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REPORT TO THE BOARD OF FISHERIES

By:

Len Schwarz

Regional Information Report[1] No. 4K88-2

Alaska Department of Fish and Game
Division of Commercial Fisheries
211 Mission Road
Kodiak, Alaska 99615

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[1] The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. The reports frequently serve diverse ad hoc informational purposes or archive basic uninterrupted data. To accommodate timely reporting of recently collected information, reports in this series may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

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Regional Information Report No[1] 4K88-2

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Division of Commercial Fisheries, Westward Region
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SUMMARY

During the 1988 Dutch Harbor food and bait herring fishery 7 seine vessels and 1 gill net vessel harvested 2,004 short tons of herring. The 1988 quota was 3,100 tons. Approximately 69% of the harvest was marketed as bait with the remainder marketed as food. The average ex-vessel price was $252 making the fishery worth approximately $505,000.

HISTORICAL PERSPECTIVE AND BACKGROUND

The Eastern Aleutian Islands herring food/bait fishery occurs near Unalaska and Akutan Islands primarily in the vicinity of Unalaska and Akutan Bays (Figure 1). By regulation the fishery management plan applies to the Unimak, Akutan, and Unalaska Districts and the Umnak District east of Samalga Pass. This fishery, also known as the "Dutch Harbor herring fishery", has occurred annually since 1981. Historically the fishery occurred from 1929 to 1938 (Table 1).

Historically the industry was a mixture of gillnet and seine gear, holding pounds, and numerous small shore-based hand packing operations. A large portion of the catch was brined for either food or bait purposes; some product was frozen. Seine gear provided the bulk of the herring harvest.

Currently fishing effort consists of purse seine vessels, which use large seines up to 250 fathoms long and 25 to 35 fathoms deep. The entire 1981-1986 harvest was taken by purse seine. One gill net vessel participated in the 1987 and 1988 season. Purse seine vessels average about 50 feet in keel length and also participate in the area M salmon fishery. The fish-finding electronics (sonar) onboard these vessels are critical to the fishing operation, much as the airplane is critical to the sac-roe fishery. Generally there is a fairly free exchange of information between all the vessels involved. Fleet efficiency is also enhanced by its ability to spread out and conduct "sonar

searches" over a fairly large area when herring concentrations leave traditional fishing areas.

When herring concentrations leave the usual harvest locations, the industry follows the herring with floating processors and tenders. Processing efficiency and product quality may decline when this occurs. Harvest locations have extended over approximately 90 miles, from Tigalda Island to Makushin Bay (Figure 1). The majority of the harvest, however has occurred within a 5 mile radius of shore-based processing facilities in Unalaska and Akutan Bays.

Two similarities between the current and historical fisheries are the quality problems associated with feeding herring and the availability of herring when industry desires to harvest them. The feed problem was overcome in the historical fishery by the use of holding pounds, where seine caught herring were held until their stomachs became empty. Gill net caught herring required special handling to prevent spoilage. In the current fishery the use of shaved ice and super-chilled seawater in conjunction with rapid processing alleviates most of the feed related problems. When feeding conditions are severe the processors have suspended buying. Historically, the availability of herring was categorized into an early summer run (late June to late July) and a late summer run (late August to early September). This pattern does not seem to hold in the current fishery as herring have been steadily harvested from July 16 through September 15.

Shore-based processors purchase the majority of the herring harvested in this fishery. Floating processors have been used each year, however they are limited by daily handling capacities which are considerably less than that of the shore-based plants. All of the processors associated with the herring fishery have floating processors and are diversified into bottomfish, salmon, halibut, black cod, scallops, and the Bering Sea and Peninsula

crab fisheries. In 1988 some herring were tendered to the King Cove shore plant.

The values shown in Table 1 represent estimates of total ex-vessel value. Generally, the ex-vessel value for bait herring has exceeded that for food herring. Industry information indicates that foreign food markets currently have multiple sources of herring from European and Canadian stocks which have been cycling high in recent years. While Eastern Aleutian food herring are a suitable and desirable product, an ample and more reliable supply of food herring from other countries currently dominate the market. The bait product from this fishery has a more solid market in that it is used locally and in other fishing ports of Alaska as bait for the longline and crab fisheries. Bait demands have been increasing in recent years and a premium is placed on quality bait, i.e. freshness and high oil content. Overall, the ex-vessel value of bait herring has remained more stable than that for food.

