Excerpt from *Review of Selected California Fisheries for 2011: Ocean Salmon, California Sheephead, California Halibut, Longnose skate, Petrale sole, California Spiny Lobster, Dungeness Crab, White Shark, and Algal Blooms*. D. Porzio, ed. 2012 CalCOFI Report, Vol 53, pgs. 22-25. California Halibut

California halibut (halibut), *Paralichthys californicus,* is an important flatfish species to the commercial and recreational fisheries in central and southern California. Halibut may be found in relatively shallow nearshore waters on the west coast of North America from Almejas Bay, Baja California Sur to the Quillayute River, Washington, with the species most common south of Bodega Bay, California. Individual fish can grow up to 1.5 m (5 ft) in total length (TL) and weigh as much as 32.7 kg (72 lb). Halibut are sexually dimorphic with females growing at a faster rate compared to males of the same age. Female halibut will attain a larger size, and may become sexually mature between 5 and 6 years of age. Males do not grow as large as females and mature earlier, at 1 to 3 years of age. Fecundity is considered high with mature females producing up to one million eggs per spawning event. Successful recruitment is dependent upon favorable environmental conditions and availability of suitable nursery habitat.

In regard to the commercial fishery, halibut are harvested using three primary gears: trawl, hook-and-line, and set gill net. Over the past 30 years, from 1981 to 2011 (fig. 1), total annual landings of halibut peaked at 602.4 t with an ex-vessel value of $3.26 million in 1997, had a low of 176.3 t valued at $1.84 million in 2007, and averaged 438.3 t. Total landings for 2011 were 199.7 t with an ex-vessel value of $2.17 million. In 2011, the three principle gears comprised 99 percent of halibut landings. Trawl was the dominant gear in 2011, accounting for 49 percent of the total catch, followed by hook-and-line gear at 29 percent and set gill net at 21 percent.

Bottom trawls have produced more halibut landings than any other commercial gear type; landings have fluctuated from a high of 331.3 t in 1997 to a low of 71.9 t in 1985 (fig. 2). At the peak of the halibut trawl fishery (1997), 112 trawl vessels made at least one halibut landing. For this period, the year of lowest trawl landings (1985), 58 vessels made at least one halibut landing. In 2011, a total of 32 trawl vessels landed 98.8 t of halibut compared to 42 trawl vessels that landed 137.2 t in 2010. The San Francisco port complex received a majority (67 percent) of the landings in 2011, followed by the Santa Barbara port complex (27 percent), with Morro Bay accounting for 3 percent of the trawl catch. Directed trawling for halibut is by Department-issued permit only. Currently there are 43 permitted vessels, but not all actively fish. Vessels with a federal groundfish permit may take up to 68 kg (150 lb) of halibut incidentally per trip while fishing for groundfish.

Gill net landings generally have declined in the past 30 years, from a high of 421.7 t in 1985 to a low of 41.6 t in 2011. A series of depth restrictions, enacted

to protect sea bird and sea otter populations along the central California coast and prohibiting set net gear in 60 fm or less, greatly impacted the gill net fleet. This is evidenced by the lack of landings made north of Point Arguello since 2002. The gill net fishery now operates only in southern California, with the Santa Barbara port complex receiving 73 percent of 2011 landings, followed by the port complexes of San Diego (14 percent) and Los Angeles (13 percent). A limited-entry general gill net permit is required.

Annual landings reported by the hook-and-line fleet have fluctuated over the past three decades, ranging from a high of 94.4 t in 2003 to a low of 3.3 t in 1984. In 2011, 271 hook-and-line vessels landed 58.7 t statewide. The top two port complexes for hook-and-line landings were San Francisco (52 percent) and Santa Barbara (15 percent). The hook-and-line fishery is open access; no special permit is required and only a commercial fishing license is needed.

For the halibut commercial fishery, California Fish and Game Code §8392 requires a minimum size of 559 mm (22 inches) total length for retention. This simple but effective statute was established in 1979. Various prohibitions on bottom trawling within state waters have been in effect since 1915 with some exceptions, one of these being the California Halibut Trawl Grounds (CHTG). Created in 1971, the CHTG by definition encompass an area one to three nautical miles from shore between Point Arguello (Santa Barbara County) and Point Mugu (Ventura County). The CHTG are closed to trawling from March 15 through June 15 and fishermen are required to use “Light Touch Trawl Gear” (Title 14 CCR §124(b)) with a minimum cod-end mesh size of 191 mm (7.5 inches). In 2004, Senate Bill 1459 prohibited trawling in all State waters except those in the CHTG. The most notable closure, enforced since 2007, is the historical trawl area of Monterey Bay.

