

---

**East Atlantic Tuna Pole and line FIP based in Senegal**

**Analysis of data collected by  
observers on board EU vessels  
(2019-2022)**



**CONSULTANCY REPORT**

September 2023

---

Dr Fambaye NGOM SOW, Fisheries Biologist – Leading Consultant – Email: [ngomfambaye2015@gmail.com](mailto:ngomfambaye2015@gmail.com)  
Kamarel BA Fisheries Ecology

# Table of Contents

- 1. **Context**..... 3
- 2. **Methodological approach** ..... 3
- 3. **Results of the analysis** ..... 4
  - 3.1- *Characteristics of the pole & line operators based in Dakar* ..... 4
  - 3.2. The number of tides covered by observers ..... 5
  - 3.3. The specific composition of the target catches ..... 5
  - 3.4. Bycatch ..... 8
  - 3.5. Quantities and specific composition of live bait from pole-and-line vessels ..... 10
- 4. **Conclusions and Recommendations** ..... 11
- 5. **References**..... 12

## 1. Context

In Senegal, the FIP is for pole-and-line tuna fishing targeting Skipjack tuna (*Katsuwonis pelamis*), Yellowfin tuna (*Thunnus albacares*) and Bigeye tuna (*Thunnus obesus*) in the eastern Atlantic Ocean. It is a 4-year project, funded by Thai Union, Princes and the Association of Spanish Pole-and-Line Tuna Boats in Dakar.

The overall objective of the project is to achieve a sustainable stock status for tuna species that is compatible with Maximum Sustainable Yield (MSY) and strengthen the management systems. These are the guiding principles of the MSC standard and once met, the fishery is expected to go into certification. This is expected to start in 2024 for Skipjack, Yellowfin and Bigeye tuna caught in the eastern Atlantic Ocean by pole-and-line vessels based in Dakar, Senegal.

The FIP's triennial audit report identified a clear gap on the analyses of by-catch information that on board observers collect.

This report focuses on the analysis of data collected by PSPD (Directorate for the Protection and Surveillance of Fisheries) observers on board European Union pole-and-line vessels during the period 2019 - 2022. More specifically, the work is focused on 04 vessels (3 Spanish and 1 French). This is a follow-up to work by (Fall and Gueye, 2019) and (Ngom sow et al., 2020).

It is in this context that this study is carried out in order to see the quality of the information collected, particularly on incidental fauna, to identify gaps and to formulate recommendations.

## 2. Methodological approach

The work is based on the reports of observers from the Directorate for the Protection and Surveillance of Fisheries on board the 4 European Union pole-and-line vessels based at the port of Dakar (DPSP). In order to carry out this work, several tasks were carried out:

### **Retrieving Observer Reports**

In Senegal, observers from the Directorate of Fisheries Protection and Surveillance (DPSP) board the vessels and collect the data. As a result, a formal request was made to the PPPD to have the reports in paper format