HARVEST STRATEGY

The harvest strategy of the Dutch Harbor food and bait herring fishery has been evolving since it was re-established in 1981 (Table 2). During the 1981 and 1982 seasons there were no harvest restrictions. From 1983-1985 the Board of Fisheries implemented a harvest ceiling of 3,527 tons per year due to biological concern over multiple exploitation on Eastern Bering Sea spawning stocks, specifically the Bristol Bay, Nelson Island and Port Moller stocks. Scale pattern analysis studies identified these stocks as comprising the Eastern Aleutian herring biomass. The extensive sac-roe fisheries occurring on these stocks coupled with the food/bait fishery on different proportions of these same spawning stocks creates an element of biological concern and possible exploitation above the board's 20% guideline policy. In 1986 a modification of the harvest ceiling was implemented by ADF&G in response to the Board of Fisheries concern for the diminishing nature of the contributing

stocks (primarily Togiak, to which the bulk of the Eastern Aleutian catch is estimated to be comprised). Concern was triggered by a lack of recruitment in the spawning stocks. The 1986 harvest ceiling in the Eastern Aleutians was reduced by 30% (to 2,453 tons). This reduction was commensurate with the percentage reduction of the observed available Togiak spawning biomass between the springs of 1985 and 1986. The 1987 harvest ceiling was set at 2,332 tons in line with the 1985 to 1987 reduction in observed Togiak spawning biomass.

In 1988 the Alaska Board of Fisheries implemented a Bering Sea Herring Fisheries Management Plan which established a criteria for calculating the Dutch Harbor food and bait quota.

To ensure the conservation of herring stocks, the board adopted a requirement that the overall exploitation of a herring stock should not exceed 20% of the spawning biomass. In the case of the Togiak spawning stock an allocation between the sac-roe fishery, spawn on kelp fishery, and the Dutch Harbor food and bait fishery was established so that the catch did not exceed 20% of the spawning biomass. The number of fishermen involved and the value of the fishery were factors considered by the Board when making the allocations between the fisheries. The Bering Sea Management Plan defines under what conditions and to what extent there will be a Dutch Harbor food and bait fishery. The elements governing the food and bait fishery are listed below:

1. The Dutch Harbor food and bait fishery quota is determined through the following calculations:

    A. The desired exploitation rate (maximum of 20%) is applied to the estimated Togiak spawning biomass. This figure represents the total combined allowable harvest to be extracted by the Togiak sac-roe fishery, spawn on kelp fishery, and the Dutch Harbor food and bait fishery.

B. The spawn on kelp fishery is allocated 1,500 tons of herring.

C. The Dutch Harbor fishery is allocated 7% of the remaining allowable harvest (after the 1,500 ton spawn on kelp allocation has been subtracted from the total allowable harvest).

D. The Togiak herring sac-roe harvest allocation is the remainder of the total allowable harvest after the spawn on kelp and Dutch Harbor allocation have been subtracted.

2. If the herring sac-roe harvest in the Togiak District exceeds its allocation by more than 20%, the department shall deduct the amount of herring that exceeds the Togiak District herring sac-roe allocation from the Dutch Harbor fishery allocation for that season.

3. If the Togiak District herring sac-roe fisheries do not harvest their allocation the unharvested amount of herring will be added to the Dutch Harbor fishery allocation. When an increase of the Dutch Harbor fishery allocation is made under this section, the total allocated harvest may not exceed 3,100 s.t.

4. When the Togiak District is below its threshold (35,000 tons), the Dutch Harbor fishery will be closed for that season.

1988 FISHERY

Using the newly adopted Bering Sea Herring Management Plan and the projected Togiak spawning biomass, a preseason estimated quota of 658 tons was anticipated for the Dutch Harbor herring fishery. A much larger than anticipated biomass was observed in Togiak during the 1988 spring sac-roe fishery. In addition the

allowable sac-roe harvest was not taken in Togiak. Because of these two factors the Dutch Harbor quota was set at 3,100 tons, the maximum harvest allowed under the Bering Sea Herring Management Plan.

