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Catch and Effort Statistics from the 1978 International Squid
(*Illex illecebrosus*) Fishery in Subarea 4

by

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Introduction

The squid fishery has traditionally been a Canadian bait fishery until 1970. Increased interest by other nations resulted in fluctuating catch levels until 1975 (Amaratunga *et al*, 1978). During 1978, the fishery remained at approximately the same level as in 1977. This sustained high catch rate has precipitated a new enthusiasm in this growing fishery.

Waldron (1979) has dealt with the 1978 trends and dynamics and it is the intent of this paper to present only a cursory coverage.

Data Source

The catch data were obtained from weekly vessel reports submitted by all countries operating in the Canadian zone (Table 1). The Canadian catch statistics were compiled from weekly reports submitted by the various plants engaged in developmental charters with foreign fleets. These latter results are preliminary and subject to change as more precise data is made available (Table 2).

Effort data was collected in a similar manner as the catch. However, effort reported by those countries participating in more than one fishery was adjusted to observed effort and also standardized to USSR tonnage class 7 vessels (Table 3).

Catch and Effort Distribution

The major concentration of squid were on the Sable Island Bank at depths of 150-250 meters (Fig. 1). The fishery increased after July 16 and started

to decrease after October 1 (Fig. 2). The major participants in the fishery had obtained the bulk of their quotas by that time and the sustained level of catches were primarily Canadian.

The effort directed towards the fishery did not peak when the highest catches occurred. Effort was sustained later in the year due to the large input of developmental charters (Fig. 3).

The reported catch for all foreign vessels fishing in 4VWX was 27,007 mt while the Canadian catch from charters was 24,315 mt for a total offshore of 51,322 mt. Landings by inshore vessels in the Maritimes was 1,038 mt. The Newfoundland Canadian catch in Subarea 3 amounted to 39,122 mt. This would bring the total Canadian catch from inshore and offshore for Subareas 3 and 4 to 64,475 mt. The total catch for inshore and offshore squid (*Illex illecebrosus*) is 98,590 mt (data presented to this meeting).

Amaratunga, *et al.* (1978) reported preliminary catch figures for 1977 of 29,678 mt for the Newfoundland inshore fishery, 40,935.9 mt for the international fishery in Subareas 3 and 4 and 8,034.1 mt for the Canadian offshore fishery in Subareas 3 and 4. The total figure was 78,648.0 mt. This figure was subsequently revised to 80,633 mt. The 1978 catch was approximately 18% higher than that reported in 1977. Waldron (1979) reported removals for 261.1×10^6 individuals based upon 51,322 mt in Div. 4VWX. Extrapolation to the total fishery would indicate 501.5×10^6 individuals were removed for the total squid fishery in Subareas 3 and 4 during 1978.

References

- Amaratunga, T. M. Roberge and L. Wood. 1978. A study of the 1977 International catch statistics for the squid (*Illex illecebrosus*) fishery in ICNAF Subareas 3 and 4. ICNAF Res. Doc. 78/II/3, Serial No. 5155.
- Milligan, M. R. and D. E. Waldron. 1979. Weekly observed and adjusted length frequency samples collected during the 1978 International observer program. (Unpublished data.)
- Waldron, D. E. 1979. Assessment of the 1978 4VWX squid (*Illex illecebrosus*) fishery. ICNAF Res. Doc. 79/II/19, Serial No. 5345.

Table 1. 1978 reported bi-weekly squid (*Illex*) catch and effort for ICNAF Div. 4VWX.

