GUIDELINES ON RISK ASSESSMENT METHODOLOGY ON FISHERIES COMPLIANCE

European Fisheries Control Agency
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1. Introduction

The aim of this document is to briefly present the generic principles and guidelines of risk assessment (RA) conducted by the European Fisheries Control Agency (EFCA) as a key tool for the implementation of the SCIP agreed end of December 2018 and for the strategic planning of Joint Deployment Plans (JDPs). Under the new SCIP to enter in force from 1st of January 2019, the same generic methodology shall be used by Member States (MS) on their national risk assessment. However, the identified threats should reflect the national reality and may differ from the threat identified regionally.

Different types of information and data of different sources are analysed to formulate recommendations for the deployment of control means and implementation of activities to monitor and improve compliance. The risk assessment exercise aims at prioritising threats between the different fishery segments, which are defined according to the fishing gear(s), mesh size, area(s) and target species. Based on this assessment, a set of recommendations are prepared which should be the basis for the planning of control activities for an efficient and cost-effective implementation aiming to improve compliance.

The guidelines presented are formulated to be comprehensive and to facilitate the assessment of risks in a consistent, generic and transparent way, being applicable at regional and national level. These guidelines are also appropriate in data limited situations, by providing alternative solutions when the data available are insufficient to proceed to a quantitative evaluation. In the absence of sufficient information, the recommended actions should follow a precautionary approach. When elements of the methodology differ from assessments conducted at national and regional levels, the differences are described in the document.

1.1. What is the risk management process?

A risk management process consists of a structured framework for the identification, analysis, evaluation and treatment of risks, ensuring the efficient placement of compliance and enforcement resources to respond to risks, to create effective deterrence to non-compliance and to provide assurance that compliance risks were recognized, and addressed, in a prioritization manner. Figure 1 depicts the main steps of a risk management process.

The risk management process conducted for non-compliance with fisheries regulations presented here, is aligned with the generic risk management methodologies applied for other topics such as natural hazards events or financial risks and follows the recommended guidelines (ISO, 2009[1]).

Risk assessment is the first step of the risk management process, and is further detailed below.

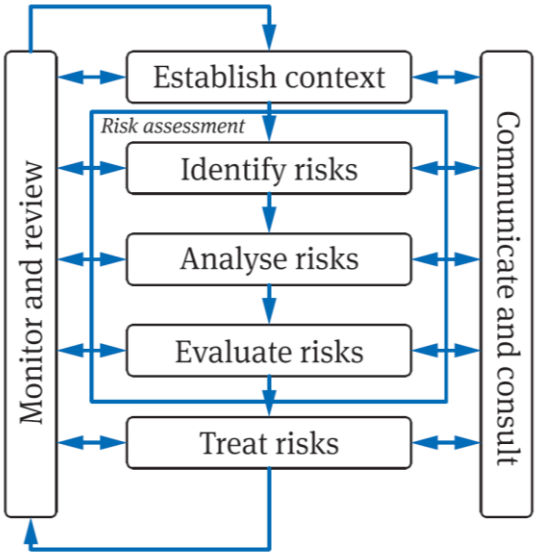


Figure 1. Steps of the risk assessment cycle (from ISO, 2009[1]).

2. Risk Assessment (RA)

The Risk Assessment (RA) is the first step of the risk management process and consists on the quantitative and / or qualitative estimate of risk related to a recognized threat. It is the process of assessing the probabilities of occurrence of risk events and their consequences, which allows the prioritization of the risks to establish a most-to-least-critical importance ranking. The process consists of three main steps: i) risk definition; ii) risk analysis; and iii) risk evaluation.

In the case of the RA of compliance with a fishing regulation, non-compliance situations are the considered risks[2]. The RA is generally steered by a group of experts with knowledge of the fisheries under the scope of the assessment. Experts with an understanding on RA methodology are an advantage. Otherwise, it is important that those experts get acquainted with the risk assessment methodology, understand the definitions and the different steps of the process. For that purpose, the RA methodologic document(s) should have been available to the experts in advance.

[1]International Standards Organization (2009), ISO 31000 Risk Management – principles and guidelines. International Organization for standardization, Switzerland, 26pp.
[2] Control Regulation EC 1224/2009, Article 4, item 17 and 18.

Assessors should document all steps in the assessment process including a standard description and clear explanations of the decision making process to facilitate the understanding by different potential users and support future assessment exercises. Provision of the adequate documentation, which ideally should follow a standard reporting structure, is an essential quality criteria useful for the future review and evaluation of the risk management process or as information for future risk assessments. As far as possible, the report should include a good description of the fisheries, should describe the regulatory framework in place at the time of the assessment, and should list all the information considered, such as for example if compliance indicators were used.

