



Serial No. 5158
(D.c.2)

ICNAF Res. Doc. 78/11/6

SPECIAL MEETING OF STACRES - FEBRUARY 1978

Breakdown of inshore Newfoundland squid catches, 1975-77 with
length and sex composition from commercial samples

by

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Introduction

Mercer (1973a) gives a monthly breakdown of inshore Newfoundland squid landings for the period 1956-72 and a statistical area breakdown for 1955-68. Detailed statistics are unavailable for earlier years but an account of relative annual abundance back to 1879 is given by Squires (1957). The offshore fishery for squid (*Illex illecebrosus*) has developed rather explosively over the past few years and it was considered that details of inshore Newfoundland landings and commercial catch sampling for this period would be useful in discussions on management of this fishery.

Materials and Methods

Monthly landings of squid by Newfoundland sea fisheries statistical area (Fig. 1) and ICNAF division (Fig. 2) were obtained from the Economics and Intelligence Branch, Fisheries and Marine Service, Newfoundland Region and the ICNAF Statistical Bulletin. Figures for 1977 are not final.

During 1975-77 15 samples (averaging 421 squid per sample) were obtained from commercial catches at Holyrood, Conception Bay (Newfoundland statistical area E, ICNAF division 3L). In addition, a sample was obtained from Torbay in June 1977 and one from Freshwater Bay in September 1977 (both localities are in Newfoundland statistical area F, ICNAF division 3L). Dorsal mantle lengths were measured to the nearest half-centimeter, sex was determined and maturity classified according to the scale proposed by Mercer (1973b). Length-frequency data by sex were adjusted up to total removals for ICNAF division 3L for those months that samples were obtained using the length-weight relationship of Mercer (1973c). Samples were not obtained for each month that landings were made throughout 1975-77. The following catches were not sampled: July 1975 and 1976, October 1976 and 1977, November 1975, and December 1977. In 1976 and 1977 September and November samples were combined to obtain an average to represent October. These combined samples were adjusted up to total removals for October catches in those years. This could not be done for other months in which samples were not obtained. Samples for those months from previous years were not used because when samples for the same period in different years were compared by cursory examination, the differences were quite considerable.

Results

Landings

In 1973 inshore Newfoundland squid landings were 621 tons, up slightly from 1972 landings of 45 tons. In 1974 landings were down again to a very low level (17 tons). Landings increased to 3202 tons in 1975, to 9895 tons in 1976 and to 29,678 tons in 1977. The previous high landings were 10,399 tons in 1964. The considerable increase in 1977 over the previous high landings resulted from increased effort due to better prices to fishermen. However, even 1977 landings are well below the potential 50,000 tons suggested for this area by Mercer (quoted as a personal communication by Voss (1973)). There's little doubt, however, that the catching capacity was sufficiently great for this potential to have been realized. It was not realized because plants frequently had to stop buying squid when their freezing space became filled.

A breakdown of Newfoundland squid landings for 1975, 1976, and 1977 by month for Newfoundland statistical areas and for ICNAF divisions is given in Tables 1 and 2.

Length frequencies

Length frequency distributions by sex are shown (Figs. 3, 4, 5) for all samples from commercial catches at Holyrood during 1975-77. In males the frequencies are broken down by maturity stage. Numbers examined, mean lengths and standard deviations are included in the figures. The subjects of sexual maturity, sex ratios and size distribution for squid inshore at Newfoundland have already been treated in detail by Mercer (1973b, 1975). Our purpose here is to make similar data available for more recent years.

Frequencies adjusted up to total removals

Length frequencies for samples collected within division 3L during 1955-77 were adjusted up to total removals in 3L for the months in which the samples were taken (Tables 3, 4, 5). Unfortunately, samples were not obtained for all months in which landings were made. Frequencies were produced for October 1976 and 1977 by combining September and November samples and averaging. This was not possible, however, for other months that were not sampled.

Acknowledgments

The assistance of Paul Beck in preparing the tables is gratefully acknowledged. We also thank M.C. Mercer for allowing us to make use of samples collected while he was scientist-in-charge of squid investigations at this establishment.

