

Northwest Atlantic Fisheries Organization



Serial No. N1378

NAFO SCR Doc. 87/78

SCIENTIFIC COUNCIL MEETING - SEPTEMBER 1987

Some Particularities of Roundnose Grenadier (*Coryphaenoides rupestris* Gunn.)  
in the North Mid-Atlantic Ridge Region

by

L. Danke

Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe,  
An der Jägerbäk 2, Rostock 2510, German Democratic Republic

### Introduction

Roundnose grenadier is a widespread deepwater fish occurring as in the slope areas as in distantly situated subwater banks (SAVVATIMSKI and SHAFRAN, 1981). This species has commercial importance in NAFO Subareas 1-3, in which Newfoundland and Labrador catches are higher than Westgreenland catch (ATKINSON and POWER, 1986). During a Poland-GDR joint program of fishery investigations by RV "Prof. Siedlecki" some works on roundnose grenadier of the North Mid Atlantic Ridge region were carried out in July 1986. The paper presents some results on roundnose grenadier intending sampling informations for NAFO.

### Materials and Methods

Material was collected during fishery investigations by pelagic trawls on submarine seamounts up to depths of 800 m (Fig. 1). As proposed by BAJDALINOV et al. (1986) the length was measured by sex as preanal length. In some few individuals which had unbroken tails both lengths were taken, preanal length and total length. Weight, maturity, age from scales and stomach filling were also determined. Because of the different and poor material mean values and also statistical comparisons were omitted. The length weight relations and the total preanal length relations base on logarithmic calculations.

### Results and Discussion

The catch experiments on the very different fishing positions showed big differences in catch, catch composition and results concerning roundnose grenadier. From place to place the length maxima, the length range and the sex portion per length group changed (Fig. 2). Distinctly the portion of females decreased southward, only in one case the number of females predominated (haul 75), in one haul females were absent (haul 85). SAVVATIMSKY and SHAFRAN (1981) noted slight differences in

Subarea 3 K in growth between males and females and also a balanced sex portion. The length range varied from 5 to 24 cm and differed from Westgreenland values (KOSSWIG, 1980) and North-labrador (PARSONS et al., 1978). For the length-weight relation calculations the preanal length was used (Fig. 3). The von BERTALANFFY growth parameters could be calculated only for males because of lack of material (Fig. 4), ATKINSON (1980) gave growth curves for NAFO Subareas 1 and 0 and also for Subareas 2 and 3. The growth of the roundnose grenadier of the North Mid Atlantic Ridge region seems to be somewhat better in the older age groups. The conversion from preanal to total length showed some sex differences (Fig. 5). Also in the age samples we noted variations (Fig. 6). The age of roundnose grenadier varied from 5 to 25 years, in the haul 75 only between 5 and 16 years. A big amount of older specimens was found in haul 83. This sample consisted almost merely of males. When summarizing the age samples it seems that males are older than females. The strongest age groups in 2 hauls were specimens of more than 15 years in 2 other hauls more younger fish (8-10 and 9-13 years old). BORRMANN (1978) found in Labrador/Newfoundland and in Westgreenland samples 13-16 years old roundnose grenadier as most abundant age groups. The sex ratio and maturity stages differend from haul to haul (Tabl. 1 and 2). On the southern positions males predominated, northerly the sex ratio was more balanced. The maturity stages differed, too. Juvenile and developing males we found in some samples, in others there were spawners and postspawners. No spawning females were noted,

possibly spawning took place in greater depths. A high percentage of individuals showed empty or extruded stomachs. By feeding fish according to GUSHCHIN and PODRAZHANSKAYA (1983) we didn't note neither bottom nor near bottom organisms as food. Small fish fed Euphauseaceae, the older fishes fed Crustacea, Pisces and Cephalopoda.

#### Conclusions

- In the North Mid Atlantic Ridge area roundnose grenadier from different positions differed in length, age and sex composition
- Length and age range seems to be greater than in commercial fishery areas
- Maturity analysis shows the Mid Atlantic Ridge area as a spawning area.

