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# Commercial Fisheries of the Santa Barbara Channel and Associated Infrastructure Needs

Carolynn S. Culver  John B. Richards  Caroline M. Pomeroy

# COMMERCIAL FISHERIES

# OF

# THE SANTA BARBARA CHANNEL

# AND

# ASSOCIATED INFRASTRUCTURE NEEDS

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# EXECUTIVE SUMMARY

Over the past decade, commercial fishing activity has declined nationwide as a result of expanded fishery management and its effects, including the downsizing of fisheries aimed at sustaining or rebuilding fish populations. In California, regulatory changes were implemented in response to concerns over the status of specific fish stocks (e.g., rockfish, cabezon, sheephead), as well as general concerns about marine resources and habitats. The downsizing of commercial fisheries has clearly impacted the fishing communities of the Santa Barbara Channel region (SBC), with significant reductions in fishable areas, quantities and species, and fishery participants. This, in turn, has impacted working waterfronts (harbors) and ancillary fishing businesses, leading many to question the future of commercial fisheries. Harbor administrators, in particular, are trying to determine whether to maintain and improve fishery infrastructure given the downsizing of commercial fisheries. To address this issue, we evaluated the current and future status of commercial fisheries and associated infrastructure needs and options for the SBC by:

- Analyzing local fishery landings data
- Conducting interviews with local commercial fishery participants
- Conducting a workshop with persons knowledgeable about SBC and California commercial fisheries
- Gathering information from persons knowledgeable about commercial fishing operations and infrastructure at other West Coast ports

Our results indicate that there are about 201 full-time resident commercial fishery participants in the region. (This number does not include part-time or transient commercial or recreational fishery participants.) Primary fishing operations include dive, trap, purse seine (including lampara nets), trawl, gillnet, and longline. Troll, hook and line (including pole and line), and harpoon operations also exist, although these are typically secondary fisheries for full-time SBC fishery participants. Dive operations comprise more than one-third of the local operations, with another quarter being trap operations, and another third being net operations (purse seine, trawl, gillnet).

Four harbors – Santa Barbara, Ventura, Channel Islands, and Port Hueneme – host the region's commercial fisheries in various ways. Infrastructure needs varied among ports and fishing operations, but overall fishery participants identified a need for the following facilities/services that are currently very limited, if available at all:

- Processing
- Cold storage
- Live fish holding areas/tanks

Several other infrastructure needs were identified for specific fishing operations and harbors, including:

- Storage space (gear, trailers and vessels)
- Gear repair areas
- Bait suppliers and facilities
- Improved unloading facilities and procedures

Landings data analyses indicated a great diversity of commercial fisheries in the SBC region. Invertebrate fisheries (e.g., squid, sea urchin, lobster, sea cucumber, crab)

comprised a majority of the local landings, with several finfish (e.g., halibut, sardine, anchovy, white seabass, tuna, sheephead) also important fishery components. Local fisheries are generally described as high-volume, low-price (e.g., anchovy purse seine) or low-volume, high-price (e.g., lobster trap) fisheries, although certain fisheries (e.g., sea urchin dive) fall somewhere in between. The highest value fisheries in terms of total ex-vessel value in the region averaged over the recent five years included the squid purse seine, sea urchin dive, and lobster trap fisheries and the highest volume fisheries of the region were the squid seine, coastal pelagic species (CPS) (anchovy, mackerel and sardine) seine, and sea urchin dive fisheries. Landings of these and the other fisheries varied among the four local harbors. Santa Barbara, Channel Islands and Ventura Harbors have diverse and similar sets of fisheries associated with them, but Ventura Harbor differed in its emphasis on seine fisheries compared to dive and trap fisheries at the other two harbors. In contrast, Port Hueneme Harbor is highly specialized, with a focus on seine fisheries.

Fluctuations in fishery landings were due to environmental, regulatory, and economic factors. Based on the recent five years of landings data and observations of managers, researchers and fishery participants knowledgeable of SBC fishery resources, the fishery resources of the SBC are generally considered to be healthy, albeit naturally fluctuating due to the oceanographic complexities of the region. Climatic events, particularly El Niños, impacted the top fisheries of the region (as well as many other fisheries) with both immediate and delayed effects on the distribution and abundance of species. Further, various fishing operations of the SBC were severely impacted by new regulations, most notably:

- Channel Islands Marine Protected Areas
- Rockfish Conservation Area
- Cowcod Conservation Area
- Nearshore Gillnet Closure
- Trawl Exclusion Zone
- Groundfish and Nearshore Finfish Quotas

Commercial fishery landings were also influenced by economic factors, including weak economies in other nations, competition with foreign seafood, and increased operating costs (e.g., fuel). Future regulations and closures will likely further restrict fishing operations for some SBC fisheries, especially with the implementation of fishery management plans mandated by the Marine Life Management Act, the development of a network of coastal marine reserves per the Marine Life Protection Act, and the potential closure of the California halibut trawl grounds pursuant to SB 1459 and AB 1431. Long-term sustainability of local resources and fisheries requires coordination among these and other management tools, and adaptive management that responds to changes in the ecological and human dimensions of fisheries.

While the abundance of fishery resources for most of the commercial fisheries of this region is not presently in question, commercial fishing communities are faced with several other challenges:

- Limited access to fishery resources and fishing grounds
- Increasing operating costs
- Competition with product of foreign fisheries

Given the expanded role of the public in fisheries management, the current disconnect between local communities and their fisheries may exacerbate the loss of access to fish and productive areas. Lack of community support may also reduce the viability of local fishing operations if primarily foreign-fished products that are less regulated and less expensive continue to be purchased instead of local products that are substantially regulated but more expensive. Consequently, impacts to local harbors will also persist if the level of local fishing activity falls below what is required to maintain working waterfronts, as has occurred recently in Morro Bay Harbor. Development and sustainability of domestic markets is becoming increasingly important for some local fisheries, as export market opportunities shrink due to increased competition with foreign fisheries.

Despite the challenges facing SBC commercial fishing communities, local fishery participants continue to be resilient and committed to their profession and the sustainability of marine resources. They recognize the potential for improving the long-term survival of their communities through future opportunities, including:

- Development of new fisheries
- Expansion of markets for existing small-scale fisheries
- Development of value-added products
- New and/or expanded use of select gear types
- Direct marketing to restaurants and the public
- Education of local communities

Diversification of fishing operations through development of new or expanded sustainable fisheries that target non-traditional species or use new fishing gear or technologies will help improve individual businesses. It will also help support harbor infrastructure over the long-term. Efforts to educate local communities about their fisheries may also enhance the sustainability of fishing operations and harbors, particularly if locally appropriate and adaptive management is supported and fisheries and fishing areas re-open and remain open when the science supports such measures. Direct marketing at the harbors and local restaurants, as well as additional harbor festivals and accurate media reports, could facilitate connections between local communities and their fisheries.

Taken together, commercial fisheries of the SBC will continue in the future, provided sufficient and appropriate infrastructure and community support. Maintenance and improvement of harbor infrastructure is critical for enabling local fishery participants to continue providing high-quality seafood and other marine products. With the downsizing of the commercial fisheries, these facilities and services need to become more adaptive to the changes in the type of fisheries and fishing activity. Likewise, support from local communities is needed for developing practical management that allows for sustainable fisheries and fishing communities, while protecting and enhancing marine resources.

## ACKNOWLEDGEMENTS

We thank the many people who contributed information and ideas throughout this effort, particularly fishing community members and others who participated in the workshop (Appendix C-1) and the interviews, and provided information on other West Coast ports (Appendix B). Special thanks are extended to Cindy Thomson and Rebecca Rizzo for their assistance with and discussions about the fishery landings data. We are also grateful to Mark Helvey, Chris Fanning, Lyle Enriquez and Corinne Pinkerton for their review of the landings analyses and to anonymous fishery representatives who reviewed parts of the document. Frequent assistance from and discussions with Kristine Barsky, Jerome Betts, Pete Dupuy, Craig Fusaro, Mike McCorkle, Matt Newnham, Dave Ono, Diane Pleschner-Steele, and Michelle Walker are much appreciated. We thank Michael Robinson for developing the GIS map of the closed areas discussed in this report. We also value the support of Oscar Peña, Mick Kronman, Kim Beaird and Janelle Kohl throughout the project, and the editorial and design advice of Marsha Gear and Joann Furse. This project was funded by the Ventura Port District, NOAA Fisheries, Santa Barbara Harbor, and the California Sea Grant Extension Program, University of California Cooperative Extension. Publication support was provided by California Sea Grant and the Collaborative Marine Research Program, Channel Islands Marine Sanctuary Foundation. Any errors of fact or interpretation are the authors' alone.

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# INTRODUCTION


Statewide, many people have noticed reduced commercial fishing activity at their local harbors. This significant decline in commercial activity is primarily due to the implementation of various regulations over the past 5–10 years. These regulations addressed concerns about the sustainability of marine fishery resources, as it had become clear that some populations of marine organisms, most notably some species of groundfish[1] and abalone, had reached critically low levels and that new management strategies were needed to improve the status of these resources. Many factors contributed to these population declines, including habitat destruction from coastal development, pollution, disease, failed recruitment resulting from prolonged adverse environmental conditions, and mistaken assumptions about the fishing pressure that some stocks could withstand. Commercial and recreational fishing

[1]The groundfish complex is comprised of more than 90 species of bottom-dwelling finfish, including rockfish (rf), flatfish, and lingcod. As of this writing, 7 species are listed as overfished: bocaccio rf, canary rf, cowcod rf, darkblotched rf*, Pacific ocean perch*, yelloweye rf*, widow rf*. (* indicates species that primarily occur north of the SBC.) Lingcod have recently been declared fully recovered.

operations became more efficient, and in some cases over-capitalized by the early 1990s. Thus, even for those local commercial fisheries considered healthy (i.e., able to maintain stable levels of harvest, such as squid, lobster, halibut, sardine, spot prawn), new regulations were implemented to reduce commercial fishing effort. These regulations included: 1) limited entry (restricted access), 2) reduced quotas, 3) gear restrictions, 4) area closures (including marine reserves), and 5) daily and seasonal closures.

While these regulations were generally necessary for long-term sustainability of commercial fisheries, there were unanticipated consequences for those fisheries and communities. In addition to the impacts on fishery participants, some local harbors (e.g., Morro Bay) are now struggling to maintain required infrastructure for the remaining commercial fishing operations. Further, many harbors are debating the future need and justification for maintaining and improving facilities and services that support commercial fishing activities. Discussions on the fate of commercial fishing infrastructure have been exacerbated by the increased value of coastal real estate, as water-dependent uses now compete with high-value uses such as residential and tourism related real estate development that are not ocean dependent.

Commercial fishing communities of the Santa Barbara Channel region (SBC) are no exception, as they have been heavily impacted by fishery regulations and are located in extremely valuable coastal areas of California. Consequently, local harbors are now faced with difficult decisions about how to balance the needs of commercial fisheries with other demands and within their budgetary constraints. This dilemma led the Ventura Port District to request this project to provide information on the future of the SBC's commercial fisheries. We expanded the project to include the other harbors in the region, as they also faced similar issues. In addition to providing information to address these needs, this project may further serve as a model for other communities working toward sustainable fisheries and fishing communities.

**The Project**

The goal of this project was to provide information on current and potential future trends of Santa Barbara Channel commercial fisheries, and associated infrastructure needs and options to local harbor managers. Our objectives were threefold: 1) to develop profiles of the current commercial fisheries and associated infrastructure needs of the four harbors in the Santa Barbara Channel region, 2) to identify factors that may alter the current fisheries profiles over the next 5 to 10 years and describe how these changes may impact infrastructure needs and 3) to identify potential improvements and alternatives for meeting the current and future infrastructure needs of the various commercial fisheries.

To address these objectives, we analyzed commercial fishery landings data from the Pacific Fisheries Information Network (PacFIN) database, surveyed resident SBC commercial fishery participants, and interviewed individuals knowledgeable about SBC and other West Coast commercial fisheries, harbors and associated infrastructure. In addition, we conducted a workshop with local commercial fishery representatives, fishery scientists, and managers.

This report addresses 4 major topics related to SBC commercial fisheries and harbors:

1. SBC Commercial Fisheries
2. Current Infrastructure Needs
3. Factors Influencing SBC Fisheries
4. The Future of SBC Fisheries

Section 1 provides information about the region and local commercial fishing operations. We describe the distribution of various fishing operations among the local ports, vessel and crew sizes, and estimates of the time spent fishing inside and outside of the region. Also included in this section are profiles of commercial landings for the region and at each local port, with annual ex-vessel values and volumes of landings for the top fisheries. These data illustrate historic trends in landings covering a 25-year period (1981–2005), as well as the most recent 5-year trends (2001–2005) following the downsizing of commercial fisheries.

Section 2 describes the current infrastructure needs of local fishing operators, beginning with an explanation of needs common to all fishery participants and those specific to particular operations. A brief summary of the current infrastructure needs for each port follows, with suggestions for general improvements (more detailed information is provided in Appendix E). We conclude with discussions of model facilities and services at other West Coast harbors that may serve as examples for addressing current, local infrastructure needs.

Section 3 discusses several factors presently influencing fishery landings of the SBC, including environmental, regulatory and economic variables. In particular, we describe the effect of climatic processes on local fishery resources. Regulations and economic factors that have had major impacts on local fishing operations are also described. We illustrate when and how these factors have influenced SBC fishery landings for the top three fisheries of the region.

Section 4 discusses anticipated changes in local fisheries. We first describe some of the challenges facing the local fishing communities. Opportunities for addressing those challenges follow, including the potential for re-opening closed areas and fisheries and the development of new and/or expanded fisheries. We also provide information regarding anticipated changes in management and future infrastructure needs.

In this report, we focus only on commercial fisheries of the Santa Barbara Channel region and primarily on fishery resources and fishing participants (not processors or ancillary fishery businesses). Recreational fisheries, including those that involve commercial passenger fishing vessels (CPFVs), as well as private boat and shore-based fishing, are beyond the scope of this study. We use the term 'fish' to refer to all types of marine organisms (finfish, sharks, shellfish, non-shelled invertebrates) landed commercially. We define a fishery as comprising a gear type-species (or species group) configuration commonly used by commercial fishery participants. We also describe fisheries as 'high-volume, low-price' or 'low-volume, high-price' fisheries, or somewhere in between, based on the typical volume of landings made per trip and the ex-vessel price per pound relative to other fisheries. Importantly, a high-volume, low-price fishery may account for considerable total ex-vessel value despite the low price per pound received dockside by the fishery participant.

## METHODS

To evaluate the current and future status of commercial fisheries and associated infrastructure for the Santa Barbara Channel region (SBC), we analyzed both existing data and field data collected specifically for this project. The existing data provided information on all fishery landings for the region, including those made by non-resident and part-time fishery participants. Data collected in the field were gathered primarily from full-time resident fishery participants.

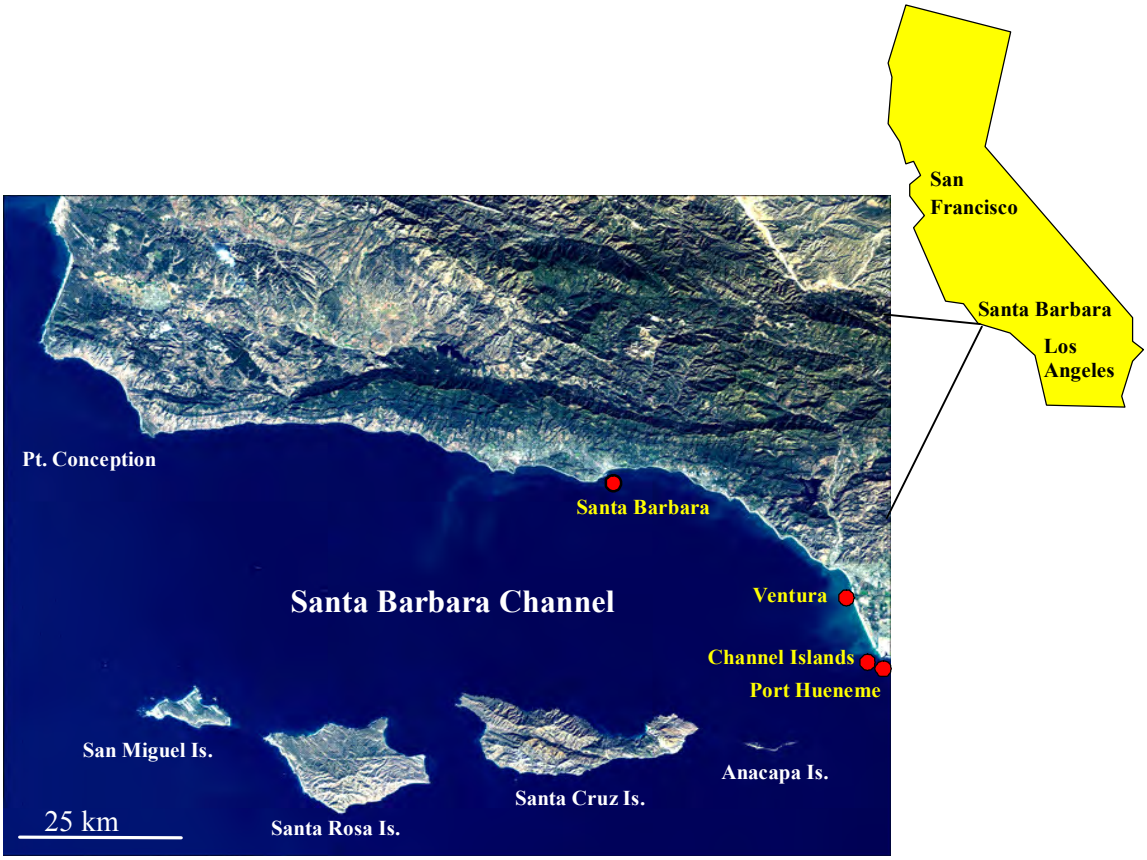
### The Region

The SBC is defined here as the ocean waters south of Point Conception to just south of Hueneme Canyon off Point Mugu (Santa Barbara and Ventura Counties), as well as the waters surrounding the four northern Channel Islands (San Miguel, Santa Rosa, Santa Cruz and Anacapa Islands) (Fig. 1). The SBC commercial fishing communities are served by four harbors, including Santa Barbara, Ventura, Channel Islands and Port Hueneme.

### Archival Data Analyses

To identify the recent trends and specific fisheries associated with SBC commercial fishery participants, we analyzed commercial fishery landings data. These data were provided by Cindy Thomson

**Figure 1**. Map of the Santa Barbara Channel region. Red dots indicate local harbors.



(NOAA Fisheries[2]) and Carrie Pomeroy, derived from their "Fishery and Vessel Profiles for Pacific Coast Communities" project analyses of West Coast commercial landings data from the Pacific Fisheries Information Network (PacFIN) database. To compliment Thomson and Pomeroy's ongoing West Coast project, we used the same fishery categories and data sets for this project (Table 1). Many categories included more than one species and/or gear type to enable development of broad categories that were applicable coastwide, to meet the needs of Thomson and Pomeroy's project. We did not include a few of their fishery categories in our analyses because there were few, if any, SBC landings: eulachon net, herring gillnet/dive, salmon net, sturgeon gillnet, whiting trawl, and other shellfish trawl/dredge/digger.

Commercial fishery landings were measured by ex-vessel value and volume of landings. Ex-vessel value is the price paid to the fishery participant at the dock. These values do not include multipliers associated with processing and retail values. All values were adjusted for 2005 inflation rates. The volume of landings is the weight (pounds) of fish landed. Only data that met confidentiality requirements–at least 3 vessels and 3 buyers involved in the landings–were reported. There were only a few cases where confidentiality requirements could not be met. These cases are identified in the appropriate sections, and the associated data are accounted for in totals, but are not reported as separate values.

We analyzed landings data over 25-year (1981 to 2005) and 5-year (2001 to 2005) periods. The 25-year period was based on the availability of accurate data, and it provided a historical overview of fishery landings for the SBC. The 5-year period represented the most recent five years of available landings data and provided a more accurate overview of current SBC fisheries following the downsizing of California fisheries. Fishery landings data were analyzed for the Santa Barbara Channel region as a whole[3], as well as by port.

To determine the composition of commercial fishery participants in the harbors, we began with PacFIN data on the number of vessels making landings for the top fishery for each gear type at each harbor in 2005: urchin dive, lobster or crab (whichever was highest) trap, squid purse seine, halibut or white seabass/yellowtail gillnet (whichever was highest), prawn trawl and longline tuna. These numbers were then ground-truthed and adjusted based on discussions with local fishery representatives.

We also developed fishery profiles for the top three regional fisheries that described the various factors affecting fishing effort and subsequent landings. We first reviewed literature, in particular *California's Living Marine Resources: A Status Report* (Leet et al. 2001), to gain insight on known factors influencing the fishery statewide. We then spoke with local fishing representatives, buyers, scientists and managers to refine our understanding of factors impacting the local landings for each fishery. They and others knowledgeable about the region's fisheries reviewed the resulting profiles.

[2] National Marine Fisheries Service.

[3] Regional landings included landings at the four primary harbors, as well as at smaller landing sites in the area (e.g., Gaviota pier, Stearns Wharf). Commercial landings at these sites were very small, totaling only approximately 375,000 pounds over all fisheries for the entire 25-year period and just over 21,500 pounds over the recent 5 years for all fisheries.

**Table 1**. Fishery categories used for analyzing landings data for the Santa Barbara Channel region.

| **Fishery Category** |
|---|
| Abalone Dive |
| Sea Urchin Dive[1] |
| Crab Trap |
| Hagfish Trap |
| Lobster Trap |
| Prawn Trap[2] |
| CPS Seine[3] |
| Squid Seine[4] |
| Tuna Seine[5] |
| Non-Whiting Groundfish Trawl |
| Sea Cucumber Trawl and Dive[1] |
| Prawn Trawl[6] |
| Halibut Set Gillnet |
| Rockfish Gillnet |
| Shark Gillnet |
| Swordfish Drift Gillnet |
| Yellowtail/White Sea Bass Gillnet |
| White Croaker Gillnet |
| Tuna Longline |
| Swordfish Longline |
| Albacore Troll and Hook & Line[7] |
| Salmon Troll |
| Halibut Hook & Line |
| Nearshore Finfish Hook & Line and Trap |
| Sablefish Hook & Line and Trap |
| Shark Hook & Line |
| Swordfish Harpoon |
| All Else |

[1]Net gear landings were included in these categories, but are infrequent in SBC landings.
[2]Prawn trap fisheries include shrimp species. We use 'prawn' here because it refers to the primary species (spot prawn) targeted in the SBC fishery.
[3]The seine fishery for coastal pelagic species (CPS) consists of anchovy, mackerel and sardine.
[4]Dipnet landings of squid were included in this category, but are infrequent in SBC landings.
[5]Tuna seine fishery includes albacore, bonito and other tuna.
[6]Prawn trawl fisheries include shrimp species. We use 'prawn' here because it refers to the primary species (ridgeback prawn) targeted in the SBC fishery.
[7]The albacore hook & line fishery includes live-bait pole & line fishery.

**Field Data**

To assess current and anticipated local commercial fishing activities and associated infrastructure needs, we conducted semi-structured survey interviews with 84 commercial fishery participants. The survey interview consisted of both closed-ended and open-ended questions, with the same format used for all interviews (Appendix A). Questions covered past, current and future fishing activities, marketing, and current and future infrastructure needs. Data were entered into and analyzed using Microsoft Access™.

Potential interviewees were identified from lists of commercial slip holders, from our own knowledge, and through consultation with key local fishing representatives. Each individual was assigned to a single gear type based on their primary fishery, even though the majority of individuals use multiple gear types. We targeted resident, full-time commercial fishery participants of the SBC, those who rely on commercial fishing as their primary income. We also included 6 part-time commercial fishery participants from the salmon troll and halibut hook & line fisheries at Santa Barbara Harbor because these fisheries represent secondary fisheries for many of the full-timers and because landings by part-time fishery participants have recently increased significantly at this harbor. We sought to interview one-third of the fishery participants from each harbor and gear type, unless they numbered 6 or fewer in which case we sought to interview 75% or more of those individuals.

We interviewed 39% (78) of the full-time, resident commercial fishery participants of the region, including 42% (44) of Santa Barbara Harbor-based participants, 41% (21) of Ventura Harbor-based participants, 27% (12) of Channel Islands Harbor-based participants and 100% (1) of Port Hueneme Harbor-based participants. Less than 1/3 of the representatives from Channel Islands Harbor were interviewed because of difficulties with locating individuals and time and funding constraints. Respondents represented 25% (23) of divers, 42% (23) of trappers, 36% (9) of seiners, 80% (20) of 'other net' operations, and 100% (3) of longliners of the region. The high percent coverage of the last two gear types is a reflection of the low number of operators in those gear types at each harbor. Gillnet and trawl operations were considered separately when determining the number of interviews to conduct, and were only later combined for statistical reasons. A little more than 1/3 of the trappers were interviewed because we sought to include individuals from all major trap fisheries (lobster, crab, prawn, fish). A little less than 1/3 of regions' divers were interviewed because we had difficulty locating divers based at Channel Islands Harbor. Despite these limitations, we believe we obtained a representative sample for all fisheries of the SBC.

In addition to the interviews, we contacted Sea Grant Extension Advisors, harbor managers, port commissioners, and marine consultants familiar with commercial fishing harbors in California, Oregon, Washington, and Alaska (Appendix B). These persons were asked to describe the types of commercial fisheries supported by the various harbors that they were familiar with, and the associated facilities and services at those harbors. They were also asked about specific infrastructure identified by interviewees as "model" facilities and services. This information was qualitatively analyzed and integrated with interview and other data on harbors and their infrastructure.

**"Futures" Workshop**

To further examine the future of local commercial fisheries, we convened a workshop in late spring 2006 with 14 individuals knowledgeable of California commercial fisheries. Participants included 3 SBC commercial fishery representatives from different fisheries who had knowledge of not only their own fishery, but also other local fisheries, 2 fish buyers, 4 scientists, 4 managers and 2 others (Appendix C-1). Prior to the workshop, participants were requested to gather information from their colleagues about the challenges facing commercial fishery participants and potential strategies for addressing these challenges (Appendix C-2). This information was used during the workshop to stimulate and focus the workshop discussion, with the identified challenges discussed and refined and 3 chosen challenges discussed in more detail. Information from the workshop is integrated throughout this report.


Matt Newnham

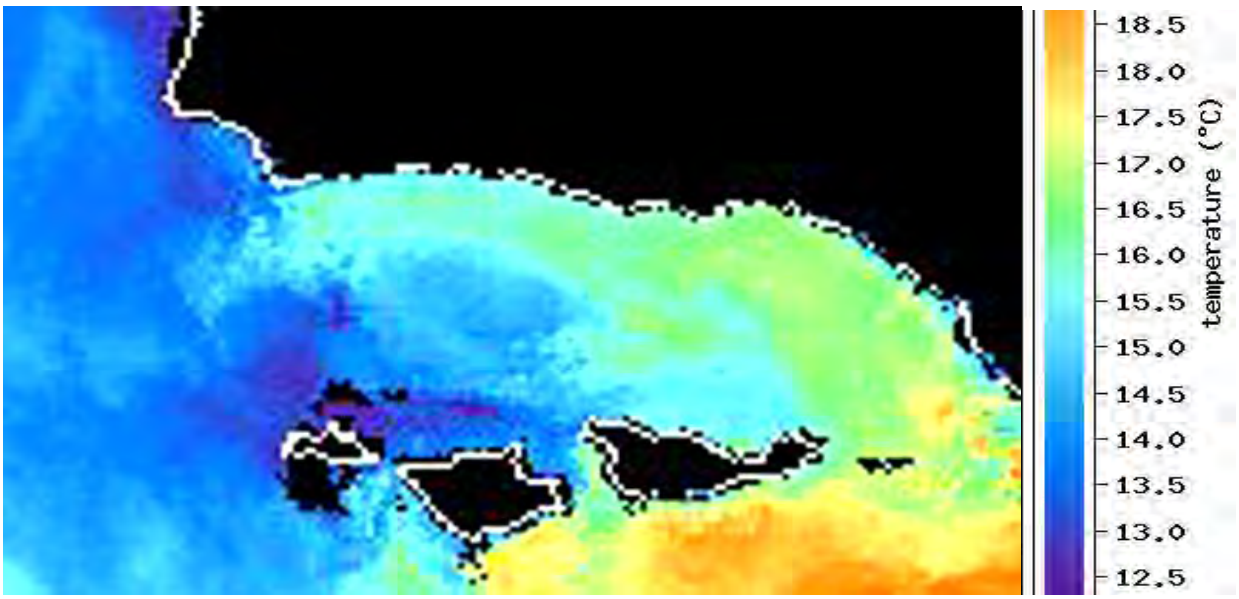
## SBC COMMERCIAL FISHERIES

**The Region**

The biogeography of the SBC makes it a diverse, productive and complex site for fisheries. This is largely because it is a transition zone where the cold waters north of Point Conception mix with the warm waters of Southern California, resulting in a great diversity of organisms. Because it is a major upwelling zone, it is also a very productive area for fisheries. The circulation patterns are complex and fluctuate among upwelling, relaxation, cyclonic (eddies) and flood conditions (Harms & Winant 1998). Individuals fishing in the Santa Barbara Channel have relied on a suite of fisheries (often artisanal in nature) to adapt to the changing conditions and availability of fishery resources of the region.

**Fishing Operations**

Based on our field work, there are approximately 201 full-time resident commercial fishery participants at the 4 SBC ports (Fig. 2). These harbors vary in size, emphasis and support infrastructure for commercial fisheries. Port Hueneme Harbor has limited facilities for commercial fishing operations because it is a large, deep-water port that primarily services cargo ships and offshore oil industry support vessels, and it shares the harbor entrance with the adjacent U.S. Naval Base. Fish are landed by vessels from various locations at this port, but there are currently only 5 commercial fishing vessel slips and no public boat launch. Channel Islands Harbor supports recreational boating, as well as a moderate amount of commercial fishing. Ventura Harbor supports more commercial fishing activity than Channel Islands Harbor, including many of the larger vessels working in the SBC. Santa Barbara Harbor, while the smallest harbor of the region,

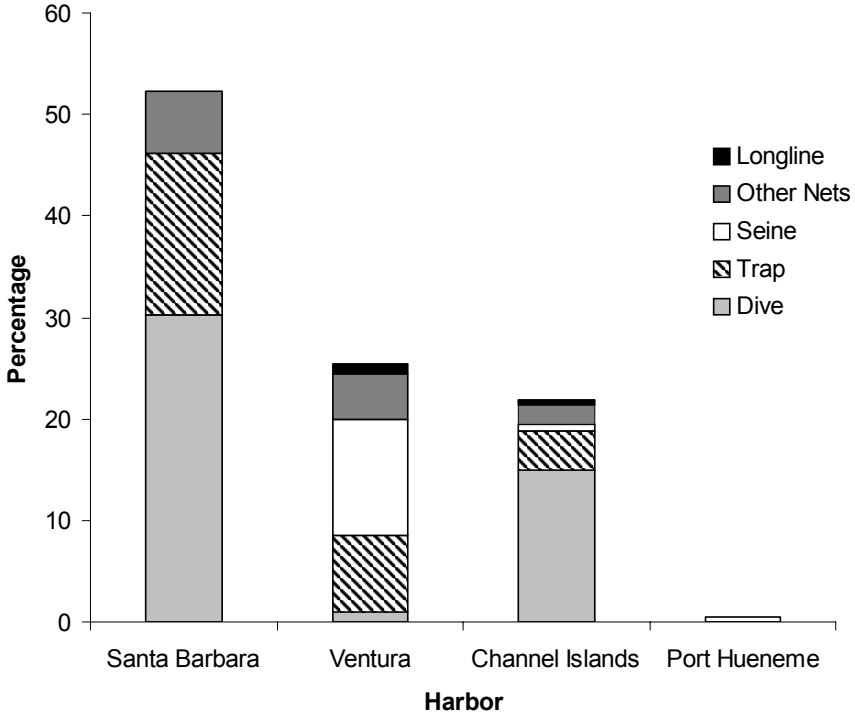



Sea surface water temperature chart, Santa Barbara Channel region. August 27, 2001. NOAA-16 NLSST Split.

supports the greatest number of commercial fishing vessels in the region.

