PFA

PELAGIC FREEZER-TRAWLER ASSOCIATION

REPORT

PFA self-sampling in SPRFMO area 2015-2016

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PFA Report 07/2016

12 October 2016

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Please cite as: Pastoors, M.A. (2016) PFA self-sampling in SPRFMO area 2015-2016. PFA report 07/2016.

Summary

A description is presented of the fisheries carried out by vessels belonging to members of the Pelagic Freezer-trawler Association (PFA) within the SPRFMO area during 2015 and 2016. On the vessels, the PFA self-sampling programme has been carried out during all trips from April to September. A description of the self-sampling programme is presented. The self-sampling programme delivers information on spatial and temporal evolution of the fishery, species and length compositions, CPUE and ambient fishing conditions (temperature and depth). A comparison between self-sampling data and observer data is presented for this fishery.

Contents

Introduction

An extensive monitoring takes place on-board of pelagic freezer-trawlers operated by the members of the Pelagic Freezer-trawler Association (PFA). The catches of pelagic freezer-trawlers are sorted into batches of the same species, area and size class. The sampling process consists of a counting, measuring and weighing of all individual fish contained in one frozen carton of around 23 kg of fish and the determination of additional features like stomach content, fat content and the amount of damaged fish. Within the project “Pelagic Research Fleet”, the PFA aims to capitalize on that monitoring by collecting information on hauls, catches and the combinations of haul and catch.

As part of the PRF project, a comprehensive self-sampling has been carried out during the fishery on Jack mackerel in the SPRFMO area during 2015 and 2016. This report summarizes the results obtained from that self-sampling programme.

Programme development

The PFA self-sampling programme has seen a major development over the years 2014 to 2016. The self-sampling is carried out during fisheries in European waters, West-African waters and in the South Pacific. Overall, the number of trips sampled has increased from 4 in 2014, 34 in 2015 and 55 in 2016 (until early september only). The volume of catch that was subject to self-sampling in 2016 was around 170 000 tonnes.

During the period of development of the self-sampling programme several modifications have been implemented after discussions with the quality managers onboard of the vessels who are carrying out the self-sampling. The overall self-sampling approach consists of three elements:

1. Collect haul-by-haul information of the fisheries operation (date, time, position, depth, temperature, gear characteristics, estimated catch)
2. Collect batch-per-haul information that is generated in the freezing plant included on the vessels. Normally batch information is not separated out to different hauls, as batches of fish may be produced from several hauls. In the self-sampling programme, the quality managers have been asked to record the

number of cartons in each batch that have been produced from individual hauls.

3. Collect additional length samples based on a sample of fish. The length samples have initially been taken as a sample of the different batches that have already been graded into different species and length groups. During 2016, the procedure for length samples has been modified so that a random of around 20 kg will be taken from one of the hauls on a certain day.

All self-sampling data have been collected using coupled Excel spreadsheets whereby the formatting and data-entry have been predefined. An important aspect was that the quality managers on board of the vessel could also use the spreadsheet to generate the type of information that they required for reporting back to the skipper and to the companies.

The spreadsheets were collected at the end of the trips and added to a master-spreadsheet that was then converted into a number of RData files. All analysis have been carried out using the R package.

Results

General description of the PFA fisheries and self-sampling in the SPRFMO area

The PFA fisheries in SPRFMO area in 2015 and 2016 can be summarized as follows

year	startdate	enddate	nvessels	catch	ndays
2015	15-4-2015	9-9-2015	2	28,972	224
2016	18-4-2016	20-9-2016	1	10,284	128

year	nhauls	nmerk	nhaulmerk	nsamples	nlength
2015	388	76	1,501	73	7,464
2016	169	41	680	58	6,845

The number of “merk” refers to the number of batches that have been produced. The number of “haulmerk” refers to the combination of parts of the batches produced by certain hauls.

The species composition of the catches is shown in Figure 1.

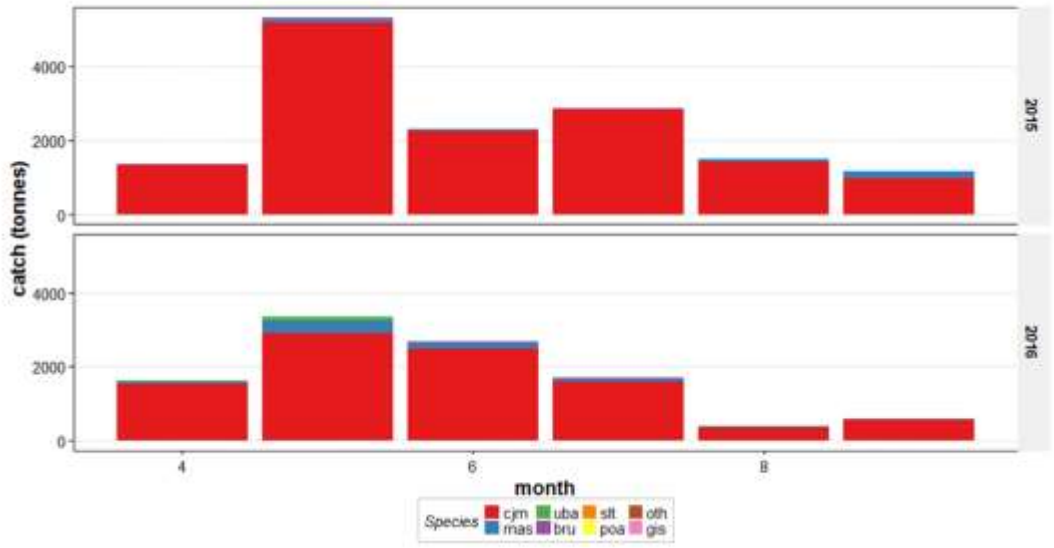

Figure 1 Species composition of PFA fisheries in SPRFMO area, 2015 and 2016

Spatial distribution of the fishery

The approximate positions of hauls carried out by PFA vessels by year and month (figure 2)

