

Point Thomson Fish Studies, 1999 and 2001

SUMMARY

1999: East wind year
2001: West wind year

1999: Cooler, more saline
2001: Warmer, less saline

1999: ARCS recruitment
2001: No ARCS recruitment

ARCS juveniles use Lions Bay for summer foraging habitat, but in lower numbers than in Prudhoe Bay region. ARCS 1997 year class very strong; very high catch rates at PTU in 2001; this year class large at Prudhoe also.

PTU beyond range of juvenile BDWF foraging. Adult BDWF do forage in Lions Bay, but this may be nearly the furthest extent of their summer movements.

PTU beyond range of juvenile LSCS foraging. Adult LSCS do forage in Lions Bay, but this may be nearly the furthest extent of their summer movements. LSCS were very abundant in 2001.

DV CHAR catch rates in 1999 higher than 2001. Lions Bay a migratory corridor for Dolly Varden from Canning, but the extent of use of the lagoon by Dolly Varden may vary from year to year.

No surprises from two years of study at Lions Bay/Point Thomson area. Have sampled both "kinds" of years at Point Thomson: east wind and west wind years. Patterns of fish catches match the known life histories and population dynamics of these species obtained from the long time series of fish data collected in the Prudhoe Bay region.

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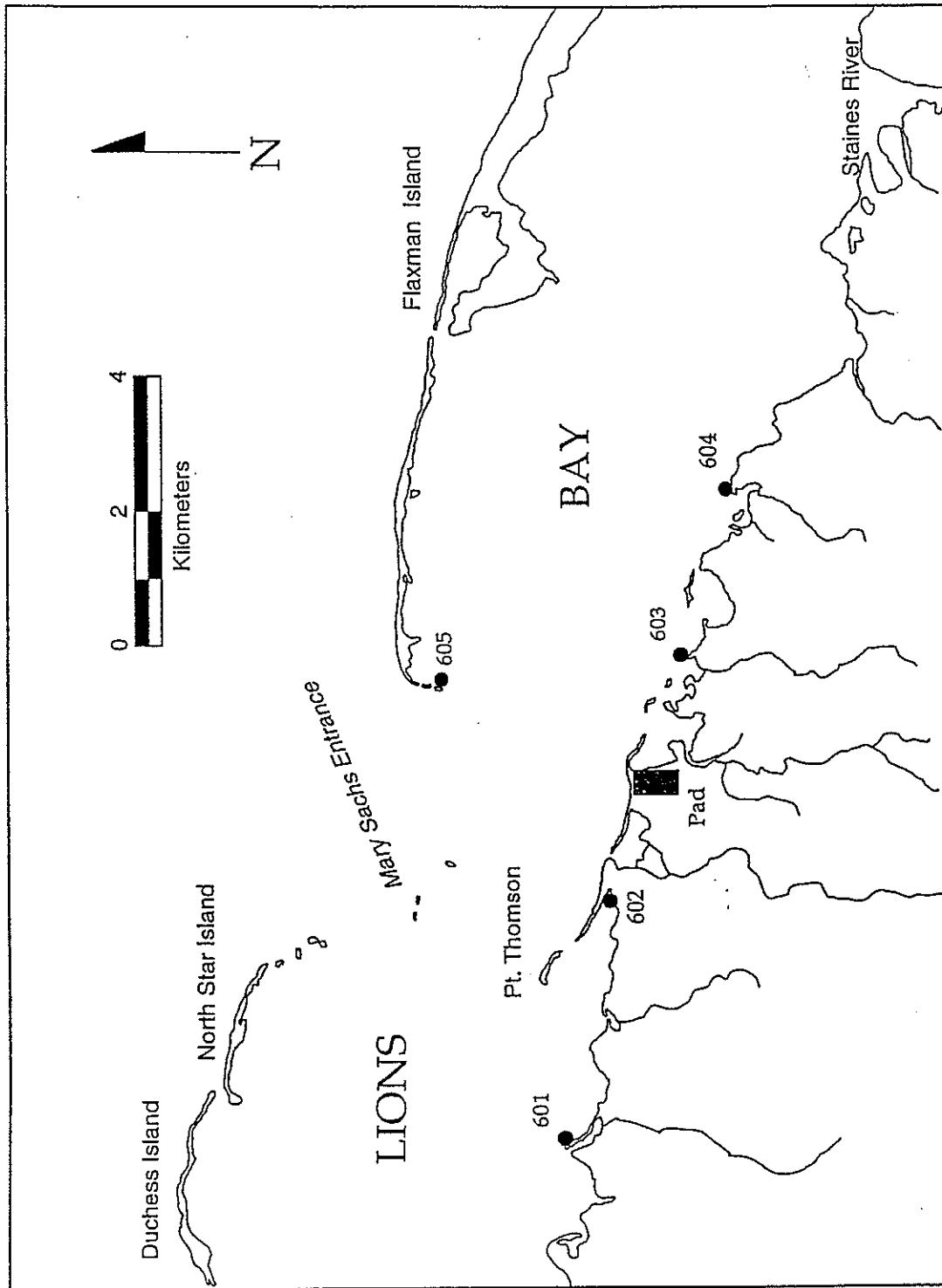


Figure 1. The Point Thomson study area showing locations of fyke net sampling sites.

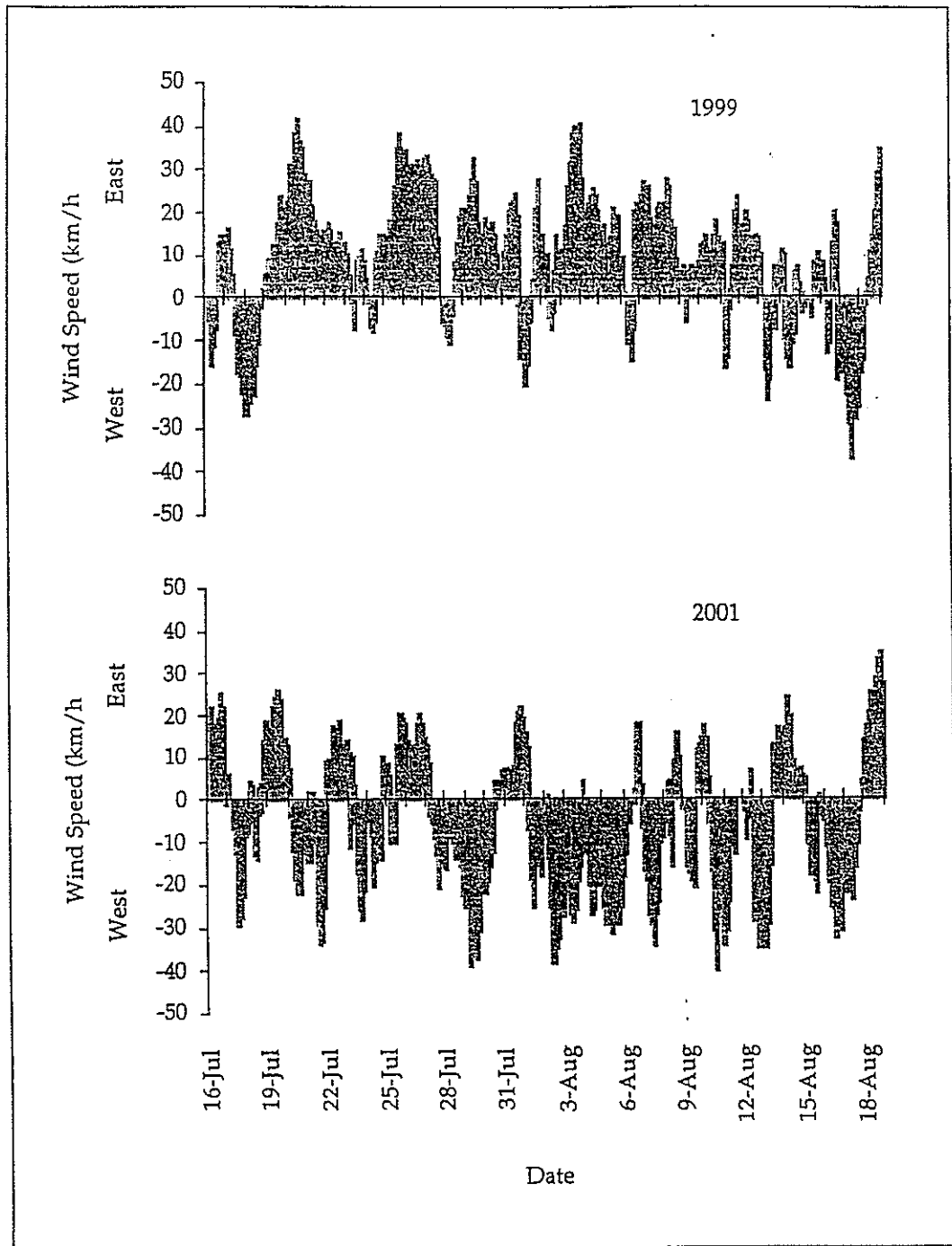


Figure 9. Hourly east/west wind speeds by date for the years 1999 and 2001.

