NOAA FISHERIES

Black Sea Bass Projections Round 5

October 2024

Background

- SEDAR 76 found BSB overfished but not overfishing
- SEDAR 76 report presents reference point a maximum landed yield
  - Incorrectly called MSY
- SSC decided $F_{40\%}$ is an appropriate proxy for F_{MSY}
- Fisheries management plan explicitly defines F_{MSY} proxy as $F_{30\%}$
- Council has not yet received notification from NOAA that BSB is overfished
  - Regional office waiting until FMP is revised to declare overfished

Previous projections

- First round in assessment report based on maximum landed yield
- Second round attempted to fit to 2022 data
  - Resulted in an very high F due to low abundance and high catch
- Third round separate landing and discard F
  - Discard fishing mortality assumed to remain at geometric mean of terminal three years in assessment (2019-2021)
- Fourth round attempted to change minimum size limits
  - SSC decided to use selectivity weighting between landings and discards based on terminal three years of assessment (2019-2021)

April SSC request

- The Council is considering several changes to the management of Black Sea Bass which may require additional projection runs. We are asking the information be provided to for SSC review in July . The SSC will consider scheduling the July webinar meeting (when the requested information would be presented) during their April 16-19, 2024 meeting. We will follow up with the deadline for the materials when the July meeting has been scheduled.
  - Changing size limits.
    - Develop new OFL and ABC projections with changes in minimum size limits of L50, of 11, 12, and 13 inches (both sectors being equal). The regulations would be implemented in 2025.
    - Maximum size limit where 50% or 100% of population is predicted to be male.
  - Develop scenarios where the discard F is reallocated to landings F. See SEDAR73 Red Snapper Forecasts: New Methodology and Additional July Scenarios 16, 2021. In particular, scenarios 6, 8, 14 and 16 with recruitment based on long-term mean or short-term (2014 to 2019) recruitment and potentially change level of discards due to wave 1 and 2 being closed to match shallow water grouper closure.

July SSC request

- For October SSC meeting:
- Provide additional Black Sea Bass projections:
  - Using the current project methods, incorporate a phase-in of ABC reductions over 3 years for Black Sea Bass. Assume landings of 68,000 lbs in 2026, 61,000 lbs in 2027, and 54,000 lbs in 2028. Compare the probability of rebuilding by 2030 (~approximately one generation based on SEDAR 76) and 2034 (10-year) with current projections.
  - Applying the current commercial: recreational allocation (43/57) to total fishery yield and then subtract discards for each sector to provide sector ABCs.
    - Apply to both the 30% and 40% SPR scenarios.
    - Assume status quo selectivity for both sectors.

September SSC request

- Black Sea Bass projections (Frebuild) requested following the June meeting now need to be based on Fmsy. A rebuilding plan will be addressed later. We had initially requested this by due October 4 but due to the change to Fmsy catch levels, we would request the information no later than October 10.

Projection scenarios

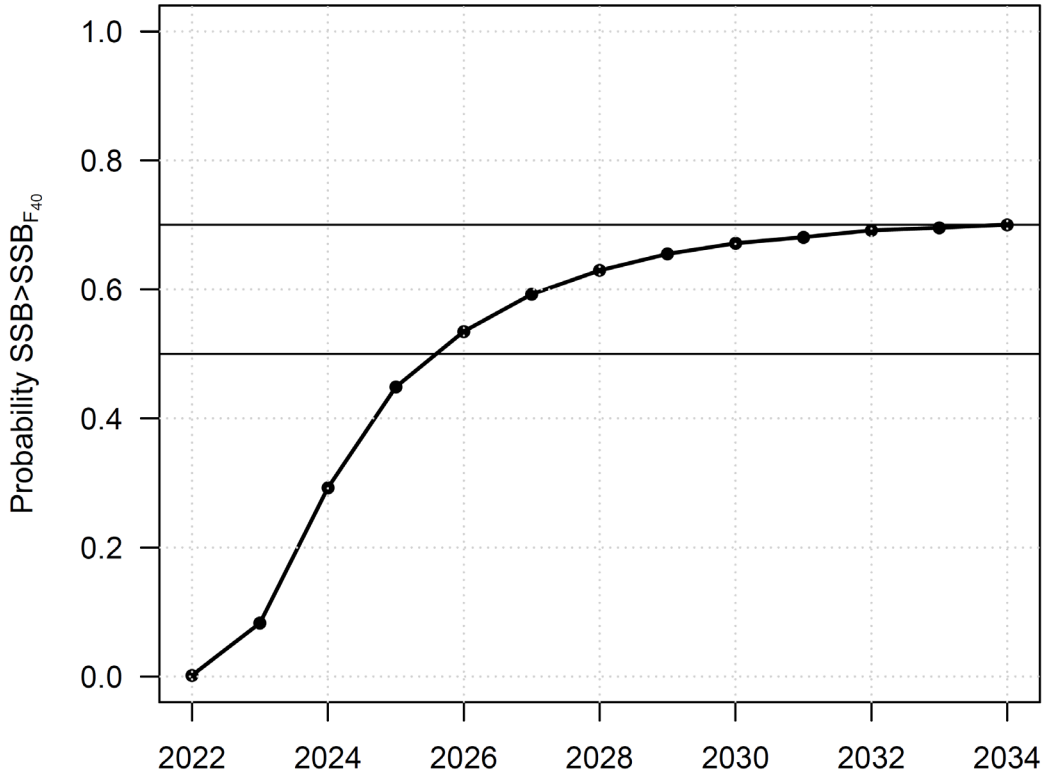
1. Original OFL and ABC
2. 11” minimum size limit
3. 12” minimum size limit
4. 13”minimum size limit
5. Wave 1 & 2 Closure
6. Landings Phase-In
7. $P^*_{30\%}$ $F_{40\%}$ $D_{current}$
8. $P^*_{30\%}$ $F_{40\%}$
9. $P^*_{30\%}$ $F_{30\%}$
10. $P^*_{30\%}$ $F_{30\%}$ $D_{current}$

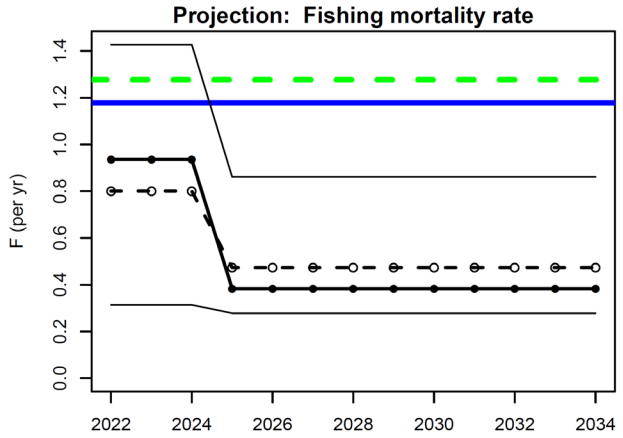
- All scenarios except landings phase-in have a longer term average (R0) and recent mean (rec.mu) recruitment scenario
- Longterm average recruitment used to determine $F_{rebuild}$ for landings by 2034
- Recent mean recruitment for short-term ABC projections
  - Use $F_{rebuild}$ from longterm

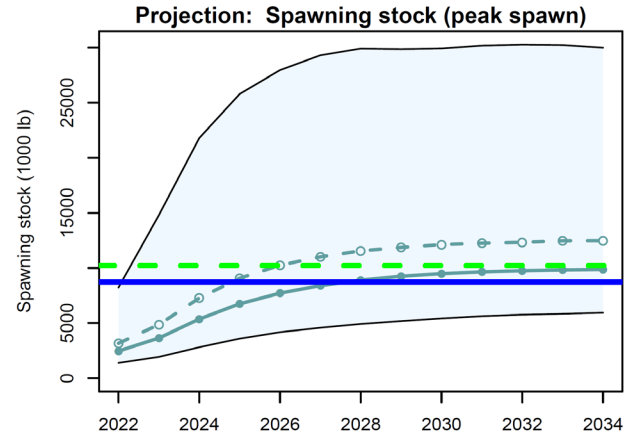
Original Projection Methods

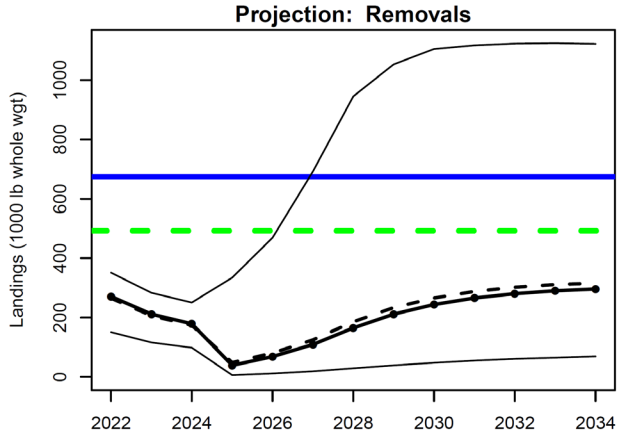
- Management action occurs in 2025
- Discard mortality for all years assumed to remain at current levels
- Recruitment assumed to change in 2023
- OFL scenario: longterm average recruitment
- ABC scenario: recent mean recruitment (2014-2019)

