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Summary of Catch Statistics for the Northern Labrador  
Arctic Charr fishery in 1983

by

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### Abstract

Catch and effort statistics for the northern Labrador Arctic charr fishery are summarized. Total northern Labrador charr landings of 179 t were 26% lower than 1982 landings but only 7% lower than the previous 9 year mean of 191 t. Factors contributing to the decreased catches in 1983 were: lower abundance of Arctic charr available to the inshore fishery, apparent offshore movement of charr, lack of a fishery in the Hebron-Saglek region and reduced effort because of ice conditions along the northern Labrador coast in 1983.

### Résumé

Nous résumons des statistiques sur les prises et sur l'effort de pêche de l'omble chevalier de la zone de pêche du nord du Labrador. Les débarquements totaux d'omble pour le nord du Labrador, qui s'établissaient à 179 t, étaient inférieurs de 26 % aux débarquements de 1982, mais de 7 % seulement à la moyenne des neuf années précédentes, qui était de 191 t. Les facteurs qui ont eu un rôle à jouer dans la baisse des prises en 1983 étaient les suivants: abondance moindre des ombles chevaliers disponibles pour la pêche côtière, déplacement apparent des ombles chevaliers au large, perte d'une pêcherie dans la région de Hebron-Saglek et baisse de l'effort de pêche attribuable à l'état des glaces le long de la côte nord du Labrador en 1983.

## Introduction

Total commercial production of anadromous Arctic charr from the northern Labrador coast has been available since 1942. Catch statistics from individual fishing areas within the Nain fishing region (Fig. 1), which produces 85% of the total catch, have been available since 1974. From 1977 to 1982 more than 200 t of Arctic charr were caught annually in the northern Labrador area making this one of the largest commercial charr fisheries in the world. The highest landings on record were 252 t in 1981, with the lowest catch during the past 30 years of 54 t in 1975.

This paper updates previous reports (Dempson 1982a; Ledrew and Dempson 1982) summarizing Labrador Arctic charr landings and examines reasons for the decline in catches during the past year.

## Methods

Information on the commercial landings of Arctic charr were obtained from Economics Branch of the Department of Fisheries and Oceans. Purchase slips, prepared by Economics, were issued to buyers and were filled out at the time of catch receipt. Information requested included the name of the fisherman, licence number, area where fish were caught, number of nets used, weight of fish landed by size category and species, and total number of each species caught.

Landed catches, were converted to round weight (in kilograms) using the conversion factor: gutted head-on weight  $\times 1.24 =$  round fresh weight (Coady and Best 1976).

Catch per unit effort estimates were derived following the method initiated by Coady and Best (1976) and are expressed in terms of kilograms per man-week fished. Total effort for a one week period, therefore, is the total number of fishermen fishing and landing fish during a one week interval.

Estimates of the area of ice concentration along the Labrador coast north of Latitude 55 were obtained from weekly ice charts produced by the Navy Polar Oceanography Centre, Maryland.

## Results and Discussion

### Total northern Labrador landings

Figure 2 illustrates the commercial production of Arctic charr from 1942-83. Also illustrated are the landings from the Nain and Makkovik fishing regions from 1974-83. The fishery is still characterized by large annual fluctuations in catches with the Nain fishery still producing about 85% of the total northern Labrador production (Table 1).

Landings of Arctic charr in 1983 totalled 179 t and were 26% lower than 1982 landings, but only 7% lower than the previous 9 year mean (191 t, 1974-

82). Both the Nain and Makkovik fisheries decreased by approximately 26%. Landings in the Nain region of 150 t were the lowest since 1976 although effort here decreased by only 6% from 1982. It was the first time since 1976 that total northern Labrador landings were below 200 t.

#### Catch and effort data - area analysis

The Nain fishing region has been subdivided on a geographical basis with a number of specific fishing areas (Fig. 1). Subsequent studies have shown that charr from certain areas, principally the inner bays and fiords, can be differentiated as separate stocks (Dempson 1984; Dempson and Misra 1984). A summary of catch and effort statistics from these individual areas is presented in Table 2.

An examination of Table 2 shows a major shift has occurred in the fishery during the past several years. In 1976-77 approximately 76% of the total landings from the Nain fishing region came from Voisey Bay, Anaktalik Bay, Tikkoatokak Bay, Okak Bay and Napartok Bay (Fig. 1). As a result, a commercial sampling program began on these areas in 1977 (Dempson 1978). Concern for the high exploitation on Arctic charr stocks in the local Nain area (Dempson 1978; Dempson et al. 1979) and later confirmed by subsequent assessments (Dempson 1981, 1982b; Dempson and LeDrew 1982) resulted in the implementation of a quota management system in 1979. The major objective of this quota system was to reduce fishing effort and thus fishing mortality on the charr stocks in the Voisey, Anaktalik, and Tikkoatokak Bay areas. A quota was later applied to the Okak Bay stock in 1981 (Dempson and LeDrew 1982). It was hoped that fishing effort would be transferred and distributed to other areas along the northern Labrador coast. Average annual catch and effort in Voisey, Anaktalik, and Tikkoatokak Bay for the period 1977-79 was 87 t and 248 man-weeks respectively. For the period 1981-83 average annual catch and effort had declined to 41 t and 137 man-weeks.

By 1982 the combined effect of quotas on stocks in the local Nain area and the expansion of the fishery into the Hebron-Saglek region had resulted in a distributional shift in both the catch and effort directed towards the northern Labrador Arctic charr fishery. Catches from the Voisey, Anaktalik, Tikkoatokak, Okak, and Napartok areas now (1982-83) represented only 35% of the total Nain region catch of Arctic charr.