The Dutch Harbor fishery opens by regulation on July 16. Since the preseason quota was anticipated to be only 658 tons, short fishing periods were to be established to prevent overharvest. In past years daily catches of 800 tons were not uncommon. Since the actual quota was 3,100 tons, the fishery was initially open to continuous fishing at 12:01 A.M. July 16. Seven seine vessels and one gill net vessel began fishing on July 16. Six companies with a holding capacity of approximately 1,400 tons were registered to buy herring.

Herring were accessible for harvest and 1,000 tons were taken on July 17 and 18 (Table 3). By the third day of the fishery markets began to disintegrate and the harvest rate slowed down. When it was anticipated preseason that the quota would be 658 tons, the major purchaser of bait herring imported herring from the east coast. As a result, there was less of a demand for bait herring. There was a limited market for food herring, however quality standards were greatly increased from past years. Fish stomachs as well as intestines had to be virtually empty of feed before they would be bought for food herring. Buying was suspended by several companies on July 19 and 20 due to the presence of feed in fish stomachs. One load of approximately 50 tons was dumped when it failed to meet food herring quality standards.

By July 20 fishermen began leaving the herring fishery due to the inability to consistently find herring free of feed, the large pink salmon run on the South Peninsula, and the high price being paid for pink salmon. By July 22 one seine vessel remained to fish for herring in between the Dutch Harbor salmon fishing openings.

The fishery was left open until it closed by regulation on February 28. Only 2,003 tons of the 3,200 ton quota were taken. A total of 1,383 tons were used as bait herring with 621 tons used as food. The harvest initially began in western Unalaska Bay, then moved west of Cape Cheerful near Winslow Bay on July 19. The average price per ton was $252, making the fishery worth approximately $505,000 to the fishermen.

AGE CLASS COMPOSITION

From July 16 to July 30, 684 herring were sampled for age, weight, and length data. Age composition data are listed in Tables 5 and 6. The majority (80%) of the samples taken in Dutch Harbor were 9 years old or older. Virtually no fish under 7 years old were present in the Dutch Harbor fishery. The Togiak escapement from the 1988 spring sac-roe fishery was estimated to be comprised of 60% age 9 and older fish. The age class composition of the 1988 spring Togiak escapement is very comparable to the 1988 Dutch Harbor fishery. The only noticeable difference is the absence of ages 4 and 5 from the Dutch Harbor samples. Age 4 and 5 made up 17% of the Togiak age composition.

Figure 1. Waters included in the Dutch Harbor herring food and bait fisheries management plan.

