

Summary of the 2012-13 Pacific Herring Spawning Population and Commercial Fisheries in San Francisco Bay



CDFW photo



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**California Department of Fish and Wildlife
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SPAWNING POPULATION SUMMARY

The spawning biomass estimate for the 2012-13 season is 79,500 tons, which exceeds the historical average (1979-80 season to present) of 52,000 tons. This is the fourth year of an increase in the spawning biomass since the 2008-09 season record low estimate of 4,800 tons (Figure 1). Age composition data indicates that the increase in spawning biomass was due to a strong recruitment of 3-year old herring to the spawning population (Figure 2). Four and 5-year old herring also continued to persist in the population. The increase in recruitment, returning 4- and 5-year old herring, is likely due to more favorable biological and environmental conditions, both in estuarine and oceanic ecosystems.

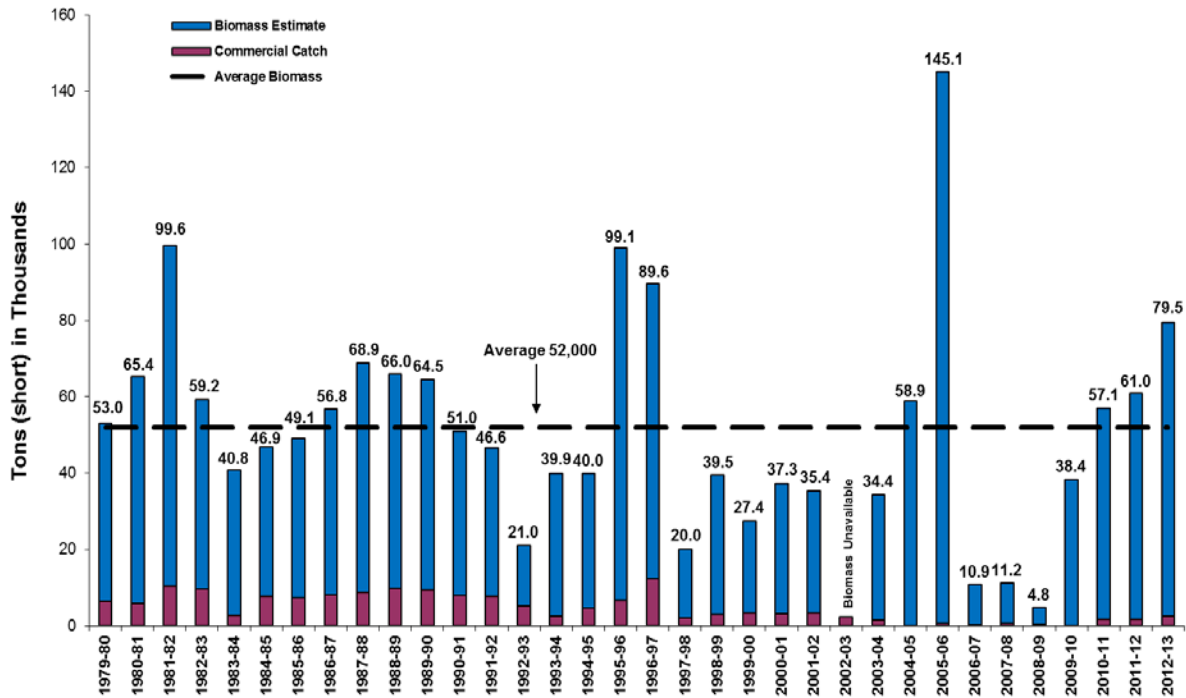


Figure 1. San Francisco Bay Pacific herring biomass estimates and commercial catch

