

3.3 Evaluation of Fish Size in Relation to Offsets

Summary and Conclusions

There is no evidence that mis-marked warps affected length composition of cod, haddock or yellowtail flounder taken by the *R/V Albatross IV*. Mis-marked warps did not appear to reduce or increase, on a proportional basis, the catch of large or small fish.

Introduction

In this analysis, survey length composition data from NEFSC survey bottom trawls with mis-marked warps were compared to length composition data from other bottom trawl surveys and from commercial bottom trawls. The purpose of the analysis was to test the hypothesis that mis-marked warps affected the catch of small or large fish in NEFSC survey bottom trawls during 2000-2002. The analysis focused on three key species (cod, haddock and yellowtail flounder) and there were three groups of comparisons (see below).

The first group of analyses (Figures 3.3.1 to 3.3.3) used data from NEFSC and DFO (Department of Fisheries and Oceans Canada) spring surveys over the Canadian portion of Georges Bank during 1997-1999 (“pre-warps”) and 2000-2002 (“post warps”). Both spring bottom trawl surveys cover the same area on Georges Bank at about the same time of year. The Canadian portion of Georges Bank (DFO bottom trawl strata 5Za-5Zb; NEFSC offshore survey strata 16-18 and 21-22) was selected for analysis because fish abundance is relatively high on the Canadian side and intensity of DFO sampling is reduced in US portions of Georges Bank. Data were for depths less than 100 fathoms (183 m) because the DFO survey does not sample deeper water near Georges Bank.

The second group of analyses involved monkfish length composition data for the Georges Bank and Mid-Atlantic Bight areas from the 2001 NEFSC winter bottom trawl survey (with mis-marked warps) and length composition data collected by commercial vessels (6 inch mesh codends with no liner) during the 2001 cooperative monkfish survey.

The third group of analyses involved length composition data for paired tows in a fishing power experiment during the 2001 NEFSC spring bottom trawl survey. For the fishing power experiment, the *R/V Delaware II* (no mis-marked warps) towed the same type of net beside the track towed by the *R/V Albatross I* (with mis-marked warps) at the same time or approximately the same time. The purpose of the experiment was to calibrate catches by the vessels. Problems with mis-marked warps on the *R/V Albatross IV* were unknown at the time. Fishing power of the two vessels differs for some species but length composition data depend primarily on the type and configuration of the trawl. Thus, length composition data from the two vessels should differ if mis-marked warps affected the length composition of catches by the *R/V Albatross IV*.

Average length composition data for each time period were used in most comparisons. Averages were computed by expressing the length composition for each survey (or tow) as proportions and then averaging the proportions for each survey.

Results

Length composition data for cod and yellowtail flounder from the Canadian portion of Georges Bank were similar in the two spring surveys and in the pre-and post warp periods (Figures 3.3.1 to 3.3.3). The DFO survey took more large haddock and less small haddock, on a proportional basis, than the NEFSC survey during both periods. Length composition data for haddock in the NEFSC survey appear more variable than for the DFO survey, probably because the sample size (number of tows, see below) is lower in the NEFSC survey for the Canadian side of Georges Bank. Given the sample size for NEFSC surveys, the wide range of sizes, and natural variability in haddock, the differences in length composition data for haddock in the pre- and post-warp periods are best attributed to random variability in the data.

Survey	Number Pre-Warp Tows (1997-1999)	Number Post warp Tows (2000-2002)
NEFSC Spring	67	65
DFO	127	131

Length composition data from the 2001 NEFSC bottom trawl survey and commercial vessels in the Cooperative Monkfish Survey show that NEFSC survey bottom trawls took proportionally more small monkfish due to the small mesh liner in survey bottom trawls (< 25 cm, Figure 3.3.4). However, length composition data for larger monkfish (> 25 cm) were similar suggesting that mis-marked warps had little effect on size composition of monkfish in the NEFSC survey.

Length composition data from paired tows by the R/V *Albatross IV* (with mis-marked warps) and R/V *Delaware II* (without mis-marked warps) during the 2002 spring survey fishing power experiment were virtually identical for cod, haddock and yellowtail flounder (Figure 3.3.5).