Bi-week ending	CANADA		GROUP A ¹		GROUP B ²		GROUP A + B		TOTAL		
	Catch (m.t.)	Days	Catch (m.t.)	Days	Catch (m.t.)	Days	Catch (m.t.)	Days	Catch (m.t.)	Days	C/F
16	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	7.2	2	7.2	2	7.2	2	3.6
20	-	-	-	-	53.2	14	53.2	14	53.2	14	3.8
22	-	-	-	-	56.9	14	56.9	14	56.9	14	4.1
24	-	-	-	-	67.4	17	67.4	17	67.4	17	4.0
26	-	-	-	-	276.0	41	276.0	41	276.0	41	6.7
28	-	-	154.5	27	417.9	60	572.4	87	572.4	87	6.6
30	135.2	3	2322.5	132	8119.6	361	10442.1	493	10577.3	496	21.3
32	392.2	24	971.9	85	1971.5	182	2943.4	267	3335.6	291	11.5
34	1316.7	51	1043.7	112	1338.3	48	2382.0	160	3698.7	211	17.5
36	3207.8	142	975.7	103	1276.2	85	2251.9	188	5459.7	330	16.5
38	5304.5	235	1827.8	138	870.5	62	2698.3	200	8002.8	435	18.4
40	5768.2	233	1555.9	142	340.7	18	1896.6	160	7664.8	393	20.0
42	2641.4	186	828.8	90	312.2	25	1141.0	115	3782.4	301	12.6
44	4747.7	154	372.0	26	1351.8	60	1723.8	86	6471.5	240	27.0
46	667.6	68	110.0	11	376.3	26	486.3	37	1153.9	105	11.0
48	104.8	34	8.7	3	-	-	8.7	3	113.5	37	3.0
50	29.0	12	-	-	-	-	-	-	29.0	12	2.4
52	0.5	1	-	-	-	-	-	-	0.5	1	0.5
TOTAL	24,315.6	1143	10171.5	869	16835.7	1015	27007.2	1884	51,322.8	3027	13.14

¹ GROUP A - All Foreign Countries allocated Squid Quotas excluding Bulgaria, Cuba, Japan, USSR

² GROUP B - Cuba, Japan, Bulgaria, USSR.

Table 2. Weekly reported catch statistics from the 1978 Canadian Offshore Squid (Illex illecebrosus) fishery in ICNAF Areas 3 - 4

Area No.	No. Vessels	Directed Squid Effort (days)	Squid Catch (m.t.)	C/F (m.t./day)	BYCATCH (m.t.)					Flounder (unspecified)	Other Ground	
					S.hake	Cod	Pollock	Haddock	Mackerel			Argentine Redfish
30	29	1	0	0.0	-	-	-	-	-	-	-	-
31	1	5	152.63	30.53	-	-	-	-	-	-	-	-
32	1	7	243.02	34.72	-	-	-	-	-	-	-	-
33	1	1	33.78	33.78	-	-	-	-	-	-	-	-
34	1	3	174.2	58.07	-	-	-	-	-	-	-	-
35	2	14	651.73	46.55	-	-	-	-	-	-	-	-
36	2	12	218.2	18.18	0.1	-	-	0.2	-	-	-	-
37	3	7	172.25	24.61	0.1	-	-	0.2	-	-	-	-
38	1	2	8	4	-	-	-	-	-	-	-	-
TOTALS	5	52	1653.81	31.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
4Vn	42	1	-	-	-	-	-	-	-	-	-	-
43	1	2	10.5	5.25	-	-	-	-	-	-	-	-
44	1	6	34.87	5.81	-	-	-	-	-	-	-	-
45	1	5	29.2	5.84	-	-	-	-	-	-	-	-
46	1	6	20.6	3.43	-	-	-	-	-	-	-	-
47	1	7	45.2	6.46	-	-	-	-	-	-	-	-
48	1	2	8.6	4.3	-	-	-	-	-	-	-	-
TOTALS	1	28	148.97	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32	5.32
4VWX	29	2	7.3	3.65	-	-	-	-	-	-	-	-
30	9	1	127.88	14.21	-	-	-	-	-	-	-	-
31	3	10	113.65	11.37	2.5	0.8	-	0.7	-	-	-	0.4
32	2	14	278.5	19.89	10.7	0.5	0.3	2.5	-	-	-	1.5
33	3	16	515.91	32.24	-	-	-	-	-	-	-	-
34	5	35	800.83	22.88	4.52	-	0.4	-	-	0.1	0.1	-
35	12	47	1232.27	26.22	10.9	0.19	-	0.15	-	-	0.1	3.5
36	20	95	1975.52	20.79	10.06	-	-	-	-	-	-	19.9
37	21	107	3000.89	28.05	46.9	6.7	3.2	1.7	0.5	-	0.3	46.2
38	26	127.5	2303.64	18.06	37.7	0.8	5.2	0.78	-	3	-	29.1
39	28	119	2740.76	23.03	225.12	0.97	1.53	2	-	0.05	0.2	19.6
40	24	114	3027.45	26.56	66.93	0.1	-	0.9	-	2.93	0.3	4.4
41	24	87	834.69	9.59	23.5	0.16	0.69	2.4	-	-	-	4.61
42	27	99	1806.7	18.25	15.17	0.16	-	5.7	-	0.3	-	7.22
43	18	91	2927.63	32.17	9.3	0.5	2.15	0.23	-	0.1	38.3	2
44	13	63	1820.07	28.89	0.91	0.1	0.1	0.54	-	2.00	-	0.1
45	7	33	569.6	17.26	-	1	-	-	-	-	-	-
46	7	35	98	2.8	1.1	0.7	0.4	0.7	-	-	-	-
47	5	22	68.6	3.12	6.2	1	0.7	0.4	-	-	-	-
48	4	12	36.2	3.02	4.9	0.2	0.2	0.5	-	0.6	0	0.1
49	2	8	24.9	3.11	10	0.4	0.1	1	-	3.6	-	0.4
50	3	4	4.1	1.02	4.7	-	-	0.4	-	0.1	0.2	-
51	1	1	0.5	0.5	2.7	0.1	0.4	0.8	-	0.2	-	-
TOTALS	29	1142.5	24315.59	21.282	489.81	8.38	5.37	21.40	0.92	38.64	3.93	138.97

