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

2024 GBYP ACOUSTIC TAGGING CAMPAIGN ON BLUEFIN TUNA IN PORTUGUESE TRAP

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Background and objectives

In 2024 the GBYP Steering Committee agreed that a tagging campaign on bluefin tuna should be conducted, to test the efficiency of acoustic tags and the new receiver arrays deployed in recent years by the European Tracking Network (ETN), namely at the Strait of Gibraltar and off the Atlantic cost of Europe.

Accordingly, a tagging campaign was set by the Secretariat in straight coordination with IFAPA (EU-Spain) that donated the acoustic tags, IPMA (EU-Portugal) that assisted on all logistics, and the TUNIPEX tuna trap (EU-Portugal). The campaign was initially set aiming to tag bluefin tuna specimens on their migration into the Mediterranean Sea, but at a later stage also to tag those specimens migrating back to the Atlantic Ocean.

Preparatory work

On 4 June 2024, the tagging team prepared the a total of 18 VEMCO acoustic tags, model V16, with attachment holes for external mounting and double tether (*domeier* umbrella anchors), which included an ICCAT conventional spaghetti tag inside the transparent silicone tube around the tetter, that has a specific unique code number, and reference to ICCAR and rewarding in case of tag recovery (see **figure 1**).

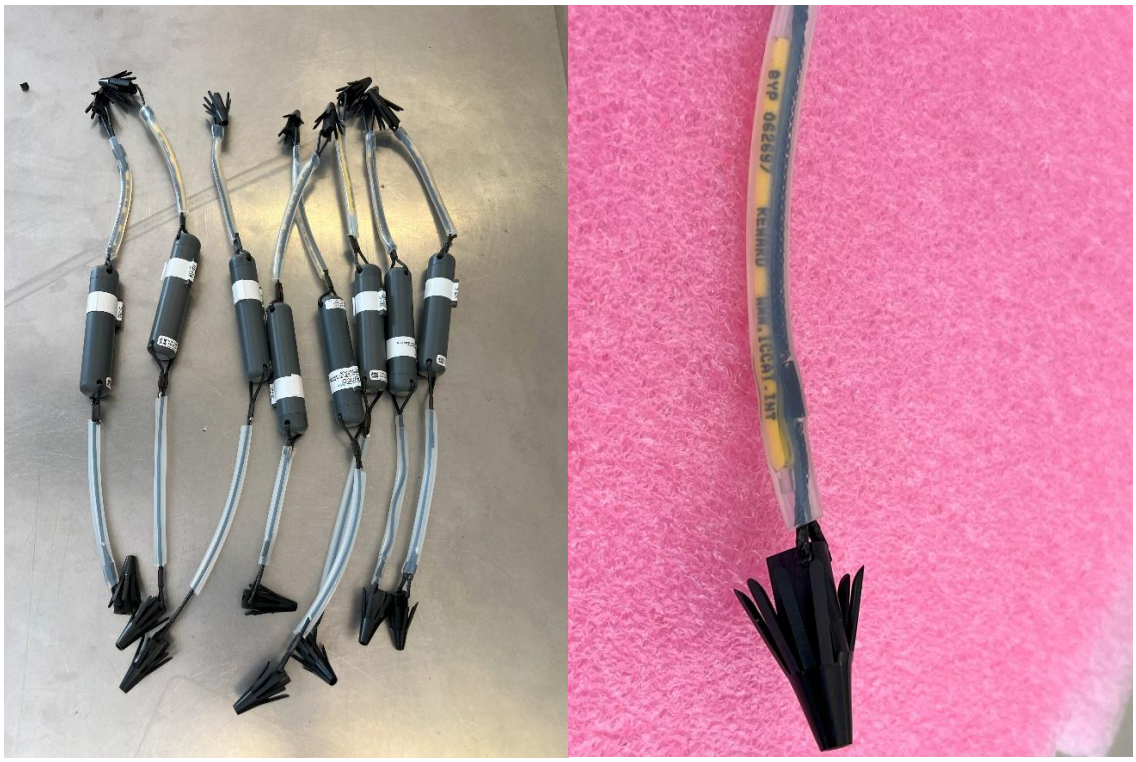

Figure 1 – VEMCO model V16 with double tether and *domeier* anchor type (on the left). Detailed on the conventional ICCAT spaghetti tags placed inside the transparent silicone tube around the tether (on the right).

