

Tuna CHART 2024 Report



**An Roinn Comhshaoil,
Aeráide agus Cumarsáide**
Department of the Environment,
Climate and Communications



**An Roinn Talmhaíochta,
Bia agus Mara**
Department of Agriculture,
Food and the Marine

Wögerbauer C, Maxwell H, Drumm A, Waters C, and Roche WK 2025. Report on Ireland's Atlantic bluefin tuna catch, tag and release data collection programme 2024. Ireland's Tuna CHART Programme Report. Inland Fisheries Ireland, Dublin. 21pp.

Table of Contents

1.	Introduction.....	3
2.	Methods	4
	2.1 Skipper authorisation and training	4
	2.1 Tiered Pilot Study for new methods.....	5
	2.2 Additional Control Measure.....	8
	2.3 Updated Legislation.....	8
	2.4 Protection.....	8
	2.5 Data	9
3.	Results	10
	3.1 Overview	10
	3.2 Fishing Effort	10
	3.3 Tagging Results	11
	3.4 Size Distribution.....	13
	3.5 Satellite Tagging.....	14
	3.6 Observer Programme	14
	3.7 Angling and Handling Trends.....	14
	3.8 Reporting procedures	15
	3.9 Tiered pilot angling gear study.....	15
4.	Discussion	17
5.	References	20

1. Introduction

In 2018, the International Commission for the Conservation of Atlantic Tunas (ICCAT) permitted countries in the North-East Atlantic without an Atlantic bluefin tuna (ABFT) quota to authorise a limited number of sport vessels to target bluefin tuna with the purpose of data collection, through angling “tag and release”, without the need to allocate a country-specific quota. To that end, Tuna CHART is Ireland’s conventional tagging programme designed to implement, co-ordinate and oversee data collection delivered via “tag and release” of ABFT by authorised angling charter skippers.

The aim of the programme is to collect data on the spatial and temporal distribution of ABFT in Irish waters. Another function is to record biometric data such as length and general condition for Ireland to report to ICCAT and improve our understanding of aspects of the ecology of ABFT presenting in Ireland’s coastal waters.

Typically, ABFT (*Thunnus thynnus*), the largest tuna in the world, frequent Irish coastal waters from mid-summer to mid-winter to feed, following annual spawning migrations in the Mediterranean and possibly even the Gulf of Mexico. Recent satellite tagging analysis demonstrates that ABFT are present in small numbers year-round in Irish waters (Pagniellow et al 2023). The bluefin tuna is prized by sea anglers for its power and fighting ability and is a highly valuable commercial species.

ICCAT is an inter-governmental fishery organisation 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.

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.

The Mediterranean and Eastern ABFT (considered a single stock) is a highly regulated species with annual catch limits set by ICCAT based on scientific advice.

The European Commission (EC) became a Contracting Party to ICCAT in 1997. EU TACs and quotas for ABFT were set by Council for the first time at the December 1997 meeting to implement ICCAT catch limits/TACs for these species. Ireland did not have a track record of targeting ABFT and does not have a quota. Ireland has access to a by-catch “others” quota for member states without a quota share to cover by-catches of BFT in commercial fisheries subject to certain conditions. Ireland has no quota to cover recreational angling for BFT and has had no such quota since 1997.

The oceanic waters off south Donegal are currently regarded by ICCAT as a key area for ABFT and indications are that significant numbers arrive in the area over the period August to November each year.

The Tuna CHART programme commenced in 2019 and is a collaborative scientific programme between Inland Fisheries Ireland and the Marine Institute in partnership with the Sea Fisheries Protection Authority, the Department of Agriculture, Food and the Marine (DAFM) and the Department of Environment, Climate and Communications (DECC). Management and staff from these agencies manage the overall Tuna Chart programme as part of Ireland's Tuna CHART Management group. A Technical group works as a subset of the management group and includes IFI Research staff and Marine Institute staff. The Technical group provides advice and analysis to the Tuna CHART management group.

This is a recreational catch and release fishery operated by authorised, trained charter skippers who take out paying anglers to catch tuna for tagging. Training skippers in tagging procedures, reporting of fish caught and fishing activities are requirements of the programme. Mortalities must be reported to ICCAT.

This report presents a summary overview of the 2024 programme results compared with previous years.

2. Methods

This section provides an overview of the methods relating to various elements of the programme and the changes made in 2024. The methods relate mainly to the process of enabling the charter skippers to capture and report data on individual tuna and to effect safe tagging and release. Tuna welfare is central to this process. A methods manual was compiled separately and provides an overview of the requirements of the programme - such as gear specifications and the requirement for all bluefin to be retained in the water at all times. Additionally, recommendations are included for handling, recovery, and release of the fish (Wögerbauer *et al.* 2019)

A subgroup, the Tuna CHART Technical group manage skipper authorisations, the training course, the tagging methodologies, and determine which data to collect. This group also coordinates the data collection by skippers, including the measurement and handling aspects, as well as overseeing the data collection observer programme.

2.1 Skipper authorisation and training

In 2024, following an application process, 22 experienced charter skippers were authorised under a DECC Section 14 authorisation to operate a catch, tag and release bluefin charter fishery. A total of 18 skippers returned from previous Tuna CHART programmes; 4 new skippers, based on the northwest and south coasts respectively, were approved for inclusion. Authorised skippers were based in ports along the Northwest, West and South coasts (Fig.1).

Anglers are permitted to participate in the fishery as paying customers onboard vessels of authorised skippers. Anglers participate in the fishery by hiring charter skippers and their vessels for angling trips. Anglers hook and play the bluefin to the side of the boat using angling gear, applying fish 'playing'

methods approved by the wider Tuna CHART group. The process is strictly monitored. The angling methods and ABFT handling guidelines for the programme are detailed in the method manual (Wögerbauer *et al.* 2019) which is, in-part, based on the ICCAT Tagging manual (Cort *et al.* 2010).

As training must be undertaken by authorised skippers as a condition of the data collection fishery, a detailed online training course was developed in 2020 by IFI and the Marine Institute in collaboration with DAFM, DECC and the SFPA. This course was expanded in 2021 to include information on the regulations regarding angling near cetaceans. New skippers are required to pass a test for each module to pass the course. The training course encompasses an introduction to ICCAT and bluefin tagging research, bluefin welfare, required angling gear and best practice, bluefin handling and tagging techniques, legislation, and data collection.

