VIMS Cobia Tagging Program

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SEDAR58-SID-11

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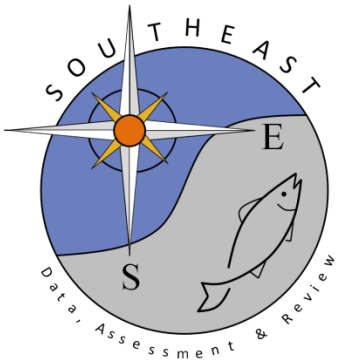

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VIMS Cobia Tagging Program – Working Paper for SEDAR58 Stock ID
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1 Intro

Cobia were tagged in the southern Chesapeake Bay during summer 2017. A small number of detections have been recorded from the community tracking network on the east coast. Five VR2W receivers were deployed in the Southern Chesapeake Bay.

2 Tagging

Cobia were tagged in the southern Chesapeake Bay during summer 2017. We were hoping to deploy 30 tags during the season. Kevin Weng made the decision, against the better judgment of colleagues, to wait until later in the summer to begin tagging, as late-tagged fish were less likely to be caught in the Bay, and more likely to still be alive to yield a full year migration cycle. The normal structure-associated phase that occurs late in the year, when we thought we would be able to access fish more quickly, did not happen in 2017. It appears the fish migrated out without showing a strong buoy-aggregation and bridge-piling aggregation period. As such, we were only able to tag 13 cobia (Table 1).

To date cobia have been detected inside the Chesapeake Bay (our receivers + Hilton/Fisher receivers, VIMS), at the mouth of the Chesapeake Bay and just outside the mouth of the Bay (US Navy array), off North Carolina (NCSU array), South Carolina (SCDNR array), and Cape Canaveral, FL (NASA array, Fig. 1). The other institutions graciously shared detections of our fish.

2.1 Departure of cobia from Chesapeake Bay

We believe that the tagging effort, combined with the Navy receiver coverage in and near the mouth of the Chesapeake Bay will allow us to determine the timing of arrival and departure to/from the Bay. Our preliminary results show that cobia abundance decreases strongly in September (Fig. 2). We assumed that cobia departed from the Bay when a cobia was detected outside of the Bay and was not detected back in the Bay. Cobia began their departure out of the Bay in late August and early September (Fig. 3 & Table 1).

2.2 Southern extent of migration

Our dataset will not be useful for at least another year, but one early result indicates that the GA-FL line may not be the southern boundary of the Atlantic stock. Two cobia were detected among receiver arrays deployed off North Carolina (1 cobia, NCSU), South Carolina (2 cobia, SCDNR), and Florida (1 cobia, NASA glider off Cape Canaveral) (Fig. 4). Although the detection of a single fish moving south of the present stock boundary (cobia detected in Florida) is not very useful, it merely indicates the potential that future data may be useful in determining the boundary and mixing zone (Fig. 5).

3 Receiver deployments

We established five receiver stations in the southern Chesapeake Bay, on the eastern shore side of the bay, which is presently not covered by any receivers. While these new receivers will be useful for understanding habitat use and fine scale movements of fishes, they will not, of course, be useful in determining the southern extent of cobia migration.

Tables & Figures

Table 1. Information on tagged cobia and associated detection metrics.

