

Science, Service, Stewardship



SEDAR 31 Gulf of Mexico Red Snapper: Review workshop

April 30, 2013



**NOAA
FISHERIES
SERVICE**

NOAA



Projections

- Projected model forward for 20 years (2013-2031)
- Projected at 5 fishing mortality rate scenarios
 - F_{CURRENT} – average F for 2009-2011
 - $F_{\text{SPR26\%}}$
 - F_{MAX}
 - F_{OY} - 75% of F_{SPR30}
 - F_{OY} - 75% of F_{MAX}



Projection methods

- Projections were run assuming that selectivity, discarding, and retention were the same as the four most recent years (2009-2011)
- Assumed that relative allocation of landings from directed fleets would be similar going forward



Projection methods

- The model was extended forward to 2012 to include calculated 2012 landings for the 8 directed fishing fleets
- Discards for the directed fleets in 2012 were derived by the model
- Discards for the 6 bycatch fleets in 2012 were assumed to be equal to 2011 levels
- Discards for the 6 bycatch fleets for 2013-2031 were estimated using a fixed exploitation rate that was set equal to the exploitation rate in 2011 for those fisheries



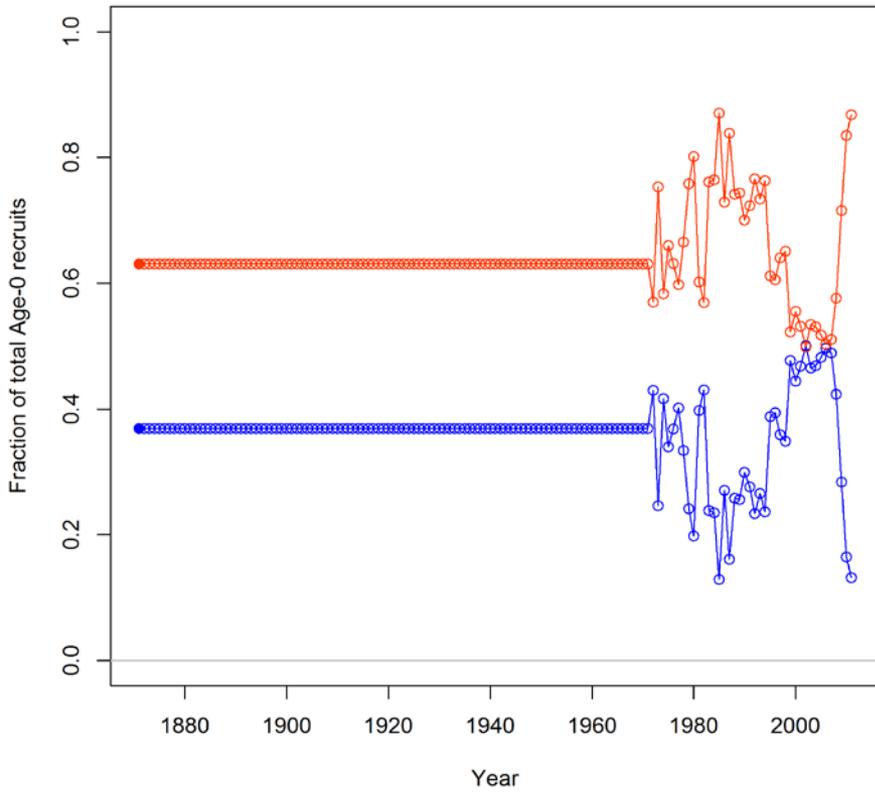
Projection methods

- Recruitment deviations for the projection period are derived from the recent stock-recruitment relationship
- No stochastic recruitment in deterministic projections, uncertainty in recruitment incorporated into bootstraps
- Recruitment allocation between the two stocks for the projection period was assumed to be similar to model estimated historical allocation
 - 63% West – 37% East

