Agenda #13
May 1979

ANALYSIS OF CURRENT FISHERY INFORMATION RELATING TO THE STOCK OF *C. OPILIO* NORTH OF 58° IN THE EASTERN BERING SEA

Tanner Crab Plan Development Team

May 23, 1979

North Pacific Fishery Management Council
333 West 4th Avenue
Anchorage, Alaska 99510

Analysis of Current Fishery Information Relating to the Stock of C.opilio north of 58° N.,in the eastern Bering Sea

Relative to the potential problem cited at the March, 1979 SSC meeting (Tanner Crab PDT, 1979), analysis of current fishery information suggests that there are more C.opilio north of 58° N. than the 1978 survey indicated.

The 1978 survey estimate of about 9500 mt of male C.opilio >99mm north of 58° was made after about 13,400 mt had been removed from the area (Wolotira and Armetta. 1978), indicating a population of around 23,000 mt at the beginning of the Japanese fishery. To date, CPUE for the mothership fishery is about the same as for 1978 (table 1), indicating a level of abundance of crab similar to that in 1978. Thus, at this point in time it appears that there is an adequate stock of C.Opilio to support the 1979 Japanese fishery. Early indications of substantial increases in the catch rates of the Japanese landbased fishery (table 2) support this conclusion.

The apparent replenishment of stock north of 58° may have come from redistribution of crabs since the 1978 survey, as well as from growth recruitment. Evidence that the distribution has changed is provided by a comparison of Japanese and U.S. catch rates for 1979. The Japanese mothership CPUE for April, when corrected for a difference in relative fishing power (table 3), is similar to the CPUE of the U.S. fleet operating off Unimak during the same period---- 70 crabs per pot (=17.1 x 4.1) versus 78 for the U.S. fleet. According to the 1978 survey, densites of C.Opilio should be almost twice as high (1.8 x) in the area of the U.S. fishery as in the area of the mothership fishery (figure 1).

Table 1 —Comparison of catch rates for the Japanese mothership crab fishery in the eastern Bering Sea, 1978 and 1979.

1978		1979	
Week Ending	Crabs per Potlift	Week Ending	Crabs per Potlift
		3/3	8.7
		3/10	13.1
3/18	11.5	3/17	14.4
3/25	16.7	3/24	17.2
4/01	18.9	3/31	15.8
4/08	17.1	4/07	17,2
4/15	18.1	4/14	16.2
4/22	15.6	4/21	18.0
4/29	16.5	4/28	17.2
5/06	15.9	5/05	20.5
AVERAGE	16.3		17.1

Table 2.--Comparison of catch rates for the Japanese landbased crab fishery in the eastern Bering Sea, 1978 and 1979.

1978			1979		
Week Ending	Catch(mt) per Vessel-Day	Number of Vessels	Week Ending	Catch(mt) per Vessel-Day	Number of Vessels
5/20	3.48	2-9	5/16	4.13	5-7
5/27	3.01	4-10	5/11	4.47	6-7
TOTAL THRU 5/27	3.19	2-10	TOTAL THRU 5/11	4.77	5-7

Table 3.--Estimates of fishing power factors for U.S. Tanner crab vessels relative to Japanese mothership Tanner crab catcher vessels.

Year	Relative Fishing Power Factor	95% Confidence Interval	Number of Observations
1975	4.6	2.8-8.1	6
1976	3.7	2.9-4.7	12
1977	4.2	3.2-5.6	20
YEARS COMBINED	4.1	3.4-4.9	38

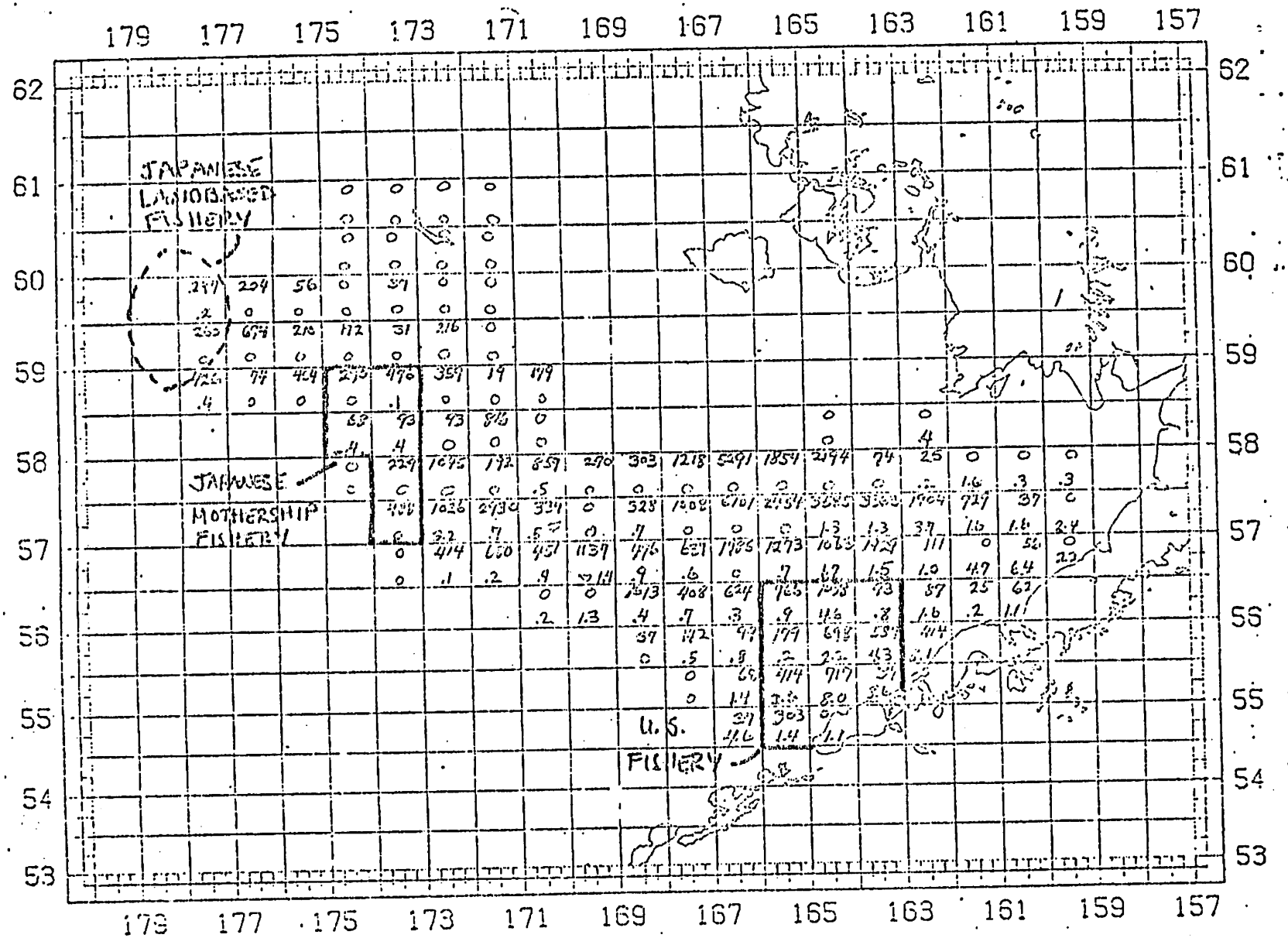


Figure 1.--Locations of the 1979 C. opilio fisheries, and distribution of estimated ABC (mt) for 1979 based on the 1978 NMFS survey (lower number in each 1/2 X 1 degree rectangle is the percent of legal male C. bairdi).

REFERENCES

Tanner Crab Plan Development Team, 1979. Possible options for management of the Japanese Tanner Crab fishery in the Eastern Bering Sea in 1979. MS, 9pp.

Wolotira, R.J. and T. Armetta, 1978. Summary of observations of Japanese Tanner crab fleets in the Eastern Bering Sea, 1978. INPFC Doc. 2127, 18pp.

#13

STATUS OF THE JAPANESE TANNER CRAB FISHERY IN THE EASTERN BERING SEA THROUGH MAY10,1979

Mr. Chairman, members of the Council, my name is Tsuneo Takahashi . We appreciate this opportunity to express our views before the Council on behalf of the Japanese Tanner crab industy.

