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**RESEARCH VESSEL SALMONID CPUE
IN RELATION TO THE NORTHERN BOUNDARY
OF THE SQUID DRIFTNET FISHERY**

by

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RESEARCH VESSEL SALMONID CPUE IN RELATION TO THE NORTHERN BOUNDARY OF THE SQUID DRIFTNET FISHERY

ABSTRACT

Research vessel gillnet catch per unit effort (CPUE) from 1972-1989 is presented in tabular form for six salmonid species by latitude and month for easy comparison with the northern boundary of the Japanese high seas squid driftnet fishery.

Because of bycatch of salmonids by high seas squid driftnet fisheries, the relative abundance of salmonids in and near the squid fishery area is of interest. This document presents salmonid catch per unit effort (CPUE) calculated from Japanese salmon and squid research vessels. The values are arranged by latitude and month so that CPUE can be compared with the northern boundary of the Japanese high seas squid driftnet fishery. Because the tables were prepared for general use by the Commission and the Sub-Committee on Salmon, no interpretation of the results is made.

Gillnet catch data from 1972-1989 from Japanese salmon research vessels and from 1984-1989 from Japanese squid research vessels were used. Because of problems in the reporting of steelhead catches, only data from 1981-1989 were used for steelhead. Records for total gillnet catch (Z999 records) were used for both effort and salmon catch tallies. Data were stratified by species, month, 1° latitude from 39°N to 54°N, and two longitudinal regions (170°E-170°W and 170°W-145°W) corresponding to the western and eastern fishery regions which have different northern boundaries in July and August. Data are presented for six (June-November) of the seven months in which the fishery operates. No research vessel operations were conducted in the fishery area in December, but very little fishing takes place in that month. CPUE was calculated as total catch for each species divided by total number of tans fished in each stratum and is expressed in the tables as catch per tan for each species. The calculations are presented by species in Tables 1-6.

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Table 1. Driftnet effort in tans and mean catch of sockeye salmon per tan in combined sampling of Japanese salmon (1972-89) and squid (1984-1989) research vessels between 39°N and 54°N, 170°E and 145°W. Horizontal bars denote monthly northern fishery boundary.

°N	June		July		August		September		October		November	
	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE
	<u>170°E - 170°W</u>											
54	4241	1.2846	2879	0.4908	257	0.0506						
53	6452	1.6386	1069	0.4051	255	0.0196						
52	4317	2.3831	1694	2.0697	60	0.9833						
51	5681	2.1516	14823	2.4936	1007	2.9583	410	0.9780				
50	15281	1.2362	24326	2.5002	1450	1.5386	150	0.7333				
49	12573	0.8486	15444	0.8987	732	0.5232	370	0.2054				
48	9649	0.7474	11717	0.2756	2680	0.0507	180	0.0278				
47	11341	0.6702	13173	0.0420	1546	0.0039						
46	11603	0.4789	12901	0.0127	1005	0.0070	180	0.0000			184	0.0163
45	13132	0.2414	16910	0.0039	824	0.0000	60	0.0000			200	0.0000
44	12015	0.0777	6974	0.0000	522	0.0000	120	0.0000			84	0.0000
43	12399	0.0135	6200	0.0000	751	0.0000	120	0.0000			184	0.0000
42	9062	0.0000	3250	0.0000	913	0.0000	220	0.0000			184	0.0000
41	1721	0.0000	3283	0.0000	717	0.0000					100	0.0000
40	1052	0.0000	2442	0.0000	717	0.0000					100	0.0000
39	1454	0.0000	1429	0.0000	291	0.0000					100	0.0000
	<u>170°W - 145°W</u>											
54	1231	2.9058	775	3.1961								
53	406	1.2143	687	1.8617								
52	292	0.2945	637	2.3093								
51	90	0.8889	1002	2.2395								
50	90	0.7444	742	1.0148								
49	90	0.2667	476	0.5483								
48	935	0.4235	473	0.3340								
47	650	0.2323	219	0.0091	392	0.0204						
46	654	0.1927	300	0.2333	897	0.0000						
45	752	0.0372	319	0.0721	797	0.0000	159	0.0000	180	0.0000		
44	545	0.0000	675	0.0000	699	0.0000	159	0.0000	59	0.0000		
43	692	0.0014	769	0.0000	496	0.0000	60	0.0000				
42	90	0.0000	1075	0.0000	598	0.0000	338	0.0000				
41	100	0.0000	774	0.0000	298	0.0000	60	0.0000				
40	100	0.0000	399	0.0000	200	0.0000						
39	94	0.0000	673	0.0000	100	0.0000						

Table 2. Driftnet effort in tans and mean catch of chum salmon per tan in combined sampling of Japanese salmon (1972-89) and squid (1984-1989) research vessels between 39°N and 54°N, 170°E and 145°W. Horizontal bars denote monthly northern fishery boundary.