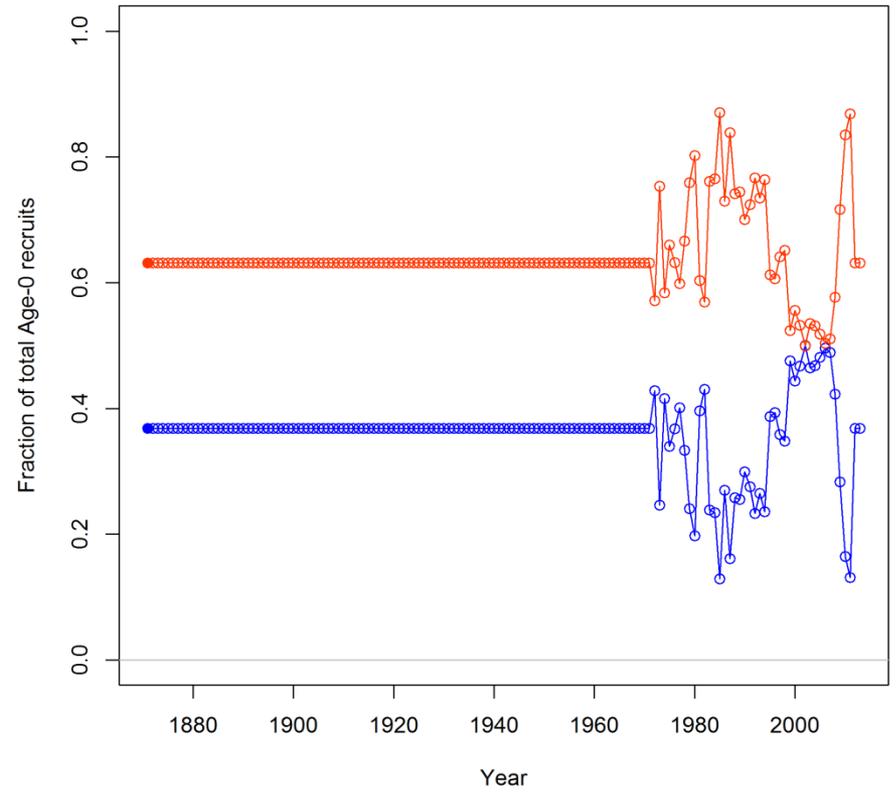


Projection methods

Fraction of total Age-0 recruits by area

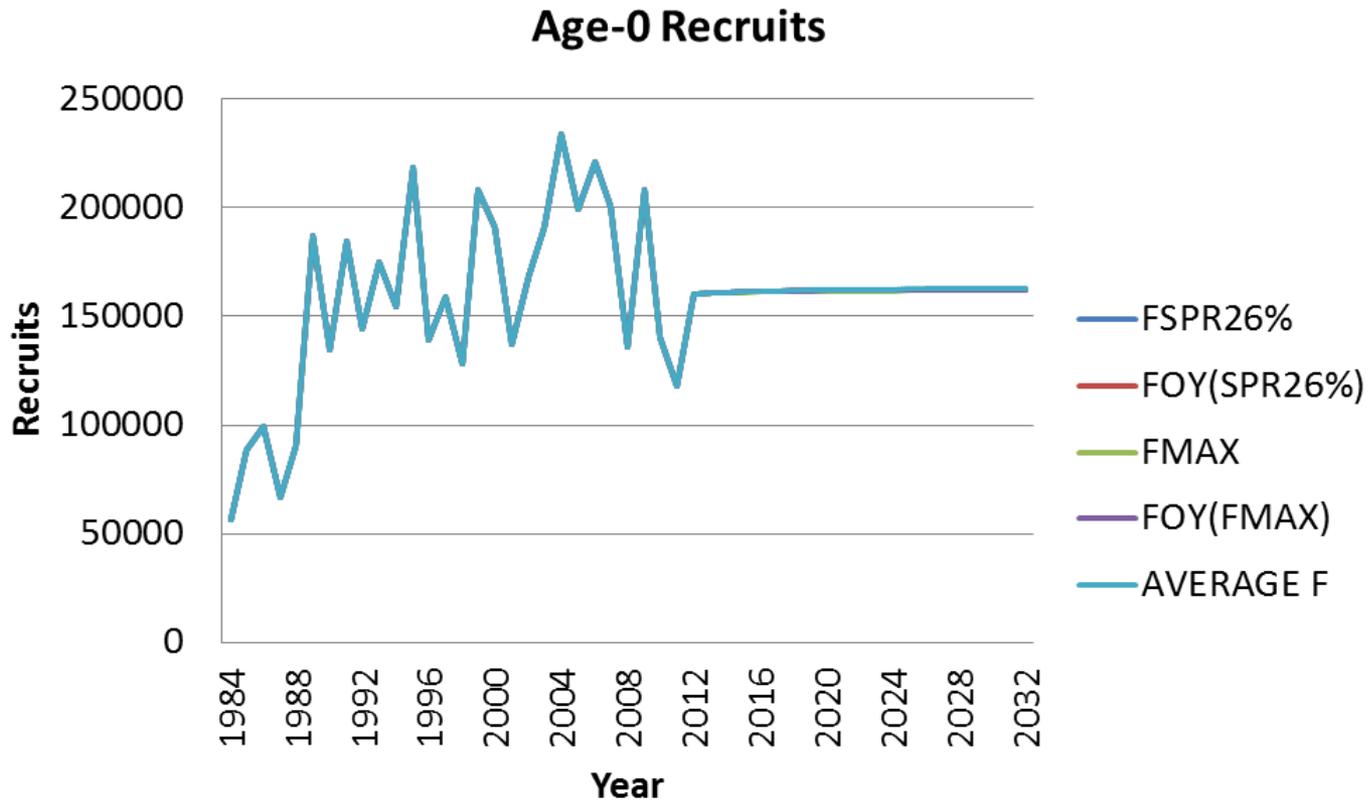


Fraction of total Age-0 recruits by area



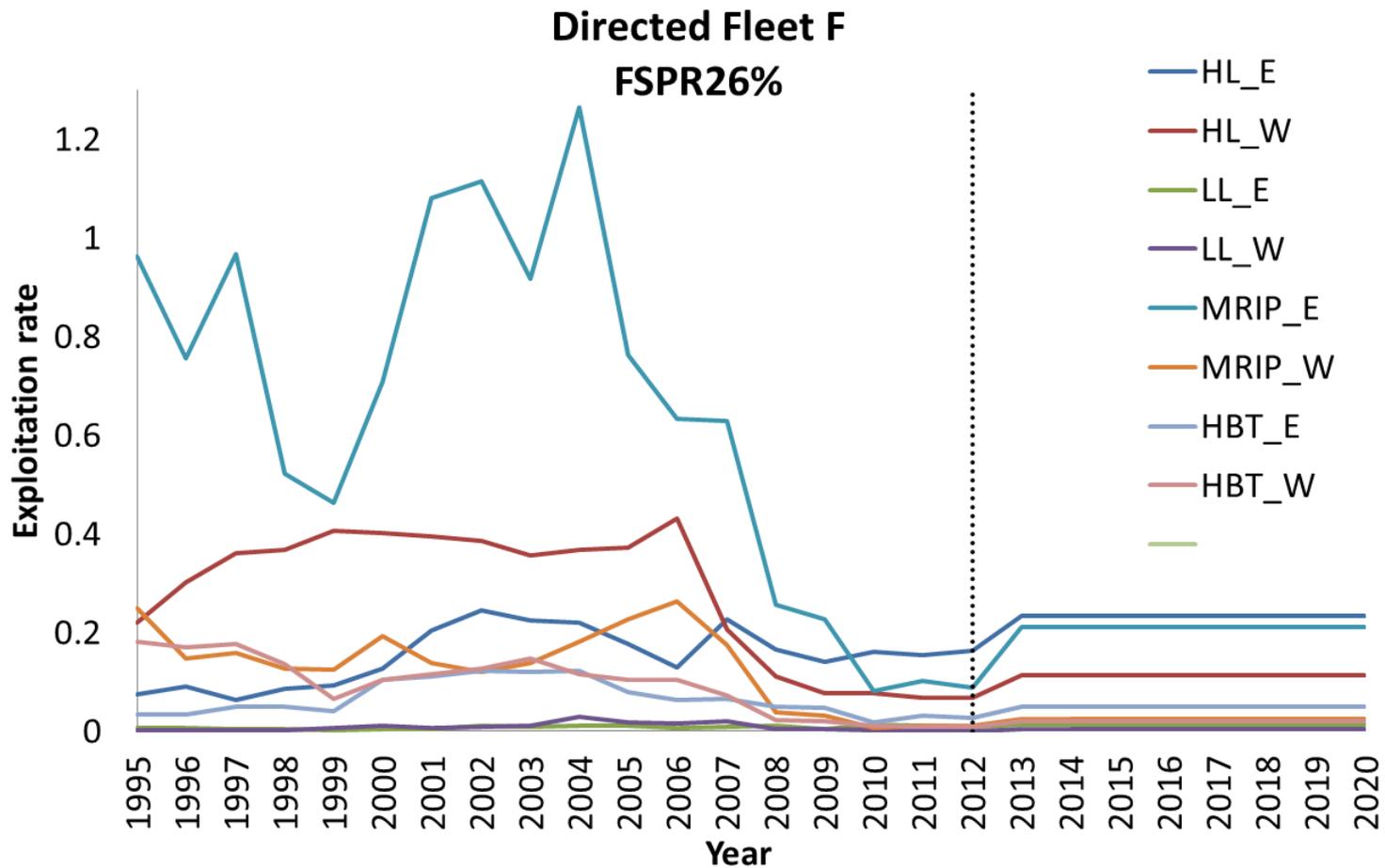


