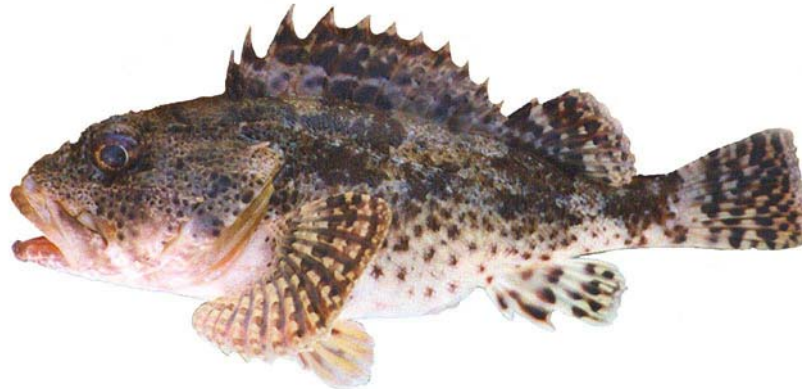


## 8. CALIFORNIA SCORPIONFISH



California Scorpionfish, *Scorpaena guttata*. Photo credit: DFG

### Review of the Fishery

California scorpionfish, *Scorpaena guttata*, known locally as sculpin, are an important part of the commercial and sport fishery in southern California, especially within the Los Angeles port complex. In the recreational fishery, they are taken primarily aboard commercial passenger fishing vessels (CPFV) and private/rental vessels, and occasionally from piers and jetties. From 1995-2000, California scorpionfish ranked fifth and sixth statewide in the top ten most commonly landed species from private/rental vessels and CPFV modes, respectively. Based on total number of California scorpionfish landed by mode from 2004-2006, 68.6 percent were CPFV, 22.9 percent were private/rental boat, 5.6 percent were man-made, and 2.8 percent were beach/bank (CRFS data, 2004-2006). Beaches and banks tend to be too shallow, thereby minimizing catch for this mode. California scorpionfish, because of their small size and relatively cryptic habits, comprise a very small percentage of recreational take by divers. A review of the Marine Recreational Fishery Statistical Survey (MRFSS) data show the average annual landing of California scorpionfish from the period of 1980 to 1989 was 285,900 fish and declined by 22 percent to 223,400 fish from the period of 1993 to 2003; landings peaked in 1989 at more than 700,000 fish (Figure 8.1). The California Recreational Fisheries Survey (CRFS) data show California scorpionfish landings have fluctuated between 50,000-90,000 fish per year since 2004 (Figure 8.2).