The purpose of our statement today is to keep you informed of our current fishing operations by the two mothership fleets in the Bering Sea. During the last meeting we recommended that further observation of the fishery would be necessary prior to reaching any meaningful conclusion on the status of the fishery, although the catch trend then was lower than that during the same period last year. One of the notable features since the end of March has been a substantial change in the catch trend. Figure 1 demonstrates abrupt upturn in c.p.u.e. since the end of March in contrast with the down-swing in c.p.u.e. during the same period last year. (See Fig.1)

Other notable features the Japanese fleets have encountered since the start of operations include more stormy weather than in usual years, which has prevented them from fishing operations. Table 1 compares the number of stormy weather days, catch, and c.p.u.e. during this season with those of last year.

Table 1

Status of Japan Tanner Crab Fishery

	Days on the ground	Days pot lifted	Stormy days	Catch Weight (M.T)	Average Catch per day (M.T)	c.p.u.e. crabs/pot
1979	Feb.24-May 10 76	62.7	13.3	5233.193	83.463	16.4
1978	Mar.12-May 10 60	58.6	1.4	4927.624	84.089	16.5

Also the bottom temperature which was higher than average last year has continued to increase up to the present by 0.5°C. As to the effect the higher temperature will have on the stock, we have not yet reached any conclusion.

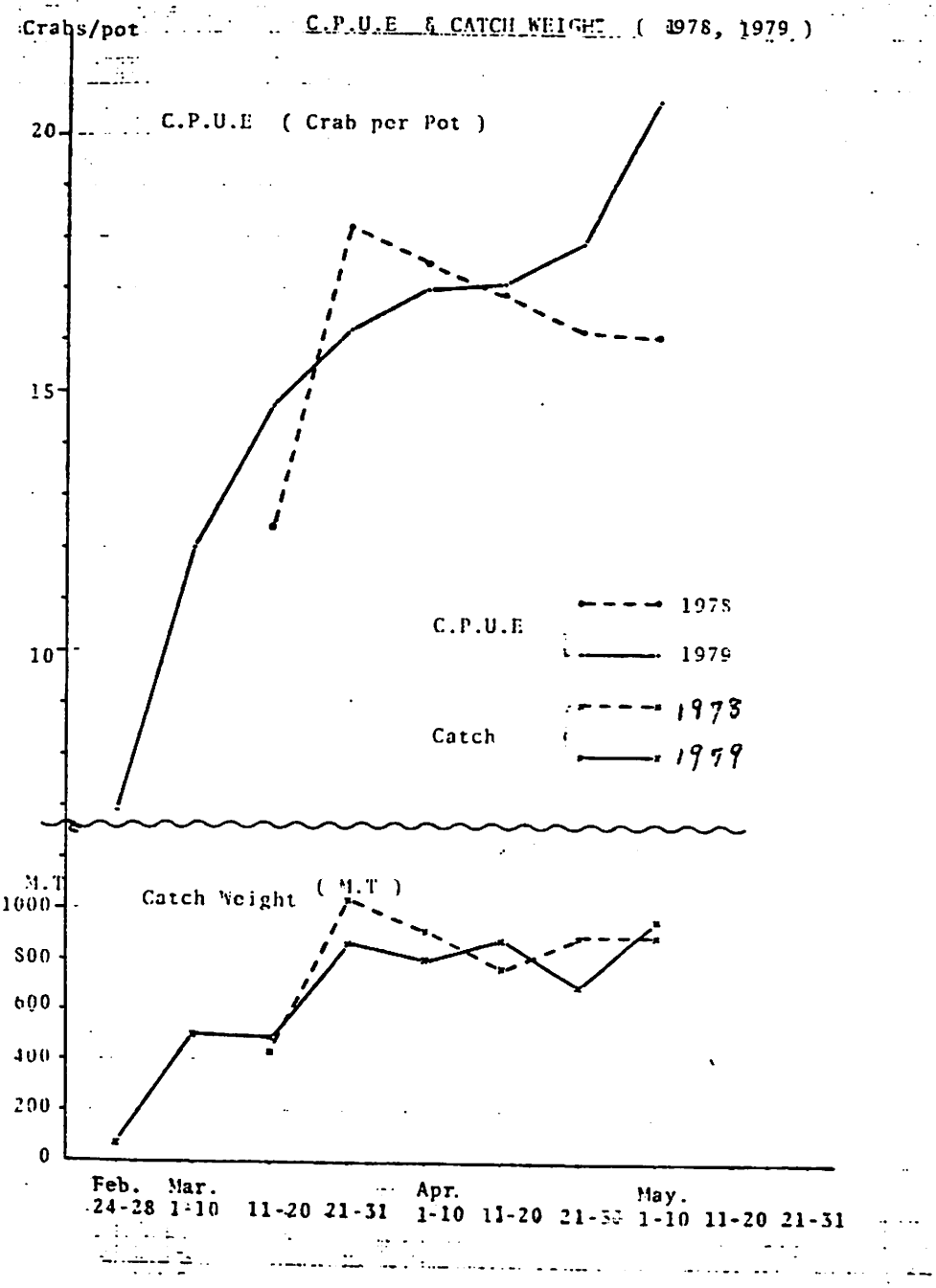
With regard to the drift ice which we feared prior to starting our operations, we have been lucky to encounter no drift ice on the ground during the two months operation this year.

The data shown in Table 1 and Figure 1 do really support the following estimate by the Japanese scientists;
" Our stock assessment of Tanner crab, based on the data and information obtained from a Japanese research vessel during 1978, demonstrates that the Japanese catch in accordance with the permitted area and quota will not have any adverse effect on the stock and that the Japanese fleets will be able to continue fishing operations under stable stock conditions without causing any overexploitation. "

Judging from the stock assessment by the scientists and the current catch trend, it is reasonably anticipated that the Japanese fleets will take the quota during this season.
Thank you.

TSUNEO TAKAHASHI
Representative
Japanese Tanner Crab
Industry

Fig. I


Crabs/pot
C.P.U.E & CATCH WEIGHT (1978, 1979)
C.P.U.E (Crab per Pot)
20
15
10
C.P.U.E
1978
1979
Catch
1978
1979
M.T
Catch Weight (M.T)
1000
800
600
400
200
0
Feb.
24-28
Mar.
1-10
11-20
21-31
Apr.
1-10
11-20
21-30
May.
1-10
11-20
21-31