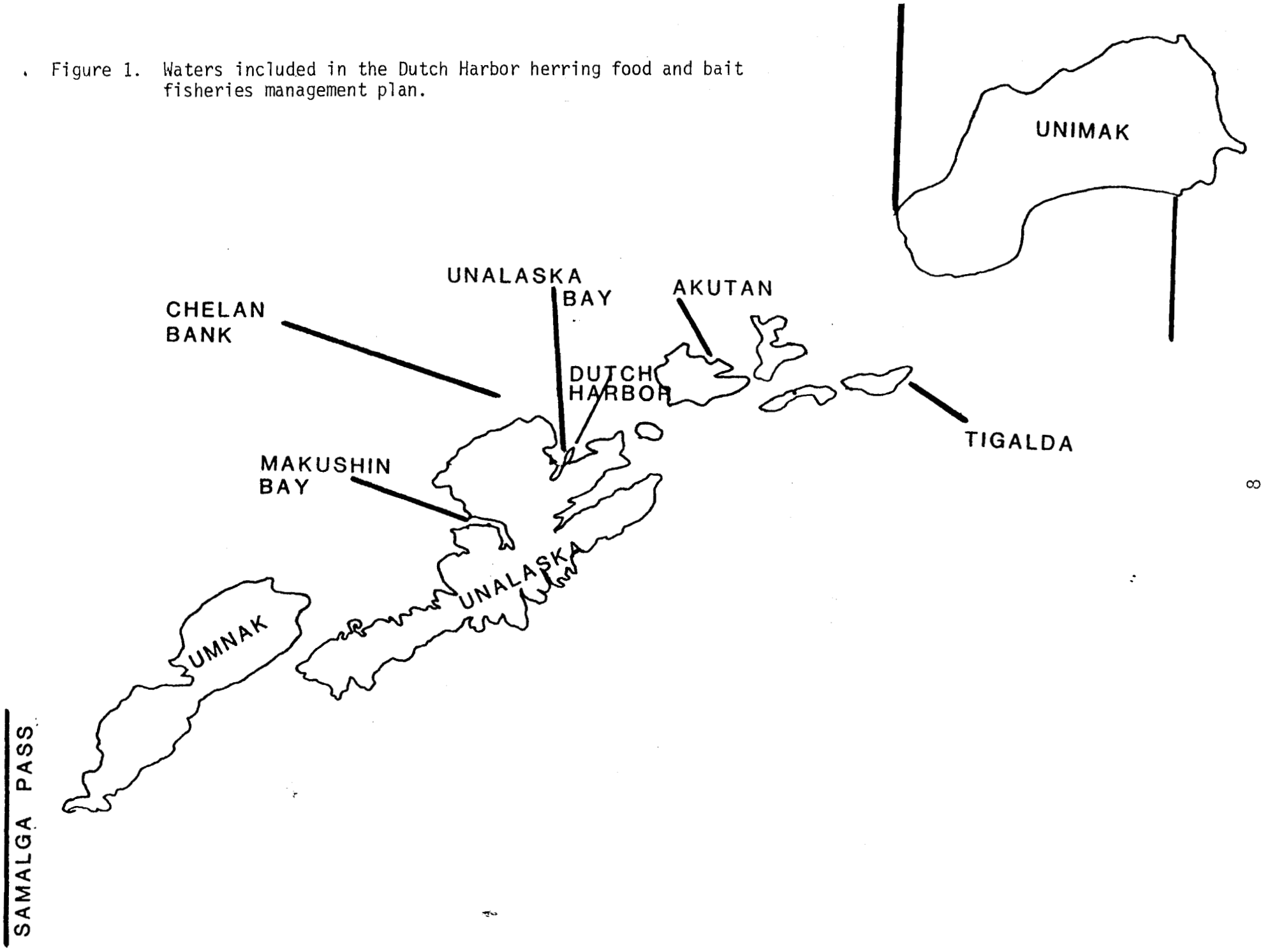

Table 1. PENINSULA/ALEUTIANS MANAGEMENT AREA EASTERN ALEUTIAN ISLANDS HERRING FOOD/BAIT FISHERY HISTORICAL INDUSTRY SUMMARY BY YEAR

YEAR	HARVEST IN SHORT TONS	NO. PROCESSORS	NO. BOATS	NO. LANDINGS	X TONS PER BOAT	X TONS PER LANDING	X $ PER TON	$ VALUE (MILLIONS)	X $ PER VESSEL
1929	1259	*	*	*	*	*	*	*	*
1930	1916	*	*	*	*	*	*	*	*
1931	1056	12	26	*	*	*	*	*	*
1932	2510	12	30	*	*	*	*	*	*
1933	1585	12	38	*	*	*	*	*	*
1934	1533	9	*	*	*	*	*	*	*
1935	2412	10	*	*	*	*	*	*	*
1936	1379	8	*	*	*	*	*	*	*
1937	579	*	*	*	*	*	*	*	*
1938	513	*	*	*	*	*	*	*	*
1939-44	NO FISHERY								
1945	75	*	*	*	*	*	*	*	*
1946-80	NO FISHERY								
1981	704	2	2	16	352	44	300	0.211	0.11
1982	3565	6	7	95	509.3	37.5	300	1.02	0.15
1983	3567	5	8	96	445.9	37.2	232	0.828	0.10
1984	3578	5	9	61	397.6	58.7	210	0.751	0.68
1985	3480	3	6	78	560	44.6	162	0.564	0.09
1986	2394	4	7	53	342	45.2	254	0.600	0.09
1987	2503	4	8	45	373	55.6	300	0.751	0.09
1988	2004	6	8[a]	59	251	34.0	252	.505	0.06

[a]Seven seiners and one gill netter participated.

