and weighed 318 to 949 g, while females ranged from 263 to 673 mm TL and 408 to 3,706 g (Fig. 1). The length-weight relationship for North Carolina gulf flounder can best be expressed as log w = -5.24 + 3.134 log l for 75 specimens (sexes combined), r = 0.957 (Fig. 1). Little change occurred when the male data was removed because the female length-weight relationship was virtually the same: log w = -5.018 + 3.053 log l (N = 62), r = 0.955. Vick's (1964) large specimen, 710 mm TL, 5,000 g, fits right on our regression curve. Thus, there is little doubt that his specimen was *P. albigutta* because *P. dentatus* does not occur in the Gulf of Mexico (Robins and Ray 1986), and *P. squamilentus* or *P. lethostigma* possess other distinguishing meristic, morphometric, and ecological requirements (Vick 1964; Gutherz 1967).

The maximum known upper size and weight can now be raised to at least 673 mm and 3,706 g in North Carolina.

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FUNCTIONAL REGRESSION EQUATIONS FOR ZOOPLANKTON DISPLACEMENT VOLUME, WET WEIGHT, DRY WEIGHT, AND CARBON: A CORRECTION

The objective of this note is to point out the fact that the first nine equations published by Wiebe et al. (1975, table 2) were those appropriate for the Y on X regressions; they were not the functional regression equations as originally claimed. This mistake was discovered as a result of correspondence with F. A. Ascioti (Dip. di Biologia Animale Ed Ecologia Marina; Universita di Messina; Via Dei Verdi 75; 98100 Messina ITALY). This table 2 should have had the following equations in it:

Equation		Regression equation			N
1 $LOG(DV)$	=	-1.434 + 0.820	$LOG(C)$		87
2 $LOG(WW)$	=	-1.537 + 0.852	$LOG(C)$		70
3 $LOG(DW)$	=	0.499 + 0.991	$LOG(C)$		195
4 $LOG(DV)$	=	-1.842 + 0.865	$LOG(DW)$		163
5 $LOG(WW)$	=	-2.002 + 0.950	$LOG(DW)$		95
6 $LOG(DV)$	=	0.139 + 1.003	$LOG(WW)$		77
7 $LOG(BWW)$	=	-1.947 + 1.050	$LOG(BDW)$		421
8 $LOG(BDV)$	=	-1.887 + 1.007	$LOG(BDW)$		404
9 $LOG(BDV)$	=	0.005 + 0.981	$LOG(BWW)$		403

10	LOG(PDW)	=	0.853 + 1.024	LOG(PC)	45
11	LOG(DV)	=	1.037 + 0.839	LOG(DW)	111
12	LOG(WW)	=	0.975 + 0.946	LOG(DW)	94
13	LOG(DV)	=	0.107 + 1.082	LOG(WW)	76

To prepare these GM functional regression equations (Ricker 1973:412), the original data were checked and log transformed, and the regressions recomputed. The variances and correlation coefficients remain essentially unchanged. Note that in Wiebe et al. (1975) and above, equations 1–10 are based on biomass standardized to per cubic meter while the remainder are not. Equations 6 and 10 in table 2 of Wiebe et al. (1975) also contained errors; the intercept of equation 6 was incorrectly printed as 0.670 rather than 0.067; the intercept of equation 10, which was 0.558, has been corrected to 0.853.

The equations listed above, when compared with those originally presented, provide estimates of x given y or y given x, which generally differ by less than 6% in the central part of the data set and by less than 15% in the tails of the data set. Samples similar in biomass and taxonomic composition to those used in this study, which we have analyzed for size of individuals as a function of taxonomic unit (Davis and Wiebe 1985), contain animals which typically range in size from 0.35 mm to 100 mm.

For a number of samples for which we reported carbon values, nitrogen values were also obtained from the CHN analyzers we used (Table 1, this note). Although carbon to nitrogen conversion factors exist in the literature, few are based on data ranging over as many hydrographic regimes as does data presented in Wiebe et al. (1975). Since a growing number of mathematical models use nitrogen rather than carbon as the basic currency, we take this opportunity to present these data (Fig. 1) and the resulting carbon/nitrogen ratio.

