

3.4 Evaluation of Gear Mensuration Data from the R/V *Albatross IV* Trawl Warp Offset Experiment

The effects of trawl warp length offsets on the gear performance of the R/V *Albatross* were assessed during a controlled experiment, conducted on September 25-26, 2002, at six stations ranging in depth from 46-91 m (Figure 3.4.1). During each tow, gear performance was assessed through videotaping and logging of gear mensuration data from Simrad sensors mounted on the doors and the trawl wing ends and headrope of a Yankee 36 net. In addition, several other variables logged by the Simrad ITI system, such as speed over ground, vessel location and water depth were evaluated.

During each tow, warp length offsets of 0 ft. (equal port and starboard warp lengths), 2 ft., 4 ft., 6 ft., and 12 ft. were paid out from the starboard side of the vessel, followed by the port side of the vessel. An additional offset of 18 ft. was fished at the deepest station sampled (station 907). At each station, the trawl winches were locked and the trawl was allowed to reach the bottom and stabilize before beginning the experiment. During each tow, the trawl remained in the water throughout all offset changes, and after consistent sensor readings were observed, was allowed to fish for variable periods of time.

Changes in trawl geometry were evaluated graphically and statistically. Wing spread and headrope height readings from each station were graphed over time, between the winch lock and re-engage period, and each warp offset change was denoted. No headrope height readings were obtained at station 904. Door spread was not evaluated because the door sensors did not operate consistently. However, door spread is geometrically related to wing spread and wing spread data were evaluated.

In summary, graphs of headrope height and wingspread were similar across warp offset treatments (horizontal trend) and there was no indication of a change in this trend across stations (depths; Figure 3.4.2).

Headrope height and wingspread data, for port and starboard offsets were also evaluated statistically. At each station, the means and standard deviations of headrope height and wingspread were calculated separately, for port and starboard offsets, for each warp offset time interval (Figure 3.4.3). Headrope height and wingspread data collected at stations 904 and 905 represent single readings, so no statistical evaluation of these data was conducted. Means and standard deviations of headrope height and wingspread for the combined stations (stations 906, 907, 908 and 909) were also computed.

In summary, port and starboard wingspread means for each warp offset treatment were similar. The same was true for headrope height means. In addition, there was no significant difference detected between wingspread means for warp length offsets of 0-6 ft. at depths of 49-91 m. The same was true for headrope height means. Differences between headrope height means for even warps and warp length offsets of 12 ft. varied in significance between stations. The same was true for wingspread means. There was no significant difference detected between wingspread means, for all stations combined, for warp length offsets of 0-12 ft. at depths of 49-91 m. The

same was true for headrope height means for all stations combined (Figure 3.4.4). At the deepest station (91 m), there was no significant difference between headrope height means of warp length offsets of 0-18 ft. The same was true for wingspread means for the starboard side.

These data indicate that even at warp offsets greater than depths where groundfish stocks are typically found (Figure 3.7.31), the net remains spread and open, with mensuration readings very similar to the no-offset condition. While this does not prove that warp offsets on catch rates are negligible, had net dimensions changed dramatically, survey catches would most likely have been affected.