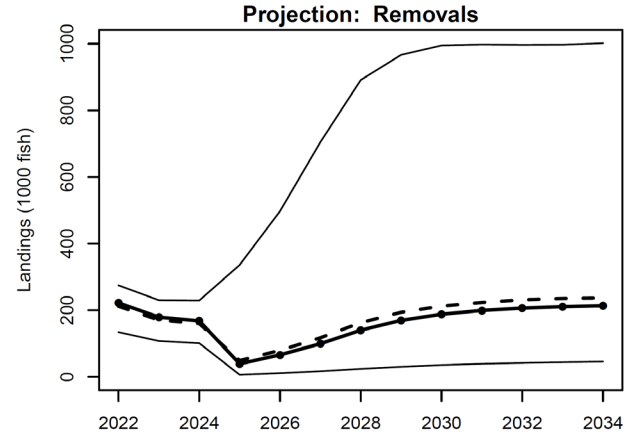
Original OFL scenario

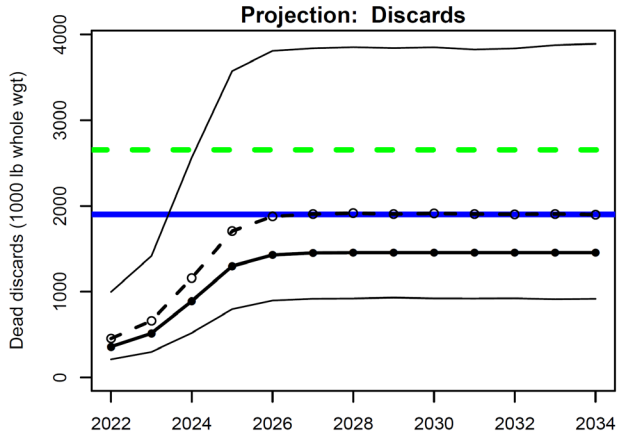


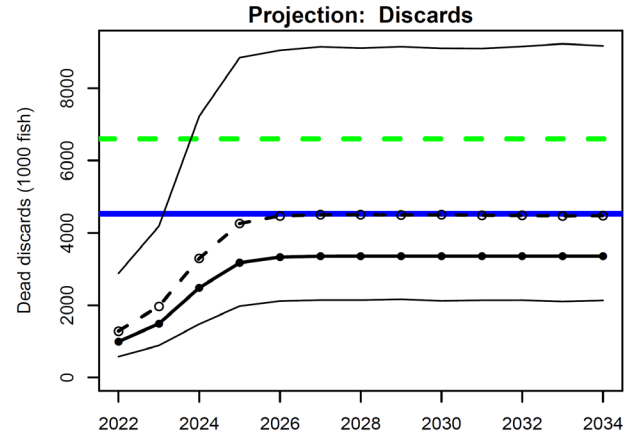




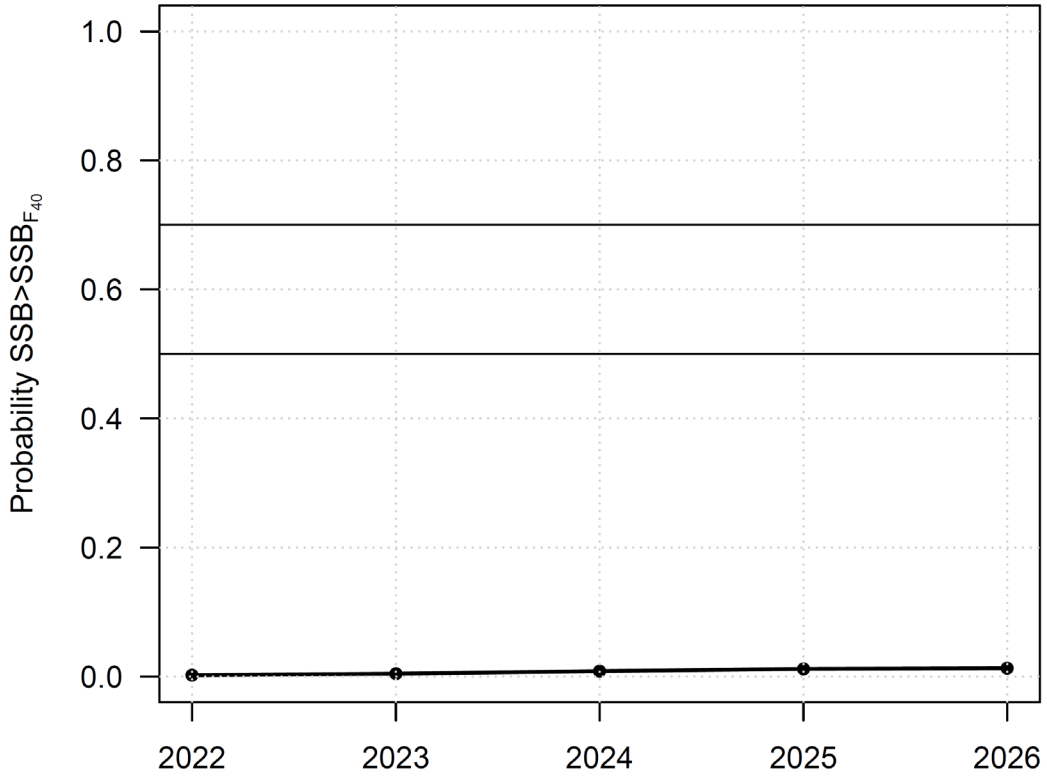


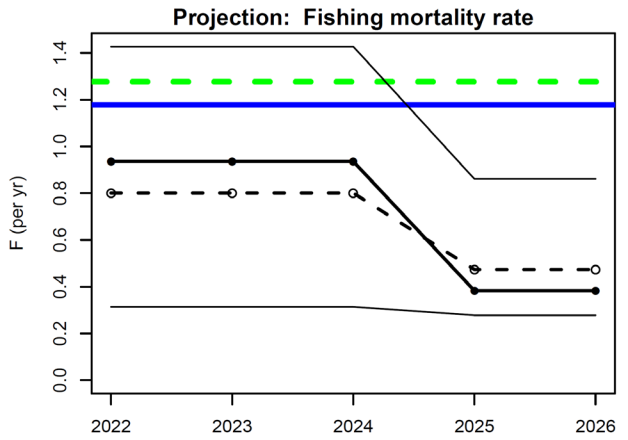


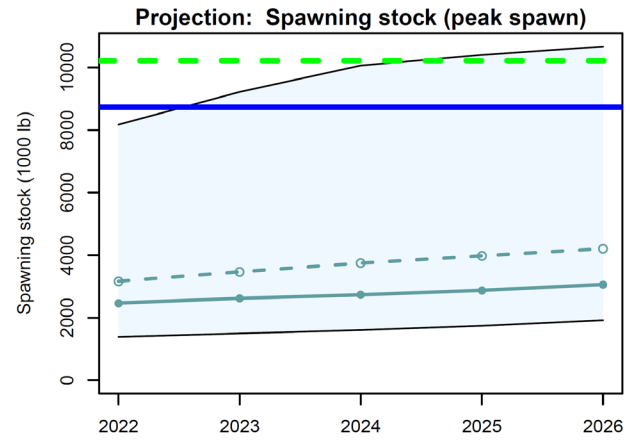


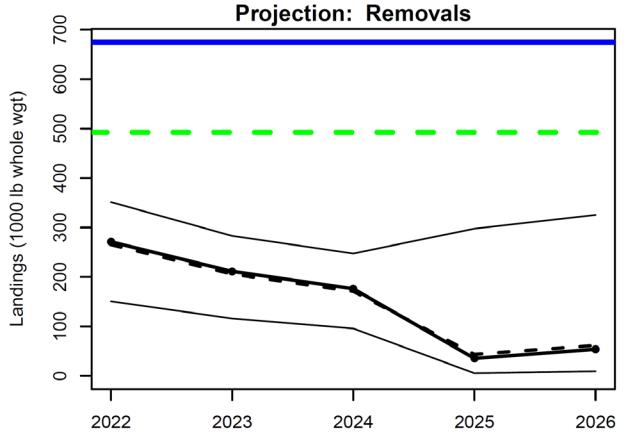


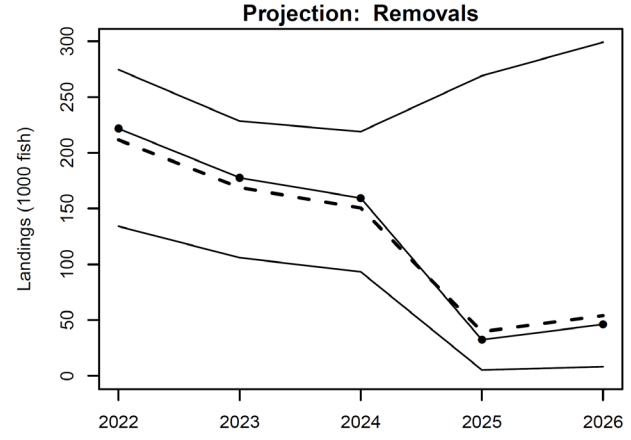
Original ABC scenario

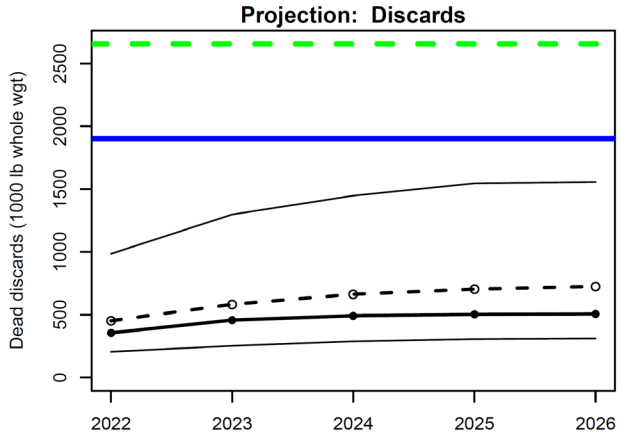


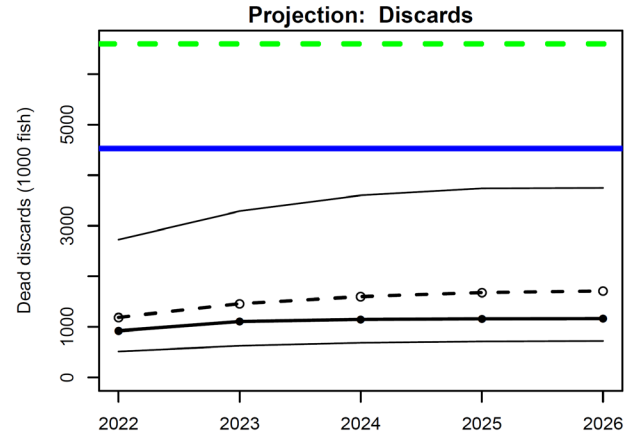








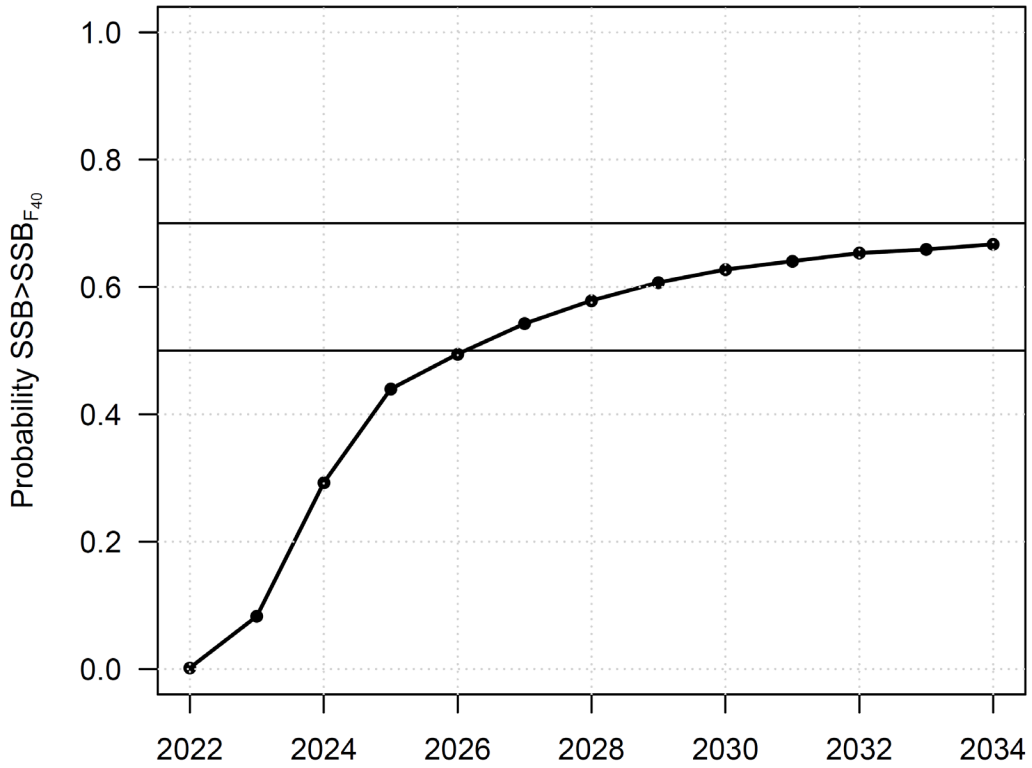


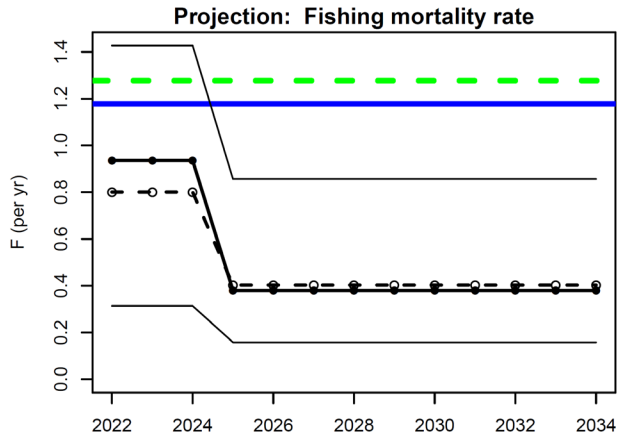


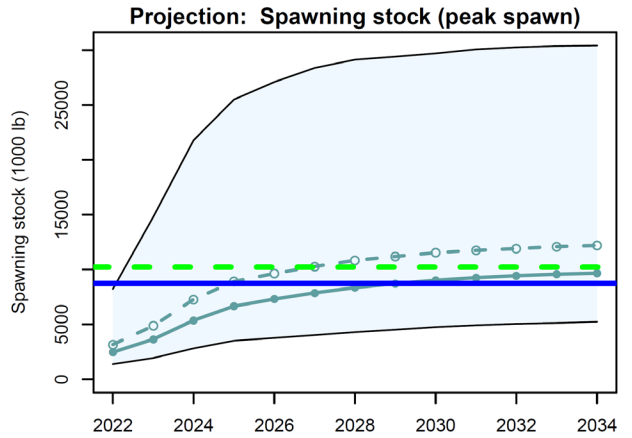
Minimum Size Limit Methods

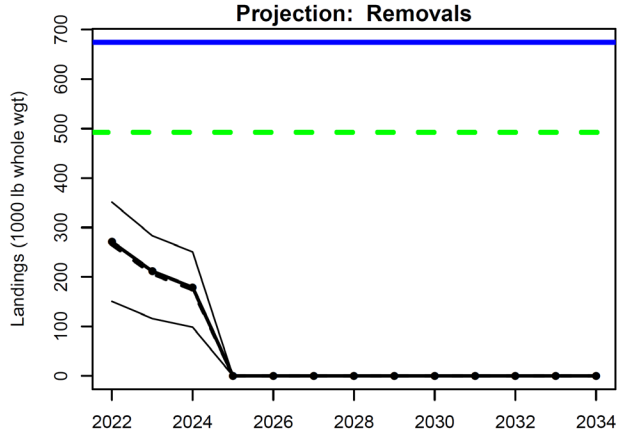
- 11” minimum size limit
  - Landings selectivity average commercial pots and handline from 2013-2021
  - Discards selectivity from combined commercial discard fleet 2013-2021
- 12” minimum size limit
  - Landings selectivity average recreational and headboat 2007-2012
  - Discards selectivity from recreational and headboat mirrored 2007-2012
- 13” minimum size limit
  - Landings selectivity average recreational and headboat 2013-2021
  - Discard selectivity from recreational and headboat mirrored 2013-2021
- Landings to discard weighting from last 3 years of assessment

