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Golden Tilefish

by

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Distribution, Biology and Management

Golden tilefish, *Lopholatilus chamaeleonticeps*, are distributed in the Northeast Atlantic along the outer continental shelf from Nova Scotia to South America, and are relatively abundant in the Southern New England to Mid-Atlantic region at depths of 80 to 440 m (44 to 240 fathoms). Golden tilefish have a narrow temperature preference of 9° to 14° C, and generally occur in and around submarine canyons where they occupy burrows in sedimentary substrates. Golden tilefish are relatively slow growing and long-lived with a maximum observed age and length for females of 46 years and 110 cm (43.3 in.), and 39 years and 112 cm (44.1 in.) for males. At lengths exceeding 70 cm (27.6 in.), the predorsal adipose flap, characteristic of the species, is larger in males and can be used to distinguish the sexes. Golden tilefish of both sexes are mature at ages of 5 to 7 years (Grimes et al. 1988).

The Mid-Atlantic Fishery Management Council implemented the Golden Tilefish Fishery Management Plan (FMP) in November of 2001. Rebuilding of the Golden tilefish stock to B_{msy} is based on a ten-year constant harvest quota of 905 mt. The northern Golden tilefish stock unit is defined as occurring in areas north of Cape Hatteras to the Hague line along the shelf break (Figure 21.1). The information provided herein reflects the results of the most recent peer-reviewed assessments for the Golden tilefish stock (NEFSC 2005).

The Fishery

Total commercial landings (live weight) increased from less than 125 mt during 1967-1972 to more than 3,900 mt in 1979 and 1980 (Figure 21.2). Landings stabilized at about 2,000 mt during 1982-1986, increased to 3,200 mt in 1987 but declined to 450 mt in 1989. During 1988-2001, annual landings ranged between 454 and 1,838 mt. An annual quota of 905 mt was implemented in November of 2001. Landings in 2003 and 2004 exceeded the quota at 1,130 and 1,215 mt respectively (Table 21.1). Since the 1980s, over 85% of the commercial landings of Golden tilefish have been taken in the longline fishery. During the late 1970s and early 1980s

Barnegat, NJ was the principal Golden tilefish port; more recently Montauk, NY has accounted for most of the landings.

Estimates of recruitment do not exist. However, strong year classes (1993 and 1999 cohorts) can be seen in the commercial length frequency distributions. Most of the landings between 2002 and 2004 were from the strong 1999 year class (Figure 21.3).

CPUE Indices

A fishery independent index of abundance does not exist for Golden tilefish. However, three different time series of commercial longline catch per unit effort (CPUE) indices are available. The first series was developed by Turner (1986) who used a general linear modeling approach to standardize tilefish effort during 1973-1982 obtained from logbooks of tilefish fishermen. Two additional CPUE series were calculated from the NEFSC weighout data (1979-1993) and vessel trip report data (VTR, 1995-2004). CPUE values declined from the mid-1970s to the early 1990s, briefly increased and declined in the late 1990s, and have increased since 2000 (Figure 21.2). The commercial landings at lengths suggests that this recent increase in CPUE is due to the strong 1999 year class.

Assessment Results

A surplus production model (ASPIC) was used in the 2005 Golden tilefish stock assessment (SARC 41). The ratio F/F_{msy} exceeded 1.0 during 1978-1988, fluctuated below and above 1.0 during 1989-1998, and has since been below 1.0 (Figure 21.4). The ratio of B/B_{msy} was above 1.0 in the 1970s. B/B_{msy} was below 0.5 from 1988 through 2001, but increased to 0.72 in 2005.

Biological Reference Points

Biological reference points were last calculated at SARC 41 (NEFSC 2005) and are presented in Table 21.2. The updated biological reference points in SARC 41 did not change greatly from the original estimates used for the development of the Golden tilefish fishery management plan. Both the age and length based YPR model estimated F_{max} at 0.14 (Figure 21.5).

