Golden Tilefish Projections

Prepared by NMFS Southeast Fisheries Science Center

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Introduction

In a memorandum dated January 5, 2017, from Gregg Waugh to Dr. Bonnie Ponwith, The South Atlantic Fishery Management Council requested additional Golden Tilefish projections. This report fulfills that request. Specifically, the requested projection scenarios were for the following:

1. Provide projections of Golden Tilefish yield and stock conditions to 2024 based on P* values of 40% and 45%. (Note that the 2016 Golden Tilefish update assessment provided projections at P*=35% and 50%.) The alternative fishing mortality rates will take effect in 2019, and use the assumption that the current ACL (625,000 lbs whole weight) will be met in 2017 and 2018. For each scenario, provide the full suite of projection outputs as provided in the 2016 Golden Tilefish update.

2. Provide projections of Golden Tilefish yield and stock conditions to 2024 based on P* values of 35% and 50%. (Note that the 2016 Golden Tilefish update assessment provided projections at P*=35% and 50% under the assumption that new management would take place in 2018.) The alternative fishing mortality rates will take effect in 2019, and use the assumption that the current ACL (625,000 lbs whole weight) will be met in 2017 and 2018. 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 2018, that value was converted to gutted weight using the meristic relationship from the stock assessment,

$$WW = 1.059\ GW$$

Results

Results are tabulated in Tables 1–4, and presented graphically in Figures 1–8.

Table 1. Projections results with fishing mortality rate fixed to provide P*=0.35 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	0.317	17	2257	78	590	0.479
2019	300	1478	0.149	17	2219	33	258	0.495
2020	305	1510	0.149	18	2303	38	294	0.545
2021	311	1533	0.149	19	2366	42	328	0.593
2022	319	1567	0.149	19	2418	45	355	0.637
2023	321	1583	0.149	20	2463	46	374	0.679
2024	326	1607	0.149	21	2501	48	387	0.715

Table 2. Projections results with fishing mortality rate fixed to provide P*=0.40 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	0.317	17	2257	78	590	0.479
2019	300	1478	0.171	17	2219	38	294	0.493
2020	304	1504	0.171	18	2279	43	329	0.536
2021	310	1521	0.171	18	2320	47	363	0.579
2022	317	1550	0.171	19	2357	49	388	0.616
2023	318	1561	0.171	19	2386	51	404	0.653
2024	323	1580	0.171	20	2417	52	416	0.686

Table 3. Projections results with fishing mortality rate fixed to provide P*=0.45 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	0.317	17	2257	78	590	0.479
2019	300	1478	0.195	17	2219	43	332	0.490
2020	304	1497	0.195	17	2254	48	366	0.526
2021	308	1509	0.195	17	2275	51	399	0.559
2022	315	1532	0.195	18	2294	54	420	0.592
2023	316	1540	0.195	18	2314	55	433	0.622
2024	319	1554	0.195	19	2335	55	441	0.649

Table 4. Projections results with fishing mortality rate fixed to provide P*=0.50 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	0.317	17	2257	78	590	0.479
2019	300	1478	0.214	17	2219	47	362	0.487
2020	304	1492	0.214	17	2236	51	393	0.518
2021	307	1500	0.214	17	2241	55	424	0.545
2022	313	1519	0.214	17	2251	57	441	0.571
2023	313	1524	0.214	17	2264	58	451	0.596
2024	316	1534	0.214	18	2276	58	458	0.620

Figure 1. Projection results when fishing mortality rate is fixed to provide P*=0.35 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.