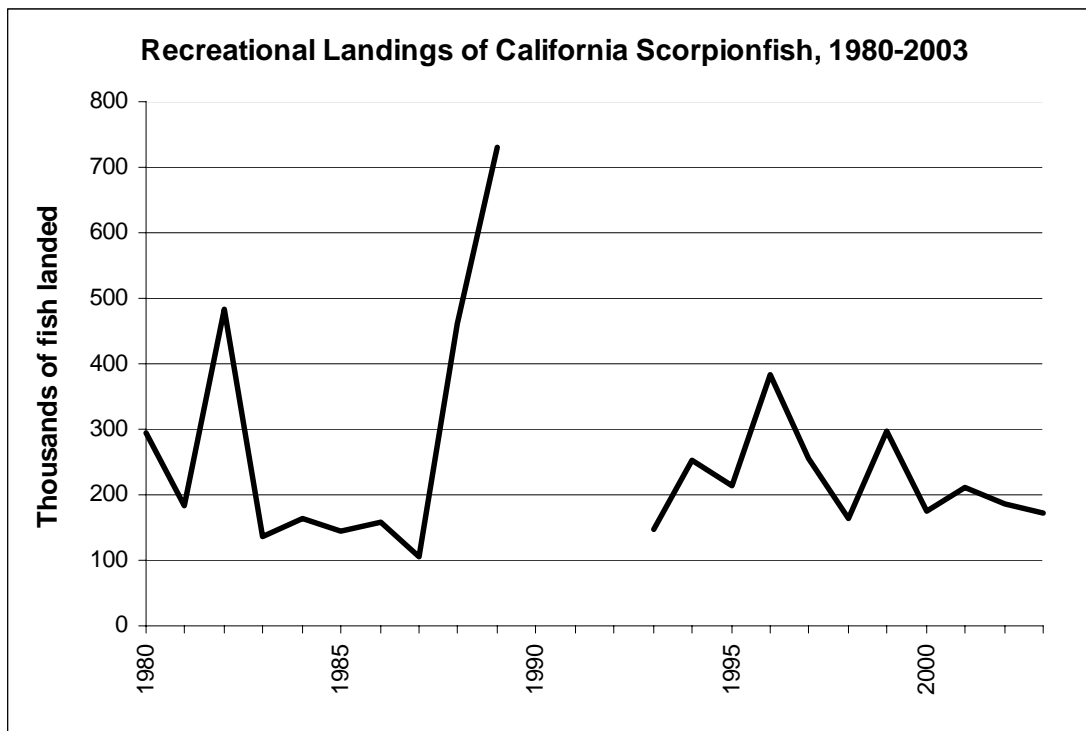


Figure 8.1. Recreational catch (in numbers of fish) of California scorpionfish from 1980-2003. Data Source: MRFSS data for all gear types; data not available for 1990-1992.

According to CPFV logbook data, partyboat landings of California scorpionfish decreased dramatically from a peak of 227,200 fish in 1999 to 72,700 fish in 2004 (Figure 8.3). The biggest decline was between the years 2001 and 2002; the latter year showed about half the amount of California scorpionfish landed in the previous year. This decrease in landings is most likely a result of reduced harvest limits and management measures implemented to protect “overfished” species which limited access to scorpionfish habitat, such as the adoption of depth restrictions and the implementation of closed fishing areas, and an overall effort shift to other fisheries and away from scorpionfish (see Management Considerations). From 2001-2006, CPFV logbook data show partyboat landings of California scorpionfish ranged between 72,700 and 162,600 fish. Partyboat landings have increased in the past three years (Figure 8.3) as harvest limits have increased, regulations have relaxed and more scorpionfish habitat has become available to fishing communities.

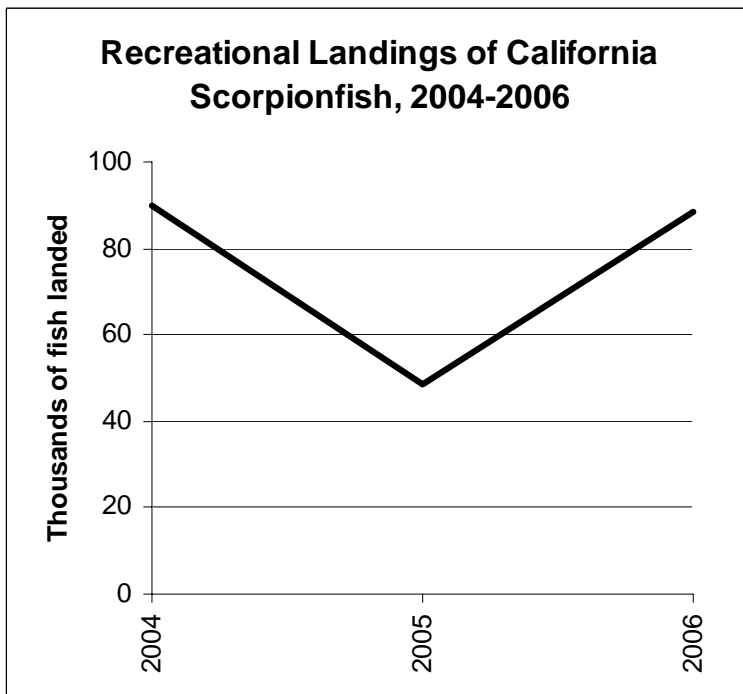


Figure 8.2. Recreational catch (in numbers of fish) of California scorpionfish, 2004-2006. Data Source: CRFS data for all gear types.

