

THE ATLANTIC-WIDE RESEARCH PROGRAMME FOR BLUEFIN TUNA
(GBYP Phase 13)

Electronic tagging in North Carolina 2024

Draft Report

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Stanford University



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Introduction

The Stanford TAG-A-Giant (TAG) program has been a leader in electronic tagging of northern bluefin tuna for 28 years. Our team has used the data collected through this program to enhance our understanding of the spatial distribution of Atlantic bluefin tuna (*Thunnus thynnus*; ABT) with the goal of improving assessment models. A primary aim is to use these long-term spatial datasets to better quantify parameters necessary for effective management such as seasonal movement patterns and natural and fisheries mortality. By combining satellite tag data with multi-year acoustic records we can validate model assumptions and improve the accuracy of our mortality estimates. Additionally, genetic analysis of fin clips collected during the tagging can be used to validate stock-of-origin assignments based on visitation to a spawning ground.

The GBYP Phase 13 MOU with Stanford was approved by ICCAT in August 2023. The intention of this MOU was to carry out a tagging campaign off the coast of North Carolina. The MOU awarded 8 WC PATs. Four (4) of these tags were deployed in North Carolina in February 2024. The other 4 tags failed battery transmission tests and were returned to Wildlife Computers for warranty replacement.

Results: North Carolina 2024 tagging campaign

Table 1: Accounting of Phase 13 tags.

MOU	Tag Number	PTT	Status	Tag Type	Manufacturer
Phase 13	23P0372	244348	Returned to WC	PAT	Wildlife
Phase 13	23P0480	244350	Returned to WC	PAT	Wildlife
Phase 13	23P0483	244352	Returned to WC	PAT	Wildlife
Phase 13	23P0485	244353	Carolina	PAT	Wildlife
Phase 13	23P0491	244354	Carolina	PAT	Wildlife
Phase 13	23P0492	244355	Carolina	PAT	Wildlife
Phase 13	23P0536	244356	Carolina	PAT	Wildlife
Phase 13	23P0537	244357	Returned to WC	PAT	Wildlife

Table 2: Metadata pertaining to all ICCAT tags deployed in the North Carolina. (RS-Robbie Schallert)

Event ID	Tag Number	PTT	Tag Type	Date	Latitude	Longitude	CFL (cm)	Tagger	Pop Date	Rec Date	Status
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512400600	23P0485	244353	PAT	2/26/2024	35.19814	-75.1275	190	RS			Deployed
512401200	23P0492	244355	PAT	2/27/2024	35.55883	-74.7085	234	RS			Deployed
512401300	23P0491	244354	PAT	2/27/2024	35.554	-74.7145	218	RS			Deployed
512401400	23P0536	244356	PAT	2/27/2024	35.58	-74.6967	219	RS			Deployed

The 27-year tagging effort conducted by the TAG program off the coast of North Carolina has been critical to expanding our current understanding of spatial and temporal habitat usage of this region by all known stocks of Atlantic bluefin tuna (ABT). The mixing of the cold Labrador Current with the warm Gulf Stream creates an exceptional oceanographic feature, generating numerous eddies and current flows, concentrating prey along the temperature and chlorophyll breaks created by this interaction. This oceanographic hotspot is utilized as a feeding and transitory corridor by both stocks of ABT. Continued tagging in this region will further increase our understanding of the timing of these movements by the different stocks of ABT, allowing us to better inform fishery management. Weather was a limiting factor during this campaign, allowing only 5 days of fishing within this period of time. Fishing primarily occurred 20-40nm offshore, depending on where the fish were concentrating along the temperature and chlorophyll fronts. All fish were caught on the troll using fresh dead ballyhoo (*Hemiramphus brasiliensis*).

The North Carolina 2024 tagging campaign was conducted out of the Oregon Inlet Fishing Center, Hatteras Island, North Carolina. This tagging effort was conducted over 12 days (February 19th-March 1st). We deployed 4 tags from the 2023 MOU on ABT ranging from 190-234cm CFL (4 WC miniPAT 390's, Table 2).

Conclusion

The Phase 13 MOU has enabled Stanford University to maintain the continuity of this important western Atlantic tagging dataset that contributes management-relevant information into the ICCAT GBYP. The improved natural mortality estimates, stock-specific movement patterns, and insights into regional mixing dynamics have all been valuable to ABT management, especially for the development of the multi-stock M3 mixing model supporting the new Management Strategy Evaluation process. Future campaigns supported by ICCAT GBYP will continue to add critical spatial use and migration information from these important regions utilized by ABT.

Acknowledgments

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Tuna (GBYP), which is funded by the European Union, several ICCAT CPCs, the ICCAT Secretariat, and other entities (see <https://www.iccat.int/gbyp/en/overview.asp>). The content of this paper does not necessarily reflect ICCAT's point of view or that of any of the other sponsors, who carry no responsibility. In addition, it does not indicate the Commission's future policy in this area.