In addition, a live interactive on-line training session for all skippers was held in mid-June 2024 with contributions from IFI and MI. The live session emphasised good handling and the best possible recovery of the bluefin prior to release. Furthermore, after tagging the fish should be 'refreshed' alongside the moving vessel, for a minimum of five minutes recovery, time prior to release to maximise post-release survival. A short video of a bluefin being recovered in Tuna CHART 2021 was screened to discuss improvements and facilitate learning. Skippers were encouraged to minimise fight times wherever possible; skipper discretion in terms of fight time was permitted. We recommended that skippers should take over from anglers if the fish was not alongside the vessel after 30 minutes. The skipper should then bring the fish alongside as quickly as possible.

DECC Section 14 authorisations enable the skippers to operate for the duration of the survey fishery (1st July - 12th November 2024).

All skippers/vessels are required to have suitably rated angling equipment, including 80-130lb class (or greater) bent butt rods and reels, and swivel rod holders. These provisions are required to minimise risk to tuna from lengthy playing bouts, and to allow for best management of fish welfare. Gear checks were undertaken by IFI staff prior to authorisation.

2.1 Tiered Pilot Study for new methods

Following a formal request by the Irish Charter Skippers Association (ICSA) for an expansion of the methods permitted to fish for ABFT, a review of proposed methods was made by the Technical Group (Wögerbauer *et al.* 2024). Recommendations were made to the Tuna Chart Management group. The management group agreed to approve two out of three new methods requested, with a tiered system based on skipper experience (Table 1). All skippers were permitted to allow anglers to use the currently most popular angling method of trolling and/or bait fishing if they wished.

Of the new methods requested skippers were permitted to allow anglers to troll and bring the fish alongside using a 'stand-up' angler harness, if the skipper deemed the angler capable. Experienced skippers, classified as those who had caught, tagged and released at least 20 ABFT, were permitted to utilise jigging, using suitably rated gear, if weather conditions permitted and the skipper deemed the

angler capable. A third new method, casting and popping, was requested but was not authorised for the programme by the Management group.

Table 1 Tiered pilot new angling method system

Tier 1 All Skipper	Tier 1 All Skippers	Tier 2 Experienced Skippers
Method 1	Method 2	Method 3
CURRENT METHOD - Trolling with swivel rod holders	Trolling with Stand-up Harness (Stand Up Fishing)	Jigging
All Skippers All Anglers Skippers Gear	All Skippers All Capable Anglers Anglers Own Harness	Most Experienced Skippers only All Capable Anglers Anglers Own Gear

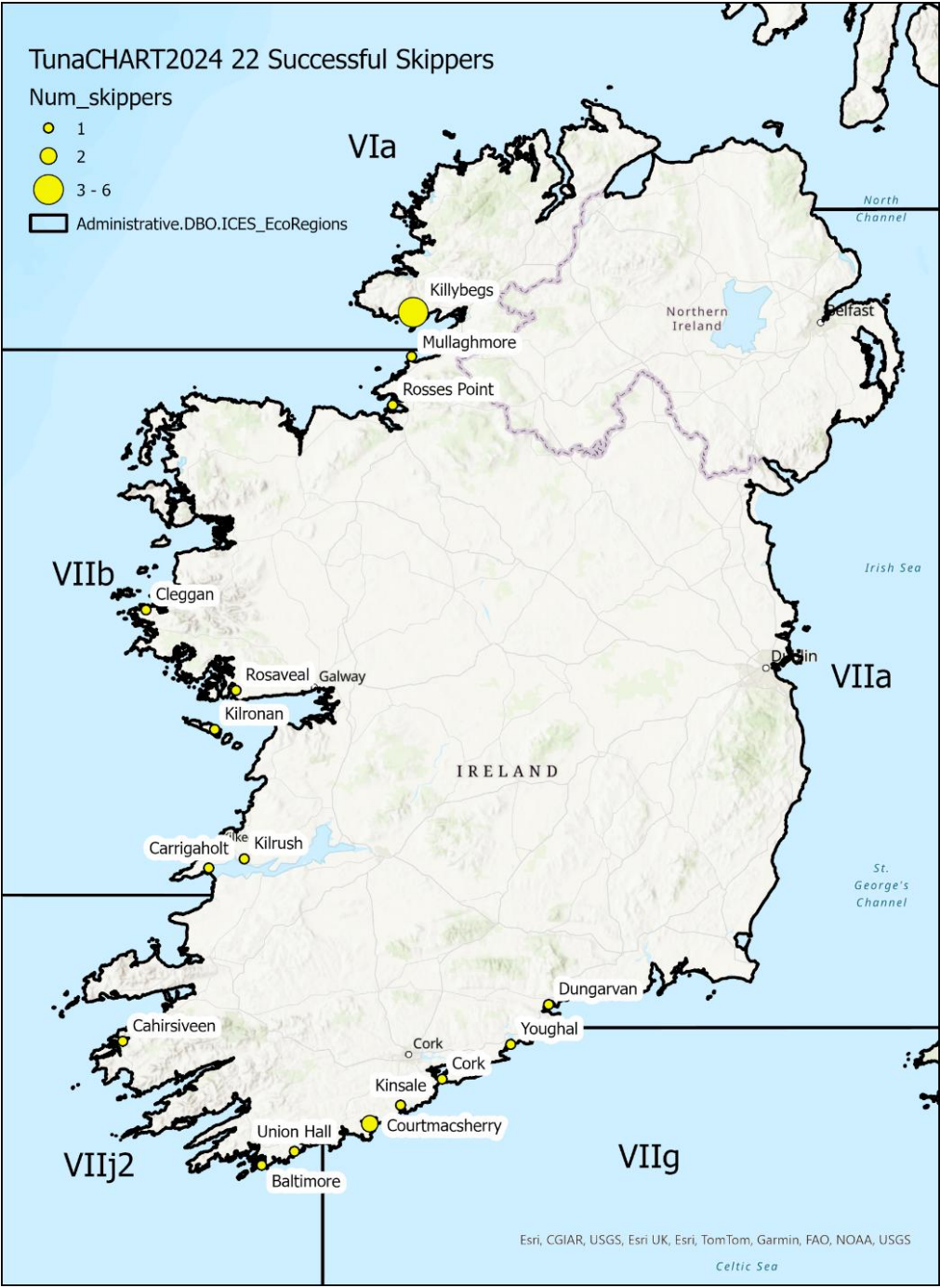


Fig. 1 Spatial Distribution of Authorised Skippers in 2024



Fig. 2 ABFT a) and b) tagged, c) measured and d) recovered in the water as required by Tuna CHART guidelines.

