

**Summary of 1996-97
Spawning-Ground Surveys
and
Commercial Catch in Tomales Bay.**

Prepared for:
Tomales Bay Herring Fishery Public Meeting
Bodega Bay
March 31, 1997

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TABLE 1. Tomales Bay Herring Spawn Data, 1996-97 Season.

Date	Location	Area M ²	Eggs/ M ²	Millions of Eggs	Conversion Factor X 10 ⁻⁸	Tons
23-Nov-97	1A	13,776	57,478	792	1.38	12
	28	71,194	171,566	12,200	1.38	169
	28A	42,357	191,047	8,090	1.38	112
19-Dec-97	1	7,540	473,393	3,570	1.38	49
	1A	47,407	642,229	30,400	1.38	420
	*1A	9,481	114,833	1,092	1.38	15
	Hearts Desire	150	671,700	9,138	1.38	1
	*Hearts Desire	13,597	141,006	1,828	1.38	125
	1B	18,965	169,198	3,210	1.38	44
	2	7,939	597,173	4,740	1.38	65
	2A	878	350,905	308	1.38	2
1-Jan-97	2	7,939	327,712	2,600	1.38	36
	**Hearts Desire	13,597	54,000	735	1.38	9
	1	354	76,263	27	1.38	T
	1A	15,840	102,467	1,620	1.38	65
	**1A	9,481	29,365	280	1.38	6
21-23- Jan-97	1A	47,407	97,144	4,610	1.38	64
	**1A	9,481	4,594	43	1.4	T
	1	7,185	630,665	7,186	1.38	63
	***Hrts Desire	13,597	4,594	360	1.4	6
6-Feb-97	1	7,185	204,152	1,470	1.07	16
	2	5,065	105,494	534	1.07	6

TABLE 1. Tomales Bay Herring Spawn Data, 1996-97 Season.						
12-Mar-97	***1A	24,543	4,443	109	1.4	2
	1					T
	***Hrts Desire	13,597	15,186	1,040	1.4	3
TOTAL						1,288

T = Trace Spawn, >1 ton

* High density of *Gracilaria* (.5g/m²) assigned for known area

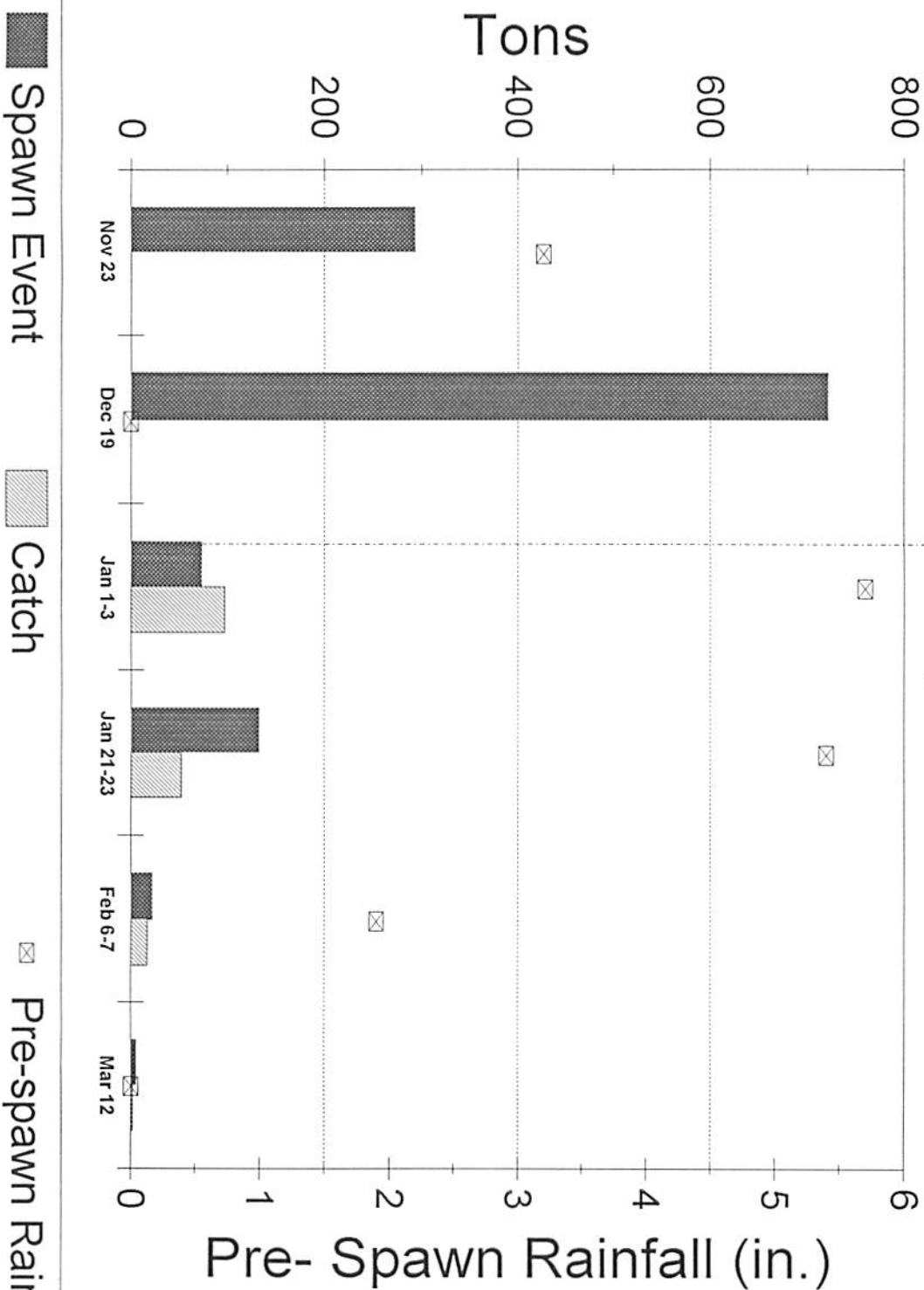
** Area of medium density *Gracilaria* sp. (.2g/m²)