2.1. Risk Definition

2.1.1. Scope

The first step in the RA process is to define / validate the scope of the risk assessment exercise. This includes defining / validating which areas, fisheries and time period are to be considered.

2.1.2. Data sources

The RA should include a description of the different data sources that are used in the process and how the data are provided. If data are missing, it should be documented, together with an evaluation of the possible consequence on the results of the risk assessment exercise. Possible alternatives to remediate the missing data should be considered and described (e.g., use data submitted in previous years). The methodologies used for the process and analysis of the data, including quality checks, should be documented.

In case of regional RA, some input data depends on replies from MS to EFCA's data calls. The data calls should be requested well in advance of the risk assessment workshop to allow MS to process it in due time and to conduct data compilation and quality check. Data should be requested preferably via a formal data call. If the same (or very similar) data were requested in previous years, the data format should be maintained (or the differences highlighted). Doing as such will facilitate stability in data submission, which in turn, will facilitate the process of data quality check.

Different data from fishing and control activity are used to conduct the RA. Data from fishing activities that could be used are:

a) logbook/catch declarations;
b) available compliance indicators;
c) status of the exploited stock;
d) information on by-catch of protected species.

In addition, other data / information not listed above might be also necessary for the RA. For example, control data on inspection activities, such as the temporal and spatial number of inspections and the inspection means available could be useful. Also, analysis of infringements such as the main infringement type, spatial and temporal information, gear, mesh size, species, etc. are important information for the RA process.

2.1.3. Fisheries segmentation

The RA should be conducted based on homogeneous fishery units with similar fishing characteristics (e.g., gear, area and target species) and subject to similar aspects of the regulations. These homogeneous fishery units are commonly designated as "fleet segment". Even when a pre-established segmentation of the fisheries is provided, it should be validated. Spatial and temporal dimensions could be considered at this stage, if there is evidence that the priority risk of non-compliance varies significantly within the same fleet segment depending on the fishing area or fishing season, respectively. It may also occur that some fishery segment(s) might not be considered in the RA exercise because, based on either regulation or intelligence, it is recognized that the identified risks are not applicable to those segments.

2.1.4. Description of fisheries ("fact sheets")

It is useful to have a compilation of the main features of the fleet segments being analysed. EFCA compiles summary documents, the so called "*fact sheets*", which, with the same format for each fleet segment, provide the following information:

- Fishery segment code/name;
- Fishing gear(s) and mesh size, if applicable;
- Target species;
- Discard/unwanted catches: i) information if substantial or negligible of the main target species; ii) main by-catch species; iii) level of by-catch of protected species;
- Fishing season;
- Fishing fleet(s), main fishing MS;
- Fishing area(s);
- Exploited stocks;
- Stock status of the main exploited stocks, TAC and % of catches in relation either to the total catch of all segments or to the TAC;
- Applicable regulations;
- Risk identification and characterization;
- Plots of catches by MS and exploited species.

MS should also compile these types of information for their fisheries in similar documents, adapted for the national analysis.

2.1.5. Description of applicable regulation (in the *fact sheets*)

A review of the applicable regulation is an important input for the RA. A brief description of the rules each fishery segment is subjected to is documented in the *fact sheets.*

The objective of this step is to ensure that all assessors share the same knowledge on how the regulations may influence the non-compliance in each fleet segment.

The description is presented in sub-points such as those suggested below:

- Technical measures;
- Conservation measures;
- Rules applicable regarding the Landing Obligation;
- Rules applicable to reporting and recording obligations;
- Other.

2.1.6. Risk characterisation

Based on the previous steps, which have described the fisheries and reviewed associated regulations, it is important to (re-)examine the threats by fleet segment to identify the associated possible non-compliance events and highlight specificities. The characterisation should be based on previous experiences, such as inspection results, documented infringements, and intelligence / expert knowledge. Also, recent changes in the regulation should be taken in account and considered as a possible threat due to their novelty and associated unawareness. In the RA exercise, experts should consider all the possible threats, from sea activity to market. However, the RA exercise should focus on those perceived to be more problematic. It might be useful to establish a typology of non-compliance, and to take this typology into account in the following steps (the risk analysis and evaluation) of the RA. For example, for the threat of misrecording, it is important to characterize the type of misrecording, i.e. misrecording of catch quantities, area misrecording, species misrecording, etc.

