Trawl Comparisons and Fishing Power Corrections for the F/V *Northwest Explorer*, R/V *TINRO*, and R/V *Kaiyo maru* during the 2002 BASIS Survey

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BASIS (Bering-Aleutian Salmon International Survey) research vessels, F/V *Northwest Explorer* (United States), R/V *TINRO* (Russia), and R/V *Kaiyo maru* (Japan)*,* completed joint trawling at twelve stations in the Bering Sea between September 12 and September 18 during 2002. The *Kaiyo maru* and the *Northwest Explorer* completed joint trawling at five stations, the *Northwest Explorer* and the *TINRO* completed joint trawling at six stations, and all three vessels completed joint trawling at one station. Four of the six stations sampled by the *Northwest Explorer* and the *TINRO* were part of a diel study, where the same station was sampled four times (every six hours for 24 hours). Trawls differed in their headrope length and number of wingtips; trawls were configured with different bridle lengths, warp lengths, door sizes, and footrope weights; and vessels differed in their size and horsepower. These differences resulted in differences in sampling depth (vertical opening of the trawl), trawl width, warp length, and trawling speed. Catch rates were standardized for the average area swept during each trawl haul by all three vessels (0.37 km^2 of seawater). Immature chum salmon (*Oncorhynchus keta*), sockeye salmon (*O. nerka*), chinook salmon (*O. tshawytscha*), and juvenile Atka mackerel (*Pleurogrammus monopterygius*) were the primary species and life-history stages caught during the trawl comparisons.

Generalized linear models were used to fit fishing power models to catch and catch rates with a robust maximum likelihood approach. The *Kaiyo maru* had the largest fishing power for both catch and catch rates, followed by the *TINRO* and the *Northwest Explorer*. The largest difference in fishing power consistently occurred between the *Kaiyo maru* and the *Northwest Explorer*. The *TINRO* and the *Northwest Explorer* were most similar in their fishing power for salmon, whereas the *Kaiyo maru* and *TINRO* were most similar in their fishing power for Atka mackerel. Fishing power corrections were larger for catch than catch per unit of effort (CPUE) due to different effort levels by each vessel. Fishing power coefficients for CPUE of all species were significant at the $p < 0.10$ level; however, only Atka mackerel was significant at the $p < 0.05$ level.

Although large differences exist in the sampling characteristics of pelagic trawls used by BASIS vessels (particularly with respect to sampling depth, or vertical trawl opening), fishing power models provide reasonable corrections for differences in fishing power. However, caution should be used when applying these fishing power correction terms because the small number of stations used to compute fishing power estimates limits our ability to ensure that correction terms are applicable to other areas and times.