Coincident with the reduced catch and effort in Voisey, Anaktalik, and Tikkoatokak Bays, however, was an increasing catch in the offshore island areas of Dog Island and Black Island (Table 2, Fig. 3). From 1977-79 average annual catch and effort in these two areas combined were 7 t and 124 man-weeks. From 1981-83 average effort increased to only 132 man-weeks per year but catch rose to 16 t. The increased catch per unit effort may suggest that the abundance of charr in these outer areas has increased since 1980 in comparison to pre-1980 years.

Figures 3, 4, and 5 illustrate the change in catch, effort, and catch per unit effort for the Anaktalik, Voisey, and Tikkoatokak group in comparison with Dog Island and Black Island. As shown in Fig. 3 the catch of charr in the offshore areas has been increasing while the total catch from the local Nain

area (specifically these above five areas) has been reduced substantially. Thus the quota management plan would have appeared to have successfully reduced exploitation in this particular area. Similarly effort in the inner bay areas has decreased from the high levels during the late 1970's while effort in the offshore areas has not consistently increased nor decreased (Fig. 4). Catch per unit effort, however, has increased rather steadily in the offshore areas but fluctuated in the inner bays (Fig. 5).

Catch and effort are highly correlated for the Nain region Arctic charr fishery ( $r^2 = 0.87$ ,  $p < 0.01$ ) (Fig. 6). Catch and effort were significantly correlated ( $p < 0.01$ ) for all areas with at least six years of data ( $n = 14$ ) except Dog Island and Tasiuyak. Ten of the twelve areas with significant correlations had  $r^2$  values greater than 0.80 (Table 2). These high correlations between catch and effort do not necessarily mean that catch rates (C/E) are good indices of abundance. Verification would come from examining relationships between catch rates and some other independent estimate of stock abundance. The correlations, however, do suggest a degree of regularity between catch and effort.

We can now examine patterns of these catch rates for specific areas keeping in mind that the changes in the rates may not accurately represent absolute changes in stock abundance.

Catches in Anaktalik Bay were the lowest on record for that area (Table 2). Catch rates similarly were the lowest. The 1983 catch in Voisey Bay was the second lowest on record and again catch rate was down, but not in the same magnitude as for Anaktalik Bay. The same pattern of low catch and decreased catch rate occurred in Tikkoatokak Bay as well. Catch rates were high in Dog Island and Black Island suggesting an offshore movement of charr during the past year.

While landings from Voisey Bay were down, catch, effort and catch per unit effort were high in the adjacent Antons area (Table 2). Tag returns indicate that Voisey Bay charr migrate into the Antons area which is somewhat outside of the typical inner bay areas (Fig. 1). In fact 29% of Voisey Bay tag recaptures were from Antons and 86% of the total returns were from both Antons and Voisey Bay itself.

As previously stated, the catch of charr and effort in Tikkoatokak Bay (16 t) were the lowest since 1974. Much of this effort was redirected into Webb Bay where the catch of 15 t and effort of 56 man-weeks were the highest since 1974 (Table 2). Only 7% of Nain Bay, Fraser River, and Tikkoatokak Bay Arctic charr tag recaptures have come from Webb Bay suggesting that the landings from this bay were largely fish from that same area.

#### Size composition

From 1976 to 1978 approximately 24% of the Arctic charr caught in the Nain fishing region were over 2.3 kg (gutted head-on weight) in size. Since 1979 the percentage of large charr in the commercial catch has decreased to an average of 14% for the period 1980-82. Several specific areas, for example

Voisey Bay and Anaktalik Bay, which previously had over 35% of their landings composed of large charr have now dropped below 20%. The percentage of large charr in the catch from Tikkoatokak Bay has begun to increase slightly during the past two years while remaining relatively constant in both Anaktalik Bay and Voisey Bay. For the entire Nain fishery in 1983, only 8% of the landings were large charr. A direct comparison between the last two years, however, should include the effect of the Hebron-Saglek fishery in 1982. By omitting catches from Hebron Fiord, Domes and Ramah Bay, the 1982 landings would similarly have been composed of only 8% large charr. The northern fishery during 1981 and 1982 in effect kept the percentage of large charr in the total landings from falling to the levels observed in 1983.

#### Factors contributing to decreased catches in 1983

As previously stated, landings in 1983 were 26% lower than in 1982 but only 7% lower than the previous 9 year mean. With catches in both the Nain and Makkovik fisheries down and several individual fishing areas down substantially, it would appear that there was an overall decreased abundance of charr available to the fishery. Other factors besides decreased stock abundance, however, also are believed to have resulted in the lower commercial production of charr during the past year.

Effort was lower in 1983 but only by 6% from 1982. The effect of the delayed opening of the commercial fishery (July 1, 1983) and no fishery in the Hebron-Saglek region likely influenced fishing attitudes of fishermen. More effort was directed into the offshore island areas where, typically, catch rates for charr are lower than in the inner bays where charr are in more confined areas. Also fishermen in the outer areas are more inclined to direct their effort toward catching Atlantic salmon.

During 1982 the expanded Arctic charr fishery which extended from Napartok Bay to Ramah Bay (Fig. 1) took 59% of the total charr catch from the Nain fishing region. These areas were not fished in 1983. This undoubtedly contributed to the decreased catch observed in 1983. Fishermen expecting to go north did not put as much effort into the fishery around Nain until it was obvious that the northern fishery would not occur.