References

- Mercer, M.C. 1973a. Nominal catch of squid in Canadian Atlantic waters (Subareas 2-4) 1920-68. Intern. Comm. Northw. Atlant. Fish. Res. Doc. 73/73 Ser. No. 3025: 10 p.
- 1973b. Sexual maturity and sex ratios of the ommastrephid squid, *Illex illecebrosus* (LeSueur) at Newfoundland (Subarea 3). Intern. Comm. Northw. Atlant. Fish. Res. Doc. 73/71 Ser. No. 3023: 14 p.
- 1973c. Length-weight relationship of the ommastrephid squid *Illex illecebrosus* (LeSueur). Intern. Comm. Northw. Atlant. Fish. Res. Doc. 73/72 Ser. No. 3024: 2 p.
1975. Size distributions of the migrant ommastrephid squid, *Illex illecebrosus* (LeSueur) in Newfoundland inshore waters. Intern. Comm. Northw. Atlant. Fish. Res. Doc. 75/27 Ser. No. 3482: 13 p.
- Squires, H.J. 1957. Squid, *Illex illecebrosus* (LeSueur), in the Newfoundland fishing area. J. Fish. Res. Board Can. 14: 693-728.
- Voss, G.L. 1973. Cephalopod resources of the world. FAO Circular No. 149. 75 p.

Table 1. Breakdown of squid landings (metric tons) at Newfoundland 1975-77 by sea fisheries areas as delineated in Fig. 1.

Fishery Area	1975							Totals
	Month							
	June	July	August	Sept.	Oct.	Nov.	Dec.	
A	0	45.9	265.7	23.9	.6	0	0	336.1
B	0	20.9	75.5	26.9	4.0	0	0	127.3
C	0	40.1	187.3	75.6	59.5	0	0	362.5
D	0	102.4	590.2	113.7	55.8	0	0	862.1
E	.1	146.1	744.8	267.5	64.7	.8	0	1224.0
F	0	1.5	48.4	76.1	1.3	0	0	127.3
G	0	0	.1	.4	.3	0	0	.8
H	0	9.4	74.6	.2	.5	0	0	84.7
I	0	0	24.3	7.5	5.1	0	0	36.9
J	0	.4	26.8	9.1	2.6	.4	.3	39.6
K	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0
M	0	0	0	.2	0	0	0	.2
N	0	0	0	0	0	0	0	0
O	0	0	0	0	0	0	0	0
Totals	.1	366.7	2037.7	601.1	194.4	1.2	.3	3201.5
1976								
A	0	0	31.0	567.4	66.4	0	0	664.8
B	0	0	6.3	444.1	629.6	90.2	0	1170.2
C	0	2.6	233.9	576.8	215.6	.7	0	1029.6
D	0	1.7	470.2	1632.2	1332.9	194.6	0	3631.6
E	0	10.5	809.1	632.0	721.9	0	0	2173.5
F	0	.9	25.3	90.6	4.2	0	0	121.0
G	0	0	4.0	21.3	4.1	0	0	29.4
H	0	76.5	126.2	174.0	0	0	0	376.7
I	0	16.8	57.0	23.4	1.0	0	0	98.2
J	0	193.7	214.4	139.4	20.6	0	0	568.1
K	0	6.0	.2	0	.1	0	0	6.3
L	0	4.2	0	0	0	0	0	4.2
M	0	0	3.3	19.0	6.8	0	0	29.1
N	0	.1	3.6	20.0	.3	0	0	24.0
O	0	0	.4	0	0	0	0	.4
Totals	0	313.0	1984.9	4340.2	3003.5	285.5	0	9927.1
1977								
A	0	2.2	233.9	620.6	176.0	0	0	1032.7
B	.6	1.9	263.0	1556.8	2354.1	382.1	0	4558.5
C	4.3	44.6	690.8	611.7	857.2	397.7	0	2606.3
D	4.8	536.4	2345.6	1347.1	4172.3	2992.5	15.3	11414.0
E	1.8	528.9	987.4	652.0	2067.5	1293.4	0	5531.0
F	0	15.2	287.3	382.8	732.7	710.0	7.2	2135.2
G	0	0	39.9	32.0	7.3	40.9	0	120.10
H	0	41.8	205.1	506.0	378.6	40.6	0	1172.1
I	0	.9	54.8	69.8	11.5	.2	0	137.2
J	0	0	480.7	406.2	80.8	2.1	0	969.8
K	0	0	.4	.3	0	0	0	.7
L	0	0	.2	.1	0	0	0	.3
M	0	.3	0	0	0	0	0	.3
N	0	0	0	0	0	0	0	0
O	0	0	0	0	0	0	0	0
Totals	11.5	1172.2	5589.1	6185.4	10838.0	5859.5	22.5	29678.2