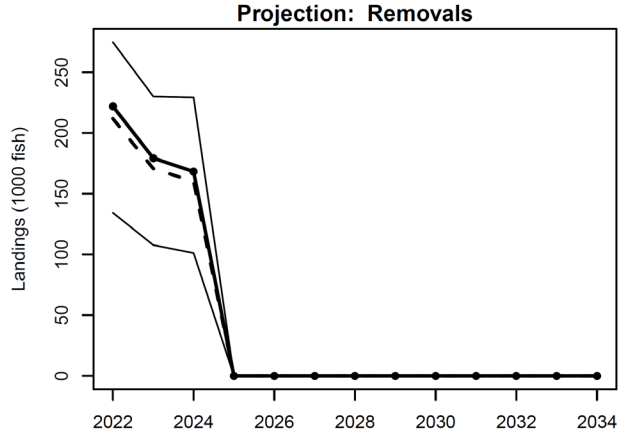
11” minimum size limit R0

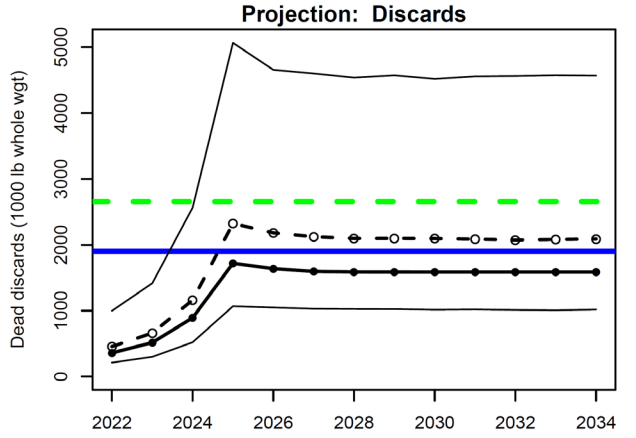


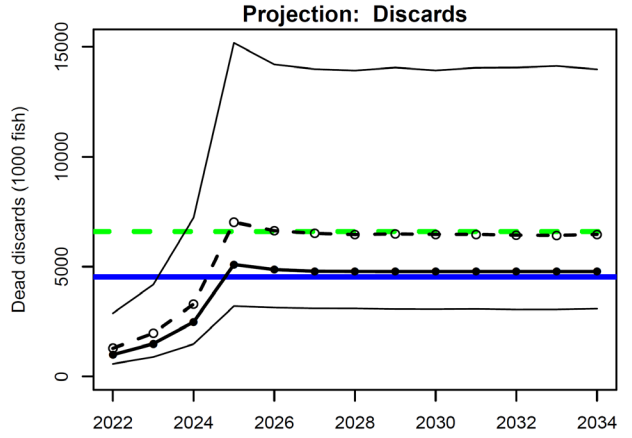




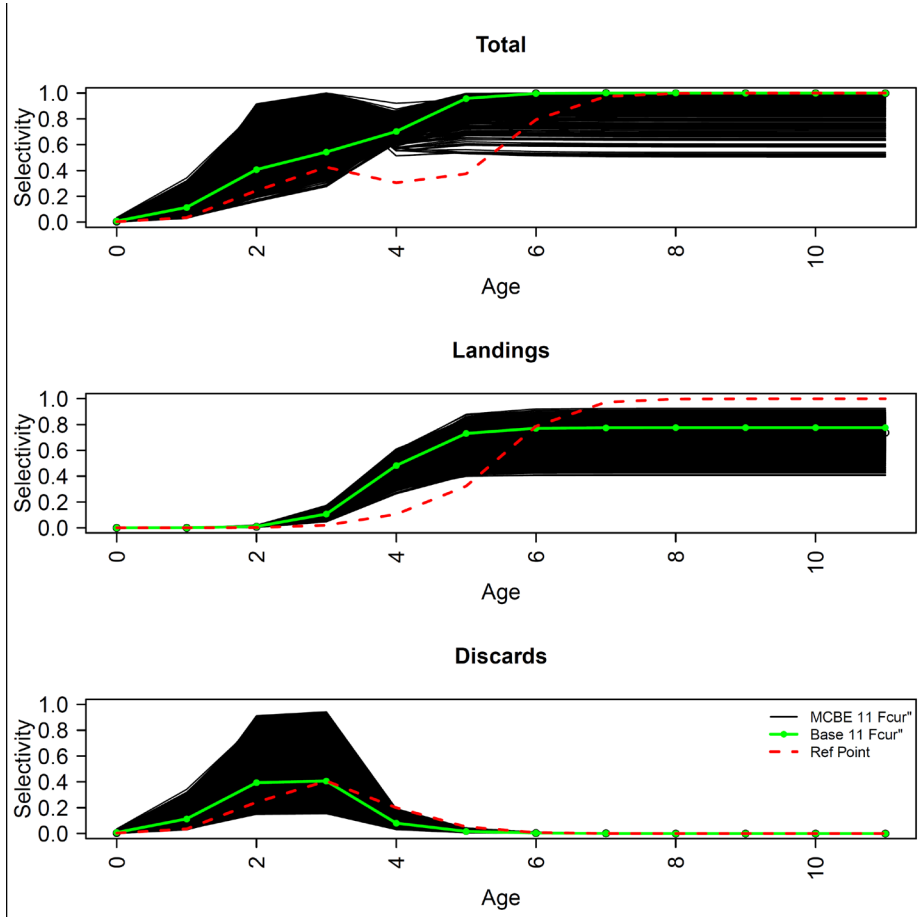


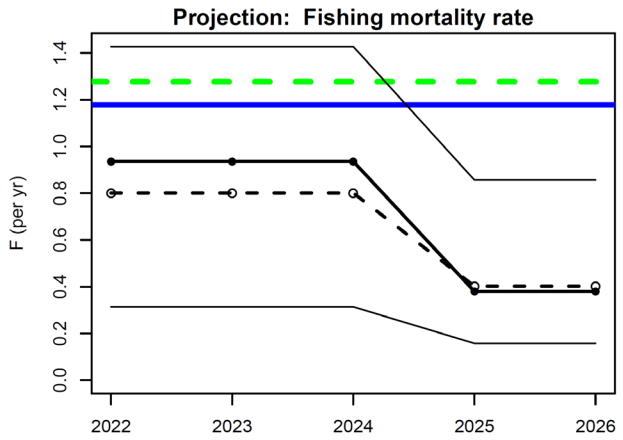


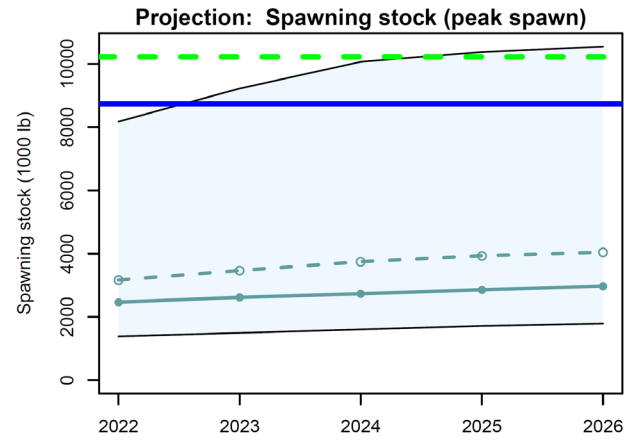


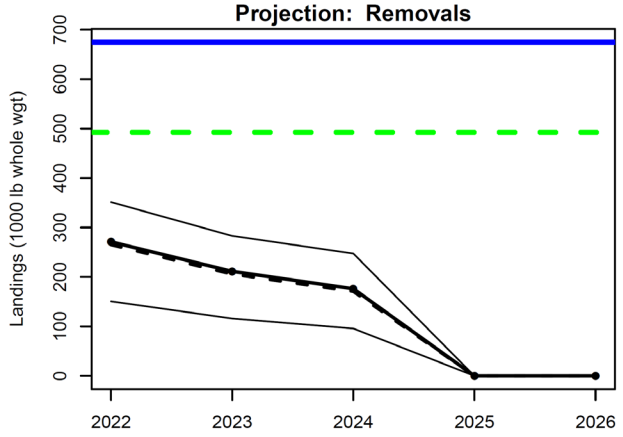


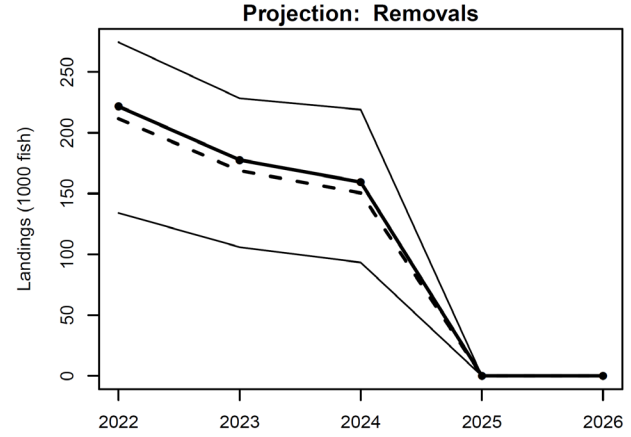
11” minimum size limit Rec.mu

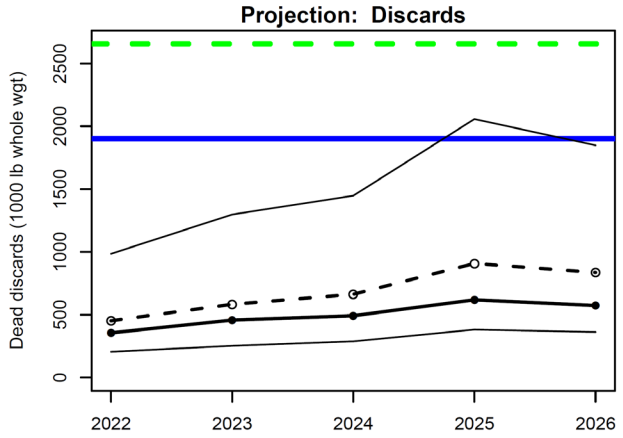


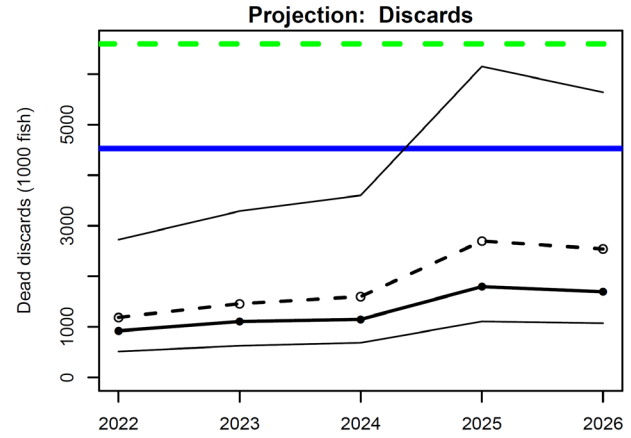




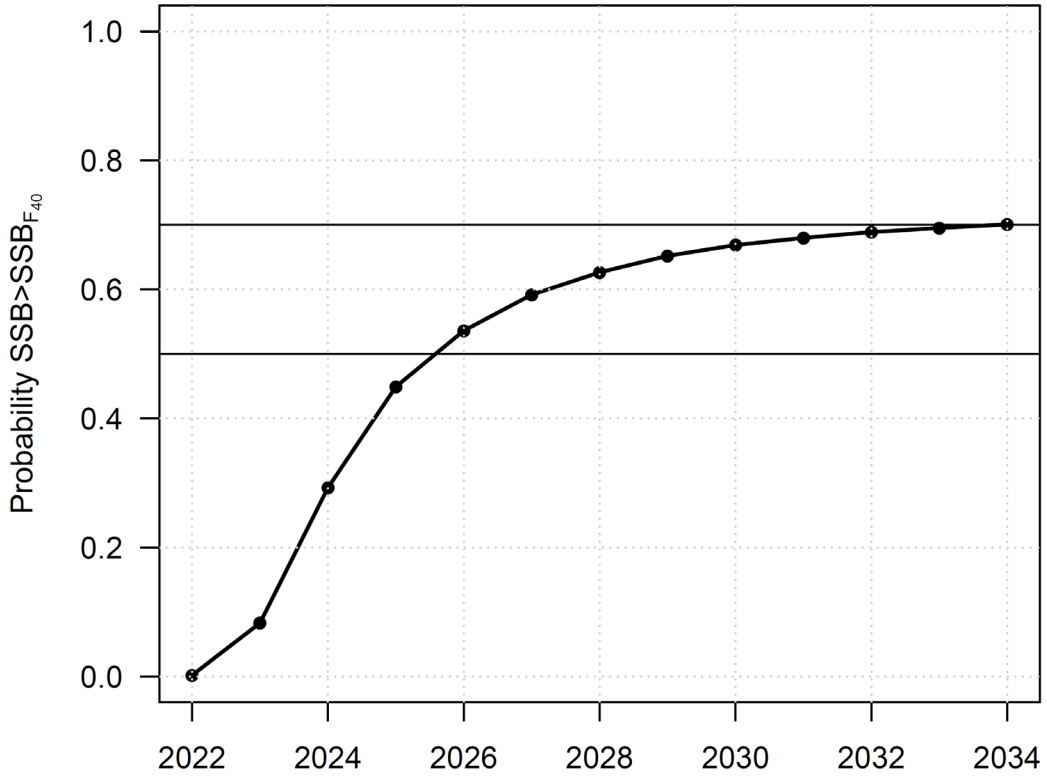


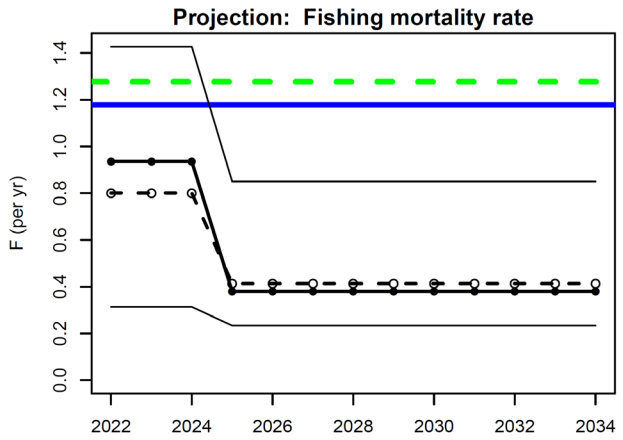


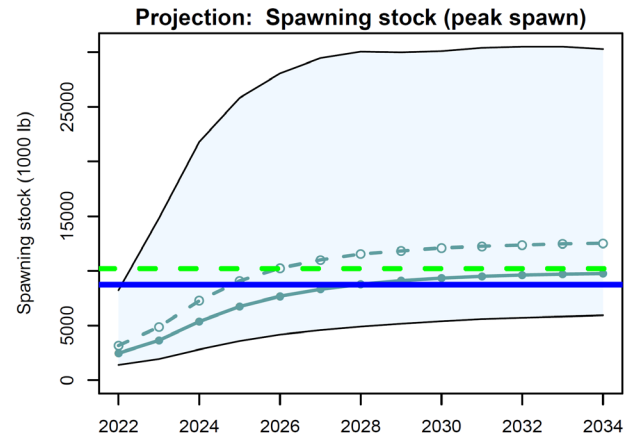


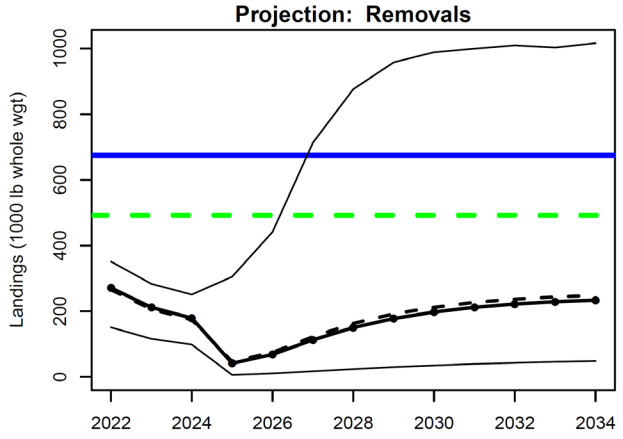


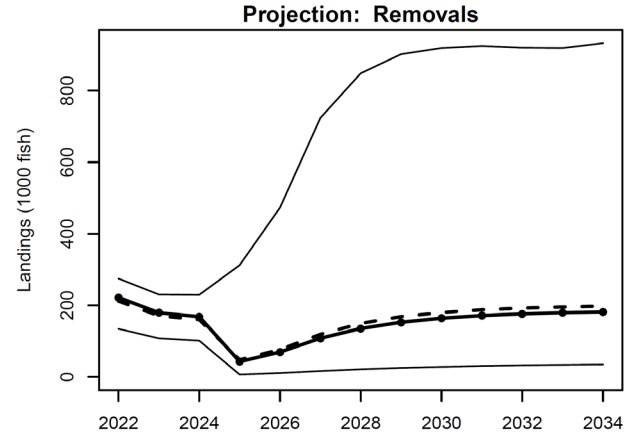
12” minimum size limit R0

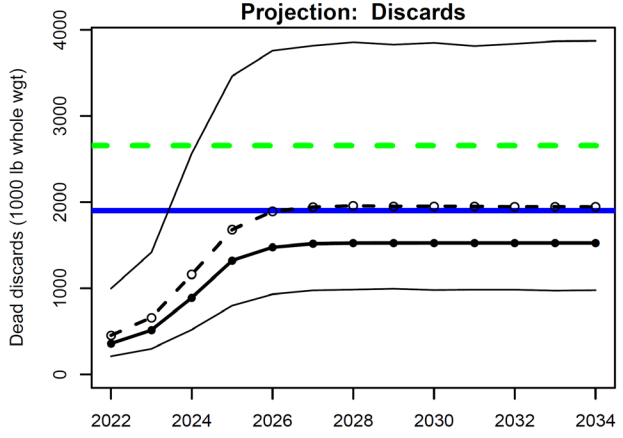


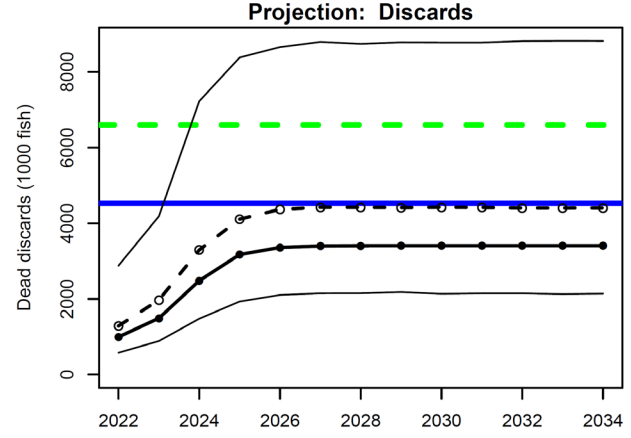




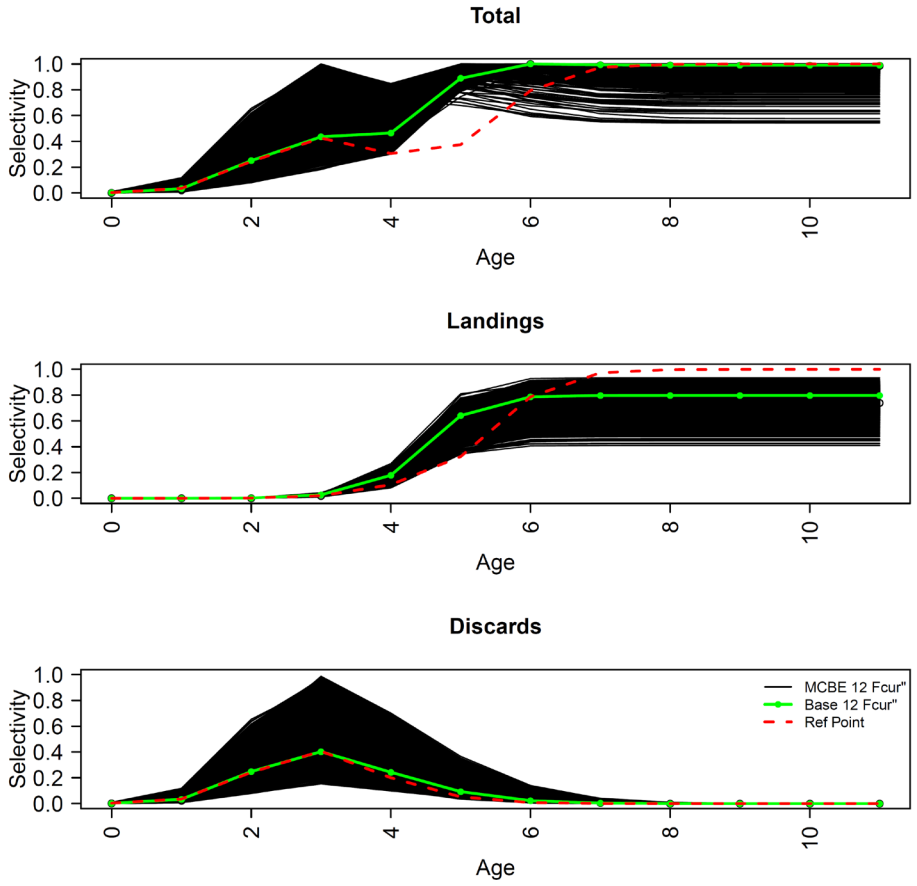


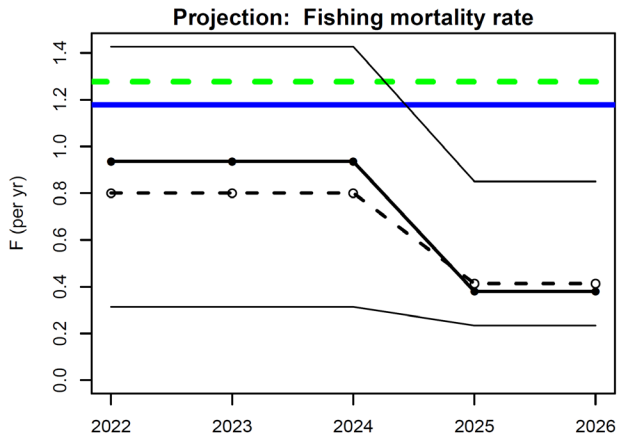


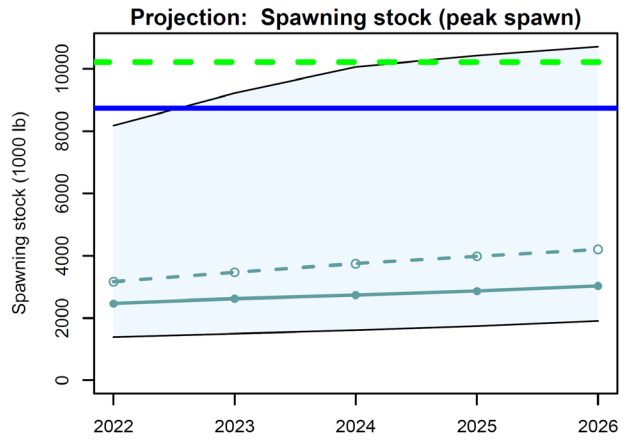


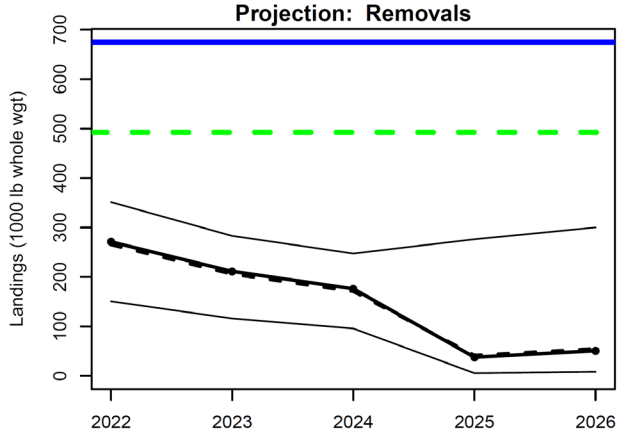


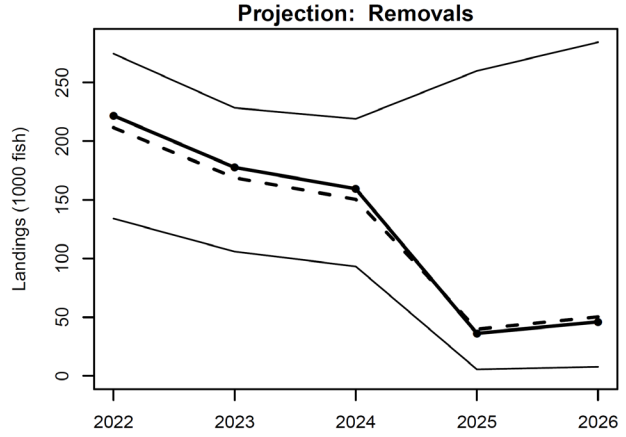
12” minimum size limit Rec.mu

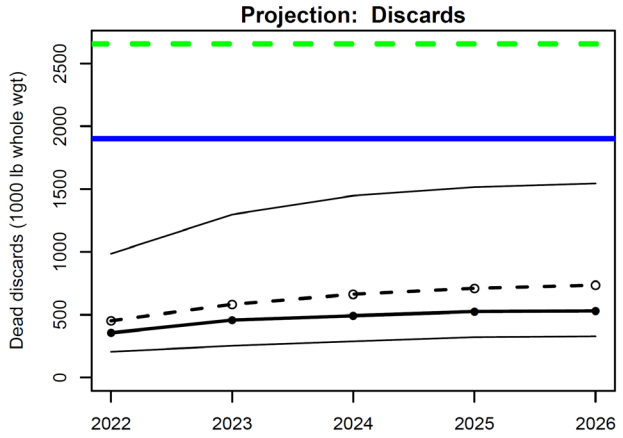