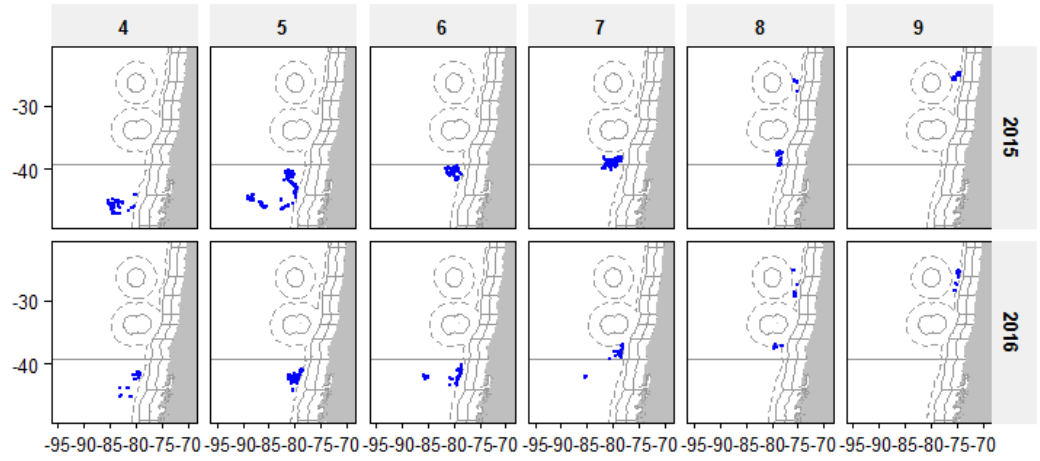

Figure 2 Approximate PFA haul positions by year and month.

Catches of Jack mackerel by PFA vessels by year and month aggregated per 1 degree square (figure 3).

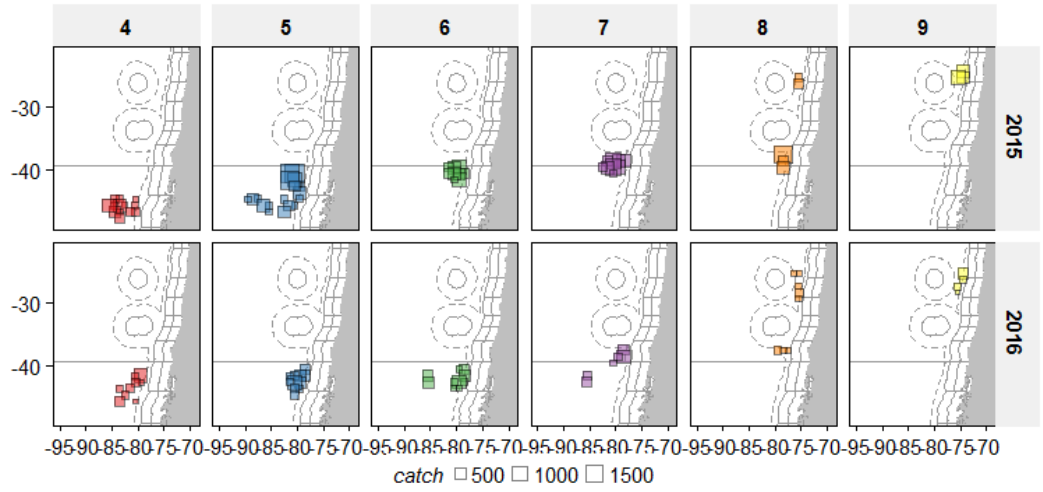

Figure 3 PFA CJM catch per 1 degree square, by year and month.

Effort (fishing hours) by PFA vessels by year and month aggregated per 1 degree square (figure 4).

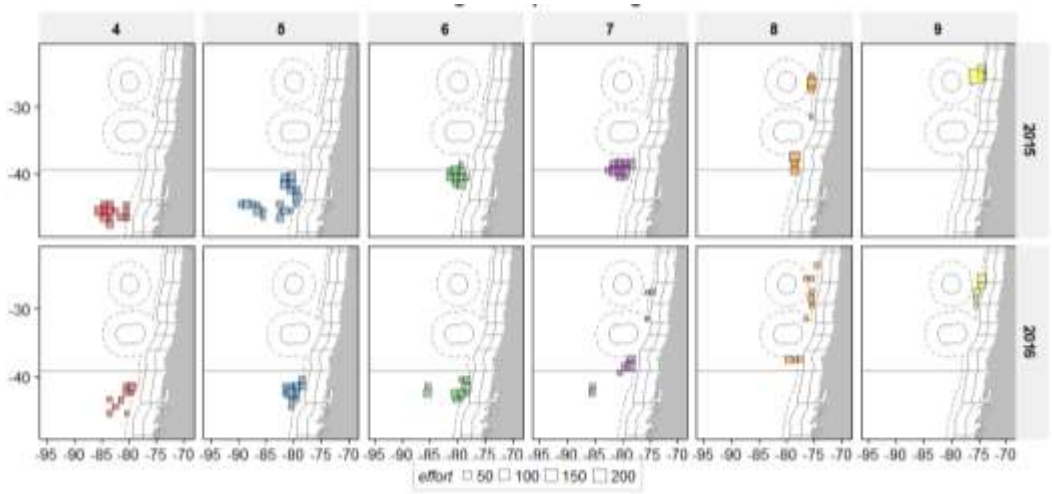

Figure 4 PFA effort (fishing hours) per 1 degree square, by year and month.

Log CPUE (ton/hour) of Jack mackerel by PFA vessels by year and month aggregated per 1 degree square (figure 5).