Commercial fishing in the SBC includes the use of many different gear types. The four primary gear types include dive, trap, purse seine (including lampara nets) and other nets (trawl and gillnet). In addition, a few other types of gear are used, including longline, hook/pole & line, troll and harpoon. With the exception of longlines, these other gear types are typically secondary gear for those who commercially fish full-time. While we recognize that many full-time SBC fishery participants use more than one gear type, we have assigned each individual to a single gear type to illustrate the composition of local fishing operations. Based on these

**Figure 2**. Distribution of full-time resident commercial fishery participants among the Santa Barbara Channel region harbors by primary gear types (n=201). "Other Nets" includes trawl and drift and set gillnets.

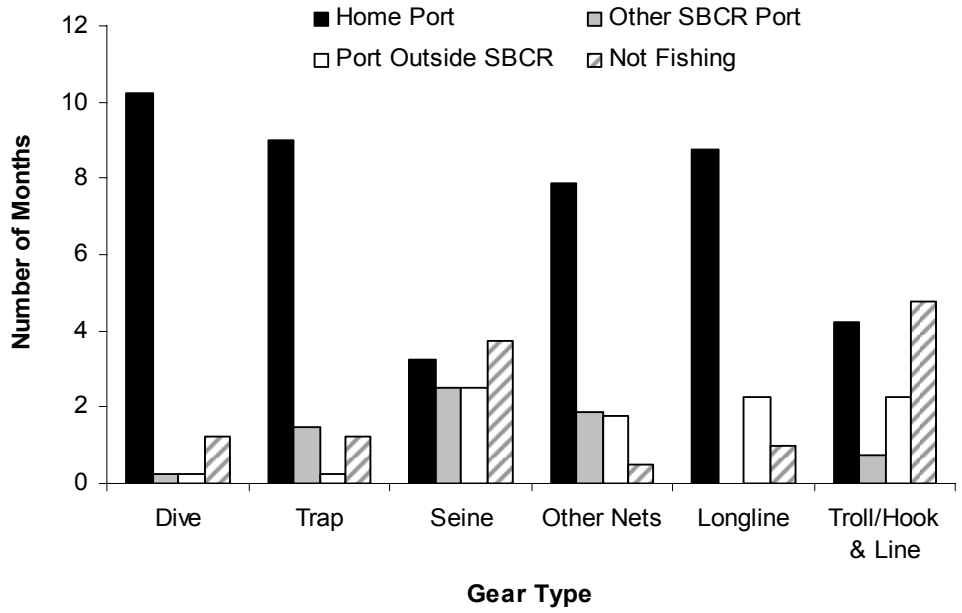



primary gear types, the local fishing operations are distributed differently among the SBC harbors, with some operations present at several of the local ports and others at a single primary port (Fig. 2). Divers comprise the largest component (42%) of the regions' resident commercial fishing operations, with Santa Barbara and Channel Islands Harbors home to the majority (98%) of these operations. Trappers comprise another 25% of the region's resident fishing operations, being distributed at 3 of the ports: Santa Barbara (58%), Ventura (27%) and Channel Islands (15%). Most other (37%) commercial fishery participants of the SBC use various net gear (purse seine, trawl, gillnet). Ventura Harbor is home port to the majority (92%) of the seiners, which comprise approximately 12% of the full-time resident fishery participants

of the area. The other net operations are distributed among Santa Barbara (46%), Ventura (34%) and Channel Islands (21%) Harbors and they comprise approximately 20% of the local fishery participants. Longliners make up a small fleet in the area. Notably, these numbers do not include part-time fishing operations or "transient" participants, commercial fishing operators that land fish at SBC ports, but whose home port is outside of the region. Thus, of the 272 vessels landing fish at SBC ports in 2005 (PacFIN data), approximately 74% were resident vessels and the rest were either transients or part-time fishing operators.

While many commercial fishery participants spend the majority of the year landing their catch at their home port, some spend equal or more time landing their catch at ports other than their home port. Specifically, SBC fishery participants landed fish at their home port an average of 8 months of the year in 2005 (Fig. 3). The rest of the year

**Figure 3**. Number of months per year SBC fishing operations land fish, by gear and port area (n=84).




was spent either landing fish at another SBC port other than their home port (1.25 months), at a port outside of the area (1.25 months), or not fishing (1.5 months). On average, the dive fleet spent the greatest number of months (10.25 months) landing fish at their home port. Trappers, trawlers and longliners spent nearly as much time landing fish at their home port as divers: 9.0, 8.75 and 8.75 months respectively. In contrast, seiners (3.25 months) and trollers and hook & liners (4.25 months) spent considerably less time landing their catch at their home ports.

Much of the variation in time spent landing fish at the home port is explained by the type of fishing operation (e.g., regional vs. localized, full-time vs. part-time participants). Seiners target coastal pelagic

species (CPS), and in particular squid. Large spawning aggregations of squid occur off Southern California (northern and southern Channel Islands and coast) and in Monterey Bay. The fishery is concentrated in these areas seasonally, and the catch is landed at nearby ports where the pumps needed to unload the squid are available. Environmental conditions influence the distribution of squid, thereby affecting the locations where squid are landed. For example, in 2006 squid aggregated off Catalina Island (a southern Channel Island) and were landed at San Pedro Harbor and nearby Port of Los Angeles (Terminal Island) instead of at SBC ports. Trollers and hook & liners also move around more than other fishing participants, especially those targeting salmon and albacore, which are wide ranging anadromous or pelagic species. Further, troll and hook & line fishing operations are comprised of many part-time participants who only fish for part of the year, as evidenced by the high number of months spent not fishing.

Importantly, while we have assigned each individual to a specific gear type, most full-time SBC fishery participants use more than one type of gear. For example, some trappers switch to net, troll, hook & line and/or dive gear for part of the year (e.g., lobster trapper and urchin diver). Similarly, local trawlers may target halibut and ridgeback shrimp for part of the year, and then switch to set and drift gillnets or other gear types (troll, hook & line, traps). Likewise, several divers participate in troll, hook & line, trap and gillnet fisheries. By switching among fisheries throughout the year, SBC fishing operations have remained economically viable as they adapt to the continually changing conditions of the Santa Barbara Channel. However, local fishery participants are losing the flexibility to move among fisheries as new management strategies that include restricted access and harvest capacity reductions are being implemented in most fisheries.

In general, SBC fishing operations use small (20-34 ft) to medium (35-50 ft) sized vessels, averaging approximately 38 feet across all operations (Table 2). Exceptions are the seiners and longliners who have larger vessels, averaging 61 and 72 feet respectively. The smallest boats are operated by divers (averaging 29 feet in vessel length) and trappers (averaging 31 feet in vessel length). Vessel size also relates to the number of crew required by the various fishing operations. Seiners and longliners average 3 to 4 crew in addition to the skipper vs. the skipper and a single crew member for all other SBC fishing operations (Table 2). Like many California commercial fishery participants, SBC fishery participants have a vast amount of commercial fishing experience, averaging 27 years of fishing experience specifically in the SBC. Resident commercial fishery participants of the SBC are on average 52 years old, with only 10% of participants less than 40 years of age (crew not included) (Table 3).

**Table 2**. Vessel lengths and crew sizes excluding the skipper for Santa Barbara Channel region commercial fishing operations (n=84).

| Gear Type | Average Length (ft) | Range Length (ft) | Average Crew Size |
|---|---|---|---|
| Dive | 29 | 24 – 36 | 1 |
| Trap | 31 | 16 – 46 | 1 |
| Purse seine | 61 | 45 – 79 | 3 |
| Light Boat (seine) | 39 | 35 – 45 | 0 |
| Trawl | 46 | 36 – 60 | 1 |
| Gillnet | 42 | 27 – 58 | 1 |
| Longline | 72 | 42 – 87 | 4 |

**Table 3**. Age of resident full-time commercial fishery participants of the Santa Barbara Channel region (n=81).

| Gear Type (Sample Size) | Average Age | Range Age |
|---|---|---|
| All (81) | 52 | 30 – 71 |
| Dive (22) | 50 | 30 – 63 |
| Trap (23) | 51 | 39 – 71 |
| Purse seine (9) | 51 | 40 – 64 |
| Trawl (8) | 56 | 36 – 68 |
| Gillnet (12) | 50 | 39 – 60 |
| Longline (3) | 55 | 44 – 71 |
| Troll/Hook & Line (6) | 56 | 40 – 69 |

## The Commercial Fisheries


The commercial fishery resources of the SBC include a diversity of finfish, sharks and rays and invertebrates (a.k.a., shellfish) (Appendix D). Additional species have been commercially fished, and may be fished in the future as new market opportunities arise. Invertebrates continue to be a major component of the fisheries of the SBC, with finfish also contributing to the value and volume of fishery landings in this region. The majority of these organisms are landed for human consumption, but some are also used as fishing bait and/or aquaculture feed. A small percentage of fish landed may also supply non-consumptive uses, such as pharmaceutical products, education and research.

### Status of SBC Fishery Resources

Following, we illustrate and describe patterns in the ex-vessel value and volume of commercial fishery landings over the past 25- and recent 5-year periods for the region and each local harbor. Our interpretations are based on examinations of the landings data and discussions with others knowledgeable about fishing activities over these time periods. Importantly, landings data are not a direct measure of resource abundance. Thus, interpretation of these data requires knowledge of other factors that may affect landings patterns. (See "Factors Currently Influencing SBC Fisheries.")

For many SBC fisheries, fishery regulations have affected fishery landings patterns, as new management strategies have been implemented to conserve the fishery resources. These measures, together with changes in markets and general conservation efforts have resulted in the relatively constant volume of fishery landings for the recent 5-year period. More detailed data on catch-per-unit-effort are needed to further support these analyses. Clearly there are some species that require rebuilding (e.g., abalones, canary rockfish), and regulations have been implemented and are regularly

reviewed and modified to achieve the goal of species recovery. Nonetheless, based on recent landings and the knowledge of those working in the region, it appears that the majority of SBC fishery resources are currently healthy, with some notable recoveries in recent years (e.g., sardine, lingcod). However, given the oceanographic dynamics of the region and likely changes in fishing effort due to changing stock abundances, regulations, and economics, there is a continued need to adapt management both when fishing opportunities arise and when sustainability is at risk.

## The Santa Barbara Channel Region

### Historic Landings, 1981–2005

The annual ex-vessel value (EVV) of commercial fishery landings of the Santa Barbara Channel region (SBC) ranged from about $16 million to $47 million, averaging about $30 million between 1981 and 2005 (Fig. 4). There was an initial decline in the value of landings due to moderate decreases in the value of landings for the sea urchin dive, CPS seine and prawn trawl fisheries. However, values for these and other fisheries (e.g., squid purse seine, abalone dive) gradually increased as fishery markets expanded nationally and internationally (mid 1980s–mid 1990s). By the late-1980s, there was a substantial increase in the value of the sea urchin dive fishery, with this fishery accounting for 43% to 67% (averaging 56%) of the total value of landings for the SBC during its peak years (1989–1994) (Fig. 5). As the EVV of sea urchin landings began to decline in the mid-1990s, there was a large increase in EVV of squid purse seine landings (Fig. 5) (see "Fishery Profiles" section). This fishery has since been a major contributor to SBC fishery landings, except in 1998 when squid abundance was low due to El Niño conditions. During 1998, moderate (>$1 million) landings in several fisheries, including the nearshore finfish hook & line/trap, crab and lobster trap, and sea urchin dive fisheries, sustained the EVV of SBC fishery landings.

**Figure 4**. Average annual ex-vessel value of Santa Barbara Channel commercial fishery landings, 1981–2005. Values adjusted for 2005 inflation rates.

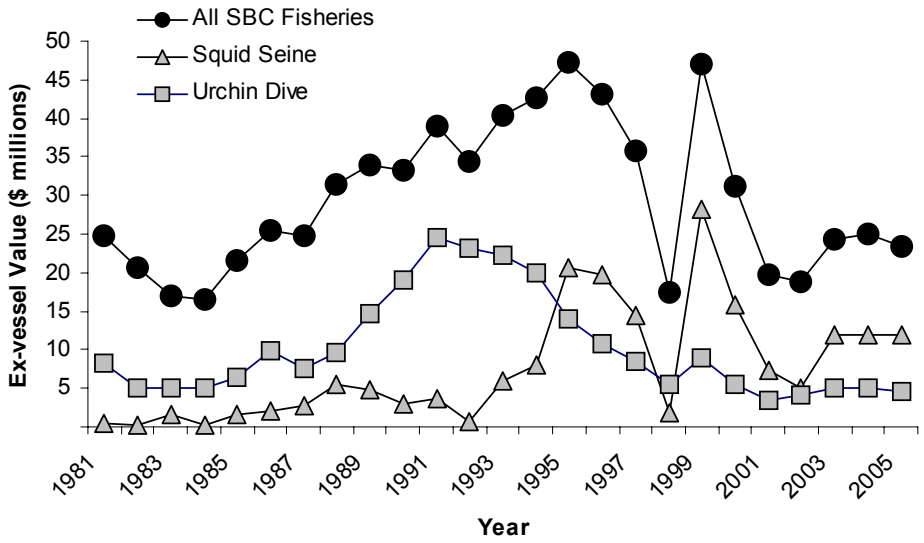
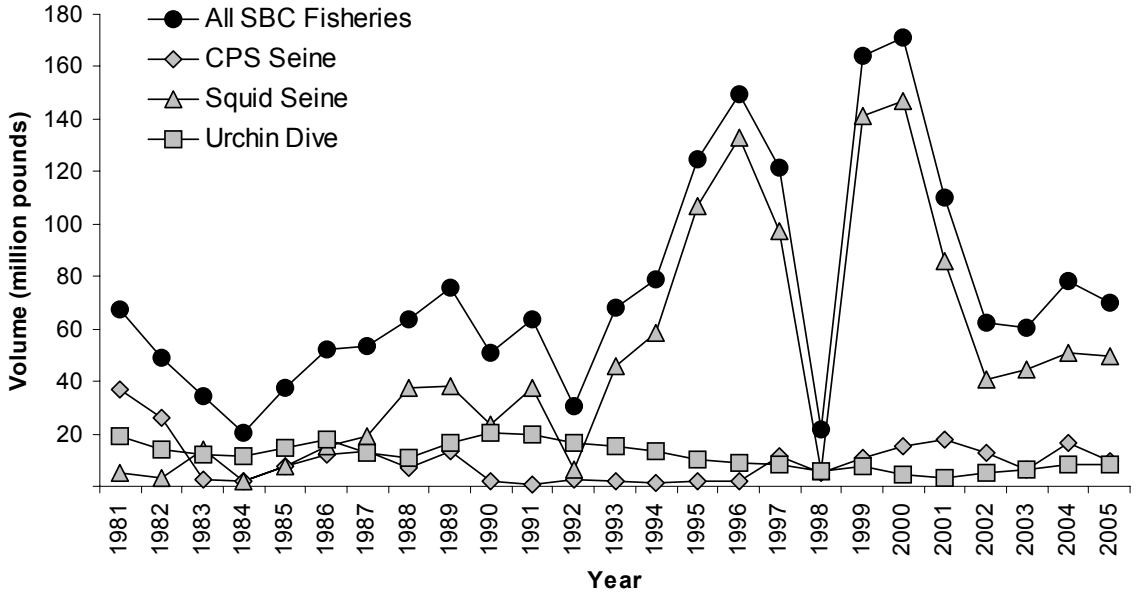


**Figure 5**. Average annual volume of Santa Barbara Channel commercial fishery landings, 1981–2005.




The annual volume of SBC landings varied more than the EVV of landings between 1981 and 2005, ranging from 20 million to 171 million pounds and averaging 75 million pounds annually (Fig. 5). Dramatic shifts in the volume of landings were primarily influenced by the squid purse seine fishery, particularly since 1989. Prior to that, the CPS seine fishery had more influence on the amount of landings in the SBC. While the sea urchin dive fishery provided a large portion of the value of landings, it generally had little influence on the volume of landings at SBC harbors, except in years when landings were minimal for the seine fisheries.

**Recent Landings, 2001–2005**

The annual EVV of fishery landings at SBC ports averaged approximately $22 million, ranging from $19 million to $25 million over the recent 5 years. Three fisheries– squid purse seine, sea urchin dive and lobster trap– accounted for almost 75% of the average annual EVV, with the top 10 fisheries comprising approximately 93% of the EVV (Table 4, Fig. 4). Recent changes in fisheries regulations impacted some of the top 10 fisheries. Most notably, decreased quotas for the nearshore and groundfish fisheries, including those for rockfishes, lingcod and sheephead, resulted in decreased EVV of landings for these fisheries. The closure of the spot prawn trawl fishery in 2004, and the associated increase in trap permits for this species, changed the relative EVV of these fisheries in 2005. However, a longline fishery for high-quality tuna emerged as a promising new fishery for the region during this recent 5-year period. Likewise, experimentation with marketing of hagfish as a food item in 2005 may lead to revival of this fishery, which was previously a short-lived (1988–1992) fishery that supplied the non-consumptive Asian market for eel skin leather products.

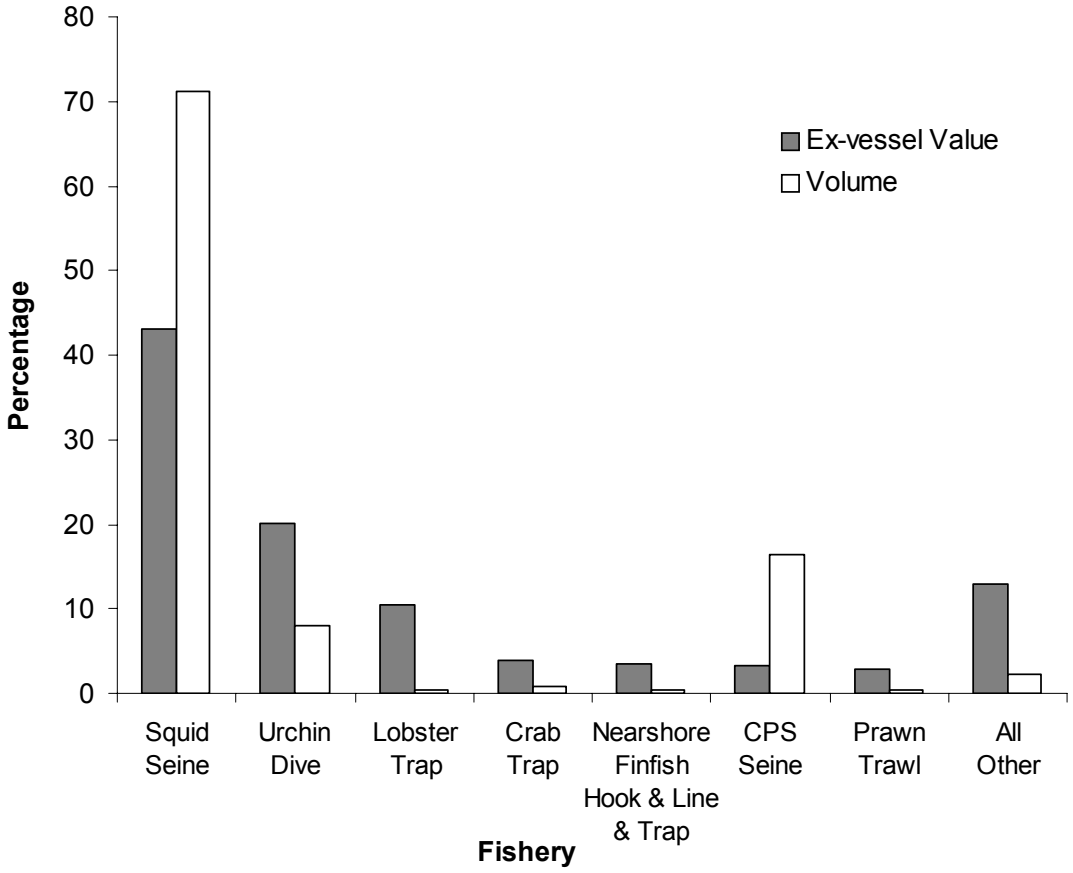
**Table 4**. Average annual ex-vessel value and volume of landings and the percentage of the total value and volume of landings for the top 10 fisheries of the Santa Barbara Channel region, 2001–2005. The percent contribution of each fishery listed is based upon the total EVV for all fisheries of the region, not just those listed. **= <0.5% of total landings. Values adjusted for 2005 inflation rates.

| | 2001–05 Ex-vessel Value | | Avg Annual Percentage | |
|---|---|---|---|---|
| Regional Fishery | Average ($) | Percent of Total | Average (pounds) | Percent of Total |
| Squid Seine | 9,595,032 | 43 | 54,282,200 | 71 |
| Urchin Dive | 4,457,387 | 20 | 6,178,139 | 8 |
| Lobster Trap | 2,310,426 | 10.5 | 321,446 | 0.5 |
| Nearshore Finfish Hook & Line/Trap | 768,797 | 3.5 | 314,301 | 0.5 |
| Crab Trap | 880,461 | 4 | 660,624 | 1 |
| Prawn Trawl | 638,521 | 3 | 322,212 | 0.5 |
| CPS Seine | 741,518 | 3 | 12,539,272 | 16.5 |
| Halibut Set Gillnet | 427,208 | 2 | 178,998 | ** |
| Sea Cucumber Trawl/Dive | 466,584 | 2 | 512,307 | 0.75 |
| Prawn Trap | 430,047 | 2 | 43,847 | ** |

The annual volume of SBC fishery landings ranged from approximately 61 to 110 million pounds, averaging 76 million pounds between 2001 and 2005. The two seine fisheries (squid and CPS) combined represented almost 90% of the average annual landings, with the urchin fishery another notable contributor to the volume of landings at SBC ports (Table 4, Fig. 5). As previously described, implementation of recent regulations impacted landings for certain trawl, trap, and hook & line fisheries. Most other fisheries maintained relatively constant landings from 2001–2005, although significant damage and loss of catch due to seals and sea lions has reportedly reduced landings of the halibut set net and other finfish fisheries.

Importantly, while the volume of landings for most of the local fisheries are only a small proportion of the total landings for the region, the EVV of these landings is often substantial as compared to the high-volume, low-price seine fisheries (Fig. 6). In fact, on average a little more than 50% of the EVV of SBC fishery landings between 2001 and 2005 came from fisheries other than seine fisheries, illustrating the importance of lower volume fisheries to the EVV of landings.

**Figure 6**. Percent contribution of ex-vessel value and volume of landings for the top regional commercial fisheries of the Santa Barbara Channel, 2001–2005.




## SBC Port Comparisons

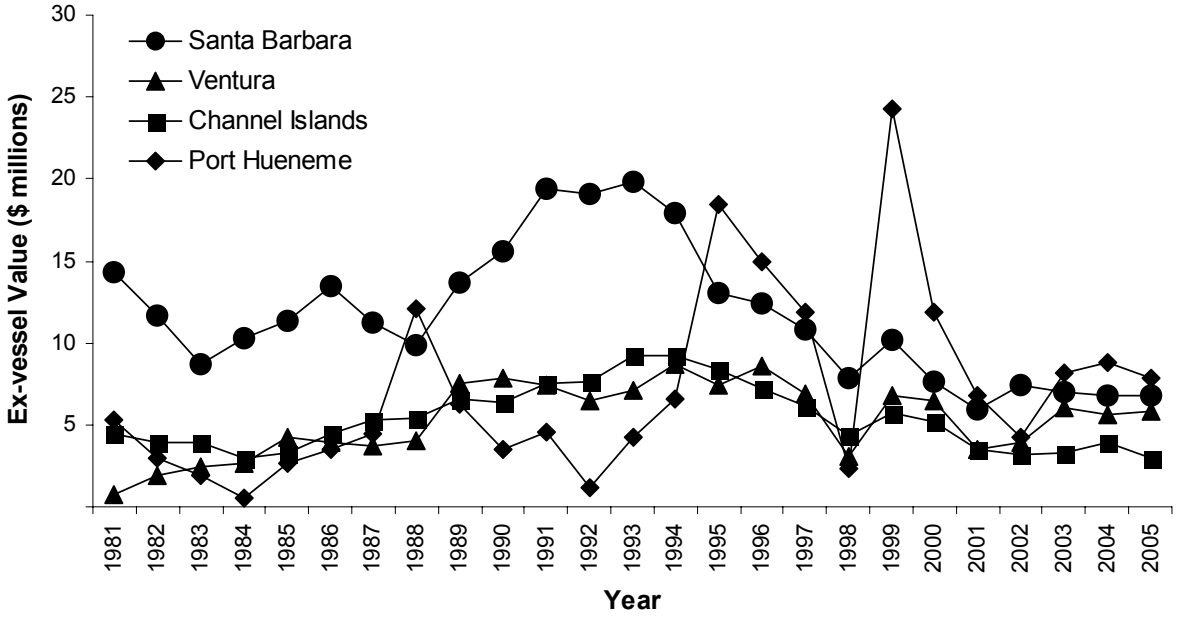
### Historic Landings, 1981–2005

Despite the availability of similar fisheries resources throughout the SBC, fishery landings varied significantly among the local ports. Specifically, the average annual ex-vessel value (EVV) of fishery landings between 1981 and 2005 was substantially greater for Santa Barbara Harbor as compared to the other local harbors (Table 5, Fig. 7). However, for certain years the total EVV of Port Hueneme Harbor was similar to (e.g., 1988) or substantially higher (e.g., 1999) than at Santa Barbara Harbor. Further, until recently, the annual EVV of Ventura and Channel Islands Harbors was consistently much lower than the EVV of Santa Barbara Harbor. Changes in the value of the landings among harbors were typically due to changes in the abundance and regulatory constraints of, and market demand for, particular species (e.g., squid, urchin).

**Table 5**. Average annual ex-vessel value ($ millions) and volume (million pounds) of commercial fishery landings at Santa Barbara Channel harbors, 1981–2005 (25 yr) and 2001–2005 (5 yr).

| Landings | Time Period | Santa Barbara | Ventura | Channel Islands | Port Hueneme | All SBC Harbors |
|---|---|---|---|---|---|---|
| Ex-vessel Value | 25 yr | 11.7 | 5.3 | 5.4 | 7.2 | 29.5 |
| | 5 yr | 6.8 | 5.0 | 3.4 | 7.2 | 22.3 |
| Volume | 25 yr | 9.9 | 12.1 | 5.9 | 47.4 | 75.2 |
| | 5 yr | 6.9 | 17.0 | 2.8 | 49.7 | 76.3 |

**Figure 7**. Average annual ex-vessel value of fishery landings at SBC ports, 1981–2005. Values adjusted for 2005 inflation rates.




The volume of fishery landings over the last 25 years also differed among the local harbors, with substantially more fish (by weight) landed at Port Hueneme Harbor, followed by Ventura and then the other two harbors (Table 5, Fig. 8). Exceptions were 1983–1985, 1992 and 1998, when the volume of fish landed at Port Hueneme Harbor was low and thus more similar to the volume of landings at the other local ports. El Niño conditions persisted during these anomalous years, resulting in a low abundance of squid in the Santa Barbara Channel (the primary species landed at Port Hueneme Harbor). Ventura Harbor initially had the lowest volume of landings as compared to the other harbors. However, by the mid-1990s, Ventura Harbor landings

increased largely due to the arrival and subsequent landings of squid purse seiners. Landings there have remained higher than landings at Santa Barbara and Channel Islands Harbors since then, with the exception of 1998 when the volume of squid seine landings plummeted in response to El Niño conditions.

**Recent Landings, 2001–2005**

Following the recent downsizing of fisheries in California, the average annual EVV of all commercial fisheries continued to differ among the four local harbors (Table 5, Figs. 7, 9). The EVV of landings at Santa Barbara Harbor remained high among the ports of the region, but Port Hueneme Harbor and to a lesser degree Ventura Harbor reached similar levels of value in recent years. This difference in EVV among the harbors between the two time periods (25 vs. 5 years) was due primarily to the substantial decline in the value of landings at Santa Barbara Harbor coupled with an increase in landings in the squid fishery at Port Hueneme and Ventura harbors. Sea urchin landings declined at Santa Barbara Harbor following implementation of new regulations which reduced effort, and declines in market prices due to increased competition with foreign fisheries. Also, in 1997 the abalone dive fishery, that had historically been an important component of the value of landings at Santa Barbara Harbor, was closed.

The average annual volume of landings for the recent 5 years was also significantly different among SBC harbors (Table 5, Figs. 8, 9). However, unlike the EVV of fishery landings, the recent 5-year trend in the volume of landings among harbors was similar to the pattern occurring over the long term (25 years). That is, the average annual volume of landings remained higher at Port Hueneme Harbor as compared to the other three harbors (Table 5, Fig. 8). Further, the volume of landings at Ventura Harbor, while much lower than at Port Hueneme Harbor, was consistently higher than at Santa Barbara and Channel Islands Harbors where the average volume of landings remained low. The variation in the volume of landings among harbors is accounted for by the differing fisheries and fishing operations at each harbor.

