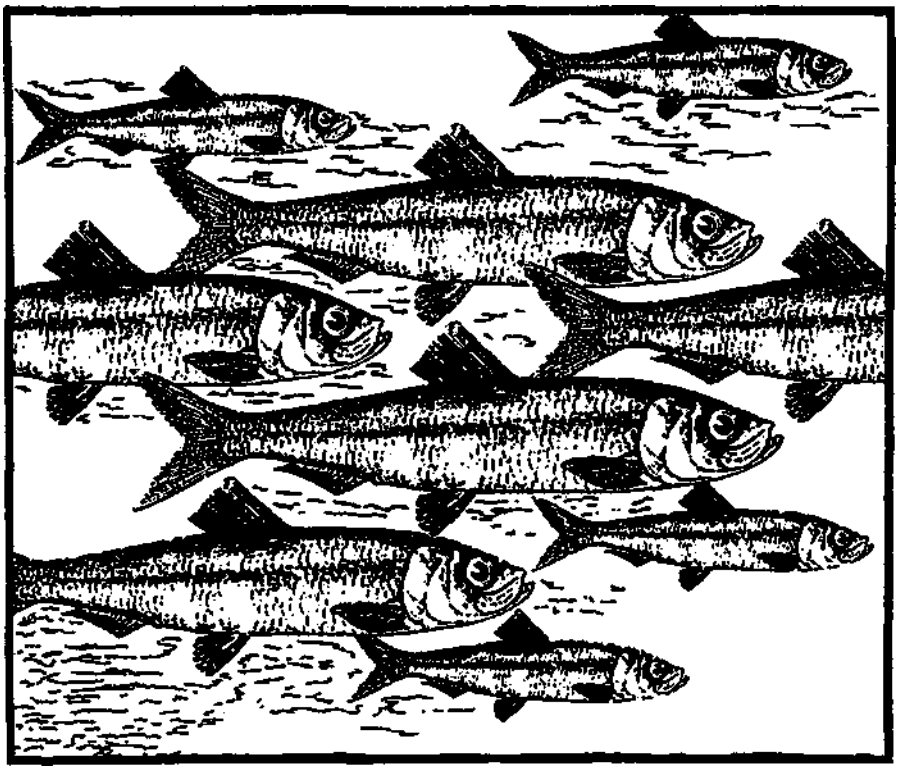
Summary of 2000-01 Spawning-Ground Surveys and Commercial Catch in Tomales Bay With Management Proposals for Next Season



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Highlights of the 2000-01 Tomales Bay Pacific Herring Season

- The pattern of spawning escapement was unusual this season because such a large percentage (72 %) occurred within the month of December. January and February estimates (24 % and 4 % respectively) contributed slightly over a quarter of the total spawning escapement for the season.

- *Gracilaria* was an important spawning substrate this year. It was estimated that 41 % of the total spawning escapement occurred on *Gracilaria* this season. In December and January it accounted for 36 % and 59 % respectively. However, in February only 7 % of spawns were on *Gracilaria.*

- Eelgrass bed density within Tomales Bay appeared to decline overall when comparing 17 beds with last seasons data. A comparison of seven beds south of the town of Marshall showed a decrease of 25 % from 1999 - 2000. Density in eleven eelgrass beds north of Marshall was reduced by 42 % from last year. The bulk of the spawns in Tomales Bay were confined to bed areas south of the town of Marshall. Bed area 28 A was spawned upon six times this season, and supported 52 % of the spawning escapement for the season.

- The preliminary spawning biomass estimate of 4,196 tons is approximately double last season's 2,011 ton biomass. In addition, this season's estimate is 76 % greater than the 7-year average of 2,382 tons. However, it is 400 tons, or 9 % less than the 25-year average of 4,595 tons.

Q Five trace spawns were observed this season. The first trace spawn occurred on November 11, and marked the first spawn of the season. December was the only month that a trace spawn was not detected. A trace spawn discovered at Bed 30 on February 12, and may be the first recorded evidence of spawning at this site. It indicates that herring have attempted to utilize even the most southern eelgrass bed in Tomales Bay.

- By December 26, the spawning escapement surpassed 2,000 tons; this allowed the initial 200 ton catch quota to be increased to 300 tons. Spawning escapement passed 3,000 tons by January 18, allowing a quota of 400 tons for the season. The commercial herring fishery catch for the season totaled 298.5 tons, but it was 101.5 tons less than the allowable 400 ton catch quota.

- Tissue samples from this season's spawning herring were collected for DNA analysis. A total of 200 tissue core samples and 150 fin tissue samples were collected from spawning schools throughout the season. Herring were collected from different schools this season. Five schools are represented in the core tissue study, while three of the five schools where included in the fin tissue study.

Review of the 2000-01 Pacific Herring Season by Month

November

On November 3, we began our seasonal herring surveys. A trace spawn was detected on Bed 28 on November 11. We began to notice that fish were holding in John's Hole. Herring schools seemed to move into Tomales Bay with the high tides. Near the end of November herring became abundant enough to capture with our multi-panel gill net. The total spawning escapement for November was 0.2 tons, and accounted for less than 1 % of the season total.

