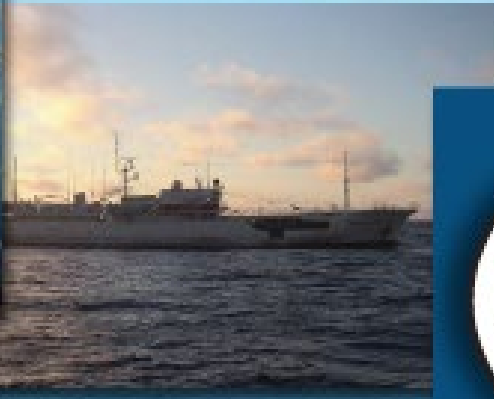


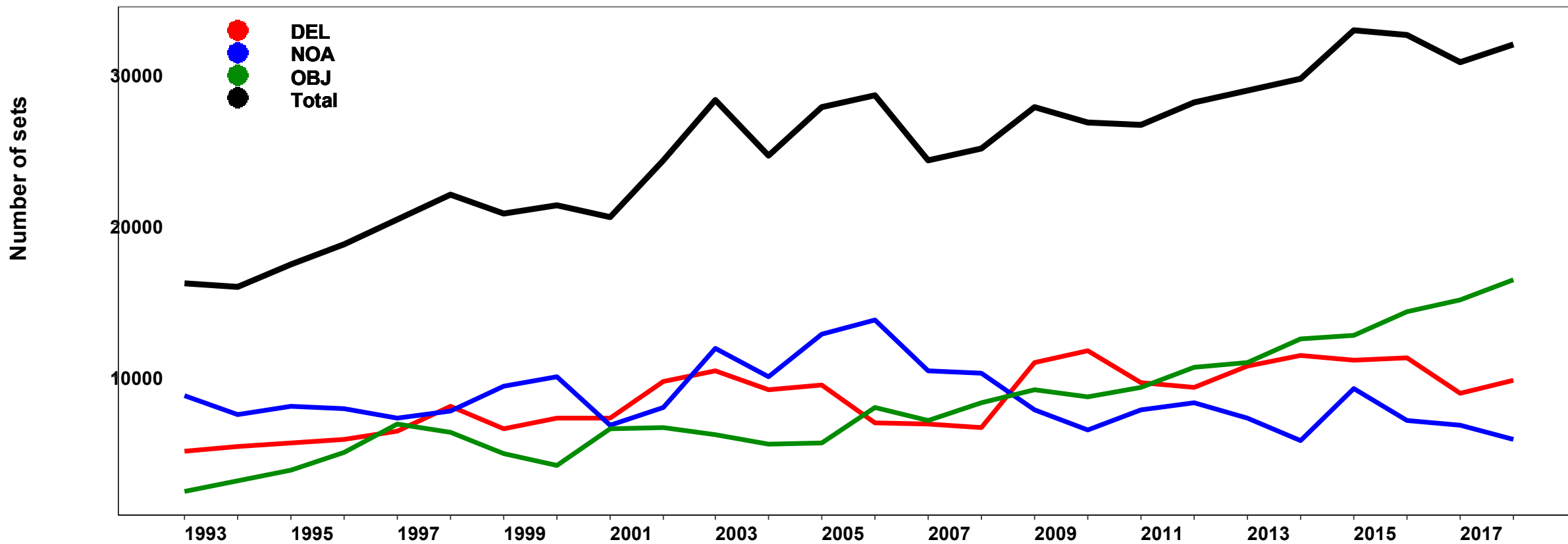
Comisión Interamericana del Atún Tropical
Inter-American Tropical Tuna Commission