OPERATIONAL CHART OF THE JAPANESE FLEET

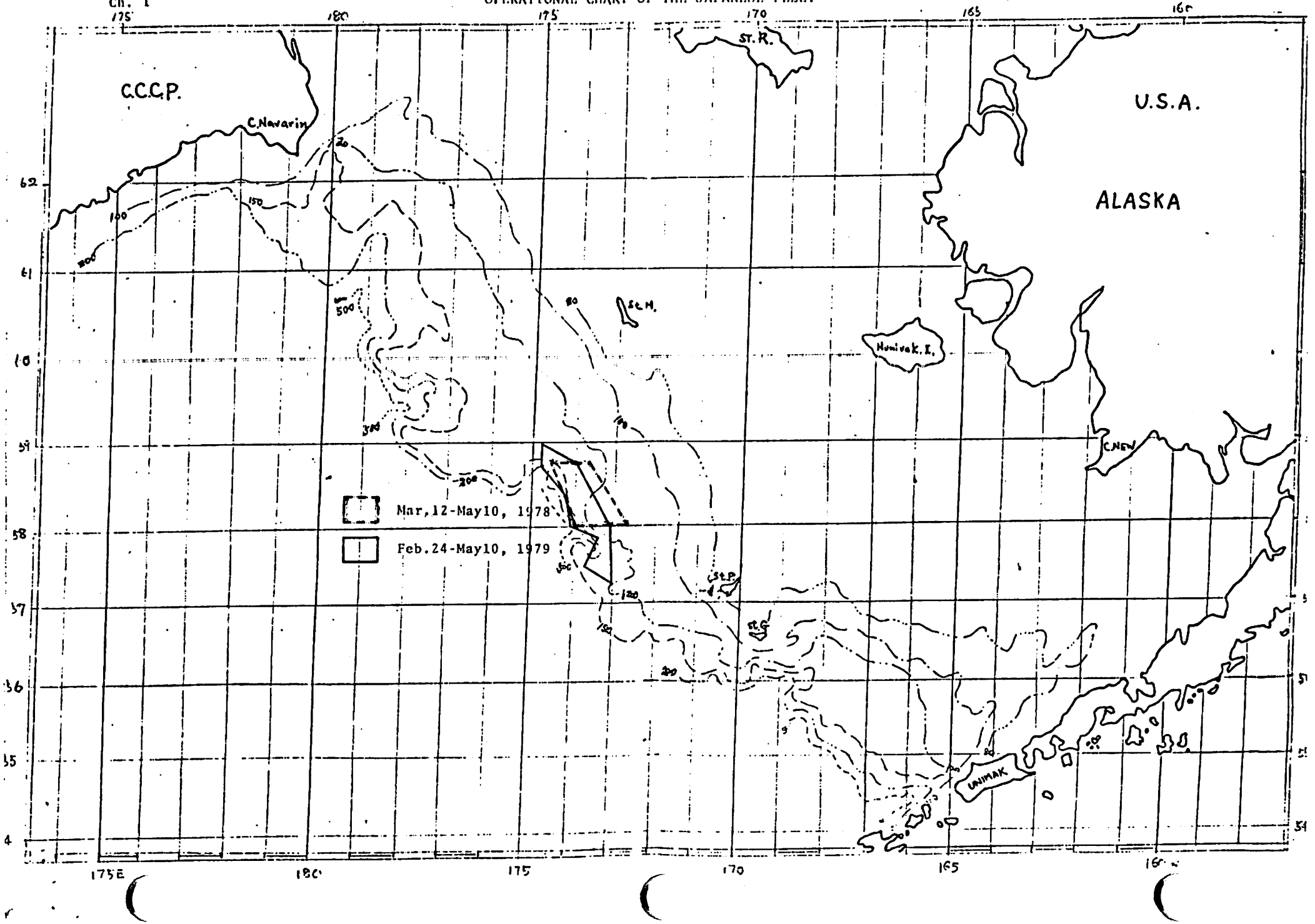


Table 2. JAPANESE TANNER CRAB. MOTHER-SHIP. CATCH DATA. 1979 (CATCH NORTH OF 36°N)

Fishing Date	Catch Weight (Kg)			Catch Number			Average Weight(g)			Comparison Percentage Weight			Comparison Percentage Number			C.P.U.E.
	Opilio	Bairdi	Hybrid	Opilio	Bairdi	Hybrid	OP	B	HY	OP	B	HY	OP	B	HY	
2 / 21																
22																
23																
24 418	1,233	24	65	1,752	35	91	704	686	714	93.3	1.8	4.9	93.3	1.9	4.8	4.5
25 896	2,272	267	195	3,787	477	342	600	560	570	83.1	9.8	7.1	82.2	10.4	7.4	5.1
26 1,239	7,995		98	10,952		134	730		731	98.8		1.2	98.8		1.2	8.9
27 3,685	21,893	1,801	922	31,501	2,444	1,274	695	737	724	88.9	7.3	3.8	89.4	6.9	3.7	6.2
28 6,165	24,723	3,684	918	39,613	5,445	1,269	624	677	723	84.3	12.6	3.1	85.5	11.8	2.7	7.5
7 10days 14,403	58,116	5,776	2,198	87,605	8,401	3,110	663	688	707	87.9	8.7	3.4	88.4	8.5	3.1	6.9
monthly total 14,403	58,116	5,776	2,198	87,605	8,401	3,110	663	688	707	87.9	8.7	3.4	88.4	8.5	3.1	6.9
3 / 1 6,948	31,404	4,169	2,177	50,496	6,374	3,180	623	654	685	83.8	11.0	5.8	84.1	10.6	5.3	8.6
2 7,274	38,841	3,010	2,919	61,547	4,077	4,095	631	738	713	86.8	6.7	6.5	88.3	5.8	5.9	9.6
3 7,257	42,216	5,397	4,988	65,912	7,801	7,292	641	718	684	80.0	10.6	9.4	81.4	9.6	9.0	11.2
4 7,507	38,948	2,432	3,337	90,310	3,721	4,682	653	654	717	91.0	3.8	5.2	91.5	3.8	4.7	13.1
5 2,038	13,734	1,086	1,473	26,062	1,488	2,133	604	730	691	86.0	5.9	8.1	87.8	5.0	7.2	14.6
6 6,198	43,394	239	329	68,266	531	706	636	450	466	98.7	0.5	0.8	98.2	0.8	1.0	11.2
7 6,929	53,894	6,946	2,764	87,140	9,740	3,728	619	713	741	84.7	10.9	4.4	86.6	9.7	3.7	14.5
8 6,965	53,434	6,239	1,478	88,317	9,218	2,346	605	677	630	87.4	10.2	2.4	88.4	9.2	2.4	14.3
9 7,144	49,808	2,636	1,930	85,344	4,566	2,655	584	577	727	91.6	4.8	3.6	92.2	4.9	2.9	13.0
10 7,530	49,068	5,112	2,075	77,676	9,111	3,074	632	561	675	87.2	9.1	3.7	86.4	10.1	3.5	11.9
10days 65,790	436,741	37,466	23,490	700,998	56,627	33,891	623	662	693	87.8	7.5	4.7	88.6	7.2	4.2	12.0
3 / 11 7,290	62,669	3,210	2,759	100,255	5,732	3,601	625	560	766	91.3	4.7	4.0	91.5	5.8	3.3	15.0
12 7,047	55,262	8,235	2,131	85,618	13,523	2,755	645	609	774	84.2	12.5	3.2	84.0	13.3	2.7	14.5
13 8,221	48,947	5,640	1,449	80,691	9,348	2,264	607	603	640	87.3	10.1	2.6	87.4	10.1	2.5	11.8
14 7,998	54,010	13,247	2,148	80,210	20,427	2,505	673	649	858	77.8	19.1	3.1	77.8	19.8	2.4	12.9
15 7,458	62,943	9,378	2,882	98,331	13,707	3,056	640	684	940	85.4	12.5	3.8	85.8	11.9	2.7	15.4
5 days 38,014	283,831	39,711	11,369	445,105	62,737	14,191	638	633	801	84.7	11.8	3.4	85.3	12.0	2.7	13.7
21 ~ 31 18,707	778,688	82,953	37,057	1,233,708	127,765	51,197	631	649	724	86.7	9.2	4.1	87.2	9.1	3.8	12.0

Table

JAPANESE TANNER CRAB. MOTHER-SHIP. CATCH DATA. 1979 (NORTH OF 58°N)

