Golden Tilefish Projections—March, 2018

Prepared by NMFS Southeast Fisheries Science Center, Beaufort Laboratory

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Introduction

In a memorandum dated March 16, 2018, from Gregg Waugh to Dr. Cisco Werner, The South Atlantic Fishery Management Council requested additional Golden Tilefish projections. This report fulfills that request. Specifically, the Council requested the following:

Provide projections of Golden Tilefish yield and stock conditions to 2024 based on $F=75\%F_{MSY}$ and $F=F_{MSY}$. The alternative fishing mortality rates will take effect in 2019. Landings in 2017 assumed that the ACL (625,000 lb whole weight) was fully met, and in 2018 that a reduced ACL (362,000 lb whole weight) will be fully met. For each scenario, provide the full suite of projection outputs as provided in the 2016 Golden Tilefish update.

Methods

Except for modifications to accommodate the request, the projection methods were identical to those used in the most recent SEDAR stock assessment of Golden Tilefish. In these projections, landings were computed in gutted weight (GW), and thus to match the 625,000 lb (whole weight, WW) ACL in 2017 and 362,000 lb (WW) ACL in 2018, the WW values were converted to gutted weight using the meristic relationship from the stock assessment,

$$WW = 1.059\ GW$$

Results

Results of projections at $F=75\%F_{MSY}$ are tabulated in Table 1 and presented graphically in Figures 1 and 2. Results of projections at $F=F_{MSY}$ are tabulated in Table 2 and presented graphically in Figures 3 and 4.

Table 1. Projections results with fishing mortality rate at F=75%F_{MSY} starting in 2019. R = number of age-1 recruits (1000 fish), N = total stock abundance (1000 fish), F = fishing mortality rate (per year), S = spawning stock (mt), B = total stock biomass (mt), L = landings expressed in numbers (1000 fish) and gutted weight (1000 lb), and pr.sdmsst = proportion of stochastic projection replicates with SSB ≥ MSST using the 75% definition of MSST. All values except year and probabilities are medians from the stochastic projections.

Year	R (1000)	N (1000)	F	S (mt)	B (mt)	L (1000 fish)	L (1000 lb gutted)	pr.sdmsst
2015	310	1526	0.262	18	2297	66	522	0.496
2016	305	1518	0.262	18	2295	65	509	0.496
2017	305	1508	0.306	18	2300	77	590	0.488
2018	302	1489	0.173	18	2257	45	342	0.499
2019	305	1514	0.160	19	2344	39	309	0.535
2020	312	1541	0.160	19	2389	44	343	0.582
2021	317	1559	0.160	19	2421	47	371	0.624
2022	323	1584	0.160	20	2451	49	393	0.664
2023	324	1599	0.160	20	2476	50	406	0.701
2024	327	1616	0.160	21	2508	51	414	0.733

Table 2. Projections results with fishing mortality rate at $F=F_{MSY}$ starting in 2019. R = number of age-1 recruits (1000 fish), N = total stock abundance (1000 fish), F = fishing mortality rate (per year), S = spawning stock (mt), B = total stock biomass (mt), L = landings expressed in numbers (1000 fish) and gutted weight (1000 lb), and pr.sdmsst = proportion of stochastic projection replicates with SSB ≥ MSST using the 75% definition of MSST. All values except year and probabilities are medians from the stochastic projections.

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2019	305	1514	0.214	18	2344	52	403	0.529
2020	311	1527	0.214	18	2329	55	430	0.559
2021	313	1531	0.214	18	2314	58	450	0.584
2022	318	1544	0.214	18	2309	59	462	0.608
2023	317	1547	0.214	18	2309	59	466	0.630
2024	320	1557	0.214	18	2320	59	469	0.652