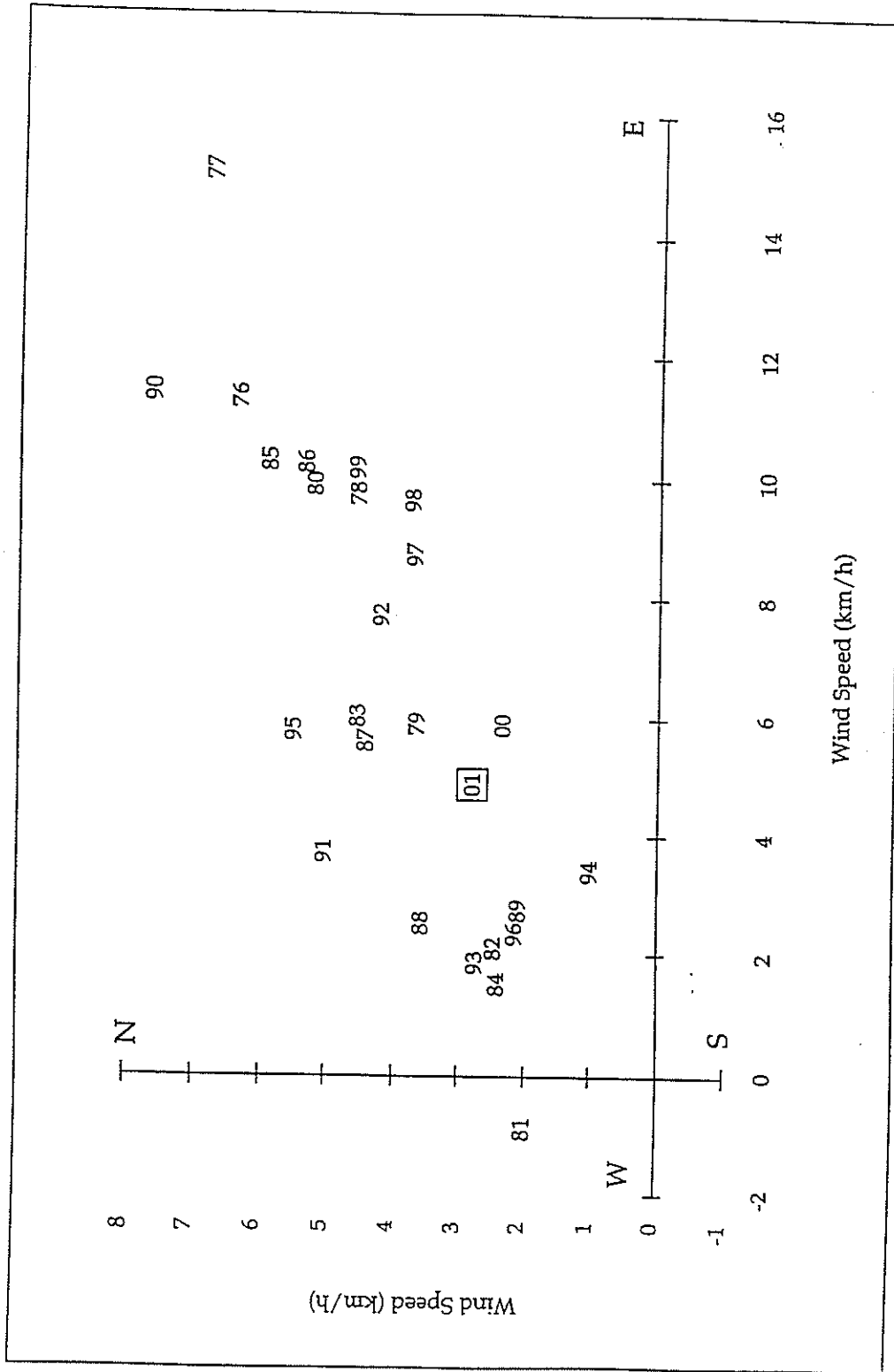


Figure 5. Mean hourly wind speed by year from 1976 to 2001 for the period 1 July- 31 August. Data are expressed in rectangular coordinates with the ordinate (x) representing the east/west wind component and the abscissa (y) representing the north/south wind component. Data for summer 2001 are highlighted. Data were collected at the Deadhorse Airport, Deadhorse, Alaska, by the National Weather Service.

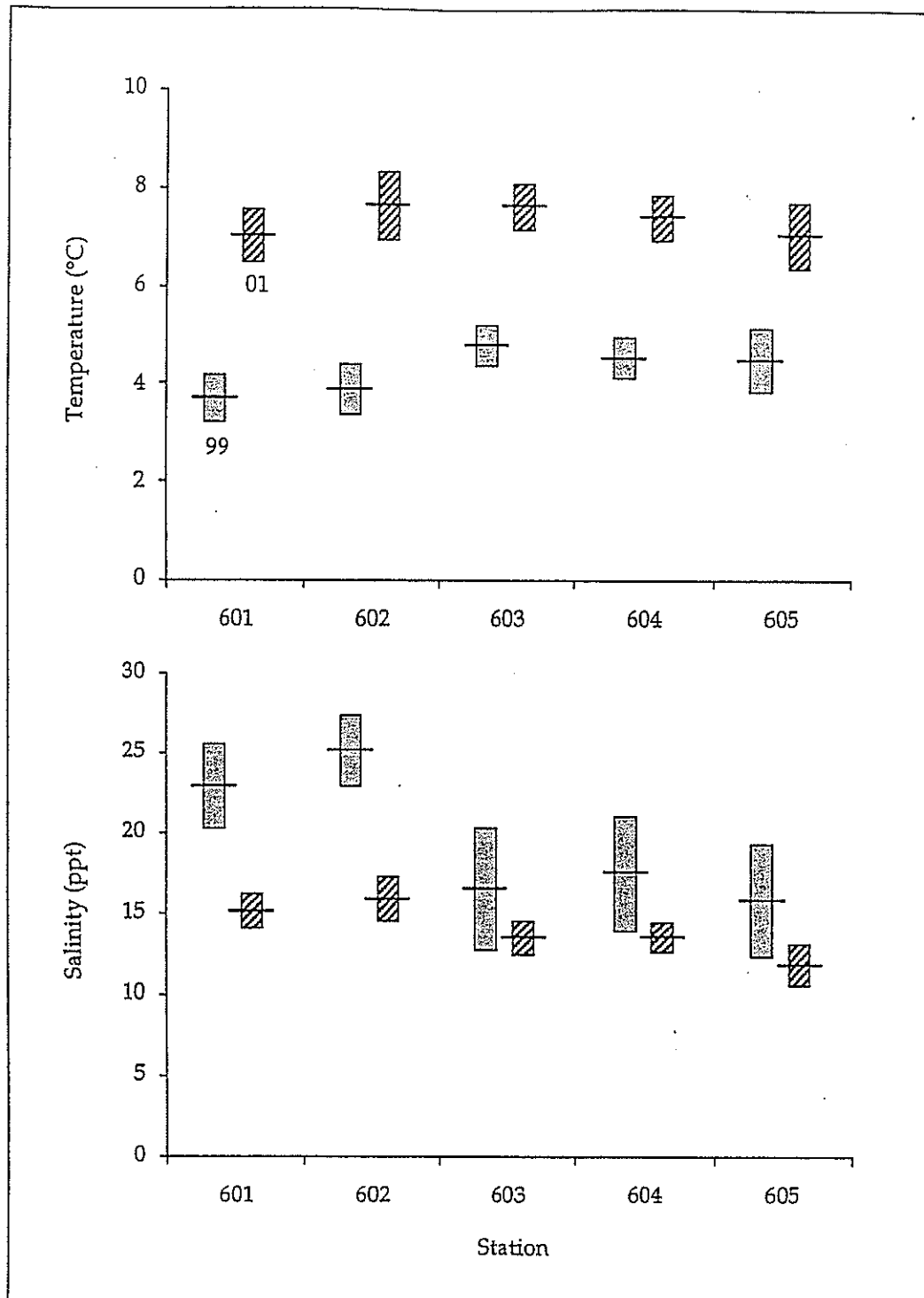


Figure 8. Mean (± 2 SE) daily values of temperature and salinity by station for the common time frame 16 July-18 August. Shaded bars denote 1999 data; hatched bars denote 2001 data.

Table 3. Species composition by net for fish collected during the 2001 Point Thomson study and species totals for the 1999 study. Data for 1999 are from Fechhelm et al. (2000).

Scientific Name	Common Name	Station (2001)							1999	
		600	601	602	603	604	605	Total	Total	
<i>Coregonus sardinella</i>	Least cisco	1	5,273	2,569	1,805	4,111	1,116	14,875	9,007	
<i>Myoxocephalus quadricornis</i>	Fourhorn sculpin	466	2,536	773	754	1,672	519	6,720	13,146	
<i>Coregonus autumnalis</i>	Arctic cisco	39	945	681	780	1,062	2,032	5,539	15,549	
<i>Salvelinus malma</i>	Dolly Varden	299	819	261	322	453	1,280	3,434	9,459	
<i>Boreogadus saida</i>	Arctic cod	0	545	146	406	865	165	2,127	3,229	
<i>Pleuronectes glacialis</i>	Arctic flounder	11	146	274	124	577	144	1,276	947	
<i>Osmerus mordax</i>	Rainbow smelt	19	374	186	203	343	3	1,128	215	
<i>Eleginus navaga</i>	Saffron cod	1	50	54	54	138	42	339	8,699	
<i>Coregonus nasus</i>	Broad whitefish	21	126	61	25	54	1	288	491	
<i>Pungitius pungitius</i>	Ninespine stickleback	0	102	67	13	40	1	223	6,892	
Zoarcidae	Eelpout	0	5	9	3	9	7	33	1	
<i>Mallotus villosus</i>	Capelin	0	14	2	0	1	1	18	0	
Cottidae	Sculpin sp.	0	11	0	1	2	2	16	0	
<i>Coregonus pidschian</i>	Humpback whitefish	0	8	2	0	0	0	10	101	
Cyclopteridae	Snailfish	0	2	3	1	2	0	8	1	
<i>Oncorhynchus keta</i>	Chum salmon	0	1	0	0	1	1	3	0	
<i>Coregonus sp.</i>	Hybrid Cisco	0	0	1	0	0	1	2	0	
<i>Prosopium cylindraceum</i>	Round whitefish	0	0	0	0	1	1	2	13	
<i>Thymallus arcticus</i>	Arctic grayling	1	0	0	0	0	0	1	17	
Salmonidae	Unidentified whitefish	0	0	0	0	1	0	1	0	
Total		858	10,957	5,089	4,491	9,332	5,316	36,043	67,767	

