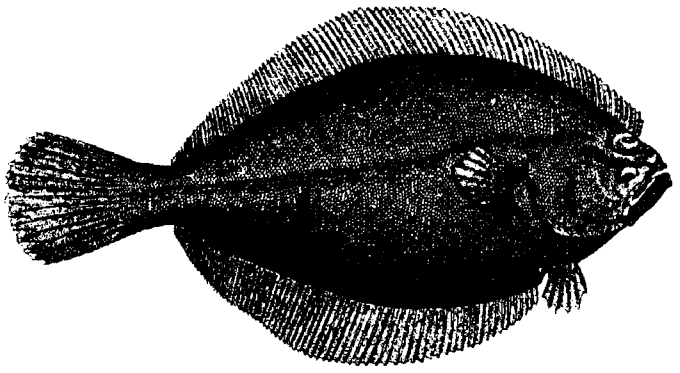
American Plaice

by L. O'Brien

The American plaice or dab, *Hippoglossoides platessoides*, is a large-mouthed, "right-handed" flounder, distributed along the Northwest Atlantic continental shelf from southern Labrador to Rhode Island in relatively deep waters. Off the U.S. coast, the greatest commercial concentrations exist between 90 and 182 m (50 and 100 fathoms). Maturation begins between ages 2 and 3 but most individuals do not reach sexual maturity until age 4. Spawning occurs in spring, generally during March through May. Growth is rather slow; 3-year-old fish are normally between 22 and 28 cm (9 to 11 in.) in length, and weigh between 90 and 190 g (0.2 to 0.4 lbs). After age 4, females grow faster than males.

The principal commercial fishing gear used to catch American plaice is the otter trawl. Recreational and foreign catches are insignificant. The U.S. fishery is managed under the New England Fishery Management Council's Multispecies Fishery Management Plan. Management measures include a moratorium on permits, days-at-sea restrictions, time/area closures, gear restrictions, and minimum size limits.

Landings of American plaice increased from an annual average of 2,300 mt during 1972-1976 to an average of 12,700 mt per year during 1979-1984. Subsequently, annual landings declined and since 1991 have ranged between 4,000 mt and 7,000 mt. Total commercial landings in 1996 were 4,400 mt, 5% less than in 1995 (4,700 mt). Between 1960 and 1974, 67% of U.S. landings were from deepwater areas on Georges Bank. Since then, Gulf of Maine landings have greatly exceeded those from Georges Bank.



The U.S. commercial catch per unit effort (CPUE) index was relatively stable between 1964 and 1969, declined in the early 1970s, and then sharply increased to a record high in 1977, when total landings doubled. Subsequently, the index steadily declined, reaching a record low in 1988, and remained relatively stable at a low level through 1993. Values for 1994-1996 are currently unavailable.

Abundance and biomass indices from NEFSC autumn bottom trawl surveys reached record-low values in 1987 but increased through 1990 as the strong 1987 year class recruited to the survey gear. Indices declined in 1991 and 1992, but increased in 1994 due to record high catches of 2-year-old fish from the 1992 year class. Indices remained stable in 1995 but declined in 1996.

A 1992 virtual population analysis indicated that fishing mortality on fully recruited ages (6-9+) more than doubled between 1981 (F =0.36) and 1987 (F=0.87), but declined to F=0.47 in 1990. Fishing mortality in 1991 was estimated to be 0.58, well above F_{max}=0.29 (23% exploitation rate) and the F needed to attain 20% maximum spawning potential ($F_{20\%}$=0.49, 35% exploitation rate), the overfishing definition established for this stock. Subsequent projections indicate that fishing mortality was above 0.70 (46% exploitation rate) during 1992-1995 but declined to about 0.5 in 1996.

Spawning stock biomass declined from 41,400 mt during 1980-1982 to 7,700 mt during 1987-1989. In 1991, spawning stock biomass increased to 13,400 mt as the strong 1987 year class began to recruit to the spawning stock. Projections indicate that spawning stock biomass remained relatively stable during 1992-1993, declined during 1994-1995 and then increased in 1996 as the strong 1992 year class, similar in strength to the 1987 year class, recruited to the spawning stock.

Discard estimates for American plaice indicate that discarding is highest on age 2 and 3 fish in the northern shrimp fishery and on age 3 and 4 fish in the large mesh otter trawl fishery. Estimates for the northern shrimp fishery indicate that by 1991, 40% of the total cumulative catch (in numbers) of the 1987 year class had been discarded. Similarly, in the large mesh fishery, 41% of the total cumulative catch of the 1987 year class is estimated to have been discarded by 1991. Discarding in the shrimp fishery, however, has been reduced following introduction of the Nordmore grate in April of 1992.

