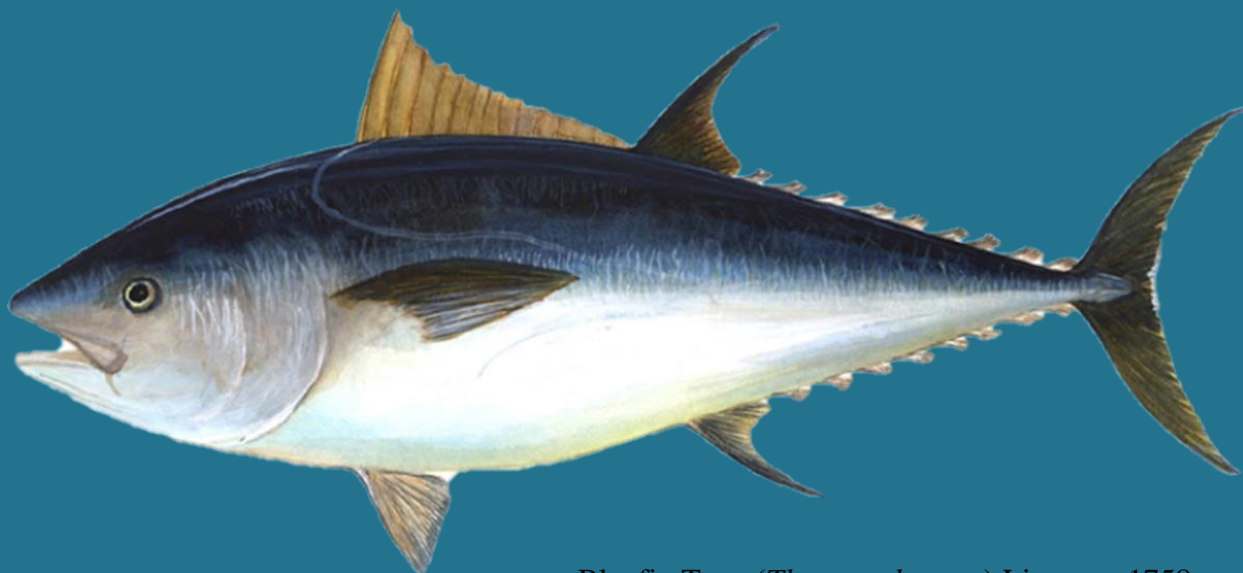


THE ATLANTIC-WIDE RESEARCH PROGRAMME FOR
BLUEFIN TUNA (GBYP Phase 11)

Final report on tagging activities in the Celtic
Seas Area 2021



Bluefin Tuna (*Thunnus thynnus*) Linnaeus 1758

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Marine Institute
Foras na Mara



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by the European Union

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1. Executive Summary of bluefin Tuna Satellite Tagging in Ireland, 2021

In June 2021, the Marine Institute responded to a call for a short term contract for the tagging programme 2021 (Area B) of the Atlantic Wide Research programme for bluefin Tuna ((ICCAT GBYP 2021-B, Phase 11) and were successful in this bid and received 9 satellite tags and associated funding for tagging activities and production of reports and information. An additional 14 satellite tags were made available by the Marine Institute.

Satellite tagging of Atlantic bluefin tuna was successfully carried out at the end of August and first two weeks of September 2021 with 14 individuals tagged and released with Wildlife Computers, pop-off satellite archival tags (PSAT) (Table 2) and numbered spaghetti tags. However, 2021 was a relatively poor year compared to the highly successful year of 2020. Presence and abundance of bluefin tuna in Irish waters was greatly reduced when compared to the previous tagging year of 2020, with a marked decrease in Catch Per Unit Effort by Irish bluefin angling vessels. Tagging of bluefin with the tags provided by ICCAT GBYP under ICCAT GBYP contract 07/2018-PHASE 8 and ICCAT GBYP 16/2019-B, Phase 9 was due to be carried in the later part of the season. However, scarcity of fish at that time compared to previous years resulted in the Marine Institute tagging team being unable to deploy the 9 satellite tags provided by ICCAT GBYP 06/2021, despite eight full day attempts to deploy these tags in the North-West and South of Ireland.

All tagging was carried out under an approved project licence from the Irish Health Products Regulating Authority (HPRA) with licenced and trained personnel. The Irish Sea Fisheries Protection Agency (SFPA) were made aware of the programme and identities of the vessels, skippers and scientific personnel and a derogation was obtained for scientific research fishing for a specified area and period. The Marine Institute have been included by ICCAT in the International Research Mortality Allowance (RMA). ICCAT also supplied ICCAT coded floy tags for identification of fish if recaptured at a later stage. An Invitation to supply quotes for the Supply of a Commercial/Recreational fishing vessel to tag bluefin tuna off the Coast of Ireland for the Marine Institute was issued in July 2021.