**Figure 8**. Annual volume of fishery landings at Santa Barbara Channel ports, 1981–2005.

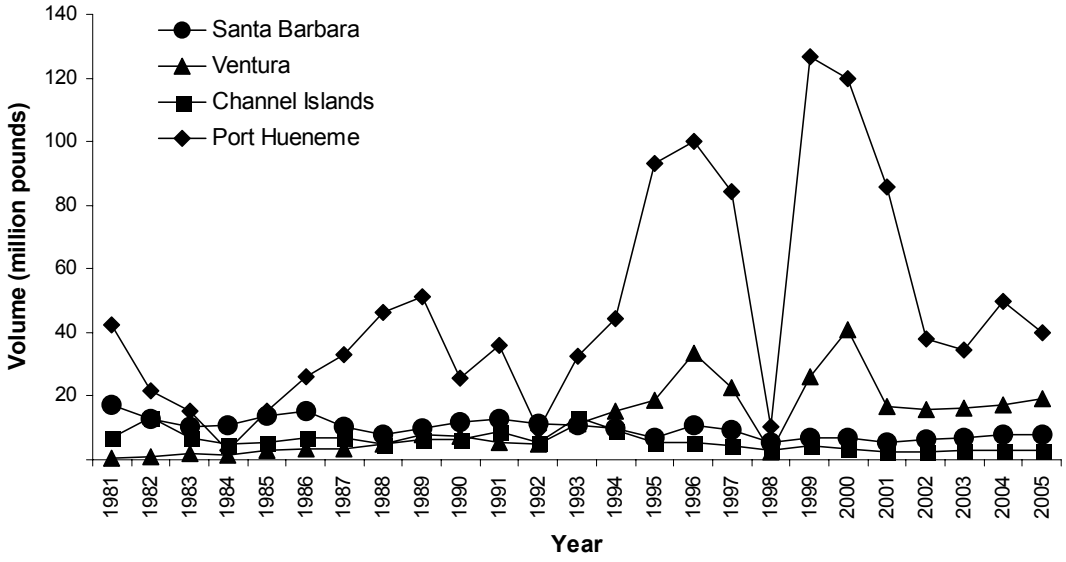
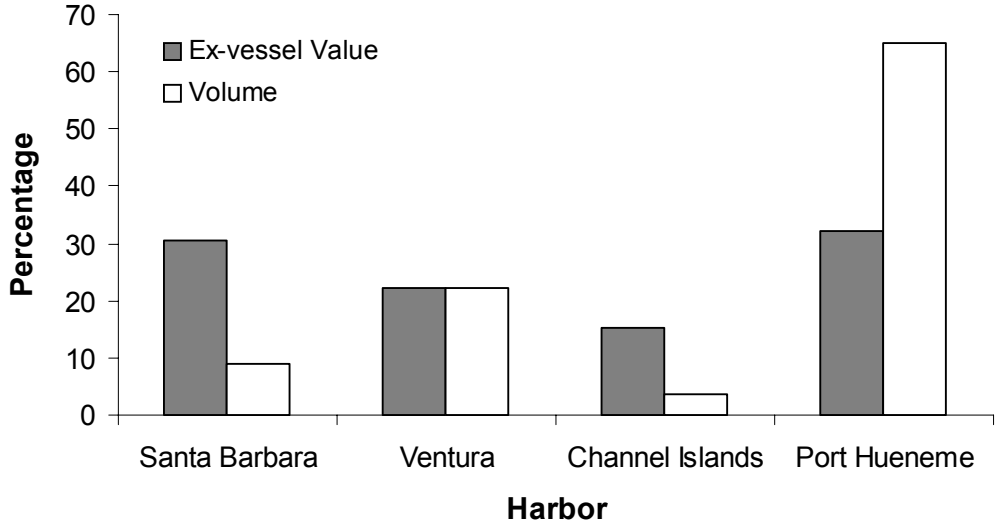


**Figure 9**. Percentage of the average annual regional landings for the Santa Barbara Channel region accounted for by the four ports, 2001–2005.




Within harbors, the average annual EVV of fishery landings was less over the recent 5-year period compared to the past 25 years for Santa Barbara, Ventura and Channel Islands, but was similar for Port Hueneme Harbor (Table 5). However, the degree to which the value of landings differed from the 25-year mean varied among these harbors. The decline at Santa Barbara Harbor was the most dramatic, at 42%. Channel Islands Harbor had a similar decline of approximately 37%. In contrast, there was only a small decrease (6%) in the EVV of fisheries landings at Ventura Harbor. The decline in EVV of fisheries landings was largely due to regulations that led to the downsizing of California fisheries along with stagnant or declining market prices. Fishing effort declined for most fisheries, with fewer fishery participants, fewer fishing days, lower fishing quotas and fewer open fishing areas. Likewise, declines in market prices with the increase in global competition for some fisheries (e.g., sea urchin) impacted the EVV. Santa Barbara and Channel Islands Harbors were more heavily impacted over the years due to closures and reductions in fisheries that have primarily contributed to landings at these two harbors (e.g., abalone and sea urchin dive fisheries, prawn trawl fishery, and several gillnet fisheries).

The average annual volume of landings was also less for the 5-year period at 2 harbors, with Channel Islands Harbor experiencing the largest decline (53%), followed by Santa Barbara Harbor (30%). The gillnet closures associated with Proposition 132 contributed to the declines in landings at these harbors, as landings for some fisheries were substantially reduced (e.g., halibut) or completely eliminated (e.g., angel shark). In contrast, there was a moderate (40%) increase in the volume of fishery landings at Ventura Harbor, and a slight (5%) increase in landings at Port Hueneme Harbor. As with EVV, the decline in the volume of landings resulted primarily from recent changes in fisheries regulations and marketing. The decrease in landings was not as severe for Ventura and Port Hueneme due

to the increased and continued landings of the squid purse seine fishery, in particular. This high-volume fishery did not account for a sizeable part of the landings at Ventura Harbor until the mid-1990s, thus explaining the higher 5-year average compared to the 25-year average (which includes years before the squid fishery began).

Currently, the composition of high-volume, low-price and low-volume, high-price fisheries varies among ports (Fig. 9). Santa Barbara and Channel Islands Harbors are the most similar, with a wide diversity of low- to mid-volume, mid- to high-price fisheries (e.g., lobster, spot prawn, urchin). At the other end of the spectrum is Port Hueneme Harbor, which primarily supports landings for seine fisheries (e.g., squid, mackerel, sardines) that represent valuable high-volume, low-price fisheries. Ventura Harbor falls somewhere in between, having both high-volume, low-price and low-volume, high-price fisheries.

**Santa Barbara Harbor**

**Historic Landings, 1981–2005**

The annual ex-vessel value (EVV) of fishery landings at Santa Barbara Harbor ranged from $5.9 million to $19.8 million, averaging $11.9 million over the past 25 years (Fig. 10). Similar to Channel Islands Harbor, the EVV of landings at Santa Barbara Harbor was largely influenced by the urchin dive fishery. This fishery averaged approximately 51% of the total annual EVV from 1981–2005, and 68% during the fishery's peak years (1990–1994) (Fig. 10). The other 49% of the EVV of fishery landings at Santa Barbara Harbor came from a variety of fisheries. For example, approximately $2.2 million of the annual EVV was landed by the abalone dive fishery prior to its closure in 1998. The lobster trap fishery has been a consistent and integral contributor to the EVV of fishery landings at Santa Barbara Harbor, averaging just under $1 million per year. Likewise, the prawn trawl fishery was an important component of the landings at this harbor, averaging approximately $700,000 per year until 2004, when use of trawl gear for the take of spot prawn was prohibited. In general, the squid seine fishery has been virtually absent from Santa Barbara Harbor, with the exception of 1996 and 1997, when it accounted for a small amount of ex-vessel value at the harbor. This may change, as a permit for a temporary wetfish pumping station has been approved for this harbor.

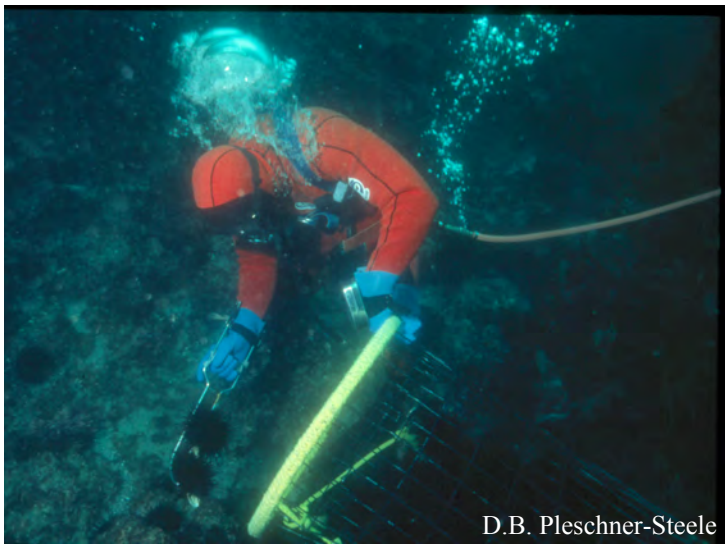
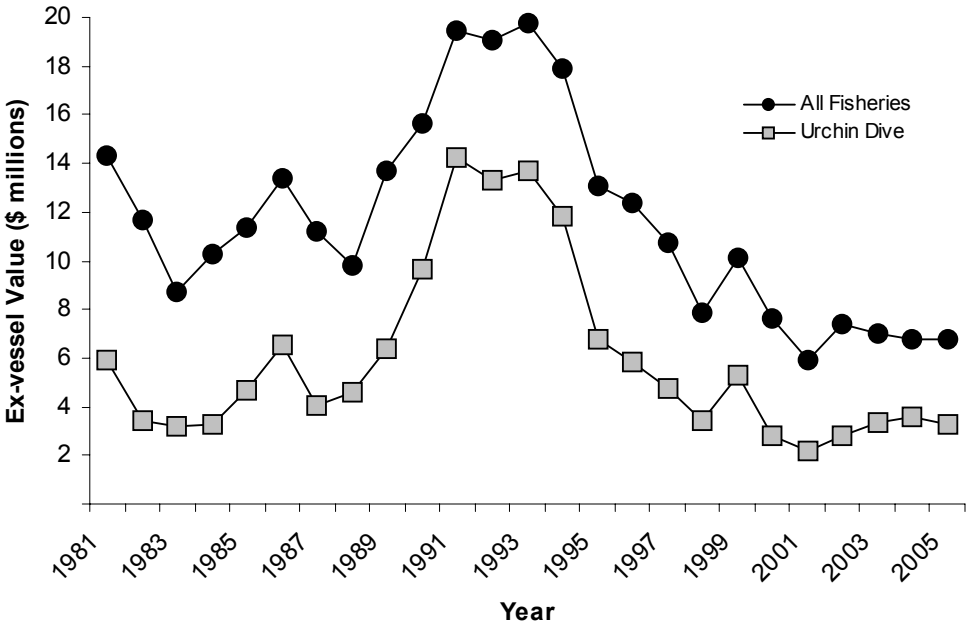

D.B. Pleschner-Steele

**Figure 10**. Annual ex-vessel value of commercial landings at Santa Barbara Harbor, 1981–2005. Values adjusted for 2005 inflation rates.




From 1981 to 2005, the volume of fishery landings at Santa Barbara Harbor ranged from 5.2 million to 17.4 million pounds, averaging 9.9 million pounds (Fig. 11) per year. Landings from the sea urchin dive fishery averaged 68% of the total volume of fish landed between 1981 and 2005 and 82% during the fishery's peak years (1990–1994) (Fig. 11). In 1996 and 1997, the squid seine fleet also contributed significant landings at Santa Barbara Harbor, with smaller, but still considerable landings of squid in the 2000s. Other fisheries, including the prawn trawl fishery, the nearshore finfish hook & line and trap fisheries, and several net fisheries (groundfish trawl, halibut set net, shark gillnet, rockfish gillnet) continued to provide moderate amounts (100,000s to 1 million pounds) of landings. Restrictions on gear and implementation of quotas have dramatically reduced the landings of the net and nearshore finfish fisheries.

**Recent Landings, 2001–2005**

The average annual EVV of fishery landings was considerably lower during the recent 5-year period ($6.8 million) as compared to the 25-year period ($11.9 million). This reduction was due to a combination of factors, including the closure of some fisheries (e.g., abalone dive, nearshore gillnet fisheries), the downsizing of many fleets (e.g., sea urchin dive, net fisheries), the reduction of quotas and fishing days (e.g., nearshore finfish fisheries) and increased competition on the global market and subsequent declines in market prices (e.g., sea urchin dive). The urchin dive fishery continued to provide the highest average value of fishery landings at this harbor, contributing 45% of the total annual EVV (Table 6, Fig. 12). Four other fisheries comprised approximately 40% of the total average annual EVV. Half (20%) of this EVV came from the lobster trap fishery,

with the crab trap fishery, and to a lesser extent the prawn trawl and nearshore finfish hook & line and trap fisheries, contributing the balance of the EVV of fishery landings at Santa Barbara Harbor. The value of landings from the squid seine fishery was more consistent during the recent 5 years, but overall remained at very low levels. This may change in the near future, when facilities for offloading squid operate at this harbor.

**Figure 11**. Annual volume of commercial landings at Santa Barbara Harbor, 1981–2005.

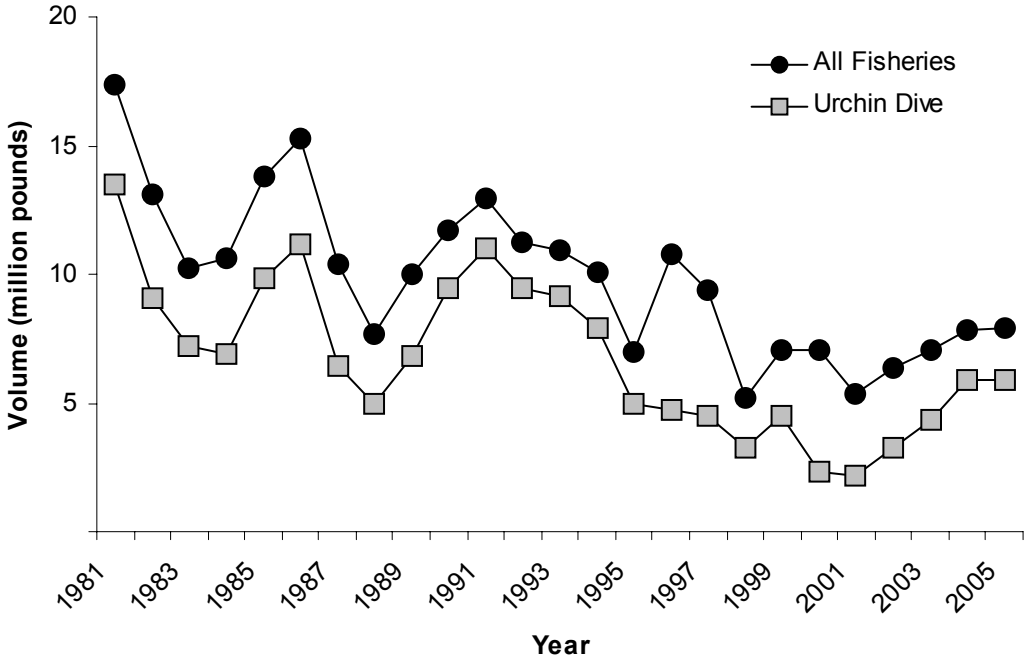
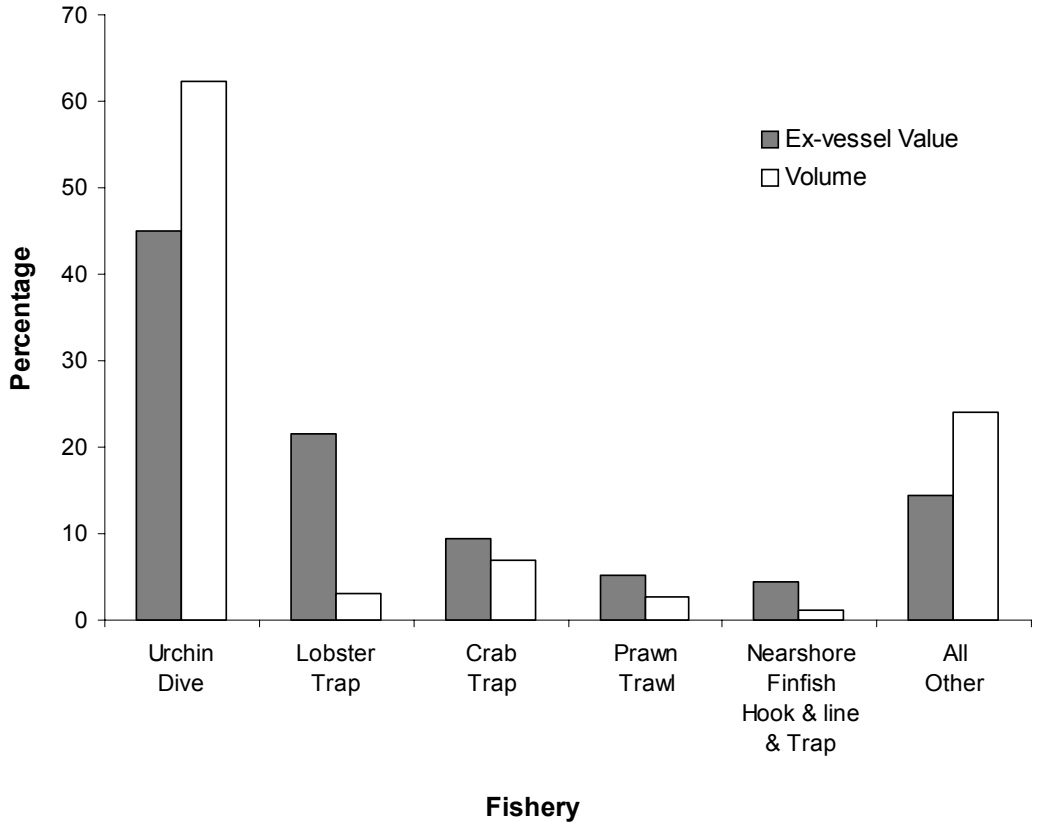



**Table 6**. Average annual ex-vessel value and volume landed in top commercial fisheries at Santa Barbara Harbor, 2001–2005. Squid seine data excluded to insure confidentiality. Values adjusted for 2005 inflation rates.

| | 2001–2005 Ex-vessel Value | | 2001–2005 Volume | |
|---|---|---|---|---|
| **Regional Fishery** | **Average ($)** | **Percent of Total** | **Average (pounds)** | **Percent of Total** |
| Urchin Dive | 2,977,290 | 44.0 | 4,294,803 | 62.3 |
| Lobster Trap | 1,426,992 | 21.1 | 206,731 | 3.0 |
| Crab Trap | 599,873 | 8.9 | 475,129 | 6.9 |
| Prawn Trawl | 424,378 | 6.3 | 186,111 | 2.7 |
| Nearshore Finfish Hook & Line/Trap | 399,454 | 5.0 | 76,636 | 1.1 |
| Sea Cucumber Trawl/Dive | 183,879 | 2.7 | 233,067 | 3.4 |

The average annual volume of fishery landings was also considerably lower over the recent 5-year period (6.6 million pounds) as compared to the past 25-year period (9.9 million pounds), largely due to reductions in commercial landings of dive (abalone, sea urchin), net (swordfish, shark) and nearshore hook & line and trap fisheries. As with the value of landings, the sea urchin dive fishery contributed the largest volume of landings (59%) at this harbor from 2001–2005 (Fig. 12). Also, the same primary fisheries that contributed to the value of landings contributed to the volume of fish landed, but to different degrees. For example, a higher volume of crabs was landed than lobsters, but the value of lobsters was higher than the value of crabs. Squid seine landings also contributed significantly to the volume of landings at Santa Barbara Harbor, albeit at much lower levels than at Ventura or Port Hueneme Harbors (squid landings data are not reported to insure confidentiality). As described above, the recent prohibition on the use of trawl gear for the take of spot prawn greatly reduced the volume of the local prawn trawl landings.

**Figure 12.** Contribution of top fisheries to the average annual ex-vessel value and volume of commercial landings at Santa Barbara Harbor, 2001–2005. 'All Other' includes fisheries that contributed less than 5% to the total value of landings, and to insure confidentiality, squid seine landings.



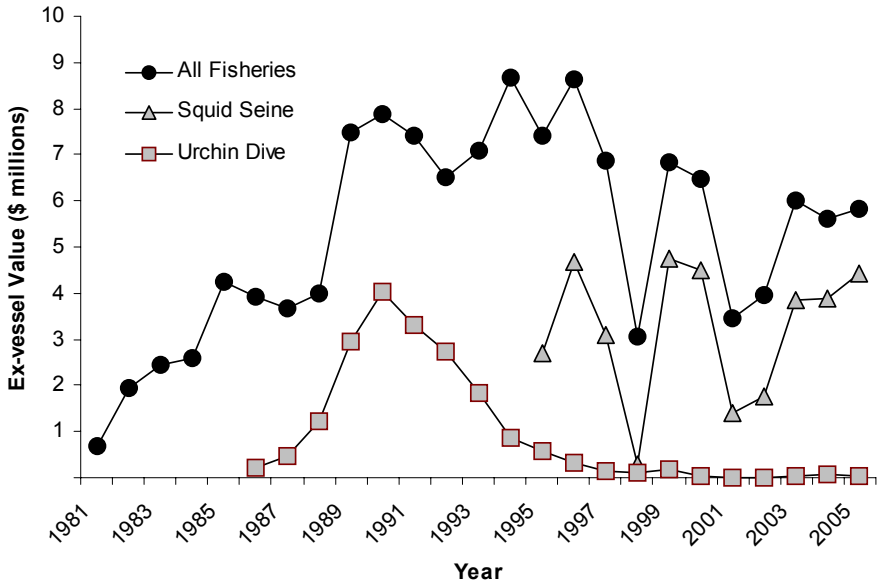
## Ventura Harbor

### Historic Landings, 1981–2005

The annual ex-vessel value (EVV) of fishery landings at Ventura Harbor ranged from approximately $700,000 to $8.7 million, averaging $5.3 million from 1981 through 2005 (Fig. 13). Initially, several net fisheries (e.g., halibut set net, prawn trawl, swordfish drift gillnet, shark gillnet) provided the majority of EVV at this harbor. In the mid-1980s, hook & line and trap fisheries (e.g., nearshore finfish hook & line and trap, lobster trap) joined the net fisheries as significant contributors of EVV for fishery landings at Ventura Harbor. Then, in 1989, the EVV of landings at this port doubled in association with the development and expansion of the sea urchin dive fishery. For several years (1988–1993) the urchin dive fishery contributed an average of 40% of the overall EVV at Ventura Harbor (Fig. 13). However, the urchin dive fishery was virtually replaced by the squid seine fishery by the mid-1990s at this port following the significant increase in demand, fishing activity and receiving capacity for squid.

From 1995 through 2005, with the exception of 1998 (year of strong El Niño), the EVV of the squid seine fishery averaged 57% of the fishery landings at Ventura Harbor (Fig. 13). Several other fisheries combined contributed to the remaining portion (43%) of the EVV for the harbor, in particular the swordfish longline, prawn trawl, nearshore finfish hook & line and trap, and lobster trap fisheries. To a lesser extent, the halibut set net, crab trap, tuna longline, and sea cucumber trawl and dive fisheries also contributed to the EVV of landings at Ventura Harbor over the past 10 years.

**Figure 13**. Annual ex-vessel value of commercial landings at Ventura Harbor, 1981–2005. Data from some fisheries excluded in years when fewer than 3 vessels or 3 buyers participated to insure confidentiality. Values adjusted for 2005 inflation rates.



There were large fluctuations in the volume of fishery landings, ranging from 430,000 to 41.0 million pounds and averaging 12.1 million pounds from 1981–2005 (Fig. 14). As with the value, in the early to mid-1980s, net fisheries (e.g., halibut set net, CPS seine, swordfish drift gillnet, shark gillnet) contributed significantly to the volume of fishery landings at Ventura Harbor. In the years since, the urchin dive and squid seine fisheries represented the substantial increases in the volume of fishery landings (Fig.14). Most notably, the volume of landings at this harbor increased 2- to 8-fold during years with high squid landings.

**Recent Landings, 2001–2005**

The average annual EVV of fishery landings was slightly lower over the recent 5-year period ($5.0 million) as compared to the 25-year period ($5.3 million). This limited reduction in EVV resulted from a combination of factors, including reduced fishing effort in conjunction with new fisheries regulations and the replacement of higher price fisheries (i.e., urchin dive) with lower-price, high-volume fisheries (i.e., squid seine). The squid seine fishery contributed substantially to the recent EVV of landings at Ventura Harbor, averaging approximately 62% of the EVV (Table 7, Fig. 15). The lobster trap, prawn trawl, halibut and yellowtail/white seabass gillnet, tuna longline (data not included to insure confidentiality), crab trap and other smaller fisheries comprised the remaining portion of the EVV (Table 7, Fig. 15). The albacore troll and hook & line fisheries also contributed substantially to the EVV in 2002 and 2003, when albacore were caught nearby, and landed at Santa Barbara Channel ports. Likewise, the swordfish longline fishery contributed consistent landings from 2001 to 2003, prior to the closure of the fishery in U.S. waters (≤ 200 miles offshore) in early 2004. Prawn trawl landings were also a consistent contributor to the landings in Ventura Harbor until the prohibition of trawl gear for the take of spot prawn in 2004. This closure, however, was offset somewhat by an increase in trap permits for the take of spot prawns, and the subsequent substantial increase in landings in 2005. The low-volume, high-price spot prawn trap fishery is becoming a very valuable fishery for the region.

The average annual volume of landings increased over the recent 5 years (17.0 million pounds) as compared to the 25 years (12.1 million pounds), primarily due to continuous moderate landings of the squid seine fishery that accounted for an average of 94% of the volume of landings from 2001–2005 (Table 7, Fig. 15). There was also a fair volume of albacore landed by the troll and hook & line fleets, as well as landings from the prawn trawl, halibut set net, crab trap, CPS seine and yellowtail/white seabass drift net fisheries, although the volume landed by these fisheries was a small fraction of the total volume of squid landings. Overall, the volume of landings at this harbor was stable from 2001 through 2005, with the composition of fisheries influenced by regulations and the distribution and abundance of certain species (e.g., albacore, yellowtail) in the SBC (Table 7).

**Figure 14**. Annual volume of commercial landings at Ventura Harbor, 1981–2005. Data from some fisheries excluded in years when fewer than 3 vessels or 3 buyers participated to insure confidentiality.

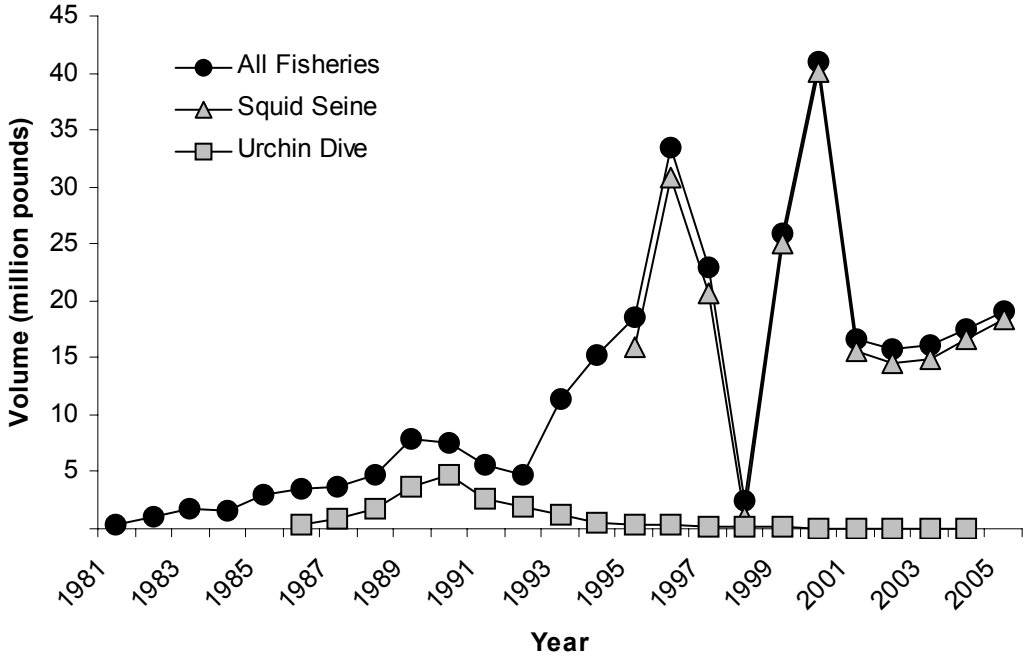
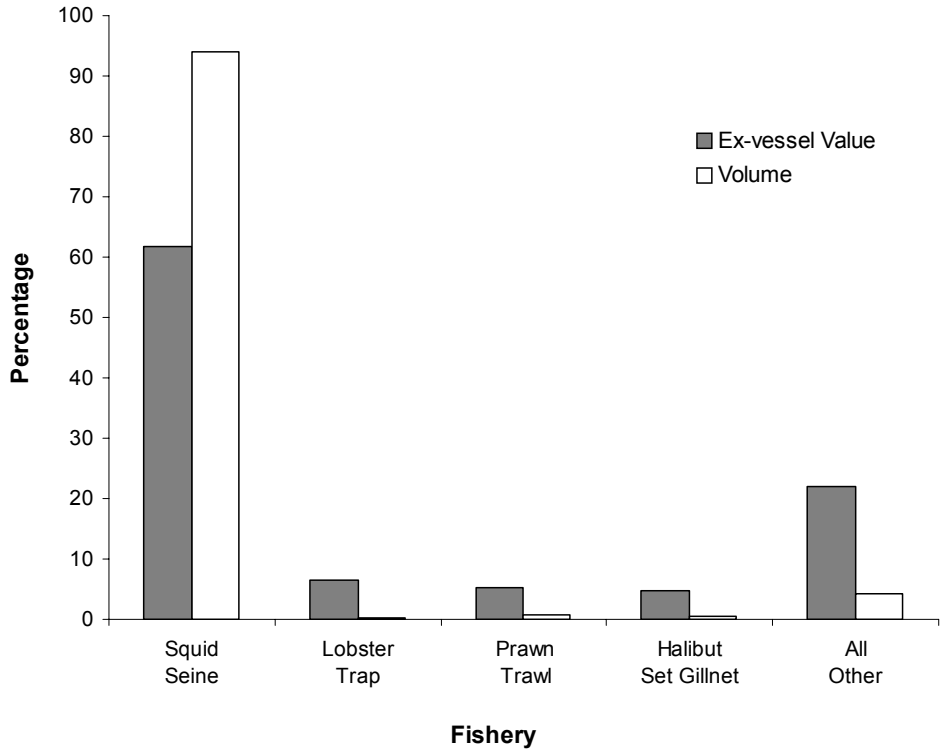



**Table 7.** Average annual ex-vessel value and volume landed in top commercial fisheries at Ventura Harbor, 2001–2005. Tuna and swordfish longline and CPS seine data are excluded to insure confidentiality. Values adjusted for 2005 inflation rates.

| | 2001–2005 Ex-vessel Value | | 2001–2005 Volume | |
|---|---|---|---|---|
| **Regional Fishery** | **Average ($)** | **Percent of Total** | **Average (pounds)** | **Percent of Total** |
| Squid Seine | 3,066,340 | 61.7 | 16,005,541 | 94.1 |
| Lobster Trap | 320,492 | 6.4 | 43,372 | 0.3 |
| Prawn Trawl | 259,288 | 5.2 | 125,930 | 0.7 |
| Halibut Set Gillnet | 235,953 | 4.7 | 100,008 | 0.6 |
| Yellowtail/White Seabass Gillnet | 135,003 | 2.7 | 78,098 | 0.5 |
| Crab Trap | 106,665 | 2.1 | 84,841 | 0.5 |
| Albacore Troll & Hook & Line | 93,499 | 1.9 | 144,885 | 0.9 |

**Figure 15**. Contribution of top fisheries to the average annual ex-vessel value and volume of commercial landings at Ventura Harbor, 2001–2005. 'All Other' includes fisheries that contributed less than 5% to the total value of landings.