*** Area of low density *Gracilaria* sp. (.02g/m²)

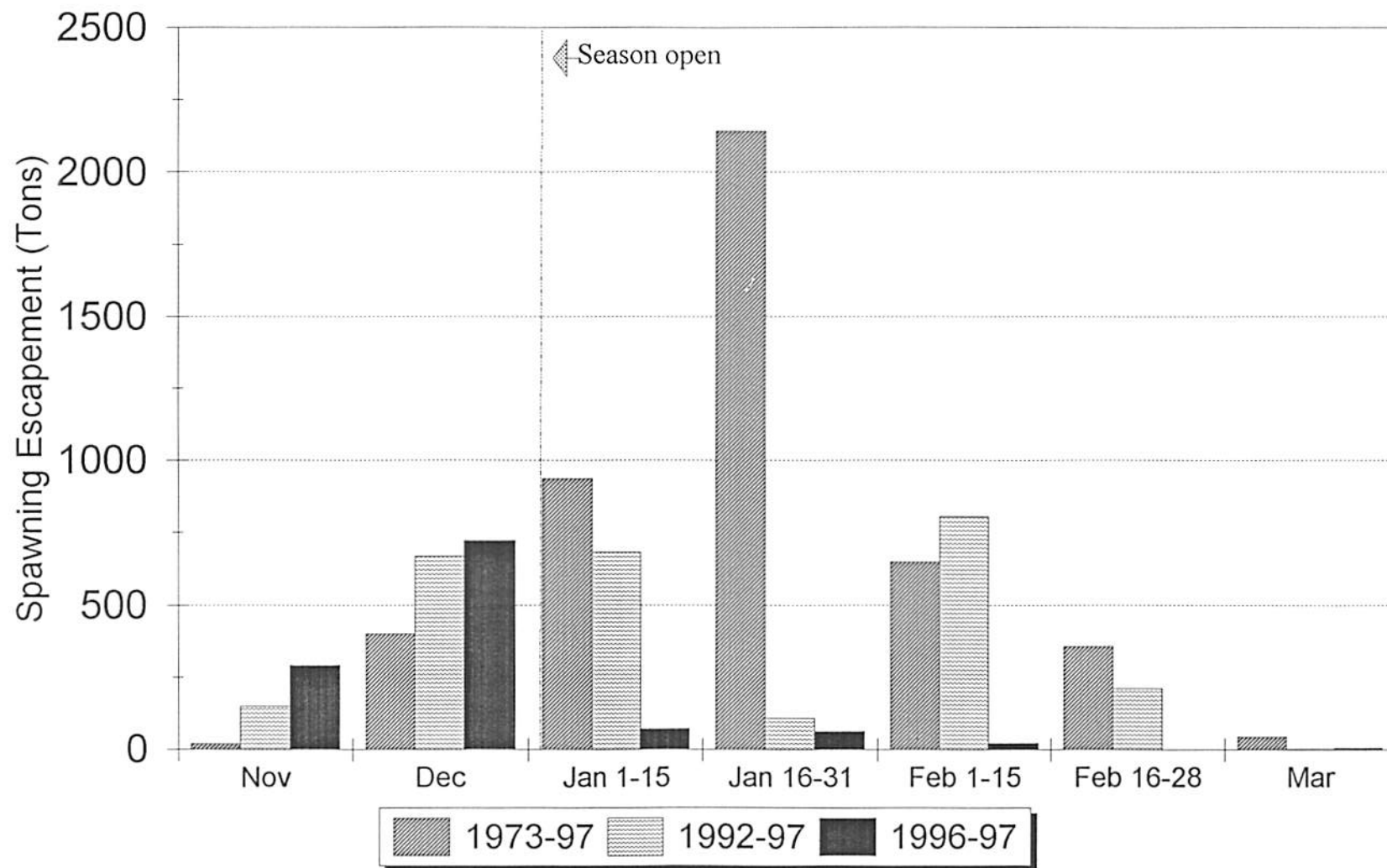
Spawn Escapement vs. Catch & Rainfall

1996-97 Season

Season Open



Distribution of Spawning Biomass Over Time



21 November 1997 Spawning Rainfall graph

Spawning Biomass versus Rainfall

November-March, 1975-1997

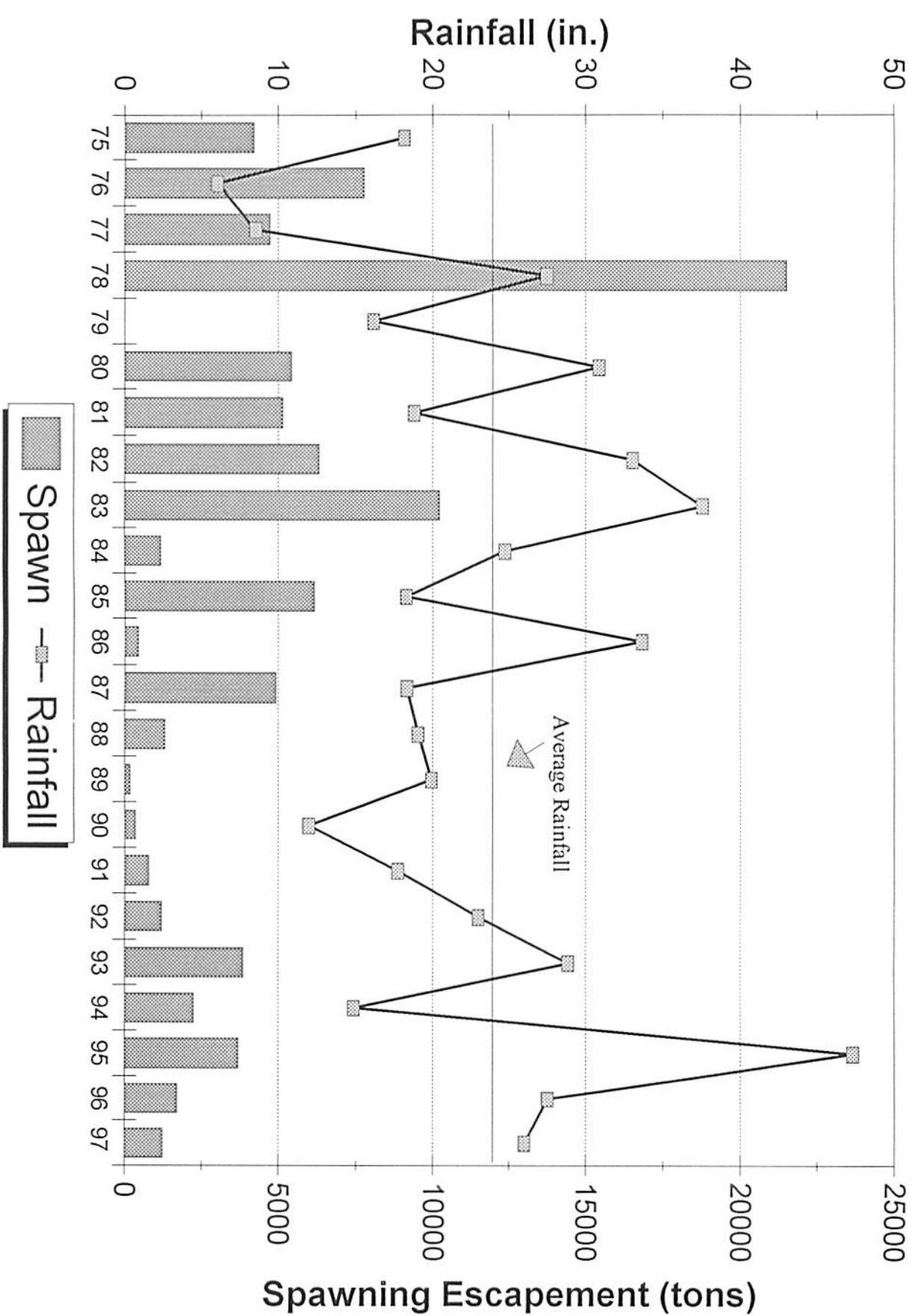


TABLE 2. Daily Landings by Tomales Bay Gillnet Fleet for 1996-97 Season.

Date	Pounds	Tons	Trips	Lbs/ Trip	Roe Count
