

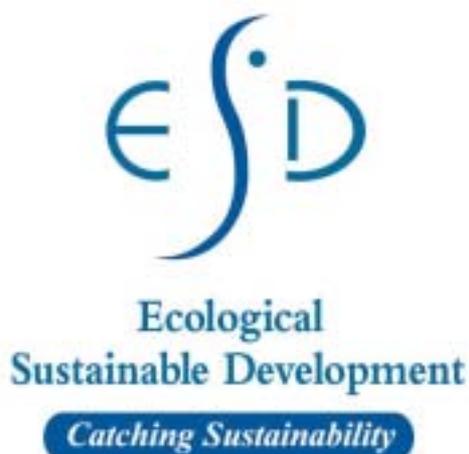
# SCFA - FRDC ESD PROJECT

## RISK ASSESSMENT PROCESS Wild Capture Fisheries

SCFA-FRDC PROJECT TEAM

VERSION 3.2

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***This set of Risk Assessment Guidelines is part of an on-going process to develop a reporting framework for ESD and fisheries within Australia. It is not the final version and changes are made regularly after case studies have shown areas where improvements can be made.***

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## Risk Assessment Process

After the issues have been identified through the alterations to the component trees, a process to prioritise each of these issues needs to be completed. For all of the environmental issues in the 3 relevant component trees, this should be done using a formal risk assessment process. The risk assessment framework that should be applied should be consistent with the Australian Standard AS/NZS 4360:1999 Risk Management. The general requirements for completing a risk assessment are well described elsewhere but in summary, it considers the range of potential consequences of an issue/activity and how likely those consequences are to occur.

### 4.3.1

***“Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that those consequences may occur.”***

AS/NZS 4360:1999 page 12

The combination of the level of consequence and the likelihood is used to produce an estimated level of risk associated with the particular hazardous event/issue in question.

A realistic estimate should be made by the group of the possible consequence level of an issue. This level can be from 0-5, with 0 being negligible and 5 being catastrophic/irreversible. This assessment needs to be based upon the combined judgement of the participants at the workshop who collectively should have considerable expertise in the areas examined. The level of consequence needs to be determined at the appropriate scale for the issue. Thus for target species you assess the consequence of a fishery on the appropriate population not at the individual level, obviously catching one fish is always catastrophic for the individual but usually not for the population. Similarly, when assessing possible ecosystem impacts this should be done at the level of the whole ecosystem or at least in terms of the entire extent of the habitat, not at the level of an individual patch or individuals of non-target species.

To assist in the consistency of approach, a series of ecological consequence tables has been generated. Thus there are five tables that cover:

1. Target species/major non-retained species,
2. By-product/minor non-retained species,
3. Protected Species (A category under the EPBC Act)
4. Habitat issues and
5. Ecosystem effects.

The likelihood of a consequence occurring is assigned to one of six levels from remote to likely. In doing so, the workshop group should consider the likelihood of the “hazardous” event (ie the consequence) actually occurring, based upon their collective wisdom which again would include an understanding of the scale of impact required to produce the consequence.

From these two figures (consequence and likelihood), the overall risk level, which is largely the mathematical product of the consequence and likelihood levels (Risk = Consequence x Likelihood), can be calculated. From this product each issue can then

be assigned a *Risk Ranking* within one of five categories: Extreme, High, Moderate, Low and Negligible (see Table 4).

This process should be completed for each of the identified issues with a risk ranking developed and the rationale for assigning these rankings recorded at the required level of detail. Given that the information used to determine the levels of risk are usually not well known or available, to ensure that there is full transparency in the process -

**- the actual risk assessment is not just the scores developed during the meeting but the full output reports backed up by the appropriate level of documentation/justification.**

Only the issues of sufficient risk or priority (M, H or E), which should include all those that require specific management actions to achieve these ratings, will need to have a full performance report completed. Nonetheless, for the negligible and low risk issues where reports are not needed it is still a necessary element that the rationale for classifying issues as low risk or negligible risk must be documented and form part of the ESD report so that stakeholders can see why these issues were accorded these ratings (and potentially supply alternative information to affect these ratings). The level of justification required should be appropriately greater for low compared to negligible risk issues. It should be noted that if a full performance report is not needed, this by definition means that there are no specific management actions being taken. If you need to take management actions then you need to develop a performance report to assess the performance of this management.