## Channel Islands Harbor

### Historic Landings, 1981–2005

The annual EVV of fishery landings at Channel Islands Harbor ranged from $2.9 to $9.2 million, averaging $5.4 million between 1981 and 2005 (Fig. 16). Overall, the sea urchin dive fishery was responsible for the largest proportion of the EVV of landings at this harbor, averaging 64% of the total EVV over the 25-year period and ranging from 73% to 88% of the total value of landings during the fishery's peak years (1989–1995). Several other fisheries consistently contributed to the EVV of fishery landings in the 1980s and 1990s, including the nearshore finfish hook & line and trap, prawn and lobster trap fisheries.

The average annual volume of fishery landings ranged from 2.4 million to 13.5 million pounds, averaging 5.9 million pounds between 1981 and 2005 (Fig. 17). As with the value of landings, the urchin dive fishery provided a significant percentage (average of 68%) of the volume of landings during the 25-year period. Prior to 1995, the seine fleet also contributed significantly to the volume of landings during years when coastal pelagic species (1982) and squid (1982–1983, 1991, and 1993–1994) were especially abundant in the Santa Barbara Channel. Since 1995, the urchin dive fishery, along with the nearshore finfish hook & line and trap and sea cucumber trawl and dive fisheries, were major contributors to the volume of fishery landings at this harbor.

**Figure 16**. Annual ex-vessel value of commercial landings at Channel Islands Harbor, 1981–2005. Values adjusted for 2005 inflation rates.

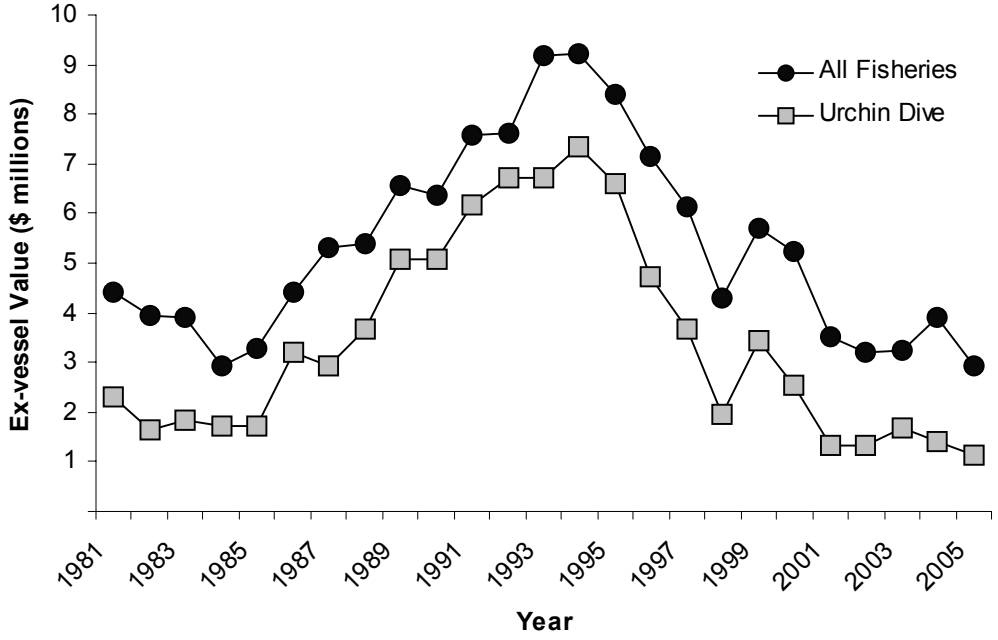
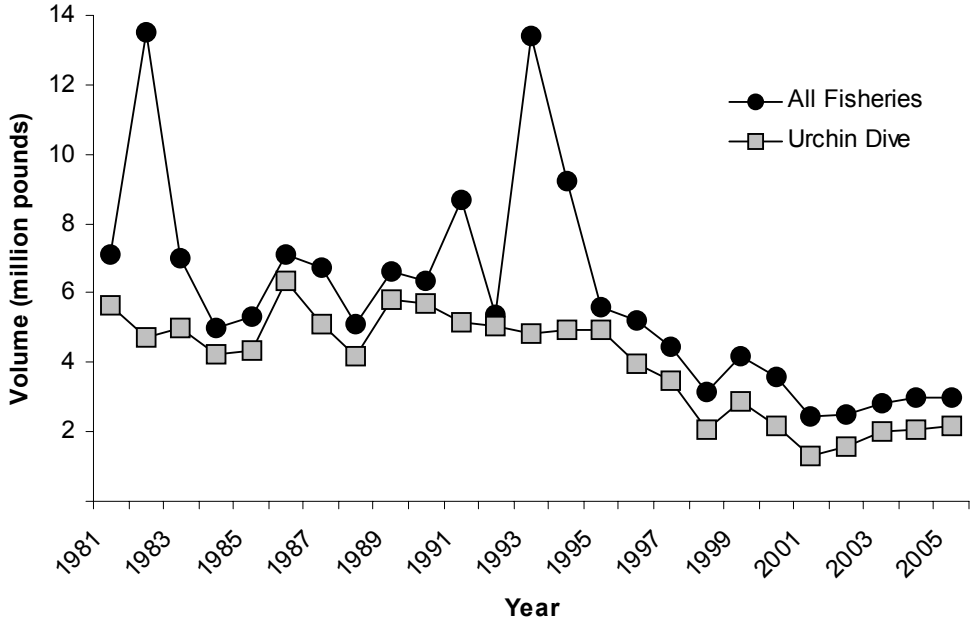



**Figure 17**. Average annual volume of commercial landings at Channel Islands Harbor, 1981–2005.



**Recent Landings, 2001–2005**

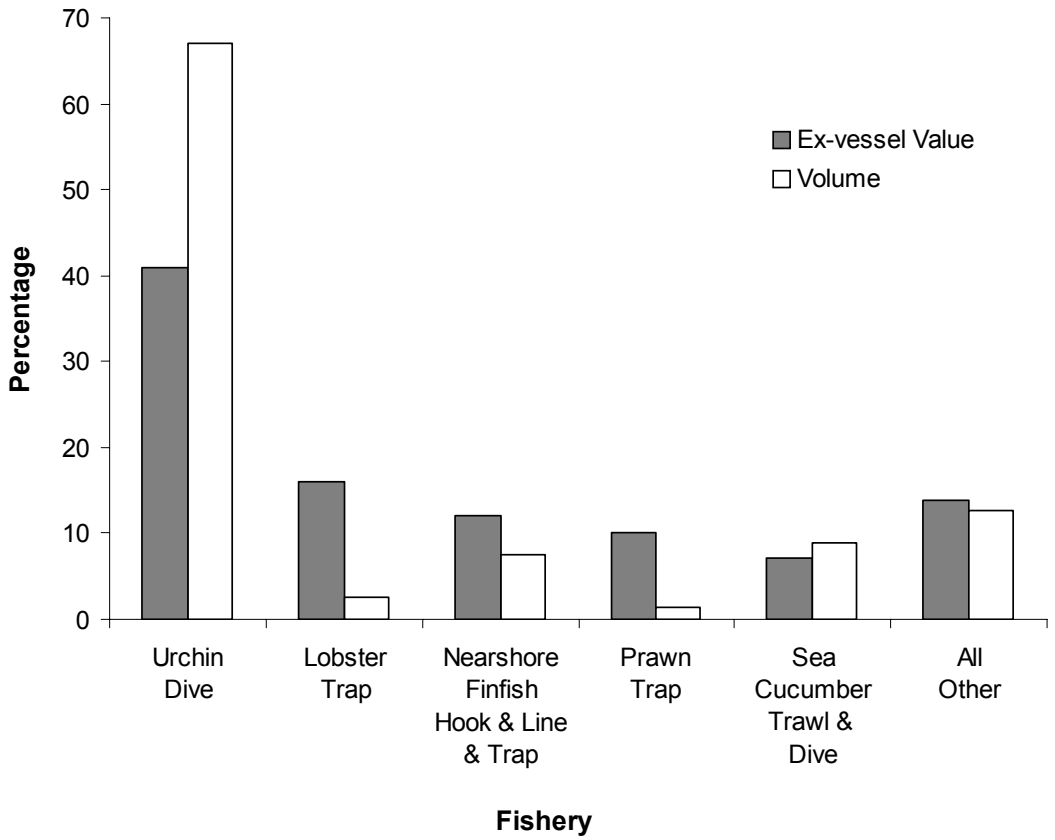
The average annual EVV of fishery landings was lower over the recent 5-year period ($3.4 million) as compared to the past 25-year period ($5.4 million). This decrease in the value of landings was due, in part, to a decline in fishing effort by the urchin dive fleet following the implementation of new regulations that vastly reduced the number of permits (from approximately 900 statewide in 1989 to 400 statewide in 2000) and a drop in the market price of sea urchin (see Fishery Profile Section). Declines in market price resulted from increased competition with foreign-fished urchins (e.g., Russia, China, Korea) (early 1990s) and a decline in the Japanese economy (1998). Subsequently, this fishery constituted only 41% of the total EVV of landings for Channel Islands Harbor for 2001–2005 (Table 8, Fig. 16). Several other fisheries, specifically the lobster trap, nearshore finfish hook & line and trap, prawn trap and sea cucumber trawl and dive fisheries, were important components (each contributing ≥ 5% of the annual value) of the landings for Channel Islands Harbor from 2001–2005 (Table 8, Fig. 18). In fact, 30% of the total value of landings for 2004 came from the lobster trap fishery. Likewise, the nearshore finfish hook & line and trap fisheries and the prawn trap fishery combined provided 17% to 32% of the annual value of landings for Channel Islands Harbor during this 5-year period. In general, the value of landings remained fairly consistent over the recent 5 years, with the same fisheries comprising the top fisheries by ex-vessel value for the port each year. Strikingly, lobster landings increased more than 4-fold in 2004 when legal-sized lobsters were highly abundant in the SBC (see Fishery Profile Section). However, landings returned to normal levels the following year.

The average annual volume of fishery landings was also lower over the recent 5-year period (2.8 million pounds) as compared to the past 25-year period (5.9 million pounds), as a result of lower landings of urchin and a lack of squid landings. The urchin dive fishery continued to contribute substantially to the volume of landings at Channel Islands Harbor, representing on average approximately 66% of the annual landings (Table 8, Fig. 18). The sea cucumber trawl and dive and nearshore finfish hook & line and trap fisheries combined contributed approximately 16% of the average volume of fisheries landings (Table 8, Fig. 18). Overall, the same fisheries provided the greatest volume of landings at Channel Islands Harbor for each of the recent five years, with the exception of a hagfish (also known as slime eel) trap fishery that re-emerged in 2005. Hagfish were previously fished in the Santa Barbara Channel in the late 1980s and early 1990s for their skins for eel-skin leather goods. The latest effort, however, was aimed at the food trade, and it remains unknown whether such a market would persist and sustain a small fishery in the Santa Barbara Channel region.

**Table 8**. Average annual ex-vessel value and volume landed in the top commercial fisheries at Channel Islands Harbor, 2001–2005. Values adjusted for 2005 inflation rates.

| | 2001–2005 Ex-vessel Value | | 2001–2005 Volume | |
|---|---|---|---|---|
| **Regional Fishery** | **Average ($)** | **Percent of Total** | **Average (pounds)** | **Percent of Total** |
| Urchin Dive | 1,378,595 | 41% | 1,835,475 | 67% |
| Lobster Trap | 529,531 | 16% | 71,296 | 2.6% |
| Nearshore Finfish Hook & Line/Trap | 397,821 | 12% | 210,820 | 7.6% |
| Prawn Trap | 347,446 | 10% | 35,552 | 1.3% |
| Sea Cucumber Trawl/Dive | 242,433 | 7.2% | 241,353 | 8.8% |
| Crab Trap | 139,087 | 4.1% | 99,887 | 3.6% |
| Halibut Gillnet | 128,575 | 3.8% | 48,090 | 1.7% |

**Figure 18**. Percent contribution of ex-vessel value and volume of landings for the top commercial fisheries at Channel Islands Harbor, 2001–2005. 'All Other' includes fisheries that contributed less than 5% to the total value of landings.



## Port Hueneme Harbor

### Historic Landings (1981–2005)

Between 1981 and 2005, the value and volume of fishery landings fluctuated tremendously at Port Hueneme Harbor (Figs. 19, 20). The ex-vessel value (EVV) of landings ranged from approximately $500,000 to $24 million, averaging $7.2 million (Fig. 19). The volume of landings varied even more, ranging from 3 million to 127 million pounds and averaging 47 million pounds (Fig. 20). Landings were virtually nonexistent in 1984, 1992 and 1998, due to a low abundance of squid in the Santa Barbara Channel in association with El Niño conditions. Peak landings occurred in 1988, 1994 and 1999 primarily due to the high abundance of and strong market demand for squid, as well as substantial landings from the tuna seine fishery in 1988.

Fishery landings at Port Hueneme Harbor were influenced almost entirely by the squid and CPS purse seine fisheries (Figs. 19, 20). Initially, the CPS seine fishery provided the majority of the landed value and volume at this harbor. However, in 1983 the seine fleet expanded into fishing squid and the two fisheries combined provided the majority of landings for the next few years. By 1989, the squid seine fishery dominated the landings at Port Hueneme Harbor, providing nearly all of the fisheries landings at this port. The tuna seine fishery also contributed substantial landings at this harbor in 1988. Years with particularly low landings were primarily due to a lack of squid in the channel, but other fluctuations were a result of resource abundance and market price and associated fishing effort (Yaremko 2001; Pomeroy et al., 2002).

**Figure 19.** Annual ex-vessel value of commercial fishery landings at Port Hueneme Harbor, 1981–2005. Squid seine data excluded in 1984 to insure confidentiality. Values adjusted for 2005 inflation rates.

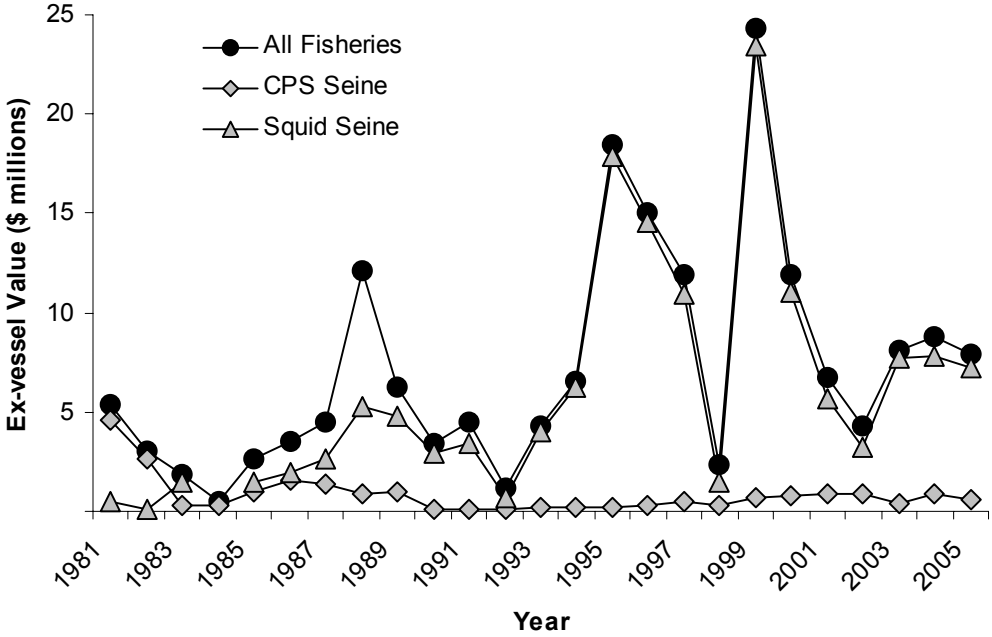
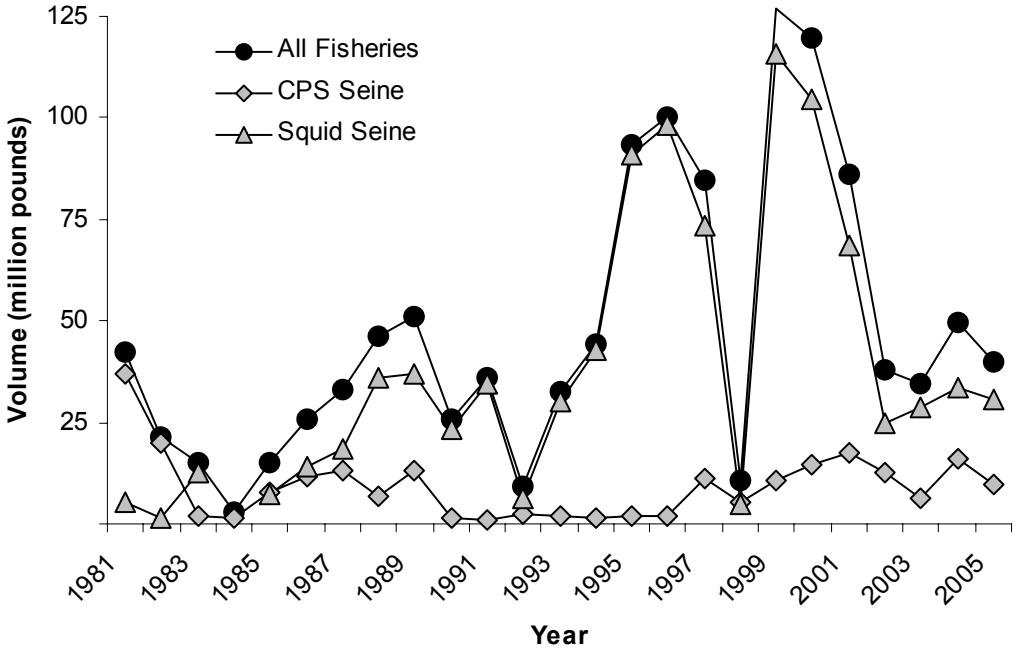


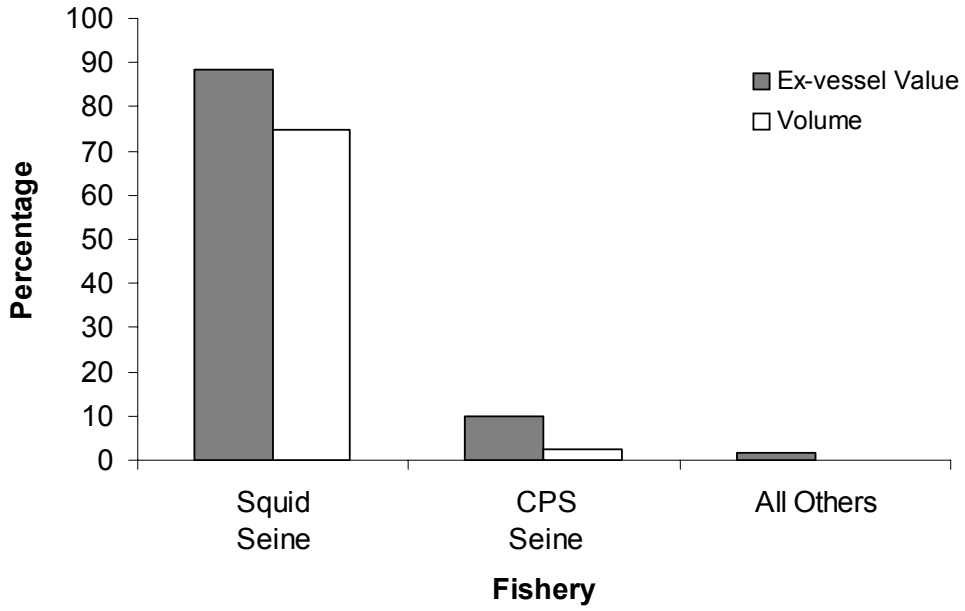
**Figure 20.** Annual volume of commercial fishery landings at Port Hueneme Harbor, 1981–2005. Squid seine data excluded for 1984 to insure confidentiality.




**Recent Landings (2001–2005)**

Over the recent 5 years, the EVV and volume of landings at Port Hueneme Harbor continued to fluctuate, albeit to a smaller degree (Figs. 19, 20). The annual ex-vessel EVV of fisheries landings averaged $7.2 million, ranging from $4.3 to $8.8 million per year. The annual weight of the fisheries landings averaged approximately 50 million pounds, ranging from 34.7 to 85.9 million pounds per year. The squid and CPS seine fisheries continued to dominate the landings for this port, combined contributing an average of 98.5% of the total value and 99.8% of the total volume of landings for the recent 5 years (Fig. 21). The implementation of a moratorium on entry to the fishery in 1999 (with attrition in permits over a 3-year period), the establishment of weekend closures in the Santa Barbara Channel in 1999, and a restricted access program and fishery management plan in 2004 for the squid seine fishery coincided with a recent resurgence of CPS seine landings at Port Hueneme Harbor.

**Figure 21**. Percent contribution of ex-vessel value and volume landed for top commercial fisheries at Port Hueneme Harbor, 2001–2005.



## INFRASTRUCTURE NEEDS

### Commercial Fishing Infrastructure

Clearly, commercial fishing represents an ocean-dependent activity. As such, maintaining an economically viable commercial fishing community depends largely on the community's access to productive fishing grounds and nearby harbor facilities that enable fishery participants to provide high-quality seafood to the public. We identify and describe below six general areas of infrastructure that are important for, if not essential to, the viability of SBC commercial fishing operations:

1. Harbor Space Allocations (e.g., for vessels, vehicles, trailers, gear)
2. Loading and Unloading Facilities
3. Equipment, Supplies and Services
4. Product Quality Facilities
5. Marketing Facilities and Services
6. Miscellaneous Facilities and Services (e.g., restrooms, meeting halls)

Harbor Space Allocations: Harbor space allocations, including slips, moorings, docks, launch ramps, gear storage and repair areas and parking, are critically needed to sustain commercial fishing communities. Waterfront access to fishing grounds is necessary for providing high-quality seafood to the consumer, while keeping operating costs down. A single harbor facility that serves a region is not suitable for sustaining fishing communities, as most fish needs to be landed close to where it is caught to maintain high quality. Likewise, gear repair and storage areas at or close to the harbor greatly enhances the efficiency of fishing operations. Maintaining dedicated waterfront space and access for commercial fishing vessels is becoming increasingly difficult as real estate values soar along coastal areas.


C.S. Culver

Loading & Unloading Facilities: Commercial fishing operations also require loading and unloading facilities, especially piers with hoists, truck waiting areas and boat launches for moving fish from the vessel to the buyer and for loading supplies, gear, and equipment onto fishing vessels. Traditionally, buyers and processors provided these services, and some still do at several West Coast ports. However, in the SBC many fishing participants now rely on public piers and hoists for unloading their catch. Purse seine operations are an exception, as their catch is unloaded by the buyers and processors who own or lease the necessary unloading equipment. Launch ramps have also become important for loading and unloading seafood products, gear, and supplies, especially for the smaller trap, dive, hook & line, and troll vessels. Large trucks are essential to transporting certain high-volume fishery species such as squid, wetfish, and sea urchins to processors and markets. Thus, piers and docks must be sturdy enough to handle these trucks, and waiting areas are needed to prevent congestion on the piers, harbor roads, and nearby streets.

Equipment, Supplies and Services: Commercial fishing operations also require fishing vessel equipment and gear, supplies and services, particularly fuel, bait, utilities, engine, hydraulic and other services, waste disposal, and vessel haul-out and water taxi services. Having access to fishing vessel equipment and fishing gear in or close to the fleets' homeports (community-based) improves their operations by saving time and effort, along with reducing fuel and shipping costs.

Fuel availability at reasonable and competitive prices is fundamental for all fleets. The rapidly rising fuel costs in the past two years have placed significant economic stress on SBC fishery participants as ex-vessel prices for most seafood have not increased proportionately, and in some cases have actually declined as products from other countries enter local markets. Availability of nearby, affordable haul-out facilities, as well as engine, hydraulic, and other services are important for assuring that vessels are maintained to insure safety and efficiency of commercial fishing operations.

Product Quality: The highly competitive and global market for seafood has intensified the demand for high-quality seafood. This requires access to ice, cold storage, holding tanks/areas for live products and processing facilities. While most harbors currently provide ice, processing facilities are limited and cold storage and holding facilities for live seafood are lacking.

Marketing: Selling fish requires certain marketing infrastructure, such as scales, fish buyers and directed marketing space. Many local fishery participants are harvesting and selling live fish and many buyers are now utilizing trucks and vans with seawater tanks or refrigeration to serve Asian markets that demand very high-quality seafood. Selling directly to the broader public has also become an important marketing strategy for many local fishery participants.

Miscellaneous Facilities/Services: Commercial fishery participants also value other support infrastructure, including showers and restrooms, information centers/meeting halls, and telecommunications equipment. Secure facilities and harbor staff and administrators that are willing to work with fishing operators on addressing their needs and concerns were also identified by local fishery participants as valuable infrastructure.

**Needs of Specific Fishing Operations**
While there are general infrastructure needs required by all fishing operators (e.g., slips, parking, unloading facilities, gear storage, and fuel), there are also specific needs for particular fishing operations (Table 9). For instance, a number of divers, trollers and hook & liners keep their vessels on trailers and thus, require facilities (e.g., ramps) to launch their boats. Trappers, trollers and hook & liners also have a critical need for bait and often use launch ramps for loading and unloading gear and live products. Gear repair areas are essential for all net fisheries and are useful, but not critical, for trap, dive, hook & line, and troll operations. Water taxis are needed by vessels using moorings, though commercial moorings are limited within the region to an area off Santa Barbara Harbor.

Facility needs also vary between fishery participants who sell their catch directly to retailers and consumers versus those who sell to wholesale buyers. The former require certified public scales, while the latter generally do not because the buyers and processors purchasing the fish have scales. Fish buyer and distributor facilities are needed by a majority of individuals who prefer not to deal with the complexities of direct marketing or who land large quantities of product destined for processing.

Likewise, there are different infrastructure needs for those who sell live fish (e.g., divers, trappers) as compared to those who sell processed fish (net and line fishery operators). Cold storage facilities are needed for all fishing operations, but in particular for those fisheries, such as seine, other net fisheries, and troll, long-line and hook & line fisheries, that provide high-quality processed seafood. These fisheries also require processing facilities. In contrast, live holding tanks or "in-harbor" areas that can be aerated and used to safely hold live products (secure from seals/sea lions and humans) are increasingly important to those engaged in live product fisheries. Currently, most trappers use seawater tanks or totes on their vessels as temporary holding tanks. Lobster and crab trappers also use receivers (hard plastic mesh cages) submerged in the harbor to hold their catch alive prior to sale. These methods work reasonably well until a red tide (naturally occurring toxic algal bloom) or oil or sewage spill occurs that severely decreases oxygen levels in the harbor water causing die-offs and major losses of live products being held within the harbor or in tanks supplied with harbor water. While ice is used by almost all fishing operations, the amount required is generally less, if needed at all, for those providing live seafood and larger boats with refrigeration systems.

**Current SBC Infrastructure Needs**
Infrastructure needs not only vary among fishing operations, but also among harbors as existing facilities and services differ with each port (Table 10). Overall, SBC commercial fishery participants were generally satisfied with the following facilities and services across harbors (Santa Barbara, Ventura and Channel Islands Harbors)[4]:

- Slips
- Docks
- Truck Waiting Area
- Boat Launches
- Utilities
- Waste Disposal Facilities
- Directed Marketing Space
- Restrooms/Showers

[4] Port Hueneme Harbor data are excluded to insure confidentiality.

**Table 9**. Summary of Santa Barbara Channel region infrastructure needs. Blanks indicate facility/service not needed. + indicates facility/service somewhat needed. +++ indicates facility/service critically needed.

| | | Commercial Fishing Fleets | | | | |
|---|---|---|---|---|---|---|
| **Facility/Service** | **All** | **Dive** | **Trap** | **Seine** | **Other Net** | **Troll/H&L** |
| ***Harbor Space Allocations*** | | | | | | |
| Slips | +++ | | | | | |
| Moorings | | | | + | | |
| Launch Ramps (Vessels) | | +++ | + | | | +++ |
| Docks | +++ | | | | | |
| Gear Storage | +++ | | | | | |
| Gear Repair | | + | + | +++ | +++ | + |
| Parking | +++ | | | | | |
| | | | | | | |
| ***Loading/Unloading*** | | | | | | |
| Unloading | +++ | | | | | |
| Truck Waiting | +++ | | | | | |
| Boat Launch (Load/Unload) | | + | +++ | | | +++ |
| | | | | | | |
| ***Equipment/Supplies*** | | | | | | |
| Equipment Suppliers | +++ | | | | | |
| Fuel | +++ | | | | | |
| Bait | | | +++ | | | +++ |
| Utilities | +++ | | | | | |
| Vessel Haul-out | +++ | | | | | |
| Engine & Other Services | +++ | | | | | |
| Waste Disposal | +++ | | | | | |
| Water Taxi | | | | + | | |
| | | | | | | |
| ***Product Quality*** | | | | | | |
| Ice | | + | + | +++ | +++ | +++ |
| Cold Storage | | + | + | +++ | +++ | +++ |
| Holding Tanks/Areas | | | +++ | | + | +++ |
| Processing Facilities | | +++ | | +++ | +++ | + |
| | | | | | | |
| ***Marketing*** | | | | | | |
| Scales | | | + | | + | + |
| Fish Buyers | +++ | | | | | |
| Directed Market Space | | | +++ | | +++ | +++ |
| | | | | | | |
| ***Misc. Facilities/Services*** | | | | | | |
| Information Ctr/Meeting Hall | +++ | | | | | |
| Telecommunications Equip | +++ | | | | | |
| Showers/Restrooms | +++ | | | | | |

**Table 10**. Rating of harbor infrastructure by commercial fishery participants of the Santa Barbara Channel. Availability: A, available. L, limited. N, not available. Rating: (--), 0% to 30%, (-) = 31% to 44%, (o) = 45% to 55%, (+) = 56% to 69%, (++) = 70% to 100%. Port Hueneme Harbor data not included to insure confidentiality.

| | HARBOR (Sample Size) | | | | | |
|---|---|---|---|---|---|---|
| | Santa Barbara (49) | | Ventura (22) | | Channel Islands (12) | |
| **Facility/Service** | **Avail-ability** | **Adequate Rating (%)** | **Avail-ability** | **Adequate Rating (%)** | **Avail-ability** | **Adequate Rating (%)** |
| **Harbor Space Allocations** | | | | | | |
| Slips | A | ++ (81) | A | ++ (77) | A | ++ (92) |
| Moorings | A | + (64) | N | -- (20) | N | -- (0) |
| Docks | A | ++ (92) | A | ++ (91) | A | ++ (91) |
| Gear Storage | L | -- (26) | A | ++ (90) | N | -- (0) |
| Gear Repair | A | o (53) | A | + (65) | L | -- (25) |
| Parking | A | o (51) | A | ++ (77) | A | ++ (83) |
| **Loading/Unloading Fac.** | | | | | | |
| Unloading | A | ++ (90) | A | ++ (70) | A | -- (27) |
| Truck Waiting | A | ++ (85) | A | ++ (90) | A | ++ (75) |
| Boat Launch | A | ++ (91) | A | ++ (89) | A | ++ (100) |
| **Equipment, Supplies and Services** | | | | | | |
| Equipment Suppliers | L | o (48) | A | ++ (81) | A | + (58) |
| Fuel | A | ++ (80) | A | ++ (95) | A | - (33) |
| Bait | L | - (36) | L | - (36) | L | - (43) |
| Utilities | A | ++ (96) | A | ++ (90) | A | ++ (83) |
| Vessel Haul-Out | A | + (57) | A | ++ (95) | A | ++ (75) |
| Engine & Other Services | L | - (32) | A | ++ (90) | A | ++ (92) |
| Waste Disposal | A | ++ (98) | A | ++ (86) | A | ++ (92) |
| Water Taxi | A | ++ (90) | A | o (50) | A | ++ (100) |
| **Product Quality** | | | | | | |
| Ice | A | ++ (91) | A | ++ (78) | N | -- (0) |
| Cold Storage | N | -- (11) | N | -- (6) | N | -- (18) |
| Holding Tanks/Areas | N | -- (9) | N | -- (7) | N | -- (10) |
| Processing Facilities | L | -- (15) | L | - (37) | L | -- (18) |
| **Marketing Fac/Services** | | | | | | |
| Scales | N | - (35) | N | - (42) | N | -- (0) |
| Fish Buyers | A | + (62) | A | ++ (76) | L | -- (9) |
| Directed Market Space | A | ++ (93) | A | ++ (94) | A | ++ (91) |
| **Misc. Facilities/Services** | | | | | | |
| Info Center/Meeting Hall | A | ++ (91) | A | ++ (100) | N | - (33) |
| Telecommunications Equip | L | o (55) | A | + (69) | N | -- (0) |
| Showers/Restrooms | A | ++ (98) | A | ++ (95) | A | ++ (100) |

In contrast, they were not satisfied with processing, cold storage and live fish holding tank facilities/services, which are limited, if not completely lacking, at the local harbors. The adequacy of the remaining facilities/services varied among the harbors and thus, is described in the following port-specific sections as appropriate. Appendices E-1 through E-4 provide port-specific descriptions and suggestions for improvements of the various facilities/services, including some facilities and services that were deemed adequate.