Figure 1. Projection results with fishing mortality rate at F=75%F$_{MSY}$ starting in 2019. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.
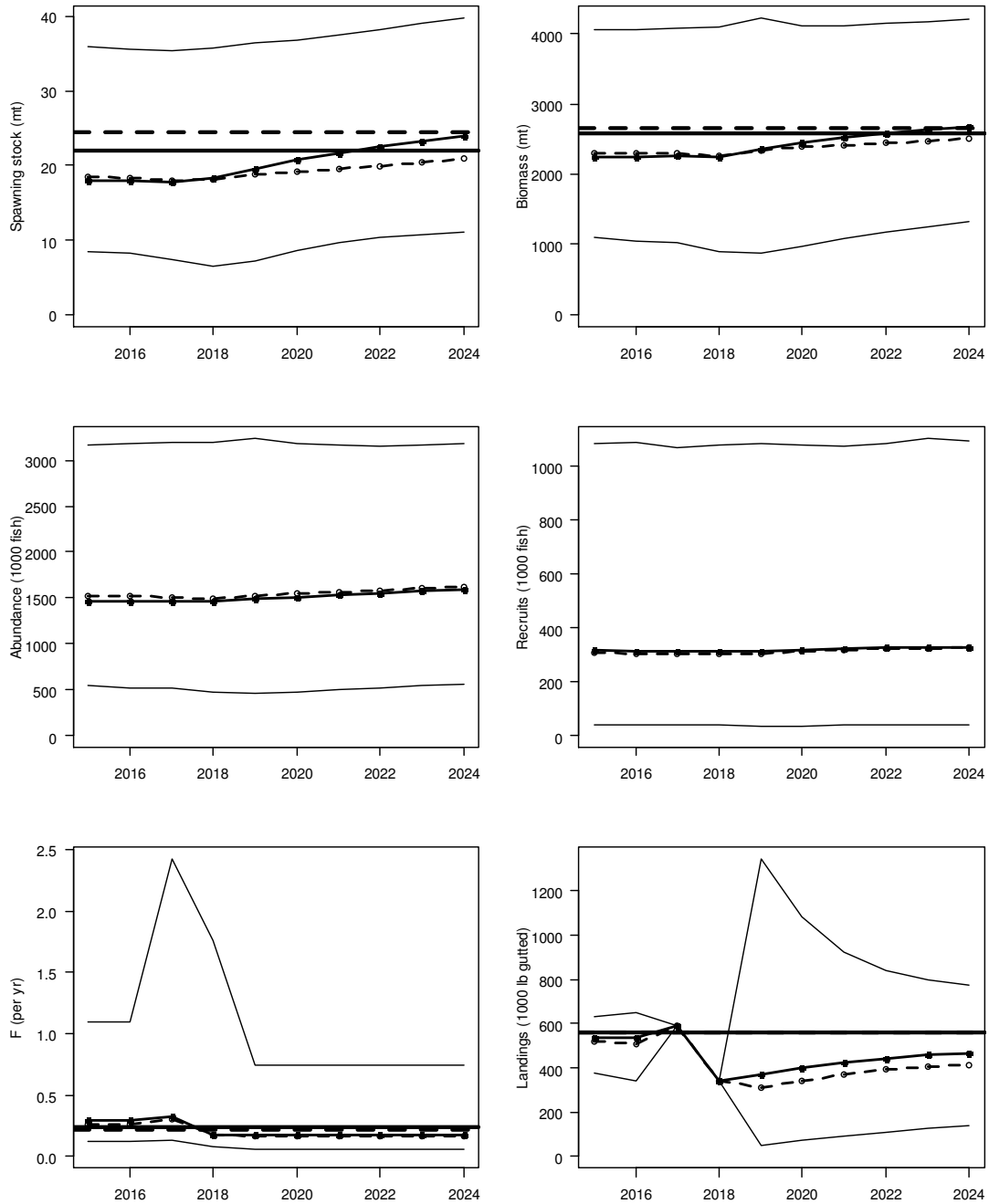
Figure 2. Projected probability that SSB exceeds MSST with fishing mortality rate at F=75%F_{MSY} starting in 2019. The curve represents the proportion of projection replicates for which SSB exceeds the replicate-specific MSST using the 75% definition of MSST. Horizontal line drawn at 0.5 for reference.
