

# **Summary of 2002-03 Spawning-Ground Surveys and Commercial Catch in Tomales Bay**



**Prepared for:  
Director's Herring Advisory Committee  
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## **Review of the 2002-03 Tomales Bay Pacific Herring Fishery Season by Month**

### **November**

We did not begin the field season until November 12, this season due to problems associated with hiring a scientific aide. By November 15, we found our first spawn of the season, which had occurred on November 13. It was a small trace spawn that covered parts of beds 28 and 28A. We began field mapping and taking density samples. *Gracilaria* seemed to be more widespread in the southern eelgrass bed areas than previous seasons. However, *Gracilaria* density seemed to be reduced in Marconi Cove, which had the greatest density last season. On November 25, we conducted our first dive survey since the 2000-01 season. We surveyed beds 1A, Marconi Cove, and 28A. We used the results from the new survey to calculate new *Gracilaria* densities.

Prior to Thanksgiving there was a lot of bird and seal activity near Shell Beach and Pebble Beach. Harold Ames reported that they were beginning to see herring out in Bodega Bay while they were crab fishing. On Thanksgiving Day, November 28, there was a spawn at bed 1B that totaled 25.8 tons. The month of November was fairly dry, with only 2.5 inches of precipitation.

### **December**

December began with a new school moving from Hog Island down to Duck Cove. On December 3, we spotted birds and sea lions working a school off of Pelican Point. We set our nets on great marks that were solid red and 5 meters deep, in 15 meters of water. We managed to catch 25 sardines and a few shiner surfperch. We continued mapping and taking eelgrass bed density samples. On December 5th, we located herring finishing spawning on Bed 28A. We set our nets on good marks, but had our nets picked clean every time. We decided to abandon our fishing efforts before the seals destroyed our nets any further. The spawning escapement for this spawn from bed 28A totaled 71.2 tons.

Another school arrived in the bay soon after followed by a storm. On December 11th, we saw great marks in the hole near Laird's Landing, with marks 10 meters high. We set our nets and finally caught our first herring of the season. In mid-December, we had storms come in and bring heavy rains and strong winds. At this time power was knocked out of most of western Sonoma and Marin counties. We also lost the Department of Health Services rain gauge at Tomasini for almost the entire season. On December 18, we had our largest spawning event of the season. The spawning event combined for 2,319 tons and covered beds 1, 1A, 1B, 1C, Hearts Desire, 28, 28A, Marconi Cove, Tony's, 29 and 27. We were finally able to get a good population sample with our gill nets because the seals were spread thin. On December 22, we managed to surprise a school of herring that was trying to spawn over the weekend. We were

surprised to find herring spawning over bed 1A since it was already spawned upon on the 18th. We found that the herring extended the spawn, but primarily spawned upon *Gracilaria* which the previous school neglected.

By the December 23, a new school of green fish was forming within the bay. The question was whether or not these fish would hold until the season opener. On December 29, the season opened amidst a storm. There was some debate among fishermen whether or not to fish. Some felt that they should wait, but test sets provided roe counts of 14 percent; however, there were still immature fish mixed in the catch. The fishermen decided to fish, but it wasn't until around midnight that the herring started to hit the nets. The first landings indicated that the roe was higher than the test sets. Herring landings on December 30th totaled 32.7 tons and had a roe count of 14.8 percent. The next day the landings were very disappointing and totaled only 10 tons. The main reason for the poor landings was that strong winds picked up and halted most fishing effort by 1:00 a.m. There were no spawns associated with this period of fishing. The month ended with 2,390.6 tons of spawning escapement, all prior to the commercial fishery season. The total herring landings for the month were 42.7 tons.

## **January**

The strong winds that ended December continued into January. On January 6, we arrived at Marshall Boat Works as a few boats were preparing to be unloaded. The mood of the fishermen was dour as they unloaded. Most of the initial catch was made near Pelican Point and contained a high percentage (25-40%) of sardines. Besides the high percentage of sardines, the roe quality of the herring was also poor. Due to the unloading equipment and process it was impractical for the herring and sardines to be sorted and weighed separately. The unsorted catch weight therefore was applied to the herring quota. Total fish landed for the day was 5.2 tons at a roe count of 4.8 percent. Since, the buyer would not buy the fish from the fishermen were responsible for dealing with their catch. Most fishermen used their catch to bait their crab traps. Later that day we found spawn at beds 1A, 1B, 1C, Hearts Desire, 28, 28A, and Marconi Cove. This spawn dated back to January 4-5. The total spawning escapement from the event was 1117.7 tons. With sardines now in the mix, fishermen were very cautious as they fished. On January 13, the fishermen located some fish and did a test set, but found some sardines in the catch and decided to stop fishing. The next day, we were able to locate the school and capture samples, but sardines did not show up in our catch. At the dock there was some concern that the herring in the bay might be small. The preliminary spawning escapement estimates indicated that the 3,000 ton mark was surpassed, and catch quota was raised to 400 tons.

On January 20, we found a few boats out fishing. Fishermen, Chris Lawson, told us that he had found spawn, and that the herring had spawned over the weekend. We confirmed that the herring had spawned over the weekend. The spawn covered beds 11, 25, 23, 26, 27, 29, and 3. The spawning escapement from this spawn totaled 219 tons. We also found a few eggs in beds around Hog Island. Another school formed soon after in the bay, but we had a difficult time finding good marks to set our nets on. On January 29, fishermen landed 16.3 tons of herring with a roe count of 15 percent. We were not able to sample the commercial catch from these landings. The fishermen were unable to

catch herring the following day. There was no spawning associated with their catches. The month of January ended with 1,336.7 tons of spawning escapement and 21.5 tons of herring landed.

## **February**

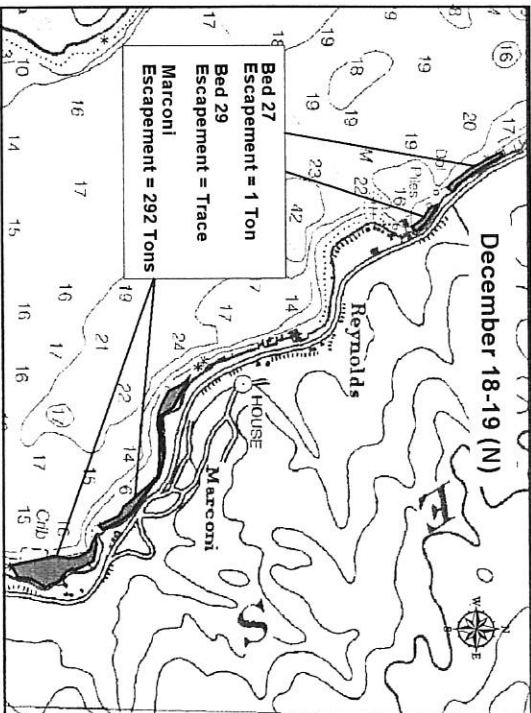
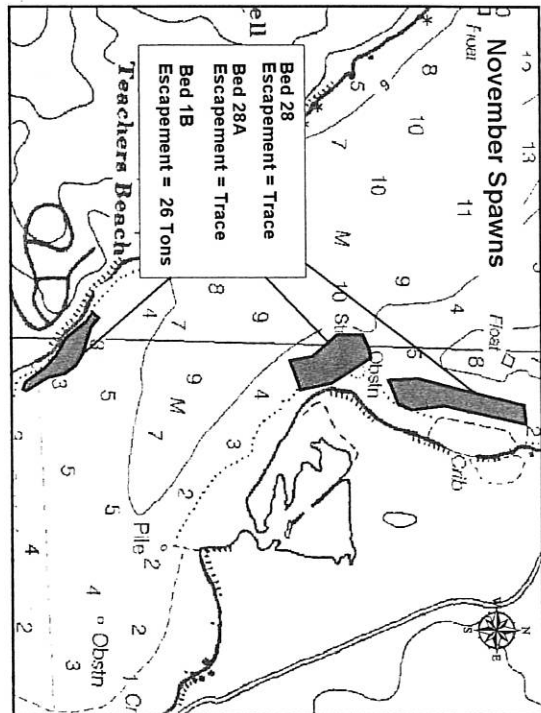
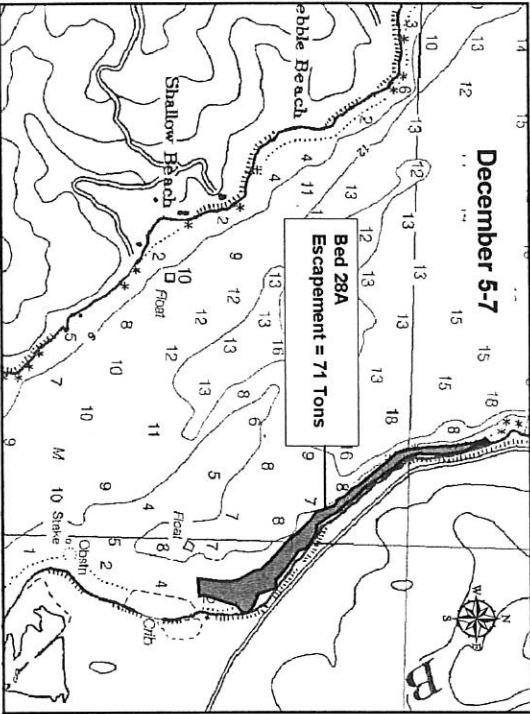
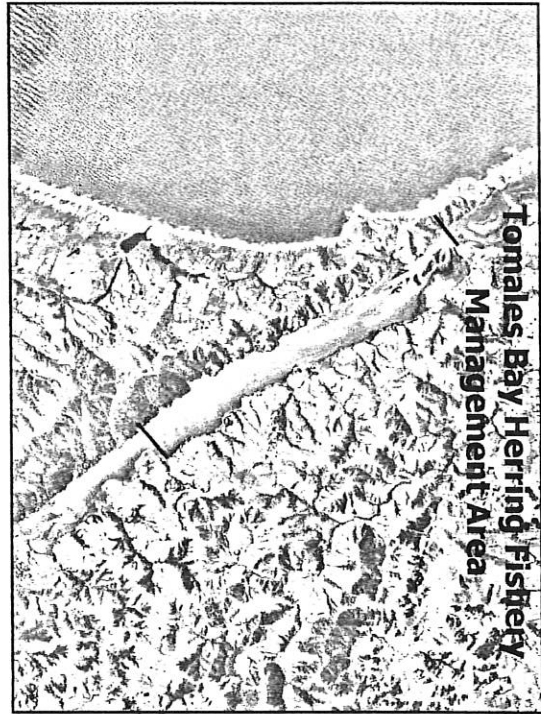
The month of February started off with a weekend spawn. The fishermen were still able to catch herring at the tail end of the spawning event. They landed 14 tons at a roe count of 14.3 percent. We collected 200 herring tissue samples from the commercial catch for a genetic study conducted by Canada's Department of Fisheries and Oceans. The spawning event covered beds 27, 29, 28, 28A, and Marconi Cove. The total spawning escapement from the February 2-3, spawning event was 536.6 tons. Fishermen Gene Maffucci, informed us of a spawning event that was occurring at Pebble Beach on February 8. We were able to locate the spawn which covered beds 1A, 1B, and 1C. This was a small spawn that was 14.3 tons, and another weekend spawn. The preliminary spawning escapement estimates had surpassed the 4,000 ton mark prior to February 15, so the quota was raised the maximum of 500 tons.

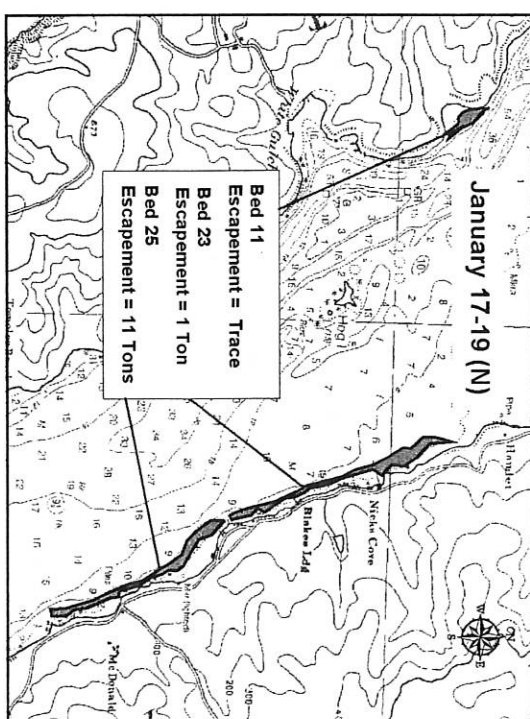
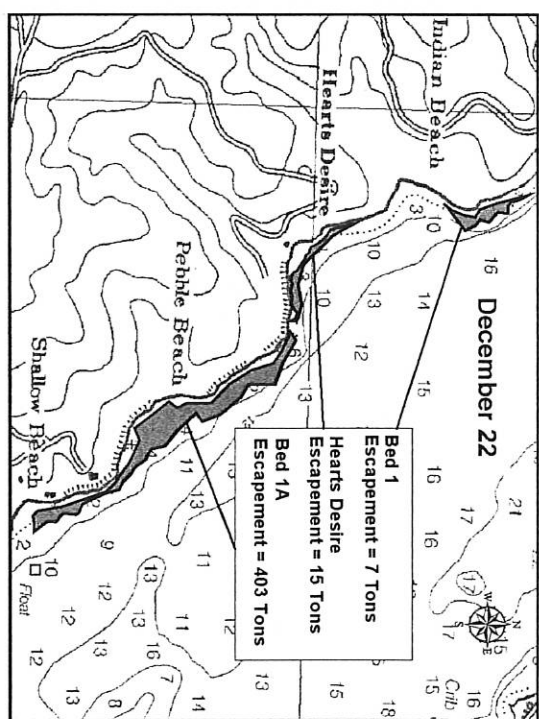
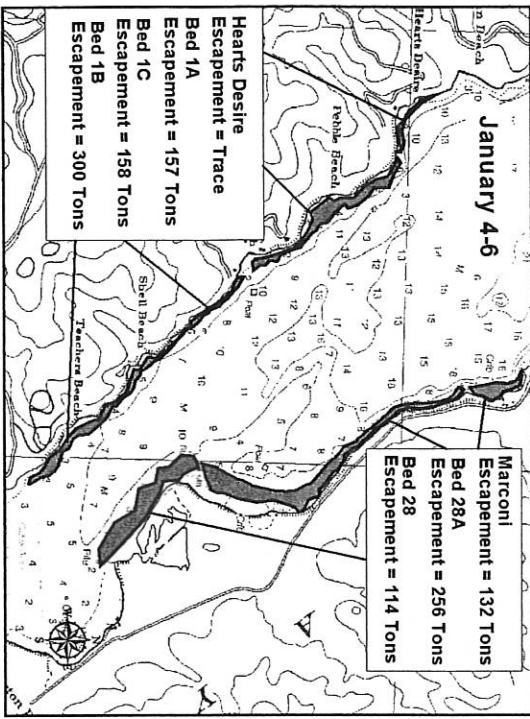
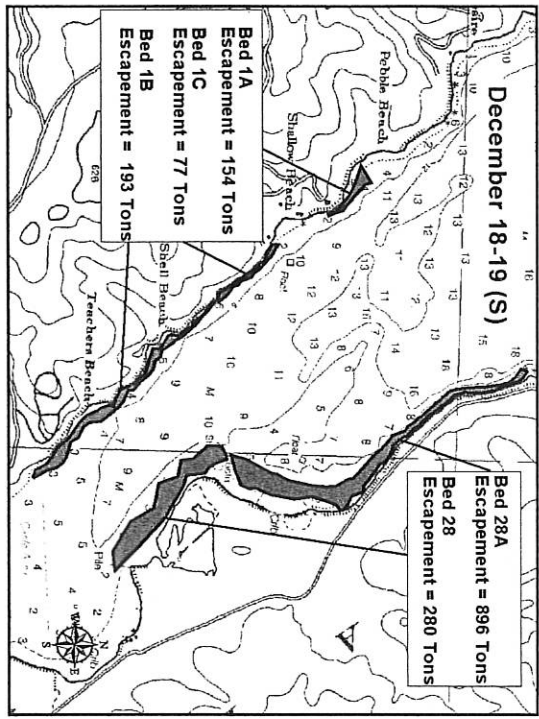
On February 10, Department of Fish and Game, Tim Furlong, and several fishermen participated in a Marin Agricultural Land Trust (M.A.L.T.) field trip at Marshall Boat Work. The purpose of the field trip was educating the members about the Tomales Bay Herring Fishery. By February 13, the reduced number of seals and the absence of pelicans and cormorants in Tomales Bay were noticeable. Our fishing effort through the rest of February yielded only two herring, white croakers, and jacksmelt. On February 24, the pump was pulled out of Marshall Boat Works. February ended with 550.8 tons of spawn escapement, and 14 tons of herring landed.

