

South Coast Fishery Spotlight: California Spiny Lobster

The California spiny lobster (*Panulirus interruptus*) supports a commercially and recreationally important fishery, primarily within the South Coast which encompasses California's jurisdictional waters (0-3 nautical miles from shore) from Point Conception in Santa Barbara County to the US-MEX border, including state waters around offshore islands. The California Department of Fish and Wildlife (CDFW) has managed this fishery for over a century, implementing and enforcing regulations set by the [California Fish and Game Commission](#) (Commission). **Current management measures include commercial fishing permits, recreational harvest report cards, gear restrictions, size limits, time and area closures, and a recreational possession limit.**

Commercial Fishery

The [commercial trap fishery](#) opens on the first Wednesday in October and continues through the first Wednesday after March 15 the following calendar year. Since 2000, and increasingly since 2010, the commercial fishery has been one of [California's most lucrative fisheries](#). Commercial market receipt data from the 2015/2016 commercial fishing season indicate the ex-vessel revenue (value) was nearly \$16 million, making it the third highest grossing fishery in the state.

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Recreational Fishery

The [recreational fishery](#) opens on the Saturday preceding the first Wednesday in October and continues through the first Wednesday after March 15 the following calendar year (which allows four days of recreational fishing prior to the start of the commercial fishery). The recreational fishery is [highly participatory](#), as evidenced by the tens of thousands of [spiny lobster report cards](#) sold each year; 32,661 were sold in the 2015/2016 recreational fishing season.

Recreational Fishery continued on page 4

Commercial Fishery

CDFW compiled and analyzed reported commercial market receipt data (California Fisheries Information System [CFIS]), and commercial logbook data ([Marine Logbook System](#) [MLS]) from the 2005/2006 fishing season through the 2015/2016 fishing season to estimate various fishery metrics for the commercial spiny lobster trap fishery.

The price-per-pound (median price paid per pound of spiny lobster landed) for each of the past 11 fishing seasons has increased consistently – mainly since the 2010/2011 fishing season – and fetched a high of over \$20 per pound during the 2015/2016 season (Table 1). Commercial landings (total catch reported in pounds) have stayed relatively consistent over the past 11 seasons (Table 1, Figure 1). The ex-vessel revenue (total revenue of reported landings, or value) for each of the past 11 seasons has generally increased, with a peak value of over \$17 million for the 2014/2015 season (Table 1, Figure 1). Effort (number of trap pulls) generally increased each fishing season up to 2011/2012, reaching over 1.1 million trap pulls reported from the 2011/2012 through 2014/2015 seasons (Table 1). Catch-per-unit-effort (CPUE; calculated as number of legal spiny lobsters retained per trap) has slightly decreased over the past 11 seasons (Table 1).

Table 1- Reported spiny lobster commercial price-per-pound, landings (pounds), ex-vessel revenue (2010\$), effort (trap pulls), and estimated CPUE (lobsters retained per trap) from the 2005/2006 through 2015/2016 commercial fishing seasons. Data sources (extracted August 2016): CFIS for price-per-pound, landings, and ex-vessel revenue; MLS for effort and CPUE estimates.

Season	Price-per-Pound	Landings	Ex-Vessel Revenue	Effort	CPUE
2005/2006	\$8.25	698,478	\$5,233,922	796,703	0.58
2006/2007	\$9.50	880,546	\$8,598,934	858,667	0.68
2007/2008	\$11.00	674,049	\$7,458,287	809,309	0.54
2008/2009	\$10.75	728,186	\$7,931,097	728,186	0.53
2009/2010	\$12.00	752,672	\$9,078,263	859,223	0.56
2010/2011	\$16.50	695,360	\$11,450,938	974,698	0.47
2011/2012	\$17.50	751,118	\$12,775,154	1,123,355	0.44
2012/2013	\$17.00	858,556	\$13,472,903	1,150,296	0.49
2013/2014	\$19.00	811,227	\$13,994,310	1,179,670	0.46
2014/2015	\$19.00	959,150	\$17,356,366	1,150,879	0.51
2015/2016	\$20.50	793,829	\$15,628,167	952,112	0.47