- ATKINSON, D.B.; 1980. Weight-length relationships of roundnose grenadier in Subareas 0 + 1 and 2 + 3  
NAFO SCR Doc 80/VI/83
- ATKINSON, D.B. and POWER, D., 1986: An update of the status of roundnose grenadier in Subareas 0 + 1 and 2 + 3  
NAFO SCR Doc 86/29 pp. 1 - 10
- BAJDALINOV, A.P.; DOROVSKIKH R.S. and STULOVA L.J. 1986: On the transition to a new system of measurement of the North Atlantic Roundnose Grenadier (*Coryphaenoides rupestris*) length  
NAFO SCR Doc 86/61, pp. 1 - 8
- BORRMANN, H., 1978: Stock assessment of roundnose grenadier in the Northwest Atlantic  
ICNAF Res. Doc 78/VI/54
- GUSHCHIN, A.V. and PODRAZHANSKAYA, 1983: Feeding of roundnose grenadier, *Coryphaenoides rupestris* Gunn., and its position in the trophic system of the North Atlantic  
NAFO SCR Doc 83/IX/81 pp. 1- 14
- KOSSWIG, K., 1980: A contribution on the age and growth of roundnose grenadier (*Coryphaenoides rupestris* GUNN.) at West Greenland (NAFO Subarea 1)  
NAFO SCR Doc 80/VI/92 pp. 1- 5
- PARSONS, D.G.; VEITCH, P. J. and LEGGE, W.E., 1978: Some characteristics of the roundnose grenadier fisheries in ICNAF Subareas 0 + 1 and 2 + 3  
ICNAF Res. Doc. 78/VI/47 pp. 1 - 9
- SAVVATIMSKY, P.I. and SHAFRAN, 1981: Status of Roundnose Grenadier stocks and possibilities for their commercial removal in the Northwest Atlantic  
NAFO SCR Doc 81/IX/106 pp. 1 - 29

Table 1: Sex ratio of roundnose grenadier, Mid Atlantic Ridge, July 1986, %

Haul number	♂	♀	n
71	59.6	40.4	151
73	51.9	48.1	104
75	42.3	57.7	104
93	97.4	2.6	77

**Table 2:** Maturity stages of roundnose grenadier, Mid Atlantic Ridge, July 1986, %

Haul number	I	II	III	IV	V	VI	VII	VIII	not identified	n
<b>Males</b>										
71	17.8	49.3	6.7	10.0	6.7	6.7	5.6	3.3		90
73	70.4	29.6								54
75	68.2	31.8								44
83		4.0			5.3	24.0	46.7	20.0		75
<b>Females</b>										
71	16.4	41.0	6.6	4.9	26.2			3.3	1.6	61
73	56.0	40.0						4.0		50
75	31.7	66.7							1.7	60
83				50.0	50.0					2