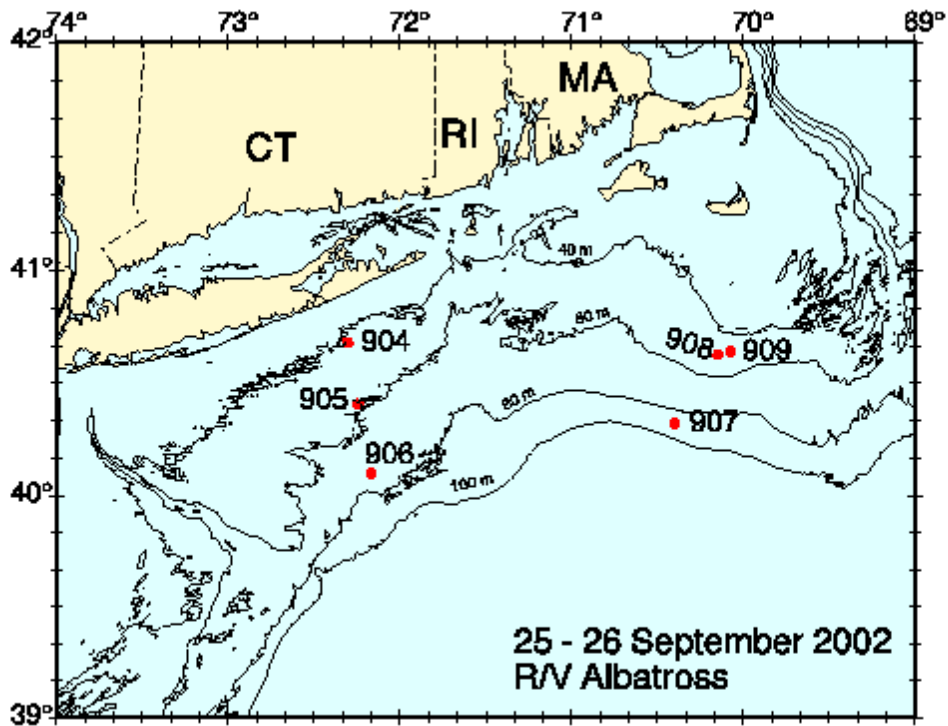


Figure 3.4.1. Locations of stations where video and trawl sensor data were collected to assess the effects of warp length offsets on the trawl performance (Yankee 36 net) of the R/V *Albatross IV* during 25-26 September, 2002.

