

# Marine Life Protection Act Initiative



## Levels of Protection in the MLPA North Coast Study Region

Presentation to the MLPA Master Plan Science Advisory Team  
January 21, 2010 • Eureka, CA

Dr. Mark Carr • MLPA Master Plan Science Advisory Team



## Protection in MPAs

### Key Question

“How much will the ecosystem differ from a state marine reserve if a proposed activity is allowed?”

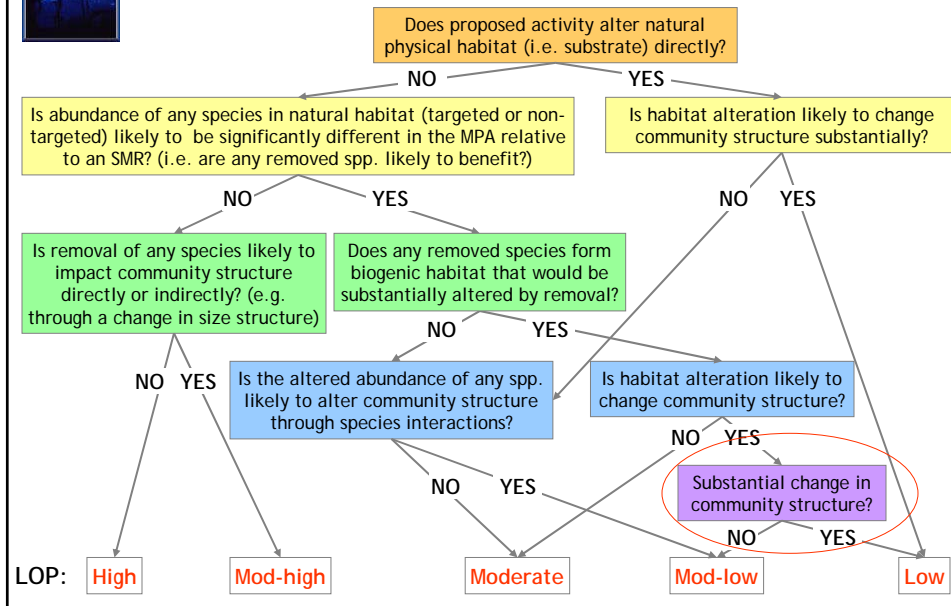
#### Large Difference If:

- Habitat is damaged
- Many species are removed
- Ecologically important species are removed

#### Small Difference If:

- No habitat damage
- Low associated catch
- Removed species are highly mobile

# Conceptual Model for Determining LOP



# Levels of Protection – North Coast

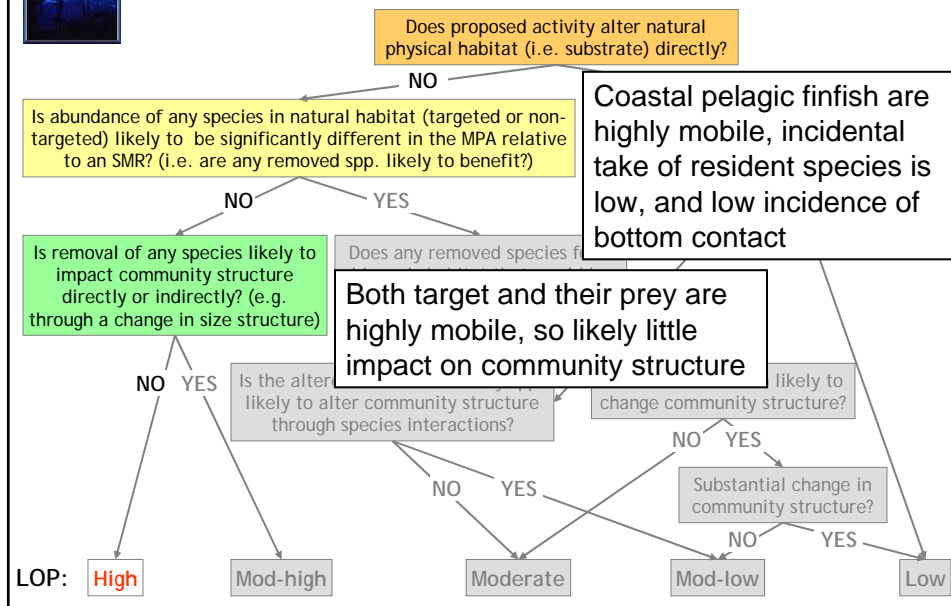
Level of Protection	MPA Types	Activities Associated with this Protection Level
Very high	SMR	No take
High	SMCA SMP	Salmon (H&L or troll in waters >50m depth); coastal pelagic finfish <sup>1</sup> (H&L, round-haul net, dip net);
Mod-high	SMCA SMP	Dungeness crab (trap, hoop-net, diving); salmon (troll in water <50m depth);
Moderate	SMCA SMP	smelts (H&L, dip net); redbtail surfperch (H&L from shore); California halibut (H&L); coonstripe shrimp and spot prawn (trap); clams (intertidal hand harvest); turf algae <sup>2</sup> (intertidal hand harvest); salmon (H&L in waters <50m depth)
Mod-low	SMCA SMP	Pacific halibut (H&L); lingcod, cabezon, and rockfishes, and greenlings (H&L, spearfishing, trap); red abalone (free-diving); urchin (diving)
Low	SMCA SMP	Rock scallop (diving); mussels (hand harvest); bull kelp (hand harvest); ghost shrimp (hand harvest); sea palm (intertidal hand harvest); canopy-forming algae <sup>3</sup> (intertidal hand harvest)