Functional regression of carbon versus nitrogen yielded the following significant ($P < 0.01$; $r^2 = 0.99$) relationship:
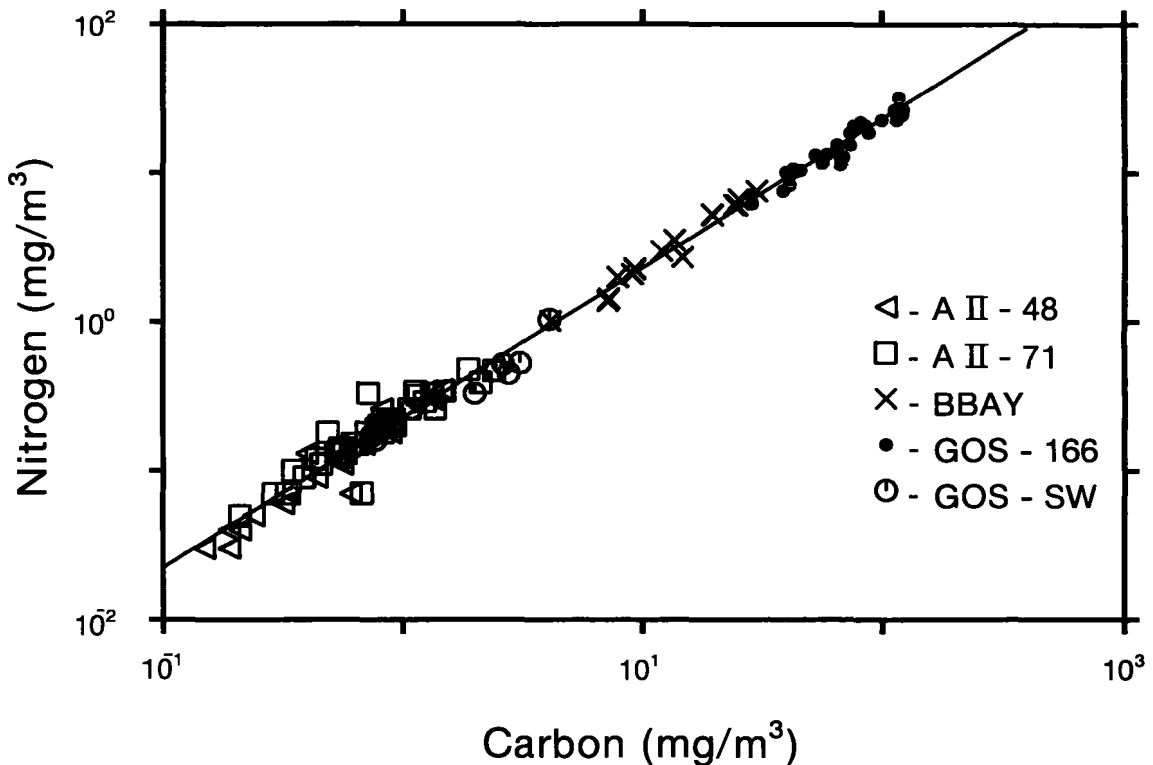

FIGURE 1.—Plot of data used in calculating the regression relating carbon and nitrogen in zooplankton collections from areas specified in Table 1.

Cruise or area	Date	No. of measure-ments	Diameter of net (mesh size)
Buzzards Bay	Jan.–June 1972	16	70 cm (240 µm)
Slope Water (RV *Gosnold*)	June–Aug. 1972	12	100 cm (333 µm)
Atlantis II 48 (Gulf of Mexico)	Nov. 1968	19	70 cm (240 µm)
Gosnold 166 (New York Bight)	June 1970	33	70 cm (240 µm)
Atlantis II 71 (Sargasso Sea)	Sept. 1972	39	100 cm (333 µm)

$$\text{Nitrogen (mg/m}^3) = -0.0247 + 0.2324 \text{ carbon (mg/m}^3)$$

Essentially the carbon/nitrogen ratio of the bulk zooplankton we collected is a constant (4.30) over a broad range of values and oceanographic habitats. As an atomic ratio, 5.02, this value is lower than that predicted by the Redfield ratio, 6.63 (Redfield et al. 1963), an indication that zooplankton are nitrogen rich relative to their phytoplankton counterparts.

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ELECTROPHORETIC IDENTIFICATION OF EARLY JUVENILE YELLOWFIN TUNA, *THUNNUS ALBACARES*

Early juveniles, 13 mm standard length (SL) or larger, of yellowfin tuna, *Thunnus albacares*, and bigeye tuna, *T. obesus*, cannot be distinguished on the basis of meristic, morphological, or pigmentation characters (Matsumoto et al. 1972). Collette et al. (1984) reported that most species of the genus *Thunnus* can be distinguished at the larval stage by melanophore patterns. Matsumoto et al. (1972) and Nishikawa and Rimmer (1987) suggested that *T. albacares* and *T. obesus* larvae can be separated by the respective absence or presence of postanal ventral melanophores. Confirmation of the identification of *T. albacares* larvae has been obtained through laboratory rearing studies (Harada et al. 1971; Mori et al. 1971). However, the use of post-anal ventral pigmentation patterns as reliable characters to distinguish yellowfin and bigeye tuna larvae has been questioned by Richards and Pothoff (1974). Nishikawa and Rimmer (1987) stated that it is virtually impossible to identify to species the early juvenile stages, 15 to 60 mm SL, of *Thunnus* because larval pigmentation patterns become obscured and are no longer diagnostic. Furthermore, Pothoff (1974) was unable to separate *T. albacares* and *T. obesus* as early juveniles, 8 to 100 mm SL, on the basis of osteological characters.

Electrophoresis of water soluble proteins has been used to distinguish morphologically similar larval and early juvenile marine fishes (Morgan 1975; Smith and Crossland 1977; Sidell et al. 1978; Smith and Benson 1980). Sharp and Pirages (1978) presented starch gel electrophoretic patterns for several loci of adults of many scombrid species, including most members of the genus *Thunnus*. Although electrophoretically very similar, adults of yellowfin and bigeye tuna can be unambiguously distinguished by the electrophoretic pattern of the muscle isozyme of glycerol-3-phosphate dehydrog-