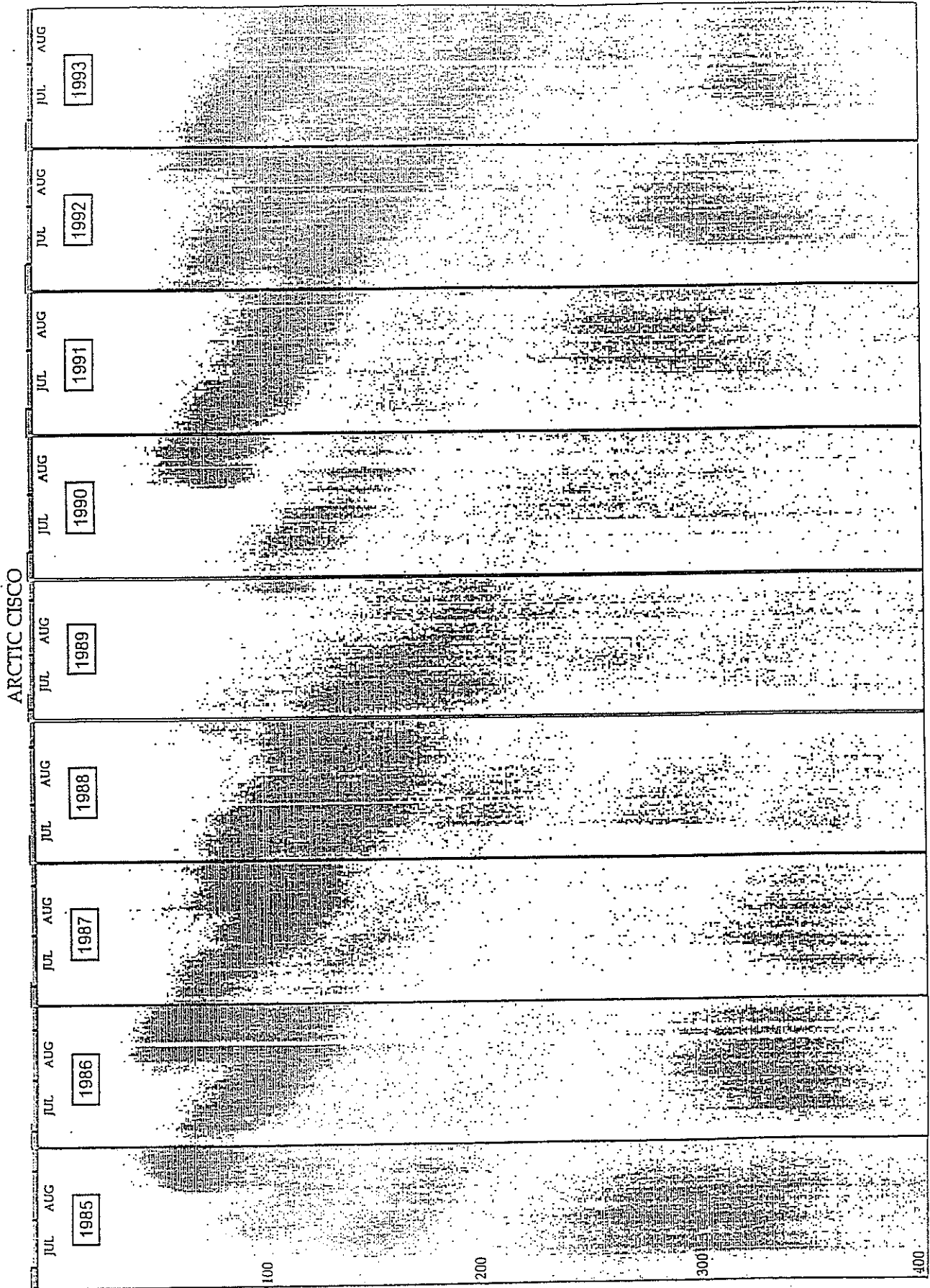


Figure 10. Catch by length and date of Arctic cisco in the Prudhoe Bay area for 1985-2001.

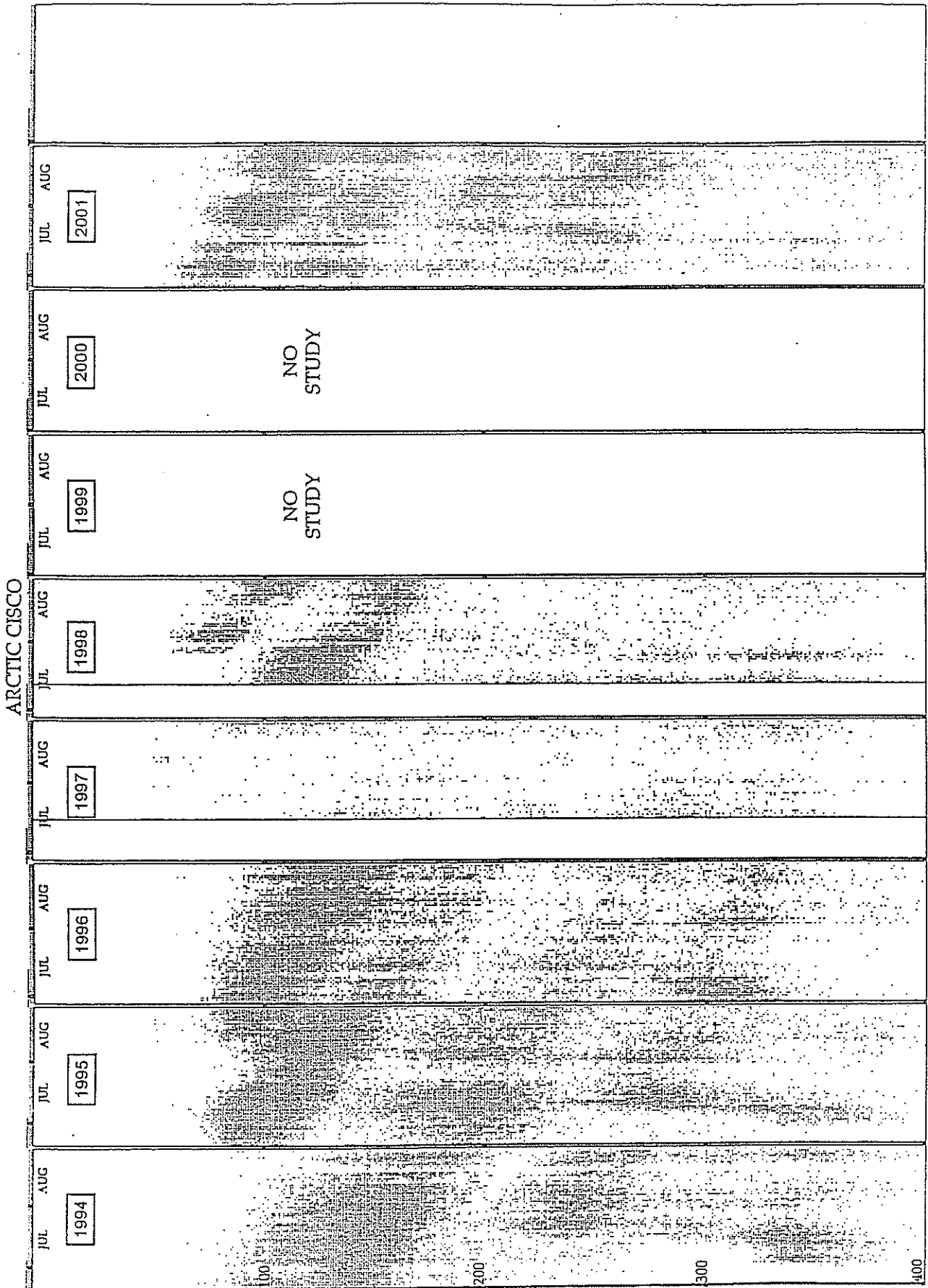


Figure 10. Continued.

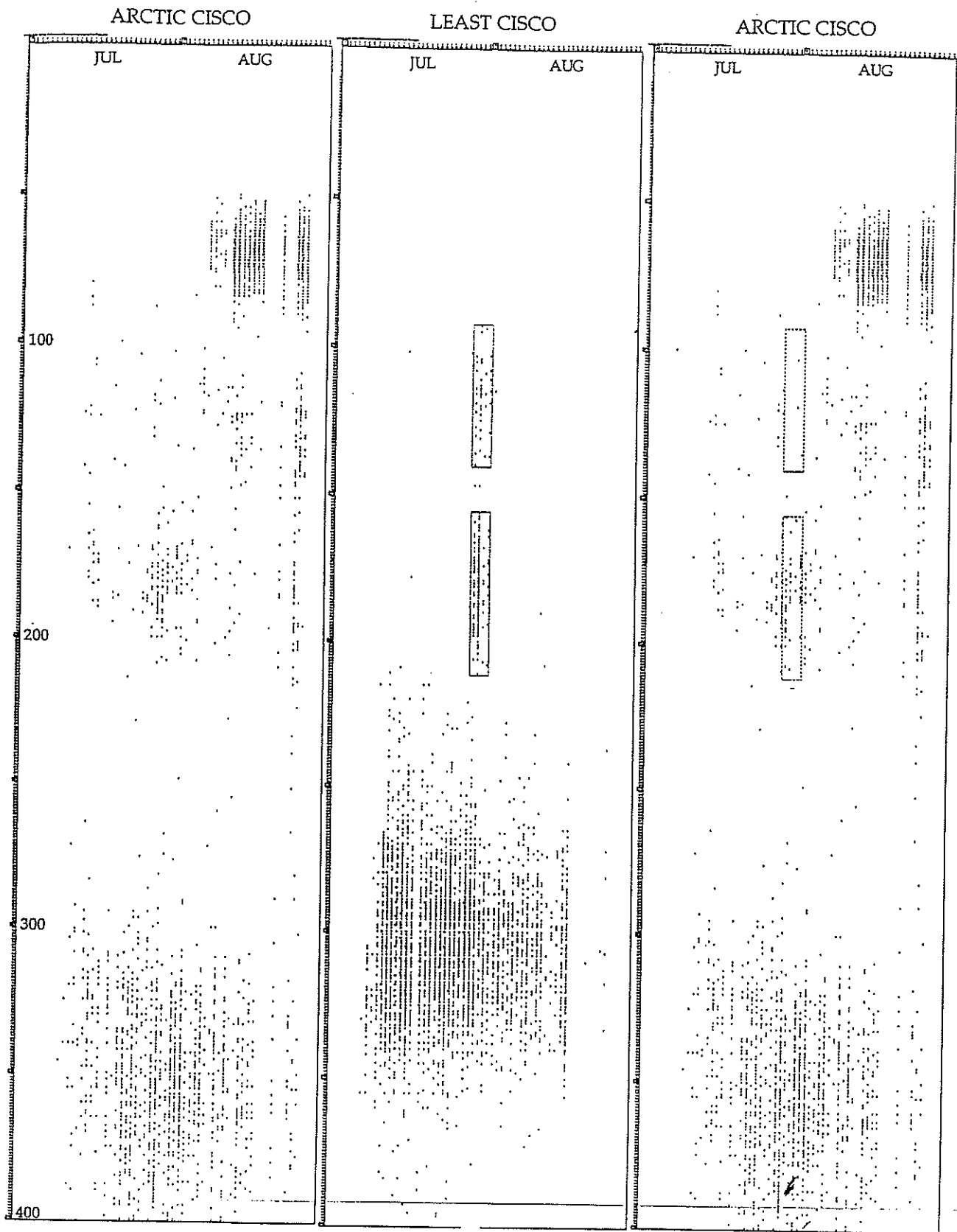


Figure 4. Catch by length data for Arctic and least cisco collected at Point Thomson in 1999. Two groups of small "least cisco" caught from 29 July to 1 August are blocked by dotted lines. These blocks (not the size data) are superimposed on the Arctic cisco catch data in the third panel (duplicate of first panel). Data indicate that small "least cisco" collected at Point Thomson match the size distribution of age-1 and age-2 Arctic cisco.