## **March**

March had no commercial landings. To date there has been only one spawning event that occurred on March 8. The trace spawn was located at beds 1C and 1A. The spawn was primarily on *Gracilaria*. Strangely, about 95 percent of the eggs were white. This possibly occurred because of poor fertilization of the eggs.







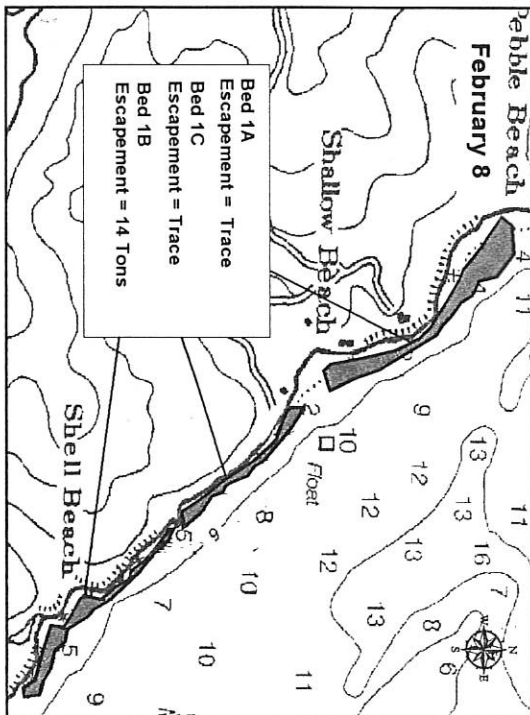
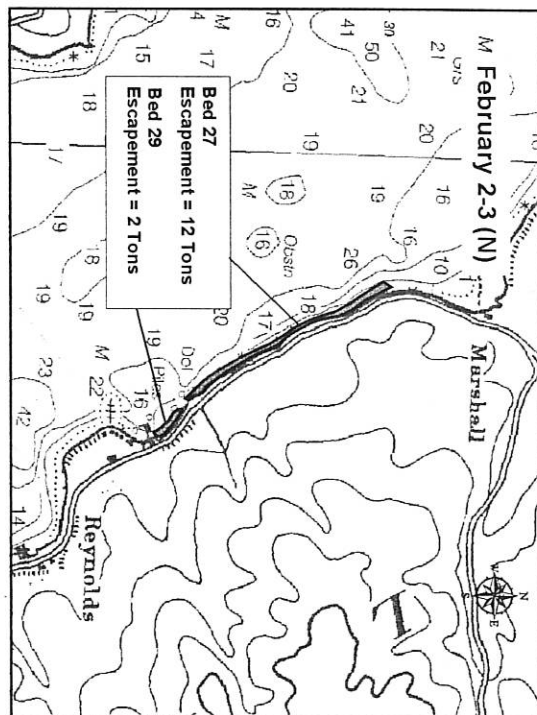
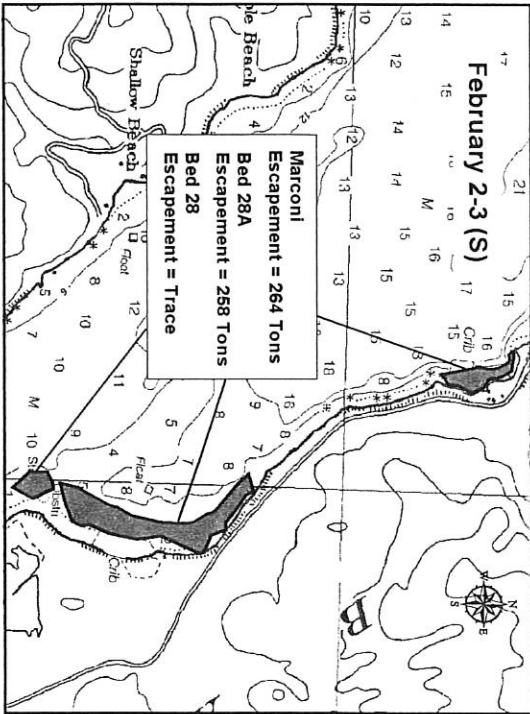
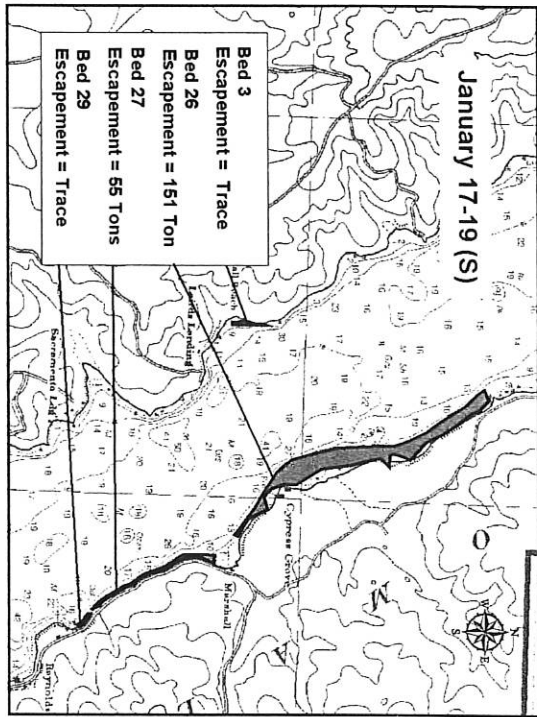




Table 1. Tomales Bay Herring Spawn Escapement 2002-03						
DATE SPAWNED	BED #	SUBSTRATE TYPE	AREA (M2)	CONVERSION FACTOR	SPAWNING ESCAPEMENT	TOTAL BED ESCAPEMENT
11/13/2002	28	Zostera		1.38E-08	TRACE	TRACE
11/13/2002	28A	Zostera		1.38E-08	TRACE	TRACE
11/28/2002	1B	Zostera	14,185.7	1.38E-08	21.6	25.8
		Gracilaria	2,503.4	1.38E-08	4.3	
NOVEMBER SPAWNING ESCAPEMENT TOTALS						25.8
12/5/2002	28A	Zostera	67,603.9	1.38E-08	50.1	71.2
		Gracilaria	11,930.1	1.38E-08	21.1	
12/18/2002	1A	Zostera	57,389.5	1.18E-08	92.7	153.5
		Gracilaria	10,127.6	1.18E-08	60.8	
12/18/2002	1B	Zostera	48,196.7	1.18E-08	96.9	193.1
		Gracilaria	8,505.3	1.18E-08	96.2	
12/18/2002	1C	Zostera	9,486.0	1.18E-08	45.4	77.5
		Gracilaria	1,674.0	1.18E-08	32.1	
12/18/2002	28	Zostera	90,886.5	1.18E-08	280.3	280.3
		Gracilaria		1.18E-08	TRACE	
12/18/2002	28A	Zostera	69,736.5	1.18E-08	62.0	896.3
		Gracilaria	69,736.5	1.18E-08	834.4	
12/18/2002	Marconi	Gracilaria	22,408.6	1.18E-08	260.9	292.3
12/18/2002	Tony's	Zostera		1.18E-08	TRACE	TRACE
12/19/2002	27	Gracilaria		1.18E-08	TRACE	1.1
		Zostera	4,310.4	1.18E-08	1.1	
12/19/2002	29	Zostera	2,283.1	1.18E-08	TRACE	TRACE
		Gracilaria	402.9	1.18E-08	TRACE	
12/22/2002	1	Zostera	8,607.1	1.27E-08	7.2	7.2
12/22/2002	1A	Zostera	57,389.5	1.27E-08	140.2	402.8
		Gracilaria	10,127.6	1.27E-08	262.6	
12/22/2002	HD	Zostera	8,579.1	1.27E-08	15.2	15.2
		Gracilaria	1,514.0	1.27E-08	TRACE	
DECEMBER SPAWNING ESCAPEMENT TOTALS						2,390.6
1/4/2003	HD	Zostera	8,579.1	9.67E-09	TRACE	TRACE
1/5/2003	1C	Zostera	9,486.0	9.67E-09	80.8	157.6
		Gracilaria	1,659.0	9.67E-09	76.8	
1/5/2003	28	Zostera	90,886.5	9.67E-09	95.2	113.7
		Gracilaria	10,098.5	9.67E-09	18.5	
1/5/2003	28A	Zostera	69,736.5	9.67E-09	32.8	256.5
		Gracilaria	69,736.5	9.67E-09	223.5	
1/5/2003	MC	Zostera	22,408.6	9.67E-09	123.9	132.5
		Zostera	12,656.5	9.67E-09	8.5	
1/5/2003	1A	Zostera	57,389.5	9.67E-09	157.5	157.5
		Gracilaria	10,127.6	9.67E-09	TRACE	
1/5/2003	1B	Zostera	48,196.7	9.67E-09	179.8	300.1
		Gracilaria	8,505.3	9.67E-09	120.3	
1/17/2003	11	Zostera		9.67E-09	TRACE	TRACE
1/18/2003	25	Zostera	50,757.8	9.67E-09	10.5	10.5
1/18/2003	23	Zostera	50,757.8	9.67E-09	1.3	1.3
1/18/2003	26	Zostera	186,190.0	9.67E-09	150.5	150.5
1/18/2003	27	Zostera	18,538.5	9.67E-09	54.3	54.3
1/18/2003	29	Zostera		9.67E-09	TRACE	TRACE
		Gracilaria		9.67E-09	TRACE	
1/19/2003	3	Zostera	3,666.9	9.67E-09	2.4	2.4
JANUARY SPAWNING ESCAPEMENT TOTALS						1,336.7
2/3/2003	27	Zostera	13,163.1	9.12E-09	12.3	12.3
2/2/2003	28	Zostera		9.12E-09	TRACE	TRACE
		Gracilaria		9.12E-09	TRACE	
2/2/2003	28A	Zostera	53,232.5	9.12E-09	2.0	257.6
		Gracilaria	53,232.5	9.12E-09	255.6	
2/3/2003	29	Zostera	2,352.0	9.12E-09	2.4	2.4
		Gracilaria		9.12E-09	TRACE	
2/3/2003	Marconi	Gracilaria	20,347.3	9.12E-09	264.3	264.3
2/8/2003	1A	Zostera		9.12E-09	TRACE	TRACE
		Gracilaria		9.12E-09	TRACE	
2/8/2003	1B	Zostera	14,467.0	9.12E-09	5.3	14.3
		Gracilaria	2,553.0	9.12E-09	9.0	
2/8/2003	1C	Zostera		9.12E-09	TRACE	TRACE
		Gracilaria		9.12E-09	TRACE	
FEBRUARY SPAWNING ESCAPEMENT TOTALS						550.8
3/8/2003	1C	Zostera		9.12E-09	TRACE	TRACE
		Gracilaria		9.12E-09	TRACE	
3/8/2003	1A	Gracilaria		9.12E-09	TRACE	Trace
MARCH SPAWNING ESCAPEMENT TOTALS						Trace
Trace spawns are less than one ton						Season Total 4,304.0



**Table 2. Monthly Spawning Escapement by Spawning Substrate**

Month	Zostera	% of monthly spawn	Gracilaria	% of monthly spawn
Nov	21.6	83.5%	4.3	16.5%
Dec	822.5	34.4%	1568.1	65.6%
Jan	773.6	57.9%	563.1	42.1%
Feb	22.0	4.0%	528.9	96.0%
Mar	Trace	n/a	Trace	n/a

**TABLE 3. Daily Landings by Tomales Bay Gill Net Fleet for 2002-03 Season.\***

Date	Pounds	Tons	Tickets	Pounds/Ticket	Tons/Ticket	Roe Count
12/30/2002	65333	32.67	22	2969.68	1.48	14.8
12/31/2002	20033	10.02	16	1252.06	0.63	14.26
1/6/2003	10463	5.23	14	747.36	0.37	4.78
1/29/2003	32571	16.29	23	1416.13	0.71	14.96
2/3/2003	27951	13.98	25	1118.04	0.56	14.34
<b>Totals</b>	<b>156,351</b>	<b>78.18</b>	<b>100</b>	-----	-----	-----
<b>Average</b>	-----	<del>0.78</del>	-----	<b>1563.51</b>	<b>0.78</b>	<b>14.01</b>

\* Two inch mesh gill nets with one shackle of net per permittee.