1 The grouping "coastal pelagic finfish" includes: Northern anchovy (*Engraulis mordax*), Pacific herring (*Clupea pallasii*), jack mackerel (*Trachurus symmetricus*), Pacific mackerel (*Scomber japonicus*), and Pacific sardine (*Sardinops sagax*).

2 The grouping "turf algae" includes the following harvested groups: *Porphyra* spp. (Nori, Laver), *Ulva* spp. (Sea Lettuce), *Chondrocanthus/Gigartina exasperata* (Turkish Towel), and *Mastocarpus* spp. (Mendocino Grapestone).

3 The grouping "canopy-forming algae" includes the following harvested groups: *Alaria* spp. (Wakame), *Lessoniopsis littoralis* (Ocean Ribbons), *Laminaria* spp. (Kombu), *Saccharina/Hedophyllum sessile* ('Sweet' Kombu), *Egregia menziesii* (Feather Boa), and *Fucus* spp. (Bladder wrack or Rockweed).

## LOP: Coastal Pelagic Finfish by Net



## Salmon Levels of Protection

- Salmon highly mobile, so assigned LOPs largely dependent on other species taken in conjunction with salmon
- Associated catch of resident species varies as a function of two things:
  - Fishing mode: **troll** (under power) vs. **non-troll H&L** (drift or mooch) methods
  - Depth fished: in shallower water gear is likely to be closer to the bottom
- Limited catch information that allows us to differentiate these two factors and none of it allows certainty that only salmon were targeted



# Salmon Levels of Protection

**Catch information examined by the work group includes:**

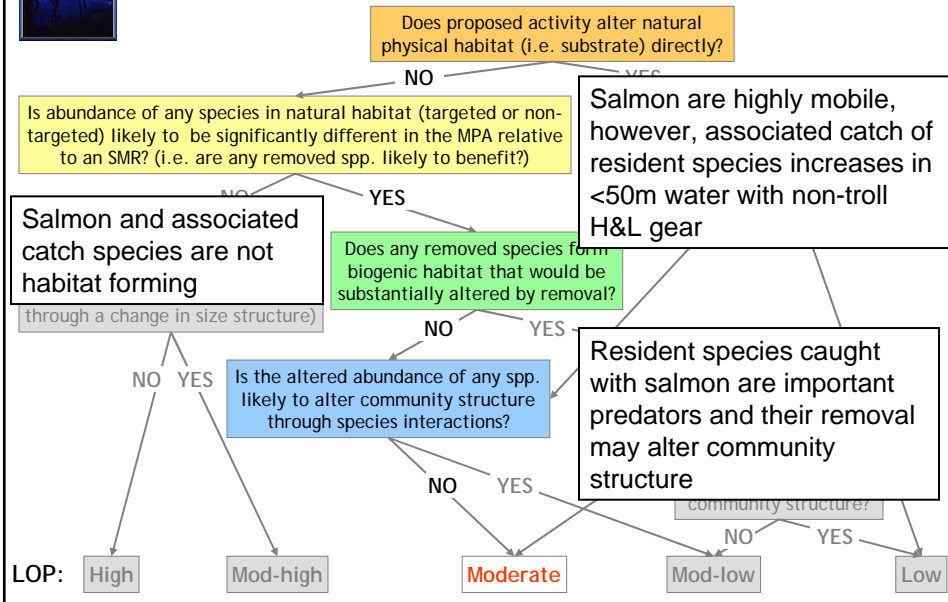
- Commercial passenger fishing vessel (CPFV) logbooks
- California Recreational Fisheries Survey (CRFS) observers