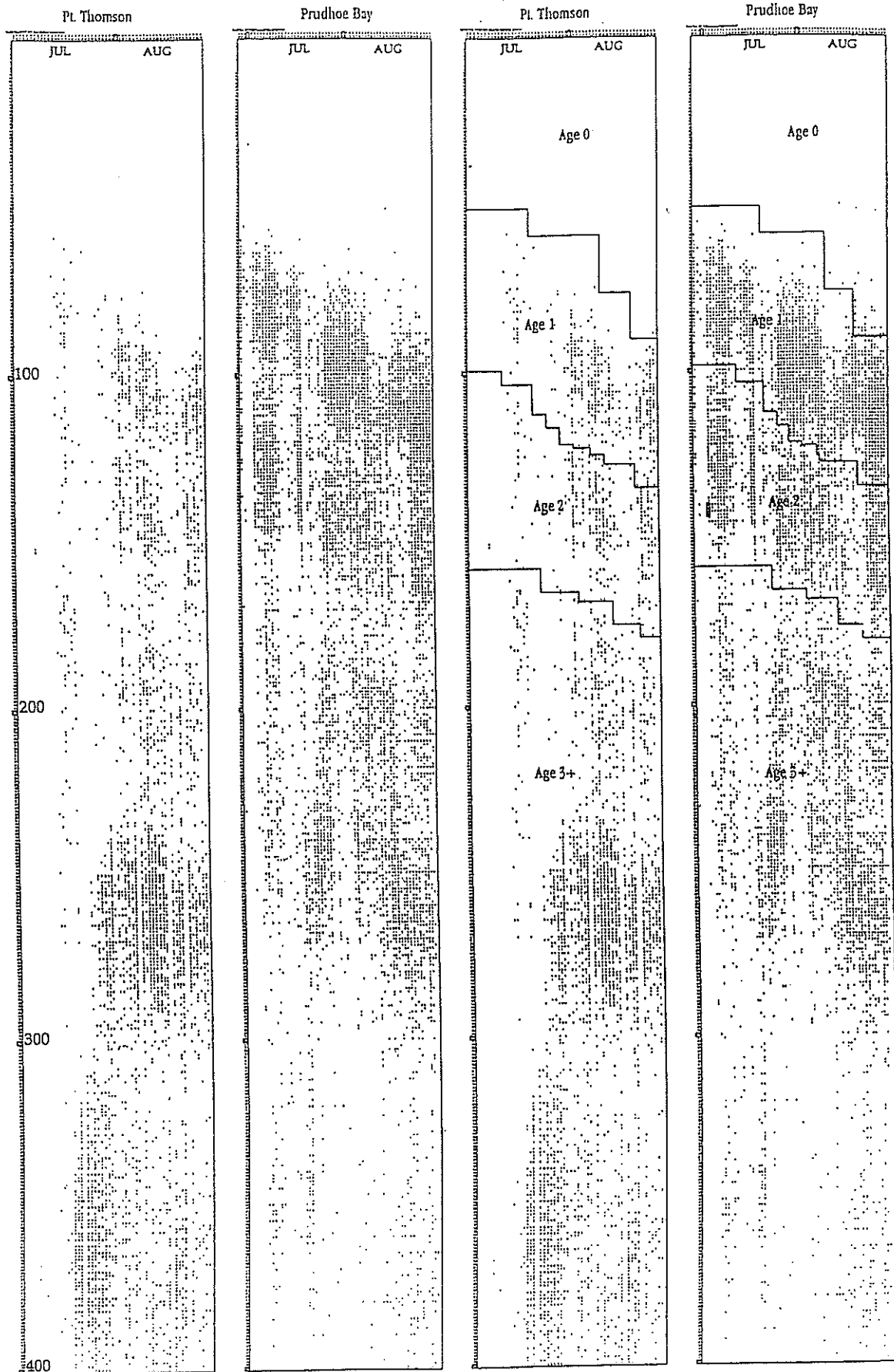


Figure 11. Catch by length and date of Arctic cisco in Prudhoe Bay and at Point Thomson 2001, with cohorts delineated in the right two panels.

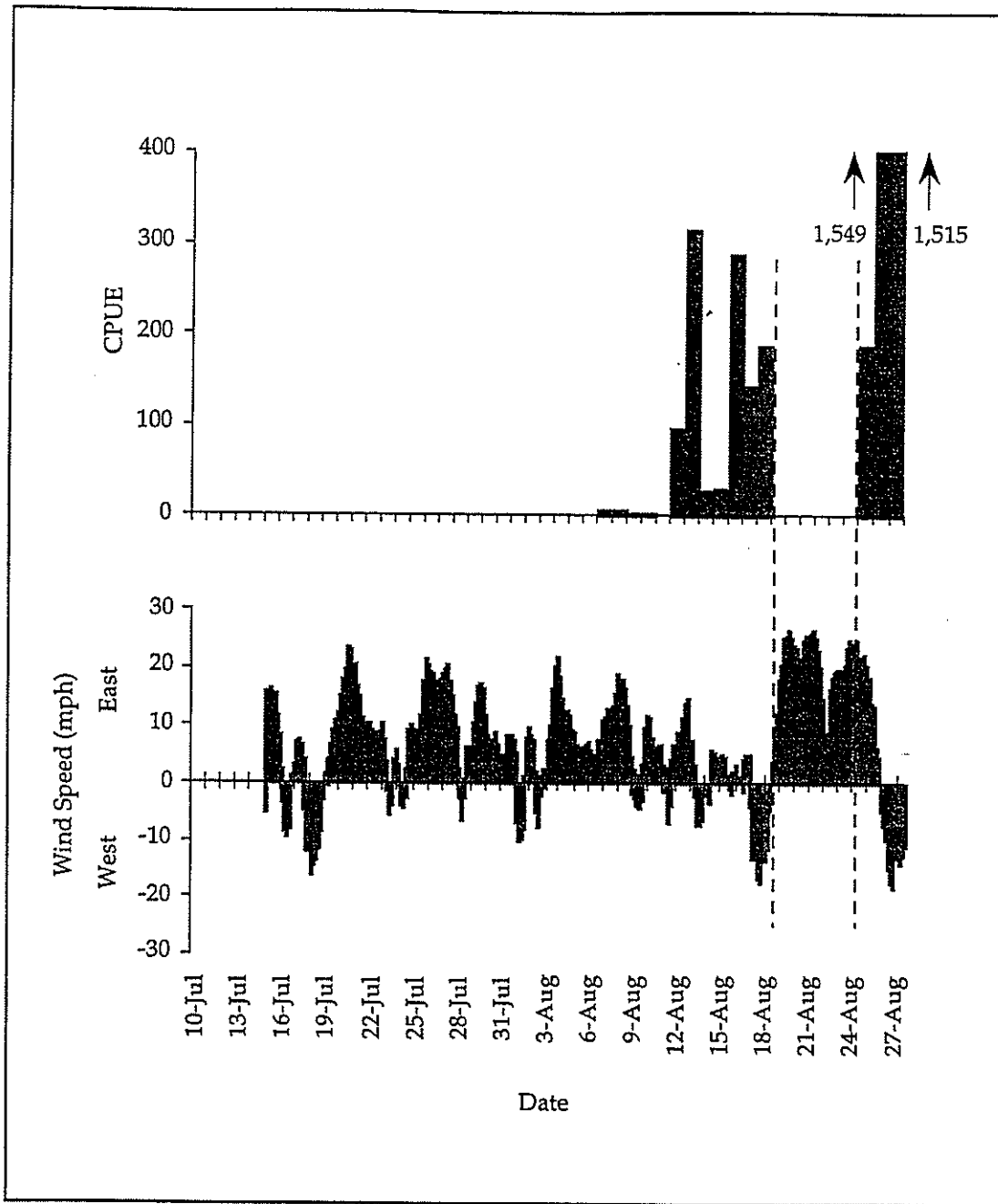


Figure 8. Catch-per-unit-effort (CPUE: fish/net/24 h) for age-0 (Cohort 1) Arctic cisco collected at Point Thomson in 1999 (top panel) and average hourly east/west wind speed by date (bottom panel). Vertical dashed lines denote the period when fyke nets were not operational.

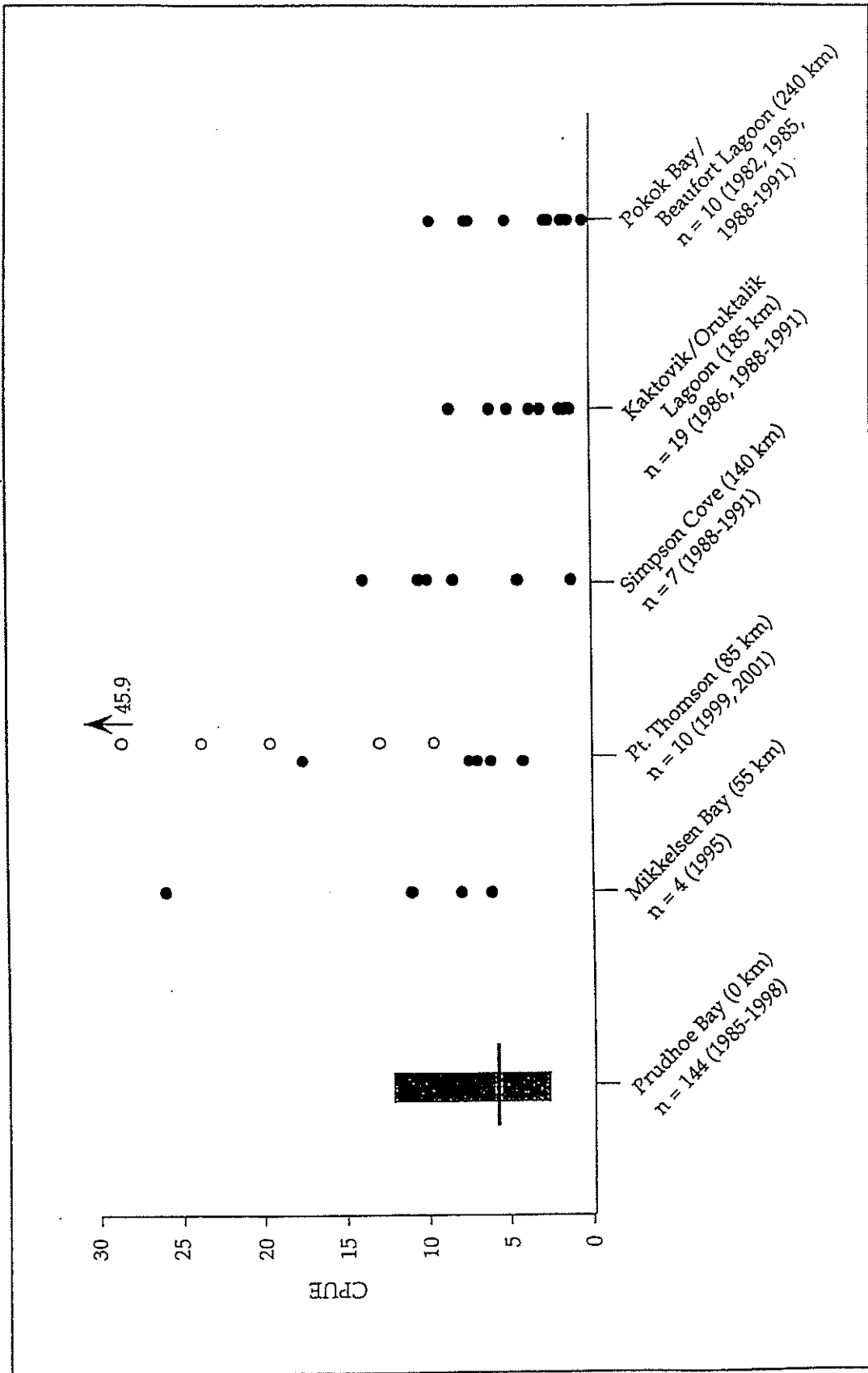


Figure 18. Catch-per-unit-effort (CPUE=fish/net/24 h) of Arctic cisco (age 3+) collected by fyke net along the Beaufort Sea coast from Prudhoe Bay to the U.S. / Canadian border. Locations are scaled to the approximate distance from Prudhoe Bay (0 km). Sample size (n) denotes the total number of fyke nets sampled followed parenthetically by the years in which sampling took place. Data for Prudhoe Bay are expressed as median and interquartile range. Sources: Prudhoe Bay (Cannon et al. 1987; Glass et al. 1990; LGL 1990, 1991, 1992, 1993, 1994a, 1994b, 1999a, 1999b; Reub et al. 1991; Griffiths et al. 1995, 1996, 1997), Mikkelsen Bay (Fechhelm et al. 1996), Point Thomson (Fechhelm et al. 2000 [solid symbols]; this study [open symbols]), Simpson Cove (Underwood et al. 1995), Kaktovik (Wiswar et al. 1995; Underwood et al. 1995), Pokok Bay/Beaufort Lagoon (Griffiths 1983; West and Wiswar 1985; Underwood et al. 1995). Data for West and Wiswar (1985), Underwood et al. (1995) and Wiswar et al. (1995) are for fish ≥ 200 mm and are, therefore, slight underestimates of age 3+ catch.

