

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT ON CURRENT WETFISH MONITORING AND
MANAGEMENT ACTIVITIES

This California Department of Fish and Wildlife (CDFW) report summarizes current wetfish monitoring and management efforts, which includes an update on the recent CDFW live bait public meeting and live bait catch tracking, a description of the CDFW Coastal Pelagic Species (CPS) finfish monitoring and biological sampling program, an update on the status of CDFW's northern anchovy sample collection and processing, a description of recent northern anchovy catch distribution in California, and an update on the amount of incidental Pacific sardine taken in other targeted CPS finfish fisheries.

CDFW Live Bait Meeting Update

The CDFW held a public meeting May 28, 2015 to discuss live bait operations and catch. Invited guests totaled 25 representatives from the live bait industry (boat and barge operators), commercial passenger fishing vessels and landings, and the recreational fishery. Participants originated from various ports, including Emeryville, Oxnard, Marina del Rey, San Pedro, Long Beach, Newport Beach, Dana Point, and San Diego, and included all large live bait operators. The goals of meeting were to improve understanding of live bait fishing operations, catch reporting, and the context of live bait in terms of CPS management. The meeting resulted in an informational exchange leading to a better understanding of the live bait fishery and management, and to improvements in catch accounting. Specifically, CDFW and live bait industry representatives agreed on revisions to the current log forms to better account for catch, and to continued cooperation to effectively monitor and track catch in the future.

Live Bait Catch Summaries

Reported California live bait catch for Pacific sardine and anchovy from 2000-2014 are shown in Figure 1. Note these catch data are converted from reported scoops from voluntary logs, using a conversion of 12.5 lbs per scoop. Refinements to the log forms and efforts to increase participation in the log program are now being undertaken to more accurately account for take from this fishery.

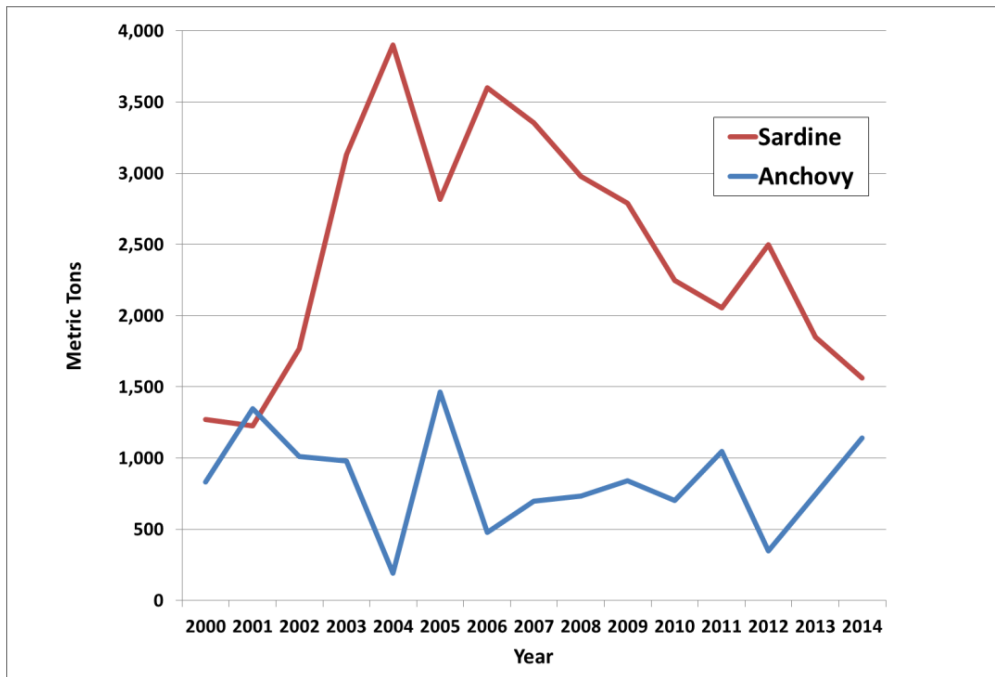


Figure 1. California live bait catch for Pacific sardine and northern anchovy for years 2000-2014. Data from voluntarily submitted logbooks submitted to CDFW.