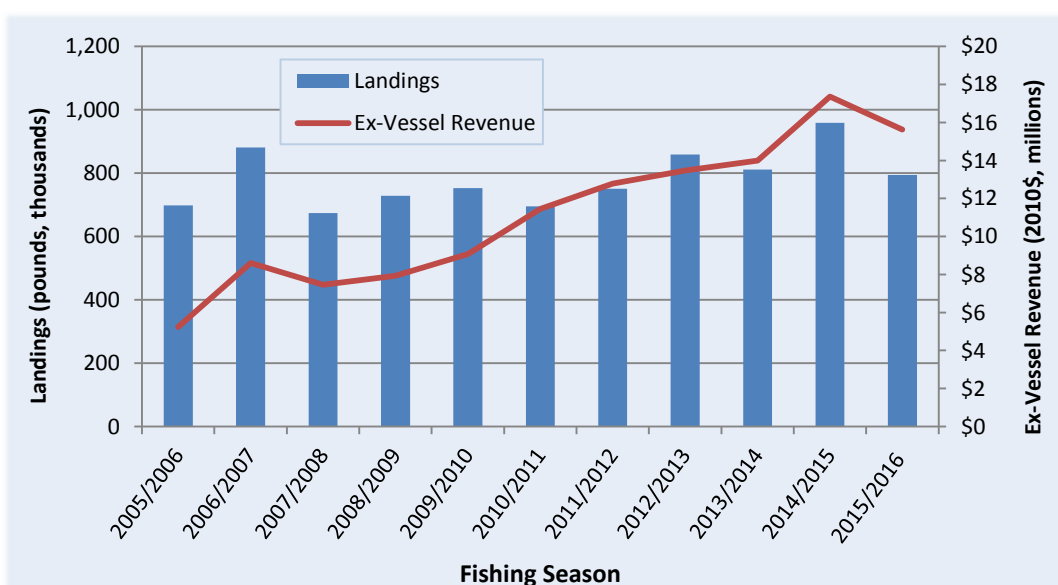


Figure 1. Reported spiny lobster commercial landings (pounds) and ex-vessel revenue (2010\$). Ex-vessel revenue was adjusted for inflation to year 2010 dollars. Data source (extracted August 2016): CFIS.