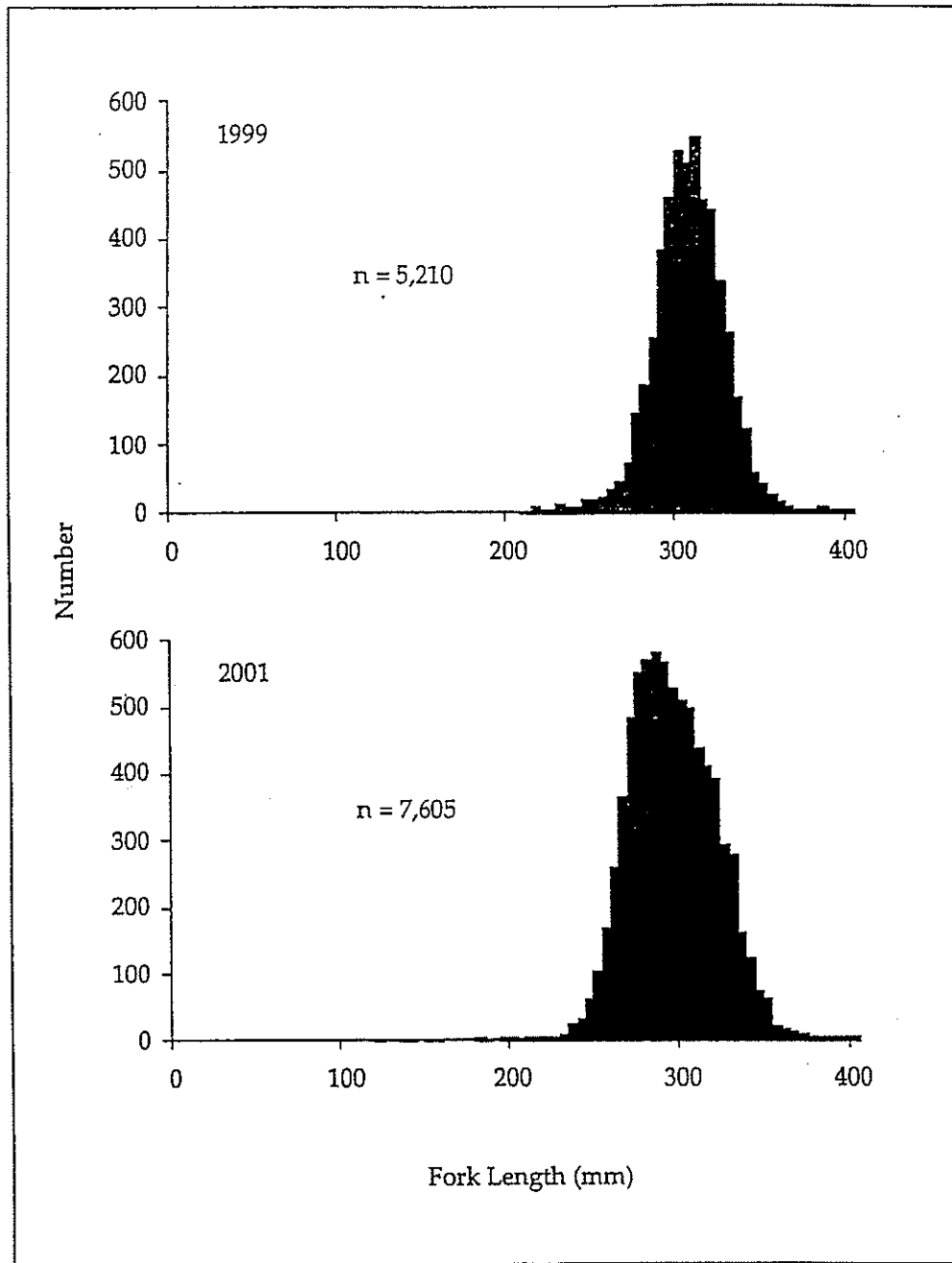


Figure 30. Length-frequency distributions of least cisco collected at Point Thomson, 1999-2001.

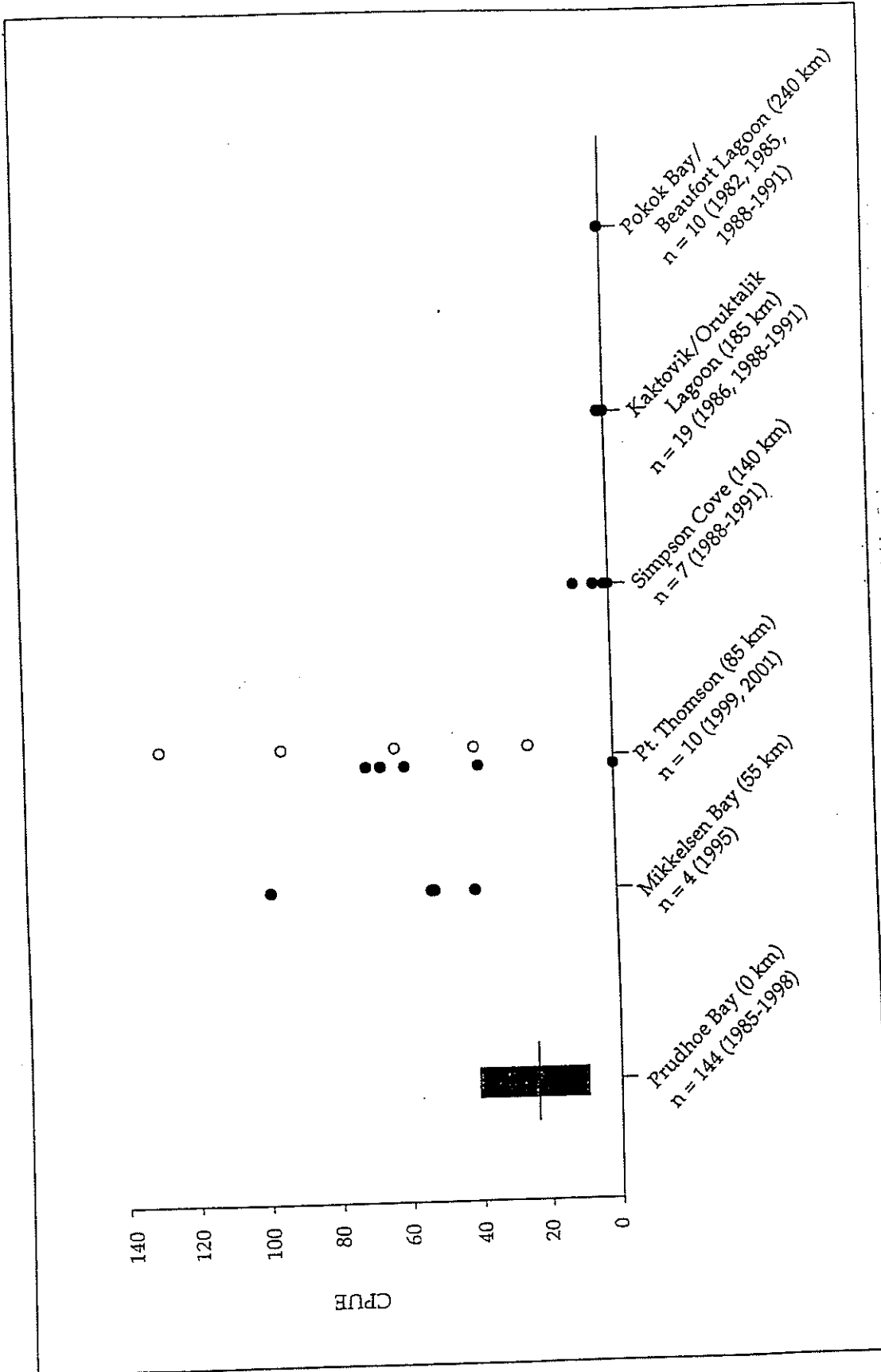


Figure 32. Catch-per-unit-effort (CPUE=fish/net / 24 h) of adult least cisco (> 180 mm) collected by fyke net along the Beaufort Sea coast from Prudhoe Bay to the U.S. / Canadian border. (Studies for Simpson Cove, Kaktovik, and Pokok Bay reported catches of all least cisco and it was assumed that all were adults). Locations are scaled to the approximate distance from Prudhoe Bay (0 km). Sample size (n) denotes the total number of fyke nets sampled followed parenthetically by the years in which sampling took place. Data for Prudhoe Bay are expressed as median and interquartile range. Data exclude 178 “juvenile least cisco” collected by Wesy and Wiswar (1984) at Beaufort lagoon in August, 1984 (misidentified fish). Sources: Prudhoe Bay (Cannon et al. 1987; Glass et al. 1990; LGL 1990, 1992, 1993, 1994a, 1994b, 1999a, 1999b; Reub et al. 1991; and Griffiths et al. 1995, 1996, 1997), Mikkelsen Bay (Fechhelm et al. 1996), Pt. Thomson (Fechhelm et al. 2000 [solid symbols]); this study [open symbols]), Simpson Cove (Underwood et al. 1995), Kaktovik (Wiswar et al. 1995; Underwood et al. 1995), Pokok Bay / Beaufort Lagoon (Griffiths 1983; West and Wiswar 1985; Underwood et al. 1995).

