

California Sardine Landings in Other CPS Fisheries (2001-2006)
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This analysis is in response to the question of how many sardines are taken in other fisheries in California. The implication being, that if the sardine harvest guideline was reached in 2008, what other CPS fisheries might be affected by a sardine closure, since there is no "set aside" for incidentally caught sardines.

In terms of gear type, 98% of the sardine landed since 1980 has been landed either with either purse seines (DFG Gear Code 71) or drum seines (DFG Gear Code 73). The remaining 2% comes from all other gear types combined, including such gears as lampara, trawl nets, etc. Therefore, 98% of sardine are landed in CPS fisheries in California.

For the CPS fleet itself, there is a problem in that the fish landing receipt does not identify which species was "targeted" by the fisherman. So, for example, if a purse seiner makes a landing of 55% sardine and 45% mackerel, there is no confirmation that the individual was targeting sardines. The fisherman may have been after mackerel or even squid, but opportunistically brought in sardines if the target species was not found.

In 2006, we found that 18% of the landing receipts identified sardine and some other CPS on the landing receipt. This represents 20% of the total 46,672 metric tons of sardine landed in 2006 (Table 1). The remaining 80% of the 2006 sardine landings were identified as pure loads on the landing receipts.

Table 1. Sardine landed with other CPS on the landing receipt for 2006 (source CDFG CFIS database).

CPS Species	Metric Tons (Sardines)	Percent
Sardine captured with Market Squid	486	5.3%
Sardine captured with Bonito	0.001 (320 lbs)	<1%
Sardine captured with Pacific Mackerel	4,999	54.2%
Sardine captured with Jack Mackerel	1,906	20.6%
Sardine captured with Anchovy	1,825	19.8%
Total sardine captured with other CPS	9,216	100%

However, this does not get completely at the question of which CPS fishery caught these sardines. It only gives us the incidental landings of other CPS species with sardines. Therefore, in order to answer the question, we had to assume that for each CPS landing receipt, the single species with the greatest percentage of the catch by weight reported was the "targeted" species (Table 2). So, for 2006, 4.7% (2,193 mt / 46,672 mt) of all sardine landings came from fisheries targeting other CPS.

To get at the question of which of the CPS fisheries may be impacted by a sardine closure, we broke the CPS landings from Table 2 down by month to show when sardines are most likely to appear in landings targeting other CPS (Figure 1).

Table 2. Sardine landed in other CPS fisheries in 2006 identified as the species with the greatest percentage (by weight) reported on the landing receipt (source CDFG CFIS database).

CPS Species	Metric Tons (Sardines)	Percent
Sardine captured in Market Squid Fishery	284	13.0%
Sardine captured in Bonito Fishery	0	0.0%
Sardine captured in Pacific Mackerel Fishery	701	32.0%
Sardine captured in Jack Mackerel Fishery	131	6.0%
Sardine captured in Anchovy Fishery	1,077	49.1%
Total sardine captured other CPS Fisheries	2,193	100.0%

