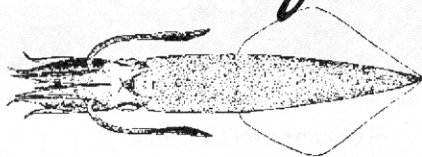


Longfin Inshore Squid



by S.X. Cadrin

Longfin inshore squid (*Loligo pealeii*) school in continental shelf and slope waters from Newfoundland to the Gulf of Venezuela. Within its range of commercial exploitation (Georges Bank to Cape Hatteras) longfin squid comprise a unit stock. North of Cape Hatteras, individuals migrate seasonally, moving offshore during late autumn to overwinter in warmer waters along the edge of the continental shelf and inshore during the spring and early summer. Longfin squid live for less than one year, grow rapidly, and spawn year-round. Individuals hatched in summer grow more rapidly than those hatched in winter. The species is sexually dimorphic, with males growing faster and attaining larger sizes than females. Some males attain dorsal mantle lengths of more than 40 cm (16 in.), although most squid harvested in the commercial fishery are less than 30 cm (12 in.) long.

The U.S. squid fishery began in the late 1800s as a source of bait, and from 1928 to 1967, annual squid landings from Maine to North Carolina (including northern shortfin squid, *Illex illecebrosus* landings) ranged from 500-2,000 mt. A directed foreign fishery developed in the late 1960s, and distant water fleets exploited longfin squid throughout the 1970s and early 1980s. Landings fluctuate widely, because generations have minimal overlap and seasonal dynamics are sensitive to environmental factors. Annual landings averaged 19,900 mt from 1967 to 1986 with a maximum of 37,600 mt taken in 1973. Since 1986 there have been no allocations to foreign nationals, and foreign landings have been negligible. From 1987-1996, U.S. landings have averaged 18,200 mt annually. In 1996, landings totalled 12,500 mt.



Longfin squid on butterfish
& sand lance

NOAA Fisheries
NEFSC photo by Brenda Figuerido

Most landings are taken from Southern New England and Mid-Atlantic waters. Fishing patterns reflect seasonal distribution; most effort is directed offshore from October to March and inshore from April to September. The fishery is dominated by small-mesh otter trawlers, but substantial landings are also taken from pound nets and fish traps in spring and summer. Since 1987, winter fishing effort has increased, and offshore landings have generally been three-fold greater than inshore landings.

The longfin squid stock is managed by the Mid-Atlantic Fishery Management Council under the Atlantic

Mackerel, Squid, and Butterfish Fishery Management Plan. Management measures include use of moratorium permits, annual quota specifications and gear restrictions.

In 1996, management targets for the longfin squid stock were reevaluated to reflect recent research on its life history. The estimated long-term potential total yield (LPTY) is 21,000 mt, corresponding to a target fishing mortality rate of $F_{50\%}=0.13$ and 0.14 (11% exploitation rate) for winter and summer hatched squid, respectively. This level of exploitation is based on maintaining 50% of potential spawning stock biomass per recruit to en-

“Landings fluctuate widely, because generations have minimal overlap and seasonal dynamics are sensitive to environmental factors.”

hance the probability of sustainable yields. The overfishing threshold of maximum yield per recruit (F_{max}) was determined to be 0.38-0.36 (28-26% exploitation rate). For 1997, domestic annual harvest (DAH) was set at 21,000 mt, the allowable biological catch (ABC) level, established at LPTY.

Indices of abundance from the NEFSC autumn bottom trawl survey are highly variable. The survey index was below average in 1995 and 1996.

The short lifespan of longfin squid combined with their rapid growth and capacity to spawn year-round leads to a seasonally dynamic resource. The potential for recruitment overfishing of the stock is substantial because longfin squid recruit to the fishery and to the spawning stock in the same year. This resource is considered to be fully exploited.