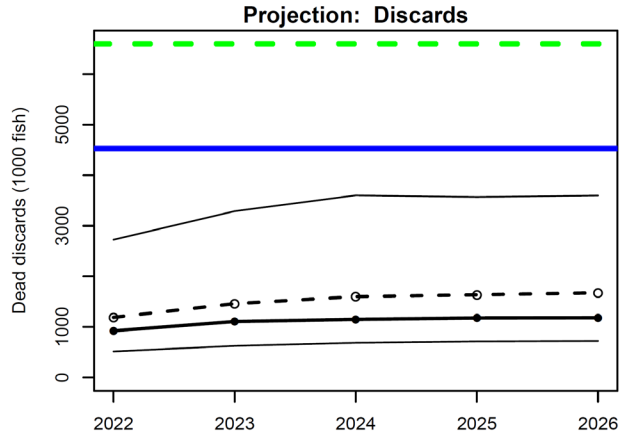




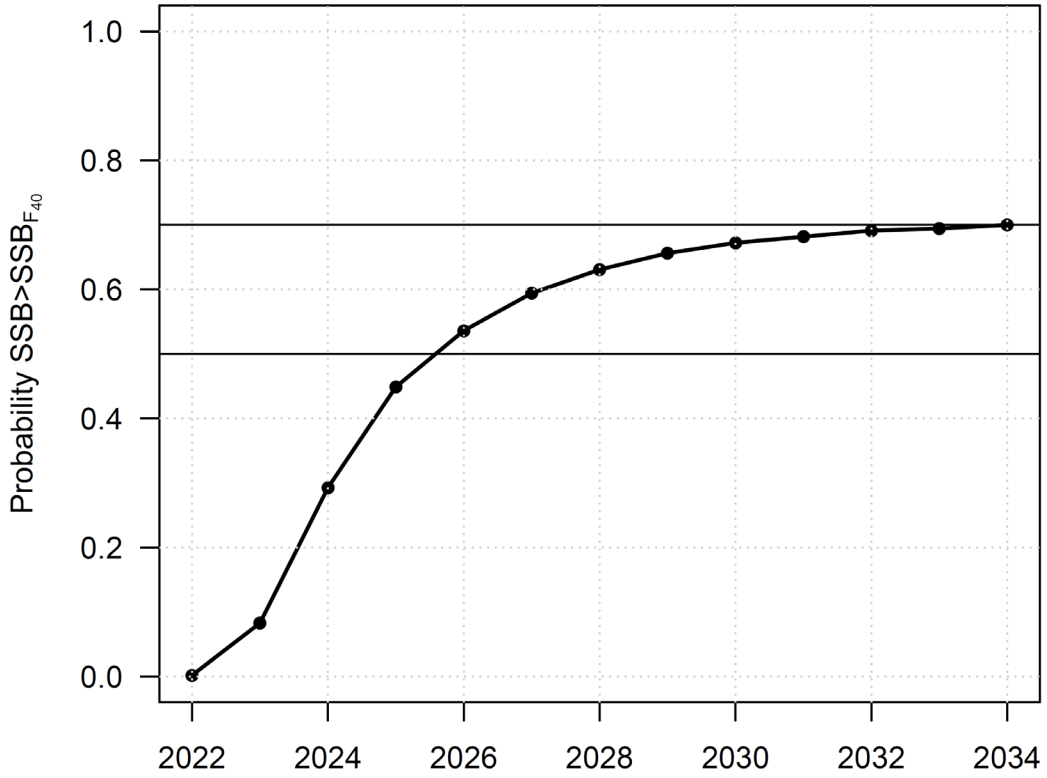


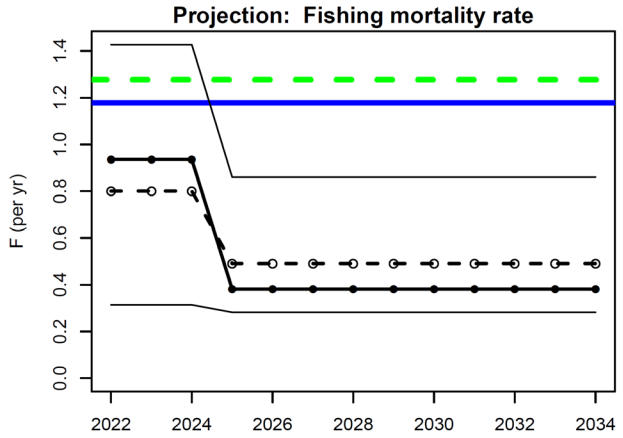


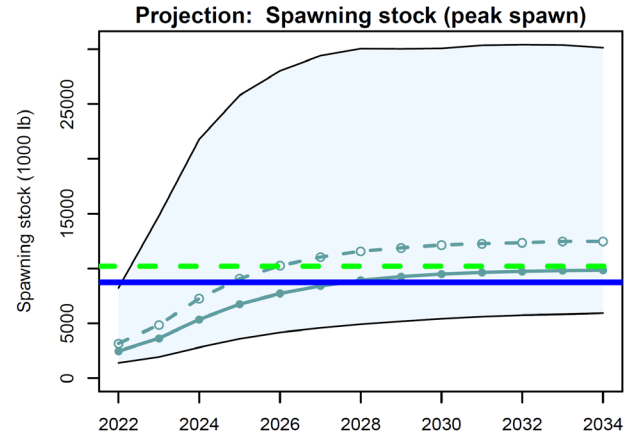


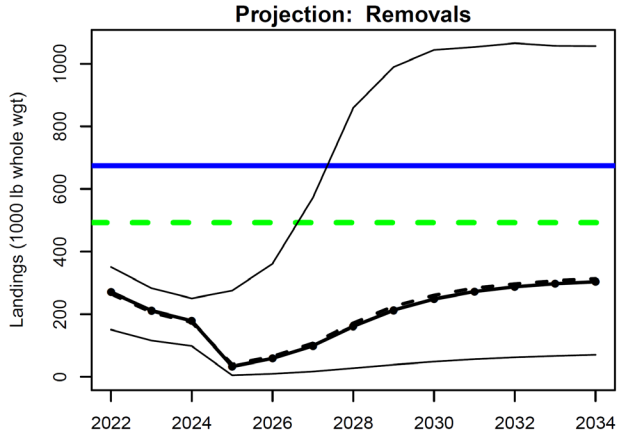


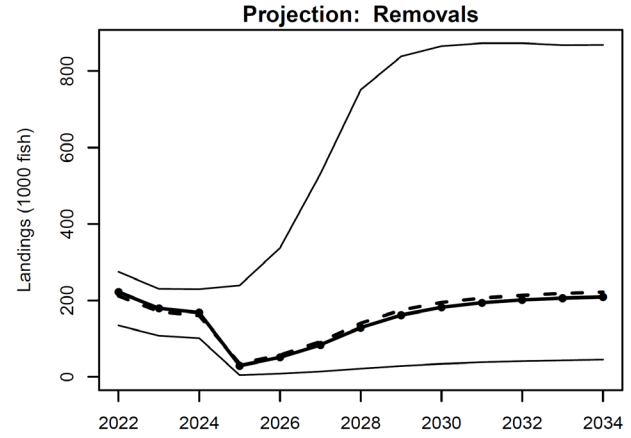
13”minimum size limit R0

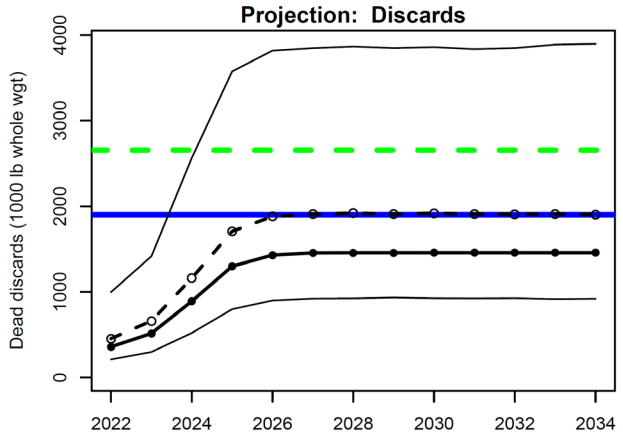


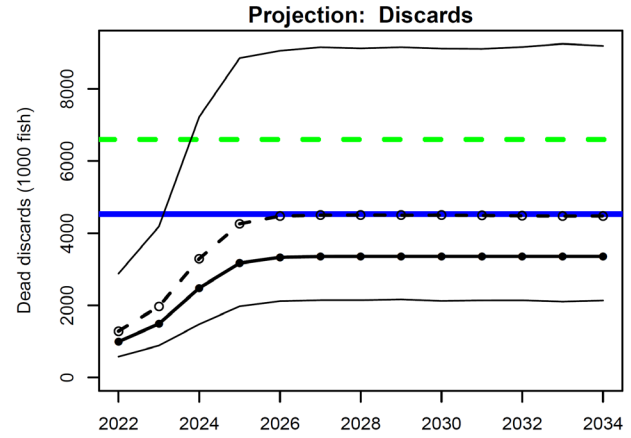




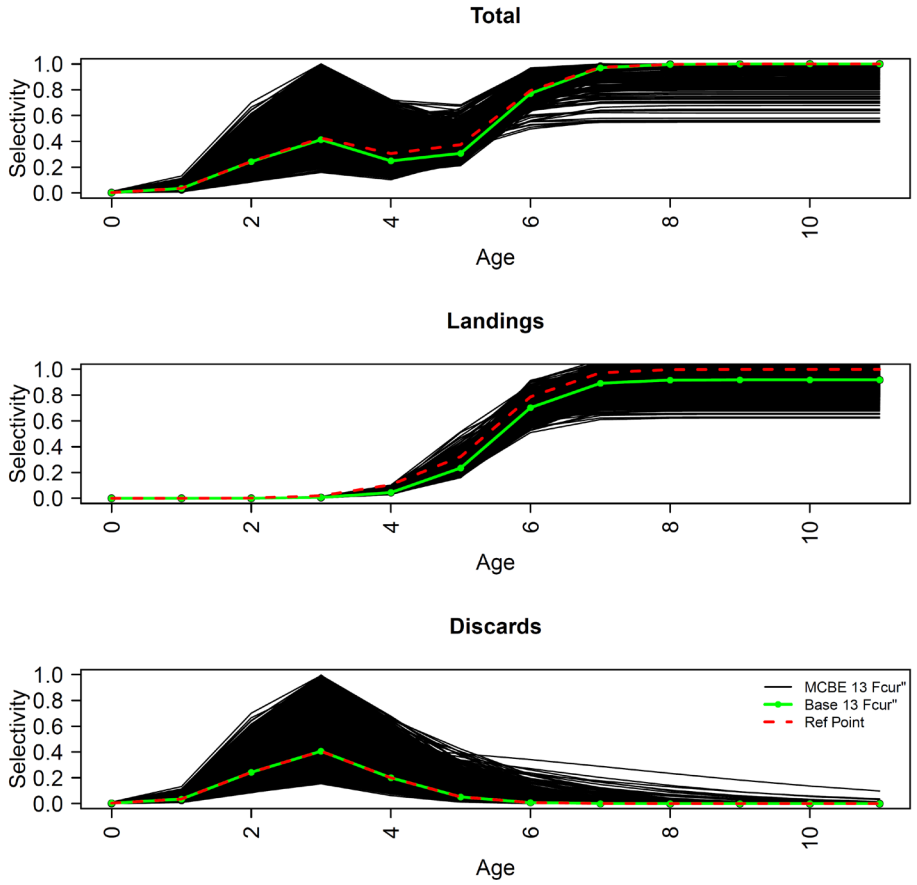


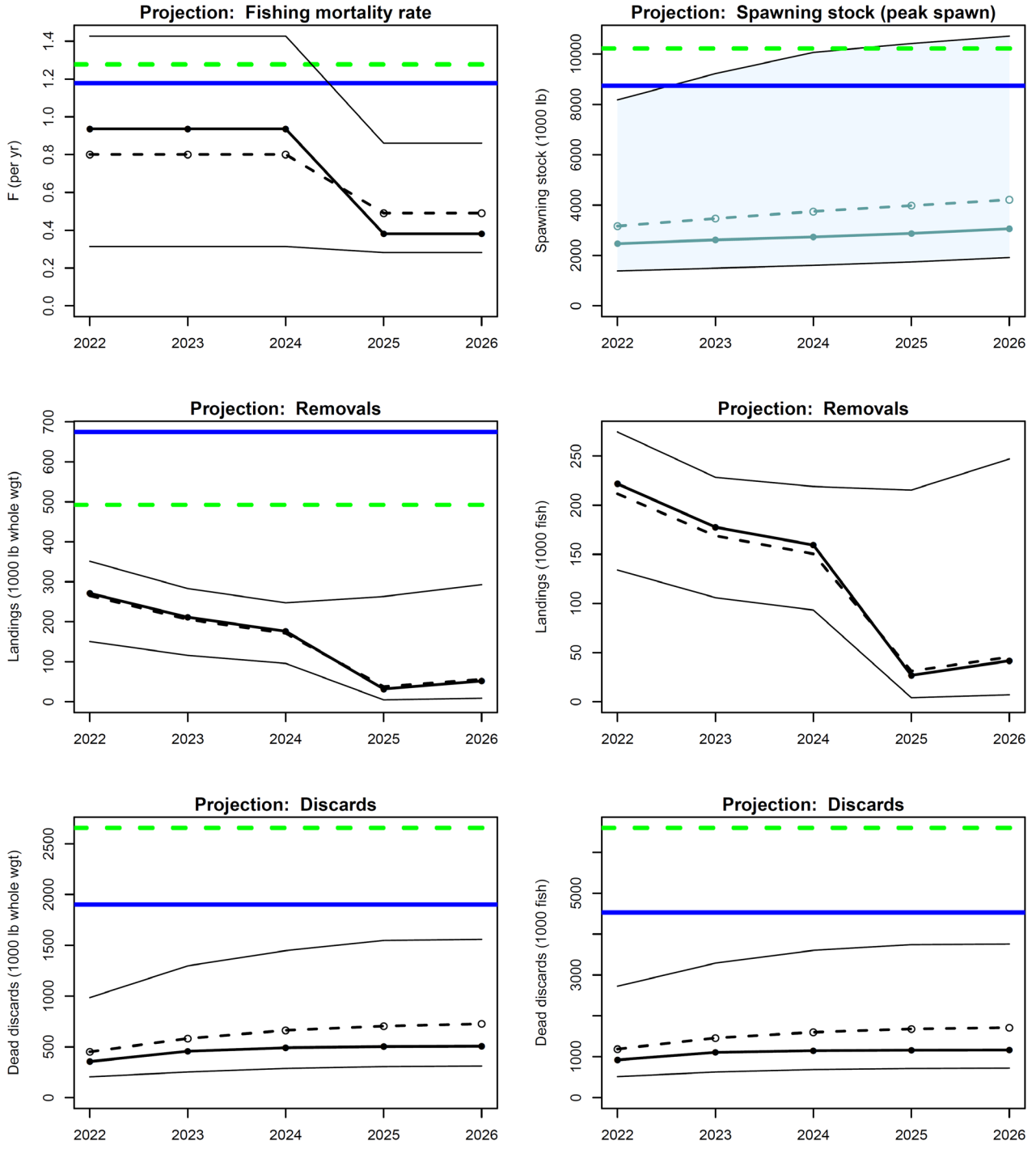






13”minimum size limit Rec.mu

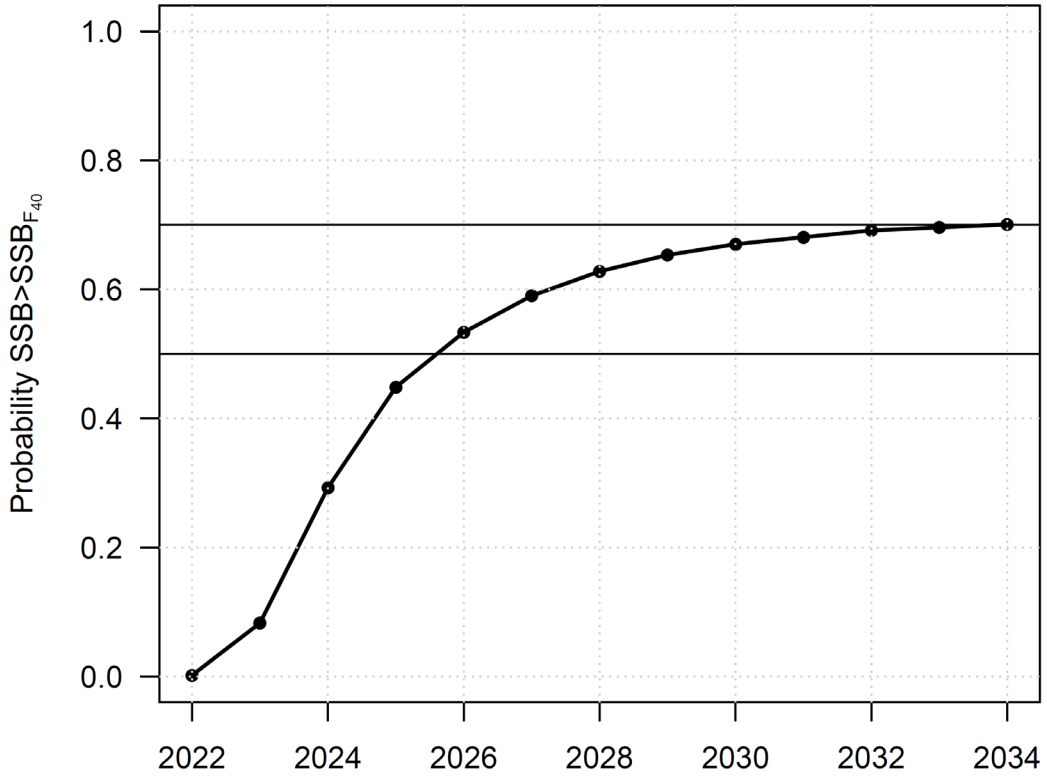


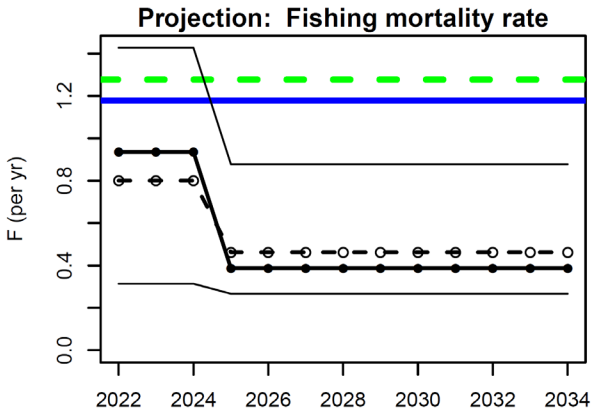


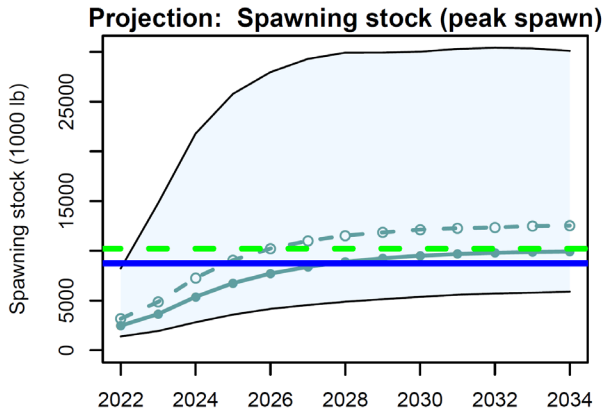
Wave 1 & 2 Closure Methods

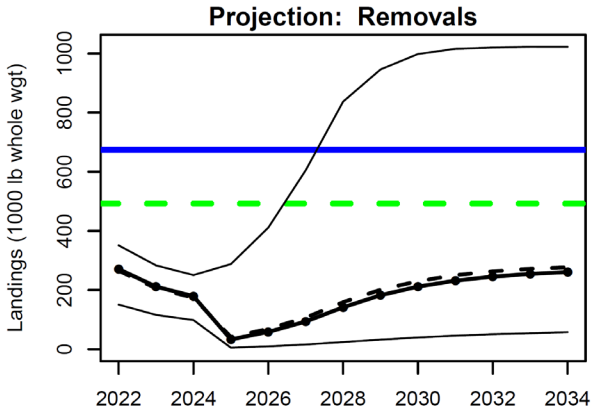
- Calculated percent of landings in wave 1 & 2 for general recreational >3mi (13.4%) and headboat (19.2%)
- Multiplied current F by proportion landings in wave 1 & 2 and fleet specific discard mortality rate
- Added to discard mortality rate starting in 2025
  - Assume size structure of size limit discards
- Determined fishing mortality rate for landings that gives 70% rebuild
- Longterm average and recent mean scenarios

