4K89-30

KODIAK MANAGEMENT AREA

COMMERCIAL HERRING SAC-ROE AND FOOD/BAIT FISHERIES - 1989

A REPORT TO THE BOARD OF FISHERIES

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1989
KODIAK HERRING SAC-ROE FISHERY

AREA DESCRIPTION

The Kodiak Management Area comprises all waters of Alaska from the southern entrance of Imuya Bay near Kilokak Rocks north to Cape Douglas, including Kodiak, Afognak and adjacent islands (Figure 1). This report on the 1989 herring sac-roe fishery was prepared for the November 1989 Board of Fisheries meeting in Anchorage. Portions of the statistics herein are preliminary and subject to minor change.

HISTORICAL PERSPECTIVE

General

The Kodiak Area sac-roe fishery began in 1964 and has produced an average annual harvest of 1,350 tons over this 26 year period (Table 1). Prior to 1977 the fishery was essentially unregulated as to G.H.L.'s, gear types, seasons, and fishing periods. It was a relatively low value fishery with few participants, all seiners, who concentrated their effort in 4 or 5 bays on Kodiak Island's westside. Annual harvests (along with effort level, fish abundance, prices and processor interest) fluctuated greatly during the fourteen year period between 1964 and 1977. Following the record low harvest years of the mid-1970's came the pivotal years of 1977 and 1978. In 1977, improved market conditions kindled renewed industry interest which was initially confined to a few seiners who began successfully using aircraft. By 1978, the beginnings of the contemporary sac-roe fishery were evident with a noticeably expanded seine fleet using aircraft and tenders. This effort evolved to the very mobile and efficient seine fleet which exists today. In 1978, gillnet gear entered the fishery for the first time.

Since 1977, many proposed regulatory changes and several changes in management strategy have occurred as the fishery went through

a rapid developmental phase. Regulatory changes during this period have dealt with gear efficiency, gear conflicts between seiners and gillnetters, restrictions on gear levels (exclusive registration and limited entry), and closed water areas. The overall effect has been the emergence of a relatively stable commercial sac-roe fishery on very small stocks during a period of moderate stock abundance, all in the face of increasingly efficient gear. This is best illustrated by the data presented in Table 2.

Fishery Characteristics and Harvest Strategy

The current Kodiak sac-roe fishery occurs in numerous bays and isolated coastal locations during a seven to eight week period extending from mid-April to mid-June. The fishery opens by regulation on a specific date (April 15), and the entire management area is opened at this time, excluding those stocks requiring biological protection. Roe recovery, weather conditions, and effort levels are not considered unless it is obvious wastage may occur. Fishing periods are set by emergency order and normally extend for 24 hours beginning at 12:00 noon on odd numbered days. The 24-hour closures which begin at 12:00 noon on even numbered days are a critical management tool which allows the management staff time to assess harvest, gear concentrations, herring biomass estimates, and relocate field crews if necessary. Management Units which are not closed in-season close by regulation on June 30. Legal gear for this fishery is purse seines (100 fathoms maximum length and a maximum 1,000 meshes in depth), and gillnets (aggregate length may not exceed 150 fathoms). Limited entry has been in effect since 1981, however gear levels still fluctuate somewhat because transferable permit levels haven't been finalized.

A unique characteristic of this fishery is that it commences prior to any major build-up of fish. This allows for a more general distribution of effort and conceptually a slower rate of

harvest on these small stocks, at least at current abundance levels. Throughout the season, the entire fleet is allowed to roam independently and continually in search of potential harvest locations. Both gillnet and seine gear fish the same grounds. There are no area or time separations by the different gear types. Monitoring of pre-harvest movements of both herring schools and commercial gear is critical to management activity. Even though the annual harvest is distributed between 40-50 management units (stocks) there is a general sequence of harvest timing by groups of these units. This allows ADF&G to distribute its ground-monitoring effort into the most likely harvest locations. Frequent ADF&G aerial surveillance of the entire area, supplements and actually directs in-season changes in the grounds and monitoring effort; commercial spotter reports provide invaluable information on all facets of the fishery and remain vitally important to management activities.

This sac-roe fishery annually yields one of the higher ex-vessel values per ton in the State. Competition among shore-based processors is probably a major factor combined with inherent high quality of fish. The quality of fish is obtained from in-season handling of a relatively small quantity of fish over a long period of time has provided Kodiak herring with a good reputation which yields maximum returns to the industry.

1989 SEASON SUMMARY

Effort and Harvest Summary

During a 76 day period extending from April 15 through June 29 a total of 2,249 short tons of sac-roe herring were harvested. The average roe recovery was approximately 10% and the average ex-vessel price (delivered to the dock) was $850 per ton for 10% recovery. The total estimated ex-vessel value of the fishery was 1.911 million dollars.

Oil from the Exxon Valdez spill on March 24 resulted in 34 management unit closures due to the potential contamination and subsequent waste of the herring harvested (Table 4). Twenty-six units were closed prior to any harvest occurring. Eight management units were closed after initial harvests had occurred. The combined pre-season guideline harvest level (GHL) for the 34 management units closed due to potential oil contamination was 670 tons. 152.6 tons were harvested prior to closures, leaving a GHL balance of 517.7 tons not available for harvesting.

The pre-season guideline harvest level for the entire management area was 2,415 tons. Subtracting the GHL of 517.7 tons not available for harvesting, a "fishable GHL of 1,897 tons remained for the management units not affected by oil contamination during the course of the herring fishery. The actual harvest of 2,249 tons was approximately 352 tons higher than the "fishable" pre-season GHL; this was primarily due to new stocks being exploited and better than expected spawning biomasses in major management units.

Industry effort involved 37 seiners and 83 gillnetters delivering to seven different processor/buyers. Of the total 2,249 tons harvested, seiners harvested 1,513 tons (67%) from 171 landings and gillnetters harvested 763 tons (33%) from 627 landings.

The average earnings by gear type was $34,749 per seiner and $7,537 per gillnetter. A further breakdown of the 1989 season by gear type by management unit is presented in Table 3.

Referring to Table 2 for comparison purposes, it should be noted that only the past eleven years are shown because these years represent the years of highest gear and harvest levels and probably represent a grouping of years whose average harvest level may be sustained for the foreseeable future (Tables 1 and 2).

The trends in gear levels show an increase through 1980 and then a decrease through 1987, a period when gear expansion was either restricted or not beneficial for future Limited Entry permit considerations. The total amount of gear making landings in 1989 increased from a low of 91 units in 1987 to 120 units. In 1989 increases in both gear types were documented; gillnet permit holders accounted for the majority of the increase.

As shown in Table 5, transferrable permits for both gear types may still increase as the Limited Entry Commission continues it's determinations on participants who may qualify for a transferrable permit.

The trend in overall harvest during the past eleven years has been relatively stable, averaging approximately 2,000 tons per year. Prior to 1978 the entire sac-roe harvest was taken by seine gear. Since 1979 the harvest percent taken by seine gear has ranged from a high of 84% in 1979 to 60% in 1988 with 74% being the recent eleven year average. Since 1983, the gillnet harvest percent has been on an increasing trend ranging from 22% in 1983 to 40% in 1988 with 26% being the recent eleven year average. The increase in gillnet efficiency can be associated with the predominant weather conditions during a particular season, improved knowledge of specific stock timings, increased use of fish finding electronics, and improvements in gear and vessels.

The Fishery

In 1989 the fishery was regulated by the issuance of 34 emergency orders (E.O.'s) of which one initiated the weekly fishing periods and opening/closing times for each period. Twenty-one E.O.'s were used to close specific management units for biological reasons (herring harvested or GHL achieved); and 12 E.O.'s were used to close specific management units due to oil contami

nation. See Table 6 for a more detailed summary of the E.O.'s issued during the 1989 fishery.

There are 72 management units currently described for the Kodiak Management Area. In 1989, 41 of those units were exploited during the sac-roe fishery. A further breakdown (Table 3) shows that 35 of those units were closed in-season by E.O. However, 8 of the units which had initial harvests were closed in season prior to the GHL's being achieved due to potential oil contamination. Of the 31 management units in which no harvest occurred, 26 were closed due to oil contamination. The remaining five management units in which no harvest occurred were either offshore units or units which have had little, if any, historical sac-roe harvest.

In the 41 units where harvests occurred, 6 were exploited exclusively by seine gear and 6 were exploited exclusively by gillnet gear.

With the exception of the areas closed due to oil contamination, the distribution of the herring harvest was similar to recent past years. As mentioned earlier, a guideline harvest level of 2,415 tons from "traditional" harvest areas was projected for the 1989 season. Five hundred eighteen (518) tons of the pre-season GHL was unavailable for harvesting due to units being closed because of oil contamination, leaving a "fishable" GHL of 1,897 tons. The overall harvest of 2,249 tons was 352 tons higher than the "fishable" GHL of 1,897 tons. Approximately 136 tons was harvested in management units listed as exploratory with no set GHL. The remaining 216 tons over the "fishable" GHL was harvested in major management units whose spawning biomass was better than expected.

As in years past, up to seven herring crews, outfitted with Single Side Band and Marine VHF radios, inflatable rafts, 10-15

h.p. outboards, tents, personal flotation gear, miscellaneous camping gear and survival equipment along with one ADF&G 40 foot vessel and two 20 foot aluminum skiffs, were used to monitor the major herring fisheries throughout the season. Twenty four hour closures following the twenty four hour openings, along with industry cooperation, effort and biomass surveys flown by the management staff and reports from the herring field crews are all necessary in maintaining the "small stock" management strategy currently in effect.

Reductions in the number of herring crews available, changes in fishing periods, or diminished industry cooperation could result in management changes (additional restrictions, closures, etc.) which in turn would significantly alter the "free roaming" sac-roe fishery which permit holders are currently accustomed to.

Subsistence/Personal Use Permits are issued to persons who want to obtain their own bait during the sac-roe season. Of the 39 permits issued this year, two have been returned to date, accounting for approximately 150 pounds of herring harvested.

STOCK STATUS

General

The current management strategy, which has evolved with the recent expansion (the last 10 years) of this fishery, considers each management unit as a stock. These geographic units represent relatively predictable stocks of herring relative to estimated biomass, age composition (excluding recruitment), growth (in a broad sense), timing and spawning locations. The relatively small stocks associated with these units are very vulnerable to excessive harvest when considering their predictability, the efficiency of the seine and gillnet fleet, and the strategy which allows effort to initiate fishing activity within established fishing periods. Adequately regulating the annual

harvest on each stock is accomplished by establishing prudent guideline harvest levels and by implementing objective in-season evaluations of stock performance and fishery performance to prevent over-harvest on each stock.

The Spawning Biomass

In 1989 the spawning biomass index (preliminary) for that portion of the Kodiak Area fished was approximately 9,550 tons, as determined by ADF&G surveys. The sac-roe harvest of 2,249 tons represented a total indexed exploitation rate of .19. This compares with past years exploitation rates which have ranged from .28 in 1983 to .41 in 1986.

These exploitation rates should be qualified, in that ADF&G's annual observations represent an unknown and undoubtedly highly variable proportion of the actual biomass. Nevertheless, these exploitation rates can be used for trend evaluation, but they should not be compared to the spawning biomass indices achieved by ADF&G in Prince William Sound, Cook Inlet and the Bering Sea where each has a relatively large biomass available for aerial indexing and where that portion of the observed biomass is annually less variable, i.e. there is greater opportunity for observing a greater and more consistent proportion of the actual total biomass.

Consequently, the exploitation rates achieved in those fisheries would be more meaningful and comparable between each area's fisheries.

It has been estimated by both staff and commercial spotter pilots, that as little as one-quarter to one-half of the actual biomass is observed for Kodiak Area stocks. This is a result of the relatively low biomass levels of these stocks, the numerous small schools associated with each stock, the long duration of time over which the entire spawning biomass for each stock

disperses its spawning effort, and the amount of dedicated aerial effort expended by both ADF&G and commercial spotters during the duration of spawning period which extends from approximately early April to early August.