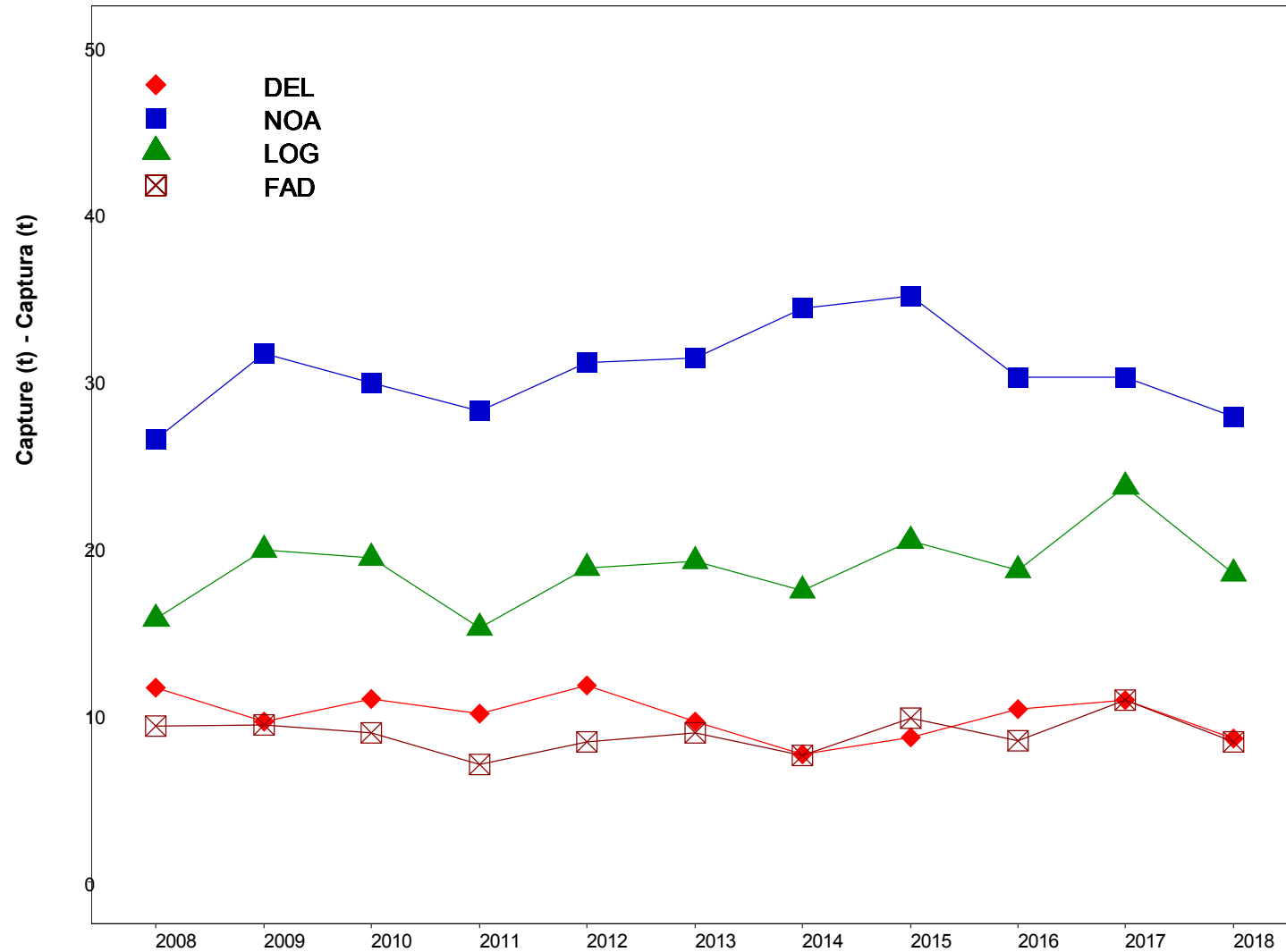
THE FISHERY ON FISH-AGGREGATING DEVICES (FADs) IN THE EASTERN PACIFIC OCEAN

Martin Hall and Marlon H. Román

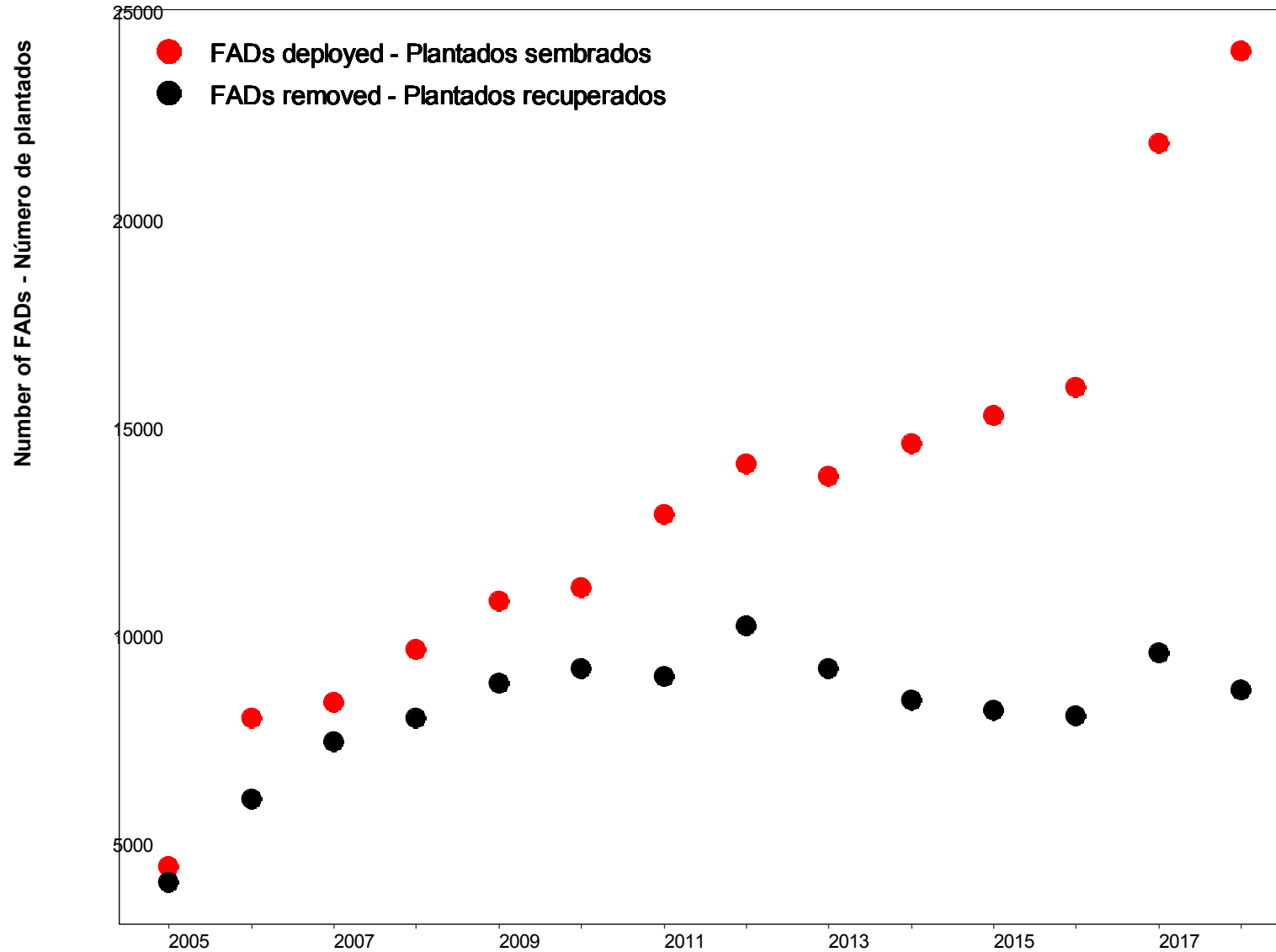
Estimated number of sets, by type of class 1-6 vessels, 1993-2018