### **Creation of the data entry mock-up**

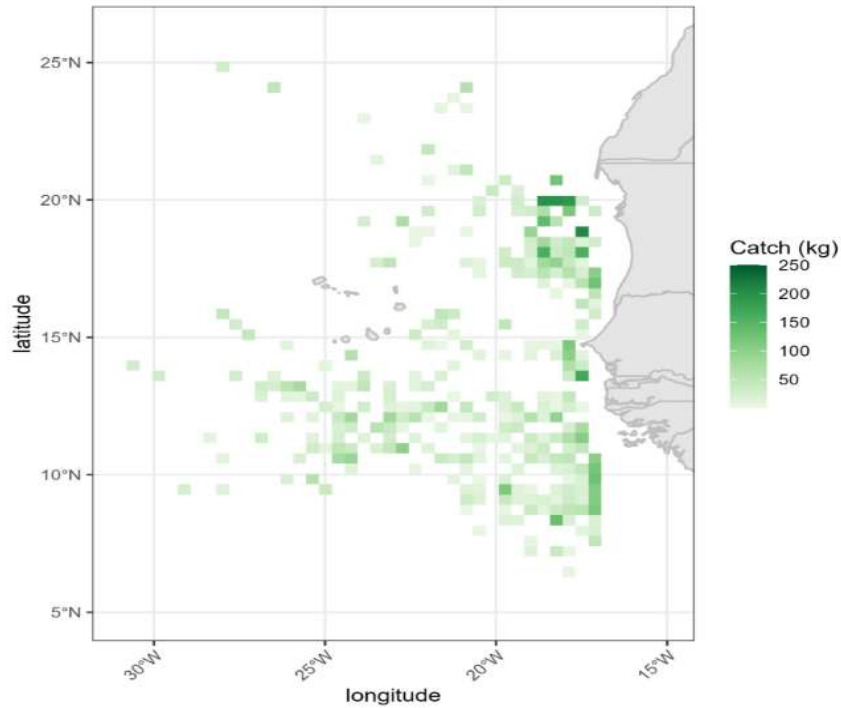
A model of data entry in MS Excel format was created in order to constitute the database which contains all the information listed in the reports by observers (catches of target species and bycatch).

### **Database Operation: Verification, Correction and Data Processing**

The database was thoroughly checked to detect inconsistencies related to collection (species codes, different nomenclatures depending on the observer, etc.). This work took us a colossal amount of time before we had an acceptable basis. This caused the delay on this deliverable.

### 3. Results of the analysis

Pole-and-line vessels exploit tuna schools located between latitudes 22° North and 5° South (from Mauritania to Guinea Conakry including the Cape Verde Islands) (Fonteneau, 1991, Ha l l ier et al., 1998, Ngom Sow et al., 2012) (**Figure 1**).



**Figure 1. Distribution of bait boat catches**

#### 3.1- Characteristics of the pole and lines vessels based in Dakar

The four vessels have gross tonnages that vary between 152 (Pilar Torre) and 370 (Corona del Mar), capacities between 300 and 400 tons and lengths between 32.50 and 36 m (Table 1)

**Table 1. Characteristics of the pole & line vessels based in Dakar**

Vessel Name	Country	Gauge (TX)	Capacity (ton)	Length (m)
<b>PILAR TORRE</b>	Spain	177	200	32.50
<b>IRIBAR ZULAIKA</b>	Spain	152	130-140	36.00
<b>BERRIZ SAN FRANCISCO</b>	Spain	241	165	35.50
<b>CORONA DEL MAR</b>	France	370	200 - 400	33.53

### 3.2. Number of trips covered by observers (from available observer logbooks 2019 to 2022)

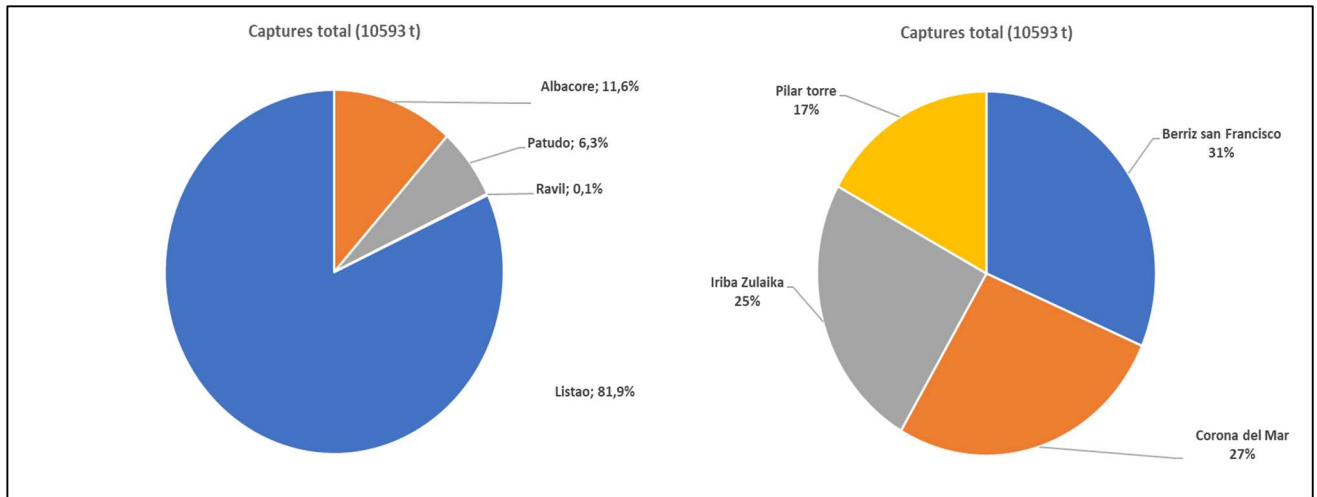
The number of trips covered by the observers is broken down by vessel and year in Table 2. The number of trips varies from ship to ship with the exception of the year 2022. Depending on the year, the number of trips covered by the observers also varies from year to year.

