



## The Importance of Working Waterfronts to Providing a Sustainable Supply of Seafood to U.S. Consumers: A San Diego Example<sup>1</sup>

Working waterfronts provide a fresh sustainable seafood supply. They support regional businesses and communities, and contribute to the U.S.'s seafood supply and food security. NOAA's National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife monitor and manage our fisheries and aim to ensure that U.S. and California citizens benefit from the resulting seafood supply, employment and revenue.

### Seafood caught by U.S. fishers is sustainable

Fishery management in the U.S. is based on the requirements established in the Magnuson-Stevens Fishery Management and Conservation Act (MSA), particularly the goal of producing optimum sustainable yield of seafood resources out of the waters in the U.S. Exclusive Economic Zone. U.S. fisheries management meets or exceeds national and international standards for sustainability<sup>2</sup>. Despite this sustainability, imported seafood currently dominates the San Diego and U.S. markets<sup>3</sup>.

### Benefits of locally-harvested U.S.-caught seafood

Recent efforts aimed at promoting and revitalizing commercial fisheries in San Diego have included the launch of San Diego's first fishers' market along with state legislation facilitating such markets throughout California, in addition to a nascent aquaculture industry, the growth of local-food movements, and local support for developing a working waterfront. There are a variety of benefits to locally-harvested and -sold seafood including: the availability of fresh, high-value seafood, local employment, enhanced social connections and interactions, shortened supply chains and increased traceability, minimized carbon footprint<sup>4</sup>.

Consumers in retail outlets, restaurants, and the like, are increasingly willing to pay a premium price for fresh, locally caught seafood. Supporting locally-caught seafood not only helps local consumers but also the businesses that serve them.

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<sup>1</sup> All data are preliminary. A full report will be available later this year.

<sup>2</sup> Helvey, M., & Wick, T. (2013). Caught in the USA – Benefit of buying local, sustainably harvested seafood (Draft). Retrieved from [http://www.nmfs.noaa.gov/stories/2013/07/docs/caught\\_in\\_the\\_usa\\_\\_benefits\\_of\\_buying\\_local\\_web.pdf](http://www.nmfs.noaa.gov/stories/2013/07/docs/caught_in_the_usa__benefits_of_buying_local_web.pdf). Accessed 24 May 2018.

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<sup>3</sup> Talley, T. S., Warde, H and Venuti, N (2016). Local Seafood Availability in San Diego, California Seafood Markets. *Future of Food: Journal on Food, Agriculture and Society*, 4(2), 40-49.

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<sup>4</sup> Brinson, A., M.-Y. Lee, B. Rountree. 2011. Direct Marketing strategies: The rise of community supported fishery programs. *Mar. Pol.* 35: 542-548.

