COLVILLE RIVER HELMERICKS WINTER FISHERY 2002

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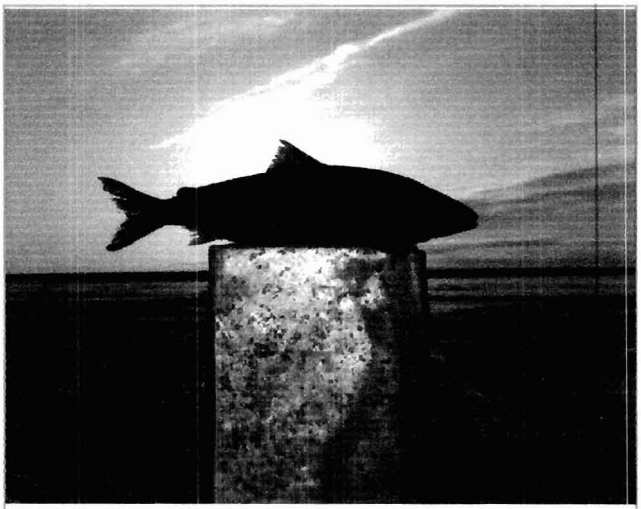
An Overview of the Helmericks Fishery 2002 Season

Freeze-up Conditions

Freeze up was over a week later than last year with the lake freezing on October 7th , and the river channel by the house froze a few days later on October 10th . We had a west wind just before freeze up that was combined with late season melting in the mountains to create moderately high water levels as the river froze. Even with the storm, the river was fresh when we started the fall fishing. A strong east wind early on the 14th of October forced higher salinity water into the lower river delta. Light south west winds for the next few days helped retain the increased salinity, but after October 19th the river slowly freshened until by December 1 salinity levels were close to those at the start of fishing.

This was another season without any large concentrations of glaucous gulls in the delta at freeze up. Those that were present didn't stay long; perhaps the high water and windy conditions made conditions that weren't conducive for good fishing for the gulls.



A New Season Starts

Fishing Effort and Methods

This year's fishing methods and location remained the same as in past years, and the total fishing effort was down 42% from the ten year average, and also 11% below last years effort. I set the first nets of the season, two 3" mesh nets on the 14th of October. Another two 3" nets were set two days later on the 16th. Net number four was fished sporaticly the first couple weeks of fishing to balance time and amount of least cisco and whitefish being caught. Net number four was pulled for the last time on November 2nd , and the other three were pulled on November 22nd, ending the season . The larger 3.25" mesh net was not used this year due to the small average size in the arctic cisco this year, and we were catching plenty of whitefish in the 3" mesh nets. We had a total of 123 net days of fishing, and data was collected over a six week period. This effort was down slightly from last year. With the arctic cisco run down to less than 1 fish per net day there didn't seem to be any economical reason to keep fishing, as we had all the whitefish and least cisco we could sell.

Nets are checked each week day except Sunday, which is set aside to get caught up on other chores. We switch to picking nets every other day when the run slows down, like it does towards the end of the season. Longer sets than two days are usually caused by storms or high temperatures, when the fish are better off left in the cold water than lying on the ice and not freezing. Catch data was recorded for each net by species and net location. Fishing effort is calculated in net days by using the date a net is set, then pulled.

Figure 01

Date	Oct. 14	Oct. 16	Oct. 19	Oct. 28	Nov. 02	Nov. 22
Net #1	3"					3"
Net #2	3"					3"
Net #3		3"				3"
Net #4		3"	3"	3"	3"	
Action Taken	Set	Set	Pulled	Set	Pulled	Pulled

Net Activity

Collection Methods

This year all tagged fish and a small sample of arctic cisco were collected for laboratory analysis. Besides the usual weight and length measurements, otoliths were also collected from the arctic cisco. On the laboratory reports the condition and names of the fish are indicated by the following notations:

ARCS - arctic cisco
BRCS - bering cisco
BDWF - broad whitefish
TND - total net days
PPT - parts per thousand
kg - kilogram
LSCS - least cisco
GRAY-grayling
HBWF - humpback whitefish
CPUE - catch per unit effort
cm - centimeter
mm - millimeter
SO - indicates a spawned out individual
M - a mature fish
M1 - may not spawn the following season
M2 - most likely to spawn the following season
Fat 0-5 - amount of body-cavity fat rated on a scale of 0-5,with 0 being the lowest, or none
Stomach fullness - indicates the amount of retained food
FL - fork length measurement
Wind storm criteria - To be classed as a storm a wind at or above 20 knots is used.

Daily catch data was recorded for each net according to species and number of fish. The nets were picked every day (except Sunday), for the first two weeks then they were picked about every other day for the rest of the season. CPUE is based on a net size of 50 meters in length by 2 meters deep, and a soak time of 24 hours. The fork length was recorded to the nearest millimeter on the dissection sheets and to the nearest centimeter on the weekly charts. Fish weights were recorded to the nearest gram. Every week fifty arctic cisco were collected at midweek from the 3" mesh nets for length frequencies. We collected six of these weekly samples from the 3-inch nets. I tried to collect weekly samples on Tuesday this year, but because of a lack of arctic cisco in the last two weeks, several days per week were needed to get a standard sample size and even then some are not a full sample of 50. Least cisco were sampled three times and humpback whitefish were sampled twice during the fall for length frequencies. No broad whitefish were sampled this year.

A YSI Model 30 conductive meter was used to record the water temperature and salinity at the Char Island set on the East Channel throughout the fishing season. Water temperature was recorded in degrees Celsius and the salinity in parts per thousand (PPT). Measurements were taken every .5 meter in the water column, starting from the surface and extending to the bottom. See table 1A-1C and Chart 01 for the current salinity and temperature readings.

Tag Return Information

The tag catch remained low, and continued to decline. The total tag returns for the 2002 season was only 9 floy tags. There has been no tagged arctic cisco for several years now, and the few collected tags were all least cisco, all from LGL's tagging done in the early 1990's. A break down of all the tags is shown in Figure 3, and the dissection data in Table 12.

Catch Totals and Monthly Catch Per Unit Effort

123 Total Net Days Fished in the 2002 Season

Figure 02

Month	ARCS	CPUE	LSCS	CPUE	HBWH	CPUE
October	3485	74.1	3370	71.7	2147	45.7
November	450	5.9	2133	28.1	2038	26.8
December	0	0	0	0	0	0
Totals	**3935**	**32.0**	**5503**	**44.7**	**4185**	**34.0**

2001 Floy Tag Recovery By Company and Species

Figure 03

Company	LSCS	ARCS	HBWH	BDWF	Total
ARCO85	00	00	00	00	**00**
ENVIRO	00	00	00	00	**00**
LGL82	00	00	00	00	**00**
LGL-blue	00	00	00	00	**00**
LGL90	02	00	00	00	**02**
LGL91	00	00	00	00	**00**
LGL92	06	00	00	00	**06**
LGL93	01	00	00	00	**01**
WCC82	00	00	00	00	**00**
MJM-01	00	00	00	00	**00**
Species	**09**	**00**	**00**	**00**	**09**

Weather and Salinity Conditions

Salinity and temperature profile measurements were taken every day during the fishing season using a YSI model s-c-t meter. One reading on December 1st was also taken to see if any major changes had occurred afterwards to check on what the river salinity was doing. Readings were taken every .5 meter, starting at the surface of the water and continuing until the bottom was reached at around 5.5 meters. The salinity was recorded in parts per thousand (PPT), and the water temperature in degrees Celsius. The water data was collected at the Char Island Station from the 14th of October to the 22nd of November, then again on December 1st.