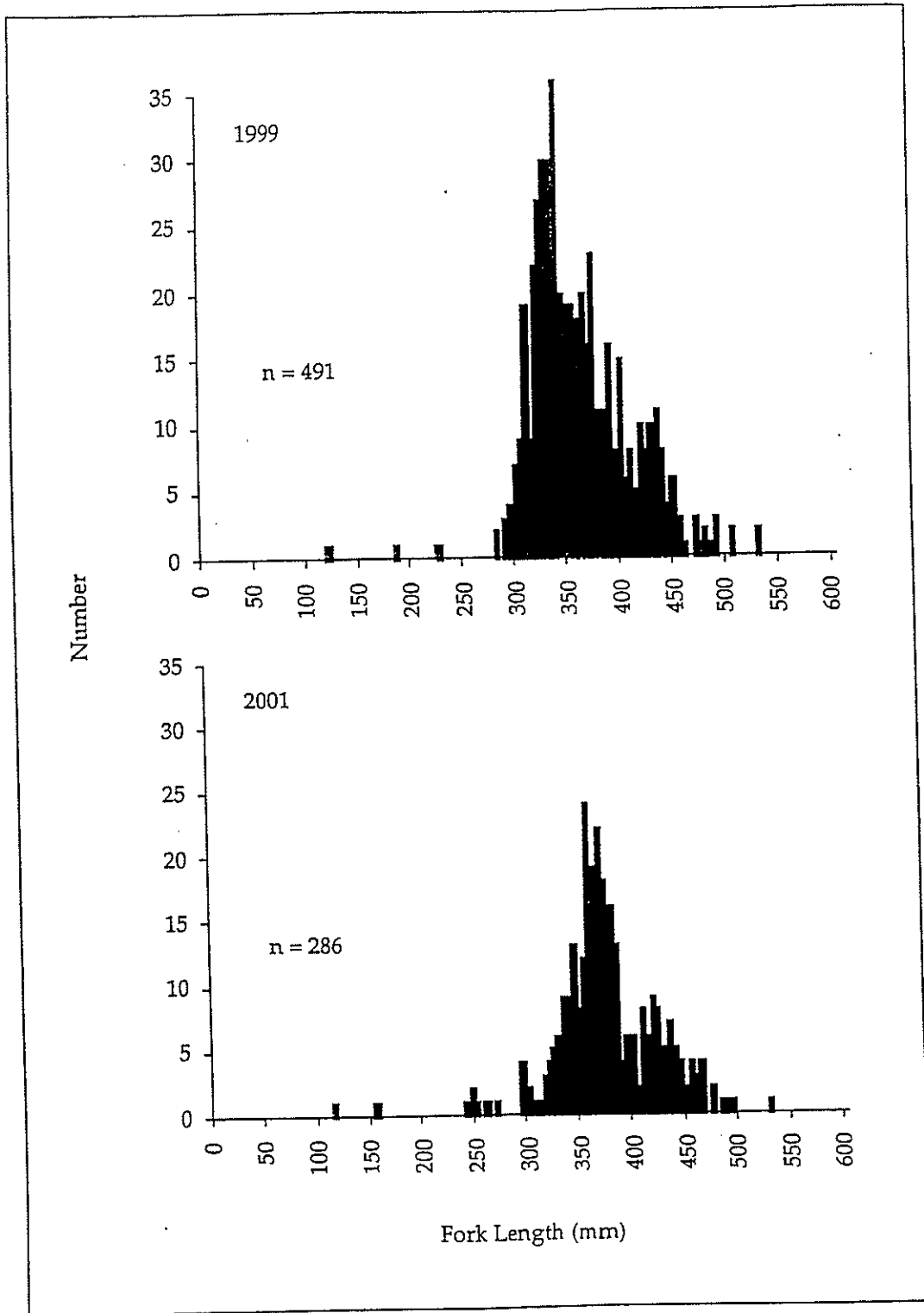


Figure 27. Length-frequency distributions for broad whitefish collected at Point Thomson, 1999 and 2001.

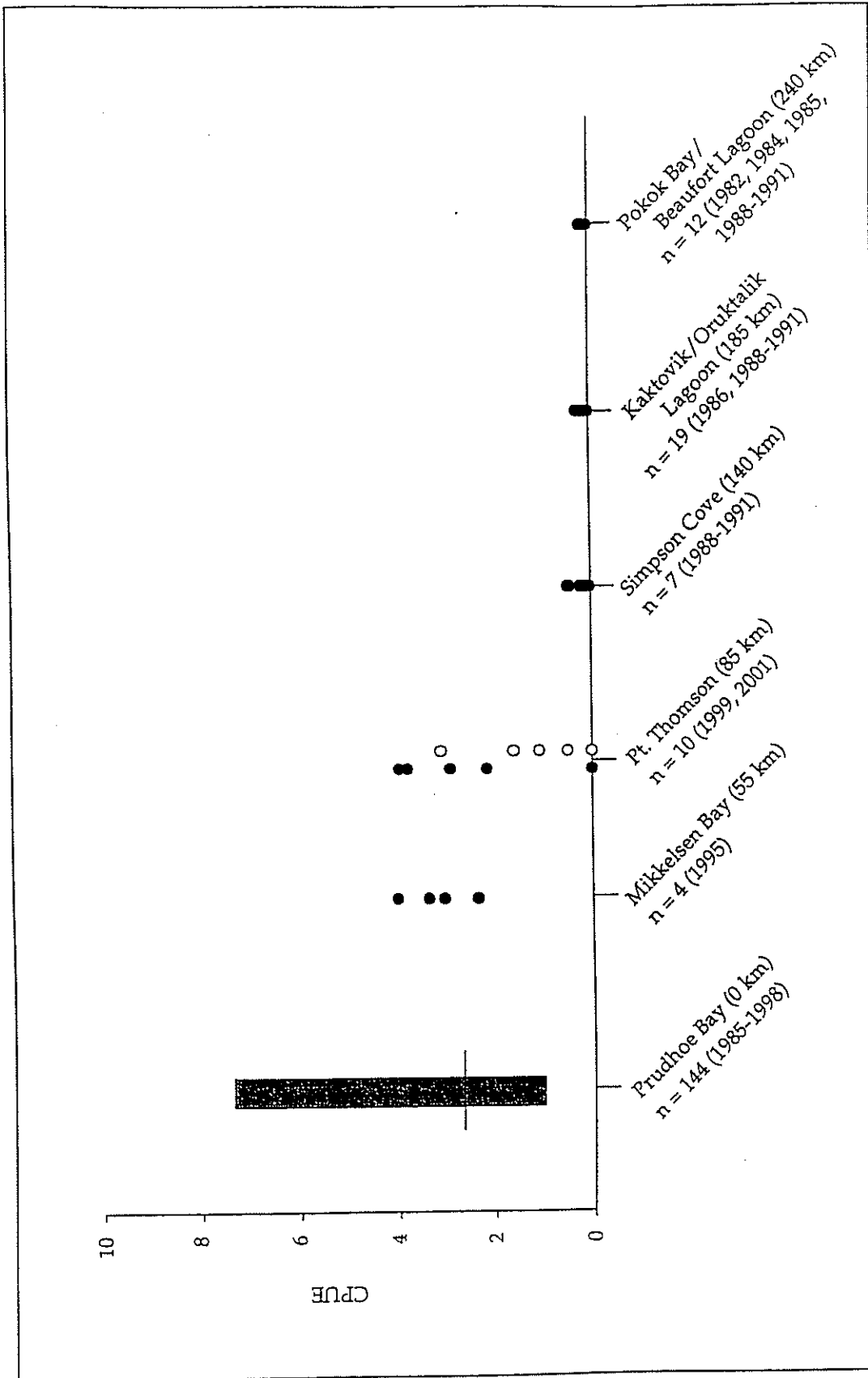


Figure 29. Catch-per-unit-effort (CPUE=fish/net/24 h) of adult broad whitefish (≥ 280 mm) collected by fyke net along the Beaufort Sea coast from Prudhoe Bay to the U.S./Canadian border. (Studies for Simpson Cove, Kaktovik, and Pokok Bay reported catches for all broad whitefish and it was assumed that all were adults). Locations are scaled to the approximate distance from Prudhoe Bay (0 km). Sample size (n) denotes the total number of fyke nets sampled followed parenthetically by the years in which sampling took place. Data for Prudhoe Bay are expressed as median and interquartile range. Sources: Prudhoe Bay (Cannon et al. 1987; Glass et al. 1990; LGL 1990, 1991, 1992, 1993, 1994a, 1994b, 1999a, 1999b; Reub et al. 1991; Griffiths et al. 1995, 1996, 1997), Mikkelsen Bay (Fechhelm et al. 1996), Point Thomson (Fechhelm et al. 2000 [solid symbols]; this study [open symbols]), Simpson Cove (Underwood et al. 1995), Kaktovik (Wiswar et al. 1995; Underwood et al. 1995), Pokok Bay/Beaufort Lagoon (Griffiths 1983; West and Wiswar 1985; Underwood et al. 1995).

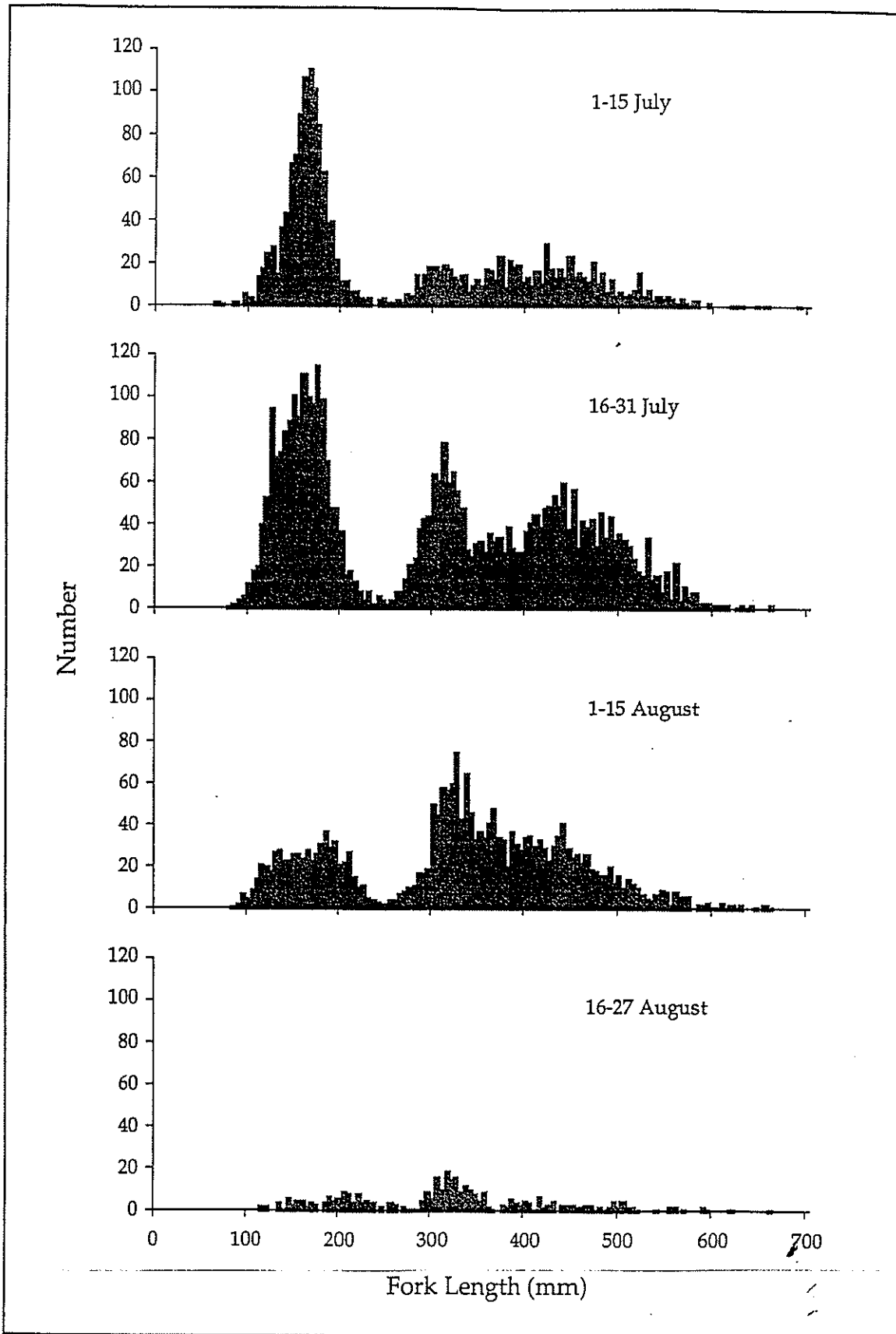


Figure 21. Length frequency distributions of Dolly Varden collected at Point Thomson, 1999.

