information and guidance to explain how a requirement should be interpreted and applied. They are not new requirements.

The MSC recommends that CABs and assessment teams check the Interpretations Log on a regular basis and follow relevant interpretations.

Auditability of the Guidance to the Fisheries Standard Toolbox and interpretations

The guidance in the Fisheries Standard Toolbox and interpretations are not directly auditable.

Derogations

Derogations are temporary normative measures that allow for an MSC requirement to be applied differently or disregarded. Derogations are provided in response to editorial errors, force majeure, where intent is no longer fit for purpose and threatens MSC credibility or as a provision to test a policy change or modify the implementation timeframe when publishing a revised version of the normative document. Derogations are posted on a public log. The MSC requires CABs to follow relevant derogations.

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The MSC Fisheries Standard Toolbox

1 Scope

The MSC Fisheries Standard Toolbox (the Toolbox) is for use by:

1. Any CAB and team assessing a Unit of Assessment against the MSC Fisheries Standard.
2. Any non-CAB entity following requirements in this document in conjunction with user manuals and other resources listed in [Section 3](#).

2 Version control requirements

2.1 The MSC Fisheries Standard Toolbox

- 2.1.1 The CAB shall apply the version of the Toolbox that is effective on the date of the announcement of any assessment process (initial assessment, surveillance audit, scope extension, expedited audit, or reassessment).
- 2.1.2 The CAB shall determine the validity of results obtained from a tool prior to a CAB entering into a contract with a fishery client as per [Section 5.4](#) of the Toolbox.

3 Normative documents

The Toolbox is a normative document that contains mandatory and optional tools.

The documents listed below contain provisions that, through reference in this text, become part of the Toolbox.

For documents listed, the latest effective version of the document applies.

- a. MSC RBF Worksheets.
- b. MSC Reporting Template.
- c. MSC Use of the RBF in a Fishery Assessment Form.
- d. MSC Section SE Announcement Template.
- e. MSC Template for Stakeholder Input into Fishery Assessments.
- f. MSC Section SE Reporting Template.
- g. Template for Peer Review of MSC Fishery Assessments.
- h. MSC Benthic Impacts Tool Settings Template

Normative documents listed in [MSC General Certification Requirements Section 2](#) also apply to implementation of the Toolbox by CABs.

All MSC forms and templates can be found on the MSC website ([msc.org](https://www.msc.org)).

4 Terms and definitions

All definitions in the [MSC-MSCI Vocabulary](#) apply in addition to the ones below:

Mandatory tool: A tool whose use is triggered during the assessment of a UoA as per requirements in the [MSC Fisheries Standard](#) and the [MSC Fisheries Certification Process](#).

Optional tool: A tool whose use is optional during the assessment of a UoA. If an optional tool is selected for use in an assessment, the team shall follow the requirements for the tool in the Toolbox.

MSC Fisheries Standard Toolbox (“Toolbox”): A suite of mandatory and optional tools that score or inform the scoring of Performance Indicators during the assessment of a UoA against the [MSC Fisheries Standard](#).

5 Requirements for CABs

5.1 General requirements

5.1.1 If the CAB is required to use a mandatory tool or chooses to use an optional tool, the team shall follow the requirements for that tool.

5.2 Determining whether a tool is applicable

5.2.1 The team shall use Table 4, Table 5 and Table 6 to determine whether a tool is applicable to the assessment of a UoA for Principles 1, 2 and 3 respectively.

5.2.1.1 The team shall apply the criteria in Table 4, Table 5 and Table 6 to all scoring elements that the team has identified.

5.2.1.2 Where more than one triggering criteria are listed, but only one criterion is met the team shall trigger the tool.

5.2.2 The team shall not derive their own stock status reference points for the criteria for triggering and selecting tools for PI 1.1.1 or PI 1.1.1A.

5.2.3 The team shall interpret “analytically determine” to mean having quantitative or semi-quantitative UoA-related mortality or interaction rates for the scoring element and relating them to population status or recovery objectives for that scoring element.

5.2.4 If a PI contains some scoring elements scored using the default assessment tree (and additional [MSC Fisheries Standard](#) sections for modified trees), and other scoring elements that trigger the use of a tool, the team shall only apply a tool to the relevant scoring element(s).

5.2.4.1 The team shall use the [Benthic Impacts Tool](#) to inform scoring of PI 2.3.1 for all scoring elements.

5.2.5 If indicators and reference points are available for the UoA, the team shall not use uncertainties in the stock definition or stock assessment models as a justification for applying a tool to Principle 1 PIs.

5.2.6 If the Risk-Based Framework is selected, the team shall follow [Tool A](#).

5.2.7 The team shall follow [Tool B](#) for required PIs (as per Table 4, Table 5 and Table 6).

5.2.8 If the Benthic Impacts Tool is selected, the team shall follow [Tool C](#).

5.2.9 If the early or voluntary application process for Section SE is selected, the team shall follow [Tool D](#).

5.2.10 The team shall not change the tool(s) it has selected after the site visit.

- 5.2.11 If more than one optional tool is applicable for scoring the same PI(s), the team shall provide a rationale for the tool selected

Table 4: Criteria for triggering and selecting tool(s) in Principle 1

Performance Indicator (PI)	Criteria	Next steps
1.1.1 and 1.1.1A Stock status	Stock status relative to the SI-specific reference points are not available, derived either from analytical stock assessment or using empirical approaches.	If criteria met, use Tool A (Risk-Based Framework) for this PI and consult Table A1 for implications of using Tool A on other PIs.
1.2.1 Harvest strategy	Scoring shark finning. A tuna UoA on MSC Fisheries Standard v2.01 opts to apply Section SE, or a non-tuna stock opts to apply Section SE through majority agreement	Use Tool B (Evidence Requirements Framework) for shark finning SI. If criteria met, use Tool D (Early or Voluntary Application of Section SE) for PI 1.2.1 SI a & b
1.2.2 Harvest control rules and tools	A tuna UoA on MSC Fisheries Standard v2.01 opts to apply Section SE, or a non-tuna stock opts to apply Section SE through majority agreement	If criteria met, use Tool D (Early or Voluntary Application of Section SE) for PI 1.2.2
1.2.3 Information/monitoring	N/A	Use default Performance Indicator Scoring Guideposts within default assessment tree for this PI.
1.2.4 Assessment of stock status	N/A	Use default Performance Indicator Scoring Guideposts within default assessment tree for this PI.

Table 5: Criteria for triggering and selecting tool(s) in Principle 2

Performance Indicator (PI)	Criteria	Next steps
2.1.1 Fish and invertebrate species outcome	Information is not available to analytically determine the direct effects of the UoA on the fish and invertebrate scoring element.	If criteria met, use Tool A (Risk-Based Framework) for the scoring element and consult Table A1 for implications of using Tool A on other PIs for the scoring element.
2.1.2 Fish and invertebrate species management	Scoring shark finning	Use Tool B (Evidence Requirements Framework) for shark finning SI.
2.1.3 Fish and invertebrate species information	N/A	For this PI, use Tool B (Evidence Requirements Framework) for SI (a) and SI (b).
2.2.1 Bird, mammal, reptile, and amphibian species outcome	Information is not available to analytically determine the direct effects of the UoA on the bird, mammal, reptile and amphibian scoring element. Note the team shall not trigger the Risk-Based Framework for PI 2.2.1 for marine mammal species that are subject to intentional killing or harassment as integral part of the fishing operation.	If criteria met, use Tool A (Risk-Based Framework) for the scoring element and consult Table A1 for implications of using Tool A on other PIs for the scoring element.
2.2.2 Bird, mammal, reptile and amphibian species management	NA	Use default Performance Indicator Scoring Guideposts within default assessment tree for this PI.
2.2.3 Bird, mammal, reptile and amphibian species information	NA	For this PI, use Tool B (Evidence Requirements Framework) for SI (a).
2.3.1 Habitats outcome	1. Quantitative information on the substratum, geomorphology, and biota of the habitats encountered (such as habitat mapping of the managed area), is not available, or 2. Gear specific, quantitative information of impact of the UoA on habitats encountered is not available. This information shall include knowledge of habitat regeneration ability that is either specific to the UoA or provided by relevant research that considers impact of the	If either or both criteria are met, use Tool A (Risk-Based Framework) for the scoring element and consult Table A1 for implications of using Tool A on other PIs. Option to use Tool C (Benthic Impact Tool) to inform scoring of PI 2.3.1, SI (a) (may be used in conjunction with the default assessment tree or RBF)

Performance Indicator (PI)	Criteria	Next steps
	gear(s) on habitats in the relevant area.	
2.3.2 Habitat management strategy	NA	Use Tool B (Evidence Requirements Framework) for this PI.
2.3.3 Habitat information	NA	For this PI, use Tool B (Evidence Requirements Framework) for SI (b).
2.4.1 Ecosystem outcome	Quantitative information is not available to assess the impact of the UoA on the ecosystem	If criteria is met, use Tool A (Risk-Based Framework) for the scoring element and consult Table A1 for implications of using Tool A on other PIs for the scoring element.
2.4.2 Ecosystem management strategy	NA	Use default Performance Indicator Scoring Guideposts within default assessment tree for this PI.
2.4.3 Ecosystem information	NA	Use default Performance Indicator Scoring Guideposts within default assessment tree for this PI.

Table 6: Criteria for triggering and selecting tool(s) in Principle 3

Performance Indicator (PI)	Criteria	Next steps
3.2.3 Compliance and enforcement	NA	Use Tool B (Evidence Requirements Framework) for PI 3.2.3 SI (c)

5.3 Reporting tool results

- 5.3.1 The team shall report all scoring outcomes from using the Toolbox in the '[MSC Reporting Template](#)'.

5.4 Period of validity of tool results

- 5.4.1 The team shall only consider results from any tool in the Toolbox as valid for use in an MSC fishery assessment if all the following conditions are met:
- The tool was applied within 1 year of the publication of the Fishery Announcement ([FCP v2.3/v3.1 7.10.1](#)).
 - The version of the Toolbox applied has not been superseded by a major version update (see Implementation timeframes).
 - The user manual for the tool has not been superseded by a major version update (see Implementation timeframes).
 - The CAB has reviewed the results and determined that the results are in compliance with the tool requirements.

End of Requirements for CABs

Tool A: Risk-Based Framework

A1 Introduction to the Risk-Based Framework (RBF)

A1.1 Applying the RBF in scoring different PIs

- A1.1.1 There are 4 methodologies within the RBF: 
- Consequence Analysis (CA).
 - Productivity Susceptibility Analysis (PSA).
 - Consequence Spatial Analysis (CSA).
 - Scale Intensity Consequence Analysis (SICA).
- A1.1.2 The team shall justify the decision to trigger the RBF for a particular scoring element within a PI using Tables Table 4, Table 5 and Table A1. 
- A1.1.3 The team shall use Table A1 to determine which Risk-Based Framework methodology to use. 
- A1.1.4 The team shall score scoring elements that are not eligible for the RBF using the default assessment tree.
- A1.1.4.1 The team shall identify any implications for other PIs using Figure A1 and Table A1, prior to proceeding.

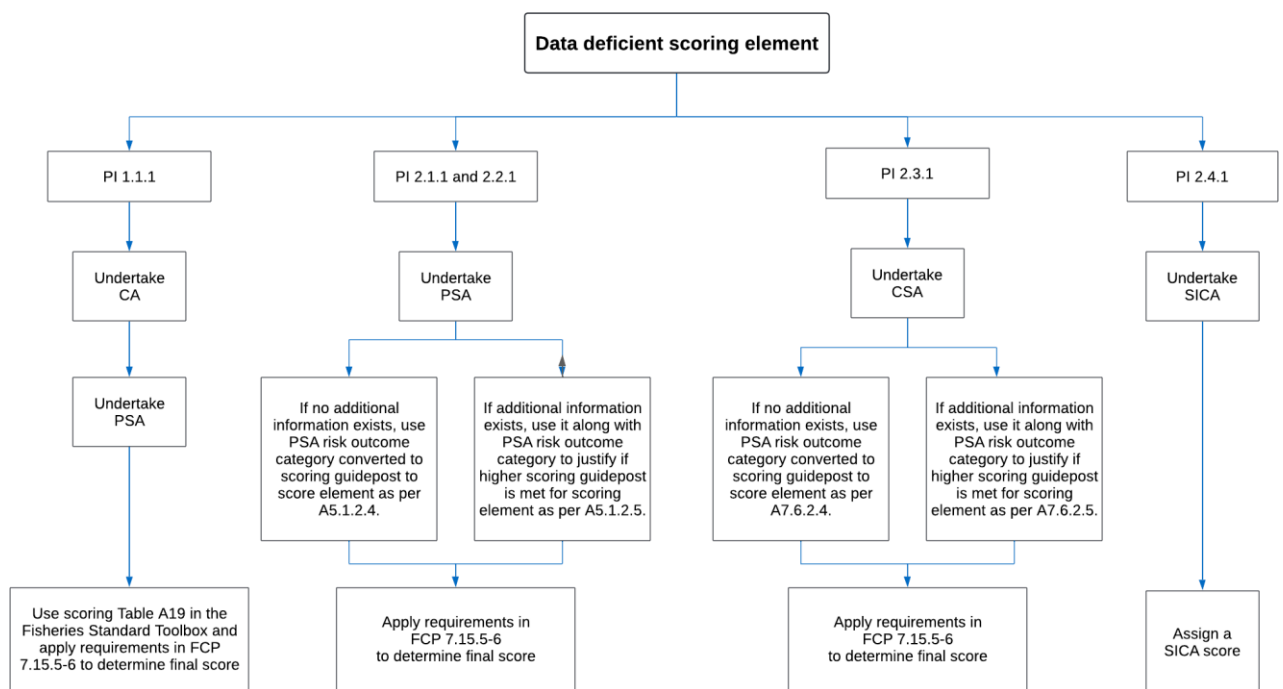


Figure A1: How to apply the RBF in scoring

Table A1: RBF methodologies applicable to scoring outcome PIs and implications for other PIs.

PI	RBF	Notes
1.1.1/1.1.1A Stock status	Yes	The team shall use both CA and PSA if the RBF is triggered.
1.1.2 Stock rebuilding	No	If the RBF is used to score PI 1.1.1/1.1.1A, the team shall not score this PI.
1.2.1 Harvest strategy	No	The team shall score this PI as normal.
1.2.2 Harvest control rules and tools	No	The team shall score this PI as normal.
1.2.3 Information/monitoring	No	The team shall score this PI as normal.
1.2.4 Assessment of stock status	No	If RBF is used to score PI 1.1.1/1.1.1A, the team shall assign a default score of 80 to this PI.
2.1.1 Fish and invertebrate species outcome	Yes	The team shall use the PSA alone if the RBF is triggered.
2.1.2 Fish and invertebrate species management	No	If the RBF is used to score PI 2.1.1, for 2.1.2 scoring issues (a) and (b), the team shall assess how elements of the management strategy combine to ensure that the direct effects of the UoA on the fish and invertebrate species such that susceptibility is maintained at or below acceptable levels given the productivity of the species.
2.1.3 Fish and invertebrate species information	No	The team shall score this PI as normal.
2.2.1 Bird, mammal, reptile and amphibian species outcome	Yes	The team shall use the PSA alone if the RBF is triggered.
2.2.2 Bird, mammal, reptile and amphibian species management	No	If the RBF is used to score PI 2.2.1, for 2.2.2 scoring issues (a) and (b), the team shall assess how the elements of the management strategy combine to ensure that the direct effects of the UoA on the bird, mammal, reptile and amphibian species are managed such that susceptibility is maintained at or below acceptable levels given the productivity of the species.
2.2.3 Bird, mammal, reptile and amphibian species information	No	The team shall score this PI as normal.
2.3.1 Habitats outcome	Yes	The team shall use the CSA alone if the RBF is triggered.
2.3.2 Habitats management	No	If the RBF is used to score PI 2.3.1, for scoring issue (a), the team shall assess how elements of the management strategy combine to manage impact, such that consequence is maintained at or below

		acceptable levels given the spatial attributes of the habitat.
2.3.3 Habitats information	No	If the RBF used to score PI 2.3.1, the team shall use the RBF alternative PI in section Error! Reference source not found. 2. If the team has opted to use the CSA as per the MSC Fisheries Standard SA3.12.1.c , the team shall score the information PI in the default tree.
2.4.1 Ecosystem outcome	Yes	The team shall use the SICA alone if the RBF is triggered.
2.4.2 Ecosystem management	No	If the RBF is used to score PI 2.4.1, for scoring issue (a), the team shall assess how elements of the management strategy combine to manage impact, such that consequence is maintained at or below acceptable levels for the most vulnerable subcomponent of the ecosystem.
2.4.3 Ecosystem information	No	The team shall score this PI as normal.
Principle 3 PIs	No	The team shall not the apply the RBF to score any PIs within Principle 3.

A2 Stakeholder involvement in RBF

A2.1 Announcing the RBF

A2.1.1 If the team determines that the RBF is to be used, the team shall:

- a. Describe and justify the use of the RBF in the 'Fishery Announcement Template', specifying any resulting stakeholder or expert consultation plans.
- b. The team shall inform stakeholders of the use of the RBF in the fishery assessment by including in communication, as a minimum, text equivalent to the following: ([A2.1](#); [FCP 7.10.2.f & g](#)). 
- i. "A key purpose of the stakeholder consultation is to collect information and speak to stakeholders with an interest in the fishery. For those parts of the assessment involving the MSC's Risk-Based Framework (RBF, see [msc.org](#)), we will be using a qualitative and semi-quantitative analysis informed by stakeholder input. To achieve a robust outcome from this consultative approach, we rely heavily on participation of a broad range of stakeholders with a balance of knowledge of the fishery. We encourage any stakeholders with experience or knowledge of the fishery to participate in this consultation."
- c. If a decision is made to use the RBF after the announcement of the fishery assessment, update the 'Fishery Announcement Template' describing and justifying the use of the RBF, specifying any resulting stakeholder or expert consultation plans..
- d. Inform stakeholders of the decision to use the RBF, specifying any resulting stakeholder or expert consultation plans.
- e. Allow at least 30 days for stakeholder input.

- A2.1.2 If the team determines that only main species will be assessed using the RBF (as per [A4.1.5](#)), then the team should announce the RBF only for those main species.
- A2.1.3 The team may decide not to announce the RBF if, based on the information available at the time of the announcement:
- a. Only minor species trigger the use of the RBF; and/or
 - b. There are no main species.
- A2.1.4 If at the site visit, information comes to light that the RBF needs to be used to score more PIs than had been previously announced, the team shall conduct additional stakeholder consultation as per A2.3.3.

A2.2 Information gathering

- A2.2.1 Prior to the announcement of the fishery assessment, the team shall gather information needed for scoring, including:
- a. Management arrangements in place together with any specific strategies, such as bycatch mitigation or recovery strategies. 
 - b. Descriptions of any monitoring strategies in place, including at-sea observer programmes (coverage, duration, objectives).
 - c. Maps of:
 - i. The distribution of fishing effort within the jurisdictional boundaries of the UoA.
 - ii. The distribution of all fishing effort on the target stock outside the UoA.
 - iii. Species, habitat and community distributions (including depth ranges).
 - d. When using the CA, information needed to:
 - i. Assist in identifying the most vulnerable subcomponent for a species.
 - ii. Score the consequence of fishing activity on the species.
 - e. When using the PSA, information needed for scoring:
 - i. The productivity attributes of each species.
 - ii. The susceptibility attributes of the species.
 - f. When using the CSA, information needed to: 
 - i. Define habitat(s).
 - ii. Score the consequence attributes of the Unit of Assessment's (UoA) habitat(s).
 - iii. Score the spatial attributes of the UoA's habitat(s).
 - g. When using the SICA, information needed for scoring:
 - i. The spatial scale of the UoA on the ecosystem.
 - ii. The temporal scale of the UoA on the ecosystem.
 - iii. The intensity of the UoA on the ecosystem.

iv. The consequence of the activity on the ecosystem.

A2.2.2 The team shall ensure that information used for scoring complies with [FCP 7.15.1.1](#).

A2.2.3 The team shall use all the data available when scoring the fishery.

A2.2.4 The team shall use the information gathered to present one of the following options in the Announcement Comment Draft Report (at initial assessment) and in the Re-Assessment Plan appendix in the Fishery Announcement (at reassessment):

- a. Provide background information to inform the stakeholder consultation process and identify data gaps relating to the applicable RBF methodology (CA, PSA, CSA, SICA); or
- b. Provide background information and draft scoring ranges using the applicable RBF methodology (CA, PSA, CSA, SICA) and identify any data gaps.

A2.3 Stakeholder consultation

A2.3.1 The team shall carry out a stakeholder consultation process to gather data and to seek expert opinions (see [FCP Section 7.13](#) and [7.14](#)).

A2.3.2 The team shall plan the stakeholder consultation process to facilitate effective participation from stakeholders based on an evaluation of the number and types of PIs and scoring elements to assess, need for interaction between stakeholder groups, and language and cultural issues.

A2.3.2.1 The team shall facilitate engagement with relevant stakeholder groups with knowledge on the operation and management of the UoA or on the scoring elements it interacts with.

A2.3.2.2 The team shall provide a description of their stakeholder or expert consultation activities in the 'MSC Reporting Template'.

A2.3.3 The team shall use the information gathered during the information gathering and stakeholder consultation process(es) to inform the scoring of the CA, PSA, CSA and SICA.

A2.3.4 The team shall be responsible for scoring PIs on the basis of the objective evidence presented and considering the precautionary approach.

A3 Conducting a Consequence Analysis (CA)

A3.1 Preparation

A3.1.1 The team shall conduct a CA for each data-deficient scoring element identified under Principle 1 (target species). 