The past year was unusual with respect to ice concentration along the Labrador coast. Table 3 summarizes the area of ice concentration between 55° and 60° latitude from 1979 to 1983. Ice concentrations more than 40 km off of the coast were omitted only when there was an absence of shore fast ice. As can be seen from the table the total ice concentration was substantially greater in 1983 than in any of the previous four years. What is more significant in relation to the fishery was the concentration of ice during the month of July. Offshore areas such as Dog Island, Black Island, Kiglapaits and Cutthroat were affected more than the inner areas. Gear was destroyed and fishermen were prevented from setting nets for short periods of time. Hebron Fiord was for the most part blocked with ice from July 17-22 as was Napartok Bay and the Black Island area around July 28. It was estimated that fishing time and collection services were reduced by approximately 30% during the 1983 fishery owing to coastal ice problems (N. Stagg, Provincial Department of Fisheries, Pers. Comm.).

In summary, the major factors contributing to the decreased landings in the northern Labrador Arctic charr fishery were: lower abundance of charr available to the inshore fishery, apparent offshore movement of charr, lack of fishery in the Hebron-Saglek region and reduced effort because of ice conditions along the northern Labrador coast. Assuming that a fishery will occur in the Hebron-Saglek region in 1984 and that there will be no serious ice problems next year it is expected that landings in 1984 will exceed 1983 levels.

#### References

- Coady, L. W., and C. W. Best. 1976. Biological and management investigations of the Arctic char fishery at Nain, Labrador. Fish. Mar. Serv. Tech. Rep. 624, 103 p.
- Dempson, J. B. 1978. Biological assessment of Arctic char (Salvelinus alpinus L.) stocks and summary of the Atlantic salmon (Salmo salar L.) fishery in northern Labrador. Fish. Mar. Serv. Tech. Rept. 817, 54 p.
1981. Assessment of several northern Labrador Arctic charr stocks. CAFSAC Res. Doc. 81/14. 15 p.
- 1982a. Summary of catch statistics and change in size characteristics of northern Labrador Arctic charr populations. CAFSAC Res. Doc. 82/7. 17 p.
- 1982b. Stock assessment of Tikkoatokak Bay Arctic charr. CAFSAC Res. Doc. 82/5. 19 p.
1984. Identification of anadromous Arctic charr stocks in coastal areas of northern Labrador. In L. Johnson, R. MCV. Clarke and K. E. Marshall [Eds.] Biology of the Arctic charr. Proceedings of the International Symposium on Arctic charr, Winnipeg, Manitoba, May 1981. University of Manitoba Press.
- Dempson, J. B., and L. J. LeDrew. 1982. An assessment of Arctic charr stocks in Voisey Bay, Anaktalik Bay and Okak Bay, northern Labrador. CAFSAC Res. Doc. 82/6. 18 p.
- Dempson, J. B., L. J. LeDrew, and T. Nicholls. 1979. Review of biological information on Arctic char (Salvelinus alpinus) in Labrador and present status of the commercial fishery. Proceedings of the symposium on research in the Labrador coastal and offshore region. Memorial University of Newfoundland. p. 60-74.
- Dempson, J. B., and R. K. Misra. 1984. Identification of anadromous Arctic charr (Salvelinus alpinus) stocks in coastal areas of northern Labrador based on a multivariate statistical analysis of meristic data. Can. J. Zool. In press.

LeDrew, L. J., and J. B. Dempson. 1982. Summary of catch statistics in the northern Labrador Arctic charr fishery. Can. Data Rep. Fish. Aquat. Sci. 353. 52 p.



Table 1. Summary of northern Labrador Arctic charr landings (kg round) by fishing region, 1974-83.

Year	Nain Fishery				Makkovik Fishery			Total catch
	Catch	No. of fishermen	Fathoms of gear licenced	Catch as % of total	Catch	No. of fishermen	Fathoms of gear licenced	
1974	120,414			81	28,133			148,547
1975	44,118			82	9,542			53,660
1976	134,898	101	-	90	15,645			150,543
1977	186,165	128	-	88	24,205			210,370
1978	213,915	141	21,340	86	34,387	149	29,300	248,302
1979	175,263	135	21,320	82	37,693	110	21,225	212,956
1980	167,991	137	23,960	83	35,561	154	30,635	203,552
1981	231,221	131	21,700	92	20,733	154	30,990	251,954
1982	203,012	118	23,600	84	39,163	141	28,200	242,175
1983	149,732	122	24,400	84	29,100	148	29,600	178,832

TABLE 2. ARCTIC CHARR CATCH STATISTICS FOR N. LABRADOR, 1974 - 1983 ;  
SUMMARY OF CATCH, EFFORT, AND SIZE COMPOSITION

r<sup>2</sup> catch  
on effort

YEAR	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	
<b>ANTONS</b>											
CATCH (KG)	9135	3489	3172	2111	4011	19371	8460	7870	6191	23062	0.91 **
EFFORT (MAN-WEEKS)	34	20	6	20	17	63	32	38	24	63	
C/E (KG)	269	174	529	106	236	307	264	207	258	366	
Ø/Ø ) 2.3KG			21.0	24.0	28.0	22.0	14.0	13.0	12.0	9.0	
<b>VOISEY BAY</b>											
QUOTAS						22500	22500	16100	16100	16000	0.90 **
CATCH (KG)	20045	238	12232	22488	33597	21880	11557	16325	7688	2953	
EFFORT (MAN-WEEKS)	64	2	45	56	85	59	52	53	38	17	
C/E (KG)	313	119	272	402	395	371	222	308	202	174	
Ø/Ø ) 2.3KG			42.0	35.0	34.0	32.0	17.0	16.0	17.0	16.7	
<b>AHAKTALIK BAY</b>											
QUOTAS						21500	21500	8660	8660	11000	0.62 **
CATCH (KG)	7821	2548	14670	21604	13075	14913	8045	9157	10836	2359	
EFFORT (MAN-WEEKS)	28	10	45	63	55	76	53	32	27	24	
C/E (KG)	279	255	326	343	238	196	152	286	401	98	
Ø/Ø ) 2.3KG			36.0	38.0	27.0	20.0	12.0	10.0	11.0	10.9	
<b>DOG ISLAND</b>											
CATCH (KG)	2659	653	212	2039	386	1440	3048	1516	1105	6858	0.36 N.S.
EFFORT (MAN-WEEKS)	38	40	11	49	25	61	86	37	38	62	
C/E (KG)	70	16	19	42	15	24	35	41	29	111	
Ø/Ø ) 2.3KG			11.0	9.0	8.0	15.0	11.0	14.0	7.0	7.9	
<b>HAIN BAY</b>											
QUOTAS										5000	0.88 **
CATCH (KG)	12461		3119	8464				5450	85	532	
EFFORT (MAN-WEEKS)	37		10	28				29	1	8	
C/E (KG)	337		312	302				188	85	67	
Ø/Ø ) 2.3KG			16.0	15.0				4.0		2.3	

