

## Changes in Commercial Fishery Catch and Landings for Selected Fishes and Invertebrates in the Channel Islands Region and Southern California

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Maximum potential losses for primary commercial fisheries were estimated to be 13-17% when state marine protected areas (MPAs) were established at the Channel Islands in 2003 (Leeworthy and Wiley 2002). To determine the actual impact of MPAs on commercial fisheries, we evaluated data on value and pounds of fish and invertebrates caught in the northern Channel Islands and southern California, using five-year averages before and after MPAs were established. A negative impact of MPAs would be detected as a relative decrease in value in the northern Channel Islands compared to southern California. In other words, if MPAs had a negative impact, when a fishery decreased in southern California, the decrease should be larger in the Channel Islands and when a fishery increased in southern California, the increase should be less in the Channel Islands. Any impacts related to MPAs would likely occur immediately upon MPA implementation.

### Key Results:

- Commercial fisheries are highly variable and are affected by many factors, including regulations, environmental, and market forces.
- Four of seven commercial fisheries had lower value in the northern Channel Islands relative to southern California after MPA implementation (Table 1). Of these, the value of two fisheries (California sheephead and rockfish) decreased more in the northern Channel Islands than in southern California, whereas value of two fisheries (California spiny lobster and market squid) increased less in the Channel Islands than in southern California.
- Since MPAs were established, value of four fisheries in the Channel Islands increased, while the value of three decreased; two declined more than the estimated maximum loss.
- The relative value of three of the four fisheries (California spiny lobster, market squid and California sheephead, highlighted in yellow) compared to southern California declined immediately after implementation of the state MPAs.
- Separating impacts of MPAs from other factors requires understanding many potential causes:
  - Landings of market squid are strongly linked with environmental variation and primary catch locations change annually.
  - Landings of California sheephead were reduced by a limit on total catch introduced in 2001.
  - Landings of rockfish were severely limited by area and depth closures introduced in 2001.
  - Increases in catch of urchins are likely associated with increases in kelp, a primary food source.

	A	B	C	D	E
Species	Est. Max. Loss	Island Value	So CA Value	Relative Change	Decrease 2003-2004
Spiny Lobster	- 16%	+ 25%	+ 61%	-36	Y
Sea Urchin	- 16%	+ 3%	- 60%	+57	N
Rock Crab	- 15%	+ 48%	- 4%	+52	N
Sea Cucumber	- 17%	- 13%	- 21%	+8	N
Market Squid	- 13%	+ 10%	+ 88%	-77	Y
California Sheephead	- 16%	- 50%	- 14%	-36	Y
Rockfish	- 16%	- 58%	- 26%	-32	N

**Table 1. A.** Estimated maximum loss in value of commercial fisheries (Leeworthy and Wiley 2002); **B-C.** Percent change in average value (2003-2007 compared to 1998-2002) for northern Channel Islands and Southern California; **D.** Relative change in value of fisheries in northern Channel Islands as compared to southern California; **E.** Decrease in value of fishery occurred in 2003-2004 (Y=yes; N=no). Yellow indicates fisheries for which relative value decreased immediately after MPAs were established.

Leeworthy, V.R. and P.C Wiley.2002. Socioeconomic impact analysis of Marine Reserve Alternatives for the Channel Islands National Marine Sanctuary. NOAA, NOS, Special Projects, Silver Spring, MD.