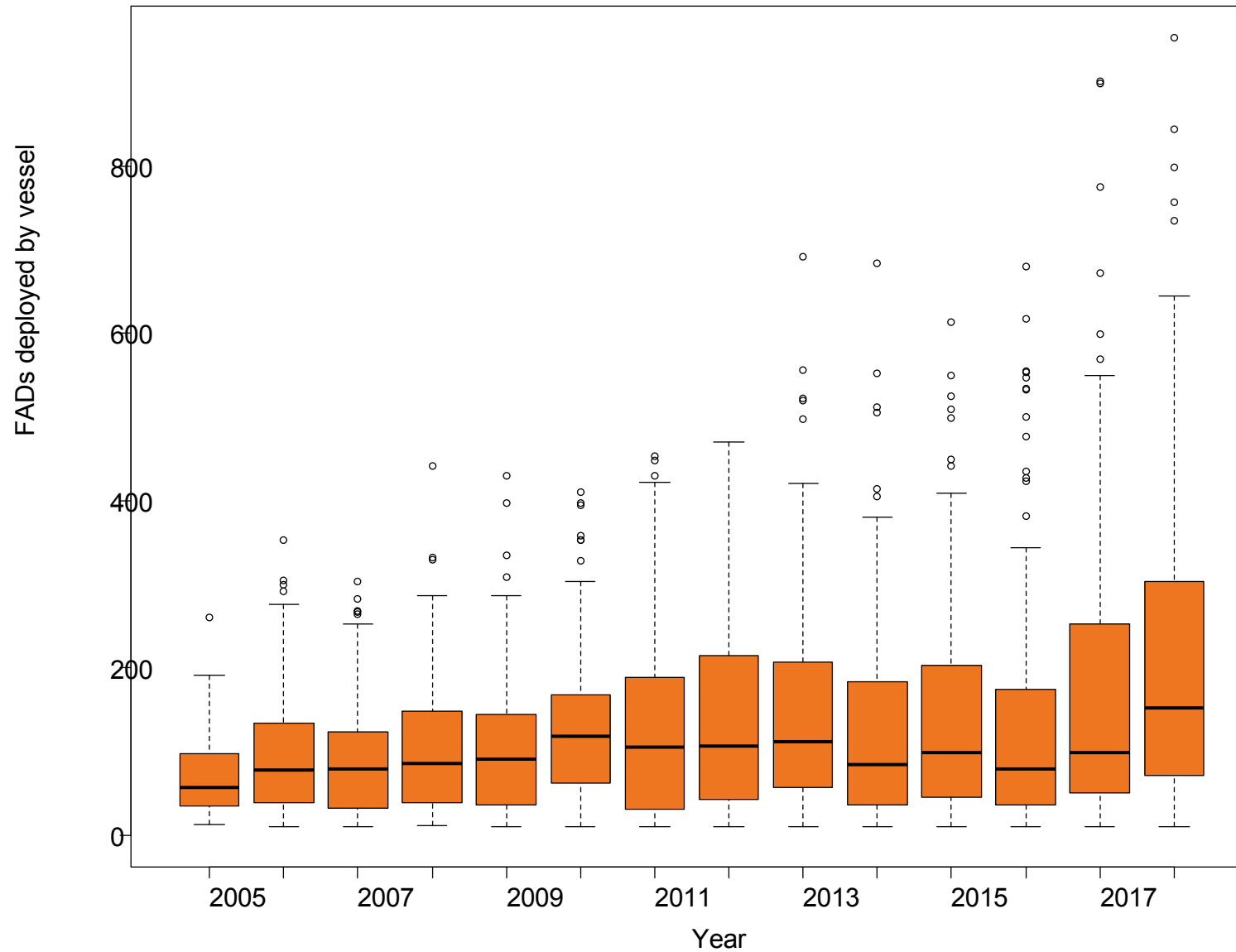
Percent of null sets, by set type, 2007-2018



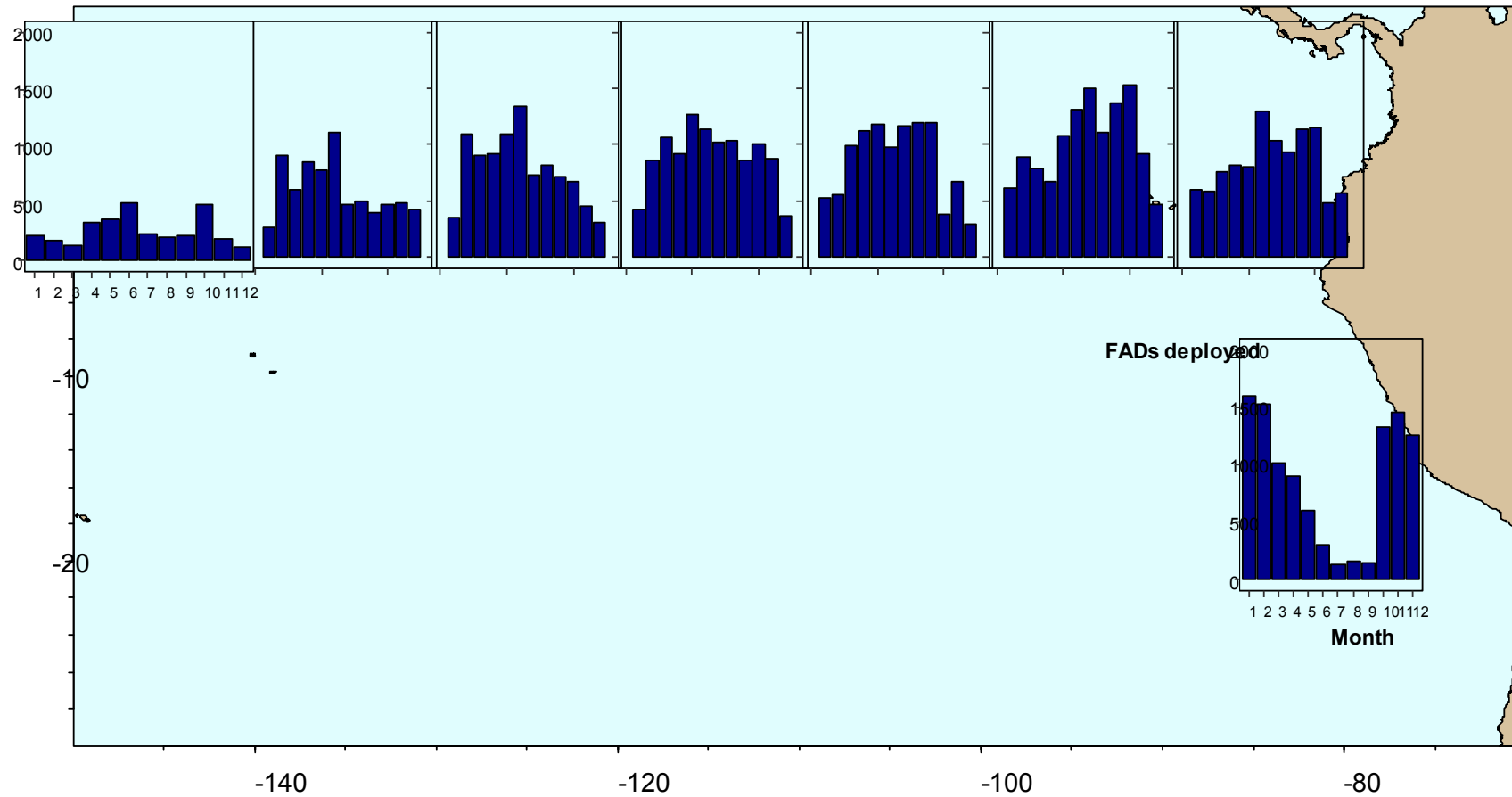
Number of FADs observed deployed and retrieved annually in the EPO, 2005-2018