No. 1

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Number Opilio	Bairdi	Hybrid	Average Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
3/11																	
12																	
13																	
14																	
15																	
16	3,328	46,030	3,858	1,692	70,833	6,324	2,197	650	610	770	89.2	7.5	3.3	89.3	8.0	2.7	23.8
17	1,792	15,008	362	118	24,986	670	157	601	540	752	96.9	2.3	0.8	96.8	2.6	0.6	14.4
18	1,530	16,388	2,949	325	26,497	4,834	382	619	610	851	83.3	15.0	1.7	83.6	15.2	1.2	20.6
19	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
10days	44,670	361,257	46,880	13,504	567,421	74,565	16,927	637	629	790	85.7	11.1	3.2	86.1	11.3	2.6	14.8
21	4,224	50,773	10,965	–	88,470	17,975	–	574	610	–	82.2	17.8	–	83.1	16.9	–	25.2
22	3,712	40,428	2,156	–	64,423	3,171	–	628	680	–	94.9	5.1	–	95.3	4.7	–	18.2
23	3,840	47,917	5,894	1,431	73,891	8,420	1,389	649	700	1,030	86.7	10.7	2.6	88.3	10.1	1.6	21.8
24	3,456	36,957	2,151	1,098	59,986	2,218	1,615	616	970	680	91.9	5.3	2.8	94.0	3.5	2.5	18.5
25	3,840	33,017	2,094	1,751	55,450	3,035	1,945	595	690	900	89.6	5.7	4.7	91.8	5.0	3.2	15.7
26	1,664	25,414	1,810	–	47,240	3,175	–	538	570	–	93.4	6.6	–	93.7	6.3	–	30.3
27	4,096	40,294	1,075	621	61,534	1,132	955	655	950	650	96.0	2.6	1.4	96.7	1.8	1.5	15.5
28	3,840	36,763	2,635	952	55,890	3,711	1,535	658	710	620	91.1	6.5	2.4	91.4	6.1	2.5	15.9
29	4,096	37,412	7,144	1,924	59,265	10,354	3,006	631	690	640	80.5	15.4	4.1	81.6	14.3	4.1	17.7
30	3,328	35,988	3,751	811	53,850	5,861	811	668	640	1,000	88.7	9.3	2.0	89.0	9.7	1.3	18.2
31	3,842	38,245	1,451	2,006	56,746	2,134	2,446	674	680	820	91.7	3.5	4.8	92.5	3.5	4.0	16.0
10days	39,938	423,208	41,126	10,594	676,745	61,186	13,702	625	672	773	89.1	8.7	2.2	90.0	8.1	1.9	18.8
Monthly Total	150,398	1,221,206	125,472	47,588	1,945,164	192,378	64,520	628	652	738	87.6	9.0	3.4	88.3	8.7	3.0	14.6
4/1	3,968	51,583	607	1,032	78,388	1,065	1,186	658	570	870	96.9	1.1	2.0	97.2	1.3	1.5	20.3
2	2,048	29,321	2,528	897	46,003	4,013	1,150	637	630	780	89.5	7.7	2.8	89.9	7.8	2.3	25.0
3	3,712	39,854	2,761	1,491	63,197	3,210	1,448	631	860	1,030	90.4	6.3	3.3	93.1	4.7	2.2	18.3
4	4,224	54,238	2,911	2,995	87,323	4,621	3,523	621	630	850	90.2	4.8	5.0	91.5	4.8	3.7	22.6
5	3,968	45,829	3,125	2,696	75,783	5,388	3,501	605	580	770	88.7	6.1	5.2	89.5	6.4	4.1	21.3
6	3,968	38,224	1,739	1,639	57,608	2,760	1,725	664	630	950	91,9	4.2	3.9	92.8	4.4	2.8	15.6
7	384	6,569	33	231	10,351	110	385	635	300	600	96.1	0.5	3.4	95.4	1.0	3.6	28.2
8	4,352	67,547	–	456	112,768	–	570	599	–	800	99.3	–	0.7	99.5	–	0.5	26.0
9	3,840	45,512	2,497	1,439	74,011	4,305	1,439	615	580	1,000	92.0	5.0	3.0	92.8	5.4	1.8	20.8
10	4,096	34,752	4,506	1,742	60,169	7,387	1,936	578	610	900	84.8	11.0	4.2	86.6	10.6	2.8	17.0
10days	34,560	413,429	20,707	14,618	665,601	32,859	16,863	621	630	867	92.1	4.6	3.3	93.0	4.6	2.4	20.7

JAPANESE TANNER CRAB. MOTHER-SHIP. CATCH DATE. 1979 (NORTH OF 58°N)

No. 2

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Catch Number Opilio	Bairdi	Hybrid	Average Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
4 /11	4,096	41,050	2,344	1,509	66,295	2,824	2,156	619	830	700	91.4	5.2	3.4	93.0	4.0	3.0	17.4
12	3,712	40,285	2,751	986	68,337	3,718	1,315	590	740	750	91.5	6.3	2.2	93.1	5.1	1.8	19.8
13	4,352	40,974	2,240	8,883	67,026	2,605	13,063	611	860	680	78.7	4.3	17.0	81.1	3.1	15.8	19.0
14	4,096	38,025	907	5,962	61,250	1,242	8,768	621	730	680	84.7	2.0	13.3	86.0	1.7	12.3	17.4
15	4,352	36,418	2,302	12,100	60,639	2,423	18,906	601	950	640	71.7	4.5	23.8	74.0	3.0	23.0	18.8
16	3,584	47,445	212	9,623	75,047	353	15,521	632	601	620	82.8	0.4	16.8	82.5	0.4	17.1	25.4
17	2,944	32,123	1,289	5,539	48,698	1,482	7,101	660	870	780	82.5	3.3	14.2	85.0	2.6	12.4	19.5
18	3,712	46,411	—	5,094	71,747	—	7,491	647	-	680	90.1	—	9.9	90.5	—	9.5	21.3
19	3,584	33,668	1,070	14,085	49,299	1,338	20,121	683	800	700	69.0	2.2	28.8	69.7	1.9	28.4	19.7
20	3,584	52,833	—	865	80,125	—	1,236	659	—	700	98.4	—	1.6	98.5	—	1.5	22.7
10days	38,016	409,232	13,115	64,646	648,463	15,985	95,678	631	820	676	84.0	2.7	13.3	85.3	2.1	12.6	20.0
21	3,584	44,827	41	8,155	64,179	82	11,486	698	500	710	84.5	0.1	15.4	84.7	0.1	15.2	21.1
22	6,923	57,246	1,850	9,740	85,330	2,291	16,190	671	808	602	83.2	2.7	14.1	82.2	2.2	15.6	15.0
23	4,068	35,558	18	5,809	54,247	16	10,614	655	1,125	547	85.9	0.1	14.0	83.6	--	16.4	15.9
24	--	—	—	—	—	—	—	—	—	—	—	—	--	—	—	—	—
25	7,274	64,762	1,149	14,276	99,840	1,870	21,338	649	614	669	80.8	1.4	17.8	81.2	1.5	17.3	16.9
26	7,471	78,614	1,307	13,850	128,952	2,209	20,082	610	592	690	83.8	1.4	14.8	85.2	1.5	13.3	20.2
27	6,524	58,318	10,959	2,992	89,944	16,003	3,551	648	685	842	80.7	15.2	4.1	82.1	14.6	3.3	16.8
28	7,079	72,264	5,905	1,737	113,630	9,064	2,479	636	651	701	90.4	7.4	2.2	90.8	7.2	2.0	17.7
29	7,322	86,270	5,168	3,774	138,039	8,562	4,245	625	604	889	90.6	5.4	4.0	91.5	5.7	2.8	20.6
30	7,283	79,785	1,883	950	130,867	3,000	1,573	610	628	604	96.6	2.2	1.2	96.6	2.2	1.2	18.6
10days	57,528	577,644	28,280	61,283	905,028	43,097	91,558	638	656	669	86.6	4.2	9.2	87.0	4.1	8.9	18.1
Monthly Total	130,104	1,400,305	62,102	140,547	2,219,092	91,941	204,099	631	675	689	87.4	3.9	8.7	88.2	3.7	8.1	19.3
5 / 1	7,920	91,127	7,888	1,479	140,188	12,309	2,034	650	641	727	90.7	7.8	1.5	90.7	8.0	1.3	19.5
2	2,518	28,240	1,950	529	46,384	3,054	921	609	639	574	91.9	6.3	1.7	92.1	6.1	1.8	20.0
3	7,319	87,948	4,413	3,032	141,522	5,903	4,166	621	748	728	92.2	4.6	3.2	93.3	3.9	2.8	20.7
4	7,669	93,218	4,928	2,786	154,050	8,739	4,221	623	564	660	92.3	4.9	2.8	92.2	5.2	2.6	21.8
5	7,534	99,255	4,821	5,087	154,380	6,836	5,872	643	705	866	90.9	4.4	4.7	92.4	4.1	3.5	22.2
6	7,632	101,337	3,171	4,265	151,142	4,828	5,442	670	657	784	93.2	2.9	3.9	93.6	3.0	3.4	21.1
7	7,685	93,634	6,011	3,134	152,653	9,710	3,537	613	619	886	91.1	5.8	3.1	92.0	5.9	2.1	21.6
8	7,711	90,659	9,519	2,719	144,545	15,683	4,074	627	607	667	88.1	9.3	2.6	88.0	9.5	2.5	21.3
9	7,652	90,683	4,044	2,494	142,696	6,733	3,916	635	601	637	93.3	4.1	2.6	93.0	4.4	2.6	20.0
10	8,252	101,361	3,991	3,960	160,414	5,249	5,354	632	760	740	92.7	3.7	3.6	93.8	3.1	3.1	20.7
10days	71,892	877,462	50,736	29,485	1,387,974	79,044	39,537	632	642	746	91.6	5.3	3.1	92.1	5.2	2.7	21.0