Recreational anglers target halibut from shore, private and rental skiffs, and party boats (also known as Commercial Passenger Fishing Vessels or CPFVs) using hook-and-line gear. Some catch also occurs from scuba divers and free divers using spear guns or pole spears. From 1980 to 2004, the method for estimating recreational catch was the Marine Recreational Fisheries Statistical Survey (MRFSS). During this period, the highest estimated annual recreational catch was 1,062 t (337,000 fish) in 1995 and the lowest estimated annual catch was 122 t (40,000 fish) in 1984 (fig. 3). There are no MRFSS data available for 1990 through 1992. The predominant fishing mode for 1980 through 2004 was private/rental skiff, followed by CPFV. In 2004, the California Recreational Fisheries Survey (CRFS) replaced the MRFSS. CRFS and MRFSS data and estimates are not directly comparable because of differences in the estimation methodology.

Preliminary data for the 2011 recreational fishery showed an estimated 211 t (58,000 fish) of halibut landed for all fishing modes statewide (fig. 4). CRFS data

indicate that private and rental boats continued to be the primary mode within the recreational halibut fishery.

Similar to the commercial fishery, a recreational halibut fishing regulation established in 1971 requires a minimum size of 559 mm total length for retention. Each recreational angler is limited to five halibut per day south of Point Sur (Monterey County) and three halibut per day north of Point Sur.

In 2011, the Department contracted for the first statewide stock assessment of halibut, with separate estimates for areas north and south of Pt. Conception. The period assessed was 1971-2010. An independent peer-review panel concluded that the results were acceptable for use in management decisions, but required additional sampling to be conducted to improve the next assessment. It was recommended that the Department increase gender-specific sampling of the fished population, continue ageing studies, divide southern California into smaller sampling regions to increase precision in analysis, and examine the possible link between the north and south through larval abundance. After implementing these recommendations, the Department plans to conduct another assessment in 2016. In addition to the peer-review, Department staff conducted an evaluation of the stock assessment using methods to evaluate data-poor fisheries. None of the Department's findings were inconsistent with the results of the stock assessment.

The population status north of Pt. Conception was considered healthy, with a relatively high biomass associated with several recent recruitment events, especially in the San Francisco area. Favorable environmental conditions appear to be driving recruitment events and fishing was not thought to be a factor in controlling abundance.

South of Pt. Conception, the halibut population was estimated to be depressed to 14 percent of historic levels, characterized by a lack of significant recruitment during the past decade, but nevertheless the fishery appears to be sustainable at current levels of harvest. In general flatfish are highly resilient marine finfish with high fecundity, and can respond relatively quickly to favorable environmental conditions with episodes of good recruitment. Southern California halibut stocks were considered depressed by the start of the evaluation period in 1971 due to sustained exploitation: the assessment found that the southern population was considered exploited since 1916. In response to the assessment, the Fish and Game Commission and the Department agreed that the best current course of action would be to increase monitoring of the fishery (both for catch level and total participation), investigate environmental bottlenecks, fill data gaps through fishery independent survey work, and to revisit the assessment process in 5 years. The assessment did not take into account any potential benefits from a recently-implemented series of Marine Protected Areas (MPA) especially those with halibut habitat. The new southern California MPA network, which became

effective January 1, 2012, accounts for 14 percent of soft bottom halibut habitat in this region.

Ageing of halibut otoliths, using thin sections, continues at present by Department staff, and individuals greater than 15 years of age are rare in the sampled catch. The majority of halibut aged from fishery sampling have been in the 5- to 8-year old range; this is true for historic samples from the late 1980s as well as those aged from 2007 to 2011. A recent recreational state-record fish, weighing 30.5 kg (67.25 lbs), was aged at 23 years, which is somewhat less than the maximum recorded age of 30 years for this species.

