South Carolina Fishery Independent Survey Description and Protocol

The three different monitoring programs used in the analysis, with the different gear types for each, were stop nets, trammel nets, and an electroshock boat. Although there was overlap during some of the time periods for each monitoring program, each was run independently. The stop net program ran from 1985 to 1996 and used fixed index sampling sites that were sampled monthly. The purpose of the stop net program was to monitor important recreational finfish species (primarily: *Sciaenops ocellatus, Cynoscion nebulosus,* and *Paralichthys lethostigma*) in order to establish population size and age structure, seasonality, reproductive dynamics, and overall abundance. The trammel net survey has been conducted since 1991 and is currently an ongoing program. It uses a stratified random sampling protocol from seven different estuaries (as strata) with individual sampling sites chosen at random within each estuarine area on a monthly basis. The trammel net program was designed to monitor important recreational finfish species over a broader geographic range than the stop net program and the randomly stratified design was more statistically robust. The electroshock sampling program began in 2001 and is also currently ongoing. The electroshock program also uses a monthly random stratified sampling design with six estuaries as strata. The electroshock boat survey was designed to complement the trammel survey by sampling the low salinity brackish and tidal freshwater portions of estuaries where the trammel net program already sampled, but could not be used effectively. Past monitoring programs in either marine or freshwater portions of South Carolina's estuaries have not provided adequate coverage within a robust sampling design for the brackish/tidal freshwater zones. Many of the important recreational finfish species utilize these low salinity areas in South Carolina's estuaries and trammel nets couldn't be used in these areas because of limitations that included water depth, heavy current, and underwater debris.

The stop net was 368 m long and 2.4 m high with 50 mm stretch mesh. There were 150 sets made with the stop net at nine different sites. The majority of the net sets (65.1%) were made in 3 sites in the Charleston Harbor (Fig. 1) and two sites in Bulls Bay (29.4%) (Fig. 1). The remaining sets were made at two sites in the Port Royal estuary and the North Inlet estuary system. Although the mesh size of the stop net was different from the trammel net, the two