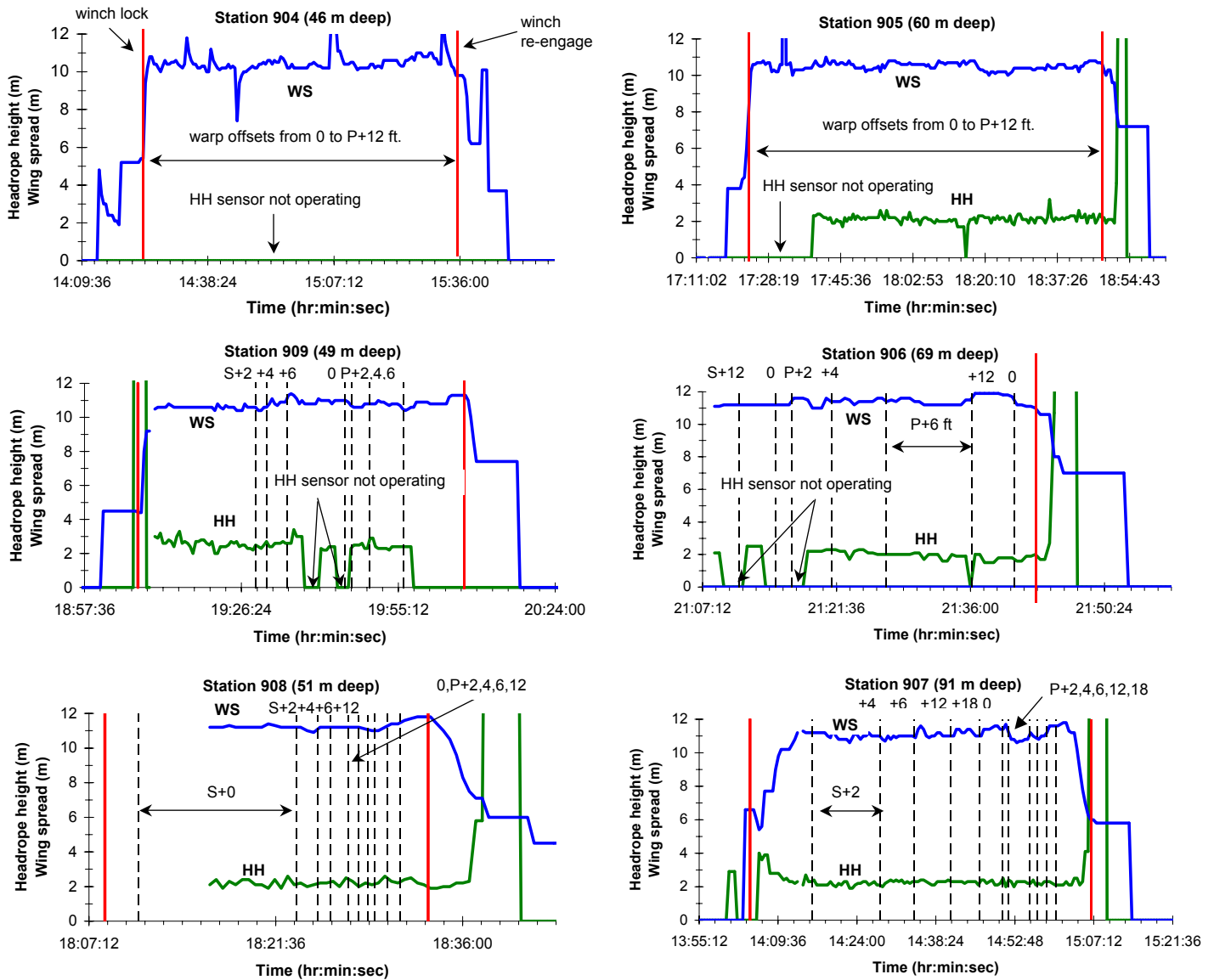
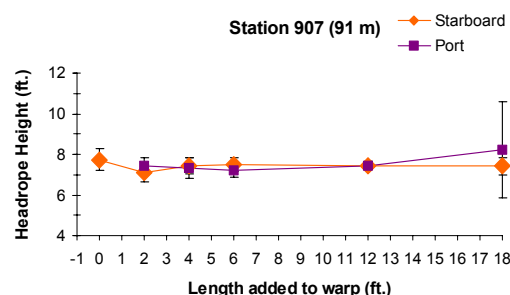
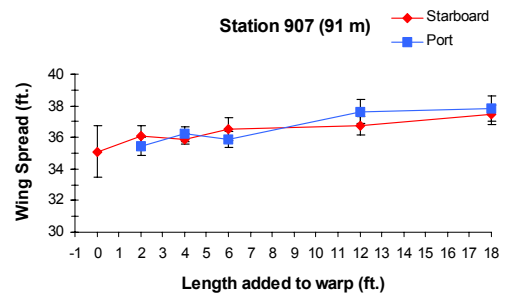
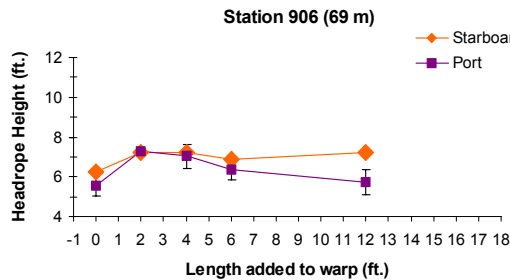
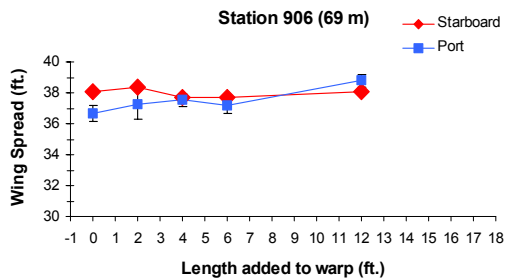
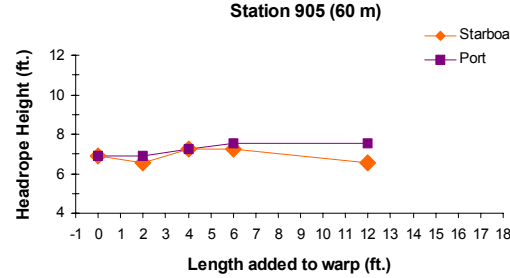