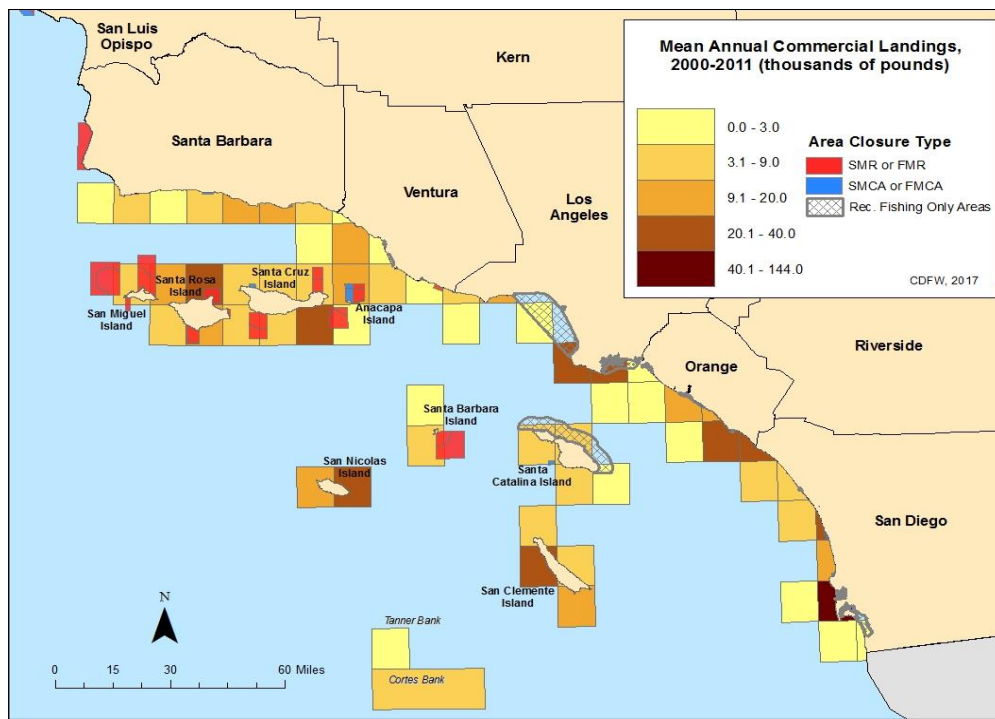


Figure 2. Reported commercial landings by CDFW commercial fishing block from January 2000 – March 2011, shown with MPAs and recreational-only fishing areas (SMCA=state marine conservation area; SMR=state marine reserve; FMR=federal marine reserve). Fishing blocks displayed include depths 250 feet or less which is the maximum spiny lobster depth range. Data source (extracted January 2017): CFIS.

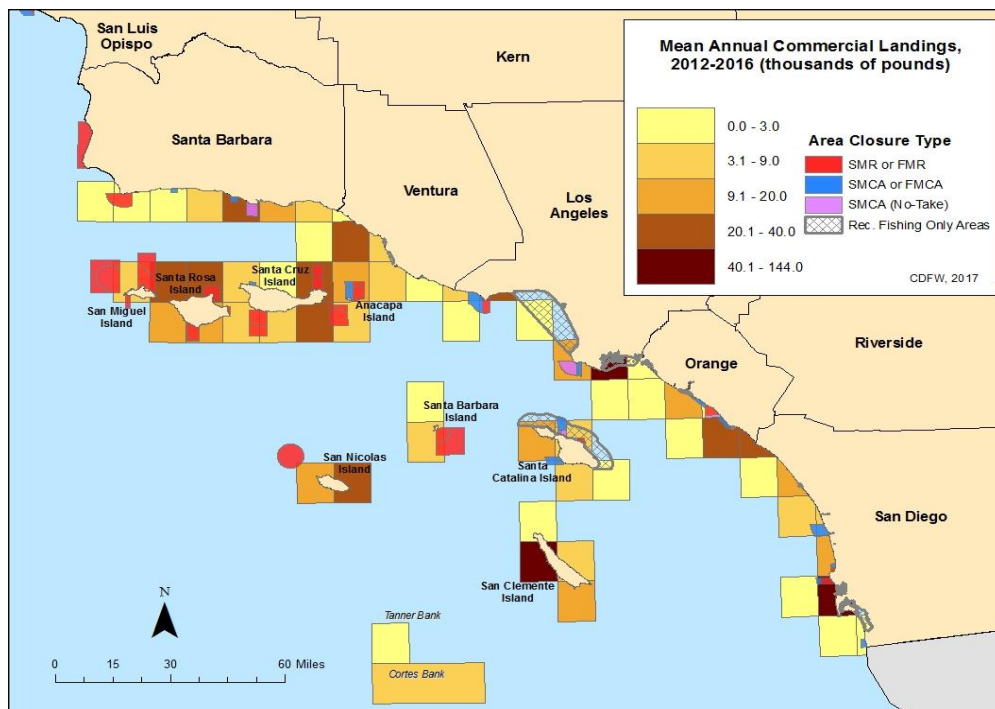


Figure 3. Reported commercial landings by CDFW commercial fishing block from January 2012 – March 2016, shown with MPAs and recreational-only fishing areas. Fishing blocks displayed include depths 250 feet or less which is the maximum spiny lobster depth range. Data source (extracted January 2017): CFIS.

Commercial spiny lobster catch (mean annual landings) by CDFW fishing block was compared from 2000-2011 (prior to MPA implementation, Figure 2) to 2012-2016 (after MPA implementation, Figure 3). CDFW fishing blocks are 10 by 10 nautical miles and therefore subject to a lack of specificity, however general trends and changes in commercial catch can be observed. **Overall, catch did not change before and after MPA implementation in the majority of fishing blocks across the South Coast** (Figures 2 and 3). However, catch increased off the western shore of San Clemente Island and near the Port of Long Beach, the latter of which may be attributed in part to a redistribution of effort resulting from the implementation of Point Vicente State Marine Conservation Area (SMCA) and Abalone Cove SMCA. Catch also increased around three of the four northern Channel Islands (San Miguel Island, Santa Rosa Island, and Santa Cruz Island), as well as near Ventura and Santa Barbara, the latter of which may be explained to an extent by an effort shift due to the implementation of Point Conception State Marine Reserve (SMR). Interestingly, the fishing block where catch increased near Santa Barbara contains two SMCAs (Naples SMCA and Campus Point SMCA) which prohibit taking spiny lobster. Catch also decreased near Encinitas in San Diego County, which may be attributed in part to the implementation of Swami’s SMCA.