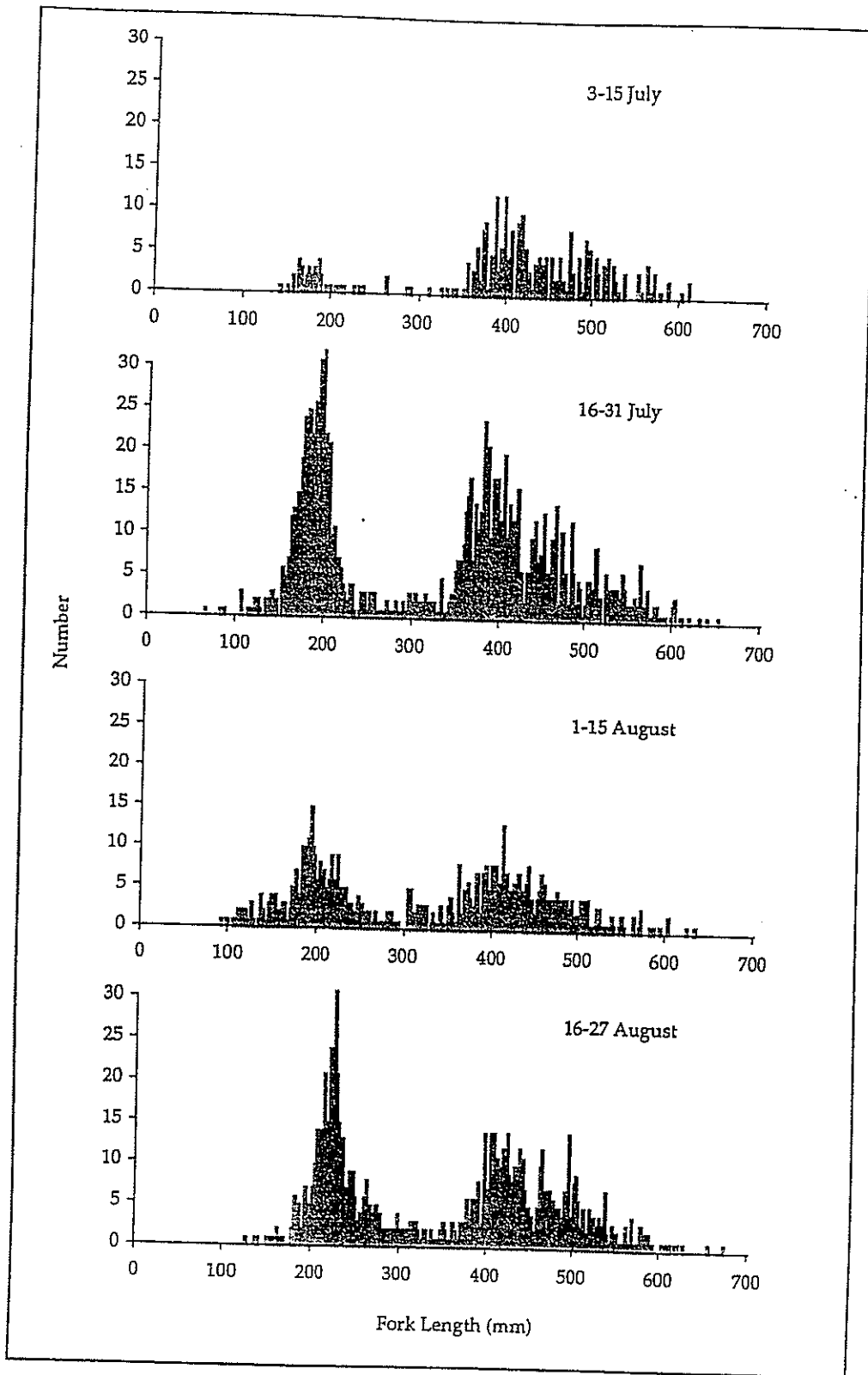


Figure 22. Length frequency distributions of Dolly Varden collected at Point Thomson, 2001.

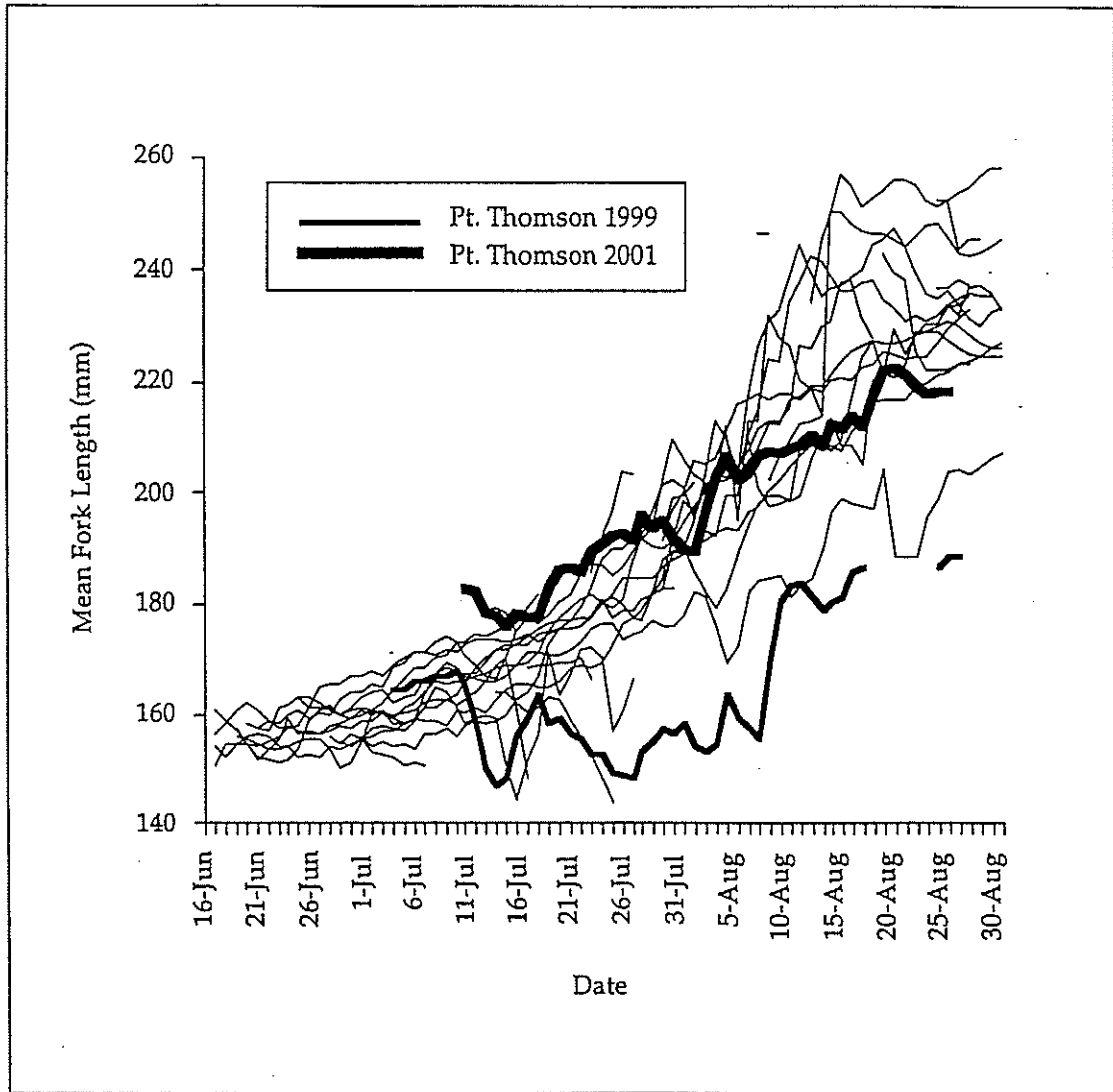


Figure 24. Mean daily fork length of Dolly Varden smolts from Prudhoe Bay (1985-1996) and Point Thomson (1999 and 2001). Data are smoothed using a three day moving average.