Summary

The biomass of Golden tilefish has increased and in 2005 the B/B_{msy} ratio was 0.72. The F/F_{msy} ratio in 2004 was below 1.0 (0.87). Thus, the stock is not in a overfished condition and overfishing is not occurring.

Table 21.1 Recreational and commercial landings of Golden tilefish (thousand metric tons).

Category	1986-95 Average	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
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	1.4	1.1	1.8	1.3	0.5	0.5	0.9	0.9	1.1	1.2	0.7
Canada	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total Nominal Catch	1.4	1.1	1.8	1.3	0.5	0.5	0.9	0.9	1.1	1.2	0.7

Table 21.2 Yield and SSB per Recruit and MSY Based Reference Points for Golden tilefish.

Yield and SSB per Recruit-based Reference Points

$F_{0.1}$ = 0.08

F_{max} = 0.14

$F_{40\%}$ = 0.08

MSY Based Reference Points

F_{MSY} = 0.21

MSY = 2,000 mt

B_{MSY} = 9,400 mt

For further information

Grimes, C. B., C. F. Idelberger, K. W. Able, and S. C. Turner. 1988. The reproductive biology of tilefish, *Lopholatilus chamaeleonticeps* Goode and Bean, from the United States Mid-Atlantic Bight, and the effects of fishing on the breeding system. Fish. Bull., U.S. 86(4):745-776.

NEFSC [Northeast Fisheries Science Center]. 2005. Report of the 41th Northeast Regional Stock Assessment Workshop (41th SAW), Stock Assessment Review Committee (SARC) consensus summary of assessments. Northeast Fish. Sci. Cent. Ref. Doc. 05-14.

NEFSC [Northeast Fisheries Science Center]. 1993. Report of the 16th Northeast Regional Stock Assessment Workshop (16th SAW), Stock Assessment Review Committee (SARC) consensus summary of assessments. Northeast Fish. Sci. Cent. Ref. Doc. 93-18. 116 p.

Turner, S. C., C. B. Grimes, and K. W. Able. 1983. Growth, mortality, and age/size structure of the fisheries for tilefish, *Lopholatilus chamaeleonticeps*, in the Middle Atlantic-Southern New England region. Fish. Bull., U.S. 81(4):751-763.

Turner, S.C. 1986. Population dynamics of and impact of fishing on tilefish, *Lopholatilus chamaeleonticeps*, in the Middle Atlantic-Southern New England region during the 1970s and early 1980s. New Brunswick, N.J.: Rutgers University. Ph.D. dissertation.

Nitschke, P., G. Shepherd, and M. Terceiro. 1998. Assessment of tilefish in the Middle Atlantic-Southern New England Region. Northeast Fish. Sci. Cent. Report to the Science and Statistics committee.