Skippers were provided with standardised equipment including measuring kits, lip hooks, and double-barbed tags in 2024, the same tag types used since 2020. These tags were a more robust tag compared to the spaghetti tags used in 2019. The double-barb tag was once again supplied by ICCAT.

2.2 Additional Control Measure

The Department of Environment, Climate and Communications introduced a bye-law in 2020 to limit unauthorised angling using trolling gear for several larger fish species. Bye-law 981 of 2020 Control of sea angling methods for certain species of fish prohibits the use of surface trolling for catching any species of tuna, shark or billfish and prohibits retaining gear or equipment on board capable of trolling fishing lines for these species. This bye-law provided additional powers to protection officers to ensure that no unauthorised persons could target ABFT. As authorised persons, Tuna CHART skippers are exempt from this bye-law.

2.3 Updated Legislation

The SFFPA and DAFM updated the Bluefin tuna Statutory Instrument (SI No. 352 of 2024) to ensure the reporting of any tagged fish and the installation of vessel monitoring systems (VMS) is legally required.

2.4 Protection

Inland Fisheries Ireland (IFI) and the Sea Fisheries Protection Authority (SFFPA) have joint responsibility for the protection of ABFT. IFI undertakes RIB patrols and coastal surveillance to monitor for unauthorised fishing of bluefin. RIB patrols engage with authorised skippers at sea to ensure handling and release methods are in keeping with Tuna CHART requirements.

SFPA has responsibility for port inspections to ensure no ABFT are landed by authorised or unauthorised vessels.

2.5 Data

All skippers were required to permit onboard installation of a VMS for the duration of the open season. The VMS was provided by CLS (www.cls.fr, Toulouse, France), a provider of satellite systems, which support monitoring and tracking of vessels at sea. Vessel positions were monitored by the SFPA and IFI.

Skippers submitted a digital report of their bluefin angling trips to IFI and Tuna CHART using the Tuna CHART form on Survey123, an ArcGIS application developed by IFI on ruggedised dedicated Samsung tablets, or on authorised skippers' personal phones. The latter facility allowed skippers to use their own 'technology' and provided increased efficiencies. All skippers were also required to record all data on a paper form. Screenshots of the data collection process are available in the 2021 report (Wögerbauer *et al.* 2022).

Data collected from the programme were subsequently cross-checked between IFI and MI. At the end of the TUNA CHART reporting cycle the quality assured data are collated and submitted to ICCAT in the form of the conventional ICCAT tagging report (TG02-CnvTReRc). The tagging data forwarded to ICCAT is processed regularly and included in the international tagging database according to the relevant Species Group needs (in this case the ABFT) and is updated every year. A summary of these data is then published and made available publicly at <https://www.iccat.int/en/accesingdb.html> under the "Tagging" toggle.

3. Results

3.1 Overview

In 2024, 234 targeted bluefin fishing trips resulted in the tagging of 294 ABFT (Table 2). An additional 10 tuna were hooked but lost before measuring or tagging, and 12 fish slipped off the grip post-measurement. No mortality was recorded. All data were digitally reported via trip survey forms, with full compliance from authorized skippers. No recaptures were reported this year.

Table 2 Summary of 2024 fishing effort, bluefin encounters and catch per unit effort (CPUE = no. bluefin tagged per angling trip).

Fishing Region	No. Authorised Skippers	No. Active Authorised Skippers	No. Trips	No. Angler Days	No. BFT hooked	No. BFT measured	No. BFT Tagged	CPUE (Tagged /Trips)
Northwest* (Donegal and Sligo)	9	9	156	437	234	229	217	1.39
South (Kerry, Cork, Waterford)	9	8	73	146	85	77	77	1.05
West* (Clare to Galway)	4	2	5	15	0	0	0	0.00
Total	22	19	234	598	316	306	294	1.25

* One skipper is registered in both Co. Clare and Co. Donegal, but has only been operating from Killybegs, Co. Donegal this season. This skippers data is listed within the Northwest row.

3.2 Fishing Effort

Bluefin angling occurred in Donegal Bay and along the west and southwest coasts of Ireland (Fig. 3). Peak activity was recorded in September and October. Three skippers did not fish due to weather (2) or vessel breakdown (1).

Fishing effort was highest in the Northwest, moderate in the South, and minimal in the West (Table 2). Poor weather led to multiple trip cancellations in North (August – Storm Lilian) the South (October – Storm Ashley). In the West, only two skippers fished, completing five trips, with numerous bluefin sighted but not hooked up.