A3.1.2 The team shall only conduct a CA if some qualitative or quantitative data exist from which trends in 1 or more of the 4 key consequence subcomponents listed in Table A2 can be identified.

A3.1.2.1 If there is no indicator data as defined in [A3.1.2](#), the team shall not assess the UoA against the [MSC Fisheries Standard](#).

A3.1.3 The team shall use the CA scoring template in Table A2 to present the scores and justifications of the CA. 

- A3.1.3.1 The team shall include the CA scoring template in the 'MSC Reporting Template'.

A3.2 Stakeholder involvement within CA

- A3.2.1 The team shall use input from stakeholders to:
- a. Provide information suitable for the semi-quantitative evaluation of the risks that the fishing activity poses to the species included in the risk assessment.
 - b. Assist in identifying the most vulnerable subcomponent for a species.
 - c. Assist in scoring the consequence of fishing for a species.

Table A2: CA scoring template

Principle 1: Stock status outcome	Scoring element	Consequence subcomponents	Consequence score
		Population size	
		Reproductive capacity	
		Age/size/sex structure	
		Geographic range	
Justification for most vulnerable subcomponent			
Justification for consequence score			

A3.3 Determine the CA score

- A3.3.1 The team shall only score the subcomponent (population size, reproductive capacity, age/size/sex structure or geographic range) for which the team decides human-induced impact is the greatest. 
- A3.3.2 Using Table A3, the team shall use data (as defined in [A3.1.2](#)) to assign a score for the consequence of the human-induced impact on the selected subcomponent. 
- A3.3.2.1 The team shall work with stakeholders.
- A3.3.2.2 If there is limited indicator information, the team shall consider the consequence as high-risk and score consequence at 60.
- A3.3.2.3 If there is no agreement between stakeholders, the team shall use the consequence category with the lowest score (60, 80 or 100).
- A3.3.3 The team shall interpret the terms “insignificant change”, “possible detectable change” and “detectable change” as follows: 
- a. “Insignificant change” to mean that changes in the subcomponents are undetectable or if detectable, these are of such a low magnitude that the impact of the human-induced impact cannot be differentiated from the natural variability for this population.
 - b. “Possible detectable change” to mean that changes are detected and can be reasonably attributable to the human-induced impact, but these are of such a low magnitude that the impact of the UoA is considered to be minimal on the population size and dynamics.
 - c. “Detectable change” to mean that changes to the subcomponent can be attributed to human induced impacts and changes are of such magnitude that cannot be considered as minimal.
- A3.3.4 The team shall interpret the terms “full exploitation rate” and “maximum sustainable level” as the maximum level of exploitation that a population can sustain such that the long-term recruitment dynamic is not adversely affected.
- A3.3.4.1 For application to Key LTL stocks, the team shall interpret the terms “full exploitation rate” and “maximum sustainable level” as the maximum level of exploitation that the ecosystem can sustain such that long-term serious ecosystem impacts do not occur.
- A3.3.5 If the consequence of the activity is determined to be at higher risk than 60 level in Table A3, the team shall fail the UoA.
- A3.3.6 The team shall use the final CA score as per [Section A5](#).

Table A3: CA scoring of subcomponents

Subcomponent	Consequence category			
	Fail	60	80	100
Population size	Consequence is higher-risk than 60 level.	Full exploitation rate but long-term recruitment dynamics not adversely affected. OR for Key LTL species: Full exploitation rate but long-term serious ecosystem impacts unlikely to occur.	Possible detectable change in size/growth rate (r) but minimal impact on population size and none on dynamics. OR for Key LTL species: Possible detectable change to population size/growth rate (r) but minimal impact on population size and no impact on ecosystems.	Insignificant change to population size/growth rate (r). Change is unlikely to be detectable against natural variability for this population. OR for Key LTL Species: Insignificant change to population size/growth rate (r). Change is unlikely to be detectable against natural variability for this population. Impact on ecosystem considered to be negligible.
Reproductive capacity		Detectable change in reproductive capacity. Impact on population dynamics at maximum sustainable level, long-term recruitment dynamics not adversely affected. OR for Key LTL species: Detectable change in reproductive capacity. Impact on population dynamics at maximum sustainable level, long-term serious ecosystem impacts unlikely to occur.	Possible detectable change in reproductive capacity but minimal impact on population dynamics. OR for Key LTL species: Possible detectable change in reproductive capacity but minimal impact on population dynamics and none on ecosystems.	Insignificant change in reproductive capacity. Unlikely to be detectable against natural variability for this population. OR for Key LTL species: Insignificant change in reproductive capacity. Unlikely to be detectable against natural variability for this population. Impact on ecosystem considered to be negligible.
Age/size/sex structure		Detectable change in age/size/sex structure. Impact on	Possible detectable change in age/size/sex structure but minimal impact on population dynamics.	Insignificant change in age/size/sex structure. Unlikely to be detectable against

		population dynamics at maximum sustainable level, long-term recruitment dynamics not adversely affected. OR for Key LTL Species: Detectable change in age/size/sex structure. Impact on population dynamics at maximum sustainable level, long-term serious ecosystem impacts unlikely to occur.	OR for Key LTL Species: Possible detectable change in age/size/sex structure but minimal impact on population dynamics and none on ecosystems.	natural variability for this population. OR for Key LTL Species: Insignificant change in age/size/sex structure. Unlikely to be detectable against natural variability for this population. Impact on ecosystem considered to be negligible
Geographic range		Detectable change in geographic range up to 10% of original distribution due to fishing activities. OR for Key LTL Species: Detectable change in geographic range up to 10% of original distribution due to fishing activities. Long-term serious ecosystem impacts unlikely to occur.	Possible detectable change in geographic range but minimal impact on population distribution and none on dynamics. OR for Key LTL Species: Possible detectable change in geographic range but minimal impact on population distribution and none on dynamics and ecosystems.	Insignificant change in geographic range. Unlikely to be detectable against natural variability for this population. OR for Key LTL Species: Insignificant change in geographic range. Unlikely to be detectable against natural variability for this population. Impact on ecosystem considered to be negligible

A4 Conducting a Productivity Susceptibility Analysis (PSA)

A4.1 Preparation

- A4.1.1 The team shall use the 'MSC RBF Worksheets' to calculate PSA scores.
- A4.1.2 The team shall document the scores and justifications for each productivity and susceptibility attribute in the PSA justification tables in the 'MSC Reporting Template'.
- A4.1.3 The team shall conduct a PSA for each data-deficient scoring element identified under Principle 1 or under the fish and invertebrate or bird, mammal, reptile and amphibian component under Principle 2, unless the options in A4.1.4 or A4.1.5 are applied.
- A4.1.4 The team may elect to conduct a PSA on “main” scoring elements only when evaluating PI 2.1.1
- A4.1.4.1 The team shall cap the final PI score as per [A5.3.1](#).
- A4.1.5 When assessing a large number of non-ETP scoring elements under PI 2.1.1 or PI 2.2.1, the team may elect to group scoring elements according to similar taxonomies and undertake a reduced number of PSAs. ■
- A4.1.5.1 The team shall:
- a. List all scoring elements and group them according to similar taxonomy. ■
 - b. Within each taxonomic group, identify at least the 2 most at-risk scoring elements determined by: ■
 - i. Selecting the scoring element with the highest risk score when scoring the productivity part of the PSA for all scoring elements, and
 - ii. Working with stakeholders to identify qualitatively which scoring elements are most at risk within each group.
 - c. Score at least 2 scoring elements within each taxonomic group using the PSA.
- A4.1.6 If several scoring elements appear to have a similar level of risk, and the team and majority of stakeholders cannot agree on which scoring element is most at risk for a given PI, the team shall conduct a PSA on all of the scoring elements in that group.
- A4.1.7 The team shall include details of the process of grouping scoring elements and determining the scoring element most at risk within each group in the 'MSC Reporting Template'.
- A4.1.7.1 The team shall provide a justification for the determination of the scoring element most at risk within each group.
- A4.1.8 The team shall apply the PSA to the representative most at-risk scoring element to determine the PSA risk outcome category for the scoring element group. ■
- A4.1.8.1 The team shall assign the PSA risk outcome category to each of the scoring elements in the scoring element group.

- A4.1.9 If the team decides to group main, minor and/or non-ETP bird, mammal, reptile and amphibian scoring elements according to similar taxonomies, the team shall cap the final PI score as per [A5.3.1](#).

A4.2 Stakeholder involvement within the PSA

- A4.2.1 The team shall use input from stakeholders to:
- a. Inform the identification of scoring elements, not already identified, that are affected by the UoA.
 - b. Inform the scoring of the productivity and susceptibility attributes within the PSA.

A4.3 PSA Step 1: Score the productivity attributes

- A4.3.1 The team shall score the productivity of each data-deficient scoring element. ■
- A4.3.2 The team shall score each productivity attribute on a three-point risk scale: low (3), medium (2) or high (1), using the cut-offs in Table A4- Table A11.
- A4.3.2.1 The team shall only score average maximum size and average size at maturity attributes for vertebrate species when using Table A4.
 - A4.3.2.2 The team shall only score the density-dependence attribute for invertebrate species.
 - A4.3.2.3 The team shall enter the 3-point scores into the '[MSC RBF Worksheets](#)' to calculate the overall productivity score.
 - A4.3.2.4 If there is limited information available for a productivity attribute, the team shall assign the more precautionary score.
 - A4.3.2.5 In the absence of information on depensatory dynamics, or if no justification is provided supporting lower risk scores (1 or 2), the team should use the highest risk score (3, low productivity).
 - A4.3.2.6 When scoring productivity for birds, mammals and reptiles (Table A5 -Table A10) the team shall: ■
 - a. Use the mean or median values, if available.
 - b. If a range is provided rather than a mean or median value, use the most precautionary value in the range.
 - c. Only use proxies to score attributes if information is available for closely related species with similar demographic traits.
 - d. If information is not available on an attribute for the species or an appropriate proxy, assign a high risk score.

Table A4: PSA productivity attributes and scores for fish and invertebrates 

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity	<5 years	5-15 years	>15 years
Average maximum age	<10 years	10-25 years	>25 years
Fecundity	>20,000 eggs per year	100-20,000 eggs per year	<100 eggs per year
Average maximum size (not to be used when scoring invertebrate species)	<100 cm	100-300 cm	>300 cm
Average size at maturity (not to be used when scoring invertebrate species)	<40 cm	40-200 cm	>200 cm
Reproductive strategy	Broadcast spawner	Demersal egg layer	Live bearer
Trophic Level	<2.75	2.75-3.25	>3.25
Density dependence (to be used when scoring invertebrate species only)	Compensatory dynamics at low population size demonstrated or likely.	No compensatory or compensatory dynamics demonstrated or likely.	Compensatory dynamics at low population sizes (Allee effects) demonstrated or likely.

Table A5: PSA productivity attributes and scores for birds 

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at first breeding: Where there are studies of only short duration used to estimate this, it is appropriate to consider whether the species value is anomalously low for the genus and score based on what is the norm for the genus rather than the individual species.	<3 years	3-7 years	>7 years
Average 'optimal' adult survival probability: Use the optimal average adult survival probability values, if available. The optimal value represents what the species is capable of achieving biologically with healthy, stable populations, i.e. the value is not unsustainably low due to population decline driven by anthropogenic impacts. If a	<0.81	0.81-0.94	>0.94

species is in decline due to anthropogenic impacts, alternatives from other unaffected similar species should be used.			
Fecundity: Considers both the number of chicks that the species is capable of fledging and the frequency of breeding.	>1 chick/year	1 chick/year	<1 chick/year

Table A6: PSA productivity attributes and scores for marine mammals: Mysticetes and sirenians

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity: Age at female sexual maturity in years.	<6	6-8	>8
Fecundity: 1/inter-birth interval (IBI).	>0.40	0.30-0.40	<0.30

Table A7: PSA productivity attributes and scores for marine mammals: Odontocetes

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity: Age at female sexual maturity in years.	<6	6-11	>11
Fecundity: 1/inter-birth interval (IBI).	>0.58	0.23-0.58	<0.23

Table A8: PSA productivity attributes and scores for marine mammals: Pinnipeds and sea otters

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity: Age at female sexual maturity in years.	<5	5-7	>7
Fecundity: Average annual reproductive rate (birth rate or pregnancy rate).	>0.87	0.58-0.87	<0.58
Average 'optimal' adult survival probability:	<0.84	0.84-0.94	>0.94

Use the optimal average adult survival probability values. The optimal value represents what the species is capable of achieving biologically with healthy, stable populations, i.e. the value is not unsustainably low due to population decline driven by anthropogenic impacts.			
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Table A9: PSA productivity attributes and scores for sea turtles

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity: Age at female sexual maturity in years.	< 15	15-25	> 25
Fecundity: Eggs per season per remigration interval Calculated as: (number of eggs per nest* number of nests per season) / remigration interval. Where ranges are provided, the most precautionary value shall be adopted for scoring.	> 150	100-150	< 100

Table A10: PSA productivity attributes and scores for sea snakes

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average length at maturity (cm): Median or mean length at maturity. Use snout vent length, as this is most often recorded.	<61.5	61.5-109.0	>109.0
Average maximum size (cm): Use total length. If differences in size between sexes, use more precautionary value. Use snout vent length, as this is most often recorded.	<90.4	90.4-168.3	>168.3
Fecundity: Egg-laying: annual reproductive output should be calculated as: number of eggs	N/A	>5	≤5

per clutch / number of nests per year. Live bearing: clutch size / number of years between reproductive periods. No species are categorised as 'low' risk/ 'high productivity'.			
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Table A11: PSA Productivity attributes and scores for amphibians

Productivity attribute	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity: Median or mean age at maturity. If range provided, use most precautionary (highest) value. Proxies may be used to score this attribute only where information is available for closely related species with similar demographic traits. Where this information is not available high risk shall be scored.	<5 years	5-15 years	>15 years
Average maximum age: Reptiles: Use median or mean reproductive lifespan. If range provided, use most precautionary (highest) value. Proxies may be used to score this attribute only where information is available for closely related species with similar demographic traits. Where this information is not available high risk shall be scored.	<10 years	10 – 25 years	>25 years
Fecundity: Proxies may be used to score this attribute only where information is available for closely related species with similar demographic traits. Where this information is not available high risk shall be scored.	>20,000 eggs per year	100-20,000 eggs per year	<100 eggs per year
Average max size: Total length of adults. Where there are differences in size between males and females or a range is provided,	<100 cm	100-300 cm	>300 cm

use the more precautionary (higher) value.			
Average size at maturity: Total length of adults. Where there are differences in size between males and females or a range is provided, use the more precautionary (higher) value. Where information is not available, apply 'Average Max Size' value.	<40 cm	40-200 cm	>200 cm
Reproductive strategy: Consider parental investment in young in addition to method of reproduction. For live bearing or egg-laying species that make a nest or give birth and leave, score medium risk. For live bearing or egg-laying species that nest guard or care for their young, score high risk.	Broadcast spawner	Demersal egg layer	Live bearer
Trophic level: Where information on the trophic level of the amphibian is not available, scoring shall focus on the prey of the reptile. Where the principle dietary components consist of higher trophic level organisms, the reptile shall be considered high risk. Where the diet is primarily composed of lower trophic-level organisms the reptile shall be considered medium or low risk. Mean trophic level of principle prey may be calculated to derive the risk score.	<2.75	2.75-3.25	>3.25

A4.4 PSA Step 2: Score the susceptibility attributes

- A4.4.1 The team shall score the susceptibility of each data-deficient scoring element.
- A4.4.2 The team shall score each susceptibility attribute on a 3-point risk scale: high (3), medium (2) or low (1), using the cut-offs in Table A13 and Table A14.
- A4.4.2.1 The team shall enter the 3-point scores into the '[MSC RBF Worksheets](#)' to calculate the overall susceptibility score.
- A4.4.2.2 If there is limited information available to score a susceptibility attribute, the team shall assign the more precautionary score.
- A4.4.3 When scoring susceptibility attributes, the team shall take into account the impacts of overlapping UoAs ([FCP PB 1.2.1](#)), according to the following requirements:

- a. The team shall identify and list separately each overlapping UoA that affects the given stock.
- b. When scoring PI 1.1.1 or PI 1.1.1A, the team shall take into account the impacts of overlapping UoAs affecting the given target stock.
- c. When scoring PI 2.1.1 and PI 2.2.1, the team shall only take into account the impacts of the UoA.

A4.4.4 When taking into account the impacts of overlapping UoAs, the team shall score the susceptibility attributes cumulatively.

- A4.4.4.1 To account for the impact of overlapping UoAs on a given stock, the team shall determine the contribution of each UoA on the total catch of the given stock.
- a. If precise catch data are available, the team shall assign weightings for each fishery based on known proportions of total catch of the given stock. 
 - b. If catch data are not available, the team shall use and document a qualitative information-gathering process to apply a weight to each fishery as per Table A12. 

Table A12: Weighting of fisheries

% contribution of catch	Weighting score
0–25	1
25–50	2
50–75	3
75–100	4

A4.4.5 The team shall calculate a weighted average of PSA scores for each fishery affecting the given stock in order to derive the final overall PSA score, except in the following case. 

- A4.4.5.1 If catch data cannot be estimated for a particular fishery (gear type) using either qualitative or quantitative data, the team shall base the susceptibility score for the overall PSA on the attributes of the gear with the highest susceptibility score.

Table A13: PSA susceptibility attributes and scores for fish and invertebrates

Susceptibility attribute	Low susceptibility (Low risk, score = 1)	Medium susceptibility (medium risk, score = 2)	High susceptibility (high risk, score = 3)
Areal overlap (availability): Overlap of the fishing effort with a species concentration of the stock	<10% overlap	10-30% overlap	>30% overlap
Encounterability: The position of the stock/species within the water column relative to the	Low overlap with fishing gear (low encounterability).	Medium overlap with fishing gear.	High overlap with fishing gear (high encounterability).

fishing gear, and the position of the stock/species within the habitat relative to the position of the gear					Default score for target species (Principle 1).	
Selectivity of gear type: Potential of the gear to retain species	a	Individuals < size at maturity are rarely caught.	a	Individuals < size at maturity are regularly caught.	a	Individuals < size at maturity are frequently caught.
	b	Individuals < size at maturity can escape or avoid gear.	b	Individuals < half the size at maturity can escape or avoid gear.	b	Individuals < half the size at maturity are retained by gear.
Post-capture mortality (PCM): The chance that, if captured, a species would be released and that it would be in a condition permitting subsequent survival	Evidence of majority released post-capture and survival. >66% of animals are returned alive and survive the encounter. Where observers can verify that >66% are released alive in combination with a high risk score for selectivity, the PCM score may be reduced to a low risk score (1).		Evidence of some released post-capture and survival. 33-66% of animals are returned alive and survive the encounter. Where observers can verify that 33-66% are released alive in combination with a high risk score for selectivity, the PCM score may be reduced to a medium risk score (2).		Retained species or majority dead when released. <33% of animals are returned alive and survive the encounter. Default score for retained species (Principle 1 or Principle 2).	

Table A14: PSA susceptibility attributes for birds, mammals, reptiles and amphibians

Susceptibility attribute	Low susceptibility (Low risk, score = 1)	Medium susceptibility (medium risk, score = 2)	High susceptibility (high risk, score = 3)
Areal overlap (availability): Overlap of the fishing effort with a concentration of the bird, mammal, reptile and amphibian scoring element.	<10% overlap	10-30% overlap	>30% overlap
Encounterability: The position of the bird, mammal, reptile and amphibian scoring element within the water column relative to the fishing gear, and the position of the stock/species within the habitat relative to the position of the gear.	Low overlap with fishing gear (low encounterability).	Medium overlap with fishing gear.	High overlap with fishing gear (high encounterability).
Selectivity of gear type: Potential of the gear to retain species.	If encountered, individuals are rarely caught / subject to direct effects.	If encountered, individuals are regularly caught / subject to direct effects.	If encountered, individuals are frequently caught / subject to direct effects.
Post-capture mortality (PCM): The chance that, if captured or there is a direct interaction with the gear, a species would be released and that it would be able to survive.	Evidence of majority released alive post capture and survival. >66% of animals are returned alive and survive the encounter.	Evidence of some released alive post capture and survival. 33-66% of animals are returned alive and survive the encounter.	Retained species or majority dead or low probability of survival when released. <33% of animals are returned alive and survive the encounter.

- A4.4.6 The team shall score areal overlap (availability) as follows: 
- a. The team shall generate areal overlap scores after consideration of the overlap of the fishing effort with the distribution of the stock.
 - b. If the impacts of fisheries other than the UoA are taken into account, the team shall score the areal overlap as the combined overlap of all listed fisheries with the areal concentration of a stock.
 - c. The team shall enter the resulting areal overlap risk scores into those cells in the '[MSC RBF Worksheets](#)' for all listed fisheries.
 - d. The team shall assess the concentration of species and the overlap of the fishing gear with the concentration species. 
 - e. For species with good distribution maps, the team shall score areal overlap using detailed mapping analysis (the amount of overlap between fishing effort and species stock distribution).
 - f. For species without good distribution maps, the team may use stakeholder-generated maps.
 - g. For species with behavioural responses that increase the catchability of the gear (i.e., hyperstability of CPUE with schooling behaviour) the team shall score the areal overlap as high risk (3) unless:
 - i. The impact on the population is estimated at consequence score equal or higher than 80 (medium or low risk). 
- A4.4.6.1 For birds, mammals, reptiles and amphibians, the team shall:
- a. Consider and document seasonality in the bird, mammal, reptile and amphibian scoring element distribution (e.g. use non-uniform density or occurrence maps in preference to static range maps).
 - b. Adopt a precautionary approach and base the score on the time when there is the highest potential overlap with the fishing effort.
- A4.4.6.2 For land-nesting species (e.g. birds, turtles, pinnipeds), if information on seasonal distribution is not available, the team shall consider and document the following:
- a. Whether the UoA operates in proximity to breeding colonies at the time of breeding.
 - b. Information on the foraging radius and/or habitat preference for breeding and non-breeding bird, mammal, reptile and amphibian scoring elements.
- A4.4.7 The team shall score encounterability as follows: 
- a. The team shall generate encounterability scores after consideration of the likelihood that a species will encounter fishing gear that is deployed within the geographic range of that species.
 - b. If the impacts of fisheries other than the UoA are taken into account, the team shall score encounterability as the combined encounterability of all listed fisheries.