Table 2. Breakdown of squid landings (metric tons) at Newfoundland 1975-77 by ICNAF Divisions as delineated in Fig. 2 .

ICNAF Divisions	1975							Totals
	Month							
	June	July	August	Sept.	Oct.	Nov.	Dec.	
2G	0	0	0	0	0	0	0	0
2H	0	0	0	0	0	0	0	0
2J	0	0	0	0	0	0	0	0
3K	0	66.8	340.1	51.7	4.6	0	0	0
3L	.1	290.2	1544.0	532.4	181.7	.8	0	463.2
3M	0	0	0	0	0	0	0	2549.2
3N	0	0	0	0	0	0	0	0
3O	0	0	0	0	0	0	0	0
3Ps	0	9.7	152.6	16.4	7.8	0	0	0
3Pn	0	.1	0	.4	.4	.3	.3	186.5
4R	0	0	1.1	.2	0	.2	0	1.5
Totals	.1	366.8	2037.8	601.1	194.5	1.3	.3	3201.9

ICNAF Divisions	1976							Totals
	Month							
	June	July	August	Sept.	Oct.	Nov.	Dec.	
2G	0	0	0	0	0	0	0	0
2H	0	0	0	0	0	0	0	0
2J	0	0	0	0	0	0	0	0
3K	0	0	37.3	1011.3	695.9	90.2	0	1834.7
3L	0	15.6	1542.9	2952.9	2278.7	194.7	0	6984.8
3M	0	0	0	0	0	0	0	0
3N	0	0	0	0	0	0	0	0
3O	0	0	0	0	0	0	0	0
3Ps	0	269.3	268.1	283.3	4.1	0	0	764.8
3Pn	0	77.7	105.2	53.5	17.5	0	0	253.9
4R	0	10.3	7.2	39.3	0	0	0	56.8
Totals	0	312.9	1960.7	4340.3	2996.2	284.9	0	9895.0

ICNAF Divisions	1977							Totals
	Month							
	June	July	August	Sept.	Oct.	Nov.	Dec.	
2G	0	0	0	0	0	0	0	0
2H	0	0	0	0	0	0	0	0
2J	0	0	0	0	0	0	0	0
3K	.7	4.0	499.8	2166.5	2514.5	382.1	0	5567.6
3L	10.9	1125.1	4348.0	3036.5	7852.5	5434.6	22.5	21330.1
3M	0	0	0	0	0	0	0	0
3N	0	0	0	0	0	0	0	0
3O	0	0	0	0	0	0	0	0
3Ps	0	42.7	675.1	916.2	455.9	41.8	0	2131.7
3Pn	0	0	65.5	65.8	15.0	1.2	0	147.5
4R	0	.3	.6	.4	0	0	0	1.3
Totals	11.6	1172.1	5589.0	6185.4	10837.9	5859.7	22.5	29678.2

Table 3. Length frequencies adjusted up to total removals for the months indicated in ICNAF division 3L in 1975.

Length (cm)	August		September		October	
	Total Removals Male	(kg) Female	Total Removals Male	(kg) Female	Total Removals Male	(kg) Female
19	4380		361			
19.25	7189					
19.75	13081		432			
20	14250		2822	448		
20.25	40282	2716	5114		280	
21	104229	11700	13318	3114	907	
21.25	125106	12577	30088	5014	2566	302
22	173234	53990	48737	7760	2470	648
22.25	174220	57851	50497	20437	9136	347
23	114472	88976	47612	23881	13538	1482
23.25	44338	83784	34156	28391	19422	3952
24	26462	51685	13103	25598	13751	8422
24.25	11355	50000	6559	22287	5596	12995
25		37201	4015	26320	4903	14764
25.25		73343	2148	19559	1165	16179
26		29913		30617		17157
26.25		12674		15693		7385
27				15498		8413
27.25				11702		5082
28		14177		8651		4696
28.25		7486		1304		2123
29				2749		2238
29.25				2895		
30				1523		
30.25						
31						
31.25						
32						
32.25						
Totals	852598	691402	258962	273441	73734	107967

Table 4. Length frequencies adjusted up to total removals for the months indicated in ICNAF division 3L in 1976.