Table 3. Catch, reported effort and adjusted effort for countries participating in the 1978 4VWX squid fishery.

Wk.	CANADA				BULGARIA				CUBA			
	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt.	Report Days	Obser. Adj.	Total Adj.
18	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	0.4	-	3	0.1
22	-	-	-	-	-	-	-	-	2.5	-	6	0.6
24	-	-	-	-	-	-	-	-	0.8	-	1	0.2
26	-	-	-	-	28.0	-	2	4	14.2	-	3	2
28	-	-	-	-	41.0	-	5	3	9.2	-	2	1
30	135.2	3	-	5	417.0	9	13	16	1014.9	50	46	39
32	392.2	24	-	36	248.2	19	15	23	283.6	33	32	26
34	1316.7	51	-	33	-	-	-	-	18.4	7	1	0.5
36	3207.8	142	-	202	-	-	-	-	124.7	15	11	8
38	5304.5	235	-	306	-	-	-	-	527.8	23	36	30
40	5768.2	233	-	534	-	-	-	-	81.9	6	-	8
42	2641.4	186	-	219	-	-	-	-	73.0	11	-	6
44	4747.7	154	-	247	-	-	-	-	449.5	19	-	23
46	667.6	68	-	195	-	-	-	-	115.5	5	-	34
48	104.8	34	-	24	-	-	-	-	-	-	-	-
50	29.0	12	-	12	-	-	-	-	-	-	-	-
52	0.5	1	-	1	-	-	-	-	-	-	-	-
TOTAL	24315.6	1143	-	1814	734.2	28	35	46	2716.4	169	141	178.4

Wk.	FRANCE				FRG				ITALY			
	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt.	Report Days	Obser. Adj.	Total Adj.
18	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
32	172.0	7	-	16	-	-	-	-	-	-	-	-
34	205.0	14	-	5	-	-	-	-	-	-	-	-
36	376.0	21	40	24	-	-	-	-	-	-	-	-
38	760.0	34	34	44	435.0	14	-	25	405.2	61	53	23
40	461.0	20	17	43	141.0	14	-	13	594.9	77	68	56
42	-	-	-	-	244.0	11	10	20	55.0	15	12	5
44	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	1974	96	91	132	820.0	39	10	58	1055.1	153	133	84