**Santa Barbara Harbor**


Santa Barbara Harbor-based commercial fishing participants were generally quite satisfied with the harbor's facilities and services (Table 10). Notably, the following facilities and services were identified as not being adequate:

Storage space (gear, trailers and vessels)

- Bait availability and storage
- Engine, hydraulic, and other services
- Cold storage, holding tanks/areas, and processing facilities
- Scales

While storage space exists, more is required to meet the needs of the various fishing operations, in particular for divers and trappers. In addition, bait, and engine, hydraulic, and other services, while available, were considered limited for the needs of fishery participants based at Santa Barbara Harbor. Availability of cold storage and holding tanks or areas for live organisms were also identified as infrastructure that would help support the viability of commercial fishing operations at Santa Barbara Harbor. Processing facilities in Santa Barbara are also limited, as the remaining operations do not buy large quantities of local product. Instead, the majority of the catch is trucked out of the area, including sea urchins that are trucked to Ventura and Los Angeles for processing. The recently expanded harbor-based seafood market may increase the sale of local fish. Certified public scales are not available, but would be useful for those involved in direct marketing. Specific suggestions for improving the Santa Barbara Harbor infrastructure are provided in Appendix E-1.

**Ventura Harbor**

The majority of Ventura Harbor-based fishery participants were satisfied with most facilities at this port, especially harbor space allocations, equipment, supplies and services, and miscellaneous facilities and services. Facilities that were considered inadequate or needing improvement and possible upgrading included:

- Slips (for smaller vessels and transients)
- Gear repair areas (especially for seine nets)
- Unloading efficiency (increased hoist speed)
- Bait availability and storage
- Cold storage, live holding tanks/areas and processing facilities
- Scales


Slips, while deemed adequate, are becoming limited for medium-sized and smaller commercial vessels as more recreational boats and yachts occupy slips among the commercial vessels. Transient fishery participants from other harbors also mentioned the diminishing availability of commercial slips.

While seiners considered the unloading facilities adequate and efficient, other fishery participants deemed the hoists as slow and the pier often too congested, making unloading difficult especially during the winter-spring squid season. Similarly, gear repair areas are available, but during the squid season there is an increased need for additional net repair sites. Currently, nets are often repaired on the commercial pier, adding to the congestion on the pier.

Availability of commercial quantities of bait is quite limited and deemed inadequate by the trappers and hook & liners. Several types of frozen wetfish bait are available nearby in Port Hueneme, but many fishery participants must go to Los Angeles processors to obtain less expensive types of fresh bait (e.g., scraps of processed fish). A cold storage facility for holding and keeping bait fresh could help limit the number of trips required by individuals to obtain bait elsewhere.

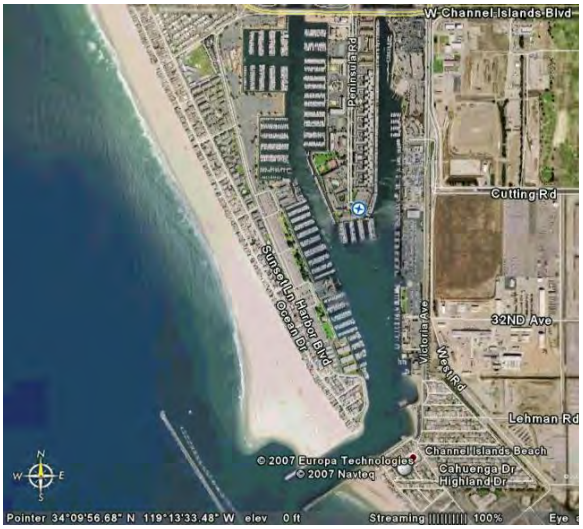
Cold storage is not presently available in or near the harbor. A small cold storage facility would likely help maintain high-quality processed fish for sale at weekend direct fishermen's markets and for local direct to consumer, retail, and restaurant sales. Likewise, holding tanks or areas for live seafood are lacking. These, too, would likely help maintain high-quality live seafood for sale at direct markets. Processing facilities are also limited in Ventura Harbor. Though a few local buyers cut fish, only small amounts of the catch are processed in these facilities. Live fish are sold primarily to buyers from the Los Angeles area and squid is trucked to offsite facilities in Ventura, Los Angeles, Monterey and Santa Cruz Counties for further processing and/or packing, freezing and shipping to other countries for processing and distribution (Pomeroy & FitzSimmons 2001). Public certified scales are not currently available, but would be useful for those involved in direct marketing of their catch, though several fishery participants currently provide their own scales. Additional suggestions for improving Ventura Harbor fisheries infrastructure are listed in Appendix E-2.

**Channel Islands Harbor**

Commercial fishery participants based in Channel Islands Harbor (CIH) were generally satisfied with the slips, docks, parking, truck waiting area, and boat launch at this port. Equipment supplies and services, with a few exceptions, were also considered adequate. However, many other facilities, such as marketing facilities and services, facilities to maintain product quality, and miscellaneous facilities/ services, were cited as needing attention and possible improvement:

- Gear Storage
- Gear Repair

- Unloading (speed, efficiency)
- Fuel Costs
- Bait Supplies (commercial)
- Ice
- Cold Storage, Holding Tanks/Areas and Processing Facilities
- Scales
- Fish Buyers
- Information Center/Meeting Hall
- Telecommunication Equipment




Access to nearby gear storage and "in-harbor" gear repair areas is essential for the cost-effective operation of a majority of CIH fishery participants. Presently, a few CIH fishery participants use the commercial fisheries gear storage area in Ventura Harbor, but space there is in demand and respondents indicated that a local storage area and designated gear repair areas would greatly improve their fishing operations.

Unloading facilities have recently been refurbished at this port, with the replacement of a self-service commercial hoist at the Fishermen's Wharf area on the east side of the harbor. However, the speed of this hoist is considered to be too slow for efficient unloading of fresh and live seafood.

Availability of commercial supplies of bait for trap, hook & line and longline fishing operations was considered problematic at CIH, as at other SBC harbors. Though frozen wetfish bait is available in Port Hueneme, most fishery participants must go to Los Angeles for larger quantities of fresh bait (scraps of processed fish).

Maintaining high-quality products is of major importance to CIH-based fishery participants, and thus the lack of ice remains a critical concern for resident and transient fishing operations at CIH. Cold storage is not available in the harbor, but instead located in the nearby city of Oxnard. These facilities are apparently not cost-effective (expensive and inconvenient) for most CIH fishery participants. Holding tanks for live products are also not available except at local retail fish markets and restaurants. Crab and lobster trappers keep their catch in receivers submerged in the harbor. This harbor is considered to have the best water quality of the SBC harbors due to the consistent seawater circulation through the harbor.

Processing facilities are limited for most CIH-based fisheries, with the exception of local sea urchin and squid processors. Fishery participants considered the availability of fish buyers as also lacking, though mobile live-fish buyers from the Los Angeles area, and local restaurants and retail markets purchase moderate amounts of seafood landed at CIH.

A majority of respondents cited the need for an information center and meeting hall. Though the harbor department's meeting room has been used for fisheries related meetings in the past, a dedicated space was suggested for a commercial fishermen's meeting room, information center, and lounge similar to the Ventura Harbor

facility. The availability of tele-communications equipment (e.g., wireless internet, computer access, FAX) at the harbor could also improve marketing opportunities for CIH fishery participants.

Though not explicitly asked about in the survey, several respondents mentioned that security in CIH is very good compared to other harbors outside the SBC area. Further specifics and suggestions for improving the infrastructure of Channel Islands Harbor are provided in Appendix E-3.

**Port Hueneme Harbor**

As previously described, Port Hueneme Harbor is not a residential harbor, but instead an important offloading site for local and transient wetfish (e.g., squid, anchovy, sardine, mackerel) fishery participants. Currently, there is one full-time, resident commercial fishery participant at Port Hueneme Harbor. Thus, to insure confidentiality, we've excluded that individual's ratings on the adequacy of the infrastructure at this harbor. Appendix E-4 provides a brief description of infrastructure associated with commercial fisheries at this port.


**Model Harbor Facilities Outside of the SBC**

The SBC ports provide many adequate facilities and services for local commercial fisheries, though some infrastructure improvements were suggested by those interviewed based on their use of facilities and services at other West Coast harbors. Many of the local fishery participants have first-hand experience with the infrastructure at various ports along the West Coast, as they often use other harbors when fishing outside of the SBC (Table 11). For example, purse seine operators often travel long distances, using the most northern and southern harbors (e.g., Petersburg and Ketchikan, AK, San Pedro and San Diego, CA) along the West Coast. Gillnet and troll operators also travel long distances and unload in many of the same harbors as the seiners, although they frequently unload in several additional harbors. In contrast, other local fishery participants (trawlers, divers, trappers) generally use harbors from north-central California (Fort Bragg and Bodega Bay) to the Mexican border (San Diego).

Evaluating infrastructure at harbors outside of the SBC that support similar commercial fisheries may provide alternatives and examples of model facilities and services that could be adapted to the local harbors. Those fishery participants interviewed identified several model facilities and services at ports from Petersburg, Alaska to San Diego, CA (Table 12). The examples provided reflected the different needs associated with different types of fishing operations and the harbors supporting those operations.

**Table 11**. West Coast ports outside of the region frequented by resident Santa Barbara Channel fishery participants.

| | Gear Type | | | | | |
|---|---|---|---|---|---|---|
| **Harbor** | **Dive** | **Trap** | **Purse Seine** | **Trawl** | **Gill Net** | **Troll Hook & Line** |
| Petersburg, AK | | | X | | | |
| Ketchican, AK | X | | X | | | |
| Bellingham, WA | | | X | | | |
| Seattle, WA | X | | X | | | |
| Westport, WA | | | | | | X |
| Ilwaco, WA | | | | | | X |
| Astoria, OR | | | X | | | X |
| Newport, OR | | | | | | X |
| Crescent City, CA | | | | | | X |
| Fort Bragg, CA | X | | | | | X |
| Bodega Bay, CA | X | | | | | X |
| San Francisco, CA | | | | | X | X |
| Halfmoon Bay, CA | | X | | | | X |
| Monterey, CA | X | | X | X | X | X |
| Moss Landing, CA | | | | X | X | X |
| Morro Bay, CA | X | | | X | X | X |
| Port San Luis, CA | | X | | X | X | X |
| San Pedro, CA | X | X | X | | X | X |
| San Diego, CA | X | | X | | X | X |

It is important to consider the feasibility of addressing the specific infrastructure improvements identified by respondents. It may not be cost-effective for harbors to change or provide several of the desired facilities and services. Moreover, some of these are not under the direct control of harbor administrators. Fuel prices, the availability of equipment suppliers, fish buyers, and bait are examples of services that are not directly addressed by harbor administrators. However, slip fees, gear repair areas, unloading facilities (hoists and piers), ice, and cold storage facilities are items that can be (and often are) addressed by harbor management with adequate funding and support and input from local commercial fishery participants. Below, we provide additional details regarding commercial fishing infrastructure located at other West Coast harbors that respondents mentioned, followed by a brief discussion of potential alternative facilities and services that may be useful for SBC harbors.

**Table 12**. Model harbors for various facilities and services that are located outside of the Santa Barbara Channel region. X denotes a feasible, high-priority need.

| | Facility/Service | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Facility/Service** | **Slips* (fees)** | **Gear Storage** | **Gear Repair*** | **Unloading* (hoists)** | **Equipment Suppliers** | **Fuel** | **Bait** | **Ice** | **Cold Storage*** |
| Petersburg, AK | | | X (Floating Docks) | | | | | | |
| Ketchican, AK | | | X (Floating Docks) | | | | | | |
| Bellingham, WA | | X | X | X | | | | | |
| Seattle, WA | | X | X | | X | | | | |
| Westport, WA | | | | X | | | | | |
| Ilwaco, WA | | | | X | | | | | |
| Astoria, OR | | | | X | | | | | |
| Newport, OR | | | | | | | | | |
| Crescent City, CA | | | X | | | | | | |
| Fort Bragg, CA | | | | | | | | | X |
| Bodega Bay, CA | | | | X | | X | | X | X |
| San Francisco, CA | | | | X | | | | | |
| Halfmoon Bay, CA | X | | | X | | | | | |
| Monterey, CA | X | | | | | | | | |
| Moss Landing, CA | | | | | | | | | |
| Morro Bay, CA | X | | | X | | | | | |
| Port San Luis, CA | | X | | | | | | | |
| San Pedro, CA | X | | X | X | X | X | X | X | |
| San Diego, CA | X | | | | | X | | X | |

Slips: SBC fishery participants highly value harbors with readily available transient slips and competitive fees for short- and long-term stays. A review of the moorage fees and transient commercial vessel policies at the model harbors identified in Table 12 provide useful comparisons for SBC harbors.

Gear Repair: Purse seine, gillnet, and trawl operators identified several model harbors with desirable gear repair areas, including two Alaskan harbors (Petersburg, Ketchikan) that have both designated "in harbor" areas and floating docks for net and gear repair. Use of floating docks for gear repair may ease congestion resulting from use of the fishing pier and harbor parking lots for net and gear repair. They have the added benefit of being temporary, and could be deployed during peak fishing periods and stored at other times.

Unloading: Representatives of many of the local fisheries (divers, trawlers, gillnetters, and trollers) provided examples of ideal unloading facilities, especially those with fast hoists and efficient unloading

procedures. However, the latter may be less useful as most of the offloading facilities from Morro Bay, CA north to Petersburg, AK, with few exceptions, are owned or leased by private companies (primarily buyers/distributors/processors) who maintain the hoists and provide trained crew for unloading vessels quickly and efficiently. Several harbors such as Bodega Bay, CA and Newport, OR have public hoists, but unloading must be done by, or under the supervision of, the harbor department or dock master. Further, while the SBC fishery participants dealing with live fish need fast, efficient unloading facilities, they also value the ability to unload their own catch using public hoists thereby avoiding any potential delays that could impact the quality of their catch.

Cold Storage: Trappers, gillnetters, trollers, and hook & liners indicated a need for small in-harbor or nearby cold storage facilities to maintain the high quality of their fish prior to selling it to local or mobile buyers, restaurants, and consumers at weekend fishermen's markets. SBC fishery participants identified the dedicated cold storage facilities at Fort Bragg and Bodega Bay Harbors as model facilities for this type of infrastructure.

**Alternative Facilities**

Harbor infrastructure that supports commercial fisheries requires continual maintenance and occasional renovation. The need for renovations of some harbor facilities, together with new infrastructure needs following recent changes in commercial fisheries provide an opportunity for adapting facilities and services to users' current and future needs. Here we identify and provide contacts for particular West Coast harbors that support fisheries similar to those supported by the SBC ports. This information may facilitate further discussions between harbors, potentially identifying alternative infrastructure that may help support the local fisheries.

Many of the harbors listed in Tables 10 and 11 support commercial fisheries similar to those occurring in the SBC. In particular, the suite of fisheries supported by Ventura Harbor is also supported at the following harbors:

- Ketchikan, AK
- Bellingham, WA
- Astoria, OR
- San Pedro and Terminal Island, CA

With the exception of the large seine operations, Santa Barbara and Channel Islands Harbors, though much smaller, provide facilities and services for fishing operations similar to those occurring at several harbors:

- Newport, OR
- Fort Bragg, CA
- Bodega Bay, CA
- Monterey, CA
- Moss Landing, CA
- Morro Bay, CA

Appendix B provides contact information for people knowledgeable about these and other fishing harbors on the West Coast. These persons may be able to answer questions about potential alternative facilities and services.

In addition to the contacts for other West Coast harbors, Alaska Sea Grant recently published a handbook on the day-to-day operations and long-term maintenance of harbors (Sorum, 2006). This publication contains up-to-date information on:

- marine construction practices and materials for piers and docks

- maintenance planning, repair, and techniques
- harbor utilities
- facility safety
- contacts for various harbor engineers and architects

Though written for northern harbors with harsh weather and sea conditions, this information will likely be valuable to Santa Barbara Channel harbor managers.

## FACTORS CURRENTLY INFLUENCING SBC FISHERIES

Identifying factors that currently influence local fisheries is useful for predicting whether and how fisheries may change in the future. The fisheries of the Santa Barbara Channel region are constantly changing in response to many different factors, including environmental, regulatory, economic and social ones. Overall, local fishery participants ranked operating costs, area closures due to implementation of marine protected areas (MPAs), and competition with foreign-fished products as having the biggest impact on their current fishing activities (Table 13). Ratings of the various factors varied among fishing operations, with fishery closures and marine mammal interactions rating much higher among net (other than seine) and line fishing operations. Market price was also rated as a major factor impacting divers. Notably, limited entry was viewed as having both positive and negative impacts: restricting the number of fishery participants positively decreased competition among participants, but also negatively impacted opportunities and flexibility among fishing operations. Following, we describe in more detail these and other known factors that impact fisheries of the SBC.

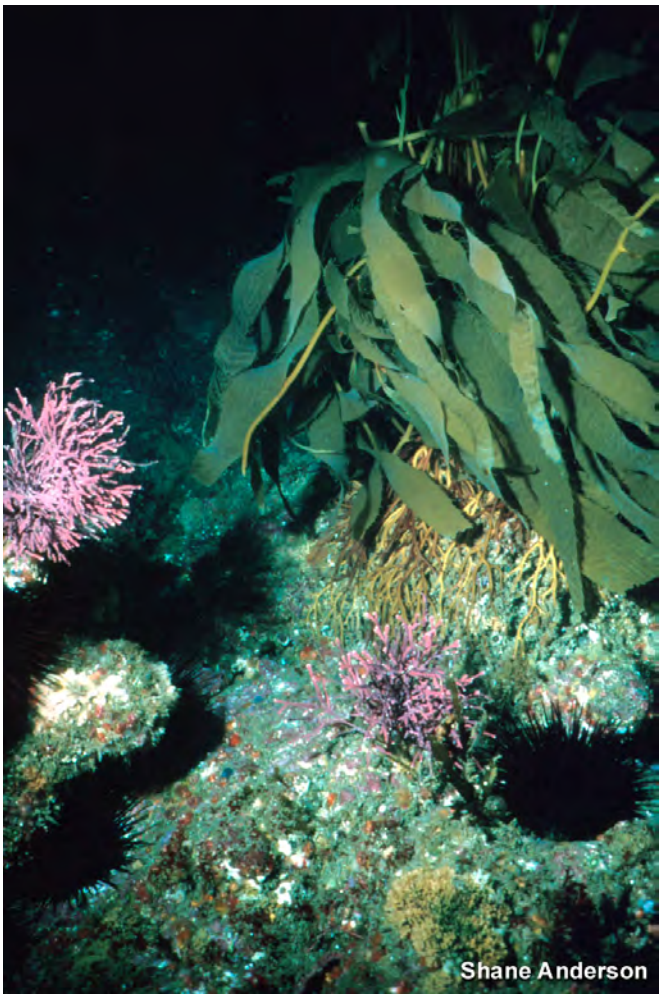
**Table 13.** Average rating for the impact of various factors on current fishing operations of the Santa Barbara Channel. 1 = no impact, 5 = major impact.

| | Fishing Operation (Sample size) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Factor** | **ALL (84)** | **Dive (23)** | **Trap (23)** | **Seine (9)** | **Other Nets (20)** | **Longline (3)** | **Troll/Hook & Line (6)** |
| Operating costs | 4.3 | 4.3 | 4.1 | 4.9 | 4.4 | 4.7 | 4.3 |
| Marine protected area (MPAs) closures | 4.1 | 4.3 | 4.2 | 4.6 | 3.6 | 3.0 | 4.5 |
| Competition with foreign-fished product | 4.0 | 4.5 | 3.8 | 4.1 | 3.8 | 4.3 | 2.5 |
| Marine mammal interactions | 3.6 | 3.4 | 2.8 | 3.7 | 4.7 | 3.0 | 3.8 |
| Limited entry | 3.5 | 4.0 | 2.7 | 3.7 | 4.1 | 3.7 | 2.3 |
| Fishery closures | 3.5 | 2.8 | 3.2 | 3.3 | 4.7 | 5.0 | 2.5 |
| Public perception | 3.4 | 3.5 | 2.9 | 3.1 | 4.1 | 4.3 | 2.0 |
| Price | 2.9 | 4.2 | 2.5 | 1.8 | 2.5 | 3.3 | 1.8 |
| Availability of markets/buyers | 2.6 | 3.1 | 2.4 | 2.7 | 2.2 | 2.0 | 3.2 |
| Infrastructure (support facilities) | 2.4 | 3.2 | 2.2 | 2.3 | 1.6 | 3.0 | 2.7 |
| Competition with domestic fished product | 1.8 | 1.8 | 1.6 | 1.4 | 2.1 | 1.0 | 2.0 |
| Competition with foreign cultured product | 1.8 | 1.3 | 1.8 | 1.2 | 2.8 | 2.7 | 1.8 |
| Competition with domestic cultured product | 1.5 | 1.3 | 1.5 | 1.2 | 1.9 | 1.0 | 1.5 |

**Environmental Factors**

Climatic processes, such as El Niño and La Niña events and regime shifts (decadal and multi-decadal), have major impacts on West Coast fisheries, in particular, the distribution and abundance of species (see Parrish & Tegner 2001; Mason 2004). Some species move out of an area while others move into an area in response to the oceanographic conditions that accompany these events. These shifts in distribution are primarily evident for pelagic, migratory and nomadic species. Further, the reproduction, larval survivorship and juvenile growth of many non-migratory species are impacted by these abnormally warm and cold water regimes, thereby impacting the abundance of the affected species. These life history parameters increase or decrease in association with the changing conditions and depending on whether they are southern (warm water) or northern (cold water) species.

El Niño events have strongly influenced landings for the three top-valued SBC fisheries (squid seine, sea urchin dive and lobster trap), although some impacts have been immediate while others have been delayed depending on the fishery (see next section Fishery Profiles). Immediate impacts include sharp declines in squid landings in El Niño years as squid become scarce on the fishing grounds, and declines in sea urchin landings as gonad production (the valuable product obtained from sea urchins) decreases due to large reductions in the primary food for sea urchin, the giant kelp, *Macrocystis*. The distribution of other species also changes in response to El Niños, with increased availability of bonito, white seabass, swordfish and yellowfin tuna in the region. El Niño conditions may also partially explain increased landings of ridgeback prawn in the SBC in association with warm water. Increased landings of lobster illustrate the delayed effect of El Niño events, as lobsters become more abundant a number of years later, presumably due to increased reproduction and larval dispersal into the SBC during warm water years, followed by growth of the abundant year classes to harvestable size in later years.



Recently, fluctuations in populations of marine species have been linked with climatic cycles that occur over a single decade or several decades. For example, several cold-water species (salmon, lingcod, rockfishes) declined during the 1980s and 1990s when warm-water conditions prevailed. In contrast, during the same period, there was an increase in some warm-water pelagic species (Pacific sardine, Pacific mackerel). While commercial fishery participants often describe cyclic fluctuations in the availability of local species, additional research is needed to determine the impact of larger-scale climatic regimes on commercially important species of the SBC.

Predictions regarding climatic events have improved, but it is still difficult to know exactly when conditions will change. Understanding the shifts associated with these events is important for preparing for changes in infrastructure needs. For example, during El Niño events squid seine fishing is highly likely to decrease, if not totally cease, while trawling for ridgeback prawn may increase. These fisheries require different infrastructure due to differences in fishing operations (purse seine vs. trawl) and markets (processed vs. live). Being able to adapt the infrastructure to these changes will help sustain local commercial fishing communities in the future.

**Regulatory Factors**

There are numerous regulations affecting SBC fishery participants, many of which are specific to certain gear types and species being fished (http://www.dfg.ca.gov/mrd/ regulations. html# commercial). However, some regulations have had impacts on a broad range of commercial fishing operations of the region. We focus on the latter regulations here to illustrate some of the major restrictions on current commercial fishing activities in the SBC.

***Area & Gear Closures***

Many areas of the SBC are closed to one or more types of fishing (Appendix F). These closures vary in how they were implemented (i.e., state or federal mandate, public vote), the area they cover, and the direct and indirect impacts on SBC commercial fisheries.

Channel Island Marine Protected Areas (MPAs): In April 2003, twelve areas (three of which were previously ecological reserves) were designated as MPAs in the SBC (http://www.dfg.ca.gov/mrd/channel_ islands/index.html). Ten of the 12 MPAs are "no take" marine reserves where fishing and kelp harvesting are prohibited. The remaining two MPAs are "conservation zones" where limited recreational fishing and commercial lobster trapping are permitted. These MPAs were implemented by the California Fish and Game Commission, in accordance with the recommendations of the Department of Fish and Game and the Channel Islands National Marine Sanctuary. Direct impacts include loss of productive fishing grounds for many SBC fishery participants. The Channel Islands National Marine Sanctuary has proposed to extend the boundaries of these reserves into federal waters.

Rockfish Conservation Area: In 2003 and 2005, large-scale closures were implemented along the entire West Coast, including the SBC, by NOAA Fisheries (http://www.nwr.noaa.gov/ Groundfish-Halibut/Groundfish-Fishery-Management/ Groundfish-Closed-Areas/Index.cfm#CP_ JUMP_30272). Boundaries vary with time of year and gear type, and are based on depth contours. These were federally mandated closures associated with the

Pacific Fishery Management Council's groundfish fishery management plan (FMP). SBC commercial trawlers, gillnetters, finfish trappers and hook & line operators lost productive fishing grounds due to these closures.

Cowcod Conservation Area: In January 2001, waters around Santa Barbara and San Nicolas Islands were closed to fishing of most groundfish as a measure for rebuilding overfished cowcod stocks[5] (http://www. dfg.ca.gov/ mrd/cowcod.html). These were federally mandated closures associated with the Groundfish FMP. As with the rockfish conservation areas, these closures, located just south of the SBC, resulted in the loss of productive fishing grounds for SBC commercial trawlers, gillnetters, trappers and hook & liners.

Nearshore Gillnet Closure: In 1994, coastal state waters (0 to 3 miles from the coast) and one mile around the northern Channel Islands were closed to gillnet fishing following the passage of State Proposition 132 in 1990 (http://www.leginfo.ca.gov/cgi-bin/displaycode?section= fgc&group= 08001-09000&file=8610.1-8610.16). This voter-mandated closure directly impacted local gillnetters and indirectly impacted other fishery participants, particularly trappers, as displaced gillnetters moved into other fisheries. This proposition also required the implementation of 4 marine reserves (no-take zones) in the state, with two of these (Vandenberg and Big Sycamore Canyon) near, but not within, the SBC.

Trawl Exclusion Zone: Trawling was banned within state waters in 1953, except in the halibut trawl grounds of the SBC that extend 1 to 3 miles out from the coast between Point Arguello and Point Mugu. However, beginning in 1971, these grounds were closed to trawling for a 4-month period from mid-March to mid-June to protect spawning adult halibut. Legislation (SB 1459, AB 1431) passed in 2004 and 2005 established additional trawl closures in the halibut trawl zone in areas fished by SBC trawlers (e.g., Point Conception, Hueneme Canyon) (http://www. leginfo.ca.gov/cgi-bin/displaycode?section=fgc&group=08001-09000&file=8495-8497). This recent legislation also requires that the Fish and Game Commission completely close the California halibut trawl grounds to trawling on April 1, 2008, unless they find that "the bottom trawl fishery for halibut minimizes bycatch, is likely not damaging sea floor habitat, is not adversely affecting ecosystem health, and is not impeding reasonable restoration of kelp, coral or other biogenic habitats." If the area is closed by the Commission, it will severely impact SBC commercial trawlers in the near future.

***Quotas***

Groundfish & Nearshore Fisheries: The federal Groundfish FMP and state Nearshore FMP include regulations for many species of finfish, including rockfish (60+ species), roundfish (cabezon, lingcod, greenling), flatfish (sole, flounder), sharks and rays (http://www.dfg.ca.gov/mrd/regulations.html#commercial; http://www.nwr.noaa. gov/Groundfish-Halibut/Groundfish-Fishery-Management). These regulations have restricted the number of fishing days and the amount of fish that can be landed per day (individual trip limit), cumulatively over a two-month period (bi-monthly trip limit), and annually (total allowable catch for the fishery). For example, for 2006, fishery participants could only land between 100–300 pounds of cabezon depending on the 2-month period, and only until the

[5] Cowcod (*Sebastes levis*) is a species of rockfish that was formally declared overfished in 2000.

annual quota (59,300 pounds) for the fishery was reached. Once the total commercial quota is reached, the fishery is closed. In 2006, the commercial greenling fishery was closed on August 1st because commercial landings had reached the allowed take for that fishing year. These regulations aim to rebuild populations of certain rockfish and other species that have dramatically declined over the years. Because these are typically slow-growing, long-lived species, some of these regulations will likely remain in place for many more years. Currently, these regulations have impacted most of the commercial fishing operations of the SBC, especially fish trappers, trawlers, gillnetters and hook & liners. However, a closer analysis of the species composition of fishes in the SBC and nearby southern areas may support the re-evaluation of these regulations that were developed based on scientific information from areas north of Point Conception where environmental conditions and resources are markedly different.

