Length-weight relationships of cod in
Subdivision 3Ps and area 3Pn4Rs in winter, 1978

by

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Introduction

One of the parameters necessary for the projection of catches
under given levels of fishing mortality is weight-at-age. Given average
length-at-age, this parameter can be derived from length-weight data.

Materials and Methods

From research vessel cruises in January, 1978, in area 3Pn4RS
and in February, 1978, in Subdivision 3Ps, samples of whole cod indi-
vidually tagged, were frozen and subsequently examined in detail in
the laboratory. Observations included whole and gutted weights in
grams for the smaller fish and in pounds and ounces for the larger.
Sixteen specimens in Subdivision 3Ps and 61 specimens in area 3Pn4RS were
weighed in pounds and ounces.   Observations taken in pounds and
ounces were converted to grams. The fork lengths (to the nearest
3-cm group) observed onboard ship were those used in calculating the
usual log-log regression.

Results

Tables 1 and 2 show the number of individuals measured at
each 3-cm group and the average whole and gutted weights for Sub-
division 3Ps and area 3Pn4RS respectively. The log-log regressions
in all four cases provided an excellent fit to the data (R>0.99).
Figures 1 to 4 show the fitted curves with the average weight-at-
length data points. The curves were calculated, however, using
each individual length-weight datum--108 observations in Subdivision
3Ps and 137 observations in area 3Pn4RS.

COD IN AREA 3Pn4RS

SLOPE = 3.1799
INTERCEPT = -5.4602
R = .9971
N = 137

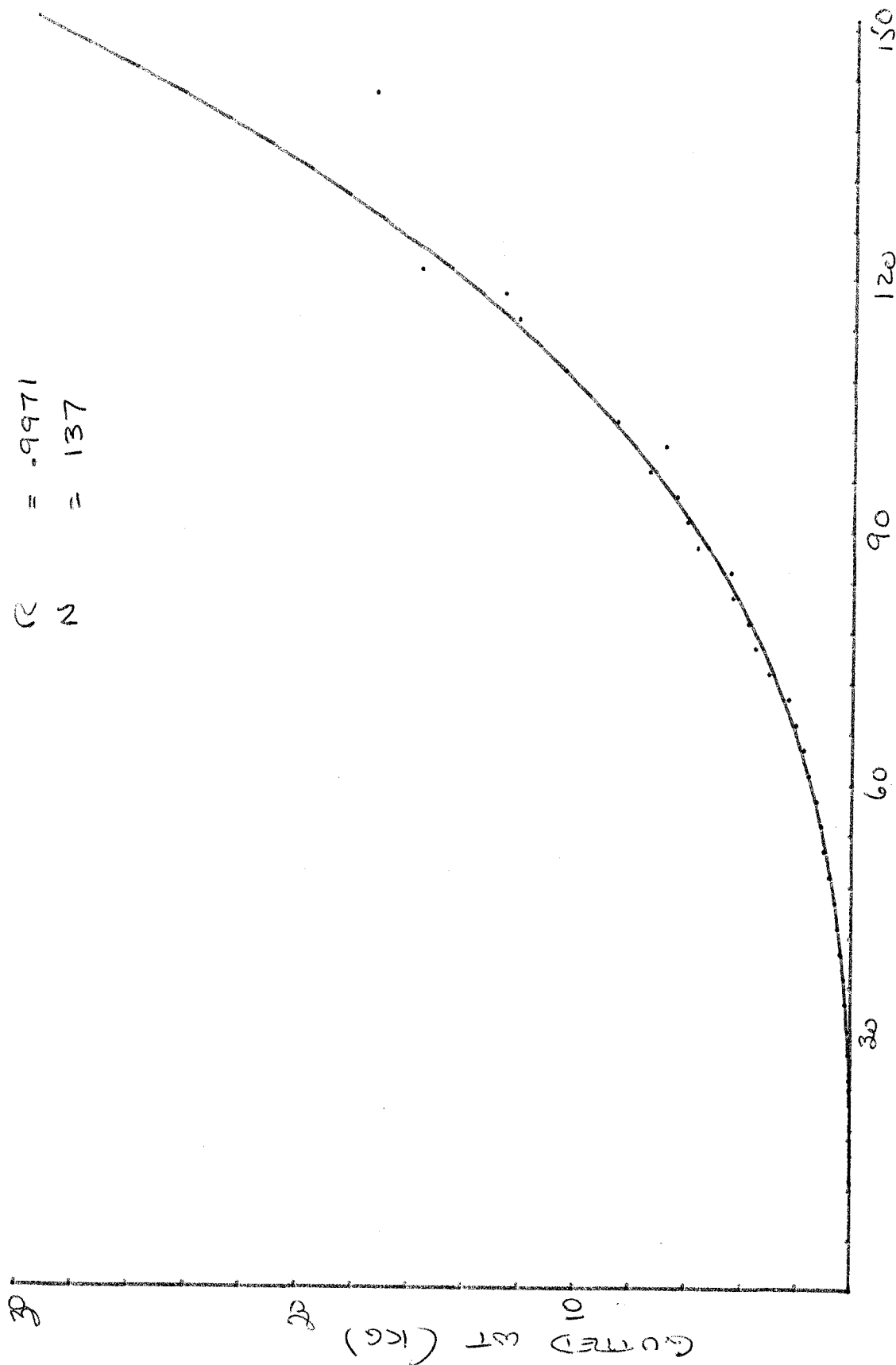GUTTED WT (KG)