Just prior to the start of fall fishing we had a few days of south to southwest wind storms, which occurred before and during freeze

Loading Fish

up. Once fall fishing started and for the rest of the fishing season, all storms were out of the north to northeast. Of the ten stormy days during fishing, four of those had wind gusts above 40 knots, and three over 30 knots. In contrast, year 2001 had only five stormy days and only one day was the wind higher than 30 knots. October winds from the southeast to west direction accounted for 39% of the winds, but all were light after freeze up. With the light westerly winds, we had little storm surge flooding and no influx of higher salinity sea water after the first week of fishing. The highest salinity was recorded on the third day of fishing (Oct.16), and four days the salinity reading on the bottom was around 20 PPT. After October 21st the average salinity readings slowly decreased with only two minor spikes around the first of November. By the end of the fishing season even the bottom readings were less than 2 PPT. The top three meters remained less than 0.5 PPT throughout the season and by December 1st the river had returned to a fresher state than when we started fishing with some readings of 0.1PPT and the bottom 2.5 meters being only 0.2 PPT.

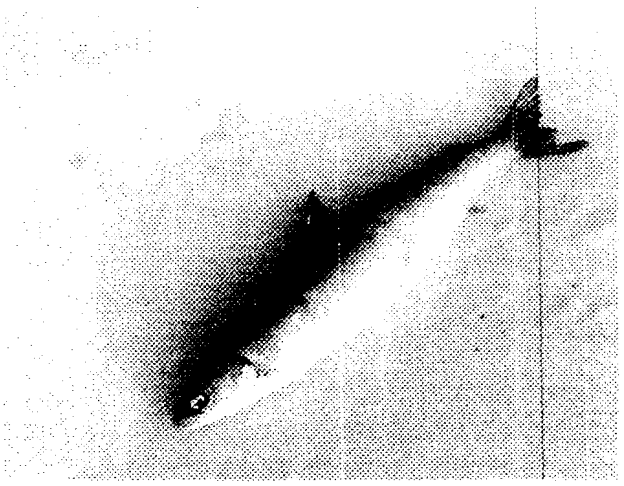
Once fall fishing started the seven major wind storms were from the north through northeast and the longest lasted four days. The strongest winds were in early November with peak gusts to 43 knots. Predominately northwest to north-northeast winds in October, coming off the sea ice to land, brought many snowy days and we set another record for the amount of moisture receive for the month. Most of this snow was lost in a rare warm spell during the period 30 October to 1 November when we had high temperatures of +35F.

Tables 1A-1C show the daily salinity and water temperatures for the Char Island Station. Chart 1 shows the salinity measurements graphed out at each meter level. Chart 2 shows the salinity averages for the years 1995-2002, Chart 3 shows the low salinity years between 1992 and 2002. Chart 5 shows the daily catch totals by species in relation to average salinity levels for 2002. Weather recorded on each fishing day and fall storms are shown in Table 2.

Taking water Readings

Arctic Cisco (Coregonus autumnalis)

The arctic cisco catch for the 123 net days of fishing this year was 3935 fish (2912 lb), which resulted in a catch per net day (CPUE) of 32.0 for the season. This year's CPUE is an increase of 2.3 over last years 13.9 CPUE, which was the lowest since 1985. This is still a decline of 52% with regards to the ten year mean CPUE of 66. The catch total doubled (2.05) over the 2001 catch but still falls well below the ten year mean of 13,831 arcs by 72%. The total net days fished dropped slightly over 2001 (123 TND to 138 TND). Part of the decline in fishing time was due to the arctic cisco moving out of the system and the fishery not needing any more least cisco or hump-back whitefish. Besides the TND being down from last year it is also down 42% against the ten year mean of 211 TND. The daily catch totals are shown in Table 03, yearly fish totals in Table 06, yearly mean totals in table 14, and daily catch totals with salinity plotted is shown in Chart 05.



Arctic Cisco

While this year's catch of arctic cisco was up over double of last year, the total biomass was only 1.38kg greater. The average fish size went from 0.50 kg in 2001 to only 0.33 kg 2002 for a total weight of 1320.9 kg. The population also showed the largest drop in fork length size as recorded for the past eighteen years, dropping 3.37cm, from 2001's record 35.65cm to this year's 32.28cm for the three inch nets. Before this the largest drop between years was 2.09cm between 1989 and 1990. Another indication of this years small size was the large increase in the number of arcs in the ≤32cm length range. This figure is also the largest gain or loss seen since 1985, going from last years 0.170% to this years 0.649% of arcs at ≤32cm fork length. (See Table 7 for ARCS population size in respect to ≤32cm)

The 32cm or less indicator is a bit misleading this year in how large the recruitment of 5-6 year old fish was. This is born out in the weekly fish measurements and total fish caught in the first week of fishing. The weekly measurements from the three-inch mesh nets (Table8), showed that the population had a fluctuation of 1.8cm for the season. the

smallest fish were caught in the first week (31.4cm), and progressively increased in size, until the largest fish were caught in the last week (33.2cm), which also coincided with the fewest number of arcs in the river system.

The season average CPUE changed drastically as the season advanced. The first week had a high CPUE of 146.8, by the second week that had dropped to 36.6, and in week six it was a miserable CPUE of only 0.7! The CPUE for October as a whole was 74.1, with November dropping rapidly to only 5.9. The large CPUE was recorded when the smallest fish were in the system. The first week of fishing caught 60% of the arctic cisco, and 89% of the arcs catch was taken in October. While there was a fair number of arctic cisco in the system during the first week and half, they were either fished out as they worked their way through the delta, or the small numbers moved back out into the ocean and didn't return. The way the arctic's numbers tailed off, worse than in any other year for the month of November, I would say there just isn't a very large number of recruits in the 5-6 year class.

The arctic cisco that were caught were in good health and most of the arcs dissected had a medium amount of body cavity fat. Out of the whole catch only four individuals were seen that looked like they could have been current year spawners. The largest individual of the fall was a mature female that was 438mm in fork length, and weighted 1113 grams.

Bering cisco (Coregonus luarettae)

Bering cisco continue to remain low after their peak in 1990, with only three taken during the fishing season this year, all in October. One mature female was sampled, and was 363mm in fork length and weighted 513grams.

Least Cisco (Coregonus sardinella)

After a low cycle last year, the least cisco catch was back up and the CPUE of 44.7 was higher than the ten year mean of 41.3. This was a 185% increase over 2001 and produced a total catch of 5503 (1722.3kg) least cisco for the year. This catch total, while up from last year was still 30% below the ten year mean of 7867 least cisco.

