

APPENDIX N

TELEMETRY DATA SUMMARY (CAPE FEAR RIVER)

(Prepared by NC Division of Marine Fisheries)

NC DMF Telemetry Data Summary – Cape Fear River (prepared by NC DMF)

Since 2011, the North Carolina Division of Marine Fisheries has maintained an acoustic monitoring array of on average 30 Vemco VR2W receivers stationed throughout the lower Cape Fear basin (Figure 1.) to track the movements and migrations of acoustically tagged anadromous fish. The two lower most stations located at Bald Head Island and Caswell Beach (LOCF01, LOCF02 respectively), have overlapping detection ranges (up to 2.5 mi) and serve as a “gate” at the river mouth to record any tagged fish in that region of river (Figure 2). Between April 2011 and January 2014, 80 Atlantic sturgeon (*Acipenser oxyrinchus*) and 2 shortnose sturgeon (*Acipenser brevirostrum*) were captured and implanted with Vemco V16 acoustic transmitters in the Cape Fear River system. Using pooled detection data across project years, tagged sturgeon (*Acipenser spp.*) were detected by stations LOCF01 or LOCF02, nine out of twelve calendar months (Table 1). This pattern of presence / absence in the lower reaches of the Cape Fear is driven by the reproductive migrations and differences in seasonal habitat use of mature and sub-adult sturgeon. Two main peaks in sturgeon movement, spring immigration and fall emigration, are the primary periods in which fish are located at the river mouth (Figure 3.) Mature Atlantic sturgeon have been detected to enter the Cape Fear starting late Feb, and exiting out of the river by the end of May. Sub-adult Atlantic sturgeon have been detected to enter the river starting in March, with the last fish entering the system in May. Sub-adult Atlantic sturgeon then typically spend the summer months (June-Aug) in deep water stretches above the saltwater interface (north of Wilmington, NC), before starting to emigrate to the ocean in September. Sturgeon tagged within the Cape Fear River typically are only detected briefly (< 20mins) at stations LOCF01 or LOCF02, before moving out of the receiver range and being detected later up-river (migrating in) or deemed to have left the system (migrated out). However, several adult Atlantic sturgeon tagged by various research institutions along the east coast have also been detected over the course of several days between Sep-May at the river mouth, indicating that this area can host large fish from other systems during their extended coastal migrations.

Table 1. Presence of Sturgeon (*Acipenser spp.*) in the lower Cape Fear River based on pooled acoustic tag detections from April 2011, to January 2014. "X" indicates at least one tag detection at that station for that month.

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
LOCF01			X	X	X				X	X	X	X
LOCF02	X	X	X	X						X	X	X