In 1989, age 5 and 6 year old herring accounted for 62% of the commercial harvest (Table 7). Age 3 herring, or recruit herring, accounted for 7.3% of the commercial harvest. Considering the good recruitment seen in 1989, combined with record levels of age 1 and 2 year old juvenile herring observed this year, the Kodiak Area biomass, in general, appears to be on a healthy trend. In 1990, the GHL for the entire area, although not yet finalized should be approximately 2,100 tons.

Age composition, aerial biomass estimates, stock and fishery performance are all indicators that the Kodiak Area biomass should continue to support a stable sac-roe fishery during the upcoming years.

1990 MANAGEMENT PLANS AND ISSUES

Pending board action on proposed regulation changes, the 1990 sac-roe management plan is expected to be similar to those plans in effect since 1982.

The guideline harvest levels for the various stocks will reflect stock status. Based on the healthy trends in both stock and fishery performance the 1990 GHL should approximate 2,100 tons. The final figure will be available when the 1990 Management Plan is distributed in March.

The actual harvest strategy which includes both gear types being able to fish the entire management area at the same times during 24 hour openings followed by 24 hour closures has been in effect since 1981 may need to be modified depending on Board action on

proposed regulation changes to separate gear and increase the length of purse seines.

Additional issues which will continue to affect the fishery are continued budget support for field crews and equipment, the eventual disposition of permanent transferrable limited entry permits, the degree of in-season cooperation between ADF&G and processors, fishermen and spotter pilots.

A new regulation passed by the Board in 1988 which prohibits the possession of herring which number more than 250 fish per 50 lb samples will likely be tested beginning in 1990 considering the high levels of juvenile herring seen in 1989.

Temporary effort increases imposed on the Kodiak Area by seine combines which are geared for the much larger sac-roe fisheries in P.W.S., Cook Inlet and Bristol Bay may also affect in-season management.

The 1990 Kodiak sac-roe fishery will also be the first "test" of the management area's waters as to continuing (if any) oil contamination resulting from the March, 1989 Exxon Valdez oil spill, effects on in-shore net fisheries.

1989/90
KODIAK HERRING FOOD/BAIT FISHERY

HISTORICAL PERSPECTIVE

General

Historically the Kodiak food/bait fishery was one of the State's major fisheries. It was primarily a reduction fishery during its peak production years and yielded tonnages which dwarf current food/bait production. During a seventeen year period (1934-1950) an average harvest of approximately 31,600 tons was sustained (Table 8). The primary product was fish meal, which required the relatively large quantities of fish which apparently were available, and the secondary use was salted food and bait products. The current fishery is primarily a bait fishery, providing a frozen product for local longline and crab fleets. Various attempts have been made at developing food products but success has been marginal, for whatever reason.

Historical effort involved large "sardine-seiner" type vessels, used in conjunction with "holding pounds" for the reduction fishery and the local small vessel seine fleet, and to a lesser extent gillnets, for a portion of the food fishery.

Fishery Characteristics

The current Kodiak Area herring food/bait fishery can be characterized as being a secondary commercial fishery on herring concentrations located in Kodiak waters. Effort and yield levels are at historical lows for the food/bait fishery whereas the sac-roe fishery supports near record levels of effort and yield. The food/bait fishery is an open-to-entry fishery, while the sac-roe fishery has been limited-to-entry since 1981. Existing regulations designate priority status to the sac-roe fishery, in that regulatory harvest strategy allocates a very major percentage of the allowable harvest on local stocks to the sac-roe fishery.

The herring food/bait season by regulation extends from August 1 through February 28. The entire area is open to continuous fishing on August 1 for all legal gear, namely seines, gillnets and trawls. There are no exclusive gear areas and the only gear restrictions are for maximum seine and gillnet length, 100 fathoms and 150 fathoms, respectively. All gear is required to register at the Kodiak ADF&G office prior to fishing, and at that time, management plans are issued and catch-reporting procedures and current regulations are reviewed. Each landing is sampled (AWL) and extensive skipper interviews are conducted to evaluate which sac-roe stocks are being impacted.

For local Kodiak stocks which are exploited during the sac-roe fishery, the food/bait herring G.H.L. on those same stocks is generally 10% of the previous season's sac-roe harvest.

There are major concentrations of non-local stocks which over-winter in East Shelikof Straits adjacent to Westside Kodiak and Afognak Islands. In 1986 a stock identification study using scale pattern analysis was performed on the above mentioned non-local stocks. The study concluded that at least 80% of the East Shelikof herring were of Kamishak spawning stock origin. Taking into account the type of stock separation study, there is a high probability the remaining percentage is also of Kamishak origin.

In March 1988, the Board allocated two percent of the previous season's total available spawning biomass from Kamishak for harvesting during Kodiak's food/bait herring fishery.

<u>Harvest Strategy</u>

The attached (Appendix 1) 1989/90 Kodiak Food/Bait Fishery Management Plan describes the current harvest strategy in detail.

The targeted food and bait fishery on Kamishak spawning stocks over-wintering in Shelikof Straits is limited to harvesting two

percent of the previous season's total available spawning biomass in Kamishak.

In order to make the actual harvest tonnage reflect only those fish which comprise the spawning biomass the following adjustments were made: All food/bait herring landings from the targeted fishery on Kamishak stocks in Shelikof Straits are sampled. All age 3 and younger herring are converted to age 5 herring by weight by landing. This is done in an attempt to relate the actual food/bait harvest on Kamishak stocks to the G.H.L. allocation which is based on spawning biomass only and not juveniles. Age 3 herring were selected because in the Kamishak spawning stocks, herring generally are not considered to be part of the spawning biomass until they reach age 4 with complete recruitment into the spawning biomass by age 5.

1989/90 SEASON SUMMARY

Harvest and Effort

For the current food/bait season which has been open since August 1. Seven vessels (3 seine, 4 trawl) and five buyers/processors have registered to participate. However, no herring have been harvestd to date (10/25/89).

Any herring which may be harvested during the 1989/90 season must only be used for bait purposes due to possible oil contamination from the Exxon Valdez spill on March 24, 1989.

As mentioned in the attached Food/Bait Fishery Management Plan 512 tons of herring are available for harvesting during the Shelikof Straits fishery which targets on Kamishak spawning stocks over-wintering in Shelikof Straits. An additional 278 tons is available for harvesting from the remainder of the Kodiak Management Area's local spawning stocks.

1990/91 MANAGEMENT PLANS AND ISSUES

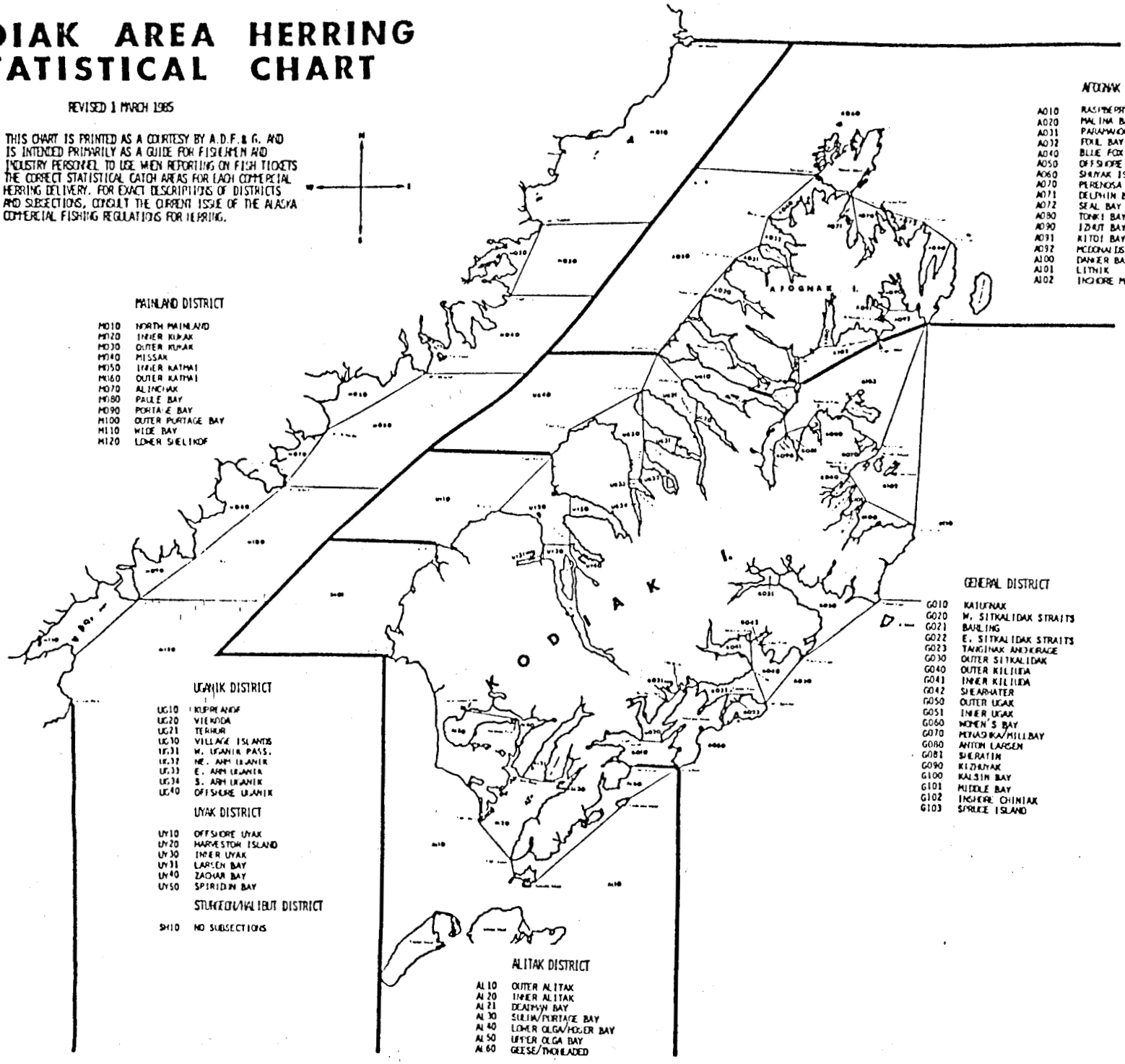
The ADF&G vessel M/V Resolution, will be used when available to provide acoustical biomass estimates of the Kamishak spawning stocks which over-winter in Shelikof Straits.

Perhaps the main issue for the 1990/91 season, will be whether there is a season, pending Board action on two proposals to eliminate the food/bait fishery and allow for only sac-roe harvests to occur on Kodiak stocks and Kamishak stocks.

KODIAK AREA HERRING STATISTICAL CHART

REVISED 1 MARCH 1985

THIS CHART IS PRINTED AS A COURTESY BY A.D.F.&G. AND IS INTENDED PRIMARILY AS A GUIDE FOR FISHERMEN AND INDUSTRY PERSONNEL TO USE WHEN REPORTING ON FISH TICKETS THE CORRECT STATISTICAL CATCH AREAS FOR EACH COMMERCIAL HERRING DELIVERY. FOR EXACT DESCRIPTIONS OF DISTRICTS AND SUBSECTIONS, CONSULT THE CURRENT ISSUE OF THE ALASKA COMMERCIAL FISHING REGULATIONS FOR HERRING.