**Fig. 1** Sampling positions mentioned in the text

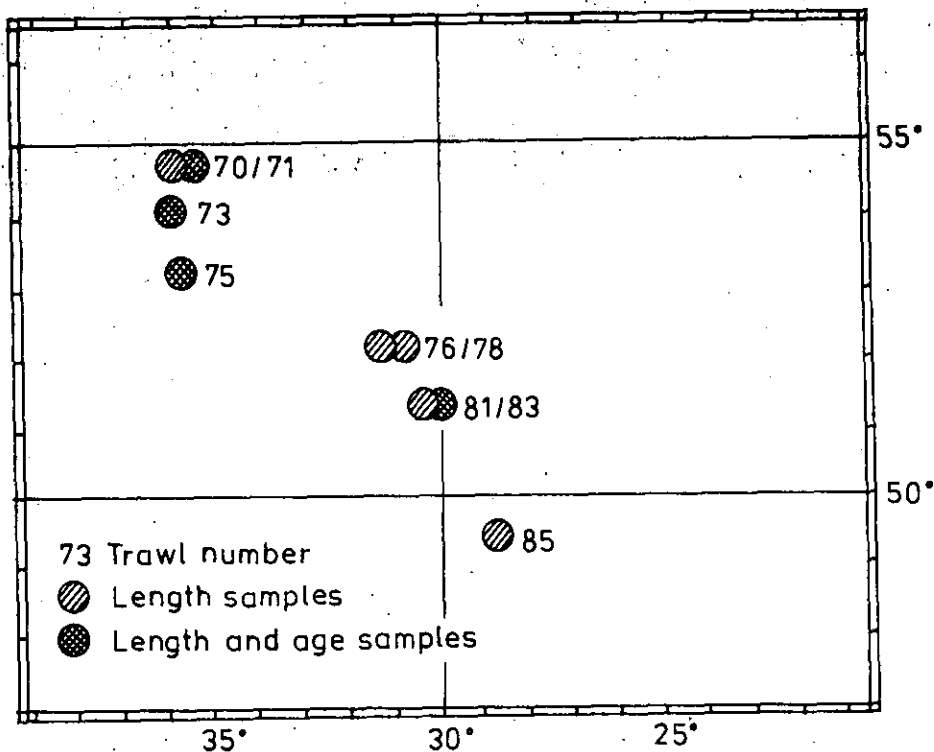


Fig.2 Length distribution of roundnose grenadier  
(*Coryphaenoides rupestris*), July 1986,  
North Mid Atlantic Ridge