2.1.7. Review of previous assessment exercises

When available, assessors should review the RA results from previous year(s). Also, if possible and available, the effectiveness of previous risk treatment measures should be reviewed. It is important, at this stage, to understand the changes that may have occurred in the regulations, fishing patterns, and the possible consequences of new data that might have become available.

2.2. Risk Analysis

The purpose of the risk analysis is to measure or evaluate, through a quantitative and/or qualitative approach, the level of risk of non-compliant events for each fleet segment.

Risk analysis is therefore the process of assessing the probability of occurrence of non-compliance events and their consequences. The non-compliance events considered should be the priority threats identified. In the RA process, the likelihood is the probability of a given event (non-compliance situation) to occur. The impact quantifies the consequences to a given objective(s) of the event once it takes place.

2.2.1. Impact

The impact provides a quantification of the severity of the consequences of a non-compliant event in relation to the objectives of the Common Fisheries Policy (CFP). It has two factors: i) stock status; and ii) level of catches. The impact analysis should be based on standard agreed criteria to be applied to all fleet segments under the scope of the assessment.

2.2.1.1 Stock status

The impact analysis takes into account the regional dimension of the assessment and its focus on fisheries managed under the CFP. The agreed criteria are related to the CFP overarching objectives of maintaining or restoring marine resources at levels that can produce the maximum sustainable Yield (MSY), ensuring the sustainable exploitation of marine resources according to the Precautionary Approach (PA). Therefore, the status of the exploited stocks by each fleet segment is used to calculate the first component of the impact.

The evaluation of the status of the stock should be based on the assessment provided by the relevant scientific bodies, in relation to MSY objectives laydown in EU multiannual plans or, in the absence of those, in relation to Precautionary Approach principles. Table 1 shows the generic scoring to be applied to the different stock status categories. Some scientific bodies, such as the International Council of the Exploitation of the Sea (ICES), evaluate the stock status in relation to two dimensions, the “fishing pressure” and the “stock size”. Further details on how to obtain the classification

categories for the stock status as listed in Table 1 using the information provided by ICES is available in Annex 1.

Table 1. Evaluation of the stock status and corresponding scores used to calculate this component of the impact in the Risk Assessment process.

Stock status classifications by scientific bodies		RA values
Underexploited	Non-fully exploited	1
Moderately exploited		
Fully exploited	Fully Exploited	
Overexploited	Overexploited	4
Depleted		
Recovering		
Unknown	Unknown	3*

* the use of the value "3" for the unknown cases is according to the Precautionary Approach.

In some cases, different stocks (or sub-stocks) of the same species are exploited by the same fleet segment. For such situations, an overall species status should be considered. An example of this process is shown in Table 2, where a given fleet segment exploits three stocks of *Species C* and an overall stock status for *Species C* is calculated based on the status and the relative importance of each stock (i.e., less important stocks contribute less to the overall species score).

Table 2. Example of the stock status classification of a fleet segment with several stocks of the same species.

Stocks exploited by a given fleet segment	Stock status[1)]	Stock status used for impact calculation
Stock 1 - *Species A*		3
Stock 2 - *Species B*		1
Stock 3 - *Species C*		
Stock 4 - *Species C*		
Stock 5 - *Species C*		
Species C		[2)] 4

[1)] From Table 1.
[2)] Overview of all stocks of *Species C*.

In cases where an updated stock status evaluation becomes available after the RA has been carried out, the impact level can be revised by EFCA in consultation with MS. Consequently, the follow up process of risk assessment should also be performed with the updated information on impact.

2.2.1.2 Level of catches

The second component of the impact is the level of catches of the exploited stocks of each fleet segment in relation to a given reference value. The reference value used for the regional RA normally is the TAC corresponding to the stock under consideration, while the reference value for the national RA should be the MS' quota for that stock. A fleet segment with minor catches of a given stock will

have a lower impact than other fleet segments with higher catches of the same stock. The level of catches is calculated as the weight of the catches of each stock expressed as a percentage of the TAC/quota of the stock in the corresponding area. However, for situations where there is a mismatch between the TAC/quota area, the stock area and the area defined for the fleet segment, it could be advisable to use another reference value for the level of catches. Possibilities include the use of the weight of the catch of that stock by all fleet segments in the area of interest or it could be attempted to try to match the TACs/quotas to the areas for which the risk is calculated.

In addition to the level of catches, other proxies to evaluate the impact could be considered such as fishing effort, fleet capacity, etc.