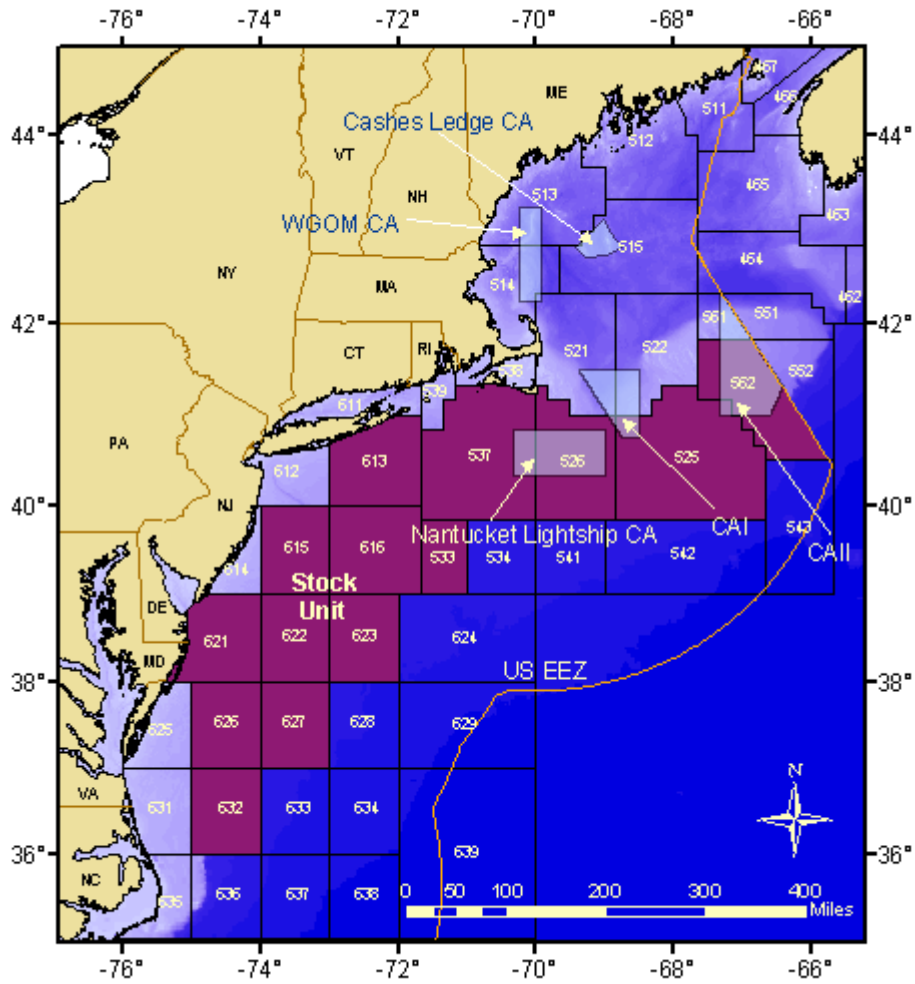


Figure 21.1. Statistical areas used to define the golden tilefish stock.