**Table 4. Annual Landings from Tomales/Bodega Bay Gill Net Fleet.**

Year	Pounds	Tons	Trips	Lbs/Trip	Roe Count
<b>2-inch Mesh Gill Net Fishery in Both Tomales Bay and Outer Bodega Bay</b>					
84-85	844,472	422.2	215	3,928	12.8
85-86	1,542,676	771.3	512	3,013	12.5
86-87	1,732,428	866.2	429	4,038	12.5
87-88	1,499,402	749.5	484	3,097	12.4
88-89	426,163	213	291	1,464	12.7
<b>Tomales Bay Closed - 2-inch Mesh Gill Net Fishery in Outer Bodega Bay</b>					
89-90	190,409	95.2	61	3,121	13.5
90-91	173,103	86.5	72	2,404	13.6
91-92	47,125	23.5	30	1,571	14.6
<b>Tomales Bay Re-Opened with 2 1/8-inch Mesh and Outer Bodega Bay Closed</b>					
92-93	444,312	222.3	66	6,732	11.0
93-94	437,867	218.9	164	2,670	12.3
94-95	550,262	275.1	84	6,551	12.0
95-96	710,573	355.3	134	5,303	13.8
96-97	443,128	222	126	3,517	11.6
97-98*	0	0	0	0	--
98-99	104,722	54	52	2,014	15.0
99-00	83,258	42	24	3,469	15.2
<b>Tomales Bay Gill Net Mesh Study - 2-inch Mesh</b>					
00-01	596,987	298.5	73	8,178	12.4
01-02	708,374	354.2	82	8,639	15.4
02-03	156,351	78	53	2,950	14.0
<b>Average</b>	<b>593,978</b>	<del>164</del>	<del>4,037</del>	<del>0</del>	<del>0.0</del>

\* El Nino year, no commercial landings.

297 164 4037 13.1



Table 5. Tomales Bay Herring Biomass Estimates 1992-93 through 2002-03 Season.

Season	Spawn Escapement (tons)	Catch (tons)	Percent Catch (Exploitation Rate)	Spawning Biomass (tons)
1992-93	3850	222	5.5%	4,072
1993-94	2245	219	8.9%	2,464
1994-95	3705	275	6.9%	3,980
1995-96	1730	355	17.0%	2,085
1996-97	1288	222	14.7%	1,510
1997-98	586	0	0.0%	586
1998-99	4017	54	1.3%	4,071
1999-00	1968	42	2.1%	2,010
2000-01*	3897	298	7.1%	4,195
2001-02*	6889	354	4.9%	7,243
2002-03*	4304	78	1.8%	4,382
<b>AVERAGE</b>	<b>3,134</b>	<b>193</b>	<b>5.8%</b>	<b>3,327</b>
<b>Mesh Study Average</b>	<b>5,030</b>	<b>243</b>	<b>4.6%</b>	<b>5,273</b>

\* indicates seasons under a experimental mesh size reduction from 2.125 inches to 2 inches

Table 6. Mean Length and Sex Ratio of Commercial Gill Net Catch and Research Catch in Tomales Bay 2002-03.

Catch	Commercial Gill Net (2-inch mesh)	Sex Ratio % M/F
	Mean Body Length (mm)	
1	189	30.6 / 69.4
2	188.7	36.25 / 63.75
3	n.d.	n.d.
4	186.9	32.2 / 67.8
<b>Average</b>	<b>188.1</b>	<b>32.1 / 67.9</b>
School	Research Multi-Panel Gill Net	Sex Ratio % M/F
	Mean Body Length (mm)	
1	n.d.	n.d.
2	n.d.	n.d.
3	n.d.	n.d.
4	177.4	59 / 41
5	177.5	62.1 / 37.9
6	171.4	50 / 50
7	173.4	50.4 / 49.6
8	170.6	48.5 / 51.5
9	n.d.	n.d.
10	156	100 / 0
<b>Average</b>	<b>175.5</b>	<b>56.1 / 43.9</b>

Table 7. Historical Lengths of Tomales Bay Commercial Gill Net Catches, 1992-93 to 2002-03.

Year	Commercial Gill Net Mesh Size	Average Length
Tomales Bay Gill Net Fishery Re-Opens with 2 1/8-in Mesh		
1992-93	2.125 inches	196.4
1993-94	2.125 inches	197.3
1994-95	2.125 inches	195.5
1995-96	2.125 inches	189.2
1996-97	2.125 inches	194.8
1997-98*	2.125 inches	196
1998-99	2.125 inches	186.3
1999-00	2.125 inches	187.6
Tomales Bay Mesh Study- Mesh Size Reduced to 2.0-in		
2000-01	2.0 inches	188
2001-02	2.0 inches	187.7
2002-03	2.0 inches	188.1
<b>Average</b>	<b>---</b>	<b>191.5</b>

\* Small samples from commercial gill nets, no commercial landings.

Table 8. Tomales Bay Herring Escapement in Tons, 1992-93 through 2002-03

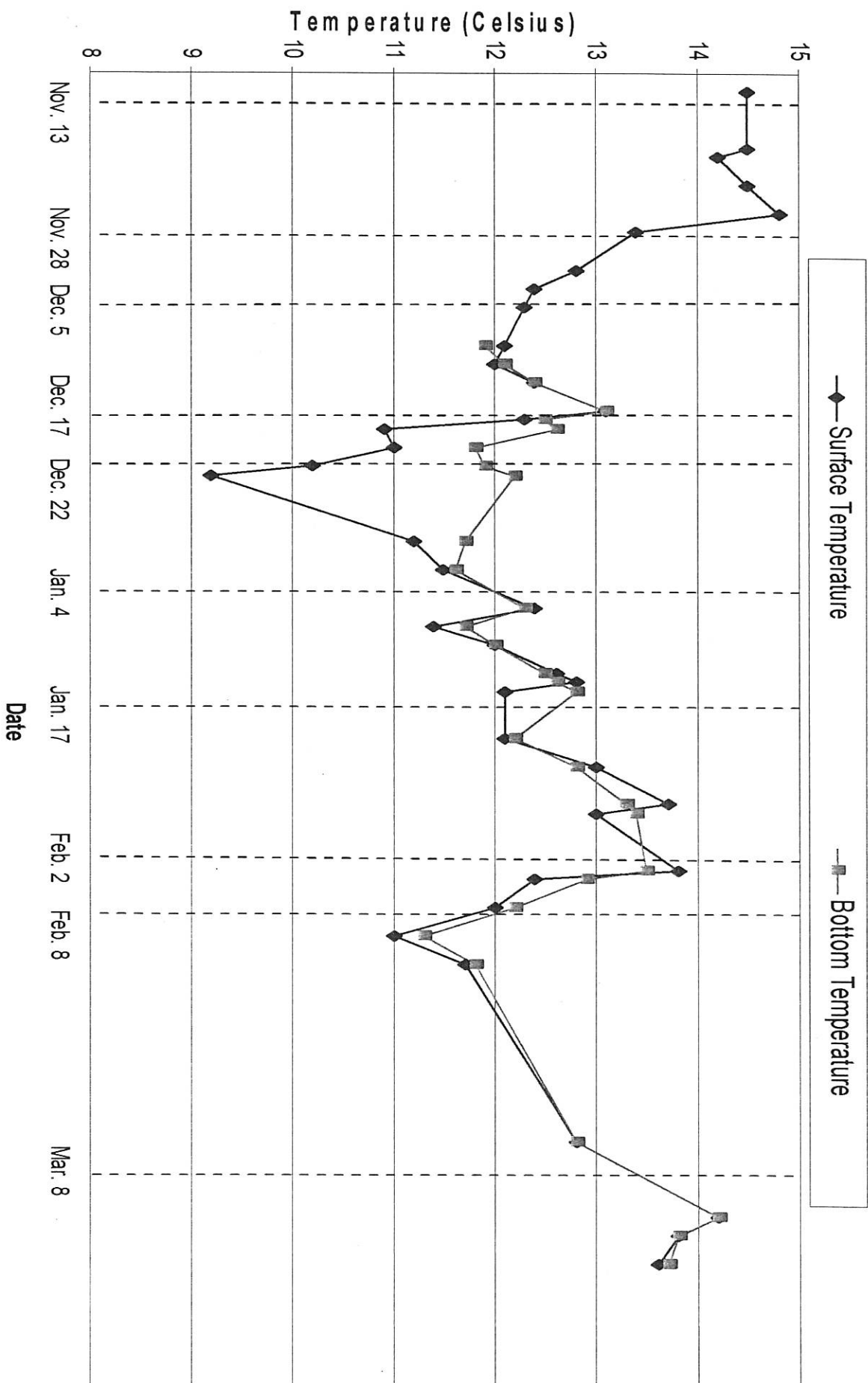
Season	November	December 1-15	December 16-31	January 1-15	January 16-31	February 1-15	February 16-28	March	Totals
92-93	0	116	1230	345	0	2140	18	0	3850
93-94	19	370	0	290	906	660	0	0	2245
94-95	27	90	2	2614	0	970	0	2	3705
95-96	84	600	431	2	225	0	387	0	1730
96-97	292	0	722	116	132	21	0	5	1288
97-98	6	0	195	T	0	236	83	66	586
98-99	0	507	0	1544	T	1966	0	T	4017
99-00	T	105	29	985	376	473	T	T	1968
00-01	T	344	2478	0	934	140	1	0	3897
01-02	577	46	4522	0	1597	0	147	T	6889
02-03	26	71	2319	1118	219	551	0	T	4304
Avg. Tons Per Month	115	204	1084	701	439	651	64	10	3134

Table 9: Tomales Bay Percent Escapement by Month, 1992-93 through 2002-03

Season	November	December 1-15	December 16-31	January 1-15	January 16-31	February 1-15	February 16-28	March	Totals
92-93	0	3	32	9	0	56	0	0	100
93-94	1	16	0	13	40	29	0	0	100
94-95	1	2	0	71	0	26	0	0	100
95-96	5	35	25	0	13	0	22	0	100
96-97	23	0	56	9	10	2	0	0	100
97-98	1	0	33	0	0	40	14	11	100
98-99	0	13	0	38	0	49	0	0	100
99-00	0	5	1	50	19	24	0	0	100
00-01	0	9	64	0	24	4	0	0	100
01-02	8	1	66	0	23	0	2	0	100
02-03	1	2	54	26	5	13	0	0	100
Avg. % Per Month	3.6	7.8	30.1	19.6	12.3	22.0	3.6	1.1	100
Cummulative % Per Month 92-03	3.6	11.4	41.4	61.1	73.3	95.4	98.9	100.0	100

Figure 1.

Tomales Bay 2002-03  
Water Temperature over Time at Marshall Boat Works



Dates and dashed lines correspond to the beginning of spawning events

Figure 2.

Tomales Bay 2002-03  
Salinity over Time at Marshall Boat Works

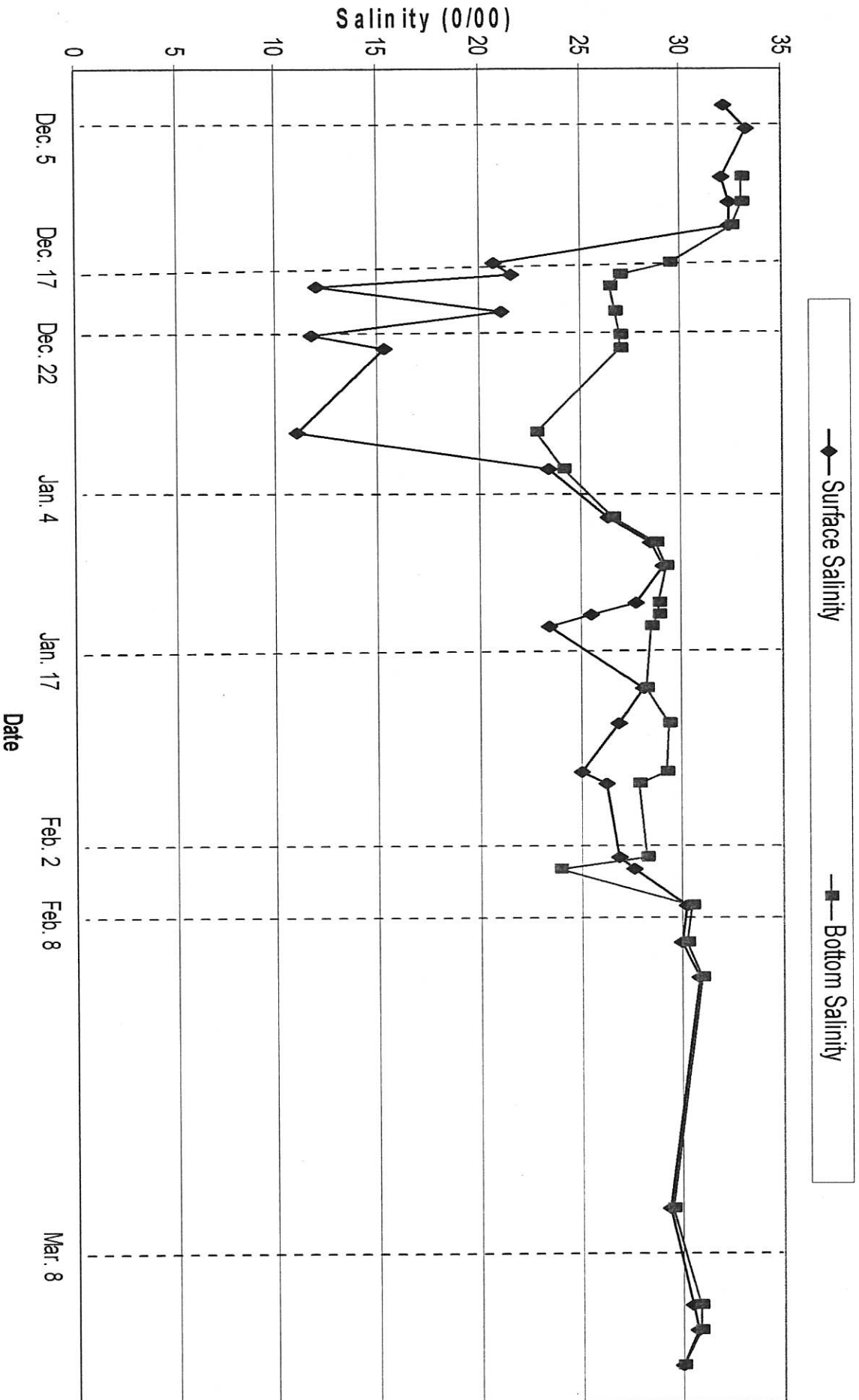


Figure 3.