Table 3. (Cont'd)

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Wk	JAPAN				POLAND				PORTUGAL			
	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt.	Report Days	Obser. Adj.	Total Ag.
18	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
24	4.1	-	-	1	-	-	-	-	-	-	-	-
26	13.5	7	-	2	-	-	-	-	-	-	-	-
28	132.6	34	37	9	90.2	10	-	6	-	-	-	-
30	834.1	62	75	32	999.8	43	-	39	-	-	-	-
32	356.6	33	37	32	212.9	14	-	19	-	-	-	-
34	322.7	18	22	8	384.0	17	13	10	-	-	-	-
36	202.7	18	14	13	-	-	-	-	-	-	-	-
38	342.7	26	-	20	-	-	-	-	-	-	-	-
40	258.8	12	-	24	-	-	-	-	138.5	11	-	13
42	239.2	14	-	20	-	-	-	-	102.0	14	10	8
44	902.3	41	-	47	-	-	-	-	220.0	14	-	11
46	260.8	21	-	76	-	-	-	-	110.0	11	-	32
48	-	-	-	-	-	-	-	-	8.0	3	-	2
50	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	3870.1	286	185	284	1686.9	84	13	74	578.5	53	10	66

Wk	ROMANIA				SPAIN				USSR			
	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt.	Report Days	Obser. Adj.	Total Adj.	Mt. &c	Report Days	Obser. Adj.	Total Adj.
18	-	-	-	-	-	-	-	-	7.2	-	1.36	-
20	-	-	-	-	-	-	-	-	52.8	-	14	-
22	-	-	-	-	-	-	-	-	54.4	-	14	-
24	-	-	-	-	-	-	-	-	62.5	-	17	-
26	-	-	-	-	5.6	6	-	1	214.7	227	32	-
28	14.0	1	-	1	50.3	20	-	3	235.1	367	16	-
30	895.0	24	-	35	427.7	81	72	17	5853.6	368	237	-
32	71.0	4	-	6	516.0	79	68	47	1083.1	240	98	-
34	-	-	-	-	454.7	88	-	11	997.2	98	25	-
36	-	-	-	-	599.7	82	-	38	948.8	60	60	-
38	-	-	-	-	228.1	29	-	13	Charter c/f	-	17.314	-
40	-	-	-	-	220.3	24	-	20	-	-	10.8	-
42	-	-	-	-	427.8	50	-	35	-	-	12.07	-
44	-	-	-	-	152.0	12	-	8	-	-	19.23	-
46	-	-	-	-	-	-	-	-	-	-	3.43	-
48	-	-	-	-	-	-	-	-	-	-	4.3	-
50	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	980	29	-	42	3082.2	471	140	193	9509.4	1360	581.5	-

Table 3. (Cont'd)

Wk	TOTAL INTERNATIONAL			TOTAL FISHERY		
	Mt.	Sum. Adj.	c/f	Mt.	Sum Adj.	c/f
18	7.2	1	7	7.2	1	7
20	53.2	14	4	53.2	14	4
22	56.9	15	4	56.9	15	4
24	67.4	18	4	67.4	18	4
26	276.0	41	7	276.0	41	7
28	572.4	39	15	572.4	39	15
30	10442.1	415	25	10577.3	420	25
32	2943.4	267	11	3335.6	303	11
34	2382.0	60	40	3698.7	93	40
36	2251.9	143	16	5459.7	345	16
38	2698.3	155	17	8002.8	461	17
40	1896.6	177	11	7664.8	711	11
42	1141.0	94	12	3782.4	313	12
44	1723.8	89	19	6471.5	336	19
46	486.3	142	3	1153.9	337	3
48	8.0	2	4	112.8	26	4
50	-	-	-	29.0	12	2
52	-	-	-	0.5	1	1
TOTAL	27006.5	1672	199	51322.1	3486	202