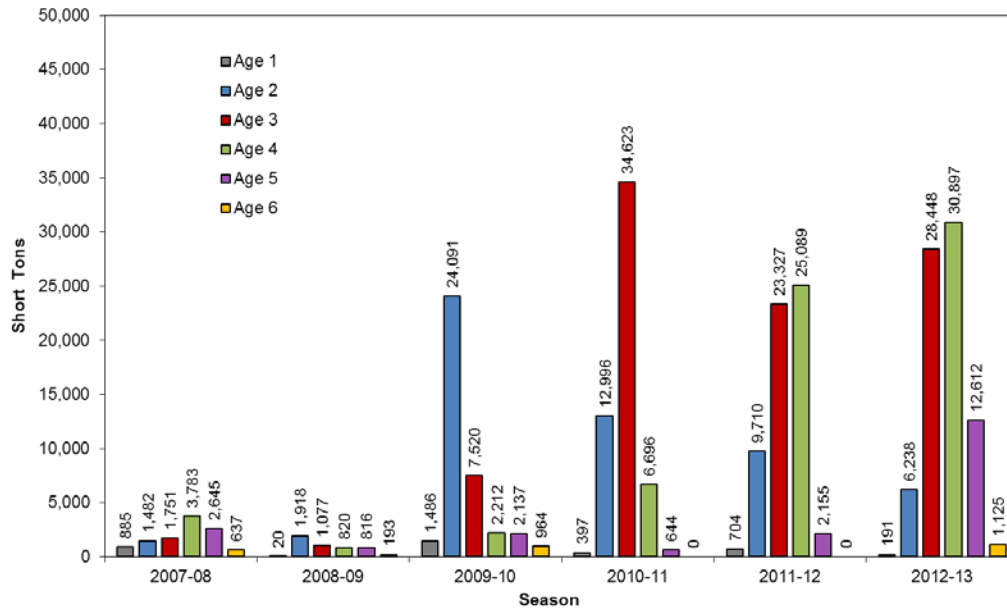


Figure 2. San Francisco Bay spawning biomass by age class for the 2007-08 to 2012-13 seasons

Twelve spawning events were recorded during the 2012-13 season, primarily within the central and northern areas of San Francisco Bay. Spawning events occurred from as far north as Point San Pablo and south to Coyote Point. The first recorded spawn of the season occurred December 3-5, 2012, and the last recorded spawn occurred on March 10-11, 2013 (Table 1). There were several protracted spawning events in the North Bay and intermittent smaller spawning events occurring in the southern areas of the bay (Figure 3). The spawning biomass for the season was temporally and spatially well distributed this season. This type of distribution helps prevent over exploitation of a single spawning wave and is an important consideration when making management decisions for the herring fishery.

Table 1. San Francisco Bay Pacific herring spawning biomass estimate by event with commercial catch totals, 2012-13

#	Approximate Spawn/Catch Date	Location	Submerged Vegetation	Shoreline	Spawn Total	Gill-net	HEOK	Fresh Fish	Biomass Total
1	December 3-5	Coyote Point		7	7				7
2	December 16-17	Richardson Bay	271		271				271
3	December 26-30	Richardson Bay	6,228		6,228		2.7		6,230
4	December 27-31	Coyote Point		262	262	0.5			263
5	January 7-11	San Francisco WF		11,282	11,282	959.5	57.6		12,299
6	January 11-14	Richardson Bay – Sausalito WF	34,533	4	34,537	9.9			34,547
7	January 24-30	Richardson Bay	1,831		1,831	372.7	78.6		2,282
8	February 1-6	Richardson Bay	14,372		14,372	318.9			14,691
9	February 7-8	Paradise – Kell Cove	141	923	1,064	668.5	37.5		1,770
10	February 8-13	Point Richmond	1,889	757	2,646				2,646
11	February 16-19	Point San Pablo	515	28	543				543
12	March 10-11	Richardson Bay	3,958		3,958	2.8			3,961
Spawn Events (n) = 12		Totals in short tons	63,738	13,263	77,001	2,333	176	0	79,510