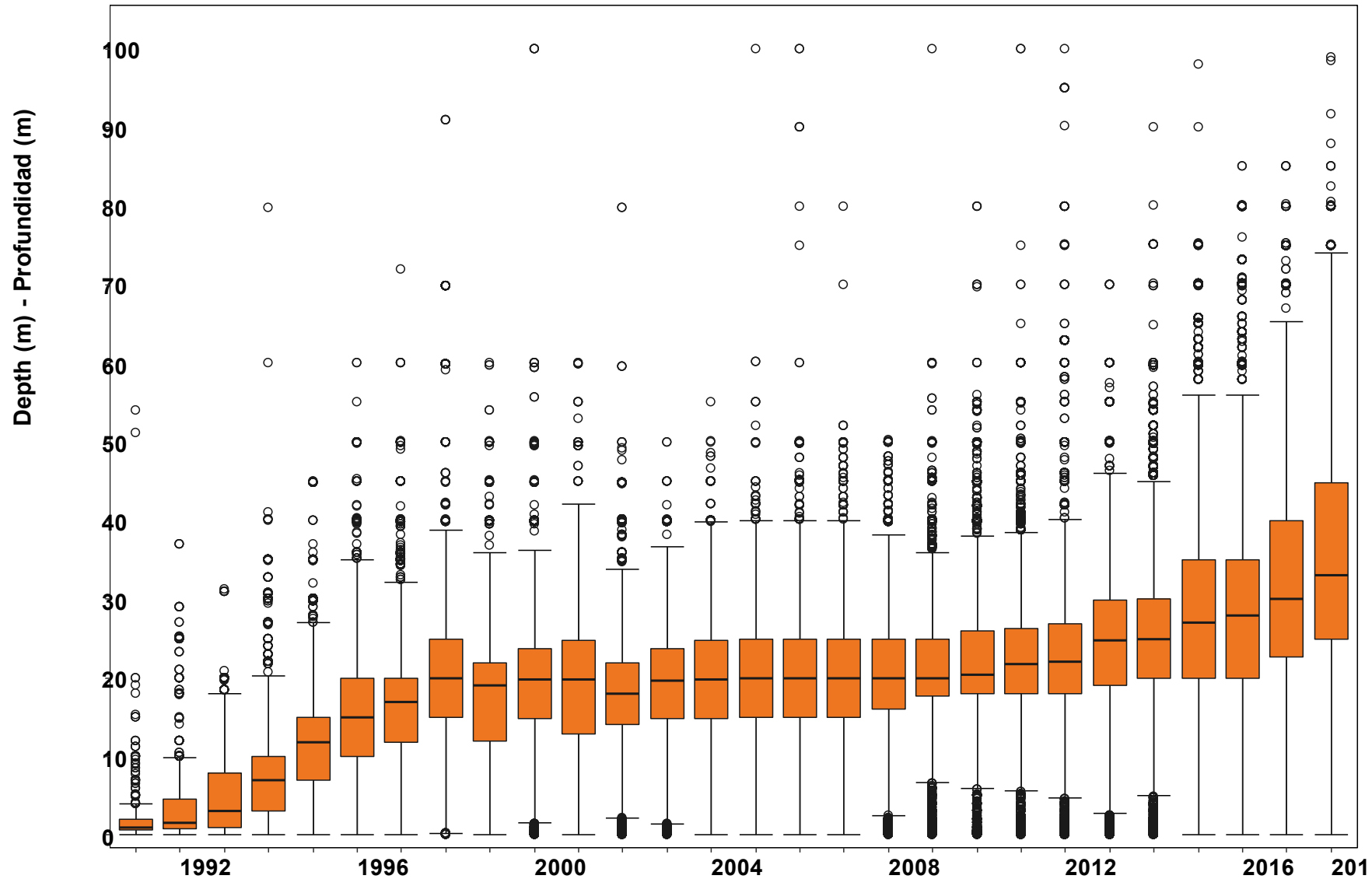
Number of FAD deployed by vessel, by year. 2015-2018



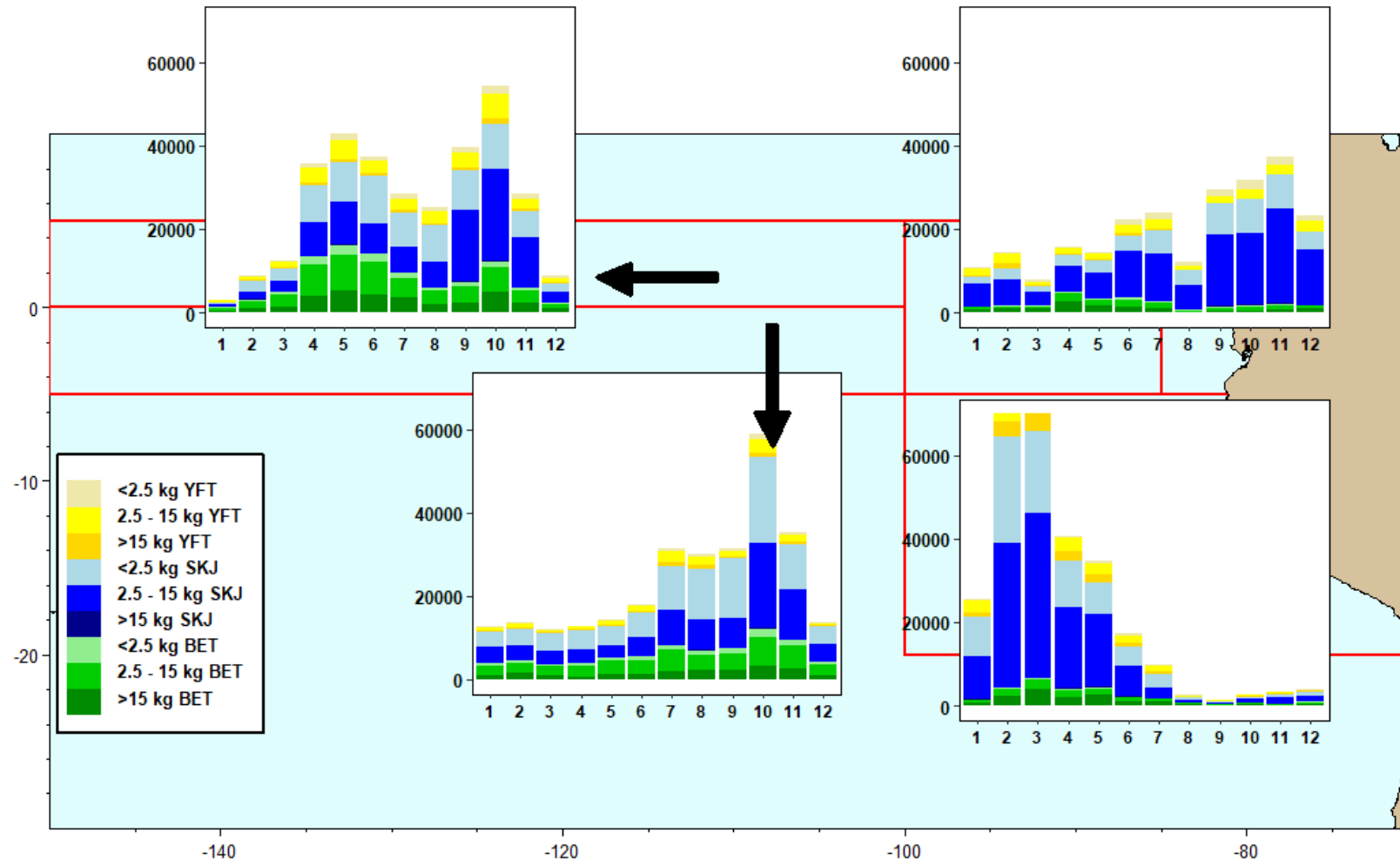
Number of FADs deployed, by month and area, 2015-2018