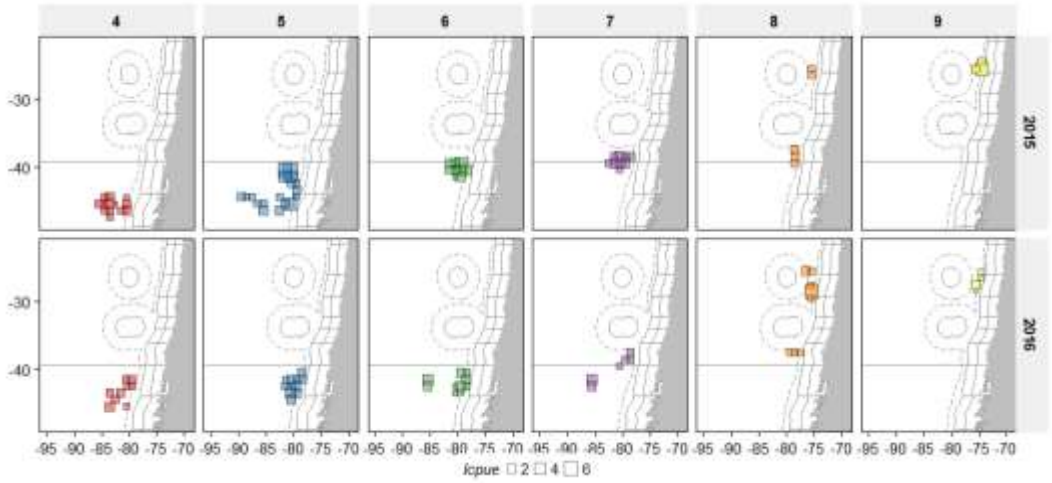

Figure 5 PFA log CPUE (log ton/fishing hours) per 1 degree square, by year and month.

Length distribution of the CJM catches

Length distributions have been measured on all PFA vessels participating in the SPRFMO fisheries for Jack mackerel in 2015 and 2016 (figure 6, tables 1 and 2). Length are measured as fork length (although some samples were accidentally measure in standardlength and afterwards converted to forklength).

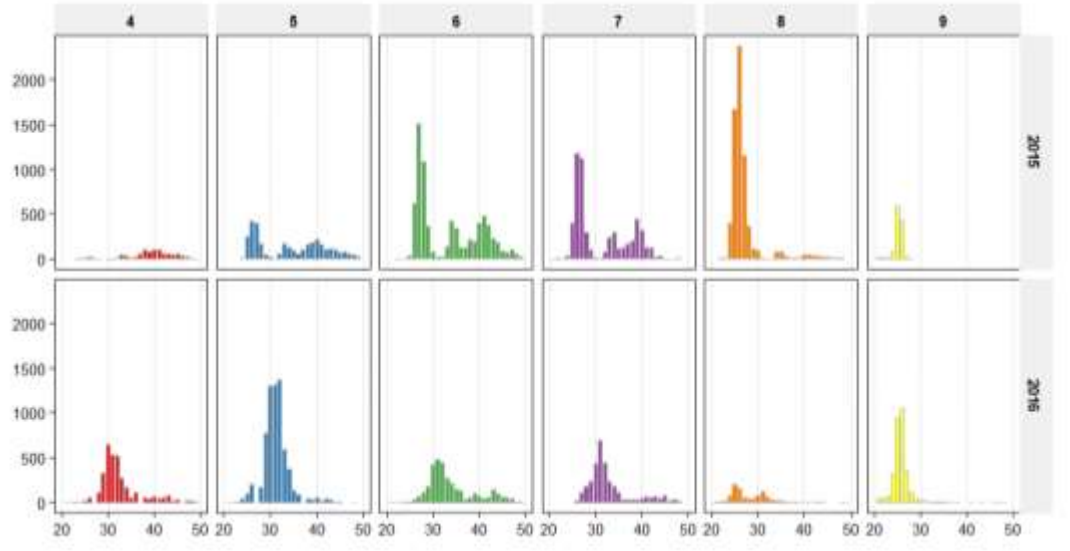

Figure 6 PFA aggregated length distributions (thousands of fish) by year and month.

Length-weight relationships were estimated using different sampling approaches (Figure 7). In 2015 most of the length measurements were taken by batch whereas in 2016 they were measured by haul. Because the weight is only available as a mean weight per haul or batch, the resolution of the length-weight relationship is lower in 2016 because it is measured against the average length per haul.

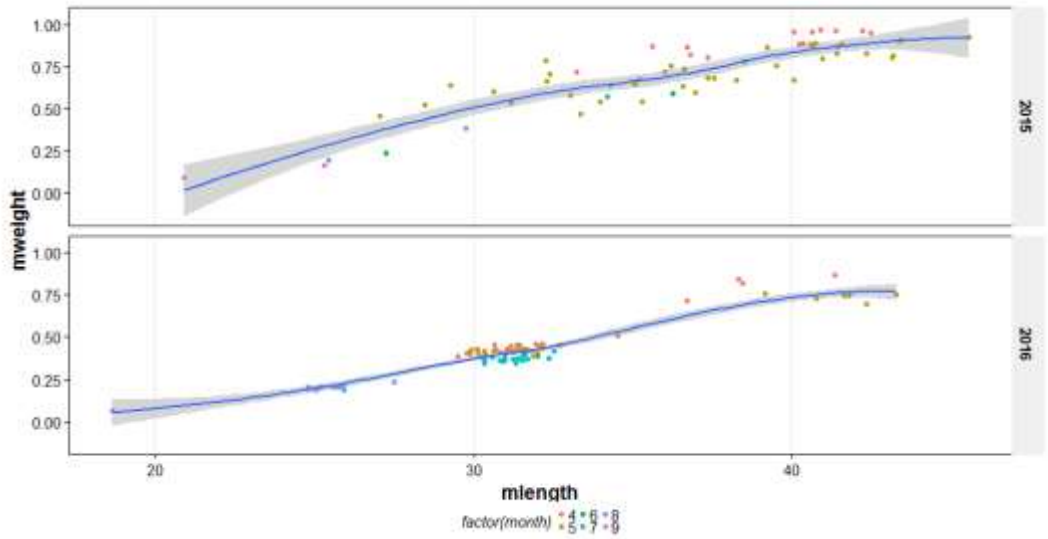

Figure 7 PFA length-weight relationships by year (and month indicated by colour coding)

Environmental drivers and fisheries

The skippers of the vessels are also collecting temperature (Figure 8) and depth information (Figure 9) which is measured on the headline of the gear. This information therefore refers to the ambient conditions during the fishing operations.