Recreational Fishery

CDFW compiled and analyzed recreational data from the [Spiny Lobster Report Card Program](#) (implemented in the fall of 2008) to estimate various fishery metrics for the recreational spiny lobster fishery.



The Spiny Lobster Report Card Program requires sport fishermen to fill out a report card when fishing for spiny lobster, even if no spiny lobster are taken. This [report card data](#) allows CDFW staff to monitor and document changes in the fishery.

The recreational fishery is highly participatory; tens of thousands of report cards are sold each year (Table 2). The return rate for report cards was low (12%–22%) in the first four calendar years of the program (2008–2011), but increased in recent years which may be partly attributed to a non-return fee that was implemented in 2013. A change in the reporting structure was also implemented in the 2013/2014 fishing season from a calendar year basis to a seasonal basis (spanning two calendar years). Some recreational fishermen may have therefore purchased 2013 calendar year report cards along with 2013/2014 report cards (which may increase the uncertainty of estimates for the 2013/2014 season, in particular, as denoted in Table 2).

Table 2- Estimates of spiny lobster recreational fishing: report cards sold (total number), report card return rate (percent), effort (estimated number of fishing trips), CPUE (number of lobsters kept per trip), catch (pounds), and estimated contribution (percent) of reported recreational catch to total catch (recreational + commercial catch) from 2008 to the 2015/2016 season based on report card data. Data sources: Lobster FMP and Spiny Lobster Report Card Program.

Year	Report cards– number sold	Report cards– return rate	Effort	CPUE	Catch	Estimated recreational catch relative to total catch
2008 ¹	27,472	22%	104,085	2.1	354,792	32%
2009	32,343	14%	147,868	2.2	527,357	43%
2010	29,108	12%	127,168	2.1	434,848	38%
2011	33,376	16%	154,743	2.0	429,953	36%
2012	37,193	33%	127,801	2.0	409,984	32%
2013 ²	14,514	49%	71,024	2.1	359,928 ³	32% ³
2013/2014	33,668	48%	88,351	1.6	384,781 ⁴	32% ⁴
2014/2015	36,414	54%	111,552	1.9	342,583	26%
2015/2016	32,661	47%	82,511	2.0	265,355	25%

¹Lobster report card was implemented in the fall of 2008; CDFW only has estimates for the latter half of calendar year 2008.

²Season-length report card was implemented for the 2013/2014 fishing season. While some recreational fishermen still purchased 2013 calendar year lobster report cards along with 2013/2014 season-length report cards, other fishermen only purchased 2013/2014 season-length report cards.

³2013 “Landings” and “Estimated recreational catch” includes landings from 2013 calendar year cards, PLUS landings from September, October, November, and December on 2013/2014 full season cards.

⁴2013/2014 “Landings” and “Estimated recreational catch” includes landings from 2013/2014 full season cards, PLUS landings from September, October, November, and December on 2013 calendar year cards.

Based on available data from January 2012 through March 2016, the largest numbers of spiny lobsters harvested (30,001 to 81,000 legals retained) in the recreational fishery were reported from Santa Catalina Island and San Diego Bay (Figure 4). Santa Cruz Island, Santa Monica Bay, the Long Beach area, and Zuniga Jetty (across from Point Loma) also reported significant amounts of spiny lobsters harvested (9,001 to 30,000 legals retained) during the examined time period (Figure 4).