The least cisco run was more consistent through-out the season when compared to the arctic cisco run. October had a daily CPUE ranging

from a high of 120 to a low of 36, with the month's average coming in at 71.7. Numbers declined in November and the CPUE for that month was down to 28.1 at the end of the fishing season. October with 47 net days produced 61% of the lscs catch, while November with 76 net days produced 39% of the lscs catch.

Fork length samples were collected three times, starting on October 15th , to assess population size. There was very little variation between sample weeks this year, having a spread of only 0.19cm. Samples ranged from 31.57cm to 31.76cm and the average fork length for the year was 31.7cm. This was a decline of .3cm from last year's 32cm, but exactly what we had in 2000.

Least Cisco

Least cisco daily catch totals are listed in Table 04, historic season totals in table 06, weekly fork length measurements are listed in Table 10, Ten Year Mean totals are listed in Table 14, Yearly length size from 1985 to 2002 are graphed in Chart 04, and catch totals graphed against salinity readings are shown in Chart 05.

All the tagged fish caught this year were least cisco, and tag data and dissection information are listed in Table 12, and Figure 3. As expected the total tag return continues to remain low, and all tags colleted this year were LGL tags from 1993 or earlier. Of the 9 tagged fish caught, 4 were mature non-spawning females, 4 were spawned-out females, and one tag was from a pulled tag with no data except species. The non-spawning females were in good health and body cavity values ranged from 1.5 to 4, and the average weight per fish was 0.31kg. The total biomass for the least cisco catch this year is 1722.3kg.

Humpback Whitefish (Coregonus pidschian)

The humpback whitefish had another good year, although not as strong as the past year. The total catch of 4185 fish was down 32% from last year's catch of 6184, and down 31% from the ten year mean of 6042 whitefish (Table 14). The run remained constant all season and the

whitefish catch was higher at the end of the season than either arctic or least ciscos (chart 05). October had a CPUE of 45.7 and produced 51% of the catch, while November's share was 49% with a CPUE of 26.8. The season CPUE of 34 was down 24% over 2001, but was 108% over the ten year mean of 31.4 (Table 14).

All segments of the population were present, most non-spawners were in good condition, and all were feeding throughout the fall. Fork length measurements were taken twice during the fall, and for the season averaged 35.2cm. Six humpback whitefish-arctic cisco hybrids were caught this fall. Of the five sampled, four were immature males ranging in length from 290mm to 350mm. The lone female was mature and had a length of 385mm and a weight of 590 grams. The average weight for humpback whitefish this year was 0.44kg, giving a total biomass for the catch of 1860.2kg.

The 2002 daily catch by net is shown in Table 05, historic yearly fish totals in Table 06, population size measurements in Table 11, yearly mean totals in Table 14, and daily catch totals plotted with daily salinity is shown in Chart 05.

Summery

The arctic cisco showed a burst of promise the first week of fishing and things looked like they had the makings of good catch of arctic's. The decline for the rest of the season with the arctic cisco was rapid and November produced our worst monthly CPUE to date. The least cisco made a good recovery from last year in the fishery, and combined with the continued good run of humpback whitefish we were able to cover our market in Fairbanks. Since Barrow is strictly an arctic cisco market, we were unable to contribute much there this year.

The data collected in the winter fishery seems to indicate that 2003 will most likely be another low catch year for the arctic cisco, but the rest of the fishery should produce good numbers of fish.

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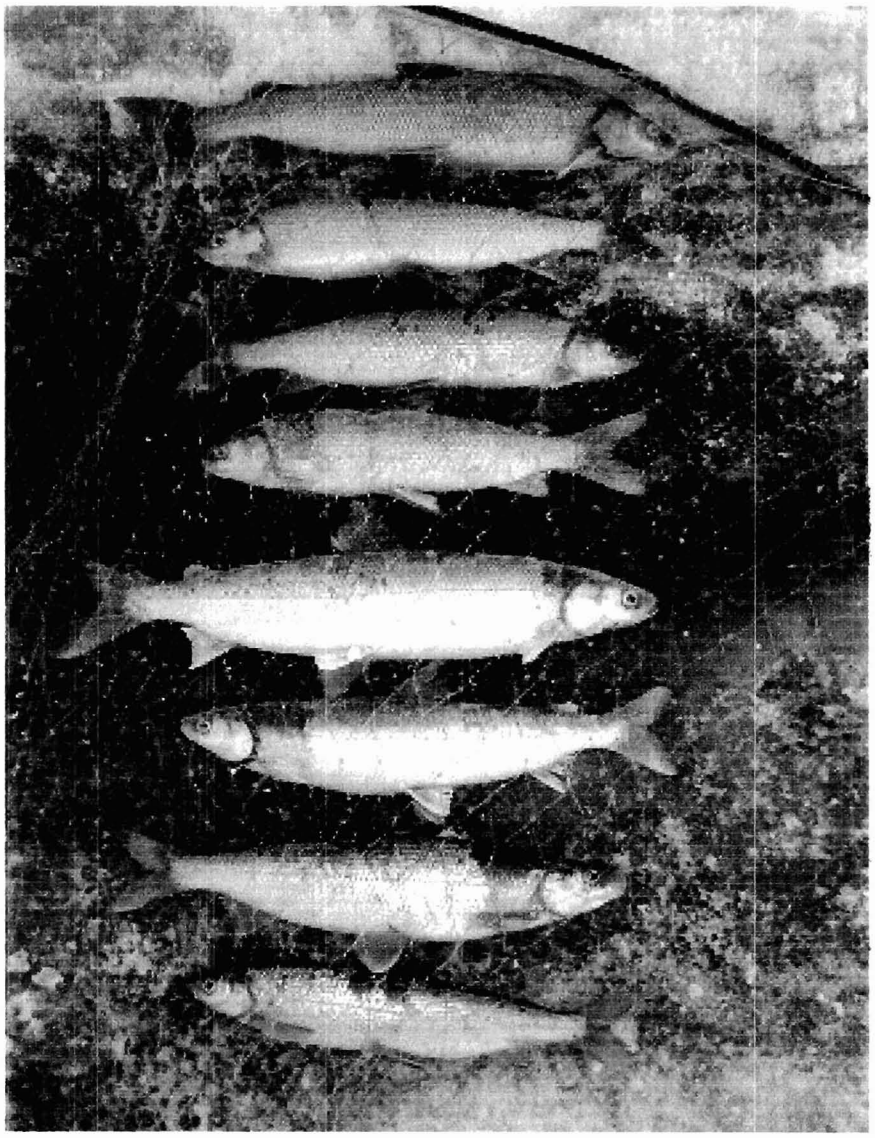
WINTER FISHERY SUPPORTING DATA