California scorpionfish are commonly targeted commercially by hook-and-line and trap, although they can be incidentally taken by trawl and gillnet. Hook-and-line gear tends to be the dominant gear type for targeting California scorpionfish. According to landings data from the California Department of Fish and Game (CDFG), California scorpionfish exceeded 40,000 pounds (18 metric tons) for all years between 1992 and 2001, and peaked at 112,800 pounds (51 metric tons) in 1998. More recently, the landings have declined considerably to around 11,000 pounds (5 metric tons) from 2003-2005, and 5,900 pounds (2.7 metric tons) in 2006. Although many factors can affect total landings, two probable influences are regulatory changes such as the reduction in harvest limits in 2000 and implementation of the nearshore restricted access program in 2003 (see Management Considerations, below).

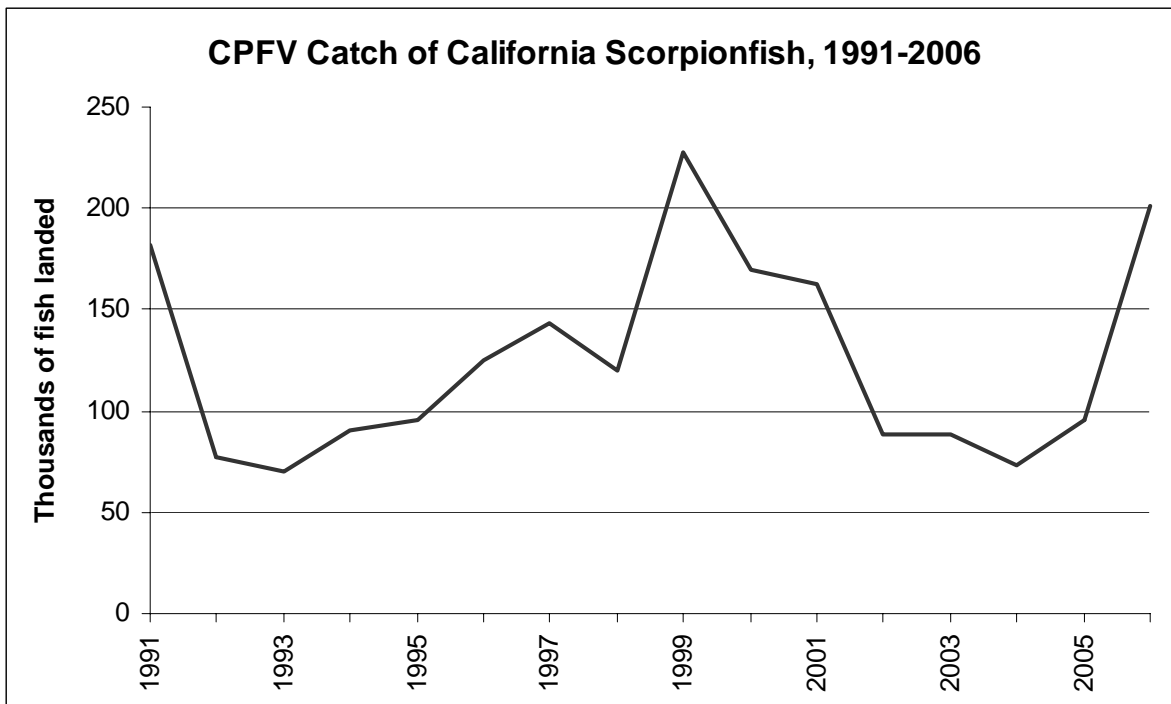


Figure 8.3. Commercial Passenger Fishing Vessel (CPFV) logbook catch data for California scorpionfish from 1991 to 2006. Data Source: CDFG commercial landing receipts, and CPFV log book data.

Another reason for fluctuation in commercial landings was due to the development of a new fishery. The live/premium fishery in the late 1980s resulted in an increase in commercial landings of California scorpionfish. The live component of the fishery has generated at least 50 percent of the total catch for scorpionfish for all years since 2000, except for 2004 in which live scorpionfish made up 28 percent of the total catch. In recent years the commercial market price for scorpionfish has been as high as \$8.00 per pound for live fish. Total commercial landings have decreased in the last six years, regardless of live or dead condition (Figure 8.4 and Table 8.1) due to lower harvest limits and very low bycatch allowances (25 pounds (11 kilograms)) (see Management Considerations, below). Currently, the recreational sector lands a majority of the California scorpionfish total catch at 46,297 pounds in 2005 to 83,774 pounds in 2006, compared to the commercial sector at 11,405 pounds in 2005 and 5,856 pounds in 2006 (Table 8.1).