Table 2. DUTCH HARBOR FOOD AND BAIT HERRING FISHERY (SHORT TONS)

YEAR	PRESEASON TOGIAK SPAWNING BIOMASS	HARVEST QUOTA	FOOD AND BAIT HARVEST	% SPAWNING BIOMASS HARVESTED
1981	159,000	NONE	704	.4%
1982	98,000	NONE	3,565	2.5%
1983	142,000	3,525[a]	3,567	2.5%
1984	115,000	3,525	3,578	3.1%
1985	132,000	3,525	3,480	2.7%
1986	96,000	2,453[b]	2,394	2.5%
1987	88,000	2,332[b]	2,503	2.8%
1988	132,000	3,100[c]	2,204	2.3%

[a]Harvest ceiling of 3,525 established by Board of Fisheries.

[b]Harvest quota set by ADF&G. Reduced proportionate with the drop from the 1985 Togiak spawning biomass level.

[c]Harvest quota set under provisions of the Bering Sea Herring Fisheries Management Plan.

Table 3. 1988 DAILY HERRING CATCHES FOR THE DUTCH HARBOR FOOD AND BAIT HERRING FISHERY

DATE		DAILY	CUMULATIVE
July	16	188.75	188,75
	17	461.17	649.92
	18	501.60	1,151.52
	19	186.63	1,338.15
	20	134.33	1,472.48
	21	62.90	1,535.38
	22	139.00	1,674.38
	23	47.54	1,721.92
	24	42.35	1,764.27
	25	24.25	1,788.52
	26	39.14	1,827.66
	27	44.12	1,871.78
	30	22.20	1,893.98
Aug.	9	3.60	1,897.58
	11	2.46	1,900.04
	15	.75	1,900.79
	16	.75	1,901.54
	24	44.79	1,946.33
Sept.	13	34.45	1,980.78
	17	8.10	1,988.88
	18	14.95	2,003.83

Table 4. PENINSULA/ALEUTIANS MANAGEMENT AREA EASTERN ALEUTIANS HERRING FOOD/BAIT FISHERY HARVEST DURATION BY YEAR

YEAR	LANDING DATE FIRST	LANDING DATE LAST	DAYS FISHED	SEINE VESSELS	TOTAL HARVEST
1981	8/03	8/23	21	2	704
1982	8/05	9/12	39	6	3,565
1983	7/23	9/06	46	5	3,567
1984	7/17	7/27	11	5	3,578
1985	7/17	8/11	26	3	3,480
1986	7/16	7/28	13	4	2,394
1987	7/16	7/23	4[a]	9[b]	2,503
1988	7/16	9/18	21	8[b]	2,004

[a]Closed 7/19, reopened for 14 hours on 7/23.

[b]Includes one gill netter.

Table 5. 1988 DUTCH HARBOR FOOD AND BAIT HERRING AGE CLASS COMPOSITION OF COMMERCIAL HARVEST (Taken From Seine Harvest)

Date	Sample Size[a]		AGES 4	5	6	7	8	9	10	11+
July 16	105	Number	0	1	2	14	4	25	32	27
17	176	Number	0	0	1	24	9	32	59	51
18	79	Number	0	0	0	4	2	14	22	37
19	44	Number	0	5	2	8	2	8	6	13
20	86	Number	0	1	2	8	6	17	21	31
21	55	Number	0	2	1	5	4	6	15	22
22	52	Number	0	0	2	2	1	6	14	27
27	47	Number	0	0	0	12	5	8	8	14
30	40	Number	0	0	0	5	3	12	7	13
TOTAL	684	Number	0	9	10	82	36	128	184	235
		Percent	0	1	2	12	5	19	27	34

[a]Samples collected from seine catch.

Table 6. DUTCH HARBOR HERRING FOOD/BAIT FISHERY PERCENT AGE COMPOSITIONS (%) BY YEAR

	AGE CLASS								
YEAR	3	4	5	6	7	8	9	10	11+
1981	15	45	20	6	0	12	2	0	0
1982	5	10	62	10	6	8	4	0	0
1983	0	1	19	69	5	1	4	1	0
1984	0	0	2	14	65	7	3	8	1
1985	0	0	1	8	32	50	5	3	1
1986	0	0	1	1	13	37	42	3	3
1987	0	0	0	0	2	12	41	34	11
1988	0	0	1	2	12	5	19	27	34