APPENDIX LISTING



Fall Whitefish and Cisco

LIST OF APPENDIX TABLES and CHARTS

Weather During Fishing Season

Colville Village

Table 02

Recorded on Sampling Day

14-Oct-02	1000hr	Ovc 25degF Vis 10	NE 22G26 kts
15-Oct-02	1015hr	Scat 18degF Vis 15	E 06 kts
16-Oct-02	1105hr	Ovc 20degF Vis 04 lt snow	SSW 05 kts
17-Oct-02	1255hr	Ovc 19degF Vis 03 snow	SSW 10 kts
18-Oct-02	1130hr	Ovc 12degF Vis 10	SSE 08 kts
19-Oct-02	1130hr	Brok 08degF Vis 10	S 05 kts
21-Oct-02	1215hr	Ovc 22degF Vis 08	N 12 kts
22-Oct-02	1105hr	Ovc 06degF Vis 02 mist	E 05 kts
24-Oct-02	1145hr	Ovc 20degF Vis 1/4 fog	Calm
25-Oct-02	1130hr	Brok 09degF Vis 20	SE 02 kts
26-Oct-02	1140hr	Scat 18degF Vis 20	N 08 kts
28-Oct-02	1140hr	Brok 28degF Vis 10	SSW 07 kts
29-Oct-02	1100hr	Ovc 27degF Vis 05 drifting snow	N 25G30 kts
01-Nov-02	1055hr	Ovc 25degF Vis 02 mist	SSW 08 kts
02-Nov-02	1110hr	Ovc 20degF Vis 05 mist	NNE 15 kts
04-Nov-02	1155hr	Brok 15degF Vis 03 drifting snow	NE 15-20 kts
06-Nov-02	1140hr	Scat 15degF Vis 10	NNE 25G35 kts
08-Nov-02	1305hr	Ovc 05degF Vis 10 lt snow	NNE 05 kts
11-Nov-02	1235hr	Brok 05degF Vis 04 lt snow, mist	NNE 10 kts
13-Nov-02	1145hr	Ovc 14degF Vis 07 lt snow	NNE 08 kts
16-Nov-02	1230hr	Ovc 14degF Vis 02 lt snow, mist	NNE 10 kts
18-Nov-02	1205hr	Ovc -2degF Vis 10	NNW 05 kts
22-Nov-02	1300hr	Scat -3degF Vis 03 blowing snow	NE 22 kts

Fall Storm Winds ≥20 Knots

05-Oct	SSW 36 knots late evening	05-Nov	NNE 30G36 knots - Pk gust 43 kts
06-Oct	SSW 40 knots morning	06-Nov	N 25G33 knots - Pk gust 42 kts
08-Oct	S 25G33 knots morning	17-Nov	N 23 knots - Pk gust 30 kts
11-Oct	ENE 28 knots morning	21-Nov	NNE 25 knots
12-Oct	NE 24G36 knots morning	22-Nov	NE 22 knots
13-Oct	NE 24G36 knots all day		
14-Oct	NE 22G26 knots		
29-Oct	N 35 knots		

ARCTIC CISCO

2002

Table 03

Daily Fish Catch by Net - East Channel CRD - October - November

DATE	Net # 1	Net # 2	Net # 3	Net # 4	Net # 5	Net # 6	Day Total
	3" Mesh	3" Mesh	3" Mesh	3" Mesh	3" Mesh	3" Mesh	
09-Oct							0
10-Oct							0
11-Oct							0
12-Oct							0
13-Oct							0
14-Oct							0
15-Oct	26	43					69
16-Oct	186	183					369
17-Oct	268	219	119	167			773
18-Oct	191	199	119	165			674
19-Oct	132	148	81	103			464
20-Oct							0
21-Oct	141	107	107				355
22-Oct	47	55	53				155
23-Oct							0
24-Oct	56	45	51				152
25-Oct	51	48	78				177
26-Oct	48	48	41				137
27-Oct							0
28-Oct	41	29	29				99
29-Oct	20	15	14	12			61
30-Oct							0
31-Oct							0
Oct. Total	1207	1139	692	447	0	0	3485
01-Nov	68	46					114
02-Nov	22	30	59	23			134
03-Nov							0
04-Nov	19	18	28				65
05-Nov							0
06-Nov	18	10	15				43
07-Nov							0
08-Nov	8	7	17				32
09-Nov							0
10-Nov							0
11-Nov	9	2	10				21
12-Nov							0
13-Nov	6	3	5				14
14-Nov							0
15-Nov							0
16-Nov	3	3	8				14
17-Nov							0
18-Nov	5	1	5				11
19-Nov							0
20-Nov							0
21-Nov							0
22-Nov	2	0	0				2
23-Nov							0
24-Nov							0
25-Nov							
26-Nov							
27-Nov							
Nov. Total	160	120	147	23	0	0	450
Year Total	1367	1259	839	470	0	0	3935

LEAST CISCO

2002

Daily Fish Catch by Net - East Channel CRD - October - November

Table 04

DATE	Net # 1	Net # 2	Net # 3	Net # 4	Net # 5	Net # 6	Net # 7	Day Total
	3" Mesh	3" Mesh	3." Mesh	3" Mesh	3" Mesh	3" Mesh	3" Mesh	
09-Oct								0
10-Oct								0
11-Oct								0
12-Oct								0
13-Oct								0
14-Oct								0
15-Oct	32	21						53
16-Oct	132	104						236
17-Oct	113	122	68	177				480
18-Oct	121	110	84	126				441
19-Oct	115	118	83	124				440
20-Oct								0
21-Oct	104	81	65					250
22-Oct	58	49	54					161
23-Oct								0
24-Oct	72	70	73					215
25-Oct	90	98	60					248
26-Oct	95	87	91					273
27-Oct								0
28-Oct	123	111	107					341
29-Oct	57	60	54	61				232
30-Oct								0
31-Oct								0
Oct. Total	1,112	1,031	739	488	0	0	0	3370
01-Nov	123	99						222
02-Nov	64	60	88	135				347
03-Nov								0
04-Nov	84	83	73					240
05-Nov								0
06-Nov	45	34	47					126
07-Nov								0
08-Nov	93	80	102					275
09-Nov								0
10-Nov								0
11-Nov	125	79	79					283
12-Nov								0
13-Nov	50	56	55					161
14-Nov								0
15-Nov								0
16-Nov	90	56	72					218
17-Nov								0
18-Nov	35	38	56					129
19-Nov								0
20-Nov								0
21-Nov								0
22-Nov	51	38	43					132
23-Nov								0
24-Nov								0
25-Nov								0
26-Nov								0
27-Nov								0
28-Nov								0
29-Nov								0
30-Nov								0
Nov. Total	760	623	615	135	0	0	0	2133
Year Total	1872	1654	1354	623	0	0	0	5503