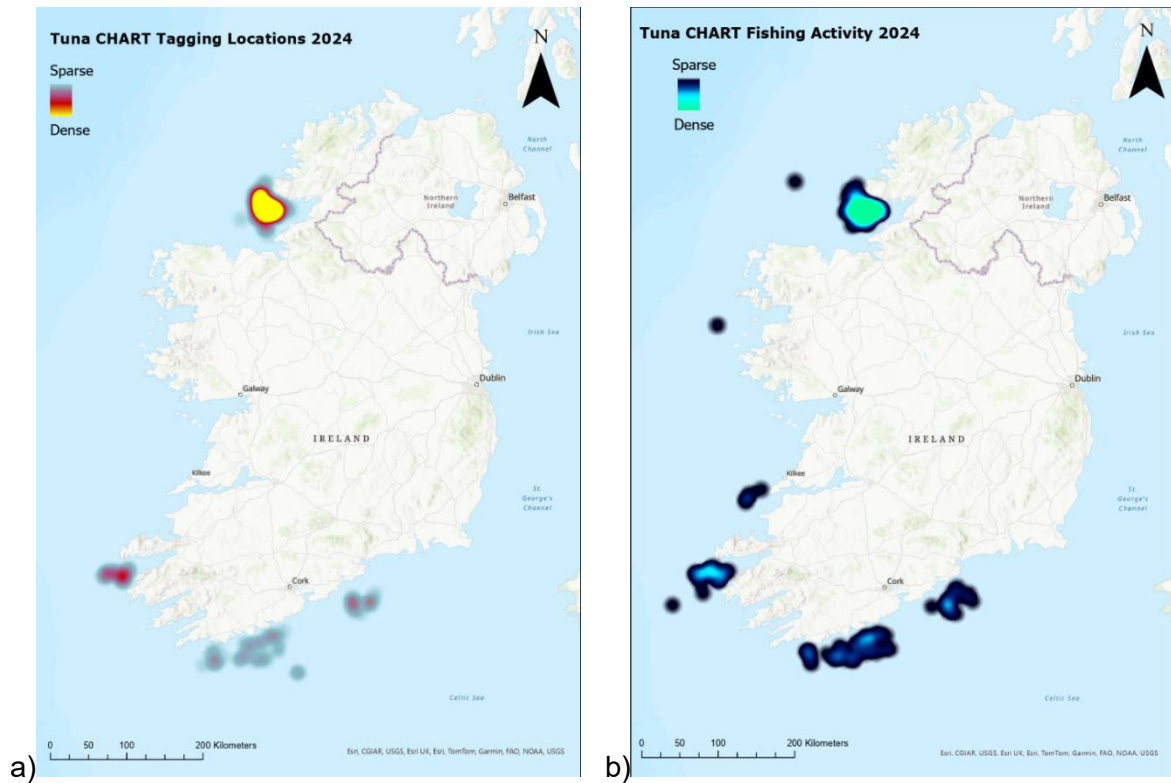


Fig. 3 a) Fishing locations by authorised skippers and b) ABFT tagging heat map Tuna CHART 2024

3.3 Tagging Results

The Northwest accounted for 74% of tagged fish

In the Northwest, eight skippers conducted 153 trips, tagging 217 fish (Catch Per Unit Effort (CPUE) = 1.4, down from 1.9 in 2023). Peak weekly CPUE was 3.0 (week of Aug. 12th). In the South, eight active skippers completed 73 trips, tagging 77 fish (CPUE = 1.05, up from 0.33 in 2023). The highest weekly CPUE (2.5) occurred in the week of October 12th.

The season's first bluefin angling trip occurred on July 8th (Kerry), and the first tagged fish was recorded on July 30th (Donegal Bay). Bluefin were caught and tagged until the final day of the season, November 12th.

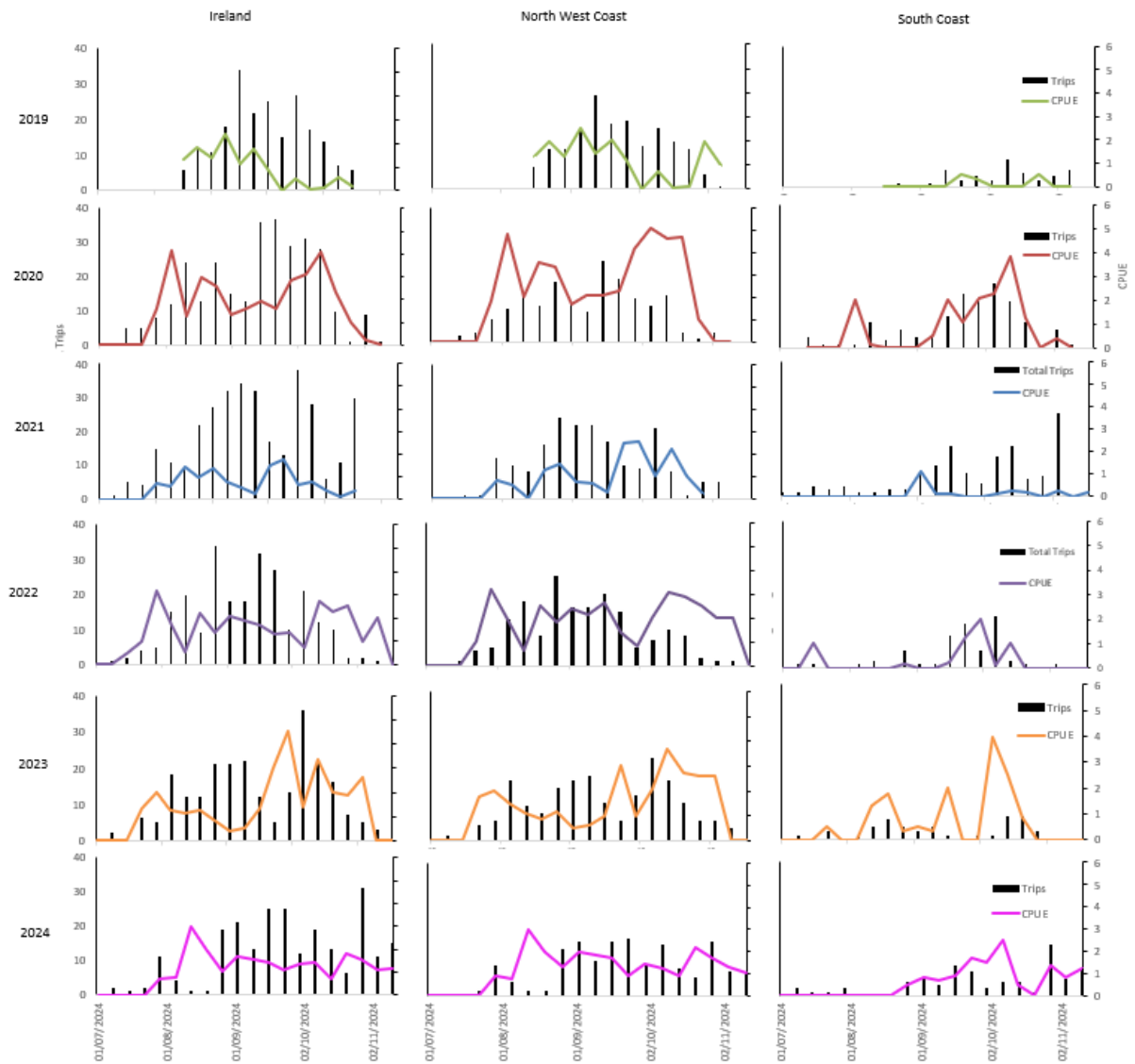


Fig. 4 Fishing effort presented as number of fishing trips and Catch Per Unit Effort (CPUE Total Tagged Bluefin/ Total Trips per week). Data are presented for the entire country and separated for the Northwest and South Coasts by year.