Incidental Pacific Sardine Taken in Other CPS Finfish Fisheries since 2014/15 Sardine Closure

Since the closure of the directed commercial Pacific sardine fishery on April 28, 2015, there has been 89.9 mt of incidental Pacific sardine landed in the California Pacific mackerel fishery. From landing receipt data, the average percent of Pacific sardine within those 22 Pacific mackerel landings was 11.4 percent. Percent composition of loads is determined by dealers for landing receipts and is also estimated by dockside samplers. These incidental landings of Pacific sardine fall well below the 500 mt and 45 percent incidental limits set by the Council for the 2014/15 fishing season.

Processors of commercial coastal pelagic species (CPS) are required to submit landing receipts twice a month to CDFW (Fish and Game Code § 8046). Information provided on landing receipts includes set location (CDFW block) and pounds landed by species for each landing. Catch data (metric tons) have been mapped by CDFW blocks and year from 2000 to 2014 (Appendix A).

CDFW CPS Finfish Biological Sampling Program

California’s Coastal Pelagic Species/Highly Migratory Species (CPS/HMS) Project began their current biological sampling program for actively managed species in the mid-1990s. The objective of this program is to collect fishery-dependent data (length, weight, sex, maturity, and age) and commercial landings information for CPS finfish landed by the California purse seine fishing fleet, which targets these species. These data are used by CDFW to monitor the fishery in California and by NOAA National Marine Fisheries Service (NMFS) to inform stock assessments for Pacific sardine and Pacific mackerel. Field sampling is conducted at Moss Landing, Monterey, Ventura, Port Hueneme, San Pedro, and Terminal Island port areas, where the majority of CPS landings occur. Pacific sardine and Pacific

mackerel have been sampled since the start of the program, while northern anchovy has been sampled since January 2014 (Table 1).

Table 1. Number of CPS finfish samples collected in California from 2000-2015. Number of samples by year, species, and port area (MN = Moss Landing/ Monterey ports, SB = Ventura/Port Hueneme ports, LA = San Pedro/Terminal Island ports). *2015 data as of May 6, 2015.

Year	Pacific Sardine				Pacific Mackerel				Northern Anchovy				Grand Total	
	MN	SB	LA	Total	MN	SB	LA	Total	MN	SB	LA	Total		
2000	0	0	110	110	0	0	80	80	Samples not collected until Jan 2014	0			0	190
2001	0	0	139	139	3	0	83	86		0			0	225
2002	41	0	138	179	0	0	94	94		0			0	273
2003	22	0	131	153	0	0	76	76		0			0	229
2004	16	0	137	153	1	0	67	68		0			0	221
2005	26	4	140	170	0	1	101	102		0			0	272
2006	90	0	128	218	4	0	93	97		0			0	315
2007	116	14	135	265	2	1	78	81		0			0	346
2008	42	0	80	122	0	1	43	44		0			0	166
2009	40	0	33	73	1	0	23	24		0			0	97
2010	50	1	87	138	0	0	18	18		0			0	156
2011	33	0	44	77	0	0	13	13		0			0	90
2012	34	5	88	127	0	1	59	60		0			0	187
2013	7	1	55	63	0	0	55	55		0			0	118
2014	20	0	35	55	4	0	43	47	48	0	2	50	152	
2015*	12	1	15	28	10	1	17	28	46	1	0	47	103	
Total	549	26	1,495	2,070	25	5	943	973	94	1	2	97	3,140	

The current finfish sampling protocol is based on a stratified random sampling plan. Each month represents one stratum, and 12 days are randomly sampled within each month for each port area. Field staff collect samples of each species in addition to obtaining a visual species composition of the loads they are sampling. Landing information for each sampled load is also collected and includes: date of landing, vessel name and FGN, captain's estimate of landing weight, set location (CDFW block), dealer name, landing receipt number, incidental species in the load, if a spotter pilot was used to locate the fish, and any other anecdotal information collected while sampling. Field staff collect one sample (25 fish) for each species that is available (Pacific sardine, Pacific mackerel, northern anchovy) that constitutes greater than 1 percent of an individual landing on each sample day. Samples are then processed in the laboratory where the standard length (mm), weight (g), sex, and maturity of fish are recorded and otoliths are extracted for ageing. On average, it takes field staff approximately two to four hours to sample an average load of finfish and one to two hours to process a single sample in the laboratory. Additionally, it takes roughly one hour to determine the age of 25 fish by examining the otoliths under a microscope. Department readers collaborate with other scientists from age and growth laboratories from the U.S., Mexico, Canada, and Australia. For standardization in reading, age comparisons are made between different labs and individual readers.