JAPANESE TANNER CRAB MOTHER-SHIP. CATCH DATE. 1979 (SOUTH OF 58°N)

	Pulling Pots	Catch Weight (Kg) Opilio	Bairdi	Hybrid	Catch Number Opilio	Bairdi	Hybrid	Average Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
3/11																	
12																	
13																	
14																	
15																	
16	3,632	31,332	-	673	47,472	-	1,020	660	-	660	97.9	-	2.1	97.9	-	2.1	13.5
17	1,258	10,766	-	124	16,312	-	188	660	-	660	98.9	-	1.1	98.9	-	1.1	13.1
18	1,708	21,103	-	1,067	30,147	-	1,524	700	-	700	95.2	-	4.8	95.2	-	4.8	18.5
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10days	6,598	63,201	-	1,864	93,931	-	2,732	673	-	682	97.1	-	2.9	97.2	-	2.8	14.7
21	3,890	31,584	-	906	45,774	-	1,313	690	-	690	97.2	-	2.8	97.2	-	2.8	12.1
22	4,335	36,965	-	255	56,869	-	393	650	-	649	99.3	-	0.7	99.3	-	0.7	13.2
23	4,309	37,586	-	1,494	52,202	-	2,076	720	-	720	96.2	-	3.8	96.2	-	3.8	12.6
24	2,818	25,684	-	1,351	36,175	-	1,902	710	-	710	95.0	-	5.0	95.0	-	5.0	13.5
25	4,255	41,079	-	911	60,411	-	1,339	680	-	680	97.8	-	2.2	97.8	-	2.2	14.5
26	2,640	23,440	-	90	34,471	-	132	680	-	682	99.6	-	0.4	99.6	-	0.4	13.1
27	3,146	36,973	-	1,152	53,584	-	1,670	690	-	690	97.0	-	3.0	97.0	-	3.0	17.6
28	3,394	29,854	-	1,661	44,557	-	2,480	670	-	670	94.7	-	5.3	94.7	-	5.3	13.9
29	3,857	36,553	-	557	52,976	-	807	690	-	690	98.5	-	1.5	98.5	-	1.5	13.9
30	4,092	37,922	-	918	55,767	-	1,351	680	-	679	97.6	-	2.4	97.6	-	2.4	14.0
31	3,915	37,847	-	273	51,145	-	369	740	-	740	99.3	-	0.7	99.3	-	0.7	13.2
10days	40,651	375,487	-	9,568	543,931	-	13,832	690	-	692	97.5	-	2.5	97.5	-	2.5	13.7
Monthly Total	47,249	438,688	-	11,432	637,862	-	16,564	688	-	690	97.5	-	2.5	97.5	-	2.5	13.9
4/1	3,611	35,395	-	325	47,831	-	439	740	-	740	99.1	-	0.9	99.1	-	0.9	13.4
2	2,568	26,721	-	424	37,111	-	590	720	-	719	98.4	-	1.6	98.4	-	1.6	14.7
3	3,976	38,102	-	833	55,220	-	1,208	690	-	690	97.9	-	2.1	97.9	-	2.1	14.2
4	3,929	43,502	-	833	60,419	-	1,157	720	-	720	98.1	-	1.9	98.1	-	1.9	15.7
5	3,813	37,231	-	1,234	50,313	-	1,667	740	-	740	96.8	-	3.2	96.8	-	3.2	13.6
6	3,565	35,580	-	935	49,416	-	1,299	720	-	720	97.4	-	2.6	97.4	-	2.6	14.2
7	3,049	32,943	-	77	45,755	-	106	720	-	726	99.8	-	0.2	99.8	-	0.2	15.0
8	3,753	32,583	-	567	43,445	-	755	750	-	751	98.3	-	1.7	98.3	-	1.7	11.8
9	3,987	30,670	-	-	42,597	-	-	720	-	-	100.0	-	-	100.0	-	-	10.7
10	3,814	31,964	-	86	47,006	-	126	680	-	683	99.7	-	0.3	99.7	-	0.3	12.4
10days	36,065	344,691	-	5,314	479,113	-	7,347	719	-	723	98.5	-	1.5	98.5	-	1.5	13.5

JAPANESE TANNER CRAB MOTHER-SHIP. CATCH DATA.1979 (SOUTH OF 58°N)

	Pulling Pots	Catch Weight (kg) Opilio	Bairdi	Hybrid	Catch Number Opilio	Bairdi	Hybrid	Arerage Weight (g) OP	B	HY	Comparison Percentage Weight OP	B	HY	Number OP	B	HY	C.P.U.E.
4 /11	3,809	31,675	–	155	43,391	–	212	730	–	731	99.5	–	0.5	99.5	–	0.5	11.4
12	3,983	36,935	–	–	49,247	–	–	750	–		100.0	–	–	100.0	–	–	12.4
13	4,118	44,444	–	1,216	56,980	–	1,558	780	–	780	97.3	–	2.7	97.3	–	2.7	14.2
14	4,232	45,661	–	354	61,703	–	479	740	–	740	99.2	–	0.8	99.2	–	0.8	14.7
15	4,330	45,126	–	469	63,559	–	659	710	–	712	99.0	–	1.0	99.0	–	1.0	14.8
16	4,139	40,625	–	940	56,423	–	1,306	720	–	720	97.7	–	2.3	97.7	–	2.3	13.9
17	3,781	36,322	–	238	50,447	–	331	720	–	719	99.3	–	0.7	99.3	–	0.7	13.4
18	3,247	38,566	–	109	56,714	–	161	680	–	677	99.7	–	0.3	99.7	–	0.3	17.5
19	2,684	27,148	–	162	38,237	–	228	710	–	711	99.4	–	0.6	99.4	–	0.6	14.3
20	3,344	32,325	–	–	48,977	–	–	660	–	–	100.0	–	–	100.0	–	–	14.6
10days	37,667	378,827	–	3,643	525,678	–	4,934	721	–	738	99.0	–	1.0	99.1	–	0.9	14.1
21	2,921	29,141	–	464	42,855	–	682	680	–	680	98.4	–	1.6	98.4	–	1.6	14.9
22																	
23																	
24																	
25		(north of 58°N)															
26																	
27																	
28																	
29																	
30																	
10days	2,921	29,141	–	464	42,855	–	682	680	–	680	98.4	–	1.6	98.4	–	1.6	14.9
Monthly Total	76,653	752,659	–	9,421	1,047,646	–	12,963	718	–	727	98.8	–	1.2	98.8	–	1.2	13.8

Table

CATCH DATA BY ½° X 1° AREAS THROUGH MAY 10, 1979

	175-00 W		174-00 W		173-00 W		172-00 W
	1979	1978	1979	1978	1979	1978	
No. of Pot Lifts	1,664		384				
Catch Wt. (tons)	27.224		6.833				
Catch Number	50,415	———	10,486	———			
C.P.U.E.	30.3		28.2				59-00 N
No. of Pot Lifts	168,103	121,697	17,470	7,309			
Catch Wt. (tons)	1,976.953	1,467.392	188.696	99.654			
Catch Number	3,141,879	1,931,570	282,273	129,090			
C.P.U.E.	18.7	15.9	16.2	17.7			58-30 N
No. of Pot Lifts	76,805	65,510	102,371	181,030		4,230	
Catch Wt. (tons)	820.368	900.724	1,000.919	2,388.674		71.180	
Catch Number	1,301,442	1,133,220	1,531,695	2,974,780	———	89,240	
C.P.U.E.	16.9	17.3	15.0	16.4		21.1	58-00 N
No. of Pot Lifts			88,316				
Catch Wt. (tons)			849.570				
Catch Number			1,207,422	———			
C.P.U.E.			13.7				57-30 N
No. of Pot Lifts			35,586				
Catch Wt. (tons)			362.630				
Catch Number			362,630	———			
C.P.U.E.			14.2				57-00 N

For Staff Review only.