- c. The team shall enter the resulting encounterability risk scores into those cells in the 'MSC RBF Worksheets' for all listed fisheries.
- d. When scoring encounterability the team shall consider the concentration of species and the overlap of the fishing gear with the concentration species.
- e. The team shall consider the deployment of fishing gear in relation to the adult habitat of each species.
- f. The team shall consider if any aspects of the fishing operations would lead to an increased likelihood for encountering the species, such as use of bait or offal discharge.

A4.4.8 The team shall score selectivity as follows:

- a. The team shall generate a selectivity score for each gear type within the UoA after consideration of the potential of gear to capture or retain the species that encounters the fishing gear.
- b. If the impacts of fisheries other than the UoA are taken into account, the team shall score selectivity for each gear type of all listed fisheries.
- c. The team shall determine the selectivity risk scores for each combination of gear type and species within the UoA individually and enter them into the 'MSC RBF Worksheets'.
- d. In Table A13 the team shall score gear selectivity using the 2 categories. 
 - i. If categories(a) and (b) indicate different risk scores, the team shall assign a score as the average of the 2 categories, rounded up to the nearest whole number on the 1:3 scale.
- e. The team shall interpret the terms “rarely”, “regularly” and “frequently” in Table A13-Table A14 as follows:
 - i. “Rarely” to mean that the capture of individuals occurs in less than 5% few gear deployments.
 - ii. “Regularly” to mean that the capture of individuals occurs in 5% to 50% of the gear deployments.
 - iii. “Frequently” to mean that the capture of individuals occurs in more than 50% of gear deployments.
- f. In Table A13, the team shall interpret the term “individuals” to mean those smaller than the size at maturity.

A4.4.8.1 For birds, mammals, reptiles and amphibians, the team shall assign a risk score considering both the ability for the gear to capture or impact an adult individual if encountered.

- a. The team shall interpret the term ‘direct effects’ to mean injuries and mortalities due to interaction with fishing operations, including fishing gear, vessels, and associated equipment.
 - i. This includes mortalities that occur after live release or interaction with the fishing operation, including those interactions that are not recorded.

- A4.4.9** The team shall score Post Capture Mortality (PCM) as follows:
- The team shall use its knowledge of species biology and fishing practice together with independent field observations to assess the chance that, if captured, a species would be released and that it would be able to survive. 
 - If the impacts of fisheries other than the UoA are taken into account, the team shall score the post-capture mortality for each gear type of all listed fisheries.
 - The team shall determine the PCM risk scores for each combination of gear type and species within the UoA individually and enter them into the '[MSC RBF Worksheets](#)'.
 - In the absence of observer data or other verified field observations made during commercial fishing operations that indicate the individuals are released alive and post-release survivorship is high, the team shall score the PCM of all species as default high risk (3).
 - The team may reduce the PCM score from a default high risk score to a lower (medium or low) risk score if:
 - A high risk score (3) has been allocated for the selectivity (relevant for fish and invertebrate scoring elements only), and
 - More than 66% (low risk score) or more than 33% (medium risk score) of the captured animals are returned alive and survive the encounter.

A4.5 PSA Step 3: Determine the PSA score

- A4.5.1** The team shall use the '[MSC RBF Worksheets](#)' to calculate the overall productivity and susceptibility risk scores (PSA score). 

A5 Scoring the UoA using the RBF for Species Performance Indicators (PIs 1.1.1, 2.1.1, and 2.2.1)

A5.1 Scoring species PIs

- A5.1.1** When scoring PI 1.1.1 or PI1.1.1A, the team shall use both the CA and PSA to produce an overall score for each scoring element.
- A5.1.1.1** The team shall use the '[MSC RBF Worksheets](#)' to calculate the equivalent MSC scores for each scoring element. 
- A5.1.1.2** The team shall assign the overall score for the scoring element as per Table A15. 

Table A15: Rules for using CA and PSA scores

CA	PSA	Rule
80 or 100	≥80	Score assigned shall be at the midway point between CA and PSA scores.
80 or 100	≥60 and <80	Score assigned for PI shall be less than 80, as near to the midway point between CA and PSA scores as possible.
80 or 100	<60	Fail
60	≥80	Score assigned for PI shall be less than 80, as near to the midway point between CA and PSA scores as possible.

60	≥60 and <80	Score assigned for PI shall be at the midway point between CA and PSA scores.
60	<60	Fail
<60	≥80	Fail
<60	≥60 and <80	Fail
<60	<60	Fail

A5.1.2 When scoring PIs 2.1.1 and 2.2.1, the team shall use the PSA score to inform and justify the determination of whether the applicable default Outcome Scoring Issue Scoring Guidepost within the relevant assessment tree is met or not met for each scoring element..

A5.1.2.1 A high-risk PSA outcome indicates that SG60 may not be met.

A5.1.2.2 A medium-risk PSA outcome indicates that SG60 is likely met but SG80 may not be met.

A5.1.2.3 A low-risk PSA outcome indicates that SG80 is likely met but SG100 may not be met.

A5.1.2.4 If no further information is available for the scoring element, then the team shall use the PSA risk outcome category converted to the Scoring Guidepost as the final determination for that element.

A5.1.2.5 If additional information is available, then the team may use it to inform and justify if a higher Scoring Guidepost than that indicated by the PSA risk outcome category, and specified in the relevant assessment tree, is fully and unambiguously met. ■

A5.2 Combining scoring elements

A5.2.1 If there is only 1 scoring element for the PI, the team shall use the score for the scoring element as the overall score for the PI.

A5.2.2 If there is a combination of both data-deficient scoring elements (scored using the RBF) and scoring elements scored using the default assessment tree, the team shall apply the requirements in FCP v4.0 7.15.5 – 6 to determine the overall score for the PI.

A5.3 Adjusting PI scores

A5.3.1 The team shall cap the final PI score for PI 2.1.1 and PI 2.2.1 if only a subset of the total number of species has been assessed using the PSA.

A5.3.1.1 If the team has only scored “main” species using the PSA (as per [A4.1.4](#)), the team shall not assign a final PI score greater than 80.

A5.3.1.2 If the team has opted to use the species-grouping option (as per [A4.1.5](#)), the team shall not assign a final PI score greater than 80.

A5.3.2 If there are no main species, and minor species are not scored using the RBF (as per [A2.1.3](#)) the team shall cap the final PI score at 80.

A5.3.3 The team shall record the CA, PSA scores (equivalent MSC score), the rationale, and MSC Scoring Guidepost in the Scoring Tables in the ‘[MSC Reporting Template](#)’.

A6 Setting conditions using the RBF for Species PIs

A6.1 PIs 1.1.1, 1.1.1A, 2.1.1, and 2.2.1

- A6.1.1 If any scoring element score is less than SG80, the team shall set a condition on that SI.
- A6.1.2 If a condition is set for a SI scored using the CA or PSA, the team shall verify that the Client Action Plan meets the following requirements: 
- a. Is capable of raising the score to the SG80 performance level,
 - b. Addresses all the scoring elements for which the score falls below SG80
 - c. Does not cause additional associated problems for other scoring elements.
- A6.1.3 The team shall not apply the RBF to the scoring element in subsequent MSC assessments if the score is below SG80 and related conditions in the preceding certification cycle remain open.
- A6.1.3.1 The RBF may be applied in subsequent MSC assessments where a related condition remains open due to accepted and justified exceptional circumstances that extended the condition deadline beyond five years.

A7 Conducting a Consequence Spatial Analysis (CSA)

A7.1 Preparation

- A7.1.1 The team shall use the 'MSC RBF Worksheets' to calculate CSA scores.
- A7.1.2 The team shall document scores and justifications for each scoring element (habitat) in the CSA justification tables in the 'MSC Reporting Template'.
- A7.1.3 The team shall conduct the CSA for each data-deficient scoring element.
- A7.1.4 The team shall apply expert judgement throughout the CSA.
- A7.1.5 When scoring, the team shall consider the full range of possible interactions associated with UOA activities.
- A7.1.6 The team shall take a precautionary approach, scoring the highest possible risk score of the relevant ranges, if: 
- a. Possible scores from UoA fishing activity or impact cut across more than 1 threshold range or more than 1 proxy range.
 - b. UoA fishing gear has been modified in a way that could increase its impact.

A7.2 Stakeholder involvement within the CSA

- A7.2.1 The team shall use input from stakeholders to:
- a. Inform the identification of the habitat(s) that are affected by the UoA.
 - b. Inform the scoring of the consequence and spatial attributes within the CSA.

A7.3 CSA Step 1: Define the habitat(s)

A7.3.1 The team shall review and list the information available about the nature and distribution of habitats associated with the “managed area”.

A7.3.1.1 The team shall interpret the term “managed area” to mean each habitat in the full area managed by the governance body(ies) responsible for fisheries management in the area(s) where the UoA operates.

A7.3.1.2 The team shall refer to the [MSC Fisheries Standard SA3.12.6](#) and the subclauses to further interpret the term “managed area”.

A7.3.1.3 Each habitat within the UoA shall be treated as a scoring element.

A7.3.2 The team shall categorise habitats in the UoA on the basis of their substratum, geomorphology, and (characteristic) biota (SGB) characteristics (Table A16). 

A7.3.3 The team shall list the biome and features (Table A17). 

Table A16: SGB habitat nomenclature (modified from Williams et al., 2011³)

Substratum	Geomorphology	Biota
Fine (mud, sand) Mud (0.1 mm) Fine sediments(0.1-1 mm) Coarse sediments (1-4 mm)	Flat Simple surface structure Unrippled/flat Current rippled/directed scour Wave rippled	Large erect Dominated by: Large and/or erect sponges Solitary large sponges Solitary sedentary/sessile epifauna (e.g. ascidians/ bryozoans) Crinoids Corals Mixed large or erect communities
Medium Gravel/pebble (4-60 mm)	Low relief Irregular topography with mounds and depressions Rough surface structure Debris flow/rubble banks	Small erect/ encrusting/burrowing Dominated by: Small, low-encrusting sponges Small, low-standing sponges Consolidated (e.g. mussels) and unconsolidated bivalve beds (e.g. scallops) Mixed small/low-encrusting invertebrate communities Infaunal bioturbators
Large Cobble/boulders (60 mm - 3 m) Igneous, metamorphic, or sedimentary bedrock (>3 m)	Outcrop Subcrop (rock protrusions from surrounding sediment <1 m) Low-relief outcrop (<1 m)	No fauna or flora No apparent epifauna, infauna, or flora
Solid reef of biogenic origin Biogenic (substratum of biogenic calcium carbonate) Depositions of skeletal material forming coral reef base	High relief High outcrop (protrusion of consolidated substrate >1 m) Rugged surface structure	Flora Dominated by: Seagrass species

³ Williams, A., Dowdney, J., Smith, A.D.M., Hobday, A.J., and Fuller, M. (2011). Evaluating impacts of fishing on benthic habitats: A risk assessment framework applied to Australian fisheries. *Fisheries Research* 112(3):154-167.

Table A17: List of example biomes and features (modified from Williams et al., 2011)

Biome	Feature
Coastal margin (<25 m) Inner shelf (25-100 m) Outer shelf (100-200 m) Upper slope (200-700 m) Mid-slope (700-1,500 m)	Seamounts Canyons Abyss Shelf break (~150-300 m) Sediment plains Sediment terraces Escarpments Plains of scattered reef Large rocky banks

A7.4 CSA Step 2: Score the consequence attributes (Table A18)

Table A18: Consequence attributes (modified from Williams et al., 2011)

Habitat-productivity attributes	Gear-habitat interaction attributes
Regeneration of biota Natural disturbance	Removability of biota Removability of substratum Substratum hardness Substratum ruggedness Seabed slope

Regeneration of biota

- A7.4.1 The team shall score this attribute based on the rate of the recovery of biota associated with the habitat, using information on age, growth, and recolonisation of biota, if available (Table A19).
- A7.4.2 If information on age, growth, and recolonisation of associated biota is not available for the UoA, the team shall refer to comparable data from studies elsewhere.
- A7.4.2.1 In the absence of such comparable studies, the team shall use the proxies in Table A19 as a surrogate for accumulation and recovery time. 
- A7.4.3 The team shall record the “regeneration of biota” score for each habitat in the ‘[MSC RBF Worksheets](#)’.

Table A19: Scoring regeneration of biota based on age, growth, and recolonisation of biota (modified from Williams et al., 2011)

Biome	Using available data				Using surrogate when data are not available				
	Annual	Less than decadal	More than decadal	No epifauna	Small erect/ encrusting	Large erect (sponges)	Large erect (ascidians and bryozoans)	Seagrass communities/macroalgal communities / mixed faunal communities/ hard corals	Crinoids/ solitary/mixed communities/ hard and soft corals
Coastal margin (<25 m)	1	2	3	1	1	1	1	2	1
Inner shelf (25-100 m)	1	2	3	1	1	2	2	2	2
Outer shelf (100-200 m)	1	2	3	1	1	3	2	3	3
Upper slope (200-700 m)	1	2	3	1	1	3	3	3	3
Mid-slope (700-1,500 m)	1	2	3	1	2	3	3	3	3

Natural disturbance

- A7.4.4 The team shall score this attribute based on the frequency of natural disturbance that affects each habitat scoring element, if this is known (Table A20). 
- A7.4.5 If information on the frequency of natural disturbance is unavailable for a habitat scoring element, the team shall use proxies as per Table A20.
- A7.4.6 The team shall record the “natural disturbance” score derived from Table A20 for each habitat scoring element in the ‘[MSC RBF Worksheets](#)’.

Table A20: Scoring natural disturbance (modified from Williams et al., 2011)

Attribute	Score		
	1	2	3
Natural disturbance	Regular or severe natural disturbance	Irregular or moderate natural disturbance	No natural disturbance
Natural disturbance (in absence of information)	Coastal margin and shallow inner shelf (<60 m)	Deep inner shelf and outer shelf (60-200 m)	Slope (>200 m)

- A7.4.7 The team shall use Table A21 and Table A22 to score the gear-habitat interaction attributes.
- A7.4.7.1 If the UoA's gear type is not provided in Table A21 and Table A22, the team shall score the attributes using the most similar gear in terms of extent of bottom contact that is provided.
- The team shall be precautionary when determining the most similar gear type.
 - The team shall provide justification for the selection of the most similar gear type.
 - The team shall provide justification for increasing or decreasing the default gear footprint score.

Removability of biota

- A7.4.8 The team shall score this attribute based on the likelihood of attached biota being removed or killed by interactions with fishing gear (Table A21). 
- A7.4.9 The team shall consider the removability and mortality of structure-forming epibiota and bioturbating infauna.
- A7.4.10 The team shall record the “removability of biota” score for each habitat in the ‘[MSC RBF Worksheets](#)’.

Removability of substratum

- A7.4.11 The team shall score this attribute based on clast (rock fragment or grain resulting from the breakdown of larger rocks) size and likelihood of the substratum being moved (Table A21). 
- A7.4.12 The team shall consider the gear type being assessed.

A7.4.13 The team shall record the “removability of substratum” score for each habitat in the ‘[MSC RBF Worksheets](#)’.

Table A21: Scoring the removability of biota and removability of substratum attributes
(modified from Hobday et al., 2007⁴)

Gear type	Removability of biota			Removability of substratum		
	No epifauna or epifloral OR Low, robust, small (<5 cm), smooth, or flexible biota OR robust, deep-burrowing biota	Erect, medium (<30 cm), moderately rugose, or inflexible biota OR Seagrass / macroalgal communities OR moderately robust, shallow-burrowing biota	Tall, delicate, large (>30 cm high), rugose, or inflexible biota OR delicate, shallow-burrowing biota	Immovable (bedrock and boulders >3 m)	<6 cm (transferable)	6 cm - 3 m (removable)
Hand collection	1	1	1	1	1	2
Demersal longline	1	1	2	1	1	1
Handline	1	1	2	1	1	1
Trap	1	2	2	1	1	1
Bottom gill net or other entangling net	1	2	3	1	1	1
Danish seine	1	2	3	1	2	3
Demersal trawl (including pair, otter twin-rig, and otter multi-rig)	1	3	3	1	3	3
Dredge	3	3	3	1	3	3

Substratum hardness

⁴ Hobday, A. J., Smith, A., Webb, H., Daley, R., Wayte, S., Bulman, C., Dowdney, J., Williams, A., Sporcic, M., Dambacher, J., Fuller, M. and Walker, T. (2007). Ecological risk assessment for the effects of fishing: methodology. Report R04/1072 for the Australian Fisheries Management Authority, Canberra.

- A7.4.14 The team shall score attribute based on the composition of the substratum for each habitat scoring element and the UoA gear type (Table A22). 
- A7.4.15 The team shall record the “substratum hardness” score for each habitat in the ‘[MSC RBF Worksheets](#)’.

Substratum ruggedness

- A7.4.16 The team shall score this attribute based on the ruggedness of the substratum and the UoA gear type (Table A22). 
- A7.4.17 The team shall record the “substratum ruggedness” score for each habitat in the ‘[MSC RBF Worksheets](#)’.

Seabed slope

- A7.4.18 The team shall score this attribute based on the seabed slope and the UoA gear type (Table A22). 
- A7.4.19 The team shall record the “seabed slope” score for each habitat in the ‘[MSC RBF Worksheets](#)’.

Aggregate consequence score

- A7.4.20 The team shall determine the aggregate consequence score for each habitat by using the ‘[MSC RBF Worksheets](#)’.

Table A22: Scoring the substratum hardness, substratum ruggedness, and seabed slope attributes (modified from Hobday et al., 2007)

Gear type	Substratum hardness			Substratum ruggedness			Seabed slope		
	Hard (igneous, sedimentary, or heavily consolidated rock types)	Soft (lightly consolidated, weathered, or biogenic)	Sediments (unconsoli- dated)	High relief (>1 m), high outcrop, or rugged surface structure (cracks, crevices, overhangs, large boulders, rock walls)	Low relief (<1.0 m), rough surface structure (rubble, small boulders, rock edges), subcrop, or low outcrop	Flat, simple surface structure (mounds, undulations, ripples), current rippled, wave rippled, or irregular	Low degree (<1): Plains in coastal margin, inner or outer shelf or mid- slope OR terraces in mid-slope OR rocky banks/ fringing reefs in coastal margin, inner or outer shelf, or upper or mid-slope	Medium degree (1- 10): Terraces in outer shelf or upper slope	High degree (>10): Canyons in outer shelf, or upper or mid-slope OR seamounts/ bioherms in coastal margin, inner shelf, or upper or mid-slope
Hand collection	1	2	3	3	3	1	1	2	3
Demersal longline	1	2	3	2	3	3	1	2	3
Handline	1	2	3	2	3	3	1	2	3
Trap	1	2	3	2	3	3	1	2	3
Bottom gill net or other entangling net	1	2	3	2	3	3	1	2	3

Gear type	Substratum hardness			Substratum ruggedness			Seabed slope		
Danish seine	1	2	3	1	1	3	1	2	3
Demersal trawl (including, pair, otter twin-rig, and otter multi- rig)	1	2	3	1	3	3	1	2	3
Dredge	1	2	3	1	1	3	1	2	3

A7.5 CSA Step 3: Score the spatial attributes

Gear footprint

- A7.5.1 The team shall score this attribute based on the gear's potential for disturbance and the number of encounters required to produce an impact on a habitat scoring element, taking into account the size, weight, and mobility of individual gears and the footprint of the gears (Table A23). 
- A7.5.2 The team shall apply A7.4.7.1 and its subclauses here.
- A7.5.3 The team shall record the gear footprint score for each habitat in the 'MSC RBF Worksheets'.

Table A23: Scoring the gear footprint attribute (modified from Hobday et al., 2007)

Gear type	Gear footprint score
Hand collection	1
Handline	1
Trap	1
Demersal longline	2
Bottom gill net or other entangling net	2
Danish seine	2
Demersal trawl (including pair, otter twin-rig, and otter multi-rig)	3
Dredge	3

Spatial overlap

- A7.5.4 The team shall score this attribute based on spatial overlap between the habitat scoring element distribution within the “managed area” (see [A7.3.1.1](#) and [A7.3.1.2](#)) and the distribution of areas fished by the UoA (Table A24). 
- A7.5.5 The team shall record the spatial overlap score for each habitat in the 'MSC RBF Worksheets'.

Likelihood of encounter

- A7.5.6 The team shall score this attribute based on the likelihood that a fishing gear will encounter the habitat within the “managed area” (see [A7.3.1.1](#) and [A7.3.1.2](#)), taking into account the nature and deployment of the fishing gear and the possibility of its interaction with the habitat (Table A24). 
- A7.5.7 The team shall record the encounterability score for each habitat in the 'MSC RBF Worksheets'.

Aggregate spatial score

- A7.5.8 The team shall determine the aggregate spatial score by using the 'MSC RBF Worksheets'.