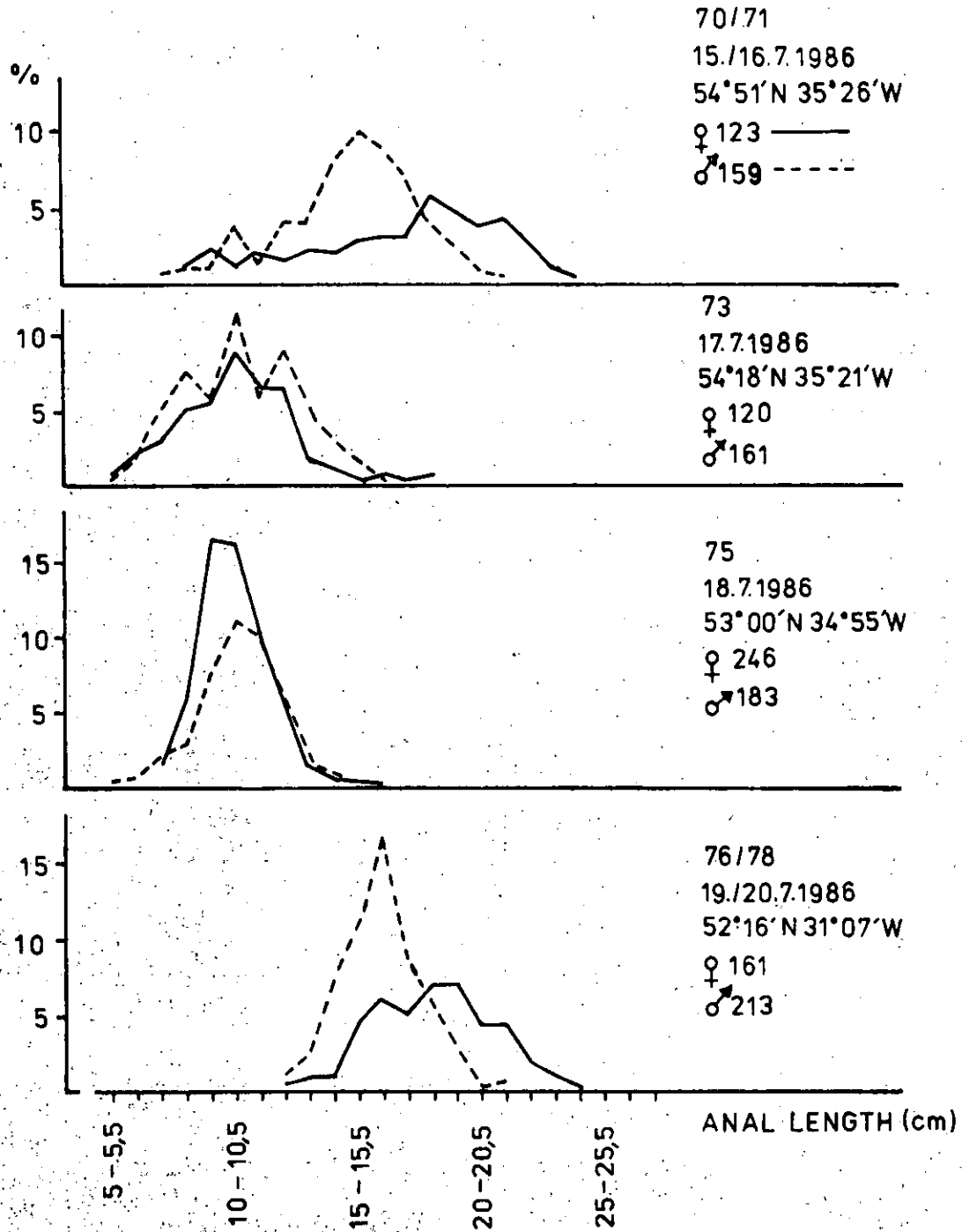