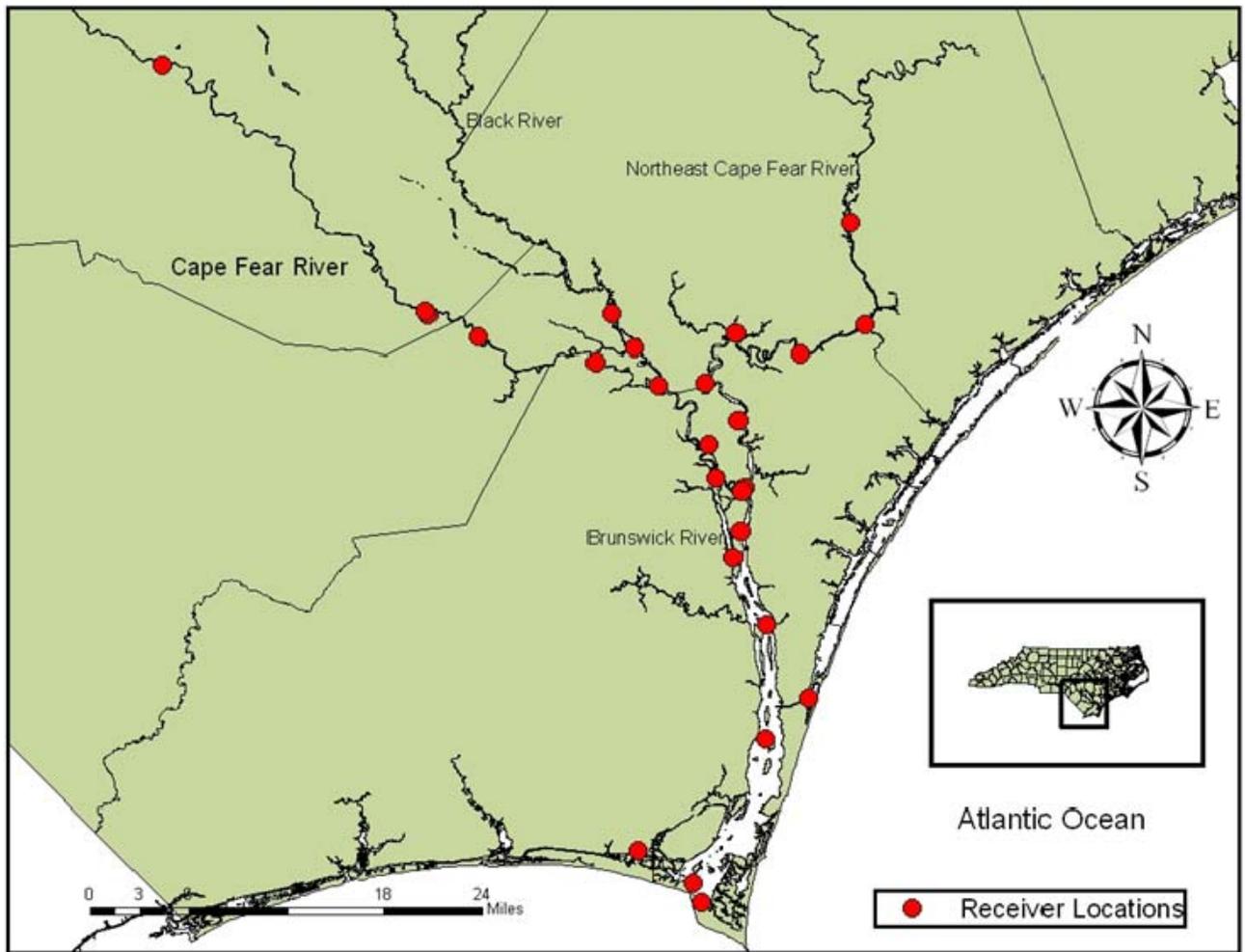


Figure 1. Acoustic monitoring stations within the Cape Fear system.