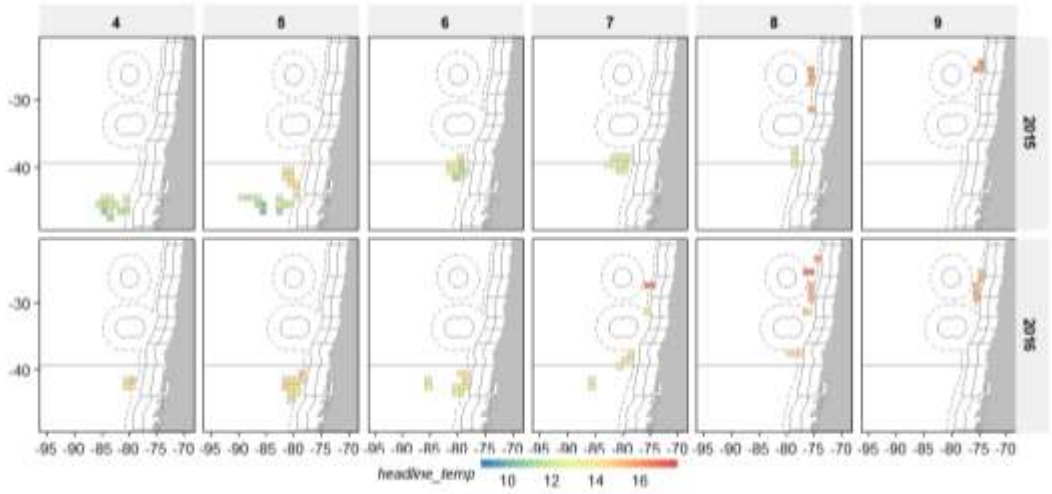

Figure 8 PFA ambient temperature (headline temperature) per 1 degree square, by year and month.

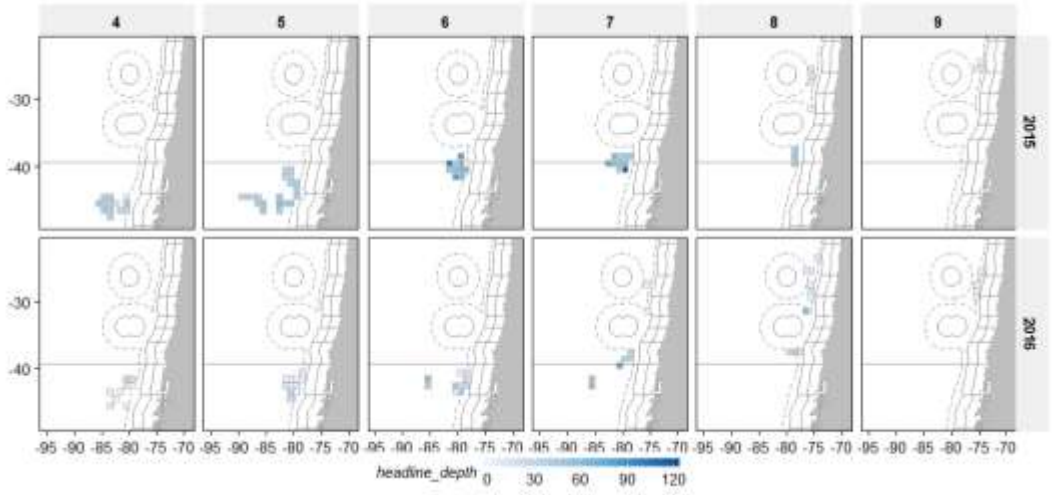

Figure 9 PFA fishing depth (meters) per 1 degree square, by year and month.

CJM CPUE

The average catch per unit of effort (tons / hour) for the PFA vessels shows in general a lower CPUE in 2016 compared to 2015, wich the exception of the month April.