Tag ID	First Detection	Last Detection	Southermost Pt (Lat)	Southermost Pt (Long)	Date Tagged	TL (cm)	Time Last In	Time First Out
18426	7/14/2017 10:43	9/9/2017 12:34	36.713	-75.818	7/8/2017	68	2017-08-13 01	2017-08-13 09
18427	7/31/2017 22:21	8/28/2017 0:56	37.04074	-76.07132	7/8/2017	73	2017-08-28 00	NA
18428	8/13/2017 11:48	8/27/2017 21:06	36.93534	-75.95619	7/8/2017	66	2017-08-20 13	2017-08-27 21
18429	7/31/2017 10:57	9/13/2017 17:31	36.8741	-75.5253	7/8/2017	70	2017-08-28 18	2017-09-12 19
18430	8/1/2017 23:05	11/2/2017 6:07	32.69403	-79.52641	7/8/2017	71	2017-09-03 00	2017-09-12 02
18431	7/9/2017 5:37	12/5/2017 9:54	28.54107	-80.36561	7/8/2017	74	2017-08-28 04	2017-08-29 02
18432	9/5/2017 8:35	10/17/2017 20:04	36.81619	-75.75994	9/4/2017	118	2017-09-14 06	2017-09-14 09
18434	8/12/2017 14:07	9/24/2017 23:11	37.0574	-76.04637	7/22/2017	101	2017-09-24 23	NA
18436	7/31/2017 21:53	10/11/2017 20:19	36.713	-75.818	7/20/2017	79	2017-09-17 11	2017-09-17 13
18438	8/1/2017 11:12	9/7/2017 0:20	36.8072	-75.7432	7/22/2017	78	2017-08-30 22	2017-09-07 00
18440	9/4/2017 18:59	9/10/2017 11:48	36.94984	-76.02338	9/4/2017	84	2017-09-10 11	NA
18442	9/4/2017 16:51	9/13/2017 15:02	36.8135	-75.7014	9/4/2017	75	2017-09-08 19	2017-09-11 05
18443	7/31/2017 16:18	10/13/2017 20:39	36.94984	-76.02338	7/22/2017	68	2017-10-13 20	NA

Table 2. Receiver deployment information.

Station	Date Established	Deployment Timeline	State	Latitude	Longitude
CBLB23	2017-11-30	Year-round	Virginia	37.14461899	-76.15065002
CBLB29	2017-08-09	Year-round	Virginia	37.18611908	-76.1569519
CBLB34	2017-08-09	Year-round	Virginia	37.235569	-76.13414001
CBLB38	2017-08-09	Year-round	Virginia	37.29187012	-76.11208344
CBLBCY	2017-11-30	Year-round	Virginia	37.10070038	-76.11949921