AFOGNAK DISTRICT

A010	RASPBERRY STRAITS
A020	MALINA BAY
A031	PARAMANOF BAY
A032	FOXY BAY
A040	BLUE FOX
A050	OFFSHORE WEST, AFOGNAK
A060	SHUYAK ISLAND
A070	PERENOSA BAY
A071	DELPHIN BAY
A072	SEAL BAY
A080	TONKI BAY
A090	IZHUT BAY
A091	KITOI BAY
A092	MCDONALDS LAGOON
A100	DANIER BAY
A101	LITHIK
A102	INSHORE MARMOT

MAINLAND DISTRICT

M010	NORTH MAINLAND
M020	INNER KUKAK
M030	OUTER KUKAK
M040	MISSAK
M050	INNER KATMAI
M060	OUTER KATMAI
M070	ALINCHAK
M080	PAULE BAY
M090	PORTAGE BAY
M100	OUTER PORTAGE BAY
M110	WIDE BAY
M120	LOWER SHELIKOF

GENERAL DISTRICT

G010	KATUFNAK
G020	W. SITKALIDAK STRAITS
G021	BARLING
G022	E. SITKALIDAK STRAITS
G023	TANGINAK ANCHORAGE
G030	OUTER SITKALIDAK
G040	OUTER KILIUDA
G041	INNER KILIUDA
G042	SHEARWATER
G050	OUTER UGAK
G051	INNER UGAK
G060	WOMEN'S BAY
G070	MONASHKA/MILLBAY
G080	ANTON LARSEN
G081	SHERATIN
G090	KIZHUYAK
G100	KALSIN BAY
G101	MIDDLE BAY
G102	INSHORE CHINIAK
G103	SPRUCE ISLAND

UGANIK DISTRICT

UG10	CHIRIKOF
UG20	VIEKODA
UG21	TERROR
UG30	VILLAGE ISLANDS
UG31	W. UGANIK PASS.
UG32	NE. ARM UGANIK
UG33	E. ARM UGANIK
UG34	S. ARM UGANIK
UG40	OFFSHORE UGANIK

UYAK DISTRICT

UY10	OFFSHORE UYAK
UY20	HARVESTOR ISLAND
UY30	INNER UYAK
UY31	LARSEN BAY
UY40	ZAOHAR BAY
UY50	SPIRIDON BAY

STUKEDOVAK/HALIBUT DISTRICT

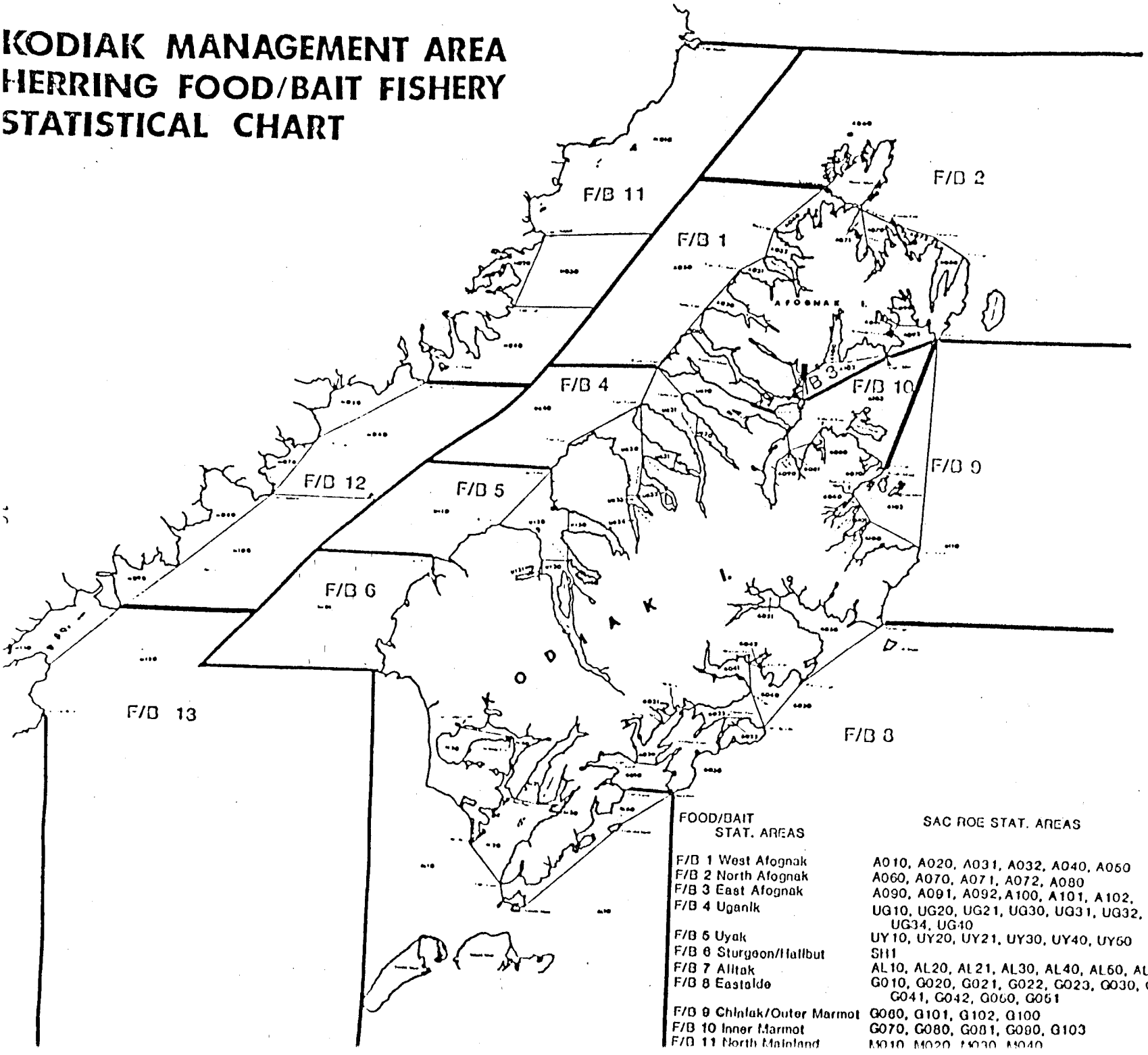
SH10	NO SUBSECTIONS

ALITAK DISTRICT

AL10	OUTER ALITAK
AL20	INNER ALITAK
AL21	DEATHAN BAY
AL30	SULTA/PORTAGE BAY
AL40	LOWER OLGA/HOLER BAY
AL50	UPPER OLGA BAY
AL60	GEESE/THOMLADED

FIGURE 1.

KODIAK MANAGEMENT AREA
HERRING FOOD/BAIT FISHERY
STATISTICAL CHART



FOOD/BAIT STAT. AREAS	SAC ROE STAT. AREAS
F/B 1 West Afognak	A010, A020, A031, A032, A040, A050
F/B 2 North Afognak	A060, A070, A071, A072, A080
F/B 3 East Afognak	A090, A091, A092, A100, A101, A102,
F/B 4 Uganik	UG10, UG20, UG21, UG30, UG31, UG32, UG33, UG34, UG40
F/B 5 Uyak	UY10, UY20, UY21, UY30, UY40, UY60
F/B 6 Sturgeon/Halibut	SH1
F/B 7 Alitak	AL10, AL20, AL21, AL30, AL40, AL50, AL60
F/B 8 Eastside	G010, G020, G021, G022, G023, G030, G040, G041, G042, G060, G061
F/B 9 Chiniak/Outer Marmot	G080, G101, G102, G100
F/B 10 Inner Marmot	G070, G080, G081, G090, G103
F/B 11 North Mainland	M010, M020, M030, M040

Fig. 2.

TABLE 1.

KODIAK MANAGEMENT AREA
HERING SAC-ROE FISHERY
HISTORICAL HARVEST AND EFFORT LEVELS

YEAR	TONS HARVESTED	SEINE	GILLNET	NUMBER CO.S	NUMBER OF VESSELS TRAWLS	GILLNET	SEINE	TOTAL
1964	567.8	567.8		2			5	5
1965	657.2	657.2		2			8	8
1966	2769.3	2769.3		4			11	11
1967	1662.4	1662.4		4			5	5
1968	2000.6	2000.6		4			10	10
1969	1130.0	1130.0		9			21	21
1970	341.6	341.6		5			13	13
1971	284.3	284.3		2			4	4
1972	215.0	215.0		1			4	4
1973	831.0	831.0		4			11	11
1974	868.0	868.0		4			26	26
1975	8.0	8.0		3			2	2
1976	4.6	4.6		1			1	1
1977	338.4	338.4		3			11	11
1978	903.6	880.6	23.0	7	2	7	28	37
1979	1735.1	1457.2	277.9	8		125	57	182
1980	2383.0	2009.0	374.0	9	1	109	92	202
1981	2065.4	1596.2	469.2	9		114	79	193
1982	1770.6	1447.0	323.6	6		67	45	112
1983	2318.5	1796.9	521.6	7		64	41	105
1984	2162.7	1691.2	471.5	7		69	39	108
1985	1967.7	1244.2	723.5	7		81	34	115
1986	1558.4	1110.8	447.6	8		71	31	102
1987	2145.9	1591.3	554.6	8		62	29	91
1988	2171.0	1303.5	867.5	6		76	33	109
1989	2248.6	1512.6	736.0	6	0	83	37	120
TOTALS	35108.7	29318.7	5790.0					
AVERAGE	1350.3	1127.6	482.5					

Table 2.

KODIAK HERRING SAC-ROE FISHERY
FISHERY SUMMARY BY YEAR AND BY GEAR

YEAR	SEASON LENGTH DAYS	TOTAL HARVEST	BY GEAR		PERCENT		LANDINGS		NO. UNITS		AVG. $'S	
			SEINE	G/N	SEINE	G/N	SEINE	G/N	SEINE	G/N	SEINE	G/N
1979	36	1735	1457	278	84	16	-	-	57	125	38,347	3,333
1980	35	2383	2009	374	84	16	-	-	92	109	14,978	2,573
1981	48	2065	1596	469	77	23	207	406	79	114	14,402	3,471
1982	59	1771	1447	324	82	18	138	191	45	67	17,819	2,719
1983	51	2319	1797	522	78	22	164	284	41	64	35,061	6,520
1984	54	2163	1691	472	78	22	138	212	39	69	34,691	5,467
1985	59	1968	1244	724	63	37	118	348	34	81	32,935	8,039
1986	61	1558	1110	448	71	29	132	385	31	71	34,010	6,002
1987	61	2146	1591	554	74	26	122	411	29	62	54,872	8945
1988	59	2171	1304	867	60	40	169	555	33	76	51350	14837
1989	76	2249	1513	736	67	33	171	627	37	83	34749	7537
11 YEAR AVG.	55	2048	1524	524	74	26	151	380	47	84	29313	5639

Table 3. 1989 KODIAK HERRING SAC ROE FISHERY
HARVEST SUMMARY BY GEAR/AREA

STAT. AREA	MGMT. UNITS	1989 GUIDELINE HARVEST LEVEL	PURSE SEINE	%	GILLNET	%	TOTAL	DATE CLOSED
	AFOGNAK DIST.							
A010	Raspberry Sts.	55 TONS	15.2	69	6.8	31	22.0	5/11-OR*
A020	Malina Bay	30 TONS	16.0	36	28.1	64	44.1	4/24
A031	Paramanof Bay	40 TONS	27.0	70	11.5	30	38.5	5/7
A032	Foul Bay	30 TONS	0	0	25.2	100	25.2	5/7
A040	Devils Inlet	10 TONS	0	-	0	-	0	5/10-OR*
A040	Blue Fox	10 TONS	0	-	0	-	0	5/10-OR*
A050	Offshore W. Afog.1/	-	0	-	0	-	0	6/30
A060	Shuyak Is.	20 TONS	0	-	0	-	0	4/15-OR*
A070	Perenosa Bay	15 TONS	0	-	0	-	0	4/15-OR*
A071	Delphin Bay	10 TONS	0	-	0	-	0	4/15-OR*
A072	Seal Bay	10 TONS	0	-	0	-	0	4/15-OR*
A080	Tonki Bay	15 TONS	0	-	0	-	0	4/15-OR*
A090	Izhut Bay	25 TONS	53.1	87	7.8	13	60.9	4/22
A091	Kitoi Bay	15 TONS	0	-	0	-	0	4/15-OR*
A092	MacDonalds Lagoon	10 TONS	2.8	26	7.9	74	10.2	6/4-OR*
A100	Danger Bay	30 TONS	14.8	47	16.4	53	31.2	5/7
A101	Litnik	15 TONS	0.6	25	1.8	75	2.4	6/16-OR*
A102	Duck Bay	10 TONS	0	-	2.7	100	2.7	6/16-OR*
District Totals	17	350 TONS	129.5	55	108.2	45	237.7	