If the catches of a fleet segment represent less than 3 % of the total TAC/quota of a stock, the catch level component of the impact is considered negligible and has no weight in the subsequent impact calculation. This fleet segment is then considered to have a “low” impact independently of the status of the stock.

For each species/ stock considered in a given fleet segment the following criteria, presented in Table 3, is used, considering the respective colour code and corresponding numerical values assigned. The numerical values range from 1 to 4, with 1 being low catch levels and 4 very high catch levels. A numerical value of 0 is used to indicate a negligible catch level.

Table 3. Criteria used to quantify the level of catches for each species. TAC is the reference value used for the regional RA while the quota is the reference for the national RA.

Fishery representing **<3%** of volume of catches (in relation to the TAC/quota)	Fishery representing **>3% and <20%** of volume of catches (in relation to the TAC/quota)	Fishery representing ≥ **20% and < 40 %** of volume of catches (in relation to the TAC/quota)	Fishery representing ≥ **40% and < 60 %** of volume of catches (in relation to the TAC/quota)	Fishery representing **≥ 60 %** of volume of catches (in relation to the TAC/quota)
negligible	1	2	3	4

It is important to note, that in many cases no add up of non-declared discards estimates or other misrecording information are considered in the calculations. This means that, for example, in the case of very high non-declared discards of a given fleet segment or under reporting of catches, the impact value calculated would be an underestimation. However, if there are evidences that non-declared discards are substantial, a higher impact value could be considered.

In case of missing data on catches, alternative methods on how to proceed should be considered, such as only used the stock status. Also, if there are signs that the available data are not reliable,

the calculation of the impact should be only based on stock status information. In addition, in cases where there is only one fleet segment exploiting the species under consideration, the impact could also be calculated based only on the information on stock status. All these cases should be duly documented.

2.2.1.3 Overall impact calculation

The calculation of the impact should first be conducted at a species level using the evaluation of the stocks status component as described in section 2.2.1.1 and the relative catch level component for each species described in section 2.2.1.2. The following rules should then be applied when combining the two components:

a) If the catches of the fleet segment of a given species represent less than 3% of the TAC/quota of that species, within a given area, the impact is "low" (value: 1; colour: green (see example of Table 4));

Table 4. Example of impact calculation of a given stock with level of catches less than 3% of the TAC.

Stocks exploited by a given fleet segment	**Stock status**	**Level of catches**		**Impact** 1 if level of catches <3%
		%	**code**	
Stock 1 - *Species A*	3	2%	0	**1** [level of catches <3%]

b) If the catches of the fleet segment of a given species represent more than or are equal to 3% of the TAC/quota of that species, the impact of a species is calculated as a weighted average of the classification of the stock status and catch levels.

When combining the catch levels with the stock status, the latter is given two times the weight of the catch levels (see example of Table 5).

Table 5. Example of impact calculation of a given stock with level of catches equal to or higher than 3% of the TAC.

Stocks exploited by a given fleet segment	**Stock status**	**Level of catches**		**Impact** if level of catches ≥3%, rounded ((2 x overall stock status) + level of catches)/3
		%	**code**	
Stock 2 - *Species B*	1	43%	3	**2** [rounded ((2 x 1)+ 3)/3]

When addressing fleet segments that target more than one stock, it is necessary to derive an impact value for that fleet segment taking into account the individual impact values obtained for each stock for that fleet segment. The impact of a fleet segment assumes that the impact on the main target species has more influence on the final impact value of the fleet segment (or area within a fleet

segment). A detailed overview of the final impact value is presented in Annex 2. The use of the impact on the main target species as a key factor is a suggested criteria and there might be reasons to deviate from it, which should be documented if this is the case.

A four-stage evaluation of the overall impact of each fleet segment is recommended, as presented below in Table 6.

Table 6. Four-stage evaluation of the overall impact.

Impact	low	medium	high	very high
Colour code	green	yellow	orange	red
Numerical code	1	2	3	4

Table 7 presents an overview of the impact value considering the results of the two factors, when addressing single species fleet segments, as it is the case of the pelagic fleet segments.

Table 7. Impact calculation for single species approach. Matrix of stock status and catch levels.