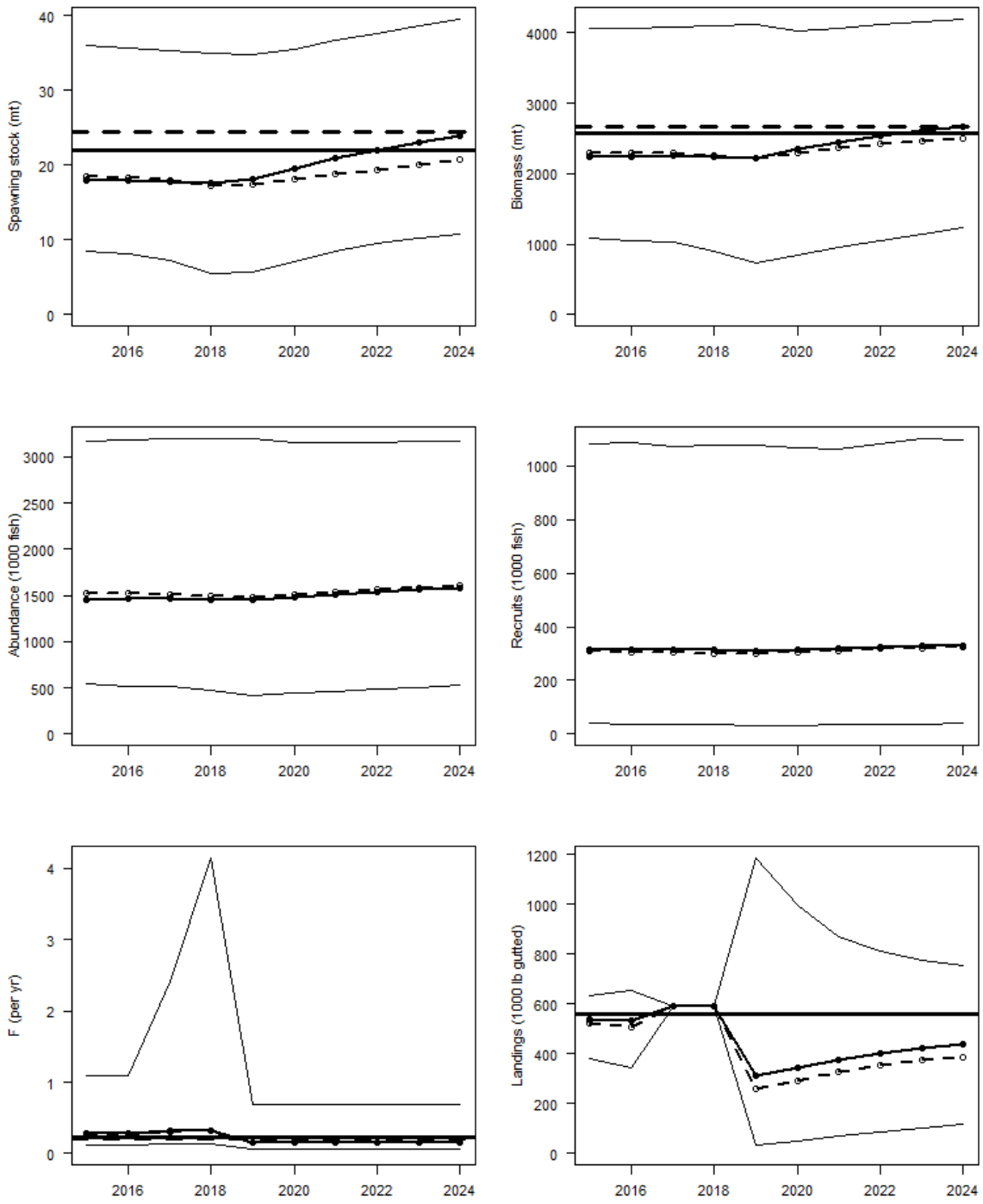

Figure 2. Projected probability that SSB exceeds MSST when fishing mortality rate is fixed to provide P*=0.35 starting in 2019. The curve represents the proportion of projection replicates for which SSB exceeds the replicate-specific MSST using the 75% definition of MSST. Horizontal line drawn at 0.5 for reference.