2. Introduction

Electronic tagging using archival tags by Block et al. (2005) highlighted the potential importance of the coast of Ireland and the UK as migratory routes for Atlantic bluefin tuna. A 191 cm fish tagged in waters off North Carolina showed trans-Atlantic migrations to the Mediterranean Sea and multi-annual site fidelity to waters off Ireland and the UK. This single track suggested that after a juvenile

foraging period in the west, Atlantic bluefin foraged in the waters of the east Atlantic off Ireland and then undertook migrations to the Balearics and other known Mediterranean spawning areas. Many other western released fish have moved into these waters (Block et al. 2005). The first dedicated electronic tagging activity off Ireland was conducted in 2003 and 2004 by a scientific team from Stanford University and An Bord Iascaigh Mhara - Irish Sea Fisheries Board (Cosgrave et al, 2008; Stokesbury et al. 2007). Tagging of fish in Irish waters demonstrated that Atlantic bluefin released in Irish waters travel between European foraging grounds, known eastern breeding regions (Mediterranean Sea; Malta) and western Atlantic waters. These data also highlighted a tentative link between bluefin caught off Ireland and western management regions. In addition, recent electronic tagging of ABFT off Scotland has shown local movements of Atlantic bluefin tuna around Scottish waters (Neat et al. 2014), to the north of Ireland, and further south. Given these insights it is important that stock of origin, habitat utilisation and large-scale movement patterns of these Atlantic bluefin are characterised in more detail to ensure that the population models and concepts used in Atlantic bluefin tuna stock assessment and Management Strategy Evaluation (MSE) are parameterised as accurately as possible.

Investigation of the distribution and movements of Atlantic bluefin tuna in Irish waters is now a research priority for Ireland. The ocean waters off south Donegal are currently regarded by the International Commission for the Conservation of Atlantic Tuna (ICCAT) as an important area for Atlantic bluefin tuna and indications are that significant numbers arrive in the area over the period August to November each year. The Department of Agriculture Food and the Marine (DAFM) requested that the Marine Institute carry out a bluefin tagging programme in autumn 2016 to support the International Commission for the Conservation of Atlantic Tuna (ICCAT) Grand Bluefin Year Programme (GBYP) Atlantic research programme for bluefin tuna.

ICCAT is an inter-governmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas. ICCAT compiles fishery statistics from its members and from all entities fishing for these species in the Atlantic Ocean, coordinates research, including stock assessment, on behalf of its members, develops scientific-based management advice, provides a mechanism for Contracting Parties to agree on management measures, and produces relevant publications. The Atlantic-wide research programme for bluefin tuna was officially adopted by the ICCAT Commission in 2008 with a key priority being to improve understanding of key biological and ecological processes through electronic tagging experiments to determine habitat and migration

routes. GBYP was adopted as official acronym of the research, which was initiated at the end of March 2010.

(ICCAT) manage Atlantic bluefin stocks under a two stock hypothesis for management and assessment i.e.

- Eastern Atlantic Ocean and Mediterranean Sea stock, that spawns in the Mediterranean Sea
 - Western Atlantic Ocean stock, that spawns in the Gulf of Mexico,
- with a boundary line dividing the stocks at 45 W longitude.

Results of Block et al. (2005) as well as tagging research by others including ICCAT and their collaborators indicates that movement across the currently assumed east-west boundary in the Atlantic, does occur. Scientists have used the spatial data to improve management models (Taylor et al. 2011, Kerr et al. 2016). ICCAT now recognises the need to develop quantitative knowledge of mixing rates and integrate this knowledge into the current assessments, as well as new models to improve the multiple stock evaluation processes.

The Mediterranean and Eastern Atlantic bluefin tuna (considered a single stock) is a highly regulated species with annual catch limits set by the International Commission for the Conservation of Atlantic Tunas (ICCAT) based on scientific advice.

The EC became a Contracting Party to ICCAT (the International Commission for the Conservation of Atlantic Tunas) in 1997. EU TACs and quotas for bluefin Tuna were set by Council for the first time at the December, 1997 meeting in order to implement ICCAT catch limits/TACs for these species. Ireland did not have a track record of targeting bluefin tuna and does not have a quota. Ireland has access to a by-catch “others” quota for MSs without a quota share to cover by-catches of BFT in commercial fisheries subject to certain conditions. Ireland has no quota to cover recreational fishing for BFT and has had no such quota since 1997. This tagging programme has been developed to improve understanding of the stock and migratory patterns.

In 2016, the Marine Institute obtained expert guidance from Stanford University (USA) and University of Acadia (Nova Scotia, Canada) to successfully tag and release 16 Atlantic bluefin tuna off the coast of Donegal with satellite tags to identify spawning stocks and the level of mixing of stocks in Irish waters. Training in application of satellite tags to bluefin was provided to staff of the Marine Institute by these international tagging experts as direct experience in handling and tagging these extremely large fish is essential for future Irish tuna research work. A consortium continued to tag bluefin tuna

off the Donegal coast over the period September to October 2017 and was expanded to include Queens University, Belfast, to investigate early behaviour and swim responses of bluefin tuna post capture and tagging. In total 9 fish were tagged with satellite tags and 3 fish tagged with accelerometer tags. The consortium works closely with ICCAT.