TABLE 2, CONTINUED ;  
SUMMARY OF CATCH, EFFORT, AND SIZE COMPOSITION

YEAR,	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	r <sup>2</sup> catch on effort
<b>TIKKOATOKAK BAY</b>											
QUOTAS						39500	39500	28500	35000	35000	
CATCH (KG)	9960	27695	31568	39483	55061	37919	42131	28066	28283	16211	0.92 **
EFFORT (MAN-WEEKS)	28	76	81	94	147	108	130	80	75	65	
C/E (KG)	356	364	390	420	374	351	324	351	377	249	
Ø/Ø > 2.3KG			19.0	20.0	18.0	14.0	10.0	5.0	7.0	8.2	
<b>WEBB BAY</b>											
CATCH (KG)	580	833	4550	2516	3472	3035	3008	8100	4607	15055	0.90 **
EFFORT (MAN-WEEKS)	1	5	15	21	16	9	8	29	27	56	
C/E (KG)	580	167	303	120	217	337	376	279	171	269	
Ø/Ø > 2.3KG			21.0	19.0	20.0	39.0	39.0	27.0	11.0	5.4	
<b>BLACK ISLAND</b>											
CATCH (KG)	4264	2101	2725	3389	2966	10632	20051	14413	11602	11028	0.81 **
EFFORT (MAN-WEEKS)	60	62	48	65	81	92	130	94	79	87	
C/E (KG)	71	34	57	52	37	116	154	153	147	127	
Ø/Ø > 2.3KG			8.0	10.0	14.0	7.0	6.0	7.0	8.0	4.2	
<b>KIGLAPAITTS</b>											
CATCH (KG)	5131	1504	6089	5435	12097	17606	16543	21911	8326	20625	0.74 **
EFFORT (MAN-WEEKS)	26	32	59	57	103	120	95	99	34	103	
C/E (KG)	197	47	103	95	117	147	174	221	245	200	
Ø/Ø > 2.3KG			25.0	25.0	34.0	14.0	18.0	12.0	16.0	11.5	
<b>TASIUTAK</b>											
CATCH (KG)	1467		281		2280	1837	1137		1060	1259	0.46 N.S.
EFFORT (MAN-WEEKS)	15		2		9	11	8		6	7	
C/E (KG)	98		141		253	167	142		177	180	
Ø/Ø > 2.3KG			21.0		71.0	34.0	14.0		11.0	12.9	

TABLE 2, CONTINUED )  
SUMMARY OF CATCH, EFFORT, AND SIZE COMPOSITION

YEAR	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	r <sup>2</sup> catch on effort	
<b>MUGFORD</b>												
CATCH (KG)			1970	1374	1148	170	513				15	0.96 **
EFFORT (MAN-WEEKS)			15	9	7	2	5				1	
C/E (KG)			131	153	164	85	103				15	
Ø/Ø > 2.3KG			30.0	36.0	32.0	16.0	15.0					
<b>OKAK BAY</b>												
QUOTAS								27300	27300	21000		0.81 **
CATCH (KG)	34250	2354	17812	27592	36125	26171	17434	11049	9031	30732		
EFFORT (MAN-WEEKS)	105	15	52	107	104	123	65	46	26	147		
C/E (KG)	326	157	343	258	347	213	268	240	347	209		
Ø/Ø > 2.3KG		0	29.0	26.0	18.0	11.0	8.0	10.0	7.0	6.5		
<b>CUTTHROAT</b>												
CATCH (KG)	12641	2703	7526	15488	41146	17803	32397	37263	25699	19043		0.84 **
EFFORT (MAN-WEEKS)	95	47	103	130	267	161	205	172	164	164		
C/E (KG)	133	58	73	119	154	111	158	217	157	116		
Ø/Ø > 2.3KG			17.0	25.0	25.0	12.0	12.0	13.0	15.0	10.1		
<b>HAFARTOK</b>												
CATCH (KG)			28972	28039	8551	2486	752	291	16485			0.96 **
EFFORT (MAN-WEEKS)			124	126	50	33	11	3	60			
C/E (KG)			234	223	171	75	68	97	275			
Ø/Ø > 2.3KG			14.0	22.0	20.0	16.0	13.0	12.0	8.0			
<b>HEBRON FIORD</b>												
QUOTAS									29072	20000		
CATCH (KG)				5957			2915	39901	37822			
EFFORT (MAN-WEEKS)				37				106	98			
C/E (KG)				161				376	386			
Ø/Ø > 2.3KG				16.0			19.0	34.0	23.0			

