

FOOD WEB COMPARISONS FOR AREAS OPEN AND CLOSED TO COMMERCIAL SHRIMP TRAWLING IN CORE SOUND, NORTH CAROLINA

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Commercial fishing in Core Sound has been very important historically and economically to the small communities in Carteret County, North Carolina. Data from the North Carolina Division of Marine Fisheries (NCDMF) indicate that there were 23 different gear types utilized in Core Sound from 2001-2005, which removed 12.7 million pounds of fish, shrimp and shellfish valued at over \$14.3 million. However, the indirect effects of shrimp trawling (especially the removal of finfishes and crabs) can represent important anthropogenic impacts on aquatic ecosystems. We are studying such impacts in Core Sound to identify food web differences in areas that are open and closed to shrimp trawling. Field work was conducted at 12 stations (six open sites, six closed sites) during fall 2006, spring 2007 and fall 2007. A wide variety of methods (trawls, seines, gillnets, benthic cores, zooplankton tows, clam raking and surveys of birds, dolphins and turtles) were used to sample as many food web groups as possible, ranging from bacteria to birds. Preliminary biological data analyses indicate significant differences in biomass/m² for several benthic-feeding fish species (spot, pinfish and croaker biomass/m² greater in closed sites) and benthic invertebrate groups (polychaetes, crustaceans and bivalves biomasses/m² greater in open sites), which strongly suggest that a trophic cascade occurred: trawling has removed shrimp and finfish that consume benthic invertebrates. In addition, NCDMF data for other gear types (used for human predator groups) and from recent fishermen interviews have been included to incorporate humans into the food web models, thus emphasizing fisheries harvests. Using network analysis packages UCINet and NetDraw, we will present visualizations of feeding relationships for the groups represented in areas open and closed to shrimp trawling in Core Sound.