**Some general trends emerge from available catch information for salmon fishing:**

- Associated catch of resident species is low in deep waters (greater than 50m depth) and higher in shallower waters
- Associated catch of resident species is low using troll methods and higher using non-troll methods



# LOP: Salmon (hook & line in <50m depth)





## Urchin Level of Protection

### The work group re-examined the LOP for urchin take based on questions about:

- The impact of urchins on kelp forest communities through grazing on kelp
- The perceived absence of natural urchin predators that occur in other study regions (sea otters, lobsters, sheephead)



## Urchin Level of Protection

### Information that was considered in the course of work group discussions:

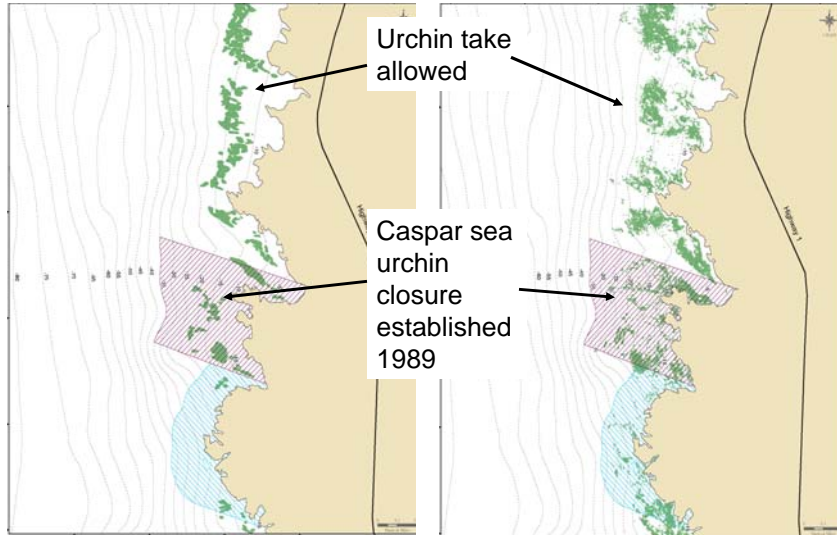
- Urchins do not appear to cause urchin barrens in the absence of commercial urchin take in the NCSR
- Natural urchin predators in the NCSR include sunflower stars (*Pycnopodia helianthodes*) and wolf eels (*Anarrhichthys ocellatus*). *Pycnopodia*, in particular, has been shown to be an effective urchin predator.
- Urchins form habitat (spine canopy) that is important for a variety of small invertebrates and may be especially important in wave-exposed NCSR habitats



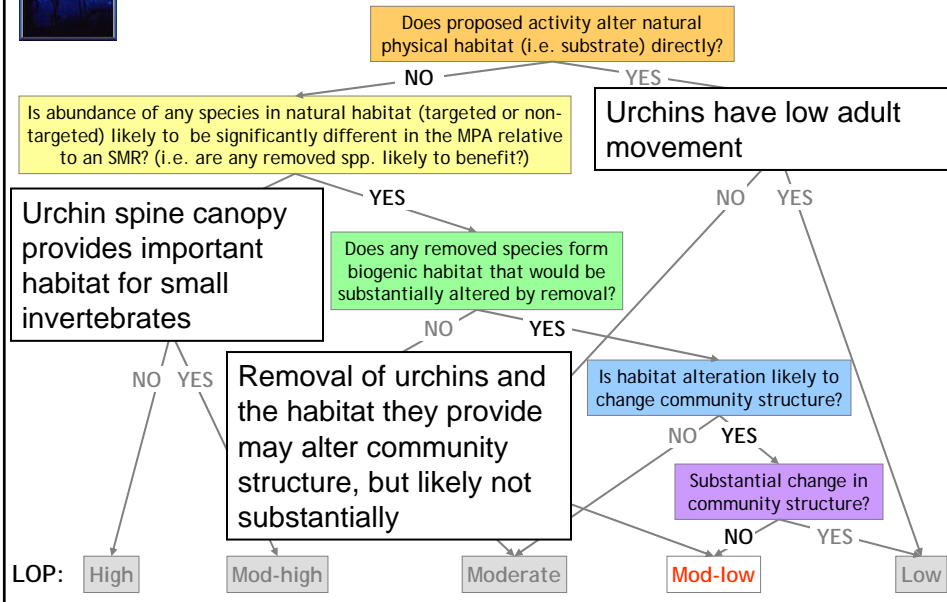
# Urchin Level of Protection

Kelp canopy 1989

Kelp canopy 2008



# LOP: Urchin Harvest



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