Finally, for issues that were rated as either having a high, and especially extreme, risk, further management measures may be needed or further information may be needed to more closely effectively quantify the risks. These outcomes are summarized in Table 2.

**Table 1 – Risk Matrix**

		Consequence					
		Negligible	Minor	Moderate	Severe	Major	Catastrophic
Likelihood		0	1	2	3	4	5
Remote	1	0	0	0	1	1	2
Rare	2	0	1	1	2	2	2
Unlikely	3	0	1	2	2	2	3
Possible	4	0	1	2	3	3	4
Occasional	5	0	1	2	3	3	4
Likely	6	0	1	2	3	4	4

**Table 2– Risk Ranking Outcomes**

<b>RISK</b>	<b>Likely Management Response</b>	<b>Reporting</b>
Negligible	0 Nil	Short Justification Only
Low	1 None Specific	Full Justification needed
Moderate	2 Specific Management Needed	Full Performance Report
High	3 Possible increases to management activities needed	Full Performance Report
Extreme	4 Likely additional management activities needed	Full Performance Report

**Consequence Definitions**

To truly assess the ecological impacts (not the social impacts – eg community attitudes to an activity) the assessments must be completed at the level of the relevant local population (unit stock), habitats, and ecosystems within the local bioregion - not at the level of an individual, patch. Note that the issues of wastage of non-retained species beyond any ecosystem impact may be a major social issue. Such social and other non-ecological issues are likely to be just as important to assess and may alter what happens to the priority of an issue.

- Retained/Non Retained/Protected species – assessed at level of locally reproducing population –unit stock
- Ecosystem – indirect impacts due to flow on effects on food chain assessed at the Regional/Bioregional level
- Habitat (attached species – eg seagrass) assessed at the regional habitat level defined as the entire habitat equivalent to that occupied by the exploited stock.

For habitats and ecosystem utilise IMPCRA style definitions or other scientifically determined scales (eg for WHA listings) where appropriate.

Table 3 Consequence categories for the Major Retained/Non-Retained Species

Level	Ecological (RETAINED: target/major-non-retained)
<b>Negligible (0)</b>	<p>General - Insignificant impacts to habitat or populations, Unlikely to be measurable against background variability</p> <p>Target Stock/Non-retained: undetectable for this population.</p>
<b>Minor (1)</b>	<p>Target/Non-Retained: Possibly detectable but no impact on population size or dynamics.</p>
<b>Moderate (2)</b>	<p>Target: Full exploitation rate where long term recruitment/dynamics not adversely impacted</p>
<b>Severe (4)</b>	<p>Target/Non Retained: Affecting recruitment levels of stocks/ or their capacity to increase</p>
<b>Major (6)</b>	<p>Target/Non Retained: Likely to cause local extinctions</p> <p>IUCN Criteria applicable</p>
<b>Catastrophic (8)</b>	<p>Target/NonRetained:Local extinctions are imminent/immediate</p> <p>IUCN Criteria Applicable</p>

Table 4 Consequence Categories for the By-Product Species/Minor Non-retained species