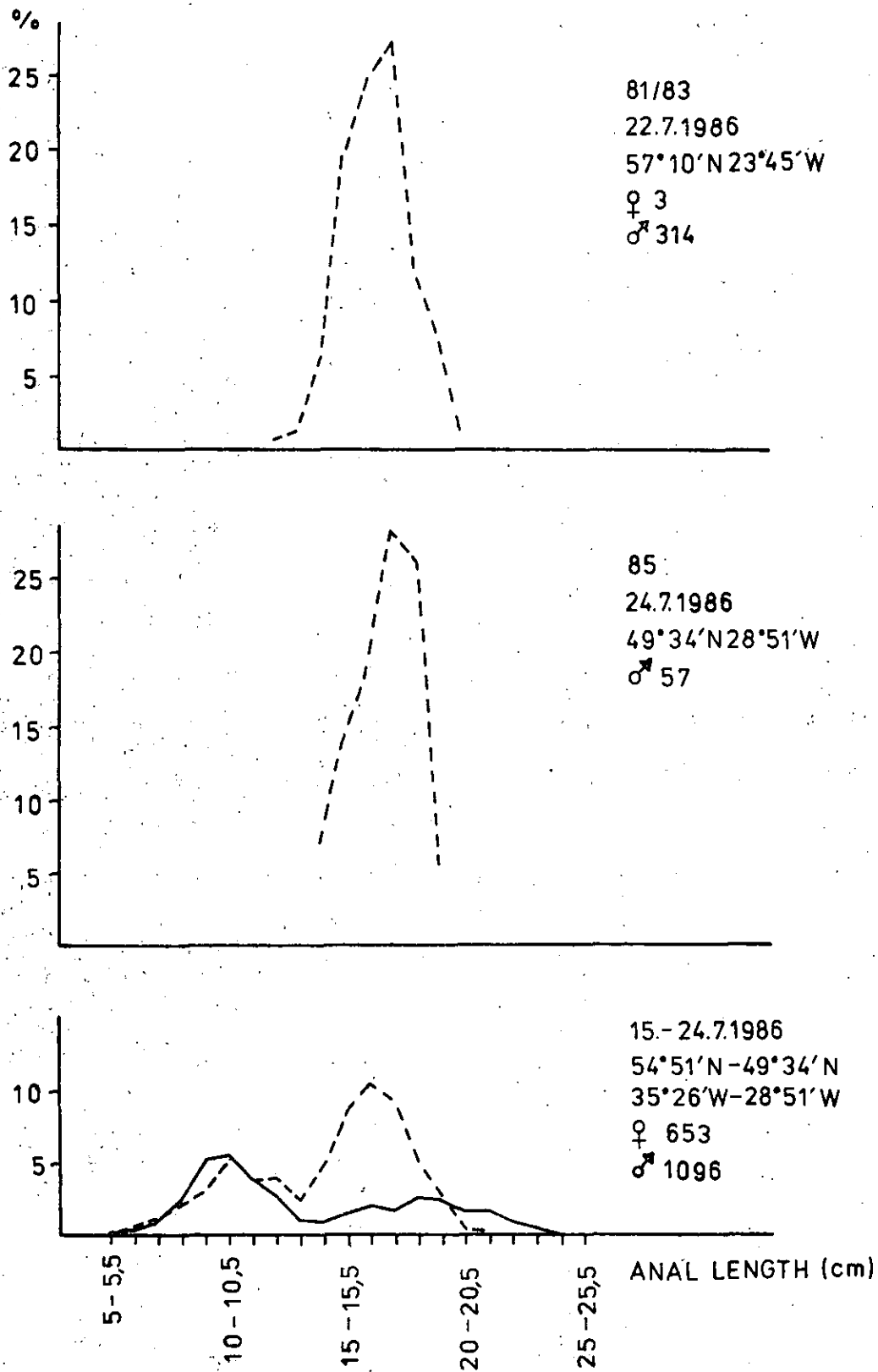