TABLE 2 , CONTINUED  
SUMMARY OF CATCH, EFFORT, AND SIZE COMPOSITION

YEAR	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	r <sup>2</sup> catch on effort
<hr/>											
DOMES											
CATCH (KG)								5187	2643		
EFFORT (MAN-WEEKS)								19	14		
C/E (KG)								273	189		
Ø/Ø ) 2.3KG								36.0	17.0		
<hr/>											
SAGLEK FIORD											
CATCH (KG)								24722	23791		
EFFORT (MAN-WEEKS)								77	118		
C/E (KG)								321	202		
Ø/Ø ) 2.3KG								18.0	7.0		
<hr/>											
RAMAH											
CATCH (KG)									7758		
EFFORT (MAN-WEEKS)									26		
C/E (KG)									298		
Ø/Ø ) 2.3KG									20.0		
<hr/>											
HAIL FISHERY											
CATCH (KG)	120414	44118	134898	186165	213915	175263	187991	231221	203012	149732	
EFFORT (MAN-WEEKS)	531	309	616	863	966	918	880	914	856	804	0.87 **
C/E (KG)	227	143	219	216	221	191	191	253	237	186	
Ø/Ø ) 2.3KG			24.0	25.0	24.0	17.0	12.0	16.0	13.0	8.3	

\*\*Significant level is P<0.01

Table 3. Summary of the area (square kilometers) of ice coverage along the Labrador coast between 55° and 60° latitude, 1979-83.

Week	1979	1980	1981	1982	1983
June 14-19	59,280	106,704	83,904	130,416	93,024
21-26	40,128	78,432	67,488	147,744	128,592
28-July 3	81,168	73,872	29,184	84,816	122,208
July 5-10	27,360	-	-	31,920	131,328
12-17	5,400	-	-	16,416	80,256
19-24	-	-	-	-	100,320
26-31	-	-	-	-	35,568
Total	213,336	259,008	180,576	411,312	691,296

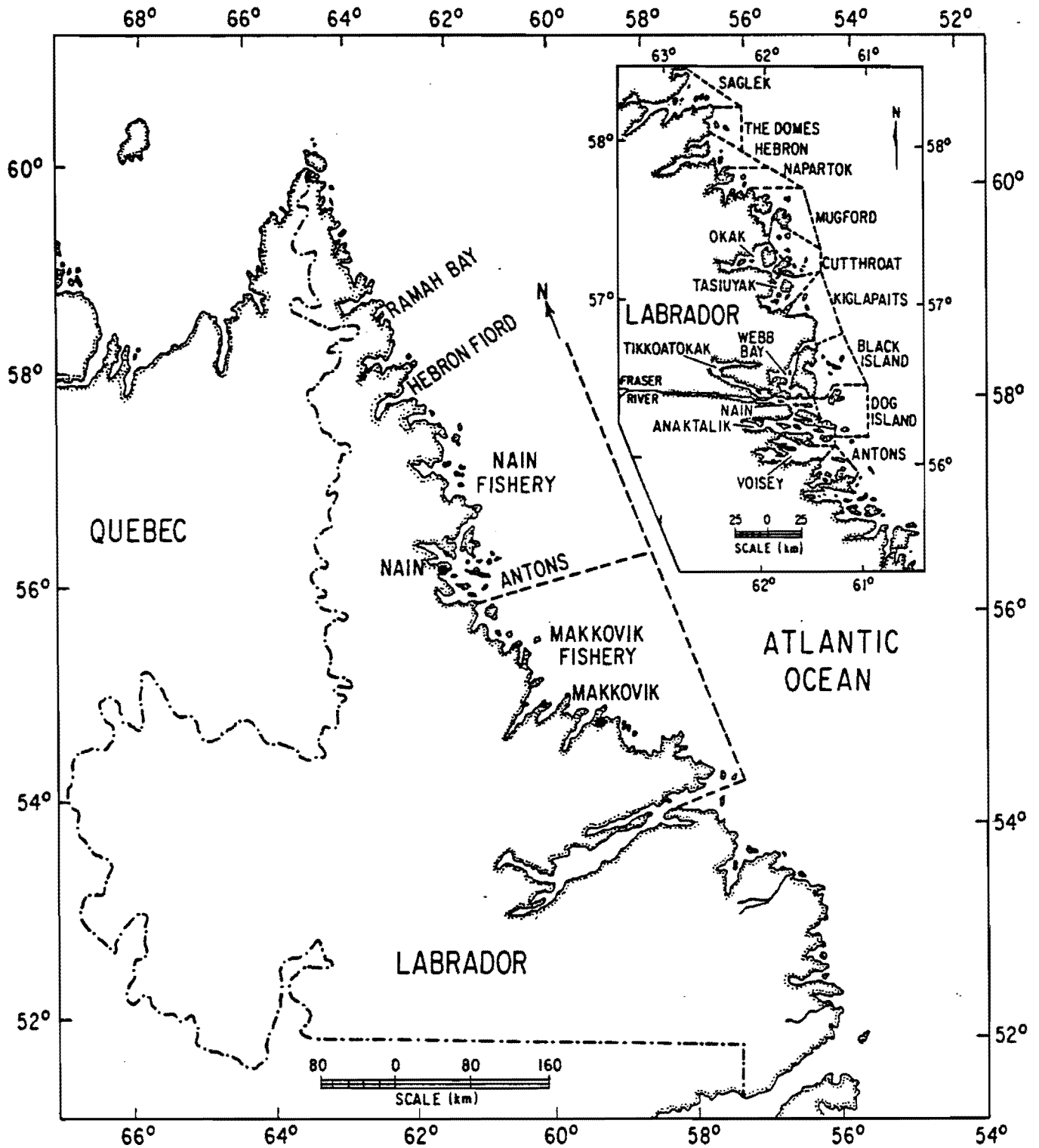


Fig. 1. Location of the Nain and Makkovik Arctic charr commercial fishing regions in northern Labrador. Insert illustrates the fishing area breakdown within the Nain fishing region.

