

Note on the yearly catches by country and gear of the FISM (France – Ivory Coast – Senegal - Morocco) fleet during the 1969-1990 period

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Summary

The current ICCAT Task 1 statistics database does not include any record of catch for Senegal and Ivory Coast during the period 1969-1990 as these data were historically included in the aggregated catch data of the so-called “FISM” fleet under the flag ‘EC.France’. Landing and logbook data were used to reallocate the FISM fleet catch between countries. This analysis shows the need to clarify the task 1 ICCAT statistics by country and historic gear, and ask France, Ivory coast and Senegal to declare their respective catch during 1969-1990. This change in the ICCAT database will not affect the total catch of task 1 statistics.

Résumé

La tâche 1 de la base de données statistiques de l'ICCAT n'inclut pas de données de captures pour le Sénégal et la Côte d'Ivoire durant la période 1969-1990 car ces données étaient historiquement incluses dans les captures agrégées de la flottille 'FISM' sous le pavillon 'EC.France'. Des données de débarquement et issues des livres de bord ont été utilisées pour réallouer les captures de la flottille FISM entre les pays qui la composent. Cette analyse souligne le besoin de clarifier la tâche 1 des statistiques de la CICTA par pays et engin historique, et de demander à la France, la Côte d'Ivoire et le Sénégal de déclarer leurs captures respectives durant la période 1969-1990. Cette modification de la base de données n'affectera pas les captures totales de la tâche 1.

1. Introduction

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The current ICCAT Task 1 statistics database does not include any record of catch for Senegal and Ivory Coast during the period 1969-1990 as these data were historically included in the aggregated catch data of the so-called "FISM" fleet under the flag 'EC.France'. The historical reasons explaining the definition of a FISM fleet are given in Fonteneau & Pianet (2007) and mainly include the homogeneity of fishing vessels and strategies, the avoidance of double declaration by both the individual flags and landing countries, the increase in sample size, and the homogeneity of data collection and processing. Following the recommendations made by Fonteneau and Pianet (2007) an analysis was performed to provide the yearly catches for each of the "FISM" individual flags: France, Ivory Coast, Senegal and Morocco. Prior to 1969, all the catch data reported to ICCAT as FISM were in fact catches that were really taken by French flag vessels, as the Senegalese fleet was developed in 1969 and the Ivorian one in 1970. Due to a failure in the back-up of individual logbook data for the period 1969-1979, only information about commercial landing of individual vessels by fishing harbour, species, flag and gear was available for this period. 2 distinct datasets were then used, the landing data and the logbook data for 1969-1979 and 1980-1990, respectively. The reallocation of the FISM fleet catch between countries is of major importance to provide on one hand a consistent time series of catch for the main fishing fleets that harvested tunas during 1969-1990. Such reallocation of catches by flag is necessary to show the real historical importance of each of the various fishing countries.

2. Materials

In the present analysis, 3 major gears were considered to accord with the information available in the ICCAT database for the "EC.France" flag corresponding to the FISM fishing fleet: baitboats (BB), medium purse-seiners (PSM), and large purse-seiners (PSG) described by a capacity over 200 MT. The BB gear included ice-well (BBI) and freezer baitboats (BBF) of the current ICCAT database, and medium purse-seiners (PSM) included mixed fishing activity, purse-seiners using live-bait (PSLB), and purse-seiners (PS).

2.1 1969-1979: Landing data

The landing database for the period 1969-1979 included more than 11,000 records of commercial landings (corresponding to 100% of the total landings) for the 3 major tuna species targeted by the FISM fleet: yellowfin (*Thunnus albacares*, YFT), skipjack (*Katsuwonis pelamis*, SKJ) and bigeye tuna (*Thunnus obesus*, BET). The landings of these 3 species showed an increasing trend throughout the period and represented on average about 63,000 t per year (Fig. 1a). Yellowfin and skipjack tunas represented the large majority of landings, with an average of 65% and 32% of the total landings, respectively. During this period, the fleet was composed of about 175 fishing vessels that landed in 8 fishing harbours, with Abidjan in Ivory Coast, Dakar in Senegal, and Pointe-Noire in Congo providing the bulk of the landings.