			Stock status		
			1	3	4
Level of catches	Fishery representing <3% of the TAC of the species being analysed	0	1	1	1
	Fishery representing ≥3% and <20% of the TAC of the species being analysed	1	1	2	3
	Fishery representing ≥ 20% and < 40 % of the TAC of the species being analysed	2	1	3	3
	Fishery representing ≥ 40% and < 60 % of the TAC of the species being analysed	3	2	3	4
	Fishery representing ≥ 60 % of volume of the TAC of the species being analysed	4	2	3	4

2.2.1.4 Other considerations of impact

The current methodology to estimate the impact of each fleet segment is independent of the threats, as it depends on the stock status and the levels of catches. In addition to stock status, two other factors related with the impact of the fishery on the marine ecosystem should be systematically considered: i) the presence of significant catches of protected species and ii) catches of deplected stock(s). When those cases occur, the impact value of the fleet segment should be raised to the next impact level. As an example, if there are significant bycatch of a protected species in a given fleet

segment evaluated as “medium” impact, the final impact for that fleet segment should be raised to “high”.

The long-term goal of the CFP is to secure sustainable fisheries, by aiming not only at ensuring environmental protection but also taking into account the economic and social dimensions of the activity. These dimensions could also be considered together with other aspects such as the credibility in terms of compliance of the EU under international agreements, credibility of management system and current compliance levels, and establishment of emergency measures. In those cases, the final impact value could also be increased by one step.

The additional aspects to be considered in the impact calculation should always be linked with the CPF objectives, applied consistently to all fleet segments and carefully documented.

2.2.2. Likelihood

As stated above, the likelihood is the probability of occurrence of a non-compliance event. For some threats, the probability of occurrence of a risk can be estimated through a quantitative indicator which is the preferred option. For the threat of non-compliance with the landing obligation, EFCA together with MS, has developed a set of compliance indicators based on the estimates of the differences in discard rates between reference data (such as last haul inspections or fishery data from vessels operating with CCTV) and the figures obtained from the logbooks/sales notes. In Annex 3, the criteria established to evaluate the likelihood of non-compliance with the landing obligation are presented. As compliance indicators are being developed, either regionally by EFCA or by the MS, appropriate criteria should also be considered, to facilitate the use of that information in the RA. Further information on the compliance indicators that could be used as input for the likelihood evaluation are detailed on the document prepared by EFCA with collaboration with Member States experts “*Guidelines on indicators to measure compliance in fisheries*”.

Nevertheless, compliance indicators are not often available or may not be considered as representative of the current fishery situation. It is then necessary for the assessors to proceed differently in order to evaluate the probability of a risk taken place. It is then recommended to identify the main factors which might explain the probability of risk occurrence, analyse and evaluate these factors, and combine the results into a single risk occurrence level for each fishery. In these cases, the expert knowledge is that main tool to assess the likelihood.

Currently, EFCA uses a four-stage evaluation for the likelihood similar to the one used for impact (see Table 6).

2.2.2.1 Other considerations of likelihood

In the absence of compliance indicators as input information to calculate the likelihood, expert knowledge is often used. Conflicting opinions of the likelihood level could be considered as limited knowledge of the situation, which, according to the precautionary approach should lead to an increased value of likelihood. The same should be the case when all assessors are not able to, confidently, evaluate the likelihood of a particular threat.

2.3. Risk Evaluation

After having estimates for each fleet segment of i) impact and ii) likelihood it is then possible to estimate the risk which is a combination of these two parameters. The resulting risk score of each threat for each fleet segment corresponds to the product of the respective impact and likelihood value. The choice of scoring scale for the rating of risk factors shall be decided by the assessors. In Figure 2 the current criteria is presented.

		Likelihood			
		Low (1)	Medium (2)	High (3)	Very high (4)
Impact	Low (1)	Low (1)	Low (2)	Medium (3)	Medium (4)
	Medium (2)	Low (2)	Medium (4)	Medium (6)	High (8)
	High (3)	Medium (3)	Medium (6)	High (9)	Very high (12)
	Very high (4)	Medium (4)	High (8)	Very high (12)	Very high (16)

Risk	from	to
Low	1	2
Medium	3	7
High	8	11
Very high	12	16

Figure 2. Risk values based on the product of impact and likelihood.

As previously referred, if update input data / information is available that might change the final risk, the RA exercise should be redone considering the new data / information and the updated evaluation considered. This could be the case of update stock status, level of catches or anyother well documented information on likelihood.

3. Next steps

The results of the risk assessment should be a key input for the planning of the future control, monitoring and surveillance (CMS) activities. The fleet segments, areas and seasons identified as

of higher risk should be the focus of CMS efforts, and adequate risk treatment measures should be recommended as a follow up step of the RA process.