In 2018 and 2019, the Marine institute continued bluefin tuna tagging of the coast of Donegal over the period of August to November whilst continuing the partnership with Queens university Belfast as well as Trinity College Dublin to investigate post tagging behaviour of bluefin tuna. In total 24 tunas were tagged with PSATs and a further four with accelerometers in 2018 under ICCAT GBYP contract 07/2018-PHASE 8 and a total of 12 tuna were tagged similarly with satellite tags in 2019 as part of ICCAT GBYP 16/2019-B, Phase 9.

In 2020, the Marine Institute submitted an Expression of Interest to participate in GBYP Phase 10 e-tagging programme in collaboration with Dr. Barbara Block's team of Stanford University, for Area B of the Atlantic Wide Research programme for Bluefin Tuna (GBYP). This EoI was positively evaluated by the GBYP Steering Committee. The Marine Institute were awarded 17 LOTEK satellite tags while the Marine Institute provided 10 tags under the EU EMFF Sustainable Fisheries Programme. In total 27 tags were deployed in 2020.

2.1 Legislative/formal preparation:

Tagging was carried out under an Animal Welfare Licence (Project AE19121/P003 as required under Directive 2010/63 /EU and S.I. No. 543 of 2012).

ICCAT included the Marine Institute in the International Research Mortality Allocation (RMA) in 2018.

Derogation of fishing for bluefin Tuna fishing for the purposes of research was reviewed and granted from the Irish Sea Fisheries Protection Authority (Appendix I).

Owing to the Covid-19 pandemic, tagging operations in 2021 were carried out under Covid Operating Procedures (C.O.P.) as directed by the Irish Government. This included reduced numbers of scientists and personnel aboard the tagging vessels. Additionally, no anglers were permitted aboard during tagging trips with the vessels deckhand carrying out all fishing and set-up of fishing gear.

2.2 Financial preparation:

ICCAT provided 9 pop-off satellite archival tags under the MOU while funding for vessel time and Marine Institute support staff was provided for by the Marine Institute for deployment of the MOU tags. Marine institute satellite tags as well as vessel time and Marine Institute support staff were funded under the EMFF Sustainable Fisheries Programme up to September 2021.

In 2021, five experienced skippers were tendered and the contract was awarded to skippers of the Leah C (Northwest Ireland), a vessel which had previously been used for tagging bluefin tuna from 2016 to 2020, and the Radiance based on the Southern coast of Ireland a vessel licenced for bluefin tuna recreational angling and which had fished in 2020 and 2021 (Appendix II).

3. Tagging Locations and Methods

Pop-up satellite transmitting tags are designed to track the large scale movements and behaviour of pelagic fish and other animals. Depth, temperature and light-level data are used to estimate location. At a user-specified date and time, a pin is corroded, releasing the tag to float to the surface and transmit summarised information via the ARGOS satellite network. Daily longitude of the migration track, is calculated onboard the tag using geo-location by light level techniques. Daily latitude can be calculated from transmitted light level curves using software provided by the tag manufacturer. The results provide the migration path and depth and temperature preferences of the study animal, as well as oceanographic data, in the form of depth-temperature profiles.

All fish were tagged off the Donegal coast within sight of shore (Figure 1). Nine PSAT tags were provided by ICCAT GBYP program (Table 1) , whose codes and model are included in Table 1, while the Marine Institute provided fourteen more. Two vessels were used during the tagging period, the Leah C in Donegal (N.W. Ireland) and the Radiance in Cork (South Ireland). These vessels are equipped with transom doors to bring fish on board with specialized gear, fighting chairs to land the fish.

All fish were captured using angling methods and squid spreader bar lure setups with up to 11 separate plastic squid lures per rig. Only the last in the train bears a hook. Once the lure is taken the fish are

played to the boat as quickly as possible and landed through the transom door via a ramp using a lip hook technique developed by the Block lab (Block et al. 2001). On board, the team performed individual tasks e.g. placing of wet cloth over the eyes of the fish to keep the fish calm, constant irrigation of the gills with a hose pumping fresh saltwater, insertion of the PSAT into the dorsal musculature using a titanium tag dart with retention loop. Two other numbered marker tags (spaghetti tags) were also applied to aid in recovering information from tagged fish. Small samples of tissue were removed from the dorsal musculature and pectoral fin for genetic analyses. As rapidly as possible the fish were released back into the water. The on-board procedure takes approximately 2 to 4 minutes. Straight fork length and girth were recorded as well as comments on the fish appearance in general, the landing, tagging and release condition of the fish upon release. The GPS coordinates of hook-up as well as sea surface temperature and depth is noted and recorded. Details of tagging events are given in Table 2.