2.2. 1980-1990: logbook data

About 4,000 fishing trips were recorded during 1980-1990 for the 4 countries composing the FISM fishing fleet. Catch data based on logbook information were species-specifically corrected to account for problems of identification of small-sized individuals (e.g. Fonteneau and Marcille 1993). Here, these catch data estimated onboard fishing vessels were not adjusted to the effective landings, i.e. the species composition of the catch estimated after correction was assumed to be accurate. Catches of the FISM fleet showed high variations throughout the period 1980-1990, with major changes in the species composition and a strong decrease of catch in the mid-1980s, a decrease mainly due to the departure of French

and Ivorian large purse-seiners to the Indian Ocean (Fig. 1b) following the environmental anomaly observed during the first quarter of 1984..

3. Methods

Annual total catches by species and gear for the FISM fleet were first estimated and compared with the ICCAT time series of catch for the flag “EC.France”. Based on the country of origin of fishing vessels, the annual proportion of catch by FISM country for each gear and species was then estimated for the 2 periods 1969-1979 and 1980-1990. This proportion was then used to split the ICCAT “EC.France” catch into the 4 composing countries of the FISM fleet.

4. Results

Catch time series of the FISM fleet derived from the 2 databases and available from the ICCAT database generally showed similar variations for each gear and species (Fig. 2). There was however a certain discrepancy for bigeye and skipjack tunas for the period 1969-1979, as specific corrections had been made in the ICCAT database to compensate for overestimates of small bigeye catches following the system defined by the Working

Group on Juvenile Tropical Tunas (Brest 1984) (Fig. 3a). Variations in aggregated catches of skipjack and bigeye tuna were indeed consistent between the ‘CM60’ and ICCAT data (Fig. 3b). The assumption of similar bias in species composition for the 4 FISM countries implied by the specific correction made in the ICCAT database was considered valid regarding the homogeneity of the FISM fleet for the period 1969-1979 (Fonteneau and Pianet 2007).

The reallocation of catch between FISM flags showed strong differences between gears, species, and time periods (Table I). For the 3 tuna species, catches from France predominated for both baitboat and large purse-seine fisheries during the full time period 1969-1990. French landings represented about 95% of tunas landed by baitboats during this period and about 85% and 78% by large purse-seiners during 1969-1979 and 1980-1990, respectively. French and Senegalese medium purse-seiners (PSM) were important during 1969-79 while the catches associated with this gear decreased steadily in the mid-1980s with the last French and Moroccan vessels leaving the fishery in 1981 and 1983, respectively. 1-2 Senegalese purse-seiners remained in the fishery through the late 1980s, landing a few hundred tons of tuna. Catches by large purse-seiners⁵ (PSG) also showed a strong decrease in the mid-1980s due to the decrease in the number of French and Ivorian boats in the eastern Atlantic waters, several of them leaving to start a fishery in the Indian Ocean.

There was generally a good agreement for between our catch estimates for the Morocco flag and data available in the ICCAT database except for large purse-seiners in the case of skipjack and bigeye tunas where ICCAT catches were higher than derived from IRD data (Fig. 4). Because Morocco declared its catches to ICCAT, the reallocation of FISM catches should only consider France, Senegal, and Ivory Coast.

5. Conclusion

The reallocation of the catch data of the FISM fleet aggregated under the ‘EC.France’ flag during 1969-1990 shows the need to:

⁵ In the ICCAT database online, large purse-seiners for the flag ‘EC.France’ correspond to the gear PSG from 1969 to 1980 and to the gear PS for 1981-1990 for yellowfin and skipjack tunas. For bigeye tuna, there is no problem of changing gear for 1969-1990 for the large purse-seiners.