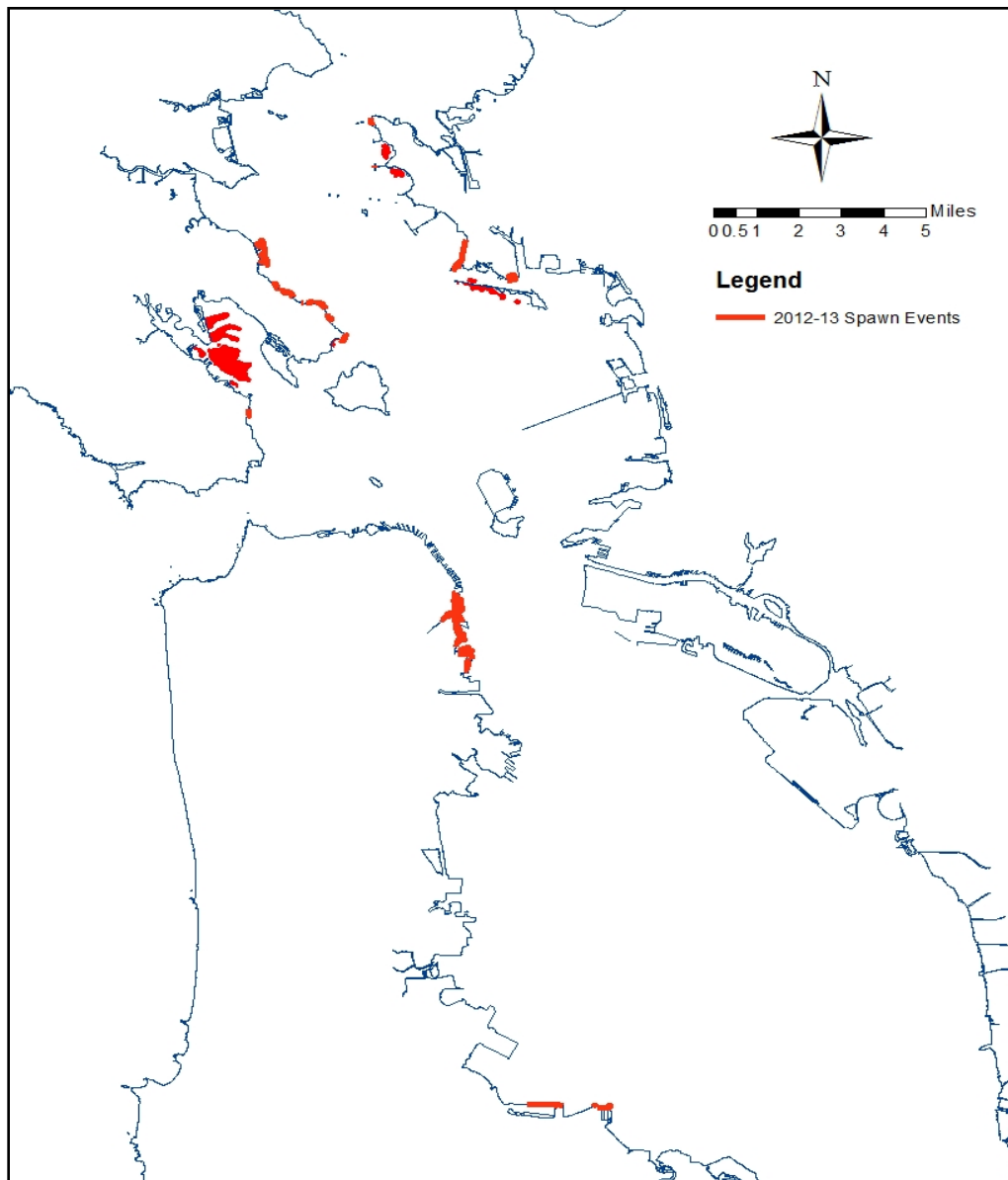


Figure 3. San Francisco Bay herring spawn event map 2012-13 season

Age composition for the 2012-13 season shows continued rebuilding of the spawning stock through a strong recruitment of 3-year old herring (2009-10 year class) (Figures 2 and 4) and the return of large numbers of 4- and 5-year old herring in the spawning population. However, during the last several seasons, the herring population structure has experienced a truncation of older age classes which continued during the 2012-13 season. The numbers and proportion of age six and older herring remain below historical averages and is of concern because these older fish formerly supported the commercial fishery (Figure 5). See Appendix for additional historical data, including average roe counts, body lengths, and Condition Index.