°N	June		July		August		September		October		November	
	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE
<u>170°E - 170°W</u>												
54	4241	0.5659	2879	2.2237	257	4.3619						
53	6452	0.6787	1069	1.3134	255	0.8039						
52	4317	1.4807	1694	0.7143	60	1.1500						
51	5681	1.3603	14823	1.3894	1007	0.7309	410	1.2976				
50	15281	0.9872	24326	1.1017	1450	0.7524	150	0.4600				
49	12573	1.2337	15444	1.0772	732	1.5082	370	0.7378				
48	9649	1.4503	11717	1.0857	2680	0.8407	180	0.5667				
47	11341	1.2345	13173	0.9547	1546	1.0705						
46	11603	0.9079	12901	0.9573	1005	0.4766	180	0.7611			184	0.7880
45	13132	0.7984	16910	0.4895	824	0.3495	60	0.0000			200	0.0000
44	12015	0.5337	6974	0.3797	522	0.0000	120	0.0000			84	0.0000
43	12399	0.3991	6200	0.4082	751	0.0093	120	0.0000			184	0.0000
42	9062	0.2373	3250	0.1178	913	0.0000	220	0.0000	100	0.0000	100	0.0000
41	1721	0.0889	3283	0.0064	717	0.0000			100	0.0000	184	0.0000
40	1052	0.0390	2442	0.0000	717	0.0000			100	0.0000	184	0.0000
39	1454	0.0000	1429	0.0000	291	0.0000			100	0.0000	184	0.0000
<u>170°W - 145°W</u>												
54	1231	1.3688	775	2.3665	392	0.1122						
53	406	0.8399	687	0.6638	897	0.1171			180	0.0056		
52	292	0.7603	637	1.0157	797	0.0000	159	0.0000	59	0.0000		
51	90	1.5111	1002	0.9521	699	0.0200	159	0.0000				
50	90	1.3889	742	0.6860	496	0.0000	60	0.0000				
49	90	0.3667	476	0.6345	598	0.0000	338	0.0000				
48	935	1.9455	473	0.6025	298	0.0000	60	0.0000				
47	650	0.9462	219	0.4475	200	0.0000						
46	654	0.8471	300	0.5633	100	0.0000						
45	752	0.6662	319	0.0345	797	0.0000						
44	545	0.5284	675	0.1407	699	0.0200						
43	692	0.2731	769	0.1352	496	0.0000						
42	90	0.1222	1075	0.0000	598	0.0000						
41	100	0.0000	774	0.0000	298	0.0000						
40	100	0.0000	399	0.0000	200	0.0000						
39	94	0.0000	673	0.0000	100	0.0000						

Table 3. Driftnet effort in tans and mean catch of pink salmon per tan in combined sampling of Japanese salmon (1972-89) and squid (1984-1989) research vessels between 39°N and 54°N, 170°E and 145°W. Horizontal bars denote monthly northern fishery boundary.

°N	June		July		August		September		October		November	
	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE
	<u>170°E - 170°W</u>											
54	4241	0.7461	2879	1.7690	257	0.0156						
53	6452	1.7480	1069	0.1085	255	0.0000						
52	4317	1.5119	1694	0.0945	60	0.0167						
51	5681	2.3167	14823	2.0907	1007	0.1092	410	0.0634				
50	15281	2.1315	24326	0.9795	1450	0.0379	150	0.0000				
49	12573	2.0394	15444	0.7919	732	0.0027	370	0.0027				
48	9649	1.7061	11717	0.6004	2680	0.0343	180	0.0000				
47	11341	1.3397	13173	0.3329	1546	0.0142						
46	11603	1.1300	12901	0.2097	1005	0.0010	180	0.0000				
45	13132	0.7690	16910	0.0984	824	0.0000	60	0.0000			184	0.0109
44	12015	0.4565	6974	0.0612	522	0.0000	120	0.0000			200	0.0000
43	12399	0.2421	6200	0.0066	751	0.0013	120	0.0000			84	0.0000
42	9062	0.1321	3250	0.0412	913	0.0000	220	0.0000			184	0.0000
41	1721	0.0070	3283	0.0052	717	0.0000			100	0.0000	100	0.0000
40	1052	0.0000	2442	0.0000	717	0.0000			100	0.0000	184	0.0000
39	1454	0.0000	1429	0.0000	291	0.0000			100	0.0000	184	0.0000
	<u>170°W - 145°W</u>											
54	1231	0.0739	775	1.0026								
53	406	0.2143	687	1.0277								
52	292	0.5925	637	0.9513								
51	90	4.9778	1002	1.8912								
50	90	1.9667	742	0.7938								
49	90	3.0333	476	0.3319								
48	935	0.8406	473	0.0550								
47	650	0.3846	219	0.0046	392	0.0000						
46	654	0.1560	300	0.0100	897	0.0000						
45	752	0.7074	319	0.0000	797	0.0000	159	0.0000	180	0.0000		
44	545	0.0569	675	0.0015	699	0.0000	159	0.0000	59	0.0000		
43	692	0.2500	769	0.0000	496	0.0000	60	0.0000				
42	90	0.0222	1075	0.0009	598	0.0000	338	0.0000				
41	100	0.0200	774	0.0000	298	0.0000	60	0.0000				
40	100	0.0000	399	0.0000	200	0.0000						
39	94	0.0000	673	0.0000	100	0.0000						