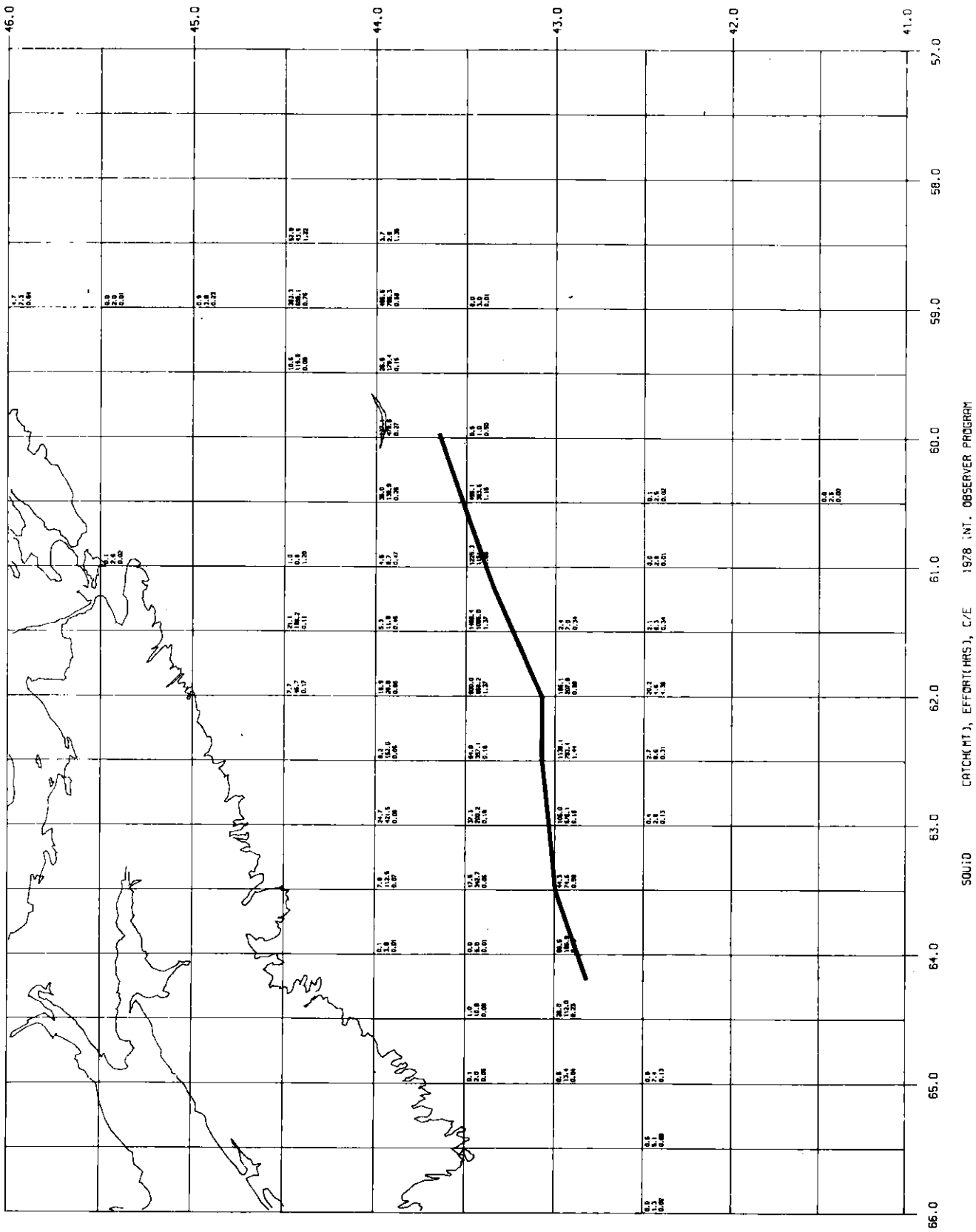


Fig. 1. Distribution of squid catch effort (hrs.) and catch/effort for the 1978 4VWX squid fishery.

