

THE AGE AND GROWTH OF JUVENILE DOLPHINFISH (*CORYPHAENA HIPPURUS*) IN EASTERN MEDITERRANEAN WATERS

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Abstract

The age of juvenile dolphinfish collected in Greek waters was determined from counting sagittal daily increments. 65 to 168 increments were counted on the sagittae of males with total lengths ranging between 430 and 717 mm, and 72 to 157 increments on the sagittae of females, with total lengths ranging between 426 and 695 mm. The von Bertalanffy growth parameters were also estimated.

Keywords: daily rings, dolphinfish, Aegean Sea

Introduction

The dolphinfish (*Coryphaena hippurus*) is an epipelagic species distributed worldwide in all tropical and temperate oceans. In the Mediterranean, juveniles of the species are caught from late August to early December, using mainly the fish aggregating device (FAD) technique. Dolphinfish appears to grow very quickly and the maximum life span in central-western Atlantic reaches four years (1). In the present study, data on the age and growth of juvenile dolphinfish from Greek waters are provided.

Material and methods

In 2002, fish sampling was conducted on monthly basis at sites where floating FADs, constructed with palm leaves, were moored. The otoliths were removed and preserved following Panella's method (2). For age readings, the sagittae were used, which were embedded in heat hardening implex resin, in order to obtain a transversal section. Sequential grinding was performed and final polishing was accomplished using a 0.3 alumina paste. Age readings were made under a light microscope, coupled to a high-resolution video camera and monitor system, following standard procedures (3). Growth increments (i.e. sagittae rings) were assumed to be formed on a daily basis and counted from the core to the tip of the rostrum at x 400. The relationship between total length (TL) and daily increments was determined with a linear regression of length on number of rings. Age-length data were modelled using the von Bertalanffy growth equation, and the growth performance index (4) was estimated.

Results and discussion

Dolphinfish ranged in length between 426 and 717 mm, with the bulk of the stock being comprised by specimens of 520-620 mm (Fig. 1). The mean TL of females was significantly (t-test, $P < 0.05$) smaller than that of males. Most of the largest specimens (>650 mm) collected in the study area were males. The age range determined from sagittal interpretation was 65-168 increments for males, having a corresponding TL range of 430-717 mm, and 72-157 increments for females, having a corresponding TL range of 426-695 mm. The parameters of the linear regressions of sagittal rings on TL are shown in Table 1, and those of the von Bertalanffy growth equation, along with the growth performance index, in Table 2. Similar results were obtained for the species in western Mediterranean waters (5).

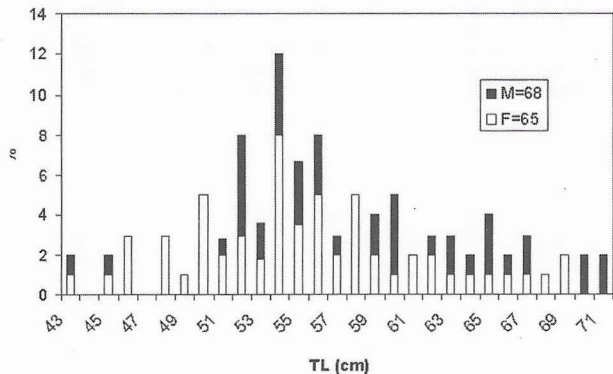


Fig. 1. Length frequency distribution of dolphinfish collected around FADs in Greek waters.

Table 1. Summary of results for linear regressions of sagittal rings on total lengths.

(r=coefficient of correlation, n=number of fish).

	Slope	(SE)	Intercept	(SE)	r	n
All fish	3.03	(0.15)	258.13	(15.62)	0.83	133
Males	2.86	(0.20)	267.92	(23.96)	0.85	68
Females	3.49	(0.29)	211.92	(31.12)	0.77	65

Table 2. Von Bertalanffy growth curve parameters for dolphinfish from Greek waters. Standard errors of estimates are in brackets. Φ : growth performance index.

	L_{∞} (mm)	K (yr^{-1})	t_0 (yr)	Φ
Female	1190.3 (219.9)	1.89 (0.69)	-0.093 (0.043)	6.4
Male	1069.1 (62.5)	2.05 (0.37)	-0.084 (0.021)	6.3
All fish	989.1 (146.5)	1.92 (0.57)	-0.087 (0.037)	6.2

References

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