Fishing revenue from the 2006 commercial harvest of California scorpionfish is estimated at \$17,000 (ex-vessel 2006 dollars). It is estimated that this same harvest contributed \$33,000 to the total business output for the State. Likewise, total employment and wages from California scorpionfish is estimated to be the equivalent of 1 job and \$15,000, respectively.

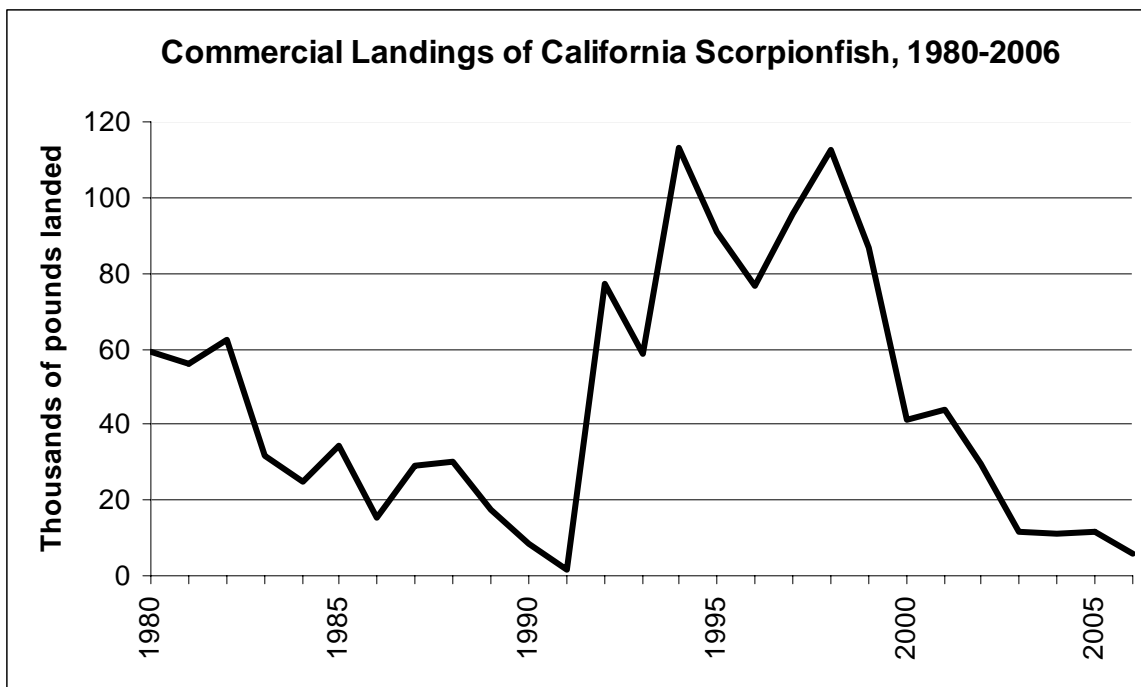


Figure 8.4. Commercial catch in pounds of California scorpionfish from 1980-2006. Data Source: CDFG commercial landing receipts for all gear types.

### Status of Biological Knowledge

The geographical range of the California scorpionfish extends from Monterey Bay (Central California) south to Uncle Sam Bank (Southern Baja California, Mexico); however this species is rare north of Santa Barbara. California scorpionfish prefer warmer waters, and a surge in catch rates north of Santa Barbara has been observed during El Niño years. California scorpionfish have been observed from the intertidal to 600 feet (183 meters), but the highest catch rates occur around 150 feet (46 meters). California scorpionfish are a benthic species, commonly found in sandy, muddy, and rocky habitats. Although frequently observed as a solitary species, aggregations are associated with prominent features such as rocks, boulders, sewer pipes, artificial reefs, and wrecks.