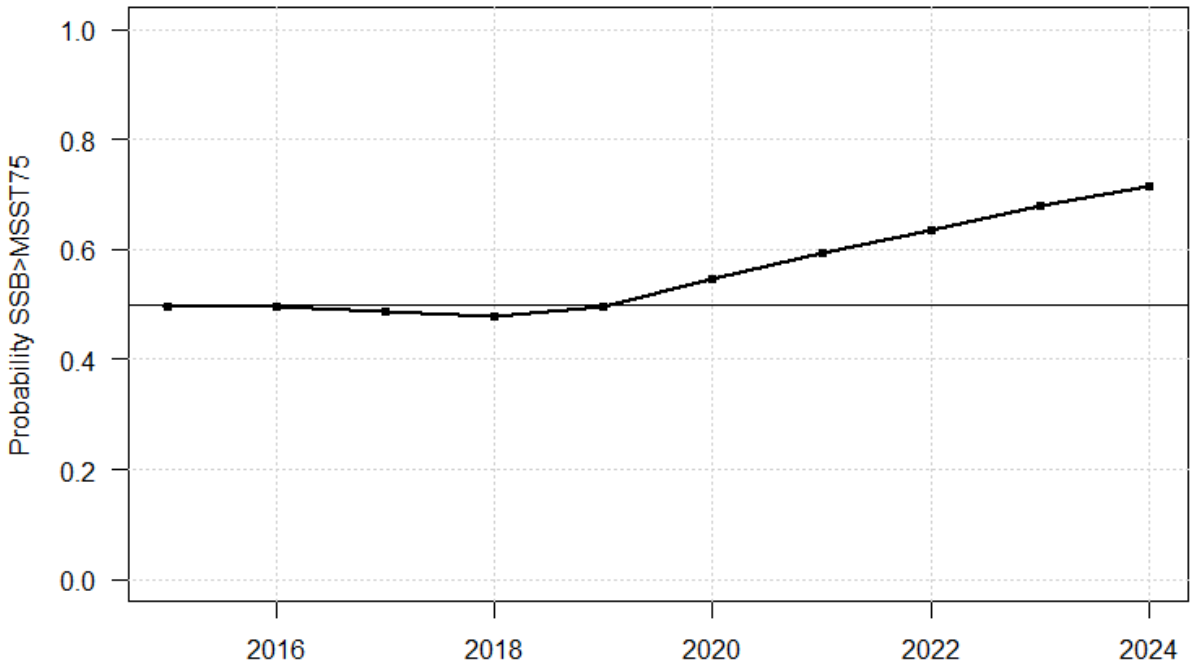

Figure 3. Projection results when fishing mortality rate is fixed to provide P*=0.40 starting in 2019. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.