Average depth of FAD net webbing, by year. 2015-2018



Captures of tunas, by species and size, in FAD sets, by month and area. 2013-2018



Capture per set and observed total captures in numbers 1993 – 2018 average

All years (1993-2018)	Bycatch per set			Estimated total bycatch in the EPO			
Size class 6 only	Bycatch per set			Estimated total bycatch in the EPO			
Species	DEL	NOA	OBJ	DEL	NOA	OBJ	All
Sailfish	0.070	0.091	0.012	676.92	486.30	80.77	1,244.00
Blue marlin	0.008	0.023	0.181	85.34	117.77	1,150.36	1,353.47
Black marlin	0.008	0.015	0.084	80.34	79.26	542.43	702.03
Striped marlin	0.009	0.021	0.020	96.51	110.98	137.28	344.76
Other/Unid billfish	0.010	0.013	0.032	94.83	61.49	219.78	376.10
Silky shark	0.191	0.617	3.770	2,024.65	3,344.56	26,123.20	31,492.41
Oceanic whitetip shark	0.007	0.025	0.303	86.45	146.38	2,014.31	2,247.15
Scalloped hammerhead	0.002	0.017	0.047	21.22	94.98	308.15	424.35
Smooth hammerhead	0.001	0.013	0.052	12.04	64.95	324.94	401.93
Other/Unid HH shark	0.006	0.025	0.078	58.15	157.90	522.25	738.30
Other/Unid shark	0.066	0.141	0.480	677.85	741.84	3,331.01	4,750.69
Giant manta	0.002	0.024	0.001	15.77	105.35	4.71	125.84
Spinetail manta	0.010	0.019	0.003	80.90	85.23	21.72	187.85
Chilean devil ray	0.004	0.006	0.001	32.36	26.49	5.17	64.02
Smoothtail manta	0.007	0.058	0.002	63.46	257.16	13.05	333.67
Munk's devil ray	0.002	0.007	0.001	16.85	32.09	3.56	52.50
Unid Manta/devil rays	0.043	0.200	0.012	379.19	1,199.64	81.66	1,660.49
Pelagic stingray	0.023	0.067	0.019	220.47	580.28	124.30	925.06
Other/Unid rays	0.002	0.000	0.000	15.77	1.31	0.73	17.81
Mahi mahi	0.041	1.460	66.860	371.61	7,678.49	434,325.56	442,375.67
Wahoo	0.021	0.149	33.657	206.07	814.56	215,399.11	216,419.75
Rainbow runner	0.002	0.193	10.442	13.62	850.27	66,369.70	67,233.59
Yellowtail	0.028	3.118	3.932	334.62	16,437.20	29,818.60	46,590.42
Other large fish	0.008	1.097	1.024	74.58	9,167.80	6,582.82	15,825.20

Bycatch per set and observed total captures 2018 in numbers

Year: 2018							
Size class 6 only (except dolphins)	Bycatch per set			Estimated total bycatch in the EPO			
Species	DEL	NOA	OBJ	DEL	NOA	OBJ	All
Sailfish	0.047	0.018	0.002	463.63	74.38	18.02	556.02
Blue marlin	0.009	0.009	0.098	86.12	37.61	1,169.17	1,292.90
Black marlin	0.002	0.002	0.013	22.03	8.04	152.31	182.38
Striped marlin	0.004	0.011	0.004	43.06	44.22	47.32	134.60
Other/Unid billfish	0.041	0.028	0.068	400.55	118.13	814.38	1,333.06
Silky shark	0.056	0.077	1.949	547.51	328.41	23,456.98	24,332.90
Oceanic whitetip shark	0.000	0.000	0.009	1.00	0.00	107.33	108.33
Scalloped hammerhead	0.000	0.002	0.015	4.00	9.01	175.21	188.22
Smooth hammerhead	0.001	0.000	0.015	8.01	2.00	180.15	190.16
Other/Unid HH shark	0.000	0.001	0.011	3.00	4.01	124.67	131.68
Other/Unid shark	0.007	0.058	0.165	73.10	241.13	1,946.03	2,260.26
Giant manta	0.000	0.002	0.001	1.00	7.00	11.26	19.27
Spinetail manta	0.006	0.012	0.003	56.00	48.20	36.53	140.73
Chilean devil ray	0.000	0.000	0.001	2.00	2.00	8.00	12.01
Smoothtail manta	0.001	0.007	0.001	5.00	29.13	6.01	40.14
Munk's devil ray	0.001	0.001	0.002	12.01	4.01	22.03	38.05
Unid Manta/devil rays	0.017	0.032	0.013	169.15	134.36	150.90	454.42
Pelagic stingray	0.013	0.015	0.021	123.10	61.23	249.24	433.58
Other/Unid rays	0.000	0.000	0.001	0.00	0.00	11.01	11.01
Mahi mahi	0.132	0.397	36.225	1,294.87	1,646.01	428,064.47	431,005.36
Wahoo	0.001	0.056	9.548	9.01	234.56	113,093.55	113,337.11
Rainbow runner	0.000	0.046	1.353	0.00	191.85	16,083.58	16,275.43
Yellowtail	0.000	0.150	3.009	0.00	622.77	35,537.08	36,159.85
Other large fish	0.001	0.007	0.259	5.01	31.07	3,071.36	3,107.44