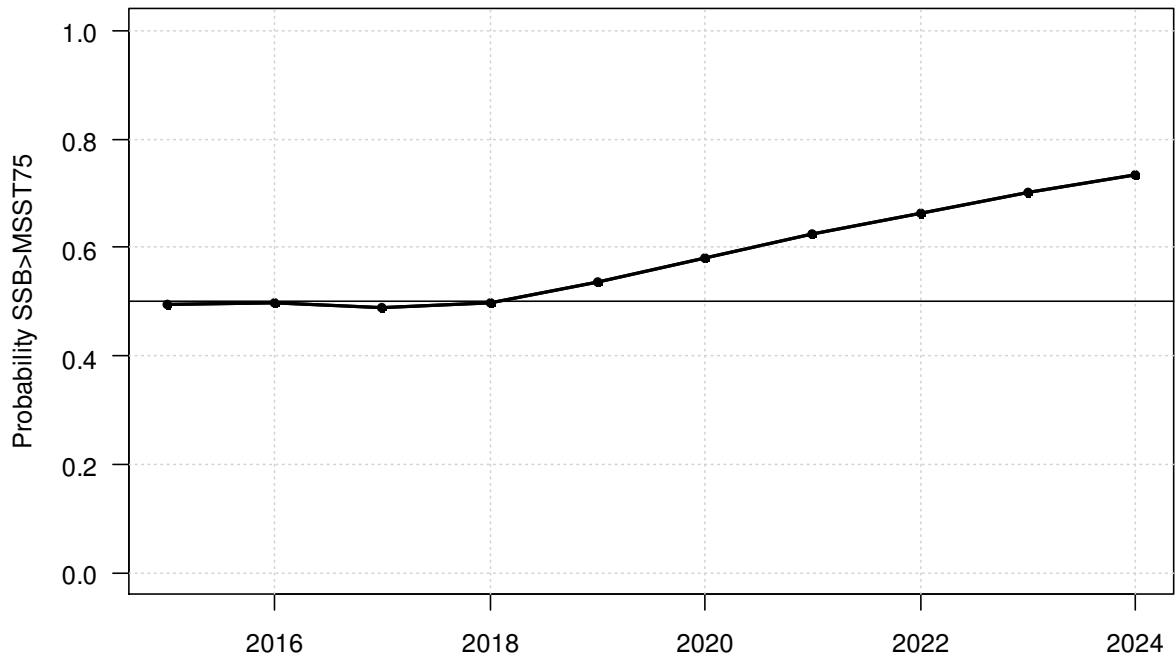
Figure 3. Projection results with fishing mortality rate at F=F$_{MSY}$ starting in 2019. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.
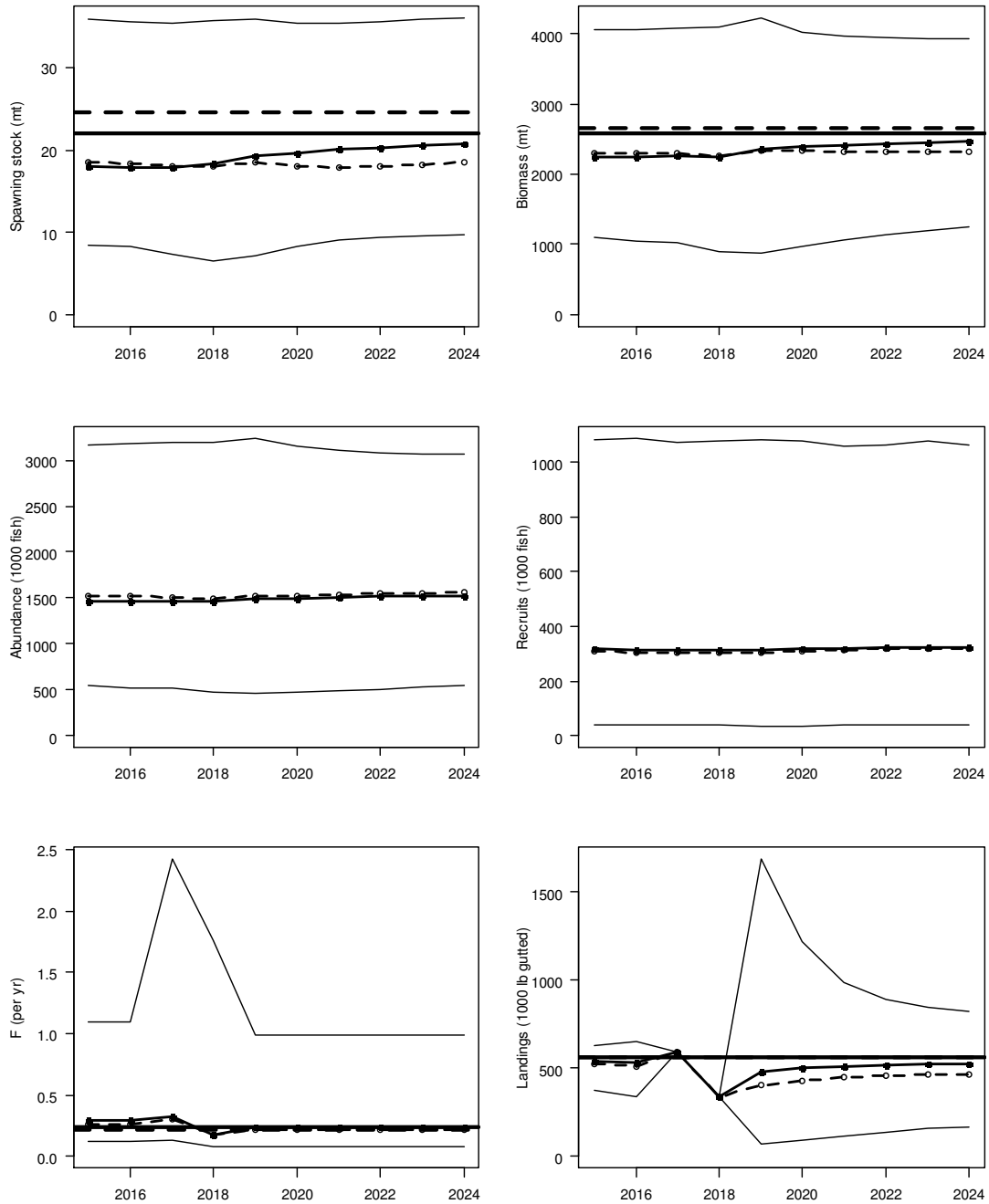
Figure 4. Projected probability that SSB exceeds MSST with fishing mortality rate at F=F$_{MSY}$ starting in 2019. The curve represents the proportion of projection replicates for which SSB exceeds the replicate-specific MSST using the 75% definition of MSST. Horizontal line drawn at 0.5 for reference.