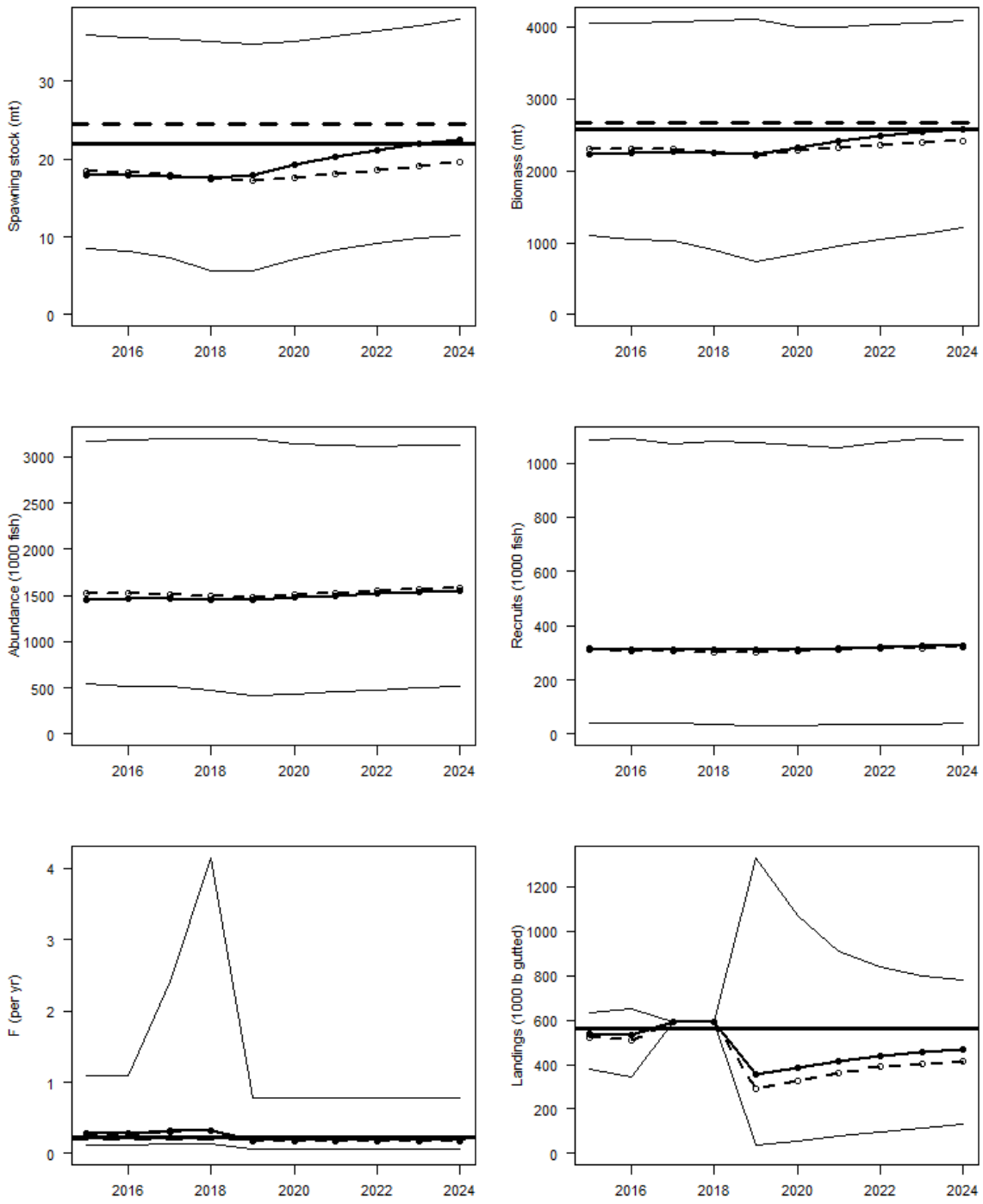

Figure 4. Projected probability that SSB exceeds MSST when fishing mortality rate is fixed to provide P*=0.40 starting in 2019. The curve represents the proportion of projection replicates for which SSB exceeds the replicate-specific MSST using the 75% definition of MSST. Horizontal line drawn at 0.5 for reference.

