SPRFMO
South Pacific Regional Fisheries Management Organisation

7th MEETING OF THE SCIENTIFIC COMMITTEE

La Havana, Cuba, 7 to 12 October 2019

SC7-JM07

CPUE standardization for the offshore fleet fishing Jack mackerel in the SPRFMO Area, including China

European Union

7th Meeting of the Scientific Committee

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PFA selfsampling report for SPRFMO, 2015-2019

Martin Pastoors, 05/10/2019

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Abstract

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 from 2015 to 2019. On the vessels, the PFA self-sampling programme has been carried out during all trips and all hauls. The self-sampling programme delivers information on spatial and temporal evolution of the fishery, species and length compositions and ambient fishing conditions (temperature and depth). Catch distributions and length compositions by quarter and division are presented for jack mackerel, chub mackerel and southers rays bream.

New in 2019, is that age sampling has been included in the self-sampling programme. Reports on age age sampling have been reported as ALK by month and as worked up age distributions by month.

1 Introduction

The Pelagic Freezer-trawler Association (PFA) is an association that has nine member companies that, in 2019, operate 17 freezer trawlers in six European countries (www.pelagicfish.eu).

In 2015, the PFA has initiated a self-sampling programme that expands the ongoing monitoring programmes on board of pelagic freezer-trawlers by the specialized crew of the vessels. The primary objective of that monitoring programme is to assess the quality of fish. The expansion in the self-sampling programme consists of recording of haul information, recording the species compositions per haul and regularly taking random length-samples from the catch. The self-sampling is carried out by the vessel quality managers on board of the vessels, who have a long experience in assessing the quality of fish, and by the skippers/officers with respect to the haul information. The scientific coordination of the self-sampling programme is carried out by Martin Pastoors (PFA chief science officer) with support of Floor Quirijns (contractor).

2 Overview of self-sampling methodology

The self-sampling programme in the SPRFMO area has been implemented on vessels from the Netherlands, Germany, Lithuania and Poland during the years 2015-2019. All trips by all PFA vessels fishing in the south Pacific will be monitored by self-sampling, also when there is a scientific observer on board for a certain trip.

The self-sampling programme is designed in such a way that it follows as closely as possible the working practices on board of the different vessels and that it delivers the information needed for the SPRFMO Science Committee. The following elements can be distinguished in the self-sampling protocol:

- haul information (date, time, position, weather conditions, environmental conditions, gear attributed, estimated catch, optionally: species composition)
- batch information (total catch per batch=production unit, including variables like species, average size, average weight, fat content, gonads y/n and stomach fill)
- linking batch and haul information (essentially a key of how much of a batch is caught in which of the hauls)
- length information (length frequency measurements, either by batch or by haul)

The self-sampling information is collected using standardized Excel worksheets. Each participating vessel will send in the information collected during a trip by the end of the trip. The data will be checked and added to the database by Floor Quirijns and/or Martin Pastoors, who will also generate standardized trip reports (using RMarkdown) which will be sent back to the vessel within one or two days. The compiled data for all vessels is being used for specific purposes, e.g. reporting to expert groups, addressing specific fishery or biological questions and supporting detailed biological studies. The PFA publishes an annual report on the self-sampling programme.

For presentation to SFRFMO, all trips carried out in the Southern Pacific have been selected for the years 2015-2019. Because the year 2019 is still ongoing, the information for that year is not complete yet.

3 Sampling intensity and spatio-temporal coverage

Within the Southern Pacific, there have been 2 PFA vessels fishing in 2015, 1 PFA vessel in 2016 and 2 PFA vessels in 2017 and 1 PFA vessel in 2018 and 2019. In most years, the vessels have been active from March/April to September. In 2019, the PFA vessel has been active from april 2019. A summary of the all the trip properties for all years is presented in table 3.1. Note that In the subsequent tables and figures only the last four years of data are being presented.

year	nvessels	ntrips	ndays	nhauls	catch	nlength	catch/trip	catch/day	catch/haul
2015	2	9	177	378	28,840	7,299	3,204	162	76
2016	1	4	95	169	10,284	6,845	2,571	108	60
2017	2	10	273	609	29,652	20,829	2,965	108	48
2018	1	5	130	236	10,234	4,692	2,046	78	43
2019	1	3	85	162	12,114	6,615	4,038	142	74
(all)	.	31	760	1,554	91,124	46,280	.	.	.

Table 3.1 PFA selfsampling summary of the number of days, hauls, trips, vessels and fish measured by area and year

Haul positions

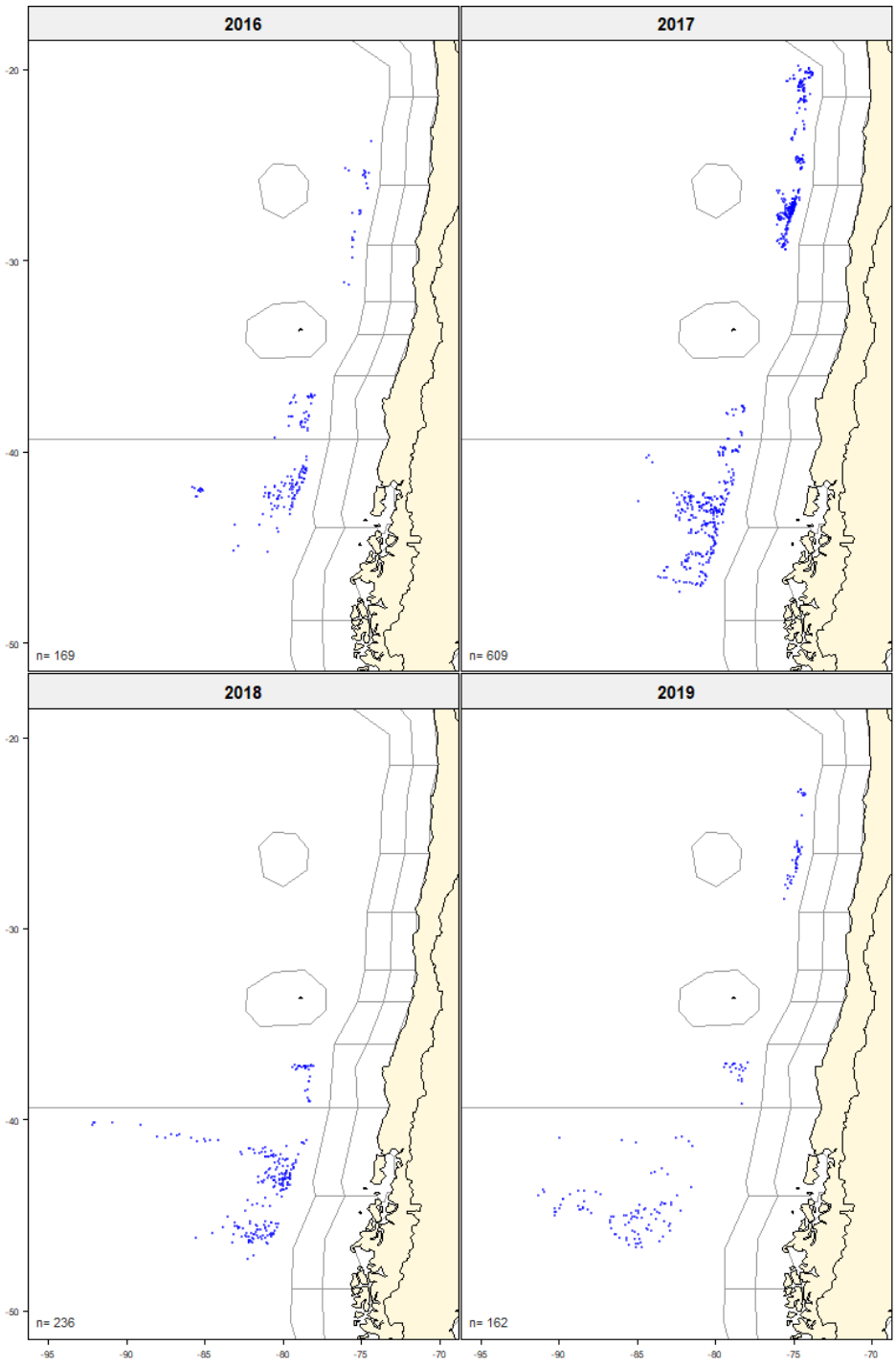

Figure 3.1: Overview of haul positions in PFA South Pacific fisheries, by year (2019 only up to 18/08/2019)

4 Catch information (by species)

Catches by species and year are shown in table 4.1 (in tonnes).

species	englishname	scientificname	2016	2017	2018	2019	all
cjm	jack mackerel	Trachurus murphyi	9,304	27,698	9,620	11,784	58,406
mas	chub mackerel	Scomber japonicus	679	1,784	117	126	2,706
bru	rays bream	Brama australis	24	85	290	106	504
uba	blue fathead	Cubiceps caeruleus	145	85	208	46	484
bpq	NA	Brama japonica	0	0	0	41	41
poa	pomfret	Brama brama	6	0	0	0	6
skj	skipjack tuna	Katsuwonus pelamis	0	0	0	6	6
edr	NA	Pseudopentaceros richardsoni	0	0	0	3	3
bep	NA	Sarda chiliensis	0	0	0	2	2
slt	slender tuna	Allothunnus fallai	0	0	0	0	0
oth	NA	NA	0	0	0	0	0
(all)	(all)	(all)	10,159	29,652	10,235	12,115	62,160

Table 4.1: Self-sampled catch by species and year (2019 only up to 18/08/2019)

4.2 Jack mackerel (CJM, Trachurus murphyi)

A summary of the Jack mackerel statistics in the self-sampling programme by year are shown in the text tables and figures below.

species	year	nvessels	ntrips	ndays	nhauls	catch	nlength	catch/trip	catch/day
cjm	2015	2	9	167	337	27,775	7,299	3,086	166
cjm	2016	1	4	86	152	9,431	6,042	2,357	109
cjm	2017	2	10	263	549	27,652	19,631	2,765	105
cjm	2018	1	5	125	213	9,619	3,937	1,923	76
cjm	2019	1	3	83	152	11,789	6,032	3,929	142
cjm	(all)	.	31	724	1,403	86,266	42,941	.	.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	nlength
cjm	87.2.6	2015	2	5	67	114	8,463	3,696
cjm	87.2.6	2016	1	3	34	54	2,053	2,974
cjm	87.2.6	2017	2	5	129	299	9,673	12,367
cjm	87.2.6	2018	1	1	19	32	1,705	592
cjm	87.2.6	2019	1	1	34	62	3,157	4,259
cjm	87.3.3	2015	2	8	107	223	19,311	3,603
cjm	87.3.3	2016	1	2	52	98	7,377	3,068
cjm	87.3.3	2017	2	7	134	250	17,978	7,264
cjm	87.3.3	2018	1	5	106	181	7,914	3,345
cjm	87.3.3	2019	1	3	49	90	8,631	1,773
cjm	(all)	2015		13	174	337	27,774	7,299
cjm	(all)	2016		5	86	152	9,430	6,042
cjm	(all)	2017		12	263	549	27,651	19,631
cjm	(all)	2018		6	125	213	9,619	3,937
cjm	(all)	2019		4	83	152	11,788	6,032
cjm	(all)	(all)		40	731	1,403	86,262	42,941

Table 4.1: Jack mackerel (CJM). summaries of the self-sampling programme by year and division.