***State Management Acts***

Two complimentary laws were passed in California as tools to improve management of the state's marine resources. They are described briefly below, with more detailed information available in California Living Marine Resources: A Status Report (Leet et al. 2001) and through the Department of Fish and Game (web sites provided below).

Marine Life Management Act (MLMA): Enacted in 1998, this state law called for several actions, including the development of FMPs for all marine fisheries not managed previously by the legislature using an ecosystem-based management approach (http://www.dfg.ca.gov/mrd/mlma/index.html). To date, management plans have been developed for the nearshore finfish, squid, white seabass, and abalone fisheries. New regulations associated with these FMPs will likely continue to restrict activities of SBC commercial fishery participants.

Marine Life Protection Act (MLPA): This 1999 state law called for the development of an improved network of marine reserves along the California coast as a tool for protecting and preserving marine biodiversity and ecosystem health (http://www.dfg.ca.gov/mrd/mlpa). The network is being developed in multiple stages, with the first stage just completed in Central California. The process will go next to North-central California (Alder Creek to Pigeon Point), and eventually will also address the North Coast and Southern California. Regardless, the newly established closures in Central California, and those that follow in North-central California, will likely impact local fishery participants. Those displaced from other areas may increase their fishing activities in the SBC, and local fishery participants that fish outside of the region may lose fishing grounds and experience increased congestion in areas that remain open. Further, the additional closures associated with the Southern California MPA process will likely impact local commercial fishery participants unless the presently closed areas are considered in the new design.

**Economic Factors**

The globalization of fisheries and seafood markets has provided new and lucrative opportunities for SBC fishery participants, including the export of squid, sea urchin and sea cucumbers. However, weak global economies and increased competition with foreign seafood have limited the ability of local fishery participants to sell their product globally. High-quality local product is now overlooked by some due to the availability of less-expensive foreign product.

Prohibition of gear types can, and have, contributed to this problem. For example, the ban on the use of gillnets in state waters led buyers to purchase some products (e.g., halibut) from Mexico. The Mexican products were obtained at lower prices, making it difficult for local fishery participants who used alternative gear types for those species to effectively compete with the buyers' new source of product. The challenge of competing with foreign products has been intensified by dramatically increased operating costs of fishing in California, while global prices have stagnated or declined. To partially address this problem, some fisheries (e.g., sea urchin dive) have developed domestic markets that recognize and promote high-quality local seafood. Additional marketing efforts such as this will likely be needed in the future to sustain SBC fishing communities. Development of alternative fishing gears to replace prohibited gear types may also help prevent the loss of current markets to foreign seafood suppliers.

**Fishery Profiles**

The following fishery profiles illustrate how the factors described above have influenced local landings for the top three SBC fisheries (in terms of ex-vessel value): squid purse seine, sea urchin dive and lobster trap[6]. These fisheries not only vary by species and gear, but also by volume and price. That is, the squid seine fishery represents a high-volume, low-price fishery, the urchin dive fishery represents a moderate-volume, low- to moderate-price fishery, and the lobster trap fishery represents a low-volume, high-price fishery.

[6] Literature used to develop these profiles is cited at the end of each section.

***Squid Purse Seine Fishery*** (high-volume, low-price)

Market squid, *Loligo opalescens*, is currently the top fishery not only in the SBC, but also statewide, both in terms of ex-vessel value and volume landed. A short lived species, market squid mature in approximately 6 to 9 months and die after spawning. Purse seine vessels usually work at night in conjunction with light boats that use high-intensity (or wattage) lights to attract aggregations of squid to the surface. The squid fishery typically occurs from October through February in the SBC and further south. Vessels move to areas of highest squid concentrations, which varies from year to year, depending on local environmental conditions.

The SBC squid seine fishery is a relatively new fishery in this area. Although it operated locally on a very small scale for many years, it was not until the early 1980s that the fishery developed in earnest in Southern California. Landings have fluctuated since then, with sharp declines associated with El Niño events, especially in 1982–1983, 1992–1993 and 1997–1998, when the squid fishery collapsed throughout California (Fig. 22). Minor El Niño conditions also affected Southern California landings in 2001–2003. The SBC squid fishery rebounded quickly following these warm-water events, with peak landings in the mid–1980s, mid–1990s, and again in 1999–2000. The latter peaks resulted in part from the increased demand for California squid in Asia, and particularly in China, together with a drop in squid harvest from other countries worldwide (Falkland Islands). This increase in fishing effort, particularly from out-of-state vessels, precipitated a moratorium in 1999 on new entry into the fishery. Initially, 248 squid seine vessel and 54 light boat permits were issued. These numbers dropped to 197 seine

vessel and 50 light boat permits during the second year of the moratorium, likely due to reduced squid availability during El Niño conditions and attrition as some who bought permits the previous year on speculation decided not to pursue the fishery. A weekend closure, already in place in the Monterey Bay area for several years, was extended statewide at this time. Additional interim management measures included a $2500 permit fee (to support research on the fishery) and mandatory logbooks. In 2001 and 2002, landings continued to decline in response to these new regulations, changes in local environmental conditions that affected the distribution of squid and changing market demand. However, landings have stabilized since then.

In 2004, the Fish and Game Commission approved a market squid FMP. Primary management measures include: 1) a restricted access program, with the goal of reducing the fleet to 77 transferable purse seine vessels, 2) a harvest cap (quota), 3) continued weekend closures statewide, 4) continued restrictions on attracting light wattage and requirement for light shields, and 5) a requirement of at least 30 percent egg escapement in the fishery (CDFG, 2004).

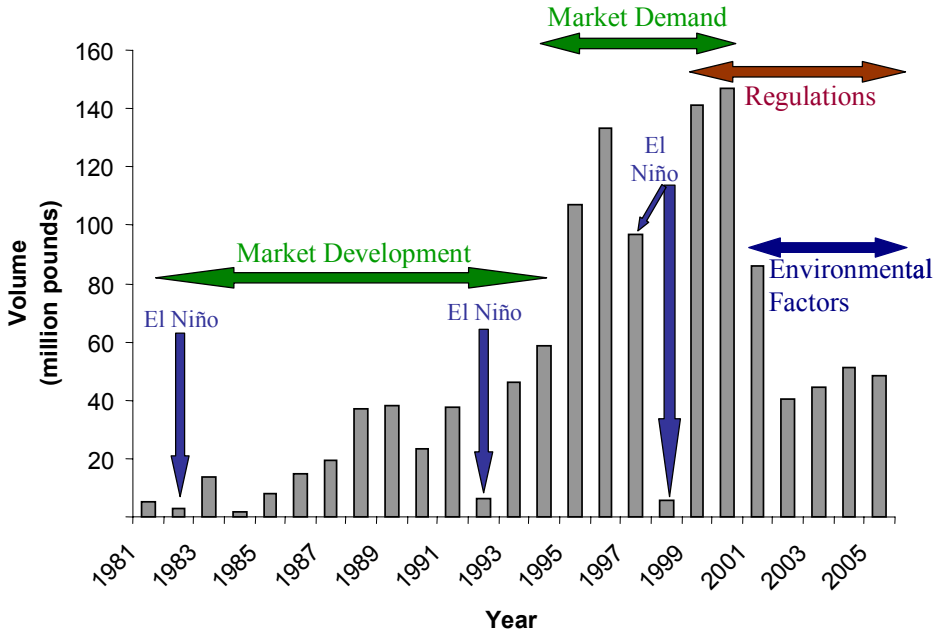
**Sources**


California Department of Fish and Game 2004. Market Squid Fishery Management Plan http://www.dfg.ca.gov/mrd/msfmp.

Pomeroy, C., M. Hunter and M. Los Huertos. 2002. Socio-economic profile of the California wetfish industry. In: California's "Wetfish" Industry: Its Importance Past, Present and Future (ed.) D.B. Pleschner. Santa Barbara, CA: California Seafood Council. 46 pp. http://ca-seafood.ucdavis.edu/news/wetfish/ wf_prof.pdf.

Yaremko, M. 2001. California market squid. In: California's Living Marine Resources: A Status Report (eds.) W.S. Leet, C.M. Dewees, R. Klingbeil and E.J. Larson. Pp. 295–298.


**Figure 22**. Factors influencing the average annual volume of squid seine landings for the Santa Barbara Channel region, 1981–2005.



**Sea Urchin Dive Fishery** (moderate-volume, low- to moderate-price)

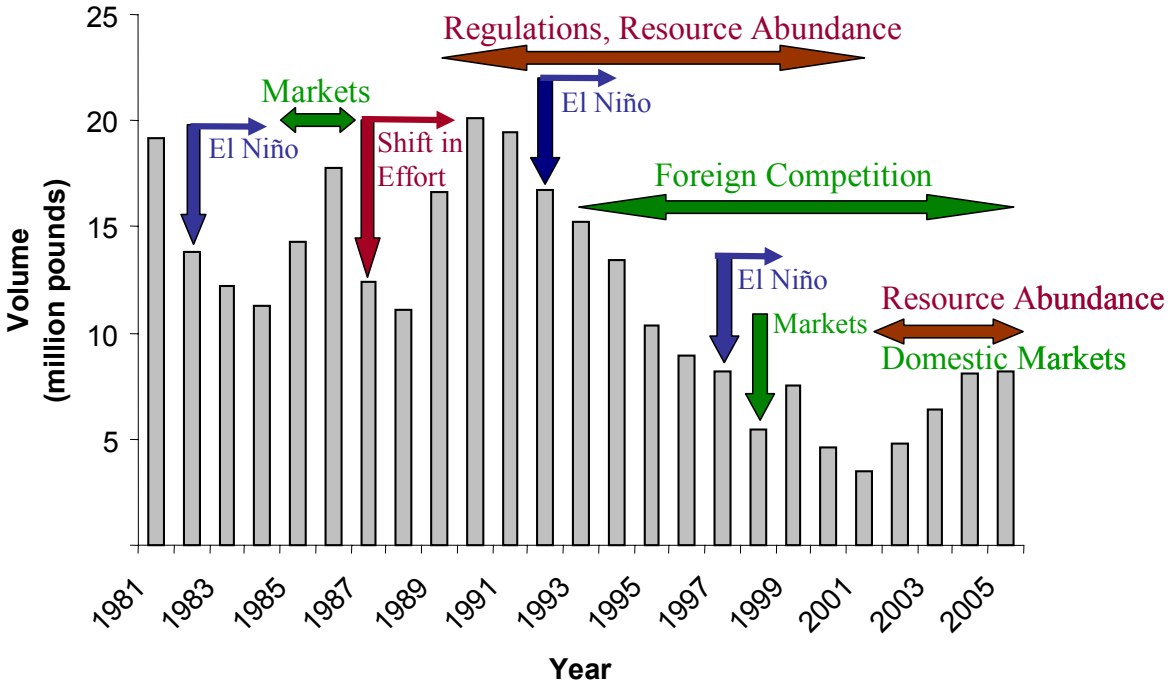
The sea urchin dive fishery has been a top fishery in the SBC for more than three decades, and the most valuable fishery in California from the late 1980s through mid-1990s. A majority of the landings have come from the northern Channel Islands for most of that time. When the fishery was developed in the early 1970s, sea urchins were considered pests due to their substantial grazing (consumption) of kelp. However, the reproductive organs (gonads), which are processed and sold as "roe" or "uni," have long been considered a delicacy among Asian cultures.

Sea urchins are relatively slow growing animals, reaching harvestable size (3.5 inch test (shell) diameter, exclusive of spines) in 4 to 5 years or longer depending on environmental conditions. Long-lived, red sea urchins live more than 50 years, with large individuals perhaps more than 100 years old. The red sea urchin, *Strongylocentrotus franciscanus*, is the primary target of divers, although in the past there were occasional landings of the purple sea urchin, *S. purpuratus*, as part of a marketing experiment. Sea urchins are harvested throughout the year, but the number of days open to fishing varies by month. Traditionally, market demand increased at the end of the year in association with the holidays, especially the Japanese New Year. However, increased competition with foreign urchin fisheries for international markets, coupled with increasing popularity of sushi in the U.S., has led to the development of domestic markets that purchase local, high-quality sea urchin uni throughout the year.

Sea urchin landings have been impacted by many factors (Fig. 23). The SBC sea urchin fishery initially expanded rapidly until the early 1980s, when a major El Niño event impacted the amount of food (kelp) available to urchins, thereby decreasing the quality of their roe. Landings recovered in 1985–1986 as the Japanese economy strengthened and as divers entered the fishery before the moratorium on issuance of new permits went into effect in 1987. Following this, there was a shift in fishing effort to Northern California, as well as to the mainland and southern Channel Islands (San Clemente and San Nicolas Islands). Fishing effort shifted back to the SBC in 1989.

Since the early 1990s, sea urchin landings have declined due to many factors including: 1) two El Niño events (1992–1994, 1997–1998), 2) decreased abundance of sea urchins with a subsequent shift in fishing effort from the SBC to southern locations (San Clemente Island, San Nicolas Island and San Diego area), 3) the weakened Japanese economy (especially in 1998) and poor exchange rate with the dollar, 4) the implementation of several restrictive regulations, and 5) increased competition for the Japanese market with sea urchins supplied by other countries (e.g., Russia, Korea, China). The amount of fishing effort has been impacted by the restricted access program that began in 1989, along with an effort-reduction program that required 10 permits to be retired for each new entrant, in an effort to reach a fishery participant capacity goal of 300. During the peak of the sea urchin fishery in the early 1990s, there were more than 900 permits in the state with approximately 300 full-time divers participating in the SBC sea urchin fishery. By 1992 the number of permits dropped to 527. Today, there are just over 300 permits statewide, with almost 100 full-time resident urchin divers working in the SBC.

**Figure 23**. Factors influencing the average annual volume of sea urchin dive landings for the Santa Barbara Channel region, 1981–2005.




In addition, increased competition with foreign product occurred at the end of the Cold War and the collapse of the Soviet Union, as Japan began buying product from other countries (Russia, China, Korea) and processing it themselves so it could be sold at a lower cost to their consumers. The weak Japanese economy in 1998 further supported purchase of less expensive foreign product, thereby decreasing the foreign demand for California sea urchins. In addition, Japan has experienced a "culture shift" of sorts, as the younger generation has turned away from the traditional preference for seafood and embraced western beef-based dietary habits. Since 2001, SBC urchin landings have increased slightly, due to the development of domestic markets and the return of some fishing effort to the SBC with the rebound of kelp beds at the Channel Islands following the 1997–1998 El Niño. In 2005, just over half of the statewide landings were made at Santa Barbara Harbor (CDFG 2006).

**Sources**

California Department of Fish and Game 2006. California sea urchin fishery report: 2005 wrap-up. 15 pp. http://www.dfg.ca.gov/mrd/seaurchin/su_report_0406.pdf.

Kalvaas, P., L. Rogers-Bennett, K. Barsky and C. Ryan. 2003. Red sea urchin. In: Annual Status of the Fisheries Report. Pp. 9-1 – 9-10. http://www.dfg.ca.gov/mrd/status/ report2003/redsu.pdf.

**Lobster Trap Fishery** (low-volume, high-price)

The California spiny lobster, *Panulirus interruptus*, is the third highest valued (ex-vessel value) commercial fishery of the Santa Barbara Channel region based on the average annual (calendar year) landings for the recent 5 years (2001–2005). Long-lived and slow growing, this species lives for approximately 20 to 30 years, matures in 5 to 6 years, and becomes large enough to be legally harvested in 7 to 11 years, depending on environmental conditions. Lobsters occur primarily south of Point Conception, being a warm-water species, and are fished using baited traps that are left in the water overnight (up to 96 hours). Most SBC fishery participants make day trips along the coast or to the northern Channel Islands, although a few make multiple day trips to these and other southern locations. The lobster fishing season runs from early October through mid-March, with most of the activity occurring in the first few months when weather and sea conditions are more favorable, the animals are more abundant in shallower waters, and holiday markets are thriving.

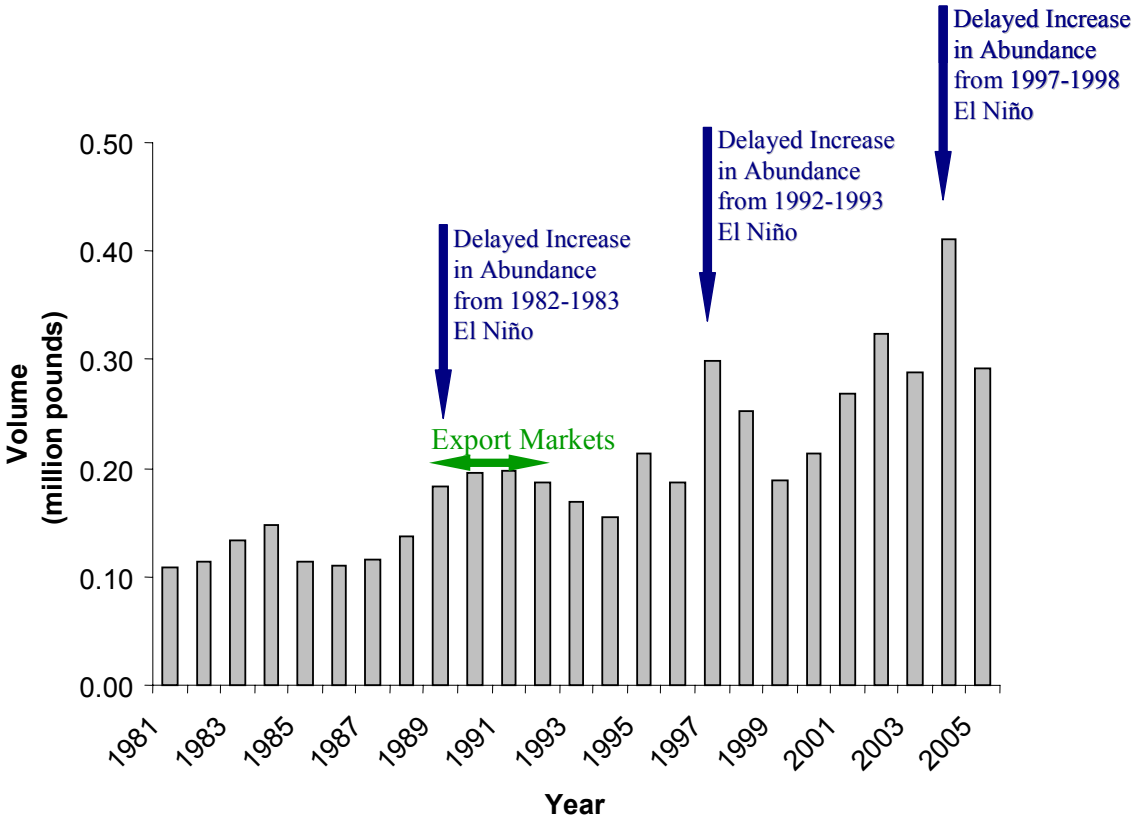
The lobster trap fishery is one of the oldest fisheries of the region, starting in the late 1800s. Landings have been fairly consistent over the past 25 years, with slight fluctuations due to changes in fishing effort and environmental conditions (Fig. 24). El Niño events have had both immediate and delayed effects on the fishery. These events often reduce the amount of fishing activity due to the increased severity of winter swells and wind. Increased landings may also occur, but may be delayed when warm water persists. For example, increased landings in the late 1980s and in 2004 are believed to be due, at least in part, to the El Niño conditions in the early 1980s and late 1990s. Presumably the warmer waters associated with the El Niño events increased lobster reproduction and transport of larvae into the SBC, consequently increasing lobster landings a number of years later. In the late 1980s, markets also expanded to Asia (Japan and Taiwan). Since then, changes in the Asian economy and other factors have impacted landings at times. These factors include competition with domestic fisheries (e.g., Maine, Florida) that can provide lobster year-round, and foreign fisheries (e.g., Australia, Mexico) that are allowed to sell processed, frozen lobster products, whereas California lobster must be sold whole. In 1994 a moratorium for new permits was implemented, followed by restricted access in 1996. There were 351 lobster operator permits in 1992, 298 permits in 1996 and 251 permits in 2000.

**Sources**

Barsky, K. 2001. California Spiny Lobster. In: California's Living Marine Resources: A Status Report (eds.) W.S. Leet, C.M. Dewees, R. Klingbeil and E.J. Larson. Pp. 98-100.

Barsky, K., A.Vejar and C. Ryan. 2003. California Spiny Lobster. In: Annual Status of the Fisheries Report. Pp. 4.1–4.8. http://www.dfg.ca.gov/mrd/status/report2003/ spinylobster.pdf.

**Figure 24**. Factors influencing the average annual volume of lobster trap landings for the Santa Barbara Channel region, 1981–2005.




## THE FUTURE OF SBC FISHERIES

Assessing the future of SBC fisheries and subsequent infrastructure needs requires not only the identification of factors that are currently influencing these fisheries, but also evaluation of the challenges facing SBC fishing communities and potential opportunities for addressing those challenges. Local commercial fishery participants identified access to fishery resources, operating costs, and fishery management as the top challenges facing them in the future, with marine mammal interactions also a challenge for many SBC fishing operations (Table 14). Similarly, the top three challenges identified during our workshop on the future of local fisheries were: 1) the disconnect between local communities and their fisheries (which impact access and management, as well as local market opportunities), 2) economic viability (including operating costs and management), and 3) increases in marine mammal interactions. While it is no small feat to address these challenges, opportunities exist for improving the sustainability of the region's commercial fisheries. Below we describe various parameters that may affect SBC fisheries in the future and potential opportunities for addressing the challenges facing the region's commercial fisheries.

Ben Henke

**Table 14**. Survey respondents' average ratings of the potential impact of various factors on future fishing activities of Santa Barbara Channel commercial fishery participants. 1 = no impact, 5 = major impact.

| | AVERAGE RATING (Sample Size) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Factor** | **All (84)** | **Dive (23)** | **Trap (23)** | **Seine (9)** | **Other Net (20)** | **Longline (3)** | **Troll/H&L (6)** |
| Access to Fishery Resources | 4.5 | 4.5 | 4.6 | 4.6 | 4.6 | 3.3 | 4.8 |
| Operating Costs | 4.5 | 4.7 | 4.2 | 5.0 | 4.4 | 4.0 | 4.5 |
| Fishery Management | 4.4 | 4.1 | 4.3 | 4.7 | 4.6 | 3.7 | 5.0 |
| Marine Mammal Interactions | 4.1 | 4.1 | 3.9 | 4.3 | 4.5 | 2.3 | 4.0 |
| Public Perception | 3.5 | 3.4 | 3.0 | 3.8 | 4.2 | 2.7 | 2.8 |
| Multiple-Use Conflicts | 3.0 | 2.7 | 2.9 | 2.9 | 3.5 | 2.3 | 3.7 |
| Infrastructure Support | 2.7 | 3.0 | 2.3 | 2.8 | 2.3 | 3.0 | 3.2 |
| Markets/Marketing | 2.4 | 2.6 | 2.4 | 2.4 | 2.2 | 2.7 | 2.2 |

**Fishery Participants**

Despite all of the realized and anticipated changes in fisheries, commercial fishery participants continue to persevere and remain dedicated to their profession and the local area. In fact, 98% of those interviewed expected to continue fishing in the Santa Barbara Channel region over the next 5 years. The few that did not anticipated moving out of the area to pursue other interests. Further, for those continuing to fish in the area, the majority (89%) expected to stay at their current home port. A few respondents expected to move either to another port within the SBC (7%) or to a port outside of the region (4%) while continuing to fish in the Channel during parts of the year. More than half of those changing ports will leave Santa Barbara Harbor, with the others leaving Ventura and Channel Islands Harbors. Several reasons were given for moving to a different port, including slip fees, marketing opportunities (e.g., closer to processors), accommodation of harbor facilities to particular types of fishing operations, availability of slips, and proximity to fishing grounds.

While local fishery participants can sustain fishing effort over the short-term (5–10 years), they are concerned about the long-term future of local commercial fisheries because of the lack of new entrants into the profession. Based on our interviews, the average age of fishery participants across gear types ranged from 50 to 56, with only 10% between the ages of 30 to 40 (crew not included) (Table 3). In addition, members of the younger generation appear little interested in entering into commercial fishing, as evidenced by the difficulty of finding crew. Many attribute this lack of interest to: 1) a misperception that commercial fishing is a dying profession with few opportunities, and 2) a general disinterest in jobs that require hard manual

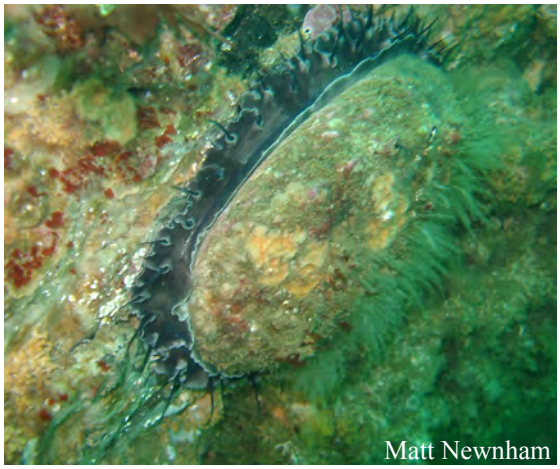
labor. Education and mentoring programs that illustrate the economics, skills required and opportunities in various fisheries may renew interest in this profession in the SBC and elsewhere. However, time is of the essence if new participants are going to benefit from the collective knowledge and experience of current fishery participants, given the demographics of the group.

**Re-opening of Fisheries**

With the current re-evaluation of fishery management in California and elsewhere, there is a move toward making management more adaptive (i.e., responsive to changes in fisheries) and regionally based. Such changes in management could lead to the opening of various areas and fisheries that were previously closed. This is especially true for SBC fisheries that are constantly fluctuating due to the dynamic oceanographic conditions in the region. Further, because the SBC is the southern limit for many northern species, northern species in the SBC are often managed as though they were similar to fisheries in the north, in terms of gear, operations and species composition. For example, groundfish fishery restrictions that apply in the SBC are based on bycatch associated with the species composition and abundance of more northerly regions, which differ fundamentally from those of the SBC. A re-evaluation of these regulations using scientific information specific to the region may justify the adoption of different regulations for groundfish and other fisheries thereby potentially providing additional fishing opportunities for SBC fleets.

Local commercial fishery participants remain optimistic that this will happen, with a little more than half (56%) of those interviewed hopeful that some fisheries and closed areas may re-open in the next 5–10 years based on scientific data that support such actions. Specifically mentioned (in order of the most responses per item) were:

- Limited opening of an experimental abalone dive fishery at San Miguel Island
- Re-opening of the drift gillnet area for swordfish, shark and tuna off Central California
- Changing of some of the Channel Island Marine Protected Areas (MPAs) (no-take zones) to Marine Conservation Areas where the harvesting of certain species (e.g., urchin, migratory species) may be permitted
- Re-opening of rockfish conservation areas (coastal state waters)
- The re-opening of cowcod conservation areas (areas around Santa Barbara and San Nicolas Islands)
- The re-opening of spot prawn trawl fishery in specific habitats (e.g., mud)
- The re-opening of the salmon fishery off Central California
- The re-opening of longline fisheries inside 200 miles
- Rotating closures among the Channel Island MPAs and other closed areas


Matt Newnham

Even though not all of these fisheries and areas are directly within the SBC, they all reflect potential opportunities for local fishery participants. Whether data and management will support the re-opening of these fisheries and areas remains to be seen, but the current move toward adaptive management on a smaller, localized spatial scale provides a framework for considering these changes. Future data collection and analyses will be critical for supporting such actions.

**New and Expanded Fisheries**

Diversification of fishing operations, through the development of new fisheries, fishing practices, marketing opportunities and new technologies, could provide additional business opportunities for local fishery participants. Many (62%) of those interviewed were optimistic about options for future diversification through development and/or expansion of:

- Direct marketing to restaurants and the public
- New fisheries
- Markets for existing small-scale fisheries
- Value-added products
- Uses of alternative gear types

Local fishery participants expressed an increased need for providing high-value seafood (e.g., live and high-quality products) through direct marketing strategies (e.g., off the boat sales, internet sales). Many also cited an interest in developing new fisheries, as well as expanding existing fisheries that currently have low market demand. Species of particular interest included crabs (e.g., sheep (spider) crab, box crab, kelp crab), snails and limpets (e.g., Kellet's whelk, wavy turban snail, giant keyhole limpet), hagfish (for food), octopus, barracuda, kelp, clams, sea cucumbers and live wetfish (e.g., squid, sardine).


D.B. Pleschner-Steele

Non-traditional markets were also mentioned as potential areas for expansion, including collection of various species for research, biomedical products, and development of feeds for cultured species. In addition, many local fishery participants recommended expanding the use of various gear types, including use of lampara nets for wetfish and market fish (e.g., barracuda, mackerel, pompano), longlines for tuna and other pelagic species, brails for squid and other wetfish and hoop nets for squid. Development of new gear, such as traps and non-bottom touching trawl nets for ridgeback prawns and deepwater species, as well as development of new value-added processes and products, including urchin ranching, where urchins are contained onshore or offshore and fed kelp to improve roe quality, may further enhance SBC fishing operations in the future. Collectively, these ideas provide opportunities for sustaining SBC fishing communities, though research and associated management will be required to facilitate and insure their sound development.

**Management**

During the next 5 to 10 years, management of California fisheries will likely change substantially as more effort and funding are directed toward the implementation of the California Ocean Protection Council's (OPC) recently released Strategic Plan for managing ocean and coastal resources. In addition, the implementation of the state Marine Life Management Act and Marine Life Protection Act will undoubtedly continue to impact SBC fisheries and commercial fishery participants as new FMPs and marine reserves are put into place. The extension of the marine protected areas of the northern Channel Islands into federal waters will also likely affect SBC fishing activities, especially net fisheries, in the near future. The future of trawling in the SBC remains uncertain, given the provisions of current legislation (SB 1459, AB 1431) to close the California halibut trawl grounds in 2008 if data indicate unacceptable impacts to marine resources and habitats.

Perhaps the largest impact could come from the recent intensification of public involvement in ocean management. Currently, SBC communities are disconnected from their local fisheries, and know little about local resources, management practices and fishing operations. As a result, there has been limited support for SBC commercial fisheries, despite the fact that local seafood is available, of high quality, highly regulated and well managed especially in comparison to less expensive international product. Without local support, access to fishery resources and sound and reasonable management, as well as sustainable fisheries and fishing communities, will continue to be difficult to achieve. Public education regarding fisheries and fishery management may help sustain local fishing communities, and could be achieved through promotion of local fisheries through the harbors, media and local events.