**Table 2. Number of trips covered by observers per vessel per year**

Year	2019	2020	2021	2022
Pilar Torre	0	9	6	8
San Francisco Again	11	6	8	8
Crown of the Sea	6	6	6	8
Iriba Zulaika	6	11	9	8
<b>Total</b>	<b>23</b>	<b>32</b>	<b>29</b>	<b>32</b>

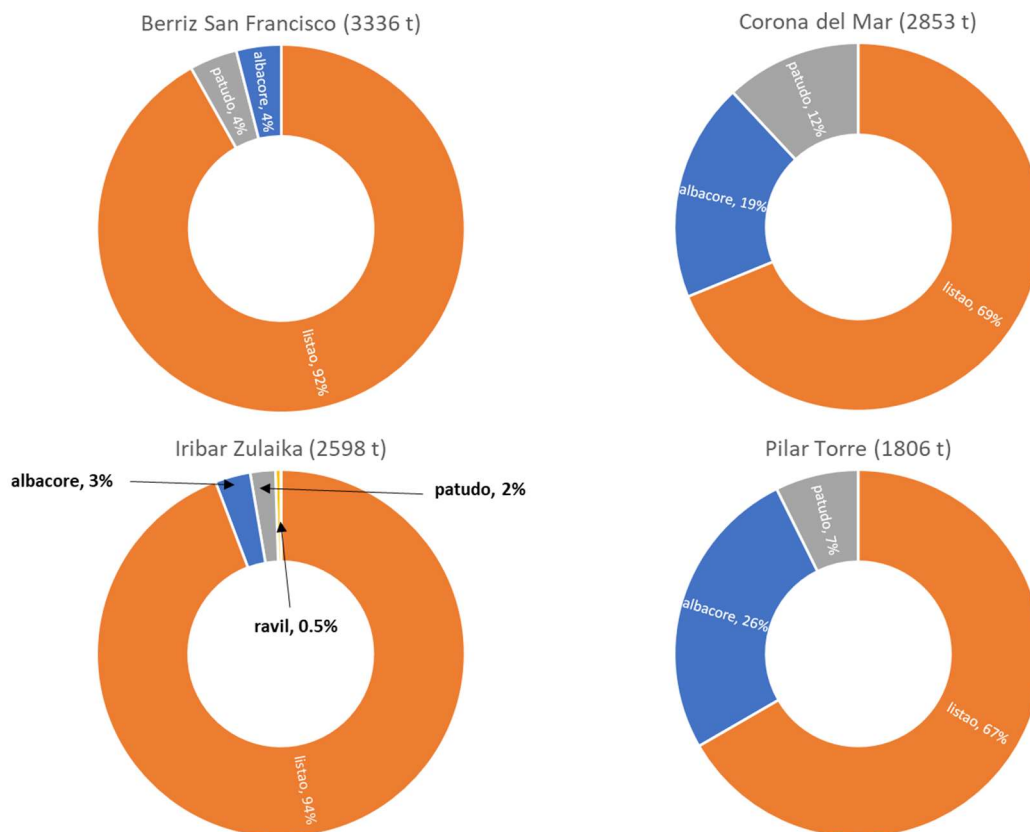
### 3.3. Composition of the target catches from available observer logbooks 2019-2022