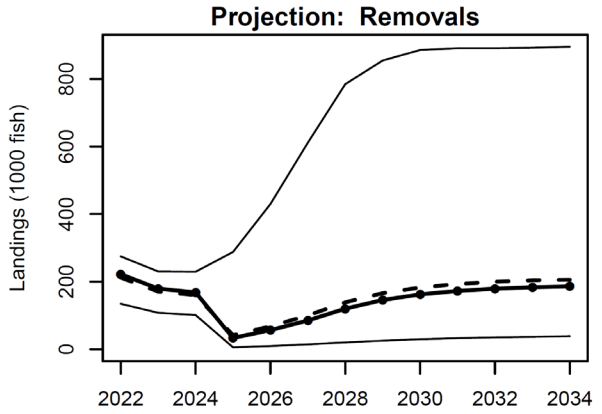
Wave 1 and 2 Closure R0

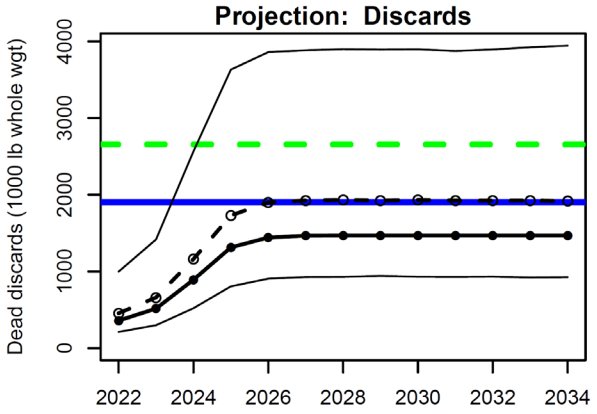


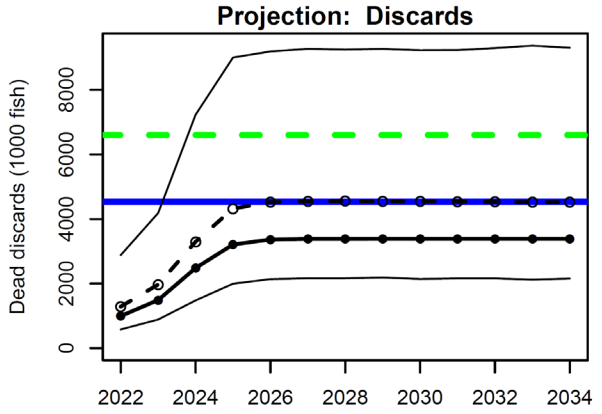




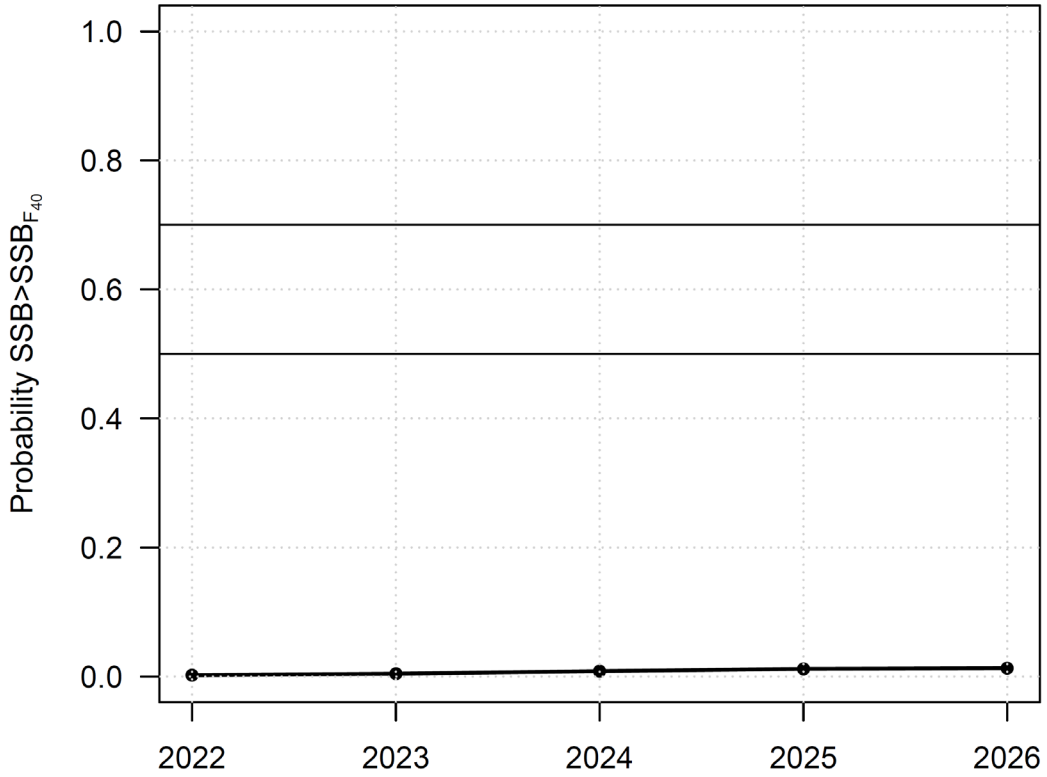


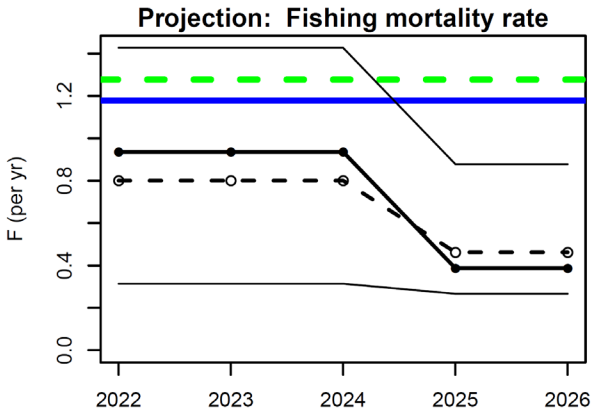


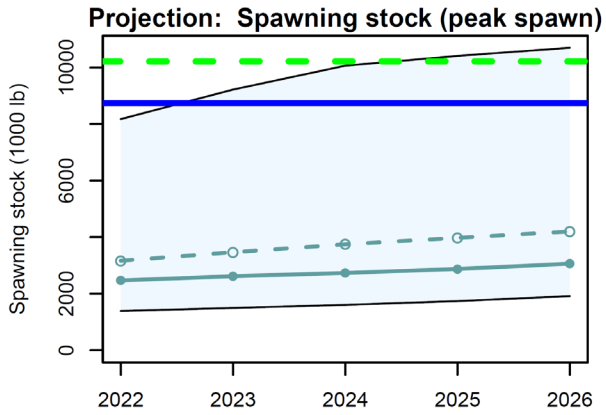


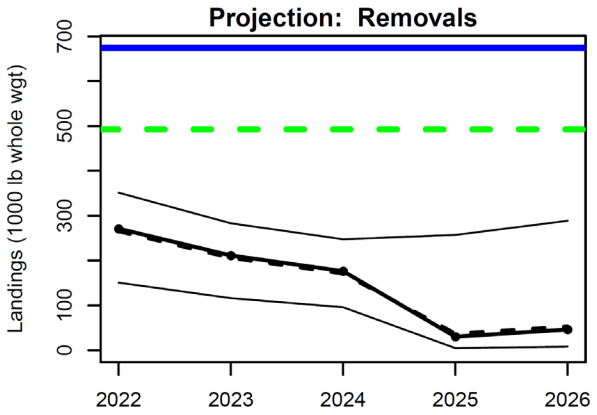


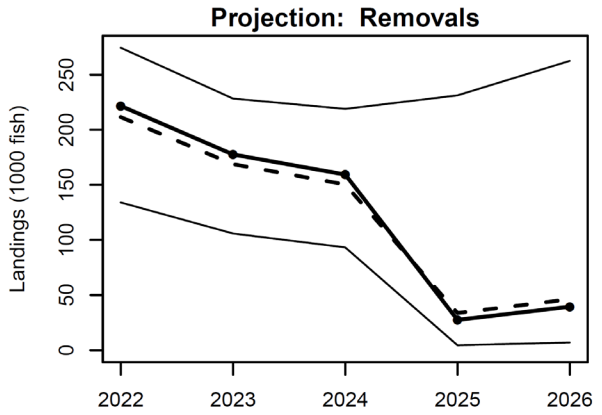
Wave 1 and 2 Closure Rec.mu

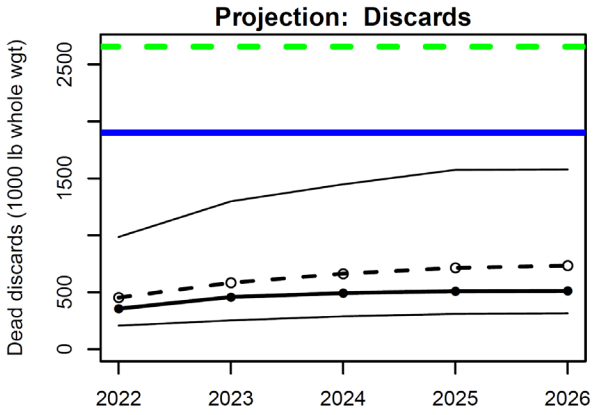


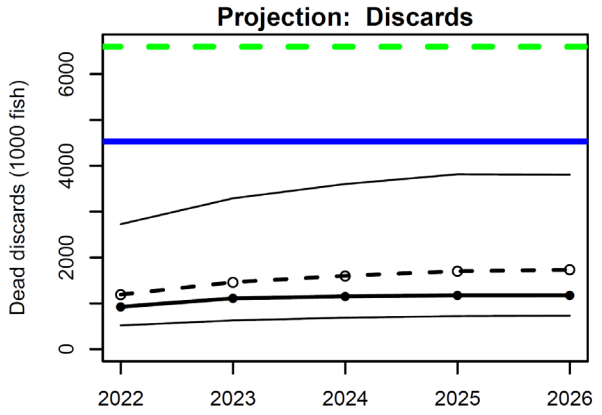








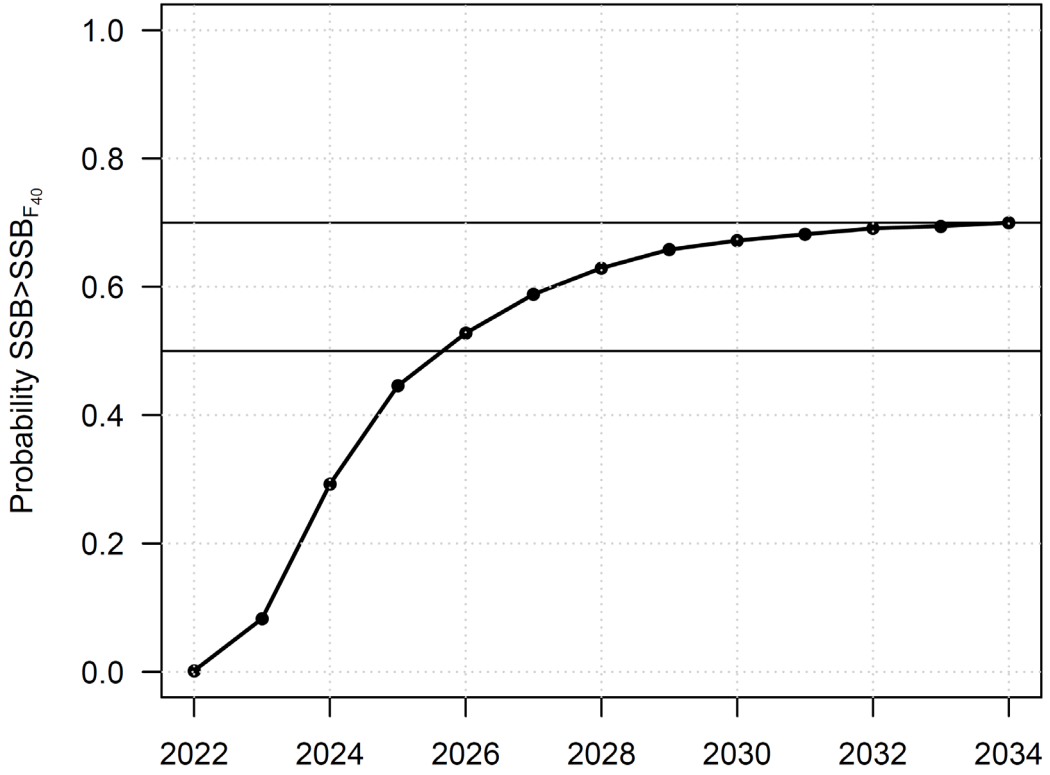


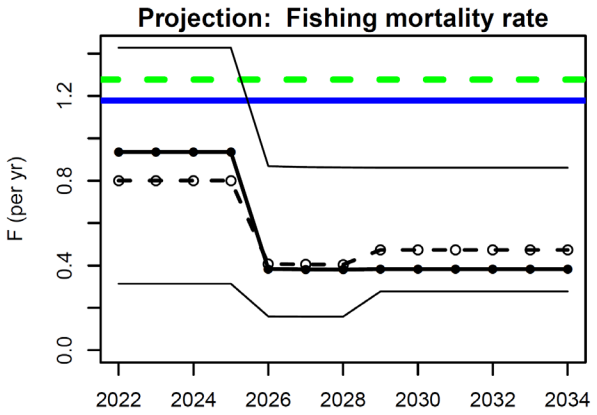


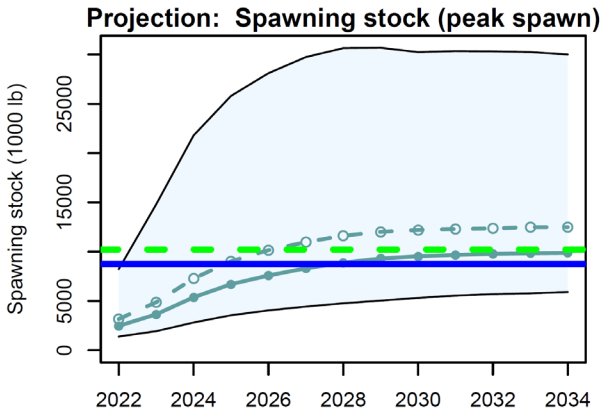
Landings Phase-In Methods

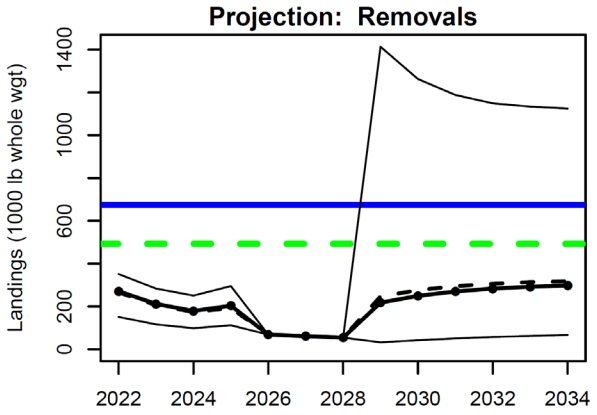
- Determined F that would give landings exactly
  - 2026 – 68,000 lb
  - 2027 – 61,000 lb
  - 2028 – 54,000 lb
- Discard mortality rate assumed at mean of terminal 3 years
- F for landings 2029 – 2034 set at value from original OFL projections
- Recruitment assumed at longterm average
- Assumes no management uncertainty in achieving landings

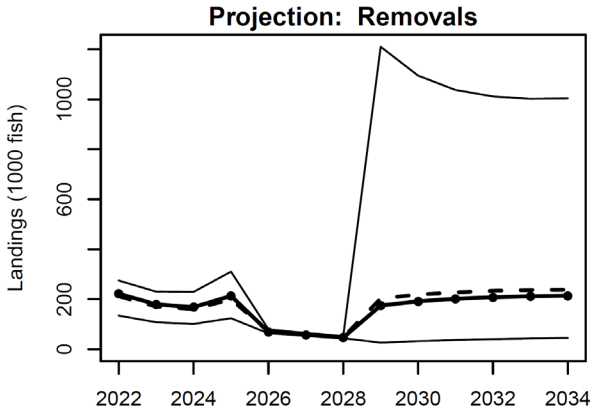
Landings Phase-In R0

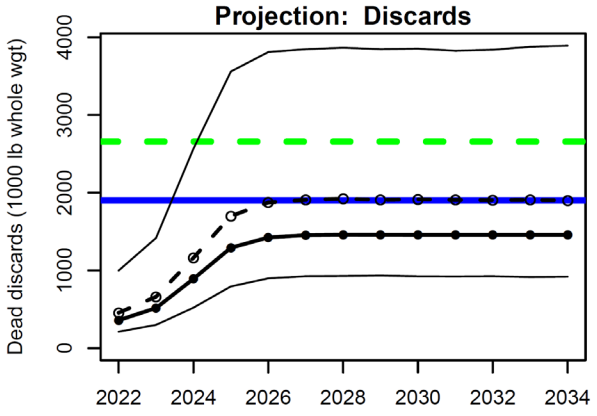


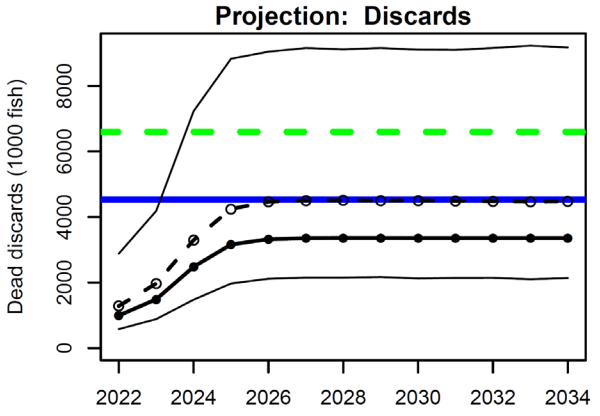








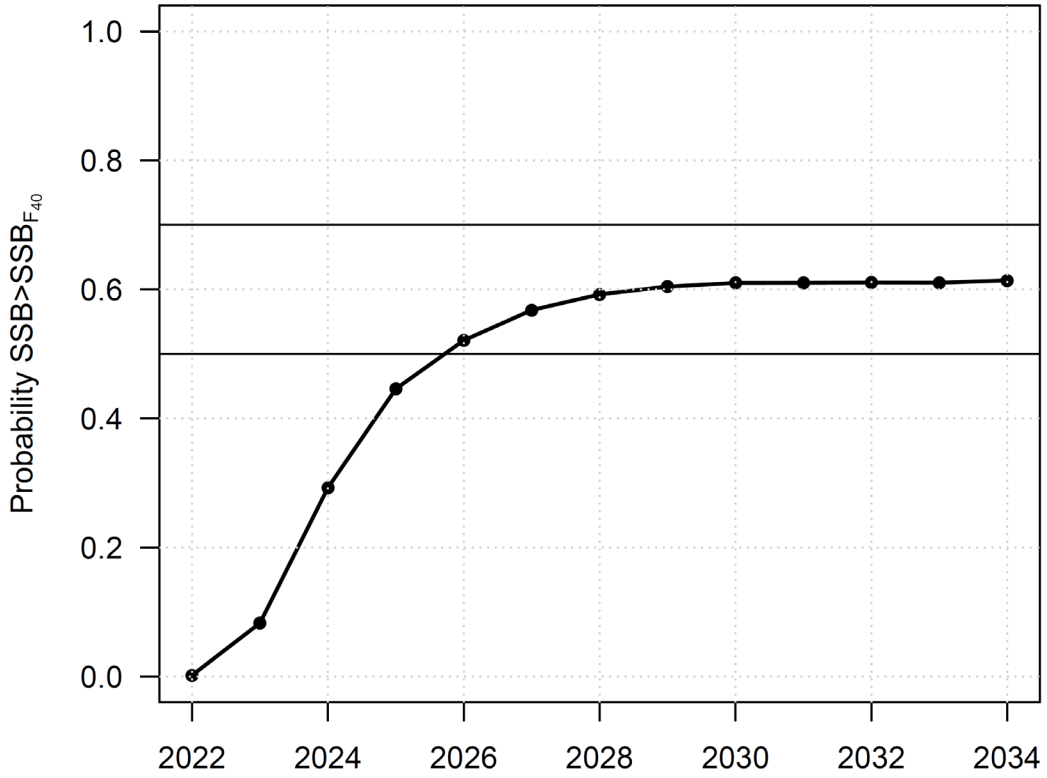


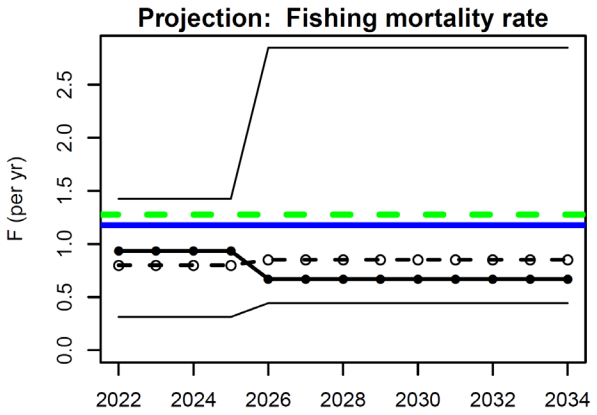


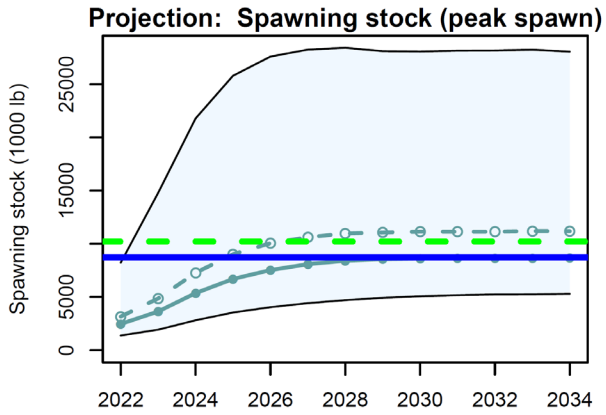
P* Methods

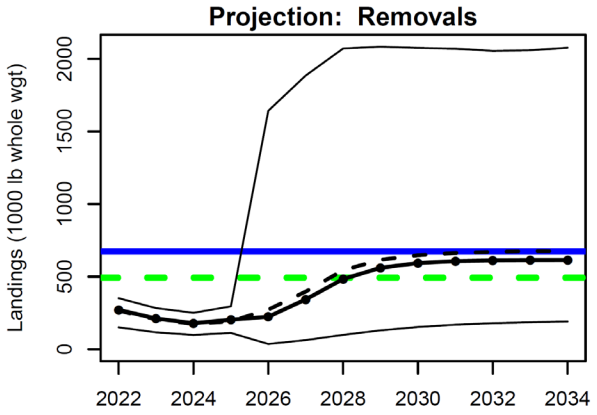
- Determined the F multiplier that produced the $P^*_{30\%}$ for $F_{40\%}$ and $F_{30\%}$
- Assumed management action started in 2026
- Projections with 2 assumptions regarding discard mortality
  - Remains at current levels
  - Scales with landings
- Projections with longterm average or recent mean recruitment