The Department's biological data collected from the fishery is used in annual stock assessments for Pacific sardine and Pacific mackerel. Weight and length are used to determine the weight-at-length relationship for the populations and lengths are also used to calculate the length composition of the California fleet's catch. Sardine age is used to determine the size-at-age from the fishery samples and combined sexes are included in the present assessment model. Conditional age-at-length compositions estimate growth within the model and data is split between the northern and southern California fishery for Pacific sardine.

Northern Anchovy Sample Collection and Processing update

In November 2013 NMFS presented a potential schedule of CPS stock assessments to the Council, which included full assessments for the northern and central subpopulations of northern anchovy in 2015 and 2016, respectively. CDFW's CPS/HMS Project incorporated northern anchovy into the finfish sampling program and, in January 2014, began collecting biological information for the fishery to aid in monitoring the changes in the fishery in California and to gather data that could be used in the development of a stock assessment for the central subpopulation of northern anchovy. Since 2014, 97 northern anchovy samples (2,025 fish) have been collected statewide. CDFW staff began processing Southern California samples in May 2014 and Northern California samples in May 2015. Otoliths of northern anchovy samples are being extracted from these samples and stored, but there is a need to re-develop expertise on ageing northern anchovy.

Recent Northern Anchovy Landings Distribution

Unlike other CPS fisheries, northern anchovy landing sizes tend to be larger in Monterey Bay area ports within the last decade with smaller but more frequent landings in the Southern California Bight (Table 2). Additionally, when market squid and Pacific sardine landings are low due to market demand or availability to the fishery, northern anchovy landings tend to increase. There was a clear increase in landings in 2014 compared to the previous five years (Figure 2). As of May 6, 2015 preliminary CDFW records indicate that over 5,000 mt of northern anchovy has been landed.

Table 2. Summary of California commercial northern anchovy fishery statistics north and south of Point Conception from 2000-2015. Percent of total California northern anchovy landings and the number of landings. Data obtained from the California Commercial Fisheries Information System (CFIS) and from landing receipts observed at the docks as available. *Data preliminary; 2015 data as of May 6, 2015.

Year	Percent of Total Landings		Number of Landings	
	North	South	North	South
2000	62%	38%	243	402
2001	61%	39%	272	464
2002	59%	41%	193	242
2003	43%	57%	99	229
2004	57%	43%	182	229
2005	55%	45%	234	300
2006	60%	40%	242	287
2007	74%	26%	208	191
2008	86%	14%	259	245
2009	37%	63%	28	146
2010	70%	30%	18	115
2011	70%	30%	37	208
2012	91%	9%	71	70
2013	94%	6%	109	187
2014*	99%	1%	253	93
2015*	100%	0%	124	3
Average	70%	30%	161	213