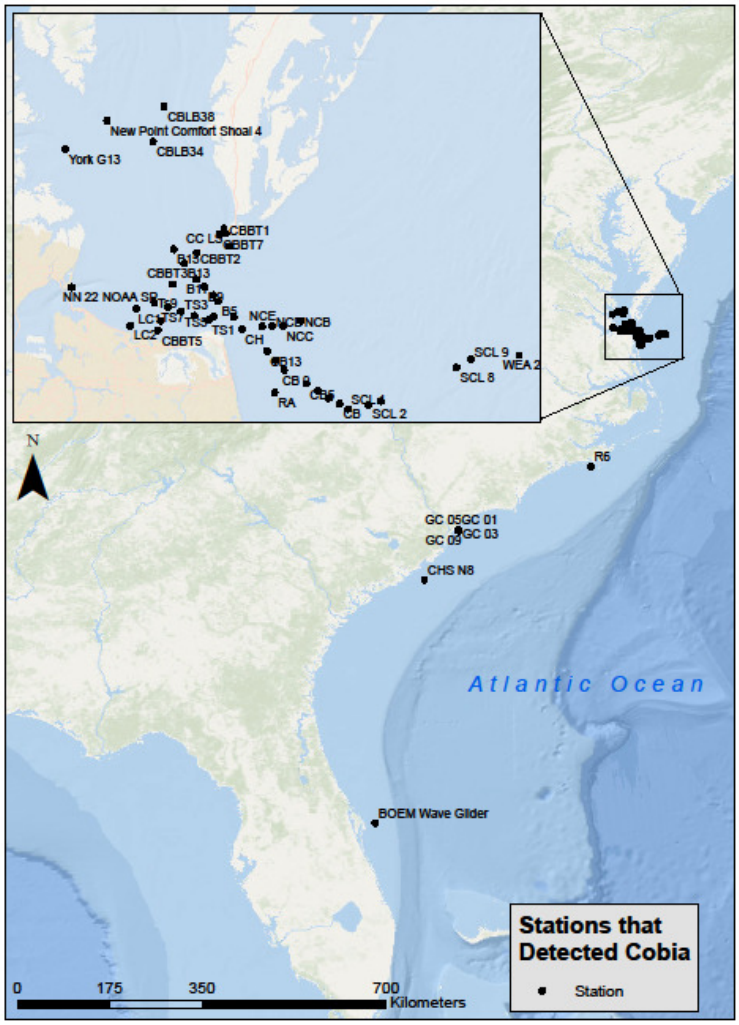

Figure 1. All stations along the U.S. East Coast that detected the 13 cobia tagged in the Chesapeake Bay by Weng's lab at VIMS.