The California scorpionfish is a comparatively small species of the scorpaenid family, reaching a maximum size of 17-inches (43-centimeters). After 4 years of age, females grow faster and reach a larger size than males. The maximum age estimated for this species is 21 years, but rarely have male ages been estimated greater than 15 years. A few fish are mature at 6-inches (15-centimeters) at age one, over 50 percent are mature at 7-inches (18-centimeters) at age two, and all are reproductively mature at age four at 9-inches (23-centimeters).

Reproduction in the California scorpionfish is well documented. They are oviparous (egg layers) with external fertilization. The spawning season occurs from

April through September, and peaks in July. They exhibit extensive vertical spawning migrations in late spring and early summer, when adults move inshore from 120 to 360 foot (37 to 110 meter) depths. These large spawning aggregations form near the bottom, rise up, and approach the surface. After August, the aggregations disperse, with observed individuals having been recaptured 25 miles (40 kilometers) from the spawning area. Females release a mass of 0.05-inch (1.3-millimeter) diameter eggs embedded in a gelatinous “egg balloon”. The egg balloon is a paired, hollow structure that is clear or light green in color. The balloon is about 0.1-inch (2.5-millimeters) thick and floats near the surface. After about 58 to 72 hours, the eggs hatch and 0.08-inch (2-millimeter) larval fish emerge. Juveniles remain hidden in mats of dense algae and among benthic encrusting organisms. Spawning occurs in the same areas every year, and studies have shown that many fish return annually to the same spawning grounds. The 2005 stock assessment showed evidence of several strong recruitments starting in 1984.

The California scorpionfish is highly cryptic, nocturnal, and feeds at night. They ambush their prey from stations of camouflage on the bottom. Juvenile California scorpionfish mainly consume gammaridean amphipods. The most important prey items in the adults include juvenile *Cancer* crabs, fishes such as anchovy and cusk-eels, octopi, isopods, and shrimp.

California scorpionfish are thick-bodied, with large dorsal spines and flexible fins. Their color is quite variable, ranging from bright orange-red through light brown, sometimes with purple streaks on the head, and black or dark brown spots covering the body. The sharp spines of the dorsal, anal, and pelvic fins are poisonous. At the base of each spine is a gland containing toxins which flow to the tip through a groove. The resulting pain from a spine-inflicted injury may be intense; however, very rarely is a spine injury fatal to humans.

### **Status of the Population**

In May 2005, the first California scorpionfish stock assessment was completed along the California coast from Point Conception to the Mexico border. That portion of the stock was estimated to be healthy according to the management criteria set forth by the state. As a result, a new harvest limit was established based on this assessment that was higher than the previous one which had been in place since 2000, and was based on a precautionary approach to management. Both commercial and recreational regulations are in place to keep the fishery sustainable. The management outcomes based on the 2005 stock assessment are discussed in the next section.

### **Management Considerations**

The California scorpionfish became a federally designated groundfish in 1982 when the Pacific Fisheries Management Council (PFMC) adopted the Pacific Coast

Groundfish Fishery Management Plan. Since then it has been managed under the joint jurisdiction of the state and the federal government. Prior to 1982, this species was managed by CDFG through regulations adopted by the state legislature and the California Fish and Game Commission (FGC).

Since the late 1990s, considerable federal pressure developed to rebuild “overfished”<sup>1</sup> species. Subsequent management actions designed to avoid these species shifted fishing effort into nearshore areas and put additional pressure on shallow water species such as California scorpionfish. At the same time, state and federal management took a more precautionary approach for unassessed, “data poor” species lowering harvest limits. In addition, the popularity of the commercial live-fish fishery increased dramatically in the 1990s resulting in even greater pressure on nearshore stocks.

California’s Marine Life Management Act (MLMA) of 1998 was adopted in response to the need to take a more precautionary approach to management that prioritized resource sustainability, and to address the rapid development of the live-fish fishery. This important piece of legislation made the possession of a commercial nearshore permit mandatory and delegated finfish management authority to the FGC. Minimum commercial size limits for nearshore species including California scorpionfish were enacted. The MLMA also required that the FGC adopt a Fisheries Management Plan (NFMP) for nearshore finfish.