- clarify the task 1 ICCAT statistics by country and historic gear, providing a full identification of the yearly catches by flag and gear during the period,
- ask France, Ivory coast and Senegal to declare their respective catch during 1969-1990, these yearly catches being at the level of present data shown by table I. This change in the ICCAT database will not affect the total catch of task 1 statistics nor the Task 2 catch and effort statistics that would remain as an aggregated FIS fleet, but only for scientific purposes.

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Figure captions

Fig. 1. FISM fleet (a) landings during 1969-79 and (b) catches estimated aboard fishing vessels and corrected for species composition during 1980-90 for the major commercial tunas of the eastern Atlantic Ocean. YFT = yellowfin; SKJ = skipjack; BET = bigeye.

Fig. 2. Comparison between FISM catch time-series derived from IRD and ICCAT databases: (a) Yellowfin tunas caught by baitboats during 1969-79 (b) Skipjack tunas caught by large purse-seiners during 1980-90.

Fig. 3. Comparison between FISM catch time-series derived from IRD and ICCAT databases: catches by large purse-seiners during 1969-79 for (a) Bigeye tunas (b) Bigeye and skipjack tunas aggregated together.

Fig. 4. Comparison between Moroccan catch data derived from the FISM aggregated catch time series and catch available in the ICCAT database. YFT = yellowfin; SKJ = skipjack; BET = bigeye; PSM = medium purse-seiners and PSG = large purse seiners.