Agenda 13.

3/21/79

Possible Options for Management of the Japanese Tanner Crab Fishery in the Eastern Bering Sea in 1979

Tanner Crab Plan Development Team

Dr. Reeves

North Pacific Fishery Management Council
333 West 4th Avenue
Anchorage, Alaska

Possible Options for Management of the Japanese Tanner Crab Fishery in the eastern Bering Sea in 1979

The 1978 National Marine Fisheries Service trawl survey in the eastern Bering Sea indicates that stocks of C. opilio have decreased in abundance (table 1) and changed their distribution (figure 1) since the last comprehensive survey in 1975. Calculations of ABC based on the 1978 data indicate that the 15,000 mt FAC for Japan may not be achieved north of 58° N latitude (table 2). Initial data from the 1979 Japanese fishery (table 3) tend to corroborate the survey findings. Thus, it is possible that the Japanese Tanner crab industry may request an additional[1/] expansion of fishing grounds south of 58° to increase their catches.

The purpose of this report is to present options for dealing with this situation if it arises. Any options, however, must be considered against the background of current and future development of the U.S. Tanner crab fishery. Figure 2 shows the extent and concentrations of the U.S. C. bairdi fishery for the last three years. Areas of heavy catch and effort (shaded areas) have remained relatively stable. However, the extent of the fishery has expanded, primarily to the north. The 1978 fishery occurred close to the 58° line in several areas.

The first reported U.S. directed catch of C. opilio occurred in 1978. The extent and concentration of this fishery is shown on figure 3. Intentions to further increase the harvest of C. opilio have been expressed by the U.S. industry[2/]. This, in conjunction with the 1978 information of the distribution of large male C. opilio, which shows heavy concentrations between

1/ An amendment to the Tanner Fishery Management Plan allowing a Japanese fishery south of 58° and west of 173°E longitude was approved in early March 1979.

2/ Testimony of industry representatives at the December 1978 meeting of the Alaska Board of Fisheries, Juneau, AK

57° and 58° (figure 4), points to a possible northern expansion of the C. opilio fishery in 1979. Thus, many areas in the region directly south of 58° appear to be of high interest to the U.S. fleet.

Owing to the apparent changes in abundance and distribution of C. opilio, maintaining the status quo in terms of fishing grounds and FAC available to the Japanese fleet has possible adverse implications for management policy currently in the FMP. For example, if the total FAC is taken from areas currently available (north of 58° and south of 58°, west of 173° longitude) and distribution data from the 1978 survey is verified by the fisheries, then the optimum exploitation rate of .58 specified in the FMP would be exceeded. The magnitude of this problem is tempered by the fact that there is a divergent view that feels the .58 figure is too low. Additionally, overexploitation of a small part of the stock may not be significant in terms of the viability of the entire stock.

With the foregoing alternatives in mind, the following options are proposed:

Option I - Maintain the [line at 58° N.] [status quo.]

This would result in no direct conflicts with the U.S. fleet. However, overexploitation of that portion of the stock north of 58°N is a possibility. To avoid this, the FAC could be reduced to around 5,500 mt and/or the Japanese fleet encouraged to explore in areas not surveyed, i.e., between 164° and 170°E longitude.

Option II - Allow the Japanese fleet south of 58° and east of 173°E after the U.S. fleet leaves the area

This would result in no direct conflict with the U.S. fleet, should not result in overexploitation of the stock, and would provide data on CPUE

comparisons north and south of 58° which would be useful in stock evaluation. The timing of this extension of fishing grounds, however, would be dependent on the timing of the U.S. fleet operations on C. bairdi and C. opilio.

Option III - Allow the Japanese fleet south to 57°30' and east to 164°.

This would result in utilization of fishing grounds not fished by the U.S. fleet during the 1978 season, but could lead to gear conflicts if the U.S. fleet operated here in 1979. However, it should not result in overexploitation of the stock and would presumably provide more timely CPUE comparisons north and south of 58°.

Table 1. Comparisons of trawl area-swept estimates of abundance for *C. opilio*, eastern Bering Sea.

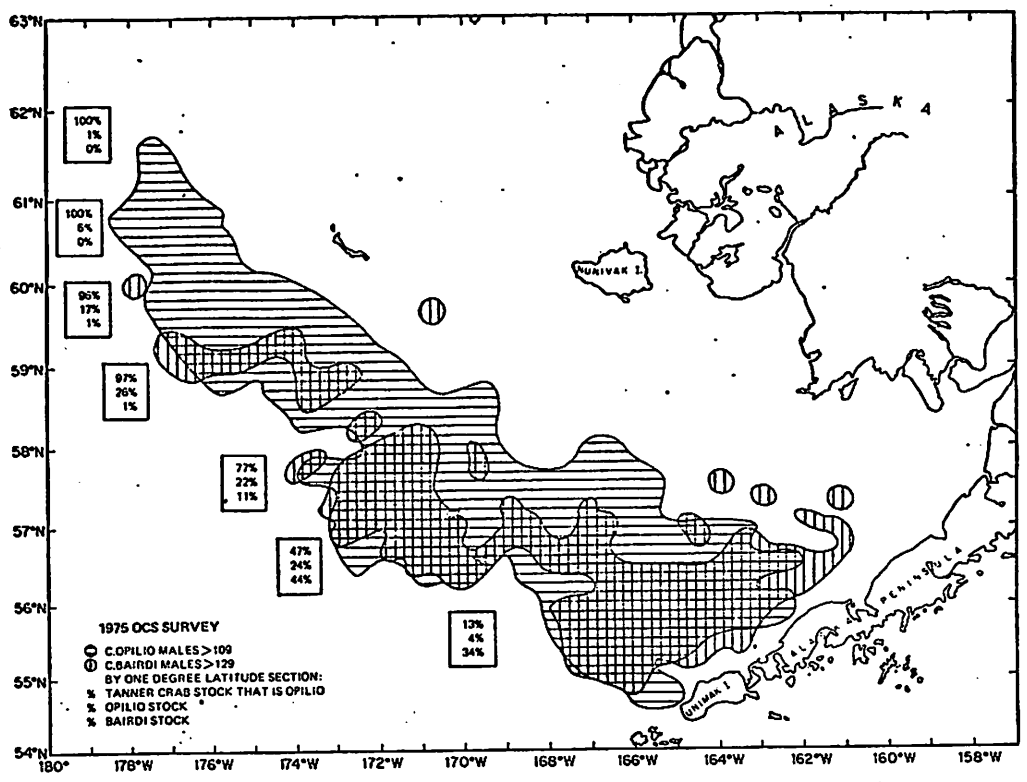
Year	Size Group	Millions of crabs	Average weight (lbs.)	Millions of pounds
1975	> 115	431	1.79	772
1978	> 99	187	1.26	235

Table 2. ABC estimates for *C. opilio*, eastern Bering Sea, by degree of latitude

Degree of North Latitude	ABC (Millions of lbs.)	ABC (Metric tons)	Percent of Total ABC
59°01'-60°00'	4.7	2127	3
58°01'-59°00'	7.4	3357	6
57°01'-58°00'	83.5	37867	61
56°01'-57°00'	32.5	14729	24
54°30'-56°00'	8.2	3732	6
Total	136.3	61812	100

Table 3.--Comparisons of catch rates for the Japanese crab mothership fishery, between 1978 and 1979

Week	Dates	1978 Average daily catch (mt)	Cumulative average (mt)	Week	Dates	1979 Average daily catch (mt)	Cumulative average (mt)	% Change
1	3/12-3/18	41.25	41.25	1	2/24-3/2	26.91	26.91	-35%
2	3/19-3/25	87.47	64.37	2	3/3-3/9	51.27	40.94	-36%
3	3/26-4/1	94.23	74.32	3	3/10-3/16	67.82	50.68	-32%