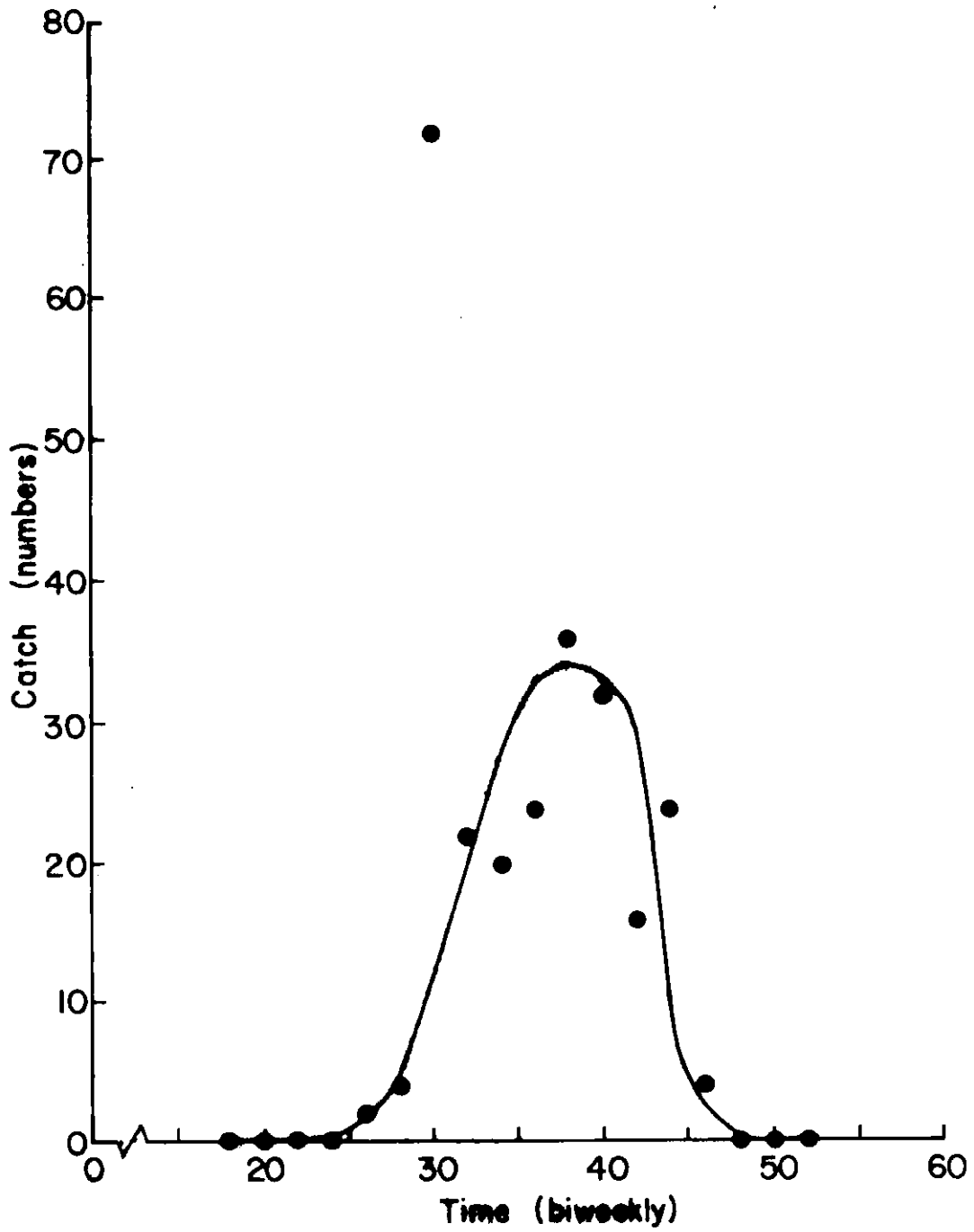


Fig. 2. Catch reported for the 1978 4VWX squid fishery.