The total tuna catches of the four pole-and-line vessels from available observer logbooks analysed amount to 10593 tons and are made up of 81.9% Skipjack tuna (SKJ), 11.6% Yellowfin tuna (YFT), 6.3% Bigeye tuna (BET) and 0.1% Rabil (Atlantic little tuna or thonine). 31% of these catches are made by the vessel Berriz San Francisco, 27% by Corona Del Mar, 25% by Iribar Zulaika and the rest by Pilar Torre (**Figure 3**).



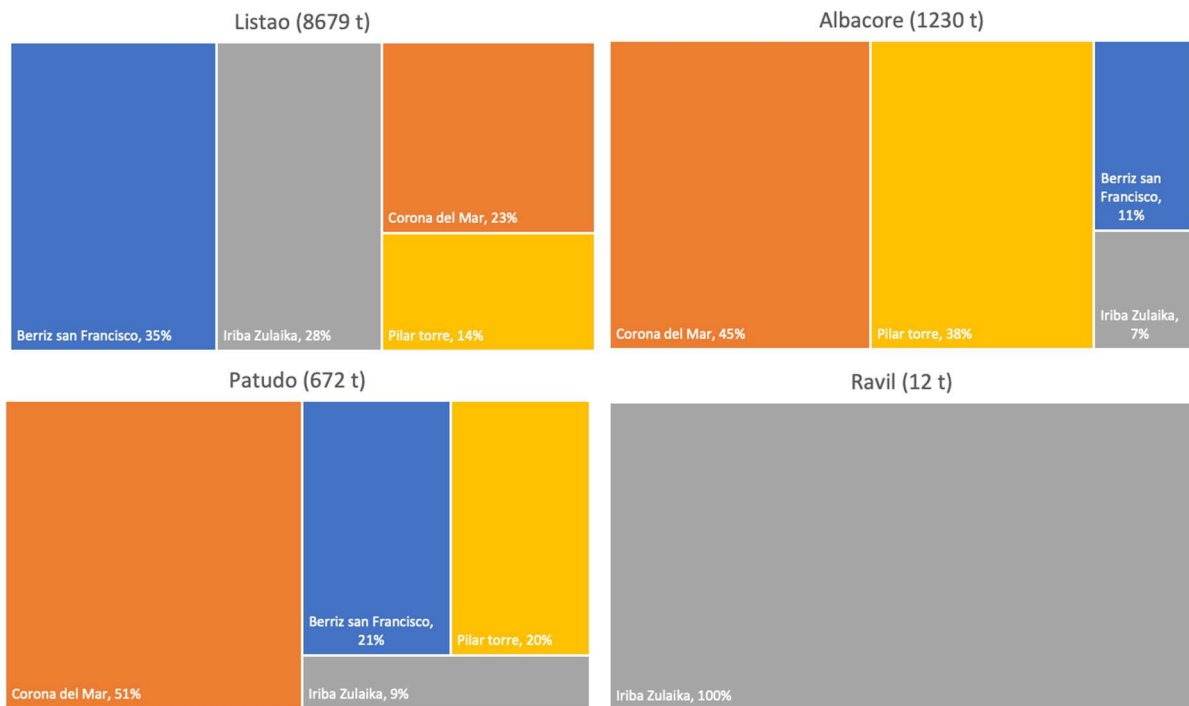
**Figure 3: Total tuna catches (left) and vessel catches (right).**