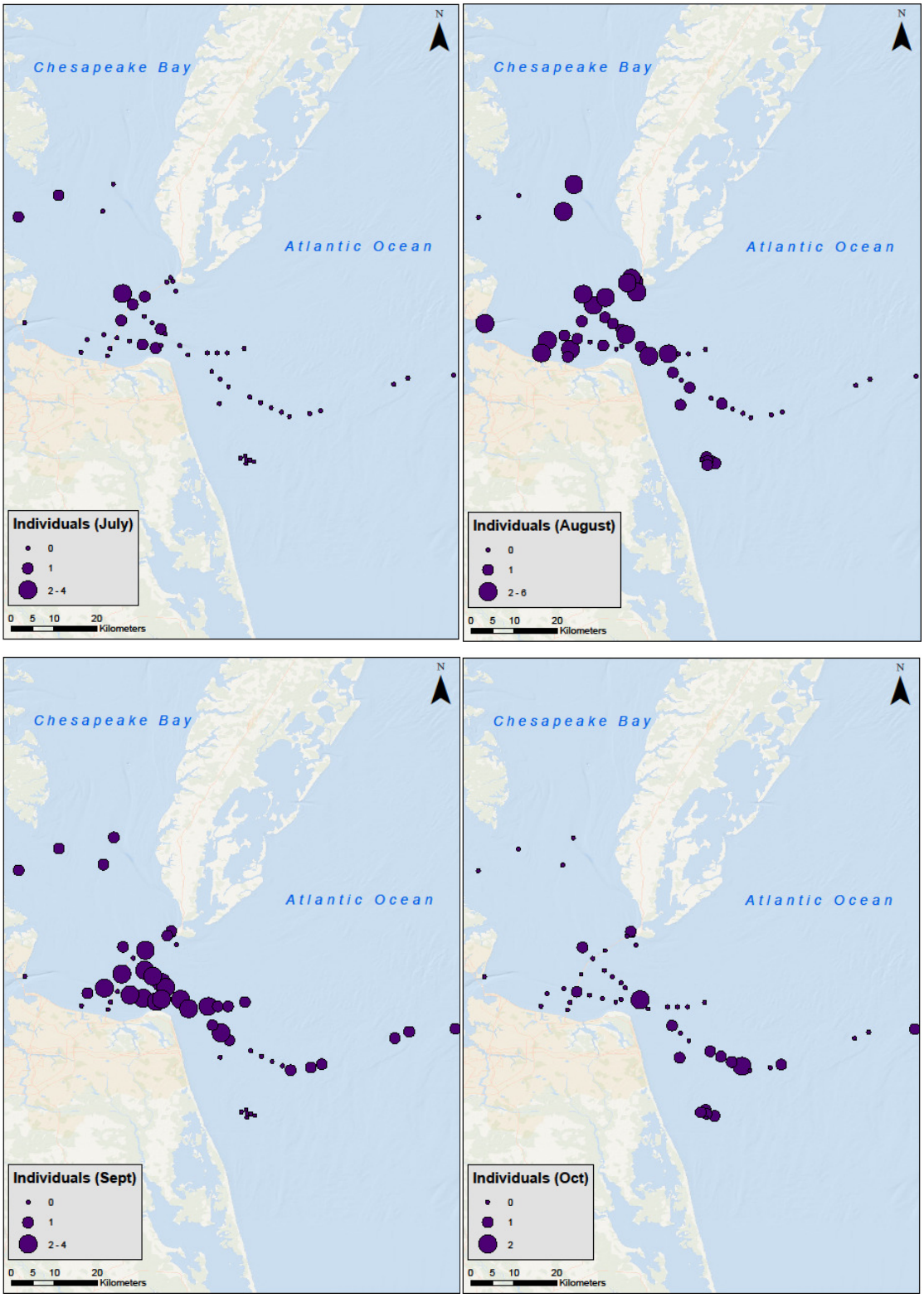

Figure 2. Number of cobia detected on receivers in and near the Chesapeake Bay from July – October 2017.

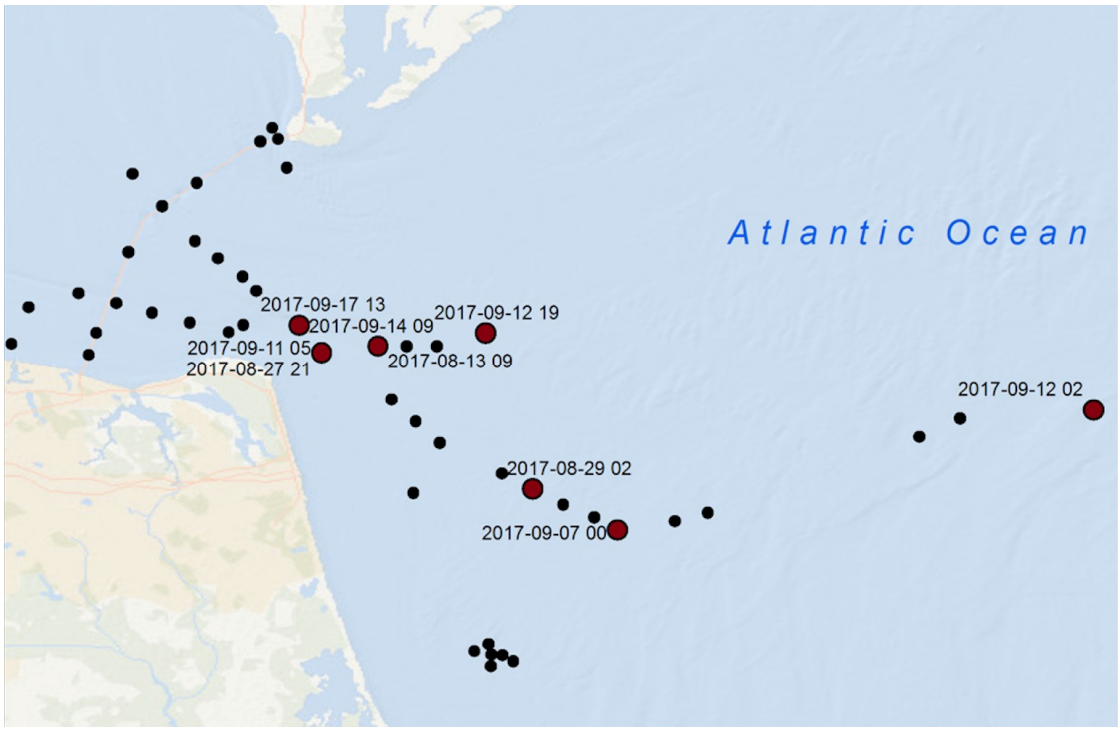

Figure 3. The dates of departure of 9 of the 13 tagged cobia. The red circles indicate the receiver station that it was detected on first once it departed from the Bay. Black circles indicate the other receiver stations.