3.4 Size Distribution

Measured bluefin ranged from 140 cm to 272 cm (mean = 200.8 cm, SD = 26.7). Fish in the 120-139 cm size range recorded in 2019 and 2023 were not recorded in 2024. The Northwest had a broad size distribution, with peaks in three size classes distribution. The South was skewed toward smaller fish (mean = 188.7 cm, SD = 31.3) (Figs. 6 & 7).



Fig. 5 Histograms of a) Northwest (Donegal Bay) measured ABFT length distribution (cm) (Straight fork length) 2024 (n=229) and b) South coast (Cork and Kerry) measured ABFT length distribution (cm) (Straight fork length) 2024 (n=77).

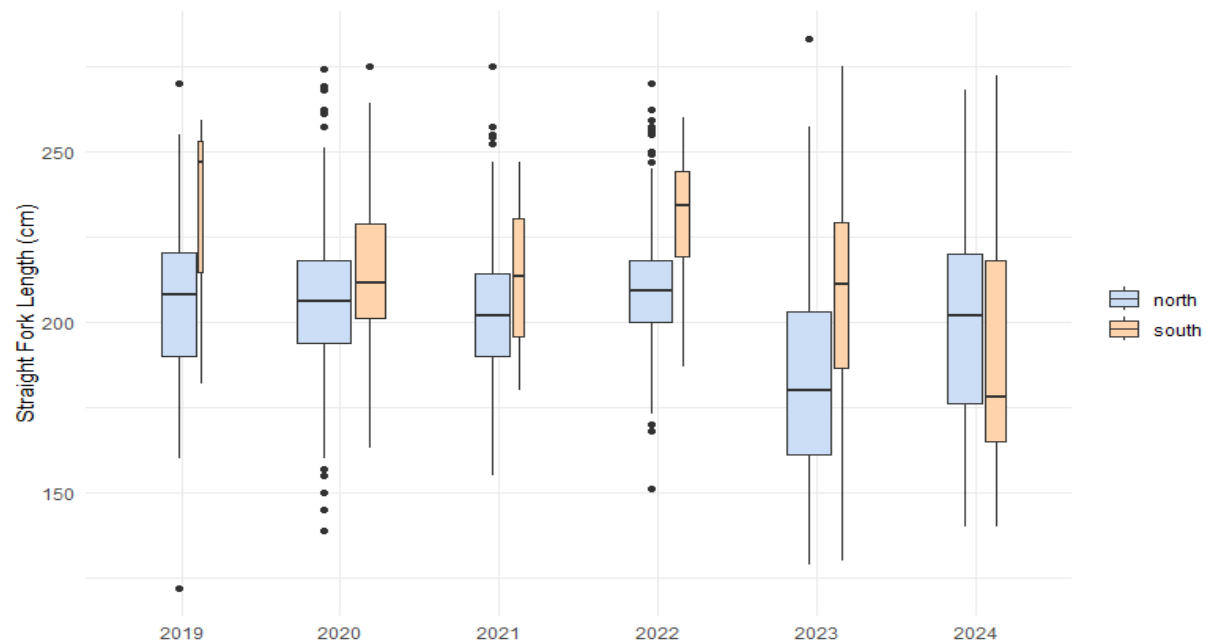


Fig. 6 Length distributions in the Northwest and Southern coasts of measured ABFT 2019-2024

3.5 Satellite Tagging

The Marine Institute satellite-tagged 12 bluefin under HPRA Licence No. AE19121/P007. These fish, caught by authorized vessels and tagged onboard under scientific supervision, are not included in this dataset.

3.6 Observer Programme

IFI staff conducted seven observer days with six skippers (Donegal Bay and Cork). On these trips four bluefin were hooked in Donegal (three tagged, one lost), while in Cork five hook-ups on a single trip were recorded (four tagged, one lost). Three observer trips ended without fish caught or tagged. Observers documented proper fish handling and tagging procedures, ensuring welfare guidelines were followed.

3.7 Angling and Handling Trends

Fight times remain stable at 25 minutes since the start of the programme, with a slight reduction in 2023 (Fig. 7a). Absence of smaller fish (120-139 cm) may explain the return to previous averages. Fight times tend to lower for smaller fish (Fig. 7). Recovery times averaged 8.3 minutes, aligning with past years (Fig. 7a and b). Skippers ensured all tuna remained in the water, following CHART Technical Group guidelines for post-release survival.