An analysis of catches per vessel shows that Skipjack tuna makes up the bulk of Berriz San Francisco's catches with nearly 92%, followed by Bigeye and Yellowfin tuna at 4% each (Figure 3). The specific composition of Corona del Mar is 69% Skipjack, 19% Yellowfin tuna and 12% Bigeye tuna; while in Iribar Zulaika, Skipjack tuna is the main species landed with 94%, while the others species are anecdotal. In Pilar Torre, Skipjack tuna accounts for a little more than 2/3 of the catches, Yellowfin tuna for 26% and Bigeye tuna for 7%.



**Figure: 4. Specific composition of tuna catches by the 4 pole-and-line tuna vessels**

Looking at the catches of each species per vessel, we can see that the Ravil (Atlantic little tuna or thonine) is caught entirely by Iribar Zulaika, while in Bigeye's case, a little more than half of the catches are made by Corona del Mar, followed respectively by Berriz San Francisco (21%), Pilar Torre (20%) and Iribar Zulaika (9%) (Figure 5). Yellowfin tuna is landed at 45% by Corona del Mar, followed by Pilar Torre (38%), then Berriz San Francisco (11%) and Iribar Zulaika (7%). Among Skipjack tusk, Berriz San Francisco accounts for about 35% of the catches, closely followed by Iribar Zulaika (28%) and Corona del Mar (23%), and finally Pilar Torre (14%).



**Figure 5: Contribution of the different vessels in the landing of the 4 main tunas**

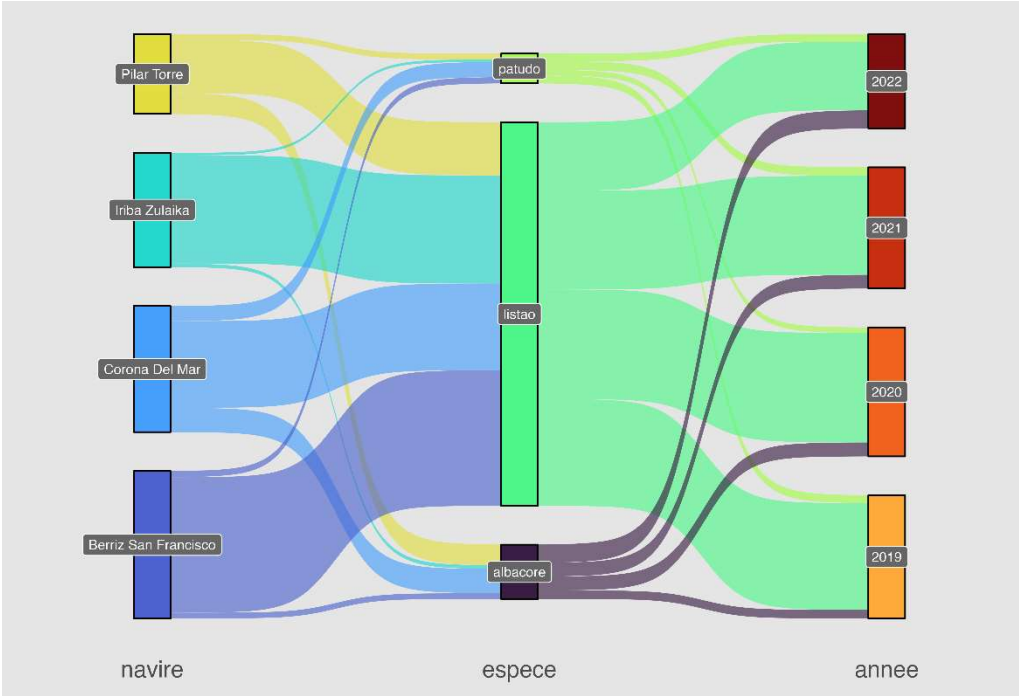
In 2019, Skipjack tuna was the most landed species with 2414.5 tons, in which Berriz San Francisco contributed around 54,52%, Corona del Mar 32.38% and Iribar Zulaika 13.1%. Yellowfin tuna came in second position with 194.12 t, and finally Bigeye tuna in 3rd position with 178.95 t (Figure 6). The catch composition of Yellowfin tuna by vessel was as follow: Berriz San Francisco (37.6%), Corona del Mar (35.12%) and Iribar Zulaika (27.28%); Whereas Corona del Mar contributed to Bigeye tuna catches up to 58.95%, Berriz San Francisco contributed 29.4% and Iribar Zulaika 11.65%.