Length (cm)	August		September		October		November	
	Total Male	Removals (kg) Female	Total Male	Removals (kg) Female	Total Male	Removals (kg) Female	Total Male	Removals (kg) Female
17 16.75								
17 17.25								
18 17.75	1983	1006						
18 18.25	1093							
19 18.75	3592							
19 19.25	3955							
20 19.75	7212	2804						
20 20.25	6299	1515						
21 20.75	13725	4905						
21 21.25	52225	19364						
22 21.75	80955	3785						
22 22.25	124943	16248		7234				
23 22.75	135083	13058	30650					
23 23.75	130450	30270	59079					
24 23.75	88191	29853	163962					
24 24.25	71170	47776	206127					
25 24.75	35043	70702	190091					
25 25.25	17087	90302	113449					
26 25.75		79967	24341					
26 26.25	7834	71311	39113					
27 26.75		39610						
27 27.25		34329						
28 27.75		52470						
28 28.25		51199						
29 28.75		36046						
29 29.25		28523						
30 29.75		20045						
30 30.25		5278						
31 30.75		5554						
31 31.25								
32 31.75		6141						
32 32.25								
Totals	780840	762061	826812	2126089	668343	1610357	59248	135452

Table 5. Length frequencies adjusted up to total removals for the months indicated in ICNAF division 3L in 1977.

Length (cm)	June		July		August	
	Total Removals (kg) Male	Total Removals (kg) Female	Total Removals (kg) Male	Total Removals (kg) Female	Total Removals (kg) Male	Total Removals (kg) Female
13 12.75	9					
13 13.25						
14 13.75	11	13				
14 14.25	26	29				
15 14.75	88	64	472			
15 15.25	180	88	265	286		
16 15.75	220	313	2673	949		
16 16.25	533	560	7623	697		
17 16.75	730	687	13640	4979		
17 17.25	1011	571	35155	10912	2934	1506
18 17.75	783	738	62361	11466	6486	3292
18 18.25	740	711	97147	21001	16089	8971
19 18.75	610	605	107369	27736	37349	17564
19 19.25	223	256	133983	25971	94863	10590
20 19.75	122	277	132144	33239	198167	43581
20 20.25	89	43	107660	19344	332241	84289
21 20.75	48		73499	36521	558349	125702
21 21.25			41654	20065	625335	184320
22 21.75		213	16603	9490	426981	157892
22 22.25		115	3922	5556	309660	122936
23 22.75		61	4320	3969	151161	142406
23 23.25		66	3497	4246	75298	91419
24 23.75			2512	4537	40569	44767
24 24.25		75	1352	3630	24250	43420
25 24.75			1452	7736	10420	27759
25 25.25				5488	11178	39386
26 25.75				5833	11975	62793
26 26.25				3095		11110
27 26.75				1642	6844	17672
27 27.25				1739		24960
28 27.75				3680		33014
28 28.25				1945		41879
29 28.75						7371
29 29.25						31107
30 29.75						
30 30.25						
31 30.75						
31 31.25						9085
32 31.75						19105
32 32.25						
32 32.25						
Totals	5422	5484	849307	275752	2940149	1407898

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Table 5. - Continued.