An evaluation of the RA process should also be considered and appropriate indicators should be used to assess its efficiency and provide guidance for further improvements. The parameters considered and the methodology could also be evaluated and, if needed, revised.

Annexes

List of annexes

Annex 1	Stock status classification based in information provided by ICES
Annex 2	Criteria used to quantify the impact for each fleet segment/area, based on the impact calculated for individual species exploited by the fleet segment/area
Annex 3	Criteria of likelihood with LO

Annex 1. Stock status classification based in information provided by ICES

In most cases, ICES provides a separate stock status evaluation for fishing mortality and for stock size and also for other defined reference points. Whenever a stock is subject to an EU multiannual plan with defined F_{MSY} ranges, these ranges should be used for the evaluation of the stock status. In the absence of an agreed multiannual plan with defined MSY ranges, the evaluation of the stock status is based on Precautionary Approach (PA) reference points. If no PA reference points are defined, the evaluation should be based on defined MSY reference points (point estimates). If no evaluation is available or is available but inconclusive then a more precautionary evaluation should be considered. In this case, the status of the stock is assigned as "unknown" (corresponding to numerical code "3" or orange colour – see Table 1). **Error! Reference source not found.** presents the hierarchical order of the information used to evaluate the stock status based on information from ICES.

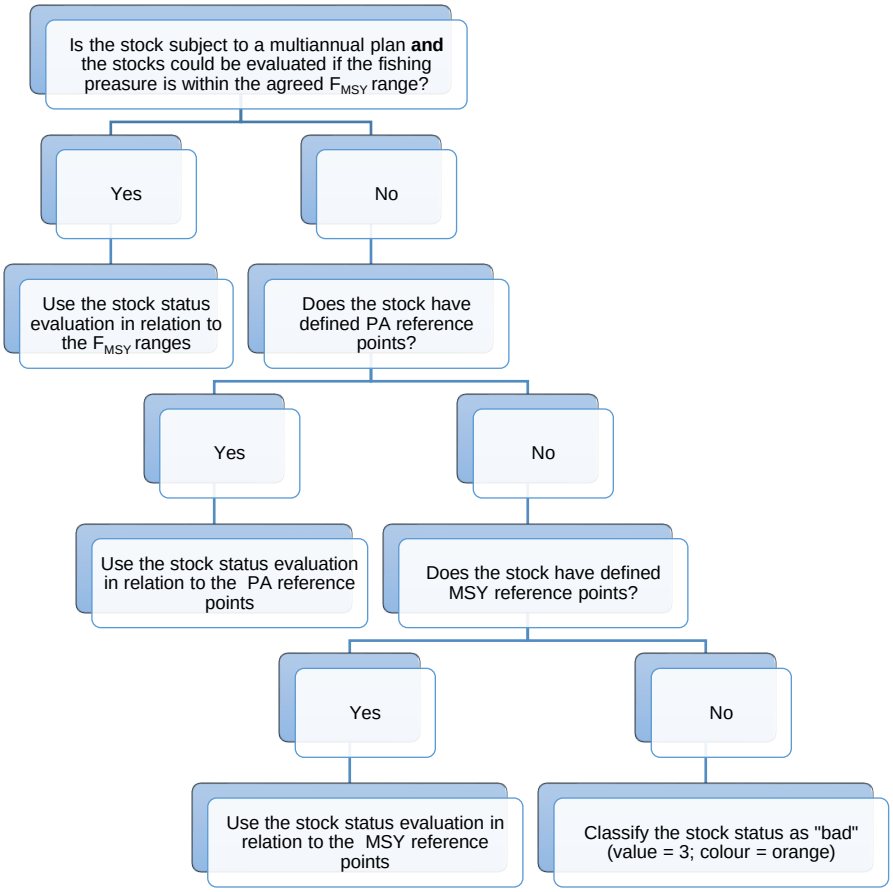


Figure A.3. Overview of the hierarchical order of the information to be used on the evaluation of the stock status as input for the impact calculation of stocks assessed by ICES.

When available, both the information of the stock status in relation to fishing pressure and stock size should be used. Usually, fishing pressure is measured as fishing mortality (F), but other parameters could be used if considered appropriate (e.g., the harvest rate). Likewise, the stock size is usually measured as spawning stocks biomass (SSB) but other elements could be considered, such as total biomass, abundance or a biomass index.

Whatever information is used to assess the status of a stock, a numerical value of 1, 3 and 4, similar to Table 1, is used.

The sections below, A.1. to A.1.3 describe how the numerical values used for the impact calculation are derived according to the decision tree presented in Figure A.3.

