THE ATLANTIC-WIDE RESEARCH PROGRAMME FOR BLUEFIN TUNA
(GBYP Phase 11 MOU 2)

Electronic tagging in La Gomera, Canary Islands 2022

Final Report

11 August 2023

The Ocean Foundation

This project is co-funded by the
European Union

Introduction

The Stanford Tag-A-Giant (TAG) program has been a leader in electronic tagging of northern bluefin tuna for 26 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 sued to validate stock-of-origin assignments based on visitation to a spawning ground.

Stanford/TAG, the Barcelona Zoo and Asociación Catalana de Pesca Responsible (ACPR) signed MOU 2 of GBYP Phase 11 with ICCAT in the spring of 2022. The intention of this MOU was to carry out a tagging campaign in the Canary Islands. The MOU awarded 14 WC PATs, 4 Lotek PSATs, and 3 Lotek archival tags. Ultimately only 6 WC PATs from this MOU were deployed in La Gomera in March and April 2022. Three (3) of the remaining WC PATs were transferred to an MOU between Exeter and ICCAT. The remaining 5 WC PATs were transferred to the Phase 12 MOU between Stanford, Fisheries and Oceans Canada (DFO) and ICCAT. The 3 Lotek archivals were deployed in North Carolina. The 4 Lotek PSATs failed to ship in time for this MOU and were also transferred to the Phase 12 MOU.

Results: 2022 tagging campaign in the Canary Islands and North Carolina

Table 1: Accounting of Phase 11 MOU 2 tags.

MOU	Tag Number	PTT	Status	Tag Type	Manufacturer
Phase 11 MOU 2	20P2912	215265	Deployed Canaries 2022	PAT	Wildlife
Phase 11 MOU 2	20P2916	215266	Deployed Canaries 2022	PAT	Wildlife
Phase 11 MOU 2	20P2921	215267	Deployed Canaries 2022	PAT	Wildlife
Phase 11 MOU 2	20P2947	215269	Deployed Canaries 2022	PAT	Wildlife
Phase 11 MOU 2	21P0416	220567	Deployed Canaries 2022	PAT	Wildlife
Phase 11 MOU 2	21P0420	220570	Deployed Canaries 2022	PAT	Wildlife

Phase 11 MOU 2	20P2942	215268	assigned to Phase 12, traded for 21P2268	PAT	Wildlife
Phase 11 MOU 2	21P0354	220554	transferred to Exeter MOU?	PAT	Wildlife
Phase 11 MOU 2	21P0355	220555	transferred to Exeter MOU?	PAT	Wildlife
Phase 11 MOU 2	21P0365	220557	transferred to Exeter MOU?	PAT	Wildlife
Phase 11 MOU 2	21P0406	220563	assigned to Phase 12, traded for 21P2272	PAT	Wildlife
Phase 11 MOU 2	21P0411	220566	assigned to Phase 12, traded for 21P2276	PAT	Wildlife
Phase 11 MOU 2	21P0419	220569	assigned to Phase 12, traded for 21P2277	PAT	Wildlife
Phase 11 MOU 2	21P0421	220571	traded for 21P2280 , then assigned to Phase 12	PAT	Wildlife
Phase 11 MOU 2	L231-1055		Deployed North Carolina 2022	Internal	Lotek
Phase 11 MOU 2	L231-1056		Deployed North Carolina 2022	Internal	Lotek
Phase 11 MOU 2	L231-1066		Deployed North Carolina 2022	Internal	Lotek
Phase 11 MOU 2	Unknown		Not received from Lotek, assigned to Phase 12	PAT	Lotek
Phase 11 MOU 2	Unknown		Not received from Lotek, assigned to Phase 12	PAT	Lotek
Phase 11 MOU 2	Unknown		Not received from Lotek, assigned to Phase 12	PAT	Lotek
Phase 11 MOU 2	Unknown		Not received from Lotek, assigned to Phase 12	PAT	Lotek

Table 2: Metadata pertaining to all ICCAT tags deployed in La Gomera. (RS-Robbie Schallert, PC-Pablo Cermeño)

Event ID	Tag Number	PTT	Tag Type	Date	Latitude	Longitude	CFL (cm)	Tagger	Pop Date	Rec Date	Status
512200100	20P2921	215267	PAT	3/25/2022	28.0908	-16.7797	230	RS, PC	2/19/2023		Popped Up
512200200	20P2947	215269	PAT	3/25/2022	28.0777	-16.7623	230		7/5/2022		Premature Release
512200300	20P2916	215266	PAT	3/30/2022	27.9543	-17.3124	269		2/24/2023		Popped Up
512200400	20P2912	215265	PAT	3/31/2022	27.9372	-17.2817	249	RS			Deployed
512200600	21P0420	220570	PAT	4/1/2022	28.0485	-17.448	276	RS	4/4/2022		Premature Release
512200700	21P0416	220567	PAT	4/2/2022	28.0942	-17.5119	260	RS			Deployed

The Canary Islands, located in the Atlantic Ocean off the northwest coast of Africa, are situated at a crossroads of major ocean currents, creating exceptional oceanographic conditions. Furthermore, the islands' complex topography, characterized by steep drop-offs and underwater ridges, contributes to the upwelling of nutrient-rich waters from the depths. Consequently, the Canary Islands are a gathering place for various marine species, including migratory giants like whales, dolphins, and ABT. ABT are concentrated mainly during Spring, supporting a small artisanal fishery. It is also a known hot spot for recreational anglers. We were able to use our collaboration with ACPR and the presence of recreational anglers to undertake this novel expedition.

From March 20 to April 3, 2022 our tagging team was in La Gomera. Unfortunately we suffered from bad weather and equipment issues, and were only able to fish for 6 days. Despite these challenges, 9 ABT were tagged, including 6 with WC PATs from this MOU.

Table 3: Metadata pertaining to all ICCAT tags deployed in North Carolina. (RS-Robbie Schallert)

Event ID	Tag Number	Tag Type	Date	Latitude	Longitude	CFL (cm)	Tagger	Rec Date	Status
512206800	L231-1055	LAT2310	12/14/2022	34.7833	-76.2664	180	RS		Deployed
512207400	L231-1056	LAT2310	12/17/2022	34.787	-76.2627	204	RS		Deployed
512207500	L231-1066	LAT2310	12/17/2022	34.7884	-76.2612	180	RS		Deployed

In December 2022, we continued our deployments in the USA in the state of North Carolina prior to the opening of the US commercial fishery. This was accomplished by partnering with sport fishers to electronically tag Atlantic bluefin tuna (*Thunnus thynnus*; ABT) with satellite and archival tags in the waters off Morehead City, NC. A total of 3 Lotek archival tags were deployed off the North Carolina coast at this time.

Conclusion

Phase 11 MOU 2 has enabled the TAG program, in collaboration with the Barcelona Zoo and ACPR 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

This work has been carried out under the ICCAT Atlantic-Wide Research Programme for Bluefin 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.