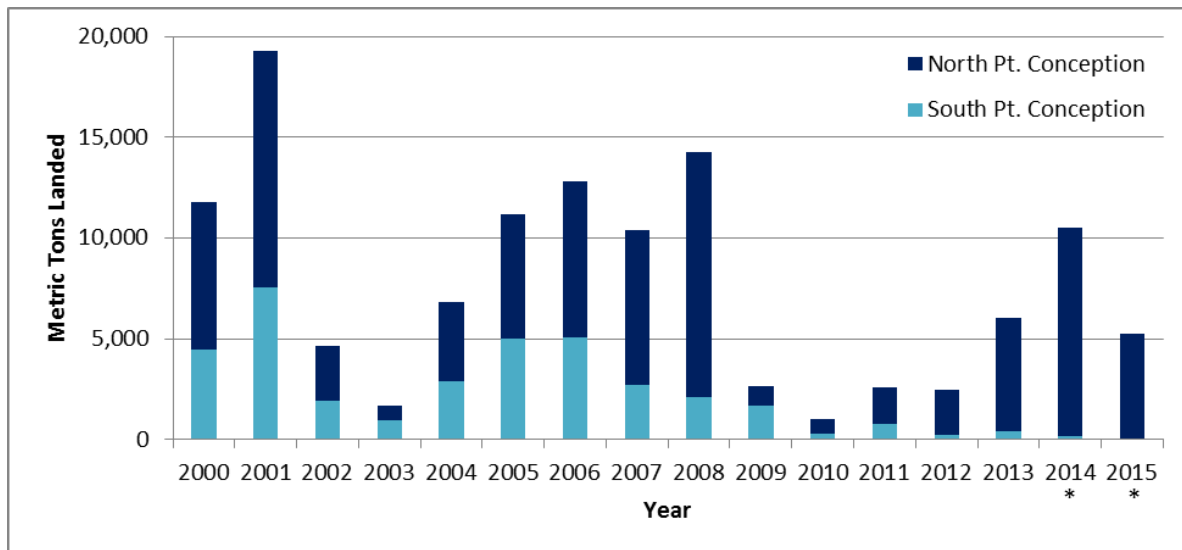
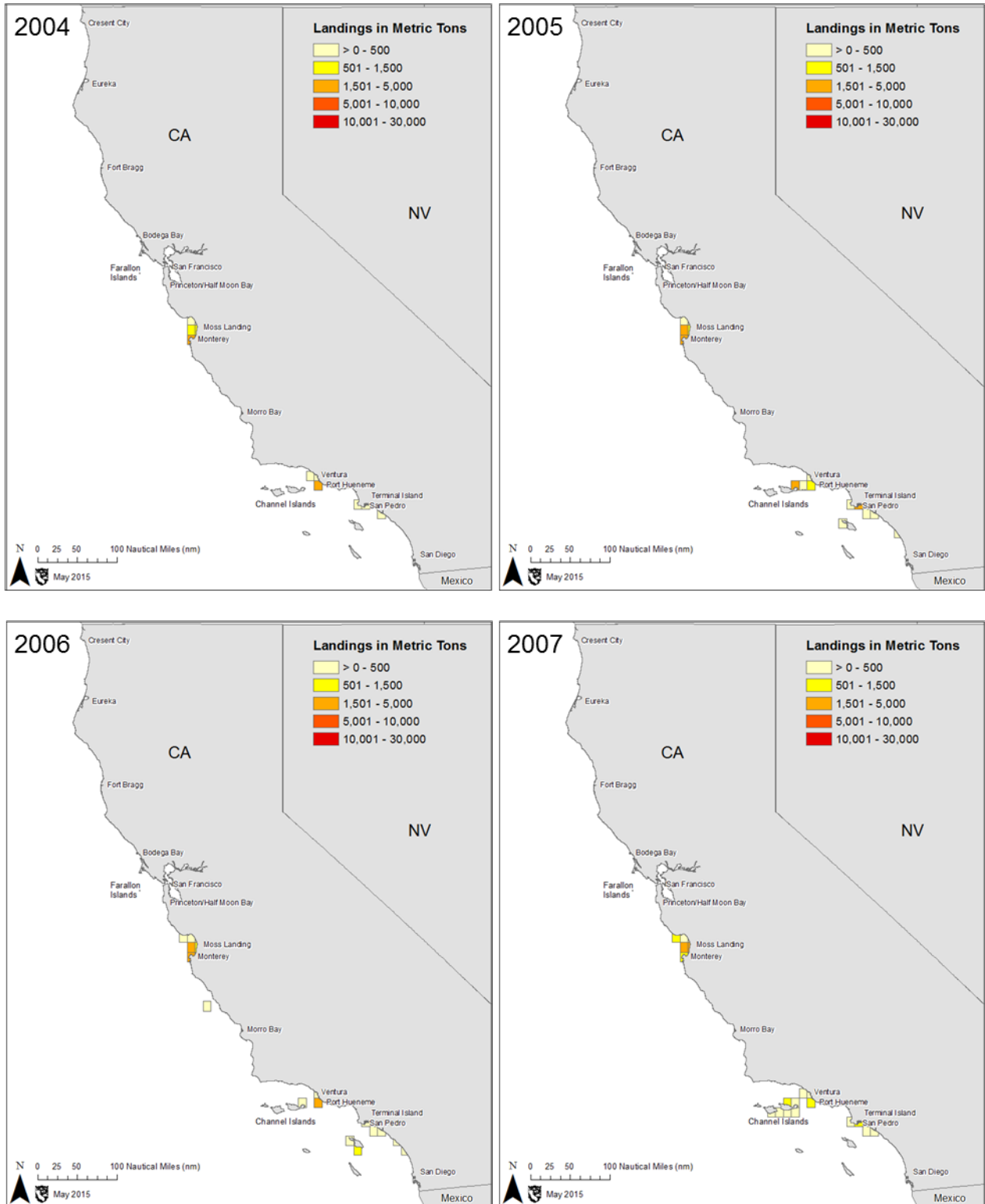


Figure 2. California northern anchovy landings north and south of Point Conception from 2000-2015. Data obtained from the California Commercial Fisheries Information System (CFIS) and from landing receipts observed at the docks as available. *Data preliminary; 2015 data as of May 6, 2015.