Table 4. Driftnet effort in tans and mean catch of coho salmon per tan in combined sampling of Japanese salmon (1972-89) and squid (1984-1989) research vessels between 39°N and 54°N, 170°E and 145°W. Horizontal bars denote monthly northern fishery boundary.

°N	June		July		August		September		October		November	
	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE
	<u>170°E - 170°W</u>											
54	4241	0.0000	2879	0.0132	257	0.0000						
53	6452	0.0017	1069	0.0075	255	0.0000						
52	4317	0.0002	1694	0.0579	60	0.0500						
51	5681	0.0014	14823	0.3935	1007	0.9643	410	0.0610				
50	15281	0.0016	24326	0.5487	1450	0.4234	150	0.0133				
49	12573	0.0041	15444	1.2066	732	0.2432	370	0.0081				
48	9649	0.0037	11717	1.3289	2680	1.1836	180	0.0000				
47	11341	0.0151	13173	1.1841	1546	1.2678						
46	11603	0.6049	12901	0.9147	1005	0.0756	180	0.0056				
45	13132	1.0135	16910	0.8859	824	0.2330	60	0.0000			184	0.0272
44	12015	1.2481	6974	0.5149	522	0.0000	120	0.0000			200	0.0000
43	12399	1.3986	6200	0.2303	751	0.0000	120	0.0000			84	0.0000
42	9062	1.1634	3250	0.0831	913	0.0011	220	0.0000	100	0.0000	184	0.0000
41	1721	0.3114	3283	0.0244	717	0.0000			100	0.0000	100	0.0000
40	1052	0.0675	2442	0.0000	717	0.0000			100	0.0000	184	0.0000
39	1454	0.0103	1429	0.0000	291	0.0000			100	0.0000	184	0.0000
	<u>170°W - 145°W</u>											
54	1231	0.0008	775	0.3226								
53	406	0.0000	687	0.4294								
52	292	0.0000	637	0.5165								
51	90	0.0000	1002	0.6737								
50	90	0.0000	742	0.8167								
49	90	0.0000	476	0.2920								
48	935	0.0160	473	0.1755								
47	650	0.0354	219	0.7260	392	0.0179						
46	654	0.1621	300	0.2000	897	0.0022						
45	752	0.5612	319	0.0094	797	0.0000	159	0.0000	180	0.0056		
44	545	0.2202	675	0.0133	699	0.0014	159	0.0000	59	0.0000		
43	692	0.5780	769	0.4603	496	0.0000	60	0.0000				
42	90	0.4556	1075	0.0000	598	0.0000	338	0.0000				
41	100	0.0000	774	0.0000	298	0.0000	60	0.0000				
40	100	0.0000	399	0.0000	200	0.0000						
39	94	0.0000	673	0.0000	100	0.0000						

Table 5. Driftnet effort in tans and mean catch of chinook salmon per tan in combined sampling of Japanese salmon (1972-89) and squid (1984-1989) research vessels between 39°N and 54°N, 170°E and 145°W. Horizontal bars denote monthly northern fishery boundary.