The main species landed in 2020 were Skipjack tuna (2478.4 tons), Yellowfin tuna (314.44 tons) and Bigeye tuna (125.35 tons). For the Skipjack, Iribar Zulaika was the vessel that caught it the most with 36.71%, followed by Pilar Torre (23.87%). Berriz San Francisco and Corona del Mar occupied the 3rd and 4th place with 21.18% and 18.23%, respectively. 95,5% of Yellowfin tuna catches were handled by two vessels: Corona del Mar (47.33%) and Pilar Torre (48.21%). Iribar Zulaika and Berriz San Francisco only contributed for 3.71% and 0.75% of catches, respectively.

For Bigeye tuna catches contribution, Pilar Torre occupied the first position with 38.29%, followed by Corona del Mar (37.56%), then came Iribar Zulaika (15%) and finally Berriz San Francisco (9.11%).

The catch of Skipjack in 2021 rose to 2237.3 tons distributed between Iribar Zulaika (30.89%), Berriz San Francisco (28.43%), Corona del Mar (22.99%) and Pilar Torre (17.69%). The catches of albacore were estimated at 310.22 tons of which Pilar Torre occupied the first place with 46.42%, followed by Corona del Mar (38.97%), Berriz San Francisco (12.12%) and Iribar Zulaika (2.49%). The total catches of Bigeye tuna in 2021 estimated at 194.48 tons were mainly landed by Berriz San Francisco (38.82%), Corona del Mar (27.55%) and Pilar Torre (27.27%). Iribar Zulaika only landed about 6.35% of Bigeye tuna in 2021.

In 2022, the catches of Skipjack were dominated by Berriz San Francisco with 37.96% of the total catch (1548.832 tons), followed by Iribar Zulaika (34.21%), then Pilar Torre (13.95%) and Corona del Mar (13.88%). For “albacore, Corona del Mar was the vessel that caught the most of this species with around 51.3% of the total catch (410.82 tons), Pilar Torre came in second position with 42.48%. Berriz San Francisco and Iribar Zulaika caught around 4.14% and 2.07%, respectively. For Bigeye tuna, Corona del Mar alone contributed up to 77.98% to the total catches (172.8 tons), Pilar Torre accounted for 18.11%, Iribar Zulaika 3.04% and Berriz San Francisco 0.87%.



**Figure 6: Annual catches of Major Tunas and Bycatch species by vessel**

**3.4. Bycatch species**

The quantities of bycatch caught recorded in the observer reports are small and consist entirely of dolphinfish (1.15 tons) and hake (1.10 tons), and are sometimes mixed (1.05 tons). There is a near absence of incidental fauna in the records in observers (**Table 4**).



**Table 4: Catch of Species by Vessel and Quarter in 2019-2022 period**

Espèce	Navire	Trimestre	Capture
Albacore	Berriz San Francisco	1	51,9
		2	28
		3	35,4
		4	14,6
	Corona del Mar	1	21,1
		2	75,7
		3	243
		4	209
	Iriba Zulaika	1	19,7
		2	14,4
		3	36,4
		4	10,4
	Pilar Torre	1	27,3
		2	115
		3	131
		4	197
Coryphène	Corona del Mar	2	0,3
		3	0,3
	Iriba Zulaika	2	0,1
		3	0,4
		4	0,1
Coryphène + merlu	Pilar Torre	1	1,1
Listao	Berriz San Francisco	1	227
		2	654
		3	1668
		4	517
	Corona del Mar	1	7,6
		2	1238
		3	490
		4	228
	Iriba Zulaika	1	56,6
		2	784
		3	1304
		4	302
	Pilar Torre	1	6,7
		2	703
		3	341
		4	153
Merlu	Corona del Mar	3	1,1
Patudo	Berriz San Francisco	1	2,3
		2	2,9

