The 2017 Texas Closure – Results of SEAMAP Sampling

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Potential gain from the 2017 Texas Closure was again calculated based on the brown shrimp size composition observed in the June/July SEAMAP trawling survey. The same methods used in last year's report were repeated. NMFS continues to monitor the Texas Closure to alert the Council to any changes in the system that might warrant reopening discussion of the management measure. The SEAMAP sampling will show quickly if any substantial changes in biological potential from the Texas Closure occur over the years.

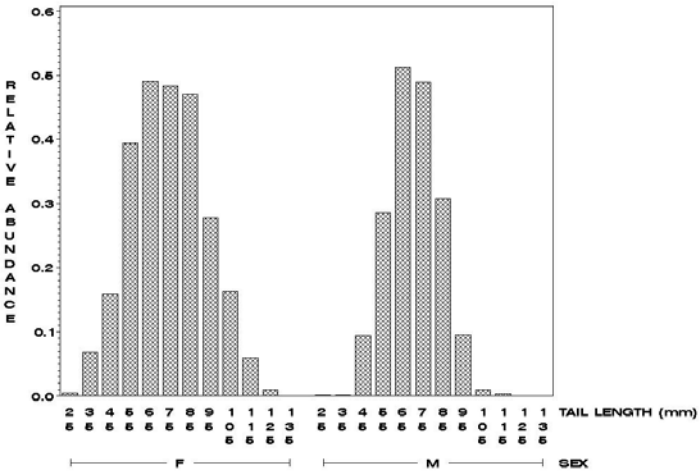

Figure 1. Size and sex composition of brown shrimp in the Texas EEZ, as determined by SEAMAP sampling. (Projected to July 1, 2017)

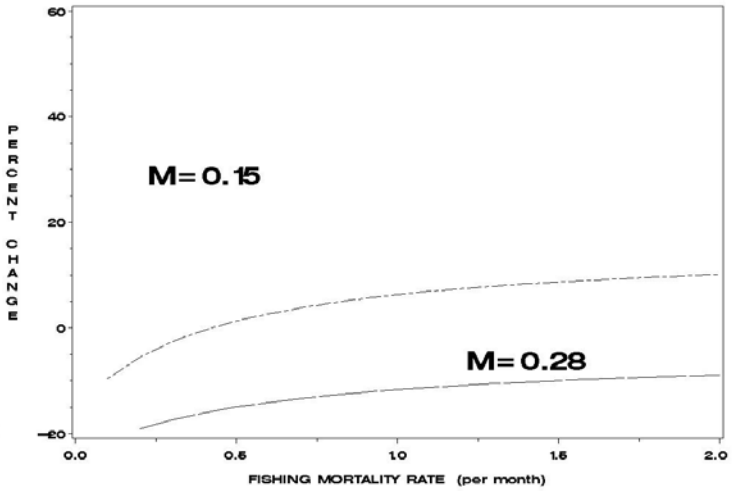

Figure 2. Estimated percent change in yield in the EEZ closure area at 2 values of natural mortality rate.

The 2017 size composition of brown shrimp in the EEZ off Texas was estimated from data collected aboard NOAA Ship *Oregon II*, as part of the standard summer SEAMAP survey (Figure 1). Yield per recruit calculations evaluate the trade-off between growth of individual shrimp and losses due to natural mortality in the closed area, producing estimates of change in yield, due to closure. Changes in yield are calculated for an extended range of fishing mortality rates (F's), for two values of natural mortality rate (M=0.15 and 0.28 per month). As in previous analyses, the two M values were chosen to bracket the range of values expected in the closed area. To compare the biological potential in 2017 with other years, calculations were based on a hypothetical 200 mile, 45 day (June 1 to July 15) closure for all years since 1981. The estimates of percent change due to closure versus F are shown in Figure 2. The percent change in yield values at F=1 and M=0.15 and 0.28 are 6.29% and -11.67%, respectively. F=1.0, which has approximated the F off Texas upon opening in past years, is taken as the point of comparison among years (Figure 3).

The performance indicated for the 2017 Closure as a percentage change was below average and decreased from that of 2016. The modal sizes for both sexes appear similar to those of 2017. The catch per effort in the 2017 SEAMAP survey off Texas (4.4 shrimp per minute) was lower than 2016 (7.1 shrimp per minute) and lower than the average of the time series (11.5 shrimp per minute) and much lower than in 2006 (30.7 shrimp per minute), which was the highest of the time series (Figure 4).

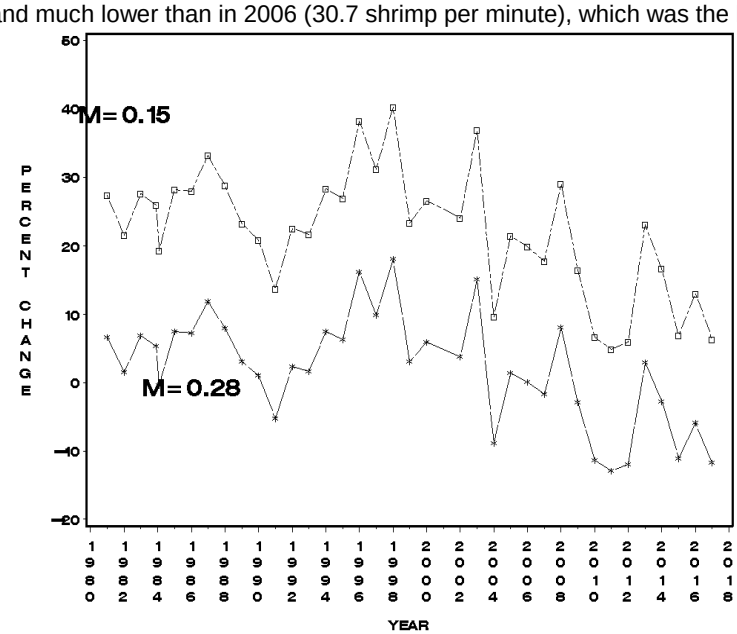

Figure 3. Yearly estimates of change in yield at F=1.

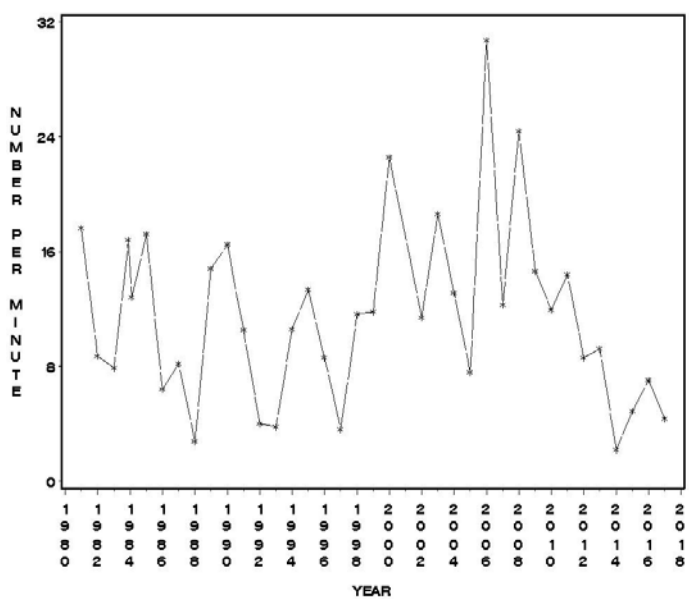

Figure 4. Brown shrimp mean catch per effort.