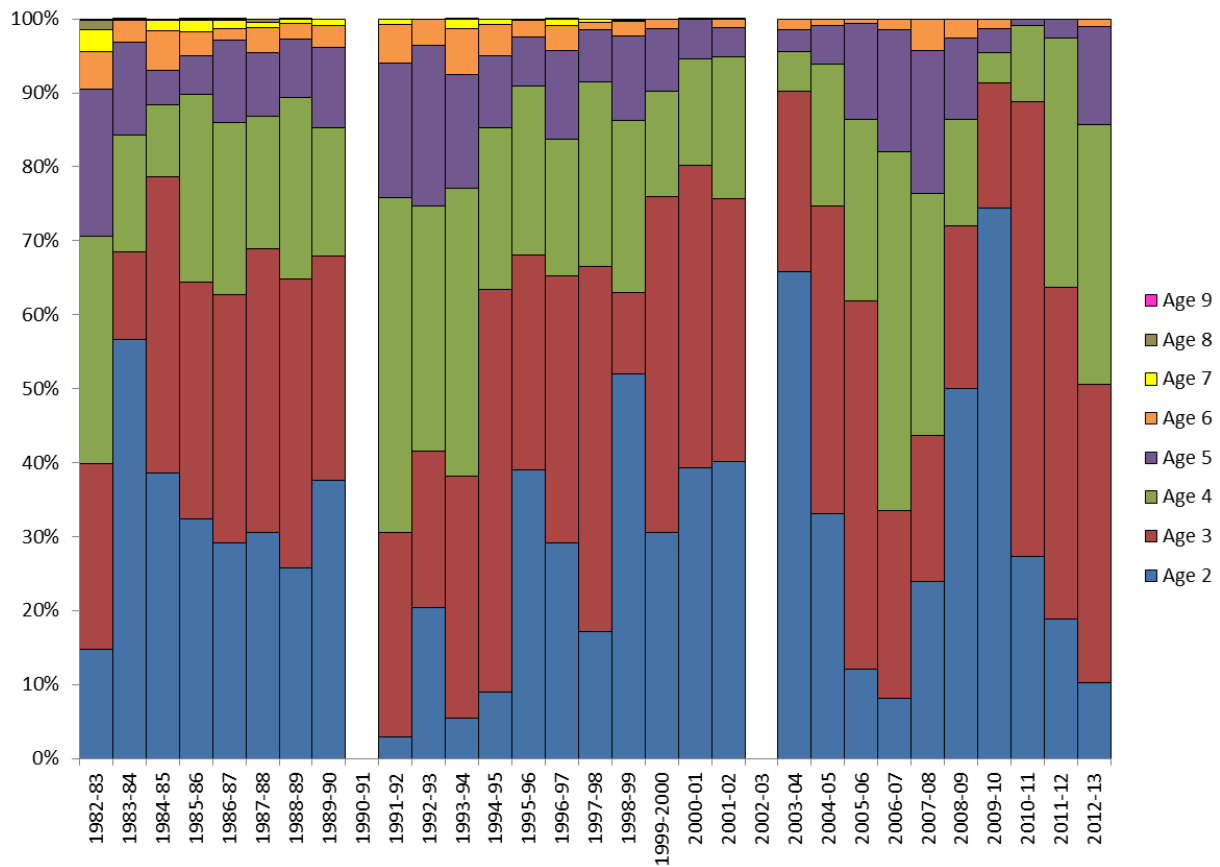


Figure 4. Age composition of the research catch (excluding age-1 fish) by number of ripe fish for the San Francisco Bay herring spawning biomass

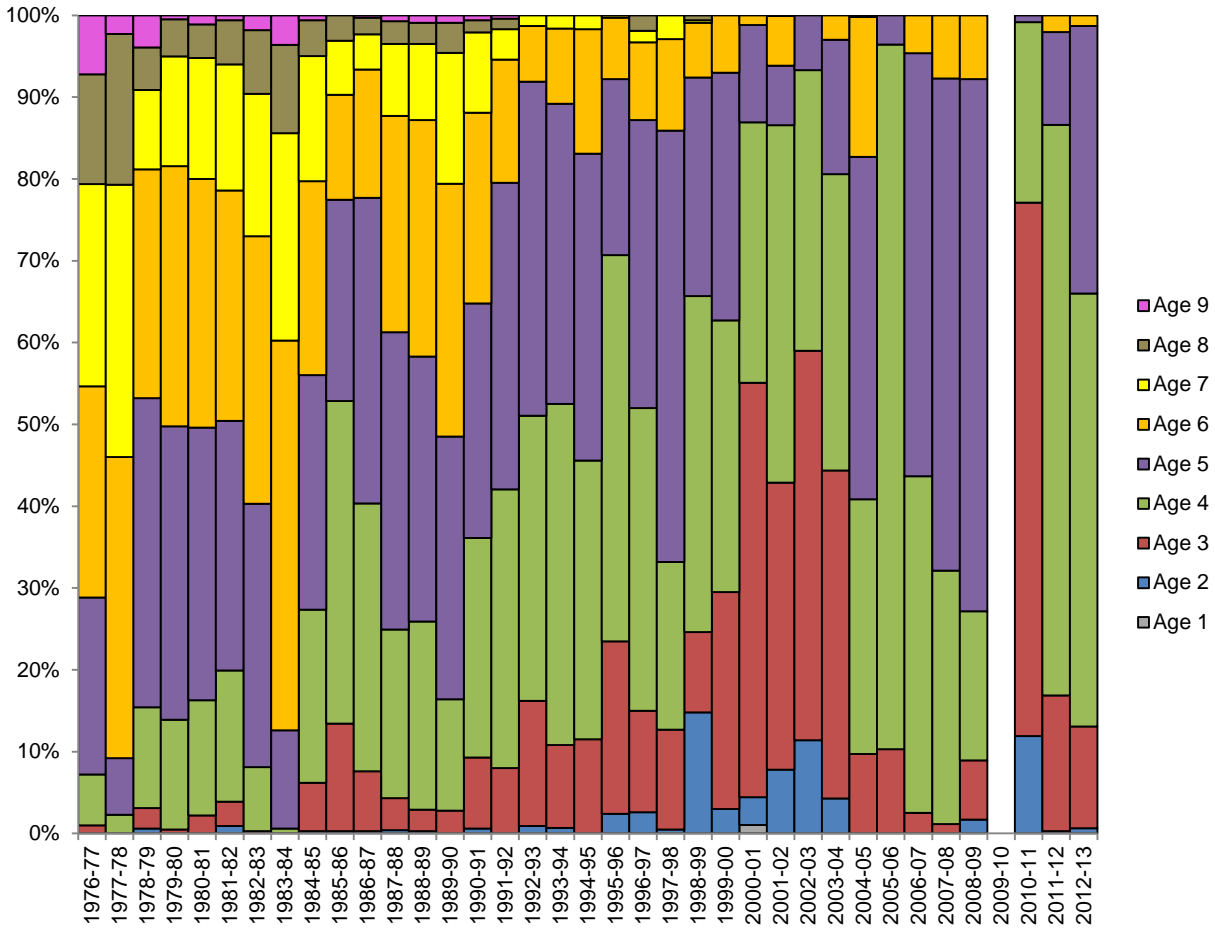


Figure 5. Age composition of the commercial gill net catch, percent by number of fish for the San Francisco Bay herring fishery. The fishery was closed during the 2009-10 season.