Length (cm)	September		October		November	
	Total Male	Removals (kg) Female	Total Male	Removals (kg) Female	Total Male	Removals (kg) Female
13						
13.25						
14						
14.25						
15						
15.25						
16						
16.25						
17						
17.25						
18						
18.25						
19						
19.25						
20						
20.25	36511	6016	35344	11340		
21	68108	12980	64175	12234		
21.25	192520	13977	195353	13174		
22	241037	82637	272537	84971	7896	
22.25	495422	112874	579481	136789	51402	
23	319887	164139	460979	179141	118405	25795
23.25	203087	221834	382712	261367	180580	27639
24	54710	276509	185579	372327	216552	59145
24.25	35318	105361	88740	337652	140009	126381
25		134718	47666	465596	50212	269673
25.25		83626		653108	53941	371153
26		50790		742037		649774
26.25				711520		771870
27		28589		538933		790673
27.25		30283		542334		579287
28				151019		565180
28.25				127713		170871
29						144501
29.25		37742				
30				71148		20125
30.25				37500		21214
31				39494		22343
31.25						
32						
32.25						
32.25		26817		50553		
Totals	1647601	1388891	2312566	5539949	818998	4615625

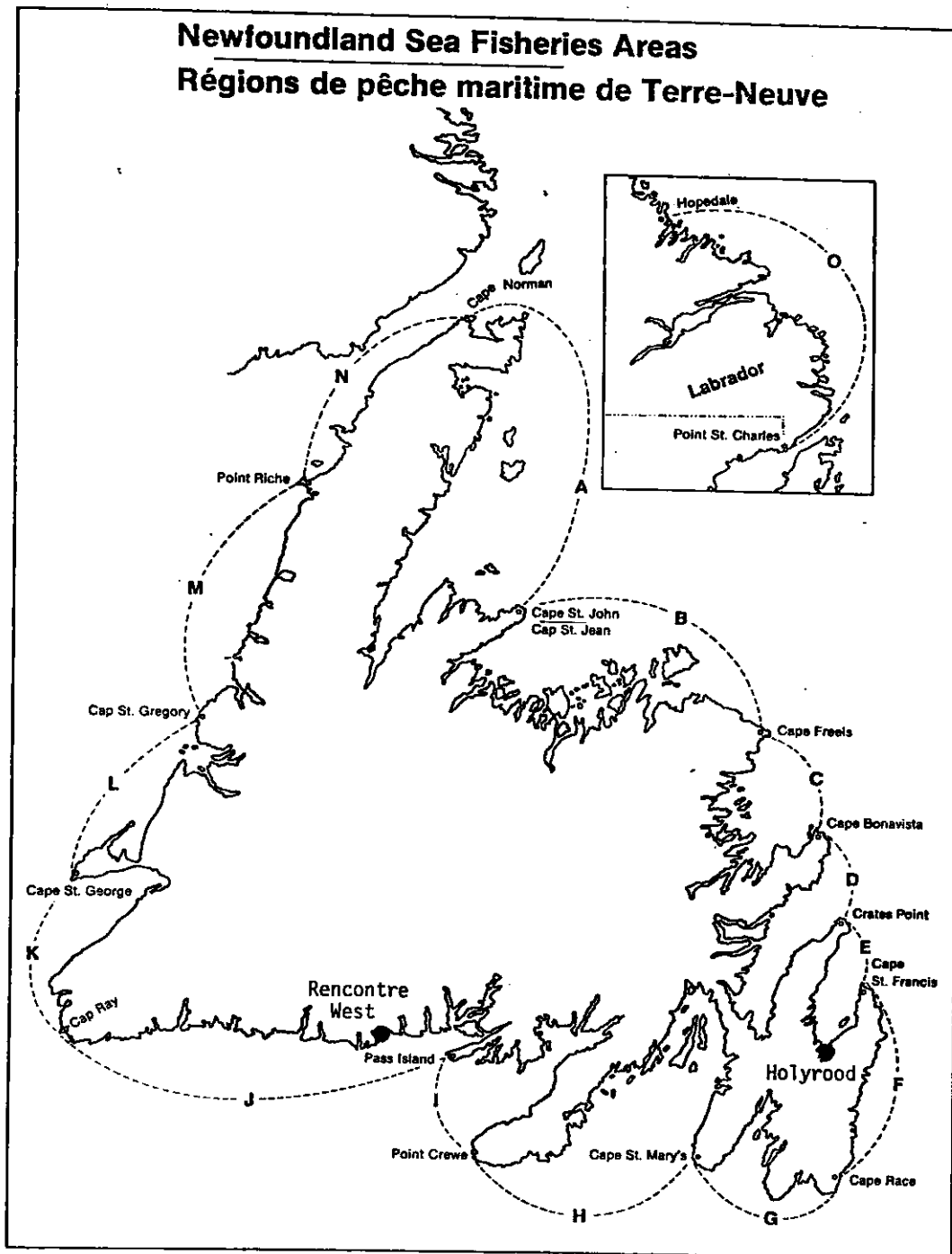


Fig. 1. Newfoundland sea fisheries statistical areas.