Fig. 2 (cont'd)



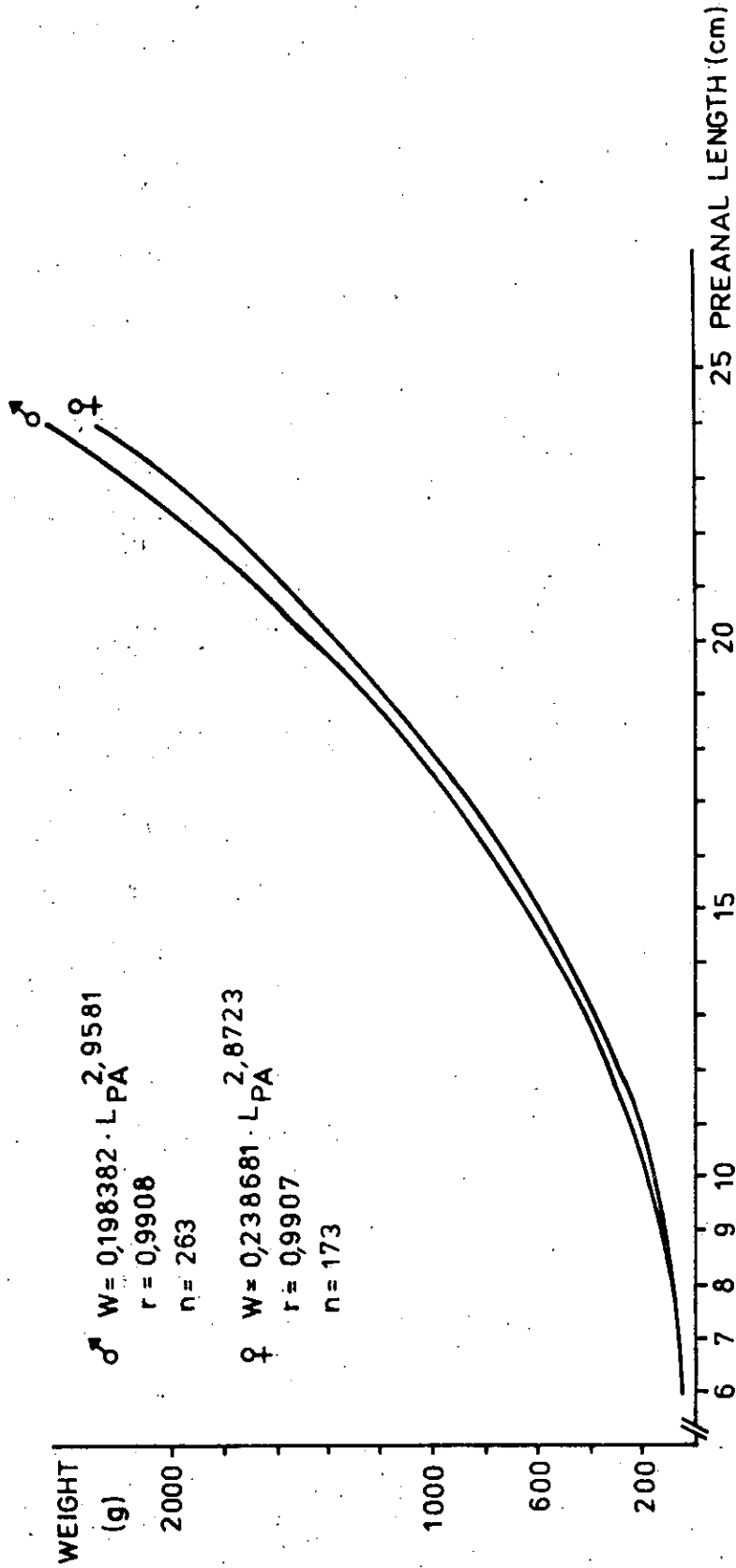


Fig. 3 Weight - preanal length relationships for roundnose grenadier from North Mid Atlantic Ridge, July 1986

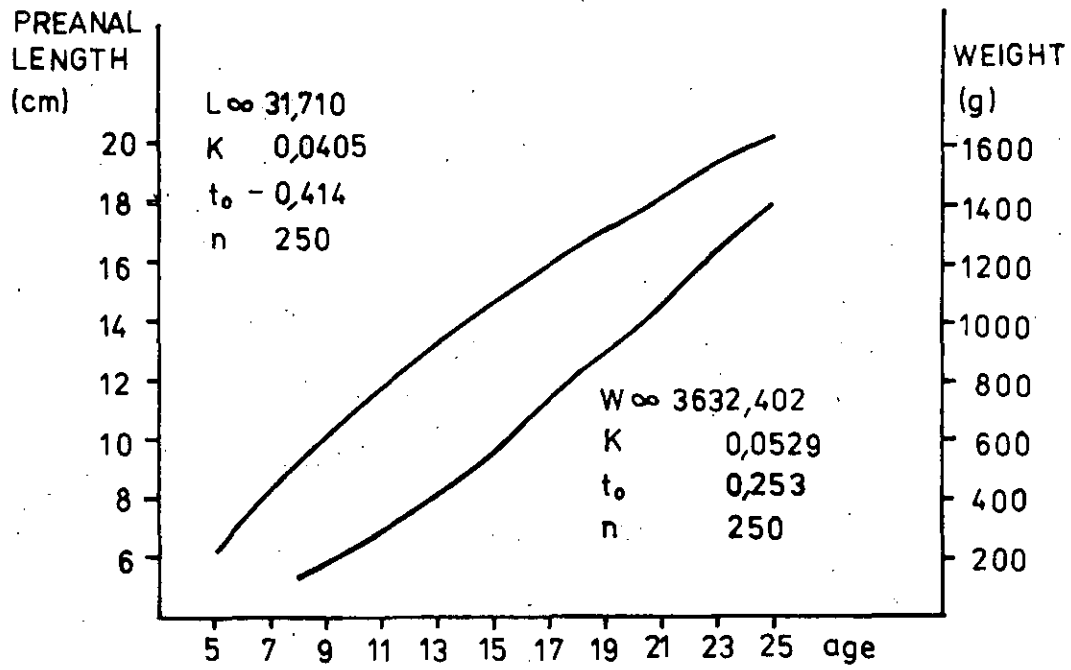


Fig.4 Von Bertalanffy curves for roundnose grenadier, males, from North Mid-Atlantic Ridge, July 1986