HUMPBACK WHITEFISH

2002

Daily Fish Catch by Net - East Channel CRD - October - November

Table 05

DATE	Net # 1 3" Mesh	Net # 2 3" Mesh	Net # 3 3." Mesh	Net # 4 3" Mesh	Net # 5 3" Mesh	Net # 6 3" Mesh	Day Total
09-Oct							0
10-Oct							0
11-Oct							0
12-Oct							0
13-Oct							0
14-Oct							0
15-Oct	100	44					144
16-Oct	199	181					380
17-Oct	43	52	72	96			263
18-Oct	13	18	47	92			170
19-Oct	28	37	69	69			203
20-Oct							0
21-Oct	31	31	82				144
22-Oct	24	20	63				107
23-Oct							0
24-Oct	47	38	85				170
25-Oct	31	33	60				231
26-Oct	22	23	62				107
27-Oct							0
28-Oct	45	41	95				181
29-Oct	31	14	62	47			154
30-Oct							0
31-Oct							0
Oct. Total	**614**	**532**	**697**	**304**	**0**	**0**	**2254**
01-Nov	34	39					73
02-Nov	33	22	151	133			339
03-Nov							0
04-Nov	42	33	112				187
05-Nov							0
06-Nov	34	26	96				156
07-Nov							0
08-Nov	44	30	126				200
09-Nov							0
10-Nov							0
11-Nov	36	40	175				251
12-Nov							0
13-Nov	23	16	111				150
14-Nov							0
15-Nov							0
16-Nov	58	28	172				258
17-Nov							0
18-Nov	28	24	94				146
19-Nov							0
20-Nov							0
21-Nov							0
22-Nov	58	45	175				278
23-Nov							0
24-Nov							0
25-Nov							0
26-Nov							0
27-Nov							0
28-Nov							0
29-Nov							0
30-Nov							0
Nov. Total	**390**	**303**	**1212**	**133**	**0**	**0**	**2038**
01-Dec							
Year Total	1,004	835	1,909	437	0	0	4,292

Yearly Fish Totals

Helmericks's Winter fishery

Table 06

YEAR	Total Effort	ARCS	LSCS	HBWF	BDWF	Catch Total
1967	774	21,904	15,982	356		38,242
1968	1,427	41,948	19,086	172		61,206
1969	699	19,593	35,001	3,136		57,730
1970	562	22,685	30,650	345		53,680
1971	1,422	41,312	23,887	183		65,382
1972	646	37,101	12,183	1,481		50,765
1973	993	71,575	25,191	5,733		102,499
1974	947	44,937	14,122	4,802		63,861
1975	759	30,953	22,476	1,946		55,375
1976	996	31,659	37,046	1,793		70,498
1977	567	31,796	14,961	1,366		48,123
1978	1,077	18,058	25,761	2,758		46,577
1979	620	9,268	25,097	1,102		35,467
1980	1,209	14,753	30,982	4,232		49,967
1981	501	38,176	15,504	469		54,149
1982	328	15,975	27,085			43,060
1983	520	18,162	37,909			56,071
1984	371	27,686	13,076			40,762
1985	368	23,678	17,383			41,061
1986	151	29,595	9,444			39,039
1987	165	14,788	4,214	1,880		20,882
1988	243	9,012	14,040	6,945		29,997
1989	306	12,145	10,328	5,904	69	28,446
1990	427	11,772	11,064	4,581	2	27,419
1991	446	9,558	3,637	1,658	11	14,864
1992	332	22,754	7,292	5,209	208	35,463
1993	196	31,310	6,037	5,339	19	42,705
1994	210	8,958	10,176	8,827	8	27,969
1995	405	14,311	8,633	10,860	186	33,990
1996	162	21,817	7,796	6,425	258	36,296
1997	225	16,990	10,754	1,721	13	29,478
1998	176	8,752	11,822	5,279	13	25,866
1999	171	8,872	7,430	6,875	436	23,613
2000	93	2,619	5,758	3,706	4	12,087
2001	138	1,924	2,976	6,185	53	11,138
2002	123	3,935	5,503	4,183	32	13,653
2003						0
2004						0
2005						0
						0

Arctic Cisco Population Size - Fork Length

≤32CM Subsample

Table 07

YEAR	CATCH	TND	CPUE	SAMPLE SIZE	AVE. SIZE	#32cm SIZE	% TOTAL
1985	23,678	368	64.3	200	33.36	69	0.345
1986	29,595	151	196	250	33.22	99	0.396
1987	14,788	165	89.6	350	34.52	27	0.077
1988	9,012	243	37.1	400	34.62	139	0.347
1989	12,145	306	39.7	350	34.86	74	0.211
1990	11,772	427	27.6	400	32.77	218	0.545
1991	9,558	446	21.4	250	32.74	137	0.548
1992	22,754	332	68.5	450	32.10	299	0.664
1993	31,310	196	159.7	300	33.36	73	0.243
1994	8,958	210	42.7	300	33.88	82	0.273
1995	14,311	405	35.3	400	31.88	277	0.692
1996	21,817	162	134.7	250	32.24	169	0.676
1997	16,990	225	75.5	250	32.76	120	0.480
1998	8,752	176	49.7	300	33.77	91	0.303
1999	8,872	171	51.9	300	33.70	110	0.366
2000	2,619	93	28.2	350	35.20	30	0.086
2001	1,924	138	13.9	357	35.65	61	0.170
2002	3,935	123	32.0	254	32.28	165	0.649

* TND=Total Net Days In Season
* NET DAY=1 Net @2 meter x 50 meter x 24 Hrs.
* CPUE=Catch Per Unit Effort
* Sample Size=Number Of Fish in Weekly Samples

ARCTIC CISCO LENGTH SAMPLES

Weekly Samples 3.0 In. Nets

Table 8

Fork	15-Oct-2002	22-Oct-2002	29-Oct-2002	6-Nov-2002	13-Nov-2002	22-Nov-2002	
Length	3"	3"	3"	3"	3"	3"	3"
25	0	0	0	0	0		
26	0	0	0	0	0		
27	0	0	0	0	0		
28	0	0	0	0	0		
29	4	2	1	1	0	0	
30	7	6	6	5	2	2	
31	11	13	12	8	7	1	
32	16	14	14	13	18	2	
33	4	7	13	6	13	4	
34	3	3	2	5	4	1	
35	0	2	0	2	0	0	
36	0	2	0	0	1	1	
37	0	1	0	2	0	2	
38	1	0	2	0	3	0	
39	1	0	0	1	0		
40	2	0	0	0	0		
41	0	0	0	0	0		
42							
43							
Average	**31.40**	**32.02**	**32.04**	**32.42**	**32.67**	**33.15**	**0.00**

Fish Measured to Nearest CM-Fork Length
Weekly Sample Size 50 Fish
Note: 6th November sample size 43 fish
Note week 5 sample size 48 fish
Note week 6 sample size 13 fish

28	0						
29	116	58	29	29	0	0	
30	210	180	180	150	60	60	
31	341	403	372	248	217	31	
32	512	448	448	416	576	64	
33	132	231	429	198	429	132	
34	102	102	68	170	136	34	
35	0	70	0	70	0	0	
36	0	72	0	0	36	36	
37	0	37	0	74	0	74	
38	38	0	76	0	114	0	
39	39	0	0	39	0	0	
40	80	0	0	0	0	0	
41	0	0	0	0	0	0	
42	0	0	0	0	0	0	
Total	**1570**	**1601**	**1602**	**1394**	**1568**	**431**	
Average	**31.4**	**32.02**	**32.04**	**32.42**	**32.67**	**33.15**	**0.00**

LEAST CISCO LENGTH SAMPLES

Weekly Samples 3 in. Nets

Table 10

Fork Length	15-Oct-2002 3"	22-Oct-2002 3"	29-Oct-2002 3"	3"	3"	3"	3"	
24	0	0	0					
25	0	0	0					
26	0	0	0					
27	0	0	0					
28	1	0	0					
29	2	2	2					
30	11	9	7					
31	12	9	13					
32	10	16	14					
33	9	9	11					
34	5	3	2					
35	1	2	1					
36	0	0	0					
37								
38								
Average	**31.57**	**31.76**	**31.70**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Fish Mearsured To Nearest CM-Fork Length
Weekly Sample Size 50 Fish