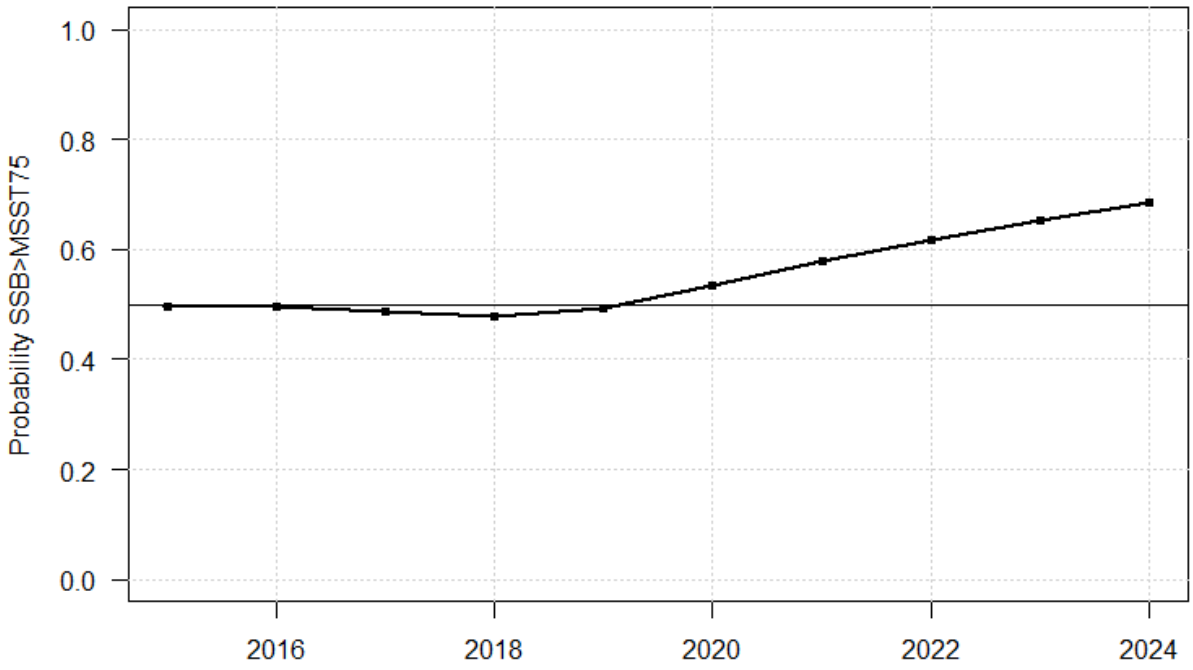

Figure 5. Projection results when fishing mortality rate is fixed to provide P*=0.45 starting in 2019. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.