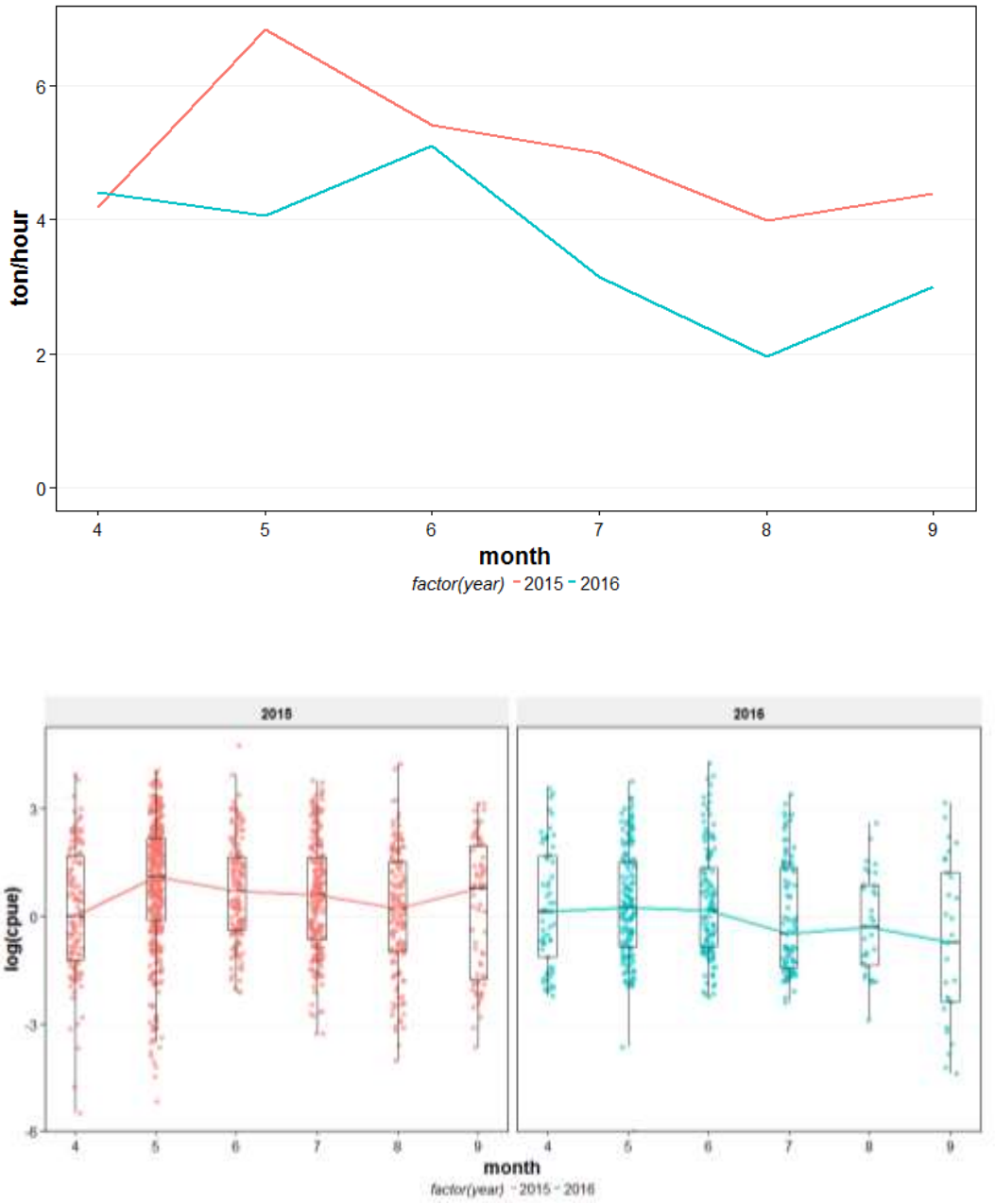

Figure 10 Top: PFA mean CJM CPUE (ton/hour). Bottom: CJM logCPUE (log ton/hour) expressed per haul in a boxplot with the lines connecting the median values.

Comparisons of self-sampling and observer trips

A critical question that is frequently raised with self-sampling data is whether the data is unbiased and reliable. Although this question cannot be answered in general based on the information available for PFA fisheries, an important issue is the link between observer collected data and self-sampling data. Often, the idea is put forward that observer data is more reliable than self-sampling data. However, the drawback of observer data is that it only applies when observers are on board, which is then often extrapolated to the seasons and trips when no observers are on board and this could lead to a bias in the length composition.

A second important issue is the sampling approach that is carried out by the scientific observer. During the PFA fisheries in 2015 a unique opportunity existed to test the potential role of self-sampling data vis-a-vis the observer data. On two vessels fishing very close to each other, both self-sampling was carried out and each of the vessels carried a scientific observer. The CJM length distributions of the two vessels from self-sampling and observer data in 2015 and 2016 (figure 11). The comparison shows that the sampling procedure followed by the scientific observer on vessel 2 in 2015 was likely biased towards larger fish in the catches. During 2016 the self-sampling and observer data were mostly consistent.

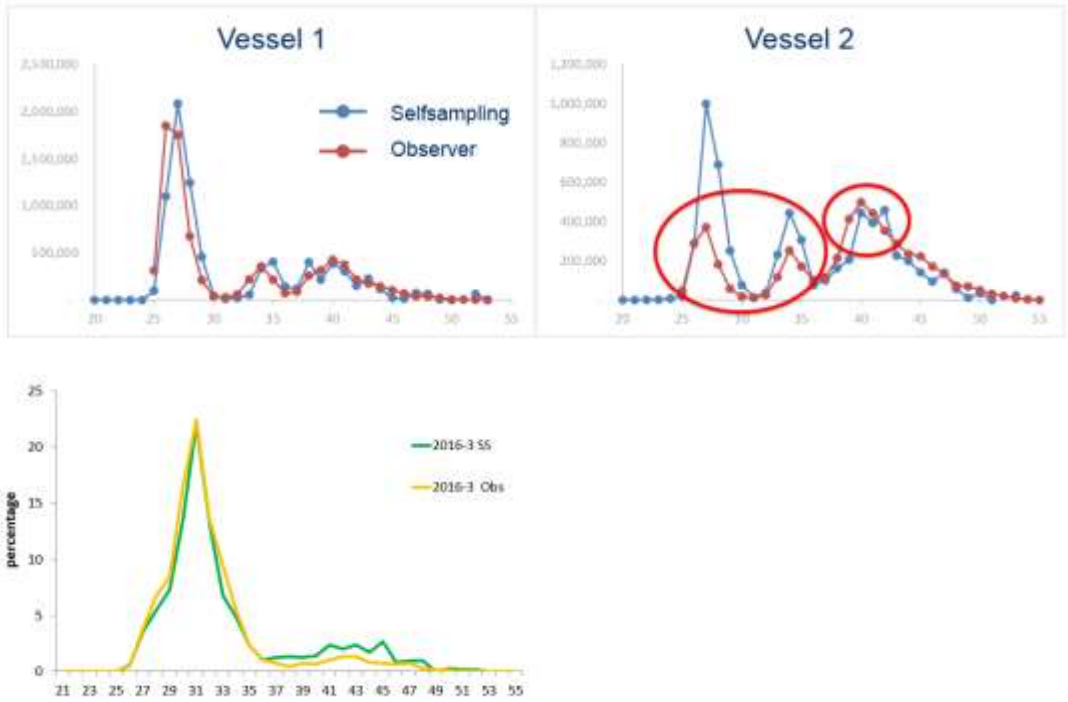

Figure 11 comparison of scientific observer data and self-sampling length frequency data for CJM in 2015 (top, 2 vessels) and 2016 (under).

Overall the self-sampling data appears to deliver consistent and reliable information that can be followed from year to year and which appears to follow the yearclasses as they pass through the fishery.

An important element of scientific observer data that cannot be replaced by self-sampled data is the information on potential bycatch or damage to non-target species.

Conclusions

PFA self-sampling programme has been rapidly expanding in 2015 and 2016 both in EU waters, west African waters and SPRFMO area. The self-sampling programme appears to be successful in contributing new types of detailed knowledge for stock assessment purposes. In the context of the SPRFMO Jack mackerel stock assessment, the self-sampled length distributions have been used to complement the scientific observer data. The self-sampling also contributed information on temperature and fishing depth. The comparison of self-sampled data with scientific observer data for Jack mackerel shows that the self-sampled data appears reliable and follows the cohorts as they more through the fishery.

Outlook

It is foreseen that the self-sampling programme will be again carried out in 2017. There is potential for expanding of the programme towards collection of information on sex ratio and gonad weight. Possibly also on acoustic information.