QUOTAS

The total fishery quota for San Francisco Bay was set at 2,854 short tons (tons) for the 2012-13 season. This was a 934 ton increase from the 2011-12 season quota of 1,920 tons and equaled 4.7 percent of the 2011-12 season spawning biomass estimate of 60,985 tons.

Gill Net Fishery

The quota for the gill net fishery was 2,655 tons (Tables 2 and 4) and was divided between the Odd and Even platoons based on the number of permits in each platoon, with the Odd receiving 1,280 tons and the Even receiving 1,375 tons. The DH fishery continued to be integrated into the Odd and Even platoons this season. These platoon allocations were modified during the season because the number of herring eggs on kelp (HEOK) permits issued increased from 8 to 10 permits between the 2011-12 and 2012-13 seasons (original gill net allocation was 2,690 tons).

Fresh Fish Market Fishery

The total Fresh Fish Market fishery quota for San Francisco Bay was set at 20 tons for the 2012-13 season with a maximum daily market order allowance of 1,000 pounds.

Herring Eggs on Kelp Fishery

The total quota for the herring eggs on kelp fishery (HEOK) fishery was 40.5 tons of product, which was converted from 179 tons of whole fish based on the total San Francisco Bay quota. All HEOK permittees must hold a herring permit (i.e. a regular gill net or a CH gill net). Each permittee's share of the herring quota (from the sac roe fishery) is then transferred to the HEOK fishery.

SEASON DATES

Gill Net Fishery

The gill net fishery opened at 8:00 a.m. on Wednesday, January 2, 2013, and closed at noon on Friday, March 15, 2013. Since 1974, the gill net fisheries have been closed each week from noon on Friday until 5:00 p.m. on Sunday. The weekend closures reduce conflict with recreational use of the bay and provide additional conservation safeguards, allowing herring to spawn without pressure from the commercial fleet. Both platoons ceased fishing prior to their scheduled closing dates; the Even surpassed its allocation on Thursday, February 7, 2013, and the Odd platoon ceased fishing prior to reaching its allocation when the herring buyers shut down operations for the season on March 8, 2013.

Fresh Fish Market Fishery

The fresh fish market fishery season was open from November 2, 2012, through March 31, 2013, excluding those periods when the roe fishery was open.

Herring Eggs on Kelp Fishery

The HEOK season began December 1, 2012, and ended March 31, 2013. The opening and closing dates for the HEOK fishery are not adjusted for holidays or weekends.

LANDINGS

Approximately 88 percent (2,332 tons) of the San Francisco Bay gill net quota was landed by the combined platoons during the 2012-13 commercial herring season (Table 2). The Even platoon exceeded their allocation by 100.7 tons and the Odd platoon was 423.9 tons short of its allocation. The fresh fish market fishery made no landings. The HEOK fishery landed 97 percent (39.3 tons product) of its quota.

TABLE 2. Herring quotas, landings, roe count, and fish count, for San Francisco Bay, 2012-2013 Season

FISHERY	QUOTA (tons)	LANDINGS (tons)	OVER QUOTA (+) UNDER QUOTA (-)	ROE COUNT	FISH COUNT
Odd gill net	1,280	856.1	- 423.9 tons	15.3	109.6
Even gill net	1,375	1,475.7	+ 100.7 tons	14.1	106.2
TOTAL GILL NET	2,655	2,331.8	-323.2 tons	14.6*	108.72*
Fresh fish market fishery (0 of 2 active)	20	0.0	- 20 tons		
HEOK (10 of 10 active)	179 whole fish = 40.5 tons product	174 tons whole fish = 39.3 tons product	- 5 tons		
SF BAY TOTAL	2,854	2,505.8	- 348.2 tons		

* Roe count and fish count are averages of information provided on receipts; therefore they may not equal the sum of platoon averages.

REVIEW OF EACH FISHERY

DH (December) Gill Net Platoon

Beginning with the 2010-2011 season, the DH herring gill net fishery was integrated into the Odd and Even fisheries with odd numbered DH permits fishing with the Odd platoon and even numbered DH permits fishing with the Even platoon.

Even and Odd Gill Net Platoons

The gill net fishery is divided into two separate platoons grouped by permit numbers that are either even or odd. Platoons alternate fishing weeks with the first platoon to fish being determined by whether January falls on an odd or even year; thus the Odd platoon was designated to fish first for the 2012-13 season.