CM								
24	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0
28	28	0	0	0	0	0	0	0
29	58	58	58	0	0	0	0	0
30	330	270	210	0	0	0	0	0
31	372	279	403	0	0	0	0	0
32	320	512	448	0	0	0	0	0
33	297	297	363	0	0	0	0	0
34	170	102	68	0	0	0	0	0
35	35	70	35	0	0	0	0	0
36	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0
Total	**1610**	**1588**	**1585**	**0**	**0**	**0**	**0**	**0**
Average	**31.57**	**31.76**	**31.70**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

HUMPBACK WHITEFISH LENGTH SAMPLES
& Broad Whitefish In 2002

Weekly Samples 3 In. Nets

Table 11

Fork Length	15-Oct HBWF	29-Oct HBWF	HBWF	HBWF		15-Oct BDWF	
28	2	0					
29	0	0					
30	2	2				1	
31	3	0				0	
32	3	3				1	
33	4	6				2	
34	8	1				2	
35	11	5				2	
36	8	10				1	
37	4	10					
38	1	6					
39	3	3					
40	1	4					
41	0	0					
42							
43							
44							
45							
46							
Average	34.50	35.96	0.00	0.00		33.6	

HBWF Sample Size 50 Fish Each
Fish Measured To Nearest CM Fork Length

CM							
28	56	0		0			
29	0	0	0	0		0	
30	60	60	0	0		30	
31	93	0	0	0		0	
32	96	96	0	0		32	
33	132	198	0	0		66	
34	272	34	0	0		68	
35	385	175	0	0		70	
36	288	360	0	0		36	
37	148	370	0	0		0	
38	38	228	0	0			
39	117	117	0	0			
40	40	160	0	0			
41	0	0	0	0			
42	0	0	0	0			
43	0	0	0	0			
44	0	0	0	0			
45	0	0	0	0			
46	0	0	0	0			
Total	1725	1798	0	0	0	302	
Average	34.5	35.96	0.00	0.00	0.00	33.6	

James Helmericks' Winter Fishery

2002 Tag Returns

Table 12

DATE	CO_NAME	TAG_ID	SPECIES	WGT_GRM	F_Lth_MM	SEX	B_CAV	STOM_V
17-Oct	LGL90	06161	LSCS	331	402	Fm2	3.0	0.10
19-Oct	LGL90	02152	LSCS	357	356	Fso	0.0	0.25
17-Oct	LGL92	15281	LSCS	298	259	Fso	0.0	0.25
28-Oct	LGL92	07579	LSCS	341	348	Fso	0.0	0.10
26-Oct	LGL92	11226	LSCS	340	383	Fm1	2.0	0.10
29-Oct	LGL92	08818	LSCS	335	366	Fm1	1.5	0.25
22-Nov	LGL92	07703	LSCS	333	345	Fso	0.0	0.50
01-Nov	LGL93	08219	LSCS	335	436	Fm1	4.0	0.10
02-Nov	LGL92	88018*	LSCS					
			LSCS					

*pulled tag no data recorded for least cisco

Winter Fishery Mean Totals All Species

1985 to 2002

Table 14

Arctic Cisco

Year	Total Catch	Total Effort	Actual CPUE
1985	23,678	368	64.3
1986	29,595	151	196.0
1987	14,788	165	89.6
1988	9,012	243	37.1
1989	12,145	306	39.1
1990	11,772	427	27.6
1991	9,558	446	21.4
1992	22,754	332	68.5
1993	31,310	196	159.7
1994	8,958	210	42.7
1995	14,311	405	35.3
1996	21,817	162	134.7
1997	16,990	225	75.5
1998	8,752	176	49.7
1999	8,872	171	51.9
2000	2,619	93	28.2
2001	1,924	138	13.9
2002	3,935	123	32.0
1992 - 2001 10 yr Mean	**13,831**	**211**	**66.0**

Least Cisco

Year	Total Catch	Total Effort	Actual CPUE
1985	17,383	368	47.2
1986	9,444	151	62.5
1987	4,214	165	25.5
1988	14,040	243	57.8
1989	10,328	306	33.8
1990	11,064	427	25.9
1991	3,637	446	8.2
1992	7,292	332	22.0
1993	6,037	196	30.8
1994	10,176	210	48.5
1995	8,633	405	21.3
1996	7,796	162	48.1
1997	10,754	225	47.8
1998	11,822	176	67.2
1999	7,430	171	43.5
2000	5,758	93	61.9
2001	2,976	138	21.6
2002	5,503	123	44.7
1992 - 2001 10 Yr Mean	**7,867**	**211**	**41.3**