Appendix A

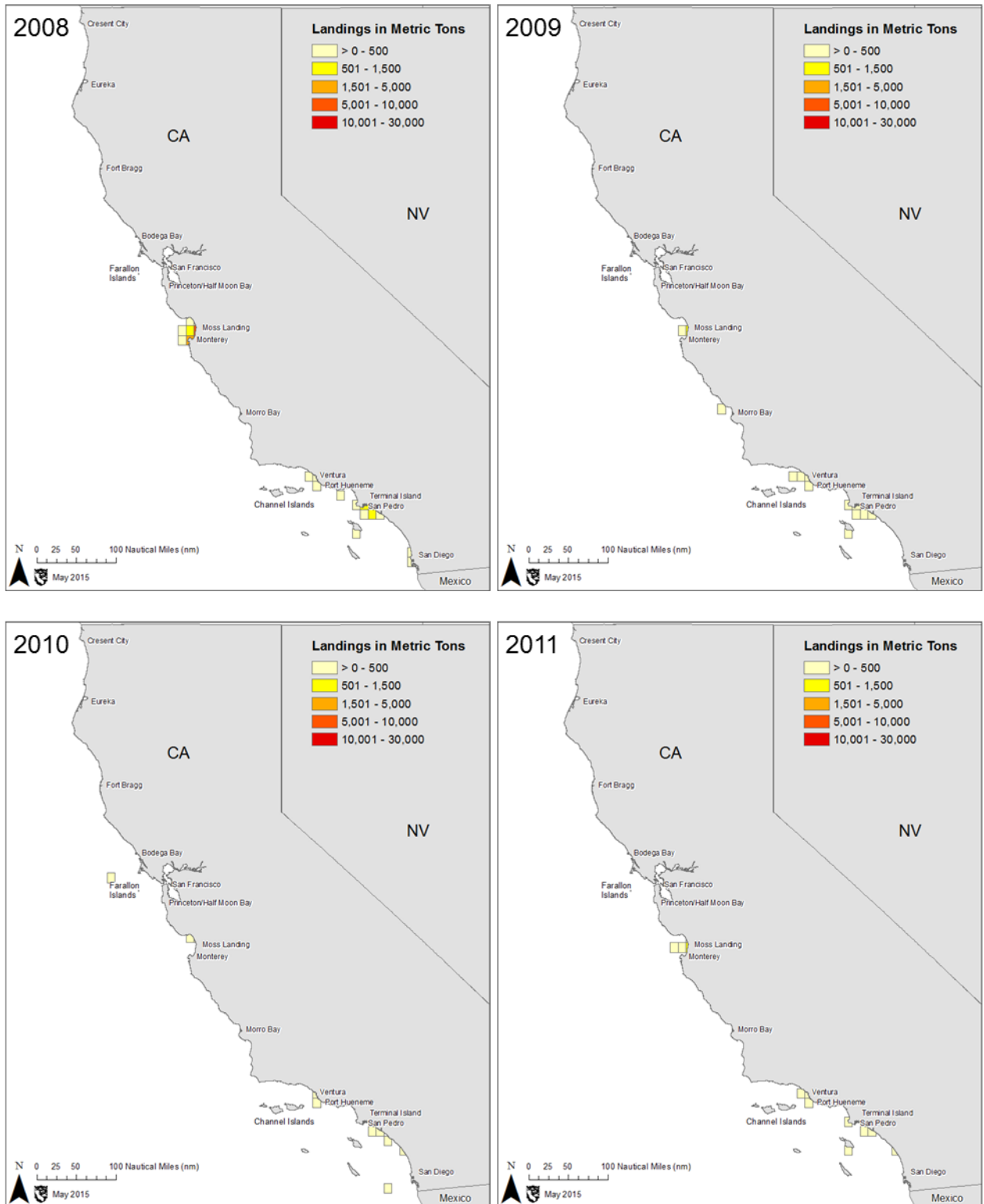
Maps of California northern anchovy landings by CDFW Block, 2000-2014



Maps do not contain any confidential commercial northern anchovy landings data; vessel activity was not disclosed where less than 3 vessels set per block per year.