TABLE 3. Quotas and landings for the herring **sac roe fisheries** in San Francisco Bay, 1972-73 season through 2012-13 season

Season	Quota (tons)	Landings (tons)	Season	Quota (tons)	Landings (tons)
1972-73*	1,500	436	1993-94	1,996	2,302
1973-74*	500	1,938	1994-95	4,408	4,574
1974-75*	600	514	1995-96	5,524	6,165
1975-76*	3,000	1,719	1996-97	13,543	11,496
1976-77*	4,000	4,201	1997-98	9,793	1,981
1977-78*	5,000	4,987	1998-99	2,739	2,817
1978-79*	5,000	4,115	1999-2000	5,460	3,356
1979-80*	6,000	6,430	2000-01	2,499	2,991
1980-81*	7,250	5,811	2001-02	4,128	3,287
1981-82*	10,000	10,415	2002-03	3,262	2,097
1982-83*	10,399	9,699	2003-04	2,020	1,540
1983-84*	10,399	2,828	2004-05	3,169	145
1984-85*	6,500	7,740	2005-06	4,328	744
1985-86*	7,530	7,278	2006-07	4,328	292
1986-87	7,470	8,098	2007-08	1,057	687
1987-88	8,432	8,741	2008-09	1,019	507
1988-89	9,238	9,736	2009-10	0	0
1989-90	9,057	8,962	2010-11	1,845	1,727
1990-91	8,858	7,741	2011-12	1,845	1,634
1991-92	7,134	7,417	2012-13	2,655	2,332
1992-93	5,175	5,151	Average :	5,089	4,259

* Quotas and landings prior to the 1985-86 season include HEOK and fresh fish allocation and landings.

Odd Platoon Summary

The Odd platoon consisted of 32 boats during the 2012-13 season. Of the 92 permits (including DH permits) assigned to the Odd platoon, only 62 permits were fished. The Odd platoon fishery opened on Wednesday, January 2, 2013, at 8:00 a.m. and made landings during the first, third and fifth fishing weeks of January and each of the first three weeks of February (Table 4). This platoon opened again at 4:00 p.m., Thursday, February 7, six hours after the Even platoon allocation was reached (and ultimately exceeded). Although the Odd allocation was not reached, the fleet ceased fishing on Friday, March 8, at 12:00 noon. Average roe percentage for Odd platoon landings equaled 15.3 percent.

TABLE 4. Daily landings for the *Odd gill net platoon*

Date	Pounds	Tons	# Receipts	Tons/Receipt	Fish Count	Roe Count
1/03/2013	4,491	0.51	2	0.26	N/A	9.9
1/15/2013	162	0.08	1	0.08	N/A	N/A
1/17/2013	72,448	9.82	12	0.82	N/A	11.5
1/28/2013	4,468	2.23	6	0.37	104	13.9
1/29/2013	20,502	10.25	10	1.03	114	14.1
1/30/2013	109,330	54.66	55	0.99	111	14.8
1/31/2013	94,636	47.32	37	1.28	113	14.6
2/01/2013	119,854	59.93	46	1.30	112	15.7
2/08/2013	709,874	354.94	59	6.02	107	15.2
2/11/2013	103,269	51.63	50	1.03	108	15.9
2/12/2013	294,237	147.12	51	2.88	108	16.1
2/13/2013	187,450	93.73	56	1.67	109	15.8
2/14/2013	29,477	14.74	30	0.49	104	15.5
2/15/2013	514	0.25	2	0.13	N/A	14.5
2/18/2013	12,109	6.05	4	1.51	N/A	15.2
3/05/2013	1,368	0.68	1	0.68	N/A	16.6
3/06/2013	4,290	2.15	10	0.21	N/A	16.7
Totals and averages	1,712,210	856.11	432	1.98*	110*	15.3*

* Tons per receipt, fish count and roe count are averages of all receipts; therefore they may not equal the sum of daily averages.

Even Platoon Summary

The Even platoon consisted of 33 boats during the 2012-13 season. Of the 96 permits (including DH permits) assigned to the Even platoon, only 66 permits were fished. The Even platoon fishery opened on Sunday, January 6, 2013, at 5:00 p.m. and made landings every other week from the second through sixth weeks of the season (Table 5). The allocation was exceeded, and the platoon was closed on Thursday, February 7, at 10:00 a.m. The average roe count for all Even platoon landings equaled 14.1 percent.