A.1.1 Stocks subject to an EU multiannual plan with defined F_{MSY} ranges

EU multiannual plans are currently being defined. For several stocks in the Baltic Sea there is already an agreed multiannual plan (EU 2016/1139) with a defined range of values of F_{MSY} for each stock. The F_{MSY} range corresponds to a range of fishing mortality values that will result in maximum sustainable yields (MSY) in the long term under existing average environmental conditions without significantly affecting the reproduction process for the stock concerned. Whenever a stock is subject to a multiannual plan, the evaluation of i) the fishing pressure in relation to the F_{MSY} range defined by the plan in conjunction with ii) the evaluation of the stock size in relation to the MSY $B_{trigger}$ should be the basis of the impact calculation. As soon as other multiannual plans are agreed for other areas besides the Baltic Sea, the F_{MSY} ranges defined on those plans should be the basis for the stock status evaluation used in the impact calculation. The use of the MSY ranges also address, to some extent, mixed-fisheries aspects. The evaluation should be as described in Table A. 1 with the respective colour code and corresponding numerical values assigned.

Table A. 1. Evaluation of stock status for stocks subjected to an EU multiannual plan.

		Stock size in relation to MSY $B_{trigger}$		
		Stock size ≥ MSY $B_{trigger}$	**Stock size < MSY $B_{trigger}$**	**No MSY $B_{trigger}$ defined or no evaluation available**
Fishing pressure in relation to range of F_{MSY}	**Within the F_{MSY} range**	1	3	3
	Outside the F_{MSY} range	3	4	4
	No evaluation	Use PA reference points to assess the stock status		

A.1.2 Stock with defined precautionary reference points

For stocks not subject to an agreed multiannual plan and with defined PA reference points, the later should be used for the evaluation of the status of the stock. The evaluation should be as described in Table A. 2 with the respective colour code and corresponding numerical values assigned.

Table A. 2. Evaluation of stock status for stocks not subject to a multiannual plan and with defined PA reference points.

		Stock size in relation to PA ref. points			
		Stock size ≥ B_{pa}	B_{pa}>Stock size ≥ B_{lim}	Stock size < B_{lim}	No PA ref. points defined or no evaluation available
Fishing pressure in relation to PA ref. points	$F \leq F_{pa}$	1	3	3	3
	$F_{pa} < F \leq F_{lim}$	3	3	4	3
	$F > F_{lim}$	3	4	4	4
	No PA ref. points defined or no evaluation available	3	3	4	3*

*Use MSY ref. point to assess the stock status if available instead of classifying as “3-orange”.

A.1.3 Stocks with no defined precautionary reference points and defined MSY reference points

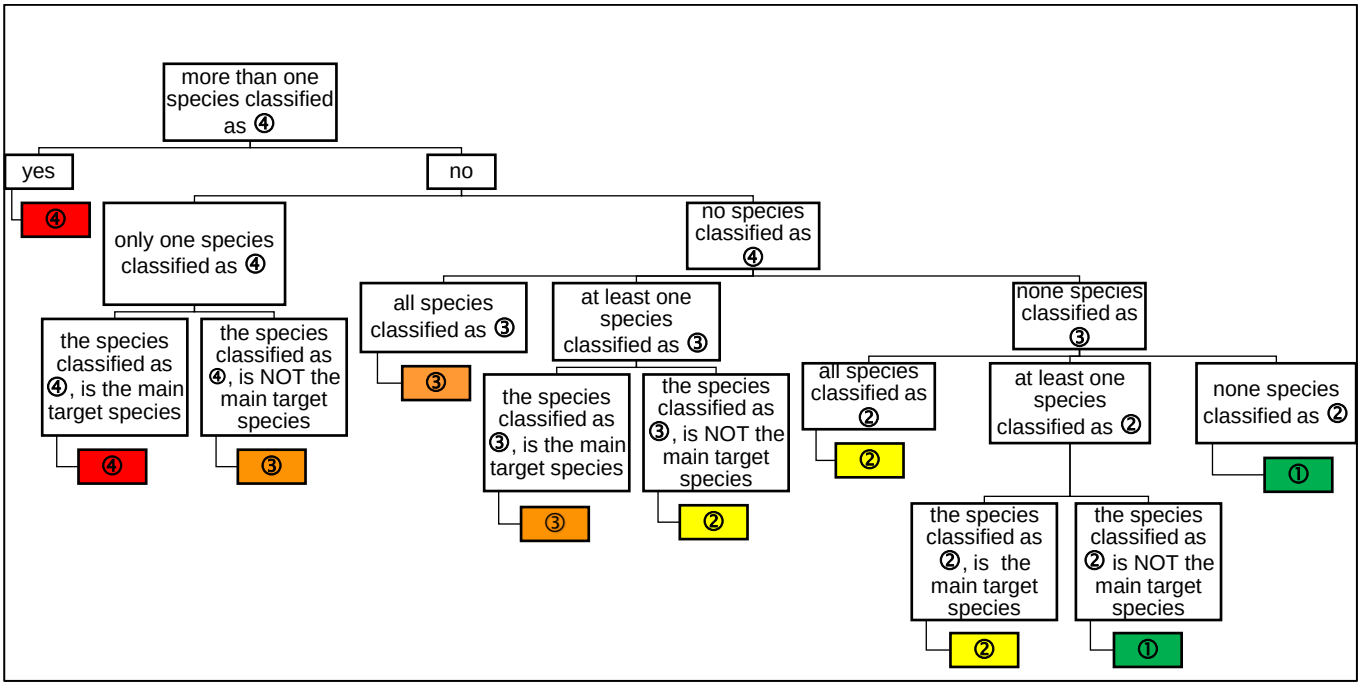
For stocks with no defined PA reference points, the information for the stock status evaluation should be based on defined MSY reference points, when available. The evaluation should be as described in Table A.3 with the respective colour code and corresponding numerical values assigned.