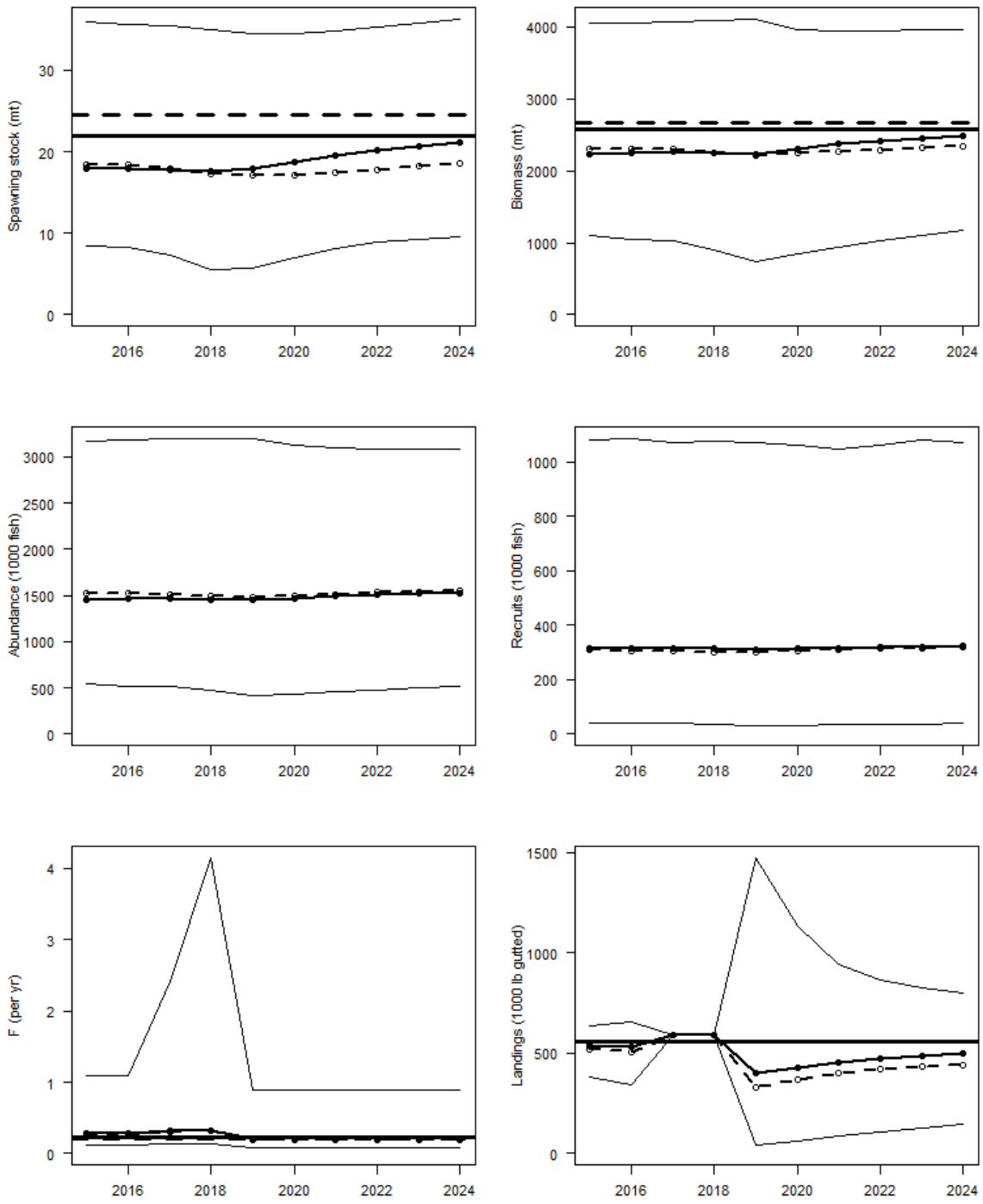

Figure 6. Projected probability that SSB exceeds MSST when fishing mortality rate is fixed to provide P*=0.45 starting in 2019. The curve represents the proportion of projection replicates for which SSB exceeds the replicate-specific MSST using the 75% definition of MSST. Horizontal line drawn at 0.5 for reference.

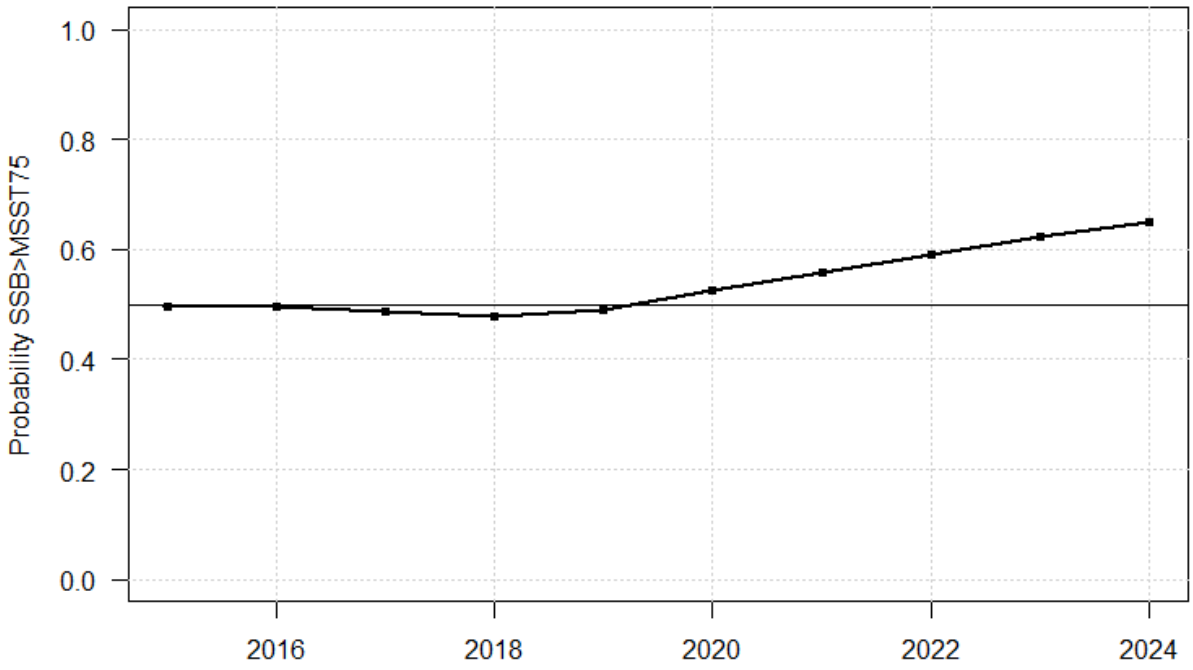

Figure 7. Projection results when fishing mortality rate is fixed to provide P*=0.50 starting in 2019. Expected values (base run) represented by dotted solid lines, medians by dashed lines with open circles, and uncertainty by thin lines corresponding to 5th and 95th percentiles of replicate projections. Solid horizontal lines mark MSY-related quantities; dashed horizontal lines represent corresponding medians.