°N	June		July		August		September		October		November	
	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE
	<u>170°E - 170°W</u>											
54	4241	0.0384	2879	0.0865	257	0.0272						
53	6452	0.0580	1069	0.0384	255	0.0000						
52	4317	0.0917	1694	0.0325	60	0.0667						
51	5681	0.0123	14823	0.0385	1007	0.0427	410	0.0024				
50	15281	0.0083	24326	0.0358	1450	0.0814	150	0.0067				
49	12573	0.0099	15444	0.0757	732	0.0273	370	0.0027				
48	9649	0.0104	11717	0.1037	2680	0.0425	180	0.0000				
47	11341	0.0346	13173	0.0791	1546	0.0259						
46	11603	0.0472	12901	0.0391	1005	0.0040	180	0.0000				
45	13132	0.0483	16910	0.0235	824	0.0000	60	0.0000			184	0.0000
44	12015	0.0282	6974	0.0050	522	0.0000	120	0.0000			200	0.0000
43	12399	0.0120	6200	0.0027	751	0.0000	120	0.0000			84	0.0000
42	9062	0.0029	3250	0.0006	913	0.0000	220	0.0000			184	0.0000
41	1721	0.0000	3283	0.0003	717	0.0000			100	0.0000	100	0.0000
40	1052	0.0000	2442	0.0000	717	0.0000			100	0.0000	184	0.0000
39	1454	0.0000	1429	0.0000	291	0.0000			100	0.0000	184	0.0000
	<u>170°W - 145°W</u>											
54	1231	0.0171	775	0.0077								
53	406	0.0025	687	0.0262								
52	292	0.0000	637	0.0942								
51	90	0.0111	1002	0.0509								
50	90	0.0000	742	0.0189								
49	90	0.0000	476	0.0126								
48	935	0.0064	473	0.0085								
47	650	0.0108	219	0.0091	392	0.0000						
46	654	0.0138	300	0.0167	897	0.0000						
45	752	0.0186	319	0.0000	797	0.0000	159	0.0000	180	0.0000		
44	545	0.0000	675	0.0000	699	0.0000	159	0.0000	59	0.0000		
43	692	0.0043	769	0.0000	496	0.0000	60	0.0000				
42	90	0.0000	1075	0.0000	598	0.0000	338	0.0000				
41	100	0.0000	774	0.0000	298	0.0000	60	0.0000				
40	100	0.0000	399	0.0000	200	0.0000						
39	94	0.0000	673	0.0000	100	0.0000						

Table 6. Driftnet effort in tans and mean catch of steelhead per tan in combined sampling of Japanese salmon (1981-89) and squid (1984-1989) research vessels between 39°N and 54°N, 170°E and 145°W. Horizontal bars denote monthly northern fishery boundary.

°N	June		July		August		September		October		November	
	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE	Tans	CPUE
<u>170°E - 170°W</u>												
54	1064	0.0000	2083	0.0010								
53	1216	0.0000	264	0.0000								
52	920	0.0000	132	0.0000								
51	1613	0.0000	4334	0.0039								
50	3234	0.0000	8832	0.0125								
49	2782	0.0004	2581	0.0174								
48	2469	0.0061	3023	0.0761	1648	0.0540						
47	2751	0.0273	3837	0.0792	652	0.0414						
46	2502	0.0492	5176	0.0864	310	0.0290	180	0.0000				
45	3801	0.0760	5147	0.0800	565	0.0195	60	0.0000			184	0.0000
44	3419	0.0904	3865	0.0401	397	0.0000	120	0.0000			200	0.0000
43	3600	0.0822	4764	0.0065	526	0.0000	120	0.0000			84	0.0000
42	2419	0.0570	2651	0.0019	690	0.0000	220	0.0000	100	0.0000	184	0.0000
41	1160	0.0043	2855	0.0000	591	0.0000			100	0.0000	100	0.0000
40	574	0.0000	2308	0.0000	591	0.0000			100	0.0000	184	0.0000
39	1016	0.0000	1001	0.0000	194	0.0000			100	0.0000	184	0.0000
<u>170°W - 145°W</u>												
54	220	0.0000	645	0.0992								
53	110	0.0000	557	0.0969								
52			637	0.1319								
51			872	0.1950								
50			742	0.3598								
49			346	0.3208								
48			345	0.0986								
47			219	0.1918	392	0.0051						
46			300	0.0733	897	0.0022						
45	100	0.0800	319	0.0282	797	0.0013	159	0.0000	180	0.0000		
44			675	0.0119	699	0.0000	159	0.0000	59	0.0000		
43	200	0.0100	500	0.0000	496	0.0000	60	0.0000				
42			1075	0.0000	598	0.0000	338	0.0000				
41	100	0.0000	774	0.0000	298	0.0000	60	0.0000				
40	100	0.0000	399	0.0000	200	0.0000						
39	94	0.0000	673	0.0000	100	0.0000						