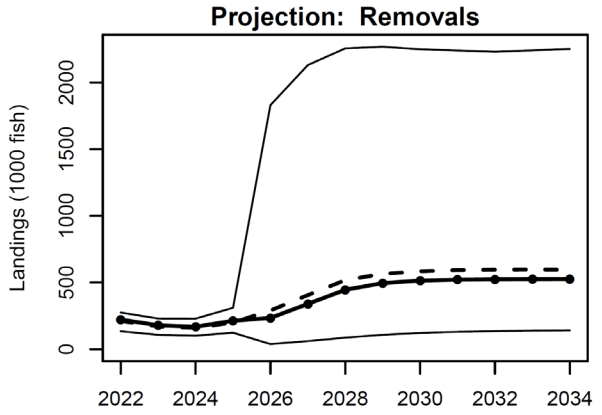
$P^*_{30\%}$ $F_{40\%}$ $D_{current}$ R0

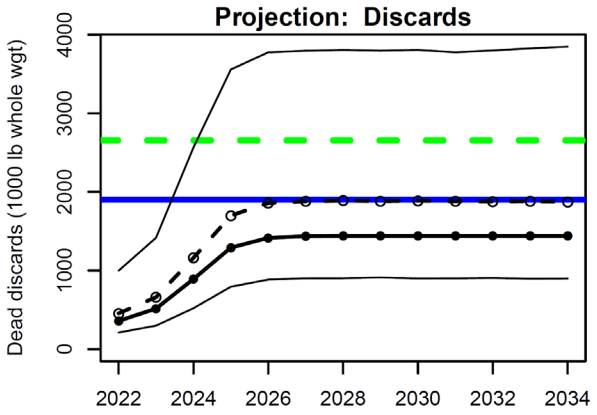


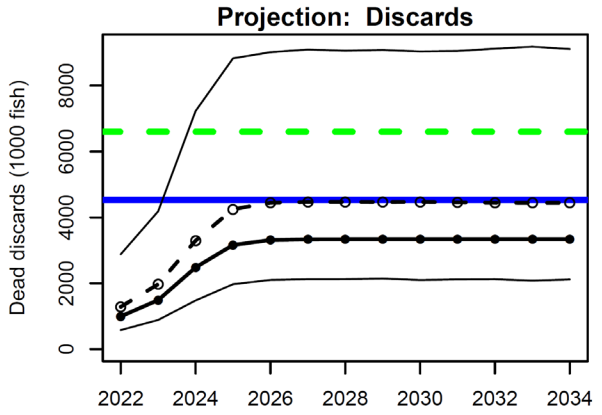




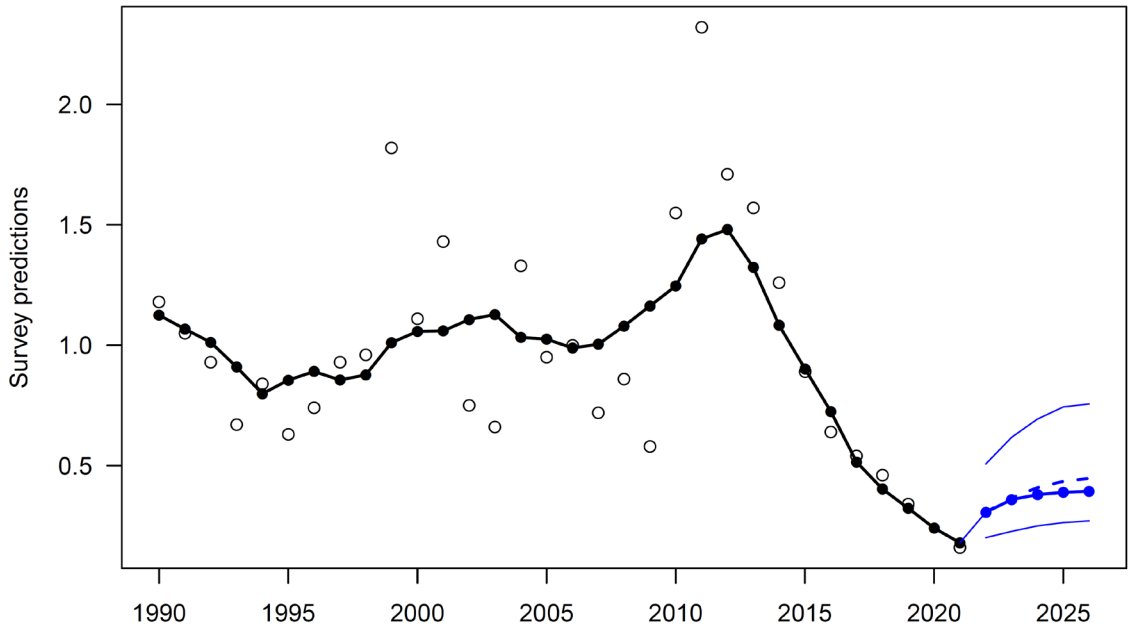


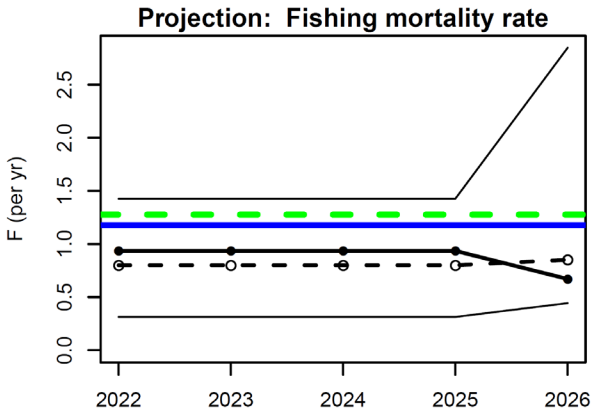


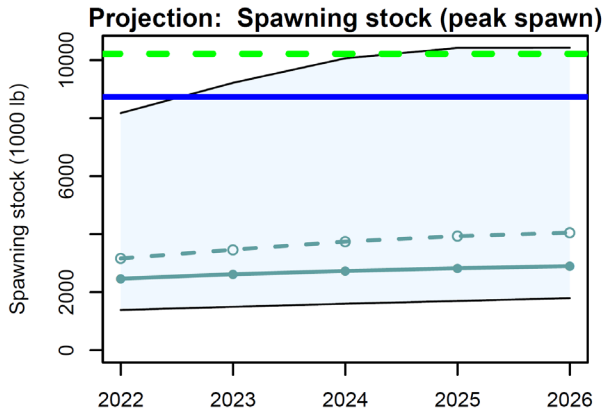


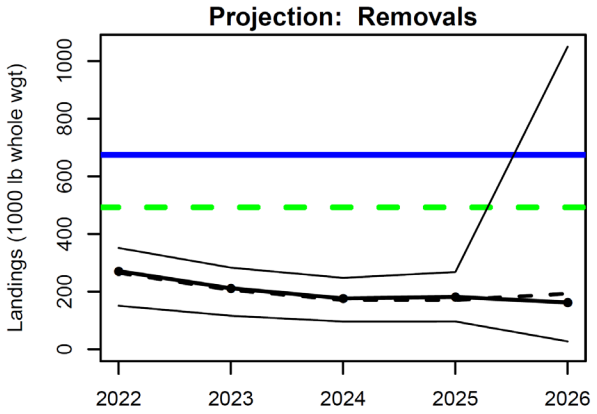


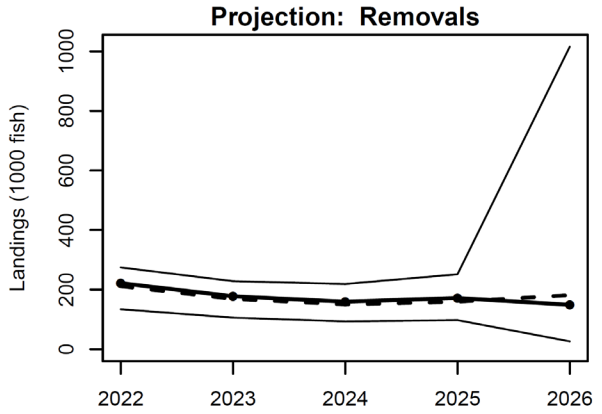
$P^*_{30\%}$ $F_{40\%}$ $D_{current}$ Rec.mu

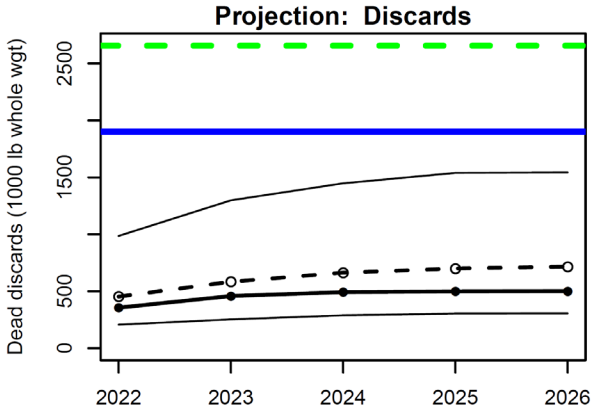


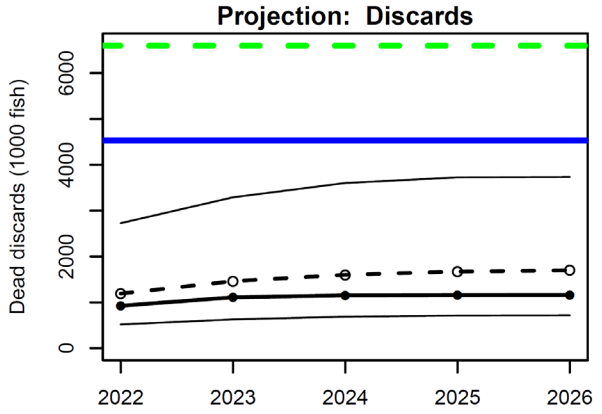




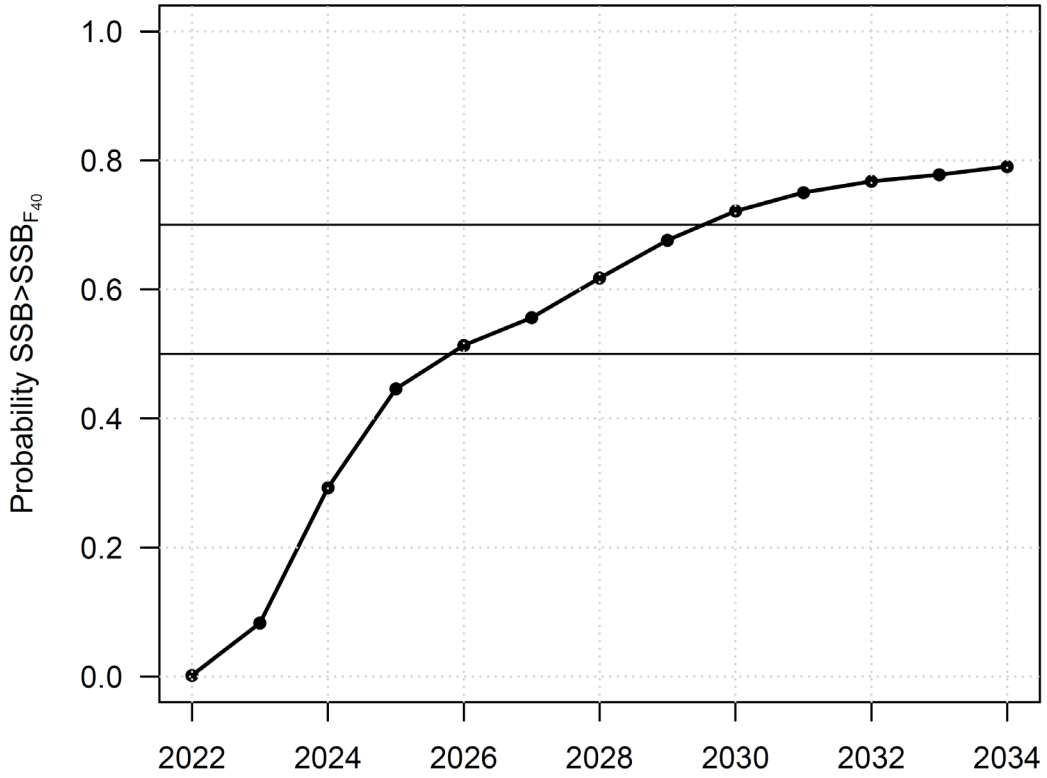


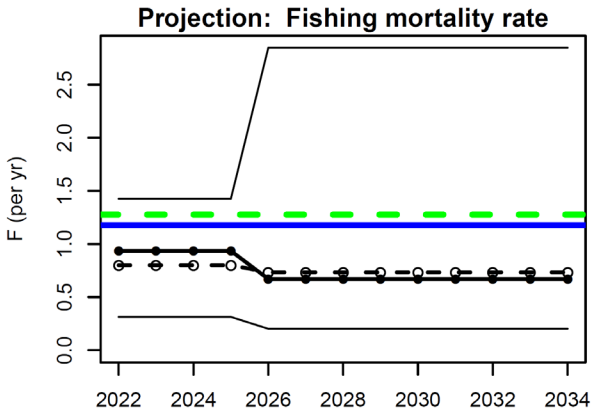


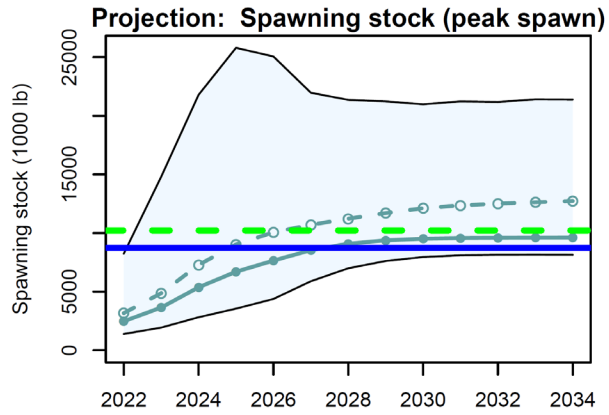


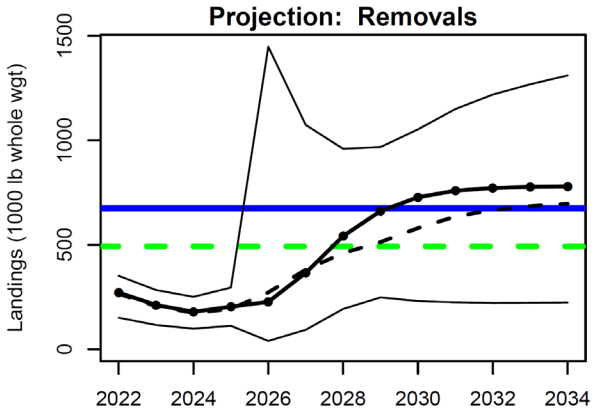


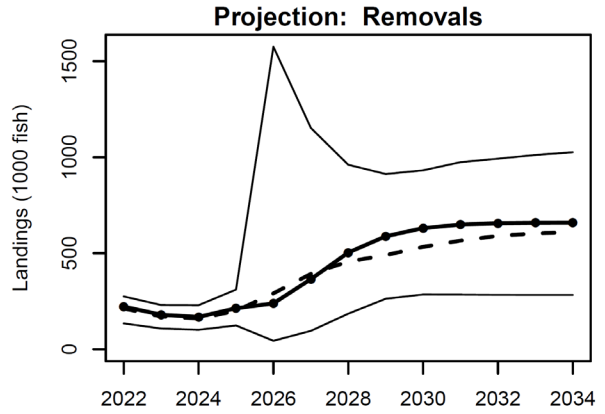
$P^*_{30\%}$ $F_{40\%}$ RO

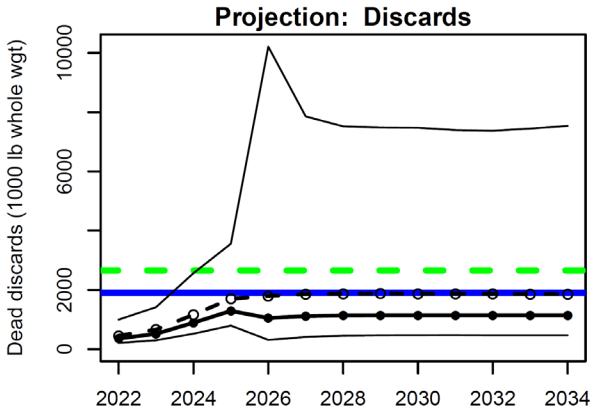

Probability SSB>SSB$_{F40}$
1.0
0.8
0.6
0.4
0.2
0.0
2022
2024
2026
2028
2030
2032
2034

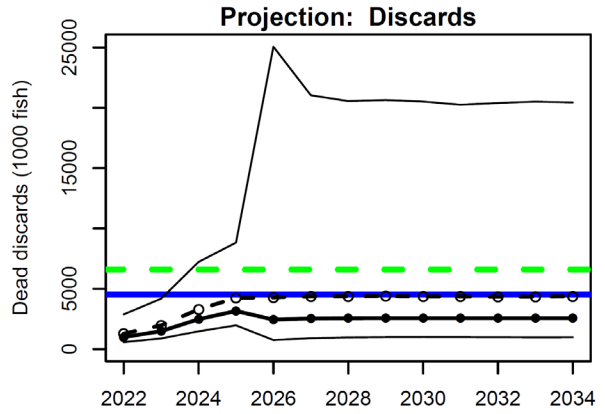

Projection: Fishing mortality rate
F (per yr)
0.0
0.5
1.0
1.5
2.0
2.5
2022
2024
2026
2028
2030
2032
2034


Projection: Spawning stock (peak spawn)
Spawning stock (1000 lb)
0
5000
15000
25000
2022
2024
2026
2028
2030
2032
2034

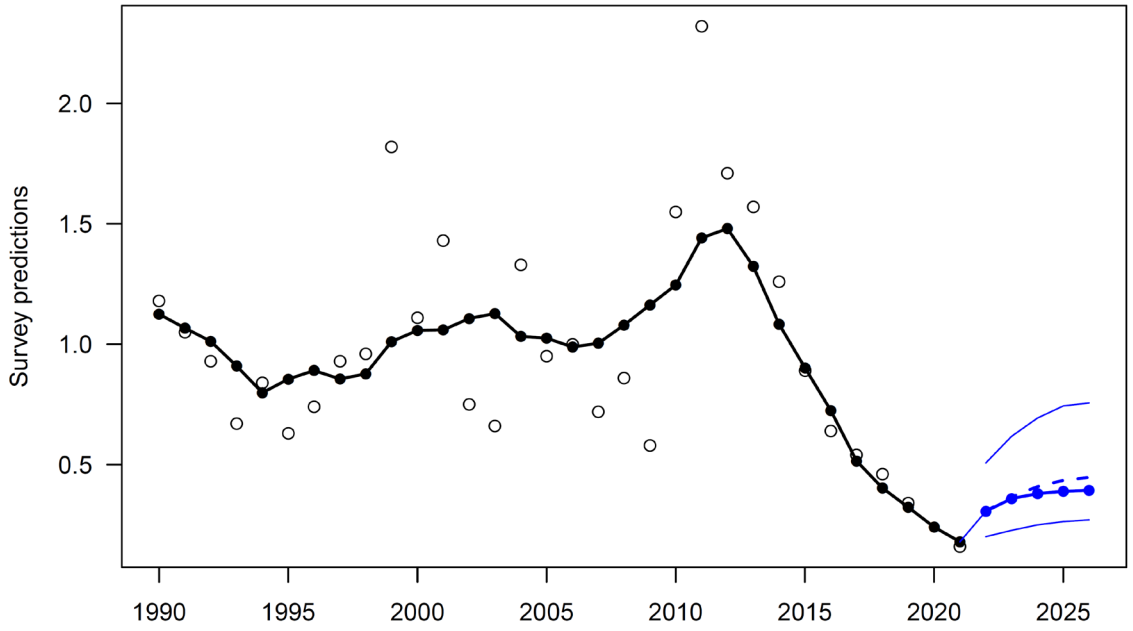

Projection: Removals
Landings (1000 lb whole wgt)
0
500
1000
1500
2022
2024
2026
2028
2030
2032
2034