TABLE 5. Daily landings for the **Even** gill net platoon

Date	Pounds	Tons	# Receipts	Tons/Receipt	Fish Count	Roe Count
1/07/2013	9,511	4.76	14	0.34	N/A	13.6
1/08/2013	240,616	120.30	49	2.46	107	13.7
1/09/2013	809,736	404.87	66	6.13	107	13.4
1/10/2013	609,464	304.73	66	4.62	105	14.3
1/11/2013	247,759	123.88	55	2.25	107	14.6
1/21/2013	190,565	95.33	60	1.59	N/A	12.0
1/22/2013	137,770	68.89	54	1.28	N/A	14.4
1/24/2013	54,667	27.33	28	0.98	N/A	13.1
1/25/2013	13,431	6.72	17	0.40	N/A	15.0
2/04/2013	5,662	2.83	10	0.28	N/A	17.2
2/05/2013	20,112	10.06	12	0.84	N/A	18.0
2/07/2013	612,000	306.00	48	6.38	N/A	15.5
Totals and averages	2,951,385	1,475.69	479	3.08*	106*	14.1*

* Tons per receipt, fish count and roe count are averages of all receipts; therefore they may not equal the sum of daily averages.

Fresh Fish Market Fishery

The season opened on November 2, 2012, and closed on March 31, 2013. Two permits were issued for this season but no landings were made as fresh fish.

Herring Eggs on Kelp Fishery

The HEOK fishery consisted of 10 permits (an increase of two over the prior season), fished by two boats, during the 2012-13 season. All 10 permits landed product. The season opened on December 1, 2012, and closed on March 31, 2013. Over 39 tons (97 percent) of the quota for HEOK product was landed (Table 6).

TABLE 6. Quotas and landings of product for the **HEOK** fishery in San Francisco Bay, 1989-90 season through 2012-13 season

Season	Quota (tons)	Landings (tons)
1989-90	110.0	107.1
1990-91	144.0	47.0
1991-92	114.0	84.2
1992-93	84.5	47.4
1993-94	35.1	35.0
1994-95	85.0	13.1
1995-96	106.5	106.8
1996-97	286.0	185.7
1997-98	209.0	36.4
1998-99	54.4	31.7
1999-2000	99.2	30.5
2000-01	49.3	27.2
2001-02	73.2	45.3
2002-03	57.6	53.3
2003-04	38.9	6.3
2004-05	55.7	0
2005-06	34.0	0
2006-07	34.0	3.9
2007-08	17.0	15.1
2008-09	17.6	3.3
2009-10	0	Fishery closed
2010-11	14.3	0
2011-12	12.3	0
2012-13	40.5	39.3
Average :	73.8	39.9

Special Education Permits

No Special Education Permits were issued for the 2012-13 season.

APPENDIX

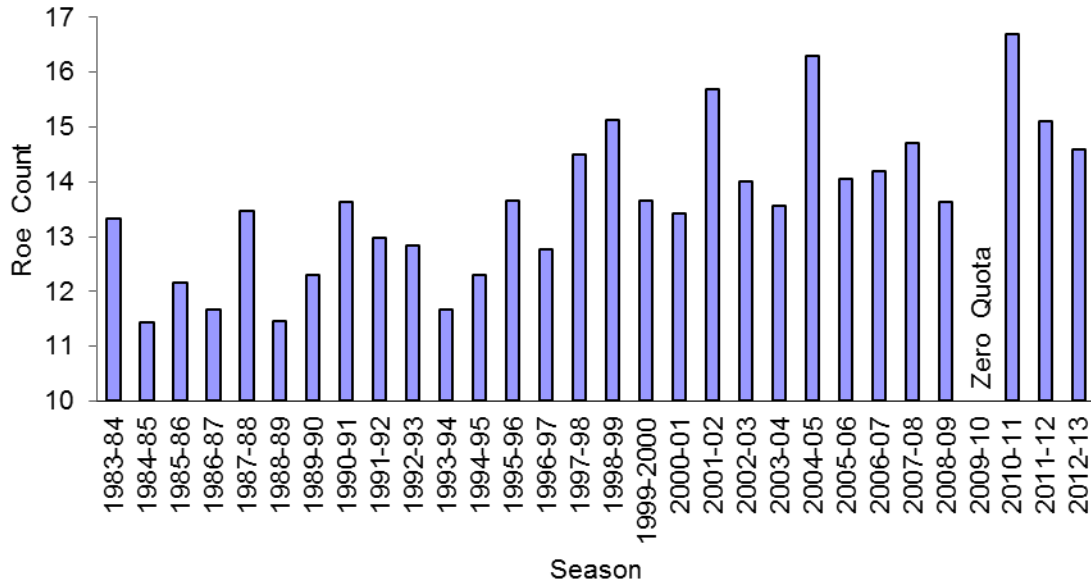


FIGURE A1. Average roe count in the San Francisco Bay gill net fisheries from 1983-84 through 2012-13 seasons