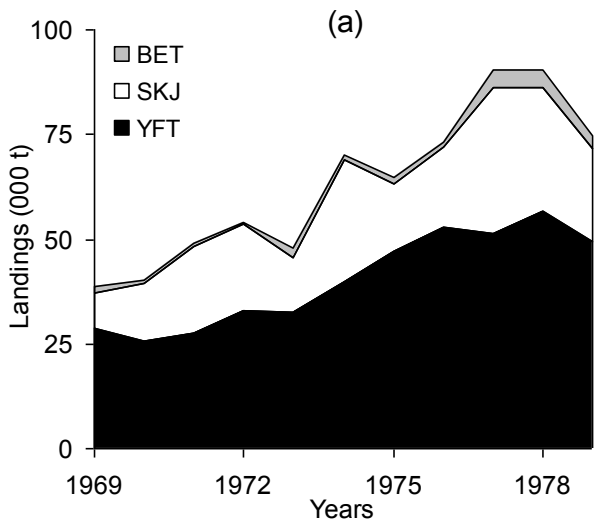


Figure 1a

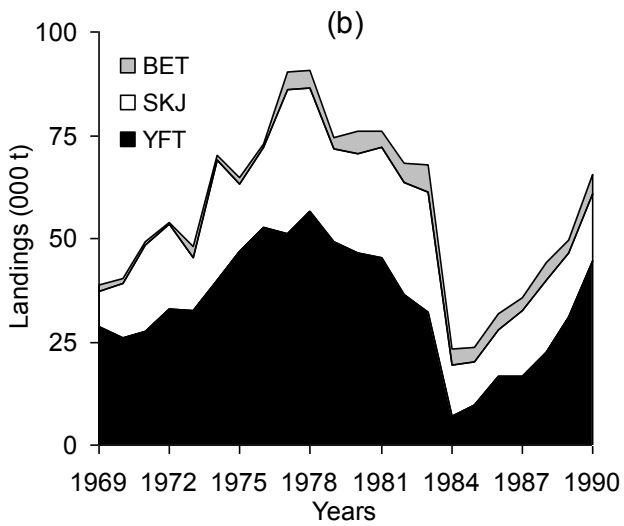


Figure 1b

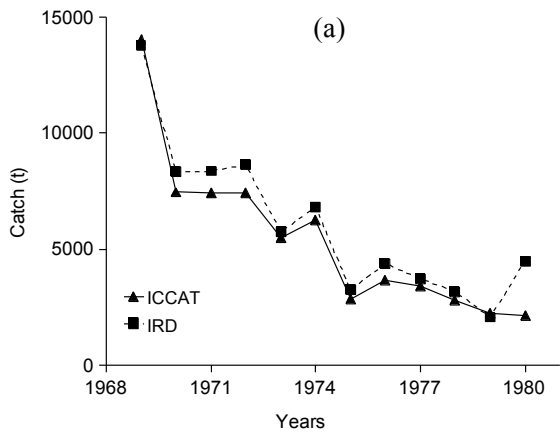


Figure 2a

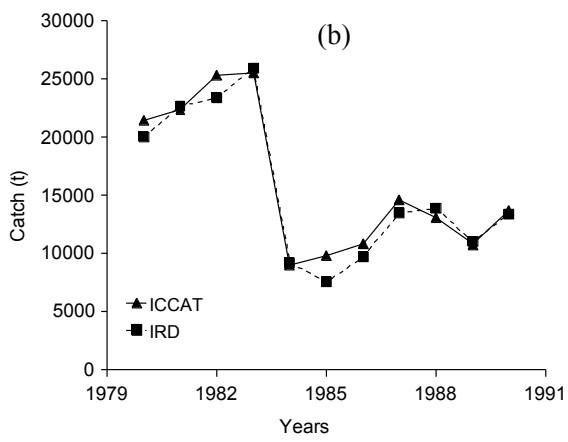


Figure 2b

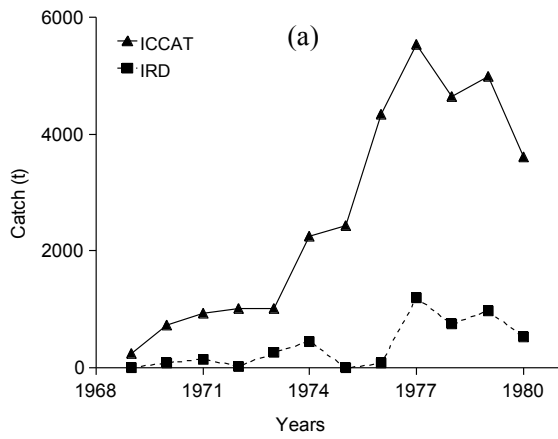


Figure 3a

