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Description of a Simple Electronic Logbook Designed to Measure Effort in the Gulf of Mexico Shrimp Fishery

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Abstract.—The magnitude and spatial distribution of fishing effort in the Gulf of Mexico penaeid shrimp fishery has been the subject of great contention. Here, we describe a simple and inexpensive electronic logbook (ELB) and algorithms tested to describe the temporal and spatial patterns of fishing effort, based on nothing more than the position of the vessel at 10-min intervals; these algorithms were tested with 788 tows (4,558 h of trawling). On average, the difference between ELB estimates and recorded levels of effort were less than 1%; spatial agreement was also good. On a spatial basis, ELB estimates accounted for more than 84–97% of the variance observed in recorded effort, depending on the grid size used in the analysis. Further, analysis of data from more than 18,000 tows yielded a strong within-trip relationship between catch and effort. This relationship enables accurate allocation of the total landings from a trip to the subareas fished, based on nothing more than trawling times within each subarea fished. Because National Marine Fisheries Service port agents already collect landings on a trip total basis, a large-scale installation of inexpensive (<US$500) ELB units should be able to measure shrimp fishing effort accurately.

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