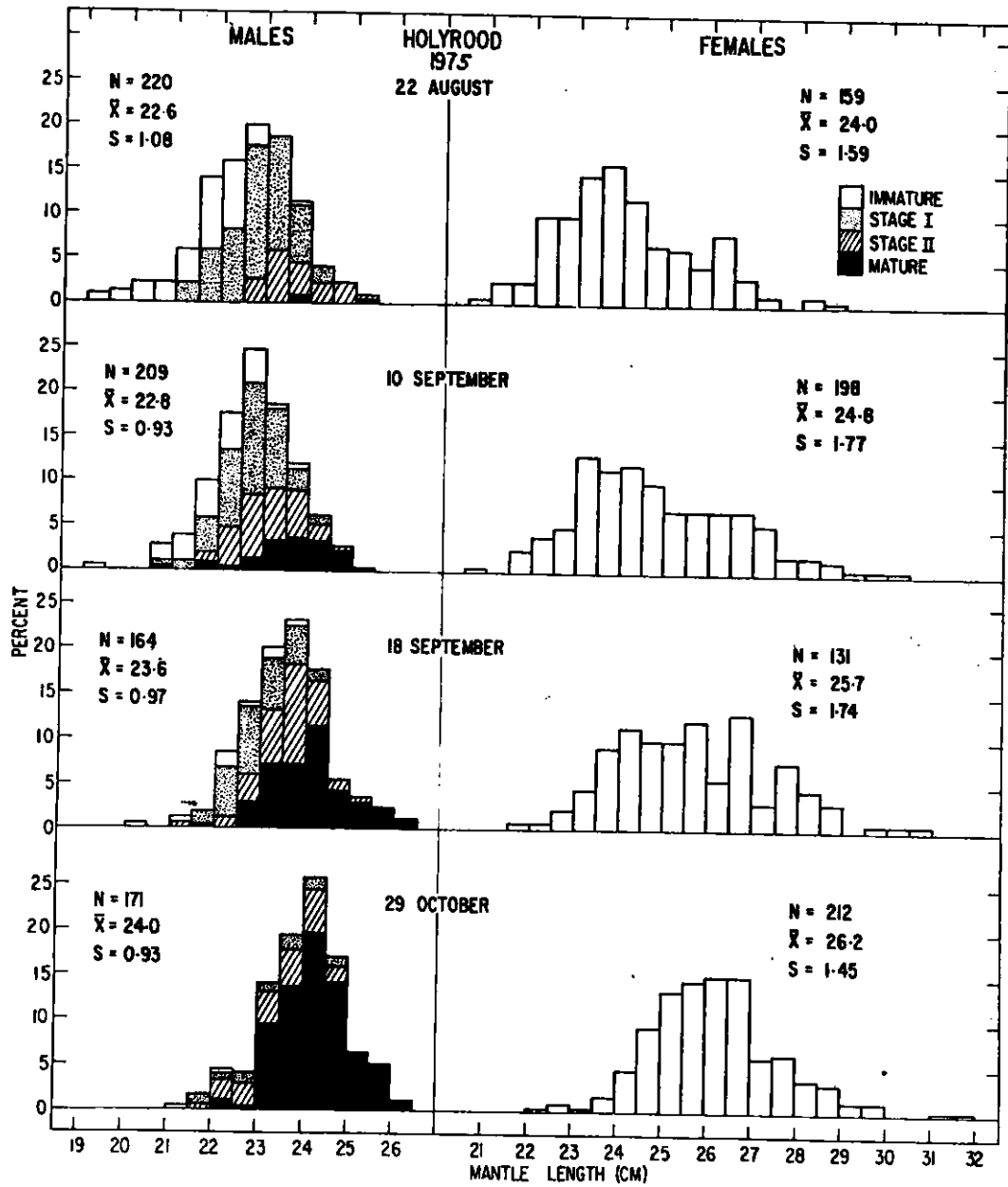


Fig. 3. Length frequency distributions for samples collected at Holyrood in 1975.