Table A24: Scoring spatial attributes (modified from Williams et al., 2011)

Spatial attribute	Score					
	0.5	1	1.5	2	2.5	3
Spatial overlap	UoA overlap with a habitat is ≤15%	UoA overlap with a habitat is ≤30%	UoA overlap with a habitat is ≤45%	UoA overlap with a habitat is ≤60%	UoA overlap with a habitat is ≤75%	UoA overlap with a habitat is >75%
Likelihood of encounter	Likelihood of encounter is ≤15%	Likelihood of encounter is ≤30%	Likelihood of encounter is ≤45%	Likelihood of encounter is ≤60%	Likelihood of encounter is ≤75%	Likelihood of encounter is >75%

A7.6 CSA Step 4: Determine the CSA score and equivalent MSC Scoring Guidepost

- A7.6.1 The team shall use the ‘[MSC RBF Worksheets](#)’ to calculate the overall consequence and spatial scores, and the CSA score for each scoring element (habitat).
- A7.6.2 The team shall use the CSA score to inform and justify the determination of whether the applicable default Outcome Scoring Issue Scoring Guidepost within the relevant assessment tree is met or not met for each scoring element.
- A7.6.2.1 A high-risk CSA outcome indicates that SG60 may not be met.
- A7.6.2.2 A medium-risk CSA outcome indicates that SG60 is likely met but SG80 may not be met.
- A7.6.2.3 A low-risk CSA outcome indicates that SG80 is likely met but SG100 may not be met.
- A7.6.2.4 If no further information is available for the scoring element, then the team shall use the CSA risk outcome category converted to the Scoring Guidepost as the final determination for that element.
- A7.6.2.5 If additional information is available, then the team may use it to inform and justify if a higher Scoring Guidepost than that indicated by the CSA risk outcome category, and specified in the default assessment tree, is fully and unambiguously met. 
- A7.6.3 If there is only 1 scoring element, the team shall use the score for the scoring element as the final PI score.
- A7.6.4 If there is a combination of both data-deficient scoring elements (scored using the RBF) and scoring elements scored using the default assessment tree, the team shall apply the requirements in FCP v4.0. 7.15.5 – 6 to determine the overall score for the PI.
- A7.6.5 The team shall record the CSA scores, the rationale, and overall MSC Scoring Guidepost in the Scoring Tables in the ‘[MSC Reporting Template](#)’.

A7.7 Setting conditions using the CSA

- A7.7.1 If any scoring element score is less than SG80, the team shall set a condition on the SI. 

- A7.7.1.1 If a condition is set on a SI that was scored using the CSA, the team shall make sure that the proposed Client Action Plan meets the following criteria:
- a. Is capable of raising the score to the SG80 performance level.
 - b. Addresses all the scoring elements for which the score was below SG80.
 - c. Does not cause additional associated problems for other scoring elements.

A7.7.2 The team shall not apply the RBF to the scoring element in subsequent MSC assessments if the score is below SG80 and related conditions in the preceding certification cycle remain open.

- A7.7.2.1 The RBF may be applied in subsequent MSC assessments where a related condition remains open due to accepted and justified exceptional circumstances that extend the condition deadline beyond five years.

A8 Conducting a Scale Intensity Consequence Analysis (SICA)

A8.1 Preparation

- A8.1.1 The team shall conduct a SICA for each data-deficient scoring element identified within PI 2.4.1.

A8.2 Stakeholder involvement within the SICA

- A8.2.1 The team shall use input from stakeholders to:
- a. Inform the identification of ecosystems that are affected by the UoA.
 - b. Provide information suitable for the qualitative evaluation of the risks that the fishing activity poses to the ecosystem.
 - c. Inform the scoring the spatial and temporal scales and the intensity of the fishing activity.
 - d. Inform the scoring the consequence for the ecosystem.

A8.3 SICA Step 1: Prepare SICA scoring template for each data-deficient scoring element

- A8.3.1 The team shall document scores and justifications in the SICA scoring template (Table A25), in the '[MSC Reporting Template](#)'.

Table A25: SICA scoring template for PI 2.4.1 Ecosystem

Performance Indicator PI 2.4.1 Ecosystem outcome	Spatial scale of fishing activity	Temporal scale of fishing activity	Intensity of fishing activity	Relevant subcomponents	Consequence score
Fishery name and UoA				Species composition	
				Functional group composition	
				Distribution of the community	
				Trophic size/structure	
Justification for spatial scale of fishing activity					
Justification for temporal scale of fishing activity					
Justification for intensity of fishing activity					
Justification for consequence score					

A8.4 SICA Step 2: Score spatial scale

- A8.4.1 The team shall work with stakeholders to assign a spatial scale score.
- A8.4.2 The team shall use the greatest spatial extent to determine the spatial scale score for the overlap of the ecosystem with the fishing activity (Table A26). 
- A8.4.2.1 The team shall only take into account the overlap of the ecosystem with the fishing activity of the UoA.
- A8.4.3 The team shall record the score for each component and the justification in the SICA scoring template (Table A25).

Table A26: SICA spatial scale scores

<1%	1-15%	16-30%	31-45%	46-60%	>60%
1	2	3	4	5	6

A8.5 SICA Step 3: Score temporal scale

- A8.5.1 The team shall work with stakeholders to assign a temporal scale score.
- A8.5.2 The team shall use the highest temporal frequency to determine the temporal scale score for the overlap of the ecosystem with the fishing activity (Table A27). 
- A8.5.2.1 The team shall only take into account the number of the days of the fishing activity of the UoA.
- A8.5.3 The team shall record the score for each component and the justification in the SICA scoring template (Table A25).

Table A27: SICA temporal scale scores

1 day every 10 years or so	1 day every few years	1-100 days per year	101-200 days per year	201-300 days per year	301-365 days per year
1	2	3	4	5	6

A8.6 SICA Step 4: Score the intensity

- A8.6.1 The team shall work with stakeholders to assign a score for intensity. 
- A8.6.1.1 The team shall base the score for the intensity of the activity on the spatial and temporal scale of the activity, its nature and extent.
- A8.6.1.2 The team shall take into account the direct impacts of the fishing activity to the ecosystem under evaluation (Table A28). 
- A8.6.2 The team shall record the score for each component and the justification in the SICA scoring template (Table A25).

Table A28: SICA intensity scores

Level	Score	Description
Negligible	1	Remote likelihood of detection of fishing activity at any spatial or temporal scale.

Minor	2	Activity occurs rarely or in few restricted locations and detectability of fishing activity even at these scales is rare.
Moderate	3	Moderate detectability of fishing activity at broader spatial scale, or obvious but local detectability.
Major	4	Detectable evidence of fishing activity occurs reasonably often at broad spatial scale.
Severe	5	Occasional but very obvious detectability or widespread and frequent evidence of fishing activity.
Catastrophic	6	Local to regional evidence of fishing activity or continual and widespread detectability.

A8.7 SICA Step 5: Identify the most vulnerable subcomponent of the ecosystem and score the consequence of the activity on the subcomponent

- A8.7.1 The team shall work with stakeholders to select the single subcomponent on which the fishing activity is having the most impact. 
- A8.7.2 When choosing which subcomponent to score, the team shall recognise that different subcomponents may be proxies for measuring the same effect but are much easier to observe and score on a qualitative basis.
- A8.7.3 The team shall score the consequence of the activity using the SICA consequence (Table A29).
- A8.7.4 The team shall base the consequence score on information provided by all stakeholders and the team's expert judgement.
- A8.7.4.1 The team shall take the scale and intensity scores into account. 
- A8.7.4.2 If there is no agreement between stakeholders, the team shall use the consequence category with the lowest score (60, 80 or 100).
- A8.7.4.3 If there is limited or no information, the team shall consider the consequence risk as high and assign a score of 60.
- A8.7.5 The team shall record the consequence score as fail if the UoA does not meet the performance levels in consequence category 60.
- A8.7.6 When assessing "changes" to subcomponents, the team shall only consider changes due to fishing activities.
- A8.7.7 The team shall record the consequence score and justification in the SICA scoring template (Table A25).

Table A29: SICA consequence score

Subcomponent	Consequence category			
	Fail	60	80	100
Species composition	Consequence is higher risk than 60 level.	Detectable changes to the community species composition without a major change in function (no loss of function). Changes to species composition up to 10%. Time to recover from impact on the scale of several to 20 years.	Impacted species do not play a keystone role (including trophic cascade impact). Only minor changes in relative abundance of other constituents. Changes of species composition up to 5%. Time to recover from impact up to 5 years.	Interactions may be occurring that affect the internal dynamics of communities, leading to change in species composition not detectable against natural variation.
Functional group composition		Changes in relative abundance of community constituents up to 10% chance of flipping to an alternate state/ trophic cascade.	Minor changes in relative abundance of community constituents up to 5%.	Interactions that affect the internal dynamics of communities leading to change in functional group composition not detectable against natural variation.
Distribution of the community		Detectable change in geographic range of communities with some impact on community dynamics. Change in geographic range up to 10% of original. Time to recover from impact on the scale of several to twenty years.	Possible detectable change in geographic range of communities but minimal impact on community dynamics change in geographic range up to 5% of original.	Interactions that affect the distribution of communities unlikely to be detectable against natural variation.
Trophic/size structure		Changes in mean trophic level and biomass/number in each size class up to 10%. Time to recover from impact on the scale of several to 20 years.	Change in mean trophic level and biomass/number in each size class up to 5%.	Changes that affect the internal dynamics unlikely to be detectable against natural variation.

A8.8 Scoring PI 2.4.1 using the RBF

- A8.8.1 The team shall use the SICA score to determine the final score for PI 2.4.1.
- A8.8.2 The team shall consider whether there is additional information to score the PI.
 - A8.8.2.1 If there is no additional information, the team shall apply the converted score directly to the PI with the accompanying scoring template and a rationale provided as justification.
 - A8.8.2.2 If there is additional information that justifies modifying the MSC score either upwards or downwards by a maximum of 10 points, the team shall use this information to reach the final MSC score for the PI. 
 - A8.8.2.3 The team shall use all information that is available on the UoA to inform the assessment.
 - A8.8.2.4 The team shall provide the justification for any score modification.
 - A8.8.2.5 The team shall record all changes to the score and rationale for the changes.
- A8.8.3 The team shall record the final PI score in the SICA table in the '[MSC Reporting Template](#)'.

A8.9 Setting conditions using the RBF (PI 2.4.1)

- A8.9.1 If any score is less than SG80, the team shall set a condition on that SI.
 - A8.9.1.1 If a condition is set for a SI that was scored using the SICA, the team shall make sure that the Client Action Plan proposed by the fishery client is capable of raising the score to SG80.
 - A8.9.1.2 The team shall only apply the RBF to the UoA in subsequent MSC assessments if the score is SG80 or above at the point of entering reassessment.

End of Tool A: Risk-Based Framework

Guidance for Tool A: Risk-Based Framework

GA1 Introduction to the Risk-Based Framework (RBF) ▲

The FAO Guidelines on Ecolabelling for Fisheries and Fisheries Products from Marine Capture Fisheries provided the conceptual basis for the adoption of a risk-based approach to the evaluation of fisheries against certain PIs in circumstances where information is inadequate to evaluate those PIs conventionally.

In paragraph 32, the FAO guidelines state:

“...the use of less elaborate methods for assessment of stocks should not preclude fisheries from possible certification for ecolabelling”. It goes on to note “...to the extent that the application of such methods results in greater uncertainty about the state of the ‘stock under consideration’, more precautionary approaches to managing such resources will be required which may necessitate lower levels of utilisation of the resource”.

The inference is that in the absence of detailed scientific information on fishery impacts and providing the existence of tools that provide a qualitative or semi-quantitative indication of the risk inherent in a fishery, it should be possible to assess such a fishery for certification based on the extent to which fishing activity is demonstrably “precautionary” or of “less risk”.

The MSC adopted an approach that considers a combination of risk-based indicators to arrive at a risk score that translates to a parallel MSC scoring guidepost. The risk-based indicators used in this process include qualitative and semi-quantitative proxies that assess the impact of fishing activity or correspond with the level of utilisation of the resource. In addition, the team should adopt the worst-case scenario approach to scoring the risk indicators in the absence of credible evidence, information or logical reasoning to the contrary.

In the event of the RBF being used for a scoring element for a specific SI, the likelihood of being scored high risk and of receiving a low MSC scoring guidepost on the specified indicator increases with increasing scale and intensity of utilisation of resources in the fishery. While the RBF allows the use of more qualitative information obtained in a stakeholder consultation process, increased uncertainty around the information or evidence used, or the lack of consensus on information obtained in the process will result in the most cautious (worst plausible) scoring guidepost being applied, furthering the likelihood of lower MSC scores.

The MSC’s intention in allowing the use of a risk-based approach is to ensure that its assessment process is accessible to data-deficient fisheries that are readily demonstrated as operating in a precautionary manner.

Implicit in the approach is a recognition that fisheries operating at relatively high levels of utilisation pose a greater risk to the ecological components with which they interact and that the assessment and management of such risks must be underpinned by comprehensive scientific information.

The MSC is aware of the existence of other risk-based analysis tools, as well as the fact that the development of these tools is a continuous process. The MSC has not calibrated any alternative risk-based approaches against the default assessment tree but would encourage interested parties to consider calibration of such equivalent risk-based approaches against the SGs in the default assessment tree.

The precaution built into the RBF methods creates an incentive to use the conventional process when data is available.

GA1.1 Applying the RBF in scoring different PIs ▲

Background

The RBF is designed for use in association with the default tree for Principles 1 and 2. The RBF was adopted by the MSC to enable scoring of fisheries in data-deficient situations, particularly for the outcome PIs associated with Principles 1 and 2.

The team may apply the RBF to the whole PI if the team determines that all scoring elements are data-deficient.

For Principle 1 PIs, the team usually scores only 1 scoring element (target species of the fishery), but under Principle 2, the team may score a range of fish and invertebrate species, bird, mammal, reptile and amphibian species, habitats, or ecosystems.

There may be UoAs that contain both data-deficient and non-data-deficient scoring elements (e.g. different fish and invertebrate species).

GA1.1.2 RBF methodologies ▲

The RBF includes a set of methods for assessing the risk to each of the ecological components from activities associated with the UoA. The methods range in complexity and data requirements from a system based on expert judgment, to a semi-quantitative analysis to assess potential risk. Each of the methods provides a risk-based estimate of the direct effects of the UoA on a data-deficient scoring element being scored against an outcome PI. These risk-based estimates are related to the specific Scoring Guideposts used to assess the performance of the UoA against the outcome PI for a component.

The robustness of these methodologies relies heavily on the inputs of a suitably broad stakeholder group with a good balance of knowledge about the UoA and its impacts on ecological components. Table GA1 below provides a description of the 4 methodologies within the RBF.

Table GA1: Description of methodologies within the RBF

Methodology	Description
Consequence Analysis (CA)	The CA is a semi-quantitative analysis that assesses the consequence of fishing activity on a particular species subcomponent. The CA is partly based on the structured collection of qualitative information from a diverse group of stakeholders, as well as using information on proxies that estimate changes to the relevant subcomponent in a fishery.
Productivity Susceptibility Analysis (PSA)	The PSA uses information about the productivity and susceptibility of each species to individually score a set of attributes using pre-established PSA tables. Any attribute for which there is insufficient data is automatically assigned the highest risk score: at least some of information is needed to demonstrate low risk in the fishery.
Consequence Spatial Analysis (CSA)	The CSA uses information about the consequence of fishing activities and spatial distribution of habitat types to individually score a set of attributes using pre-established CSA tables. Any attribute for which there is insufficient data is automatically assigned the highest risk score: at least some level of information is needed to demonstrate low risk in the fishery.
Scale Intensity Consequence Analysis (SICA)	The SICA is a qualitative analysis that aims to identify which activities lead to a significant impact on any ecosystem. A SICA is partly based on the

	structured collection of qualitative information pertaining to the PI in question from a diverse group of stakeholders.
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GA1.1.3 PIs scored using the RBF ▲

Table GA2 provides guidance about which RBF methodologies the team may use to score outcome PIs and the implications for scoring other PIs.

Table GA2: Guidance on RBF methodologies applicable to scoring outcome PIs and implications for other PIs

PI		RBF applicability
1.1.1 & 1.1.1A	Stock status	Both CA and PSA applicable.
1.1.2	Stock rebuilding	The RBF is designed for use in cases where direct measures of stock status, such as estimates of biomass, are not available. There is no direct measure to determine whether the stock is actually depleted and would need to consider rebuilding measures under PI 1.1.2 therefore it is not scored if using the RBF. What is known after scoring PI 1.1.1(A) using the RBF is the risk of the stock being fished such that recruitment would be impaired.
1.2.1	Harvest strategy	RBF not applicable.
1.2.2	Harvest control rules and tools	RBF not applicable.
1.2.3	Information and monitoring	RBF not applicable.
1.2.4	Assessment of stock status	For data-limited fisheries the application of the RBF may be the only “assessment of stock status” available.
2.1.1	Fish and invertebrate species outcome	Only PSA applicable.
2.1.2	Fish and invertebrate species management	RBF not applicable.
2.1.3	Fish and invertebrate species information	RBF not applicable.
2.2.1	Bird, mammal, reptile and amphibian species outcome	Only PSA applicable.
2.2.2	Bird, mammal, reptile and amphibian species management	RBF not applicable.

PI		RBF applicability
2.2.3	Bird, mammal, reptile and amphibian species information	RBF not applicable.
2.3.1	Habitats outcome	Only CSA applicable.
2.3.2	Habitats management	RBF not applicable.
2.3.3	Habitats information	RBF not applicable.
2.4.1	Ecosystem outcome	Only SICA applicable.
2.4.2	Ecosystem management	RBF not applicable.
2.4.3	Ecosystem information	RBF not applicable.
	Principle 3	The RBF is designed to allow the team to determine the level of risk that a fishery is posing undue harm to a species, habitat, or ecosystem. The RBF does not apply to Principle 3.

GA1.1.3 and guidance to Table A1 ▲

When assessing “acceptable levels” in management PIs, the team should be guided by the language on assessing informal approaches against PI 1.2.1 (GSA 2.4). Data-deficient UoAs might not have a management strategy in place designed to keep a species or habitat above the appropriate biological limit. The team should evaluate whether the strategy aims to maintain or reduce the current susceptibility or consequence score and give confidence that the UoA is operating at a low-risk level. The team should determine the equivalence of the fisheries management regime with the specific scoring issues in 2.1.2, 2.2.2 and 2.3.2.

GA2 Stakeholder involvement in RBF

GA2.1 Announcing the RBF ▲

If the team decide to use the RBF for a scoring element after the fishery assessment is announced (FCP Section 7.10), the team should ensure there is additional communication to stakeholders at that time and that the ‘Fishery Announcement Template’ is updated. If it is not clear whether a scoring element meets criteria in Section 5.2, the team should announce the possibility of using the RBF at the fishery announcement stage. In this case, and to improve efficiency of the assessment process, the CAB should announce use of the RBF at fishery announcement and plan the site visit as if it were an RBF assessment as set out in the Toolbox. If information is found at the site visit that indicates the RBF is not necessary, the CAB may proceed with the default assessment tree for the scoring element.

GA2.1.2.a Text to inform stakeholders ▲

The MSC’s intent for the recommended text is to encourage a broad range of stakeholders to participate in site visits and to provide some advance notice on the nature of the RBF approach.

Stakeholders should be informed of the risk assessment process and given the opportunity to participate.

GA2.2 Information gathering ▲

The team should use existing data and reports, if available, to identify target stocks, fish and invertebrate species, bird, mammal, reptile and amphibian species, habitats and ecosystems that may be affected by the UoA.

The team may use expert judgement and anecdotal evidence to compile preliminary lists of information. The team should then consult with stakeholders, either individually or at fishery management meetings, on the preliminary list. The team should document and justify any additions to or deletions from the preliminary list of information.

GA2.2.2.a Management arrangements ▲

For example, information of management arrangements, such as quotas, limited entry, gear restrictions, spatial closures, depth limits, etc.

GA2.2.2.f Information about UoA/habitats ▲

If there is limited information available about habitat(s) encountered by the UoA, the team may use local knowledge and/or participatory methods to define the habitat(s).

Example

For example, if there is no detailed understanding of a habitat's substratum, geomorphology, and (characteristic) biota (SGB), the team may use other sources of local information, such as data collected by local dive operators, to support the determination of habitats. Furthermore, the team could conduct RBF stakeholder workshops to determine, for example, biome classification or depth ranges of habitats using participatory methods to gather stakeholder knowledge.

GA2.3 Stakeholder consultation ▲

The team should plan the stakeholder engagement process prior to the site visit to ensure effective participation of stakeholders. Early identification of stakeholders is vital to ensuring effective consultation during the assessment process. The team should identify stakeholders both through contacts made available by the fishery client and via active stakeholder engagement methods. The choice of which method(s) to use depends on the circumstance of the UoA.

Stakeholder consultation with a suitably broad stakeholder group with a good balance of knowledge about the fishery is critical in a risk based assessment, particularly at the qualitative (CA/SICA) level of an assessment. Stakeholders provide expert judgement, local knowledge, hands-on experience, fishery-specific and ecological knowledge and raise issues that may not be covered in material provided to the team.

The team may organise stakeholder consultation using a number of approaches: workshops, focus groups, separate meetings, surveys or a blended approach. The team should consider the following factors when deciding the format and structure of consultation:

- The number of PIs that are being assessed using the RBF. It might be better to hold a separate RBF workshop with those who have information relevant to the PIs with other stakeholders attending a different meeting(s).
- Stakeholder dynamics within the group, which will affect who should meet together and who should meet separately.

- There may be conflicting opinions among group members. It might be useful to allow these opinions to be shared to help the team draw conclusions from the stakeholders.

GA3 Conducting a Consequence Analysis (CA)

GA3.1 Preparation

GA3.1.2 How to complete a CA template ▲

The team may do this by defining each species as a separate UoA or by scoring the species as separate scoring elements within a combined UoA.

GA3.1.3 CA scoring template ▲

Table GA3 provides an example of how to complete a CA template.

