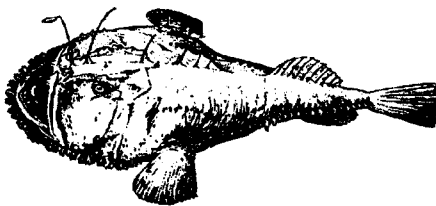


Goosefish



by J. Idoine

Goosefish, also called monkfish or angler, *Lophius americanus*, range from the Grand Banks and northern Gulf of St. Lawrence south to Cape Hatteras, North Carolina. Individuals may be found from inshore areas to depths greater than 800 m (435 fathoms). Highest concentrations occur between 70-100 m (38-55 fathoms), and in deeper water at about 190 m (100 fathoms). Seasonal migrations occur and appear to be related to spawning and food availability.

The goosefish has been described as mostly mouth with a tail attached, and reports of goosefish eating prey almost as big as themselves are common. Growth is fairly rapid and similar for both sexes up to age 4 and lengths of 47 to 48 cm (19 in.). After this, females grow a bit more rapidly and seem to live longer, about 12 years, reaching a size of slightly more than 100 cm (39 in.). Males have not been found older than age 9, with few older than age 6. Males reach total lengths of approximately 90 cm (35 in.).

Sexual maturity occurs between ages 3 and 4. Spawning may take place from spring through early autumn (depending on latitude). Females lay a nonadhesive, buoyant mucoid egg raft or veil which can be as large as 12 m (39 ft) long and 1.5 m (5 ft) wide. Incubation ranges from 7 to 22 days, after which larvae and juveniles spend several months in a pelagic phase before settling to a benthic existence at a size of about 8 cm (3 in.).

Data to definitively distinguish separate stock units of goosefish are unavailable. Assessment information is currently summarized for the "Northern Region" (Gulf of Maine and northern Georges Bank) and the "Southern Region" (southern Georges

Bank and Middle Atlantic) based on significant differences in recruitment patterns. The species is not under management in federal waters. A management plan is being developed by the New England and Mid-Atlantic Fishery Management Councils.

Total landings (live weight) remained at low levels until the mid-1970s, increasing from a few hundred mt annually to around 6,000 mt in 1978. Landings remained stable at between 8,000 and 10,000 mt until the late 1980s and then increased to a peak level of 26,800 mt in 1995-1996. Landings began to increase in the north (Gulf of Maine and northern Georges Bank) in the mid-1970s and in the south (southern Georges Bank and the Mid-Atlantic) in the late 1970s. Most of the increase in landings in recent years has been from the southern region.

Total landings patterns are driven primarily by landings of goosefish tails. From 1964-1972, the only recorded parts were tails (unclassified). Much of the fish caught went to shack (unreported) until the mid-1970s. From 1964-1975, reported landings of tails rose from 20 mt to 600 mt (landed weight). Landings then increased to 2,300 mt in 1980 and to 6,500 mt in 1996. On a regional basis, most tails were landed from the northern region in the 1960s (75-90%) through to the late 1970s (74% in 1978). From 1979 to 1989, landings of tails were about equal from both regions. In the 1990s, landings from the southern region began to predominate and now provide over 60% of the tails.

Several market categories were added to the system in 1982. Tails were divided into large (> 2.0 lbs), small (0.5-2.0 lbs), and unclassified categories. At the same time, a mar-

ket developed for livers. In 1989, unclassified round fish were added and in 1991, peewee tails (< 0.5 lbs) and cheeks appeared. Finally, in 1992, belly flaps were also recorded.

The increase in landings of livers is especially notable, increasing steadily from 10 mt in 1982 to 600 mt in 1996. During that time, ex-vessel prices for livers rose from an average of \$0.97/lb to over \$5.00/lb, with seasonal variations as high as \$19.00/lb. For whole or unclassified round fish, landings averaged over 400 mt during 1991-1993. In 1995, preliminary estimates of landings of round fish rose to over 2,600 mt, and then dropped off to a little over 1,000 mt in 1996. The relatively large rise in the tonnage of peewee tails landed is also significant. The increase from 40 mt in 1991 to 400 mt in 1995 (at < 0.5 lb per tail) represents a large increase in numbers of fish landed, most of which are below median length at maturity.

Landings (live wt) from Canadian waters (NAFO Subdiv. 5Zc) are only available from 1986 onwards, but show a rapid rise from about 300 mt in 1986 to a peak of 1,600 mt in 1990. Annual landings have since declined to around 400-500 mt from 1992-1995; and in 1996 Canadian landings dropped to less than 200 mt.

The NEFSC autumn bottom trawl survey biomass index has declined sharply over the last 15 years. The average catch per tow over the last 10 years is 0.78 kg, compared to an average value of 2.24 kg per tow during 1963-1986. Since 1987 the survey index has been less than 1.0 kg per tow and in 1996 was 0.74 kg, the third lowest on record. Additionally, the average size of goosefish caught in the survey has decreased in almost all areas. For both regions, fishing mortality in recent years has exceeded the

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overfishing definition level, while survey index values fall below levels at which overfishing is defined to occur. This resource is overexploited and at low levels of abundance.