Presence of bluefin tuna off the coast of Ireland was markedly reduced when compared to 2020. The Marine Institute carried out 15 full day tagging trips from the 31st of August to the 23rd of November 2021. Thirteen Marine Institute tags were deployed over 6 days, between the 31st of August and 8th of September. The final Marine Institute tag was placed on a fish on the 4th of October (Figure 1). A further 8 days of tagging trips specifically for ICCAT GBYP PSATs were undertaken by the Marine Institute in October and November but no fish were caught and the tags were not deployed. Four days were spent aboard the *Radiance* (Baltimore, Cork) in coastal waters off Southern Ireland from the 4th to the 5th of November and from the 22nd to the 23rd of November (Figure 2). Bait-balls were noticeably smaller, more sporadic and when sampled by a number of tuna skippers contained a smaller size/year class of pelagic fish when conditions in the area during the 2020 season. Despite the presence of large numbers of seabirds and the appearance of some larger cetaceans (humpback and fin whales), no bluefin tuna were observed during the four days off aboard the *Radiance*. Four days were spent aboard the *Leah C* (Killybegs, Donegal) on Donegal Bay in Northwest Ireland over the period of the 6th of October to the 23rd of November (Figure 3). During these trips, taggers encountered few seabirds and cetaceans and similarly to southern Ireland, only highly sporadic minor bait-balls containing a younger year class fish. Throughout the whole season, bluefin tuna were observed much less frequently in the extended area skippers had typically encountered BFT during previous tagging seasons. Additionally, a national catch and release programme for conventional tagging which occurred prior to our satellite tagging campaign saw a significant decrease in Catch Per Unit Effort when compared to the 2020 campaign (programme for conventional tagging runs from the 15th of July to the 12th of November in the North West, West and South of Ireland). Nonetheless, no

significant problems were encountered during tagging operations and no modifications were made to the tagging protocols as outlined in the HPRA project licence. All fish which were tagged were released alive with satellite tags and conventional tags attached (Table 2). ICCAT data sheets containing details are included in Appendix III.

Table 1. Pop-off archival tags (PSAT) provided by GBYP (ICCAT) to the Irish Marine Institute for tagging in 2021 under MOU.

Number	PSAT Tag Code	Manufacturer	Model	Type	Owner	Year
1	L 330-3463	LOTEK	PSATGEO	PSAT	ICCAT GBYP	2021
2	L 330-3462	LOTEK	PSATGEO	PSAT	ICCAT GBYP	2021
3	L330-3455	LOTEK	PSATGEO	PSAT	ICCAT GBYP	2021
4	L330-3445	LOTEK	PSATGEO	PSAT	ICCAT GBYP	2021
5	WC 215267	Wildlife Computers	MiniPAT	PSAT	ICCAT GBYP	2021
6	WC 215266	Wildlife Computers	MiniPAT	PSAT	ICCAT GBYP	2021
7	WC 215265	Wildlife Computers	MiniPAT	PSAT	ICCAT GBYP	2021
8	WC 215268	Wildlife Computers	MiniPAT	PSAT	ICCAT GBYP	2021
9	WC 215269	Wildlife Computers	MiniPAT	PSAT	ICCAT GBYP	2021

