Maximum size of Atlantic mackerel (*Scomber scombrus*) and Atlantic chub mackerel (*Scomber colias*) in the Northeast Atlantic

by

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Maximum length, weight and age are important parameters used in life history studies and fishery science. These measurements are applied directly or indirectly in most stock assessment models (ICES, 2009). Therefore, it is important to regularly update the maximum size of commercially important species.

Atlantic mackerel *Scomber scombrus* (Linnaeus, 1758) and Atlantic chub mackerel *Scomber colias* (Gmelin, 1789) are the two members of the genus *Scomber* inhabiting northwestern European seas (Collette, 2003). Their distribution coincides in the northeast Atlantic; however, *S. colias* also inhabits waters further south.

Atlantic mackerel is an abundant middle-sized pelagic fish, which is intensely exploited in the North Atlantic (Csirke, 1995). The northeast Atlantic stock is abundant and distributed from the south of the Iberian Peninsula to the north of Norway. It is an important target of the traditional fishery in the northeast Atlantic, and it has a high social and economic value for all the European coastal countries (Villamor, 2008). Therefore, many international organizations currently have active plans for evaluating and managing it (ICES, 2009).

Atlantic chub mackerel is also an abundant middle-sized pelagic fish. It has a wide distribution in the eastern Atlantic from the Canary and Azores Islands to the Bay of Biscay. Atlantic chub mackerel is not a target species of the Spanish fleet operating in the ICES area; however, the landings of this species have shown an increasing trend since 1999 (ICES, 2009).

The aim of this paper is to present data on the maximum observed length, weight and age of the Atlantic mackerels caught on the Spanish and Norwegian coasts and the Atlantic chub mackerel caught on the Spanish coast.

**MATERIAL AND METHODS**

A specimen of Atlantic chub mackerel was caught at the end of July 2007 by a commercial longline in the Gulf of Cadiz (35°58’N; 6°15’W; 88 m depth). It was stored frozen and sent to the Spanish Institute of Oceanography (IEO). An Atlantic mackerel specimen was caught on 13 March 2009 by a commercial gillnet vessel in the Bay of Biscay (43°29’N; 4°46’W; 110 m depth) and was sent fresh to the IEO. Biological sampling data were taken. Otoliths were removed and stored for a later reading. Both specimens were stored frozen at the IEO [IEO-ST-É-0701 (*S. colias* specimen) and IEO-ST-C-0901 (*S. scomber* specimen)].

The total and fork lengths of the two specimens were measured to the nearest mm. Total and eviscerated weights were determined to the nearest 1 g, and the organs were weighed to the nearest 0.01 g. Sex and maturity stage were determined according to the external appearance of the gonad based on the Walsh Maturity Key (Walsh et al., 1990) and following the recommendations of the Workshop of Mackerel Maturity (ICES, 2007).

The Institute of Marine Research, Bergen, Norway, has been collecting data on large Atlantic mackerels caught in Norwegian waters from reports in newspapers and magazines as well as fish reported or sent to the institute since 1980. Currently there is information on a total of 19 individuals. Until 2001, only length and weight of the specimens were recorded (a total of 15); after this date, data on sex and maturity stage as well as age (last four specimens) were also collected. Total length was measured to the nearest cm and total weight was measured to the nearest 0.1 kg in some

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### RESULTS AND DISCUSSION

The results of the analysis of the specimens caught on the Spanish and Norwegian coasts are shown in Table I.

The maximum known total length in the literature for Atlantic mackerel is 60 cm and the maximum total weight is 3 kg (Muus and Nielsen, 1999). The maximum known total length for Atlantic chub mackerel is 54 cm (Martins, 1996). However, as we can see in Table I, Atlantic chub mackerel can reach a length of 65 cm and a weight of 2.9 kg, and Atlantic mackerel can reach a length of 70 cm and weight of 3.2 kg. These specimens prove that these species can grow more than the length and weight considered previously to be the maximum. The data in Table I also show that the larger size in the Norwegian Sea of Atlantic mackerel reported most recently (2000-2005) is 55 cm compared to 70 cm in earlier years. This decrease in the larger sizes could be due to fishing pressure. In fact, the largest Atlantic mackerel reported in more recent years (since 1997) is the specimen caught on the Spanish coast, which had a length of 59 cm and a weight of 1.9 kg (Tab. I).

The Norwegian specimens of Atlantic mackerel whose otoliths were read (last four specimens, from 50 to 53 cm total length) were 12-15 years old, and the specimen caught on the Spanish coast was 20 years old (Tab. I). The maximum known age in the literature is 18 years old (44 cm) (ICES, 1995). The Atlantic chub mackerel caught on the Spanish coast was 20 years old (Tab. I), and the maximum age recorded in the literature for chub mackerel is 12 years old (54 cm) (Martins, 1996). Therefore, these specimens show that these species can reach older ages than those considered previously to be the maximum age. It would have been interesting to know the age of the largest mackerels (from 60 to 70 cm total length), as they would almost definitely have been even older.

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Maximum size of Atlantic mackerel and Atlantic club mackerel

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