Table A.3. Evaluation of stock status for stocks not subject to a multiannual plan and without defined PA reference points.

		Stock size in relation to MSY reference points ($MSY\ B_{trigger}$ or B_{MSY}*)		
		Stock size ≥ MSY $B_{trigger}$ or B_{MSY}	Stock size < MSY $B_{trigger}$ or B_{MSY}	No PA ref. points defined or no evaluation provided
Fishing pressure in relation to F_{MSY}	$F \leq F_{MSY}$	1	3	3
	$F > F_{MSY}$	3	4	3
	No MSY ref. points defined or no evaluation provided	3	4	3

* The use of either MSY $B_{trigger}$ or B_{MSY} depends on the MSY reference points used by the relevant scientific body.

Annex 2: Criteria used to quantify the impact for each fleet segment/area, based on the impact calculated for individual species exploited by the fleet segment/area.



① - low impact; ② - medium impact; ③ - high impact; ④ - very high impact

Annex 3: Criteria of likelihood with LO

Level	Main criteria	• Other possible factors
Very high (4)	• Discarding occurs in the fishery for at least 2 TAC species at a level higher than 15% of the total catch • Mixed fisheries with more than 1 by-catch species with low commercial value • Very high concentration of juveniles, low quality and / or non-marketable sizes (> 40 %) for at least 1 TAC species	• No technical measures (gear selectivity, seasonal closures) in place • Very low deterrence factor (no REM systems, very low control effort, very low sanction policy) • Very low social pressure (very low policy legitimacy, wide-spread non-compliant behaviour of others, personal reputation)
High (3)	• Discarding occur in the fishery for at least 1 TAC species at a level higher than 15 % of the total catch • Mixed fisheries with at least 1 by-catch species with low commercial value • high concentration of juveniles, low quality and / or non-marketable sizes (> 25 % <40%) for at least 1 TAC species	• Minimal technical measures in place (gear selectivity, seasonal closures) • Low deterrence factor (no REM systems, low control effort, low sanction policy) • Low social pressure (low policy legitimacy, high non-compliant behaviour of others, personal reputation)
Medium (2)	• Discards occur in the fishery for at least 1 TAC species > 5 % < 15 % • Mixed fisheries with occasional by-catch species with low commercial value • Medium concentration of juveniles, low quality and / or non-marketable sizes (> 10 % <25%) for at least 1 TAC species	• Some technical measures in place (gear selectivity, seasonal closures) • Low deterrence factor (no REM systems, low control effort, low sanction policy) • Some social pressure (some policy legitimacy, average non-compliant behaviour of others, personal reputation)
Low (1)	• Discards occur in the fishery < 5 % for all TAC species • Single-species fishery • low concentration of juveniles, low quality and / or non-marketable sizes (<10 %) for TAC species	• Technical measures in place (gear selectivity, seasonal closures) • High deterrence factor (REM systems, risk management strategy in place with adequate control effort, high sanction policy) • Social pressure (high policy legitimacy, no non-compliant behaviour of others, personal reputation highly important)