Jack mackerel (CJM). Catch by rectangle

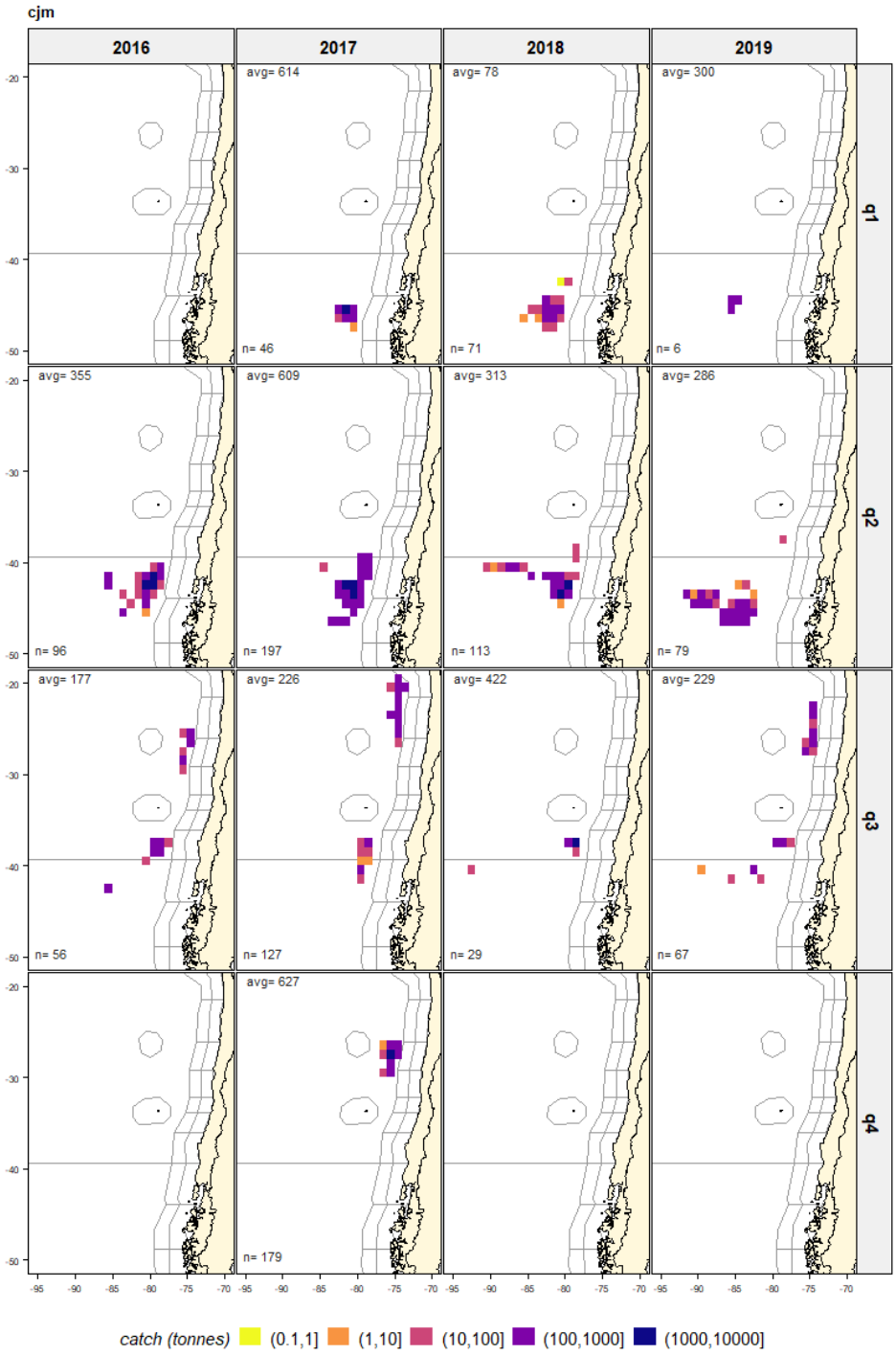

Figure 4.1.1: Jack mackerel (CJM). Overview of the catch (tonnes) by year and quarter (2019 only up to 18/08/2019).

Jack mackerel (CJM). Length frequencies by year

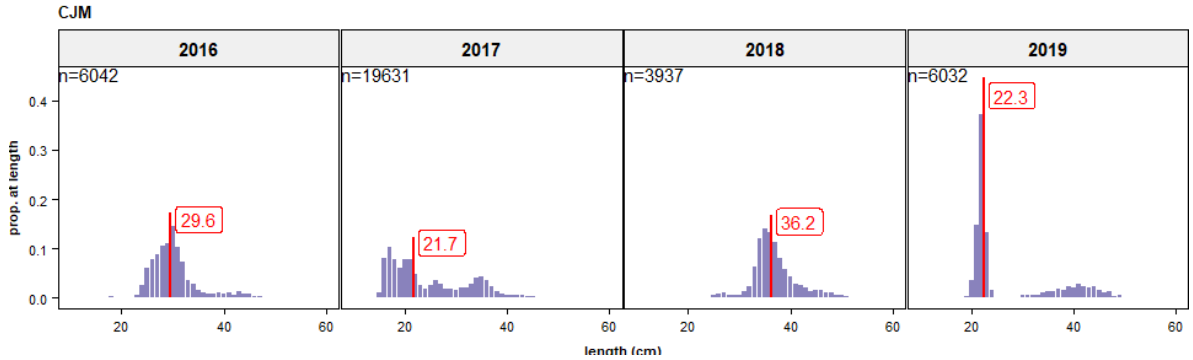

Figure 4.1.2: Jack mackerel (CJM). Relative length compositions by year (2019 only up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Jack mackerel (CJM). Length frequencies by year and quarter

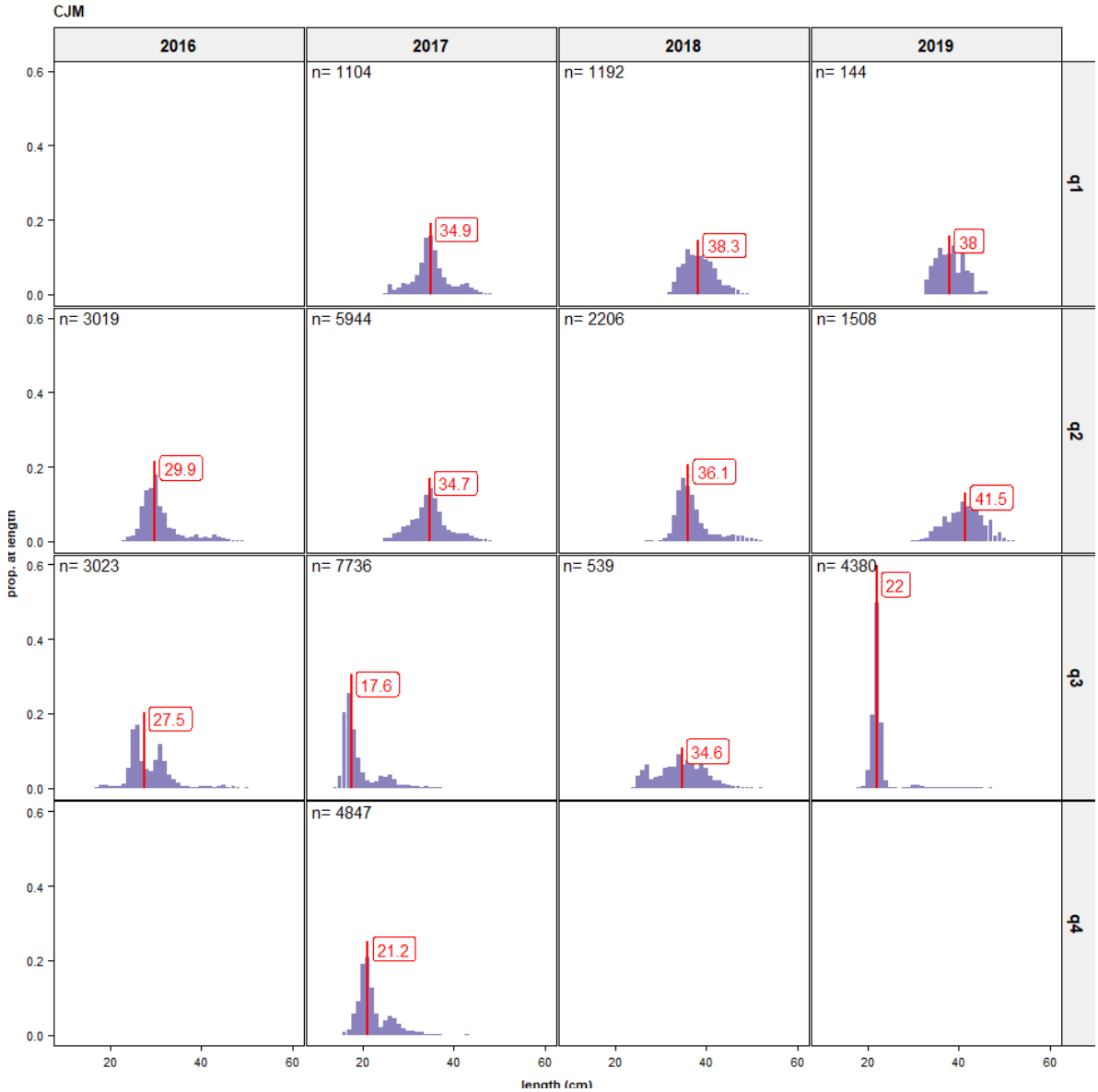

Figure 4.1.3: Jack mackerel (CJM). Relative length compositions by year and quarter (2019 only up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Jack mackerel (CJM). Length frequencies by year and division