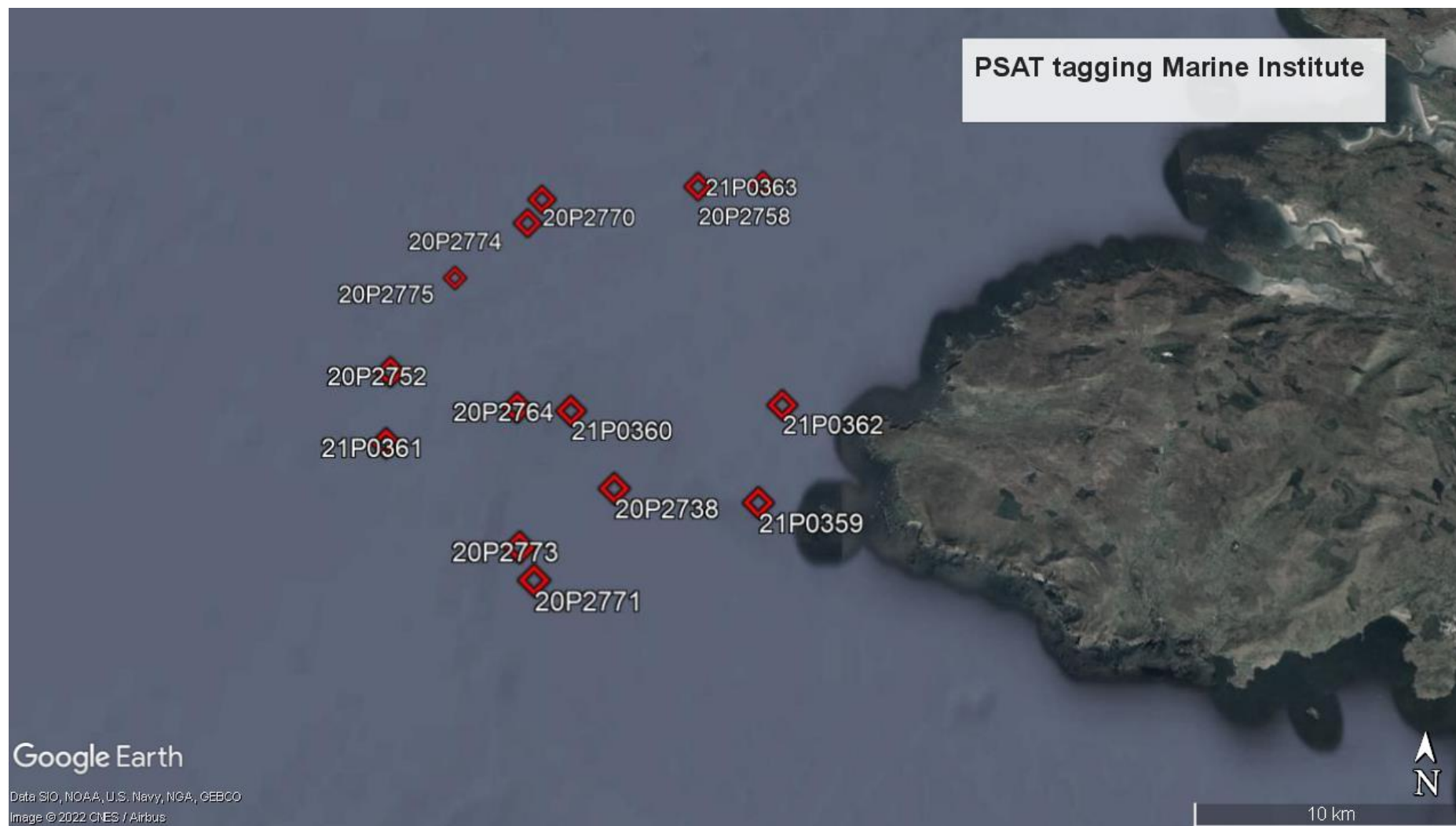


Figure 1. Marine Institute's PSAT tagging locations in Donegal Bay, North-West Ireland. Tagging took place from the 31st of August to the 4th of October 2021. A total of 7 trips were undertaken with the Leah C out of Killybegs, Donegal to tag 14 individual Bluefin tuna.