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The decline in landings that occurred between 1983 and 1989 reflected a declining trend in harvestable biomass, as indicated by both catch per unit effort and NEFSC survey indices. Although landings increased in 1990-1992, as the 1986 and 1987 year classes recruited to the fishery, landings have since declined through 1996. Stock biomass remains at a medium level. The 1992 and 1993 year classes represent the next opportunity to continue increasing harvestable biomass if fishing mortality and discarding are reduced.

For further information

Mayo, R.K., L. O'Brien, and N. Buxton. 1992. Discard estimates of American plaice in the Gulf of Maine northern shrimp fishery and the Gulf of Maine-Georges Bank large mesh otter trawl fishery. Woods Hole, MA: NOAA/NMFS/NEFSC. *NEFSC SAW Doc.* 14/3.

Northeast Fisheries Center. 1992. Report of the Fourteenth Northeast Regional Stock Assessment Workshop (14th SAW). Woods Hole, MA: NOAA/NMFS/NEFSC. *NEFSC Ref. Doc.* 92-07.

O'Brien, L., R.K. Mayo, N. Buxton, and M. Lambert. 1992. Assessment of American plaice in the Gulf of Maine - Georges Bank Region 1992. Woods Hole, MA: NOAA/NMFS/NEFSC. *NEFSC SAW-14/Res. Doc. SAW 14/2.*

Sullivan, L.F. 1982. American plaice, *Hippoglossoides platessoides*, in the Gulf of Maine. University of Rhode Island (Kingston). Master's Thesis.

Gulf of Maine-Georges Bank

American Plaice

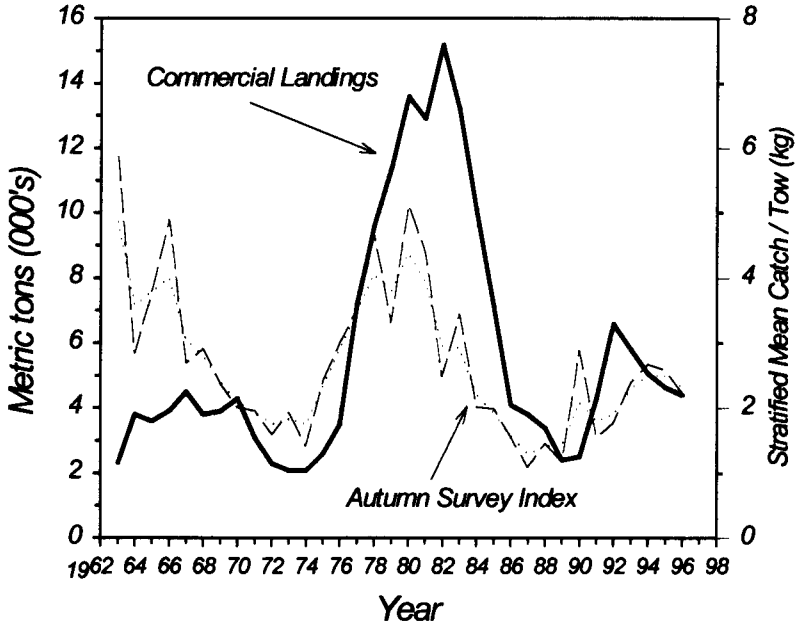

Table 9.1 Recreational catches and commercial landings (thousand metric tons)

Category	Year										
	1977-86 Average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
U.S. recreational	-	-	-	-	-	-	-	-	-	-	-
Commercial											
United States	10.4	3.8	3.4	2.4	2.5	4.3	6.6	5.8	5.1	4.7	4.4
Canada	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Other	<0.1	-	-	-	-	-	-	-	-	-	-
Total nominal catch	10.4	3.8	3.5	2.5	2.5	4.3	6.6	5.8	5.1	4.7	4.4

Summary Status

Long-term potential yield[1]	=	3,600 mt
SSB for long-term potential catch	=	12,000 mt
Importance of recreational fishery	=	Insignificant
Management	=	Multispecies FMP
Status of exploitation	=	Overexploited
Age at 50% maturity	=	3.0 years, males 3.6 years, females
Size at 50% maturity	=	22.1 cm (8.7 in.), males 26.8 cm (10.6 in.), females
Assessment level	=	Age structured
Overfishing definition	=	20% MSP
Fishing mortality rate corresponding to overfishing definition	=	$F_{20\%} = 0.49$

M = 0.20 **$F_{0.1}$ = 0.18** **F_{max} = 0.29** **F_{1996} ~ 0.50**

[1]Excluding discards