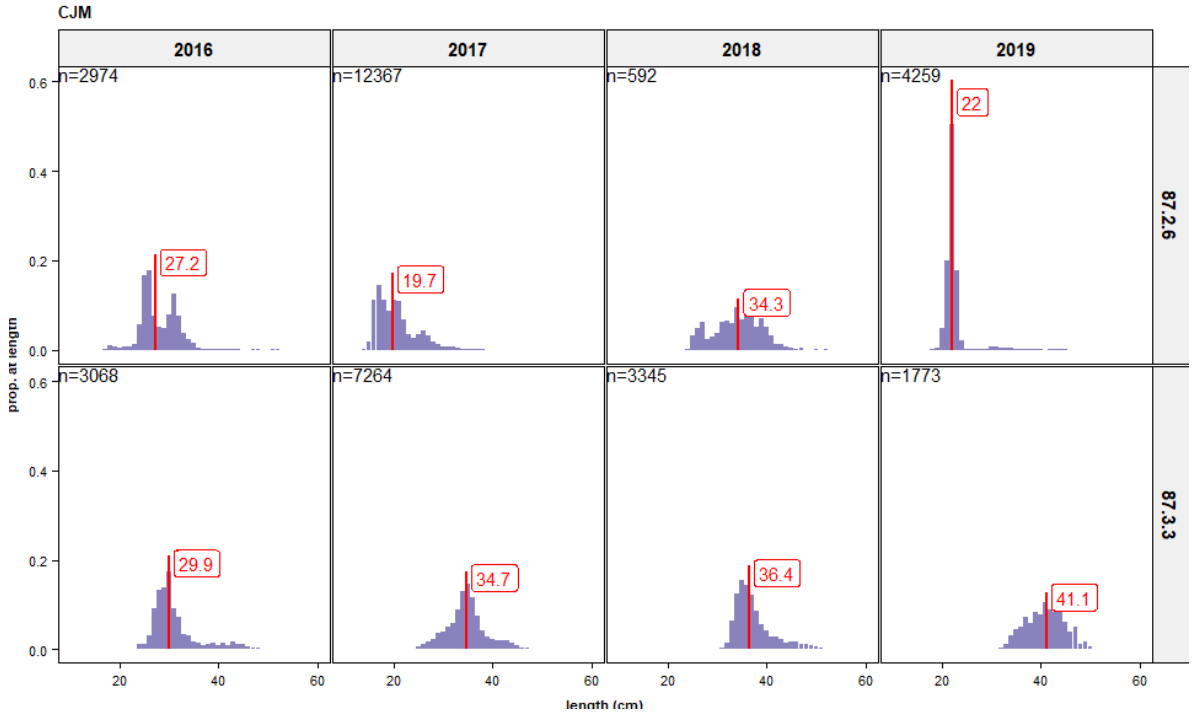

Figure 4.1.4: Jack mackerel (CJM). Relative length compositions by year and division (2019 up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Jack mackerel (CJM). Depth distribution by year and division

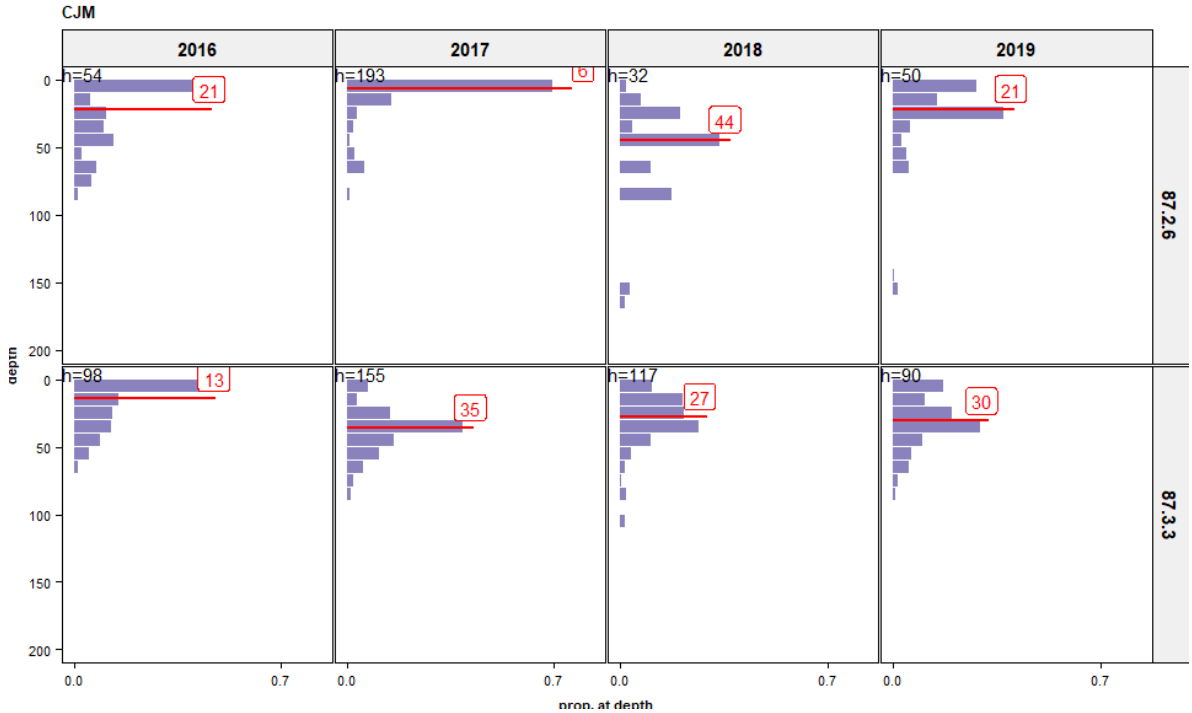

Figure 4.1.5: Jack mackerel (CJM). Relative depth distribution by year and quarter (2019 only up to 18/08/2019). Number of observations (fishing depth measurements) indicated by h. Median depth indicated in red.

Jack mackerel (CJM). Age-length key by month (2019 only)

In 2019, the self-sampling has been extended to cover age sampling. From a subset of hauls during each trip, a random sample of fish has been frozen for later analysis in the lab of INPESCA (Chile). A summary of the number of fish sampled by month is in the text table below for length, weight, sex, maturity and age. Samples for the months 6-8 have not been processed for age at present.

species	year	month	nlen	nweight	nsex	nmat	nage
cjm	2019	3	22	7	22	7	22
cjm	2019	4	67	28	67	28	67
cjm	2019	5	92	51	92	51	92
cjm	2019	6	41	20	41	20	41
cjm	2019	7	127	127	127	127	0
cjm	2019	8	61	61	61	61	0
cjm	2019	(all)	410	294	410	294	222

The Age-length keys and age distributions by month are presented in the figures below.

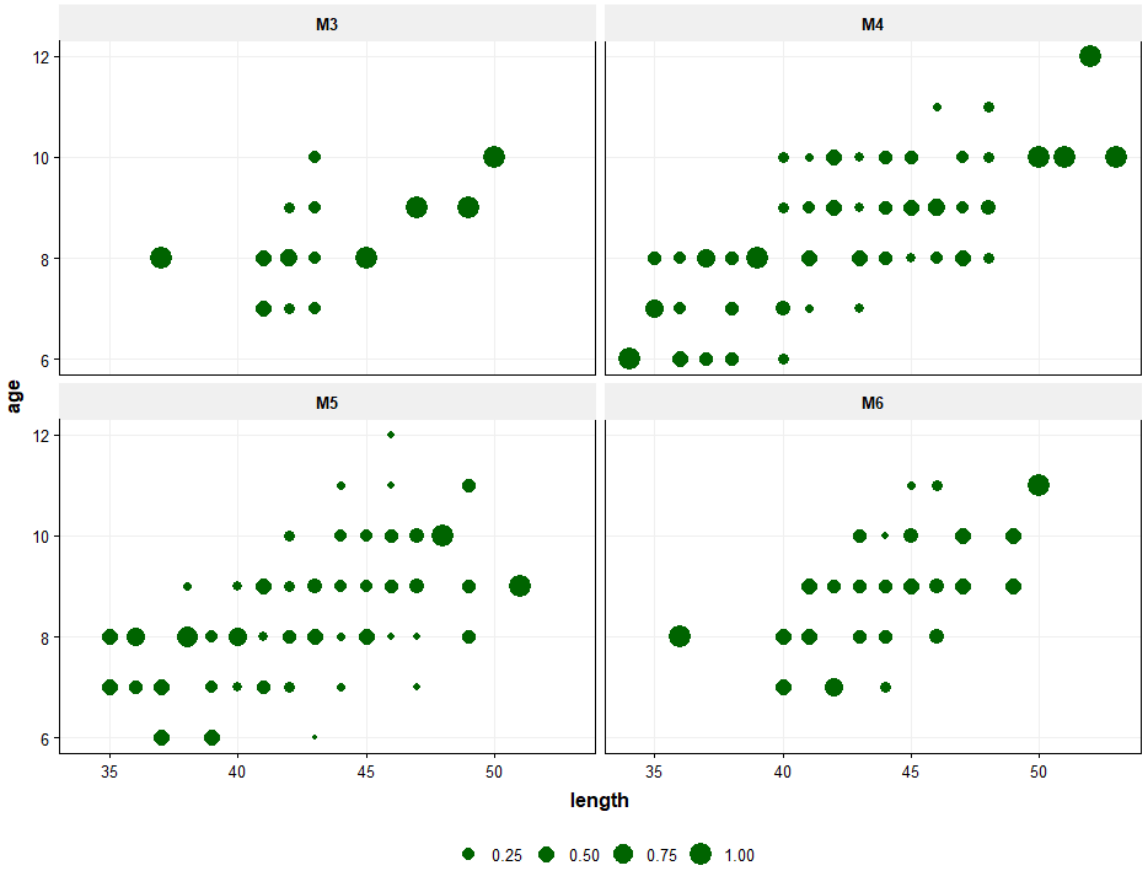

Figure 4.1.6: Jack mackerel (CJM). Age-length key collected during the 2019 sefl-sampling.