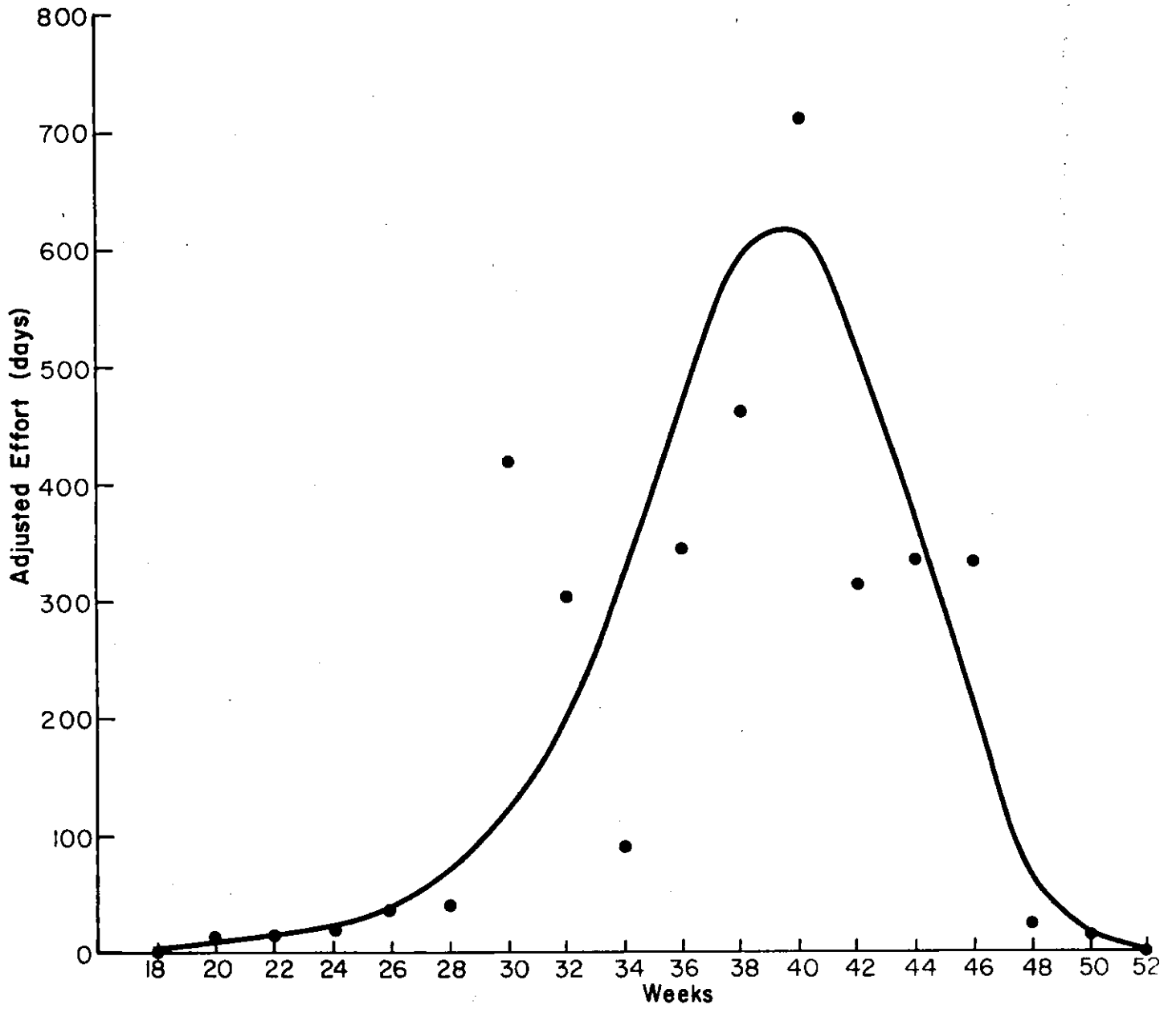


Fig. 3. Adjusted effort for the 1978 4VWX squid fishery.