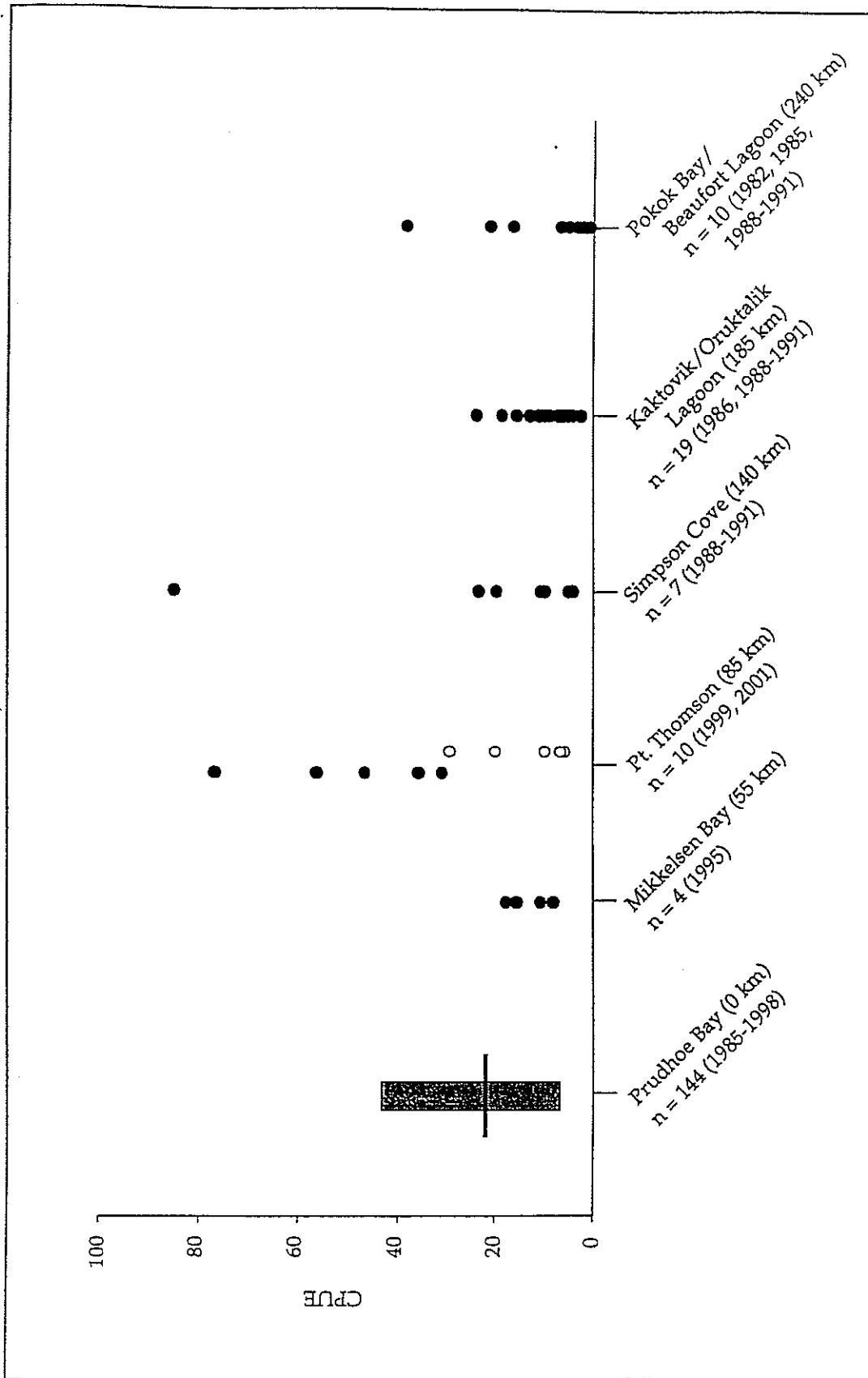


Figure 21. Catch-per-unit-effort (CPUE=fish/net/24 h) of Dolly Varden (all ages) collected by fyke net along the Beaufort Sea coast from Prudhoe Bay to the U.S./Canadian border. Locations are scaled to the approximate distance from Prudhoe Bay (0 km). Sample size (n) denotes the total number of fyke nets sampled followed parenthetically by the years in which sampling took place. Data for Prudhoe Bay are expressed as median and interquartile range. Sources: Prudhoe Bay (Cannon et al. 1987; Glass et al. 1990; LGL 1990, 1991, 1992, 1993, 1994a, 1994b, 1999a, 1999b; Reub et al. 1991; Griffiths et al. 1995, 1996, 1997), Mikkelsen Bay (Fechhelm et al. 1996), Point Thomson (Fechhelm et al. 2000 [solid symbols]; this study [open symbols]), Simpson Cove (Underwood et al. 1995), Kaktovik (Wiswar et al. 1995; Underwood et al. 1995), Pokok Bay/Beaufort Lagoon (Griffiths 1983; West and Wiswar 1985; Underwood et al. 1995).

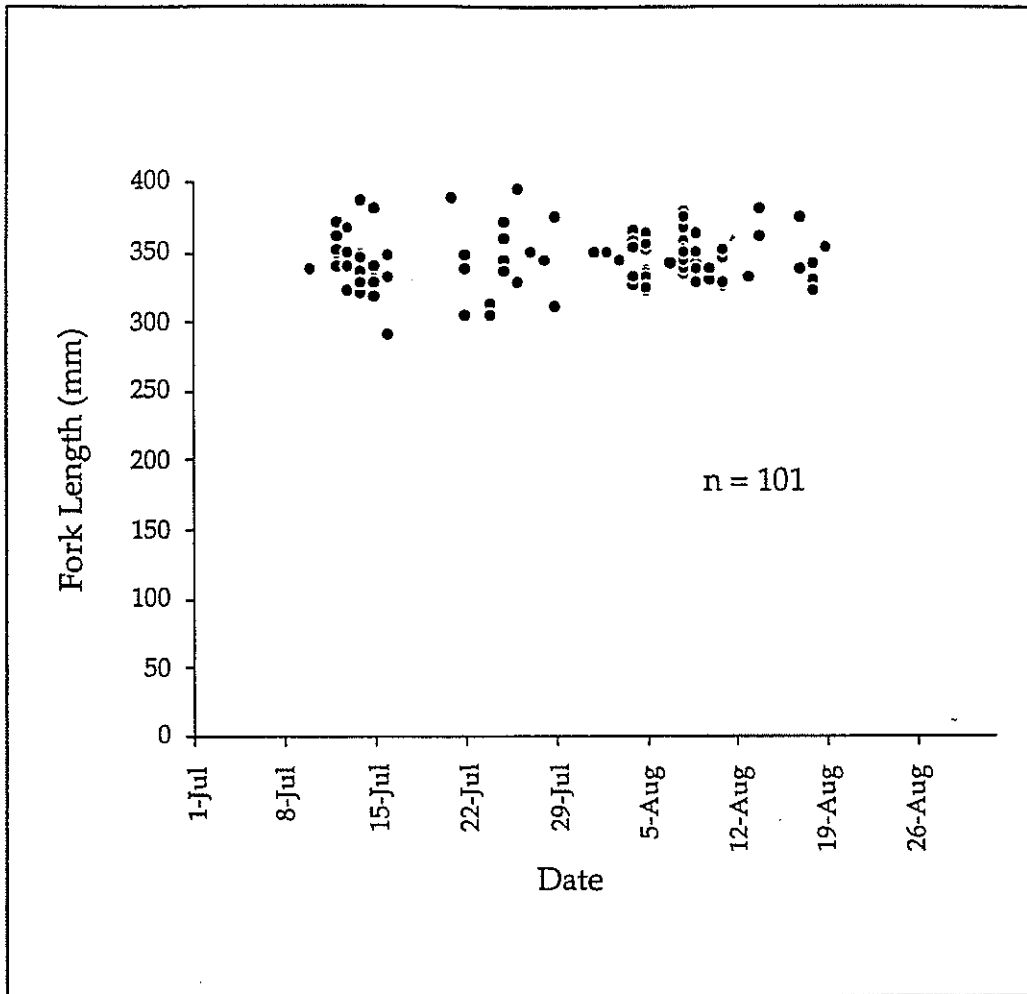
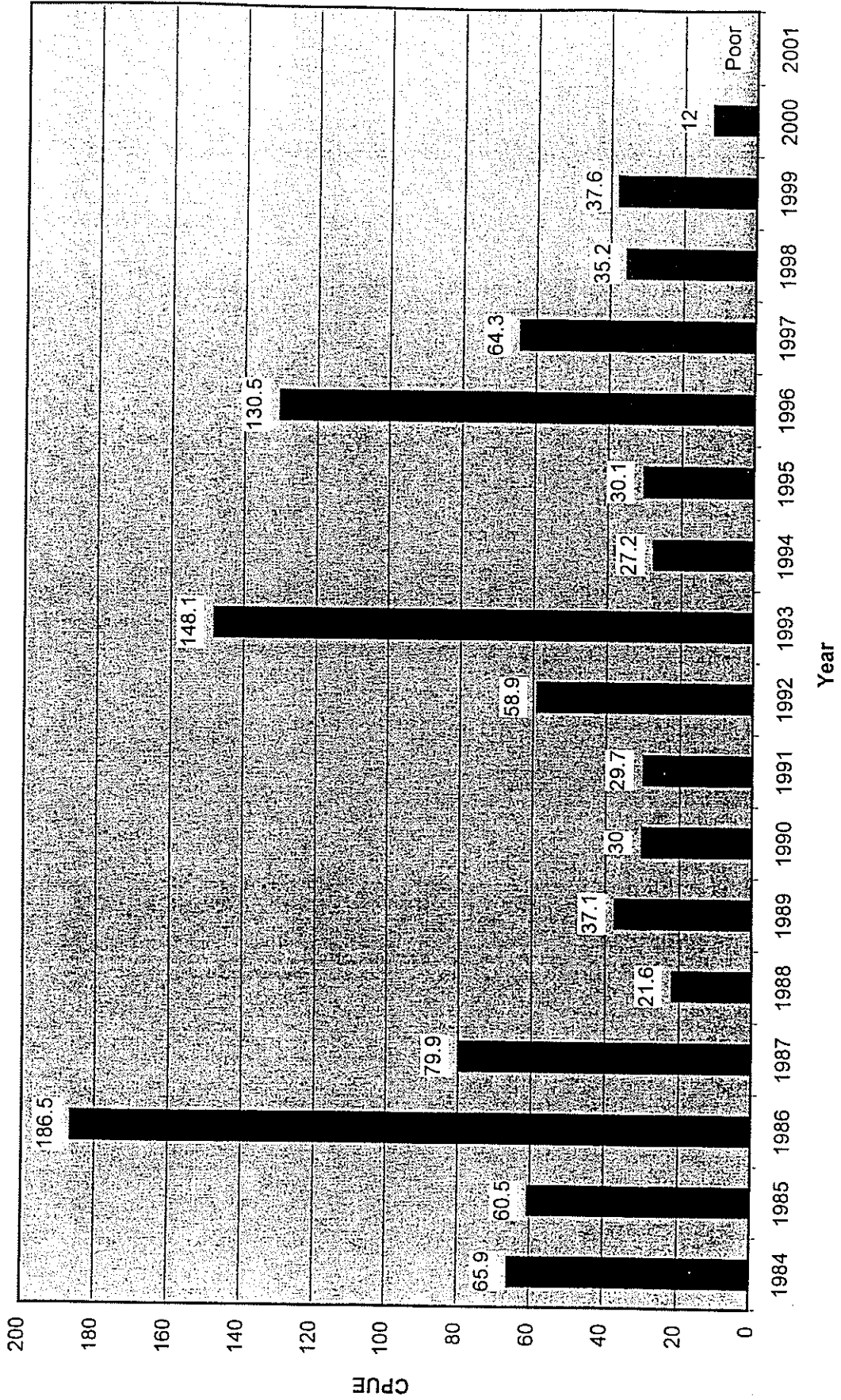


Figure 25. Fork lengths of all humpback whitefish collected by date at Point Thomson , 1999.

Arctic cisco catch rates, Colville Fishery, 1984-2001



Arctic cisco YOY Recruitment Strength, Prudhoe Bay, 1982-2001