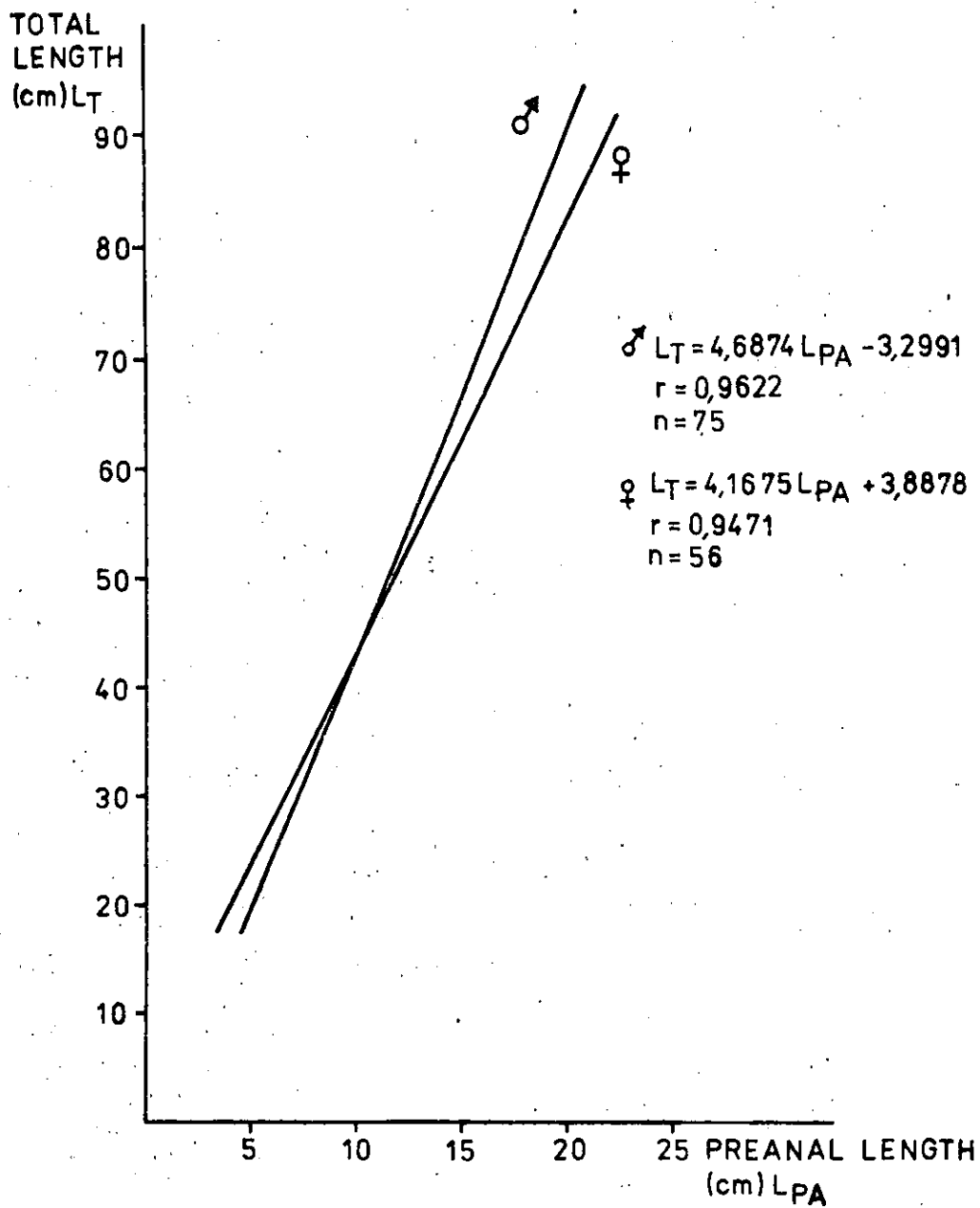


Fig.5 Linear regression of total length on preanal length for roundnose grenadier, North Mid Atlantic Ridge, July 1986