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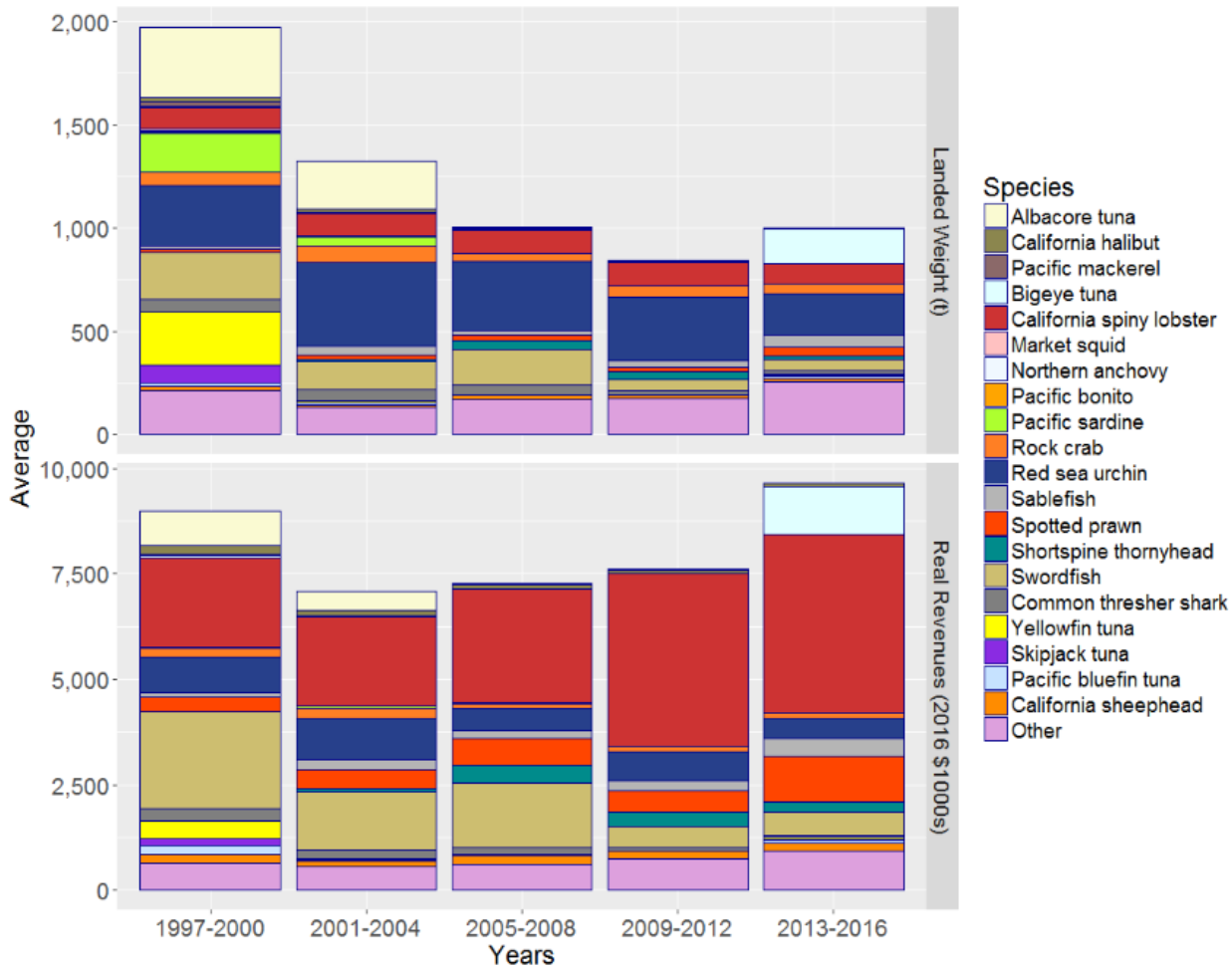
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<[http://www.thegreenhorns.net/wp-content/files\\_mf/1340378421SanFranciscoFoodShedAssessment.pdf](http://www.thegreenhorns.net/wp-content/files_mf/1340378421SanFranciscoFoodShedAssessment.pdf)> [Accessed 14 November 2017].

Weber, C. L., & Matthews, H. S. (2008). Food-Miles and the relative climate impacts of food choices in the United States. *Environmental Science Technology*, 42(10), 3508-3513.

**Fisheries are dynamic**

Fishermen respond to changes in public demand, market conditions, regulations, resource availability, and fishing technology.



**Figure 1.** Average annual landed weight (tons) and ex-vessel revenue (inflation-adjusted 2016 thousands of dollars) over four-year periods, 1997-2000, 2001-2004, 2005-2008, 2009-2012, 2013-2016 to San Diego County ports<sup>5, 6</sup>.

Since 1997, the average annual weight of seafood products landed in San Diego has trended downward, however the average annual ex-vessel value (dollar value fishermen receive for their catch) has trended up. In addition, the proportions of which species are landed or which are economically significant has changed, and will continue to change, over time.

<sup>5</sup> The twenty species listed are those for which there have been historically significant landings or revenue in San Diego and/or in Los Angeles or Orange County ports.

<sup>6</sup> All data in this fact sheet are preliminary and are from Pacific Fisheries Information Network (PacFIN).