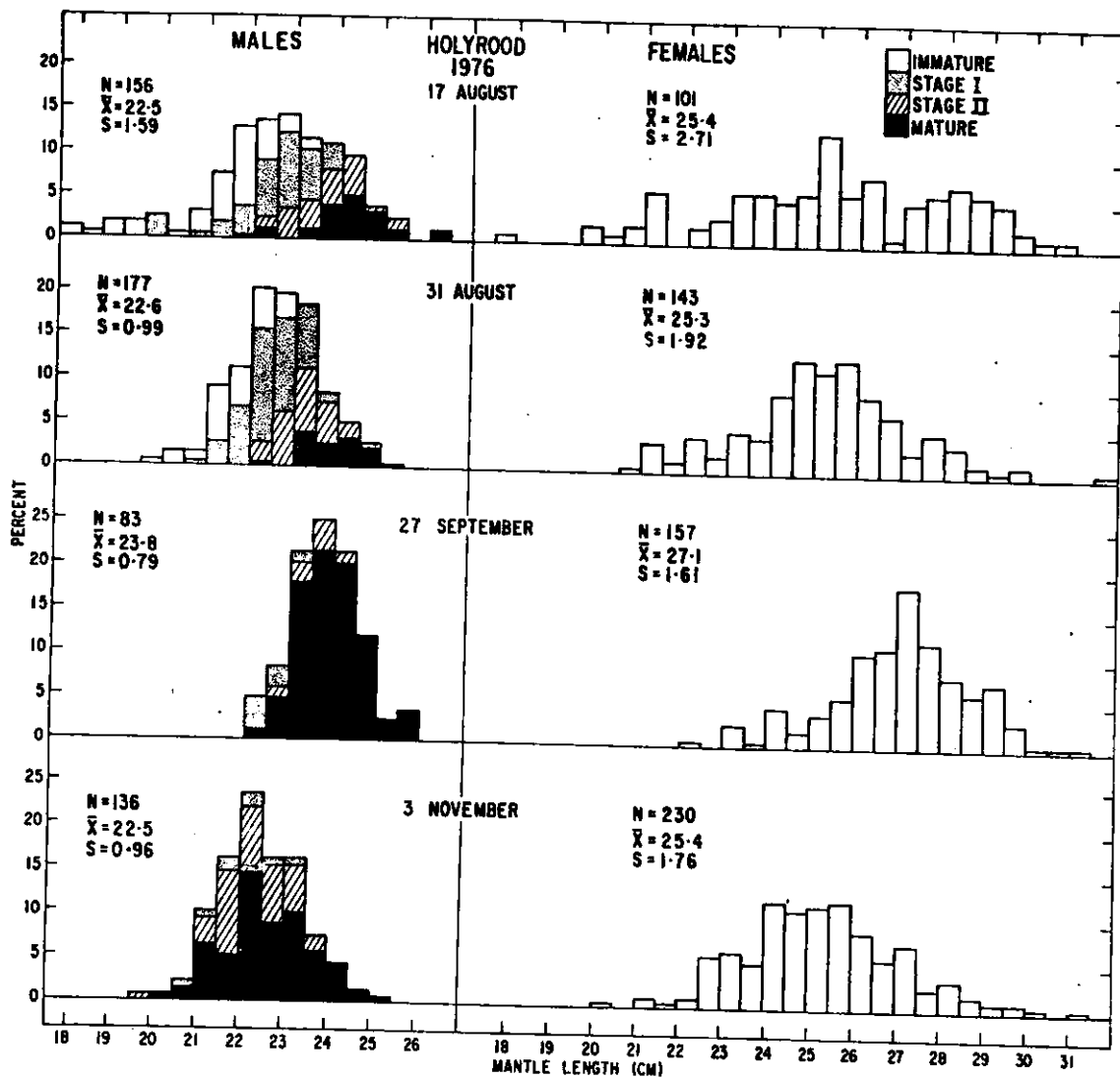


Fig. 4. Length frequency distributions for samples collected at Holyrood in 1976.