Golden Tilefish

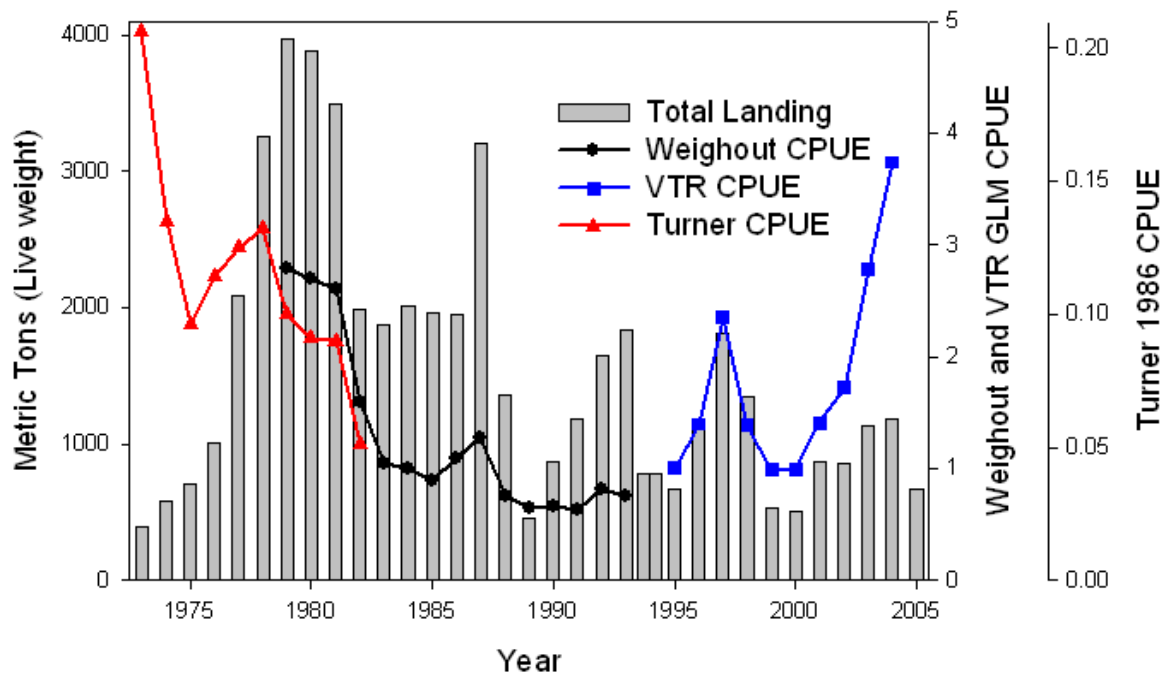


Figure 21.2. Trends in total Golden tilefish landings, and three catch per unit effort (CPUE) data series.

