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	Proposed LOP	Does proposed activity alter natural habitat directly?	Is abundance of any species in natural habitat likely to be significantly different in the MPA relative to an SMR?	Is habitat alteration likely to change community structure substantially?	Is removal of any species likely to impact community structure directly or indirectly?	Is removal of any species likely to directly alter natural habitat?	Is habitat alteration caused by species removal likely to change community structure substantially?	Is the altered abundance of any species likely to alter community structure substantially?
<b>LOPs approved by the work group</b>								
Allowed Use								
Salmon (H&L in water >50m)	High	No	No - salmon are highly mobile, and associated catch of species with low adult movement in waters deeper than 50m is likely to be low		No - salmon and their prey are highly mobile			
Coastal pelagic finfish (H&L)	High	No	No - pelagic finfish are highly mobile and associated catch of resident species is likely to be very low		No - pelagic finfish and their prey are highly mobile			
Dungeness crab (trap)	Mod-High	No - Traps contact the bottom but little habitat damage is likely	No - although the overall abundance of Dungeness crabs can be dramatically reduced by fishing, crabs are relatively mobile and their abundance is not likely to be significantly changed relative to an SMR		Yes - Dungeness crabs are important predators in the benthic environment			
Salmon (troll in water <50m)	Mod-High	No	No - Salmon are highly mobile, though associated catch of resident species is likely to be higher in waters <50m		Yes - Associated catch of resident species is likely to be higher than in deeper waters, and the removal of those species could impact community structure			
Smelts [jacksnelt, topsmelt, and true, surf and night smelt] (H&L, hand nets)	Moderate	No	Yes - Fishing for smelt near shore targets the fish during the spawning period, and associated catch includes benthic resident species		No			No - though smelt and their eggs provide food in nearshore ecosystems, the community structure is unlikely to be altered substantially

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Allowed Use	Moderate	No	Yes			No		No	
Redtail surfperch (H&L from shore)	Moderate	No	YES - halibut move only moderate distances (though some individuals might move longer distances)			No		No - Some associated catch of resident species, but not very substantial	
Coonstripe shrimp and spot prawns (trap)	Moderate	NO - traps contact bottom but habitat damage unlikely	YES - genetics and parasites suggest low movement in BC, no studies from CA			NO		NO - Though these species are predator and prey in the ecosystem, their removal will likely not impact community structure substantially	
Clam (hand harvest in the intertidal)	Moderate	NO - dynamic soft-bottom is not highly sensitive to this disturbance	YES - clams don't move around much, maybe some incidental take or death of other sessile marine invertebrates			NO		NO - clams are an important food source for many fish, elasmobranchs, and birds but hand harvest only occurs in the intertidal zone (a small portion of the depth distribution of clams) thus the impact of harvest on community structure is likely to be limited	
Turf algae [ <i>Porphyra</i> spp. (Nori, Laver), <i>Ulva</i> spp. (Sea Lettuce), <i>Chondrocantinus/Gigartina exasperata</i> (Turkish Towel) and <i>Mastocarpus</i> spp. (Mendocino Grapestone)] (hand)	Moderate	No	Yes - all species are sessile.			No		No - Though these species provide some habitat for small organisms, they do not form substantial canopies and thus their removal is unlikely to substantially alter community structure.	

California Marine Life Protection Act Initiative  
 Draft Levels of Protection in the North Coast Study Region  
 Revised December 10, 2009

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Allowed Use									
Pacific halibut (H&L)	Mod-Low	NO	YES - halibut move only moderate distances (though some individuals might move longer distances)			NO		Yes - associated catch includes resident species	
Sea urchin (hand)	Mod-Low	NO	YES - target species has low movement			NO		YES - impt grazer of kelp which can change the entire structure of ecosystem	
Lingcod (H&L, spear, trap)	Mod-Low	NO	YES - target species has low movement, incidental catch includes other low mobility reef species			NO		YES - lingcod are important predators in nearshore rocky reef	
Rockfish (H&L, spear, trap)	Mod-Low	NO	YES - target species have low movement, incidental catch includes other low mobility reef species			NO		YES - rockfish are important predators in nearshore rocky reef	
Cabezon (H&L, spear, trap)	Mod-Low	NO	YES - target species has low movement, incidental catch includes other low mobility reef species			NO		YES - cabezon are important predators	
Greenling (H&L, spear, trap)	Mod-Low	NO	YES - target species has low movement, incidental catch includes other low mobility reef species			NO		YES - greenling are important predators	