### 3.5. Quantities and specific composition of live bait from pole-and-line vessels

As for the supply of live bait to pole-and-line operators, sardinella is the main species with nearly 199 tons, or 60.5%; it is followed by mullet 66.5 tons or 20.2% and the other species combined represents 19.2% (Figure 7 and Table 5). Sardinellas were caught much more in quarters 2 (116 tons), 3 (35.6 tons) and 4 (30.4 tons), while mullet in quarters 3 (44.8 tons), 4 (14.5 tons) and 2 (7.2 tons).

Berriz San Francisco is the vessel with the highest supply of sardinellas (76.2 tons), followed by Corona del Mar (51.5 tons), Iribar Zulaika (46.5 tons) and Pilar Torre (24.3 tons). As far as mullets are concerned, Corona del Mar occupies the 1st place with 20.7 tons, followed by Iribar Zulaika (17.9 tons), Pilar Torre (15.5 tons) and Berriz San Francisco (12.4 tons). Anchovies and sea bream are used mainly by Pilar Torre with 9 tons for each species. It is also important to note that the great mix of species in bait catches makes it difficult to quantify all species exactly.

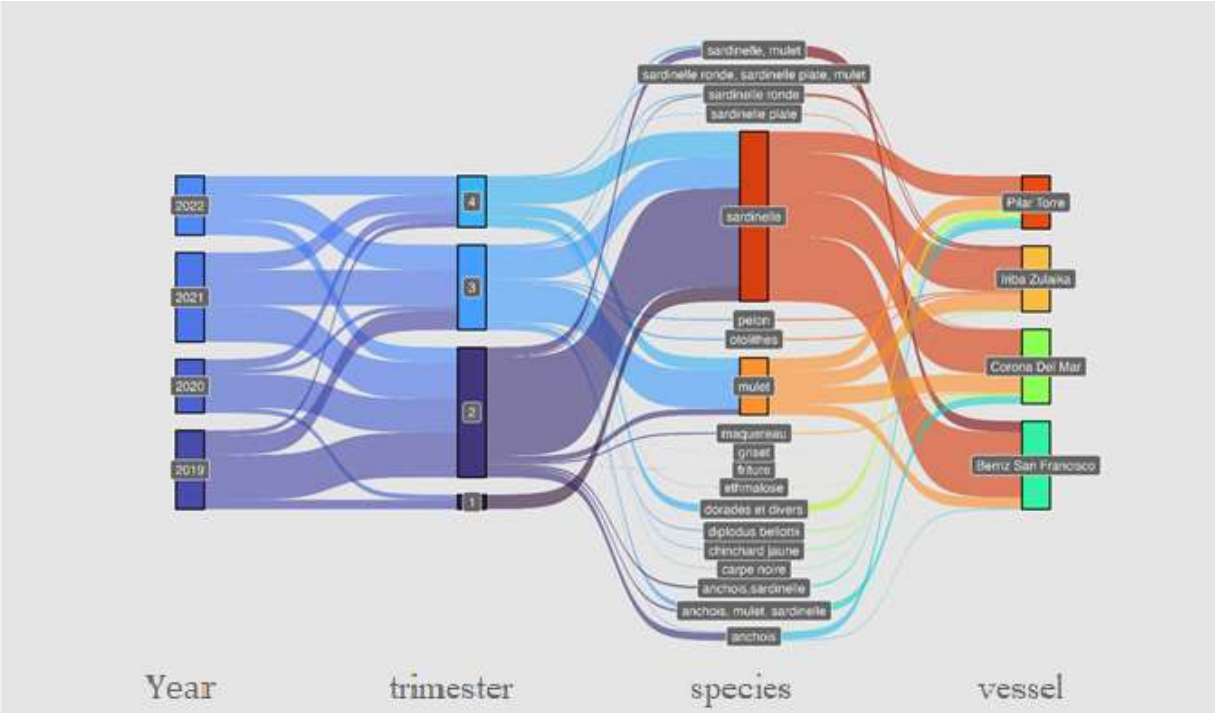


Figure 7: Supply of live bait to pole-and-line vessels based in Dakar

**Table 5: Live Bait Catch and Percentage**

<b>Species</b>	<b>Capture</b>	<b>Percentage</b>
anchovy	10,2	3,1%
anchovies + mullet + sardinella	9	2,7%
Anchovies + Sardinella	3	0,9%
carp	0,8	0,2%
Yellow horse mackerel	1,5	0,5%
diplodus bellottii	1,9	0,6%
Sea bream + miscellaneous	9	2,7%
Ethmalose	0,6	0,2%
Frying	0,25	0,1%
Griset	0,18	0,1%
Mackerel	2,25	0,7%
Mule	66,5	20,2%
Otoliths	2,5	0,8%
Fear	2,2	0,7%
Sardinelle	199	60,5%
Sardinelle plate	0,8	0,2%
Round sardinella	3,5	1,1%
Round Sardine + Flat + Mullet	2,5	0,8%
Sardinella + mullet	13	4,0%

## 4. Conclusions and Recommendations

Analysis of the reports of the observers on board the 4 EU vessels shows that: For catches of target species, the information is generally well reported in the fishing logs. As far as bycatch is concerned, reporting is almost non-existent. Only two species are recorded (Coryphene and Hake).

