A biometrical study on deep red coral, *Corallium rubrum (L.)*, in NW - Sardinia

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In spite of the special importance of Sardinian waters for red coral fishing, some basic aspects of the exploitation of this species are still unknown (CUDONI & CHESSA, 1991). This is particularly true for colonies at 90 m and deeper, due to the obvious difficulties in studying them. In particular, the analysis of population parameters in a given region can provide the basis for their stock assessment and fix priorities in research and management (FAO, 1983). The aim of this work is to give preliminary data of this kind in order to contribute also to the improvement of the fisheries Regional Law.

Colonies of a base diameter > 4 mm were collected by professional divers 12 miles SW of Capo Caccia (NW Sardinia) from a depth of 90 to 105 m, during summer 1991. In a sample of 106 intact branches, 42 of them were monoplanar and 64 pluriplanar. The base diameter (mm), the maximum height (mm) and the weight (9), were considered for biometrical purposes. The frequency distribution of the base diameter (D), the height (H), and the weight (W) give average values of respectively mm 9.5±2.1s, mm 152±36s, and g 34±20s (Figs. 1, 2, 3). Considering also the maximum values of these parameters : mm 16 (D), mm 260 (H) and g 128 (W), there is evidence of the lack of strong fishing pressure. This can be explained by the fact that this area was closed for 11 years to red coral fishing.

In order to show the relationship between age classes and base diameter, six age classes, established using the formula : age = D/1.32, as suggested by GARCIA-RODRIGUEZ & MASSO (1986b, c), are plotted against the cumulative % frequency of D (Fig. 4). It emerges that the most abundant classes are those between 5-6 (II) and 6-7 (III) years, and that the maximum age reached by a colony is 12 years. It is also evident that D sizes $\geq$ 10 mm are the most exploited ones.

Regressions between W and H (not shown here) and between W and D (Fig. 5) were calculated. While the first is similar to that found by GARCIA-RODRIGUEZ & MASSO (1986a) for a red coral population off Gerona, the second is very different : W = 0.606 $D^{1.74}$ (our data); W = 0.086 $D^{2.198}$ (Authors cited). So, taking into consideration colonies with the same diameter, the weight of ramifications found off Alghero is almost double of those found off Gerona. This fact can be explained by two different hypotheses :
1°) differences in the number of branches of the colonies;
2°) differences in the compactness of the skeleton.

Our subsequent application of the above mentioned regressions to other samples from the same fishing area off Alghero (unpublished data), confirms that H is not a good parameter for the characterization of *Corallium rubrum* populations, and that D is better. This is undoubtedly due to the allometric growth of this species and is in agreement with the findings of GARCIA-RODRIGUEZ & MASSO (1984a).

Figs. 1, 2, 3. Frequency distribution of respectively : diameter, height and weight.
Fig. 4. Cumulative frequency of age classes.
Fig. 5. Regression of weight on base diameter.
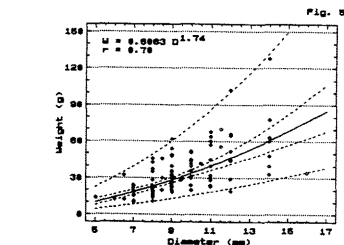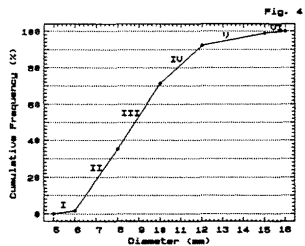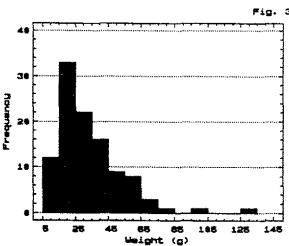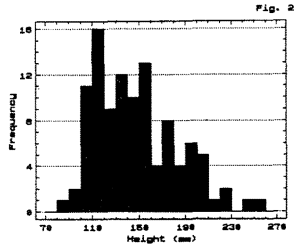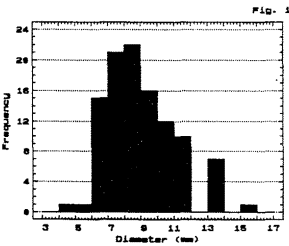
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