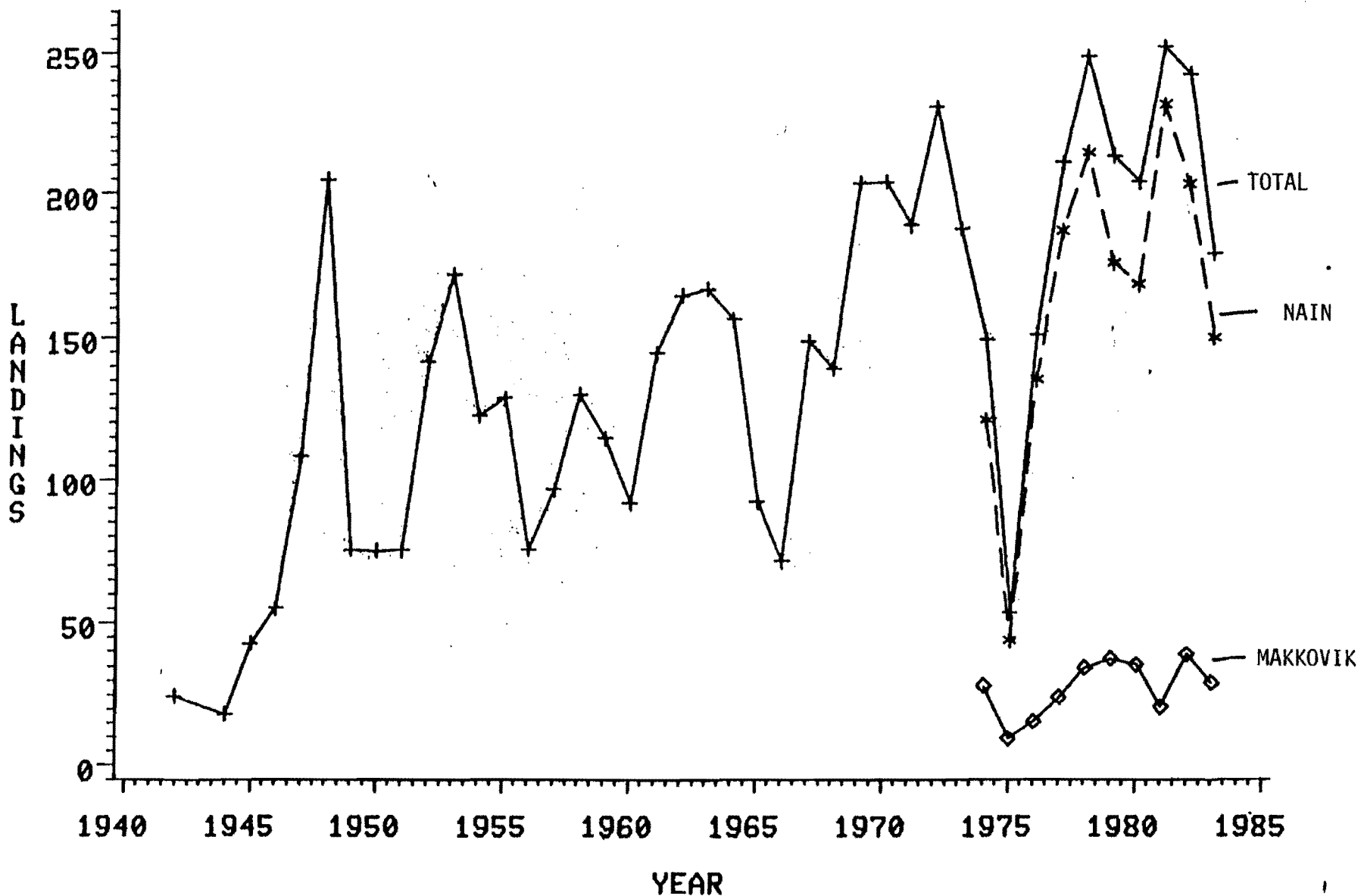


FIG. 2 SUMMARY OF NORTHERN LABRADOR ARCTIC CHARR LANDINGS (METRIC