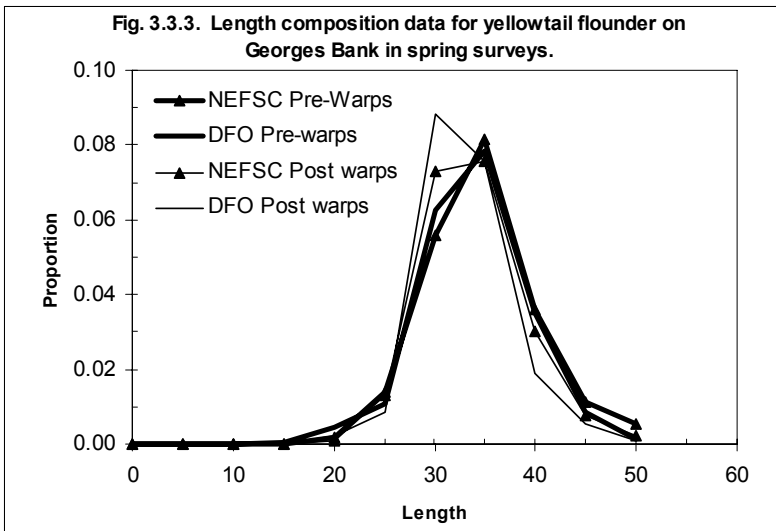
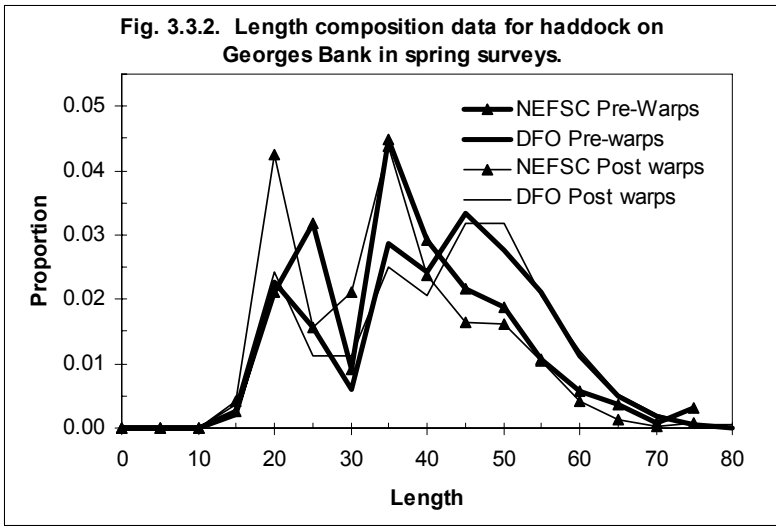
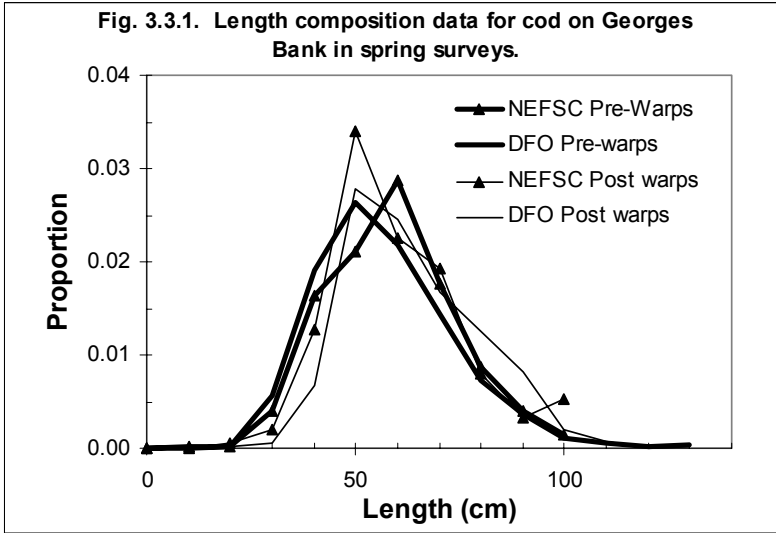


Figure 3.3.4. Length composition data for monkfish during 2001 in the NEFSC winter survey (northern and southern areas) and commercial vessels in the Cooperative Monkfish Survey (southern area).