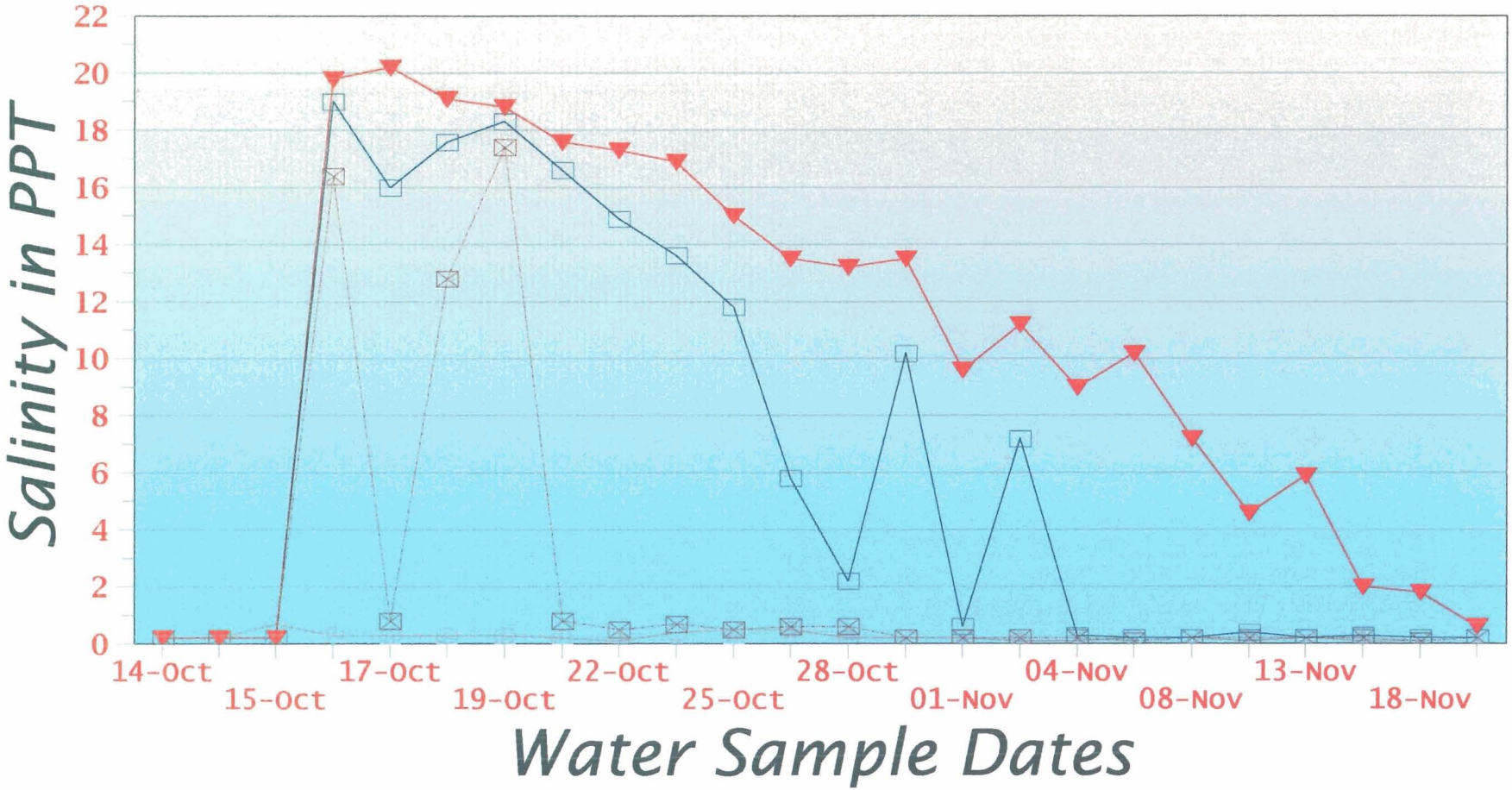
Humpback Whitefish

Year	Total Catch	Total Effort	Actual CPUE
1985		368	
1986		151	
1987	1,880	165	11.4
1988	6,945	243	28.6
1989	5,904	306	19.3
1990	4,581	427	10.7
1991	1,658	446	3.7
1992	5,209	332	15.7
1993	5,339	196	27.2
1994	8,827	210	42.0
1995	10,860	405	26.8
1996	6,425	162	39.7
1997	1,721	225	7.6
1998	5,279	176	30.0
1999	6,875	171	40.2
2000	3,704	93	39.8
2001	6,184	138	44.8
2002	4,185	123	34.0
1992 - 2001 10 Yr Mean	**6,042**	**211**	**31.4**

