

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

Electronic tagging in The Gulf of St. Lawrence, Canada 2023

Draft Report

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Stanford University



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Introduction

Stanford University and Acadia University have been electronically tagging Atlantic bluefin tuna (ABT) in the Gulf of St. Lawrence (GSL), Canada, over the past two decades. 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 and Acadia was approved by ICCAT in August 2023. The intention of this MOU was to carry out a tagging campaign in the GSL. The MOU awarded 8 WC PATs. All 8 of these tags were deployed in the GSL in Fall 2023.

Results: Canada 2023 tagging campaign

Table 1: Accounting of Phase 13 tags.

MOU	Tag Number	PTT	Status	Tag Type	Manufacturer
Phase 13	23P0538	244358	Canada	PAT	Wildlife
Phase 13	23P0539	244359	Canada	PAT	Wildlife
Phase 13	23P0541	244360	Canada	PAT	Wildlife
Phase 13	23P0542	244361	Canada	PAT	Wildlife
Phase 13	23P0544	244363	Canada	PAT	Wildlife
Phase 13	23P0545	244364	Canada	PAT	Wildlife
Phase 13	23P0546	244365	Canada	PAT	Wildlife
Phase 13	23P0548	244366	Canada	PAT	Wildlife

Table 2: Metadata pertaining to all ICCAT tags deployed in the GSL. (BB–Dr. Barbara Block, RS-Robbie Schallert)

Event ID	Tag Number	PTT	Tag Type	Date	Latitude	Longitude	CFL (cm)	Tagger	Pop Date	Rec Date	Status
512301700	23P0545	244364	PAT	9/12/2023	45.92058	-61.6461	273	BB			Deployed

512302800	23P0548	244366	PAT	9/13/2023	45.92739	-61.6346	287	BB			Deployed
512303400	23P0546	244365	PAT	9/14/2023	45.92472	-61.644	268.5	BB			Deployed
512303700	23P0544	244363	PAT	9/15/2023	45.93431	-61.6432	290	BB			Deployed
512303900	23P0542	244361	PAT	9/19/2023	45.92206	-61.6481	258	BB			Deployed
512304200	23P0541	244360	PAT	9/24/2023	45.92008	-61.6498	281	BB			Deployed
512304300	23P0539	244359	PAT	9/24/2023	45.92494	-61.6521	290	BB			Deployed
512305100	23P0538	244358	PAT	9/28/2023	46.00184	-61.6055	262	RS			Deployed

The annual tagging campaign conducted by the TAG program for the past 15 years in the Gulf of St. Lawrence, based out of Port Hood, Nova Scotia has been vital to the understanding of the migration of ABT. Both historically recognized stocks, the western (spawning in the Gulf of Mexico) and the eastern (spawning in the Mediterranean Sea), mix in the Gulf of St. Lawrence during the late summer and early fall (August-November), utilizing the vast biomass of herring and mackerel found in the gulf during these months as critical forage for their long migration back to their respective spawning grounds. With a long-term focus on tagging in this region, the TAG program (with help from ICCAT GBYP and the Canadian Department of Fisheries and Oceans) is continuing to shed light on how these migration trends, and spatial usage of the Gulf of St. Lawrence by these two important stocks has changed over time. The continuity of this large, long-term data set is critical to providing important insight and useful data incorporation into the fishery management of ABT throughout the entirety of the north Atlantic.

The Canada 2023 tagging campaign was conducted out of Murphy’s Pond, Port Hood, Nova Scotia. We deployed 8 tags from the MOU during this trip (Table 2). This effort was accomplished over a three-week span (September 10th-October 1st). Our team again had a major hurricane make landfall in Nova Scotia during our tagging effort, which in turn scattered the herring off their spawning aggregations and created hard fishing conditions post-hurricane for a period of time. Fortunately, the ABT did not scatter as much as they had in 2022 and we were able to complete the tagging effort by the end of September.

Conclusion

The Phase 13 MOU has enabled Stanford University, in collaboration with Acadia 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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