Table 3. 1989 KODIAK HERRING SAC ROE FISHERY
HARVEST SUMMARY BY GEAR/AREA
(continued)

STAT. AREA	MGMT. UNITS	1989 GUIDELINE HARVEST LEVEL	PURSE SEINE	%	GILLNET	%	TOTAL	DATE CLOSED
	UYAK DISTRICT							
UY10	Offshore Uyak[1/]	-	0	-	0	-	0	6/30
UY20	Harvester Island	10 TONS	0	-	0	-	0	5/6-OR*
UY30	Inner Uyak	240 TONS	154.2	57	116.6	43	270.8	5/29
UY30	Browns Lagoon	20 TONS	9.0	47	10.0	53	19.0	5/12
UY31	Larsen Bay	10 TONS	0	-	4.2	100	4.2	6/30
UY40	Zachar Bay	100 TONS	81.8	61	51.7	39	133.5	5/19
UY50	Spiridon Bay	160 TONS	83.9	83	6.7	17	100.65	5/12-OR*
District Totals	6	540 TONS	328.9	62	199.2	38	528.1	
	UGANIK DIST.							
UG10	Kupreanof	10 TONS	0	-	0	-	0	5/15-OR*
UG20	Viekoda	30 TONS	25.7	82	5.6	18	31.3	5/20
UG21	Terror	80 TONS	32.4	42	44.2	58	76.6	5/25
UG21	Uganik Is. Lagoon[2/]	0 TONS	0	-	0	-	0	4/15
UG30	Village Island	30 TONS	27.7	79	7.5	21	35.2	5/3
UG31	W. Uganik Pass	15 TONS	20.5	100	0	-	20.5	5/4
UG32	NE Arm Uganik	75 TONS	71.3	89	9.0	11	80.3	6/19
UG33	E. Arm Uganik	40 TONS	10.5	25	31.3	75	41.8	5/6
UG34	S. Arm Uganik	40 TONS	49.8	92	4.4	8	54.2	5/1
UG40	Offshore Uganik[1/]	-	0	-	0	-	0	-
District Totals	9	320 TONS	237.9	70	102.0	30	339.9	

Table 3. 1989 KODIAK HERRING SAC ROE FISHERY
HARVEST SUMMARY BY GEAR/AREA
(continued)

STAT. AREA	MGMT. UNITS	1989 GUIDELINE HARVEST LEVEL	PURSE SEINE	%	GILLNET	%	TOTAL	DATE CLOSED
	ALITAK DIST.							
AL10	Outer Alitak	(Exploration)	0	-	0	-	0	6/30
AL20	Inner Alitak	(Exploration)	0	-	0	-	0	6/30
AL21	Deadman Bay	125 TONS	135.7	88	18.6	12	154.3	5/29
AL30	Sulua/Portage Bay	60 TONS	60.5	76	19.6	24	80.1	5/24
AL40	Lower Olga/Moser	15 TONS	0	0	5.2	100	5.2	6/30
AL40	N. Upper Olga B.	10 TONS	0	-	0	-	0	6/30
AL50	Upper Olga Bay	190 TONS	169.1	81	40.3	19	209.4	6/30
AL60	Geese/Twoheaded	(Exploration)	6.9	89	.9	11	7.8	6/30
District Totals:	8	400 TONS	372.2	82	84.6	18	456.8	
	STURGEON/HALIBUT DIST.							
SH10	Sturgeon/Halibut	(Exploration)	0	-	0	-	0	-

Table 3. 1989 KODIAK HERRING SAC ROE FISHERY
HARVEST SUMMARY BY GEAR/AREA
(continued)

STAT. AREA	MGMT. UNITS	1989 GUIDELINE HARVEST LEVEL	PURSE SEINE	%	GILLNET	%	TOTAL	DATE CLOSED
	GENERAL DISTRICT							
G010	Kaiugnak	10 TONS	13.3	100	0	-	13.3	Part 5/10
G020	W. Sitkalidak St.	(Exploration)	113.7	86	14.8	14	128.5	Part 4/19
G021	Barling	20 TONS	0	-	17.3	100	17.3	5/20
G022	E. Sitkalidak St.	95 TONS	97.9	69	43.2	31	141.1	4/19-22
G023	Tanginak Anchorage	15 TONS	18.3	63	11.0	37	29.3	4/23
G030	Outer Sitkalidak	(Exploration)	0	-	0	-	0	6/30
G040	Outer Kiliuda	(Exploration)	0	-	0	-	0	6/16-OR*
G041	Inner Kiliuda	10 TONS	3.7	70	1.6	30	5.3	6/6-OR*
G042	Shearwater	25 TONS	19.8	100	0	-	19.8	5/3
G050	Pasagshak	25 TONS	29.4	100	0	-	29.4	5/2
G050	Outer Ugak	(Exploration)	0	-	0	-	0	6/16-OR*
G051	Inner Ugak	50 TONS	45.2	83	9.6	17	54.8	5/22
G060	Womens Bay	110 TONS	81.7	75	26.9	25	108.6	5/24
G070	Monashka/Mill B.	(Exploration)	0	-	0	-	0	6/19-OR*
G080	Anton Larsen	30 TONS	2.9	24	10.6	76	13.5	6/30
G081	Sheratin	10 TONS	3.6	100	0	-	3.6	6/30
G090	Kizhuyak	110 TONS	12.4	11	99.9	89	112.3	5/7
G100	Kalsin Bay	20 TONS	2.2	39	3.4	61	5.6	6/19-OR*
G101	Middle Bay	25 TONS	0	-	3.7	100	3.7	6/19-OR*
G102	Inshore Chiniak	10 TONS	0	-	0	-	0	6/19-OR*
G103	Spruce Island	10 TONS	0	-	0	-	0	6/19-OR*
District Total	21	575 TONS	444.1	65	242.0	35	686.1	

Table 3. 1989 KODIAK HERRING SAC ROE FISHERY
HARVEST SUMMARY BY GEAR/AREA
(continued)

STAT. AREA	MGMT. UNITS	1989 GUIDELINE HARVEST LEVEL	PURSE SEINE	%	GILLNET	%	TOTAL	DATE CLOSED
	MAINLAND DIST.							
M010	North Mainland	(Exploration)	0	-	0	-	0	4/27-OR*
M020	Inner Kukak	50 TONS	0	-	0	-	0	4/27-OR*
M030	Outer Kukak1/	-	0	-	0	-	0	4/27-OR*
M040	Inner Missak	(Exploration)	0	-	0	-	0	4/30-OR*
M040	Outer Missak1/	-	0	-	0	-	0	4/30-OR*
M050	Inner Katmai	50 TONS	0	-	0	-	0	4/30-OR*
M060	Outer Katmai1/	-	0	-	0	-	0	4/30-OR*
M070	Alinchak	30 TONS	0	-	0	-	0	4/30-OR*
M080	Puale Bay	(Exploration))	0	-	0	-	0	4/30-OR*
M090	Portage Bay	(Exploration)	0	-	0	-	0	4/30-OR*
M100	Outer Portage1/	-	0	-	0	-	0	4/30-OR*
M110	Wide Bay	100 TONS	0	-	0	-	0	4/30-OR*
M120	Lower Shelikof	(Exploration)	0	-	0	-	0	4/30-OR*
District Total		230 TONS	0		0		0	
GRAND TOTAL		2,415 TONS	1,512.6	67	736.0	33	2,248.6	

*OR = Oil Related

1/These are offshore management units which are not expected to yield herring of sac-roe quality. These units are more applicable to the food/bait fishery. (See Herring Food/Bait Fishery Management Plan.)

2/The spawning biomass has probably been reduced to less than 50 tons and the unit is closed to fishing.

Table 4. 1989 KODIAK HERRING SAC-ROE FISHERY
CHRONOLOGICAL SUMMARY OF OIL-RELATED MANAGEMENT UNIT CLOSURES
(As of July 26, 1989)

E.O. No.	Management Units (Sections)	Stat. Area	1989 Tonnage G.H.L.	Harvested	Unharvested 1/	Closures Announced	Effective
#1	Kitoi Bay (portion)	A091	15	0	15.0	4/00 P.M. 4/13	12:00 A.M. 4/15
#2	Shuyak Island	A060	20	0	20.0	10:30 A.M. 4/15	6:30 P.M. 4/15
	Perenosa Bay	A070	15	0	15.0		
	Delphin Bay	A071	10	0	10.0		
	Seal Bay	A072	10	0	10.0		
	Tonki Bay	A080	15	0	15.0		
#8	North Mainland	M010	Exp.	0	Exp.	3:00 P.M. 4/27	6:30 P.M. 4/27
	Inner Kukak	M020	50	0	50.0		
	Outer Kukak	M030	2/	0	2/		
#10	Missak	M040	Exp.	0	Exp.	12:00 A.M. 4/30	12:00 A.M. 4/30
	Inner Katmai	M050	50	0	50.0		
	Outer Katmai	M060	2/	0	2/		
	Alinchak	M070	30	0	30.0		
	Puale Bay	M080	Exp.	0	Exp.		
	Portage Bay	M090	Exp.	0	Exp.		
	Outer Portage Bay	M100	2/	2/	2/		
	Wide Bay	M110	100	0	100.0		
	Lower Shelikof	M120	Exp.	0	Exp.		
#16	Harvester Island	UY20	10	0	10.0	7:00 A.M. 5/7	12:00 A.M. 5/7
#19	Blue Fox	A040	10	0	10.0	8:00 A.M. 5/11	12:00 A.M. 5/11
#20	Raspberry Straits	A010	55	22.0	33.0	6:00 P.M. 5/11	6:30 P.M. 5/11
#22	Spiridon	UY50	160	100.6	59.4	5:00 P.M. 5/12	12:00 A.M. 5/12
#23	Kupreanof Straits	UG10	10	0	10.0	4:30 P.M. 5/15	6:30 P.M. 5/15

-continued-

1/Unharvested balance of G.H.L. unavailable for harvest because of oil-related closures. This does not necessarily reflect the total which could have potentially been harvested.

2/Offshore management units not expected to yield herring of sac-roe quality. In the unlikely event herring are harvested in these management units, an exploratory harvest strategy applies.

Table 3. 1989 KODIAK HERRING SAC-ROE FISHERY
CHRONOLOGICAL SUMMARY OF OIL-RELATED MANAGEMENT UNIT CLOSURES
(As of July 26, 1989)

- continued-

E.O. No.	Management Units (Sections)	Stat. Area	1989 Tonnage G.H.L.	Harvested	Unharvested[1]	Closures Announced	Effective
#31	McDonalds Lagoon	A092	10	10.3	0	12:00 Noon 6/4	12:00 A.M. 6/4
#32	Litnik	A101	15	2.4	12.6	12:00 Noon 6/16	12:00 Noon 6/16
	Inner Kiliuda Bay	G041	10	5.3	4.7		
	Outer Kiliuda Bay	G040	2/	0	2/		
	Outer Ugak Bay	G050	2/	0	2/		
	Inshore Marmot	A102	10	2.7	7.3		
	Spruce Island	G103	10	0	10.0		
	Inshore Chiniak	G102	10	0	10.0		
#34	Middle Bay	G101	25	3.7	21.3	4:00 P.M. 6/19	6:30 P.M. 6/19
	Kalsin Bay	G100	20	5.6	14.4		
	Monashka Bay	G070	Exp.	0	Exp.		
12 E.O.'s	**34 Management Units**		**670**	**152.6**	**517.7**		

1/Unharvested balance of G.H.L. unavailable for harvest because of oil-related closures. This does not necessarily reflect the total tonnage which could have potentially been harvested.