Chart 01

Char Island Station

2002 East Channel - Colville River



1 Meter 2 Meter 3 Meter 4 Meter 5 Meter

Chart 02

Salinity Average Char Island

1995 - 2002

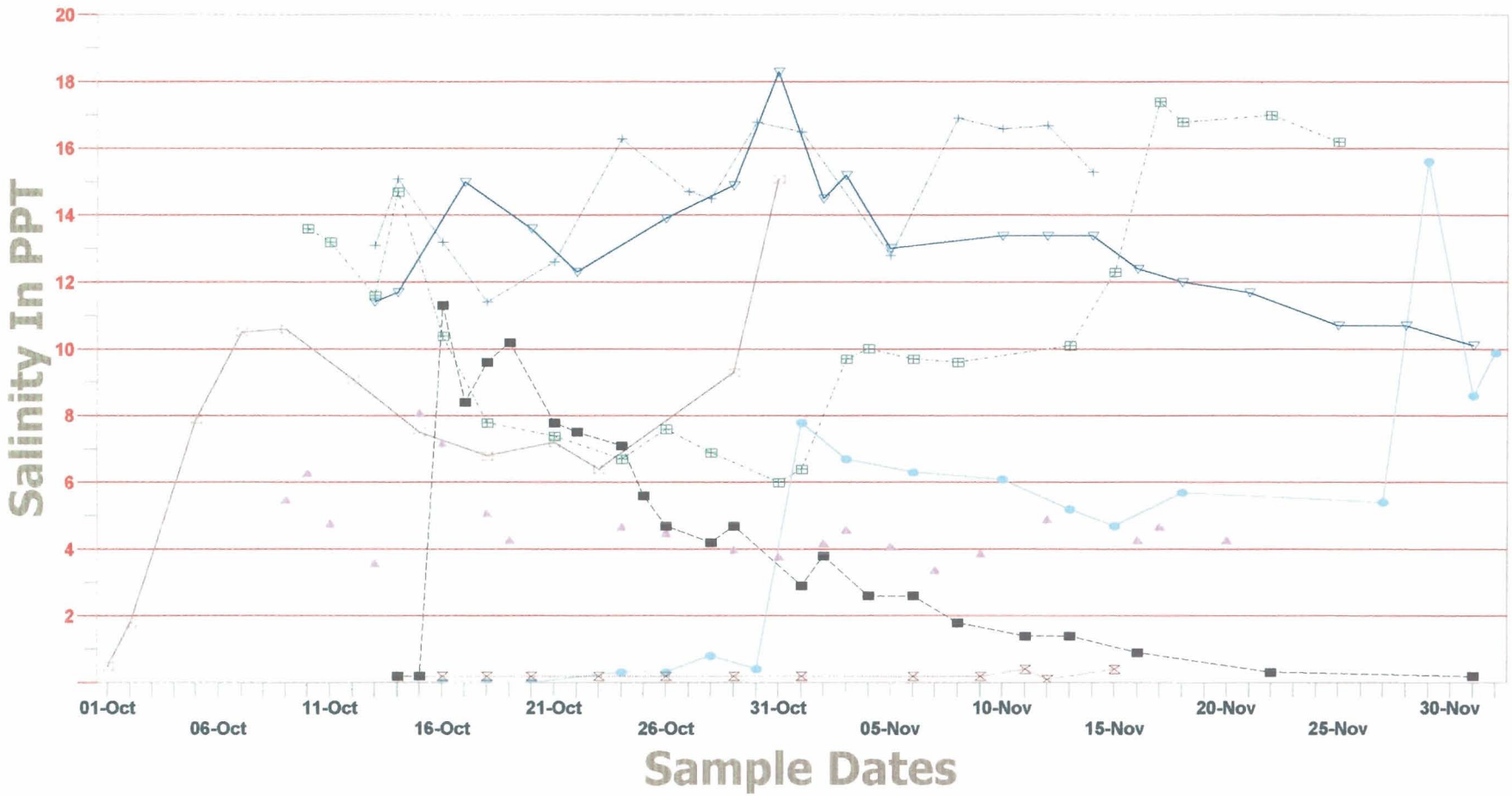


Chart 03

Salinity Average Char Island

Low Years-1992 to 2002

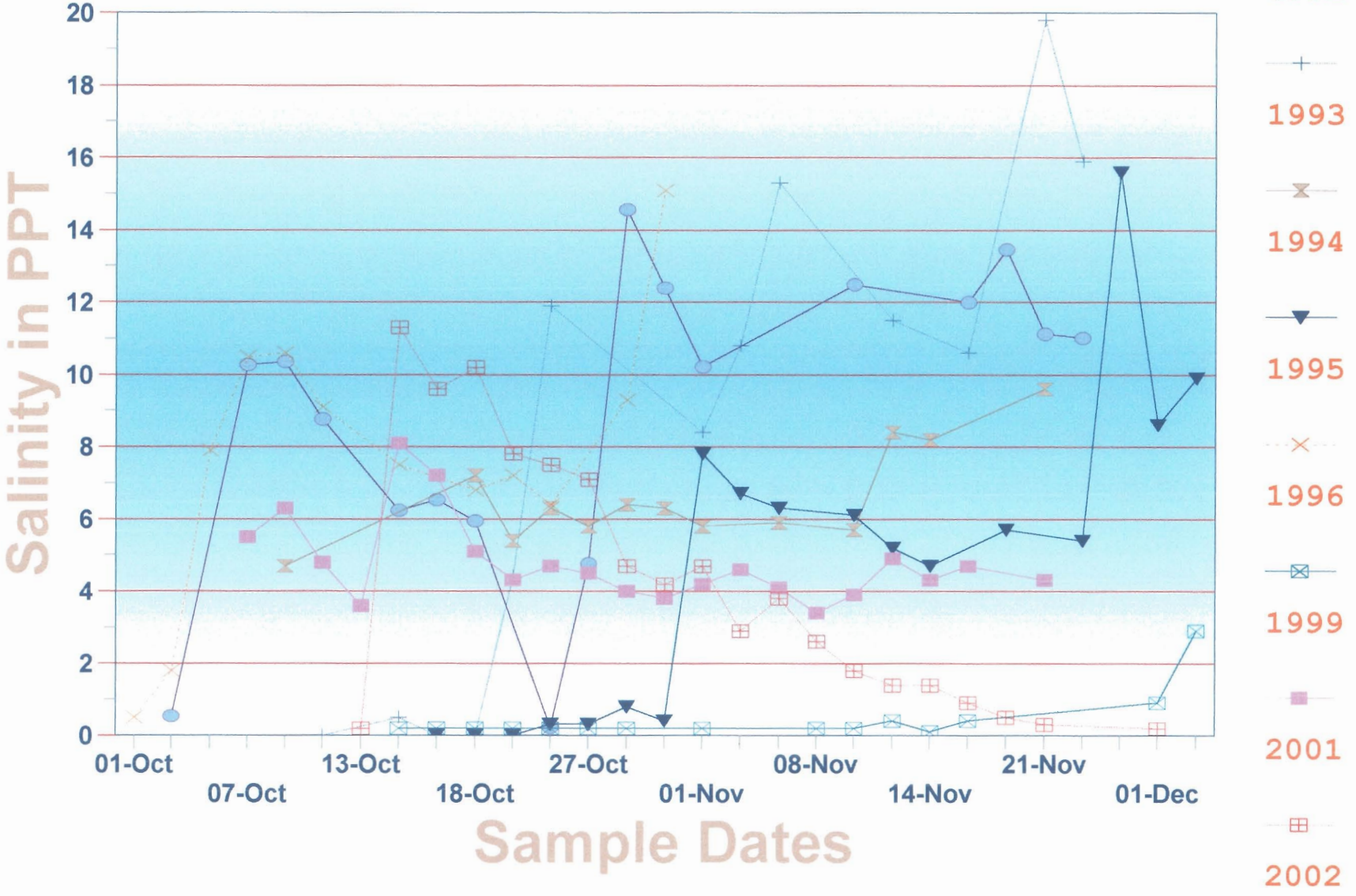


Chart 04

Least Cisco

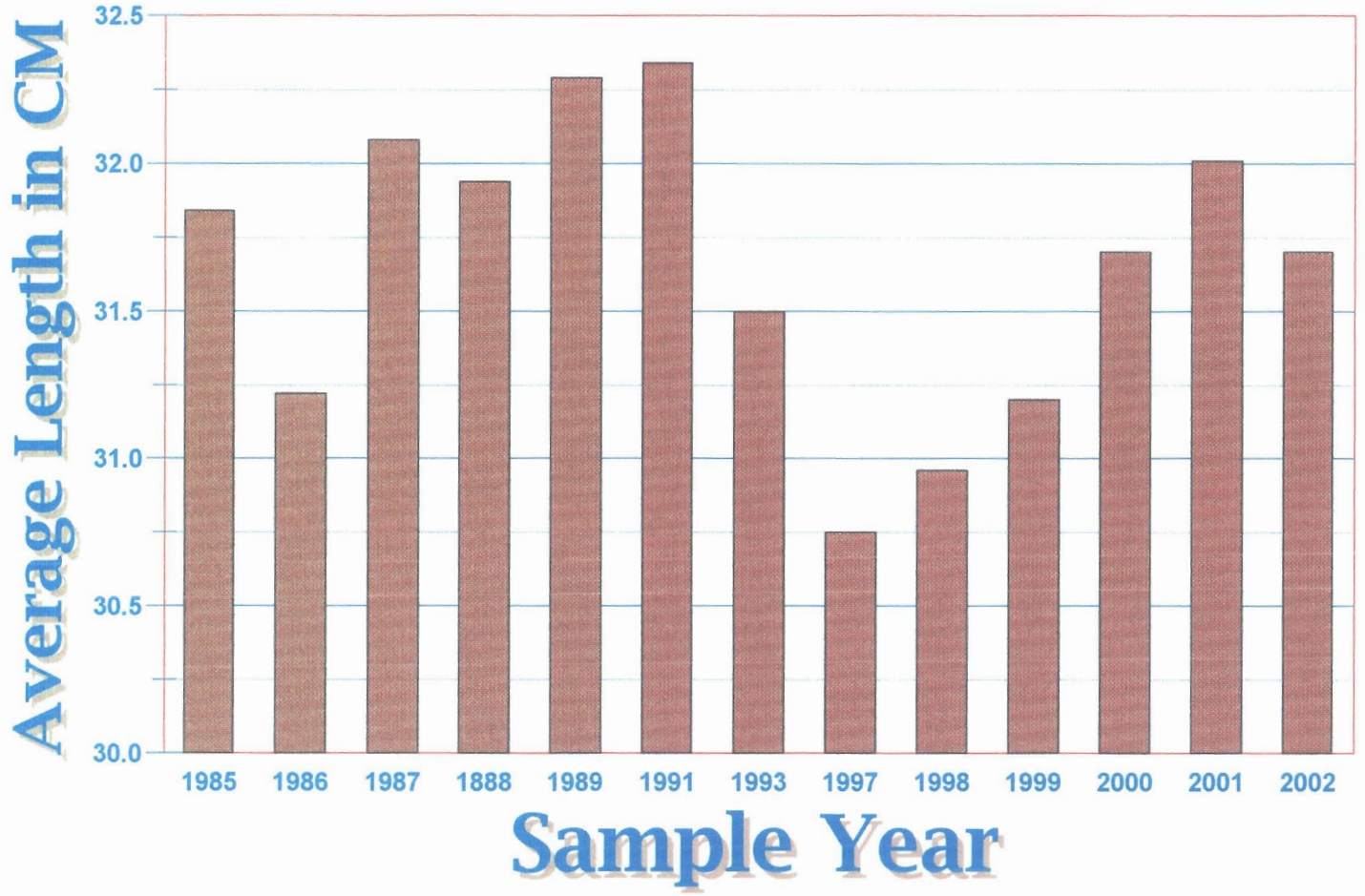


Chart 05

Daily Total Catch

By Species in 2002