Tomales Bay  
Average Monthly Water Temperature  
2001-02 vs. 2002-03

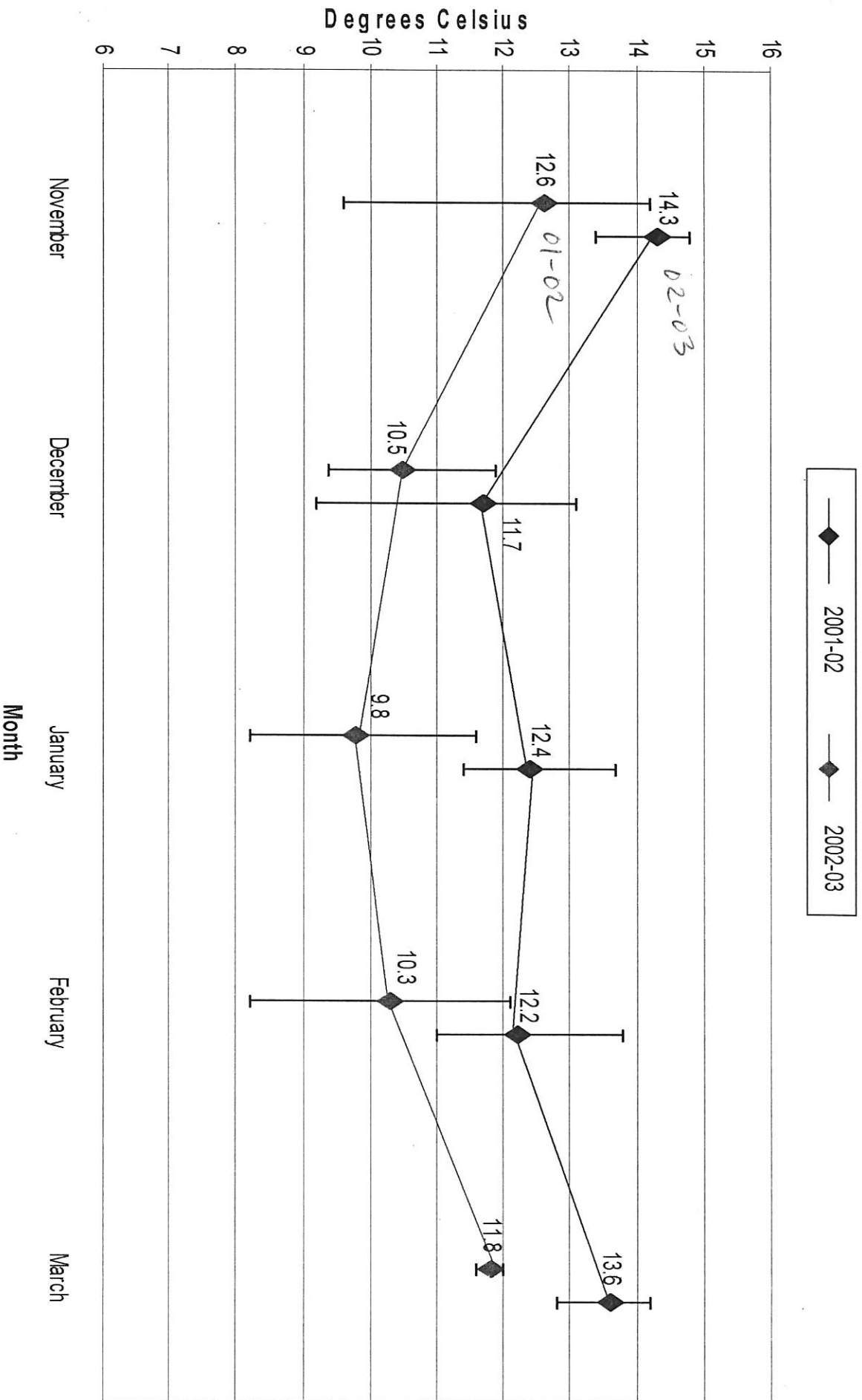


Figure 4.

# Tomales Bay 2002-03 Herring Spawning Biomass and Escapement by Season

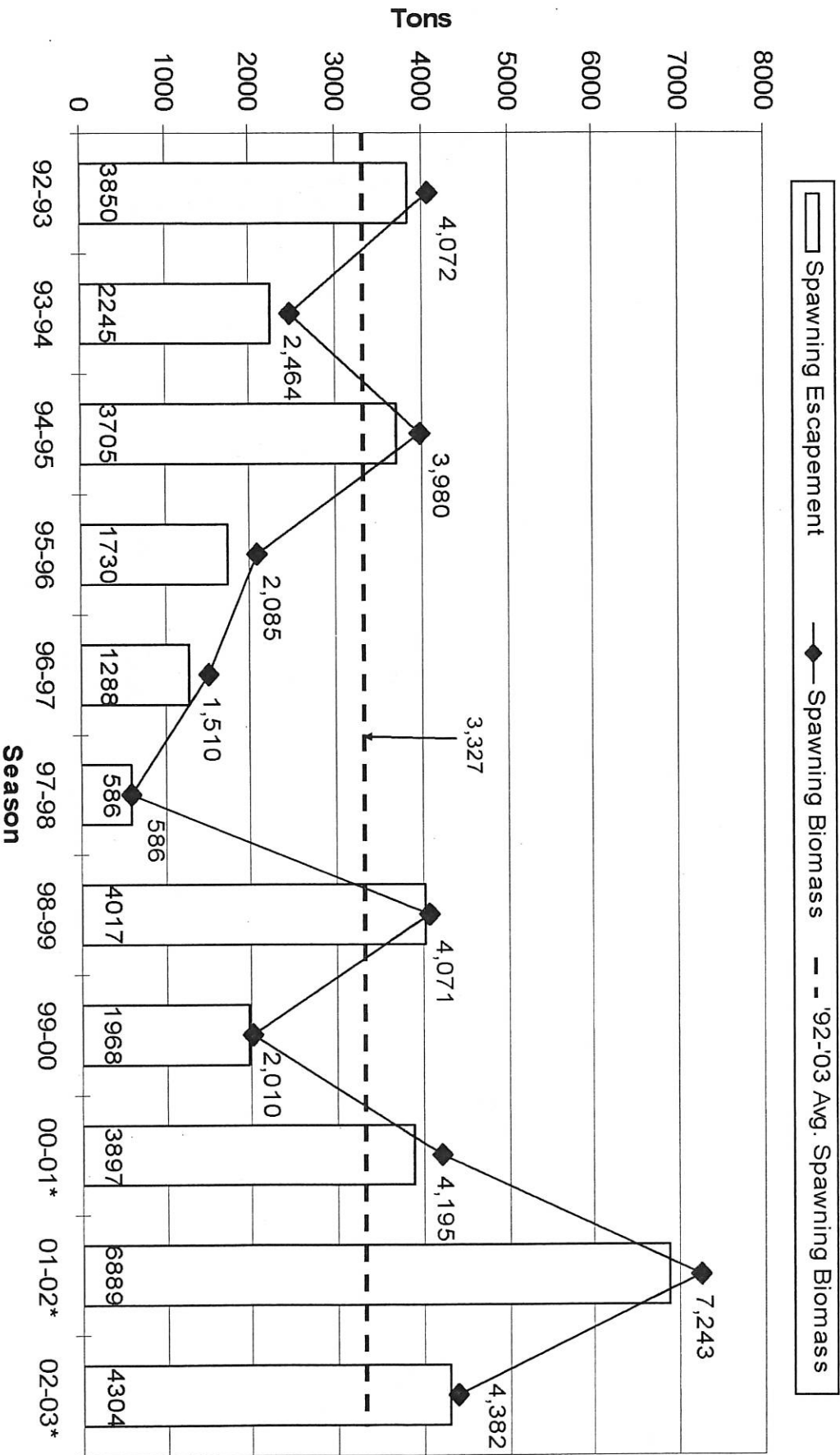
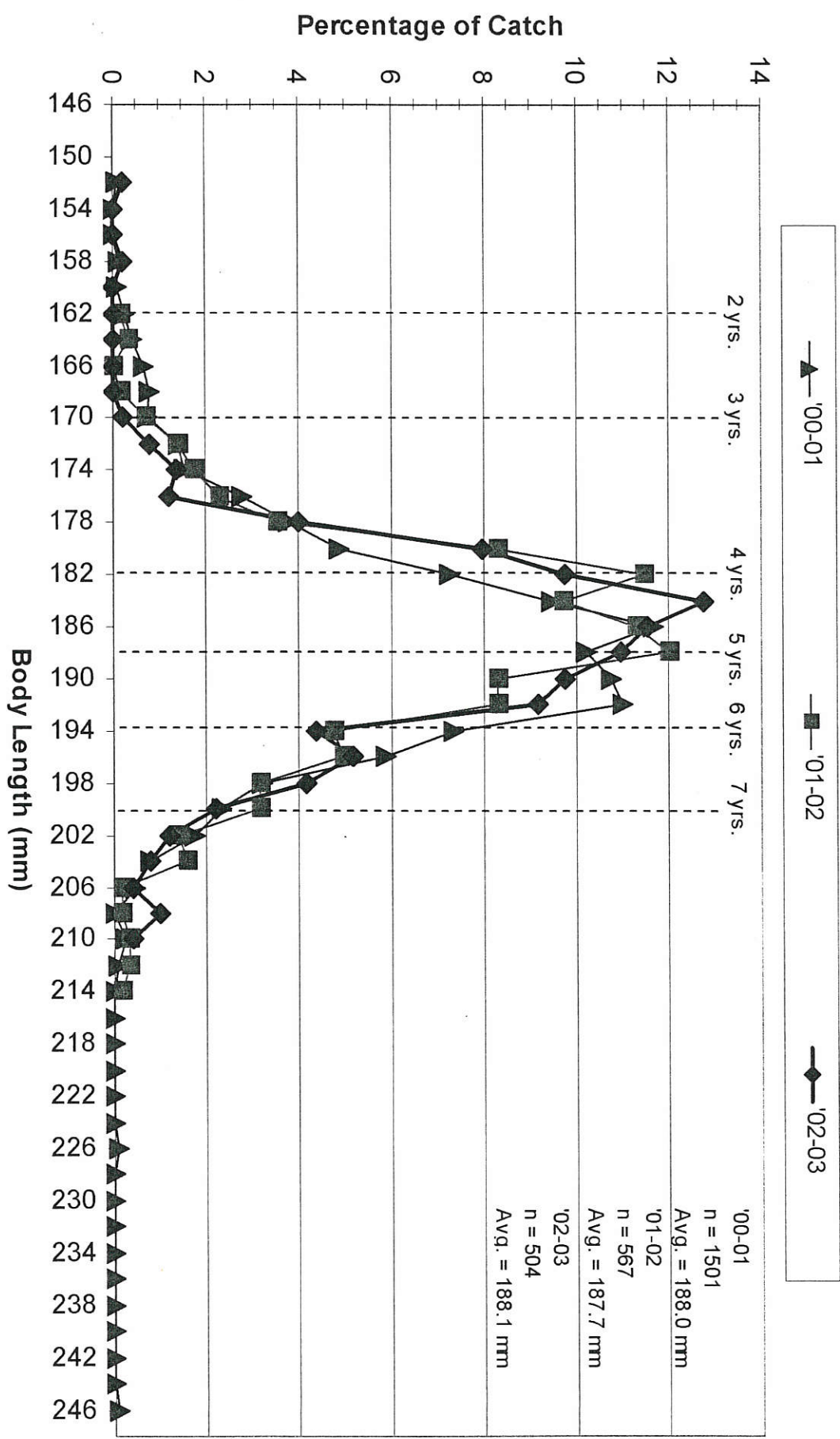




Figure 5.

# Tomales Bay Commercial Gill Net Catch 2001-02 through 2002-03



Dashed lines are estimated mean lengths at age, which are based on research catch data from 1999-00 season.

Figure 6.