Table GA3: Example of CA score and justification

Principle 1: Stock status outcome	Scoring element	Consequence subcomponents	Consequence score
XXX scallop fishery	<i>Placopecten magellanicus</i>	Population size	60
		Reproductive capacity	
		Age/size/sex structure	
		Geographic range	
Justification for most vulnerable subcomponent	Population size was considered the most vulnerable subcomponent based in the impact of exploitation patterns on biomass.		
Justification for consequence score	Information on fleet structure, fishing area and exploitation rates indicate that the stock is exploited at full exploitation rate. However, trends in exploitation rates, biomass and recruitment indicate that fishing is not adversely damaging recruitment in the long term. As the fishery is defined as fully developed and operating at full capacity it cannot be concluded that its impact on population size is minimal or its impact on dynamics is none. Indicators used are: - Fleet structure: There are 3 scallop fleets operating in the area: the AAA, BBB and CCC fleets. The AAA fleet, of which scallop fishing is the primary activity, has access to the whole area and is subject to quota limits and seasons. The BBB and CCC fleets have access to a portion of the area. - Exploitation rates: Management aims for exploitation rates of 15%, considered as the exploitation rate that will not pose a risk on the productivity of the scallop population. Exploitation rates have been maintained generally at consistent levels with this management target. - Fishing area and seasonality: Detailed distributional information of the AAA fleet's fishing effort is collected on a routine basis. - Overall approach to scoring the AAA stock/biological unit: The scallop biological unit/stock was defined as area XXX. Therefore PI 1.1.1 was scored by considering scallops in the area XXX as a single stock. This approach was considered appropriate due to the biology of scallops.		

GA3.3 Determine the CA score

GA3.3.1 “Human-induced impacts” ▲

The team should refer to the [MSC Fisheries Standard GSA2.2.7](#) for guidance human-induced impacts.

GA3.3.2 Examples of indicator (proxy) data to score consequence ▲

Table GA4 provides some examples of indicator (proxy) trend data that the team may use to score consequence. The list is not exhaustive but seeks to give an indication of the types of indicator data needed to score the subcomponents.

The team may support the interpretation of indicator and trend data with other information known about the UoA and the expert judgment of the team.

Table GA4: Examples of indicator (proxy) data to score consequence

Subcomponent	Indicator/Proxies
Population size	Catch, effort and catch per unit effort (CPUE) time-series. Sex ratio in male-only fisheries.
Reproductive capacity	Size class indexes. Catch composition time-series (sex ratio).
Age/Size/Sex structure	Catch length/age index or time-series. Catch composition (sex ratio) time-series.
Geographic range	Time-series species distribution.

In the application of the Consequence Analysis, the team should determine the risk that the UoA poses on stock status without the use of reference points. Measures and trends of fishing effort, landings, exploitation rates, biomass and recruitment estimates and spawning events before recruiting to the fishery are examples of indicators that the team may use to determine the risk associated to the fishing activity. The Consequence Analysis is intended to be a measure of the risk that fishing poses to long-term recruitment dynamics.

Fisheries operating at full exploitation levels (the so-called large-scale fisheries) will likely score below the 80-mark level. The team should only score above 60 if available indicators provide evidence of recruitment not being adversely damaged. The team may score higher if fisheries are operating at low exploitation levels in relation to the size of the stock and biology of the species. The team should only score a higher CA score of up to 100, if the impact of the fishing activity cannot be differentiated from the natural variability for this population.

The team should score 80 if available information shows changes in the population subcomponent that can be reasonably attributable to the fishing activity, but these are of such a low magnitude that the impact of the fishery is considered to be minimal on the population size and dynamics.

The team should score 60 if available information shows changes to the population subcomponent attributed to the fishing activity and these changes are of such magnitude that they cannot be considered as minimal.

Examples of consequence score rationales for each subcomponent are shown below:

Examples:

Population size justification	CA score																						
Information on CPUE trends show stability over the last 20 years. Fishing mortality trends indicates that the fishery has occurred under low or very low exploitation rates relative to stock biomass. Recruitment indices showed no major changes in the last 10 years. It can be reasonably concluded that changes in the population due to fishing are of low magnitude that cannot be detectable against the natural variability of the population.	100																						
Annual production is estimated to be higher than the removals by the fishery. Analysis of CPUE time-series suggests that the fishery over 23 years has not had a significant detrimental impact on the stock, which is estimated to be still near the virgin biomass level.	80																						
Trends in catches indicate that biomass removed has been kept below any levels that could have an effect on population dynamics. Exploitation rates are estimated not to pose a risk on population size or population dynamics. The stock is considered to be above the point where recruitment could be impaired. The current catches are lower than they were 10-20 years ago.	80																						
Information on landings and CPUE trends show stability over the last 10 years.	80																						
<table><tr><td>Year</td><td>2003</td><td>2004</td><td>2005</td><td>2006</td><td>2007</td><td>2008</td><td>2009</td><td>2010</td><td>2011</td><td>2012</td></tr><tr><td>CPUE</td><td>978</td><td>900</td><td>950</td><td>925</td><td>1000</td><td>1010</td><td>975</td><td>1023</td><td>1099</td><td>1050</td></tr></table>	Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	CPUE	978	900	950	925	1000	1010	975	1023	1099	1050	
Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012													
CPUE	978	900	950	925	1000	1010	975	1023	1099	1050													
Fishing mortality trends indicate that the fishery has occurred under low exploitation rates with catch and effort decreasing over the last 10 years (due to low prices and high fuel). Recruitment indices showed no major changes in the period 2004–2012. The stock has recently increased. It cannot be concluded that changes in population due to fishing are not detectable against the natural variability of the population.																							
Information on fleet structure, fishing area and exploitation rates indicate that the stock is exploited at full exploitation rate. However, trends in exploitation rates, biomass and recruitment indicate that fishing is not adversely damaging recruitment in the long term. Surveys are used to estimate the abundance and distribution of commercial and pre-recruits. In addition to surveys, the status of the resource is evaluated from trends in CPUE from logbook and observer data. As the fishery is defined as fully developed and operating at full capacity it cannot be concluded that its impact on population size is minimal or its impact on dynamics is none.	60																						
Information on landing, effort, and fishing mortality indicates that the crab fishing is a fully developed fishery likely to be occurring at full exploitation rates. CPUE on fully recruit crab indicates a decreasing trend in abundance. However, CPUE for per recruit show that long-term recruitment dynamics are not adversely damaged.	60																						
Stock indicators on biomass show that biomass has decreased in recent years from peak levels reached in year 2005. The biomass level seems to be higher than the lowest level experienced at which recruitment was not impaired. Therefore, it can be concluded that the fishery has not adversely damaged the long-term recruitment dynamics.	60																						
Available evidence indicates that recruitment dynamics are adversely affected. Therefore, consequence is higher risk than 60. Spawning stock biomass (SSB) has continuously declined since 2001. The 2013 SSB is the lowest observed in the time-series. The fishing mortality has shown a declining trend since the mid-1980s; it has been relatively stable in recent years, but still is considered to remain high given current SSB levels. Recent recruitments have been lower than earlier in the time- series, with the 2011 recruitment being the lowest.	fail																						

Reproductive capacity justifications	CA score
A slow-growing, long-lived species (more than 40 years of age). The estimated age at 50% selectivity (22 years) is well above the age at 50% maturity (5.3 years). Individuals should therefore have more than 17 years of spawning before they enter the fishery, therefore ensuring the protection of a significant part of the adult population (survival of discards is assumed to be high). It can be concluded that the fishery has minimal impact on population size and no impact on dynamics.	80
The moderate to low exploitation rates, together with minimum landing size (MLS) that allows multiple spawning events indicates that the fishery has minimal impact on population dynamics. The status of the stock of crab in the area, informed by stock indicators on biomass and fishing mortality, is considered good.	80
The cockle stock is intensively fished (33% of the estimated biomass). Available evidence suggests that there may be a detectable change in reproductive capacity as cockles are caught in their second year of growth. The MLS implemented for this fishery allows for catching individuals in their second year of growth. A retained cockle is defined as one that is retained by a gauge having a square opening of 20 mm measured across each side. Cockles of this length are in their second year of growth and will have spawned at least once before being caught. The harvest strategy ensures that long-term recruitment dynamics is not adversely damaged by fishing.	60

Age/Size/sex structure justifications	CA score
Size frequency distribution of the species is available from a fully developed fishery, showing that recruitment is not being adversely damaged. However, the level of catch and the fleet structure do not enable a qualitative assessment to determine that the impact on population dynamics is minimal.	60
In a crab fishery, available evidence indicates that there is a detectable change in size/sex structure. However, information on abundance and recruitment indicates that long-term recruitment dynamics have not been adversely damaged. There appears to be a reduced number of large males of sufficient size to mate with the largest females, and that has the potential effect of reducing the reproductive capacity of these largest females. There is concern that reduced abundance of large male crabs may lead to sperm limitation and reduced levels of egg production if there are no males left in the population to mate with the larger females.	60

Geographic range justifications	CA score
With only 2 or 3 boats fishing, fishing effort is very low, with exploitation rates of only 1 - 2% per year, and, in some years, considerably less. Since the fishery began in 1989, it has been calculated that 1,132km ² have been swept by the gear, with most of that in the period 1990–1998. This represents only 2% of the known stock distribution area (i.e. surveyed area). During the last 5 years, fishing effort has been very low with an average annual swept area of only about 26km ² , and there is no evidence of serial depletion of grounds.	80

GA3.3.3 The difference between ‘insignificant change’, ‘possible detectable change’ and ‘detectable change’ when scoring CA ▲

Changes in population size/ intrinsic growth rate (r) are assessed by the CA. The team should review biological indicator data to assess trends. The team should assess change in relation to whether or not such change is both detectable over and above natural variability and can be attributed to the impact of the fishing activity. If the trend is beyond natural variability, the team should reflect this the

scoring and rationale.

GA4 Conducting a Productivity-Susceptibility Analysis (PSA)

GA4.1.5 Grouping species ▲

The team may interpret the term “large number of species” as more than 15 species. The team may decide to conduct a PSA on all species as it may allow for a score that is above 80 for a particular PI (as per A4.1.10 and A5.3.2.2).

GA4.1.5.1.a Example of grouping by species ▲

The team should determine the taxonomic level at which species may be grouped based on the Principle 2 species characteristics. The team should not group species higher than the family taxonomic level.

Table GA5 below represents a list of Principle 2 species in a fictional fishery. Before the site visit, the team determined that there is 1 group (with 15 species) and 8 separate species needing to be scored using the RBF for PI 2.1.1.

Table GA5: Example of grouping by species

Example: Grouping by Species

Species	Taxonomy (Order/Family)	Group
Yellowfin tuna (<i>Thunnus albacares</i>)	Perciformes/Scrombridae	Group 1
Bigeye tuna (<i>Thunnus obesus</i>)	Perciformes/Scrombridae	Group 1
Blackfin tuna (<i>Thunnus atlanticus</i>)	Perciformes/Scrombridae	Group 1
Bluefin tuna (<i>Thunnus thynnus</i>)	Perciformes/Scrombridae	Group 1
Cod (<i>Gadus morhua</i>)	Gadiformes/Gadidae	n/a
European anchovy (<i>Engraulis encrasicolus</i>)	Clupeiformes/Engraulidae	n/a
Flying fish (<i>Exocoetus obtusirostris</i>)	Beloniformes/Excoetidae	n/a
Flying halfbeak (<i>Euleptorhamphus velox</i>)	Beloniformes/Hemiramphidae	n/a
Grouper (<i>Epinephelus striatus</i>)	Perciformes/Serranidae	n/a
Porcupinefish (<i>Diodon hystrix</i>)	Tetraodontiformes/Diodontidae	n/a
Rainbow runner (<i>Elagatis bipinnulata</i>)	Perciformes/Carangidae	n/a
Remora (<i>Remora remora</i>)	Perciformes/Echeneidae	n/a
Atlantic mackerel (<i>Scomber scombrus</i>)	Perciformes/Scrombridae	Group 1
Pacific sierra (<i>Scomberomorus sierra</i>)	Perciformes/Scrombridae	Group 1

Wahoo (<i>Acanthocybium solandri</i>)	Perciformes/Scrombridae	Group 1
King mackerel (<i>Scomberomorus cavalla</i>)	Perciformes/Scrombridae	Group 1
Longtail tuna (<i>Thunnus tonggol</i>)	Perciformes/Scrombridae	Group 1
Slender tuna (<i>Allothunnus fallai</i>)	Perciformes/Scrombridae	Group 1
Bullet tuna (<i>Auxis rochei</i>)	Perciformes/Scrombridae	Group 1
Frigate tuna (<i>Auxis thazard</i>)	Perciformes/Scrombridae	Group 1
Leaping bonito (<i>Cybiosarda elegans</i>)	Perciformes/Scrombridae	Group 1
Butterfly kingfish (<i>Gasterochisma melampus</i>)	Perciformes/Scrombridae	Group 1
Atlantic bonito (<i>Sarda sarda</i>)	Perciformes/Scrombridae	Group 1

GA4.1.5.1.b Scoring groups ▲

The team may score productivity attributes ahead of the stakeholder meetings using information sources such as FishBase (fishbase.org).

The team should determine which species is most at risk qualitatively based on knowledge of inherent species vulnerability, as well as frequency of interaction with the fishery, and level of damage done (e.g. released alive vs. always killed).

The team may score more than 2 species in each taxonomic group, as appropriate.

GA4.1.8 Determining PSA - MSC score for species groups ▲

The RBF worksheet in Table GA7 shows the results of the above-mentioned example.

If there are multiple scoring elements, the team should apply the requirements in FCP 7.15.5 and 7.15.6.

Table GA6: Example of scoring most at-risk species

Species group	Representative species	PSA score	MSC score	Number of species in group	Final group score
Scrombridae	Bluefin tuna (<i>Thunnus thynnus</i>)	2.70	78.0	15	75
	Wahoo (<i>Acanthocybium solandri</i>)	2.89	71.7		

Table GA7: Scoring elements and grouping species into the RBF worksheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
1	Only main species scored?			---	Productivity Scores [1-3]												Susceptibility Scores [1-3]					PSA Score	Cumulative only									
2	Scoring element	First of each scoring element	Species Grouping only ID 'At Risk' species with associated species group	Species Grouping only Number of species in species group which this species represents	Family name	Scientific name	Common name	Species type	Fishery descriptor	Average age at maturity	Average max age	Fecundity	Average max size	Average size at Maturity	Reproductive strategy	Trophic level	Density Dependence	Total Productivity (average)	Availability	Encounterability	Selectivity		Post-capture mortality	Total (multiplicative)	Catch (tons)	Weighting	Weighted Total	Weighted PSA Score	MSC PSA-derived score	Risk Category Name	MSC scoring guidepost	
3	1	First	Species Group 1		7	Scombridae	Thunnus thynnus	Bluefin tuna	Non-invertebrate	Purse seine UoA	2	3	1	3	2	1	3	2.14	3	3	3	1	1.65	2.70					78	Med	60-79	
4	2	First	Species Group 1		8	Scombridae	Acanthocybium solan	Wahoo	Non-invertebrate	Purse seine UoA	1	2	1	2	2	1	3	1.71	3	3	2	3	2.33	2.89					72	Med	60-79	
5	3	First				Gadidae	Gadus morhua	Cod	Non-invertebrate	Purse seine UoA	1	2	1	2	2	2	3	1.86	3	3	2	2	1.88	2.64					80	Low	≥80	
6	4	First				Engraulidae	Engraulis encrasicolus	European anchovy	Non-invertebrate	Purse seine UoA	1	1	1	1	1	1	2	1.14	2	2	3	3	1.88	2.20					91	Low	≥80	
7	5	First				Excoetidae	Exocoetus obtusirostr	Flying fish	Non-invertebrate	Purse seine UoA	1	1	1	1	1	1	2	1.14	1	1	3	3	1.20	1.66					99	Low	≥80	
8	6	First				Hemiramphidae	Euleptorhamphus velo	Flying halfbeak	Non-invertebrate	Purse seine UoA	2	2	2	1	1	2	2	1.71	2	2	3	3	1.88	2.54					83	Low	≥80	
9	7	First				Serranidae	Epinephelus striatus	Grouper	Non-invertebrate	Purse seine UoA	2	2	1	2	2	2	3	2.00	2	2	3	3	1.88	2.74					77	Med	60-79	
10	8	First				Didonidae	Diodon hystrix	Porcupinefish	Non-invertebrate	Purse seine UoA	1	2	1	1	1	1	3	1.43	2	2	2	3	1.58	2.13					93	Low	≥80	
11	9	First				Carangidae	Elagatis bipinnulata	Rainbow runner	Non-invertebrate	Purse seine UoA	2	3	2	2	2	1	3	2.14	2	3	2	3	1.88	2.85					73	Med	60-79	
12	10	First				Echeneidae	Remora remora	Remora	Non-invertebrate	Purse seine UoA	3	3	3	1	2	3	2	2.43	2	3	1	3	1.43	2.82					74	Med	60-79	
13																																

GA4.3 PSA Step 1: Score the productivity attributes ▲

The level of fishing impact a species can sustain depends on the inherent productivity of the species. The productivity determines how rapidly a species can recover from depletion or impact due to fishing. The productivity of a species is determined by species attributes such as longevity, growth rate, fecundity, recruitment and natural mortality. Information about productivity attributes can be found in scientific literature and websites like FishBase (fishbase.org).

GA4.3.1 ▲

The team should review various sources of information to determine correct productivity characteristics for scoring elements being assessed under the PSA.

GA4.3.2 ▲

GA4.3.2.6 Application of PSA for birds, mammals and reptiles ▲

The team should consider the quality of the information used to generate the mean or median, where these values are provided. For example, where there are studies of only short duration used to estimate attributes such as age at first breeding or sexual maturity, it is appropriate to consider whether the species value is anomalously low for the genus. If it is, the team should score based on what is the norm for the genus (i.e. using an appropriate proxy from a closely related species), or, if not possible, be precautionary and score high risk for that attribute.

Guidance to Table A4 Productivity attributes and scores – density dependence ▲

Densatory effects (Allee effects) can arise from the reduced probability of fertilisation, and they should therefore be taken into consideration when scoring species productivity.

Densatory effects may have a profound effect on the resilience of marine invertebrates to fishing mortality, as shown in some crabs and lobsters, and often also sedentary bivalves.

The team should score the density-dependent attribute as 3 (high risk, low productivity) if the species slow down the rate of population growth at low densities (densatory dynamics). The team may score the density-dependent attribute as 1 (low risk, high productivity) if the species show compensatory dynamics at low densities because density dependence acts to stabilise the populations.

Guidance to Tables A5 and A8 ▲

Fecundity for birds

The fecundity for birds considers the number of chicks rather than the number of eggs a species is capable of producing. This is because in some families (e.g. boobies, penguins), one egg is often just an insurance egg and the species never actually fledges more than one chick even if they lay more than one egg (Anderson 1990; Lamey 1990⁵).

⁵ Anderson, D.J. (1990) Evolution of obligate siblicide in boobies. 1. A test of the insurance-egg hypothesis. *American Naturalist*, 135, 334-350.

Lamey, T.C. (1990) Hatch asynchrony and brood reduction in penguins. *Penguin biology*, pp. 399- 416. Academic Press San Diego.

Average 'optional' adult survival probability for birds and pinnipeds

The productivity tables for birds and pinnipeds (Table A55 and Table A88 respectively) contain an additional attribute on 'optional' adult survival probability. This attribute is only used for these two species groups as there is more reliable data on adult survival for these groups than for the others.

The attribute instructions indicate that the optimal average adult survival probability values should be used, if available. The optimal value represents what the species is capable of achieving biologically with healthy, stable populations (i.e. the value is not unsustainably low due to population decline driven by anthropogenic impacts). If a species is in decline due to anthropogenic impacts, the team should use either proxies from a closely related species, or, if there are no reliable values for closely related species, the team should score the attribute as high risk as per [A4.3.2.6.d](#)

For example, published estimates of adult survival for Balearic shearwater *Puffinus mauretanicus* are low relative to the genus at 0.809 and largely influenced by bycatch (Genovart et al 2016 ⁶). The adult survival values from the closely related Manx shearwater *Puffinus puffinus* is 0.93 (Schreiber and Burger 2001 ⁷). In this case, the team should use the value for the closely related species to score this attribute and provide a rationale.

GA4.4 PSA Step 2: Score the susceptibility attributes ▲

The level of fishing impact that a species can sustain depends on its vulnerability or susceptibility to capture or damage by the fishery activities. The susceptibility of a species is determined by attributes such as the degree of overlap between the distribution of the fishery and the distribution of the species; and whether the species occurs at the same depth in the water column as the fishing gear.

Susceptibility is estimated as the product of 4 independent aspects; Areal overlap (availability), encounterability, selectivity and post-capture mortality (PCM).

GA4.4.4.1.a ▲

This could be tonnage of total catch for each of the fisheries being considered.

In the '[MSC RBF Worksheets](#)' the team should manually input data on catch per gear/fishery affecting the stock (for PI 1.1.1 column W, for PI 2.1.1 and PI 2.2.1, column Y).

GA4.4.4.1.b ▲

The team should consult with stakeholders.

GA4.4.5 ▲

Example

Catch data indicates that the UoA (longline fishery) catches approximately 1000t of the target species Atlantic cod. The catch data of the gillnet fishery that also retains Atlantic cod from the same stock cannot be estimated. During the RBF stakeholder workshop stakeholders agreed that the longline catch of 1000t comprises approximately 40% of the total catch while the gillnet fishery contributes about 10% of total catch. The weighting score for the longline fishery will be 2 and the weighting score for the gillnet fishery will be 1.

⁶ Genovart, M., Arcos, J.M., Álvarez, D., McMinn, M., Meier, R., Wynn, R., Guilford, T. & Oro, D. (2016) Demography of the critically endangered Balearic shearwater: the impact of fisheries and time to extinction. *Journal of Applied Ecology*, 53, 1158–1168.