For further information

Brodziak, J.K.T., and W.K. Macy, III. 1996. Growth of long-finned squid, *Loligo pealeii*, in the northwest Atlantic. *Fish. Bull.*, U.S. 94: 212-236.
 NEFSC [Northeast Fisheries Science Center]. 1996. [Report of the] 21st Northeast Regional Stock Assessment Workshop (21st SAW). Stock Assessment Review Committee (SARC) consensus summary of assessments. Woods Hole, MA: NOAA/NMFS/NEFSC. *NEFSC Ref. Doc.* 96-05d.

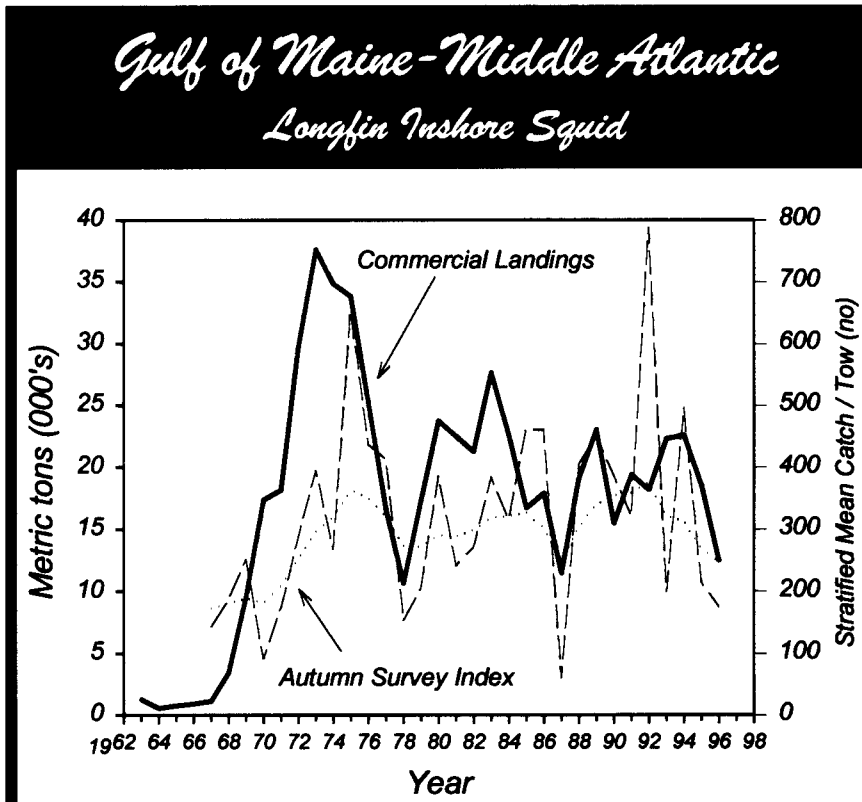


Table 28.1 Recreational catches and commercial landings (thousand metric tons)

Category	Year											
	1977-86 Average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
U.S. recreational	-	-	-	-	-	-	-	-	-	-	-	
Commercial												
United States	6.9	11.5	19.1	23.0	15.5	19.4	18.2	22.3	22.5	18.0	12.5	
Canada	-	-	-	-	-	-	-	-	-	-	-	
Other	12.8	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	
Total nominal catch	19.7	11.5	19.1	23.0	15.5	19.4	18.2	22.3	22.5	18.0	12.5	

Summary Status

- Long-term potential catch = 21,000 mt
- SSB for long-term potential catch = Unknown
- Importance of recreational fishery = Insignificant
- Management = Mackerel, Squid and Butterfish FMP
- Status of exploitation = Fully exploited
- Age at 50% maturity = 6-8 months
- Size at 50% maturity = 16 cm dorsal-mantle length
- Assessment level = Index
- Overfishing definition = F_{max}
- Fishing mortality rate corresponding to overfishing definition = $F_{max} = 0.38^1$ (winter cohort)
 $F_{max} = 0.36^1$ (summer cohort)
- Winter cohort $M = .30^1$ $F_{50\%} = 0.13^1$ $F_{1996} = \text{Unknown}$
- Summer cohort $M = .30^1$ $F_{50\%} = 0.14^1$ $F_{1996} = \text{Unknown}$

¹Monthly mortality rate