**Tomales Bay 2002-2003  
Commercial Gill Net Catch  
Size Range with Mean Length per Catch**

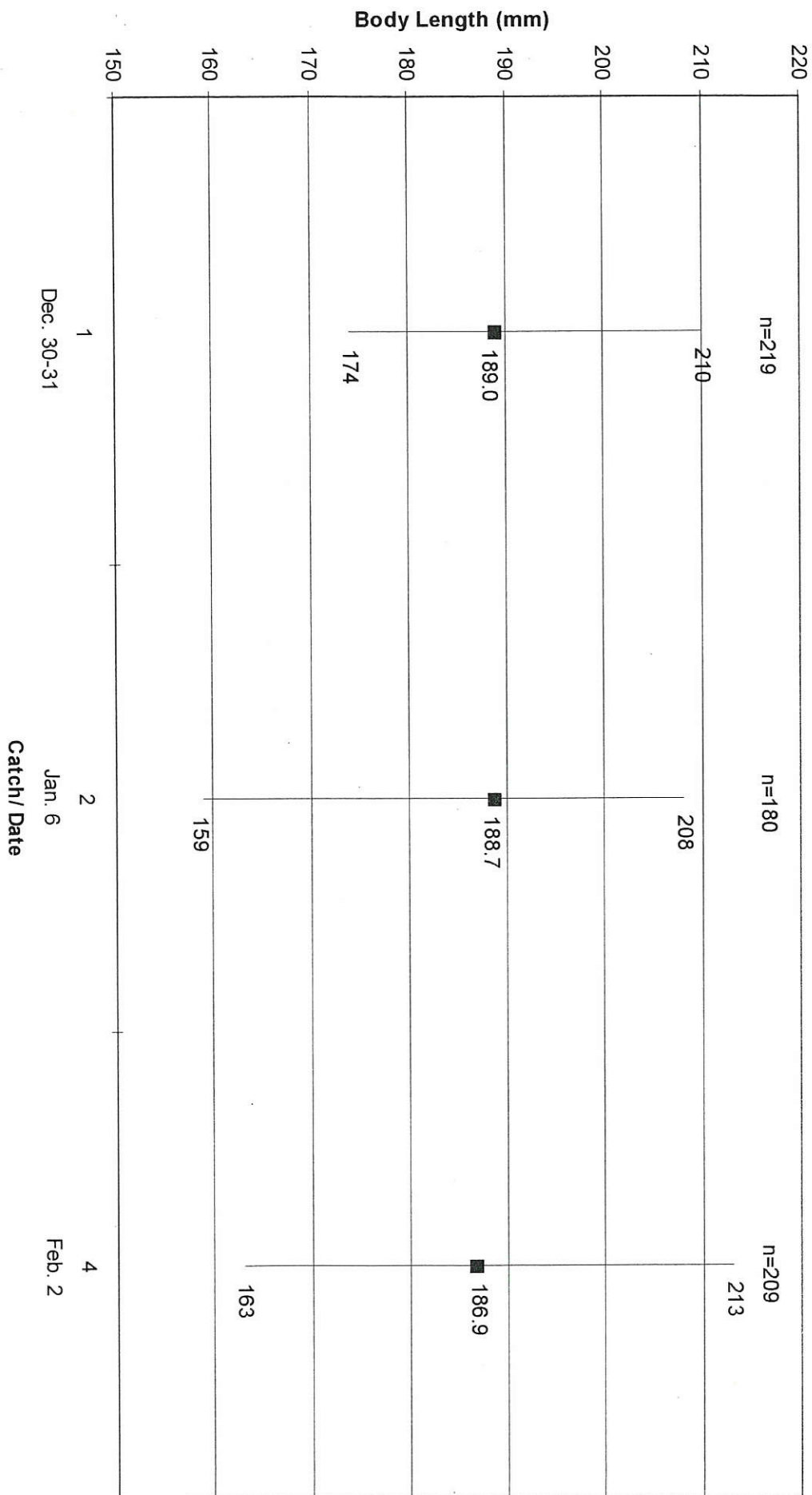


Figure 7.

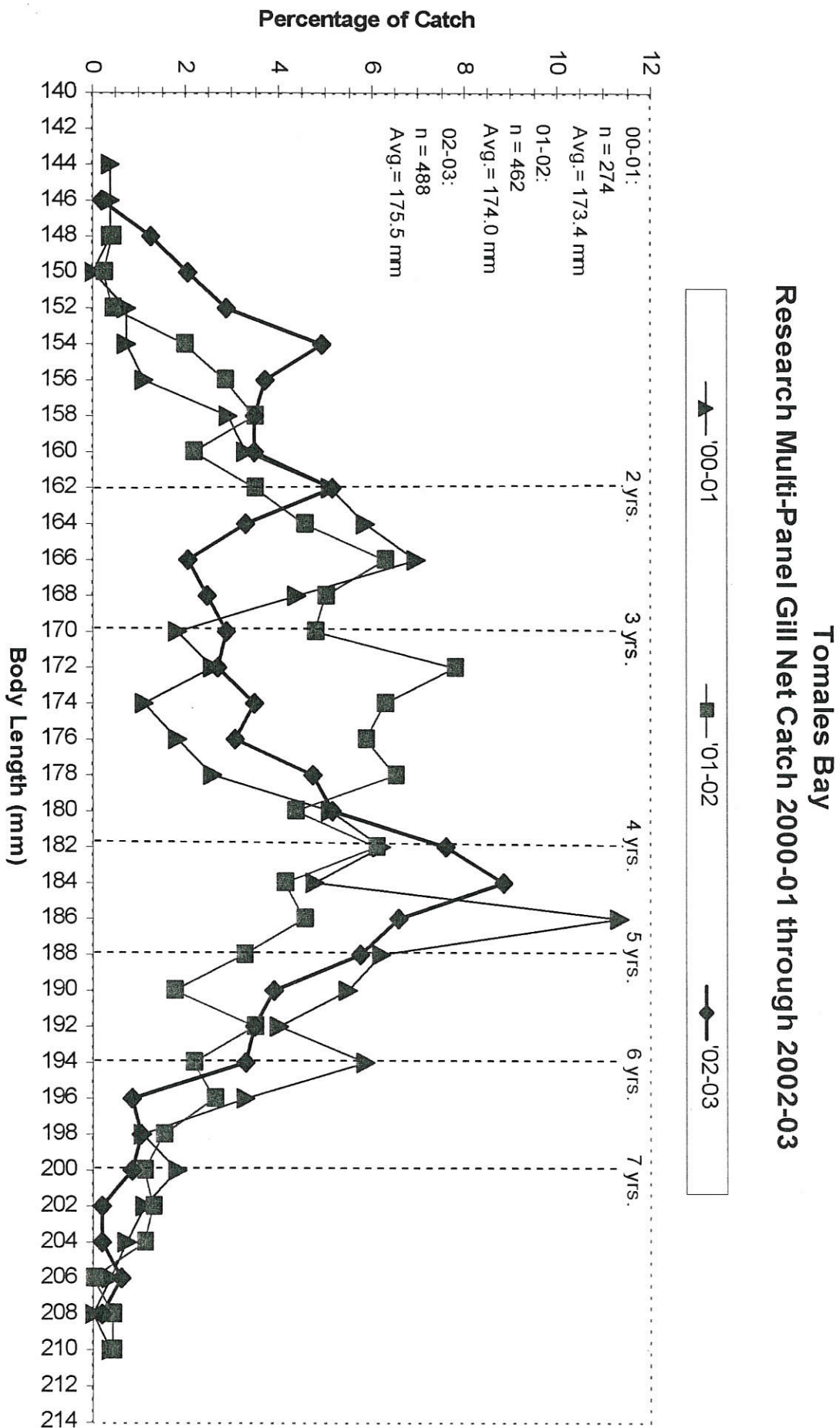


Figure 8.

**Tomales Bay 2002-03  
Research Gill Net Catch  
Size Range with Mean Length per School**

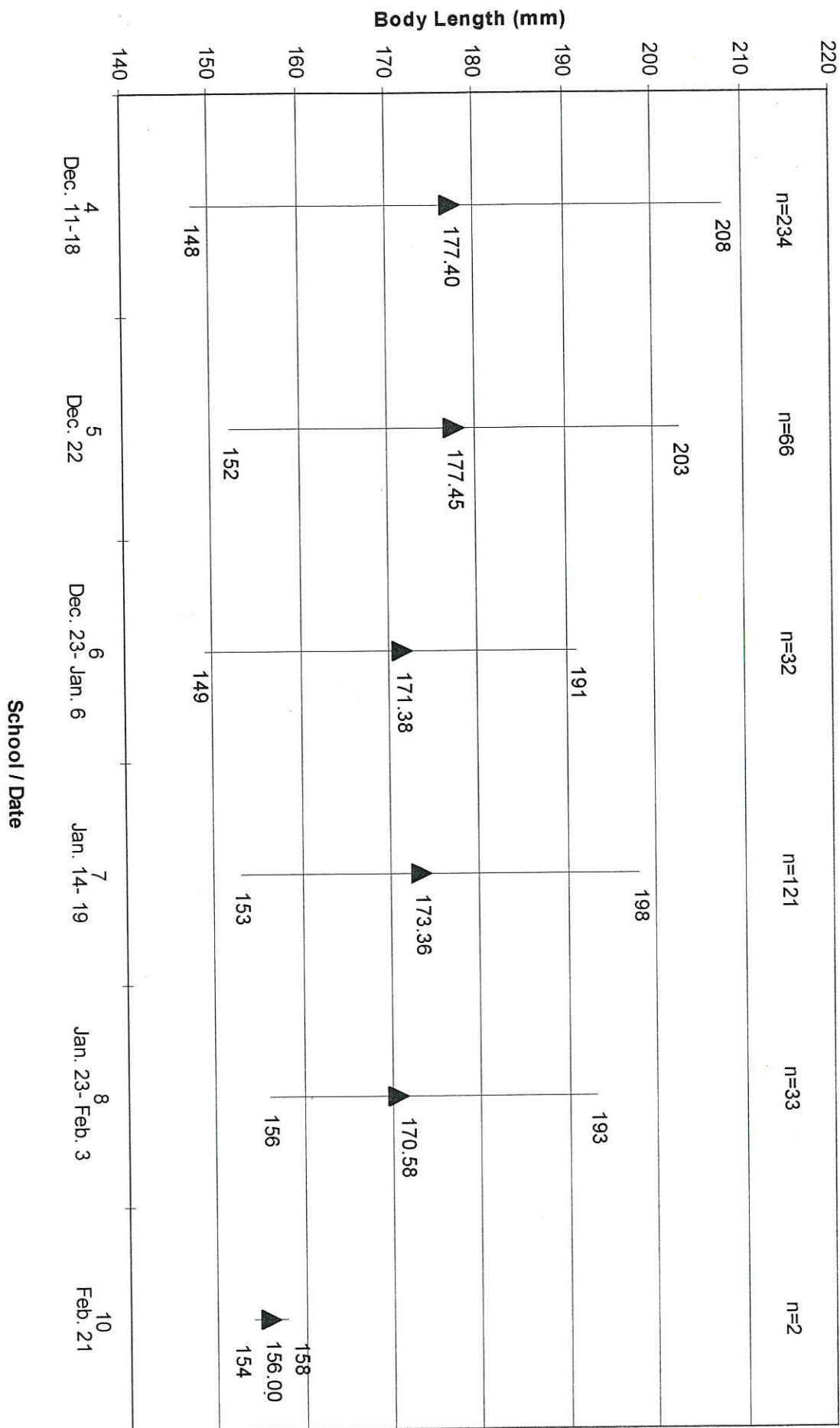


Figure 9.

# Tomales Bay 2002-03 Commercial (2" Mesh) Gillnet Catch versus Research Multi-Panel Gill Net Catch

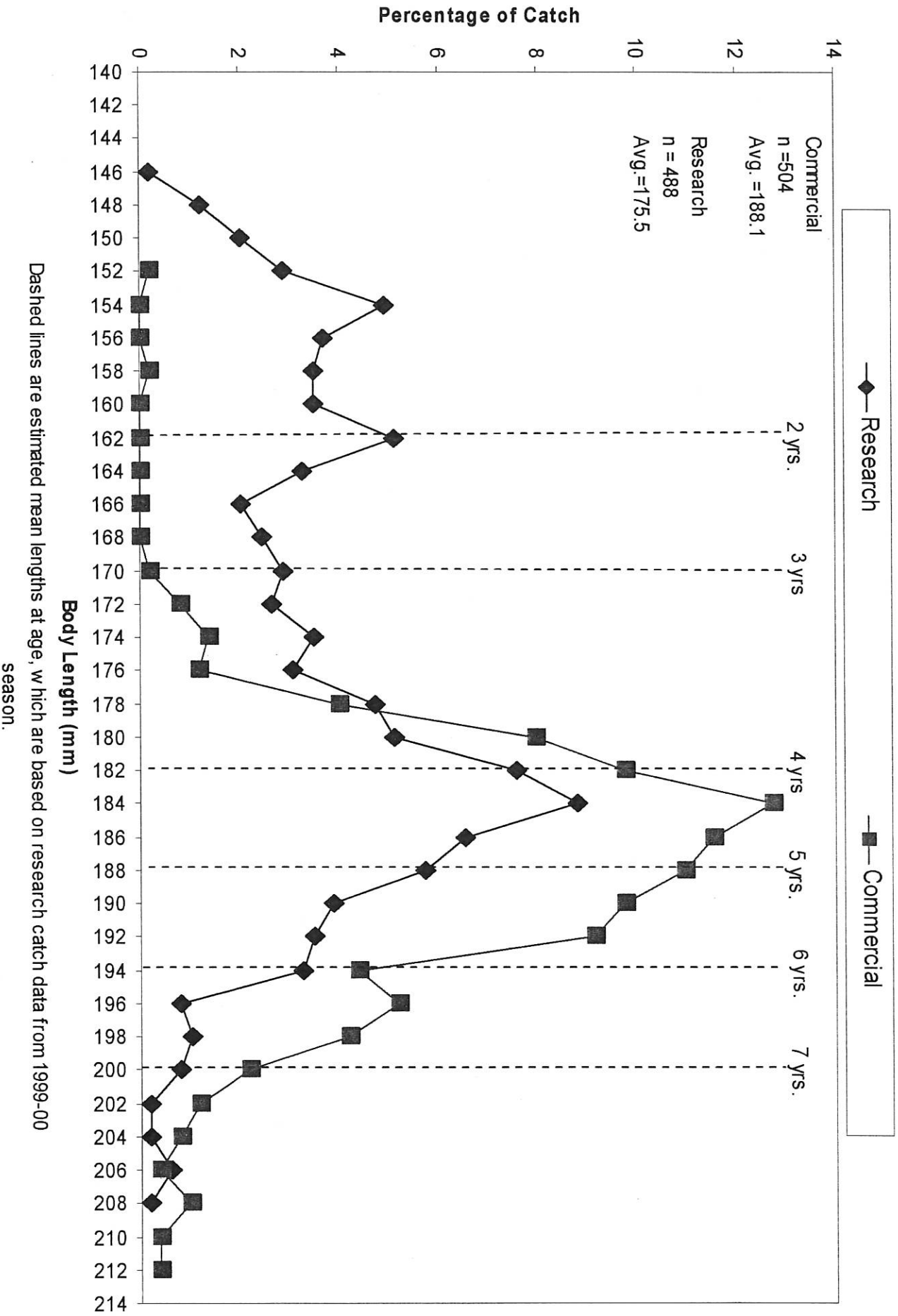


Figure 10.