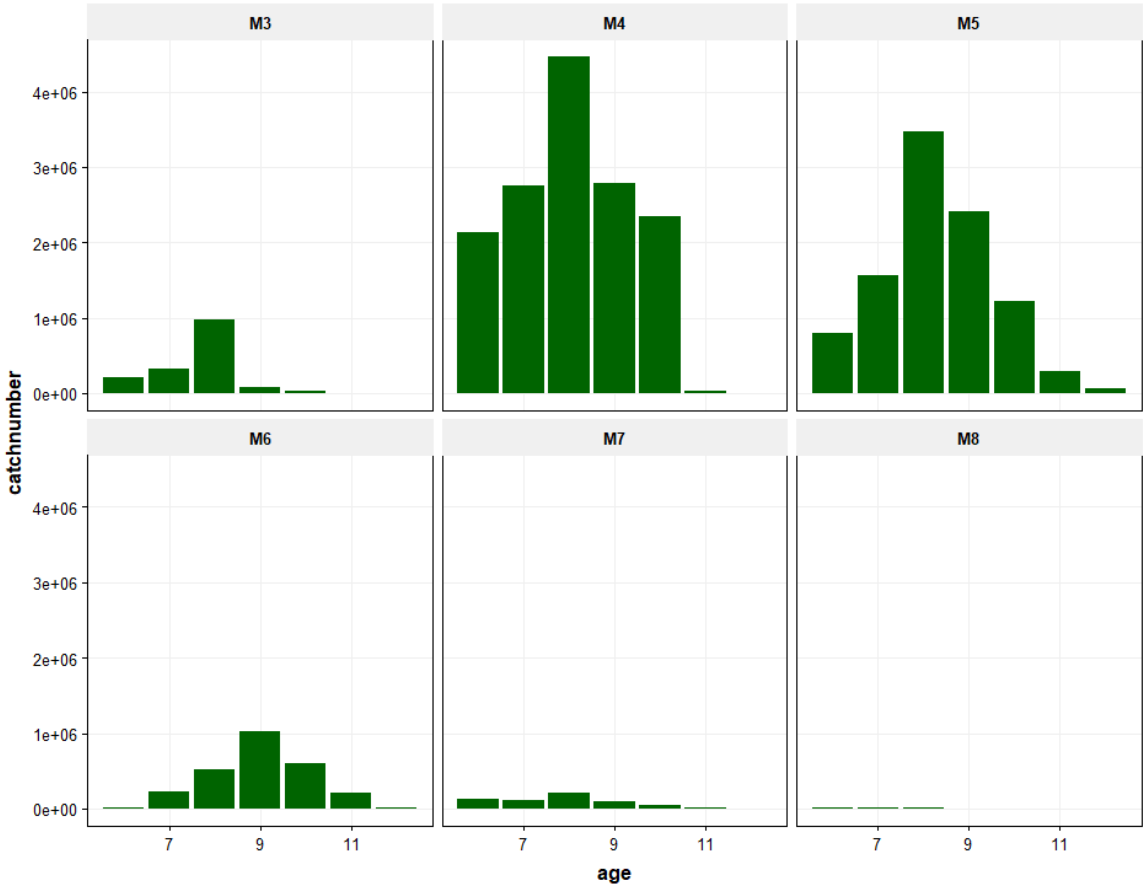

Figure 4.1.7: Jack mackerel (CJM). Age distributions of the self-sampled catches during the 2019. Note that the last few months have not been covered yet, because age reading has not yet taken place. In those case an average annual ALK has been applied when available.

4.3 Chub mackerel (MAS, Scomber japonicus)

A summary of the Chub mackerel statistics in the self-sampling programme by year are shown in the text tables and figures below.

species	year	nvessels	ntrips	ndays	nhauls	catch	nlength	catch/trip	catch/day
mas	2015	2	7	104	172	822	0	117	7
mas	2016	1	4	67	116	673	562	168	10
mas	2017	2	10	220	390	1,836	1,014	183	8
mas	2018	1	5	67	101	117	109	23	1
mas	2019	1	3	47	72	122	78	40	2
mas	(all)	.	29	505	851	3,570	1,763	.	.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	nlength
mas	87.2.6	2015	2	5	49	75	566	0
mas	87.2.6	2016	1	3	28	42	136	304
mas	87.2.6	2017	2	5	106	209	1,586	878
mas	87.2.6	2018	1	1	18	30	68	60
mas	87.2.6	2019	1	1	31	55	119	78
mas	87.3.3	2015	2	6	57	97	255	0
mas	87.3.3	2016	1	2	39	74	536	258
mas	87.3.3	2017	2	7	114	181	249	136
mas	87.3.3	2018	1	4	49	71	48	49
mas	87.3.3	2019	1	3	16	17	3	0
mas	(all)	2015		11	106	172	821	0
mas	(all)	2016		5	67	116	672	562
mas	(all)	2017		12	220	390	1,835	1,014
mas	(all)	2018		5	67	101	116	109
mas	(all)	2019		4	47	72	122	78
mas	(all)	(all)		37	507	851	3,566	1,763

Table 4.2: Chub mackerel (MAS). summaries of the self-sampling programme by year and division.

Chub mackerel (MAS). Catch by rectangle

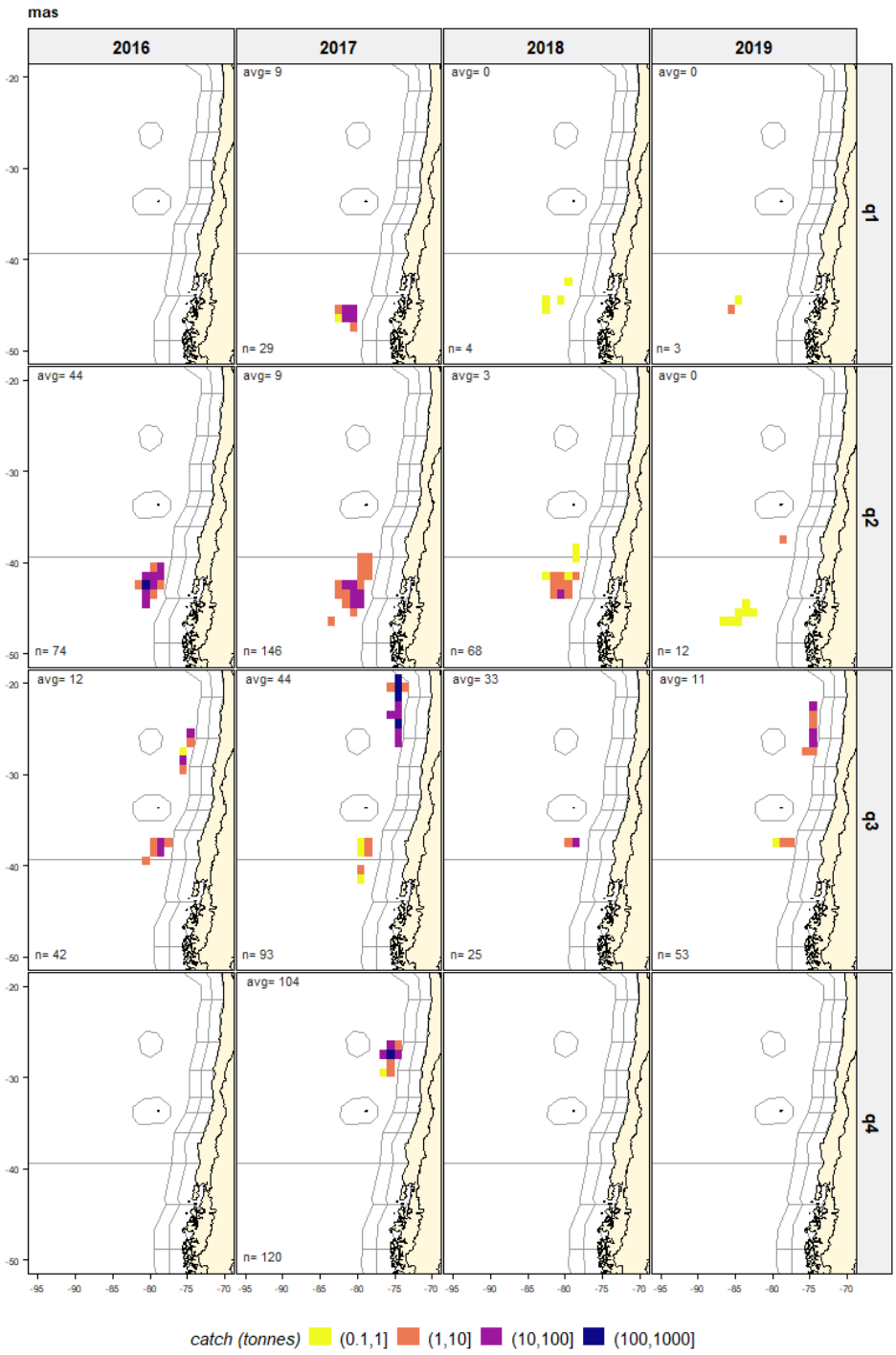

Figure 4.2.1: Chub mackerel (MAS). Overview of the catch (tonnes) by year and quarter (2019 only up to 18/08/2019).