FORK LENGTH (NEAREST 3 CM GROUP)

Fig. 1. Relationship between gutted weight and fork length of cod in area 3Pn4RS.
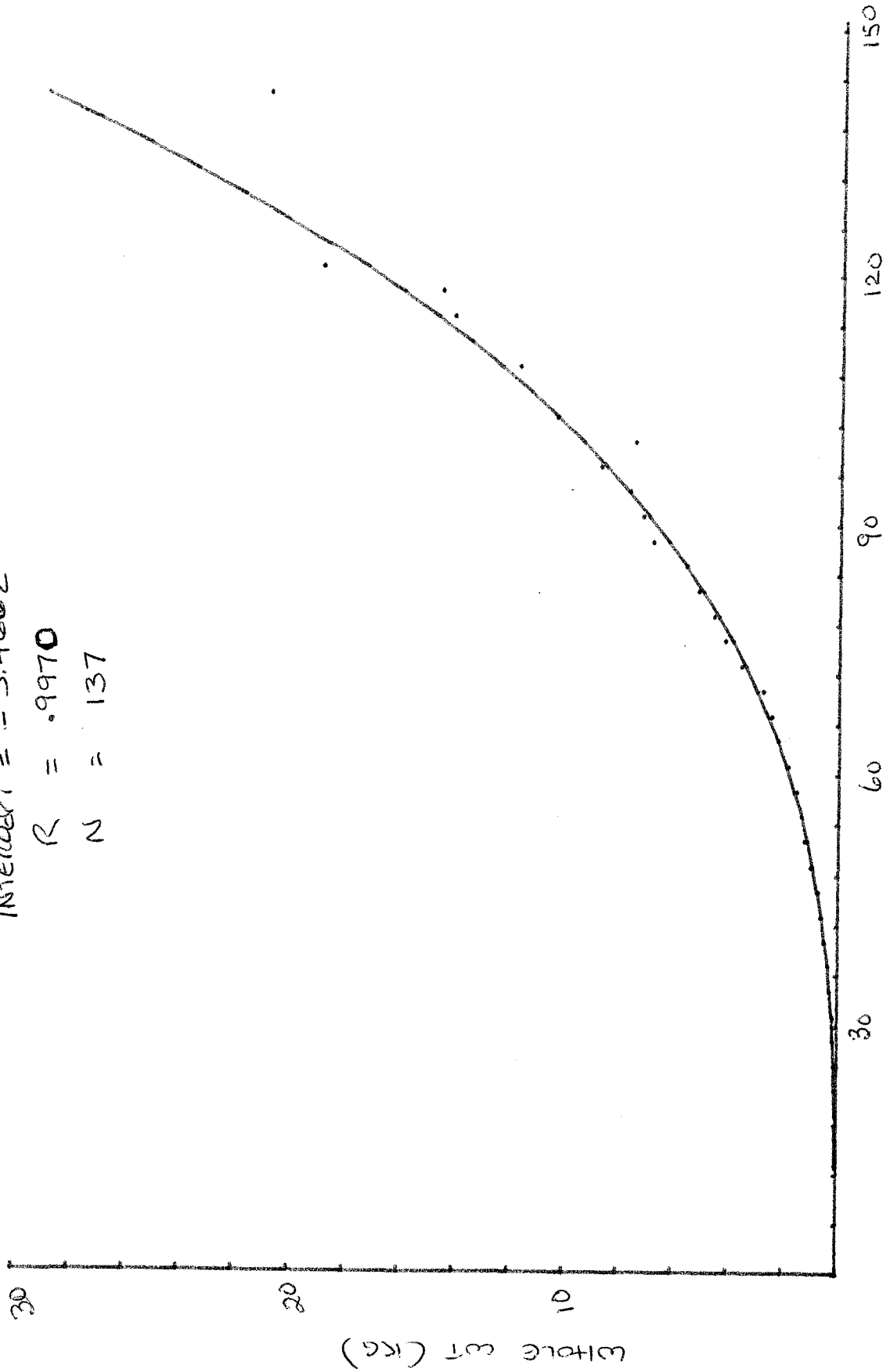
COD IN AREA 3Pn4RS

