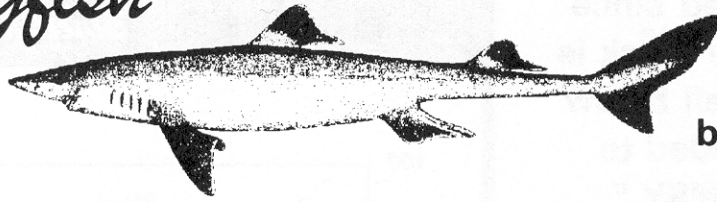


Spiny Dogfish

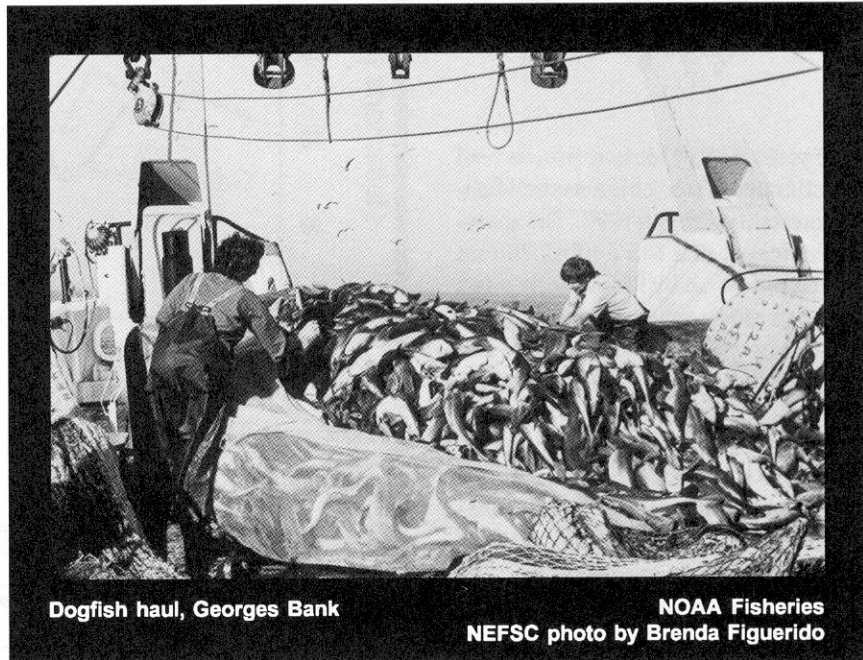


by K. Sosebee

Spiny dogfish, *Squalus acanthias*, are distributed in the western North Atlantic from Labrador to Florida. During spring and autumn, they are found in coastal waters between North Carolina and Southern New England. Dogfish migrate from the edge of the continental shelf to the Gulf of Maine-Georges Bank region in summer. They tend to school by size and, when mature, by sex. Dogfish are known to feed on many species of fish and crustaceans, but generally target the most abundant species. In the Northwest Atlantic, maximum ages reported for males and females are 35 and 40 years, respectively. The species bears live young, with a gestation period of about 18 to 22 months, producing 2 to 15 pups with an average of 6.

The principal commercial fishing gears used for catching dogfish are otter trawls and sink gillnets. Dogfish are frequently caught as bycatch and discarded during groundfish operations, particularly in the Mid-Atlantic-Southern New England area. Recreational and foreign fishing are of minor importance. The fishery is now unmanaged; a fishery management plan is under development by the Mid-Atlantic and New England fishery management councils.

Total landings peaked at 24,700 mt in 1974, declined sharply to a fairly stable average of about 5,900 mt per year during 1977-1989, and then increased sharply to over 17,000 mt in 1990; landings have since increased further to a record high of 28,000 mt in 1996. Distant water fleets accounted for virtually all of the reported total from 1966 to 1977. United States commercial landings during 1979-1989 averaged 3,600 mt per year, but then climbed sharply to 14,700 mt in



Dogfish haul, Georges Bank

NOAA Fisheries
NEFSC photo by Brenda Figuerido

1990 and to 27,200 mt in 1996. Catches in the U.S. recreational fishery increased from about 800 mt per year in 1981-1984 to about 1,400 mt from 1987-1993, but subsequently declined to 400 mt in 1996. Quantitative estimates of discards are unavailable except for 1993 (13,500 mt), but may have been at least as high as reported landings. Discards have reportedly declined with increases in directed effort and landings in recent years.

The U.S. fishery for dogfish is similar to European fisheries in being selective for large individuals [larger than 2.3 kg (5.1 lb) in weight, and 83 cm (33 in.) in length], which are primarily mature females, to meet processing and marketing requirements. However, smaller individuals, consisting of both mature and immature males as well as immature females, are also taken as bycatch and discarded.