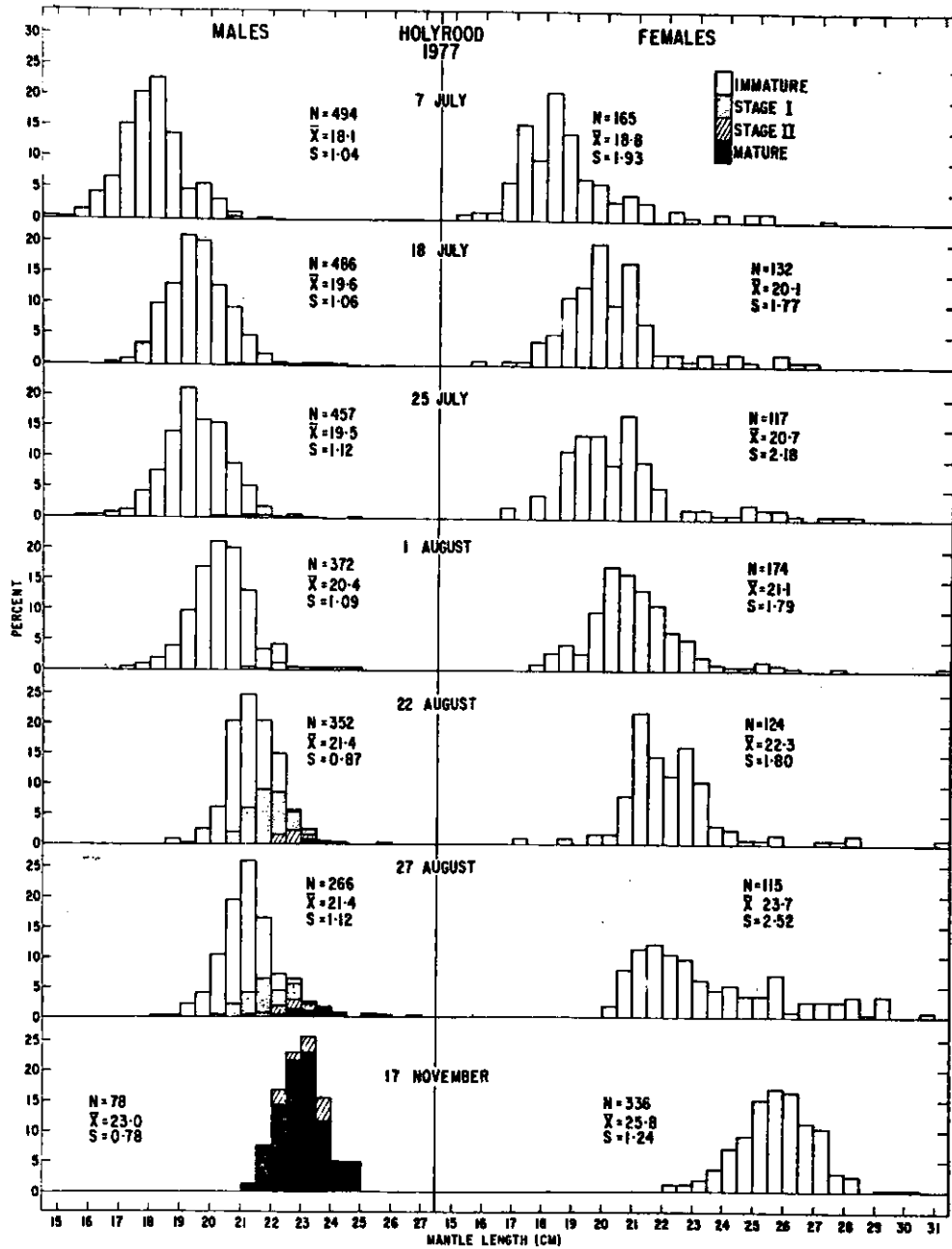


Fig. 5. Length frequency distributions for samples collected at Holyrood in 1977.