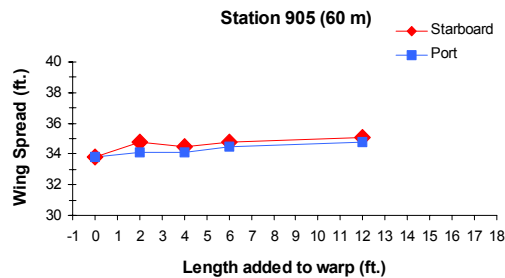
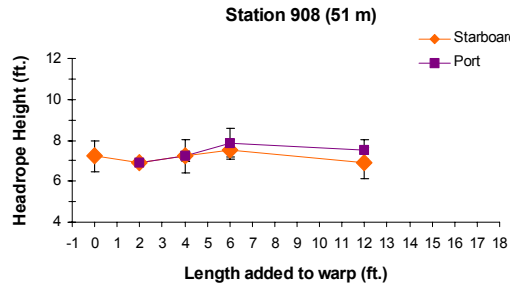
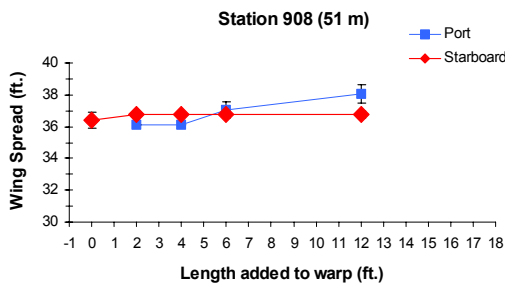
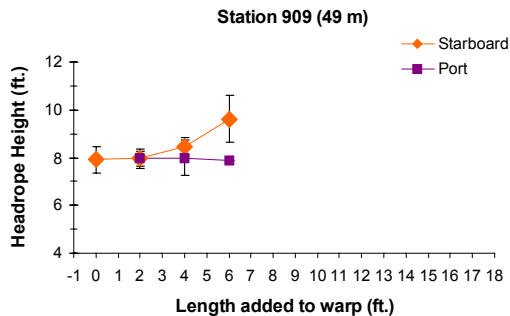
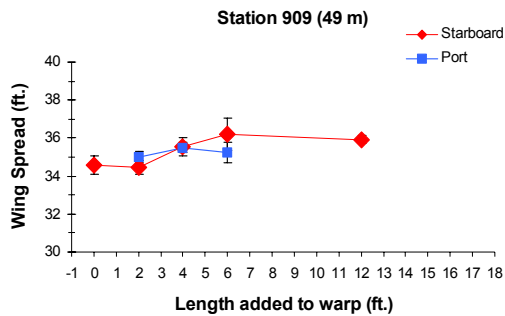