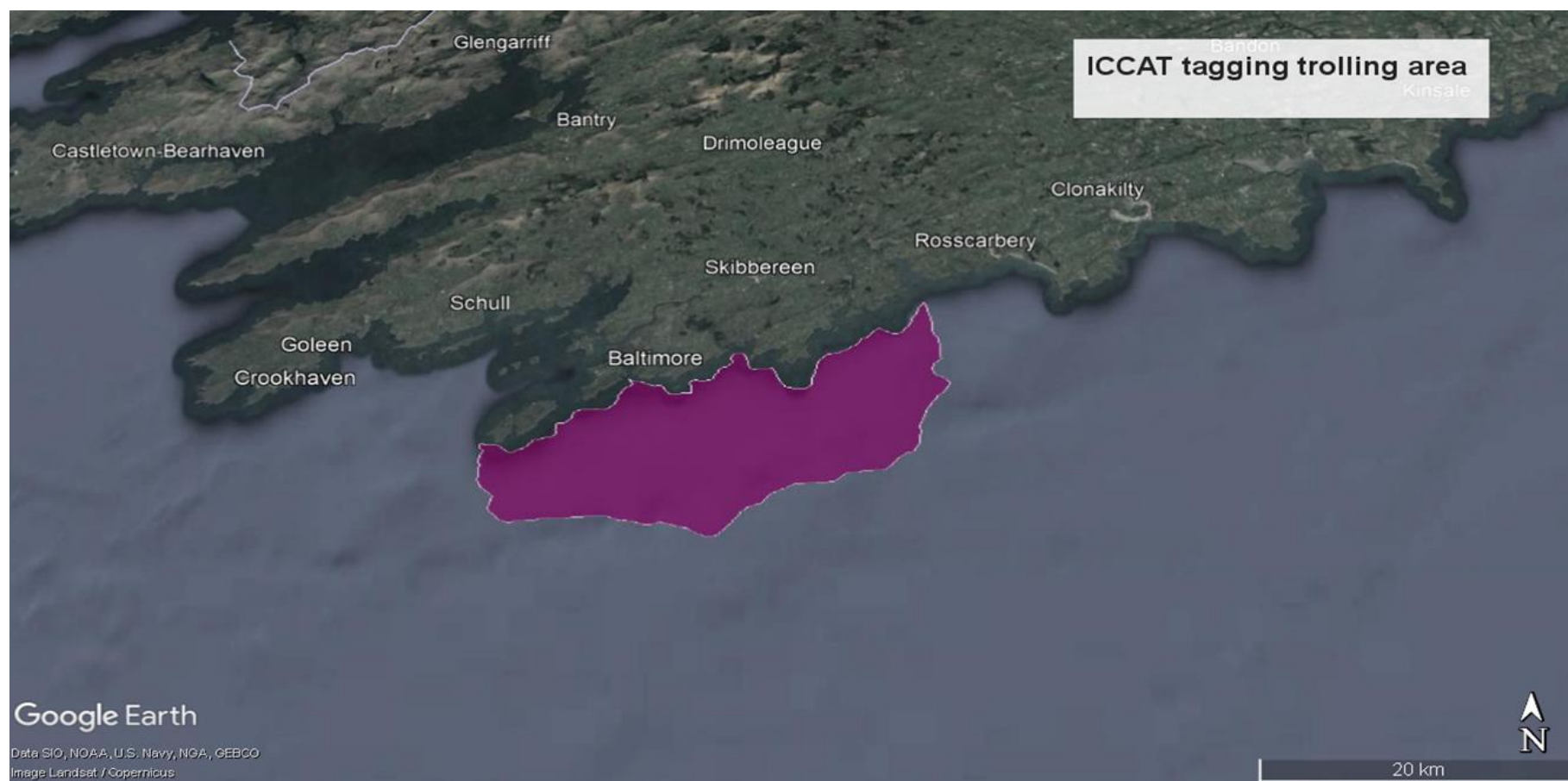


Figure 2. Trolling/ survey area (in purple) covered during attempted deployment of ICCAT tags in South-West Ireland (County Cork). Four days were spent aboard the Radiance (Baltimore, Cork) in coastal waters off Southern Ireland from the 4th to the 5th of November and from the 22nd to the 23rd of November.



Figure 3. Trolling/ survey area (in purple) covered during attempted deployment of ICCAT tags in North-West Ireland County Donegal. Four days were spent aboard the Leah C (Killybegs, Donegal) on Donegal Bay in Northwest Ireland over the period of the 5th of October to the 23rd of November. Red markers denote Marine Institute PSAT tagging events (n=14) (31/08 to 04/10/2021).

Table 2. Tagging details for bluefin Tuna tagging in Ireland 2021

PSAT Tag Code	PTT No	1st Floy Tag	2nd Floy Tag	Tagging Date	Tagging Time (24H)	Latitude	Longitude	SFLength cm
21P0363	220980	BYP30810		31/08/2021	10:42	54 35.920	8 46.389	209
21P0362	220979	BYP030809		31/08/2021	11:32	54 35.440	8 48.211	202
20P2775	215341	BYP90824		31/08/2021	12:39	54 36.576	8 51.847	176
21P0359	220976	BYP257597		01/09/2021	13:29	54 33.415	8 47.106	195
20P2774	220978	BYP30823	BYP79144	02/09/2021	12:23	54 36.670	8 53.563	208
21P0361	215334	BYO027596	BYP77533	02/09/2021	13:49	54 36.991	8 54.766	229
20P2758	215340	BYP030817	BYP079107	02/09/2021	09:53	54 35.803	8 49.376	229
20P2752	215333	BYP30816	BYP79106	04/09/2021	11:12	54 33.596	8 57.605	227
20P2764	215335	BYP03818	BYP79108	04/09/2021	12:17	54 34.486	8 57.293	172
20P2770	215336	BYP30819	BYP79109	04/09/2021	12:48	54 34.833	8 56.354	200
20P2771	215337	BYP30820		07/09/2021	N/A	54 37.060	8 56.270	196
20P2738	215332	BYP30815		07/09/2021	N/A	54 35.310	8 54.230	212
20P2773	215339	BYP30822		08/09/2021	N/A	54 36.164	8 57.250	225
21P0360	220977	BYP27595		04/10/2021	10:20	54 34.483	8 56.226	217

4. Results and possible recommendations for adjusting the tagging strategy in future

Phases of ICCAT GBYP

Long term retention of satellite tags is essential to obtain the best value for money as well as the most complete information on the migration and behaviour of bluefin tuna. It is essential to have operators who have tagged bluefin tuna with satellite tags on board at all times. Training of new taggers operators should be under strict control and be supervised by experts with at least two years of tagging bluefin tuna experience. Only limited numbers of tags should be placed by newly trained taggers.

Fish for satellite tagging should be brought to the boat as quickly as possible to avoid exhausting the fish. Hand-lining or retrieving the fish with the rod in the rod holder can assist with bringing the fish in quickly (Figure 4). Tagging of the fish while still in the water alongside the boat would be advantageous in terms of eliminating much of the stress associated with tagging on board, provided the tag could be deployed quickly and easily. However, it is not possible to do this in all sea conditions and therefore, the presence of a transom door and ramp on the vessel is essential in order to avoid lifting the fish excessively onto the boat. Sufficient space is needed to be able to turn the fish and release it head first after tagging. Lip-hooking and bringing the fish on-board is also an operation which needs to be taught by experienced operators.

Types of anchor and tethering materials are crucial. Titanium anchors should not be too sharp to avoid them pulling out of the muscle too quickly. The use of a retention loop and a second anchor is highly recommended.



Figure 4. Bluefin tuna being played into the boat quickly using the rod rest to avoid stress; tagging procedure on board. Note constant irrigation of gills with fresh seawater during tagging and subsequent sampling of tissues for genetic stock identification. (Figure not to be reproduced without permission).

5. References

Block, B. A. *et al.* (2005) Electronic tagging and population structure of Atlantic bluefin tuna. *Nature* **434**: 1121-1127.

Cosgrove *et al.* (2008) bluefin Tuna Tagging in Irish Waters. Fisheries Resource Series, Bord Iascaigh Mhara (Irish Sea Fisheries Board), Dun Laoghaire, Ireland. Vol. 6, 2008, 16pp. ISSN 1649-5357 ISBN 1-903412-29-3.