Tagging campaign

The first phase of the tagging campaign was held between 4 and 6 June 2024, at the Tunipex tuna trap platform (**figure 2**), located off the Algarve coast (Southern Portuguese coast) at 37° 01' 24''N

and 007° 50' 03W. The campaign was carried out, as a cooperative action, coordinated by the ICCAT Secretariat, that engaged Dr Pedro Lino (IPMA, EU-Portugal), Mr Oscar Mansilla (IFAPA, EU-Spain) and the TUNIPEX tuna trap (EU-Portugal).

Figure 2 – TUNIPEX tuna trap: staff isolating a shoal of Bluefin tuna specimens that entered the tuna trap the same day they were tagged.

In addition, since in the tuna trap it is not possible recommended to bring the fish on board due to the stress and potential damage induced to the fish, tagging was done with a pole. Accordingly, a pole with double deployment "needles" was prepared and a test made to ensure that the check how the tag was placed using such system for underwater tag deployment (**figure 3**). It was noted that the double anchoring underwater did not allow deep setting of the *domeier* anchors, which can cause the movement of the tag while the fish swims and consequently reduces the chances the tag to remain attached for a long period.

Figure 3 – Double needles tag deployment device set on pole for tagging bluefin tuna specimens underwater with acoustic tags (on the upper left). Aspects of the double anchoring of the middle panel. Single needle applicator (on the bottom left) and test to pull the tag by hand when deployed using a single needle.

Accordingly, a decision was taken to proceed with single *domeier* anchoring, to allow deeper setting of the anchor. Therefore, a new tagging applicator with a single needle was prepared, as detailed at the bottom left of **figure 3**. A new test was performed, and it was verified that with the new applicator the anchor was much deeper set in the fish body. A substantial amount of strength was required to pull the tether by hand, and it was not easy to completely remove the tag (see **figure 3**, at the bottom). Therefore, the team decided to use this technique to deploy the tags.

Overall, on **6 June 2024**, a total of 18 specimens were tagged and released together with a group of additional 24 bluefin tunas which had all entered the tuna trap earlier that same day. The tuna had an estimated individual weight of 65 to 80 kg and the details on the tag reference numbers are provided in **table 1**.

Table 1 – Details on the tags ID and reference number for VEMCO V16 and ICCAT tags deployed on 6 June 2024 at the TUNIPEX tuna trap facility.

Tagging order	Date	VEMCO V16 Tag		ICCAT tag
		ID	Number	
1	06/06/2024	41216	1575633	I-062684
2	06/06/2024	41218	1575635	I-064710
3	06/06/2024	41227	1575644	I-062683
4	06/06/2024	41214	1575631	I-062679
5	06/06/2024	41228	1575645	I-062691
6	06/06/2024	41213	1575630	I-062696
7	06/06/2024	41212	1575629	I-062689
8	06/06/2024	41250	1575667	I-062690
9	06/06/2024	41217	1575634	I-062676
10	06/06/2024	41240	1575657	I-062678
11	06/06/2024	41225	1575642	I-062697
12	06/06/2024	41223	1575640	I-062700
13	06/06/2024	41221	1575638	I-062686
14	06/06/2024	41220	1575637	I-062681
15	06/06/2024	41226	1575643	I-062680
16	06/06/2024	41224	1575641	I-062688
17	06/06/2024	41222	1575639	I-062677
18	06/06/2024	41219	1575636	I-062699

The second phase of the tagging campaign was held on **4 July 2024**, at the same TUNIPEX tuna trap, located off the Algarve coast (Southern Portuguese coast). The campaign was carried out again as a cooperative action, coordinated by the ICCAT Secretariat, and engaged Dr Pedro Lino (IPMA, Portugal), Mr Oscar Mansilla (IFAPA, Spain) and the TUNIPEX tuna trap.