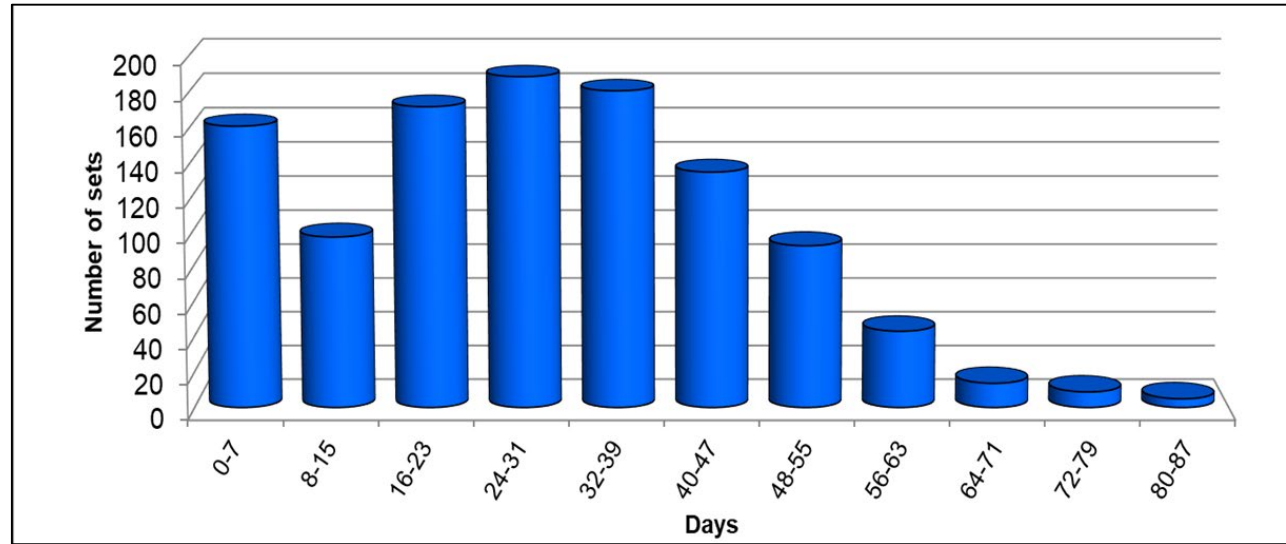
Total bycatches (Dead discards) Average 1993 – 2018 in numbers

All years (1993-2018)	Bycatch per set			Estimated total bycatch in the EPO			
Size class 6 only (except dolphins)							
Species	DEL	NOA	OBJ	DEL	NOA	OBJ	All
Sailfish	0.021	0.044	0.006	191.80	217.96	40.07	449.84
Blue marlin	0.000	0.002	0.018	4.61	10.51	116.73	131.85
Black marlin	0.001	0.003	0.016	11.79	15.50	107.63	134.92
Striped marlin	0.001	0.002	0.004	7.26	10.75	25.49	43.50
Other/Unid billfish	0.002	0.003	0.007	18.89	13.63	53.74	86.26
Silky shark	0.088	0.398	2.768	885.16	2,141.58	18,432.71	21,459.44
Oceanic whitetip shark	0.005	0.021	0.272	62.17	122.23	1,796.90	1,981.30
Scalloped hammerhead	0.001	0.010	0.040	7.29	48.05	262.33	317.68
Smooth hammerhead	0.001	0.005	0.041	5.85	24.14	257.08	287.08
Other/Unid HH shark	0.002	0.015	0.062	25.32	87.32	410.32	522.96
Other/Unid shark	0.045	0.087	0.347	448.01	419.84	2,360.69	3,228.54
Giant manta	0.002	0.024	0.001	15.50	105.14	4.64	125.28
Spinetail manta	0.009	0.019	0.003	77.87	84.24	21.06	183.17
Chilean devil ray	0.004	0.006	0.001	30.16	26.10	5.01	61.27
Smoothtail manta	0.007	0.058	0.002	60.77	255.18	12.89	328.84
Munk's devil ray	0.002	0.007	0.001	16.00	31.87	3.56	51.43
Unid Manta/devil rays	0.038	0.194	0.012	341.85	1,158.32	79.55	1,579.73
Pelagic stingray	0.023	0.066	0.019	217.16	575.64	121.94	914.74
Other/Unid rays	0.002	0.000	0.000	15.77	1.04	0.73	17.54
Mahi mahi	0.009	0.605	31.592	82.87	3,158.30	206,535.69	209,776.86
Wahoo	0.006	0.043	13.328	73.53	262.74	86,440.36	86,776.63
Rainbow runner	0.001	0.144	9.815	8.68	627.49	62,275.56	62,911.74
Yellowtail	0.017	1.135	2.790	227.36	5,924.00	21,461.72	27,613.08
Other large fish	0.007	0.701	0.641	60.92	5,770.99	4,135.41	9,967.32