Kerr, L, A; Cadrin, S.X; Secor, D.H; and Taylor N.A (2016) Modeling the implications of stock mixing and life history uncertainty of Atlantic bluefin tuna; *Canadian Journal of Fisheries and Aquatic Sciences*, 2017, 74(11): 1990-2004, <https://doi.org/10.1139/cjfas-2016-0067>

Neat, F., Horton, T. & Campbell (2014) Atlantic bluefin tuna movements in the high latitudes of the NE Atlantic: Initial results from satellite tagging west of Scotland. POLSHIFTS, April 2015, Marine Research Institute of Iceland.

Stokesbury, M. J. W. *et al.* (2007) Results of satellite tagging of Atlantic bluefin tuna, *Thunnus - thynnus*, off the coast of Ireland. *Hydrobiologia* **582**: 91-97 (TAG & Stanford).

Taylor NG, McAllister MK, Lawson GL, Carruthers T, Block BA (2011) Atlantic bluefin Tuna: A Novel Multistock Spatial Model for Assessing Population Biomass. *PLoS ONE* 6(12): e27693. doi:10.1371/journal.pone.0027693

6. Acknowledgements

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Appendix I Derogation to conduct scientific research fishing 2021



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09th August 2021

DSR 03/2021

Dr Niall Ó'Maoileidigh
Marine Institute
Ireland

DEROGATION TO CONDUCT FISHING FOR SCIENTIFIC RESEARCH "LEAH C" & "RADIANCE"

Dear Dr Ó'Maoileidigh

Please note that the Sea-Fisheries Protection Authority is pleased to agree to your request for a specific derogation to conduct fishing for scientific research subject to compliance with the terms outlined below:

Type of survey: "A research consortium has been formed comprising the Marine Institute, Stanford University (USA) and Trinity College Dublin. The consortium will aim to tag up to 30 Atlantic bluefin tuna (ABFT) with electronic/satellite archive tags and conventional tags in the coastal waters of the South and North West of Ireland between August and November 2021. The tags are supplied by the International Commission for the Conservation of Atlantic Tuna (ICCAT) and the Marine Institute. The consortium will also undertake biological sampling of fin and muscle tissue. All fish will be released back to the water".

Vessel Details Area 1: Name: Leah C (Angling Charter vessel).

Area coverage: ICES Areas 6a, 7b & 7a.

Vessel master: Michael Callaghan

Period between 10 August and 30th November 2021.

Vessel Details Area 2: Name: Radiance (Angling Charter vessel).

Area coverage: ICES Areas 7j, 7g & 7b.

Vessel master: Kieran Collins

Period between 10 August and 30th November 2021.

Target Species: Bluefin tuna (*Thunnus thynnus*)

Scientific Staff: **Scientific staff:** Dr. Niall Ó Maoiléidigh and Marine Institute staff along with colleagues from Stanford University (Robbie Schallert) and Prof. Nicholas Payne, Trinity College Dublin (at least two trained scientific personnel on board at all times during tagging).

Finally, I would like to wish you and your team every success with the project.

Christopher Neely

Sea-Fisheries Operations Manager

cc: [Naval Service, SFPA-SMT, SFPA-Senior Port Officers, European Commission]

Appendix II Invitation to Tender for Tagging Vessel

In 2021, Quotes were sought from 5 skippers with previous experience in tagging bluefin tuna and which had confirmation of Public Liability Insurance, valid Safety Certificate for vessels; confirmation that the required Safety Equipment is on board; valid Tax Clearance Certificate and minimum Vessel Technical Specification, whereby vessels must:

- a. be at least 8 meters in length.
- b. have a range of at least 20 miles offshore
- c. have a stern door with removable slide or chute
- d. space for at least one experienced anglers
- e. space for up to 5-person scientific tagging team
- f. be experienced in offshore angling operations
- g. be able to stay at sea for at least 12 hours
- h. have previous experience with catching bluefin Tuna

Quotations were evaluated by scientific staff of the Marine Institute.

Bluefin Tuna Vessel Charter 2021 –

Sample quotation request No. 1 - Lot North West Coast

Dear,

The Marine Institute is continuing its bluefin Tuna tagging programme during the 2021 season. The Institute is seeking quotations for the supply of a suitable vessel on the **North West Coast of Ireland** for **10 days** from the beginning of July until mid-November 2021. The vessel will be required to have a stern door with removable slide or chute, have space for up to 5 person scientific tagging team and have a range of at least 20 miles offshore.

The Institute will also require the vessel owner to have Public Liability insurance of not less than €2.6 million and Employers Liability of €13 million, a Valid **Safety Certificate** for vessels and the skipper has a current Atlantic bluefin Tuna Angling Authorisation.

If you are interested your quotation should be forwarded to me by return email. Please include VAT if you charge it.

Regards,

Sample quotation request No. 2 for bluefin Vessel Charter 2021 – Lot 2 South Coast.

Dear,

The Marine Institute is continuing its bluefin Tuna tagging programme during the 2021 season. The Institute is seeking quotations for the supply of a suitable vessel on the **South Coast of Ireland** for **10 days** from the beginning of July until mid-November 2021. The vessel will be required to have a stern door with removable slide or chute, have space for up to 5 person scientific tagging team and have a range of at least 20 miles offshore.