2/Offshore management units not expected to yield herring of sac-roe quality. In the unlikely event herring are harvested in these management units, an exploratory harvest strategy applies.

Table 5.

STATUS OF KODIAK SAC ROE HERRING PERMITS

	1987	1988	1989
G.N. TRANSFERABLE	59	63	64
G.N. NON-TRANSFERABLE	48	41	41
G.N. TOTAL	107	104	105
G.N. FISHED	62	76	83
SEINE TRANSFERABLE	40	45	45
SEINE NON-TRANSFERABLE	26	24	24
SEINE TOTAL	66	69	69
SEINE FISHED	29	33	37
TOTALS			
TRANSFERABLE	99	108	109
NON-TRANSFERABLE	74	65	65
TOTAL	173	173	174
FISHED	91	109	120

Table 6. KODIAK MANAGEMENT AREA
1989 HERRING SAC-ROE FISHERY
SUMMARY OF EMERGENCY ORDERS ISSUED

Emergency Order No.	Time/Date Issued	Effective	Action Taken
1	4:00 P.M. 4/13/89	12:00 A.M. 4/15/89	Identified fishing periods for 1989 season. Also identified biological closures: - All lagoons on Uganik Island - Inside a line from Shannon's Point to the southern tip of Nyman's Peninsula in Women's Bay. - Brown's Lagoon Also identified closures due to presence of oil contaminant booms: - Kitoi Bay Section (A090), that portion west of 152°20′ W. long. - Perenosa Bay Section (A070), that portion east of 152°21′ W. long (Paul's Bay) and south of 58°20′36" N. lat. (Discoverer Bay)
2	10:30 P.M. 4/15/89	6:30 P.M. 4/15/89	Closure due to close proximity of oil contaminated waters to fishing grounds of the: - Shuyak Island Section (A060) - Perenosa Bay Section (A070) - Delphin Bay Section (A071) - Seal Bay Section (A072) - Tonki Bay Section (A080)
3	2:45 P.M. 4/19/89	3:00 PM. 4/19/89	Closure due to in-season harvest of a portion of the: - E. Sitkalidak Section (G022) West of 153°16′24" W. long.
4	9:30 P.M. 4/19/89	10:00 P.M. 4/19/89	Closure due to in-season harvest of a portion of the: - W. Sitkalidak Section (G020) in Sitkalidak Straits north of latitude of Cape Liakik at 57°07′ N. Lat.

Table 6. KODIAK MANAGEMENT AREA
1989 HERRING SAC-ROE FISHERY
SUMMARY OF EMERGENCY ORDERS ISSUED
(continued)

Emergency Order No.	Time/Date Issued	Effective	Action Taken
5	5:30 A.M. 4/22/89	6:45 A.M. 4/22/89	Closure due to in-season harvest in the: - Izhut Bay Section (A090)
6	4:26 P.M. 4/23/89	5?00 P.M. 4/22/89	Closure due to in-season harvest in the: - Taniginak Anchorage Section (A023)
7	9:45 A.M. 4/24/89	10:15 A.M. 4/24/89	Closure due to in-season harvest in the: - Malina Bay Section (A020)
8	3:00 P.M.4/27/89	6:30 P.M. 4/27/89	Closure due to close proximity of oil contaminated water to fishing grounds of the: - North Mainland Section (M010) - Inner Kukak Section (M020) - Outer Kukak Section (M030)
9	8:30 P.M. 4/27/89	9:00 P.M. 4/27/89	Closure due to in-season harvest in the remaining portion of: - E. Sitkalidak Section (G022) east of 153°16'24" W. long.
10	12:00 A.M. 4/30/89	12:00 A.M. 4/30/89	Closure due to close proximity of oil contaminated waters to fishing grounds of the: - Remainder of the Mainland District.
11	11:05 P.M. 5/1/89	11:45 P.M. 5/1/89	Closure due to in-season harvest in the: - South Arm Uganik Section (UG34)

Table 6. KODIAK MANAGEMENT AREA
1989 HERRING SAC-ROE FISHERY
SUMMARY OF EMERGENCY ORDERS ISSUED
(continued)

Emergency Order No.	Time/Date Issued	Effective	Action Taken
12	4:00 P.M. 5/2/89	12:00 A.M. 5/2/89	Closure due to in-season harvest in a portion of the: - Outer Ugak Section (G050) in Pasagshak Bay north of 57°26'06" N. lat.
13	10:10 P.M. 5/3/89	10:30 P.M. 5/3/89	Closure due to in-season harvest in the: - Village Island Section (UG30)
	10:10 P.M. 5/3/89	10:35 P.M. 5/3/89	Closure due to in-season harvest in the: - Shearwater Bay Section (G042)
14	12:00 A.M. 5/4/89	12:00 A.M. 5/4/89	Closure due to in-season harvest in the: - West Uganik Pass Section (UG31)
15	12:00 A.M. 5/6/89	12:00 A.M. 5/6/89	Closure due to in-season harvest in the: - East Arm Uganik Section (UG33)
16	7:00 A.M. 5/7/89	12:00 A.M. 5/6/89	Closure due to close proximity of oil contaminated waters to fishing grounds of the: - Harvester Island Section (UY20)
17	6:00 P.M. 5/7/89	6:30 P.M. 5/7/89	Closure due to in-season harvest in the: - Danger Bay Section (A100) - Kizhuyak Bay Section (G090) - Paramanof Bay Section (A031) - Foul Bay Section (A032)

Table 6. KODIAK MANAGEMENT AREA
1989 HERRING SAC-ROE FISHERY
SUMMARY OF EMERGENCY ORDERS ISSUED
(continued)

Emergency Order No.	Time/Date Issued	Effective	Action Taken
18	4:00 P.M. 5/10/89	12:00 A.M. 5/10/89	Closure due to in-season harvest in the: - Kaiugnak Bay Section (G0010) that portion east of a line from Cape Kasiak to Cape Kiavak.
19	8:00 A.M. 5/11/89	12:00 A.M. 5/10/89	Closure due to close proximity of oil contaminated waters to fishing grounds of the: - Blue Fox Section (A040)
20	6:00 P.M. 5/11/89	6:30 P.M. 5/11/89	Closure due to close proximity of oil contaminated waters to fishing grounds of the: - Raspberry Straits Section (A010)
21	12:00 A.M. 5/12/89	12:00 A.M. 5/12/89	Closure due to in-season harvest in the: - Brown's Lagoon Section
22	5:00 P.M. 5/12/89	12:00 P.M. 5/12/89	Closure due to close proximity of oil contaminated water to fishing grounds of the: - Spiridon Bay Section (UY50)
23	4:30 P.M. 5/15/89	6:30 P.M. 5/15/89	Closure due to close proximity of oil contaminated water to fishing grounds of the: - Kupreanof Straits Section (UG10)

Table 6. KODIAK MANAGEMENT AREA
1989 HERRING SAC-ROE FISHERY
SUMMARY OF EMERGENCY ORDERS ISSUED
(continued)

Emergency Order No.	Time/Date Issued	Effective	Action Taken
24	11:00 A.M. 5/20/89	10:00 P.M. 5/19/89	Closure due to in-season harvest in the: - Zachar Bay Section (UY40)
	11:00 A.M. 5/20/89	8:45 A.M. 5/20/89	Closed due to in-season harvest in the: - Viekoda Bay Section (UG20)
	11:00 A.M. 5/20	12:00 A.M. 5/20/89	Closed due to in-season harvest in the: - Barling Bay Section (G021)
25	5:00 P.M. 5/22/89	12:00 A.M. 5/22/89	Closed due to in-season harvest in the: - Inner Ugak Section (G051)
26	5:00 P.M. 5/24/89	12:00 A.M. 5/24/89	Closure due to in-season harvest in the: - Women's Bay Section (G060)
27	6:00 P.M. 5/24/89	8:45 A.M. 5/24/89	Closure due to in-season harvest in the: - Sulua/Portage Bay Section (AL30)
28	4:00 P.M. 5/25/89	6:30 P.M. 5/25/89	Closure due to in-season harvest in the: - Terror Bay Section (UG21)
29	3:30 P.M. 5/29/89	6:30 P.M. 5/29/89	Closure due to in-season harvest in the: - Inner Uyak Bay Section (UY30)

Table 6. KODIAK MANAGEMENT AREA
1989 HERRING SAC-ROE FISHERY
SUMMARY OF EMERGENCY ORDERS ISSUED
(continued)

Emergency Order No.	Time/Date Issued	Time/Date Effective	Action Taken
30	8:00 A.M. 5/30/89	9:45 P.M. 5/29/89	Closure due to in-season harvest in the: - Deadman Bay Section (AL21)
31	12:00 A.M. 6/4/89	12:00 A.M. 6/4/89	Closure due to close proximity of oil contaminated water to fishing grounds of the: - MacDonald's Lagoon Section (A092)
32	12:00 A.M. 6/16/89	12:00 A.M. 6/16/89	Closure due to close proximity of oil contaminated waters to fishing grounds of the: - Litnik Section (A101) - Inner Kiliuda Bay Section (G041) - Outer Kiliuda Bay Section (G041) - Outer Ugak Section (G050) - Inshore Marmot Section (A102) - Spruce Island Section (G103) - Inshore Chiniak Section (G102)
33			Salmon E.O.
34	4:00 P.M. 6/19/89	6:30 P.M. 6/19/89	Closed due to in-season harvest in the: - Northeast Arm Uganik Section (UG32) Closure due to close proximity of oil contaminated water to fishing grounds of the: - Middle Bay Section (G101) - Kalsin Bay Section (G100) - Monashka Bay Section (G070)

Table 7. KODIAK MANAGEMENT AREA

1989 HERRING SAC-ROE FISHERY TOTAL AREA A.W.L. SUMMARY

	2	3	4	5	6	7	8	9	10	11+	Total/±
N	9	213	186	1261	546	28	280	125	231	34	2913
% BY AGE	.3	7.3	6.4	43.3	18.7	1.0	9.6	4.3	7.9	1.2	100%
N	9	213	186	1261	546	28	280	125	231	34	2913
AVERAGE LENGTH (MM)	168	185	210	227	246	255	259	259	259	263	234
N	9	170	159	1088	455	28	239	115	217	30	2510
AVERAGE WEIGHT (GM)	60	85	130	176	223	252	269	271	275	283	199