⁷ Schreiber, E. A. and Burger, J. A., eds. (2001) *Biology of marine birds*. Hoboken, USA: CRC Press.

Guidance on Table A14 Susceptibility scores for birds, mammals, reptiles and amphibians ▲

Given the highly migratory nature of marine birds, mammals and reptiles, the areal overlap of the fishery and species should take account of the highly seasonal changes in distribution of both the fishing effort and the distribution of the scoring element. For many species, distribution maps may be available based on tracking data. For example, Carneiro et al 2019⁸ provide a framework for estimating population-level density distributions of seabirds across the main life history stages for 22 species of albatross and petrels. They use this framework to compare the overlap of the distributions of these species with pelagic longline fisheries at a 5x5 degree grid on an annual and quarterly basis, identifying hotspots of fishery overlap with the species.

However, where there is an absence of accurate data on species distribution it may be more appropriate to use other methods to estimate overlap. For seabirds, Small et al 2013⁹ outline a range of approaches that may be used to estimate seabird distribution, including: 1) expert opinion; 2) use of range maps assuming homogeneous distribution; 3) range maps representing non-breeding distributions alongside a foraging radius from a breeding colony to represent breeding distribution; 4) a foraging radius from breeding colony refined according to known habitat preference; 5) a combination of range map, foraging radius and tracking data; 6) tracking data only or 7) modelling of distribution based on analysis of habitat preference. These approaches are likely to be similar for other bird, mammal, reptile and amphibian species. Small et al 2013 provide some advice when it comes to estimating seabird distribution that is also useful to consider when evaluating the areal overlap in the MSC context. This includes:

- The best available measure of foraging radius from seabird breeding colonies is likely to be the mean maximum of all trips based on tracking data.
- For species for which no tracking data exist, data substitutions with similar species should be treated with caution.
- Estimation of distribution should be at least year quarterly to account for changes in species distribution and fishing effort.
- The risk assessment should match the resolution of the species distribution to fishing effort – at a 5x5 degree resolution fine scale inaccuracies in estimating distribution may be of little consequence. However, in small, localised fisheries the information on distribution may not be of sufficient resolution.
- Experts should be invited to review the species distribution maps and refine as necessary.

Noting the above, where there is little reliable data on species distribution that takes account of heterogeneity of distribution by season or life history stage, the team should assign a more precautionary risk score for this attribute.

GA4.4.6 Areal overlap (availability)▲

⁸ Carneiro, A.P.B. [et al.] 2019. A framework for mapping the distribution of seabirds by integrating tracking, demography and phenology. *Journal of Applied Ecology* 57: 514-525.

⁹ Small, C.; Waugh, S.M.; Phillips, R.A. (2013) The justification, design and implementation of Ecological Risk Assessments of the effects of fishing on seabirds. *Marine Policy* 37: 192-199.

The areal overlap is the sum of the total percentage overlap of all fishery activity with the areal concentration of a stock. For example, if there are 2 fisheries both affecting 20% of the distribution of the species, the result would be 40% overlap, and the team should score areal overlap as high-risk.

Example: Areal overlap

A demersal species has a wide stock distribution. However, due to its preferred habitat, the species is found in the area shaded in grey for 95% of the time. Such behavioural patterns reduce the overlap between the species and the fishing activity (from 40% to ~20%) of fishery A and B (if considering the susceptibility cumulatively and this should be considered in scoring) (Figure GA1). If the species in the example showed migratory behaviour the situation would be different.

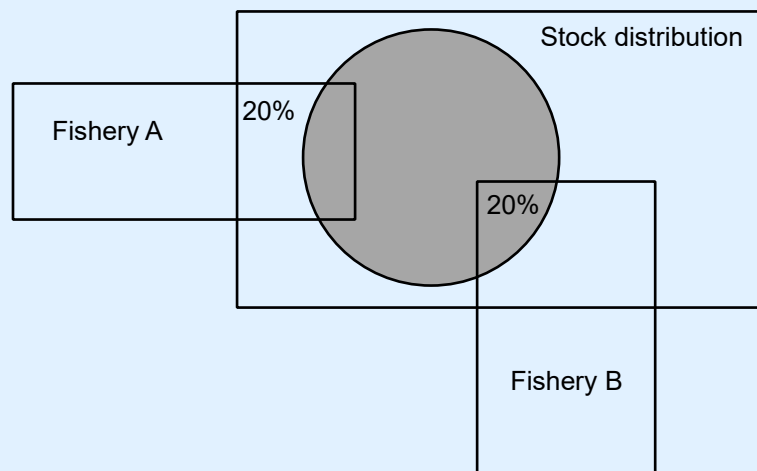


Figure GA1: Scoring areal overlap

This introduces appropriate precaution in the case where neither qualitative nor quantitative data is available.

If a fishery overlaps a large proportion of a stock distribution range the risk is high because the species has no refuge, and the potential for impact is high.

GA4.4.6.d ▲

The team should consider and document any uneven distribution or concentration of the stock, including core and marginal ranges, when estimating areal overlap.

Example

For example, for species that are known to school, and when the gear interacts with the schools, the team should score areal overlap as high-risk.

GA4.4.6.g.i Key LTL Areal Overlap ▲

The team should score fisheries that are estimated to operate at full exploitation rates or maximum sustainable levels (as defined in [A3.3.4.1](#)) as high risk for areal overlap (> 30%) due to the schooling behaviour of LTL species which increases the catchability of the gear.

GA4.4.7 Encounterability▲

The team should interpret low, medium and high risk based on the likelihood of a gear encountering a species.

If a fishery overlaps a large proportion of a stock distribution range, the team should consider the risk as high because the species has no refuge, and the potential for impact is high. Table GA8 shows an example of how to score encounterability.

The team should score encounterability as the sum of the depth range of gear types. If 2 gear types are deployed at depth ranges where more than 30% of the concentration of a species are likely to occur, the team should score encounterability as high risk.

Each fishery will have the same encounterability score as it is an aggregate of all gear types affecting the stock. The team should score encounterability as high-risk for a targeted species.

For pelagic gears the team should take a percentage overlap approach to determine the encounterability of the scoring element. For demersal gears, particularly static ones set on the seabed, the team should consider the likelihood of encounter of the scoring element on the seabed rather than the percentage overlap of the gear (on the slope) and concentration of the species. The team should consider gears set on the seabed such as pots and bottom gillnets to have high encounterability for their target species. The overlap of the spatial distributions of the scoring element and the gear may be affected by the depth and slope, but the team should consider this under Areal Overlap rather than encounterability.

Table GA8: Example of scoring encounterability

Scenario	Encounterability score
Pelagic species has a total depth range of 0-100m, and the depth range of the gear is 0-10m.	Low
Pelagic species has a total depth range of 0-100m, and the depth range of the gear is 0-10m. If the diurnal behavioural patterns are targeted by a fishery that operates at night this greatly increases the overlap of the gear with the species. See Figure GA2.	High
The species is known to migrate diurnally, and the gear interacts with a high concentration of the species at a particular time of the day.	High
If the fishery uses a gillnet, the chances of encounter for lobsters living in crevices is low.	Low
If a pot fishery uses attractive bait, the chance of encounter for lobsters is high.	High
A species occurring principally near the bottom will have low encounterability from a gear fishing in mid-water.	Low
A pot fishery would have high encounterability even in a highly rugged environment if it uses bait as an attractant.	High
Target species	High

Pelagic species has a total depth range of 0–100m, and the depth range of the gear is 0–50m.	Medium
A benthopelagic species inhabits both the sea floor and the area just above it (e.g. up to 50m from the sea bottom). The species has a total depth range of 200–400m. A mid-water gear with a depth range of 50–250m will have medium encounterability with this species.	Medium

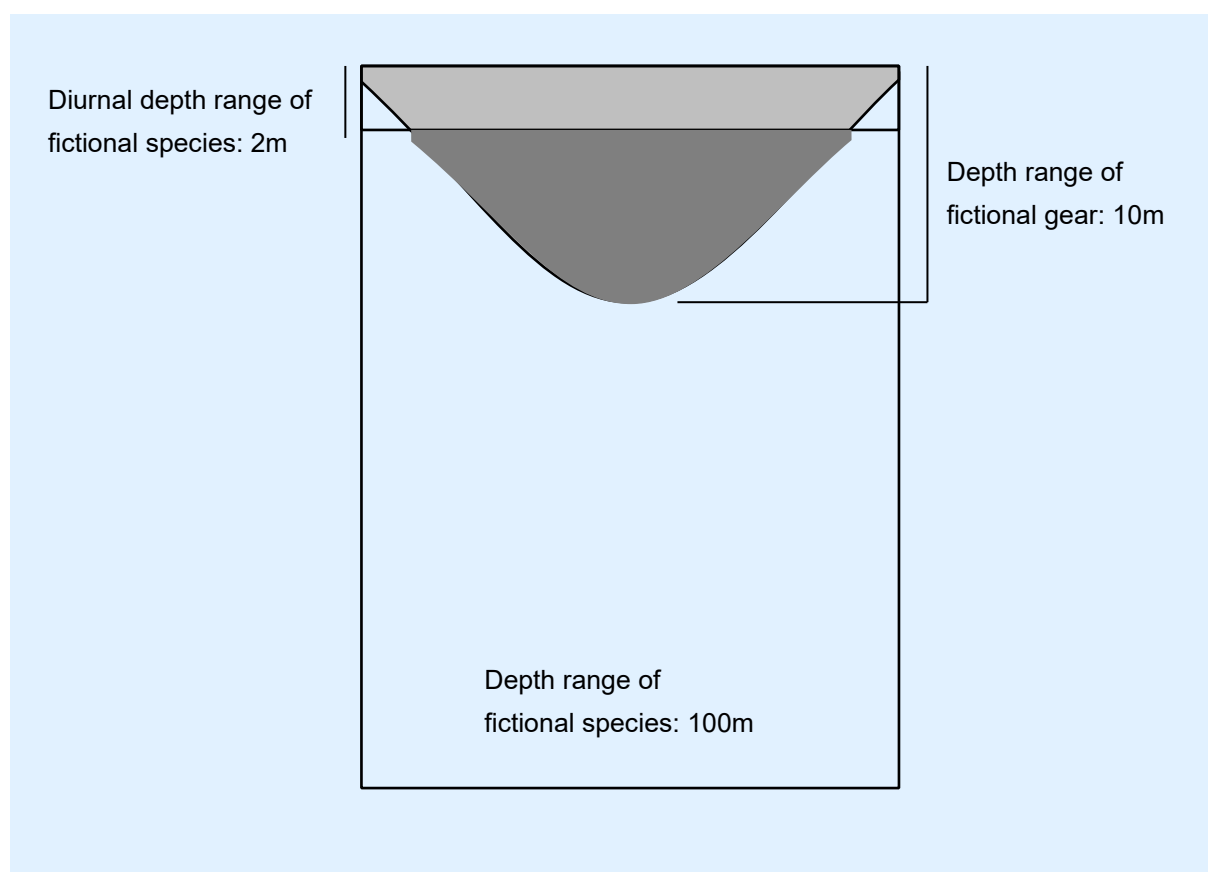


Figure GA2: Example of scoring encounterability

GA4.4.8 Selectivity ▲

Selectivity provides an estimate of retention by the fishing gear and is scored based on the risk that the gear operation retains individuals smaller than the size at maturity.

The team should base the assessment of risk on a review of empirical or analogous catch profile data or should be considered unlikely (or improbable) based on information for the species, fishing gear and operation of the UoA.

GA4.4.8.d ▲

The team should score the selectivity of the gear type considering its potential to retain immature fish. 2 elements have been defined in order to adequately assess the selectivity attribute.

When scoring the element (a), the team should determine the frequency of deployments in which immature fish are caught. The team should only consider the frequency and not the number or proportion of juveniles caught. For example:

- If juveniles are caught in 70% of gear deployments, the team should score susceptibility element (a) as 3 (high susceptibility).
- If juveniles are caught in 70% of gear deployments but the proportion of juveniles in each deployment is very low, the team should score susceptibility as still 3 (high susceptibility).
- If juveniles are caught in only 1% of gear deployments, but when it occurs the proportion of juveniles is very high (e.g. 80%), the team shall score susceptibility as 1 (low susceptibility).

When scoring the element (b), the team should focus on determining the potential of the gear/fishing method to retain juveniles or, in other words the ability of the juveniles to escape or avoid that particular gear.

GA4.4.9.a ▲

In assessing the probability that if a species is captured it would be released in a condition that would permit subsequent survival, the team may consider, for example: biological factors that may limit the potential of a species to be captured alive; handling practices of the fishery or fisheries being considered; the time taken to clear discards from the deck, etc.

If possible, the team should verify observer data in face-to-face observer meetings to make sure that the observer is qualified to identify the species concerned.

GA4.5 PSA Step 3: Determine the PSA score

GA4.5.1 ▲

This is done automatically using the 'MSC RBF Worksheets' for RBF assessments.

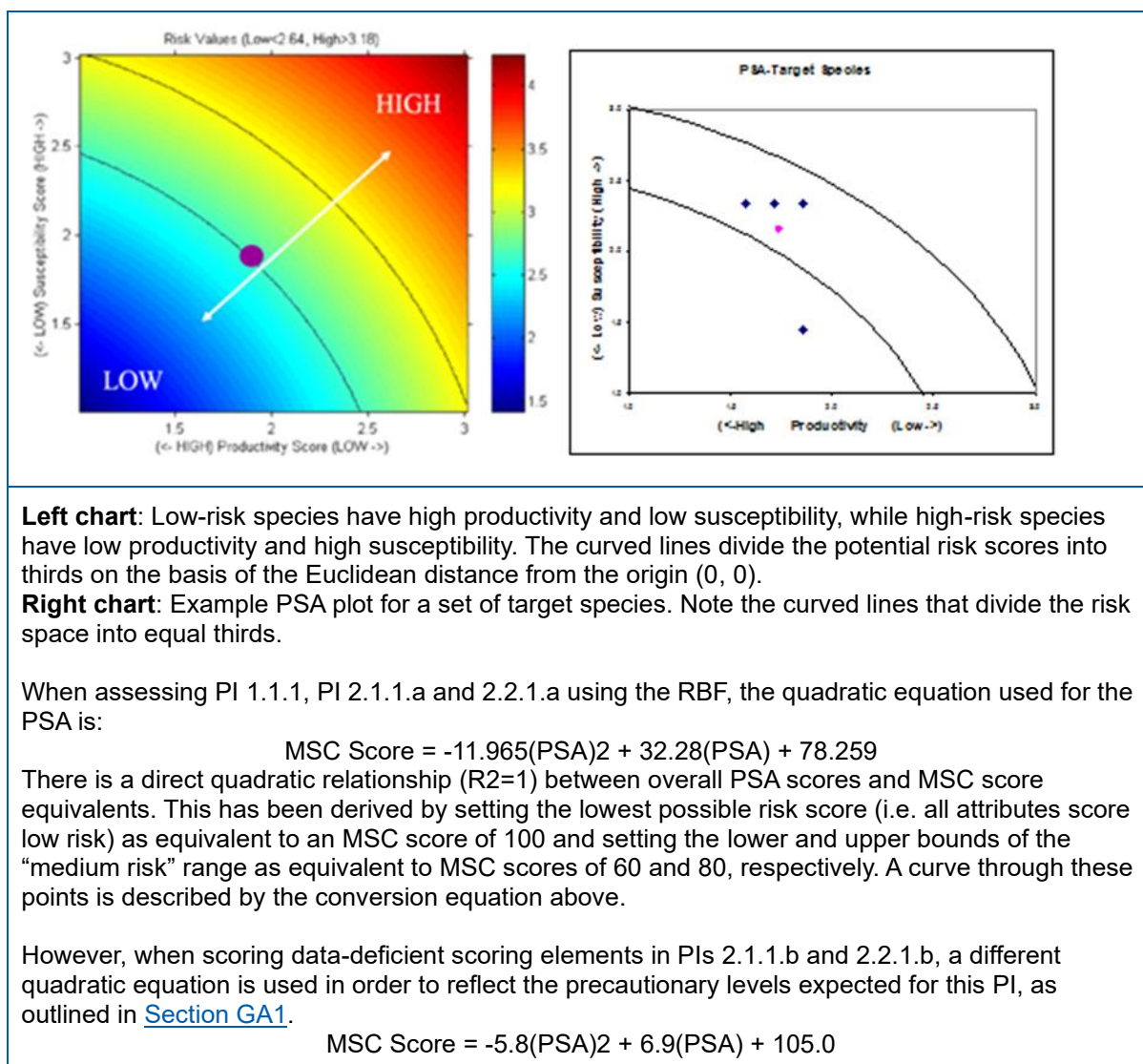
Box GA1: Calculation of the overall risk score

Calculation of Euclidean distance:

For each component unit (e.g. species) the attributes for productivity are scored [1 3] (high, medium, low productivity). These attribute scores are averaged to provide an overall productivity score in the interval [1 3]. Similarly, for each unit the attributes within the 4 aspects of susceptibility are also scored [1 3] (low, medium, and high susceptibility). These aspects are multiplied and rescaled to the interval [1 3] to provide a susceptibility score. These 2 scores are then plotted on the PSA diagnostic plot. A single risk score is calculated as the Euclidean distance from the nominal origin (0.5, 0.7), calculated as $R = \sqrt{(P^2 + S^2)}$; where R is the risk score, P is the productivity score, and S the susceptibility score. This single risk score allows a ranking of all units considered.

The divisions between risk categories and hence Scoring Guideposts are based on dividing the area of the PSA plots into equal thirds, as shown in Figure GA3.

Figure GA3: Examples of diagnostic charts for displaying PSA values for each species



GA5 Scoring the fishery using the RBF for species Performance Indicators (PIs 1.1.1, 2.1.1, and 2.2.1)

GA5.1.1 ▲

GA5.1.1.1 ▲

The PSA risk level is automatically rounded to 2 decimal points and the MSC score per scoring element is rounded to the nearest whole number.

GA5.1.1.2 ▲

In the ‘[MSC RBF Worksheets](#)’, the team should input the CA score manually. This generates the MSC score for each PI 1.1.1 scoring element automatically using rules set out in Table A15.

GA5.1.2 ▲

GA5.1.2.5 Additional information ▲

Recognising that the risk outcome and associated MSC Scoring Guidepost score generated by the PSA and CSA are highly precautionary in most cases, and rely only on productivity and susceptibility attribute information, there will be situations where additional information is available to inform whether a scoring guidepost in P2 for a given scoring element is met or not. In other words, it may not be possible to “analytically determine” with which likelihood the direct effects of the UoA on a scoring element are hindering its recovery, but it may be possible to apply the PSA or CSA risk score along with “additional information” to substantiate that an SG is fully and unambiguously met.

However, the team should not use “additional information” as a **substitute** for scoring the required attributes, nor to avoid assigning precautionary scores where information is limited or absent. In such cases, the team should first apply precautionary attribute scores in line with the method, and only then consider whether any additional information supports a justified adjustment.

What is “additional information”?

“Additional information” refers to information that is not explicitly incorporated within the applicable RBF scoring steps or attribute tables, but that materially affects the level of risk reflected in the score.

Examples include UoA-specific evidence that is directly relevant to the scoring element under assessment. Examples of RBF tool-specific additional information are provided below.

Table GA9: Examples of relevant additional information not already considered by method

Method	Examples of relevant additional information
PSA (Productivity–Susceptibility Analysis)	Absolute or relative magnitude of catches or mortality once susceptibility is set. Proportion of the population or stock component taken by the UoA versus other fleets. Cumulative anthropogenic mortality from all fishing fleets, recreational fishing, or non-fishery sources. Information about temporal concentration of catches, such as intense fishing during spawning aggregations or moratoria on fishing in spawning areas / seasons, that is not reflected in the areal overlap or encounterability scores.
CSA (Consequence Spatial Analysis)	Magnitude of habitat loss or alteration that is not directly expressed in the attribute set, such as hectares or percentage of a habitat type that has already been significantly damaged or repeatedly contacted. Cumulative footprint from other fleets, gear types or non-fishing activities. Evidence of wider functional habitat change, such as loss of nursery value or ecosystem service, beyond the relative vulnerability and overlap captured by CSA.

Additional information may be used only where it improves the alignment of the final score of the scoring element with the actual level of risk posed by the UoA, without reducing precaution. The team should not duplicate or double count information already considered in attribute scoring.

Rationale for using additional information

For the PSA and CSA in P2, where the team utilises additional information to justify an SG being met for a scoring element higher than which the PSA risk outcome alone indicates, the justification should include at least the following:

- The source(s) of the additional information;
- The relevance of the additional information to the scoring issue;
- Why the additional information is not already used in the RBF methodology; and
- How multiple sources of additional information (if used) have been considered together.

GA6 Setting conditions using the RBF for species Performance Indicators (PIs 1.1.1, 2.1.1, 2.2.1 and 2.3.1)

GA6.1 ▲

GA6.1.2 ▲

The team may test whether the Client Action Plan will result in an improved score of SG80 by re-running the PSA.

The team may use PSA results to assist with condition setting, by identifying the set of productivity and susceptibility attributes that have contributed to a high risk score. The fishery client could include actions to reduce the risk, for example by implementing changes in the attributes identified as high risk (i.e. by the setting of a condition related to reducing susceptibility).

Since productivity attributes are inherent to the species, these attributes cannot be changed through Client Action Plans. If individual productivity attributes have been scored as “high risk” because of lack of information, these risk scores could be reduced if additional studies were conducted and provided information that indicated a lower risk score. For example, if the risk score for a particular in-scope species was due to high encounterability and high PCM, then the Client Action Plan might include actions to restrict fishing to night time or reduce the mortality when that species is captured. The team may test these actions by simulating changing the PSA attribute scores and observing whether the overall risk category changes.