Chub mackerel (MAS). Length frequencies by year

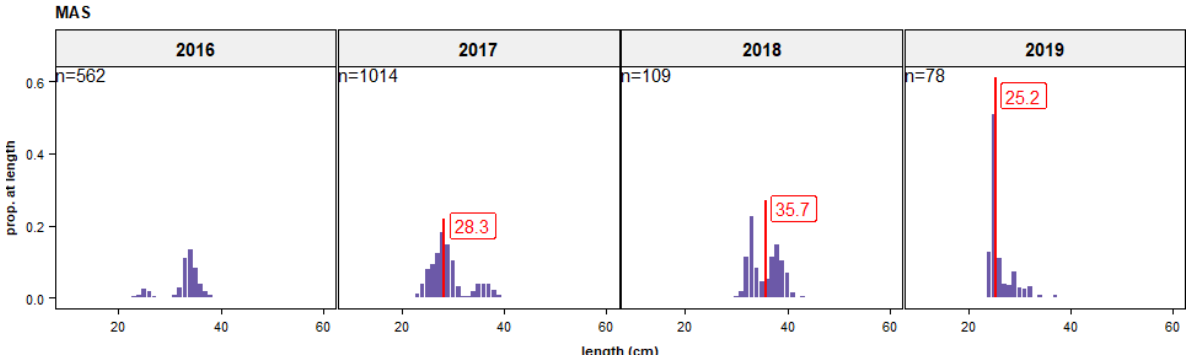

Figure 4.2.2: Chub mackerel (MAS). Relative length compositions by year (2019 only up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Chub mackerel (MAS). Length frequencies by year and quarter

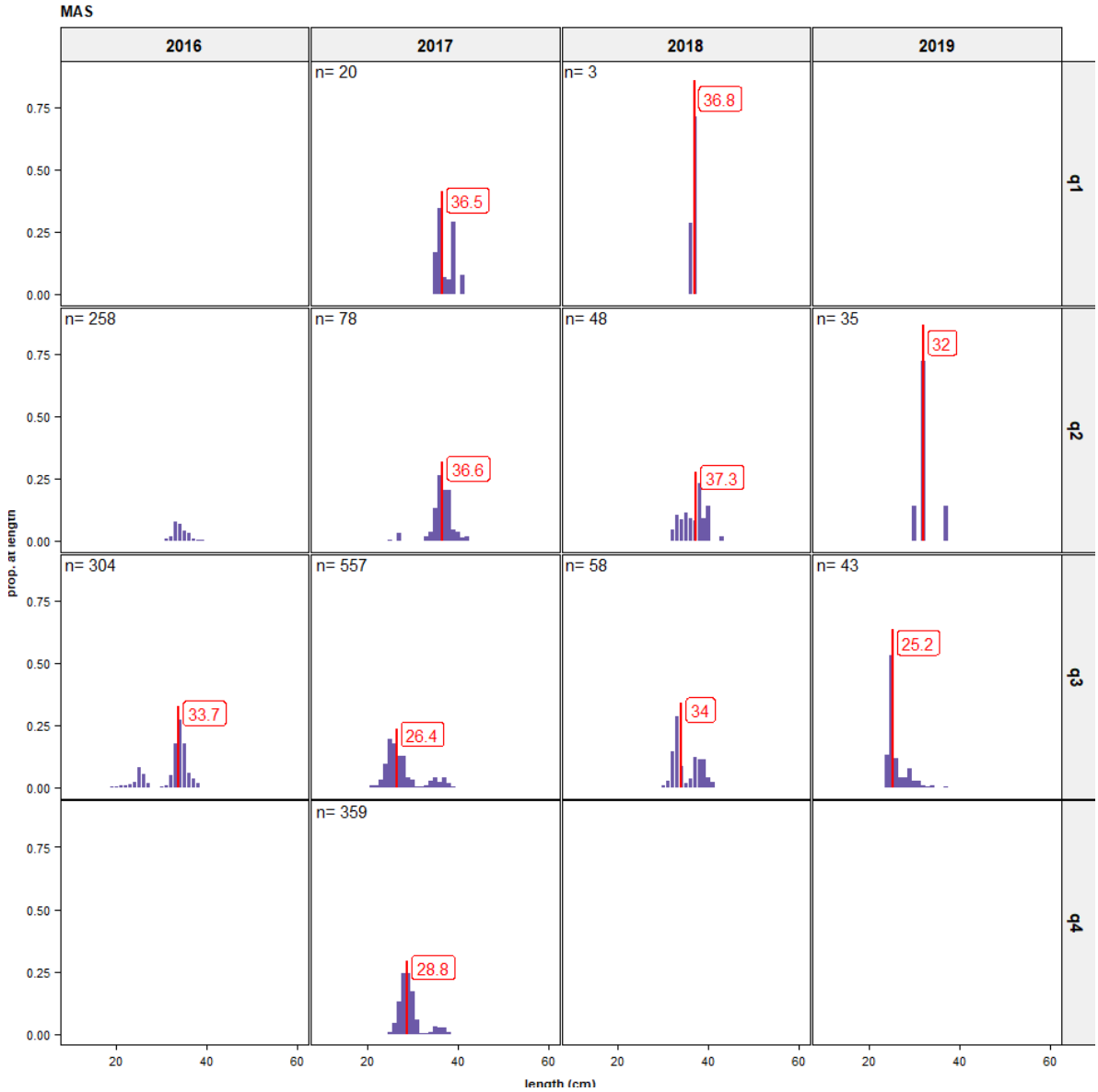

Figure 4.2.3: Chub mackerel (MAS). Relative length compositions by year and quarter (2019 only up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Chub mackerel (MAS). Length frequencies by year and division

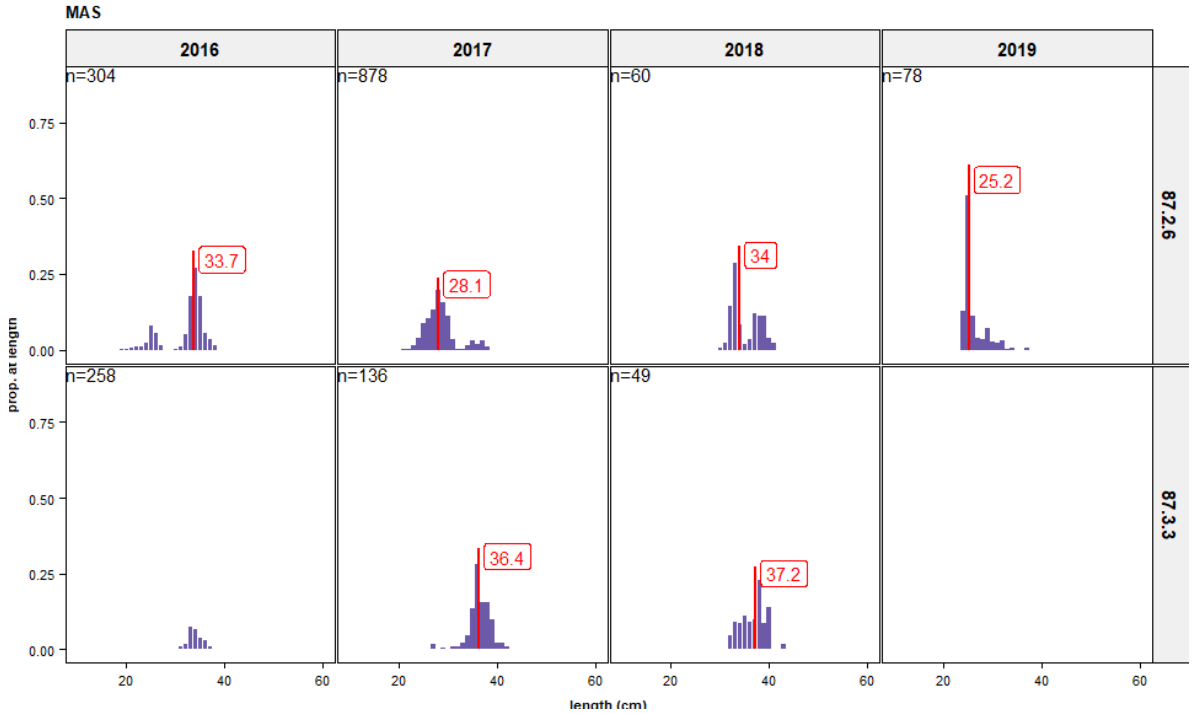

Figure 4.2.4: Chub mackerel (MAS). Relative length compositions by year and division (2019 up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Chub mackerel (MAS). Depth distribution by year and division