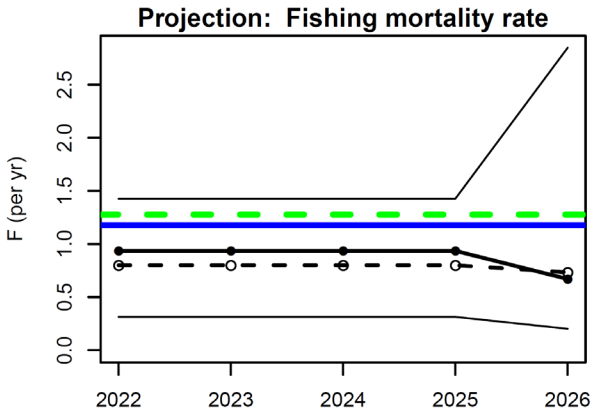

Projection: Removals
Landings (1000 fish)
0
500
1000
1500
2022
2024
2026
2028
2030
2032
2034

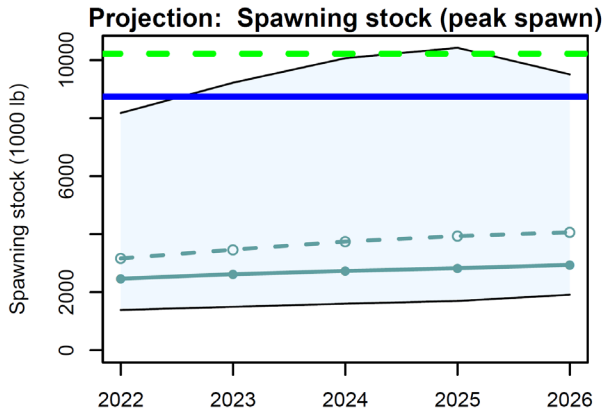

Projection: Discards
Dead discards (1000 lb whole wgt)
0
2000
6000
10000
2022
2024
2026
2028
2030
2032
2034

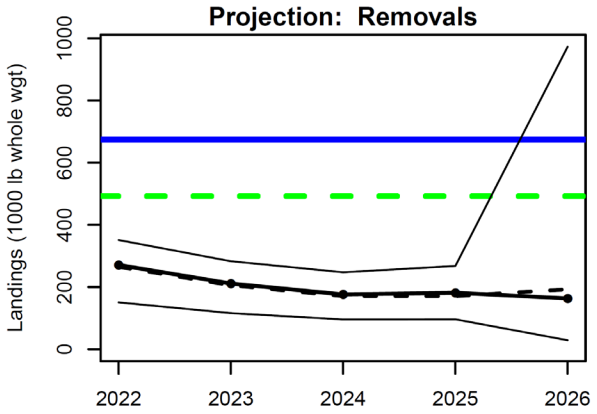

Projection: Discards
Dead discards (1000 fish)
0
5000
15000
25000
2022
2024
2026
2028
2030
2032
2034

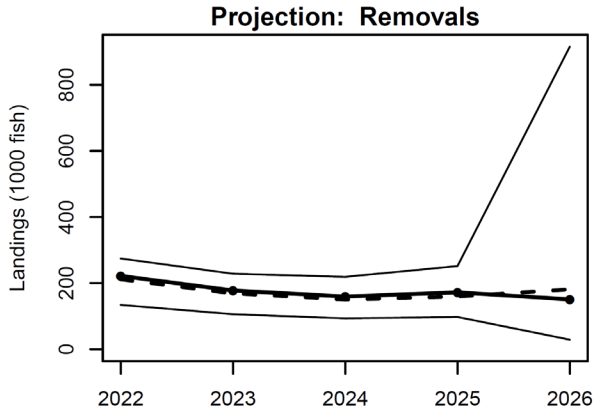
$P^*_{30\%}$ $F_{40\%}$ Rec.mu

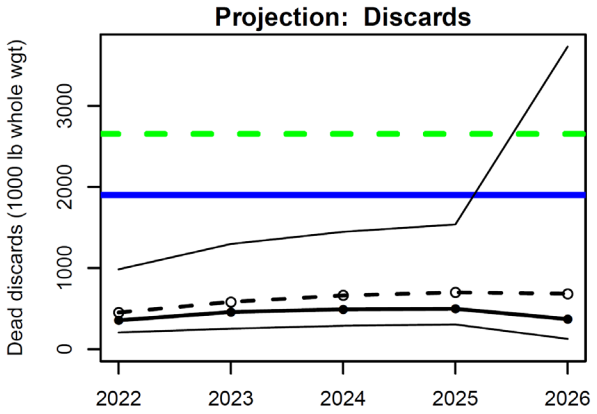


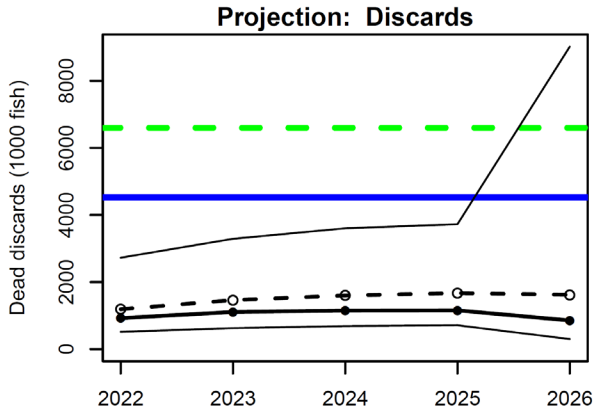




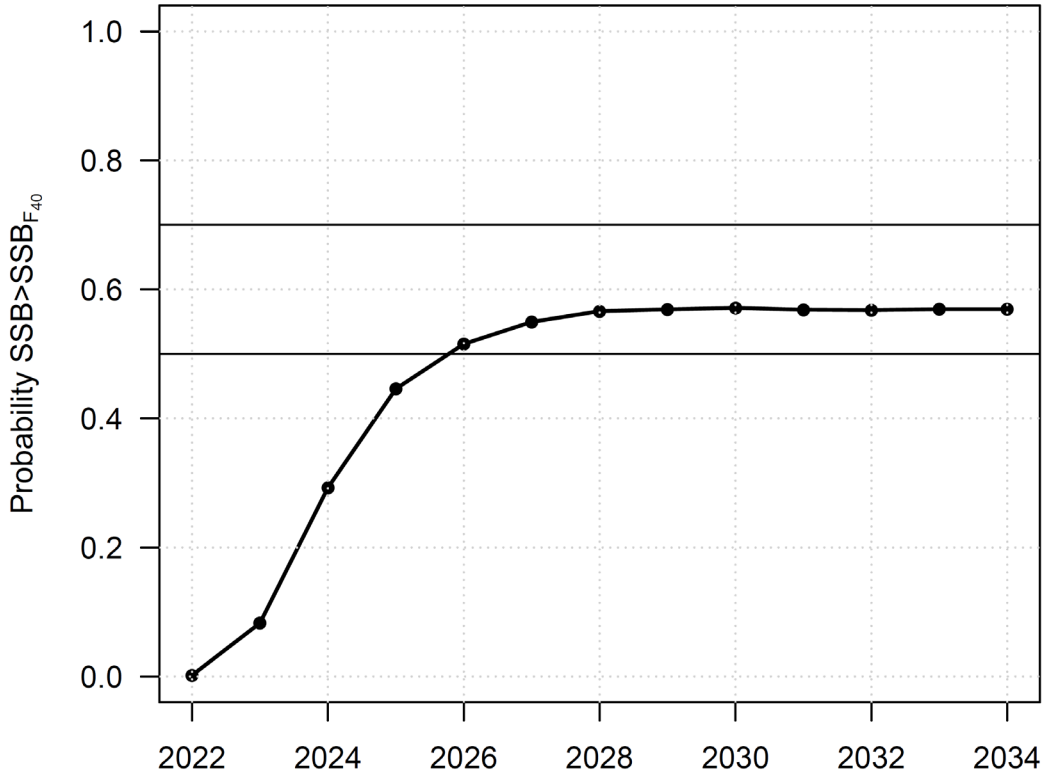


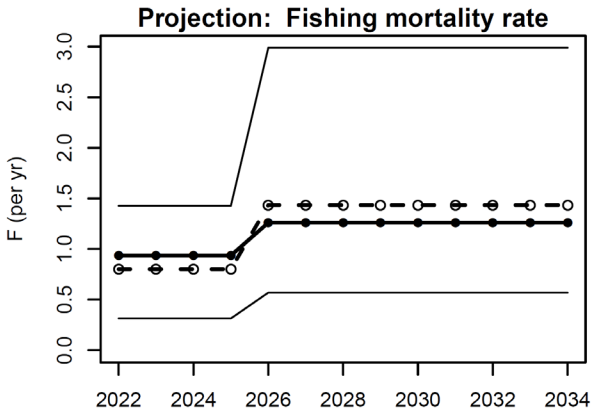


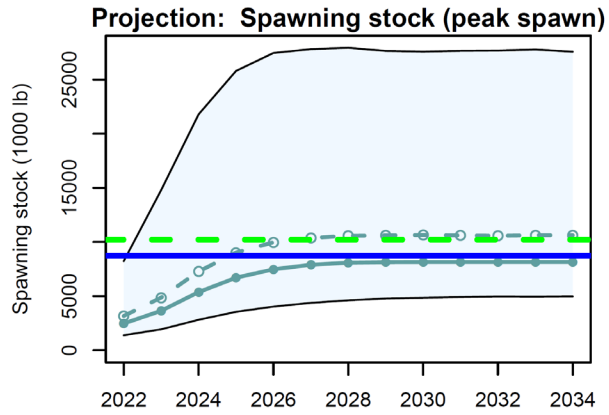


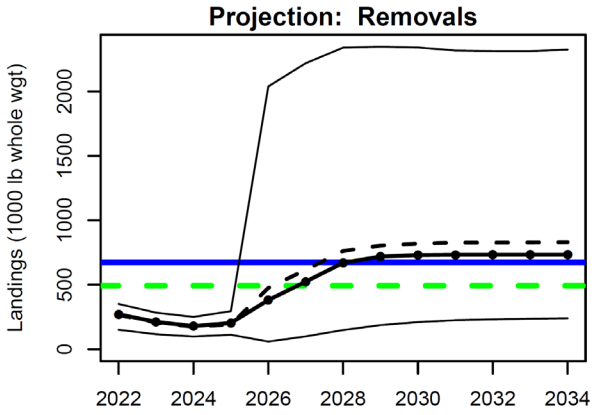


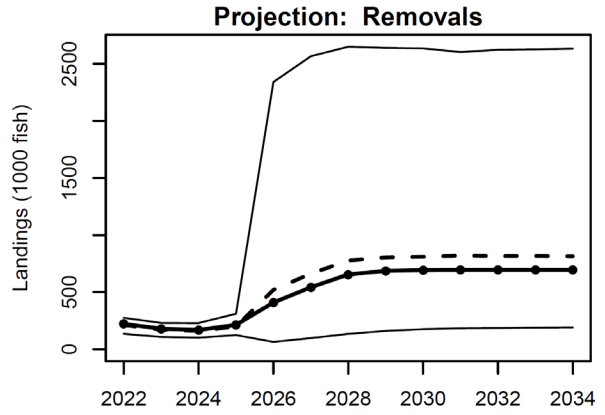
$P^*_{30\%}$ $F_{30\%}$ $D_{current}$ R0

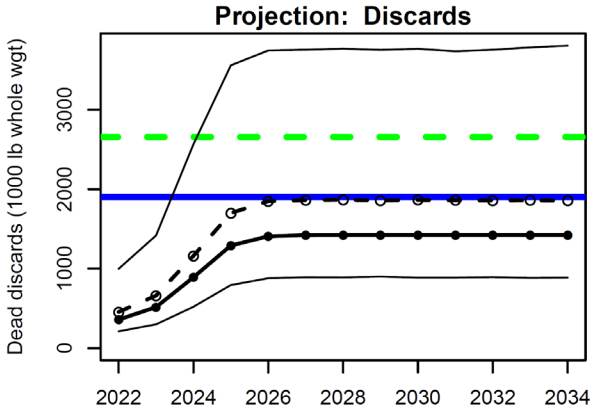


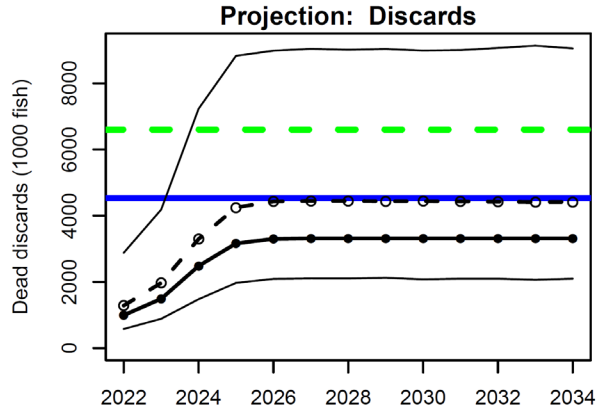




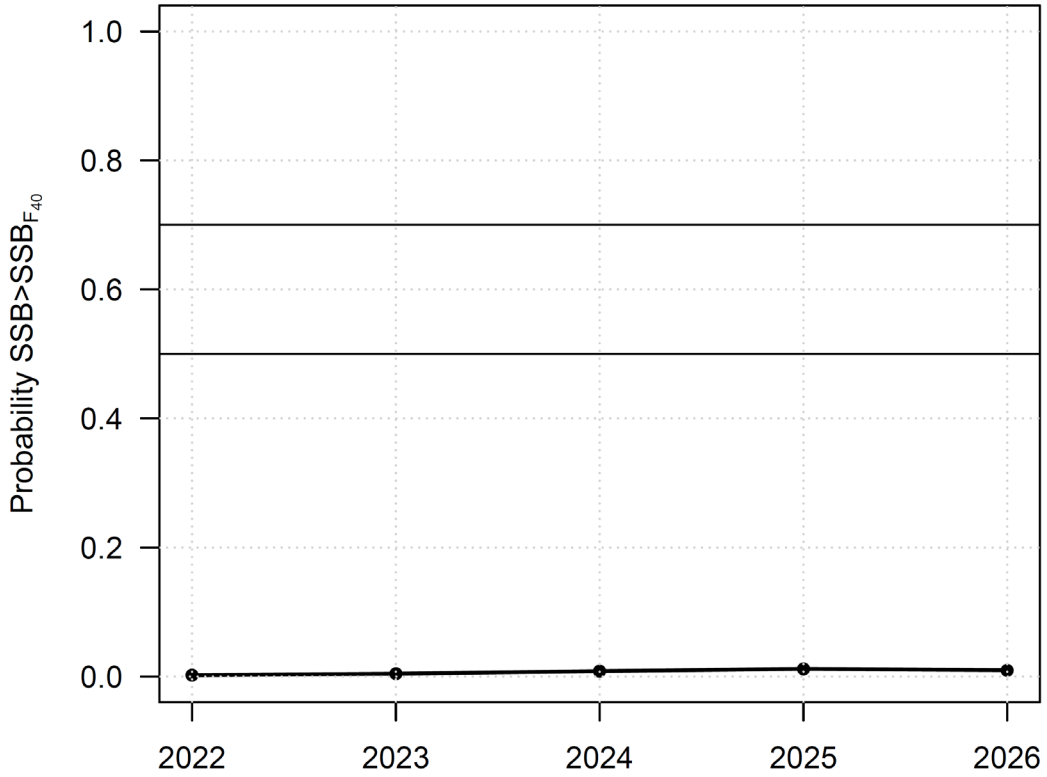


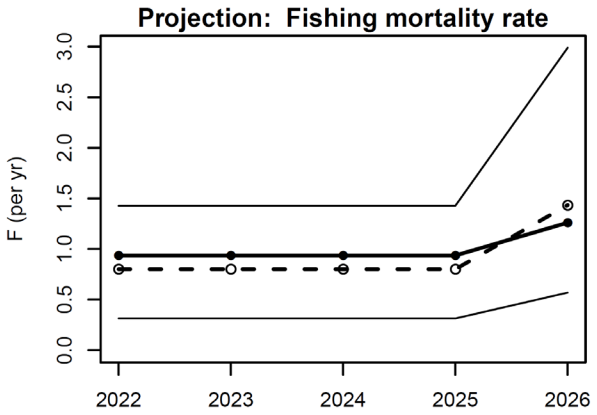


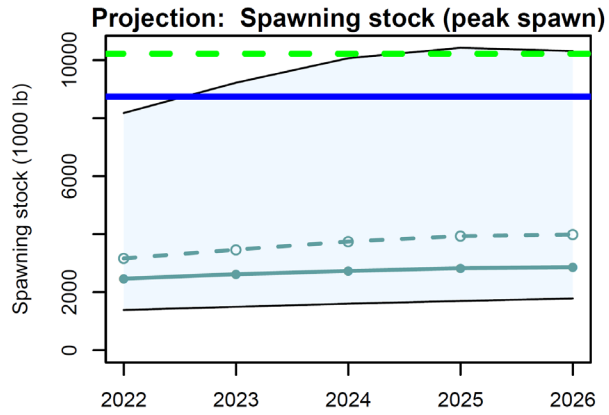


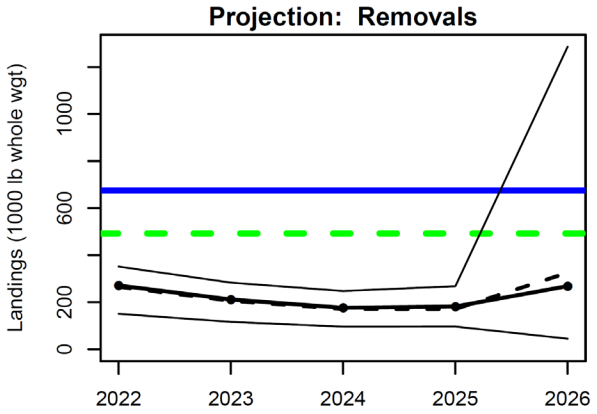


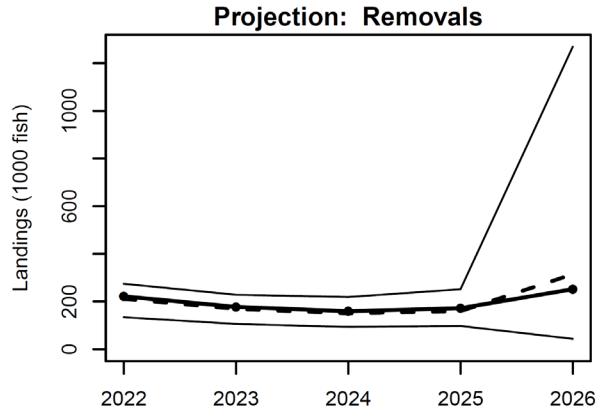
$P^*_{30\%}$ $F_{30\%}$ $D_{current}$ Rec.mu