Acknowledgements

Thanks are expressed to the skipper, officers and quality managers on board of the vessels Annelies Ilena, Margiris and Maartje Theodora for their cooperation and dedication in submitting the self-sampling information during 2015 and 2016.

Annex

Table 1 CJM length frequency data for 2015

Date	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	(all)
16-4-2015	0	0	0	0	0	0	3	7	10	10	3	0	0	0	0	9	21	14	5	0	21	49	33	11	17	10	10	13	10	0	0	3	0	0	0	0	0	0	259
17-4-2015	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	5	0	0	2	2	3	8	3	6	3	0	5	2	0	0	0	0	0	0	0	0	0	0	41
18-4-2015	0	0	0	0	0	0	0	10	14	27	10	0	0	0	0	20	29	4	0	25	42	29	9	43	12	9	4	4	4	0	1	0	0	0	0	0	0	0	296
19-4-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	7	7	14	27	14	14	14	20	7	14	7	0	0	0	0	0	0	0	0	156
20-4-2015	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	0	11	7	0	0	16	49	21	44	14	21	29	9	12	14	20	0	4	7	0	0	0	0	290
21-4-2015	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0	0	14	10	19	10	5	5	10	0	5	5	0	5	0	0	0	0	96
22-4-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	4	1	6	1	1	1	1	0	1	0	0	0	0	0	0	0	18
23-4-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	7	28	4	33	30	30	32	21	26	15	8	4	0	0	0	0	0	0	247
24-4-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	15	18	0	7	7	9	20	9	43	3	0	12	13	27	8	7	1	1	0	0	0	0	210
26-4-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	3	5	8	11	3	11	3	3	8	3	0	0	0	0	0	0	0	0	60
27-4-2015	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	0	0	0	0	9	27	31	0	0	4	13	0	4	4	0	0	0	0	0	0	103
28-4-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4	4	6	10	4	2	2	2	4	4	0	0	0	0	0	0	0	47
3-5-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	6	10	4	4	0	0	0	0	0	0	34
4-5-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	13	25	38	25	25	25	38	13	38	0	25	0	25	0	0	0	0	0	0	316
5-5-2015	0	0	0	0	0	0	0	0	0	0	2	2	0	0	2	2	3	5	2	3	4	5	11	6	3	3	4	1	0	1	1	0	0	0	0	0	0	0	60
6-5-2015	0	0	0	0	0	0	0	0	0	3	4	1	0	0	0	1	3	8	3	1	1	2	3	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	39
7-5-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	10	0	7	7	14	13	6	3	13	13	7	20	7	47	9	10	10	0	0	0	0	196
8-5-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	0	7	21	14	0	7	0	28	21	7	7	0	0	7	7	0	0	138
9-5-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	1	0	2	2	3	2	2	1	0	0	0	0	0	25
10-5-2015	0	0	0	0	0	0	0	0	0	6	34	16	13	7	0	0	21	12	41	8	37	15	54	58	29	3	36	17	8	0	6	3	3	0	0	8	0	0	435
11-5-2015	0	0	0	0	0	0	0	0	0	8	3	0	0	0	0	0	15	15	8	29	21	48	27	33	26	9	14	3	6	3	3	6	0	0	0	0	0	0	277
13-5-2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4	0	8	13	19	11	13	9	2	4	6	0	0	4	0	0	0	0	0	97
15-5-2015	0	0	0	0	0	0	0	0	0	10	38	28	6	2	0	7	6	12	10	7	4	6	7	18	15	6	14	2	7	7	0	0	0	0	0	0	0	0	212
16-5-2015	0	0	0	0	0	0	0	0	34	16	30	23	18	12	0	9	33	14	16	0	12	29	19	45	47	24	14	10	11	16	0	10	2	0	0	0	0	0	441
18-5-2015	0	0	0	0	0	0	0	4	6	12	24	14	4	0	4	0	8	12	6	2	0	14	26	18	10	6	8	12	2	12	4	2	0	0	0	0	0	0	212
19-5-2015	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0	14	9	9	0	38	9	21	20	2	23	25	29	0	2	7	9	0	0	2	0	0	0	230
20-5-2015	0	0	0	0	0	0	0	0	14	72	95	44	0	0	0	14	14	12	20	7	5	17	15	44	26	22	0	12	0	7	5	12	0	0	0	0	0	0	456
21-5-2015	0	0	0	0	0	0	0	9	64	132	63	24	0	0	0	9	9	20	21	10	0	10	18	5	15	10	16	16	0	0	5	0	10	0	0	0	0	0	466
22-5-2015	0	0	0	0	0	0	0	8	189	221	167	68	6	0	0	42	127	51	8	0	27	49	56	43	36	11	22	25	18	14	14	0	0	0	0	0	0	0	1202
23-5-2015	0	0	0	0	0	0	0	0	0	24	64	24	0	0	0	0	0	16	0	0	0	16	0	32	16	0	0	0	8	8	8	0	0	8	8	0	8	0	241
24-5-2015	0	0	0	0	0	0	0	6	104	214	154	49	25	6	0	10	29	6	12	12	8	8	6	4	10	4	0	0	12	8	0	0	0	0	0	0	0	0	689
25-5-2015	0	0	0	0	0	0	0	0	3	33	51	20	8	3	0	0	3	8	0	3	3	0	5	3	3	0	3	3	0	0	0	0	0	0	0	0	0	0	148
26-5-2015	0	0	0	0	0	0	0	0	0	2	5	3	0	0	0	0	2	3	2	2	0	0	3	2	2	0	2	5	2	3	0	0	0	0	0	0	0	0	36
27-5-2015	0	0	0	0	0	0	0	0	5	30	24	6	8	0	0	4	5	14	5	1	1	2	9	6	12	5	4	0	7	4	4	0	0	0	0	0	0	0	153
31-5-2015	0	0	0	0	0	0	0	0	96	64	38	17	10	0	0	8	13	19	10	0	4	23	19	15	24	17	18	11	0	6	0	6	6	0	0	0	0	0	425
8-6-2015	0	0	0	0	0	0	0	0	57	699	1624	1265	348	82	21	15	52	340	366	148	150	263	145	341	516	253	196	165	61	40	61	40	20	0	0	40	0	0	7310
14-6-2015	0	0	0	0	0	0	0	0	0	240	382	218	131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	971
20-6-2015	0	1	3	0	0	1	1	8	20	285	1005	695	256	79	14	32	212	498	325	110	105	170	245	457	438	504	260	211	121	88	140	69	19	35	0	0	17	0	6423
15-7-2015	0	5	3	8	10	13	10	77	799	2359	2234	590	198	28	33	155	486	600	235	253	339	423	888	641	246	246	46	68	5	3	5	22	0	0	0	0	0	0	11030
6-8-2015	0	0	0	0	0	17	17	268	2211	3533	2002	681	228	173	18	4	9	152	154	63	18	27	34	101	101	67	61	47	40	27	34	20	0	7	0	0	0	0	10115
30-8-2015	0	0	0	0	0	0	8	539	1116	1214	298	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3217
4-9-2015	0	0	0	6	14	12	12	169	1191	871	66	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2342
8-9-2015	0	0	0	28	41	6	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80
(All 2015)	0	6	6	42	65	49	53	1106	5934	10089	8435	3836	1259	406	101	346	1184	1897	1278	731	918	1395	1827	2185	1835	1392	896	779	481	391	408	269	80	73	17	55	25	0	49839