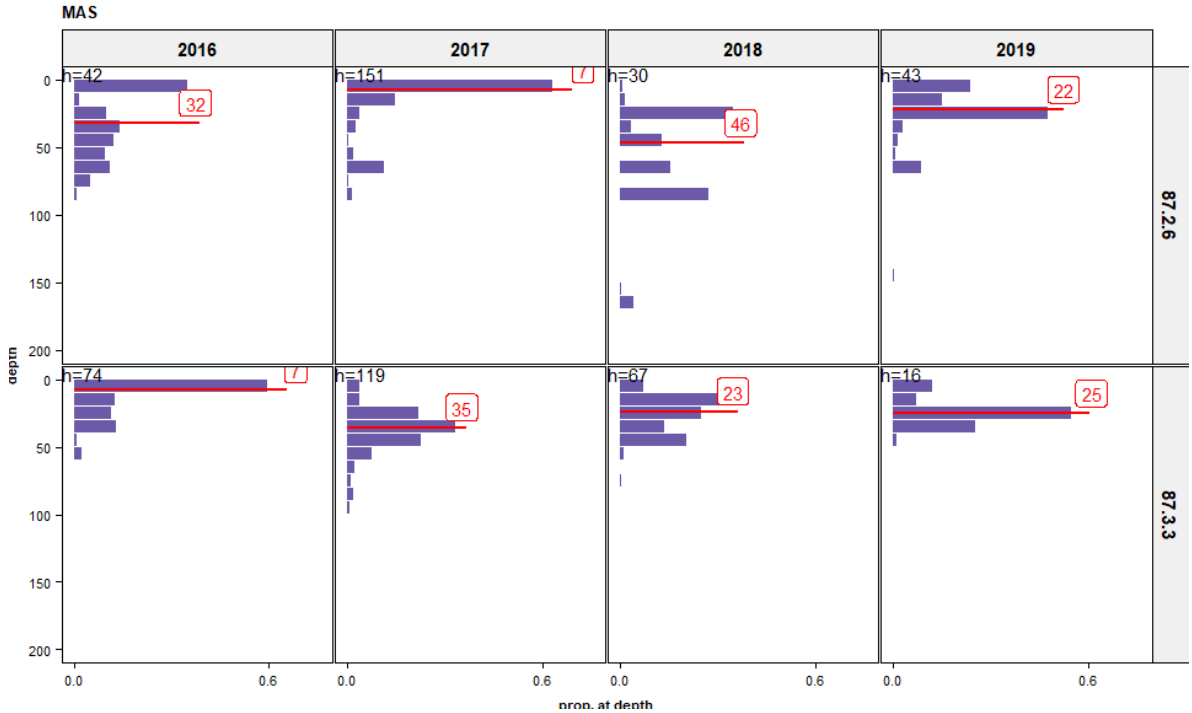

Figure 4.2.5: Chub mackerel (MAS). Relative depth distribution by year and quarter (2019 only up to 18/08/2019). Number of observations (fishing depth measurements) indicated by h. Median depth indicated in red.

##Southern rays bream (BRU, Brama australis)

A summary of the Southern rays bream statistics in the self-sampling programme by year are shown in the text tables and figures below.

species	year	nvessels	ntrips	ndays	nhauls	catch	nlength	catch/trip	catch/day
bru	2015	2	7	75	104	152	0	21	2
bru	2016	1	2	18	22	24	25	12	1
bru	2017	2	7	90	123	83	63	11	0
bru	2018	1	5	114	149	289	267	57	2
bru	2019	1	3	62	77	127	30	42	2
bru	(all)	.	24	359	475	675	385	.	.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	nlength
bru	87.2.6	2015	2	3	17	20	13	0
bru	87.2.6	2016	1	2	10	10	12	16
bru	87.2.6	2017	2	2	8	12	5	11
bru	87.2.6	2018	1	1	18	27	101	69
bru	87.2.6	2019	1	2	15	18	36	19
bru	87.3.3	2015	2	6	59	84	138	0
bru	87.3.3	2016	1	1	8	12	11	9
bru	87.3.3	2017	2	6	82	111	77	52
bru	87.3.3	2018	1	5	96	122	188	198
bru	87.3.3	2019	1	3	47	59	91	11
bru	(all)	2015		9	76	104	151	0
bru	(all)	2016		3	18	22	23	25
bru	(all)	2017		8	90	123	82	63
bru	(all)	2018		6	114	149	289	267
bru	(all)	2019		5	62	77	127	30
bru	(all)	(all)		31	360	475	672	385

Table 4.3: Southern rays bream (BRU). summaries of the self-sampling programme by year and division.

Southern rays bream (BRU). Catch by rectangle

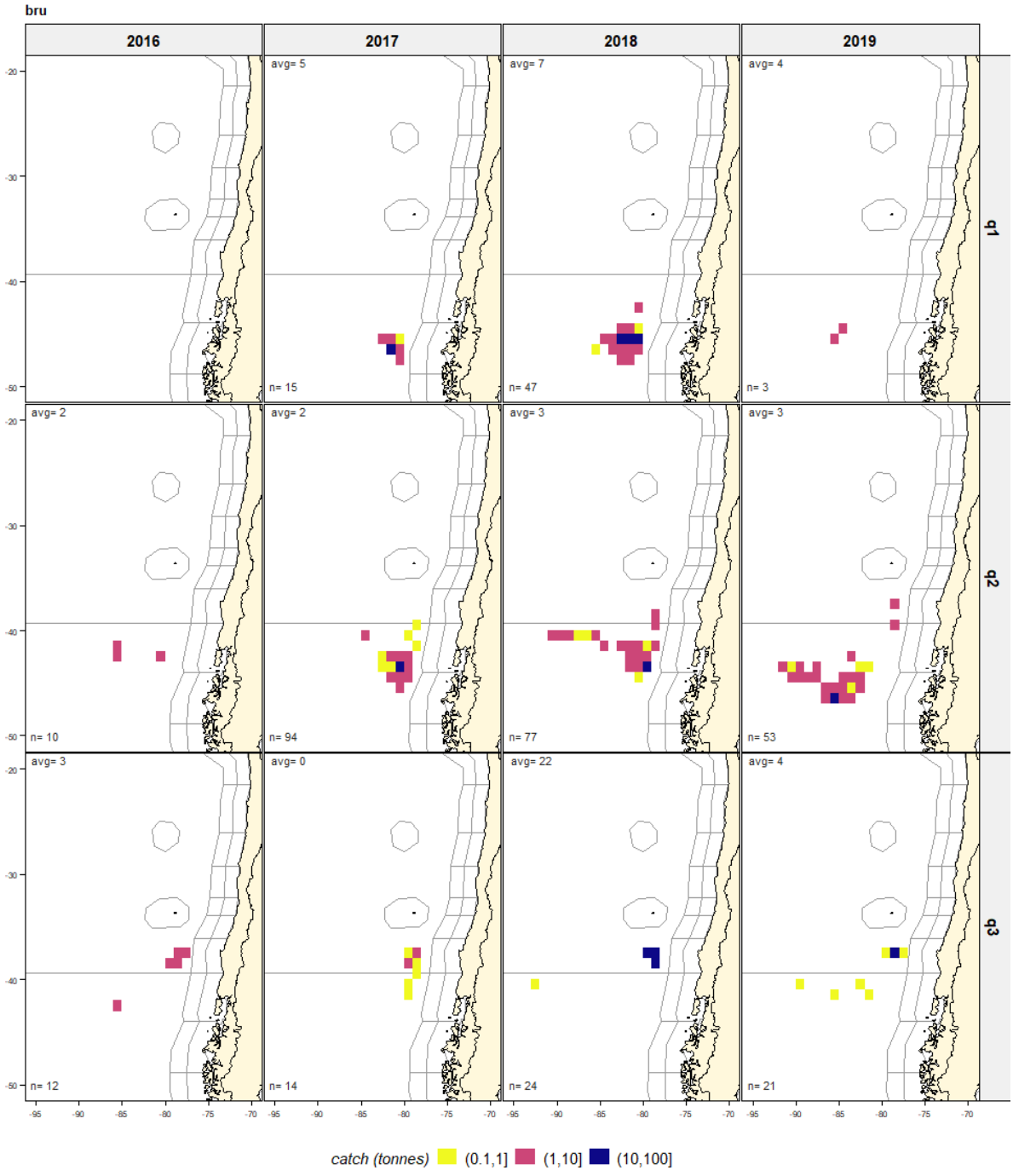

Figure 4.3.1: Southern rays bream (BRU). Overview of the catch (tonnes) by year and quarter (2019 only up to 18/08/2019).

Southern rays bream (BRU). Length frequencies by year

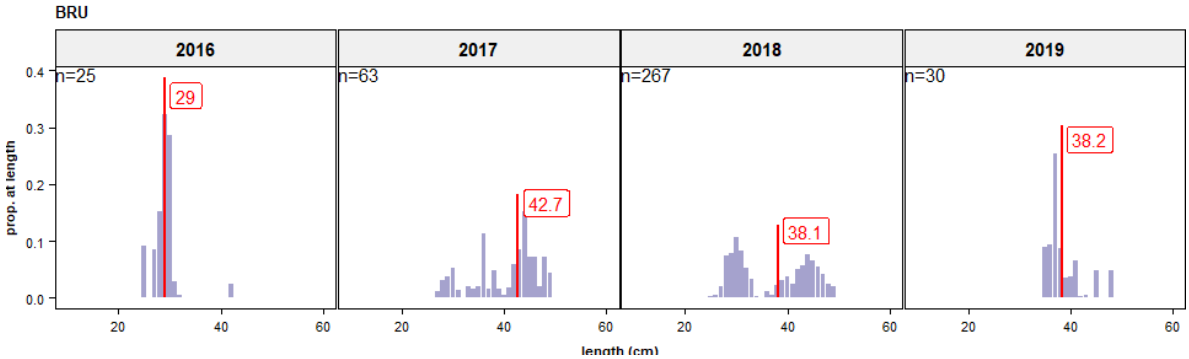

Figure 4.3.2: Southern rays bream (BRU). Relative length compositions by year (2019 only up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Southern rays bream (BRU). Length frequencies by year and quarter

