

Appendix B13: Modifications to the NEFSC sea scallop survey database.

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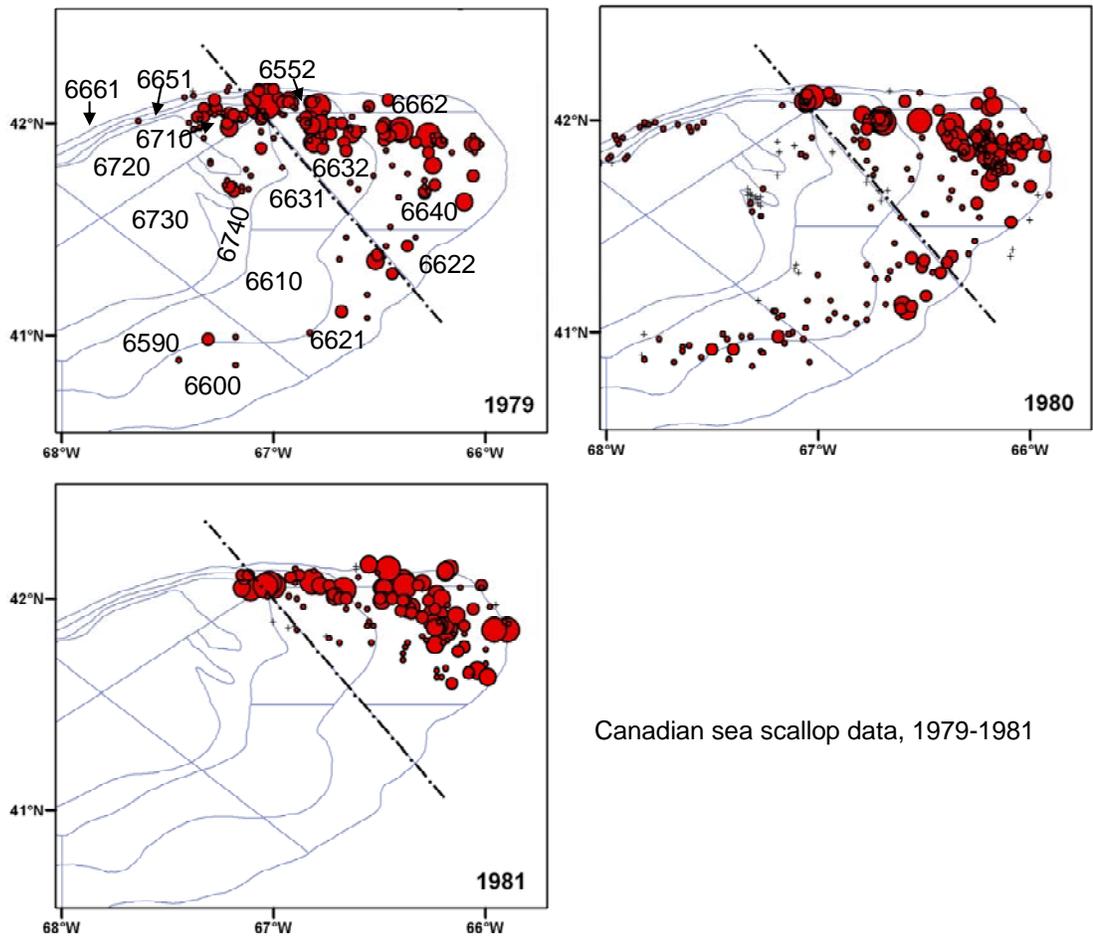
Two modifications were made to the scallop survey database for this assessment. The first modification accommodated a change in the survey vessel and survey dredge. Beginning in 2007, the NEFSC scallop survey was carried out using the *R/V Hugh Sharp* in place of the *R/V Albatross IV*, new survey protocols and a modified survey dredge. In the database, the catch in each tow can be adjusted to account for differences in tow distance and potential differences in survey dredge efficiency. Specifically, the adjusted catch in tow t for surveys during 2008-2009 is $C_t^* = \phi C_t$ where C_t was the original catch and ϕ is the adjustment factor that converts survey catches during 2008-2009 surveys to *R/V Albatross IV* equivalent units. Variances for adjusted strata means were computed using Goodman's (1960) exact formula for the variance of the product of two random variables. Based on experimental work described in this assessment, $\phi=1/1.05=0.9524$ to accommodate a 5% increase in tow distance for the new research vessel. For lack of information, the CV for the adjustment was assumed to be zero.

The second modification made it possible to compute survey abundance and biomass trends for GBK sea scallops back to 1979 instead of 1982. The years 1979-1982 were not used for GBK in the previous assessment because survey strata 6610, 6621, 6631, 6651, 6661, 6710, 6720 and 6740 were usually not sampled. In this assessment, Canadian data were used to fill these holes and Canadian data for other GBK strata were included as well (Figure 1). The Canadian survey also uses an 8' New Bedford style dredge with a liner. However the Canadians survey has a shorter tow distance (0.667 nm vs. 0.875 nm) and stratification is based on commercial LPUE in the preceding season rather than NEFSC shellfish strata. The Canadian data were adjusted for differences in tow distance based on the ratio of tow distances

$C_s^* = \frac{0.667}{0.875} C_s$. Serchuk and Wigley (1986) showed that Canadian and US data from the same strata are similar after adjustment for differences in tow distance. Differences in stratification were therefore ignored. Canadian data were also used in the statistical model used to fill holes (strata not sampled in some survey years). Imputation procedures are described in NEFSC (2007).

References

- Goodman, L.A. 1960. On the Exact Variance of Products. J. Am. Stat. Assoc. 55: 708-713
Northeast Fisheries Science Center. 2007. NEFSC. 2007. 45th Northeast Regional Stock Assessment Workshop (45th SAW): 45th SAW assessment report. Northeast Fish. Sci. Cent. Ref. Doc. 07-16.



Canadian sea scallop data, 1979-1981

Appendix B13-Figure 1. Location of Canadian sea scallop survey data for 1979-1981, which were used in this assessment. The size of the symbol in each plot indicates relative catch size.