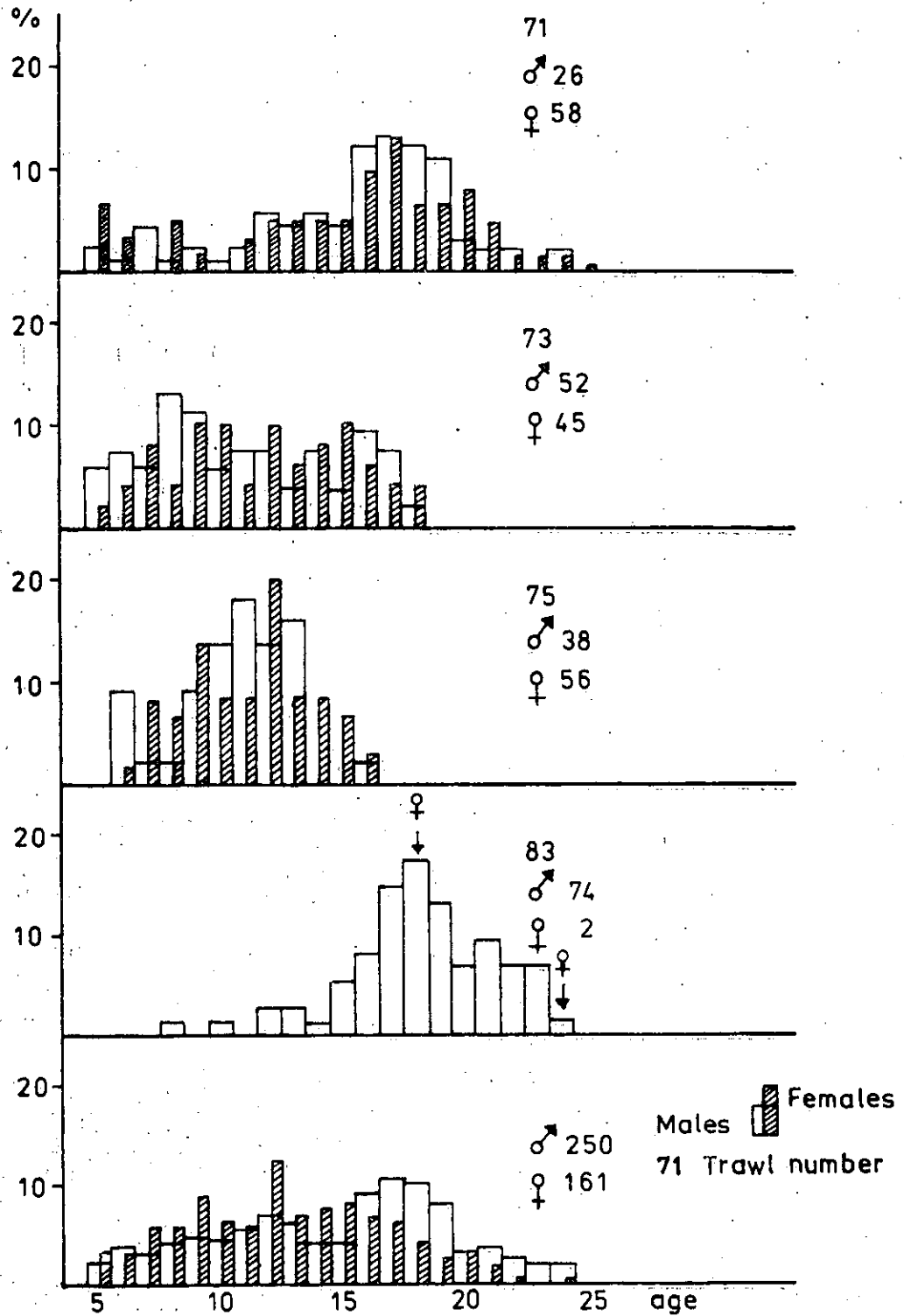


Fig.6 Age composition of roundnose grenadier in North Mid Atlantic Ridge area, July 1986