

The tables below show the sub-components for each MSC Criterion and equivalent consequence scores; Major (SG 40), Moderate (SG 60), Minor (SG 80) and Negligible (SG 100). These consequence scores are then considered in allocating eventual combined SICA scores for each of the MSC Criteria identified within the Assessment Tree. The SICA analysis does not apply to the MSC Criteria concerned with population rebuilding (of target or non-target populations).

Principle 1	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.
1.1 (MSC Criterion 1)	The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.

Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)
Population Size	Significant negative trends in stock productivity characteristics found that affect sardine recruitment, long term stock status or their capacity to increase	Minor negative trends in stock productivity characteristics but long-term recruitment dynamics of sardine not adversely damaged.	Detectable trends in sardine productivity characteristics but impact on population size and dynamics are consistent with fishing at MSY levels.	Insignificant trends in sardine productivity characteristics. Unlikely to be detectable against background variability for this population.
Geographic Range	Significant changes in sardine geographic range up to 50 %, and severe impacts on population dynamics.	Significant changes in sardine geographic range up to 25 %, and evidence of impacts on population dynamics.	Possible detectable change in sardine geographic range but minimal impact on population range and none on dynamics, change in geographic range up to 10 % of original.	No detectable change in sardine geographic range. Unlikely to be detectable against background variability for this population.
Genetic Structure	Change in frequency of sardine genotypes, effective population size or number of spawning units up to 25%.	Change in frequency of sardine genotypes, effective population size or number of spawning units up to 10%.	Possible detectable change in sardine genetic structure, as evidenced by population productivity characteristics. Any change in frequency of genotypes, effective population size or number of spawning units up to 5%.	No detectable change in sardine genetic structure, as evidenced by population productivity characteristics. Unlikely to be detectable against background variability for this population.
Age/Size/ Sex Structure	Fishing levels sufficient to result in long-term negative impacts on population productivity dynamics and hence sardine recruitment dynamics. Time to recover to original structure up to 3 generations free from impact.	Trends in sardine population dynamics identified, but long-term recruitment dynamics not adversely affected.	Possible detectable change in sardine age/size/sex structure consistent with fishing at MSY levels, but minimal impact on population dynamics and no effect on recruitment dynamics.	No detectable change in sardine age/size/sex structure. Unlikely to be detectable against background variability for this population.

Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)
Reproductive Capacity	Change in sardine reproductive capacity adversely affecting long-term recruitment dynamics. Time to recovery up to 3 generations free from impact.	Negative trends on sardine population dynamics identified, but long-term recruitment dynamics not adversely affected.	Possible detectable change in sardine reproductive capacity consistent with fishing at MSY levels, but minimal impact on population dynamics.	No detectable change in sardine reproductive capacity. Unlikely to be detectable against background variability for this population.
Behaviour/ Movement	Change in sardine behaviour/ movement with impacts on population dynamics. Time to return to original behaviour/ movement on the scale of months to years.	Detectable change in sardine behaviour/ movement with the potential for some impact on population dynamics. Time to return to original behaviour/ movement on the scale of weeks to months.	Possible detectable change in sardine behaviour/movement but minimal impact on population dynamics. Time to return to original behaviour/ movement on the scale of days to weeks.	No detectable change in sardine behaviour/movement. Unlikely to be detectable against background variability for this population. Time taken to recover to pre-disturbed state on the scale of hours.
1.3 (MSC Criterion 3)	Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity			
Genetic Structure	Change in frequency of sardine genotypes, effective population size or number of spawning units up to 25%.	Change in frequency of sardine genotypes, effective population size or number of spawning units up to 10%.	Possible detectable change in sardine genetic structure. Any change in frequency of genotypes, effective population size or number of spawning units up to 5%.	No detectable change in sardine genetic structure. Unlikely to be detectable against background variability for this population.
Age/Size/ Sex Structure	Long-term sardine recruitment dynamics adversely affected. Time to recover to original structure up to 5 generations free from impact.	Impact on sardine population dynamics at maximum sustainable level, long-term recruitment dynamics not adversely affected.	Possible detectable change in sardine age/size/sex structure but minimal impact on population dynamics.	No detectable change in sardine age/size/sex structure. Unlikely to be detectable against background variability for this population.
Reproductive Capacity	Change in sardine reproductive capacity adversely affecting long-term recruitment dynamics. Time to recovery up to 3 generations free from impact.	Negative trends on sardine population dynamics identified, but long-term recruitment dynamics not adversely affected.	Possible detectable change in sardine reproductive capacity consistent with fishing at MSY levels, but minimal impact on population dynamics.	No detectable change in sardine reproductive capacity. Unlikely to be detectable against background variability for this population.

Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)
Behaviour/ Movement	Change in sardine behaviour/ movement with impacts on population dynamics. Time to return to original behaviour/ movement on the scale of months to years.	Detectable change in sardine behaviour/ movement with the potential for some impact on population dynamics. Time to return to original behaviour/ movement on the scale of weeks to months.	Possible detectable change in sardine behaviour/movement but minimal impact on population dynamics. Time to return to original behaviour/ movement on the scale of days to weeks.	No detectable change in sardine behaviour/movement. Unlikely to be detectable against background variability for this population. Time taken to recover to pre-disturbed state on the scale of hours.

Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)

Principle 2	Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends
2.1 (MSC Criterion 1)	The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.

MRAG Sub-criterion 2.1.1	Impacts of the fishery on habitats
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Habitat Structure and Function	The level of reduction of internal dynamics of habitat may threaten ability to recover adequately, or it will cause strong downstream effects from loss of function. For impacts on non-fragile habitats this may be for up to 50% of habitat affected, but for more fragile habitats, to stay in this category the % area affected up to 25%. Time to recover from impact on the scale of > one year to < decadal	Impact reduces habitat structure and function. For impacts on non-fragile habitat structure this may be for up to 50% of habitat affected, but for more fragile habitats, to stay in this category the % area affected needs to be smaller up to 20%. Time to recover from local impact on the scale of months to < one year, at larger spatial scales recovery time of months to < one year.	Detectable impact on habitat structure and function. Time to recover from impact on the scale of days to months, regardless of spatial scale.	No detectable change to the internal dynamics of habitat or populations of species making up the habitat. Time taken to recover to pre-disturbed state on the scale of hours to days.
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MRAG Sub-criterion 2.1.2	Impacts of the fishery on retained catch (non-P1 species) and bycatch (non-retained)
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Population Size	Relative state of capture/susceptibility suspected/known to be greater than 50%	No information is available on the relative area or susceptibility to capture/ impact or on the vulnerability of life history traits of this type of species. Susceptibility to capture is suspected to be less than 50% and species do not have vulnerable life history traits. For species with	Possible detectable change in size/growth rate (r) but minimal impact on population size and none on dynamics.	Insignificant change to population size/growth rate (r). Unlikely to be detectable against background variability for this population.
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Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)
		vulnerable life history traits to stay in this category susceptibility to capture must be less than 25%.		
Geographic Range	Change in geographic range up to 25 % of original.	Change in geographic range up to 10% of original.	Possible detectable change in geographic range but minimal impact on population range and none on dynamics, change in geographic range up to 5 % of original.	No detectable change in geographic range. Unlikely to be detectable against background variability for this population.
Genetic Structure	Change in frequency of genotypes, effective population size or number of spawning units up to 25%.	Detectable change in genetic structure. Change in frequency of genotypes, Effective population size or number of spawning units up to 10%.	Possible detectable change in genetic structure. Any change in frequency of genotypes, effective population size or number of spawning units up to 5%.	No detectable change in genetic structure. Unlikely to be detectable against background variability for this population.
Age/Size/Sex Structure	Long-term recruitment dynamics adversely affected. Time to recover to original structure up to 5 generations free from impact.	Detectable change in age/size/sex structure. Impact on population dynamics at maximum sustainable level, long-term recruitment dynamics not adversely damaged.	Possible detectable change in age/size/sex structure but minimal impact on population dynamics.	No detectable change in age/size/sex structure. Unlikely to be detectable against background variability for this population.
Reproductive Capacity	Change in reproductive capacity adversely affecting long-term recruitment dynamics. Time to recovery up to 3 generations free from impact.	Negative trends on population dynamics identified, but long-term recruitment dynamics not adversely affected.	Possible detectable change in reproductive capacity consistent with fishing at MSY levels, but minimal impact on population dynamics.	No detectable change in reproductive capacity. Unlikely to be detectable against background variability for this population.
Behaviour / Movement	Change in behaviour/ movement with impacts on population dynamics. Time to return to original behaviour/ movement on the scale of months to years.	Detectable change in behaviour/ movement with the potential for some impact on population dynamics. Time to return to original behaviour/movement on the scale of weeks to months.	Possible detectable change in behaviour/movement but minimal impact on population dynamics. Time to return to original behaviour/ movement on the scale of days to weeks.	No detectable change in behaviour/ movement. Unlikely to be detectable against background variability for this population. Time taken to recover to pre-disturbed state on the scale of hours.

Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)
Species Composition	Major changes to the community species composition (~25%) (involving keystone species) with major change in function. Ecosystem function altered measurably and some function or components are locally missing/declining/increasing outside of historical range and/or allowed/facilitated new species to appear. Recovery period measured in years.	Detectable changes to the community species composition without a major change in function (no loss of function). Changes to species composition up to 10%.	Impacted species do not play a keystone role – only minor changes in relative abundance of other constituents. Changes of species composition up to 5%.	Interactions may be occurring which affect the internal dynamics of communities leading to change in species composition not detectable against natural variation.
Functional Group Composition	Ecosystem function altered measurably and some functional groups are locally missing/declining/increasing outside of historical range and/or allowed/facilitated new species to appear. Recovery period measured in months to years.	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 which affect the internal dynamics of communities leading to change in functional group composition not detectable against natural variation.
Trophic / Size Structure	Changes in mean trophic level. Ecosystem function altered measurably and some function or components are locally missing/declining/increasing outside of historical range and/or allowed/facilitated new species to appear. Recovery period measured in years to decades.	Changes in mean trophic level, biomass/ number in each size class up to 10%.	Change in mean trophic level, biomass/ number in each size class up to 5%.	Interactions which affect the internal dynamics unlikely to be detectable against natural variation.

Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)

MRAG Sub-criterion 2.1.3	Impacts of the fishery on the ecosystem			
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Species Composition	Major changes to the community species composition (~25%) (involving keystone species) with major change in function. Ecosystem function altered measurably and some function or components are locally missing/declining/increasing outside of historical range and/or allowed/facilitated new species to appear. Recovery period measured in years.	Detectable changes to the community species composition without a major change in function (no loss of function). Changes to species composition up to 10%.	Impacted species do not play a keystone role – only minor changes in relative abundance of other constituents. Changes of species composition up to 5%.	Interactions may be occurring which affect the internal dynamics of communities leading to change in species composition not detectable against natural variation.
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Functional Group Composition	Ecosystem function altered measurably and some functional groups are locally missing/declining/increasing outside of historical range and/or allowed/facilitated new species to appear. Recovery period measured in months to years.	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 which affect the internal dynamics of communities leading to change in functional group composition not detectable against natural variation.
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Distribution of the Community	Geographic range of communities, ecosystem function altered measurably and some functional groups are locally missing/declining/increasing outside of historical range. Change in geographic range for up to 25 % of the species. Recovery period measured in months to years.	Detectable change in geographic range of communities with some impact on community dynamics Change in geographic range up to 10 % of original.	Possible detectable change in geographic range of communities but minimal impact on community dynamics change in geographic range up to 5 % of original.	Interactions which affect the distribution of communities unlikely to be detectable against natural variation.
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Component	Consequence Score			
	Consequence Major (Equivalent SG 40)	Consequence Moderate (Equivalent SG 60)	Consequence Minor (Equivalent SG 80)	Consequence Negligible (Equivalent SG 100)
Genetic Structure	Change in frequency of genotypes, effective population size or number of spawning units up to 25%.	Detectable change in genetic structure. Change in frequency of genotypes, Effective population size or number of spawning units up to 10%.	Possible detectable change in genetic structure. Any change in frequency of genotypes, effective population size or number of spawning units up to 5%.	No detectable change in genetic structure. Unlikely to be detectable against background variability for this population.
Trophic / Size Structure	Changes in mean trophic level. Ecosystem function altered measurably and some function or components are locally missing/declining/increasing outside of historical range and/or allowed/facilitated new species to appear. Recovery period measured in years to decades.	Changes in mean trophic level, biomass/ number in each size class up to 10%.	Change in mean trophic level, biomass/ number in each size class up to 5%.	Interactions which affect the internal dynamics unlikely to be detectable against natural variation.
2.2 (MSC Criterion 2)	The fishery is conducted in a manner that does not threaten biological diversity (at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.			
MRAG Sub-criterion 2 2.1	Impacts on Protected, Endangered and Threatened (PET) species.			
Population Size	Affecting recruitment state of stocks or their capacity to increase.	State of reduction on the rate of increase are at the maximum acceptable level. Possible detectable change in size/ growth rate (r) but minimal impact on population size and none on dynamics of TEP species.	Insignificant change to population size/growth rate (r). Unlikely to be detectable against background variability for this population.	Almost none are killed.