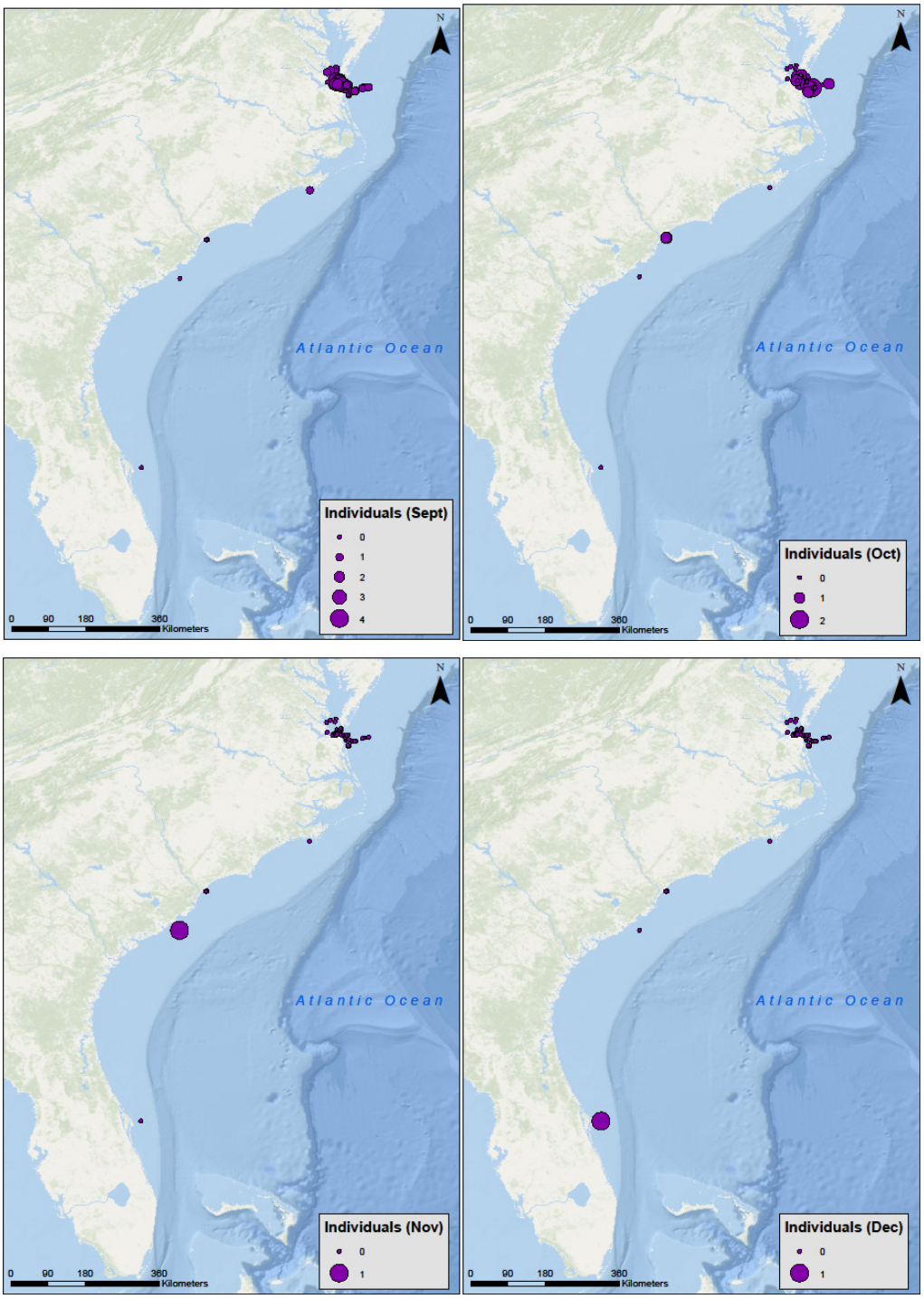

Figure 4. Number of cobia detected on receivers along the U.S. East Coast from September – December 2017.