**Tomales Bay 2002-03  
Research Gill Net Catch  
Size Range with Mean Length by Mesh Size**

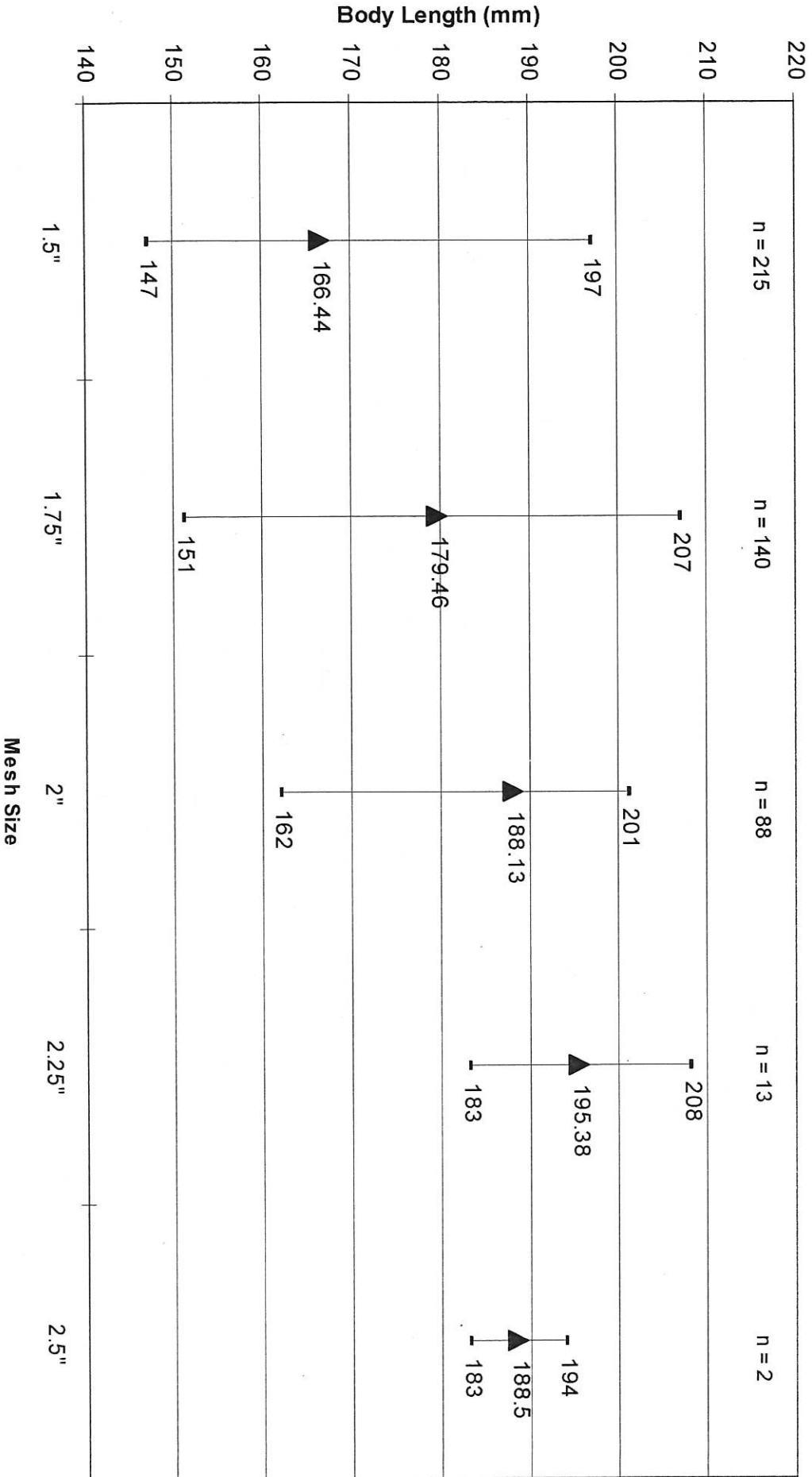
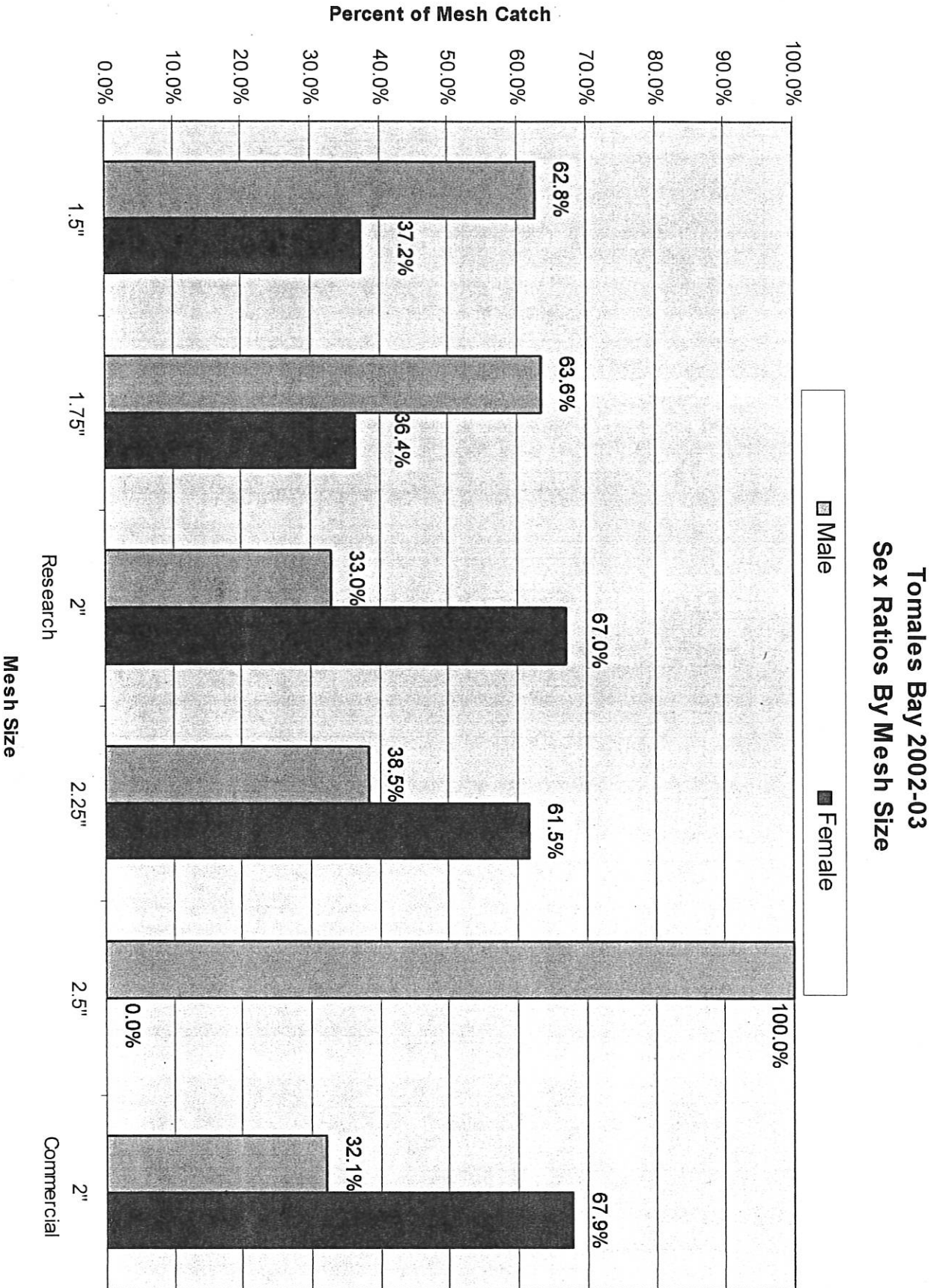




Figure 11.



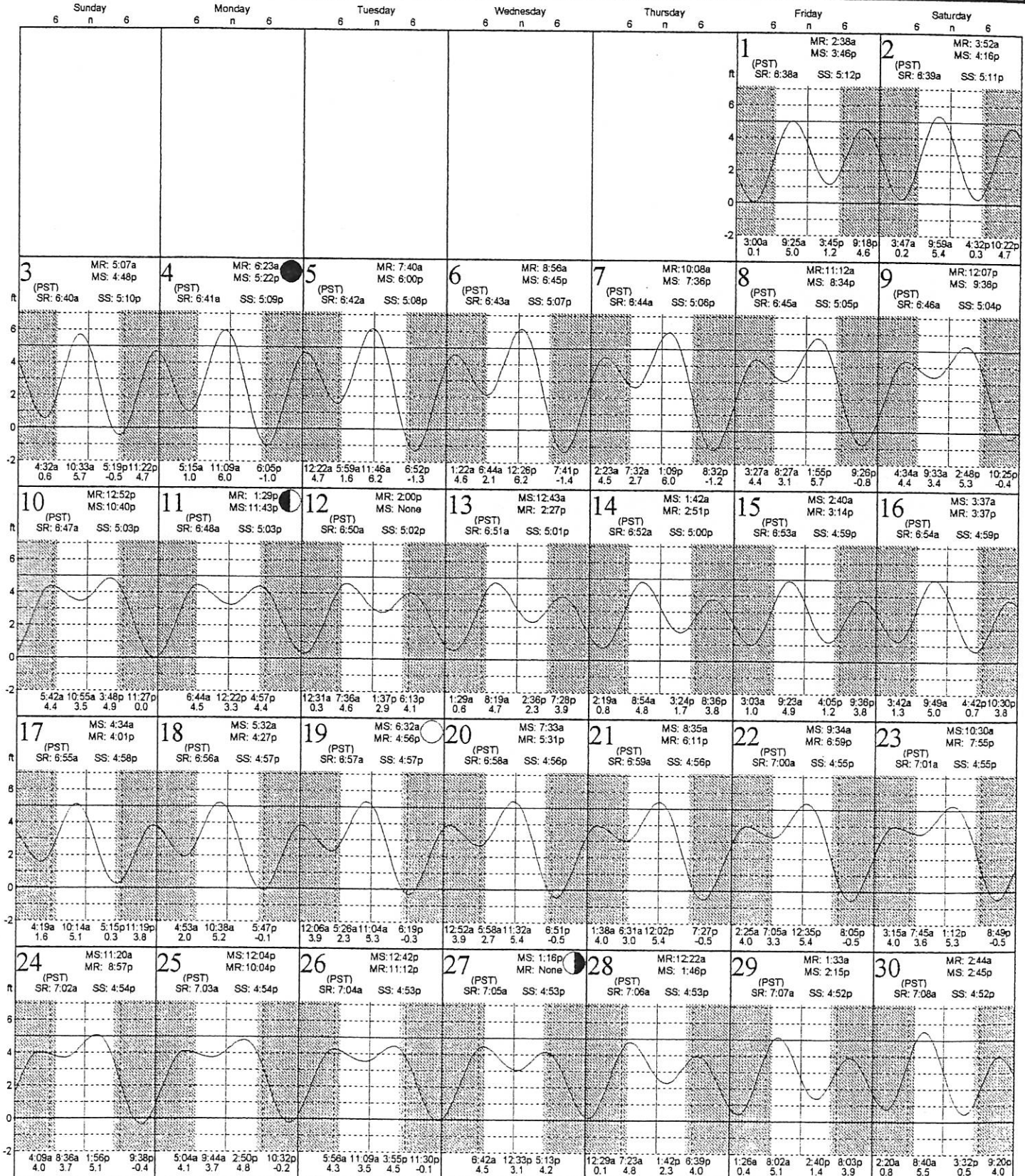
# Tides:Marshall, Tomales Bay

based on San Francisco (Golden Gate), California (NOAA)  
38° 10' N 122° 54' W

Average Tides  
Mean Range: 3.6 ft  
MHHW: 5.4 ft  
Mean Tide: 2.8 ft

November 2002

Monthly High & Low  
High November 6, 12:26p 6.2 ft  
Low November 6, 7:41p -1.4 ft



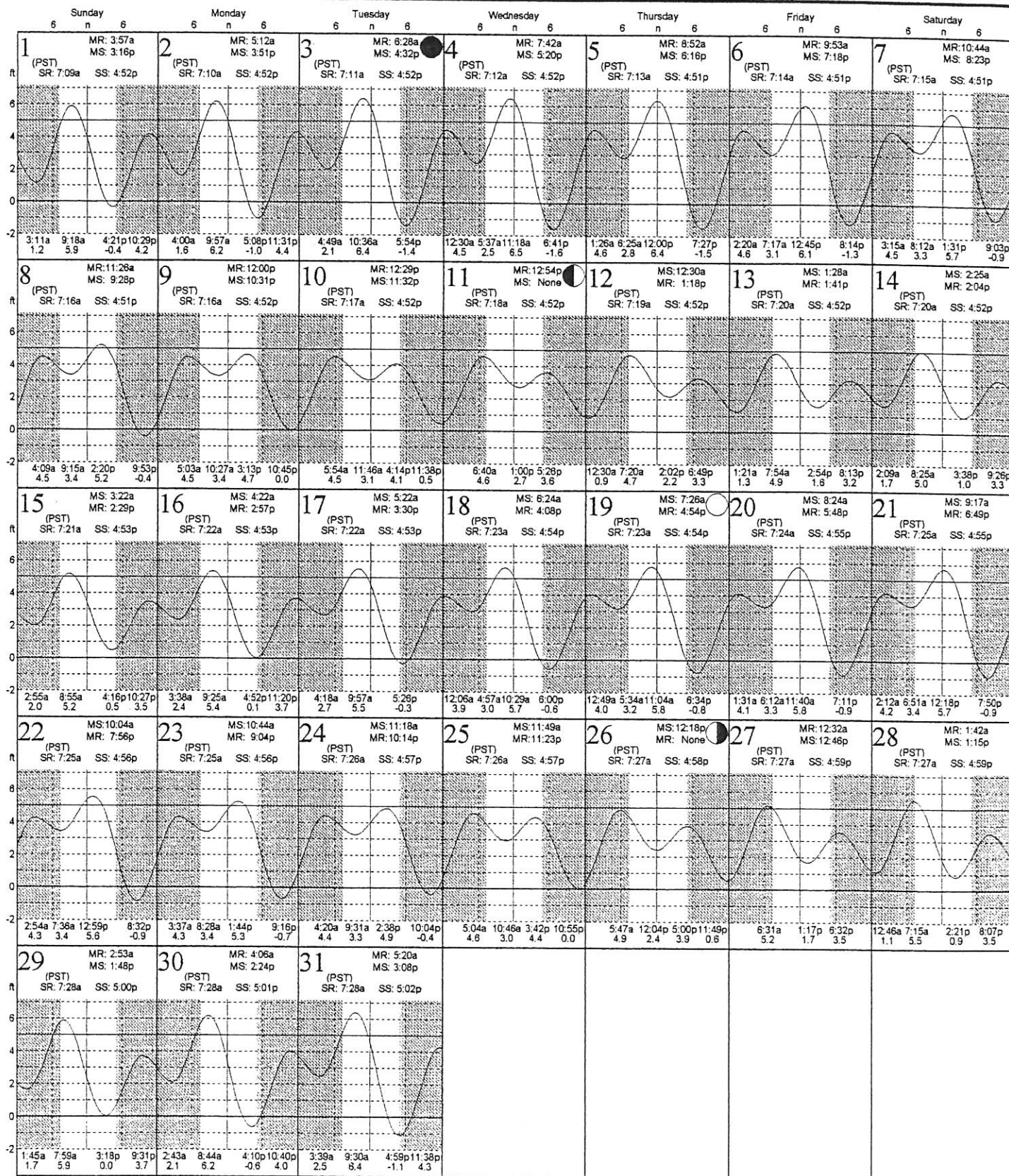
# Tides:Marshall, Tomales Bay

based on San Francisco (Golden Gate), California (NOAA)  
38° 10' N 122° 54' W

Average Tides  
Mean Range: 3.6 ft  
MHHW: 5.4 ft  
Mean Tide: 2.8 ft

## December 2002

Monthly High & Low  
High December 4, 11:18a 6.5 ft  
Low December 4, 6:41p -1.6 ft