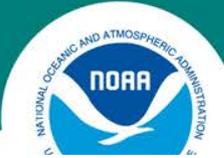
Projection methods





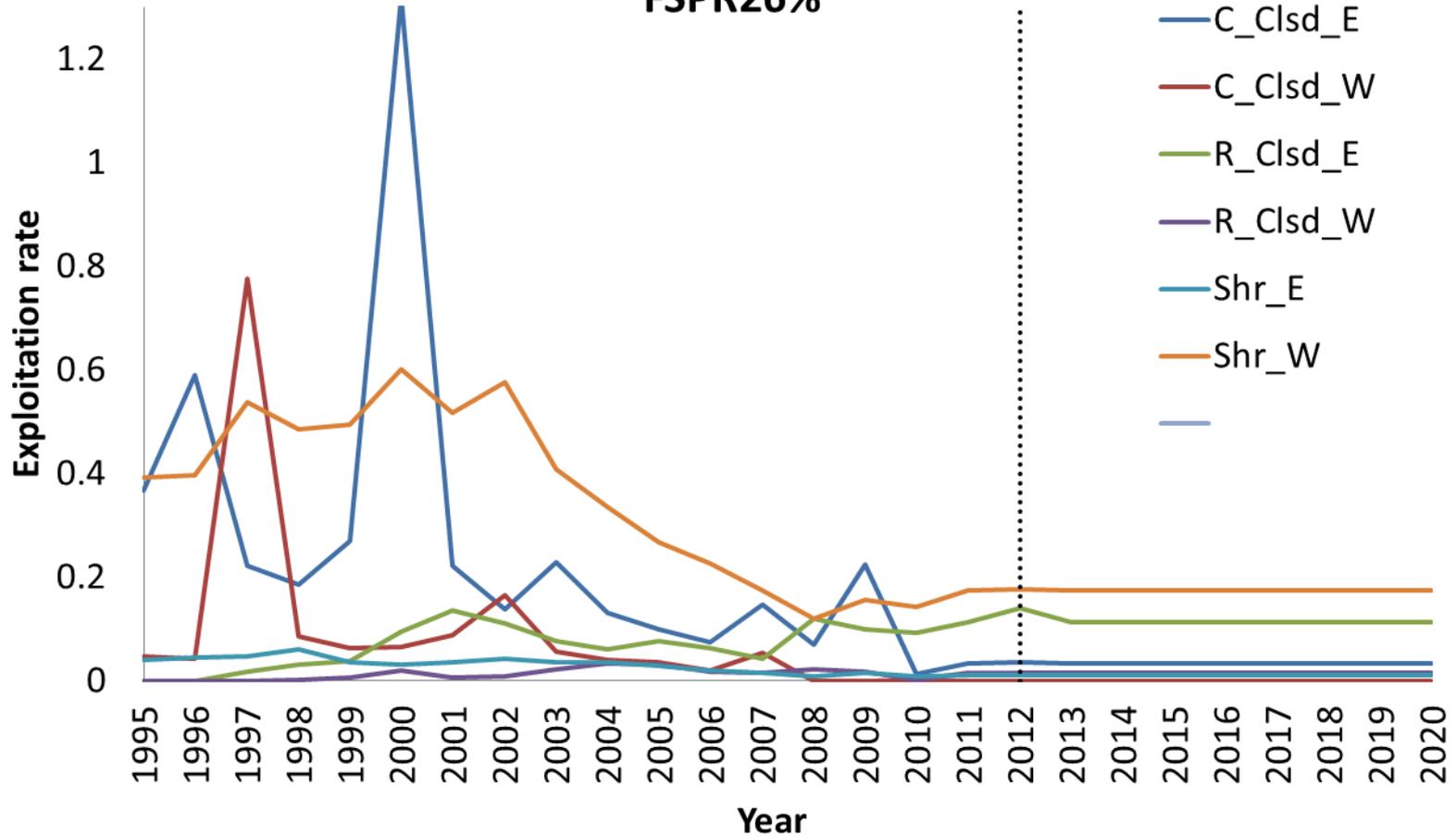
Projection methods





Projection methods

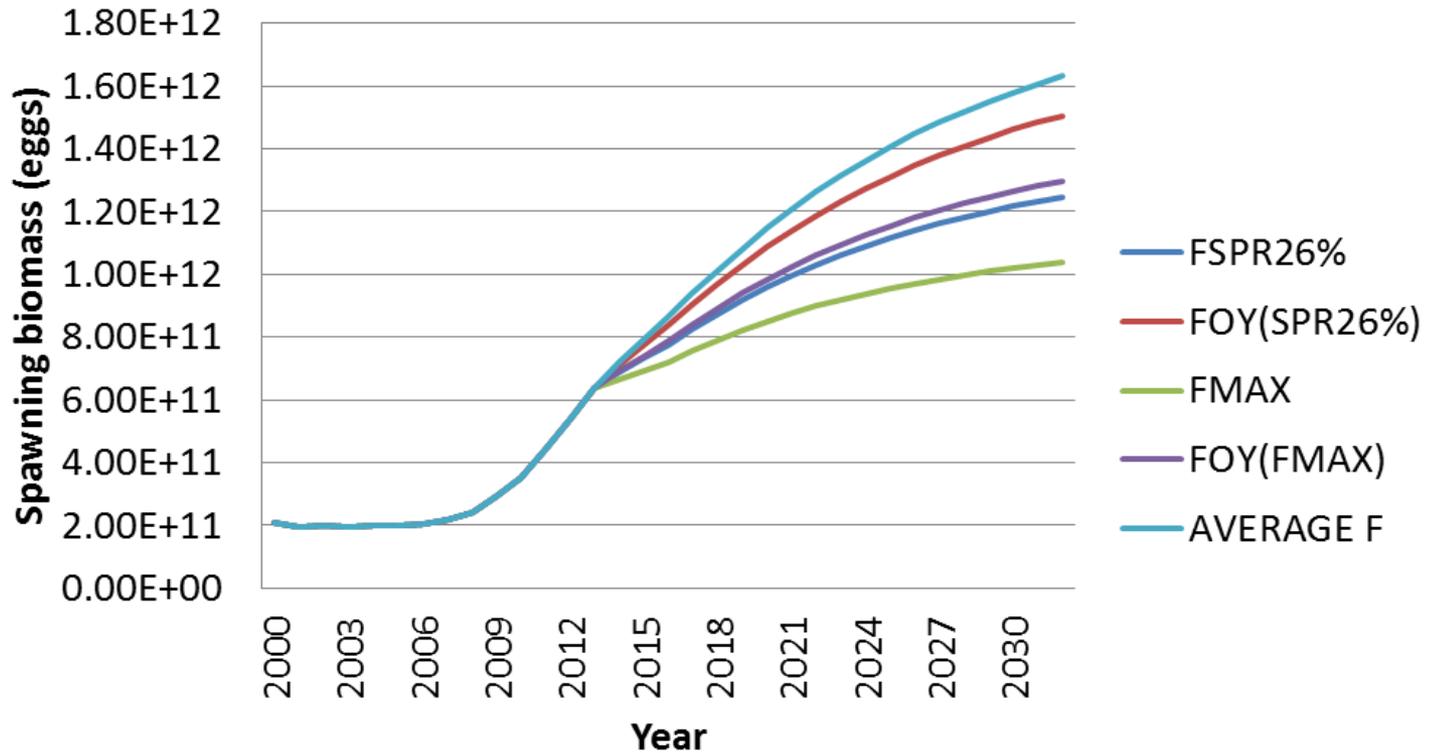