Under these new guidelines, in 2000 the FGC adopted a precautionary approach for nearshore stocks with no assessment including California scorpionfish which called for harvest limits to be set at 50 percent of historic landings.

Nineteen nearshore species, including the California scorpionfish, are managed under provisions outlined in the NFMP, which was adopted by the FGC in 2002. The NFMP also mandated a precautionary management approach for stocks without quantifiable assessments so harvest limits continued to be set at 50 percent of historic landings until better information was available. In conjunction with the NFMP adoption, the FGC adopted a restricted access program which reduced the number of nearshore permittees regionally, limited approved gears to trap and hook-and-line, and provided for minimal bycatch in other fisheries.

In 2003 and 2004, California scorpionfish was managed under a separate harvest limit split between the commercial and recreational sectors with the majority of the harvest limit allocated to the commercial sector. In 2003, the commercial sector landed only 25 percent of its available California scorpionfish allocation but the recreational sector exceeded its allocation. In 2004, the commercial sector landed 24 percent of its allocation and the recreational sector landed 69 percent. California scorpionfish was again placed into the “Minor Nearshore” category in 2005 and 2006, and was not managed with a separate harvest limit.

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<sup>1</sup> “Overfished” is a formal federal or state designation used when the status of an assessed stock is determined to be at a critically low level; several important California groundfish species share this designation including bocaccio, canary, cowcod, widow and yelloweye rockfishes and previously, lingcod.

Harvest limits are set by the outcomes of stock assessments whenever possible; the most recent California scorpionfish assessment was completed in 2005 and the harvest limit was increased. Although the stock assessment indicated a healthy stock, there were some uncertainties in the data. For example, there was a large amount of variation in recruitment levels, and uncertainty in the value of natural mortality. In addition, site fidelity information gained from tagging studies would help inform managers of the appropriateness of regional management for this species. To fill in the information gaps concerning the stock structure, extensive tagging studies conducted in Mexican waters would be beneficial since a large proportion of the stock resides south of the Mexican border. Finally, an updated ageing study would improve future stock assessments.

The PFMC and the State of California continue to work as a coordinated effort to develop and adopt various management specifications to keep harvest within targets. Examples include area closures, depth restrictions, minimum size limits, and bag limits to regulate the recreational fishery. For the commercial fishery, license and permit regulations, finfish trap permits, gear restrictions, seasonal and area closures, depth restrictions, trip limits, and minimum size limits are used for management purposes.

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**Further Reading**

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| <b>Table 8.1. Commercial landings (pounds) of California scorpionfish, 1980-2006</b> |               |             |               |             |               |
|--|---------------|-------------|---------------|-------------|---------------|
| <b>Year</b>  | <b>Pounds</b> | <b>Year</b> | <b>Pounds</b> | <b>Year</b> | <b>Pounds</b> |
| <b>1980</b>  | 59,168        | <b>1989</b> | 17,639        | <b>1998</b> | 112,822       |
| <b>1981</b>  | 56,284        | <b>1990</b> | 8,407         | <b>1999</b> | 86,675        |
| <b>1982</b>  | 62,264        | <b>1991</b> | 1,452         | <b>2000</b> | 41,252        |
| <b>1983</b>  | 31,719        | <b>1992</b> | 77,323        | <b>2001</b> | 44,040        |
| <b>1984</b>  | 24,984        | <b>1993</b> | 58,877        | <b>2002</b> | 29,761        |
| <b>1985</b>  | 34,501        | <b>1994</b> | 113,123       | <b>2003</b> | 11,582        |
| <b>1986</b>  | 15,544        | <b>1995</b> | 90,740        | <b>2004</b> | 11,034        |
| <b>1987</b>  | 28,823        | <b>1996</b> | 76,444        | <b>2005</b> | 11,405        |
| <b>1988</b>  | 29,869        | <b>1997</b> | 95,880        | <b>2006</b> | 5,856         |

Data Source: CDFG commercial landing receipts for all commercial gear types (1980-2006).