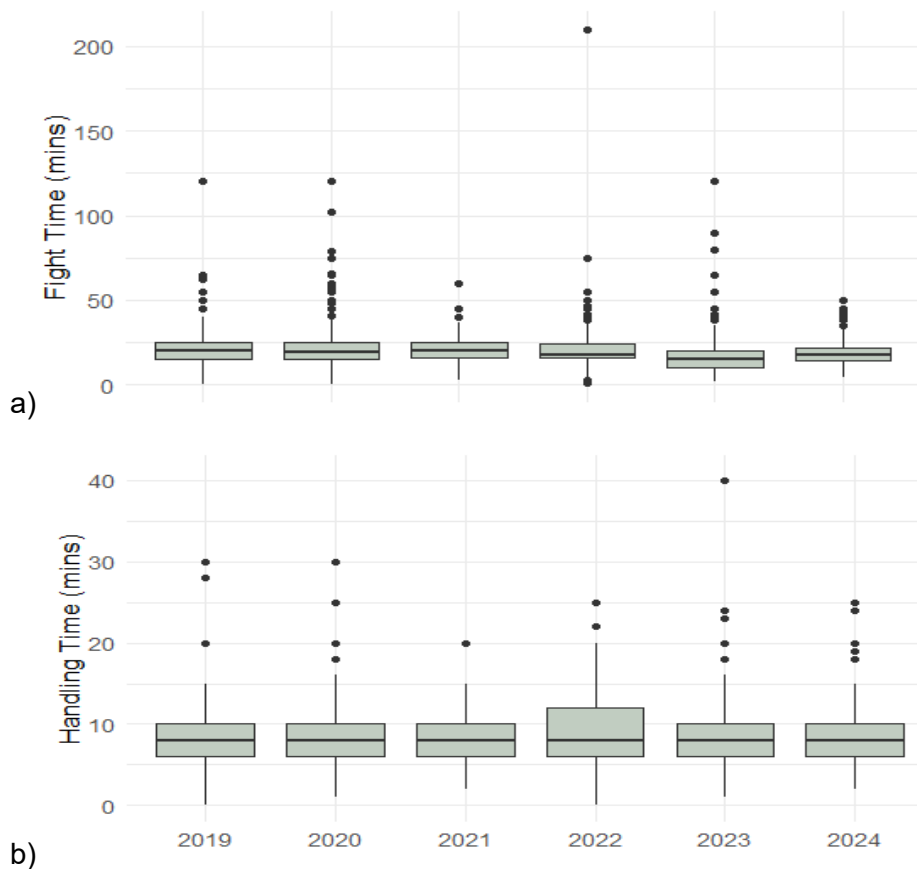


Fig. 7 a) Fight time and b) handling times 2019-2024

3.8 Reporting procedures

The relevant data was reported digitally by skippers upon submission of their individual trip survey form. All data were submitted fully to the programme and there was good compliance by authorised skippers with the requirements of the programme. No recaptures were reported this year.

3.9 Tiered pilot angling gear study

The standard method of trolling, using rods inserted into rod holders, continued to be the most used method in 2024 (Fig. 8a). A total of 16% of trips used trolling from a stand-up harness in 2024. Only 2 trips (0.9%) undertook bait fishing.

Trolling from a stand-up harness was marginally less successful than trolling using rod holders; 12% of fish hooked were lost by slipping the hook when being reeled in by anglers using a harness whereas 7% were lost when being reeled by anglers using rod holders. Of the two fish hooked by bait, one was lost before being brought alongside.

The size distribution of fish caught using trolling with a harness fell within the same range as trolling with rod holders (Fig. 8b). The largest fish (238-272cm) were brought alongside using rod holders, which enabled the boat to take the strain of the fish. Fight times and handling times were very similar using both trolling with rod holders and trolling with harness for fish between 140-236cm (Fig. 9a and b).

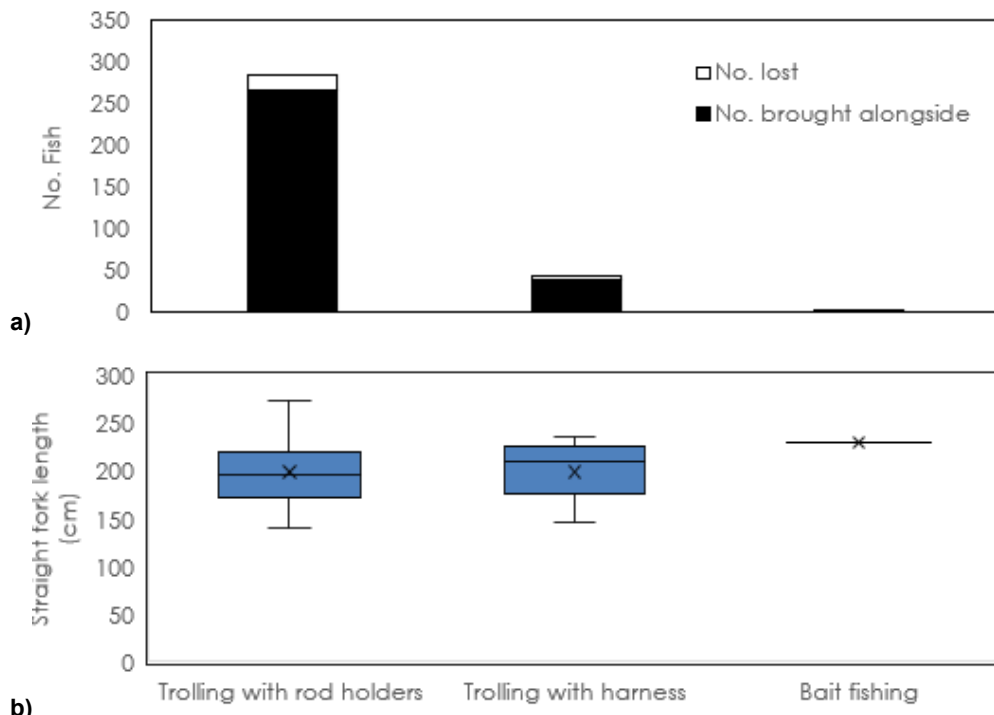
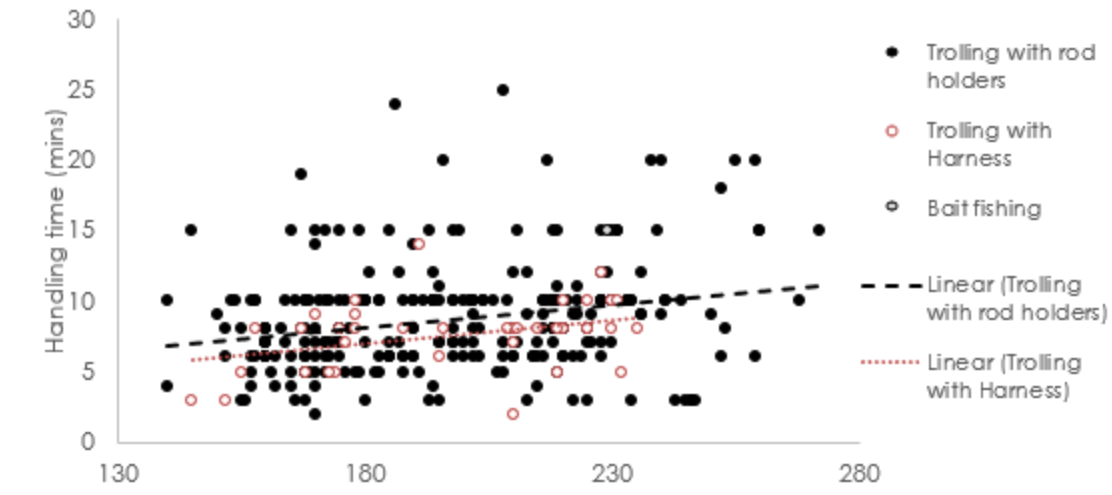
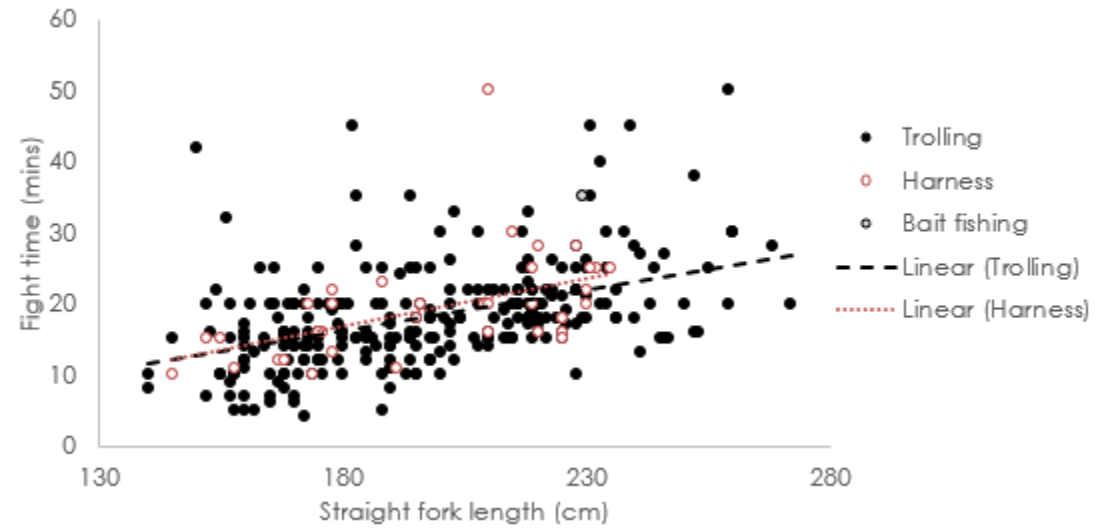