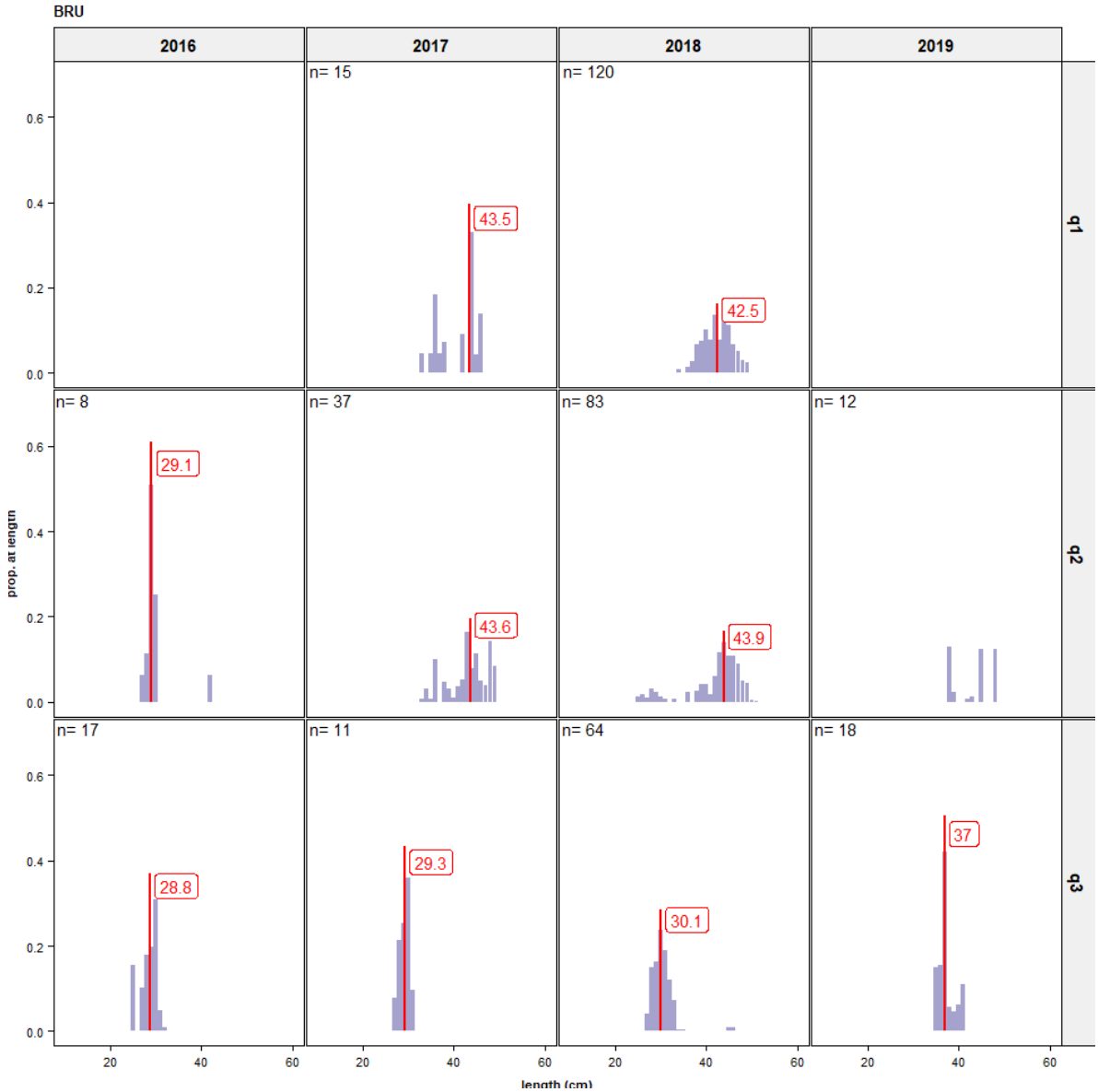

Figure 4.3.3: Southern rays bream (BRU). Relative length compositions by year and quarter (2019 only up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Southern rays bream (BRU). Length frequencies by year and division

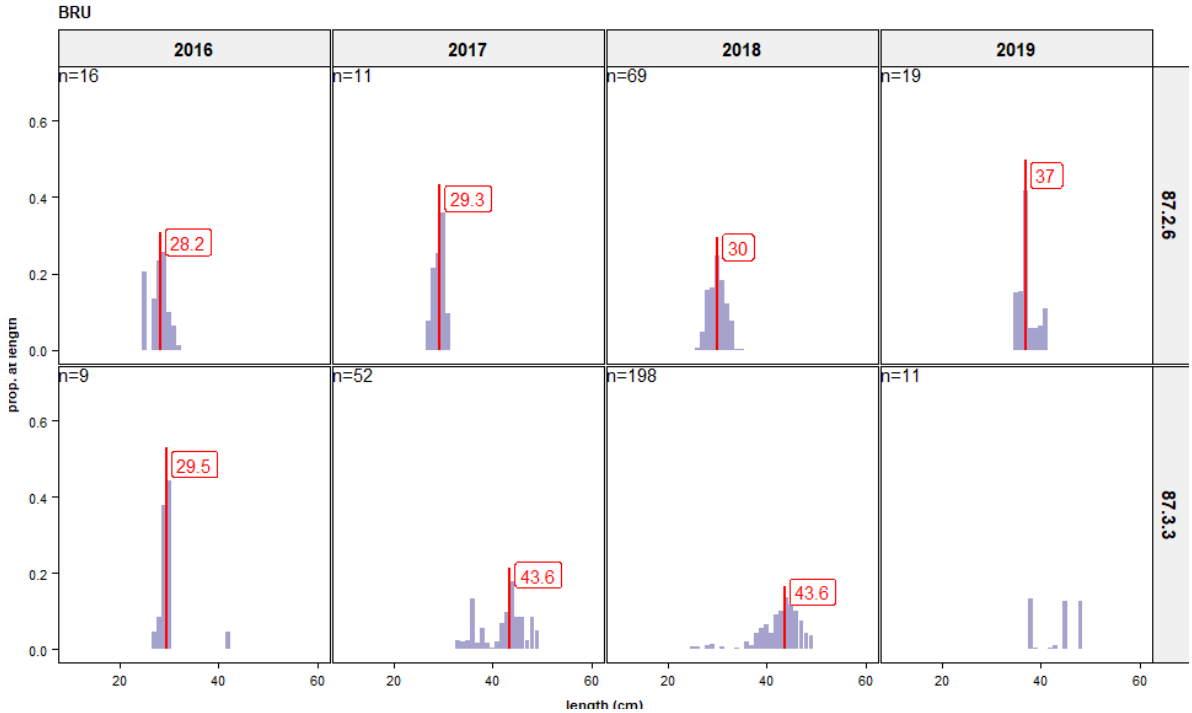

Figure 4.3.4: Southern rays bream (BRU). Relative length compositions by year and division (2019 up to 18/08/2019). Number of observations (length measurements) indicated by n. Median length (fork length) indicated in red.

Southern rays bream (BRU). Depth distribution by year and division

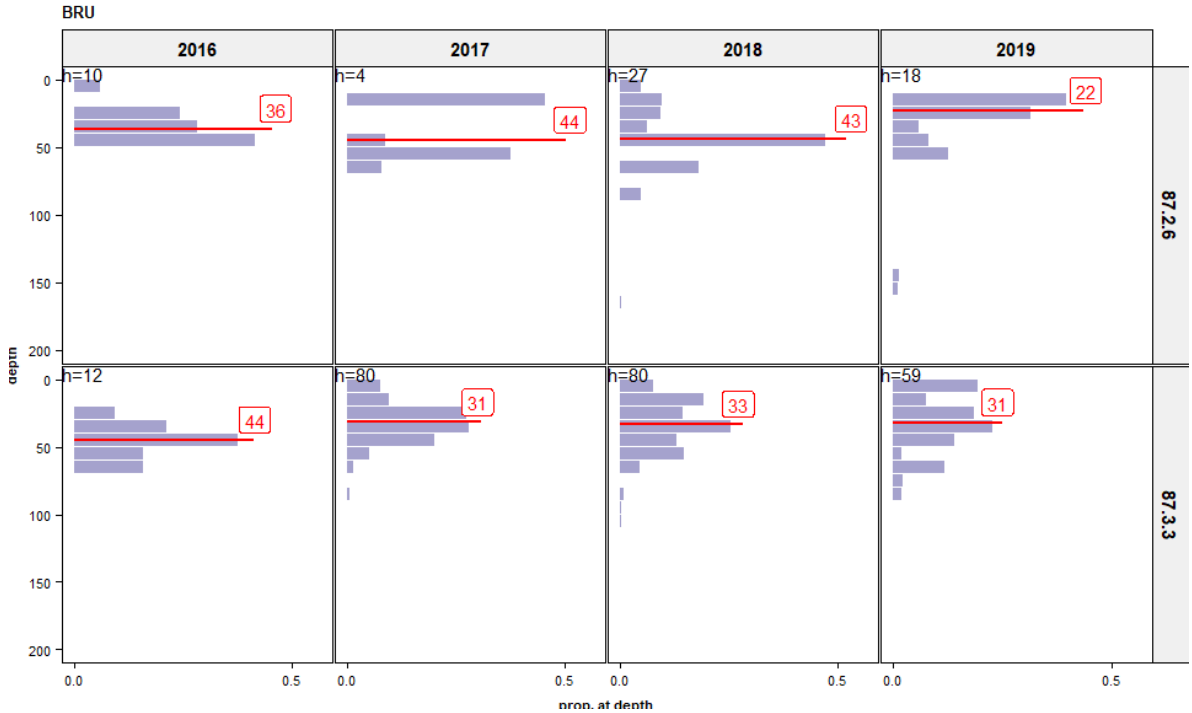

Figure 4.3.c: Southern rays bream (BRU). Relative depth distribution by year and quarter (2019 only up to 18/08/2019). Number of observations (fishing depth measurements) indicated by h. Median depth indicated in red.

5 Environmental conditions

Surface temperature

Average surface temperature by quarter and by rectangle (1x1 degree) is shown in figure 5.1.