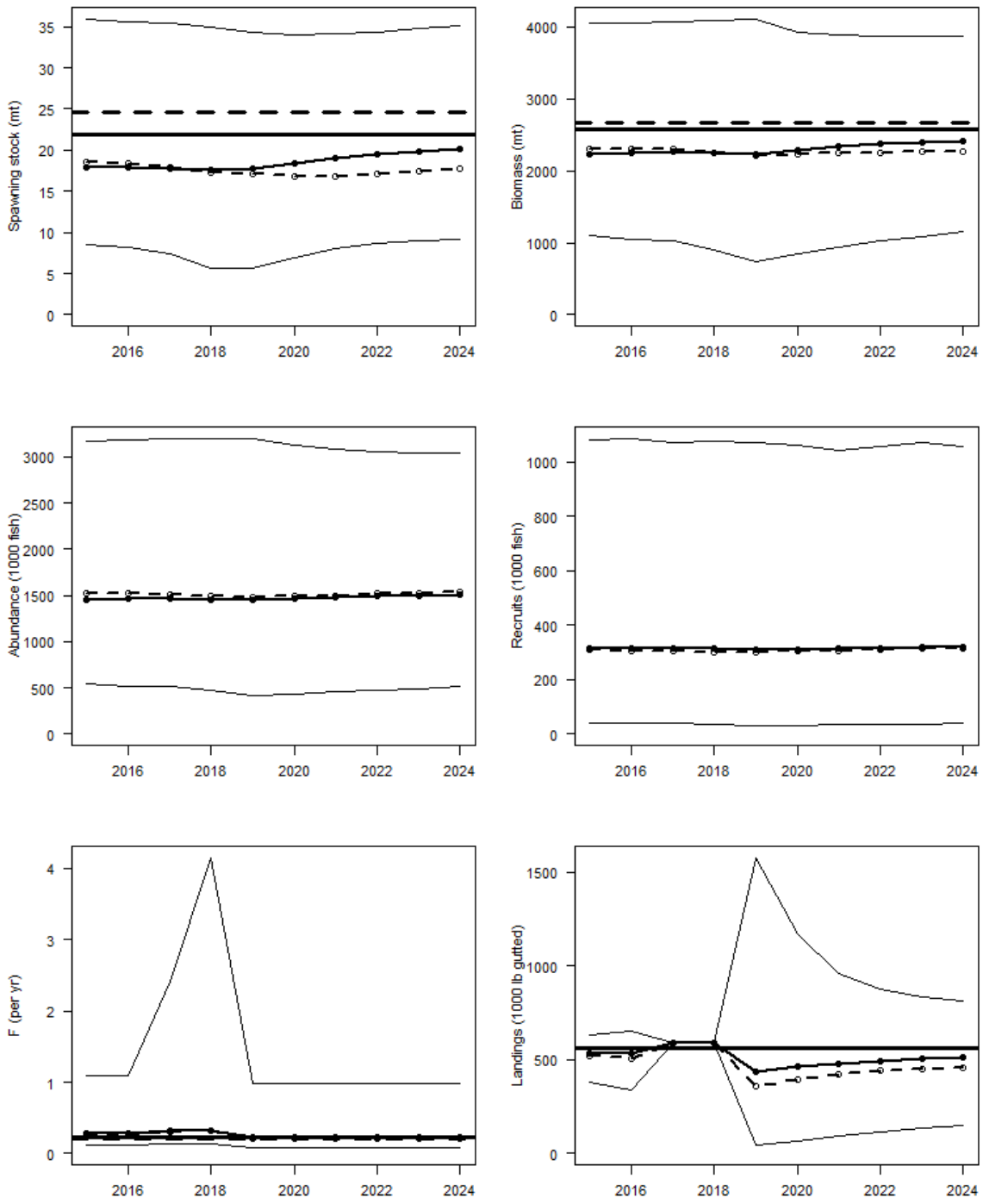

Figure 8. Projected probability that SSB exceeds MSST when fishing mortality rate is fixed to provide P*=0.50 starting in 2019. The curve represents the proportion of projection replicates for which SSB exceeds the replicate-specific MSST using the 75% definition of MSST. Horizontal line drawn at 0.5 for reference.