Note: sampling dates between 20/6/2015 and 30/8/2016 refer to batch sampling instead of haul sampling and are therefore less frequent.

Table 2 CJM length frequency data for 2016

Date	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	(all)
18-4-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	22	4	4	0	9	4	0	0	4	4	9	9	0	4	0	0	0	0	0	0	0	83
19-4-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
21-4-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	7	2	11	0	2	2	0	2	4	4	4	0	0	2	0	0	0	0	0	0	0	47
22-4-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	54	0	0	37	54	37	43	64	5	21	0	16	21	5	0	0	0	0	0	362
25-4-2016	0	0	0	0	0	0	0	0	9	0	24	62	130	58	43	30	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	361
26-4-2016	0	0	0	0	0	0	0	0	0	0	12	62	105	124	112	43	25	9	0	0	3	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	502
27-4-2016	0	0	0	0	0	0	0	0	15	41	0	43	120	216	188	241	155	61	20	43	0	42	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1191
28-4-2016	0	0	0	0	0	0	0	0	0	1	0	8	28	52	75	91	10	26	8	1	0	0	0	1	1	0	8	1	0	0	0	0	0	0	0	0	0	0	309
29-4-2016	0	0	0	0	0	0	0	0	0	4	0	27	54	140	77	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	349
30-4-2016	0	0	0	0	0	0	0	0	0	0	1	2	7	8	5	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
2-5-2016	0	0	0	0	0	0	0	0	7	7	0	14	20	75	55	27	20	14	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	259
3-5-2016	0	0	0	0	0	0	0	0	0	0	0	0	5	14	29	39	10	10	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	116
4-5-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	4	32	32	4	0	0	4	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	85
5-5-2016	0	0	0	0	0	0	0	0	5	0	0	5	47	52	21	21	16	10	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	181
6-5-2016	0	0	0	0	0	0	0	0	12	0	7	36	101	92	96	57	37	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	439
7-5-2016	0	0	0	0	0	0	0	0	0	0	2	17	38	26	19	5	14	2	0	0	0	0	0	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	130
8-5-2016	0	0	0	0	0	0	0	0	0	24	0	34	99	157	174	112	100	59	3	7	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	777
9-5-2016	0	0	0	0	0	0	0	0	0	0	0	15	130	98	111	80	39	22	6	6	0	0	0	6	0	6	6	0	0	0	0	0	0	0	0	0	0	0	527
10-5-2016	0	0	0	0	0	0	0	0	25	39	0	14	63	83	44	68	17	15	0	5	0	5	0	0	0	10	0	5	0	0	0	0	0	0	0	0	0	0	394
11-5-2016	0	0	0	0	0	0	0	0	0	0	0	0	23	41	41	36	9	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	158
12-5-2016	0	0	0	0	0	0	0	0	21	16	0	5	104	191	190	298	63	24	19	5	0	5	19	25	0	12	5	0	0	0	0	0	0	0	0	0	0	0	1002
13-5-2016	0	0	0	0	0	0	0	2	5	21	0	12	41	60	34	30	8	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	218
14-5-2016	0	0	0	0	0	0	0	0	0	1	0	2	6	6	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
15-5-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
16-5-2016	0	0	0	0	0	0	0	0	1	16	0	11	32	68	72	106	77	20	9	25	0	6	4	4	0	0	4	8	0	0	0	0	0	0	0	0	0	0	463
17-5-2016	0	0	0	0	0	0	0	0	6	6	0	5	26	79	110	122	36	35	9	4	0	4	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	453
18-5-2016	0	0	0	0	0	0	0	0	7	0	0	1	31	41	67	56	22	12	7	1	0	7	0	4	0	4	4	0	0	0	0	4	0	0	0	0	0	0	269
19-5-2016	0	0	0	0	0	0	0	5	5	19	0	21	23	94	121	71	21	22	5	12	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0	0	0	428
20-5-2016	0	0	0	0	0	0	0	0	7	0	0	0	15	15	30	67	22	0	0	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	172
21-5-2016	0	0	0	0	0	0	0	0	0	21	0	5	36	57	21	52	10	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212
29-5-2016	0	0	0	0	0	0	0	0	2	21	0	10	19	27	46	32	16	10	5	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	193
2-6-2016	0	0	0	0	0	0	0	0	0	1	1	1	5	7	9	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
4-6-2016	0	0	0	0	0	0	0	1	0	0	0	6	8	28	25	25	11	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112
5-6-2016	0	0	0	0	0	0	0	0	0	0	9	14	12	58	63	103	47	55	15	18	4	3	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	410
6-6-2016	0	0	0	0	4	0	0	0	7	4	0	7	15	40	29	15	22	8	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	162
7-6-2016	0	0	0	0	0	0	0	0	0	0	3	8	8	21	46	41	35	27	12	7	5	0	7	0	0	5	5	2	5	0	2	0	0	0	0	0	0	0	239
8-6-2016	0	0	0	0	0	0	0	0	0	0	3	3	17	27	44	75	14	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	190
9-6-2016	0	0	0	0	0	0	0	0	0	3	8	10	15	18	20	10	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90
10-6-2016	0	0	0	0	0	0	0	0	0	2	14	6	3	25	23	36	15	33	9	13	0	5	0	12	0	5	5	17	0	5	2	0	0	0	0	0	0	3	234
11-6-2016	0	0	0	0	0	0	0	3	12	6	9	14	27	55	16	17	1	1	1	0	0	1	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	173
12-6-2016	0	0	0	0	0	0	0	0	0	0	13	13	33	53	53	72	46	13	20	0	0	0	0	0	0	0	0	13	0	7	0	0	0	0	0	0	0	0	335