Metric Tons of Sardine Landed in Other CPS Fisheries in 2006

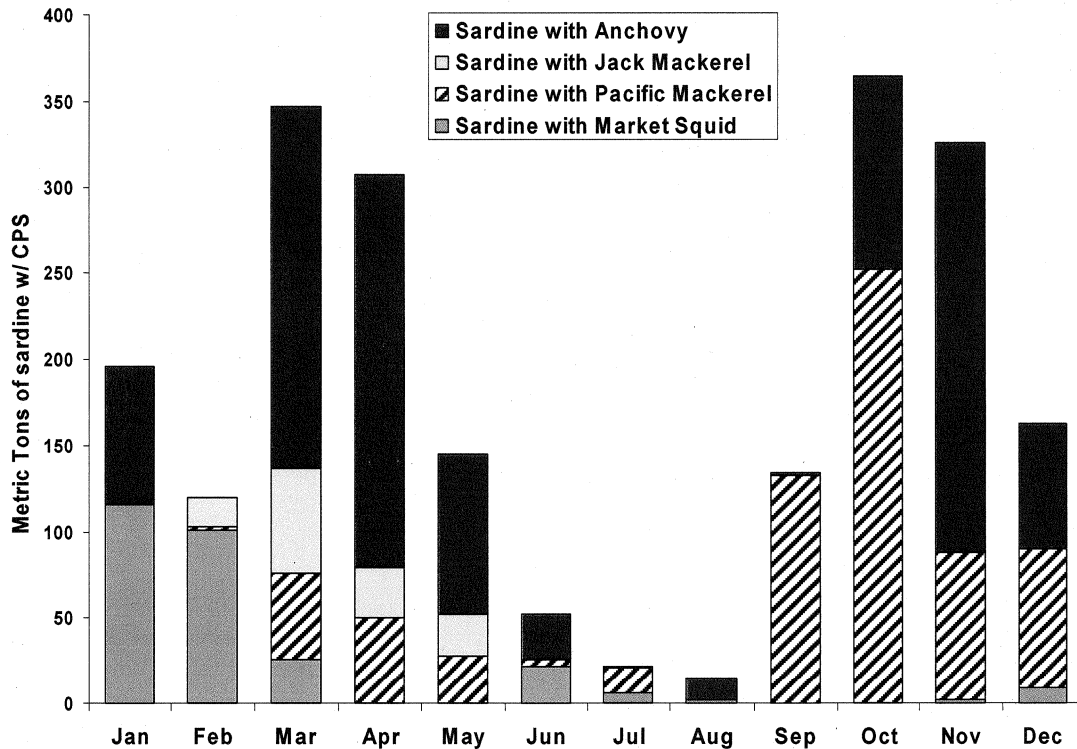


Figure 1. Metric tons of sardine landed in other CPS fisheries by month in 2006 (source CDFG CFIS database).

For the last six years, the amount of sardine landed in other CPS fisheries averaged over 1,300 mt, which is approximately 3% of the total sardine landed for each year (Table 3). The maximum percentage was the 2006 value at nearly 5%.

Nearly half (46%) of all sardine landed in other CPS fisheries came from the anchovy fishery, with an additional 31% from the Pacific mackerel fishery and 15% from the market squid fishery (Table 4). To identify those months and other CPS fisheries that may be vulnerable to a closure if the sardine HG is achieved, the average monthly break down of sardine landings in other CPS fisheries for 2001-2006 was plotted in Figure 2.

Year	Sardine in other CPS Fisheries	Total Sardine Landed	Percent
2001	1,507	51,893	2.9%
2002	1,280	58,353	2.2%
2003	611	34,732	1.8%
2004	1,371	44,305	3.1%
2005	850	34,633	2.5%
2006	2,193	46,672	4.7%
Average 2001-2006	1,302	45,098	2.9%

CPS Species	Average Metric Tons (Sardines)	Percent
Sardine captured in Market Squid Fishery	204	15%
Sardine captured in Pacific Mackerel Fishery	408	31%
Sardine captured in Jack Mackerel Fishery	105	8%
Sardine captured in Bonito Fishery	0	0%
Sardine captured in Anchovy Fishery	619	46%
Total sardine captured other CPS Fisheries	1,337	

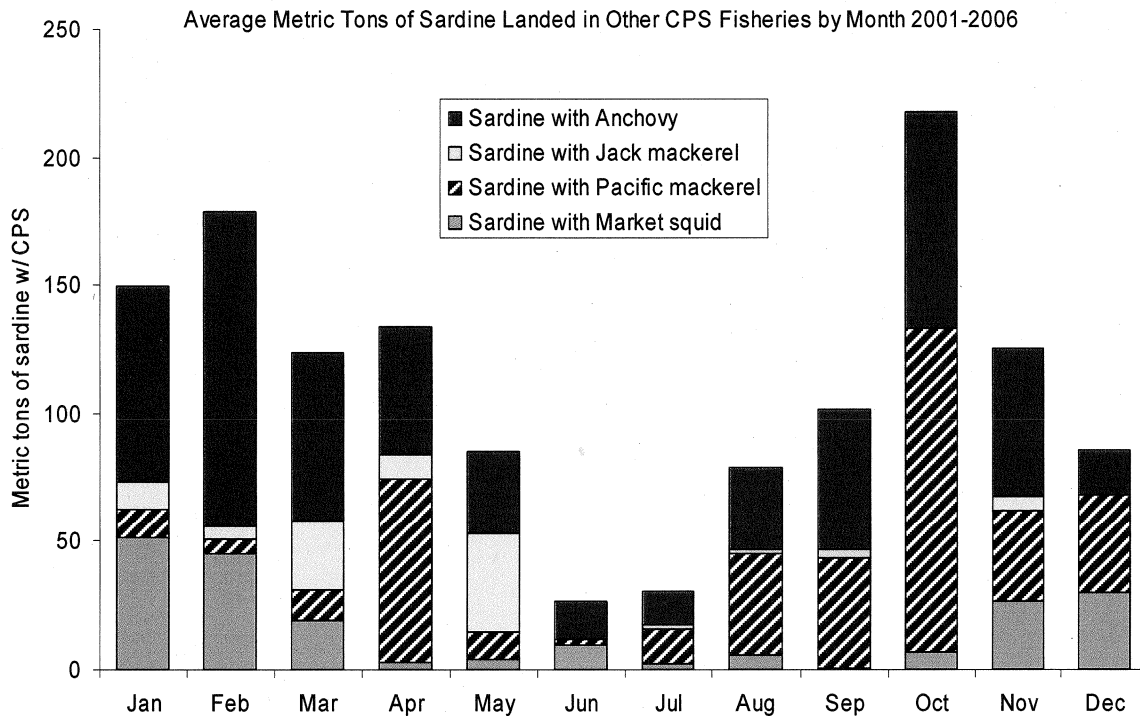


Figure 2. Average metric tons of sardine landed in other CPS fisheries by month for 2001-2006 (source CDFG CFIS database).