For example, the California spiny lobster fishery demonstrates the current value of local fisheries, having consistently been landed in San Diego County since 1997. During 2009-2012 foreign markets opened up increasing the demand and average ex-vessel value of lobster to a high of \$19.67 per pound in 2015<sup>7</sup> and accordingly increased the total value to San Diego. While markets fluctuate and are difficult to predict, historic data show that the San Diego component of these commercial fisheries reliably bring important financial benefit to the city .

Between 1997 and 2004, albacore tuna was a significant portion of the landings into San Diego. Historical records indicate that landings to California were among the highest to the West Coast from 1957-1982<sup>8</sup>. Since 2006 landings to Tuna Harbor, and all of San Diego County, have all but disappeared as the albacore population has shifted north. However, albacore caught off Oregon or Washington are sometimes landed in San Diego. While difficult to forecast when or if albacore will return to southern California, and in spite of the absence of albacore, the commercial fisheries have continued to bring an important, and increasing, economic benefit to the area.

Yet another example, swordfish landings to San Diego County ports have declined over time, but the commercial fishing industry has developed a market for and supplemented with bigeye tuna, landings of which increased in the most recent period (2013-2016). Both changes were caused by either migrating populations or fishing regulations changing and thus affecting which species fishermen can land and where it made economic sense to do so<sup>9</sup>. The industry has proven adaptive.

### **San Diego fisheries are valuable**

Since 1981, the annual ex-vessel revenues of seafood landed to San Diego County ports has ranged from \$6.3 million to \$201.5 million<sup>10</sup> with an annual average of \$21 million. Annual landed weights averaged 6,517 mt over the years 1981-2016, with landings of sea urchins, swordfish, spiny lobster, and common thresher shark consistently generating high landed weights and ex-vessel revenues. These values represent only a fraction of the overall economic benefit of the commercial fishing industry to San Diego as the operational expenses of fishing also generate demand for goods, services and employment in the local economy. A thriving fishing fleet contributes to the tourism that fuels much of San Diego's economy, much like in Fisherman's Wharf in San Francisco.

There are also non-monetary intangible benefits that a thriving and active commercial fishing industry contributes to communities: social capital, or the value of relationships and the ability to cooperate, food security, stewardship and education, among others<sup>11</sup>.

### **Working waterfronts are critical to maintaining a sustainable U.S. seafood supply**

Productive U.S. fisheries depend on waterfronts that have the necessary infrastructure for fishery operations. Commercial fishermen in northern California have cited declines in local infrastructure, reductions in fisheries opportunities and activity, and the resulting loss in local processing facilities as challenges to continuing their

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<sup>7</sup> CDF&W. 2016. California spiny lobster fishery management plan. [<https://www.wildlife.ca.gov/Conservation/Marine/Lobster-FMP> Accessed on 6 February 2019]

<sup>8</sup> Pacific Marine Fisheries Commission. 1983. 35th Annual Report of the PACIFIC MARINE FISHERIES COMMISSION FOR THE YEAR 1982. Edited by: Russel G. Porter. Junei. [Accessed on 14 Dec 2018 [https://www.psmfc.org/wp-content/uploads/2012/02/Resources\\_Publications\\_Annual\\_Reports\\_1982\\_PSMFC\\_Annual\\_Report.pdf](https://www.psmfc.org/wp-content/uploads/2012/02/Resources_Publications_Annual_Reports_1982_PSMFC_Annual_Report.pdf)]

<sup>9</sup> C. Urbisci, L., S. Stohs, & K.R. Piner. (2017). From Sunrise to Sunset in the California Drift Gillnet Fishery: An Examination of the Effects of Time and Area Closures on the Catch and Catch Rates of Pelagic Species. *Marine Fisheries Review*. 78. 1-11. 10.7755/MFR.78.3-4.1.

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<sup>10</sup> In 1981 in inflation-adjusted 2016 dollars.