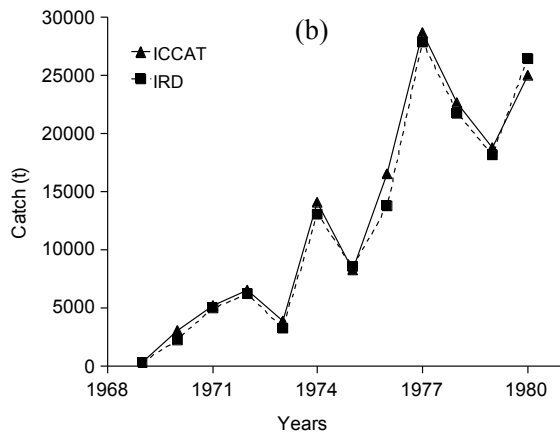


Figure 3b

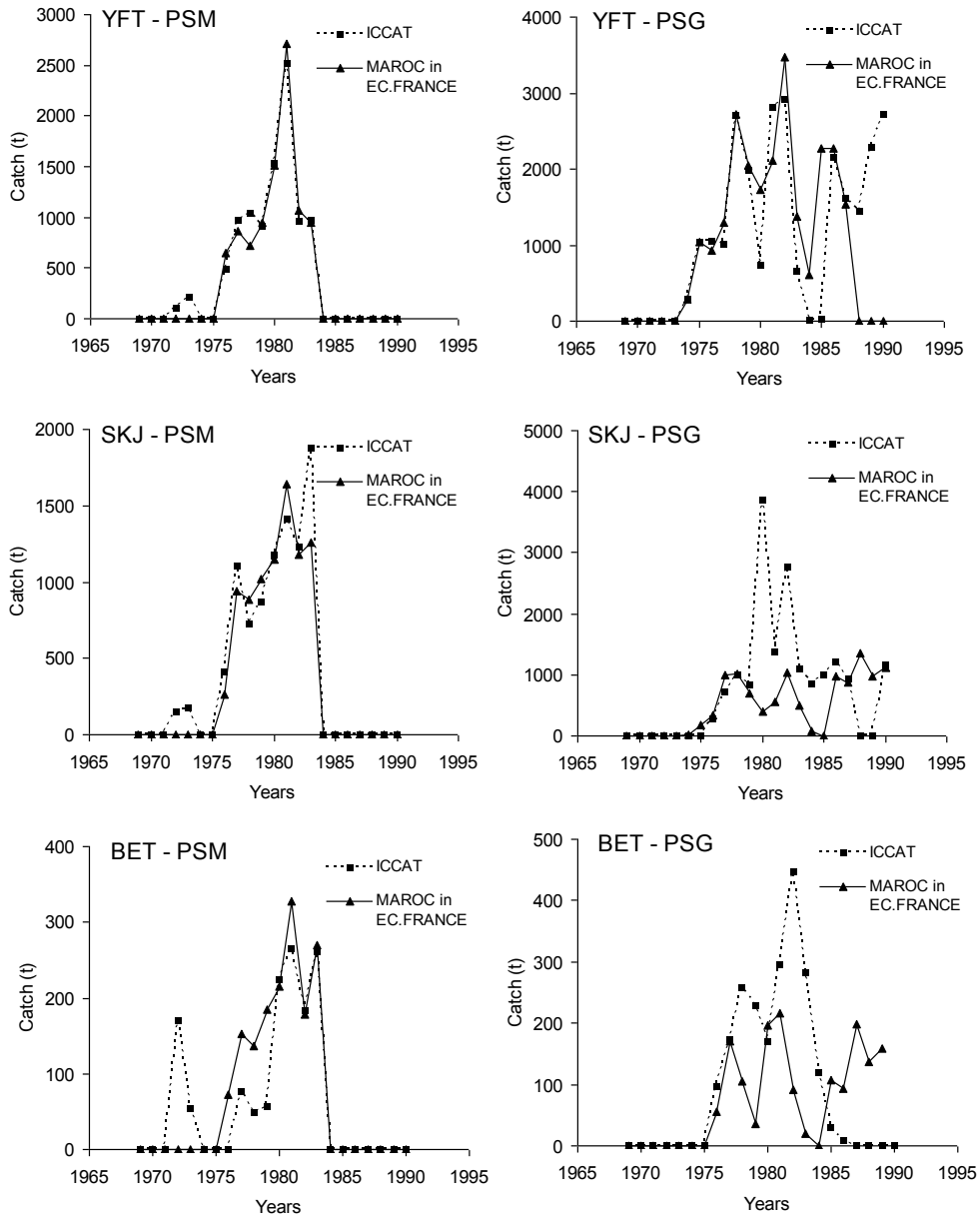


Figure 4

Table I. Annual catch (t) by FISM country, species, and species for the period 1969-1990. BB = Baitboat; PSM = Medium purse-seiner; PSG = large purse-seiner; YFT = yellowfin; SKJ = skipjack; BET = bigeye.