SLOPE = 3.2185

INTERCEPT = -5.4652

R = .9970

N = 137

FORK LENGTH (NEAREST 3 CM GROUP)

WHOLE WT (KG)

Fig. 2. Relationship between whole weight and fork length of cod in area 3Pn4RS.

COD IN SUBDIVISION 3Ps

SLOPE = 3.0271
INTERCEPT = -5.1901
R = .9976
N = 108

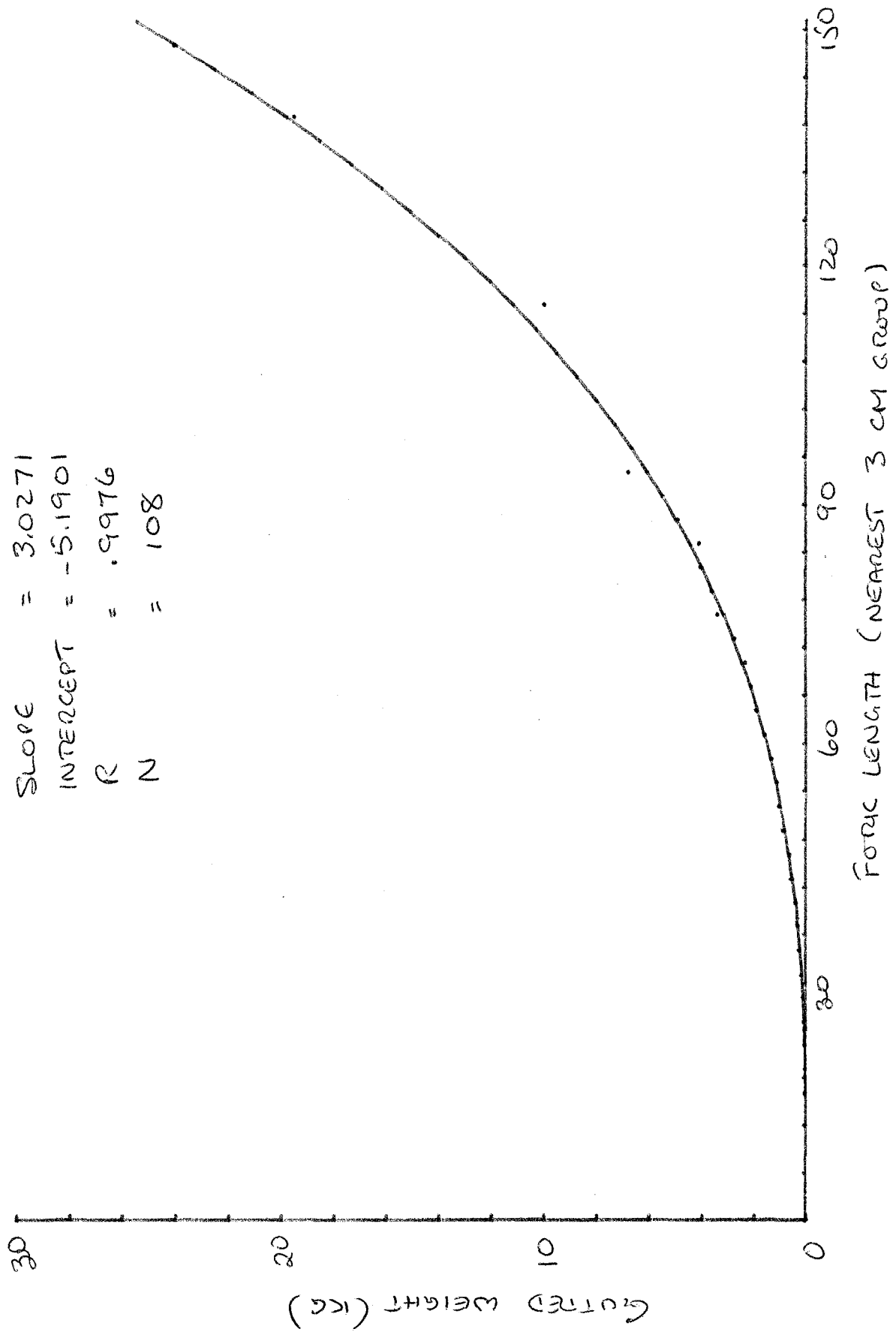GUTTED WEIGHT (KG)