The team should consider whether actions proposed in the Client Action Plan (e.g. alternative gear) could have negative consequences on other scoring elements.

GA7 Conducting the Consequence Spatial Analysis (CSA) ▲

Background

The CSA was structured around a set of attributes that describe gear impacts (consequence) and the habitat (spatial) for each habitat being affected by different fishing gears. The CSA methodology and attributes were based on the ‘Ecological Risk Assessment for the Effects of Fishing’ methodology (Hobday et al., 2007¹⁰, Williams et al., 2011¹¹), which was derived from images, expert opinion, and scientific literature. Both the method and attributes were modified to enable their application to MSC assessments.

The CSA consists of the following steps:

- **CSA Step 1:** Define the habitat(s).
- **CSA Step 2:** Score the consequence attributes.
- **CSA Step 3:** Score the spatial attributes.
- **CSA Step 4:** Determine the CSA score and equivalent MSC scoring guidepost.

¹⁰ Hobday, A. J., Smith, A., Webb, H., Daley, R., Wayte, S., Bulman, C., Dowdney, J., Williams, A., Sporcic, M., Dambacher, J., Fuller, M. and Walker, T., 2007. Ecological risk assessment for the effects of fishing: methodology. Report R04/1072 for the Australian Fisheries Management Authority, Canberra.

¹¹ Williams, A., Dowdney, J., Smith, A.D.M., Hobday, A.J., and Fuller, M., 2011. Evaluating impacts of fishing on benthic habitats: A risk assessment framework applied to Australian fisheries. Fisheries Research 112(3):154-167.

The CSA examines attributes of each habitat associated with the UoA in order to provide a relative measure of the risk on the scoring element (habitat) from fishing activities.

GA7.1 Preparation

GA7.1.2 ▲

In the absence of detailed scientific information, the team should assess the UoA's impacts based on the extent to which fishing activity is demonstrably 'precautionary' or of 'less risk'. The team should consider the worst-case scenario. For example, if fishing takes place on both the outer continental shelf and slope, the team should score the natural disturbance score as 3 and not 2, reflecting the higher potential risk of impact on the slope. Another example is that the team should score removability of biota as 2 if a Danish seine UoA affects both low, robust biota and erect, medium biota.

The team should consider UoA specifics in the absence of credible evidence, information, or logical reasoning to the contrary. For example, the addition of rockhoppers to trawl gear allows the UoA to contact previously inaccessible areas, which may contain more complex habitats. The team should consider the impacts on these more complex habitats when scoring the attributes. Conversely, some modifications may lessen the gear's impact on the habitat, which the team should also consider.

GA7.3 CSA Step 1: Define the habitat(s)

GA7.3.2 ▲

For example, a habitat may be defined as "Medium-Outcrop-Large erect".

GA7.3.3 ▲

The examples of biomes and features and their associated depths in Table A17 are provided to emphasise the large differences that exist in the fauna and their life-history characteristics between depth zones and to provide a way to estimate the spatial extent of habitats (refer to the spatial overlap attribute below). For example, the extent of sediment plains on the outer shelf could be roughly estimated and differentiated from sediment plains on the slope.

GA7.4 CSA Step 2: Score the consequence attributes ▲

The 2 habitat-productivity attributes' scores are multiplied by 2 to reflect the increased importance of these 2 attributes. The consequence score is then the average of all habitat-productivity and gear-habitat interaction attribute scores.

GA7.4.2 ▲

GA7.4.2.5 ▲

Biotas have different intrinsic rates of growth, reproduction, and regeneration, which are also variable in different conditions of temperature, nutrients, and productivity (Williams et al., 2010¹²). Habitat depth is an appropriate proxy for regeneration of biota because rates of growth and reproduction will typically be slower in deeper water where temperature and nutrient availability are lower (Hobday et al., 2007). Further, the type of biota may be relevant since some (e.g. corals, crinoids, large sponges) grow at a very slow rate compared to others (e.g. encrusting species).

GA7.4.4 ▲

Biotas subject to greater natural disturbances have a greater intrinsic ability to recover from impacts. Common natural disturbances result from wave action and tidal movements, but other factors, such as local currents, storm surge, flooding, temperature fluctuations, and predation, may also be relevant. Habitat depth is considered a suitable proxy for natural disturbance because deeper habitats typically experience fewer or no natural disturbances.

GA7.4.8 ▲

Removability of biota is influenced by the size, height, robustness, flexibility, and structural complexity of the attached biota. Large, erect, inflexible, or delicate biota is more vulnerable to physical damage or removal than small, low, flexible, robust, or deep-burrowing biota. Rugosity refers to the ridged nature of the organism. In general, more rugose (i.e. complex) organisms are more vulnerable to the impacts of fishing. The interactions between a high diversity of biota types and non-standardised fishing gear can make this attribute difficult to score. For example, demersal trawls can have a range of factors influencing removability, such as footrope weight, use of chains, roller or bobbin size, bridle configuration, and door weight. The team should consider the full range of possible interactions.

GA7.4.11 ▲

For example, intermediate-sized rock fragments (6 cm to 3 m) that form attachment sites for sessile fauna can be permanently removed. While soft sediment is less resistant to impact, it is generally more resilient because it accumulates relatively rapidly and is altered by burrowing fauna.

GA7.4.14 ▲

The substratum hardness attribute considers whether or not the seabed will be degraded by contact with fishing gear. For example, hard rocky bottom is intrinsically more resistant to impact.

GA7.4.16 ▲

Substratum ruggedness is scored based on the concept that the access of gear to the habitat is related to the ruggedness of the substratum. For example, large rocks and steep slopes make an area less accessible to mobile gear.

GA7.4.18 ▲

For example, fishing impact can be greater on steep slopes because they are more prone to landslide damage.

GA7.5 CSA Step 3: Score the spatial attributes ▲

¹² Williams, A., Schlacher, T.A., Rowden, A.A., Althaus, F., Clark, M.R., Bowden, D.A., Stewart, R., Bax, N.J., Consalvey, M. and Kloser, R.J., 2010. 'Seamount megabenthic assemblages fail to recover from trawling impacts'. *Marine Ecology* 31: 183-199.

The spatial score is the geometric mean of the spatial attributes.

GA7.5.2 ▲

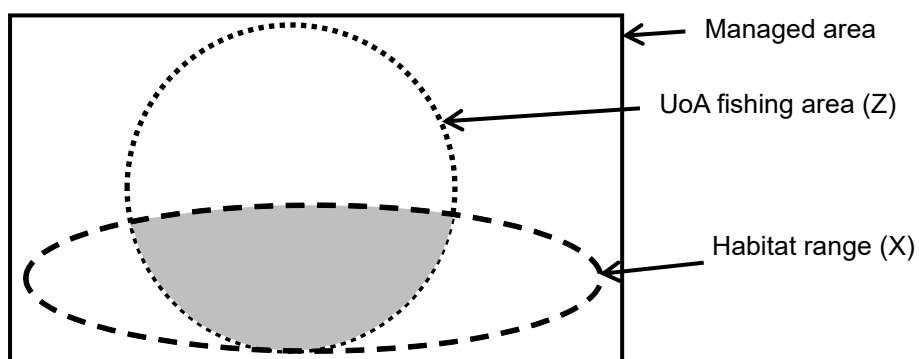
The team should consider gear footprint in terms of gear size, weight, and mobility. This attribute measures the level of impact by considering the frequency and intensity of gear disturbance on the habitat. The gear footprint scores are based on the number of encounters needed to have an impact on structural biota in a unit area.

Table GA10: Number of encounters needed to cause impact (modified from Williams et al., 2011)

Gear type	Many encounters needed to cause impact	Some encounters needed to cause impact	Single encounter needed to cause impact
Hand collection	✓		
Handline	✓		
Demersal longline		✓	
Bottom gill net or other entangling net		✓	
Danish seine		✓	
Demersal trawl (including pair, otter twin-rig, and otter multi-rig)			✓
Dredge			✓

GA7.5.4 ▲

The spatial overlap attribute is the overlap of a habitat's range in the “managed area” with the UoA's fishing area. It is calculated as the UoA's fishing area (Z) divided by the habitat's range within the “managed area” (X) (Figure GA4). The team should refer to [GA7.3.3](#) and Table A16 for details on estimating the spatial extent of habitats.



Spatial overlap (S) = proportion of X overlapped by Z

Figure GA4: Visualising the spatial overlap attribute

GA7.5.6 ▲

The likelihood of encounter attribute is a measure of how likely the UoA is to encounter the habitat within the “managed area”.

Example

A UoA using semi-pelagic gear that rarely affects a benthic habitat would likely have a likelihood of encounter score of 0.5 for that habitat. Similarly, a demersal trawl will have low likelihood of encounter with a habitat that is confined to heavy reef areas because the trawl cannot operate in such areas. Conversely, a UoA that uses a gear that targets a certain habitat will have high likelihood of encounter with that habitat.

GA7.5.4 Additional guidance on spatial overlap and likelihood of encounter ▲

The team should estimate the spatial overlap and likelihood of encounter attributes based on the most recent spatial distribution of fishing by the UoA. The team should modify the assessed fishing area of the UoA according to the gear being used.

For example, if longlines are used in only part of the “managed area” (e.g. due to habitat characteristics that do not allow for longline usage throughout the entire area), the team should assess this part.

GA7.6 CSA Step 4: Determine the CSA score and equivalent MSC Scoring Guidepost ▲

Calculation of Euclidean distance

For each scoring element (i.e. habitat), the attributes for consequence are scored 1-3 (low, medium, and high). Both of the habitat-productivity attributes' scores are doubled, and then all habitat-productivity and gear-habitat interaction attribute scores are averaged to provide an overall consequence score in the interval. Similarly, the spatial attributes are also scored 1-3 (low, medium, and high) though half scores are possible. The spatial score is derived as a geometric mean of the 3 spatial scores. The consequence and spatial scores then produce a single risk score calculated as the

Euclidean distance from the nominal origin [0,0]: $R = \sqrt{(C^2 + S^2)}$;where R is the risk score, C is the consequence score, and S the spatial score.

Conversion of the CSA score

The CSA score is converted to an MSC score using the quadratic equation:

$$\text{MSC Score} = -9.1(\text{CSA})^2 + 22.4(\text{CSA}) + 86.8$$

There is a direct quadratic relationship ($R^2=1$) between overall CSA scores and MSC score equivalents. This has been derived setting the highest possible risk score (i.e. all attributes score high risk) as equivalent to an MSC score of 0; setting the lowest possible risk score (i.e. all attributes score low risk) as equivalent to an MSC score of 100; and setting the lower and upper bounds of the medium risk range as equivalent to MSC scores of 60 and 80, respectively.

GA7.7 Setting conditions using the CSA

GA7.7.2 ▲

Since some of the CSA attributes are inherent to the habitat (i.e. consequence attributes), these attributes cannot be changed through Client Action Plans. If attributes have been scored as “high risk” because of a lack of information, these risk scores could be reduced if additional studies were conducted and provided information that indicated a lower risk score.

However, implementation of the Client Action Plan may lead to changes to the spatial attributes. For example, fishery clients may implement gear modifications that lessen their habitat impacts, fishery clients may change their spatial footprint by avoiding high-risk scoring elements (e.g. corals), and/or fishery clients may make other spatial changes that will result in lower-risk impacts.

The team may test whether the proposed Client Action Plan will have the desired effect at the time of verifying and accepting the Client Action Plan by re-running the CSA. The team should consider whether actions proposed in the Client Action Plan (e.g. alternative gear) could have negative consequences on other scoring elements.

GA8 Conducting a Scale Intensity Consequence Analysis (SICA)

GA8.1 Preparation ▲

The 5 MSC SICA steps are summarised below:

- SICA Step 1: Prepare a SICA scoring template for each ecosystem.
- SICA Step 2: Score spatial scale of the fishing activity.
- SICA Step 3: Score temporal scale of the fishing activity.
- SICA Step 4: Score the intensity of the fishing activity.
- SICA Step 5: Score the consequence resulting from the scale and intensity of the fishing activity for the most vulnerable subcomponent of the ecosystem.

GA8.4 SICA Step 2: Score spatial scale of fishing activity potentially having an impact on the ecosystem

GA8.4.2 ▲

The scale score is not used to mathematically determine the consequence score. It is used in the process of making judgements about the level of intensity at SICA Step 4. 2 different activities that scored the same for spatial scale might have quite different outcomes for the intensity score.

Example of use of Table A26

If fishing activity (e.g. capture by longline) takes place within 20% of the overall distribution of the ecosystem, then the spatial scale is scored as 3. This needs to be the overlap of the fishing activity of the UoA with the ecosystem distribution.

GA8.5 SICA Step 3: Score temporal scale of fishing activity potentially having an impact on the ecosystem

GA8.5.2 ▲

Examples of scoring temporal scale

- If the fishing activity occurs daily, the temporal scale is scored as 6.
- If fishing activity occurs once per year, then the temporal scale is scored as 3.
- It may be more logical for some activities to consider the aggregate number of days that an activity occurs. For example, if the activity “fishing” was undertaken by 10 boats during the same 150 days of the year, the score is 4. If the same 10 boats each spend 30 non-overlapping days fishing, the temporal scale of the activity is a sum of 300 days, indicating that a score of 6 is appropriate.
- If the activity occurs over many days, but only every 10 years, the number of days divided by the number of years in the cycle is used to determine the score. For example, 100 days of an activity every 10 years averages 10 days every year, so a score of 3 is appropriate.

GA8.6 SICA Step 4: Score the intensity of the relevant activity

GA8.6.2 ▲

The team should ensure the intensity score is consistent with the spatial and temporal scores.

Example of scoring intensity:

If spatial and temporal scales are scored as high-risk, the same would be expected when scoring intensity. The overall intensity of fishing activity depends upon the distribution and dynamics of the stock being exploited.

GA8.6.2.2 ▲

The team should ensure the intensity score reflects the frequency and extent of fishing activity.

Examples of intensity scores

- Spatial scale score = low, and temporal scale score = low.

Intensity score = low

Justification: The spatial overlap between the fishing activity and the ecosystem distribution is extremely low and the fishing activity occurs very rarely. This combination of scale scores indicates that the intensity of this fishery is negligible.

- Spatial scale score = high, and temporal scale score = high.

Intensity score = high

Justification: The fishing activity covers almost half of the spatial distribution of the stock and the fishing activity occurs frequently. This combination of scale scores indicates that the intensity of this fishery is severe.

- Spatial scale score = low, and temporal scale score = high.

Intensity score = high

Justification: The spatial overlap between the fishing activity and the stock distribution is extremely low, and the fishing activity occurs frequently. This combination of scale scores indicates that the intensity of this fishery is severe as the fishing activity has frequent impacts on a small part of the stock.

GA8.7 SICA Step 5: Identify the most vulnerable subcomponent of the ecosystem, and score the consequence of the activity on the subcomponent

GA8.7.2 ▲

Subcomponents are indicators of health.

GA8.7.4 ▲

GA8.7.4.1 ▲

If the scale and intensity are scored as medium or high risk, the team should provide additional information to justify a low or medium risk score for consequence.

The team should consider Stakeholder perception in combination with additional qualitative and quantitative information to support the consequence score. Without such information, the team should score consequence as higher risk than the 60 level and fail the UoA.

GA8.8.2 ▲

GA8.8.2.2 ▲

The team may reduce default high risk scores (due to a lack of information) if additional studies revealed the risk level was actually lower. For example, if the SICA results in a consequence score of 80 but additional information is available and presented that justifies raising this score, the team may give a final MSC score of 85.

End of Guidance for Tool A: Risk-Based Framework

Tool B: Evidence Requirements Framework

The intent of the Evidence Requirements Framework is that the information used in fishery assessments is subject to a structured consideration of accuracy as a basis for determining its adequacy for scoring. The Evidence Requirements Framework also seeks to ensure that the team's use of information is clearly documented. ■

B1 Scope / applicability ■

- B1.1.1 The team shall use the Evidence Requirements Framework to determine the adequacy of information used to inform scoring for the following SIs:
- Shark finning: PI 1.2.1 SI (e), PI 2.1.2 SI (e)
 - Information on the direct effects of the UoA: PI 2.1.3 SI (a), PI 2.1.3 SI (b), PI 2.2.3 SI (a), PI 2.3.3 SI (b)
 - Habitats management compliance information: PI 2.3.2 SI (c)
 - Compliance information: PI 3.2.3 SI (c)

B2 Key terms

- B2.1.1 The team shall interpret the following terms used in the Evidence Requirements Framework as follows:
- "Accuracy" to mean the quality of the information, and how effectively it describes the situation. Accuracy is defined in terms of:
 - "Objectivity" to mean the extent to which information is free from conflict of interest.
 - "Relevance" to mean the extent to which the information is pertinent to the scoring issue.
 - "Completeness" to mean the extent to which the information captures all relevant aspects and dimensions.
 - "Consistency" to mean the extent to which different information sources are in agreement.

B3 Consideration of information accuracy

- B3.1.1 The team shall identify and review the available information source(s) applicable to the scoring issue. ■
- B3.1.2 For each information source, the team shall consider:
- The objectivity, relevance, completeness and consistency of the information. ■
 - The extent to which potential for bias is understood and mitigated. ■
- B3.1.3 For quantitative information sources, the team shall also consider how methods of data collection account for variability. ■
- B3.1.4 Where the team have concluded that there are no scoring elements in a component, then the team shall still consider the accuracy of the information which supports this conclusion.

B4 Determination of information adequacy

- B4.1.1 The team shall select the information source(s) that will inform scoring from those identified and reviewed in B3.
- B4.1.2 The team shall determine whether the information selected is collectively adequate to meet each scoring guidepost.

- B4.1.3 The team shall be more precautionary in their determination where there is a lower level of accuracy or a greater reliance on the team's expert judgement.
- B4.1.4 The team's determination shall recognise that:
- A higher level of accuracy is required where there is greater potential for UoA impact.
 - A lower level of accuracy may be adequate where there is a lower potential for UoA impact.

B5 Scoring and rationale

- B5.1.1 For the information selected to inform scoring, the team shall document within the scoring rationale:
- A consideration of accuracy of the collective information.
 - Any triangulation between sources of information.
 - The adequacy of the collective information to meet scoring guideposts.
- B5.1.2 The team shall highlight any differences between the information used for different scoring elements.
-

Guidance for Tool B: Evidence Requirements Framework

The intent of the Evidence Requirements Framework is to be aligned with guidelines in ISO19011 in relation to verification of evidence.

GB1 Scope / applicability

The team may use the Evidence Requirements Framework to inform scoring elsewhere in the MSC Fisheries Standard.

GB3 Consideration of information accuracy

GB3.1.1

Below is a list of potential sources of information relevant for scoring where the Evidence Requirements Framework applies. There may be additional relevant information sources to those listed below. This list is not exhaustive.

- Academic research
- Electronic monitoring (e.g., cameras)
- Geospatial positioning (e.g., AIS, VMS)
- Grey literature
- Infringement reports
- Legal reports
- Logbooks
- Management agency reports
- Observer programmes
- On-board inspections
- Port inspections
- Reference fleets
- Research surveys

- Reviews and evaluations
- Risk assessments
- Sales accounting
- Self-reported data
- Stakeholder interviews
- Stock assessments
- Technical expert opinion
- Technical reports

GB3.1.2.a

The team should use the example questions in Table GB1 to guide their determination of objectivity, relevance, completeness and consistency.

Table GB1 Questions to guide the determination of information accuracy

Objectivity	To what extent is the information independently provided or reviewed?
	To what extent is the information likely to be affected by a conflict of interest?
Relevance	To what extent is the information directly applicable to the UoA or scoring element?
	To what extent is the monitoring programme appropriate for gathering relevant information?
Completeness	To what extent is the information representative of the UoA or scoring element in space and time?
	To what extent is the information up to date?
Consistency	To what extent does the information source agree with other sources?

GB3.1.2.b

Potential for bias may exist in the following areas:

- Observation bias is a deviation from the truth that results during the process of observing and recording information. This can occur due to observer effects, the use of biased estimators, sampling design, data handling protocols or measuring errors.
- Response bias is the tendency for participants to respond inaccurately when providing information, in the sense of overestimating or underestimating a value. This can occur as a result of conflict of interest, the recorder or respondent's competency, questioning method and social or cognitive biases (e.g., confirmation bias, availability bias, etc.).

GB3.1.3

The team should use the example questions in Table GB2 to guide their determination of how methods of data collection may account for variability.

Table GB2 Questions to guide the determination of information variability

Characteristics of the fishing fleet and operations	How is variability in the physical characteristics of the fleet accounted for?
	How is variability in where, when and how the species is caught accounted for?
Ecological and biological characteristics	How is variability in species distribution accounted for?
	How is seasonal variability in productivity accounted for?
Monitoring design	How does the sampling design take into account patterns of clustering in catch events?

The team may report statistics describing precision, such as a coefficient of variation, where these are available.

Tool C: Benthic Impacts Tool

C1 General

C1.1 General requirements

- C1.1.1 The team may use the Benthic Impacts Tool to inform scoring for PI 2.3.1, scoring issue (a).
- C1.1.2 If the Benthic Impacts Tool is used, the team shall:
- a. Follow the instructions in the latest version of the [MSC Benthic Impacts Tool User Manual](#).
 - b. Report the settings and data used in the Benthic Impacts Tool in the 'MSC Reporting Template' (Section 11.9).
 - c. Include a copy of the Benthic Impacts Tool template ('MSC Reporting Template', Section 11.9) in all relevant assessment documents, including any document for which the tool has informed scoring.
 - d. Consider and document the indicative scores alongside other relevant information as per the [MSC Fisheries Standard SA3.12.1](#) to determine and justify the final score for PI 2.3.1, scoring issue (a).