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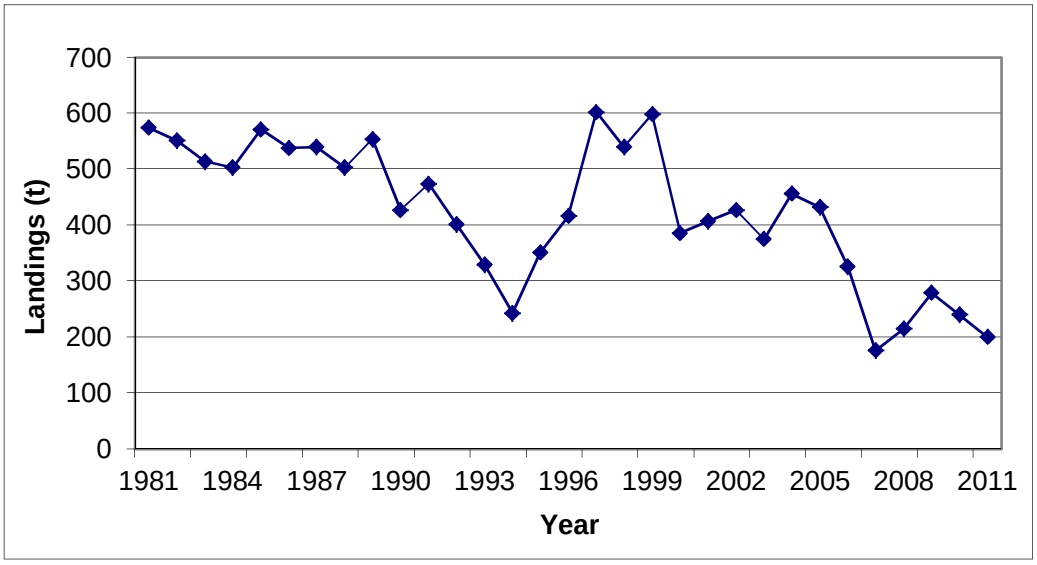

Figure 1. Statewide commercial landings of California halibut (Paralichthys californicus) in metric tons for 1981-2011. Data Source: Commercial Fisheries Information System.

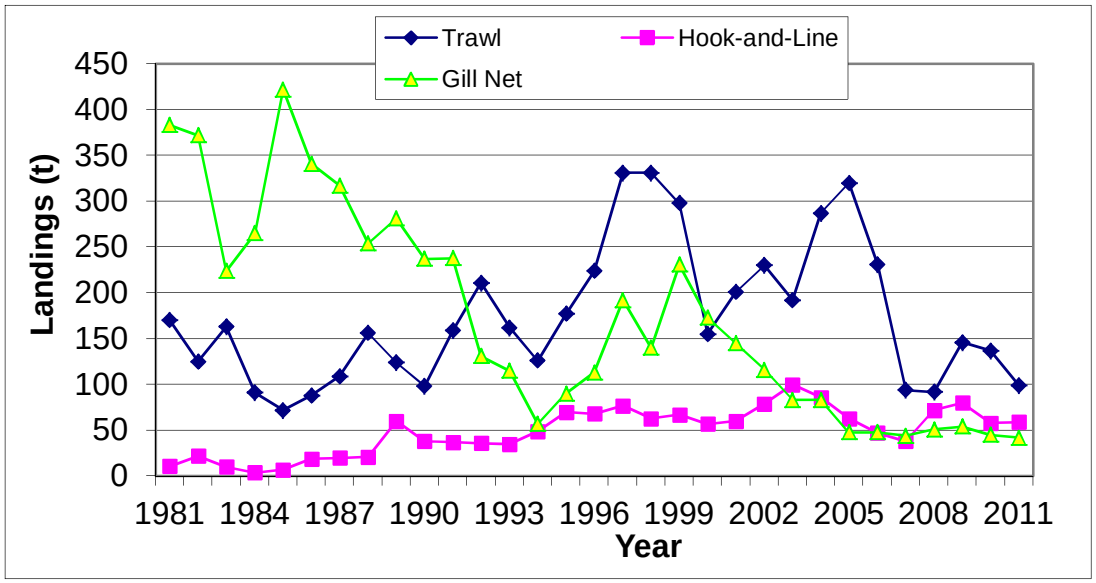

Figure 2. 30 year catch (metric tons) comparison between the three principle commercial gears, 1981-2011. Data source: Commercial Fisheries Information System