FORK LENGTH (NEAREST 3 CM GROUP)

Fig. 3. Relationship between gutted weight and fork length of cod in Subdivision 3Ps.

COD IN SUBDIVISION 3Ps

SLOPE = 3.0746
INTERCEPT = -5.2094
R = .9973
N = 108

← 34.5 KG

WHOLE WEIGHT (KG)
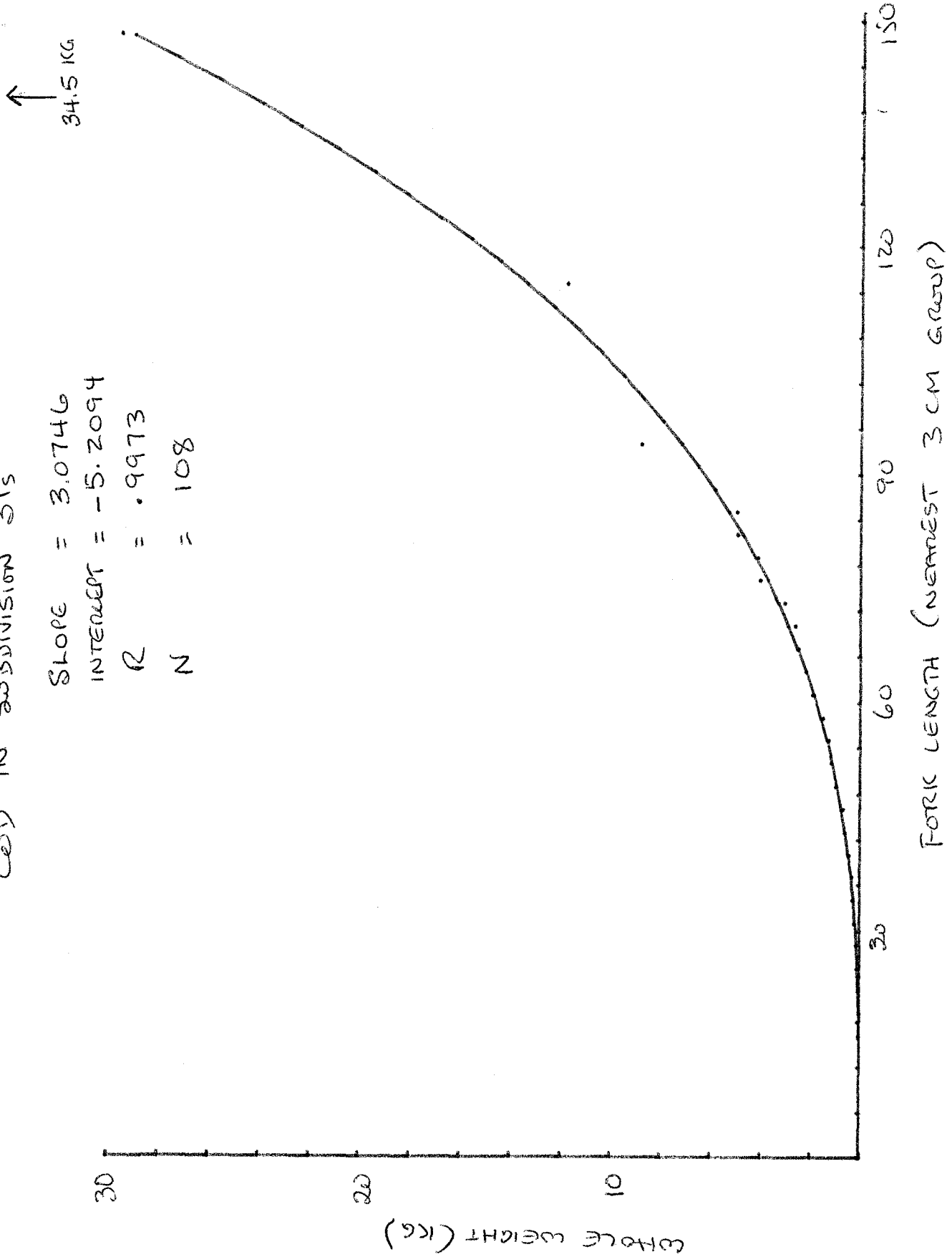
FORK LENGTH (NEAREST 3 CM GROUP)