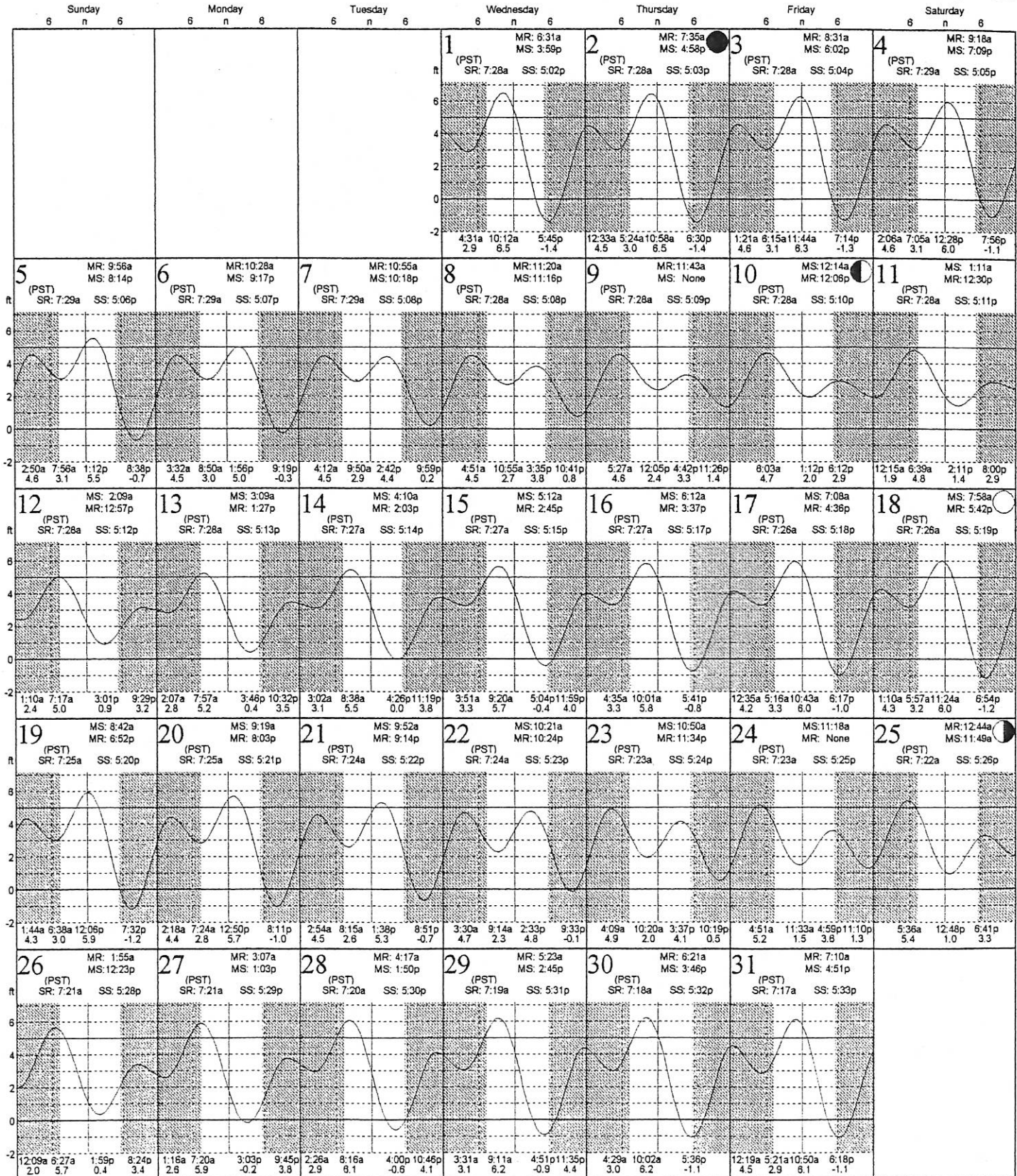
# Tides:Marshall, Tomales Bay

based on San Francisco (Golden Gate), California (NOAA)  
38° 10' N 122° 54' W

Average Tides  
Mean Range: 3.6 ft  
MHHW: 5.4 ft  
Mean Tide: 2.8 ft

Monthly High & Low  
High January 1, 10:12a 6.5 ft  
Low January 2, 8:30p -1.4 ft

## January 2003



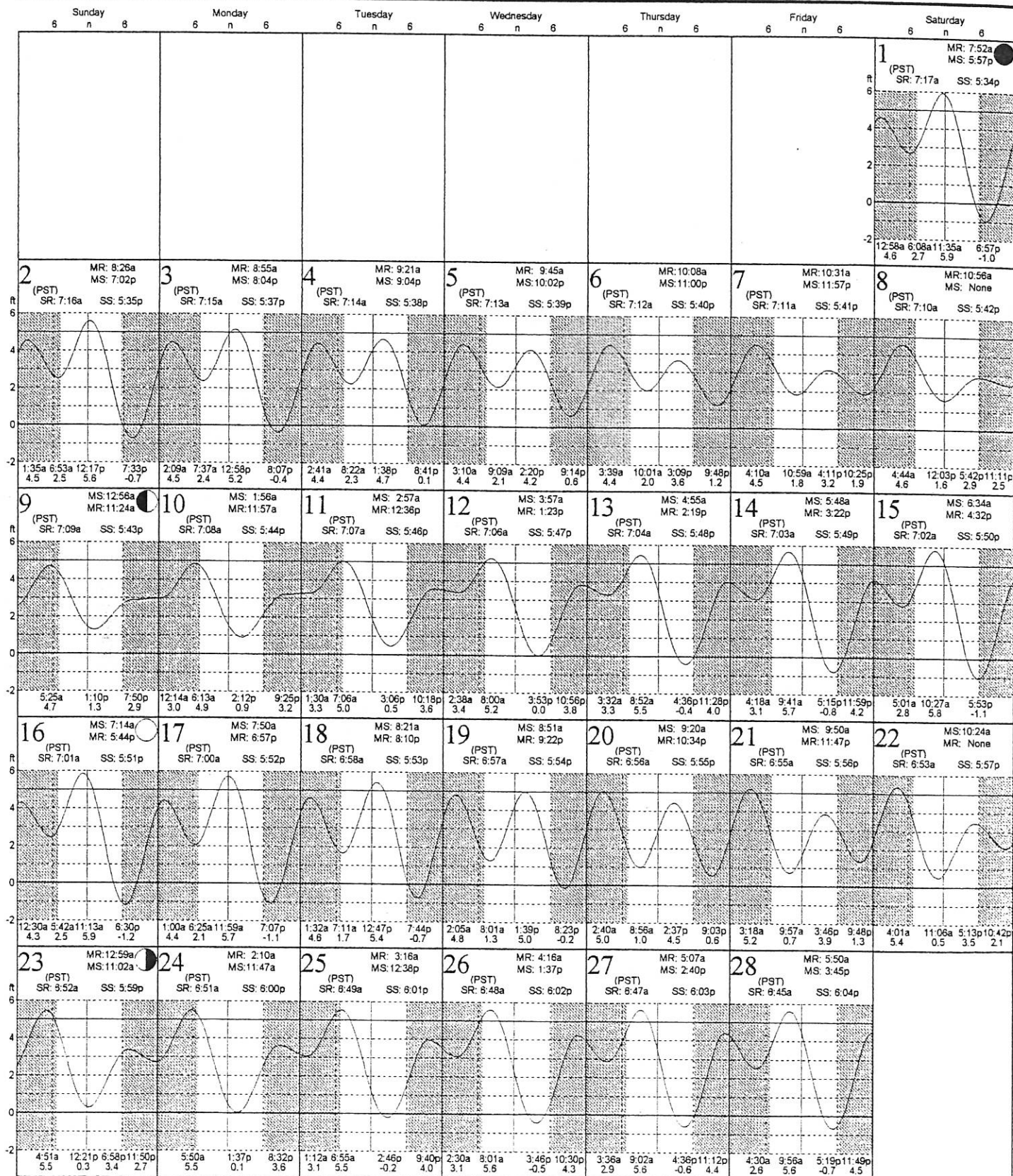
# Tides:Marshall, Tomales Bay

based on San Francisco (Golden Gate), California (NOAA)  
38° 10' N 122° 54' W

Average Tides  
Mean Range: 3.6 ft  
MH-HW: 5.4 ft  
Mean Tide: 2.8 ft

## February 2003

Monthly High & Low  
High February 1, 11:35a 5.9 ft  
Low February 16, 6:30p -1.2 ft





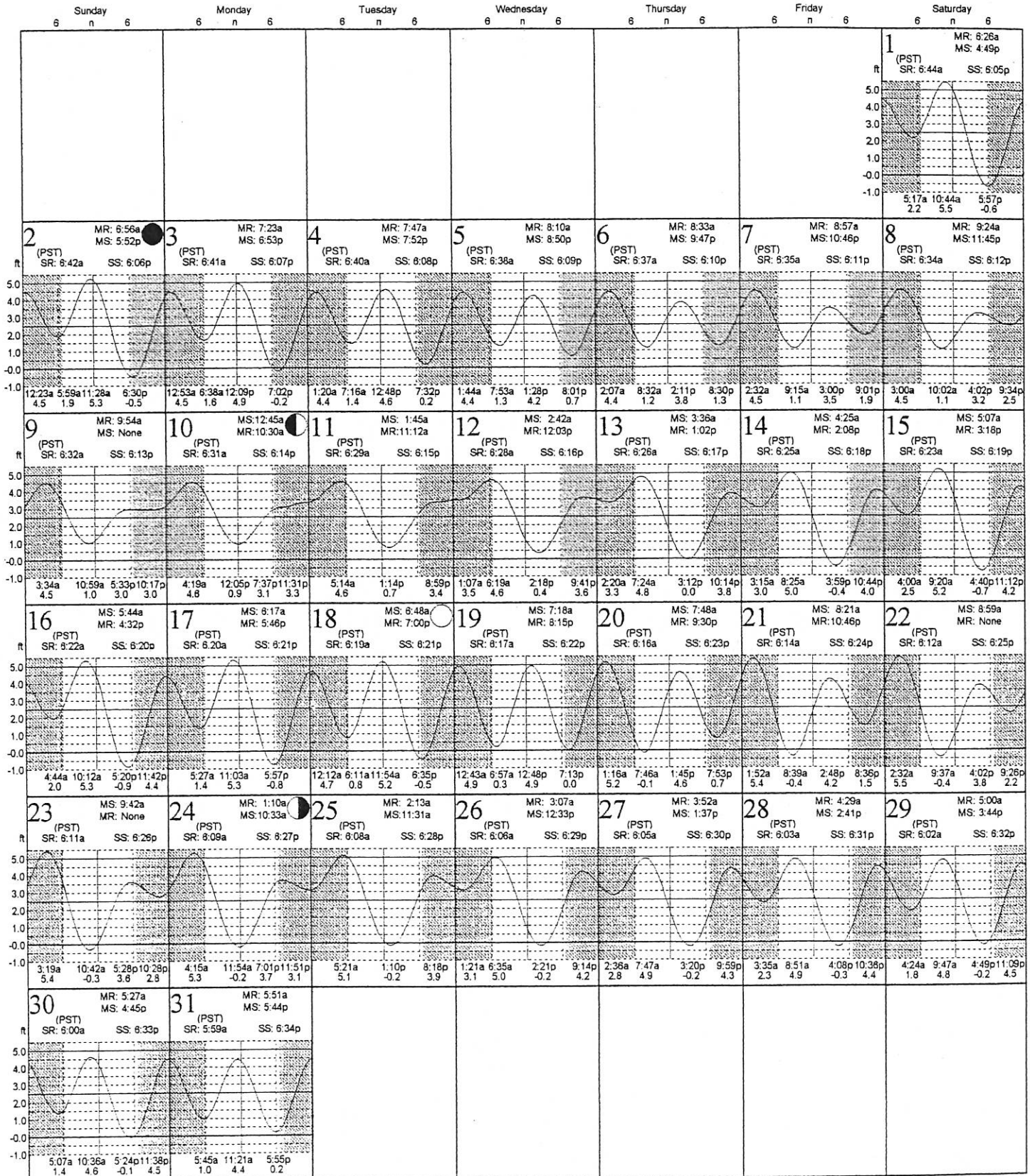
# Tides:Marshall, Tomales Bay

based on San Francisco (Golden Gate), California (NOAA)  
38° 10' N 122° 54' W

March 2003

Average Tides  
Mean Range: 3.8 ft  
MHHW: 5.4 ft  
Mean Tide: 2.8 ft

Monthly High & Low  
High March 1, 10:44a 5.5 ft  
Low March 16, 5:20p -0.9 ft





# Proposals for the 2003-2004 Herring Fishery in Tomales Bay

## **SUMMARY:**

The preliminary 2002-03 spawning biomass estimate of 4,382 tons represents a 39.5 percent decrease from last season's 7,243 ton biomass estimate. This is the second largest spawning biomass estimate since the commercial fishery was re-opened in Tomales Bay for the 1992-93 season. This season's spawning biomass estimate was 32 percent higher than the 3,327 ton biomass average for that period.

Approximately 57 percent of the total season spawning escapement occurred in the months of November and December and prior to the start of the commercial fishery. While there was more spawning escapement during the same period last season the largest spawning event coincided with the opening of the fishery. This year the season's largest spawning event occurred prior to the opening of the commercial fishery. The past three seasons have been dominated by late December spawning events.

