1	No evidence from long-term analysis of yellowfin tuna condition that Drifting Fish
2	Aggregating Devices act as ecological traps
3	
4	Supplement 1
5	
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Year	FOB-associated	Free school	Unknown	Total
1987	0	0	659	659
1988	0	0	664	664
1989	0	0	401	401
1990	279	119	407	805
2003	78	75	343	496
2004	0	82	691	773
2005	235	10	979	1,224
2006	105	337	3,339	3,781
2007	61	34	1,524	1,619
2008	9	27	926	962
2009	513	100	2,008	2,621
2010	433	123	944	1,500
2011	629	591	604	1,824
2012	233	510	2,688	3,431
2013	381	36	944	1,361
2014	523	178	402	1,103
2015	598	37	425	1,060
2016	0	0	294	294
2017	114	0	140	254
2018	165	0	251	416
2019	0	0	666	666
Total	4,356	2,259	19,299	25,914

Table S1: Number of sampled yellowfin tuna per school type per year.

Table S2: Number of sampled yellowfin tuna per size class per year.

Year	< 75 cm	75 – 120 cm	> 120 cm
1987	13	423	223
1988	11	254	399
1989	19	189	193
1990	804	1	0
2003	0	166	330

Year	< 75 cm	75 – 120 cm	> 120 cm
2004	0	157	616
2005	0	1,089	135
2006	0	2,670	1,111
2007	0	960	659
2008	0	163	799
2009	158	1,244	1,219
2010	331	304	865
2011	31	752	1,041
2012	16	1,781	1,634
2013	189	462	710
2014	678	272	153
2015	751	229	80
2016	230	4	60
2017	197	24	33
2018	342	74	0
2019	640	26	0
Total	4,410	11,244	10,260



20 Figure S1: Coefficients of the Generalized Additive Models considering a subset of data. Only

- small fish (<75cm, red circles), only medium fish (75-120cm, blue triangles) or only large fish
- 22 (>120cm, green squares). Coefficients of the fishing year (A) and of the quarter (B). Each coefficient
- 23 represent the mean deviation of T (K_n) from the values at a given level of reference. The error bars
- represent the standard deviation. Considered categories of reference: Y: 2017; Q: Q1. The year 2017
- 25 was chosen as the reference year because it is the most recent year with all size classes measured.



26 Figure S2: Coefficients of the Generalized Additive Model with fishing mode as an explanatory

27 **variable.** Coefficients of the fishing year (A), of the quarter (B), of the size class (C) and of the fishing

mode (D). Please note that each coefficient represents the mean deviation of T(K_n) from the values for 28 a given category of reference. The shape of the point represents the distribution of the obtained values. 29 30 The numbers in grey in the upper part of the panels represent the percentage of the models generated in 31 the bootstrap for which the given category was significantly different from the category of reference. 32 Considered categories of reference, represented by a black dot: Y: 2015; Q: Q1; SC: <75 cm, FM: FOB. 33 2015 was chosen as the reference year because it is the most recent year with both FOB-associated and 34 FSC tuna, as only FOB-associated tuna were sampled in 2016 and 2017. The T(K_n) of FSC was 35 significantly higher than that of FOB-associated tuna in all the models generated in the bootstrap (see 36 panel D).





- 42 for which the given category was significantly different from the category of reference. Considered
- 43 categories of reference: Y: 2018; Q: Q1; SC: <75 cm.



44 Figure S4: Diagnostic plots of the residuals of 4 randomly picked Generalized Additive Models performed. (A-D) Quantile-quantile plots of the

45 residuals. (E-H) Plot of the Moran's I in the data, in blue, and in the model residuals, in red. Distances on x axis is the distance used to define two

46 points as "linked" in the Moran's I calculation (see details of the *dnearneigh* function in the *spdep* package in R).



47 Figure S5: Coefficients of the Generalized Additive Model presented in the main
48 manuscript. Coefficients of the fishing year (A) (same as panel B of Figure 2), of the quarter
49 (B) and of the size class (C). Each coefficient represents the mean deviation of T(K_n) from the

values for a category of reference. The shape of the points represents the distribution of the
values obtained with the bootstrap process. Numbers in grey in the upper part of the panels
represent the percentage of the models generated in the bootstrap for which a given category
was significantly different from the category of reference. Considered category of reference,
represented by a black dot: Y: 2019; Q: Q1; SC: <75 cm.



Figure S6: Spatial prediction of the Generalized Additive Models. (A) Mean predicted
value of K_n. (B) Mean number of samples in the data used as input in the model. Dark grey

- 57 cells represent cells in which no tuna was sampled. Considered categories of reference for the
- 58 prediction: Y: 2019; Q: Q1; size class: <75 cm.



- 59 **Figure S7: Boxplot of the fork length of sampled tuna per year.** The uneven distribution
- 60 of the sampling is mainly due to the fact that data comes from different research projects,
- 61 which do not always aim at studying the same size class.