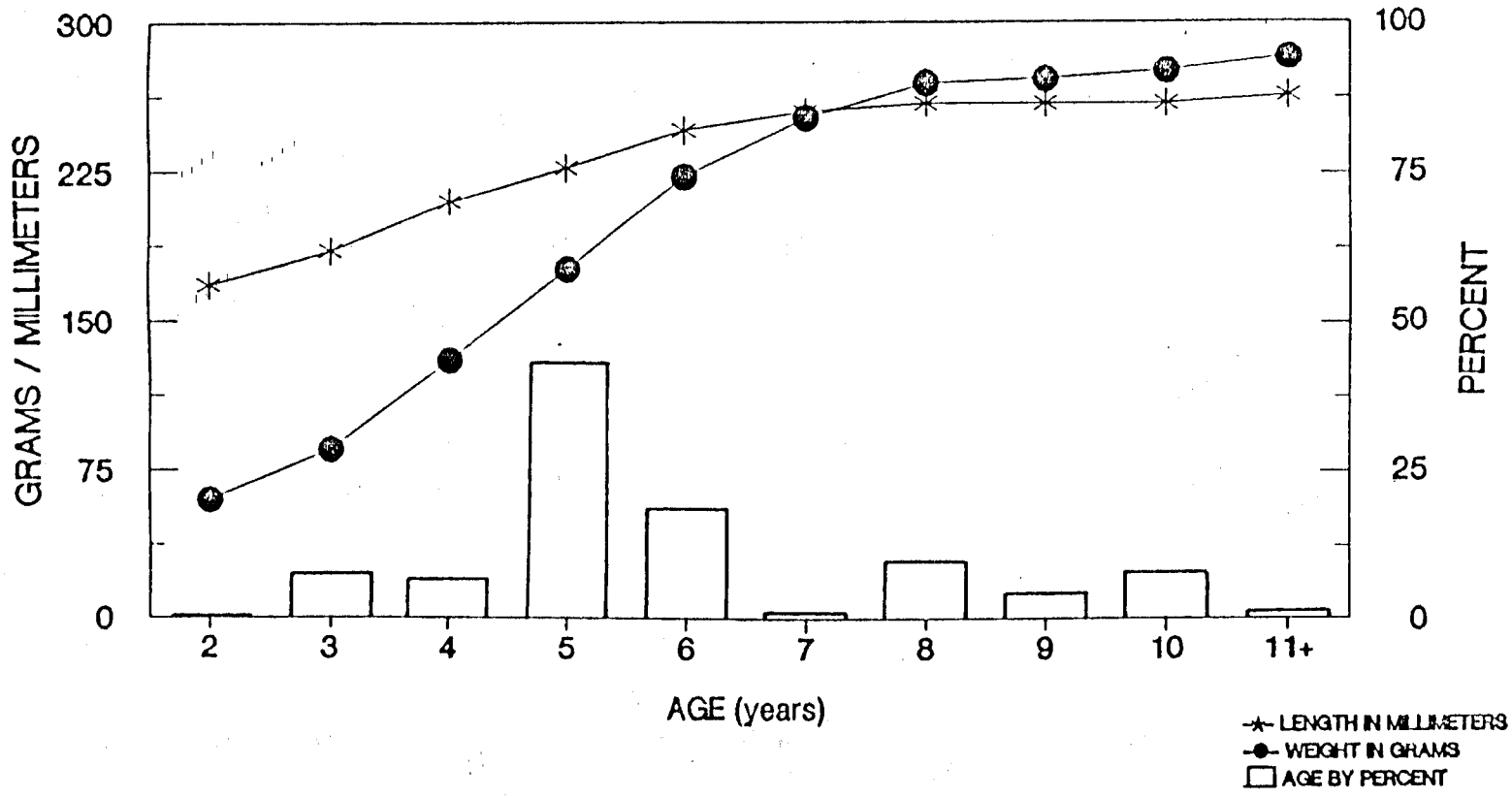


TABLE 8.

KODIAK MANAGEMENT AREA
COMMERCIAL HERRING FISHERIES
HISTORICAL HARVEST LEVELS
(SHORT TONS)

YEAR	FOOD & BAIT	SAC ROE	TOTAL	YEAR	FOOD & BAIT	SAC ROE	TOTAL	YEAR	FOOD & BAIT	SAC ROE	TOTAL
1912	20.0	0.0	20.0	1940	22677.0	0.0	22677.0	1968	15.4	2001.0	2016.4
1913	0.0	0.0	0.0	1941	40083.5	0.0	40083.5	1969	11.0	1130.0	1141.0
1914	0.0	0.0	0.0	1942	16791.0	0.0	16791.0	1970	7.5	342.0	349.5
1915	0.0	0.0	0.0	1943	35352.0	0.0	35352.0	1971	44.2	284.0	328.2
1916	70.0	0.0	70.0	1944	26835.0	0.0	26835.0	1972	49.8	215.0	264.8
1917	137.9	0.0	137.9	1945	31114.0	0.0	31114.0	1973	178.0	831.0	1009.0
1918	118.4	0.0	118.4	1946	47505.9	0.0	47505.9	1974	40.1	868.0	908.1
1919	259.7	0.0	259.7	1947	50743.0	0.0	50743.0	1975	5.2	8.0	13.2
1920	45.9	0.0	45.9	1948	46428.0	0.0	46428.0	1976	NA	5.0	5.0
1921	944.9	0.0	944.9	1949	0.0	0.0	0.0	1977	NA	338.0	338.0
1922	1482.6	0.0	1482.6	1950	44132.5	0.0	44132.5	1978	398.9	904.0	1302.9
1923	321.5	0.0	321.5	1951	4299.0	0.0	4299.0	1979	124.8	1736.0	1860.8
1924	4823.0	0.0	4823.0	1952	1389.0	0.0	1389.0	1980	380.7	2384.0	2764.7
1925	9997.0	0.0	9997.0	1953	725.0	0.0	725.0	1981	18.0	2063.0	2081.0
1926	2680.9	0.0	2680.9	1954	0.0	0.0	0.0	1982	326.0	1771.0	2097.0
1927	2592.9	0.0	2592.9	1955	0.0	0.0	0.0	1983	33.4	2319.0	2352.4
1928	625.0	0.0	625.0	1956	13524.0	0.0	13524.0	1984	123.0	2163.0	2286.0
1929	NO DATA	0.0	0.0	1957	21218.5	0.0	21218.5	1985	102.0	1968.0	2070.0
1930	622.0	0.0	622.0	1958	1711.0	0.0	1711.0	1986	213.0	1558.0	1771.0
1931	1000.0	0.0	1000.0	1959	3831.0	0.0	3831.0	1987	217.1	2146.0	2363.1
1932	3594.0	0.0	3594.0	1960	0.0	0.0	0.0	1988	340.2	2171.0	2511.2
1933	2312.5	0.0	2312.5	1961	0.0	0.0	0.0	1989	N/A	2248.6	2248.6
1934	60000.0	0.0	60000.0	1962	0.0	0.0	0.0				
1935	NO DATA	0.0	0.0	1963	0.0	0.0	0.0				
1936	24748.0	0.0	24748.0	1964	309.8	568.0	877.8				
1937	27659.3	0.0	27659.3	1965	35.0	657.0	692.0				
1938	24522.0	0.0	24522.0	1966	198.0	2769.0	2967.0				
1939	38600.5	0.0	38600.5	1967	300.3	1662.0	1962.3				

APPENDIX I

1989/90
HARVEST STRATEGY FOR THE KODIAK MANAGEMENT AREA COMMERCIAL FOOD/BAIT HERRING FISHERY

By: Larry Malloy, Area Management Biologist
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Regional Information Report[1] No 4K89-26

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

August, 1989

[1]The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and 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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Introduction:

- Due to the potential for gear or fish contamination to occur during the 1989/90 Kodiak food/bait herring season, all herring harvested must be inspected by DEC personnel and can be processed and sold only for bait and may not be used as a food product.

- This harvest strategy attempts to answer most pertinent pre-season and in-season questions regarding the Kodiak food/bait herring fishery.

- This fishery targets both Kodiak and Kamishak spawning stocks which are present in the Kodiak Area during the food/bait season (8/1 - 2/28).

- Since the herring sac-roe fisheries in the Kodiak and Cook Inlet areas are closed-to-entry fisheries, they are treated as primary fisheries and are managed to provide for the majority of the harvest on the affected stocks to occur in these fisheries. The food/bait fisheries on these same stocks are subsequently treated as secondary fisheries and associated harvest levels are directly related to the results of the sac-roe fisheries on these stocks; food/bait harvest levels generally will not exceed 10% of the sac-roe harvest on any of these stocks. Consequently, consideration is given to the biological concerns associated with "double dipping" fisheries on the same stock and is also given to the 200+ limited entry permit holders for both Kodiak and Cook Inlet sac-roe fisheries whose economic interests in permits could be adversely affected without a specific allocative directive for each fishery.

- Since the commercial sac-roe fisheries in Kodiak and Cook Inlet target on herring with mature roe beginning with age 4 and primarily on age 5 and older herring; individual food/bait landings of age 3 or less will be adjusted to reflect weights of age 5 herring.

- A Board of Fisheries regulatory change in March 1988 resulted in the directive to manage the Kodiak Area food/bait fishery in a manner which considers the aforementioned concerns. Specifically management is guided by the following new regulation:

  5 AAC 27.535

  a) The department shall manage the herring food/bait fishery directed on Kodiak spawning stocks so that the food/bait harvest does not exceed 10% of the previous sac-roe season's actual harvest on each stock.

  b) The department shall manage the food/bait herring fishery directed on Kamishak spawning stocks, which over-winter in the Eastern Shelikof Straits, so that the harvest does not exceed 2% (two) of the total available spawning biomass of Kamishak stocks as determined by the department during the most recent sac-roe season.

1. SEASON:

- August 1, 1989 through February 28, 1990.

2. FISHING PERIODS:

- Open to continuous fishing from 12:01 A.M. 8/1/88 to 12:00 P.M. 2/28/89 unless superceded by emergency order closures.

3. CLOSED WATERS:

- See CLOSED WATERS section of the 1989 Commercial Herring Regulation book (page 29).

4. PERMITS REQUIRED (2):

A. Interim Use Permits for legal gear:

- H01K Purse Seine
- H34K Gillnet
- H07K Trawl

B. Registration Permit - Kodiak ADF&G Office

- Permit will be used for:

  - Monitoring fleet size by gear type.

  - Clarifying catch reporting procedures, closed water areas, and in-season emergency order announcement procedures.

- Both permits are available at the Kodiak Fish and Game office.

5. LEGAL GEAR RESTRICTIONS:

01 - Purse Seines
- Maximum length: 100 fathoms
- Maximum depth: 1,000 meshes (herring web)
- Leads allowed during food/bait season.

34 - Gillnets
- Maximum length: 150 fathoms; mesh size: 2-1/8" - 2-1/2".

07 - Trawl
- No restrictions

- Consult the 1989 Herring Regulation book for a complete listing of all regulations.

6. HARVEST STRATEGY:

Regulation 5 AAC 27.535(a)(b), as approved by the Alaska Board of Fisheries in March 1988, describes a harvest strategy for the Kodiak Area food/bait fishery which provides for:

- A secondary food/bait harvest, following a primary sac-roe harvest, on both Kodiak spawning stocks and on Kamishak spawning stocks which occur in the Kodiak Management Area during the Kodiak food/bait season (8/1 - 2/28).

- An exclusion of a food/bait harvest on Kodiak stocks in that portion of Shelikof Straits associated with the occurrence of Kamishak stocks as depicted in Fig. 1, except that a harvest on Kodiak stocks may occur in the aforementioned units if the harvest occurs in in-shore areas (bays) prior to a closure of these areas based upon the G.H.L. for Kamishak stocks being achieved.

- An exploratory harvest scenario on unidentified stocks which occur in areas not covered by the two aforementioned provisions.

To accommodate this harvest strategy, thirteen (13) food/bait management units have been established to include geographical groupings of sac-roe stocks and adjacent offshore areas (See Fig. 2).

- For each management unit there is a Guideline Harvest Level (G.H.L.) which reflects the combined G.H.L.'s for Kodiak stocks included within each food/bait unit (See Table 1).

- Six of these food/bait units have also been identified and consolidated into a geographical grouping representing that area where the food/bait harvest on Kamishak stocks will most likely occur (See Fig. 1).

The 1989 food/bait G.H.L. for the Kodiak Area will be affected by the following management considerations:

- For Kodiak spawning stocks, the department will generally limit the food/bait harvest to 10% of the previous spring's sac-roe harvest on a stock by stock basis. Variations to this strategy are depicted in Table 1 with explanations listed in the Table's footnotes. Harvest levels on Kodiak stocks in the adjacent offshore areas will reflect the combined food/bait G.H.L. for the sac-roe stocks included within that management unit. See Table 1 for a listing of G.H.L.'s by stock and by management unit.

- For identified non-Kodiak spawning stocks, the department will control the harvest to insure that a particular stock is not overexploited. At this time, Kamishak Bay spawning stock(s) are the only identified non-Kodiak spawning stock(s) which occur in the Kodiak Management Area during the Kodiak food/bait season (8/1 - 2/28).

    - In the case of Kamishak Bay spawning stock(s) where evidence exists that they are present in Kodiak area waters during the food/bait season, the harvest level will not be allowed to exceed 512 tons. This tonnage is approximately 2% of the 1989 Kamishak Bay pre-sac-roe season total available indexed spawning biomass (sac-roe harvest: 4,801 s.t. plus post-season indexed spawning biomass 20,800 s.t.)