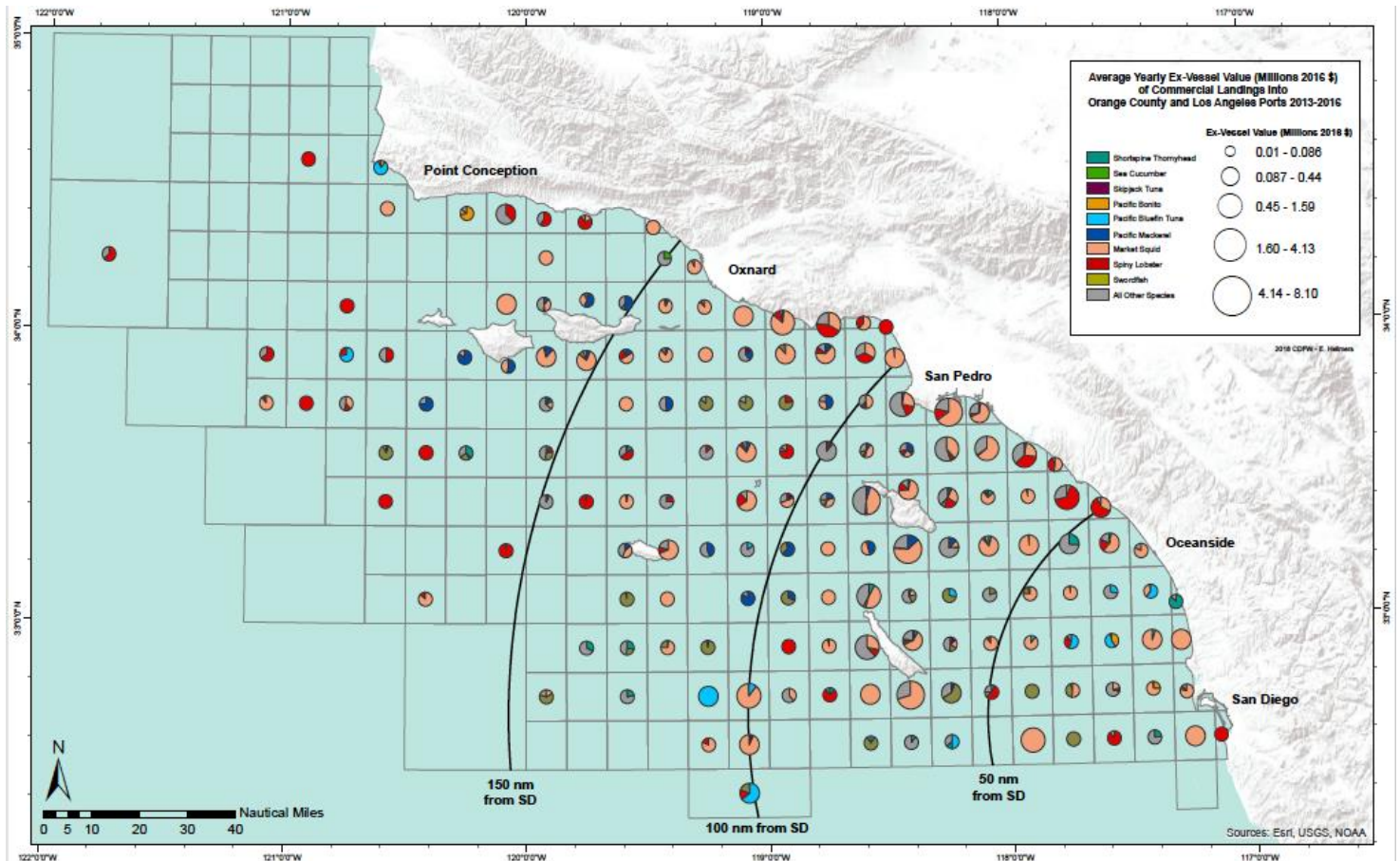
<sup>11</sup> Holland, D.S., A.W. Kitts, P.P. Da Silva, J. Wiersma, 2013. Social Capital and the Success of Harvest Cooperatives in the New England Groundfish Fishery. *Mar. Res. Econ.* 28: 133-153.