**Bycatch Fleet F
FSPR26%**





Initial projections

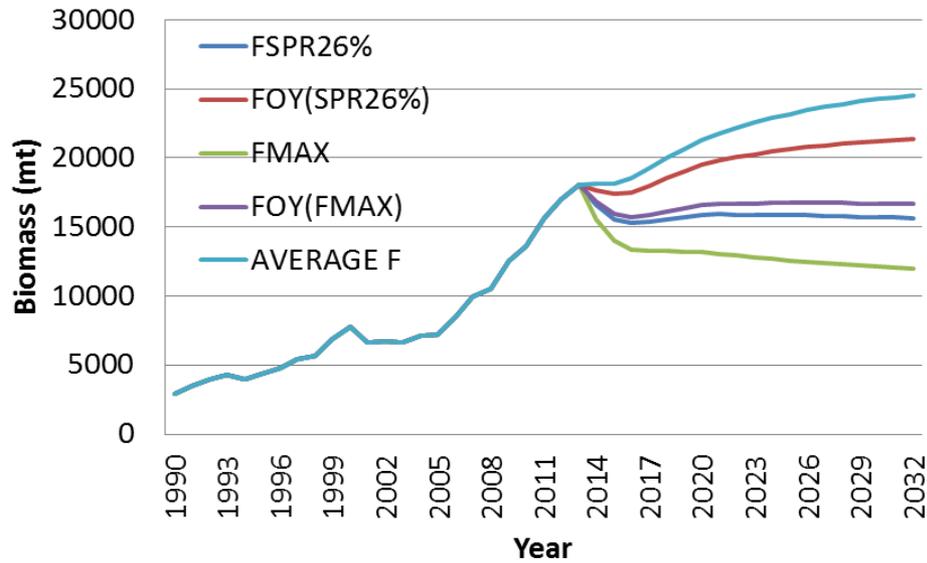
Spawning biomass



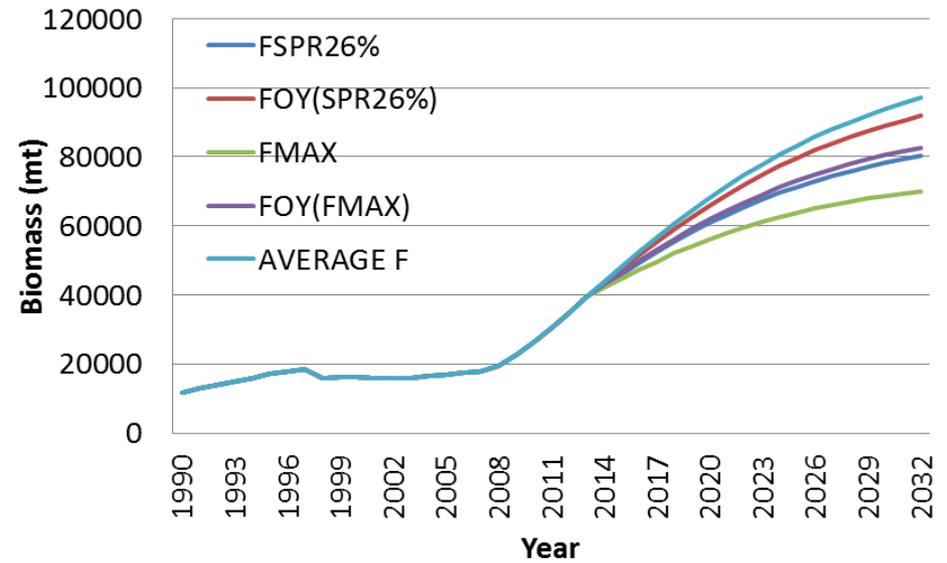


Initial projections

Total Biomass East



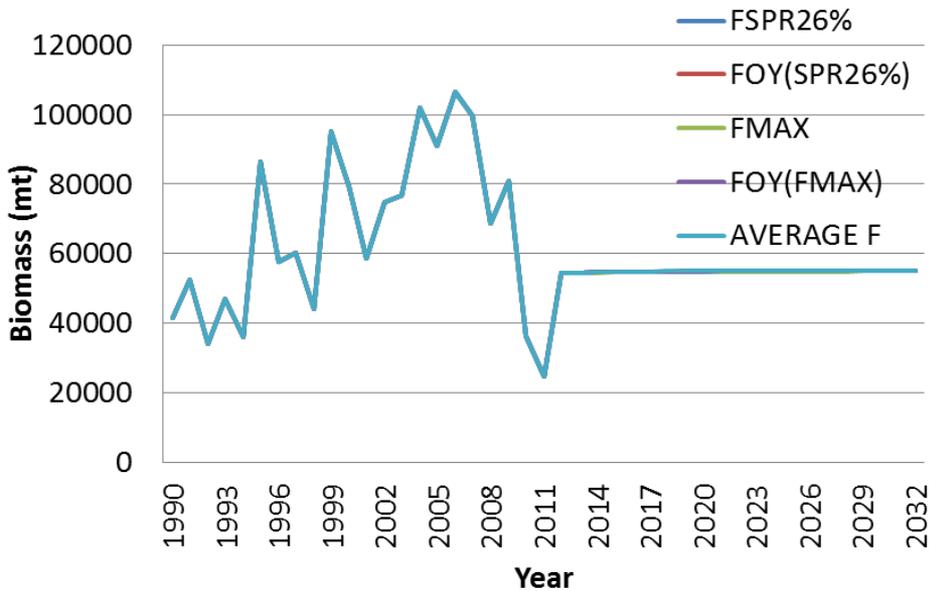