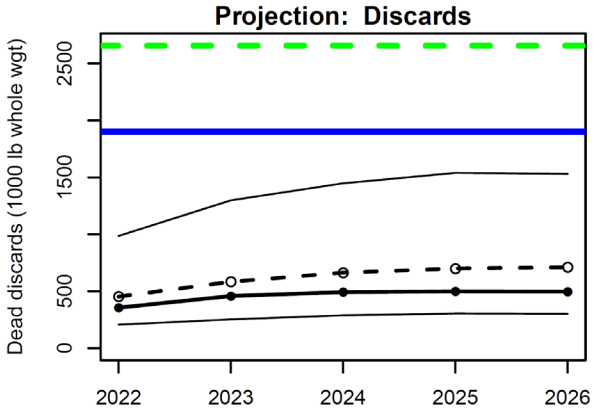


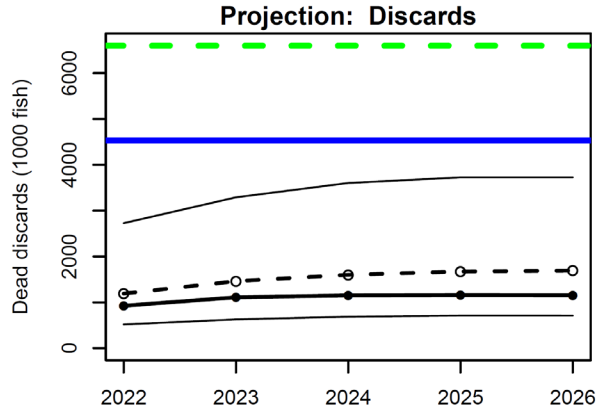




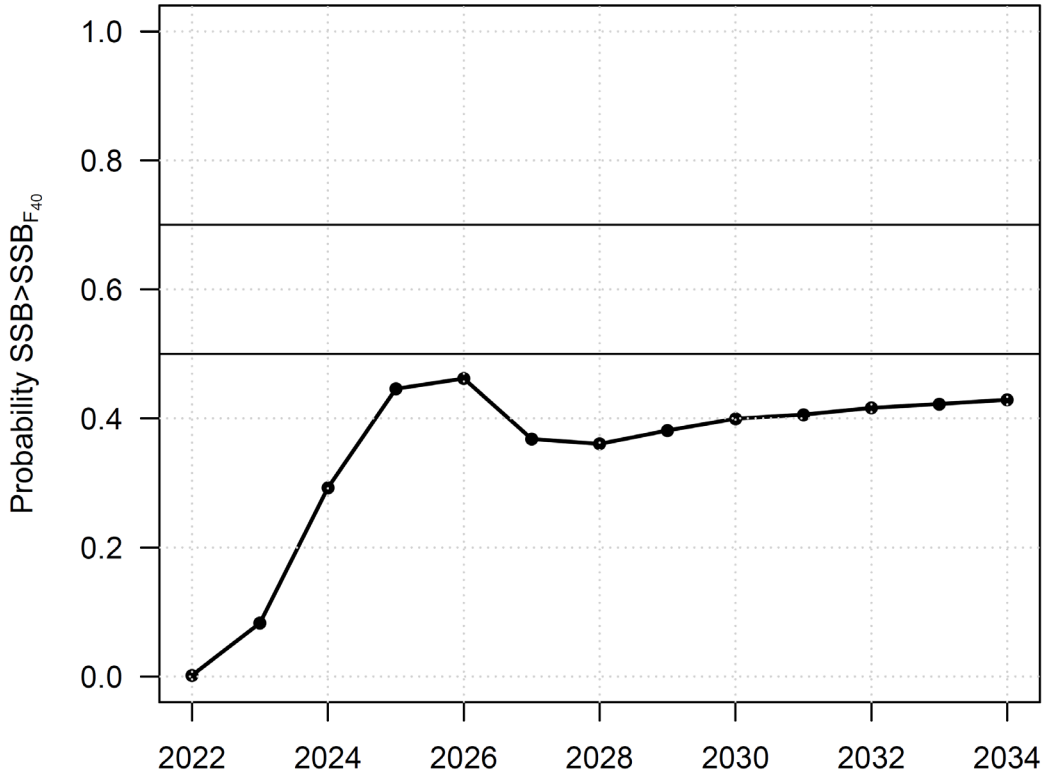


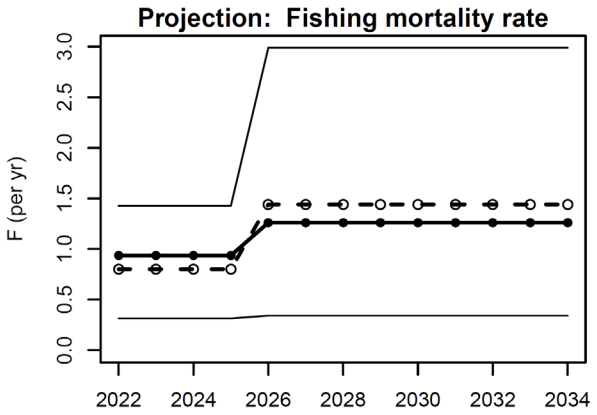


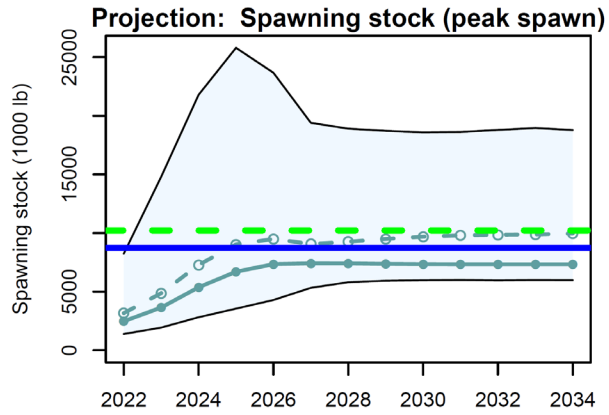


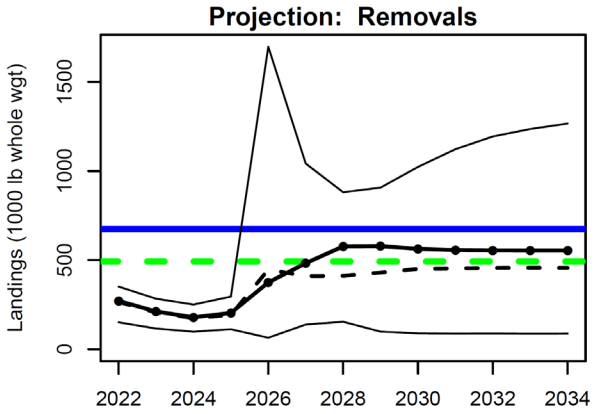


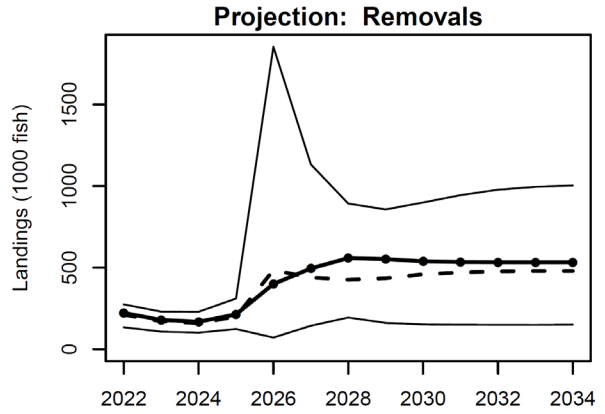
$P^*_{30\%}$ $F_{30\%}$ RO

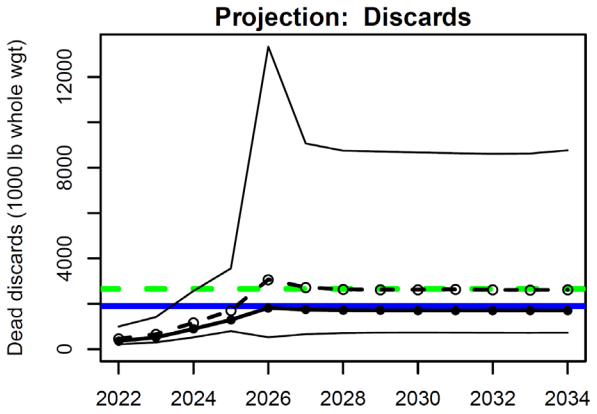

Probability SSB>SSB$_{F40}$
1.0
0.8
0.6
0.4
0.2
0.0
2022
2024
2026
2028
2030
2032
2034

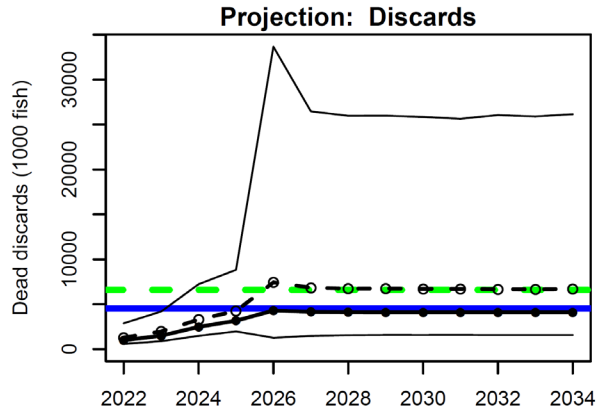

Projection: Fishing mortality rate
F (per yr)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2022
2024
2026
2028
2030
2032
2034


Projection: Spawning stock (peak spawn)
Spawning stock (1000 lb)
0
5000
15000
25000
2022
2024
2026
2028
2030
2032
2034

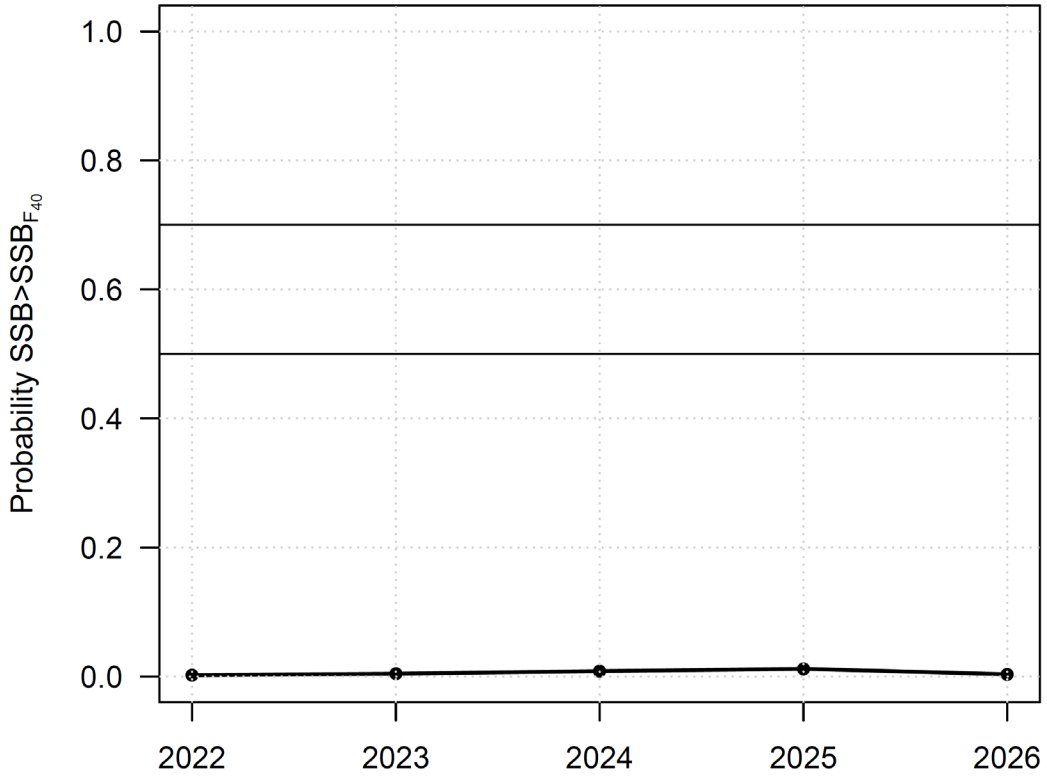

Projection: Removals
Landings (1000 lb whole wgt)
0
500
1000
1500
2022
2024
2026
2028
2030
2032
2034

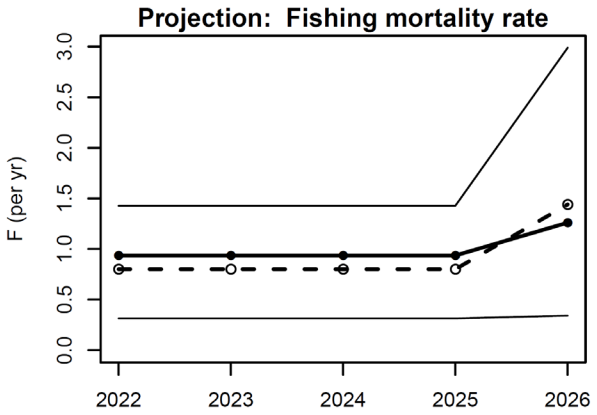

Projection: Removals
Landings (1000 fish)
0
500
1000
1500
2022
2024
2026
2028
2030
2032
2034

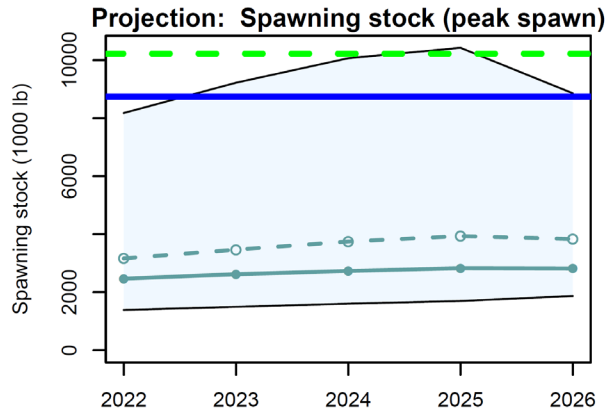

Projection: Discards
Dead discards (1000 lb whole wgt)
0
4000
8000
12000
2022
2024
2026
2028
2030
2032
2034

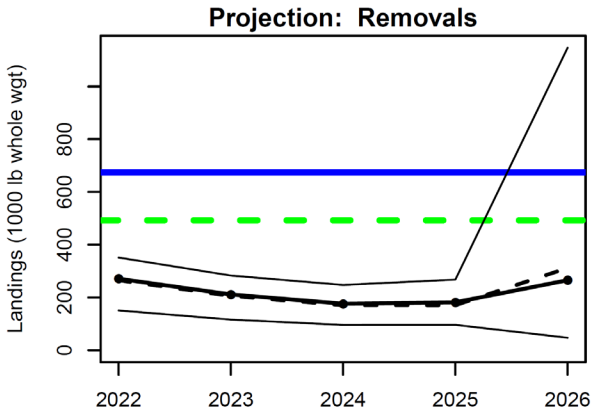

Projection: Discards
Dead discards (1000 fish)
0
10000
20000
30000
2022
2024
2026
2028
2030
2032
2034

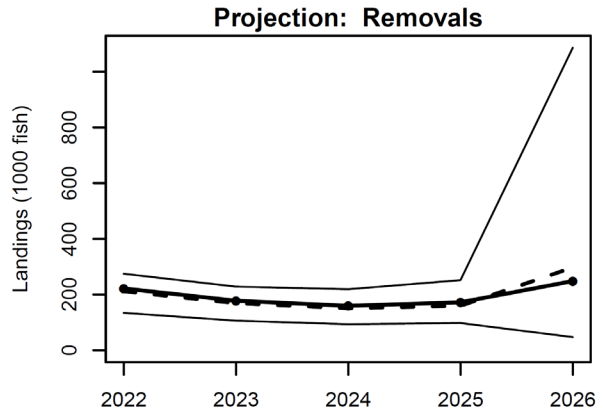
$P^*_{30\%}$ $F_{30\%}$ Rec.mu

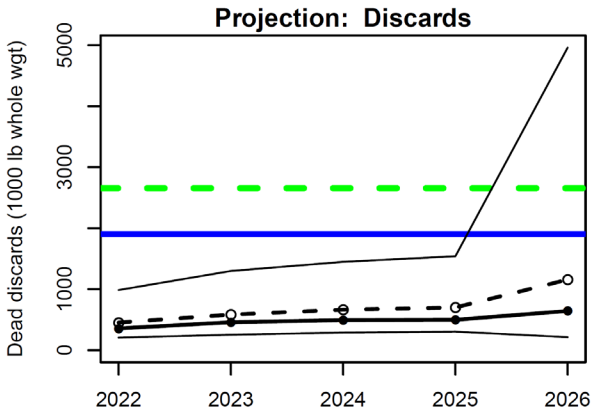


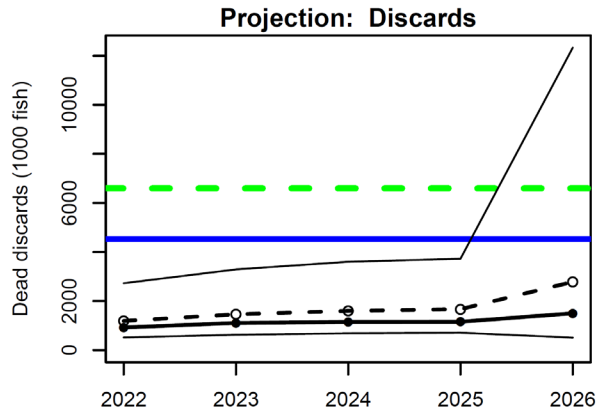












Sector Allocations

- Assessment discards are 28.88% of F, ~69% of dead individuals and 45% of weight
  - Recreational discards are 99.92% of discards
- Original Rebuild Scenario
  - Total yield in 2025 715 klb 1718 thousands of fish
  - Recreational Allocation (57%) 428.07 klb 979.26 thousands of fish
  - Discard projection 708klb 1678 thousands of fish
- $P^*_{30\%}$ $F_{40\%}$
  - Total yield in 2026 909 klb 1882 thousands of fish
  - Recreational Allocation (57%) 518.13 lb 1072.74 thousands of fish
  - Discard projection 716 klb 1700 thousands of fish
- Recreational sector exceeds allocation through discards at current levels