13-6-2016	0	0	0	0	0	0	0	0	0	6	0	11	11	46	68	29	23	51	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257
14-6-2016	0	0	0	0	0	0	0	0	0	0	0	2	2	8	8	2	4	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	29
15-6-2016	0	0	0	0	0	0	0	0	0	1	0	1	3	3	7	5	6	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
18-6-2016	0	0	0	0	0	0	0	0	0	4	9	6	7	20	14	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73
19-6-2016	0	0	0	0	0	0	0	0	0	1	0	10	15	18	13	6	3	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	72
26-6-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	3	0	10	25	24	24	54	6	12	27	25	10	6	0	0	3	0	0	0	0	0	0	237
28-6-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	8	8	17	0	4	17	12	4	0	21	4	17	4	8	4	4	0	0	0	0	0	137
29-6-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	33	0	8	26	20	14	8	78	41	33	26	22	0	8	0	0	0	0	0	358
30-6-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	7	5	2	7	7	7	7	5	2	0	0	0	0	0	0	57
1-7-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	18	5	5	21	30	18	39	39	51	27	26	13	19	17	0	0	0	0	0	0	336
2-7-2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	22	7	0	7	15	7	0	15	45	7	7	7	0	7	0	0	0	0	164
4-7-2016	0	0	0	0	0	0	0	0	0	1	12	16	19	40	56	18	11	3	8	0	0	3	0	1	0	1	0	0	0	1	0	0	3	3	0	0	0	0	197
12-7-2016	0	0	0	0	0	0	0	0	0	0	2	6	5	8	5	5	3	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	36
13-7-2016	0	0	0	0	0	0	0	0	0	6	6	8	12	16	27	11	12	8	1	3	0	0	3	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	123
14-7-2016	0	0	0	0	0	0	0	0	0	0	23	35	23	53	74	45	19	6	0	2	0	0	0	2	0	0	1	0	2	0	0	0	0	0	0	0	0	0	283
15-7-2016	0	0	0	0	0	0	0	0	0	8	32	32	19	79	48	38	12	20	6	0	6	0	0	6	0	0	8	0	0	0	0	0	0	0	0	1	0	0	315
16-7-2016	0	0	0	0	0	0	0	0	0	2	13	5	25	32	33	13	5	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	133
17-7-2016	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
18-7-2016	0	0	0	0	0	0	0	0	0	0	0	0	6	10	20	16	6	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	62
20-7-2016	0	0	0	0	0	0	0	0	0	0	5	5	0	9	33	21	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80
21-7-2016	0	0	0	0	0	0	0	0	0	0	0	3	18	28	41	26	12	8	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	141
22-7-2016	0	0	0	0	0	0	0	0	0	0	0	1	5	4	9	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	31
28-7-2016	0	0	0	0	0	0	0	0	0	0	4	29	42	35	123	50	30	16	9	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	339
29-7-2016	0	0	0	0	0	0	0	0	0	0	13	19	23	27	55	73	34	17	13	6	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	280
30-7-2016	0	0	0	0	0	0	0	0	0	0	7	27	33	67	140	81	40	33	48	7	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	492
31-7-2016	0	0	0	0	0	0	0	0	0	0	0	0	4	24	24	36	28	36	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	161
1-8-2016	0	0	0	0	0	0	0	0	0	0	0	5	5	14	43	20	7	2	0	0	2	0	0	0	0	2	2	0	0	0	0	2	0	0	0	0	0	0	103
2-8-2016	0	0	0	0	0	0	0	0	0	2	6	9	15	27	43	31	7	0	5	0	2	2	1	1	1	2	4	0	0	0	1	0	0	0	0	0	0	0	157
3-8-2016	0	0	0	0	0	0	0	0	0	0	7	9	2	22	20	9	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76
4-8-2016	0	0	0	0	0	0	0	0	0	1	1	3	1	3	4	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
7-8-2016	0	0	0	0	0	0	0	0	0	0	0	0	8	6	18	4	6	6	2	2	0	2	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	57
24-8-2016	12	60	46	16	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	142
29-8-2016	0	0	0	0	0	0	0	0	9	13	9	9	8	3	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56
30-8-2016	0	0	0	0	0	4	17	30	134	94	17	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	302
31-8-2016	0	0	0	0	1	0	7	45	63	46	16	3	3	4	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	192
5-9-2016	0	0	0	0	0	0	0	3	82	93	17	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	201
6-9-2016	0	0	0	0	0	0	3	23	29	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68
8-9-2016	0	0	0	3	9	8	16	78	115	94	30	2	9	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	370
9-9-2016	0	0	0	0	0	0	10	87	362	419	118	51	15	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1081
10-9-2016	0	0	1	1	3	0	4	39	114	152	48	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	378
11-9-2016	0	3	5	3	11	11	8	13	53	71	63	42	13	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	310
13-9-2016	0	0	0	1	0	1	1	2	22	28	13	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73
15-9-2016	0	3	3	16	13	22	19	54	120	149	57	3	0	0	0	0	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	468
(all 2016)	12	72	61	81	113	95	140	1487	7153	11572	9027	4574	2864	3308	3269	3182	2514	2735	1658	1087	983	1580	2037	2405	2006	1592	1218	955	654	464	502	334	99	80	19	58	27	3	70018