**Future Infrastructure Needs**

Many of the future infrastructure needs of SBC fishery participants overlap with those already identified as current infrastructure needs. However, some of these needs are, and will continue to be, exacerbated by changes in local fisheries. In particular, the current statewide movement (identified in the California OPC Strategic Plan) toward low-volume, high-price fisheries (of which there are several already occurring in the SBC) has direct implications for the marketing of local seafood and the associated infrastructure needs, such as:

- Expanded direct sales

- Live fish holding, cold storage and processing
- Unloading facilities/services (space, hoists, ice)

J.B. Richards

Although many individuals would like to spend the majority of their time at sea fishing, most recognize the need to focus more attention on sales and marketing strategies that increase the value of their catch, such as direct sales to restaurants and consumers. Currently, three of the local harbors support direct-sales fish markets one morning each weekend, with some harbors more supportive than others. Many respondents cited the need for increased advertisement and expansion (in time and space) of the direct-sale markets, with appropriate filleting and holding (e.g., live tanks, cold storage), packaging and shipping facilities. Some envisioned possibly having a fisheries cooperative that would oversee these facilities so that they could have permanent, long-term marketing and storage space. Most expressed a clear need for better facilities for holding their catch prior to sale. Secure and properly aerated holding tanks and pens, similar to those in Newport and Moss Landing Harbors, were suggested for maintaining high-quality live products. Other alternatives suggested were well-aerated areas within or just outside of the harbors, especially for times when water quality is poor (e.g., red tides, high runoff). The need for refrigerator and freezer space, whether lockers, a truck or van, or much larger facilities (similar to cold storage for agriculture), was also mentioned by many who sell whole, fresh, cleaned and processed seafood products.

Small-volume, high-price fisheries also require different unloading facilities and services, for both the catch and gear. Those already participating in this type of fishery were particularly concerned about having appropriate space and facilities for unloading their catches and gear. Use of launch ramps (floating docks) for unloading commercial product varies among harbors, and none of the local harbors has a designated commercial fish dock associated with the launch ramps. The need for dedicated space for unloading smaller volume loads is especially critical during the peak squid and urchin seasons when the main fishing piers are busy unloading the larger volume catches of these boats. Improved and additional hoists with appropriate speed and load capacities, maintenance of working or replacement of unreliable ice machines, and the availability of salt water ice (better for wooden boats) and block ice (for sea cucumbers and spot prawns) were also identified as needs among the local fleets. It is likely that these needs will intensify in the future as additional small-volume, high-price fisheries are established.

## CONCLUSIONS

What is the future of commercial fisheries of the Santa Barbara Channel region? There are undoubtedly many challenges facing commercial fisheries. Most of the SBC's commercial fishery resources are diverse and presently healthy, albeit dynamic and in need of management that is more adaptive and coordinated. Similarly, local fishery participants remain dedicated to their profession, but indeed they will have to continue to be resilient, engaged, and innovative in the future, adapting to natural fluctuations in fishery resources and changing management of those resources. Specific challenges include the loss of flexibility to adapt to changes in species availability by altering the species targeted, as it is becoming more difficult to move among fisheries and fishing grounds. In addition, increased operating costs, particularly fuel costs, and competition with foreign-fished products will continue to be problematic. Loss of catch to marine mammals will also undoubtedly continue, being especially difficult for net fishery operators and, in the future, for divers and trappers due to the expansion of sea otter populations in the SBC.

Despite what appears to be a dire situation for commercial fishery participants, the diversity and availability of SBC fishery resources provides future opportunities for improving the viability of local fishing operations. In particular, diversification into new or currently smaller fisheries would help local fishery participants regain some flexibility for adjusting to changes in species abundance and subsequent regulations. This includes development of new markets for various species, as well as development of new or seldom-used gear types and technologies. Such new or expanded fisheries would also require collection of adequate biological and socio-economic data for developing sound management strategies in parallel with the development of the fishery. The development of value-added products may also help SBC fishery participants obtain higher values for some species they are already catching. Enhanced direct marketing, through local restaurants, web sites, cooperatives and other means, could be especially helpful in sustaining local fisheries. More localized marketing efforts would also provide a way for connecting local communities with their fisheries. Indirectly, this could facilitate education of the community about the status of local fisheries and their regulations, thereby potentially leading to public support for fisheries management that better addresses the local and regional situation.

Diversification and adaptability are traits that are also important for maintaining fishery-based harbor infrastructure, a critical component for sustaining local fishing communities. Harbors that support a diversity of fisheries are better able to endure variability and change in fishing activities because they are not solely dependent on a single fishery to maintain the infrastructure. Further, harbors that can adapt to changes in infrastructure needs will be better situated to support local fishing operations and thereby increase the efficiency of the harbor. For example, local piers become extremely congested in the fall when large purse seine operations are landing squid, the lobster fishery is in full swing, shrimp/prawn fisheries are starting and finishing, and sea urchin markets are thriving. Providing alternative facilities during this time could greatly enhance the abilities of all fishery participants to land

fish at the harbors. Having plans for maintaining infrastructure during periods when certain fisheries are expected to decline could help both harbors and fishing operations. As previously described, two of the top three fisheries of the region are negatively impacted by climatic processes, particularly El Niño events, with squid virtually disappearing from the fishing grounds and sea urchin landings decreasing due to a significant drop in quality. Temporary facilities could be provided to support other fishing activities that may increase during these times (e.g., ridgeback prawns). Providing holding facilities for sea urchins where they could be fed to increase their quality may be another alternative (however, this would require Department of Fish and Game approval and consideration of how removal of these animals during such events may impact the stock).

Commercial fishing is truly an ocean-dependent use. Although the local commercial fisheries have clearly been downsized, adequate resources and enough professional fishery participants remain to support active local fishing communities over the next 5 to 10 years barring significant ecological changes. Management that is better coordinated and adaptive to changes in the ecological and human dimensions of fisheries is essential for both short- and long-term sustainability of SBC fishery resources and fishing communities. Beyond 10 years, the future of local fisheries is more difficult to predict, especially given that many fishery participants will be retiring and there are few new entrants into the profession. This could change, however, if the current challenges can be addressed so that commercial fishing becomes a more viable career and business. While balancing the needs of commercial fishery participants with the financial realities of harbor operations is no small task, the availability of adequate waterfront infrastructure also remains critical for providing high-quality seafood and other marine products. This includes support for both high-volume, low-price fisheries, as well as low-volume, high-price fisheries. Continued discussions between harbor management and commercial fishery participants will improve the ability to balance infrastructure needs and financial considerations of local ports. Likewise, continuing collaborative and coordinated efforts among fishing communities, scientists and managers as occurred during this project, will further support sustainable commercial fisheries in the Santa Barbara Channel region and in other coastal communities.


C.S. Culver

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# APPENDIX A
# INTERVIEW QUESTIONNAIRE

## Santa Barbara Channel Commercial Fisheries and Associated Infrastructure Needs


## C. Culver, J. Richards, & C. Pomeroy
## Sea Grant Extension Program
## University of California Cooperative Extension


**Interview information**

Resp. Code: _____ Gender: m / f Date: _____ Location: _____

Interviewer: _____ Time start/stop: _____/_____ Primary Fishery Confirmed: _____ Yes

**Introduction**

Thank you very much for agreeing to this interview. To recap, we're conducting a study of the commercial fisheries of the Santa Barbara Channel and the associated infrastructure needs. The study is being supported by the Ventura Port District, Santa Barbara Harbor, NOAA Fisheries and the Sea Grant Extension Program. The goal of the study is to describe current and future trends in the fisheries of the channel, including factors influencing these trends. In addition, we will be assessing infrastructure needs for supporting current and future fisheries. This information is being requested by local harbor managers to help them understand fisheries and the many factors that affect them, and to evaluate the need for harbor improvements/renovations that support commercial fishing in this region. Results of this study will be summarized in a California Sea Grant report, and distributed to the commercial fishing industry, the local harbor managers, NOAA Fisheries, California Department of Fish and Game, and others interested in this project.

Before we begin, we want to let you know about your rights as a participant in the study. First, your participation is voluntary. You can decline to participate or to answer particular questions, but please know that the results of our study will be more accurate if you participate and add to the information we collect. Second, you will be anonymous. Your survey is labeled only with an ID number, and in our reporting on the project we will only present information on groups of individuals, so that no one individual can be identified. Finally, if there is any information you would like to share with us that you would like to remain confidential, please say so, and we will be sure to treat it that way.

Are you comfortable with this? Do you have any questions before we begin?

**I. Fishing Activities**

We would like to start by asking about your current and past fishing activities.

1. What year did you begin commercial fishing professionally? _____Year

2. What year did you begin fishing professionally in the Santa Barbara Channel? _____Year

3. What is your home port? Santa Barbara _____ Ventura _____ Channel Islands _____ Port Hueneme _____
   Other (please specify) _____

4. Have you changed your home port in the past 5-10 years? _____ Yes ___ No
   If yes, when and why?

5. What is the length (ft) (tip to tip) of the vessel you currently operate/work on: _____
   If unsure of the total length, what is the make & model of the boat?

6. Excluding yourself, what size crew do you typically have? _____

7. Do you belong to any fishing groups or organizations? ____ Yes ____ No
If yes, which one(s):

| Organization | Member |
|---|---|
| California Fisheries Coalition | |
| Commercial Fishermen of Santa Barbara, Inc. | |
| Federation of Independent Seafood Harvesters | |
| Pacific Coast Federation of Fishermen's Associations | |
| Southern California Commercial Fishing Association | |
| Ventura County Commercial Fishermen's Association | |
| California Abalone Association | |
| Point Conception Groundfishermen's Association | |
| California Lobster & Trap Fishermen's Association | |
| Southern California Trawlers Association | |
| California Sea Urchin Commission | |
| Sea Urchin Harvesters' Association | |
| California Wetfish Producers Association | |
| Western Fishboat Owners Association (WFOA) | |

8. On a scale of 1 to 5, how would you rate each of the following factors for its **current** effect on your fishing operation? 1 = no impact and 5 = major impact. (DK = don't know)

| Factor | 1 | 2 | 3 | 4 | 5 | DK |
|---|---|---|---|---|---|---|
| a. Limited entry | | | | | | |
| b. Fishery closures (e.g., cowcod, trawl-spot prawn, inshore gillnet) | | | | | | |
| c. Marine Protected Area (MPAs) closures | | | | | | |
| d. Other fishing area closures (e.g., EFH) | | | | | | |
| e. Other non-fishing related closures (e.g., oil, military, cable) | | | | | | |
| f. Marine mammal interactions | | | | | | |
| g. Permit Fees | | | | | | |
| h. Operating costs (fuel, slip fees, etc.) | | | | | | |
| i. Harbor support facilities | | | | | | |
| j. Availability of crew | | | | | | |
| k. Public Perception | | | | | | |
| l. Market Price | | | | | | |
| m. Availability of markets/buyers | | | | | | |
| n. Competition with domestic fished product | | | | | | |
| o. Competition with foreign fished product | | | | | | |
| p. Competition with domestic cultured product | | | | | | |
| q. Competition with foreign cultured product | | | | | | |

**II. Future Fishing Activities**
Now we'd like to ask you about your future fishing activities.

9. Do you expect to change your home port in the next 5 years: _____ Yes _____ No
If yes, what port will you move to and why: _____ port
Why?

10. Do you expect to be fishing in the Santa Barbara Channel region 5 years from now: _____ Yes _____ No
If no, please specify why not (e.g., retiring, moving out of area etc.):

11. Do you expect any currently closed areas or fisheries to re-open in the next 5-10 years? _____ Yes _____No
If yes, what areas/fisheries?

12. Do you expect any **new** fisheries, marketing opportunities, fishing practices or technologies to **emerge** in the next 5-10 years?
If yes, what fisheries/fishing practices/fishing technologies do you expect, and how, if at all, will it/each affect the use of or need for support facilities?

| New Fishery/Fishing Technology | New Support Facilities Needed |
|---|---|
| | |
| | |
| | |
| | |

13. Do you expect any fisheries, fishing practices or technologies to become **obsolete** in the next 5-10 years?
If yes, what are the fisheries/fishing practices/fishing technologies, and how, if at all, will it/each affect the use of or need for support facilities?

| Obsolete Fishery/ Fishing Technology | Support Facilities No Longer Needed |
|---|---|
| | |
| | |
| | |
| | |

14. There are many issues facing the commercial fishing industry. On a scale of 1 to 5, how would you rate each of the following issues for its potential effect on **future** fishing activities? 1=no impact and 5 = major impact. (DK = don't know)

| Issue | 1 | 2 | 3 | 4 | 5 | DK |
|---|---|---|---|---|---|---|
| a. Access to fisheries resources | | | | | | |
| b. Fisheries regulations/management | | | | | | |
| c. Multiple-use conflicts | | | | | | |
| d. Marine mammal interactions | | | | | | |
| e. Infrastructure support | | | | | | |
| f. Markets/Marketing | | | | | | |
| g. Operating costs | | | | | | |
| h. Public perception | | | | | | |

**III. MARKETS AND MARKETING**

We would now like to get your thoughts about fisheries markets and marketing.

15. Do you see seafood markets in California changing over the next 5 years? _____ Yes _____ No
If yes, how?

16. Are there any additional support facilities at the harbor (or elsewhere) that would help facilitate sales of your product(s)?
_____ Yes _____ No
If yes, what type of facilities?

**IV. Infrastructure Needs**

In this section, we are interested in your use and assessment of the current and future needs for onshore facilities/services that support commercial fishing operations in the Santa Barbara Channel region.

17. For 2005, in what months did you land product at each of the following ports?

| Port | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Barbara Harbor | | | | | | | | | | | | |
| Ventura Harbor | | | | | | | | | | | | |
| Channel Islands Harbor | | | | | | | | | | | | |
| Port Hueneme | | | | | | | | | | | | |
| Other California port(s) | | | | | | | | | | | | |
| Port(s) outside of California | | | | | | | | | | | | |

18. What port do you use most often in the Santa Barbara Channel region?

Port (circle one): Santa Barbara Ventura Channel Islands Port Hueneme

a. For this port, do you find the following facilities or services adequate or inadequate (if not applicable, please put n/a)?

b. For those facilities/services you find inadequate, what suggestions do you have for potential solutions or improvements?

| Facilities/Services | Adequate (Yes/No) | Potential solution(s) |
|---|---|---|
| 1. Slip Space | | |
| 2. Mooring Space | | |
| 3. Docks | | |
| 4. Utilities (Water/Electric) | | |
| 5. Fuel Station | | |
| 6. Equipment Suppliers | | |
| 7. Engine, Hydraulic and Other Services | | |
| 8. Bait Suppliers | | |
| 8. Unloading Facilities | | |
| 10. Scales | | |
| 11. Ice Facility | | |
| 12. Truck Waiting Area | | |
| 13. Processing Facilities | | |
| 14. Cold Storage | | |
| 15. Fish Buyer/Distributor Facilities | | |
| 16. Holding Tanks for Live Products | | |
| 17. Directed Marketing Space and Equipment | | |
| 18. Gear Storage | | |
| 19. Gear Repair | | |
| 20. Vessel Haul-out and Repair Facilities | | |
| 21. Waste Disposal/Recycling | | |
| 22. Small Boat Launch | | |
| 23. Water Taxi Service | | |
| 24. Parking | | |
| 25. Information Center/ Meeting Hall | | |
| 26. Telecommunications/ Equipment (Fax, Phone etc.) | | |
| 27. Showers/Restrooms | | |

19. Are there any facilities/services at your home port that you feel are superior compared to other ports? _____ Yes _____No
If yes, what are the facilities/services?

20. For facilities/services at Santa Barbara Channel area ports **other** than your home port, are there any facilities/services that you consider inadequate and if so, do you have suggestions for potential improvements?

| Port | Inadequate Facilities/Services | Potential solution(s) |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

21. Are there any facilities/services at Santa Barbara Channel area ports **other** than your home port that you feel are superior compared to other ports? _____ Yes _____ No
If yes, what are the facilities/services?

22. For the facilities/services that you feel are **inadequate** at ports of the Santa Barbara Channel region, are there ports you have used elsewhere that represent good models for those particular facilities/services? _____ Yes _____ No
If yes, what are the facilities/services you liked and in what port do they occur?

| Facilities/Services | Model Port(s) |
|---|---|
| | |
| | |
| | |
| | |
| | |

23. Are there any other facilities/services that are currently NOT available at the local ports that would help you with your business?

24. In 2005, did you use the unloading facilities at Ventura harbor? _____ Yes _____ No
If yes, we are interested in your opinions regarding the required repairs of the commercial fishing pier. Considering potential financial constraints, on a scale of 1 to 5, with 1 meaning you STRONGLY FAVOR a solution, 3 meaning you're NEUTRAL, and 5 meaning you STRONGLY OPPOSE that solution, please indicate how you feel about each of the following options for repairing the pier and why:

| Replacement Option | Rating | Why |
|---|---|---|
| Identical replacement | | |
| Similar, but smaller | | |
| Floating dock instead | | |
| Launch ramps instead | | |
| Combination; smaller pier plus additional launch ramps | | |
| Other (please specify) | | |

25. Have you ever landed product using a floating dock? _____ Yes _____ No

If yes,
a) What benefits, if any, did you experience when using the floating dock?

b) What problems, if any, did you experience when using the floating dock?

**V. Demographics**
Finally, we would like to ask you some questions about you personally.

26. What year were you born?

27. What is your ethnic background (ethnicity)?
___ Italian ___ Slavic ___ Scandinavian
___ Vietnamese ___ Hispanic ___ Anglo ___ Portuguese ___ other

28. Where is your primary residence? _____ City _____ State _____Zip

**Closing**
Well, that's it. Thank you very much for your time and input.

Is there anything you would like to add to what you've said, or any questions you would like to ask about the things we've discussed? (NOTE: Confidential comments to be recorded on last page)

If I need clarification on anything we've talked about or have a few further questions, may I get back in touch with you? ___Yes ___ No
If yes, where can you be reached (To be recorded on last page)

Would you like a copy of our report? _____ Yes _____ No
If yes, where should we send it? (To be recorded on last page)

Are there other members of the commercial fishing industry that you would suggest we talk to about fisheries of the Santa Barbara Channel and associated infrastructure needs?

**Contact Information & Confidential Statements**
(To be separated from rest of survey)

Resp. Code _____

Name _____
Address _____
_____
_____

Telephone No. _____
Email _____

Confidential Comments:

## APPENDIX B

## Contact List

## West Coast Commercial Fishing Harbors
## Outside of the Santa Barbara Channel Region

**California**
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Brian Paust
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907-772-3381

## APPENDIX C-1

## Workshop Participant List

## The Future of the Commercial Fisheries of the Santa Barbara Channel Region May 31 – June 1, 2006

**Commercial Fishery Representatives**
Neil Guglielmo, F/V *Trionfo*
Mike McCorkle, F/V *PieFace*
Bruce Steele, F/V *Halcyon*

**Seafood Buyers**
Andria Bargiel, Andria's Seafood
Michael Wagner, Andria's Seafood

**Fishery Scientists**
Craig Fusaro, Ph.D., Oil & Fisheries Liaison Office
Janet Mason, NOAA Fisheries, Pacific Fisheries Environ. Laboratory
Steve Ralston, Ph.D., NOAA Fisheries, Fisheries Ecology Division, SW Fisheries Science Ctr
Cindy Thomson, NOAA Fisheries, Fisheries Ecology Division, SW Fisheries Science Ctr

**Fishery Managers**
Kristine Barsky, CA Dept. of Fish & Game
Lyle Enriquez, NOAA Fisheries, Long Beach
Chris Fanning, NOAA Fisheries, Long Beach
Corinne Pinkerton, NOAA Fisheries, Long Beach

**Other**
Sus Kato, NMFS Underutilized Species Development Program (Retired)
Michael Robinson, Department of Geography, U.C. Santa Barbara

**Facilitators**
Carrie Culver, Ph.D., Sea Grant Extension Program, University of California Cooperative Ext.
Carrie Pomeroy, Ph.D. Sea Grant Extension Program, University of California Cooperative Ext.
John Richards, Sea Grant Extension Program, University of California Cooperative Ext.

**APPENDIX C-2**

**WORKSHOP KEY QUESTIONS**

**THE FUTURE OF COMMERCIAL FISHERIES OF THE SANTA BARBARA CHANNEL REGION**
**May 31 - June 1, 2006**

1. There are many challenges facing commercial fishing communities nationwide. Below we identify some of the challenges – environmental, ecological, socio-economic and regulatory – that may affect the Santa Barbara Channel (SBC) region in particular. On a scale of 1 to 5, how would you and your colleagues rate each of the following challenges for its potential effect on the future of the region's fishing communities? 1 = no impact, 3 = moderate impact, 5 = major impact, Dk = don't know

| **CHALLENGE** | **RATING** |
|---|---|
| Continuing or increased marine mammal interactions (e.g., at sea, in harbors) | |
| Loss of flexibility to move among fisheries | |
| Loss of infrastructure (e.g., harbor, businesses, management) | |
| Increased operating costs | |
| Public perceptions | |
| Fisheries management (e.g., ecosystem-based, data-poor, MPAs) | |

2. Are there other challenges to the future of commercial fisheries in the SBC region that you and your colleagues have identified? Yes _____ No _____

If yes, please write them in the table below, and rate them using the same scale in question 1 (1=no impact, 3 = moderate impact, 5=major impact, Dk=Don't know).

| **CHALLENGE** | **RATING** |
|---|---|
| | |
| | |
| | |
| | |
| | |

3. For the three challenges you rated as having the highest impact on commercial fisheries, what research, information, and/or infrastructure do you and your colleagues feel are needed to address the challenge?

**Challenge I**:
Research Needs:

Information Needs:

Infrastructure Needs:

**Challenge II**:
Research Needs:

Information Needs:

Infrastructure Needs:

**Challenge III**:
Research Needs:

Information Needs:

Infrastructure Needs:

## APPENDIX D

### Primary Commercial Species
### Santa Barbara Channel region

**Dive Fisheries**

Invertebrates
- Sea Cucumber
  - Warty sea cucumber, *Parastichopus parvimensis*
- Sea urchin
  - Red sea urchin, *Strongylocentrotus franciscanus*
- Snail (Emerging Fishery)
  - Wavy turban snail, *Lithopoma undosum*

**Gillnet (Set & Drift) Fisheries**

Fishes
- Seabass
  - White seabass, *Atractoscion nobilis*
- Swordfish, *Xiphias gladius*
- Yellowtail, *Seriola lalandi*
- White croaker, *Genyonemus lineatus*
- California barracuda, *Sphyraena argentea*

Sharks
- Common thresher shark, *Alopias vulpinus*
- Shortfin mako shark, *Isurus oxyrinchus*
- Pacific angel shark, *Squatina californica*
- Soupfin shark, *Galeorhinus galeus*

**Harpoon Fisheries**

Fishes
- Swordfish, *Xiphias gladius*

**Longline Fisheries**

Fishes
- Bigeye tuna, *Thunnus obesus*
- Yellowfin tuna, *Thunnus albacares*
- Bluefin tuna, *Thunnus orientalis*
- Skipjack tuna, *Katsuwonus pelamis*
- Swordfish, *Xiphias gladius*

Sharks
- Common thresher shark, *Alopias vulpinus*
- Shortfin mako shark, *Isurus oxyrinchus*

**Purse Seine Fisheries**

Invertebrates
- Squid
  - Market squid, *Loligo opalescens*

Fishes
- Anchovy
  - Northern anchovy, *Engraulis mordax*
- Mackerel
  - Pacific mackerel, *Scomber japonicus*
  - Jack mackerel, *Trachurus symmetricus*
- Sardine
  - Pacific sardine, *Sardinops sagax*
- Pacific bonito, *Sarda chiliensis*
- Tunas
  - Bigeye tuna, *Thunnus obesus*
  - Yellowfin tuna, *Thunnus albacares*
  - Bluefin tuna, *Thunnus orientalis*
  - Skipjack tuna, *Katsuwonus pelamis*

**Trap Fisheries**

Invertebrates
- Crab
  - Brown rock crab, *Cancer antennarius*
  - Red rock crab, *Cancer productus*
  - Yellow rock crab, *Cancer anthonyi*
  - Sheep crab, *Loxorhynchus grandis*
- Lobster
  - California spiny lobster, *Panulirus interruptus*
- Prawn
  - Spot prawn, *Pandalus platyceros*
- Snail (Emerging Fishery)
  - Kellet's whelk, *Kelletia kelletii*

Fishes
- Nearshore Finfish
  - California sheephead, *Semicossyphus pulcher*
  - Cabezon, *Scorpaenicathys marmoratus*
  - Shallow water rockfish, *Sebastes* spp.
    - Grass rockfish, *S. rastrelliger*
    - Copper rockfish, *S. caurinus*
    - Blackgill rockfish, *S. melanostomus*
  - California scorpionfish, *Scorpaena guttata*
  - California moray eel, *Gymnothorax mordax*

Shortspine thornyhead, *Sebastolobus alascanus*
Longspine thornyhead, *Sebastolobus altivelis*
Sablefish, *Anoplopoma fimbria*
Other Fish (emerging/sporadic fisheries)
Hagfish (slime eel), *Eptatretus stoutii*

**Trawl Fisheries**

Fishes
Flatfish
California halibut, *Paralichthys californicus*
Petrale sole, *Eopsetta jordani*
English sole, *Pleuronectes vetulus*
Dover sole, *Microstomus pacificus*
Pacific sanddab, *Citharichthys sordidus*
Slender sole, *Eopsetta exilis*
Rex sole, *Errex zachirus*
Hornyhead turbot, *Pleuronicthys verticalis*
Roundfish
Lingcod, *Ophiodon elongates*
White croaker, *Genyonemus lineatus*
Pacific whiting, *Merluccius productus*

Sharks/Skates/Rays (Elasmobranchs)
Pacific angel shark, *Squatina californica*
Brown smoothhound, *Mustelus henlei*
California skate, *Raja inornata*
Pacific electric ray, *Torpedo californica*

Invertebrates
Prawn/Shrimp
Ridgeback prawn, *Sicyonia ingentis*
Pink (ocean) shrimp, *Pandalus jordani*

Giant red sea cucumber, *Parastichopus californicus*

**Troll and Hook & Line Fisheries**[7]

Fishes
Chinook salmon, *Oncorhynchus tshawytscha*
Albacore, *Thunnus alalunga*
California halibut, *Paralichthys californicus*

[7] Pole and line gear also used in the albacore fishery.

## APPENDIX E-1
## INFRASTRUCTURE NEEDS

### Santa Barbara Harbor (SBH)

**Harbor Space Allocations (HSA)** were generally considered by those interviewed to be adequate, with the exception of storage areas for gear, trailers, and vessels that were cited as having limited availability. The need for additional storage was a high priority for a majority of SBH fishery participants. The following are suggestions and ideas for improvements of specific HSA facilities, even those rated as adequate, as identified by a significant numbers of respondents.

Slips: Though commercial slips were considered to be adequate by those who hold them, close to 20% of those interviewed, particularly those moored in more expensive non-commercial slips or those who currently trailer their vessels and are awaiting a commercial slip, felt slip space was inadequate due to limited availability. Suggestions for improvements included: a) providing additional designated commercial slips, b) improving verification of the working status of those with commercial slips, c) designation of Marina 4 as a commercial dock, d) docking trappers together in one location to improve sales, live product security, and pick-up of product, e) reviewing slip rates for commercial transient and trailered vessels, as rates are considered high given the limitation on commercial slips and the critical need for access to the harbor and facilities, f) consideration of a second dock for dive vessels similar to the existing CUDA dock, and g) primary use of Marina 1A vacant slips by commercial transients, thereby negating potential conflicts among user groups. Mixed use among commercial vessels and recreational vessels and yachts has at times resulted in conflicts over the differing schedules and types of activities of these groups.

Moorings: Considered by most interviewed fishery participants to be adequate. However, a few respondents felt the mooring area to the east of Stearns Wharf was too hazardous for most commercial fishing vessels, though some may use it during more benign weather in the summer and fall.

Docks: Overall the docks were considered adequate, but a few suggested: a) checking for electrolysis at the docks, as there has been some problem with vessel corrosion, and b) adding storage areas on the docks for receivers, as some receivers have been lost or taken while moored at recreational docks.

Gear Storage: As mentioned above, gear storage was rated as a critical need among SBH fishery participants because it is increasingly difficult to find suitable (nearby and affordable) areas for storing gear in Santa Barbara. The existing fishing gear storage yard, that was initially funded by the California Coastal Conservancy and is now operated by the Commercial Fishermen of Santa Barbara, Inc., is within one mile of the harbor on privately owned property. While it has been useful to some fishery participants, space is limited to 16 containers and 7 spaces for boats and the demand is much higher as indicated by the persistent waiting list for the facility. Primarily trappers, divers, and various net fishery operators identified this need and several have

suggested working with the Harbor Department or others to locate empty city, county, or railroad space that might be leased and made secure for storage of traps, other fishing gear, smaller vessels, and trailers. In addition, there was a suggestion to explore the availability of County Coastal Resources Enhancement Funds (CREF) to setup additional storage facilities.

Gear Repair: About half (53%) of SBH fishery participants considered the designated gear repair area as adequate, albeit these were primarily fishery participants who repair nets. The other 47% of respondents (primarily trappers and divers) indicated a need for additional space.

Parking: There were mixed reactions regarding the parking situation at SBH. Just over 50% of the fishery participants rated parking as adequate, with all of the others expressing various levels of concern about the harbor parking situation and the related impacts on their fishing operations. Many cited a problem with competition for space with others, including Santa Barbara City College (SBCC) students, offshore oil crews, and weekend tourists. Suggested improvements were: a) designation of parking areas or assigned spaces for commercial fishery participants and/or slip holders with commercial vessels, b) avoiding over-subscribing spaces, especially to SBCC students who have access to parking garages and lots on campus, c) establishing a "color-coded" slip holder parking system to provide designated priority areas for ocean-dependent commercial harbor uses, and d) review of the 72-hour maximum limit on commercial vessel trailers for those working multiple day trips at the Channel Islands.

**Loading/Unloading** facilities are readily available and rated as quite adequate by most fishery participants using SBH. A few suggested a need to increase the efficiency of loading and unloading gear and offloading seafood products, and a need to decrease conflicts with other harbor users.

Unloading (pier and hoists): The Navy Pier and the three token-operated hoists are in constant use by a majority of fishery participants and were often praised as being the best suited for nearly all SBC fishing operations. More than 89% of the respondents rated "unloading" as adequate. Of exception was the offloading of wetfish from larger seiners and live seafood from smaller operations. The latter are often more quickly and efficiently offloaded at the small-boat launch ramp.

Truck Waiting: A significant majority (85%) of those interviewed rated the truck waiting area as adequate, though at times crowded, especially during peak tourist times. Many viewed the coordination of unloading and truck movements by the sea urchin buyers' representatives in the evenings as helpful for alleviating congestion and maintaining an orderly flow of traffic, including pedestrians, on the pier.