TONNES), 1942-1983



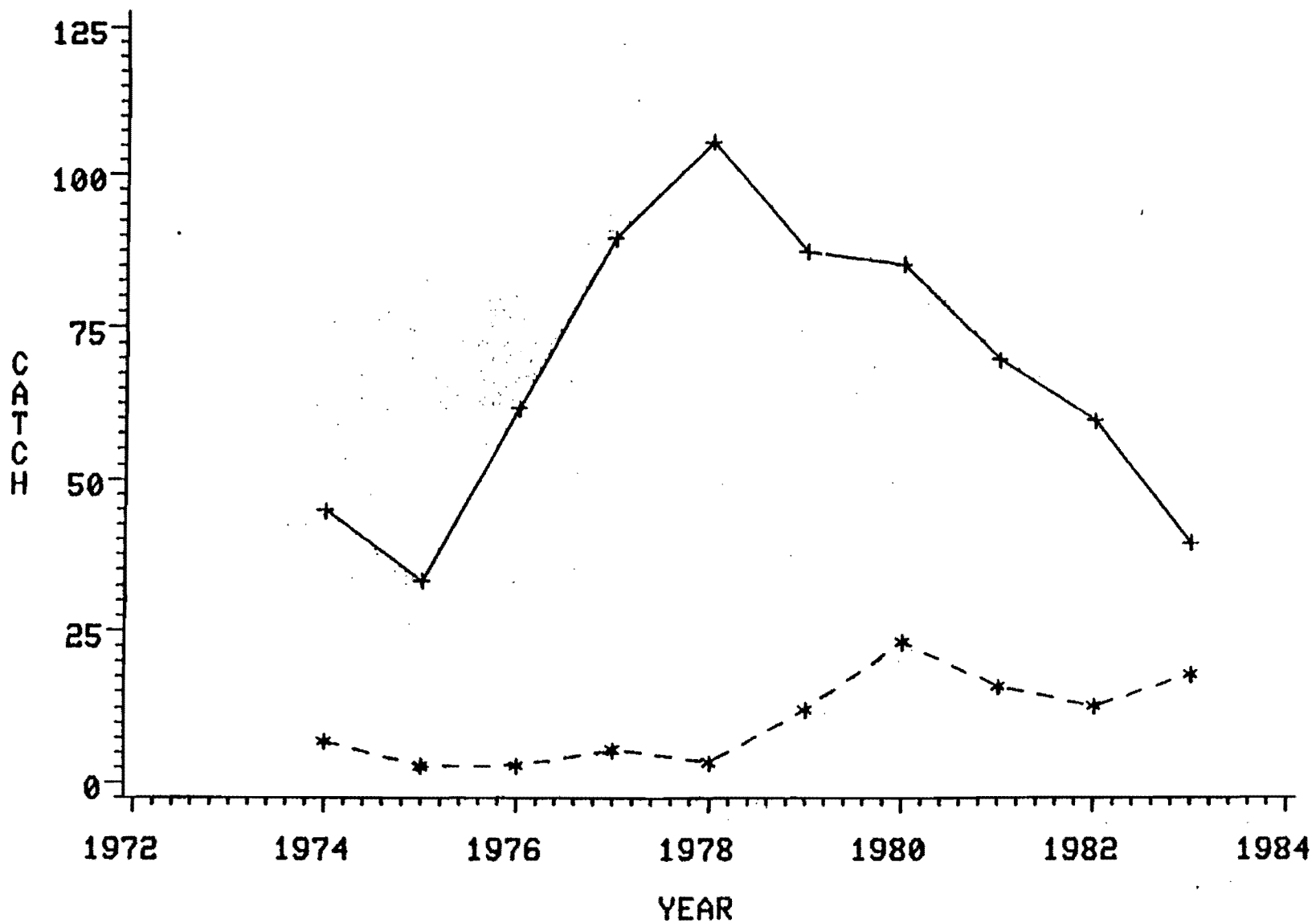
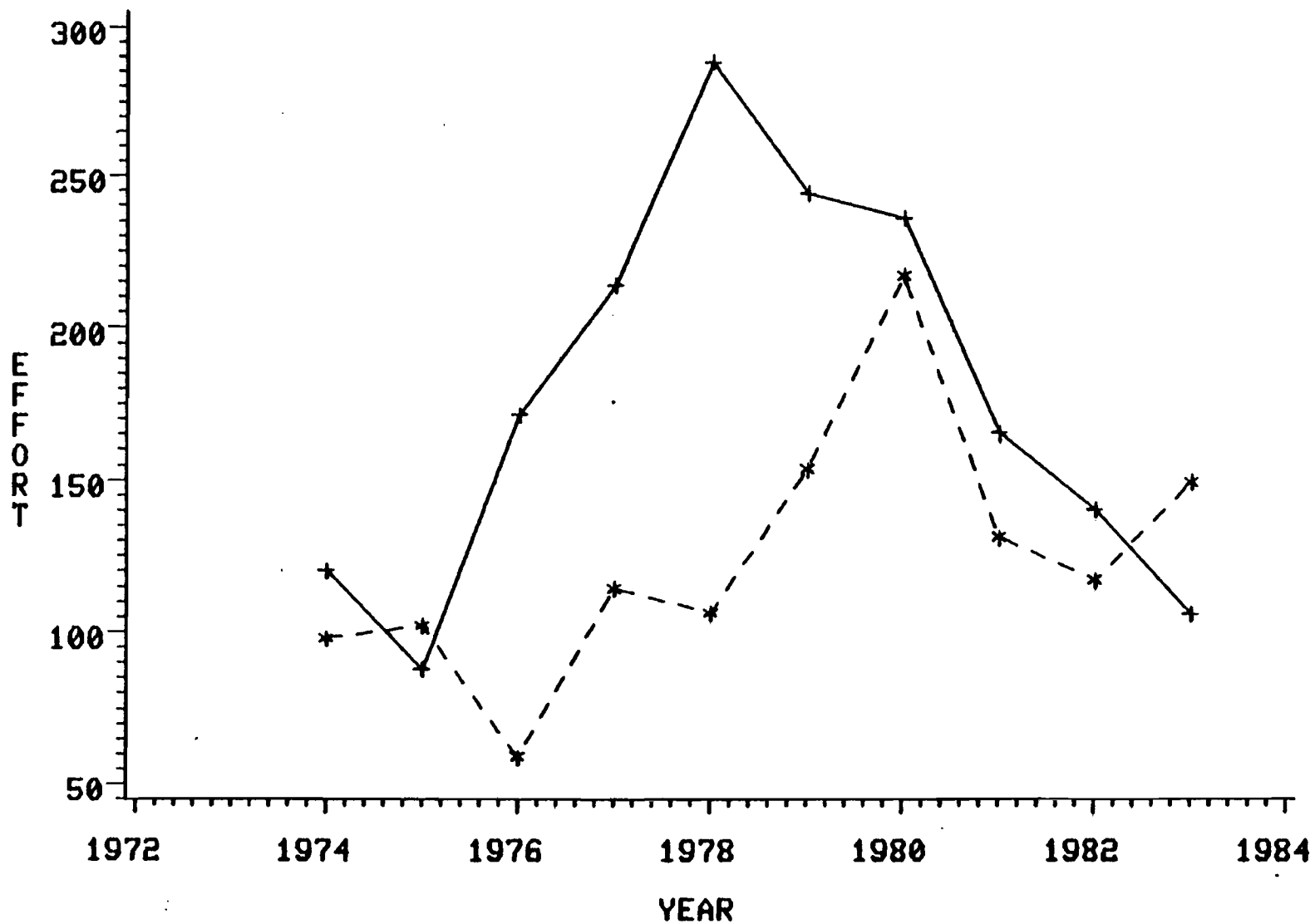