Total Biomass West



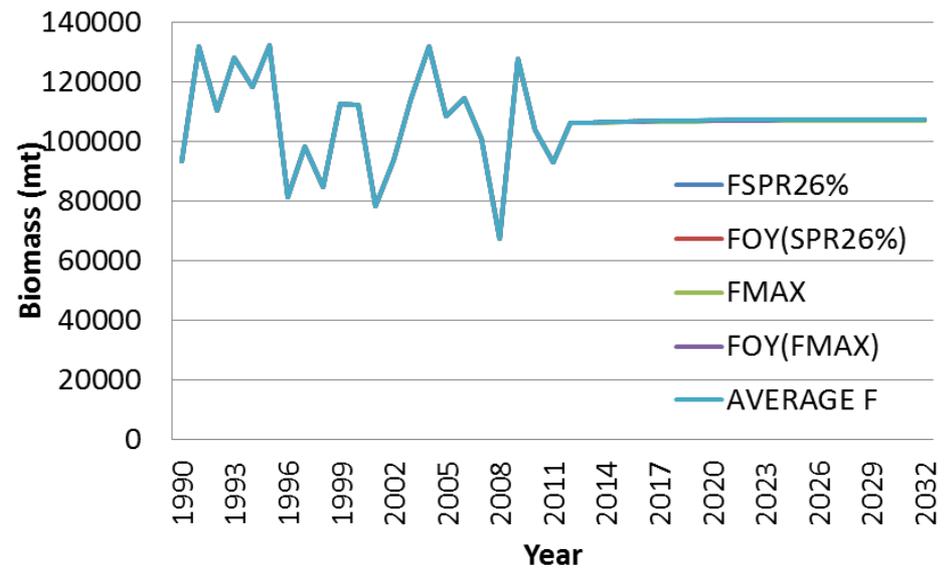


Initial projections

Age-0 Recruitment East



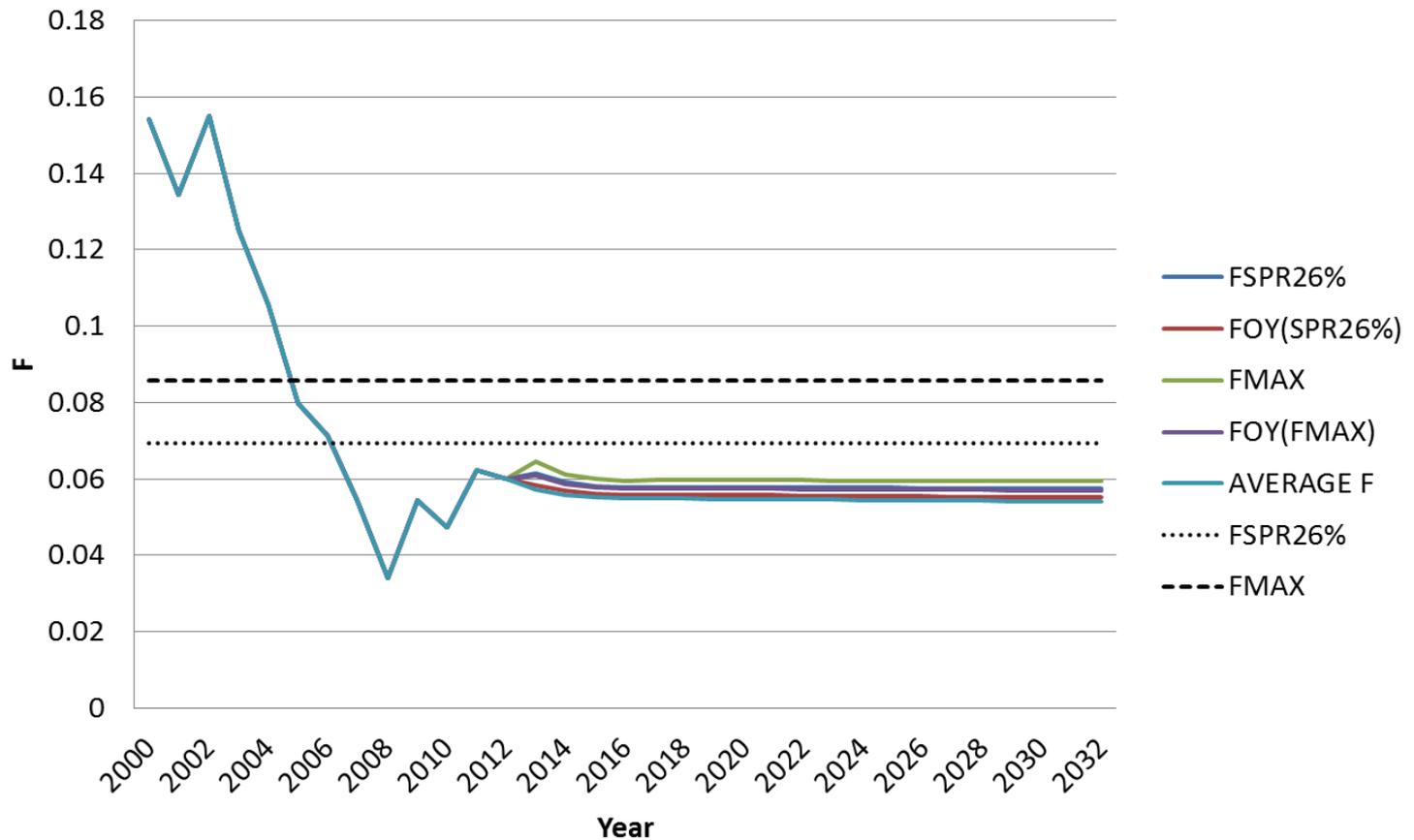
Age-0 Recruitment West





Initial projections