			1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
France	YFT	BB	12463	6366	6443	6422	5486	6240	2841	3577	3327	2727	2205
France	YFT	PSM	10595	7588	8122	8798	7721	8878	5759	3494	2182	525	31
France	YFT	PSG	2915	5830	5153	8995	11717	15969	27943	33652	32065	37171	33561
France	SKJ	BB	3270	3830	4874	3439	3201	4375	1760	2070	2592	3220	3326
France	SKJ	PSM	2283	4056	5896	5099	2540	6107	2009	1018	2030	738	15
France	SKJ	PSG	121	2213	3897	4773	2524	11099	4746	9449	17255	13060	9949
France	BET	BB	2109	1077	1024	1059	1224	981	1325	1333	2541	3530	2004
France	BET	PSM	999	1276	997	1382	1162	1137	325	157	482	287	27
France	BET	PSG	0	735	807	1013	784	1889	2429	4331	3920	3372	3582
Senegal	YFT	BB	1564	1090	985	989	7	34	25	105	64	74	56
Senegal	YFT	PSM	936	2727	4069	5908	5865	4173	3069	1904	632	956	189
Senegal	YFT	PSG	0	0	0	0	0	0	0	0	237	0	0
Senegal	SKJ	BB	299	389	718	260	26	50	23	66	50	93	42
Senegal	SKJ	PSM	183	1274	2415	3304	2236	3372	2171	966	1293	2214	440
Senegal	SKJ	PSG	0	0	0	0	0	0	0	0	125	0	0
Senegal	BET	BB	251	382	324	10	0	0	4	32	28	81	34
Senegal	BET	PSM	48	412	690	320	879	473	818	626	226	368	204
Senegal	BET	PSG	0	0	0	0	0	0	0	0	0	0	0
Ivory Coast	YFT	PSM	0	380	606	590	1311	1479	1837	868	1128	1224	261
Ivory Coast	YFT	PSG	0	143	690	2039	1039	1489	4589	6485	8337	8769	8667
Ivory Coast	SKJ	PSM	0	148	466	415	489	1382	622	334	960	939	185
Ivory Coast	SKJ	PSG	0	141	428	751	321	735	896	2374	4732	3899	3165
Ivory Coast	BET	PSM	0	3	0	0	97	351	0	0	86	23	0
Ivory Coast	BET	PSG	0	0	130	0	242	370	0	6	1554	1106	1295

Table I. Annual catch (t) by gear, species and FISM country for the period 1969-1990 (continued). BB = Baitboat; PSM = Medium purse-seiner; PSG = large purse-seiner; YFT = yellowfin; SKJ = skipjack; BET = bigeye.

			1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
France	YFT	BB	2111	2913	3034	2728	3383	2736	3463	3525	4304	2197	3671
France	YFT	PSM	1	72	0	0	0	0	0	0	0	0	0
France	YFT	PSG	38989	36472	29311	33811	2552	7563	10932	11475	14478	26124	39182
France	SKJ	BB	3110	2498	4378	2655	3655	3152	1612	1783	2520	3802	3352
France	SKJ	PSM	5.5	91.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
France	SKJ	PSG	17191	16337	16532	19182	4670	5913	8721	12556	10892	9808	12525
France	BET	BB	2407	2164	1832	2062	2122	3846	3142	2535	2503	2040	2739
France	BET	PSM	1	27	0	0	0	0	0	0	0	0	0
France	BET	PSG	2943	3804	3371	4507	1442	379	874	806	1322	1085	2124
Senegal	YFT	BB	31	40	0	0	77	138	334	253	104	143	112
Senegal	YFT	PSM	0	588	378	35	34	123	115	144	128	62	0
Senegal	YFT	PSG	0	0	1083	1128	990	1720	754	484	861	0	0
Senegal	SKJ	BB	69	110	0	0	150	141	282	174	280	374	103
Senegal	SKJ	PSM	0	861	443	193	154	582	275	531	595	253	0
Senegal	SKJ	PSG	0	0	1346	902	2682	2763	1170	1203	868	0	0
Senegal	BET	BB	43	34	0	0	24	188	86	144	4	0	0
Senegal	BET	PSM	0	105	50	14	0	16	3	262	0	0	0
Senegal	BET	PSG	0	0	115	146	195	109	55	64	133	0	0
Ivory Coast	YFT	PSM	0	0	0	0	0	0	0	0	0	0	0
Ivory Coast	YFT	PSG	10970	9670	8051	1143	891	0	0	0	0	0	0
Ivory Coast	SKJ	PSM	0	0	0	0	0	0	0	0	0	0	0
Ivory Coast	SKJ	PSG	3836	5486	6357	4969	1613	1094	0	0	0	0	0
Ivory Coast	BET	PSM	0	0	0	0	0	0	0	0	0	0	0
Ivory Coast	BET	PSG	628	1425	1308	1041	450	76	0	0	0	0	0