O'Donnell, K., Hesselgrave, T. Macdonald, E., McIsaac, J., Nobles, D., Sutcliff, T., Fernandes, D., Reid-Kuecks, B., 2013. Understanding Values in Canada's North Pacific: Capturing Values from Commercial Fisheries. EcoTrust Canada & T. Buck Suzuki Foundation. Pp. 102.

businesses<sup>12</sup>. Their concerns are not unique. Loss of waterfronts with the necessary infrastructure contradict the goals of the MSA and threaten viable commercial fisheries across the U.S.

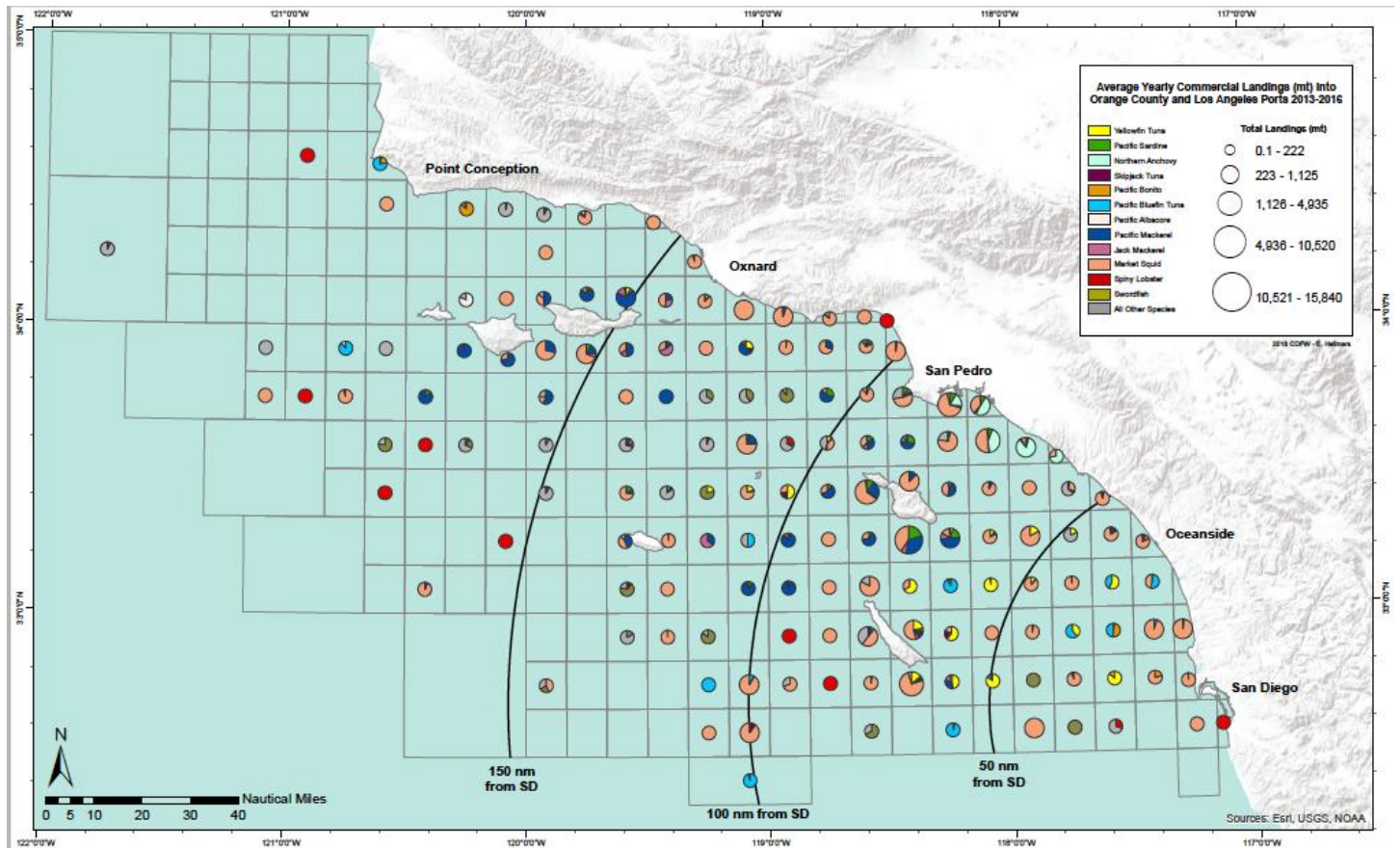
Without adequate infrastructure fishermen will berth their vessels, offload and/or process their catch elsewhere. Moving fishing operations to other ports, processing facilities may be more dependent on imported seafood and are more likely to move operations to areas with more fishing. Fishermen take into account travel costs, including the location of processing facilities, when deciding on where to land their fish. With fewer processors, fewer fishermen are likely to remain in the region, further decreasing availability of local seafood.