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<b>Allowed Use</b>	Does proposed activity alter natural habitat directly?	Is abundance of any species in natural habitat likely to be significantly different in the MPA relative to an SMR?	Is habitat alteration likely to change community structure substantially?	Is removal of any species likely to impact community structure directly or indirectly?
<b>Abalone (hand harvest by free diving)</b>	Proposed LOP: <b>Mod-Low</b>	Yes - abalone have extremely low mobility	Is habitat alteration likely to change community structure substantially?	Is removal of any species likely to impact community structure directly or indirectly?
<b>Rock scallop (hand harvest)</b>	Proposed LOP: <b>Low</b>	Yes - removal of scallops can damage the physical substrate (rocks) to which they attach	YES - rock scallop removal modifies rugosity of reef and local diversity of benthic species	Is removal of any species likely to impact community structure directly or indirectly?
<b>Ghost shrimp (hand harvest)</b>	Proposed LOP: <b>Low</b>	NO - direct habitat damage through trampling is not a primary concern	YES - ghost shrimp are bioengineers who alter the soft bottom habitat creating refuge for a variety of other species. Ghost shrimp are also important prey for a variety of fishes and birds.	Is removal of any species likely to impact community structure directly or indirectly?
<b>Mussels (hand harvest)</b>	Proposed LOP: <b>Low</b>	NO - doesn't damage the substrate, per se	YES - mussels FORM habitat, so removing them removes the habitat	Is removal of any species likely to impact community structure directly or indirectly?
				Is habitat alteration caused by species removal likely to change community structure substantially?
				Is the altered abundance of any species likely to alter community structure substantially?
				Yes - abalone are important herbivores in the nearshore rocky ecosystem and may alter the local abundance and composition of algal communities, and juveniles provide a source of prey for small predators
				YES - removal of ghost shrimps and the trampling associated with their removal could substantially alter mudflat communities.
				YES - mussel beds are associated with a unique community, removing them changes community structure

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<b>Allowed Use</b>	No	Yes - all species are sessile.	Is habitat alteration likely to change to community structure substantially?	Is removal of any species likely to impact community structure directly or indirectly?	Is removal of any species likely to directly alter natural habitat?	Is habitat alteration caused by species removal likely to change community structure substantially?	Is the altered abundance of any species likely to alter community structure substantially?		
Canopy forming algae [ <i>Alaria</i> spp. (Wakame), <i>Lessoniopsis littoralis</i> . (Ocean Ribbons), <i>Laminaria</i> spp. (Kombu), <i>Saccharina/Hedophyllum</i> <i>sessile</i> ('Sweet' Kombu), <i>Egregia menziesii</i> (Feather Boa) and <i>Fucus</i> spp. (Bladder wrack or Rockweed)] (hand)	No	Yes - all species are sessile.	Is habitat alteration likely to change to community structure substantially?	Is removal of any species likely to impact community structure directly or indirectly?	Yes	Yes - These species form important habitat for a variety of organisms.	Is the altered abundance of any species likely to alter community structure substantially?		
<b>Bull kelp (any method)</b>	NO - doesn't damage the substrate, per se	YES - bull kelp is sessile and harvest reduces reproductive potential	Is habitat alteration likely to change to community structure substantially?	Is removal of any species likely to impact community structure directly or indirectly?	YES - bull kelp removing it removes the habitat. Bull kelp may be more susceptible to negative population impacts of harvest due to its reproductive and life history characteristics	YES - bull kelp beds are associated with a unique community, removing them changes community structure	Is the altered abundance of any species likely to alter community structure substantially?		
<b>Sea palm (hand harvest)</b>	NO - doesn't damage the substrate, per se	YES - sea palms are sessile and harvest reduces reproductive potential	Is habitat alteration likely to change to community structure substantially?	Is removal of any species likely to impact community structure directly or indirectly?	YES - sea palms form habitat and do not easily disperse to areas from which they have been removed	YES - sea palms create a unique habitat that supports a diverse community assemblage	Is the altered abundance of any species likely to alter community structure substantially?		