Appendix A

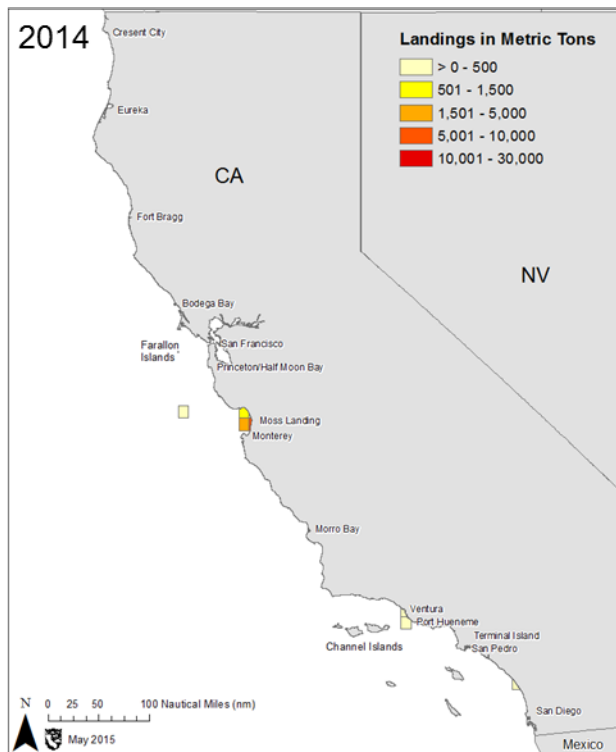
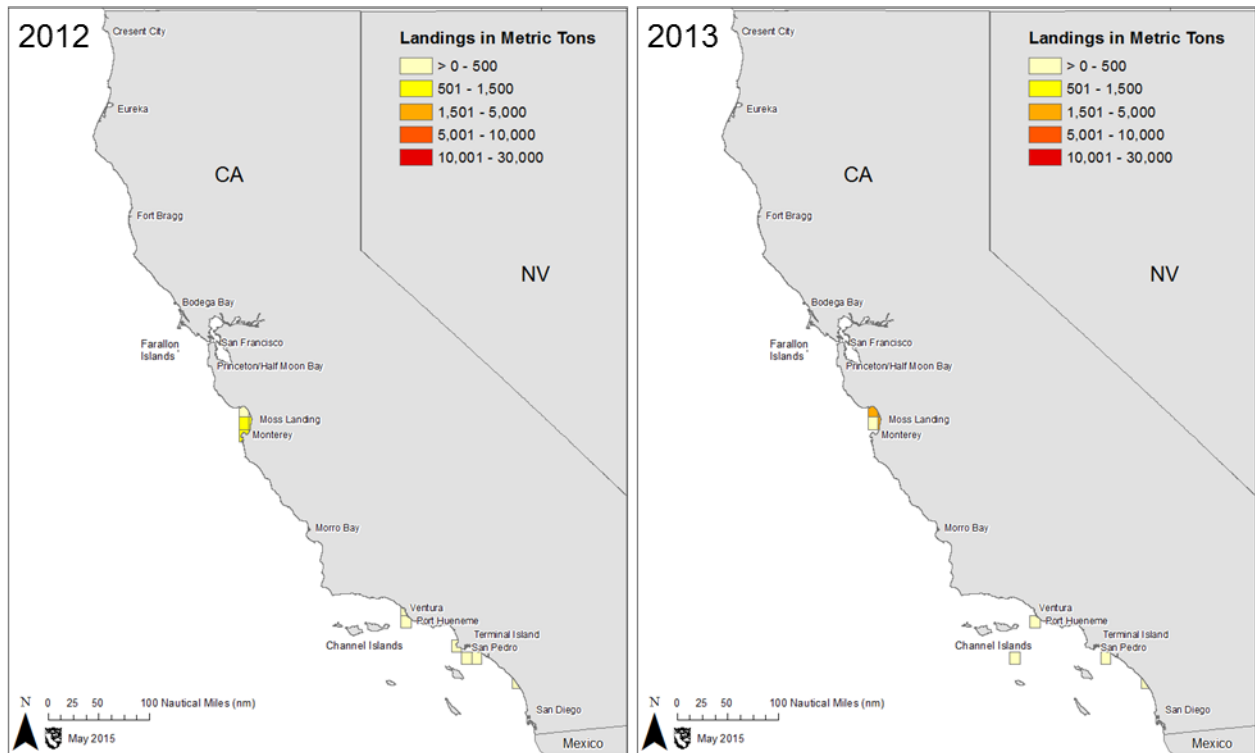
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