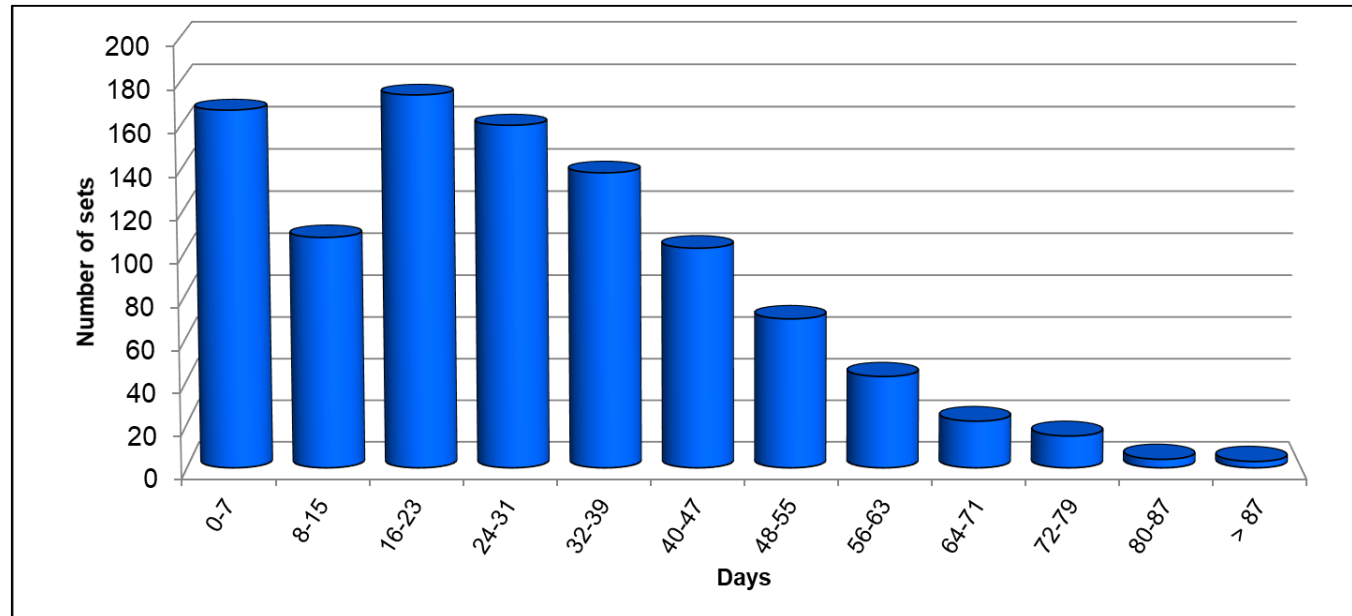
Total bycatches (Dead discards) 2018 in numbers

Year: 2018	Bycatch per set			Estimated total bycatch in the EPO			
Size class 6 only (except dolphins)							
Species	DEL	NOA	OBJ	DEL	NOA	OBJ	All
Sailfish	0.007	0.000	0.000	64.31	0.00	0.00	64.31
Blue marlin	0.000	0.001	0.001	1.00	4.02	7.84	12.86
Black marlin	0.000	0.000	0.000	0.00	0.00	0.57	0.57
Striped marlin	0.001	0.000	0.000	8.01	0.00	4.28	12.29
Other/Unid billfish	0.001	0.001	0.005	10.29	4.73	56.76	71.77
Silky shark	0.056	0.075	1.937	544.51	320.72	23,306.54	24,171.77
Oceanic whitetip shark	0.000	0.000	0.009	1.00	0.00	107.33	108.33
Scalloped hammerhead	0.000	0.002	0.015	4.00	9.01	175.21	188.22
Smooth hammerhead	0.001	0.000	0.015	8.01	2.00	180.15	190.16
Other/Unid HH shark	0.000	0.000	0.010	3.00	2.01	123.67	128.68
Other/Unid shark	0.007	0.058	0.161	69.87	241.13	1,905.38	2,216.38
Giant manta	0.000	0.002	0.001	1.00	7.00	11.26	19.27
Spinetail manta	0.006	0.012	0.003	56.00	48.16	36.53	140.69
Chilean devil ray	0.000	0.000	0.001	2.00	2.00	8.00	12.01
Smoothtail manta	0.001	0.007	0.001	5.00	28.76	6.01	39.77
Munk's devil ray	0.001	0.001	0.002	12.01	4.01	21.97	37.99
Unid Manta/devil rays	0.017	0.032	0.013	166.19	133.51	150.52	450.22
Pelagic stingray	0.012	0.013	0.021	119.97	53.15	244.96	418.08
Other/Unid rays	0.000	0.000	0.001	0.00	0.00	11.01	11.01
Mahi mahi	0.002	0.089	9.948	24.04	368.72	117,371.36	117,764.12
Wahoo	0.000	0.000	1.095	0.00	1.00	12,958.83	12,959.83
Rainbow runner	0.000	0.003	0.974	0.00	11.00	11,544.01	11,555.01
Yellowtail	0.000	0.065	2.103	0.00	271.00	24,818.85	25,089.85
Other large fish	0.000	0.006	0.063	4.00	23.07	747.34	774.42