Recreational Fishermen Use Hoop Nets and Their Hands to Harvest California Spiny Lobsters

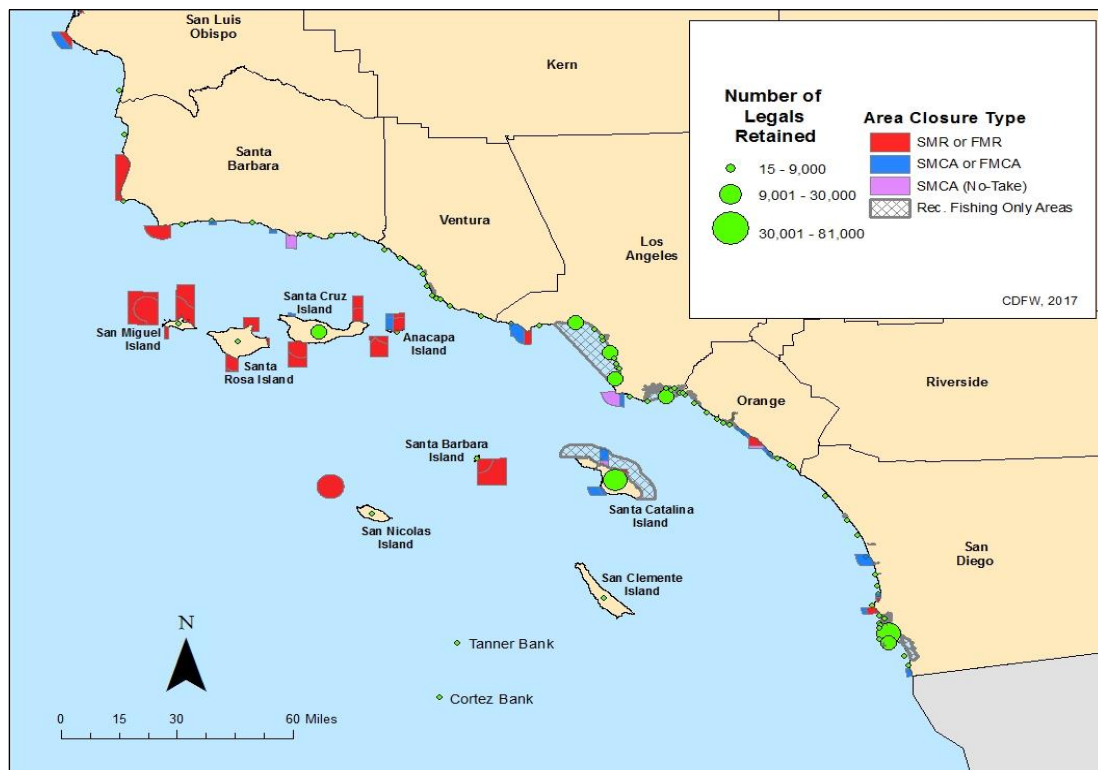
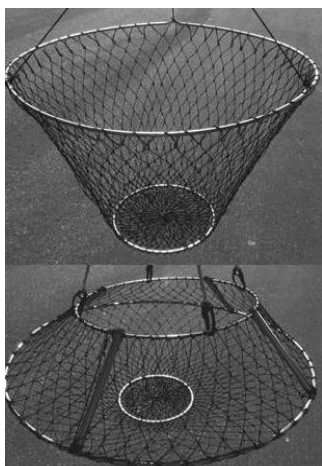


Figure 4. Reported number of legal California spiny lobsters retained from recreational spiny lobster report cards from January 2012 – March 2016, shown with MPAs and recreational-only fishing areas. Northern-most green dot denotes total catch between San Luis Obispo up to CA-OR border. Source: Spiny Lobster Report Card Program.

Recreational Fishery Effort

Recreational fishery effort (estimated number of fishing trips) has fluctuated among years, but is commonly estimated as **over 100,000 trips per fishing season** (or calendar year prior to 2013). The CPUE for the recreational fishery (calculated as number of spiny lobsters kept per trip) has remained consistent, averaging approximately two spiny lobsters per trip for all years that report card data are available. Since 2008, recreational landings (estimated weight of landings in pounds) have decreased. **With increased report card return rates in recent years, the estimated contribution (percentage) of the recreational catch to the total catch (reported recreational + commercial landings) has also generally decreased.** This is possibly due to an increase in card returns by spiny lobster divers and hoop netters who made fewer trips or did not fish at all, which decreases the estimated number of fishing trips, spiny lobsters kept relative to total cards sold, and the estimated landings.