The 78.2 ton catch was 421.8 tons short of the 500 ton season quota and was the fourth lowest catch since the 1992-93 season. This season's catch is equivalent to a 1.8 percent exploitation rate, about 31 percent of the average exploitation rate since the fishery was re-opened.

The mean length of commercially caught herring in the 2002-03 season was not significantly different than the previous three seasons although the experimental gillnet fishery in Tomales Bay has allowed the use of smaller 2 inch mesh gillnets for the 2000-01, 2001-02, and 2002-03 seasons.

**PROPOSALS FOR THE SEASON:** Season Dates: Tomales Bay herring gill net fishery would begin on Sunday, December 28, at 1700 hrs and would close Wednesday, December 31, at 1200 hrs. The fishery would re-open in 2004 at 1700 hrs on Sunday, January 4, 2004. The Tomales Bay herring gillnet fishery would end on Friday, March 5, 2004, at 1200 hrs.

Quota: 300 tons (7% of the 2002-03 spawning biomass). However, if the spawning escapement reaches or exceeds 3,000 tons prior to February 15, the quota shall be increased as follows: 1) If the spawning escapement is more than 3,000 tons, the total take of herring shall not exceed 400 tons for the season; 2) If the spawning escapement is more than 4,000 tons, the total take of herring shall not exceed 500 tons.

**RATIONALE:** Large Tomales Bay herring initial catch quotas (>300 tons) in seasons following high biomass years have resulted in high exploitation rates (>15%) in some years (e.g. 1986-87 and 1994-95). A 300 ton initial catch quota should allow fishers sufficient initial quota since no catches have exceeded 355 tons since the 1987-88 season. Since the implementation of one net per permittee, only the 2001-02 season and in the 1995-96 season did the Tomales Bay commercial catch exceed 300 tons.

**PERMITS:** Two permits per vessel.

**RATIONALE:** Most fishers like this option since it reduces the number of vessels on the bay.

**NETS:** Continuation of the Tomales Bay experimental gillnet test fishery using one shackle of 2 inch mesh per permittee.

**RATIONALE:** The Department proposes that the experimental gillnet test fishery in Tomales Bay using 2 inch mesh gillnets continue for at least an additional two seasons to assess changes in recruitment and mortality on the current stock structure and resultant commercial catch in the 2003-04 season.

Average Tides  
Mean Range: 3.6 ft  
MHHW: 5.4 ft  
Mean Tide: 2.8 ft

# Tides: Marshall, Tomales Bay

based on San Francisco (Golden Gate), California (NOAA)  
38° 10' N 122° 54' W

## December 2003

Monthly High & Low  
High December 23, 11:10a 6.8 ft  
Low December 23, 6:42p -1.9 ft

Sunday			Monday			Tuesday			Wednesday			Thursday			Friday			Saturday		
6			6			6			6			6			6			6		

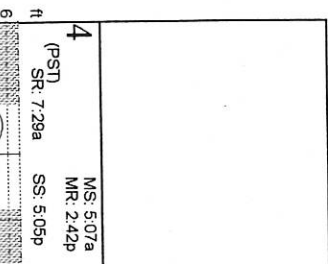
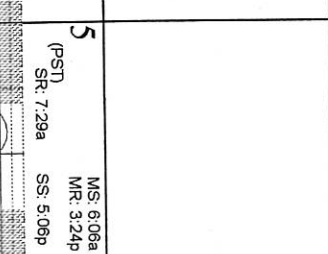
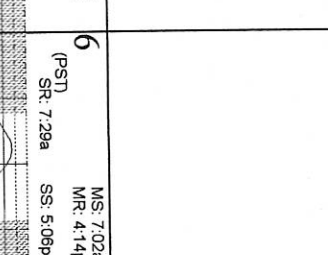
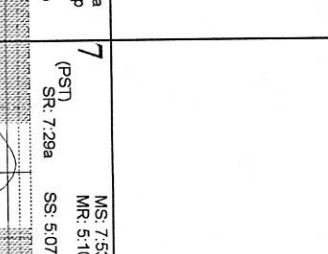
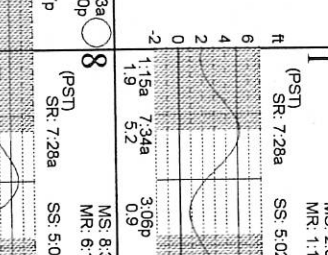
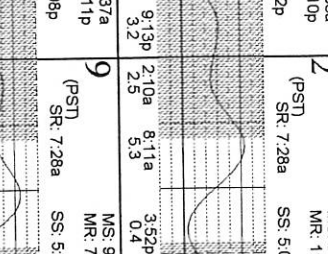
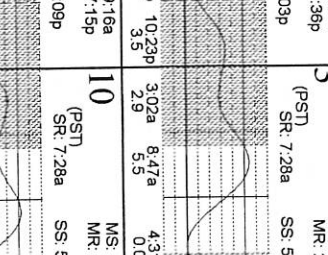
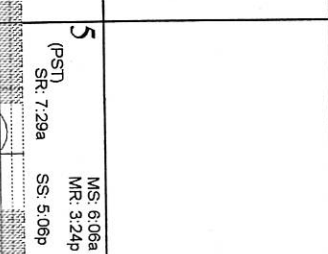
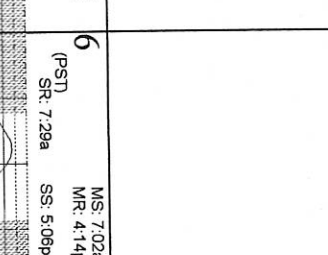
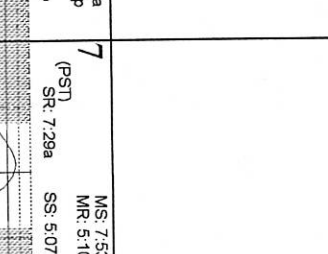
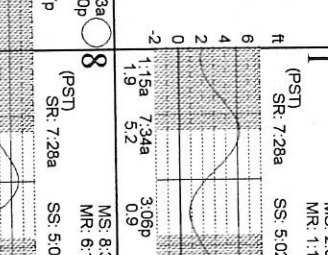
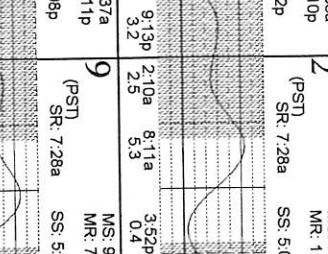
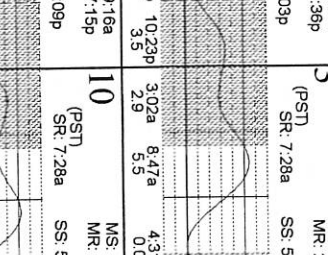
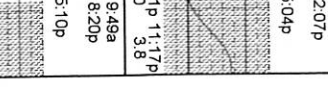
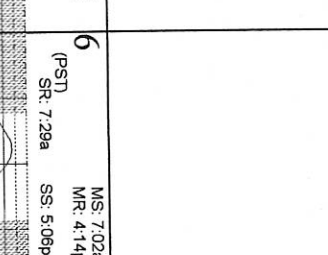
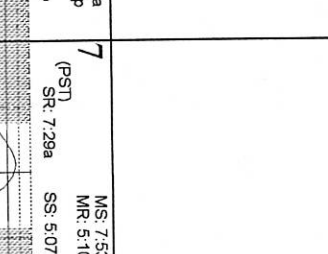
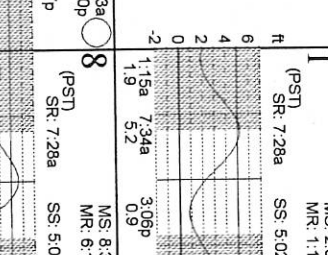
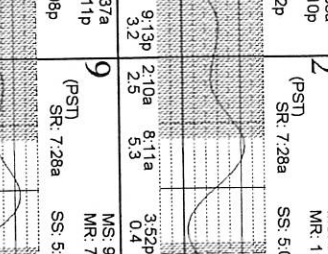
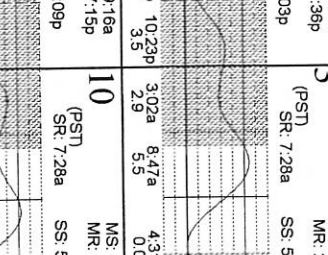
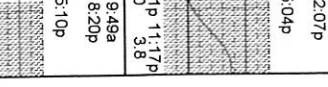
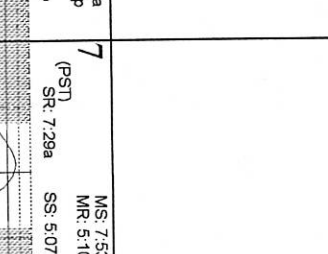
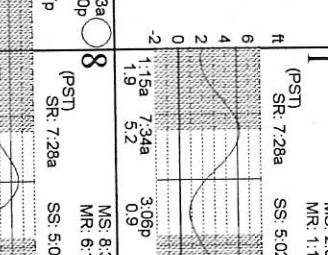
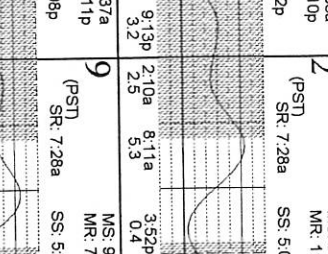
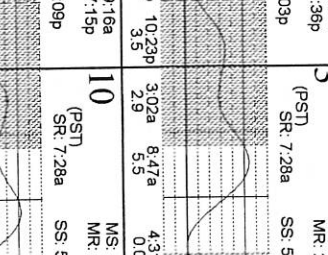
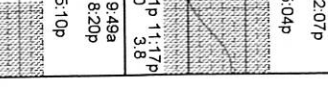
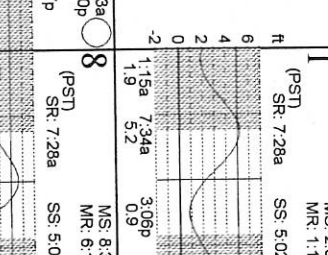
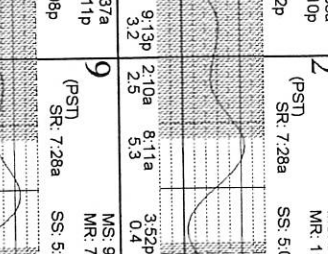
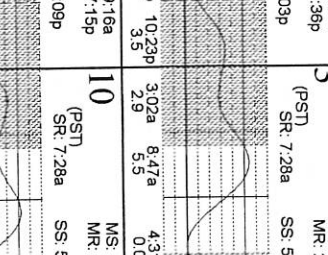
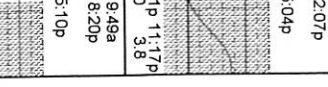
Average Tides  
Mean Range: 3.6 ft  
MHHW: 5.4 ft  
Mean Tide: 2.8 ft

# Tides: Marshall, Tomales Bay

based on San Francisco (Golden Gate), California (NOAA)  
38° 10' N 122° 54' W

January 2004

Monthly High & Low  
High January 20, 10:09a 6.6 ft  
Low January 21, 6:31p -1.6 ft

Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
6	n	6	n	6	n	6	n	6	n	6	n	6	n
													
<b>4</b> (PST) SR: 7:29a MS: 5:07a MR: 2:42p SS: 5:05p		<b>5</b> (PST) SR: 7:29a MS: 6:06a MR: 3:24p SS: 5:06p		<b>6</b> (PST) SR: 7:29a MS: 7:02a MR: 4:14p SS: 5:06p		<b>7</b> (PST) SR: 7:29a MS: 7:53a MR: 5:10p SS: 5:07p		<b>8</b> (PST) SR: 7:28a MS: 8:37a MR: 6:11p SS: 5:08p		<b>9</b> (PST) SR: 7:28a MS: 9:16a MR: 7:15p SS: 5:09p		<b>10</b> (PST) SR: 7:28a MS: 9:49a MR: 8:20p SS: 5:10p	
													
<b>11</b> (PST) SR: 7:28a MS: 10:17a MR: 9:25p SS: 5:11p		<b>12</b> (PST) SR: 7:28a MS: 10:44a MR: 10:30p SS: 5:12p		<b>13</b> (PST) SR: 7:28a MS: 11:09a MR: 11:37p SS: 5:13p		<b>14</b> (PST) SR: 7:27a MS: 11:34a MR: None SS: 5:14p		<b>15</b> (PST) SR: 7:27a MS: 12:45a MR: 12:02p SS: 5:15p		<b>16</b> (PST) SR: 7:27a MS: 1:56a MR: 12:33p SS: 5:16p		<b>17</b> (PST) SR: 7:26a MS: 3:10a MR: 1:11p SS: 5:17p	
													
<b>18</b> (PST) SR: 7:28a MS: 4:25a MR: 1:57p SS: 5:18p		<b>19</b> (PST) SR: 7:25a MR: 5:39a MS: 2:54p SS: 5:19p		<b>20</b> (PST) SR: 7:25a MR: 6:46a MS: 4:07p SS: 5:21p		<b>21</b> (PST) SR: 7:24a MR: 7:42a MS: 5:14p SS: 5:22p		<b>22</b> (PST) SR: 7:24a MR: 8:28a MS: 6:28p SS: 5:23p		<b>23</b> (PST) SR: 7:23a MR: 9:04a MS: 7:41p SS: 5:24p		<b>24</b> (PST) SR: 7:23a MR: 9:35a MS: 8:50p SS: 5:25p	
													
<b>25</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p		<b>26</b> (PST) SR: 7:21a MR: 10:25a MS: 10:56p SS: 5:27p		<b>27</b> (PST) SR: 7:21a MR: 10:48a MS: 11:57p SS: 5:28p		<b>28</b> (PST) SR: 7:20a MR: 11:12a MS: None SS: 5:29p		<b>29</b> (PST) SR: 7:19a MR: 12:57a MS: 11:37a SS: 5:31p		<b>30</b> (PST) SR: 7:18a MR: 1:57a MS: 12:09p SS: 5:32p		<b>31</b> (PST) SR: 7:18a MR: 2:56a MS: 12:39p SS: 5:33p	
													
<b>31</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p		<b>32</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p		<b>33</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p		<b>34</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p		<b>35</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p		<b>36</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p		<b>37</b> (PST) SR: 7:22a MR: 10:01a MS: 8:54p SS: 5:26p	