Golden Tilefish Expanded Commercial Length Frequency

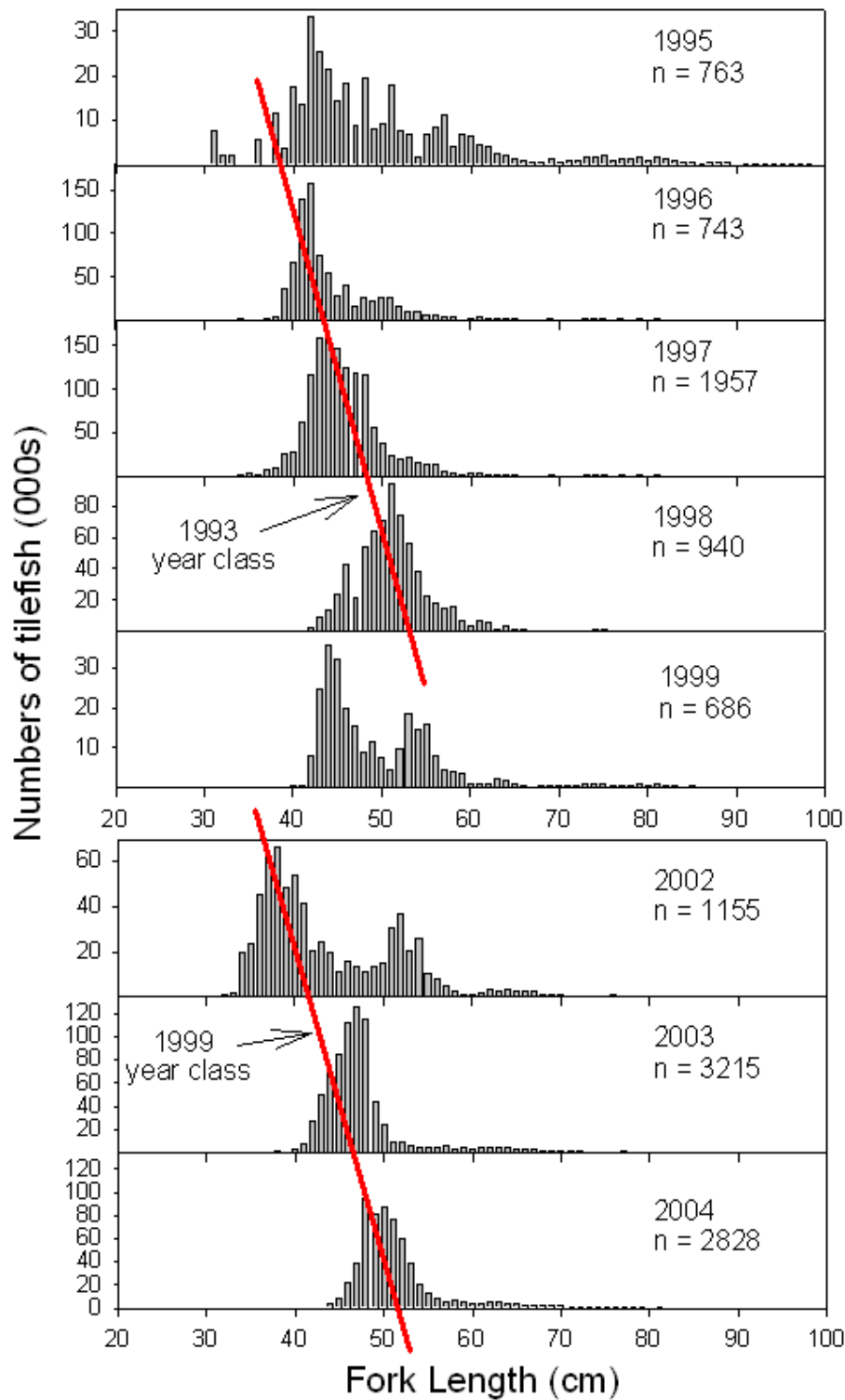


Figure 21.3 Strong 1993 and 1999 Golden tilefish year classes observations in the commercial length frequency distributions by year.

Golden Tilefish

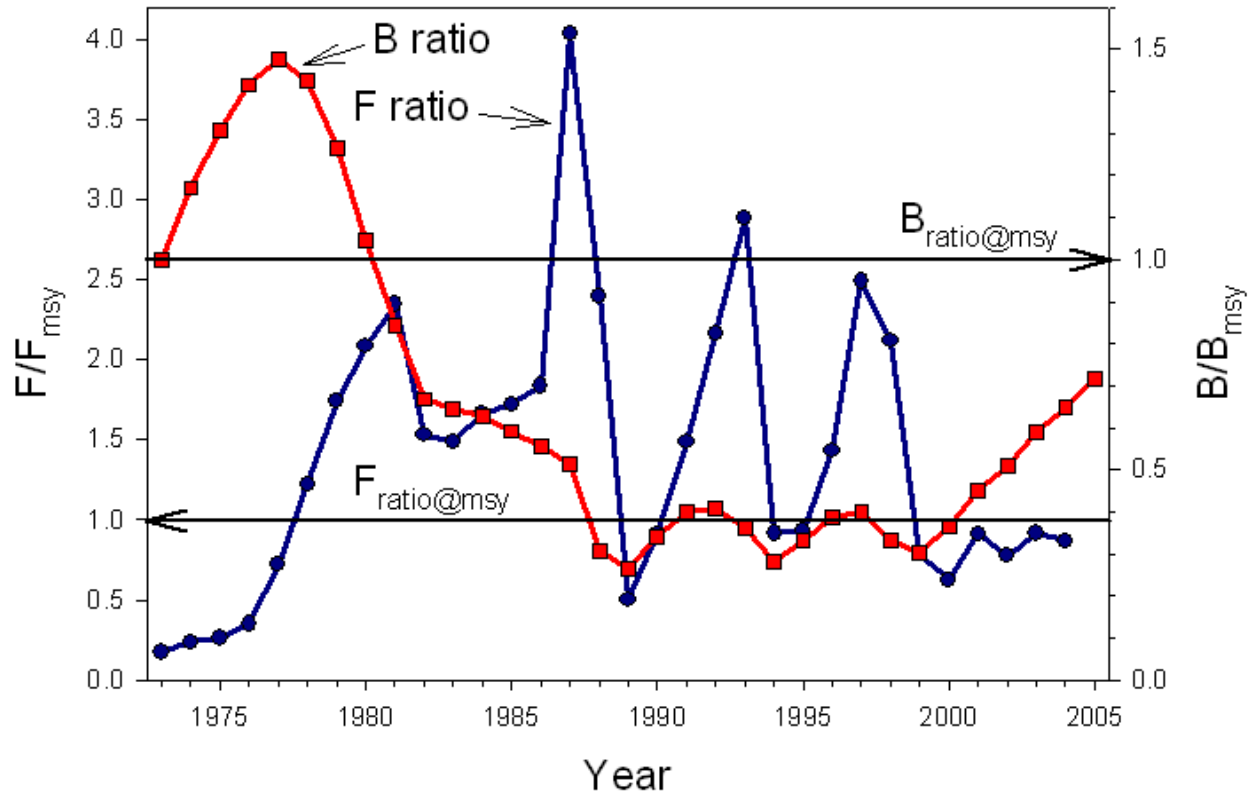


Figure 21.4. Trends in Golden tilefish F/F_{msy} and B/B_{msy} ratios from 2005 assessment.