02-Jan-97	187,787	94	21	8,942	11.8
03-Jan-97	6,740	3	8	843	12.9
06-Jan-97	68,460	34	26	2,633	11.6
22-Jan-97	104,893	52	29	3,617	10.2
06-Feb-97	26,134	13	12	2,178	12.3
07-Feb-97	8,441	4	9	938	12.6
17-Feb-97	38,349	19	20	1,917	13.5
12-Mar-97	2,324	1	1	2,324	11.6
TOTAL	443,128	222	126	2,100	11.6
AVG 1992-96	535,800	268	112	5,315	12.3
AVG 1985-96	716,500	358	212	3,401	12.8

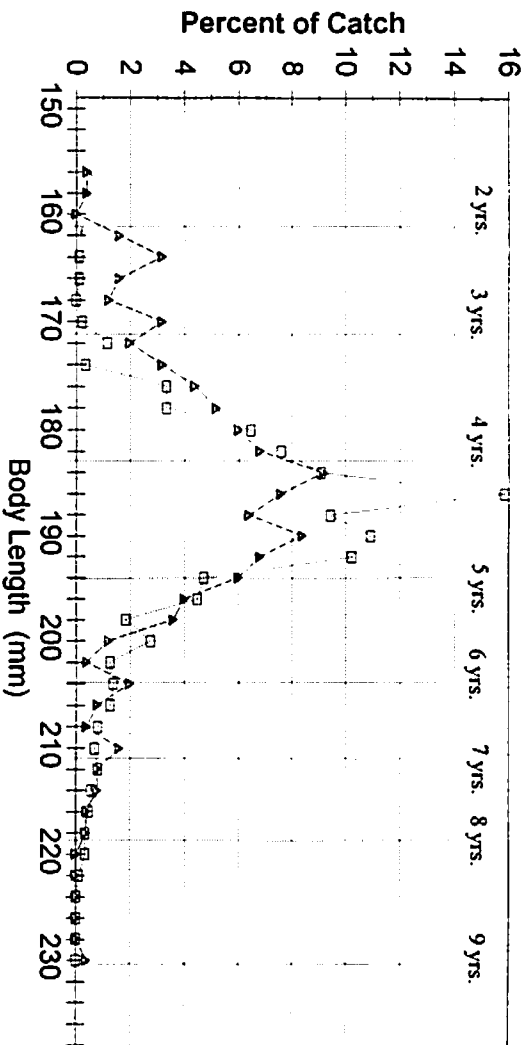
TABLE 3. Mean Length (mm BL) of the Tomales Bay commercial gill net catch.

Date	Mean Length	Sex Ratio M/F			
02-Jan-97	195.3	56.4/43.6			
03-Jan-97	193.4	48.7/51.3			
06-Jan-97	193.8	51.5/48.5			
22-Jan-97	195.8	60.6/39.4			
06-Feb-97	194.8	50.5/49.5			
12-Mar-97	193.5	47.5/52.5			
Historical Lengths of commercial gill net catch					
5-Yr Avg	1992-93*	1993-94*	1994-95*	1995-96*	1996-97*
194.6	196.4	197.3	195.5	189.2	194.8

*Switched to 2-1/8 inch mesh. Catch entirely from Tomales Bay.