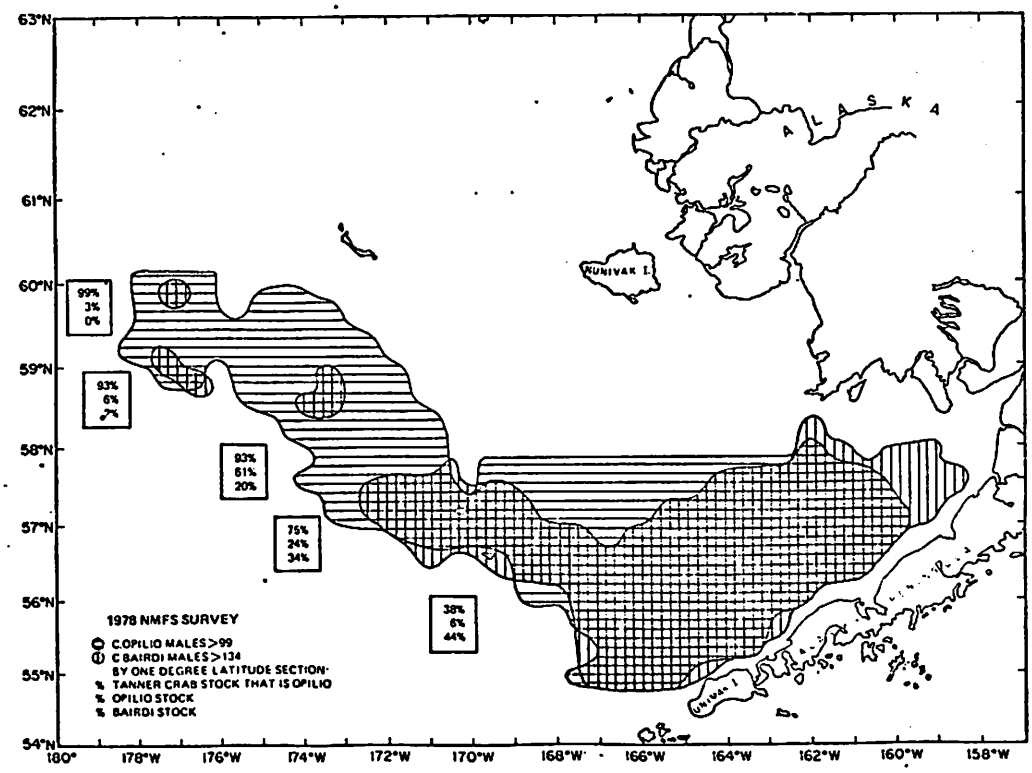


Figure 1. Comparisons of distribution of C. bairdi and C. opilio in the eastern Bering Sea, 1975 (top) and 1978 (bottom).

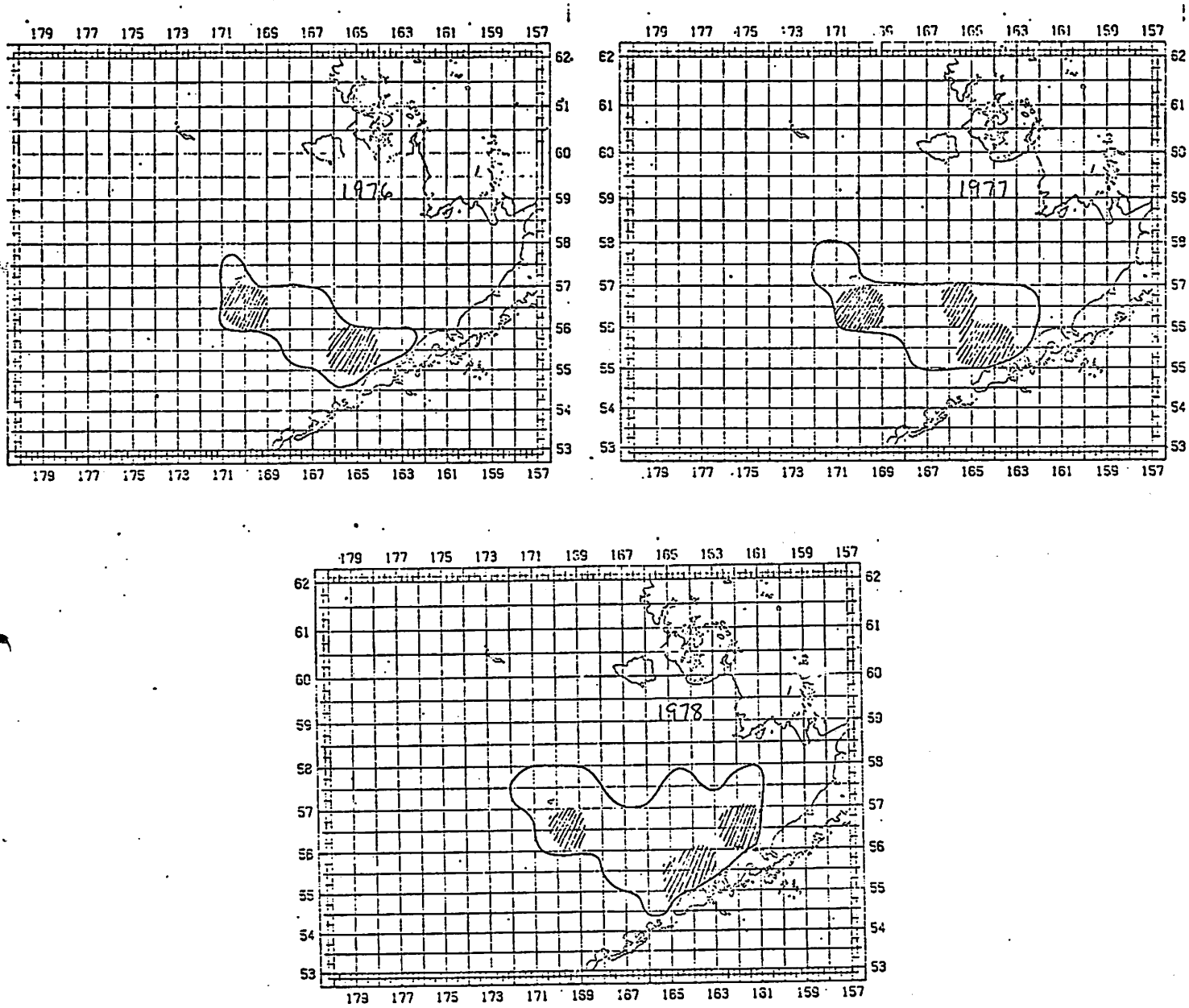


Figure 2.--Extent and concentration of catch and effort (shaded areas) of the U.S. C. bairdi fishery, 1976-78.