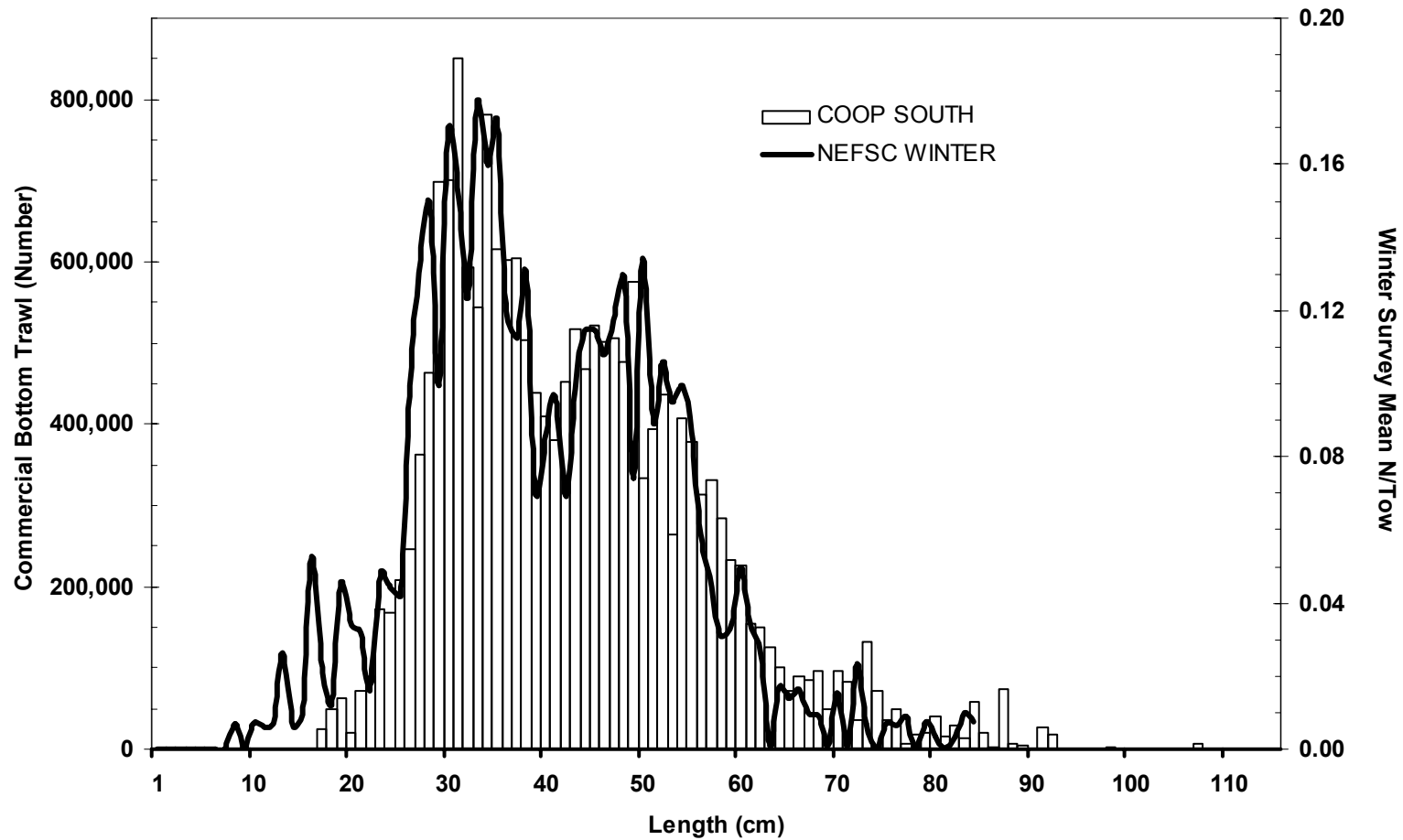


Figure 3.3.5. Length composition data for cod, haddock and yellowtail flounder in paired tows for a fishing power experiment during the spring of 2002.