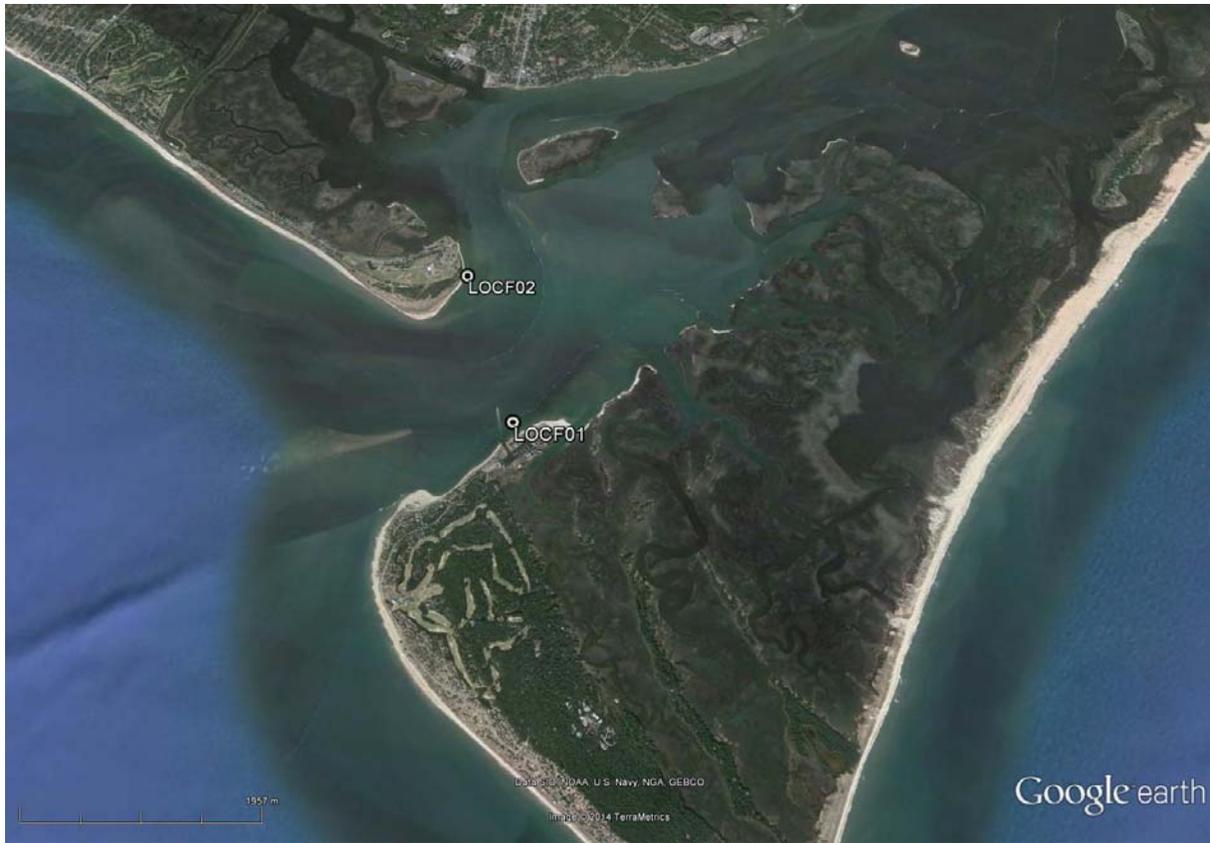


Figure 2. Satellite image showing the locations of acoustic receiver stations LOCF01 and LOCF02, which form the “gate” at the mouth of the Cape Fear River.

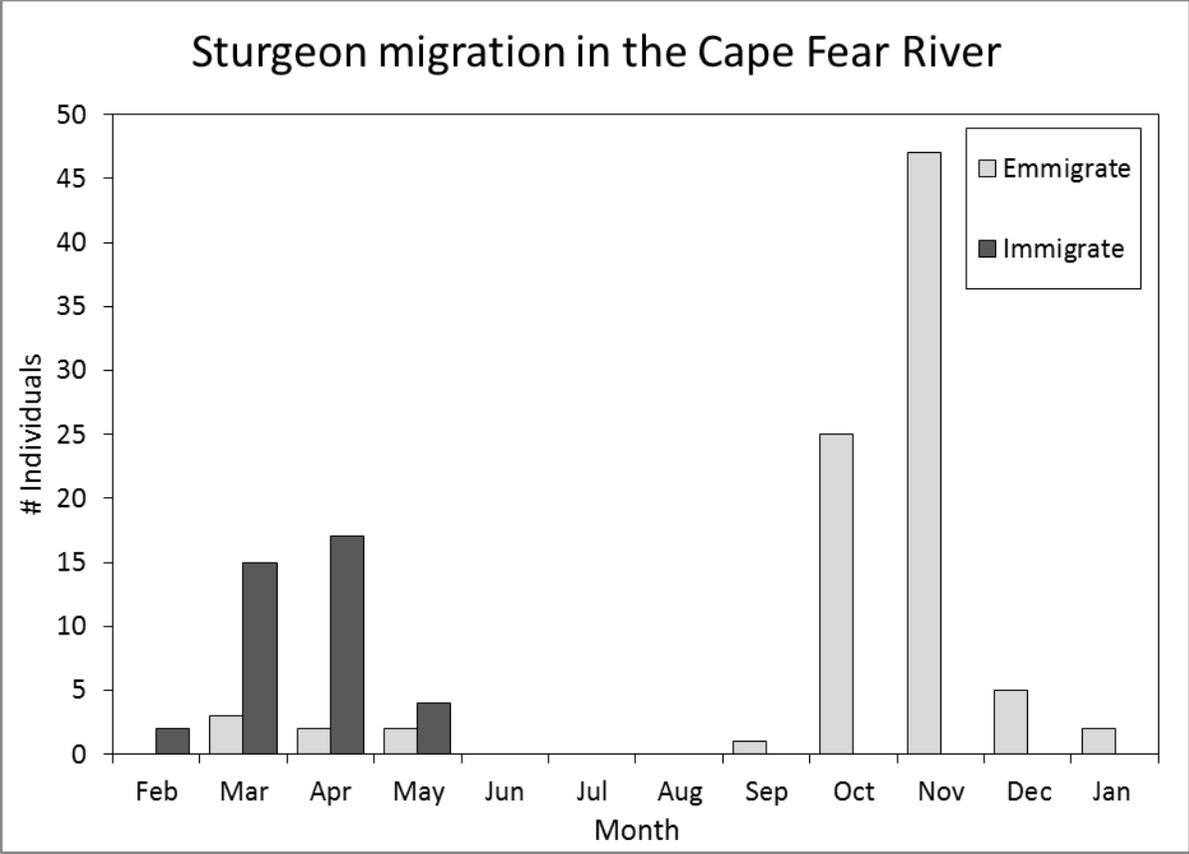


Figure 3. The number of individual sturgeon entering or leaving the Cape Fear River system pooled by month from April 2011 to Jan 2014.