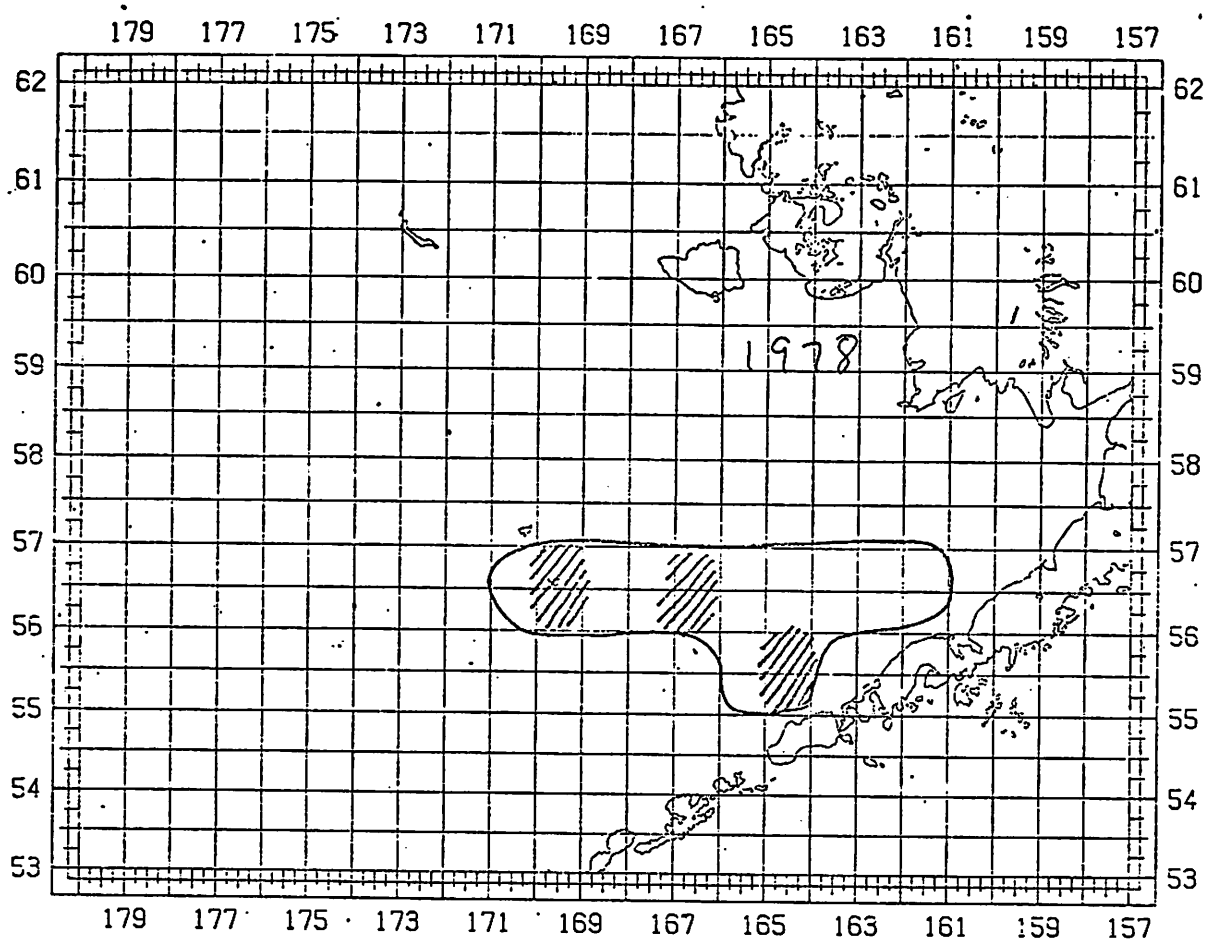


Figure 3.--Extent and concentrations of catch and effort (shaded areas) of the U.S. C. opilio fishery, 1978.

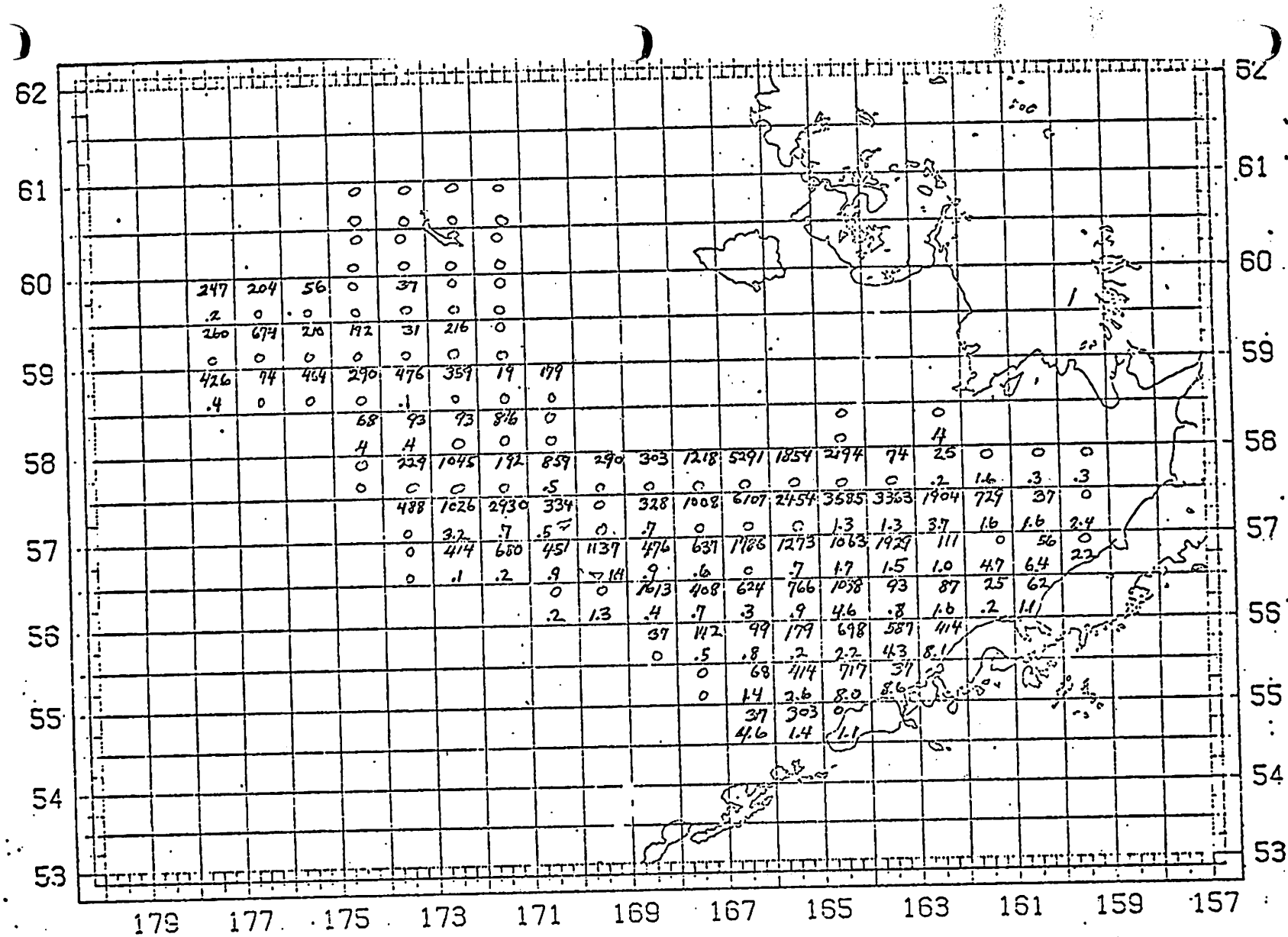


Figure 4. Distribution of 1979 estimated ABC (MT) for C. opilio in the eastern Bering Sea by 1/2° X 1° degree rectangles (Lower number in each rectangle is percent of legal male C. bairdi estimated for that rectangle).

Agenda #13

May 1979

FILE	ACT	INFO	ROUTE TO	INITIAL
				3

MAY 13 1979

cc: Council (603)

PRELIMINARY WESTWARD REGIONAL

TANNER CRAB CATCH

FOR WEEK ENDING May 13, 1979

DISTRICT	SEASON GUIDELINE	WEEKLY TOTAL	SEASON ACCUMULATIVE	COMMENTS
Kodiak	20 - 35	0	29,129,751	1
South Peninsula	20 - 30	427,124	10,645,468	1
Eastern Aleutians	0	13,767	1,229,112	2
Western Aleutians	0	NF	197,244	
Bering Sea				
C. bairdi	40 - 70			
Southeastern		1,540,417	35,587,343	
Pribilof		119,374	2,547,428	2 3
Total Bering Bairdi		1,659,791	38,134,771	
C. opilio	0			
Southeastern		3,610,821	12,730,845	
Pribilof		1,970	163,645	
Total Bering Opilio		3,612,791	12,894,490	
TOTAL BERING SEA		5,272,582	51,029,261	
REGIONAL TOTAL		5,713,473	92,230,836	

COMMENTS:

[1]Season closed May 15.

[2]Corrected figures.

	Vessels	Bairdi Crab	Pot lifts	CPUE
[3]C. bairdi	13	222,097	5,451	41
C. bairdi C. opilio	40	320,953	15,856	20

A closure announcement has been made to close the Bering Sea District to C. bairdi fishing at 12:00 noon May 24, 1979.