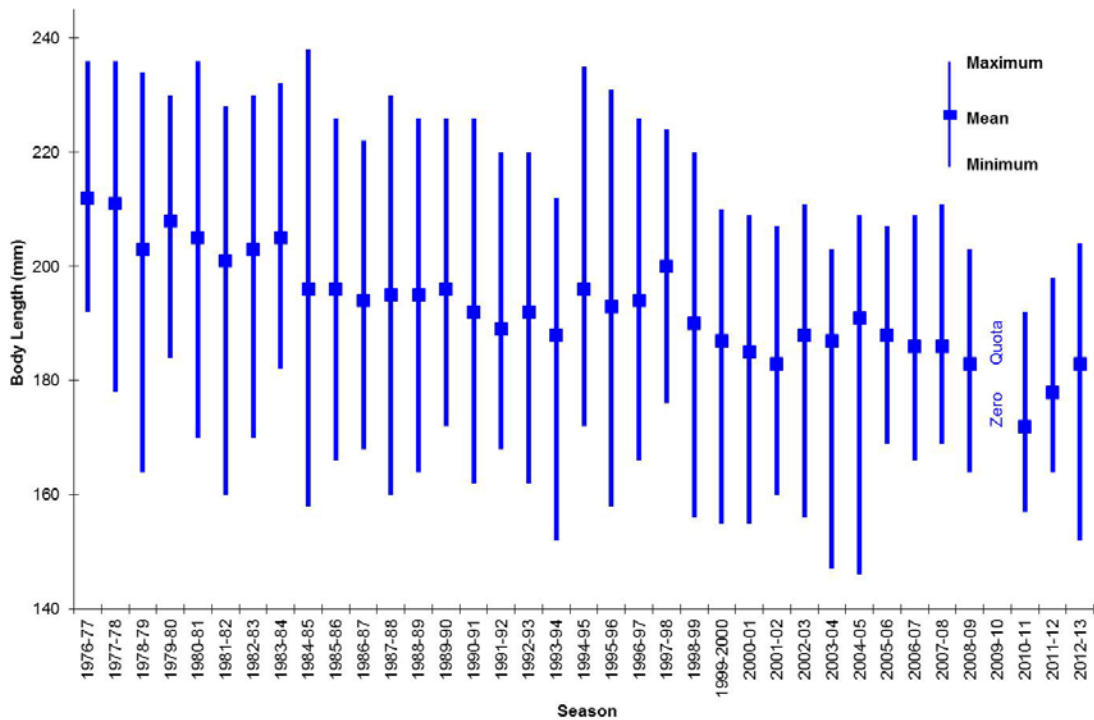


FIGURE A2. San Francisco Bay herring commercial gill net fishery minimum, mean and maximum body length from 1976-77 through 2012-13 seasons

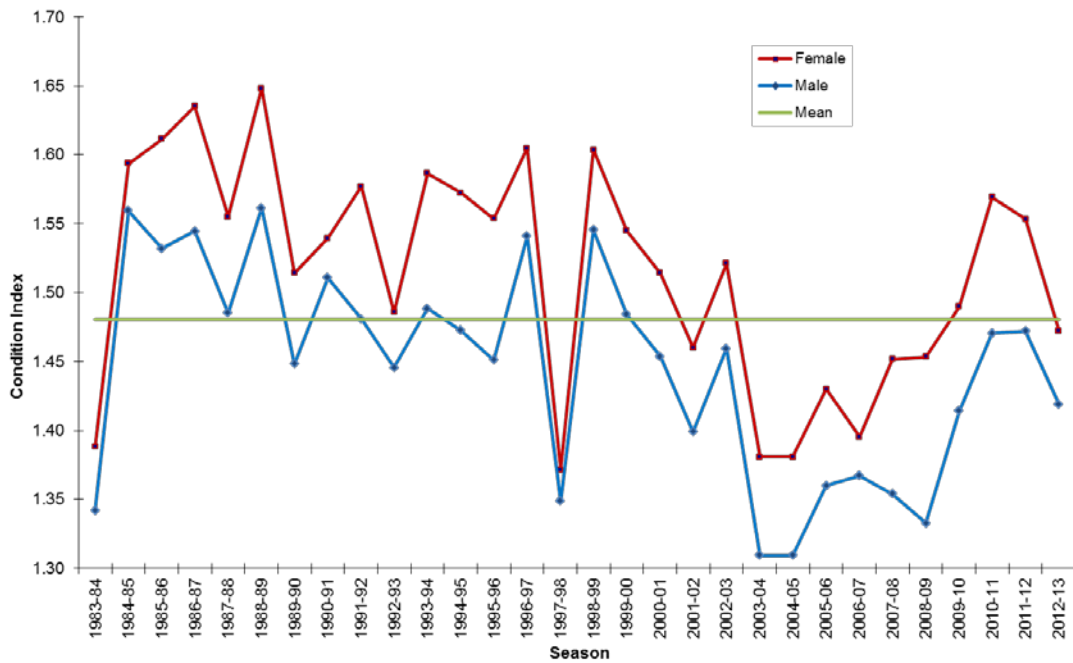


FIGURE A3. Average Condition Index (CI) and historical mean CI for ripe male and female fish in the research catch from the San Francisco Bay herring spawning population