December

The month of December was atypical, when compared to an average herring season. An estimated 2821.5 tons, or 72 % of this season's spawning escapement occurred during this month. Two spawning periods contributed to the large escapement in December. The first period occurred December 5-7, involved three beds (28A, 1A, IC), and resulted in an estimate of 343.8 tons. *Gracilaria* from Bed 28A

amounted to 163.3 tons, or 48 % of the escapement for this period. The second spawning period coincided with the start of the commercial herring fishery season. This period, December 25-27, involved twelve beds (1A, IB, IC, 2-8,3A, 28A), and was estimated at 2,477.8 tons. As a spawning substrate, *Gracilaria* from Beds 28A and 3A accounted for 859 tons, approximately 35 % of the period's escapement. The estimated escapement from the second spawning period alone warranted an increase of the commercial catch quota to 300 tons; the escapement reached over 2,000 ton prior to February 15,2001.

The commercial herring fishery started at 1700 hrs on December 26,2000. Sixty-one landings were made between two days, December 27 and 28. In those two days, 119 tons of herring were landed in December, with an average landing of 1.95 tons. The commercial fishery exploited only 4 % of the 2,940.5 tons of the month's spawning biomass. The landings for this month was approximately 40 % of the total catch this season.

January

Spawning events in Tomales Bay occurred during two periods within the month. The first period from 18-21 January, involved five beds (27,28,28A, 29, Marconi), and amounted to 914.1 tons of escapement. Gracilaria from 28A and Marconi combined for 547.6 tons, approximately 60 % of this periods escapement. The second period of spawning was on Bed IB on 25 January and totaled 20 tons. We discovered one trace spawn in January, on Bed 29. The total spawning escapement for January was 934.1 tons, which was 24 % of the season's total.

January's commercial catch totaled to 170.7 tons of herring. This month's herring landings were 57 % of the season's total catch. There were 69 landings in January, they were spread among four days. The average landing was 2.5 tons. On January 18, spawning escapement surpassed 3,000 tons, so the catch quota was increased to 400 tons. The largest daily landing of the season occurred on Januaryl9, and amounted to 104 tons. The exploitation rate for January was 15.5 % of the

1104.9 tons of spawning biomass.

February

There was one major spawning period in February. Five beds (1A, IB, 1C, 28,28A) were spawned upon between February 2-4 and a combined total of 119 tons. *Gracilaria* played only a minor role as the spawning substrate. It accounted for only 9.8 tons, or 8.3 % for the period. On February 8 and 9, there was a much smaller spawn on two beds (1A, 28A), that totaled 20.6 tons. The month concluded with three trace spawns on Feb. 12, Bed 30; Feb. 21, Bed 1; and Feb. 23, Bed 1C. The total spawn escapement for the month was 141.7 tons, or 4 % of the season's total.

The commercial herring fishery in February consisted of 8 landings on 22 February. The combined catch totaled 8.7 tons with an average of 1.1 tons per landing. The fishery exploited 5.8 % of the 150.5 tons of spawning biomass for the month.

March

There were no major spawning events in March. The only evidence of spawning was a trace spawn at Bed 28, on March 11th. The first half of the month we detected small groups herring with our fathometer, but they evaded our multi-panel gill net. We did not detect any schools of herring in the latter part of March, but we did notice an increasing number of *Amelia*, or moon jellyfish.

The commercial herring fishery
closed on March 9lh at 12:00.
There were no commercial
landings in March.

Proposals for the 2001-2002 Herring Fishery in Tomales Bay

SUMMARY: The preliminary 2000-01 spawning biomass estimate of 4,200 cons is more than double last season's 2,011 ton biomass. This was the largest spawning biomass estimate in the past 15 years and was just 10 percent less than the 28-year long-term spawning biomass average of 4,653 tons.

Approximately 72 percent of the total season spawning escapement occurred in the month of December with 60 percent of the spawning escapement occurring in the last week of December on and after the December 26 season opening.

The 298 ton catch was 102 tons short of the 400 ton season quota and was equivalent to an exploitation rate of 7.1 percent and was 2.8 percent less than the 28-year long-term exploitation rate for the Tomales Bay herring fishery.

The mean length of commercially caught herring was not significantly different than last season although the experimental gillnet fishery in Tomales Bay allowed the use of smaller 2 inch mesh gillnet. More older and larger herring were available to the commercial gear this season than in the 1999-00 season.

PROPOSALS FOR THE SEASON:

Season Dates: Tomales Bay herring gill net fishery would begin on Wednesday, December 26, at 1700 hrs and would close Friday, December 28, at 1200 hrs. The fishery would re-open in 2002 at 1200 hrs on Wednesday, January 2, 2002. The Tomales Bay herring gillnet fishery would end on Friday, March 8, 2002, at 1200 hrs.

Quota: 300 tons (7% of the 2000-01 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 for the season.

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, see Table 2, page 6). A 300 ton initial catch quota would allow fishers sufficient initial quota so that if further increases in the catch quota were' justified, most likely no cessation of fishing effort would be required. Since the implementation of one net per permittee, only 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 season to assess changes in recruitment and mortality on the current stock structure and resultant commercial catch in the 2001-02 season.

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