The Institute will also require the vessel owner to have Public Liability insurance of not less than €2.6 million and Employers Liability of €13 million, a Valid **Safety Certificate** for vessels and the skipper has a current Atlantic bluefin Tuna Angling Authorisation.

If you are interested your quotation should be forwarded to me by return email. Please include VAT if you charge it.

Regards.

Annex III. TG03-EleTReRc_Ireland_BFT_2021 ICCAT electronic report document for 2021 bluefin tuna tagging Ireland

Specimen identifier (unique)			Tagging															Time strata		Geographical strata			Fishing operation				
			RC	Electronic 1				Electronic 2				Conventional 1			Conventional 2			Date	Time	Latitude	Longitude	Area Description	Vessel ID	Gear code	School type	Survey name (acronym)	Depth (m)
ID	Species code	Sex code	RC	Stage code	Tag type	Tag color	Manufacturer	Tag Code	Tag type	Tag color	Manufacturer	Tag Code	Tag type	Tag color	Tag Code	Tag type	Tag color	yyyy-mm-dd	hh:mm	dd°mm.mm	ddd°mm.mm[NS]	text (100)	Vessels	T05	T06	text (15)	integer
integer	T01	T02	T03		T21	T22	text		T21	T22	text	OTH	T21	T22	XX999999	T21	T22	25/08/2007	08:45	15.12345	-17.01333	n/a		T05	T06	text (15)	integer
1	BFT	M	RC1	06AF0001	POP-UP	grn		06AF0001	POP-UP	grn		SS004051	STWT	grn	SS004051	STWT	grn	31/08/2021	10:42	54 35.920	8 46.389	Donegal, Ireland	1	PS	FAD	CIV-ETRO005	1000
1	BFT	U	R-1	21P0363	POP-ARC	gra	Wildlife Computers					BYP30810	ST-DART1	yel	BYP79100	ST-DART2	yel	31/08/2021	10:42	54 35.920	8 46.389	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
2	BFT	U	R-1	21P0362	POP-ARC	gra	Wildlife Computers					BYP030809	ST-DART1	yel	BYP77534	ST-DART2	yel	31/08/2021	11:32	54 35.440	8 48.211	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
3	BFT	U	R-1	20P2775	POP-ARC	gra	Wildlife Computers					BYP90824	ST-DART1	yel	BYP79146	ST-DART2	yel	31/08/2021	12:39	54 36.576	8 51.847	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
4	BFT	U	R-1	21P0359	POP-ARC	gra	Wildlife Computers					BYP257597	ST-DART1	yel	BYP77531	ST-DART2	yel	01/09/2021	13:29	54 33.415	8 47.106	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
5	BFT	U	R-1	20P2774	POP-ARC	gra	Wildlife Computers				2ND FLOY BYP79144	BYP30823	ST-DART1	yel		ST-DART2	yel	02/09/2021	09:53	54 35.803	8 49.376	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
6	BFT	U	R-1	21P0361	POP-ARC	gra	Wildlife Computers				BYP77533	BYO027596	ST-DART1	yel		ST-DART2	yel	02/09/2021	12:23	54 36.670	8 53.563	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
7	BFT	U	R-1	20P2758	POP-ARC	gra	Wildlife Computers				BYP079107	BYP030817	ST-DART1	yel		ST-DART2	yel	02/09/2021	13:49	54 36.991	8 54.766	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
8	BFT	U	R-1	20P2752	POP-ARC	gra	Wildlife Computers				BYP79106	BYP30816	ST-DART1	yel		ST-DART2	yel	04/09/2021	11:12	54 33.596	8 57.605	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
9	BFT	U	R-1	20P2764	POP-ARC	gra	Wildlife Computers				BYP79108	BYP03818	ST-DART1	yel		ST-DART2	yel	04/09/2021	12:17	54 34.486	8 57.293	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
10	BFT	U	R-1	20P2770	POP-ARC	gra	Wildlife Computers				BYP79109	BYP30819	ST-DART1	yel		ST-DART2	yel	04/09/2021	12:48	54 34.833	8 56.354	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
11	BFT	U	R-1	20P2771	POP-ARC	gra	Wildlife Computers					BYP30820	ST-DART1	yel	BYP79110	ST-DART2	yel	07/09/2021	N/A	54 37.060	8 56.270	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
12	BFT	U	R-1	20P2738	POP-ARC	gra	Wildlife Computers					BYP30815	ST-DART1	yel	BYP79105	ST-DART2	yel	07/09/2021	N/A	54 35.310	8 54.230	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
13	BFT	U	R-1	20P2773	POP-ARC	gra	Wildlife Computers					BYP30822	ST-DART1	yel	BYP79141	ST-DART2	yel	08/09/2021	N/A	54 36.164	8 57.250	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A
14	BFT	U	R-1	21P0360	POP-ARC	gra	Wildlife Computers					BYP27595	ST-DART1	yel	BYP77532	ST-DART2	yel	04/10/2021	10:20	54 34.483	8 56.226	Donegal, Ireland	1	TROL	FSC	IRELAND 2021	N/A