For further information

Armstrong, M.P. 1987. Life history of the goosefish, *Lophius americanus*. Williamsburg, Virginia: College of William and Mary. Master’s thesis.

Bigelow, H.B., and W.C. Schroeder. 1953. Fishes of the Gulf of Maine. *Fish. Bull., U.S. Fish. Wildl. Serv.*, 74(53).

Grosslein, M.D. and T.R. Azarovitz. 1982. Goosefish, *Lophius americanus*. In: Fish distribution. *MESA New York Bight Atlas Monograph 15*. Albany, New York: New York Sea Grant Institute.

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

NEFSC [Northeast Fisheries Science Center]. 1997. [Report of the] 23rd Northeast Regional Stock Assessment Workshop (23rd SAW) Stock Assessment Review Committee (SARC) consensus summary of assessments. Woods Hole, MA: NOAA/NMFS/NEFSC. *NEFSC Ref. Doc.* 97-05.

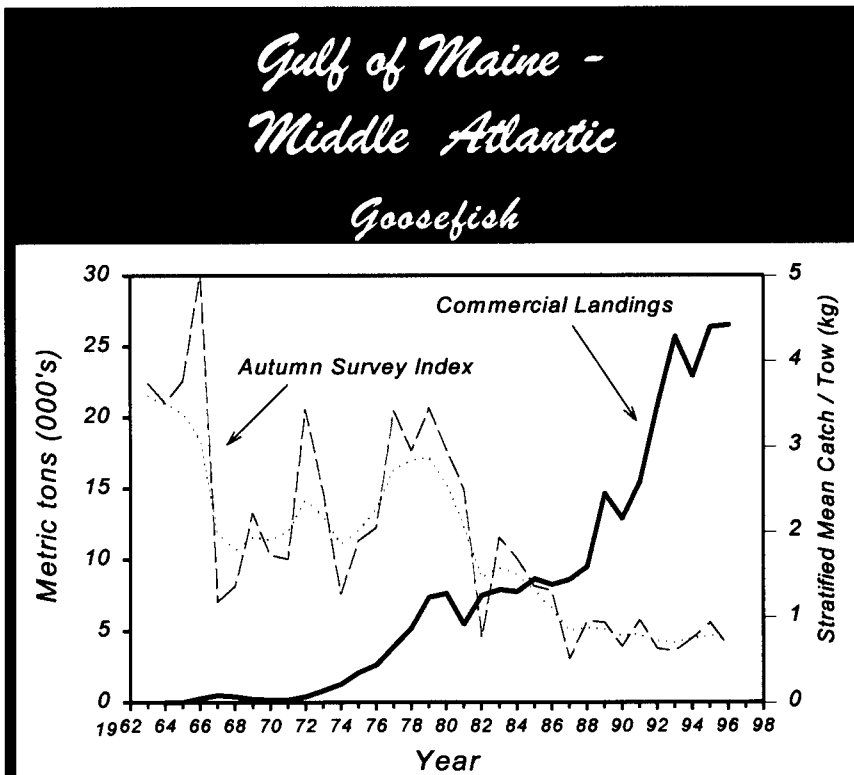


Table 13.1 Recreational catches and commercial landings (thousand metric tons)

Category	Year										
	1977-86 Average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
U.S. recreational	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Commercial											
United States	7.0	8.7	9.5	14.9	12.9	15.5	20.8	25.7	22.9	26.4	26.6
Canada	<0.1	0.7	0.9	1.2	1.6	1.0	0.5	0.4	0.5	0.4	0.2
Other	-	-	-	-	-	-	-	-	-	-	-
Total nominal catch	7.0	9.4	10.4	16.1	14.5	16.5	21.3	26.1	23.4	26.8	26.8

Summary Status

- Long-term potential catch = Unknown
- SSB for long-term potential catch = Unknown
- Importance of recreational fishery = Insignificant
- Management = FMP under development
- Status of exploitation = Overexploited
- Age at 50% maturity = 3 years, males
4 years, females
- Size at 50% maturity = 37 cm (14.6 in.), males
49 cm (19.3 in.), females
- Assessment level = Index
- Overfishing definition = Three-year moving average autumn survey weight per tow falls below the 33rd percentile of the time series, 1963-1994, or F exceeds $F_{threshold}$
- Fishing mortality rate corresponding to overfishing definition = $F_{threshold} = 0.05$ Northern Region
 $F_{threshold} = 0.14$ Southern Region

M = 0.20 $F_{0.1} = \text{Unknown}$ $F_{max} = 0.20$ $F_{1996} = \text{Unknown}$