FIG. 3 PLOT OF TOTAL CHARR CATCH (+) (TONNES) FROM INNER AND OUTER AREAS IN RELATION TO OFFSHORE ISLAND CATCH (\*) FOR THE LOCAL NAIN AREA, 1974-1983



**FIG. 4 CHANGE IN TOTAL EFFORT (MAN-WEEKS) FISHED IN INNER AREAS (+) IN RELATION TO EFFORT FISHED ONLY IN OFFSHORE AREAS (\*) FOR 1974-1983**

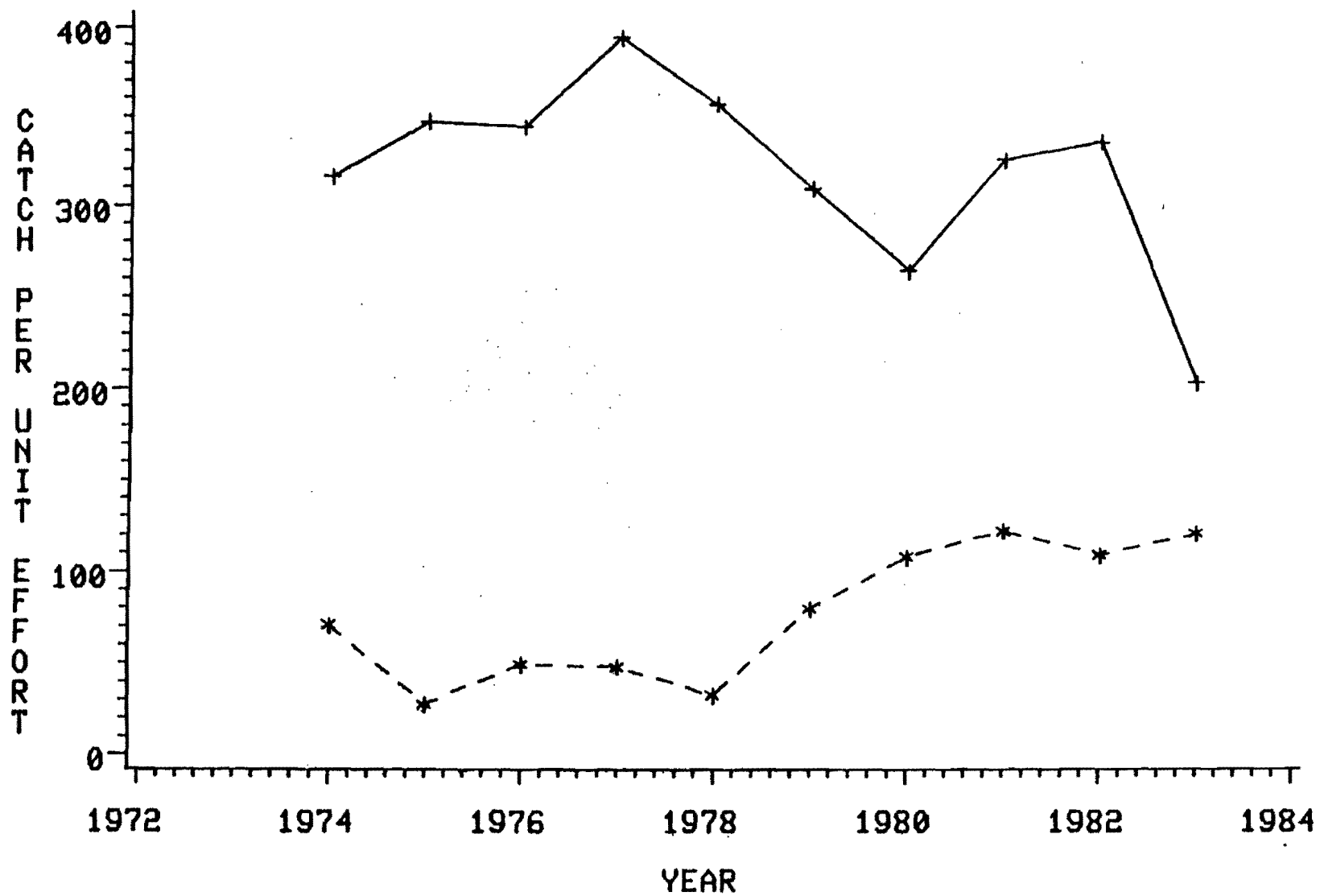


FIG. 5 CHANGE IN CATCH PER UNIT EFFORT (KG/MAN-WEEK)  
FOR INNER BAYS (+) AND OFFSHORE ISLAND AREAS (\*)  
FOR THE LOCAL NAIN FISHERY, 1974-1983

FIG.6 SUMMARY OF ARCTIC CHARR CATCH AND EFFORT DATA FROM THE MAIN FISHING REGION 1974-1983