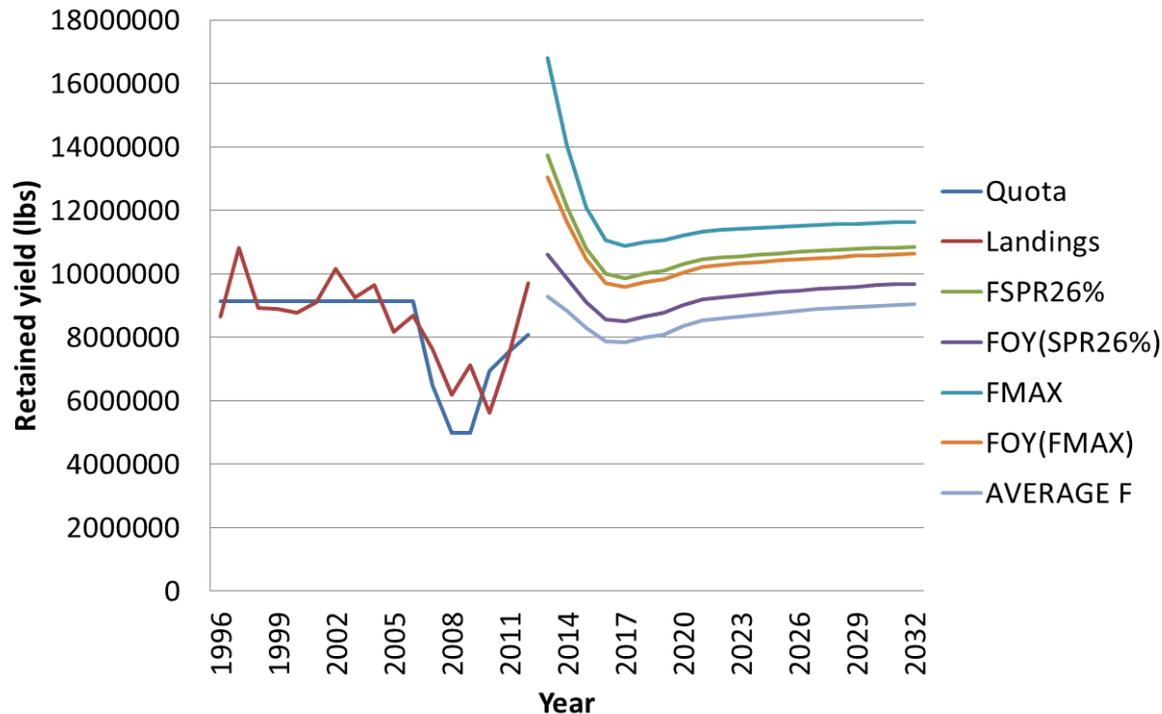
Exploitation rate





INITIAL PROJECTIONS

Assumes all sources of fishing mortality are increased by the same fraction, including closed season and shrimp bycatch removal rates