For live bait, there is no harmonization on species reporting. The information collected differs from one observer to another. There is a need to harmonize the nomenclature of species names. The quantities of live bait taken are reported by species, mixed species, genus or even unknown. Thus, there is a need for capacity building on the identification of the main species used as live bait by pole-and-line operators and the harmonization of species names used by observers.

It should be noted that in 2023, about fifteen observers were trained on the types of data to be collected once on board the ship, the identification of species (targets and bycatch), the filling out of forms, etc. At the end of this training, their reports were reviewed and validated with them. Now it is this new sheet that is used and the data is entered directly into MS Excel and on paper. It is hoped that there will be improvements in the collection of data from Senegalese observers on tuna vessels. An updated version of this report will be published end of 2025 with this new information.

## 5. References

Fall, M., Guèye, M., 2019. RAPPORT DE CONSULTANCE. Etude de de la pêche de la pêche de d'appâts vivants et DCP - FIP Pêche de thon à la Canne au Sénégal.

Fonteneau, A. 1991, Monts sous-marins et thons dans l'Atlantique tropical est. *Aquat. Living Resour.*, 1991, 4, n° 1, p. 13-25.

Freon P. & Lopez J. Les ressources pélagiques côtières au Sénégal : Etat des stocks et perspectives en 1981. *Archive CRODT N°127*, é1983 ; 82 p.

Hallier, J.P., Diouf, T., M'Bareck, M. et Foucher, E. 1998, la pêche de canneurs de Dakar : une évolution remarquable pour assurer sa survie. In: ICCAT Tuna Symposium. *Collect. Vol. Sci. Pap. ICCAT*, 50(2): 673-701.

Ngom-Sow F., Floch L., Chassot E et Chavance P. 2012. La pêche thonière des canneurs de Dakar : bilan de l'évolution durant la période de 1960 à 2010. *SCRS/2011/179*, *Collect. Vol. Sci. Pap. ICCAT*, 68(3): 1231-1249 (2012)