In addition, a lack of adequate local infrastructure may affect where fish caught near San Diego are landed. Table 1 and Figures 2 and 3 indicate catch which could potentially have been landed into San Diego County ports had sufficient infrastructure existed but which was landed in Orange or Los Angeles County ports, instead.



**Figure 2.** Average yearly ex-vessel value (millions in 2016\$) of commercial landings into Orange and Los Angeles County ports during 2013-2016, by species and landing location (CDFW blocks). Boundary markers indicate 50, 100, and 150 nautical miles from the Port of San Diego.

<sup>12</sup> Pomeroy, C., C.J. Thompson, M.M. Stevens. 2010. California’s North Coast Fishing Communities. Historical Perspective and Recent Trends. Final Report to the California State Coastal Conservancy. California Sea Grant College Program. UCSD, SIO publication T-072. Pp 340.



**Figure 3.** Average yearly commercial landings (metric tons) into Orange and Los Angeles County ports during 2013-2016, by species and landing location (CDFW blocks). Boundary markers indicate 50, 100, and 150 nautical miles from the Port of San Diego.

In Figures 2 and 3, top species landed into Los Angeles and Orange County ports (by tonnage and value) are displayed as a fraction of total landings for all species by catch location (CDFW blocks), in four-year increments. The period from 2013-16 is shown as an example. The black boundary lines show distance from San Diego.

Table 1 provides average annual catches and ex-vessel values of landings caught closer to San Diego County ports than the Los Angeles or Orange County ports to which they were landed from 1997 to 2016. These data provide insight into potential missed opportunity for fresh, locally-caught seafood, as well as reduced economic benefit for San Diego. The average potential increase in landings into San Diego for large pelagic species ranged from \$924 (for 1 mt of skipjack during 2009-12) to \$1.7M (for albacore during 1997-2000) and 952.8 mt (for skipjack during 1997-2000).

### Yearly Average Metric Tons (mt) Caught Closer to San Diego

Year	Yellowfin Tuna	Skipjack	Pacific Bonito	Pacific Bluefin	NP Albacore	Pacific Mack	Jack Mack	Swordfish	Pacific Sardine	Northern Anchovy	Shortspine Thornyhead	Market Squid	Sea Cuke	Spiny Lobster	Other Species
1997:2000	721.6	952.8	292.8	700.3	650.0	12,974.9	891.7	79.1	33,339.5	1,035.0	4.5	22,312.0	0.0	80.6	1,962.4
2001:2004	79.6	28.5	73.5	10.6	160.2	4,129.0	1,427.3	58.1	31,699.7	1,318.0	40.7	20,659.7	3.0	73.2	1,571.2
2005:2008	28.1	91.3	774.2	55.1	14.1	4,225.2	462.8	47.8	31,083.3	1,434.0	55.3	24,213.9	0.4	92.2	780.1
2009:2012	3.8	1.0	334.5	89.4	10.4	2,832.3	136.2	12.1	18,773.4	465.1	58.9	38,117.1	11.0	89.6	735.7
2013:2016	399.1	37.4	10.1	122.8	6.1	4,312.6	517.4	14.5	2,098.8	1,128.8	14.6	14,106.5	2.6	88.1	769.1