*2012 landings are provisional



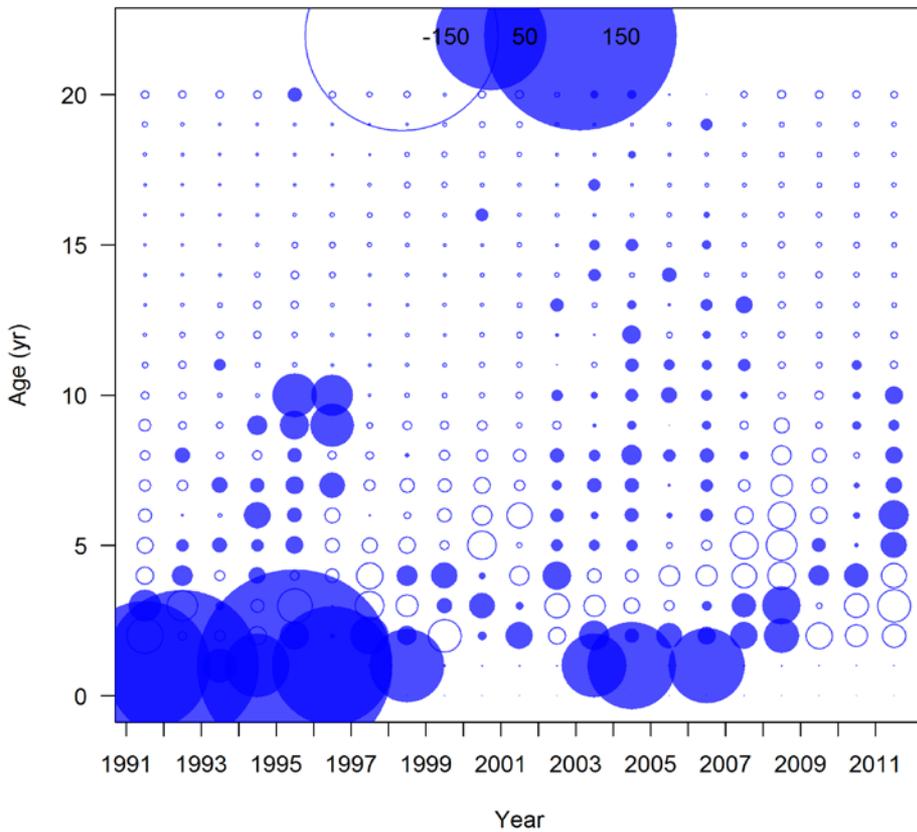
Initial projections

Year	FSPR26%	FOY(FSPR26%)	FMAX	FOY(FMAX)	AVERAGE F
2013	13,728,793	10,598,258	16,797,255	13,055,678	9,290,647
2014	12,097,640	9,858,266	14,020,152	11,640,322	8,836,239
2015	10,777,266	9,102,910	12,081,637	10,448,501	8,286,519
2016	9,995,085	8,572,852	11,071,359	9,719,596	7,861,604
2017	9,856,613	8,509,391	10,868,104	9,596,731	7,829,774
2018	9,999,736	8,665,696	10,990,220	9,743,535	7,987,841
2019	10,088,237	8,769,296	11,055,356	9,836,180	8,094,087
2020	10,292,021	9,007,224	11,215,583	10,048,538	8,340,016
2021	10,444,247	9,187,400	11,334,393	10,207,575	8,527,643
2022	10,502,219	9,256,966	11,377,288	10,268,457	8,600,119
2023	10,554,636	9,320,317	11,415,774	10,323,586	8,666,313
2024	10,602,579	9,378,399	11,450,998	10,374,041	8,727,084
2025	10,646,069	9,431,367	11,482,718	10,419,846	8,782,676
2026	10,685,525	9,479,707	11,511,307	10,461,440	8,833,506
2027	10,720,749	9,523,263	11,536,546	10,498,670	8,879,487
2028	10,752,138	9,562,388	11,558,831	10,531,910	8,920,927
2029	10,781,234	9,598,494	11,579,705	10,562,682	8,959,149
2030	10,807,332	9,630,963	11,598,419	10,590,279	8,993,557
2031	10,831,183	9,660,588	11,615,591	10,615,496	9,024,968
2032	10,853,313	9,688,009	11,631,682	10,638,861	9,054,042

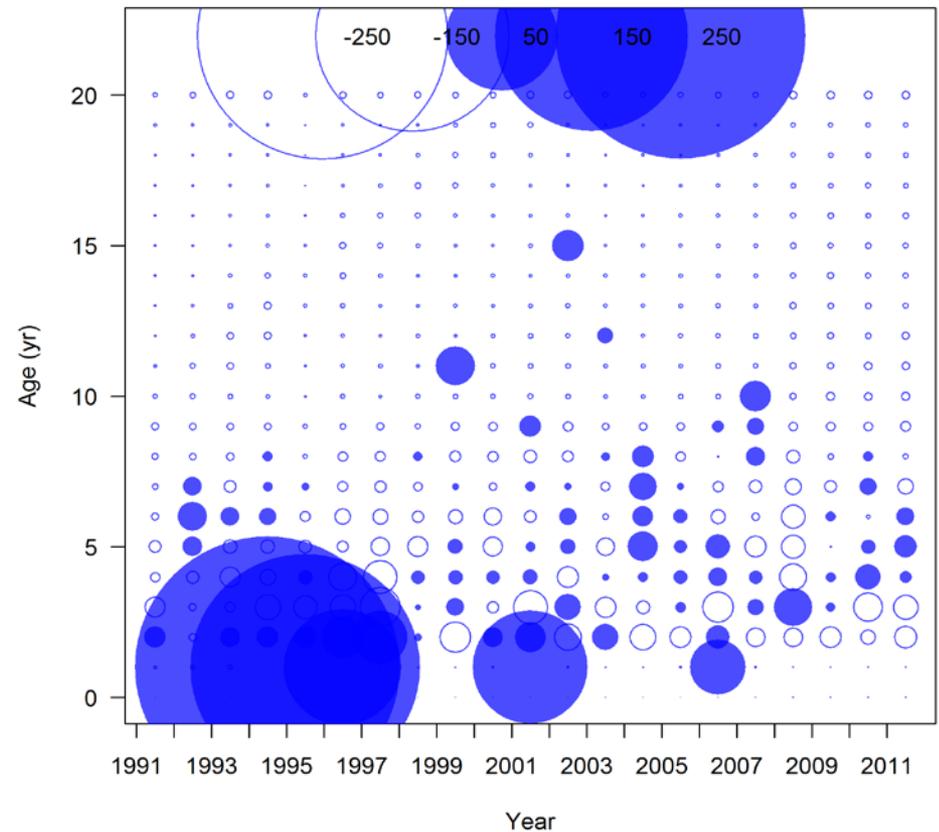


Initial projections

Pearson residuals, sexes combined, retained, MRIP_E (max=154.36)