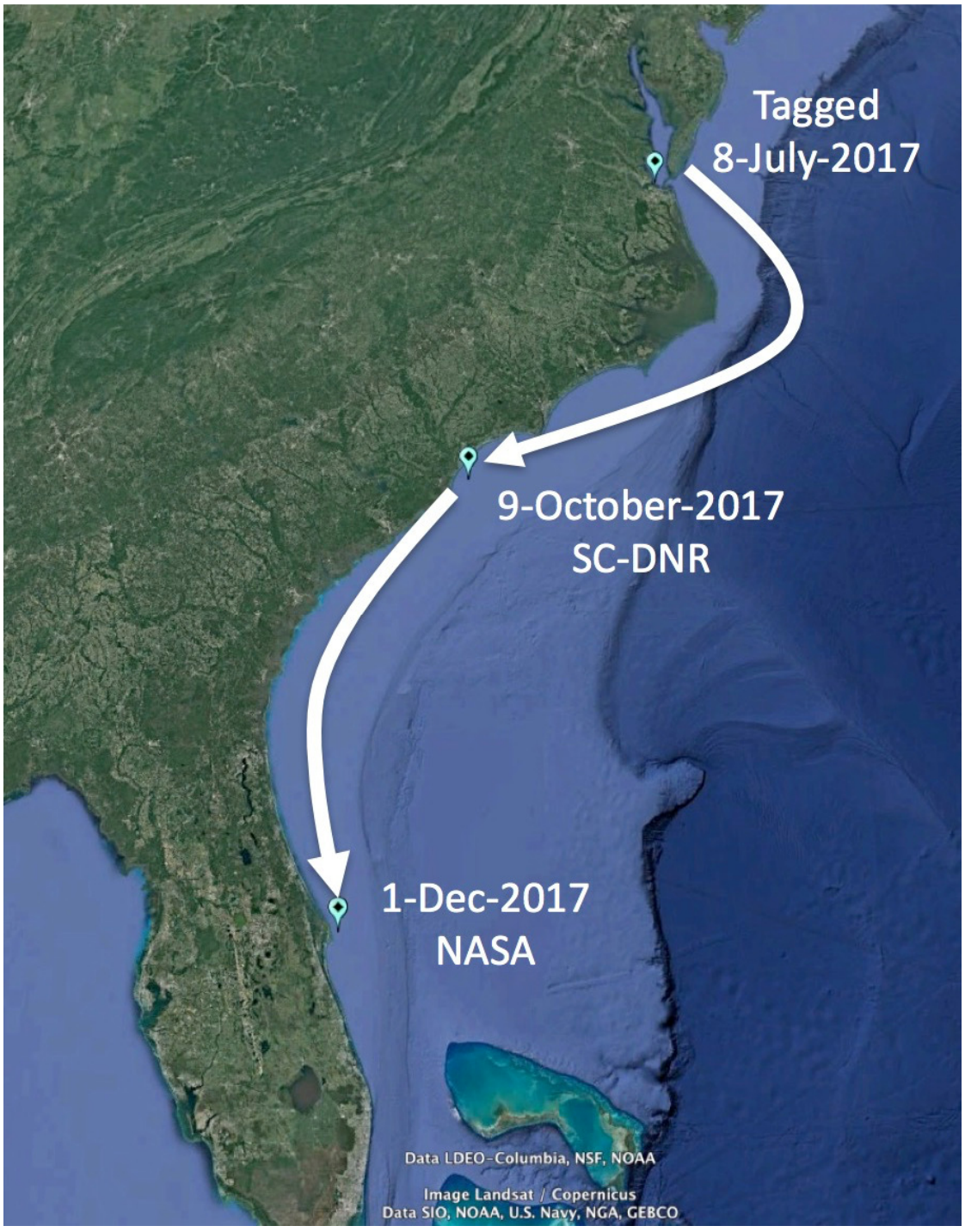

Figure 5. Migration of one cobia tagged in the Chesapeake Bay. Arrows do not show actual path, and are for illustration of direction only.