Level	Ecological (RETAINED: By-product/Non-retained:other)
<b>Negligible (0)</b>	Area where fishing occurs is negligible compared to where the relevant stock of the species resides (< 1%)
<b>Minor (1)</b>	Take in this fishery is small (< 10%) compared to total take by all fisheries and these species are covered explicitly elsewhere.  Take and area of capture by this fishery is small compared to known area of distribution (< 20%).
<b>Moderate (2)</b>	Relative area of, or susceptibility to capture is suspected to be less than 50% and species do not have vulnerable life history traits  Recovery measured in months – years
<b>Severe (4)</b>	No information is available on the relative area or susceptibility to capture or on the vulnerability of life history traits of this type of species  Relative levels of capture/susceptibility suspected/known to be greater than 50% and species should be examined explicitly
<b>Major (6)</b>	N/A (see Table 3) Use IUCN Criteria
<b>Catastrophic (8)</b>	N/A (See table 3)

Table 5 Protected Species – (note these are note for threatened species which should be rated as in the retained species table)

Level	Ecological
<b>Negligible</b>	<b>Protected Species:</b> Almost none are impacted.

<b>Minor</b>	<b>Protected Species:</b> Some are impacted but there is no impact on stock
<b>Moderate</b>	<b>Protected Species:</b> Levels of impact are at the maximum acceptable level
<b>Severe</b>	<i>Protected Species: Same as target species</i>
<b>Major</b>	<b>Protected Species:</b> same as target species
<b>Catastrophic</b>	<b>Protected Species:</b> same as target species

Table 6 Consequence categories for Habitat impacts

<b>Level</b>	<b>Ecological (HABITAT)</b>
<b>Negligible (0)</b>	General - Insignificant impacts to habitat or populations, Unlikely to be measurable against background variability  Habitat: Affecting < 1% of area of habitat.
<b>Minor (1)</b>	Habitat: Possibly localised affects < 5% of total habitat area  Rapid recovery would occur if stopped - measured in days to months.
<b>Moderate (2)</b>	Habitat: 5-30 % of habitat area is affected. :Or, if occurring over wider area, the impact to habitat from activity is not major  Recovery measured in months – years
<b>Severe (4)</b>	Habitat: 30- 60 % of habitat is affected/removed.  Recovery measured in years.
<b>Major (6)</b>	Habitat: 60 - 90% affected  Recovery period measured in years to decades.
<b>Catastrophic (8)</b>	Habitat: > 90% affected in a major way/removed  Long-term recovery period will be greater than decades.

Table 7 Consequence categories for ecosystem impacts

Level	Ecological (ECOSYSTEM)
<b>Negligible (0)</b>	<p>General - Insignificant impacts to habitat or populations, Unlikely to be measurable against background variability</p> <p>Ecosystem: Interactions may be occurring but it is unlikely that there would be any change outside of natural variation</p>
<b>Minor (1)</b>	<p>Ecosystem: Captured species do not play a keystone role – only minor changes in relative abundance of other constituents.</p> <p>Rapid recovery would occur if stopped - measured in days to months.</p>
<b>Moderate (2)</b>	<p>Ecosystem: measurable changes to the ecosystem components without there being a major change in function. (no loss of components)</p> <p>Recovery measured in months - years</p>
<b>Severe (4)</b>	<p>Ecosystem: Ecosystem function altered measurably and some function or components are missing/declining/increasing outside of historical range &amp;/or allowed/facilitated new species to appear.</p> <p>Recovery measured in years.</p>
<b>Major (6)</b>	<p>Ecosystem: A major change to ecosystem structure and function (different dynamics now occur with different species/groups now the major targets of capture)</p> <p>Recovery period measured in years to decades.</p>
<b>Catastrophic (8)</b>	<p>Ecosystem: Total collapse of ecosystem processes.</p> <p>Long-term recovery period will be greater than decades.</p>

**Table 8 – Likelihood Definitions**

<b>Level</b>	<b>Descriptor</b>
<b>Likely</b>	It is expected to occur
<b>Occasional</b>	May occur
<b>Possible</b>	Some evidence to suggest this is possible here
<b>Unlikely</b>	Uncommon, but has been known to occur elsewhere
<b>Rare</b>	May occur in exceptional circumstances
<b>Remote</b>	Never heard of, but not impossible