### Yearly Average Ex-Vessel Value (2016 \$) Caught Closer to San Diego

Year	Yellowfin Tuna	Skipjack	Pacific Bonito	Pacific Bluefin	NP Albacore	Pacific Mack	Jack Mack	Swordfish	Pacific Sardine	Northern Anchovy	Shortspine Thornyhead	Market Squid	Sea Cuke	Spiny Lobster	Other Species
1997:2000	945,495	1,031,258	196,390	1,051,116	1,680,487	2,227,686	240,023	830,096	4,234,695	169,629	37,319	8,974,512	0	2,182,495	6,884,490
2001:2004	57,059	14,343	50,975	16,299	318,044	847,319	341,494	798,781	4,030,759	163,337	352,460	7,586,902	10,592	1,835,759	5,529,524
2005:2008	25,464	56,713	590,375	42,056	4,849	787,296	104,922	571,150	3,969,719	161,236	543,502	16,833,952	2,434	2,681,878	3,130,339
2009:2012	4,015	924	316,285	106,836	15,214	704,130	29,304	186,995	3,206,212	59,909	623,176	24,766,699	104,052	3,897,670	3,325,638
2013:2016	379,822	25,955	6,325	181,028	14,218	943,651	105,710	179,185	464,800	127,545	197,541	11,047,190	18,832	4,538,860	3,555,830

**Table 1.** Average annual catches and ex-vessel values of landings caught closer to San Diego County ports than the Los Angeles or Orange County ports to which they were landed during five periods, 1997-2000, 2001-2004, 2005-2008, 2009-2012, 2013-2016. Catches are in metric tons and ex-vessel values are in inflation-adjusted 2016 dollars.

#### Changing regulations may mean more fishing opportunities

NMFS and the Pacific Fishery Management Council (PFMC) have undertaken initiatives intended to expand fishing opportunities, support attainment of optimum yield, and to offset some declining trends in fishery landings and participation, like issuing exempted fishing permits to explore the use innovative gear types, such as deep-set buoy gear. Many of such permits have been issued to San Diego-based vessels. NMFS and the PFMC are considering options to authorize this gear, and San Diego fishermen would be eligible to use it. In addition, the recent rebuilding of several commercially-important groundfish species is expected to further expand fishing opportunities in the region. West Coast communities are expected to see an increase of about 900 jobs and \$60 million in income in 2019<sup>13</sup>. The majority of these increases are projected from increases in recreational fishing in Southern California, specifically from the addition of 148,000 trips or a greater than 35% increase. A large component of the Southern California recreational fishery relies on the use of live bait to support their operations. As this live bait industry<sup>14</sup> relies on San Diego waterfront space, this increase will have a significant economic impact on the commercial bait industry and thus San Diego's commercial fisheries.

<sup>13</sup> National Marine Fisheries Service (NMFS). 2018b. Pacific Coast Groundfish Fishery 2019-2020 Harvest Specifications and Management Measures. Analytical Document Organized as a Preliminary Draft Environmental Assessment [Accessed on 19 Dec 2018 [https://www.pcouncil.org/wp-content/uploads/2018/06/E4\\_Supp\\_REVISEDAtt2\\_2019-20\\_GFSpexEA\\_E-Only\\_June2018BB.pdf](https://www.pcouncil.org/wp-content/uploads/2018/06/E4_Supp_REVISEDAtt2_2019-20_GFSpexEA_E-Only_June2018BB.pdf)].

<sup>14</sup> Bait industry landings and value are not reflected in the data presented here due to confidentiality rules.

## **Methods**

PacFIN data were used for all analyses.

Figure 1.

The top ten species for tonnage and ex-vessel value and landed into San Diego ports, particularly Driscoll's and Tuna Harbor, were determined for: (1) historic landings (1997-2005) that were not the top 10 species from 2006-2016, and (2) landings of high volume or revenue for several decades.

Figures 2 and 3, Table 1.

The distance from the centroid of each fishing block to both the port of landing and the Port of San Diego was calculated and summarized for total catch and ex-vessel value by species for landings taken in waters closer to San Diego but offloaded in Los Angeles or Orange Counties.