Fig. 4.   Relationship between whole weight and fork length of cod in Subdivision 3Ps.

Table 1. Length-weight observations from cod taken on St. Pierre Bank (ICNAF Div. 3Ps), February 1978, by the A.T. Cameron

Fork Length (cm)	No. of Specimens	Average Whole Weight (KG)	Average Gutted Weight (KG)	CALCULATED	
				Whole Weight	Gutted Weight
16	2	.032	.029	.031	.029
19	5	.051	.045	.053	.048
22	5	.077	.068	.083	.075
25	5	.137	.119	.123	.110
28	5	.180	.158	.174	.155
31	6	.260	.230	.238	.211
34	5	.335	.301	.316	.279
37	5	.384	.344	.409	.361
40	6	.514	.461	.520	.457
43	5	.654	.593	.650	.568
46	5	.730	.663	.800	.697
49	5	1.019	.911	.971	.844
52	4	1.206	1.059	1.166	1.010
55	5	1.336	1.169	1.385	1.197
58	4	1.547	1.366	1.631	1.406
61	5	1.960	1.614	1.905	1.638
64	3	2.214	1.949	2.207	1.894
67	3	2.504	2.148	2.541	2.176
70	2	2.629	2.345	2.908	2.484
73	4	3.052	2.750	3.308	2.821
76	3	4.038	3.405	3.744	3.187
79	3	4.126	3.614	4.217	3.583
82	3	4.937	4.058	4.730	4.011
85	3	4.947	4.134	5.282	4.471
88	3	5.855	4.909	5.876	4.966
94	1	8.796	6.782	7.198	6.064
115	1	11.804	9.988	13.379	11.165
139	1	34.504	19.522	23.962	19.816
148	1	29.510	24.062	29.059	23.961

Table 2.   Length-weight observations from cod taken in the Gulf of
St. Lawrence (ICNAF Divs. 3Pn4RS), January 1978, by Gadus
Atlantica.

| Fork Length (cm) | No. of Specimens | Average Whole Weight (KG) | Average Gutted Weight (KG) | CALCULATED | |
				Whole Weight	Gutted Weight
13	1	.007	.006	.013	.012
16	5	.026	.023	.026	.023
19	4	.056	.047	.045	.040
22	4	.069	.062	.072	.064
25	5	.120	.109	.108	.097
28	4	.162	.148	.156	.139
31	5	.186	.171	.216	.192
34	5	.284	.261	.291	.257
37	4	.364	.328	.382	.336
40	5	.512	.462	.491	.431
43	4	.640	.561	.620	.542
46	5	.745	.666	.770	.672
49	5	1.015	.882	.943	.821
52	5	1.231	1.062	1.142	.992
55	5	1.374	1.170	1.368	1.186
58	5	1.538	1.351	1.623	1.404
61	4	1.857	1.632	1.909	1.648
64	5	2.212	1.807	2.228	1.920
67	5	2.445	2.119	2.582	2.221
70	5	2.755	2.369	2.973	2.553
73	5	3.553	3.076	3.403	2.917
76	5	4.151	3.575	3.874	3.316
79	7	4.552	3.843	4.389	3.750
82	2	5.108	4.398	4.948	4.222
85	5	5.556	4.512	5.554	4.733
88	5	6.788	5.647	6.210	5.285
91	3	7.158	6.025	6.918	5.880
94	4	7.647	6.427	7.679	6.519
97	3	8.702	7.397	8.496	7.203
100	1	7.434	6.810	9.371	7.936
103	1	10.357	8.569	10.307	8.718
109	1	11.719	10.442	12.367	10.438
115	1	14.102	12.116	14.695	12.377
118	1	14.556	12.627	15.964	13.433
121	2	18.893	15.635	17.308	14.550
142	1	20.884	17.317	28.969	24.203