Time in days between FAD deployment and its first set

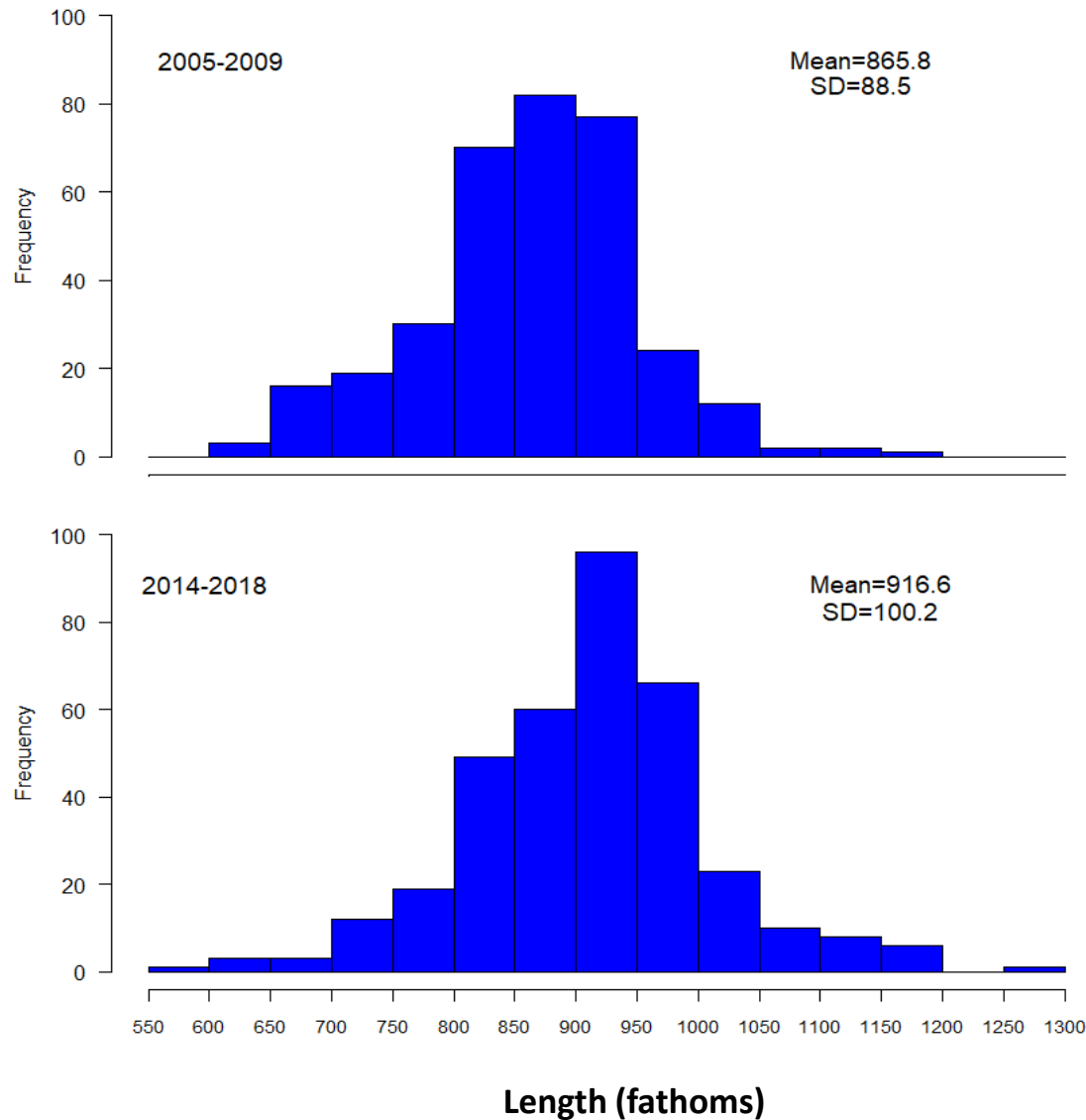


2005 - 2009

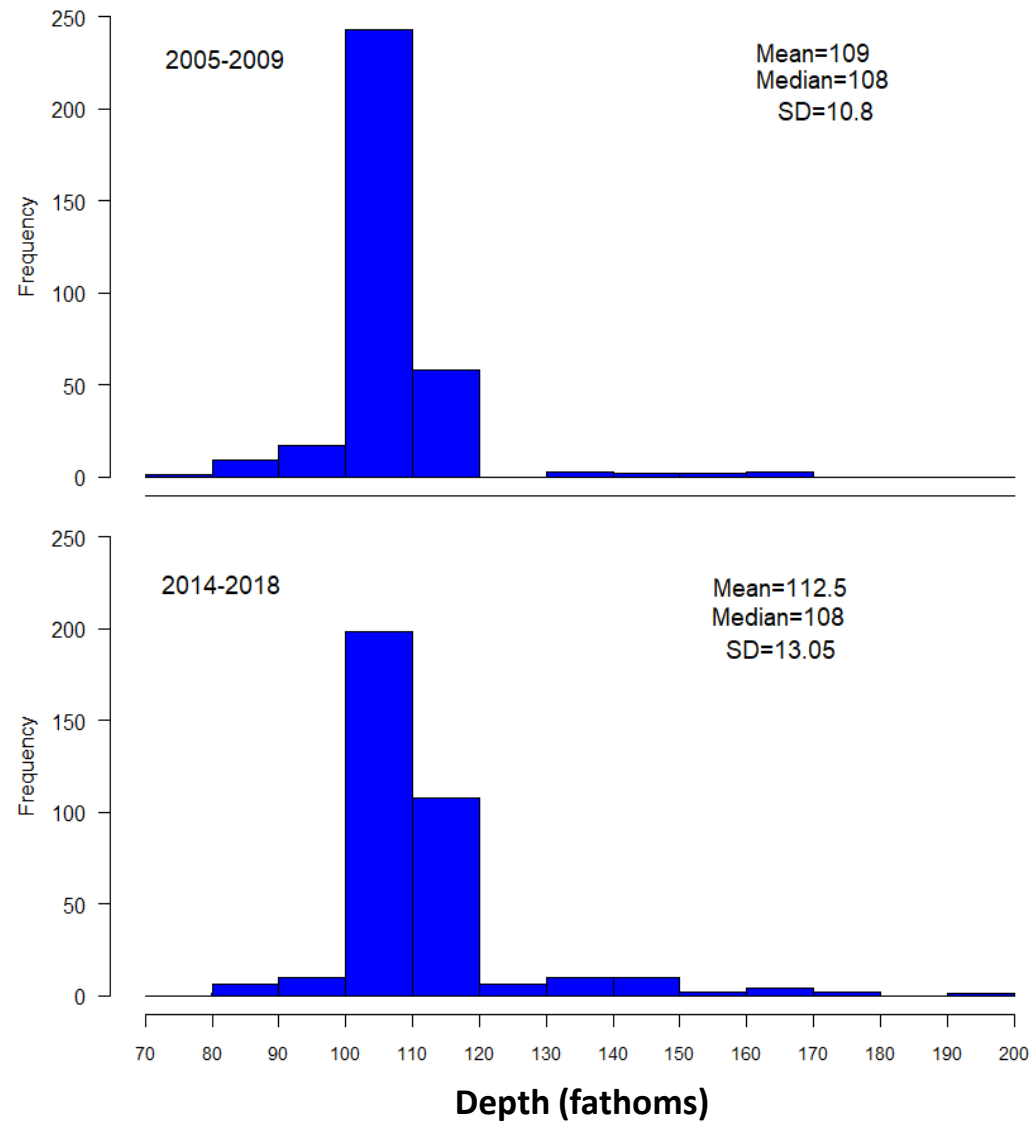


2014 - 2018

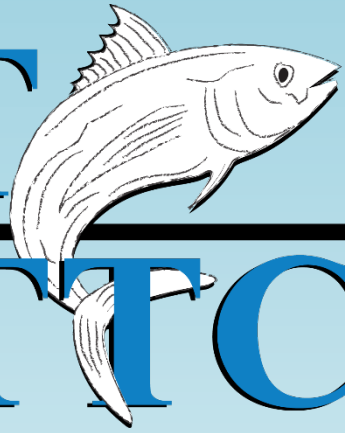
Length of the purse-seine net



Depth of the purse-seine net



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Questions