Fig. 8 a) No. ABFT hooked up per method and b) size range of ABFT brought alongside per method category.



a)



b)

Fig. 9a) Handling time and b) Fight time plotted against length for the three methods used.

4. Discussion

Ireland's Tuna CHART programme is extensive, involving many different elements (governance, administration, research, technical, protection and the angling sector) working together for a common goal. The high level of co-operation amongst the various partner agencies has allowed this programme to operate efficiently and effectively.

The 2024 ABFT tagging program in Ireland demonstrated notable regional variations in fishing effort, CPUE, and size distribution of tagged fish. These findings align with observations from other tagging initiatives and contribute to the broader understanding of ABFT behaviour and management.

There was stability in effort and trip success this year; trip numbers were stable for the last three years, and trip success was consistent around 65% (Table 3). However, CPUE was lower than recorded over the past three years; despite similar trip numbers, 86 less fish were caught in 2024 than 2023 (MacLeod *et al.* 2024). This was due to a reduction in the number of BFT tagged in Donegal Bay. In contrast, CPUE in the south increased from 0.83 (2023) (MacLeod *et al.* 2024) to 1.04 (2024).

Table 3 Tuna CHART CPUE summary data 2019-2024

Year	No. Skippers	Total Trips	No. Tagged	No. Successful Trips	CPUE (Tags/Trips)	Max. CPUE in any week	% Successful Trips
2019	15	204	209	99	1.02	2.4	49
2020	22	302	685	219	2.27	4.0	73
2021	22	336	242	129	0.72	1.8	38
2022	22	235	364	158	1.55	3.2	67
2023	19	238	380	152	1.60	4.5	64
2024	22	234	294	153	1.25	3.0	65

Regional Fishing Effort and CPUE

The highest fishing effort was recorded in the Northwest region, with 153 trips resulting in a CPUE of 1.4, a decrease from 1.9 in 2023 (MacLeod *et al.* 2024). This reaction was likely influenced by poor weather conditions limiting fishing opportunities in August, typically a time when peak fishing occurs in the Northwest. In contrast, the South region, despite adverse weather leading to numerous trip cancellations, showed an increased CPUE of 1.04, up from 0.83 in 2023. This modest improvement may suggest a potential shift in ABFT presence or availability in southern waters, particularly of fish 140-180cm length. Shifts in the distribution of ABFT have been documented, with the presence and residence of ABFT in the English Channel (Horton *et al.* 2025) where it was previously rarely encountered (Walli *et al.* 2009, Arregui *et al.* 2018, Aranda *et al.* 2013)

Annual tagging numbers in the South have increased annually since 2021, suggesting growing potential. Increased angling opportunities, weather permitting, could further enhance tagging success in this area.

Size Distribution and Migration Patterns

The Northwest's broader bluefin size distribution contrasts with the South's skew towards smaller fish, suggesting regional differences in habitat use or migratory behaviours.

Fish tagged as part England's CHART programme (mean = 189 cm SFL) (Ford *et al.* 2023) were on average similar in length to the southern caught ABFT this year. The continued recovery of the eastern ABFT stock since the early 2000's (ICCAT 2022) may be contributing to the abundance of these smaller fish.

New methods pilot study

The increased frequency of use of 'stand-up' angling (i.e. trolling) did not lead to any change in fish welfare risk. Marginally more fish hooked were lost off the hook but there were no evidence of injuries or mortalities.

No anglers used the jigging method in 2024. It is recommended that jigging is permitted for experienced skippers once again in 2025 to provide an opportunity to record data on smaller fish that may be present, but not captured, using established surface trolling methods.