End of Tool C: Benthic Impacts Tool

Tool D: Early or Voluntary Application of MSC Fisheries Standard Section SE for P1 target stocks

D1 General

D1.1 Decision to apply MSC Fisheries Standard Section SE

Early Application of Section SE for tuna stocks

D1.1.1 A CAB may apply [MSC Fisheries Standard Section SE](#)¹³ to UoCs currently certified, or UoAs currently in assessment or in reassessment against v2.01 of the [MSC Fisheries Standard](#) that meet the requirements in SE1.1.1.1 and SE1.1.1.2 subject to the following:

- D1.1.1.1 The CAB may apply Section SE as of the publication date of the [MSC Fisheries Standard v3.1](#). If no UoCs are certified or no UoAs are being assessed against MSC Fisheries Standard v4.0 at the time that a CAB wishes to apply Section SE, then the CAB shall follow D1.1.3.2, D1.1.3.3 and D1.1.4.
- D1.1.1.2 If a UoA is entered into full assessment against MSC Fisheries Standard v4.0, then the CAB for that UoA shall verify whether any overlapping UoCs certified or UoAs being assessed against the MSC Fisheries Standard v2.01 are willing to participate in the Early Application of Section SE.
 - a. If no overlapping UoAs or UoCs agree to participate in the Early Application of Section SE, then the CAB assessing the UoA against the MSC Fisheries Standard V4.0 shall follow the assessment requirements within Section SE.
 - b. If any overlapping UoAs or UoCs agree to participate in the Early Application of Section SE then the CABs for those UoAs and UoCs, including the CAB for the v4.0 UoA, shall follow the MSC Fisheries Standard Toolbox Tool D.
 - i. If a CAB applies Section SE as per D1.1.1.2.b, then the CAB shall assess the participating UoAs and UoCs against the MSC Fisheries Standard v4.0 at the next reassessment following the completion of the Early Application of Section SE process.

D1.1.1.3

Voluntary Application of Section SE for non-tuna stocks

D1.1.2 CABs may apply Section SE to UoCs currently certified, or UoAs currently in assessment or in reassessment against v2.01, v3.1 or v4.0 of the MSC Fisheries Standard that do not meet Section SE1.1.1.1 or SE1.1.1.2 subject to the following:

- D1.1.2.1 A CAB who wishes to apply Section SE has confirmed that SE1.1.4.a and SE1.1.4.b do not apply.
- D1.1.2.2 A CAB who wishes to apply Section SE shall verify whether overlapping UoCs agree to the Voluntary Application of Section SE.

¹³ Section SE herein refers to [MSC Fisheries Standard v4.0, Section SE](#)

- a. CABs shall only apply Section SE if more than half of overlapping UoCs (i.e. UoCs that include the same P1 target stock) agree to do so. [■](#)
 - b. If no overlapping UoCs exist, then D1.1.2.2.a shall apply to UoAs.
- D1.1.2.3 CABs shall only apply Section SE upon receipt of a majority agreement document signed by the clients of relevant overlapping UoCs.
 - a. Section SE shall be applied to all overlapping UoCs and UoAs, regardless of whether they have agreed to apply Section SE or not.
 - b. CABs shall follow the process in Tool D to apply Section SE.
 - c. If there is no majority agreement, then the CABs shall not apply Section SE.
- D1.1.3 If a CAB applies Section SE to UoCs certified or UoAs being assessed against the MSC Fisheries Standard v2.01, then the CAB shall assess these UoAs and UoCs against the MSC Fisheries Standard v4.0 at the next reassessment following the completion of the Voluntary Application of Section SE process.

D1.2 Process requirements for the Early or Voluntary application of Section SE¹⁴

- D1.2.1 CABs shall consider the following requirements no longer applicable and superseded by requirements in [Tool D](#), [Section SE](#) and [MSC Fisheries Standard v4.0](#):
 - a. All requirements within [FCP v4.0/v3.1/v2.3 7.16/](#) (including when following [FCP v4.0 Annex PA](#) or [v3.1/2.3 Annex PD](#)).
 - b. [FCP v4.0 7.18.5.c](#) and [FCP v3.1/v2.3/ 7.19.5 c](#) (including when following [FCP v4.0 Annex PA](#) or [v3.1/v2.3 Annex PD](#)).
 - c. [FCP v4.0 7.18.7 to 7.18.10](#) and [v3.1/v2.3 7.19.6b](#) to [7.19.9](#) (including when following [FCP v4.0 Annex PA](#) or [v3.1/2.3 Annex PD](#)).
 - d. [FCP v4.0 7.22](#) and [v3.1/v2.3 7.23.1](#).
 - e. All requirements within [FCP v4.0 7.28.14 to 7.28.21](#) and [FCP v3.1/v2.3 7.29.15](#) and [7.29.16](#)
 - f. [FCP v4.0 7.30.9](#) and [FCP v3.1/v2.3 7.31.5.3](#) (including a)
 - g. [FCP v4.0 7.30.12](#) (including [7.30.12.1](#)) and [FCP v3.1/v2.3 7.31.8](#) (including [7.31.8.1](#))
 - h. [FCP v4.0 PA1.4.2](#) and [FCP v3.1/v2.3 PD 1.4.2](#)
 - i. [GCR v2.7 7.4.3 b](#).
- D1.2.1.1 [D1.2.1](#) is only applicable to PI 1.2.1 scoring issues a and b and all PI 1.2.2 scoring issues.
- D1.2.1.2 [D1.2.1](#) is only applicable once an announcement for the application of [Section SE](#) is published.

¹⁴ The Early or Voluntary Application of Section SE is hereafter referred to as “the application of Section SE”

- D1.2.1.3 [D1.2.1](#) is only applicable for UoCs/UoAs included in the announcement for the application of [Section SE \(D1.2.7a\)](#).
- D1.2.1.4 CABs shall maintain UoCs/UoAs scores on PI 1.2.1 scoring issues a and b and all PI 1.2.2 scoring issues at the point of announcement of the application of [Section SE](#) until completion as per [D1.2.36.1](#) or [D1.2.37.1](#) or if a UoA/UoC withdraws from the process.
- D1.2.1.5 CABs shall include a statement in assessment reports (surveillance/full assessment/reassessment/scope extensions) whilst the application of [Section SE](#) is ongoing describing:
- the application of [Section SE](#) process
 - which UoAs/UoCs are included in the application process
 - how stakeholder feedback will be considered during that process.
- D1.2.1.6 [D1.2.1](#) is no longer applicable once the application of [Section SE](#) process has been concluded as per [D1.2.36.1](#) or [D1.2.37.1](#) or if a UoA/UoC withdraws from the process.
- D1.2.2 The CABs shall apply the requirements in [D1.2](#) to the overlapping UoAs of different P1 stocks separately. 
- D1.2.3 The CAB shall apply [Section SE](#) during a one-off meeting.
- D1.2.4 The CABs of the overlapping UoAs shall organise the meeting.
- D1.2.4.1 The CABs may convene an in-person or remote meeting.
- D1.2.4.2 The CABs shall organise the meeting to include the following agenda items:
- Information collection, including interviews with stakeholders.
 - Discussion of scoring between teams following [FCP v4.0 Annex PB](#), including adoption of the final scoring. 
 - Setting the conditions and milestones.
- D1.2.5 Each CAB shall form a team that comprises a team leader and a minimum of 1 additional team member, who meet the qualifications and competency requirements relevant to P1, as specified in [FCP Table PC1](#), [Table PC2](#), and [Table PC3](#), and in line with the personnel requirements in the [MSC General Certification Requirements \(GCR\)](#). 
- D1.2.5.1 The team shall attend the one-off meeting
- D1.2.5.2 The CABs of overlapping UoAs shall collaborate to ensure the joint production of single assessment documents (e.g. announcements, reports).

Announcement

- D1.2.6 The CABs shall announce the application of [Section SE using the 'MSC Section SE Announcement Template'](#)
- D1.2.7 The CABs shall include the following information in the Section SE announcement:
- The UoCs/UoAs included in the process for the application of [Section SE](#).

- b. A statement that [Section SE](#) will be applied during a one-off meeting.
- c. If applicable, a statement that the majority of UoCs have agreed as per D1.1.2.2.a.
- d. Details of what will be assessed and reviewed as part of the application of [Section SE](#).
- e. Dates and location or, if remote, the format of the one-off meeting.
- f. Meeting agenda.
- g. Details of reporting timelines.
- h. Details of stakeholder consultation opportunities.
 - i. A link to the '[MSC Template for Stakeholder Input into Fishery Assessments](#)', including: [\[link\]](#)
 - ii. An invitation for stakeholders to attend the information collection part of the meeting ([D1.2.4.2a](#)), including a statement that the teams are available to meet with stakeholders remotely if the meeting is held in person and the stakeholder is unable to attend.
 - iii. A statement that only stakeholders that participate in the one-off meeting or submit written information to the teams on [Section SE](#) Public Comment Draft Report will be eligible to object to the findings of the [Section SE](#) Final Report via the [MSC Disputes Process](#).

D1.2.8 The CABs shall upload the '[MSC Section SE Announcement Template](#)' to the MSC database for publication on the MSC website for all relevant assessments at least 30 days before the meeting is held.

Peer Review College

D1.2.9 Upon announcement of the application of [Section SE](#), the CAB shall send the Peer Review College a notification that the announcement of application of [Section SE](#) and timeline has been published on the MSC website.

D1.2.9.1 The CAB shall confirm the anticipated date that the [Section SE](#) Public will be available for peer review.

D1.2.9.2 The CAB shall inform the Peer Review College when changes are made to the reporting timeline that will affect the peer review process.

D1.2.10 The CAB shall obtain from the Peer Review College:

- a. The names of the peer reviewers who are shortlisted to carry out the peer review and details of their qualifications and competencies.
- b. Confirmation that the peer reviewers meet the required competencies.
- c. Confirmation of the availability of the peer reviewer within the timeline nominated by the CAB.

D1.2.11 Following the one-off meeting, the CAB shall either:

- a. Provide the Peer Review College with the contact details of all the stakeholders to enable the College to undertake the stakeholder consultation on potential conflicts of interest of the peer reviewers proposed, or

- b. Request their stakeholders to inform the Peer Review College regarding any potential conflicts of interest of the peer reviewers proposed, using the consultation form provided by the Peer Review College.
- D1.2.12 The CAB shall obtain from the Peer Review College confirmation that at least 1 peer reviewer is selected.
- D1.2.13 The CAB shall obtain from the Peer Review College confirmation that the selected peer reviewer has no conflicts of interest in relation to the fishery under assessment.
- D1.2.14 The Peer Review College's decision on the choice of peer reviewer is final.
- D1.2.15 The CAB shall present the information in [D1.2.10a](#) and [D1.2.10b](#) in the [Section SE](#) Public Comment Draft Report and subsequent reports.

One-off meeting

- D1.2.16 During the meeting, the teams shall:
 - a. Hold interviews and actively seek the views of stakeholders and clients to ensure that the team is aware of all relevant information and any stakeholder concerns.
 - i. If stakeholders do not wish to be interviewed, the teams shall inform them that they may submit written information to the team using the '[MSC Template for Stakeholder Input into Fishery Assessments](#)'.
 - ii. The teams shall allow private interviews with the team for stakeholders who request one.
 - b. Apply the provisions set out in [FCP v4.0/v3.1 Sections 4.3-4.5](#) regarding access to information.
 - c. Score the overlapping UoAs as per [MSC Fisheries Standard v4.0/v3.1 SE2](#), [FCP v4.0/v3.1 7.15](#), [FCP v4.0 PB1.3](#) to [PB1.5](#) and [FCP v3.1/v2.3 PB1.3](#) and [PB 1.5](#).
 - d. Set the condition as per [MSC Fisheries Standard v4.0/v3.1 SE3.3](#).

Client and Peer Review Draft Report

- D1.2.17 The CABs shall produce a joint [Section SE](#) Client and Peer Review Draft Report using the '[MSC Section SE Reporting Template](#)'.
- D1.2.18 The CAB shall issue the [Section SE](#) Client and Peer Review Draft Report to the client and to the Peer Review College at the same time, for at least 30 days.

Peer review

- D1.2.19 The CAB shall arrange a review of the [Section SE](#) Client and Peer Review Draft Report, as detailed in [D1.2.9-13](#) by peer reviewers from the Peer Review College.
- D1.2.20 The CAB shall allow the selected peer reviewers to review the [Section SE](#) Client and Peer Review Draft Report.
- D1.2.21 Upon receipt of the peer reviewer's written comments, the teams shall:

- a. Address all the issues raised, changing any part of [Section SE](#) scoring and conditions as the teams sees necessary.
 - i. The teams shall provide clear explanations, with evidence, in the CABs response column of the '[Template for Peer Review of MSC Fishery Assessments](#)' to support the teams' conclusion on whether they accept or reject each of the issues raised by the peer reviewer.
- b. Incorporate peer reviewer comments, team responses to those comments and any appropriate changes to create the [Section SE](#) Final Report.
- c. Amend the condition, as required, and ensure the fishery client amends the Client Action Plan, as required.

Client review

- D1.2.22 The CABs shall send the [Section SE](#) Client and Peer Review Draft Report to the clients.
- D1.2.23 The CABs should allow at least 30 days for the clients to:
- a. Provide information on items that would lead to a “material difference”, as defined in FCP v4.0 7.19.6.c and [FCP v3.1 7.20.6.c](#), in the outcome of the assessment.
 - b. Develop a Client Action Plan, considering [MSC Fisheries Standard v4.0/v3.1 SE3.3](#).
 - i. The use of the '[MSC Client Action Plan Template](#)' is optional.
- D1.1.18 The CABs shall review the Client Action Plan as per FCP v4.0 7.18.7 – 7.18.10 and [FCP v3.1/v2.3 7.19.7 - 7.19.9](#).

Public Comment Draft Report

- D1.2.24 The CABs shall produce a joint [Section SE](#) Public Comment Draft Report using the '[MSC Section SE Reporting Template](#)'.
- D1.2.25 The CAB shall include, as an annex to the MSC [Section SE](#) Public Comment Draft Report, the following:
- a. Confirmation of meeting held as per [D1.2.16](#).
 - b. Scoring tables for PI 1.2.1 and 1.2.2 as per [MSC Fisheries Standard v4.0/v3.1 SE2](#).
 - c. The determination of the status of the UoA relative to the milestones as per [MSC Fisheries Standard v4.0/v3.1 SE3.3.1](#).
 - d. The condition and milestones as per [MSC Fisheries Standard v4.0/v3.1 SE3.3](#).
 - e. If applicable, the signed majority agreement document as per [D1.1.2.2.a](#).
 - f. Summary of harmonisation activities, including outcomes.
 - g. Written submissions from stakeholders.
 - h. A summary of verbal submissions received during the one-off meeting likely to cause a “material difference” to the outcome of the assessment, as per FCP v4.0 7.19.6.c and [FCP v3.1/v2.3 7.20.6.c](#).

- D1.2.26 CABS shall only make changes to scoring according to FCP v4.0 7.19.2 and [FCP v3.1/v2.3 7.20.2](#)
- D1.2.27 The CABS shall upload the [Section SE](#) Public Comment Draft Report to the MSC database for publication on the MSC website.
- D1.2.27.1 The CABS shall upload an announcement with the [Section SE](#) Public Comment Draft Report.
- D1.2.27.2 The CABS shall include in the announcement:
- a. An invitation for stakeholders to provide comments on the [Section SE](#) Public Comment Draft Report.
 - b. A hyperlink to the '[MSC Template for Stakeholder Input into Fishery Assessments](#)'.
 - c. The deadline for stakeholder input.
 - d. A reminder that stakeholders must provide objective evidence in support of any claims or any claimed errors of fact.
- D1.2.28 The CABS shall allow at least 30 days for stakeholder input on the [Section SE](#) Public Comment Draft Report.
- D1.2.29 The CAB shall provide the [Section SE](#) Public Comment Draft Report to the peer reviewers for follow-up review of the assessment team's responses to the peer reviewers' initial comments.
- D1.2.29.1 The CAB shall provide the [Section SE](#) Public Comment Draft Report to peer reviewers at the same time that it is provided to stakeholders for input, for at least 30 days.
- D1.2.30 The CABS shall make the [Section SE](#) Comment Draft Report available for the MSC to conduct Technical Oversight at the same time as it is available for stakeholder input, for at least 30 days.

Final report and dispute resolution

- D1.2.31 The CABS shall produce a joint [Section SE](#) Final Report.
- D1.2.32 The CABS shall include the following in the [Section SE](#) Final Report:
- a. Written submissions from stakeholders received during the consultation on the [Section SE](#) Public Comment Draft Report.
 - b. Written submissions from the MSC Technical Oversight received during the consultation on the [Section SE](#) Public Comment Draft Report.
 - c. Responses from the team to the submissions in [D1.2.32 a](#) and [b](#), including:
 - i. Any changes to scoring, rationales, or conditions that have been made.
 - ii. Where changes are suggested but no change is made, a substantiated justification.

- D1.2.33 The CABs shall upload the [Section SE](#) Final Report to the MSC database for publication on the MSC website within 12 months of announcing the application of Section SE (D1.2.8).
- D1.2.33.1 The CABs shall upload an announcement with the [Section SE](#) Final Report.
- D1.2.33.2 The CABs shall include in the announcement:
- a. Information about the [MSC Objection Process](#).
 - b. A statement that only stakeholders that participated in the one-off meeting or submitted written information to the team on the [Section SE](#) Public Comment Draft Report are eligible to participate in the MSC Objection Process.
 - c. The deadline for input as set out in the MSC Objection Process.
- D1.2.34 The CABs shall follow the processes and timelines as set out in the MSC Objection Process.
- a. If the MSC Objection Process is triggered, all teams involved in the one-off meeting and drafting of reports shall be part of the Objection Process.

Finalising the application of Section SE

- D1.2.35 If the MSC Objection Process is triggered the CABs shall revise the [Section SE](#) Final Report to incorporate the results arising from the MSC Objection Process.
- D1.2.35.1 The CABs shall upload the revised [Section SE](#) Final Report to the MSC database for publication on the MSC website within 60 days of completion of the Objection Process.
- D1.2.36 If the MSC Objection Process is not triggered the CABs shall upload an announcement to the MSC database for publication on the MSC website.
- D1.2.36.1 The CABs shall include in the announcement a statement that the MSC Objection Process was not triggered, the [Section SE](#) Final Report is unchanged and the process for the application of [Section SE](#) is complete.
- D1.2.37 The CABs shall incorporate outcomes of the application of Section SE (as reported in the Section SE Final Report) into UoC/UoA overall assessment outcomes during subsequent audit or assessment reporting stages once the application is complete as per [D1.2.36.1](#) or [D1.2.37.1](#).
- D1.2.37.1 If UoAs or UoCs do not meet [Section SE](#) requirements or withdraw from the process, CABs shall assess the condition deadlines and milestones in place prior to the early application process following Expedited Audit requirements ([FCP v2.3/v3.1 7.30/v4.0 7.29](#)).
- D1.2.37.2 If UoAs or UoCs do meet [Section SE](#) requirements, the outcomes of the application of [Section SE](#) supersede outcomes in place prior to the application process.

End of Tool D: Early or Voluntary Application of Section SE

Guidance for Tool D: Early or Voluntary Application of MSC Fisheries Standard Section SE for P1 target stocks

GD1 General

GD1.1 Decision to apply MSC Fisheries Standard Section SE

GD1.1.2.2 Majority agreement for the application of Section SE ▲

Only UoCs get a vote for the application of [Section SE](#). Non-certified UoAs can join the process but do not have a vote. If a UoC changes their decision after the vote has taken place and a majority decision is reached, the original voting outcome stands. For example, a UoC votes for the application of Section SE but then later withdraws from the process. Without them there is only the minority of UoCs agreeing to continue with the application of [Section SE](#). However, since at the time of the vote the majority of UoCs agreed to trigger the application process the decision to proceed stands and the UoC is either not announced as per [D1.2.7a](#) or announces their removal separately (via Track a Fishery website) if the announcement for the application of Section SE is already public.

GD1.2.2 Overlapping UoAs ▲

For example, if there are 3 P1 stocks (stock X, Y and Z) and overlapping UoAs for each P1 stock, the CABs should implement the process in [D1.2](#) separately for the overlapping UoAs of each P1 stock. That means a separate process (meeting and reporting) for the overlapping UoAs of stock X, Y and Z, rather than a process that covers all the overlapping UoAs of all 3 P1 stocks.

GD1.2.3 ▲

GD1.2.4 ▲

GD1.2.4.5 ▲

GD1.2.4.6 ▲

GD1.2.4.6.a ▲

GD1.2.4.6.b ▲

The application of [Section SE](#) only considers the scoring of PI 1.2.1 scoring issue a and b and PI 1.2.2. All other scores across Principle 1 for the application of [Section SE](#) should be taken from the most recent harmonised outcome for that target stock, as published in the most recent relevant report. Scores from both the recent harmonised outcomes and [Section SE](#) are included in final score calculations to determine the overall Principle 1 score for the target stock that is undertaking early application of [Section SE](#).

GD1.2.5 CAB team membership ▲

One team leader is needed per CAB, though team members can represent multiple CABs.

GD1.2.7.h.i ▲

Stakeholder input is limited to PI 1.2.1 scoring issue a and b and PI 1.2.2.

GD1.2.23.b ▲

A joint client action plan involving certified fisheries that include the same target stock could be appropriate. When applying [FCP v4.0 7.19.7 – 7.19.9](#), the CAB(s) should consider whether all clients involved in the application of [Section SE](#) have agreed to the Client Action Plan and the milestones are achievable for closing conditions related to the target stock.

_____ End of Guidance to Tool D: Early or Voluntary Application of _____
Section SE

_____ End of MSC Fisheries Standard Toolbox _____