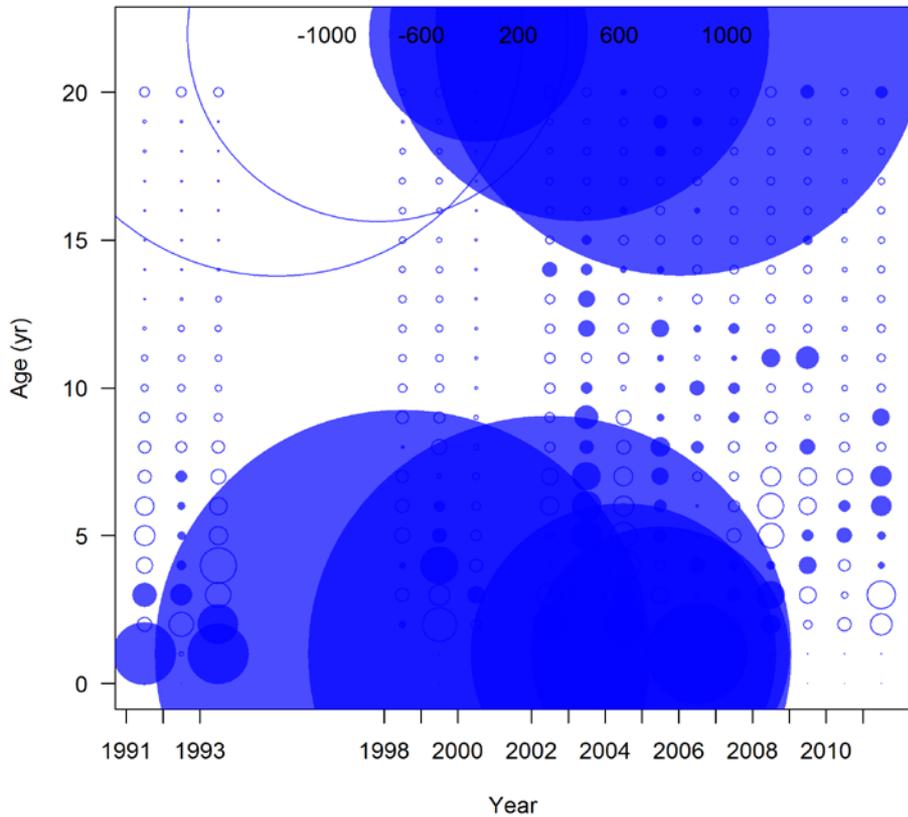
Pearson residuals, sexes combined, retained, HBT_E (max=281.22)



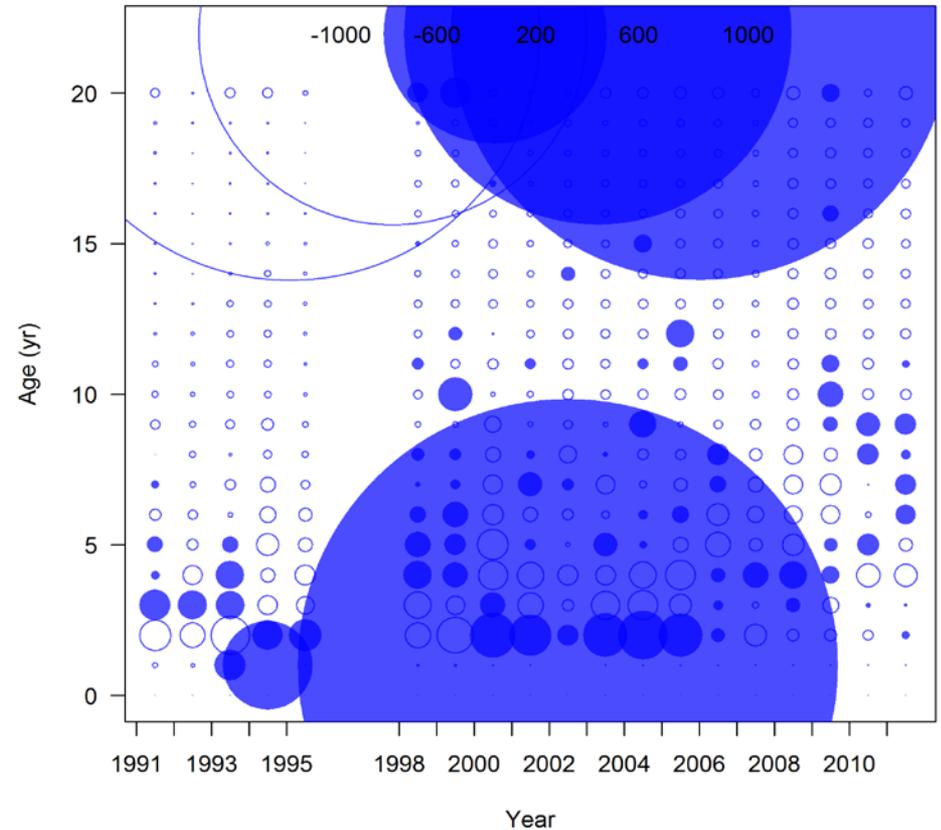


Initial projections

Pearson residuals, sexes combined, retained, MRIP_W (max=1018.36)



Pearson residuals, sexes combined, retained, HBT_W (max=1166.31)





Initial projections