Boat Launch: The ability to load and unload gear and offload fish at the small boat launch ramp was mentioned as being quite beneficial, especially for trappers and hook & liners. More than 90% of those using the launch ramp for unloading rated it as adequate. However, there were several suggestions for improving the efficiency and avoiding conflicts with recreational users, including: a) adding one more finger dock to the launch ramp area and designating it for commercial use, b) setting a loading dock to the height of a pick-up tailgate, and c) adding lights for night unloading.

**Equipment, Supplies and Services** vary significantly in terms of availability and adequacy in the Santa Barbara area. Equipment suppliers, bait, engine, hydraulic, and other services are all available, but are considered very limited for the needs of SB fishing operations. In contrast, fishery participants were satisfied with other services at the harbor, such as utilities, waste disposal, and water taxi.

Equipment Suppliers: There are currently few suppliers of commercial fishing equipment and gear located in Santa Barbara. A major commercial diving equipment supplier moved out of town recently and the existing marine stores in town are said to have limited commercial fishing gear, with the exception of marine electronics. Fishery participants instead use mail order and online services to buy equipment and/or travel to Ventura or Los Angeles to shop for needed equipment and supplies.

Fuel: Close to 80% of SBH fishery participants rated the harbor fuel dock as adequate and several commented on the high quality of the fuel and good service. The cost, however, was considered by many respondents to be too high, being one of the highest in the region, and some suggested having a second fuel dock to offer a competitive alternative to help bring prices more in line with Ventura. Whether demand would be sufficient to sustain two fuel docks in this harbor over the long-term was not addressed.

Bait: Trappers and hook & liners are constantly in need of high-quality fresh and frozen bait for their fishing operations. More than 64% of the fishery participants who use bait considered the availability of bait in Santa Barbara to be limited and supplies inadequate. Some obtain bait from wholesale fish buyers or buy it locally, while others travel to Port Hueneme or Los Angeles for their bait. Two suggestions for overcoming this problem were to encourage additional local bait supply businesses into the area or to involve the local fish market in the harbor to work with the industry to secure a freezer and negotiate a reasonable price for bait sales and/or freezer storage locker rental.

Utilities: More than 95% of the fishery participants using SBH utilities considered them to be adequate, with a few suggested improvements: a) increased water pressure, b) improved washing facilities at the launch ramp (e.g., adding an electrical outlet, reconfiguring the area to handle additional boats and trailers), and c) standardized electrical connections.

Vessel Haul-Out: Though 57% of respondents rated the vessel haul-out facility as adequate, almost as many commented that the facility is too expensive for most local commercial fishery participants. A majority of fishery participants take their vessels to Ventura Harbor to haul-out for repairs as the prices are said to be more competitive and larger boats can be accommodated. Several fishery participants suggested that a self-service repair yard would be very useful to local fishery participants, especially for those who trailer their vessel (divers, trappers, and hook & liners).

Engine, Hydraulic, and other Services: A high percentage (68%) of the SB commercial fishery participants indicated that engine, hydraulic, and other repair services and equipment are inadequate. Many of the trailered vessels are taken to a shop in Goleta for engine repairs. However, fishery participants with larger vessels and diesel engines must rely on a single local

marine diesel mechanic or take their vessel to Ventura for repairs. Hydraulic equipment and repair shops in Santa Barbara are also lacking and most fishery participants must go to a business in Oxnard for service.

Waste Disposal: The highest percentage of respondents (98%) rated waste disposal facilities as adequate, with several complimentary comments ("good" and "very good").

Water Taxi: Most of those interviewed indicated that the water taxi was not applicable to their fishing operations because they either have slips or trailer their vessels and utilize the small-boat launch ramp. The few who use the water taxi considered it adequate. As more transient fishing vessels use the improved mooring area east of Stearns Wharf there may be additional use of this service.

**Product Quality** is a critical factor at all levels of seafood business; and SBC fishery participants expressed a need for quality ice, cold storage, arrangements for holding live seafood, and processing facilities.

Ice: More than 90% of SBH fishery participants who use ice rated the ice facility and ice as adequate, having many positive comments (e.g., "good", "great", "the best" and "well-maintained facility"). One respondent suggested making block ice available either at the fuel dock or on the Navy Pier, though it is currently available at the harbor convenience food store located near the end of the pier.

Cold Storage: The majority (89%) of SBH-based fishery participants rated cold storage facilities for holding seafood and/or bait in or near SBH as inadequate because none is currently available, but these would be quite beneficial for commercial fishery participants. One suggestion was to have a mobile cold storage unit, such as a refrigerated van or trailer, at the harbor with space leased to local fishery participants.

Holding Tanks: A majority (90%) of fishery participants from SBH rated seafood holding facilities as inadequate, as no harbor-owned or cooperative-run facilities currently exist even though a significant portion of the high-price seafood (fish, crustaceans, and mollusks) landed in SBH is kept alive prior to sale to wholesale buyers. Presently, fishery participants keep their catches alive in receivers (large, plastic mesh-like cages) in harbor waters. Many respondents suggested a cooperative effort to explore different scenarios to improve live holding at the harbor, including: a) use of a floating dock similar to the bait dock with cages to secure live products, b) exploration of possible areas on or under Stearns Wharf to locate holding tanks or submerged, secure cages (cooperative management suggested), c) an area near the mouth of the harbor with constant circulation or where an aeration system (circulation pumps) could be placed that could be used during red tides or warm water events when oxygen levels in the harbor drop to dangerous levels, and d) potential use of cages in or near the harbor for holding live animals, particularly sea urchins and sea cucumbers, for later sale.

Processing Facilities: More than 85% of local fishery participants rated processing facilities as inadequate for their needs. As mentioned above, there are few processing facilities left in Santa Barbara and those that remain do not buy large quantities of local fish. The current expansion of a small harbor-based market may help this situation, but many respondents felt they would benefit from additional processing facilities. One respondent suggested putting together a group to lease a cooperative space for

individuals to process their own fish for wholesale distribution, though others point out that the cost of leasing industrial space and zoning for seafood processing facilities in Santa Barbara are potential obstacles. Hazard Analysis and Critical Control Point (HACCP) seafood regulations would also have to be followed.

**Marketing** is vital to the economic health of the fishing community and local buyers have diminished in number in Santa Barbara over the past several years. A few local buyers are able to purchase and deal with smaller amounts of locally landed seafood, but the majority of buyers are now coming from Los Angeles or other Southern California communities, especially for live fish, crustaceans, and sea urchins. Most fishery participants have been able to market their products, though respondents provided suggestions for improving this aspect of their business.

Scales: At present there are no public certified scales available in SBH, and as such a majority (65%) of respondents rated "scales" as inadequate. However, most buyers bring their own scales to the harbor and most fishery participants who sell directly to the public have also purchased their own scales. Still, several fishery participants suggested that certified scales for general use are needed, but how they would be funded and maintained was not addressed.

Fish Buyers: Nearly two-thirds (62%) of SBH fishery participants indicated that fish buyers, both local ones and those who travel from out of the area, are adequate and available. However, the other 38% felt that the situation could be improved, and several respondents noted that the expansion of the local harbor-based fish market will likely be beneficial.

Directed Marketing Space: Most (93%) SBH fishery participants rated these facilities as adequate and available, and provided positive comments about the set-up for the Saturday Morning Fish Market. Though only a few participate, most indicate the ability to sell their fish directly is a benefit to the fishing community and to local seafood consumers. A suggestion was made to explore the possibility of holding auction sales of local seafood, especially lobster, crab, and live fish.

**Miscellaneous Facilities and Services,** including a fisheries information center/meeting hall, telecommunications equipment, restrooms and showers, were rated as adequate, though a few suggestions for improvements were provided for each.

Information Center/Meeting Hall: Santa Barbara Harbor provides two classrooms that can be used for commercial fishing organization meetings, fisheries management agency meetings, and educational programs for fishery participants. More than 90% of those interviewed rated these facilities as adequate, though several ideas for improvements were offered: a) a telephone hook-up for conference calls in the classrooms, b) ceiling or portable, table-top fans, c) a fishing community bulletin board by the harbor office to help disseminate timely information, and d) a designated space for a fishermen's information center and office space (possibly shared by local fishermen's organizations).

Telecommunications Equipment: Most respondents indicated that they now rely on cell phones for their business communications, and many have computers and use the internet at home for weather and other fisheries related information. However, while slightly more than half of

the respondents indicated that "telecom" equipment at the harbor was adequate, the others (45%) were not satisfied with the available equipment. Some suggested having a fishermen's office space or lounge at the harbor with a wireless internet site, a photocopy machine, and a community GIS center that was possibly supported with funds from one or more of the fishing organizations in cooperation with the harbor administration. They also liked the "weather kiosk" at the fuel dock, but felt it needs to be better maintained as it is often non-operational.

Restrooms and Showers: Almost all (98%) of SBH fishery participants rated these facilities as adequate, with several positive comments ("Great!" "Exceptionally good"! "Best on the coast!").

Other: Though not included in the survey, both the harbor patrol and harbor administration were mentioned by many respondents as being professional, helpful, and supportive of the commercial fishing vessel owner/operators and the fishing community of Santa Barbara.

## APPENDIX E-2
## INFRASTRUCTURE NEEDS

### Ventura Harbor (VH)

**Harbor Space Allocations (HSA)** were given adequate ratings by VH fishery participants, with the exception of moorings because they are not available in this harbor. Additional comments and suggestions for improvements are provided below.

Slips: More than 75% of those interviewed that have commercial slips in VH indicated that they were adequate. However, other respondents expressed concern and dissatisfaction about the reduction in the number of commercial slips, especially for mid-sized and smaller vessels. Several respondents mentioned the placement of yachts and recreational vessels in slips that were previously designated as commercial, thus diminishing the overall availability of commercial slips. Establishment of an alternative marina for mid-sized and smaller commercial fishing vessels was suggested, as well as a program for subleasing slips that may be empty much of the year (e.g., when seiners are working outside the SBC).

Moorings: Just over half (55%) of VH-based respondents indicated that moorings were not applicable to their fishing operations, and thus they did not rate the adequacy of the moorings. However, several seiners (20% of those who responded) noted that having the option of lower-cost moorings would be beneficial to transient fishery participants when slips are not available. There were no suggestions as to where these moorings might be located.

Docks: Most (90%) VH fishery participants interviewed were satisfied with the harbor's commercial docks. In fact, several respondents provided positive comments on the recent improvements and repairs of the

docks at the Harbor Village Marina. A few noted that some ramps are slippery and dangerous, for example the ramps at the fuel dock near the commercial pier. One respondent suggested the addition of a "work dock" for net and gear repair.

Gear Storage: A high percentage (90%) of those interviewed rated gear storage as adequate. Regardless, several purse seiners and trappers were interested in working with the Ventura Harbor administration to explore potential sites that could be used as additional storage areas.

Gear Repair: A majority (65%) of Ventura fishery participants rated gear repair facilities as adequate. Most of those who rated the facilities as inadequate where purse seine operators, who require open areas to spread their large nets for repairs. They suggested the addition of a floating net and gear repair dock, such as the facilities at Ketchikan and Petersburg Harbors in Alaska.

Parking: Most fishery participants (77%) rated parking as adequate. However, 80% of those who were not satisfied with parking were located in a particular section of the harbor (Ventura Village Harbor Marinas F, G & H) where they reportedly experience problems with parking 6 months of the year (especially during special events) due to competition for space with recreational users. A suggestion to improve this situation was to assign designated parking areas for

commercial fishery participants near their slips and reserve a section for slip holders during special events.

**Loading/Unloading** facilities are available and considered adequate, though certain fishing operations would benefit from improvements in unloading speed and efficiency at the commercial pier.

Unloading (pier, hoist, pumps): Most of the purse seiners interviewed indicated unloading of squid with company-owned pumps was adequate and efficient, though congestion on the pier increased markedly during "high season." In contrast, at least 30% of the respondents representing other fishing operations (trap, trawl, gillnet, divers and longliners) rated unloading at the commercial pier as inadequate due to the slow, inefficient hoist and congestion on the pier during squid season. Suggestions for resolving these issues included: a) improving the hoist capacity, speed, and swing, b) finding a way to coordinate unloading during peak seasons, such as is done in Santa Barbara Harbor with the sea urchin unloading coordinators, and c) allowing some commercial loading and unloading of gear (e.g., traps and nets) at the launch ramp especially when the pier becomes congested. Several fishery participants gave positive feedback on the new card-activated operating system for the hoist.

*Commercial Pier*: The commercial pier at VH will require a costly ($1 million or more) renovation within the next few years. The majority (86%) of those interviewed who landed catch in Ventura Harbor in 2005, either as resident or transient fishery participants, favored identical replacement of the pier because it serves all types of SBC fishing operations (Table E.2-1). Many noted that anything smaller would result in even more congestion of fishing activities throughout the year. Floating docks were deemed impractical, especially for high-volume fisheries (e.g., squid and CPS seine, sea urchin dive), as they are unstable and unable to handle large unloading operations. While not rated highly, the combination of a smaller pier and ramp stimulated added discussions. However, most respondents felt that during the high season a small pier would not be sufficient for meeting the needs of all fishing operations.

Commercial fishery participants mentioned the need for several pier attributes: a) strong and wide enough for 2 trucks to move on and off the pier, b) several drains, c) hoists with adequate lifting capacity, speed, and height, d) "T" configuration, with hoists on either side, and e) area for smaller boats to unload when larger vessels are also present.

**Table E-2.1**. Rating for various replacement options of the Ventura Harbor commercial pier by Santa Barbara Channel region commercial fishery participants who use the pier (n=45).

| | **Rating** | | |
|---|---|---|---|
| **Replacement Option** | **In Favor** | **Neutral** | **Opposed** |
| Identical | 86.7% | 6.7% | 6.7% |
| Similar, but smaller | 2.6% | 2.6% | 94.9% |
| Floating dock instead | 0.0% | 5.3% | 94.7% |
| Combination – small pier & ramp | 0.0% | 2.6% | 97.4% |

Other suggestions for improving the use and efficiency of the current pier included: a) allowing the use of the launch ramp by smaller commercial vessels, b) adding a designated floating dock at the launch ramp (or other area in the harbor) for loading gear and unloading smaller catches, and c) providing a floating net repair dock to help relieve congestion on the pier.

*Floating Docks*: Floating docks are being used in other ports for landing fish and for loading/unloading and repairing gear. More than 65% of all fishery participants interviewed had used floating docks to unload, either where their vessel was moored next to the floating dock or at launch ramps (a type of floating dock) where their vessel was tied to the dock, such as at Santa Barbara Harbor where commercial seafood unloading and gear loading is allowed at the ramps. Overall, most of those experienced with using floating docks considered them to be a good alternative for quickly, efficiently and cost-effectively moving small to moderate loads of live and fresh seafood from their vessels using a hand-truck or dolly. Some noted difficulty, though, in moving product during low tides because the ramps would be lower in the water and they would have to transport their loads up a steeper incline. Floating docks were considered unstable and unsuitable for unloading large volumes of fish.

Truck Waiting: Most (90%) respondents considered the truck waiting areas in VH to be adequate.

Boat Launch: Most (89%) VH-based fishery participants rated the VH boat launch as adequate for launching trailered vessels and accessing SBC fishing grounds. However, several of the trappers and smaller net boat operators suggested re-assessing the harbor policies on using the launch ramp for loading and unloading gear, as this could also help relieve congestion on the commercial pier and speed up unloading operations for many commercial fishery participants.

**Equipment, Supplies and Services** for most commercial fishing operations are said to be readily available in the Ventura area, with the exception of local bait suppliers.

Equipment Suppliers: More than 80% of VH fishery participants rated equipment suppliers as adequate.

Fuel: Almost all (95%) of VH fishery participants rated fuel infrastructure as adequate, noting that having two fuel docks is beneficial to their operations. Fishery participants from other SBC ports mentioned that Ventura fuel prices are competitive and reasonable, and many purchase fuel at VH whenever they are working in the area.

Bait: The availability of bait, especially commercial quantities, was considered by many (63%) to be very limited and inadequate. A small group of trappers and hook & liners have a cooperative arrangement to bring bait from Los Angeles fish processors. Others obtain it from their seafood buyers or other local sources. No suggestions for improving this situation were offered. A number of fishery participants were also interested in exploring alternatives for storing bait on the pier to improve the aesthetics of the pier, to discourage large flocks of gulls and to minimize exposure of local merchants and the public to the bait-associated odors.

Utilities: More than 90% of the respondents rated utilities as adequate, though a recent rise in the cost of electrical service was

mentioned by VH slip holders representing several fisheries.

Vessel Haul-Out: These facilities were rated as adequate by the majority (95%) of VH fishery participants, and are considered one of the most cost-effective and user-friendly haul-out and self-service repair facilities. We received many positive comments ("great", "good double swing", "two good (boat) yards", and "best around") about these facilities. A number of fishery participants from Santa Barbara and Channel Islands Harbors travel to Ventura to haul their vessels out for maintenance.

Engine, Hydraulic, and other Services: More than 90% of VH fishery participants rated these services as adequate, with several positive comments (e.g., "good mechanics", "good hydraulic [services]"). Many Santa Barbara fishery participants travel to Ventura for engine repairs, hydraulic equipment and parts.

Waste Disposal: This service was rated by a majority (86%) of fishery participants as adequate, though there was a suggestion to add recycling of cardboard, plastic, and glass, as well as glycol.

Water Taxi: Most respondents (82%) indicated that they had no need for the water taxi service. However, for those few (n=4) that use the service, half of them found the service to be adequate. The other half rated the service inadequate, but did not provide reasons or suggestions for improvements.

**Product Quality** is essential at all levels of seafood business, starting on the fishing vessel until the product is consumed. Thus, infrastructure supporting product quality is critical for all fishery participants. Below are comments and suggestions regarding product quality infrastructure at VH.

Ice: The ice facility was rated as adequate by 78% of VH-based respondents and several mentioned their satisfaction with recent improvements in service and quality. For some fishing operators who require more ice, the current process of obtaining ice (transporting ice in a tote to the pier and then shoveling the ice onboard) is labor intensive and wasteful due to evaporation during transport of the ice. One suggestion to address this problem was to explore the feasibility of using other methods, such as use of a chute or auger, for transporting the ice directly from the machine to the vessel.

Cold Storage: Most (94%) of VH fishery participants rated cold storage as inadequate because none is available in or near the harbor. A number of fishery participants indicated a need for cold storage space, possibly a small, cooperative facility for direct marketing use. Also, an enclosed cold space to store bait was suggested to reduce odors in areas frequented by the public.

Holding Tanks: The majority (92%) of VH fishery participants interviewed rated holding tanks as inadequate, as none is available in VH despite many landing live, high-price seafood at this harbor. Trappers currently use their own receivers (cages) submerged in the harbor to temporarily hold crabs and lobsters prior to selling them. However, several respondents commented that some type of live holding facility (possibly run by a cooperative) or an aerated area in the harbor, particularly during periods of low water quality (low oxygen levels) in the harbor that cause stress and die-offs of live seafood, would be beneficial for their fishing operations. These facilities would need to consider potential interactions with seals and sea lions.

Processing Facilities: A small majority (63%) of fishery participants considered the availability of processing facilities to be limited, and thus inadequate. Though a few local buyers will cut fish, only limited amounts of locally caught fish are processed. A few fishery participants have suggested establishing a small, cooperative fish cutting or processing area to help facilitate their direct sales to restaurants and the public. However, this would require that adequate and suitable space be located, seafood safety regulations (e.g., HACCP) be met and funding be secured.

**Marketing** infrastructure in VH is limited for most fisheries, with the exception of squid seine and a few live products (e.g., lobster, fish, sea urchins).

Scales: Just over half of the respondents indicated that the scales were inadequate at VH. Currently, there are no public scales. Instead, seafood buyers supply this equipment (e.g., automatic scales on squid pumps) or fishery participants who sell directly to the public have their own. A suggestion was made to add public scales operated by a neutral weigh master, though a means of funding this service was not identified.

Fish Buyers: Most respondents (76%) rated fish buyers as adequate, though the availability of buyers varies for different seafood. That is, squid, crustacean (lobster, crab), and live fish buyers are generally available, while buyers of fish requiring processing, such as pelagics (tunas, swordfish, sharks) and groundfish, are limited. Establishment of a small, local fish-cutting facility for direct market sales was proposed.

Directed Marketing Space: More than 93% of those interviewed were satisfied with the directed marketing space.

**Miscellaneous Facilities and Services**

Information Center/Meeting Hall: All (100%) fishery participants interviewed rated this facility as adequate.

Telecommunications Equipment: Several telecommunication options are available for fishery participants in VH (e.g., internet café; use of FAX and copy machine at harbor office, telephone in fishermen's lounge), and 69% of the respondents felt these services were adequate and meeting their needs.

Restrooms/Showers: Almost all (95%) of VH-based respondents considered these facilities adequate.

Other: Though not included in the survey questions, several of the respondents mentioned that the harbor was very secure and that the harbor patrol and administration were professional and helpful.

## APPENDIX E-3
## INFRASTRUCTURE NEEDS

### Channel Islands Harbor (CIH)

**Harbor Space Allocations (HSA)** at CIH vary in availability for different types of commercial fishing operations. In general, slips, commercial docks, and parking are available, whereas vessel moorings and gear storage are not. There is also limited availability of gear repair areas.

Slips: CIH slips were rated as adequate by 92% of those interviewed. However, several fishery participants keep their vessels in private marinas rather than in the commercial slips at the harbor, because there was limited availability of these slips when they first started using the harbor. Transient fishery participants suggested revising the current policy regarding the number of days a transient vessel is allowed to stay in the harbor. The current policy includes a 10-day limit within a 30-day period. The length of stay may be extended, but it requires several steps including gaining permission from the harbor manager (by submitting a written request with reasons for the extension), adding Ventura County to the insurance policy for the vessel, and gaining approval from the county (which requires submitting a separate request). Fishery participants would like to work with the harbor to increase the number of days they are allowed to use the slips.

Moorings: There are no moorings or anchoring areas at CIH. Several transient and SBC purse seiners expressed a desire to moor at CIH on a short-term basis. This would be particularly useful both before and after they unload at Port Hueneme Harbor (PHH) so they can rest before returning to their fishing grounds, during the weekends when squid seining is prohibited, and during rough weather conditions that may not be considered quite hazardous enough for PHH to provide safe harbor.

Docks: Most (91%) CIH fishery participants were satisfied with the docks at CIH.

Gear Storage: None of the CIH-based respondents were satisfied with the commercial gear storage areas at CIH, as none is available. Many commented that such facilities are needed and would be well used by local fishery participants.

Gear Repair: The majority (75%) of respondents considered the gear repair facilities to be inadequate because they are very limited. Further, working on gear in the parking areas is not encouraged, though the commercial pier and open areas near the commercial slips were said to be available. The majority of fishery participants indicated a need for designated gear repair areas at CIH.

Parking: The majority (83%) of CIH fishery participants rated parking as adequate, though a few stated they had problems finding parking spaces at certain times, especially on the weekends.

**Loading/Unloading**: Nearly every fishery participant interviewed commented on the need to improve the efficiency of loading and unloading at CIH. At least one major

repair has been completed (replacement of a hoist) since we completed the interviews.

Unloading (pier and hoists): Unloading facilities and equipment were deemed to be inadequate by 72% of those interviewed. The hoist at the Fishermen's Wharf area on the east side of the harbor was inoperable and the hoist at the Ventura County Commercial Fishermen's Pier on the west side was said to be very slow and inefficient because it was often difficult to arrange for an operator when needed. However, the new self-service, token-operated hoist on the east side of the harbor is an improvement. There are no unloading facilities (pumps) for squid and wetfish, though these facilities are available at nearby harbors (Port Hueneme and Ventura).

Truck Waiting: Most (75%) CIH-based respondents considered the truck waiting area adequate, though several fishery participants noted congestion problems at the commercial pier when more than a few trucks were present (such as occurs when sea urchins are landed). The newly replaced hoist may help resolve this issue, as some will be able to unload at the other location.

Boat Launch: All respondents (100%) rated the boat launch as adequate, though there has been some confusion about the CIH policy about unloading at the launch ramp. Several fishery participants commented that allowing some loading and unloading of gear, as well as unloading of smaller amounts of fish, at the launch ramp would be beneficial to their operations. Santa Barbara Harbor allows use of the launch ramp for these activities, and was suggested as a model system that could be applied to CIH.

**Equipment, Supplies and Services** at or near CIH were considered adequate by most CIH fishery participants. Of exception were bait supplies and fuel.

Equipment Suppliers: A little more than half (58%) of respondents rated equipment suppliers as adequate, though many mentioned having to purchase gear, supplies, and materials from Los Angeles, by mail order, and from as far away as China (e.g., trap wire).

Fuel: Many (67%) of those interviewed expressed concern about the high cost of fuel, although it is available and a discount is offered for the purchase of large volumes. Several fishery participants go to Ventura or San Pedro to buy fuel whenever possible because it is generally less expensive.

Bait: Supplies of commercial quantities of bait were rated as inadequate by 57% of CIH fishery participants that use bait because of limited availability. A few fishery participants have arrangements with their buyers who can supply bait, while others have local sources or go to Los Angeles fish processors to buy bait.

Utilities: Many (83%) respondents rated utilities at CIH as adequate. One fishery participant felt that adding 220-volt power lines to commercial slips would be beneficial to their fishing operations.

Vessel Haul-Out: The majority (75%) of those interviewed considered vessel haul-out facilities and services to be adequate at CIH, though several commented that they go to Ventura Harbor to haul-out due to the increased cost at CIH.

Engine, Hydraulic, and other Services: Most (92%) CIH respondents rated these services as adequate. The close proximity of

this harbor to farming activities was cited as a factor increasing the availability of engine and hydraulic supplies and services, although refrigeration services are still needed.

Waste disposal: Most (92%) of those interviewed were satisfied with waste disposal facilities and services at CIH.

Water Taxi: All respondents considered the available water taxi service to be adequate at CIH.

**Product Quality** is influenced by several types of infrastructure. Fishery participants are concerned about CIH infrastructure that supports production of high-quality fish.

Ice: All respondents who land seafood products at CIH rated ice as inadequate, as there are no ice facilities available in the harbor. Several commented that an ice facility was planned several years ago, but has not been installed.

Cold Storage: The majority (82%) of CIH respondents rated cold storage as inadequate because these facilities are limited and expensive, being available in the associated city (Oxnard) but not within the harbor. No suggestions were given on improving this situation, but several fishery participants noted that a cold storage facility in the harbor would help maintain product quality prior to sales. A possible cooperative arrangement among those needing cold storage and the harbor administration could be explored.

Holding Tanks: Most (90%) fishery participants rated holding tanks as inadequate, since there are none available in CIH. Similar to other SBC fishery participants, CIH crab and lobster trappers keep their catch alive in receivers that are submerged in the harbor. Live fish and prawns are also kept alive in tanks with circulating seawater on their boats. Several respondents indicated that a public or cooperative holding tank facility would be beneficial to their operations. CIH is said to be one of the best areas to hold live seafood products due to the excellent circulation of seawater through the harbor.

Processing Facilities: There are no processing facilities available in CIH, except for a few small retail and restaurant operations that buy limited quantities of locally caught seafood. Sea urchins are landed in CIH and processed in Oxnard and Los Angeles. Squid and other wetfish species are processed in several plants in Oxnard and Port Hueneme, but these species are not landed in CIH.

**Marketing** facilities and services are considered to be limited in CIH. Those interviewed provided the following comments about marketing infrastructure.

Scales: As in other SB Channel harbors, public scales are not available at CIH. However, approximately two-thirds of CIH respondents utilize their buyer's scales or supply their own, and thus do not require public scales. The remaining one-third of respondents rated the availability of scales inadequate and indicated a need for certified public scales.

Fish Buyers: Most (91%) respondents who land fish in CIH rated the availability of fish buyers as inadequate. Several fishery participants commented that most of the buyers are mobile operations (trucks with live tanks) from the Los Angeles area and sea urchin buyers from Los Angeles and Oxnard. Local restaurants and retail markets purchase small quantities of SBC fish, and a

number of fishery participants sell directly to seafood consumers.

Directed Marketing Space: Most (91%) CIH fishery participants were satisfied with the available space for the direct-sale fish market on Sundays. However, several individuals commented that the operating policies of the market need to be improved and updated, mentioning Ventura and Santa Barbara markets as possible models. A few CIH fishery participants prefer to sell at the Ventura market.

**Miscellaneous Facilities and Services**

Information Center/Meeting Hall: More than 66% of the respondents rated these facilities as inadequate because dedicated meeting or office space for commercial fishery participants is lacking. A dedicated space for a commercial fishermen's meeting room, information center, and lounge, similar to the one in Ventura Harbor, was suggested by several respondents. However, other fishery participants mentioned that use of the harbor department's meeting room could be arranged.

Telecommunications Equipment: All respondents rated these services as inadequate, as no telecommunication equipment, other than pay phones, is available at CIH. Most CIH fishery participants now use cell phones.

Restrooms/Showers: All CIH fishery participants interviewed rated these facilities as adequate.

## APPENDIX E-4
## INFRASTRUCTURE NEEDS

### Port Hueneme Harbor (PHH)

Infrastructure supporting commercial fisheries is quite limited at PHH. Below we provide brief comments regarding the broad facility categories[8].

**Harbor Space Allocations (HSA)** at PHH are limited for commercial fishing operations. Currently there are five commercial fishing vessels with slips, including one full-time, active commercial fishery participant, one bait boat operator supplying local sportfishing charter boats, and three inactive commercial fishing operators.

Since the September 11, 2001 attack on the World Trade Center, security in the harbor has greatly increased resulting in restricted harbor access for transient commercial fishing vessels. Further, the lack of temporary berthing was also considered problematic for those waiting to unload their catch. This is especially critical during bad weather and high seas when the vessels must wait outside the harbor entrance or seek shelter in Channel Islands or Ventura Harbors. Port Hueneme administrators are aware of this issue and provide safe harbor for vessels when the sea conditions become hazardous.

There are no mooring, gear storage or gear repair facilities, and parking is limited due to security and high-volume traffic associated with cargo unloading activities.

**Loading/Unloading** facilities are also limited at PHH, serving primarily the seine fisheries. Given heightened security requirements, harbor administrators recently consolidated offloading of squid and other wetfish species to a designated special area near the entrance. Pumps for offloading wetfish are provided by the receivers.

**Equipment, Supplies and Services** infrastructure at PHH is limited to fuel, bait, utilities and waste disposal. Equipment suppliers, vessel haul-out, and engine and other services are available near the harbor.

**Product Quality** infrastructure at PHH is limited to ice. Cold storage and processing facilities are available nearby. There are no live holding tanks or areas at this harbor.

**Marketing** facilities and services at PHH are limited to nearby squid and wetfish processing facilities. Scales are provided by the wetfish buyers/processors. There is no direct marketing space in the harbor.

**Miscellaneous Facilities and Services** at PHH include restrooms, but no showers.

[8] This information was summarized from discussions with the one active, full-time, resident fishery participant, a few part-time and inactive resident fishery participants, and harbor administrators.

# APPENDIX F

## SANTA BARBARA CHANNEL REGION
## SELECTED COMMERCIAL FISHING AREA CLOSURES