Minimum swept-area total biomass estimates of spiny dogfish based on NEFSC spring bottom trawl survey catches increased steadily from about 150,000 mt in 1968 to about 600,000 mt in 1990 and have since been stable. However, estimates of fishable biomass (80 cm) peaked at about 300,000 mt in 1989 and have since declined to about 150,000 mt in 1997. Absolute estimates of fishing mortality are not available, but relative rates have increased five-fold since the late 1980s.

Declining abundance as evidenced by trends in commercial catch per unit effort and research vessel survey indices, apparent increases in fishing mortality and declines in average length in commercial landings, all suggest that this stock is overexploited. Since this species bears small numbers of live young and has a protracted gestation period, directed fisheries for mature females may impact significantly upon recruitment. The poten-

“The U.S. fishery for dogfish is similar to European fisheries in being selective for large individuals ...which are primarily mature females, to meet processing and marketing requirements.”

tial for rapid overexploitation of sharks has been widely noted.

For further information

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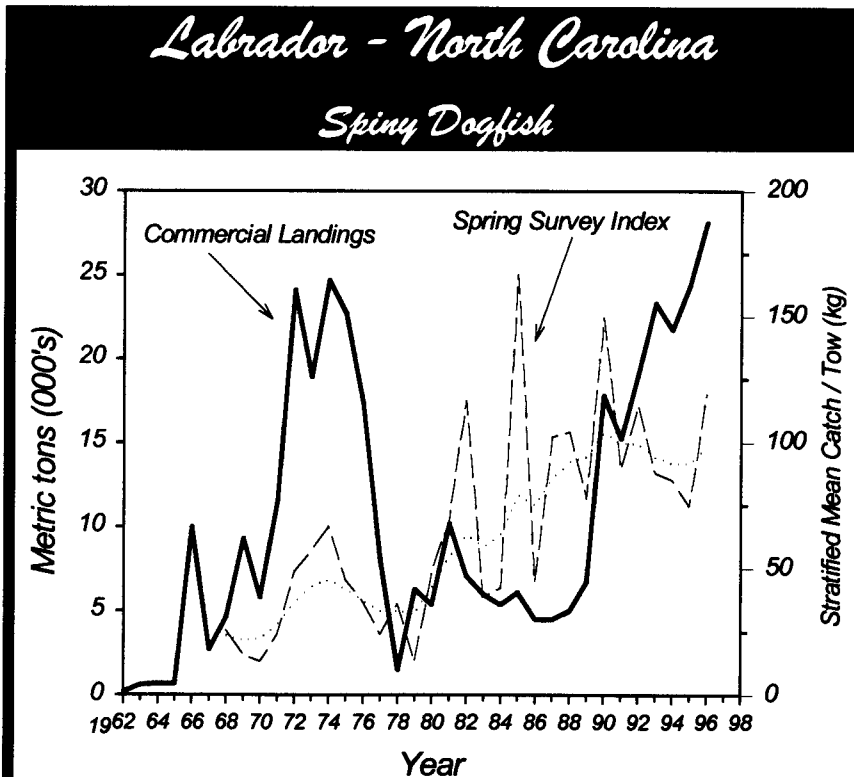


Table 25.1 Recreational catches and commercial landings (thousand metric tons)

Category	Year										
	1977-86 Average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
U.S. recreational	1.0 ¹	1.4	1.2	1.8	1.3	1.5	1.2	1.2	1.1	0.7	0.4
Commercial											
United States	3.9	2.7	3.1	4.5	14.7	13.2	16.9	20.6	18.8	22.7	27.2
Canada	0.4	0.3	-	0.2	1.3	0.3	0.8	1.4	1.8	1.0	0.4
Other	1.2	0.1	0.6	0.3	0.4	0.2	0.1	-	-	-	-
Total nominal catch	6.5	4.5	5.0	6.7	17.8	15.2	19.0	23.3	21.7	24.4	28.1

¹1981-1986 average

Summary Status

- Long-term potential catch = <10,000 mt
- SSB for long-term potential catch = 200,000 mt
- Importance of recreational fishery = Low
- Management = Pending
- Status of exploitation = Over exploited
- Age at 50% maturity = 6 years, males
12 years, females
- Size at 50% maturity = 60 cm (23 in.), males
80 cm (30 in.), females
- Assessment level = Size-based
- Overfishing definition = <100,000 mt
Female spawner biomass
- Fishing mortality rate corresponding to overfishing definition = $F_{\text{THRESHOLD}} = 0.11$
at 70 cm entry

$M = 0.09$

$F_{\text{max}} = .08$
(at 70 cm entry)

$F_{1996} = 0.3$