

Dusky Grouper (*Epinephelus marginatus*)

Fisheries Data

Fish catches from seven countries throughout the range of this fish have been declining (Table 1), resulting in an alarming decrease of 88% in total catches between 1990 and 2001 (FAO data). Since the size of the African and European fishing fleets has remained fairly stable over recent years (FAO 2002), such a decline is unlikely to be due to a decrease in fishing effort. Consequently, the most likely explanation for this trend is a drop in population size due to overexploitation.

Table 1: Fish catches by seven Dusky Grouper range countries (1990-2001) (FAO data).

Year	France	Greece	Italy	Portugal	Spain	Turkey	United Kingdom	TOTAL
1990	0	338	1,282	1	197	572	0	4,508
1991	0	107	1,525	30	208	221	0	4,433
1992	0	139	2,161	34	180	452	0	5,197
1993	0	118	1,832	29	229	513	0	4,770
1994	0	112	1,826	37	267	808	0	4,756
1995	0	195	192	23	305	620	0	2,597
1996	0	112	110	123	222	700	0	1,715
1997	0	94	91	13	204	600	12	1,563
1998	0	57	56	27	256	640	1	1,105
1999	1	64	62	8	123	135	0	420
2000	0	90	89	2	43	85	0	317
2001	0	99	97	2	71	80	0	504

Regional Status

Africa/Europe

The Dusky Grouper is exploited in Spain, Italy and mainly in southern Mediterranean countries: Morocco, Algeria, Tunisia, Lebanon, Syria, and Turkey (Brusle 1985).

South Africa

In South Africa the species is probably overexploited, with a spawning biomass per recruit level at 33% of the unfished level at the current fishing mortality. This is further supported by the reduction in mean length of catches of this species since the mid-1980s. The mean length of the fish caught in KwaZulu-Natal was substantially smaller than those caught in Mozambique, where it was subjected to lower fishing effort. Unlike KwaZulu-Natal, the sex ratio of fish in Mozambique was close to unity, indicating that loss of large males from the population by fishing was not apparent (Fennessy 2000). This is further evidenced by the decline of mean sizes of *E. marginatus* over the last ten years and a depressed reproductive per recruit levels for the species relative to those for *E. andersoni* and *E. rivulatus* captured in the same area (Fennessy 1998).

Mozambique

The species is rare in Mozambique (I. Lichucha pers. comm. 2003).

France

Small individuals were observed in Corsica between 1990, 1992, 1996 and 2001. Small fish also occurred in the Cote Bleue Marine Park in 1999 and in 2001 in the Port-Cros National Park and in the south of Corsica (Bodilis *et al.* 2003). The number of underwater observations of this species has steadily increased along the French coast of the northwestern Mediterranean Sea since 1986 (Bodilis *et al.* 2003), together with a proportional increase in individuals with <40 cm total length. But the long life span of the fish and the age of sex change between 10 and 15 years make the impact of recovery of young dusky grouper on the adult component of the population insignificant (Bodilis *et al.* 2003).

It is believed that the size and abundance of this species are positively correlated with degree of protection and reserve effect. But so far most data are limited to protected marine parks without controls from non-protected areas (Vacchi *et al.* 1998, La Mesa and Vacchi 1999).

Monaco

Small Dusky Grouper were found from 1996-1997 (Bodilis *et al.* 2003).

Algeria

In Algeria, the natural mortality ($M=0.16$) and fishing mortality ($F=1.19$) coefficients are relatively high. Moreover, the rate of exploitation ($E=0.88$) reveals a dynamic imbalance (Kara and Derbal 1995).

Spain

The presence of small grouper may be a normal and regular phenomenon in the south of Spain (J. Mas pers. comm.) and in the Balearic Islands (E. Sala pers. comm.).

Sardinia

Small individuals of *E. marginatus* were rarely observed up until 1989. Recruitment of the species occurred in 1990, 1991, 1995 to 2002 (Bodilis *et al.* 2003).

Italy and Croatia

Presence of dusky groupers (≈ 25 cm L_t) was reported recently, but not enough to describe the status of assemblages of *E. marginatus* in the areas (Bodilis *et al.* 2003).

South America

Brazil

The fish occurs along all of southeastern Brazil, but is concentrated in the tropics between latitudes 18 to 20°S. The best catch per unit effort (CPUE) occurred at 0.6 to 0.7 kg/hook/day in the same area. The highest catch was in autumn and winter. In tropical waters, the best catches occurred at depths of 31 to 60 m, in particular, the best CPUE were at depths between 11 to 80 m. In subtropical waters, however, the best fisheries occurred in two depth ranges: 21 to 60 m and 171 to 200 m, along continental shelf with very low CPUE (Paiva and Andrade 1998).