Fishery Management

Recently, CDFW collaborated with many individuals and organizations, including the [Spiny Lobster Advisory Committee](#), to develop the [California Spiny Lobster Fishery Management Plan](#) (Lobster FMP), which was adopted by the Commission in April 2016. **The Lobster FMP represents the first instance where CDFW has integrated MPAs into fisheries management** through the use of a [Spawning Potential Ratio \(SPR\) model](#).

The Lobster FMP estimates 4.5% of spiny lobster habitat was closed to both commercial and recreational fishing during the early 2000s when fewer MPAs were present in the South Coast. Following the implementation of 50 new and/or revised South Coast MPAs on January 1, 2012, the Lobster FMP estimates the percentage of spiny lobster habitat protected by MPAs (closed to both commercial and recreational fishing) is now 14.6%. The SPR model accounts for the estimated 14.6% of spiny lobster habitat protected by MPAs, thus providing a benefit that **reflects the importance of MPAs to the reproductive potential of spiny lobster**.

Over time, MPA monitoring and research, including better habitat mapping, could be used to refine the model and evaluate to what degree the model-simulated enhancement to reproductive potential is warranted. The Lobster FMP also includes a wealth of important biological, fisheries, and other contextual information to supplement other South Coast MPA baseline monitoring projects: "[Baseline Characterization of California Spiny Lobsters](#)" and "[Baseline Characterization of Human Uses](#)".

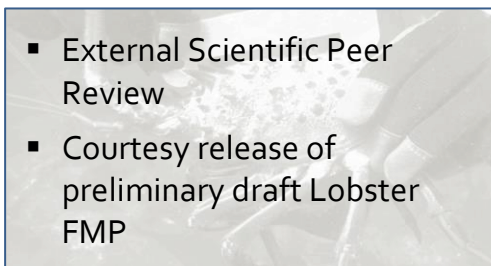
Spiny Lobster FMP Timeline Highlights

2012-2013



- Public Meetings
- Lobster Advisory Committee Meetings

2014



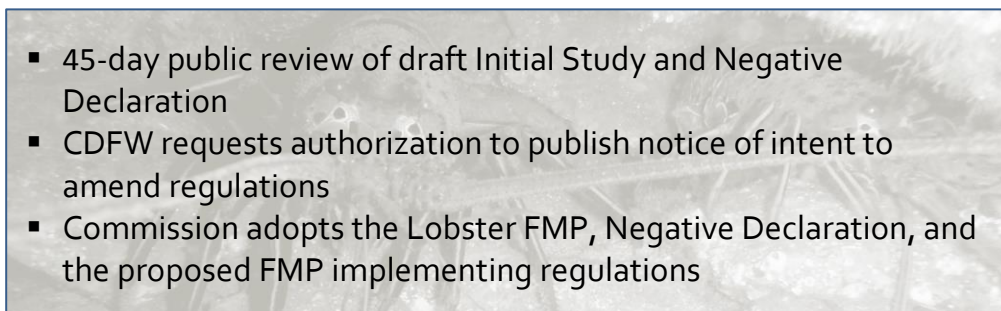
- External Scientific Peer Review
- Courtesy release of preliminary draft Lobster FMP

2015



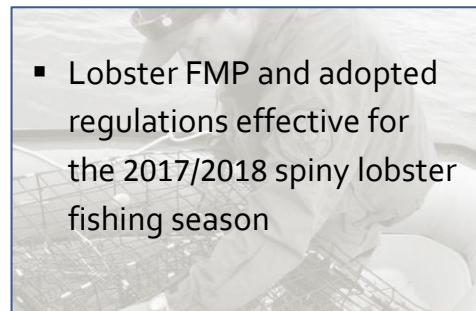
- CDFW submits the Lobster FMP to the Commission

2016



- 45-day public review of draft Initial Study and Negative Declaration
- CDFW requests authorization to publish notice of intent to amend regulations
- Commission adopts the Lobster FMP, Negative Declaration, and the proposed FMP implementing regulations

2017



- Lobster FMP and adopted regulations effective for the 2017/2018 spiny lobster fishing season

For the complete Spiny Lobster FMP timeline please visit the CDFW Spiny Lobster [webpage](#).

Acknowledgements

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