Length Frequency

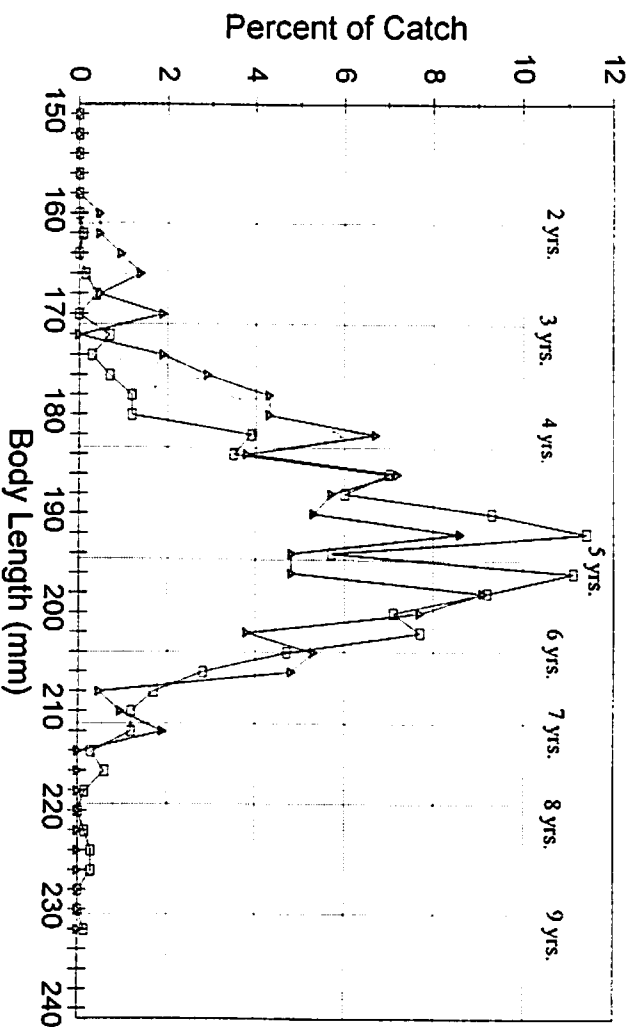
Commercial vs. Research Catches
1995-96



as/
1/11/07
pub on 4/12/07
graph 1

Length Frequency

Commercial vs. Research Catches
1996-97



as/
1/11/07
pub on 4/12/07
graph 1

TABLE 4. Tomales Bay Herring Biomass Estimates 1973-74 through 196-97 Season.

Season	Spawn Escapement (tons)	Catch (tons)	% Catch (Exploitation Rate)	Spawning Biomass (tons)
1973-74	6,041	521	7.9	6,562
1974-75	4,210	518	10.9	4,728
1975-76	7,769	144	1.8	7,913
1976-77	4,739	344	6.7	5,083
1977-78	21,513	646	2.9	22,163
1978-79	--	448	0	--
1979-80	5,420	603	10	6,023
1980-81	5,128	448	8	5,576
1981-82	6,298	851	11.9	7,149
1982-83	10,218	822	7.4	11,040
1983-84	1,170	110	8.5	1,280
1984-85	6,156	430	6.5	6,586
1985-86	435	771	12.8	6,000*
1986-87	4,931	867	14.9	5,798
1987-88	1,311	750	36.4	2,061
1988-89	167	213	56	380
1989-90	345	--	0	345
1990-91	779	--	0	779
1991-92	1,214	--	0	1,214
1992-93	3,856	222	5.4	4,078
1993-94	2,244	219	8.9	2,463
1994-95	3,704	275	7.4	3,979
1995-96	1,704	355	17.2	2,059
1996-97	1,247	222	15.1	1,469
AVERAGE	4,374	466	12.8	4,988

*Biomass estimated by cohort analysis; for all other years, biomass was estimated from spawning-ground surveys.

TABLE 5. Annual Landings from Tomales/Bodega Bay Gillnet Fleet.

Year	Pounds	Tons	Trips	Lbs/Trip	Roe Count
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	213.0	291	1,464	12.7
89-90	190,409	95.2	61	42	13.5
90-91	173,103	86.5	72	2,404	13.6
91-92	47,125	23.5	30	1,571	14.6
92-93*	444,312	222.3	66	6,736	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
Average	716,500	358.2	212	3,401	12.8

* Catch from Tomales Bay only, outer Bodega Bay closed to fishing.

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graph2

Tomales Bay Herring Biomass, Catches
and Quotas, 1991-92 to 1996-97 Seasons