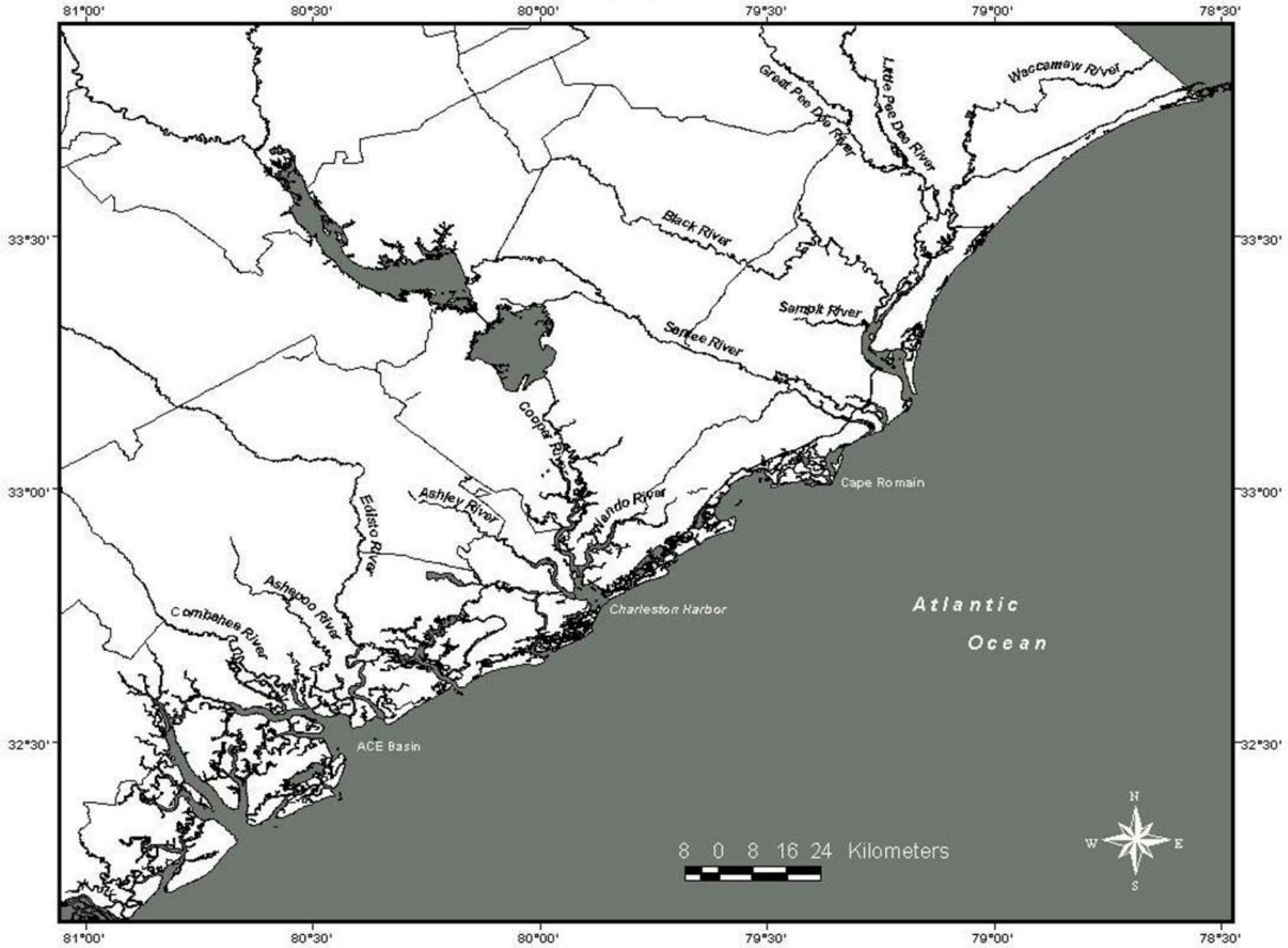
gears caught overlapping size ranges of many of the same species. The stop net was useful as a comparison to the trammel catches for species composition because of the overlap in sampling area (particularly in Charleston Harbor).

The trammel net was a 184 m long by 2.1 m deep with 177 mm outer mesh and 63 mm inner mesh. Seven different estuary systems were sampled for different time periods (Fig. 1). Charleston Harbor, Cape Romain, and the Wando River data sets had collections from January 1991 to December 2007. The Ashley River was sampled from 1992 through 2007, the ACE Basin was sampled from 1994 through 2007, the Cooper River was sampled from 1999 through 2001, and Winyah Bay was sampled from 2001 to 2007.

Since the electroshock boat could not enclose an area like the net gear, sampling followed a different protocol. Twenty to thirty sites within each estuary were determined suitable for sampling based on habitat type, and from these eight were chosen randomly for sampling each month. Sites consisted of quarter-mile long stretches of riverbank or marsh front that were sampled moving down-current for 15-20 minutes (approximate time it took to cover length of site). The estuaries and rivers sampled were the upper Winyah Bay, North Santee river, upper Cooper river, upper Ashley river, Combahee river, and the Edisto river (Fig. 1). The Edisto river was sampled as two different strata designated as the upper Edisto and the lower Edisto. The upper Ashley, upper Cooper, Edisto, and Combahee estuaries were sampled monthly from January 2001 through December 2007, the north Santee was sampled from 2001 to 2003 and upper Winyah Bay was sampled from 2003 to 2007.

All specimens collected from each gear type were sorted, counted, measured and/or weighed and then released. All of the recreationally important species (*Sciaenops ocellatus, Cynoscion nebulosis, Paralichthys lethostigma*) were measured regardless of how many were captured. By-catch species captured in large numbers were counted and a sub-sample of 25 specimens measured for length. Additionally, monthly sub-samples of a few species (*Cynoscion nebulosus* and *Paralichthys lethostigma*) from the trammel net catches were taken back to the laboratory for reproductive, age, and growth studies.

Fig. 1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