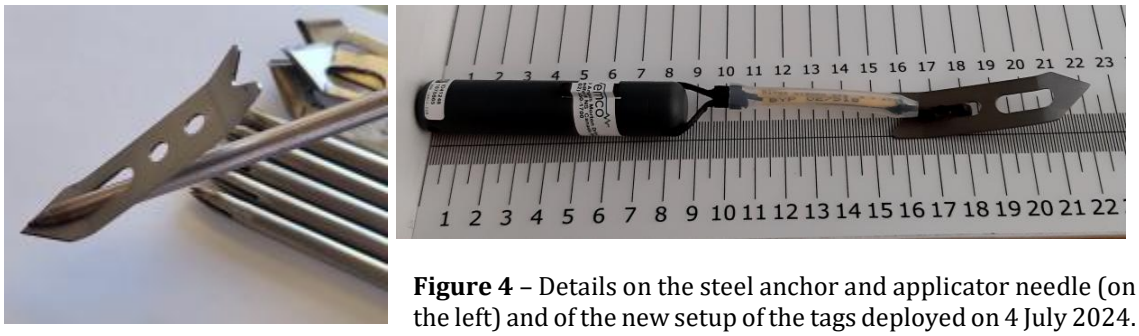

Figure 4 – Details on the steel anchor and applicator needle (on the left) and of the new setup of the tags deployed on 4 July 2024.

A different anchor was used, as well as the respective applicator to be used during the second phase of the tagging campaign (**Figure 4**, right panel), consisting of a steel anchor of about 65 mm in length, 14 mm width and 1 mm of thickness, that is attached to the tag by a 6 cm tether that included a

spaghetti tag inside the transparent silicone tube as detailed in **Figure 4** (right panel). It was noted that the steel anchor used in this 2nd phase of the campaign was deeply inserted into the fish body (**Figure 5**) and it was not possible to removed it just by pulling it, instead there was a need to use a knife to cut the skin and flesh of the fish. Therefore, it is highly recommended to use the anchor type, at least during underwater tagging of the acoustic tags.

Figure 5 – Detail on an attached acoustic tag using a steel anchor.

Overall, on 4 July 2024, a total of 1a specimens were tagged and released together with a group of additional 10 bluefin tunas which had all entered the tuna trap earlier that same day. The tuna had an estimated individual weight of 60 to 80 kg and the details on the tags reference numbers are provided in **table 2**.

Table 2 – Details on the tags ID and reference number for VEMCO V16 and ICCAT tags deployed on 4 July 2024 at the TUNIPEX tuna trap facility.

Tagging order	Date	VEMCO V16 Tag		ICCAT tag
		ID	Number	
1	04/07/2024	41233	1575650	BYP 027510
2	04/07/2024	41241	1575658	BYP 027511
3	04/07/2024	41242	1575659	BYP 027512
4	04/07/2024	41243	1575660	BYP 027513
5	04/07/2024	41244	1575661	BYP 027514
6	04/07/2024	41245	1575662	BYP 027515
7	04/07/2024	41246	1575663	BYP 027516
8	04/07/2024	41247	1575664	BYP 027517
9	04/07/2024	41249	1575666	BYP 027519
10	04/07/2024	41251	1575668	BYP 027520

The bluefin tuna specimens tagged during the 2nd phase of the campaign were classified as fish in a slightly poorer condition (i.e. not so fat) compared to those tagged in June. This is in line with the usual seasonal migration pattern for the region, corresponding to fish that has already (possibly) spawned in the Mediterranean Sea and were returning to the Atlantic Ocean.

Acknowledgments

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