Golden Tilefish Length Based Yield Per Recruit

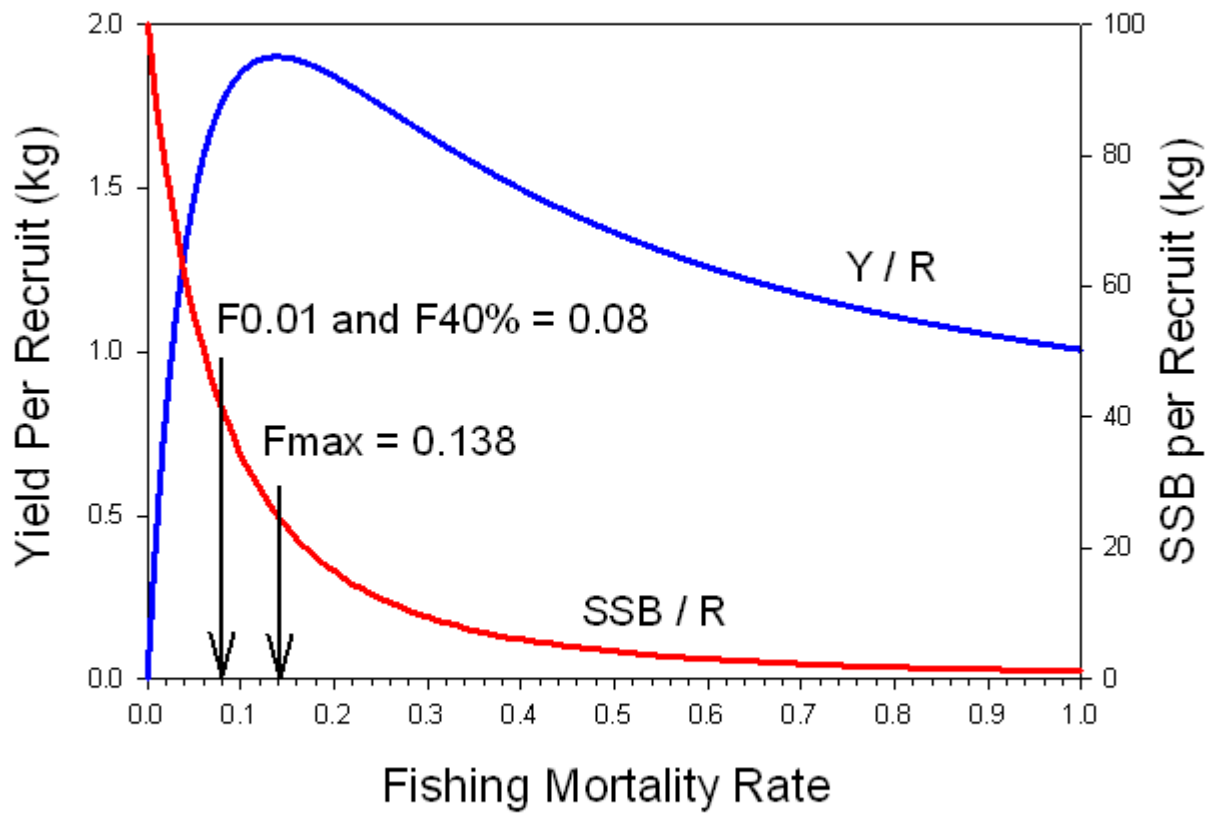


Figure 21.5. Yield per recruit and spawning stock biomass per recruit results from the length based YPR analysis for golden tilefish.