Table of fishery management measures

Category	Sub-category	Description	Objective	Pros	Cons
Technical; limits the size and type of crab landed	Minimum sizes; Maximum sizes; Male/female specific limits; Reproductive status limits; Body parts (claws)	Restricts the size, sex or the part of the crab that can be landed	Allow for growth (manage growth overfishing) Protect big spawners (and recruitment)	Easy to monitor Easy to evaluate Easy to control	Increases proportion of catch to be discarded Adds to fishing costs
Technical; gears specs	Escape gaps; Pot entrances, chambers, mesh sizes, bar spacings	May limit the type of fishing gear or its selectivity	Improve selectivity at the seabed (rather than on the boat) Reduce bycatch of undersized fish Reduce bycatch	Improved selectivity, reduced bycatch Reduces sorting time on deck	Maybe some loss of commercial catch May reduce economic efficiency if the 'best gear' is restricted
Input control	Overall fishing effort limited	The overall fishing effort (pot hauls, fleet days at sea) is limited	To (indirectly) reduce landings and maintain CPUE at a given stock size by reducing gear competition for catch		Overall effort may be restrictive depending on the total fleet effort potential or requirements. There may be an imbalance between capacity and effort needed for viable fishing. Depending on control measures it may require voluntary stakeholder compliance.
	Number of vessels limited	Limits the number of vessels in the fishery at a given time	May contribute to limiting the overall fleet effort and landings	Reduces competition for effort and catch to some degree Provides for some increase in future security	In isolation it may not stabilize effort or catch The vessels that will be included need to be identified Entry and exit rules need to be defined
	Limit effort per vessel	Pot limit per vessel or limit days at sea	Allocate a quantity of effort or effort potential to each vessel	Reduces competition and provides for balance in effort across vessels	Effort limits per vessel may be reduced and become unviable if the number of vessels increases

	Area based management	Restricts where fishing can occur (spatial closures) or where certain types of vessels have access to	To protect a proportion of the stock (within a closed area) from fishing. To give preferential access to some vessels in certain areas eg inshore V offshore	Spillover effects may improve fishery in surrounding area Fishing conditions may improve for certain vessels as competition for space is reduced	Displaces some vessels. This effort will be added somewhere else Limited suitability for mobile species
	Seasonal management	Restricts when fishing can occur; seasonal closures	Reduce overall effort and allocate effort to seasons when crab are more available, are higher quality, for processing markets and when price is higher.	May reduce overall operational fishing costs. Catch rates may be higher in the open season If quality is higher the perception of the product in the market improves	No income from the fishery in closed season More difficult to retain crew Loss of market share (live market particularly)
Output control	Overall landings (TAC)	Restricts the total amount of fish that are killed (landings + discard mortality)	Directly limits the landings and the annual fishing mortality rate	Directly manages fishing mortality in relation to reference points TACs may improve high grading at sea but this is less likely than in IQ systems	TACs may be restrictive depending on the total fleet effort potential or requirements. There may be an imbalance between capacity and TAC.
	Seasonal management: Limit landings to a given season	Allocates an overall quota (TAC) for a season.	Manages overall landings (TAC) whereby the TAC is taken in a particular season when crab are more available, are higher quality, for processing markets and when price is higher.	May reduce overall operational fishing costs. Catch rates may be higher in the open season If quality is higher the perception of the product in the market improves	No income from the fishery in closed season More difficult to retain crew Loss of market share (live market particularly)
	Landings per vessel (vessel quota)	Allocates quota to a vessel. Many variations on how to do this and the conditions that attach to it; IQ, INTQ, ITQ etc.	To improve security of tenure and certainty with respect to future earnings. The degree to which it does this depends on conditions	Increases certainty for vessel operators i.e. a vessel has a % of the TAC.	Where the number of vessels is not limited the advantage or vessel Q is limited (many Qs in an overall TAC may become unviable)

			associated with the use of the Q and how many vessels get a Q under an overall TAC	IQs and INTQs provide for higher certainty for operators in guaranteeing the allocation in future years ITQs allow the quota to be transferred to other operators IQs for crab would encourage high grading at sea to maximize the value of the Q. IQs and especially ITQs may increase	The vessels to allocate Q to need to be identified. Entry and exit rules need to be defined Operators would seek to protect the conditions associated with ITQs in the future.
In combination measures					
Usually a combination of measures is used. Size limits are more or less universal and a simple way to reduce or avoid growth overfishing and protect spawning potential if the relative sizes for market, maturity and growth works. For crab the market wants crab larger than the size at first maturity and which have already grown to about two thirds of their size so it is easy to regulate for some spawning escapement and to avoid growth overfishing. Size limits alone can be used to mitigate every increase in fishing mortality (landings and effort) but the fishery becomes increasingly unviable.					
Global TAC or effort limits can be used to protect stock status with respect to biological reference points but theoretically at least and in practice mostly these arrangements become economically unviable (open access equilibrium theory).					
Some input control is needed to maintain the economic viability of output control measures (essentially balancing fleet capacity and available fish resource)					