Figure 3.4.2. Yankee 36 headrope height (ft.) and wing spread (ft.) measurements recorded by the Simrad ITI system of the R/V *Albatross IV* at stations sampled during a 25-26 September, 2002 warp length offset experiment. Dashed lines represent starboard (S) and port (P) trawl warp length offsets of 0 ft., 2 ft., 4 ft., 6 ft., 12 ft. and 18 ft.



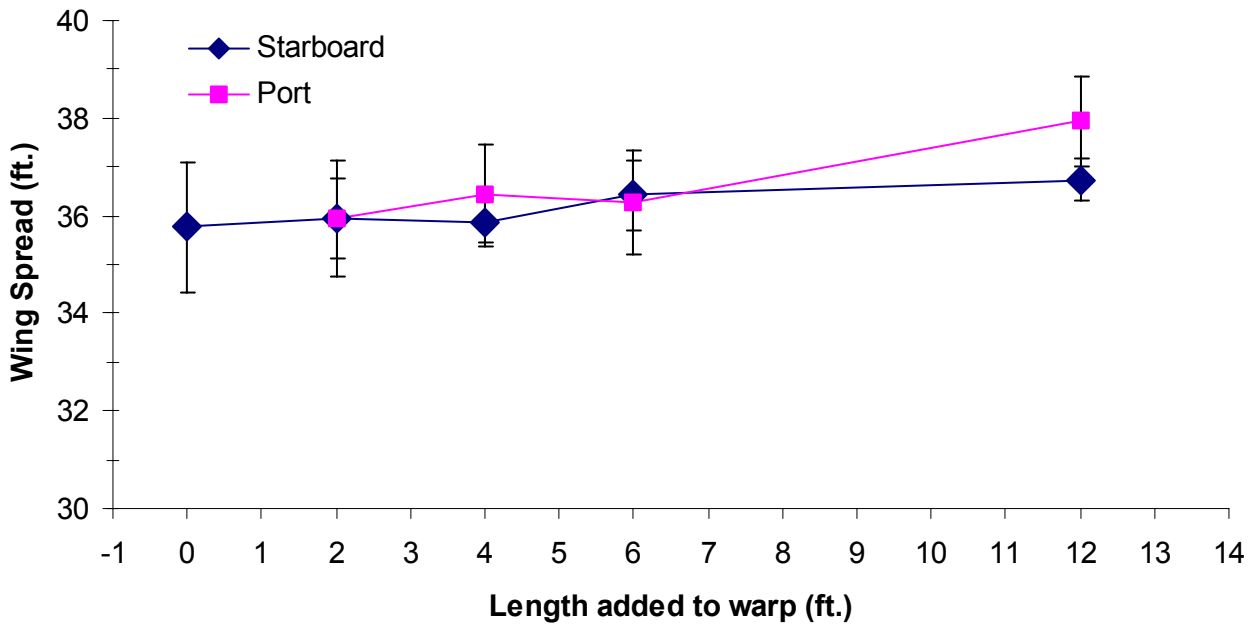
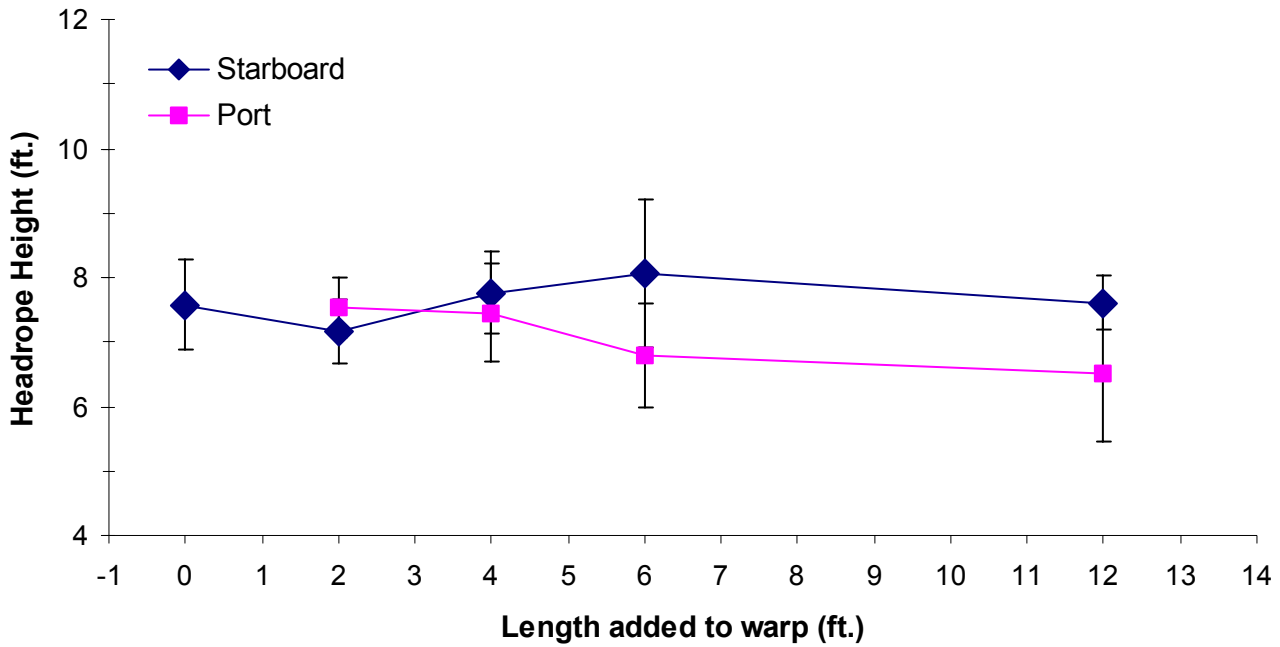


Figure 3.4.4. Means and standard deviations of headrope height (ft.) and wing spread (ft.) measurements of the Yankee 36 net of the R/V *Albatross IV*, at starboard and port trawl warp length offsets of 0 ft., 2 ft., 4 ft., 6 ft., 12 ft., for stations 906, 907, 908 and 909 combined. Starboard warp offsets of 0-6 ft. do not include station 906 because these data were not obtained.