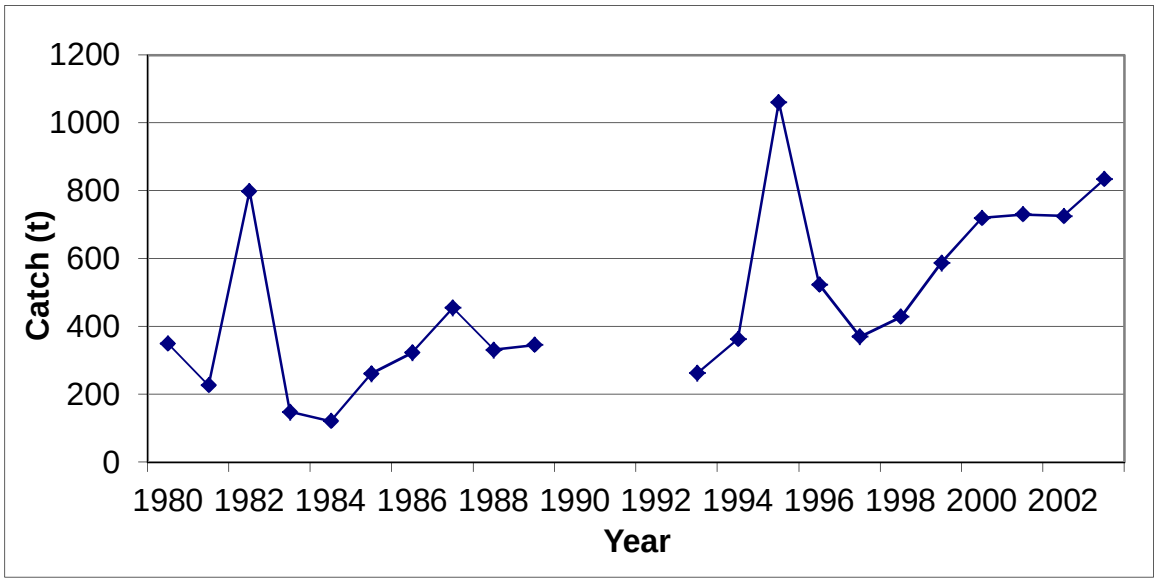

Figure 3. Estimated recreational catch (metric tons) of California halibut from 1980-2003. No data available from 1990-1992. Data source: Marine Recreational Fisheries Statistical Survey

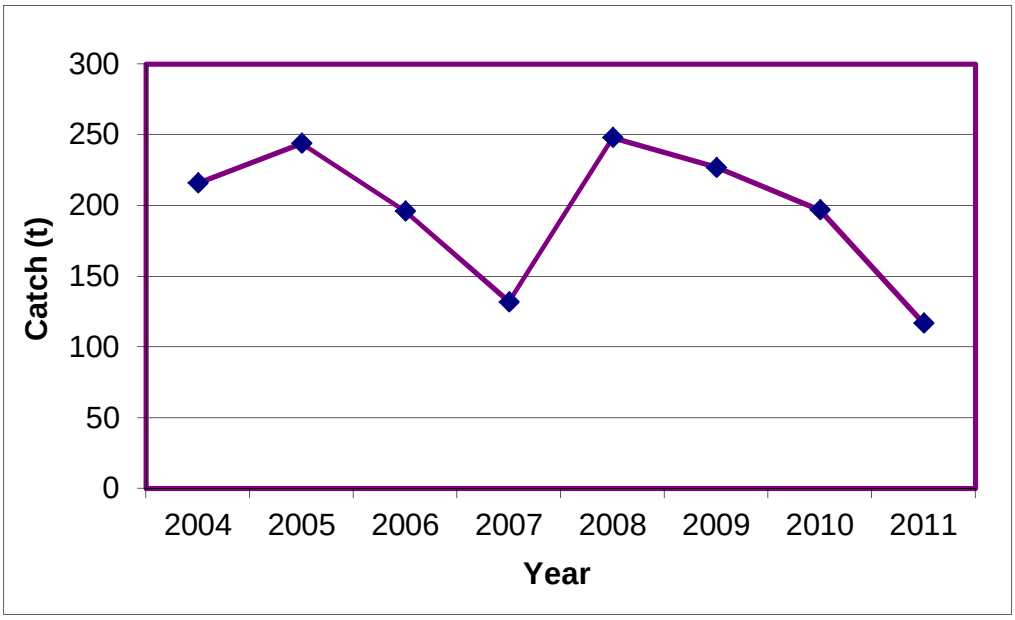

Figure 4. Estimated recreational catch (metric tons) of California halibut from 2004-2011. Data source: California Recreational Fisheries Survey