

Ecological Policies for the Visayan Sea Component of the FMA 11 Management Plan
(as per recommendation of the FMA 11 Scientific Advisory Group (SAG),
subject to stakeholders' consultation and approval of the Management Board of FMA11)

BIOLOGICAL REFERENCE FRAMEWORK

Section 8 of RA 10654 states that the Secretary may establish reference points and harvest control rules, provided that in municipal waters and fishery management areas, these may be established upon the concurrence and approval or recommendation of such special agency and the concerned LGU in consultation with the FARMC for conservation or ecological purposes.

Biological indicators with reference points are developed from the National Stock Assessment Program of the National Fisheries Research and Development Institute. Thus far, the following biological indicators and reference points for BSC have been reviewed and recommended by the Science Advisory Group (SAG) of FMA 11:

Specific Objective	Biological Indicator	Target Reference Point	Limit Reference Point
To increase the BSC stock biomass by 10% within 5 years	Proportion of juvenile:adult:megaspawner	80% mature	50% mature
	Fishing Mortality (F)	$F/M < 1$	$F=1.5M$
	Exploitation Value (E)	0.5	0.6
	Spawning Potential Ratio	$> 20\%$	$< 20\%$
	CPUE @ MSY (Schaefer) $CPUE_{current}/CPUE_{MSY}$	> 1	< 1

Other FMAs may adopt the above biological indicators and reference points subject to review and approval of its respective Scientific Advisory Group (SAG).

HARVEST STRATEGIES

The BSC fisheries will operate in compliance with the Philippine Fisheries Code, as amended by RA 10654, and the Joint DA-DILG Administrative Order 1, series of 2014. Specifically, the following regulations stipulated in JAO No.1 related to harvest controls will be used to manage the fishery:

Minimum size of blue swimming crab. The minimum carapace width of blue swimming crab allowed for catching, collecting, and trading shall be 10.2 cm. This minimum value could be increased subject to consultations with stakeholders.

Fishing gear restrictions. Favor the use of crab pots over gillnets. For the later, the minimum mesh size shall be 5 cm stretch mesh and that no gillnet fishing activity in areas with depth less than 10 meters to minimize the catching of juvenile crabs (Germano, 2006). The design of crab pots shall also be evaluated, looking into the appropriate size of the entrance and provision of an escape hatch for the exit of juvenile crabs.

Interdiction of capturing berried crabs. Catching, collecting, and trading of berried crabs shall be prohibited.

Critical to the achievement of the management objectives, stock assessment has to be conducted continuously to provide information on the health and status of the fishery. It will also verify the appropriateness of biological indicators and test the effectiveness of the harvest control rules applied.

HARVEST CONTROL RULES

Consistent with the BSC-NMP objectives, the following harvest control rules (HCRs) were recommended by Science Advisory Group (SAG) of FMA 11, subject to the approval of the FMA 11 Management Board and consultation with the stakeholders. These HCRs may be adopted by other FMAs upon review and approval of their respective FMA's SAG and MB.

Depending on the result of the annual stock assessment, the regulatory authority in concurrence with the SAG and the Management Board may apply the following scenarios:

Case 1: If the indicator is $>$ target reference point (80% mature; $F/M < 1$; 0.5 E-ratio; $> 20\%$ SPR; > 1 CPUE @MSY) for two or more consecutive years, agree to maintain the fishing effort; or agree to increase fishing effort at a certain level of input controls?

Case 2: If the indicator is $<$ target reference point (80% mature; $F/M < 1$; 0.5 E-ratio; 20% SPR; > 1 CPUE @MSY) but $>$ limit reference point (50% mature; $F=1.5M$; 0.6 E-value; 20% SPR; < 1 CPUE @MSY) for two or more consecutive years, agree to reduce the fishing effort by a percentage lower than that of Case 3, subject to consultation and approval of the SAG.

Case 3: If the indicator is $<$ limit reference point (50% mature; $F=1.5M$; 0.6 E-ratio; $< 20\%$ SPR; < 1 CPUE @MSY) for two or more consecutive years, agree for a staggered reduction of fishing effort by 20% in 5 years; or agree to put limits on fisheries input/output controls such as gear swap ; or agree to implement spatio-temporal BSC fishing closure.

RECOVERY PERIOD: Consistent with the generation time of BSC, the maximum recovery period is set at 5 years.