Post-Release Mortality and Handling Practices

The program reported zero mortality in 2024, highlighting effective fish handling and tagging protocols operated by skippers. This result aligns with findings from the Tuna CHART England 2022 programme, which reported a low mortality rate of 0.4%, down from 1.4% in 2021 (Ford *et. al* 2023)

Data Reporting and Compliance

Full compliance in data reporting by authorized skippers ensured the integrity of the dataset. Digital submission of trip survey forms to a GIS database managed by IFI on the ArcGIS Online platform facilitated efficient data collection and analysis.

Conclusion

The 2024 ABFT tagging program in Ireland provides valuable insights into regional variations in fishing effort, CPUE, spatial and size distribution. Comparisons with other tagging initiatives, such as Tuna CHART England programme and studies on ABFT migratory behaviour, contextualise these findings within broader Atlantic-wide patterns. Continued monitoring and collaboration across programs are essential for effective management and conservation of ABFT populations.

High quality spatial, temporal, and size data were again recorded in 2024, which will be shared with ICCAT in 2025 to satisfy national reporting requirements. This builds on the dataset from Tuna CHART activity in 2019-2023 previously submitted to ICCAT and allows for monitoring of population status. This data contributes to an understanding of ABFT trends in Irish waters.

5. References

- Aranda G, Abascal FJ, Varela JL & Medina A. (2013) Spawning Behaviour and Post-spawning Migration Patterns of Atlantic Bluefin Tuna (*Thunnus thynnus*) ascertained from Satellite Archival tags. PLoS One. 8 (10), e76445 (2013).
- Arregui I, Galuardi B, Goñi N, Lam CH, Fraile I, Santiago J, Molly Lutcavage M, Arrizabalaga H. (2018) Movements and geographic distribution of juvenile bluefin tuna in the Northeast Atlantic, described through internal and satellite archival tags. ICES Journal of Marine Science 75(5), 1560–1572. <https://doi.org/10.1093/icesjms/fsy056/5004410>
- Cort J, Abascal F, Belda E, Bello G Deflorio M, de la Serna J, Estruch V, Godoy D and Velasco M. (2010) Tagging manual for the Atlantic-wide research programme on Bluefin Tuna (GBYP)
- Ford J, Righton D, Ribeiro Santos A, Murphy S, McMaster J, Thomas S, Duffy M, Davis S, Arris M, and Phillips S. (2023) Summary of the 2022 catch and release tagging (CHART) programme in Southwest England. Collect. Vol. Sci. Pap. ICCAT, 80(9): 167-171 https://www.iccat.int/Documents/CVSP/CV080_2023/n_9/CV080090167.pdf (accessed 31/01/25).
- ICCAT (2020) Report of the second ICCAT intersessional meeting of the bluefin tuna species group 2020. Madrid, Spain. 1–28 pp.
- ICCAT (2022) Vol. 2 English version. SCRS. ICCAT. International Commission for the Conservation of Atlantic Tunas: Report for biennial period, 2022-23 PART I & Madrid, S. [accessed 15/2/25]. <http://www.iccat.int>.
- MacLeod K, Wögerbauer C, Maxwell H, Drumm A, O'Maoiléidigh N and Roche W (2024) Report on Ireland's Atlantic bluefin tuna catch, tag and release data collection programme 2023. Tuna CHART Programme Report. <tuna-chart-2023-report.pdf>
- Camille M.L.S. Pagniello, Niall Ó Maoiléidigh, Hugo Maxwell, Michael R. Castleton, Emilius A. Aalto, Jonathan J. Dale, Robert J. Schallert, Michael J.W. Stokesbury, Ronán Cosgrove, Simon Dedman, Alan Drumm, Ross O'Neill, Barbara A. Block, 2023. Tagging of Atlantic bluefin tuna off Ireland reveals use of distinct oceanographic hotspots. Progress in Oceanography, 219, 103135, ISSN 0079-6611, <https://doi.org/10.1016/j.pocean.2023.103135>.
- Santamaria N, Bello G, Corriero A, Deflorio M, Vassallo-Agius R, Bök T and DeMetri G (2009) Age and growth of Atlantic Bluefin Tuna, *thunnus thynnus* (osteichthyes: Thunnidae), in the Mediterranean Sea, Journal of Applied Ichthyology, 25(1), 38–45. doi:10.1111/j.1439-0426.2009.01191.x.
- Sea-fisheries (bluefin tuna) regulations 2024, SI No. 352 of 2024, Dublin: Stationery Office, available: <https://www.irishstatutebook.ie/eli/2024/si/352/made/en/pdf> [accessed 29 Jan 2025].

- Walli, A. *et al.* 2009 Seasonal movements, aggregations and diving behavior of Atlantic bluefin tuna (*Thunnus thynnus*) revealed with archival tags. PLoS One [Internet]. 4(7), e6151. <https://www.ncbi.nlm.nih.gov/pubmed/19582150> (2009). [Seasonal movements, aggregations and diving behavior of Atlantic bluefin tuna \(*Thunnus thynnus*\) revealed with archival tags - PubMed](#)
- Wögerbauer C, Drumm A, O'Maoiléidigh N and Roche W (2019) Tuna CHART Bluefin tuna data collection programme: Methods Manual. Inland Fisheries Ireland Report IFI/2019/1-4482.
- Wögerbauer C, Maxwell H, Drumm A, O'Maoiléidigh N and Roche W (2022) Report on Ireland's Atlantic bluefin tuna catch, tag and release data collection programme 2021. Tuna CHART Programme Report. [tuna-chart-2021-report.pdf](#)
- Wögerbauer C, Maxwell H, Drumm A, O'Maoiléidigh N and Roche W (2023) Report on Ireland's Atlantic bluefin tuna catch, tag and release data collection programme 2022. Tuna CHART Programme Report [tuna-chart-2022-report.pdf](#)
- Wögerbauer C, Maxwell H, Drumm A, O'Maoiléidigh N and Roche W (2024) Technical Group report to Tuna CHART management on proposed changes to gear and methodologies within Tuna CHART bluefin data collection. Irelands Tuna CHART Programme Internal Report 20pp.