- Management of Kamishak stocks for both the sac-roe and food/bait fisheries is outlined in Table 2.

- During the food/bait fishery, the Department will attempt to identify the location of Kamishak stock(s) in Kodiak Area waters via data collected from the commercial fishery and/or the ADF&G vessel M/V Resolution during its hydroacoustical surveys which target Shelikof Straits herring biomasses; the M/V Coho may also be required to assist in this search.

  - All herring samples obtained from either source will be expeditiously worked-up to apply A-W-L comparisons between Kodiak and Kamishak stocks.

  - Biomass estimates will be obtained from the fishery in terms of verbal estimation via skipper interviews as to stocks, distribution, average school size, estimated number of schools, etc! Biomass estimates will also be obtained acoustically from the M/V Resolution surveys.

- Herring harvested in this fishery from the following management units will be identified as either Kodiak stocks (per regulation 5 AAC 535(2) or as Kamishak stock(s).

  - These units include F/B 1, F/B 2, F/B 4, F/B 5, F/B 11 and F/B 12 as depicted in Figure 1.

- Herring harvested from the aforementioned food/bait management units, where the harvest occurred in in-shore (bays) locations, will be considered to be Kodiak stocks unless A-W-L and/or biomass data indicates otherwise, in which case they will be considered to be Kamishak stocks.

  - If the harvest ceiling of 512 tons on Kamishak stocks is achieved, all of the aforementioned management units would be closed to herring fishing for the remainder of the food/bait season.

- For non identified herring stocks which may occur in off-shore locations in the remaining food and bait management units, the department will control the harvest to insure that a particular stock is not overexploited. Actual harvest levels may be determined by harvest location, biomass observed and age-weight-length information.

7. GUIDELINE HARVEST LEVELS:

- For the 1989/90 food/bait season the following harvest levels will be in effect:

  - For Kodiak spawning stocks: Per regulation 5 AAC 27.535(a) as described under "Harvest Strategy", a maximum of 278.5 tons properly distributed by stock throughout the management area will be the food/bait harvest on Kodiak spawning stocks.
    - See Table 1 for harvest projections by stock.

  - For Kamishak spawning stocks: Per regulation 5 AAC 27.535(b) as described under "Harvest Strategy", a maximum of 512 tons harvested from that portion of Shelikof Straits depicted in Figure 1 (see attached) will be the food/bait harvest ceiling on Kamishak spawning stocks which occur in the Kodiak Area during the food/bai' season (8/1 - 2/28).

- Prior to harvesting Kamishak stocks in the aforementioned area, a harvest on Kodiak stocks may occur per regulation 5 AAC 27.535(a).

    - Herring harvested in inshore (bays) locations will be considered to be Kodiak stocks unless A-W-L sampling and/or biomass information indicates otherwise, in which case they will be considered to be Kamishak stocks.

- For unidentified stocks: No guideline harvest levels are established, however the remaining 209.5 tons of the regulatory 1,000 ton G.H.L. cited in the 1989 commercial herring regulation book would be expected to occur on these stocks, if justified by stock(s) strength.

    - Harvest levels per geographically distinct biomasses will be established in-season per information obtained from A-W-L sampling and from "skipper" interviews detailing estimates of biomass strength, seasonal distribution, school size, etc!

8. REPORTS REQUIRED BY FISHERMEN:

- All landings of herring for food/bait purposes must be verbally reported to ADF&G before the product is totally unloaded at the dock.

    - The following phone numbers will reach Fish and Game personnel 24 hours per day:

        - ADF&G Office: Monday through Friday
          8:00 A.M. to 4:30 P.M. - 486-4791

        - After Office Hours:
          4:30 P.M. to 8:00 A.M. - 486-4251 (Larry Malloy)
          - 486-6007 (Dave Prokopowich)

All fish tickets must be completed and sent in to the Kodiak Fish and Game office within a week of the landing.

- Send to: Alaska Department of Fish and Game
  211 Mission Road
  Kodiak, Alaska 99615

Table 1.

KODIAK MANAGEMENT AREA
1989/90 HERRING FOOD/BAIT HARVEST STRATEGY
A LISTING OF GUIDELINE HARVEST LEVELS BY FOOD/BAIT MANAGEMENT UNITS[1]

Food/Bait Mgmt. Units	Sac-Roe Management Units No.	Name	1989 Sac-Roe G.H.L.	Harvest	1989/90 Food/Bait G.H.L.
F/B 1	A010	Raspberry	35.0	22.0	5.5
	A020	Malina	30.0	44.1	3.0[2]
West Afognak	A031	Paramanof	40.0	38.5	4.0[2]
Unit	A032	Foul Bay	30.0	25.2	3.0
	A040	Blue Fox	20.0	0.0	2.0
	A050	Offshore Afognak	-	0.0	[6]
UNIT TOTALS:			175.0	129.8	17.5
F/B 2	A060	Shuyak	20.0	0.0	2.0[4]
	A070	Perenosa	15.0	0.0	1.5
North Afognak	A071	Delphin	10.0	0.0	1.0
Unit	A072	Seal Bay	10.0	0.0	1.0[5]
	A080	Tonki	15.0	0.0	1.5[2]
UNIT TOTALS:			70.0	0.0	7.0
F/B 3	A090	Izhut	25.0	60.9	2.5
	A091	Kitoi	15.0	0.0	1.5
East Afognak	A092	McDonalds	10.0	10.7	1.0
Unit	A100	Danger	30.0	31.2	3.0
	A101	Litnik	15.0	2.4	1.5
	A102	Inshore Marmot	10.0	2.7	7.3[4]
UNIT TOTALS:			105.0	107.9	16.8
F/B 4	UG10	Kupreanof	10.0	0.0	1.0[4]
	UG20	Viekoda	30.0	31.3	3.0
Uganik	UG21	Terror	80.0	76.6	8.0
Unit	UG30	Village Islands	30.0	35.2	3.0
	UG31	W. Uganik Passage	15.0	20.5	1.5
	UG32	N.E. Arm Uganik	75.0	80.3	7.5
	UG33	E. Arm Uganik	40.0	41.8	4.0
	UG34	S. Arm Uganik	40.0	54.2	4.0
	UG40	Offshore Uganik	-	0.0	[6]
UNIT TOTALS:			320.0	339.9	32.0

Table 1. (continued)

Food/Bait Mgmt. Units	Sac-Roe Management Units No.	Name	1989 Sac-Roe G.H.L.	Harvest	1989/90 Food/Bait G.H.L.
F/B 5	UY10	Offshore Uyak	-	0.0	6/
	UY20	Harvester	10.0	0.0	1.0 4/
Uyak	UY30	Inner Uyak	260.0	289.8	26.0
Unit	UY31	Larsen Bay	10.0	4.2	5.8
	UY40	Zachar	100.0	133.5	10.0
	UY50	Spiridon	160.0	100.6	16.0
UNIT TOTALS:			540.0	528.1	58.8
F/B 6 Sturgeon/ Halibut Unit	SH01	Sturgeon/Halibut	Exploration	0.0	Exploration
UNIT TOTALS:				0.0	-
F/B 7	AL10	Outer Alitak	-	0.0	
	AL20	Inner Alitak	Exploration	0.0	Exploration
Alitak	AL21	Deadman	125.0	154.3	12.5
Unit	AL30	Sulua	60.0	80.1	6.0
	AL40	Lower Olga/Moser	25.0	5.2	2.5
	AL50	Upper Olga/Moser	190.0	209.4	19.0
	AL60	Geese/Twoheaded	Exploration	7.8	Exploration
UNIT TOTALS:			400.0	456.8	40.0
F/B 8	G010	Kaiugnak	10.0	13.3	1.0
	G020	W. Sitkalidak	Exploration	128.6	Exploration
Eastside	G021	Barling	15.0	17.3	2.0
Unit	G022	E. Sitkinak	75.0	141.1	9.5
	G023	Tanginak	15.0	29.3	1.5 5/
	G030	Outer Sitkalidak	Exploration	0.0	-
	G040	Outer Kiliuda	Exploration	0.0	Exploration
	G041	Inner Kiliuda	10.0	5.3	1.0
	G042	Shearwater	15.0	19.8	2.5
	G050	Outer Ugak	Exploration	0	Exploration
	G050	Pasagshak	25.0	29.4	5.0
	G051	Inner Ugak	50.0	54.8	5.0
UNIT TOTALS:			250.0	438.8	27.5

Table 1. (continued)

Food/Bait Mgmt. Units	Sac-Roe Management Units No.	Name	1989 Sac-Roe G.H.L.	Harvest	1989/90 Food/Bait G.H.L.
F/B 9	G060	Womens Bay	110.0	108.6	11.0
	G100	Kalsin Bay	20.0	5.6	2.0
Chiniak	G101	Middle Bay	25.0	3.7	2.5
Unit	G102	Inshore Chiniak	10.0	0.0	10.0[4/]
UNIT TOTALS:			165.0	117.9	25.5
F/B 10	G070	Monashka/Mill Bay	Exploration	0.0	Exploration
	G080	Anton Larsen	30.0	13.5	3.0
North Kodiak	G081	Sheratin	10.0	3.6	6.4
Unit	G090	Kizhuyak	110.0	112.3	11.0
	G103	Spruce Island	10.0	0.0	9.0[4/]
UNIT TOTALS:			160.0	129.4	30.4
F/B 11	M010	North Mainland	Exploration	0.0	Exploration
	M020	Inner Kukak	50.0	0.0	5.0
North Mainland	M030	Outer Kukak	-	0.0	Exploration
Unit	M040	Missak	Exploration	0.0	Exploration
UNIT TOTALS:			50.0	0.0	5.0
F/B 12	M050	Inner Katmai	50.0	0.0	5.0
	M060	Outer Katmai	-	0.0	Exploration
Mid-Mainland	M070	Alinchak	30.0	0.0	3.0
Unit	M080	Puale Bay	Exploration	0.0	Exploration
	M090	Portage Bay	Exploration	0.0	Exploration
UNIT TOTALS:			80.0	0.0	8.0
F/B 13	M100	Outer Portage	-	0.0	Exploration
South Mainland	M110	Wide Bay	100.0	0.0	10.0[5/]
Unit	M120	Lower Shelikof	-	0.0	Exploration
UNIT TOTALS:			100.0	0.0	10.0
GRAND TOTALS:			2,415.0	2,248.6	278.5

*See footnotes on next page.

FOOTNOTES:

1/The Kodiak Area total G.H.L. for food/bait, as indicated in the 1989 Herring Regulation book is 1,000 s.t. However, as indicated under the regulatory harvest strategy, these stocks exploited during the sac-roe season are managed to retain approximately 10% of the available harvest for the food/bait fishery. This table reflects the available food/bait harvest for each sac-roe stock or food/bait unit, whichever applies. (See Harvest Strategy.)

2/Sac-roe management units where excessive sac-roe harvests may have occurred either this year or in the past and where a reduced food/bait harvest is justified.

3/Sac-roe management units where the sac-roe harvest substantially exceeded pre-season expectations probably as a result of increased stock abundance rather than overharvest and where an increased food/bait harvest commensurate with the increased sac-roe fishery is justified.

4/Sac-roe management units where a sac-roe underharvest may have occurred and where an increased food/bait harvest is justified. In some cases where the stock status is in question the increased food/bait harvest may still be less than pre-season expectations on those stocks.

5/Sac-roe management units where the sac-roe harvest was substantially less than pre-season expectations probably as a result of an overestimation of stock strength and where a reduced food/bait harvest is justified.

6/See attached plan for management of the Kamishak Bay Herring Spawning Stocks in the Shelikof Straits Food and Bait Fishery.

Table 2.

MANAGEMENT OF THE KAMISHAK BAY HERRING SPAWNING STOCKS
IN THE SHELIKOF STRAIT
FOOD AND BAIT FISHERY

Addendum to the 1988 Kamishak Bay
Herring Management Plan

Kamishak Bay herring spawning stocks support both the Kamishak Bay sac-roe fishery and the Shelikof Strait food and bait fishery. Pursuant to the Board of Fisheries decision to allocate 2% of the Kamishak Bay herring spawning biomass to the Shelikof Strait food and bait fishery, the following adjustments will be made to the 1988 Kamishak Bay sac-roe fishery management plan to accommodate the Board's actions and to protect the Kamishak Bay herring stock from over harvest:

1) ADF&G guidelines direct that herring harvest rates be kept at or below 20% of the current best estimate of biomass, depending upon stock strength and age composition. Best estimates of biomass of the Kamishak Bay herring stock are currently determined by aerial survey following the spring sac-roe fishery. Therefore, harvest levels in the Shelikof Strait food and bait fishery will be based on this estimate of spawning biomass.

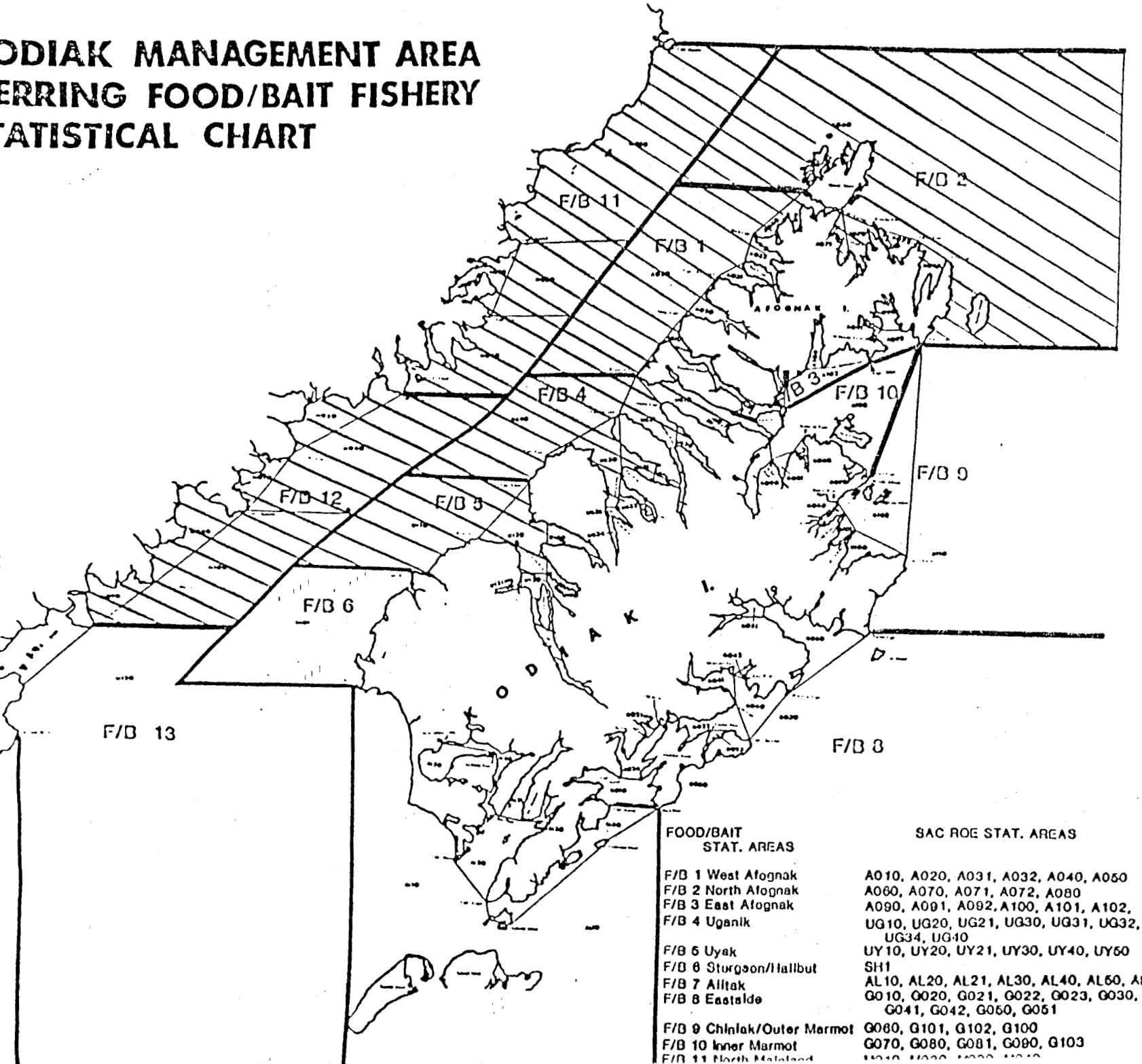
2) The harvest ceiling for the Shelikof Strait food and bait fishery will be 2% of the best estimate of the total Kamishak biomass, as determined by the Department during the most recent Kamishak herring sac-roe season. The total Kamishak Bay biomass will be determined by the best estimate of the spawning biomass following the sac-roe fishery plus the total harvest from the sac-roe fishery.

3) Present management strategy for the Kamishak Bay spawning stocks attempts to achieve a maximum harvest rate on older fish of 20% while keeping the harvest rate of fish age 5 and younger at or below 10%.

4) If ADF&G determines the harvest rate for the stock of Kamishak Bay herring should be less than 20%, either due to a decrease in biomass, weak year classes, or poor recruitment, the 2% food and bait harvest ceiling will be reduced proportionally. [i.e. If the biological markers (decrease in biomass, weak year classes, or poor recruitment) indicate that the sac-roe harvest needs to be reduced, for example to 15%, the food and bait fishery would be reduced to 1.5%]

5) If the spawning biomass of the Kamishak Bay herring stocks falls below the biological threshold level of 8,000 tons, both the Kamishak Bay sac-roe and the Shelikof Strait food and bait fishery will be closed or severely limited.

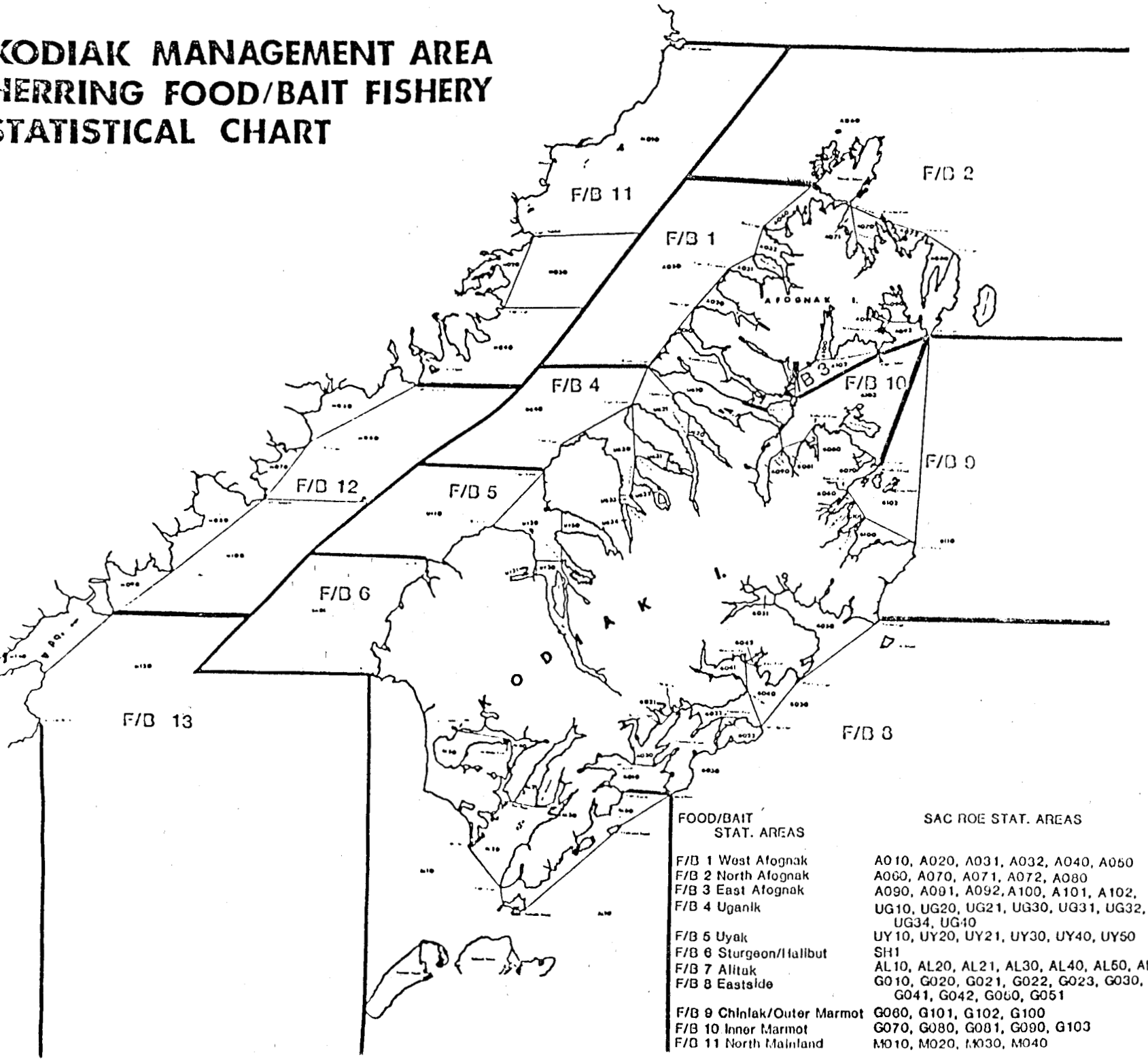
ODIAK MANAGEMENT AREA
ERRING FOOD/BAIT FISHERY
TATISTICAL CHART



FOOD/BAIT STAT. AREAS	SAC ROE STAT. AREAS
F/B 1 West Afognak	A010, A020, A031, A032, A040, A050
F/B 2 North Afognak	A060, A070, A071, A072, A080
F/B 3 East Afognak	A090, A091, A092, A100, A101, A102,
F/B 4 Uganik	UG10, UG20, UG21, UG30, UG31, UG32, UG33, UG34, UG40
F/B 5 Uyak	UY10, UY20, UY21, UY30, UY40, UY50
F/B 6 Sturgeon/Halibut	SH1
F/B 7 Alitak	AL10, AL20, AL21, AL30, AL40, AL50, AL60
F/B 8 Eastside	G010, G020, G021, G022, G023, G030, G040, G041, G042, G050, G051
F/B 9 Chiniak/Outer Marmot	G060, G101, G102, G100
F/B 10 Inner Marmot	G070, G080, G081, G090, G103
F/B 11 North Moloiaod	[illegible]

Fig. 1

KODIAK MANAGEMENT AREA
HERRING FOOD/BAIT FISHERY
STATISTICAL CHART



FOOD/BAIT STAT. AREAS	SAC ROE STAT. AREAS
F/B 1 West Afognak	A010, A020, A031, A032, A040, A050
F/B 2 North Afognak	A060, A070, A071, A072, A080
F/B 3 East Afognak	A090, A091, A092, A100, A101, A102,
F/B 4 Uganik	UG10, UG20, UG21, UG30, UG31, UG32, UG33, UG34, UG40
F/B 5 Uyak	UY10, UY20, UY21, UY30, UY40, UY50
F/B 6 Sturgeon/Halibut	SH1
F/B 7 Alitak	AL10, AL20, AL21, AL30, AL40, AL50, AL60
F/B 8 Eastside	G010, G020, G021, G022, G023, G030, G040, G041, G042, G050, G051
F/B 9 Chiniak/Outer Marmot	G060, G101, G102, G100
F/B 10 Inner Marmot	G070, G080, G081, G090, G103
F/B 11 North Mainland	M010, M020, M030, M040

Fig. 2.

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