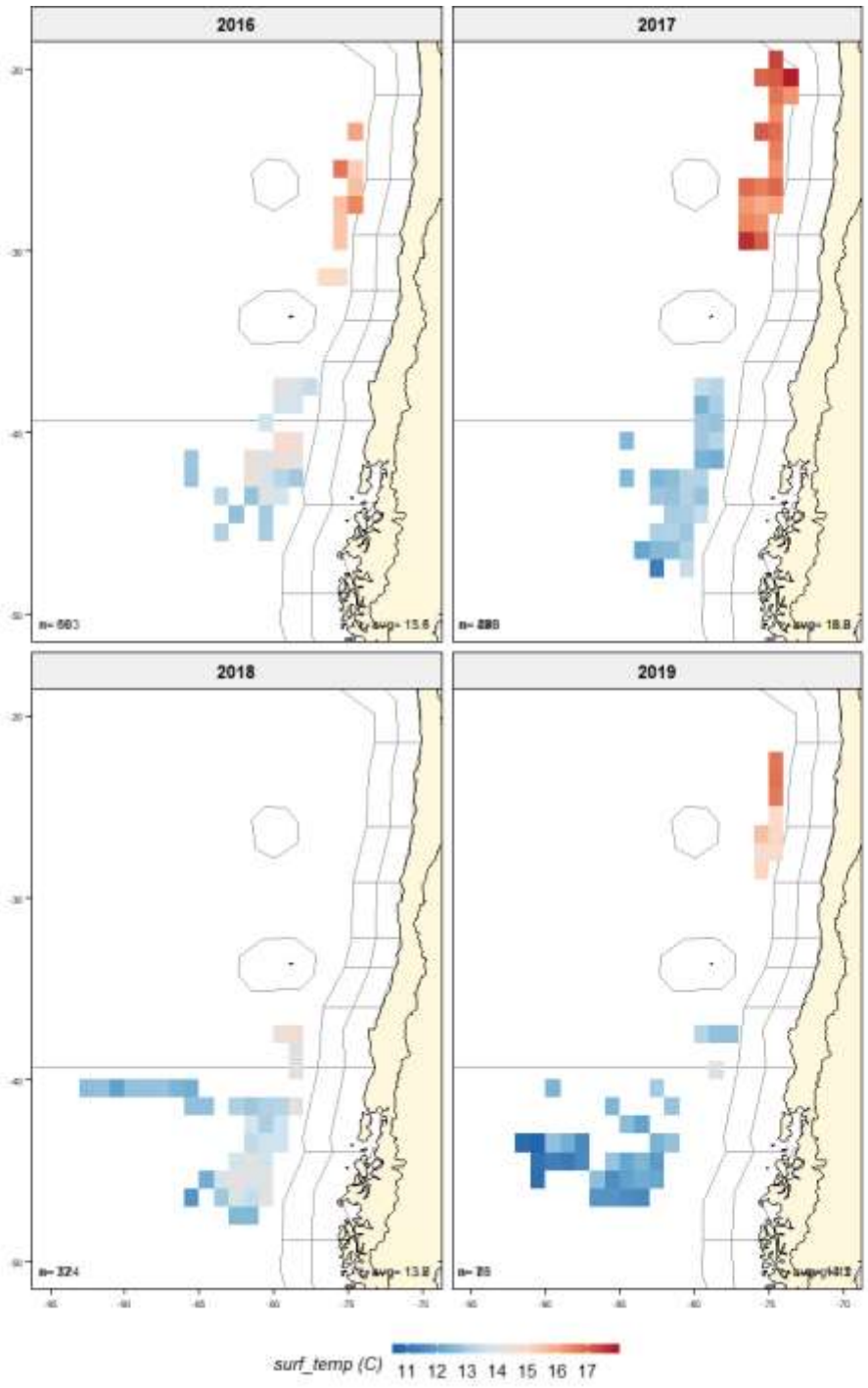

Figure 5.1: Mean surface temperature (2019 only up to 18/08/2019)

Mean fishing depth

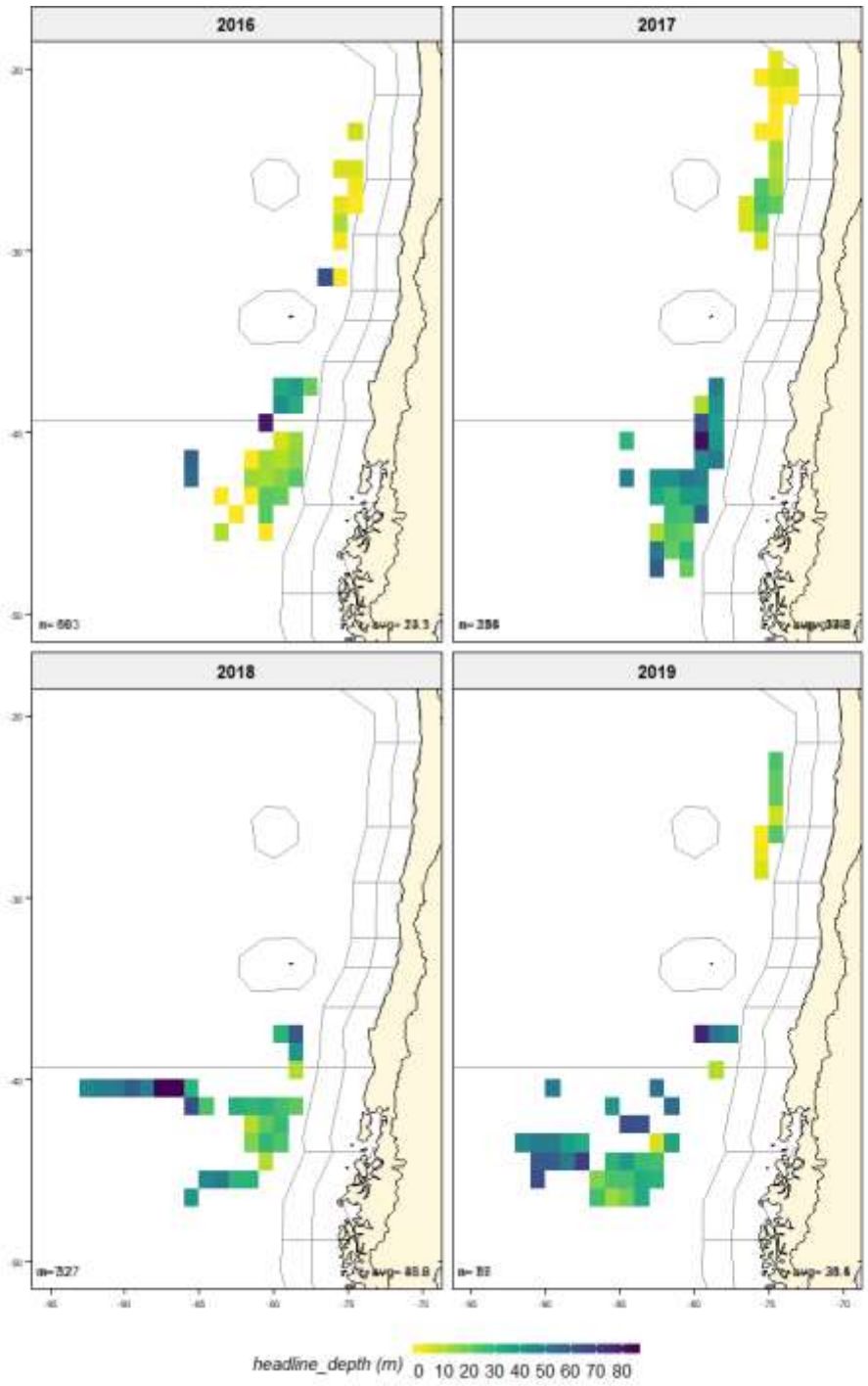

Figure 5.2: Fishing depth (m) (2019 only up to 18/08/2019)

6 Discussion and conclusions

The PFA self-sampling programme in the SPRFMO area has been carried out for the fifth year in a row (2015-2019). The results are presented in terms of meta-information on the sampling (number of vessels, trips, days and length measurements per area and/or season), in terms of the spatio-temporal distribution of catches and the length compositions by area and/or season.

At the moment this report is produced (05/10/2019), the year 2019 is still underway. The latest trip that was included in the analysis ended on 18/08/2019. However, the fishery in 2019 is still continuing and therefore the results should not be taken as an indication the final catches for 2019.

Although the information presented in this report does show a considerable overlap with the national report presented by EU (SC5 DOC-13) - which is logical because the PFA fisheries constitute the bulk of the EU catches in the SPRFMO area in most years - it is considered that there is a benefit in presenting the information from the PFA self-sampling programme directly to the SPRFMO SC. The PFA self-sampling programme is intended to fully monitor the fishery during the entire period that the vessels are active in the SPRFMO area. This delivers spatially and temporally highly resolved information on length composition, catch rates and environmental characteristics. Because of the design of the programme, the information is available on a near to real-time scale, meaning that catch data of the current year can still be processed up to the start of the SC meeting. In addition, the programme has developed in such a way that all information is available in standardized formats and allows for easy mapping and geo-spatial analysis.

A full report on the PFA self-sampling programme 2015-2018 is available at https://www.pelagicfish.eu/media/afbeeldingen/PFA%202019_03%20Selfsampling%20report%202015-2018%20v2.pdf

7 Acknowledgements

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8 More information

Please contact Martin Pastoors (mpastoors@pelagicfish.eu) if you have any questions on the PFA self-sampling programme or the specific results presented here.

8.2 Annex 1: haul information 2018 and 2019

See: *pfa fishingactivitytemplate 2018.csv* and *pfa fishingactivitytemplate 2019.csv* in folder **D:/SPRFMO/data**.

8.3 Annex 2: Jack mackerel length-frequencies 2018 and 2019 (by quarter and area)

year	quarter	area	species	length	catchnumber	prop
2018	q1	87	cjm	32	13456	0.007
2018	q1	87	cjm	33	66261	0.033
2018	q1	87	cjm	34	145945	0.072
2018	q1	87	cjm	35	165464	0.082
2018	q1	87	cjm	36	244335	0.12
2018	q1	87	cjm	37	214256	0.106
2018	q1	87	cjm	38	206510	0.102
2018	q1	87	cjm	39	209716	0.103
2018	q1	87	cjm	40	188393	0.093
2018	q1	87	cjm	41	177714	0.088
2018	q1	87	cjm	42	142710	0.07
2018	q1	87	cjm	43	78038	0.038
2018	q1	87	cjm	44	51650	0.025
2018	q1	87	cjm	45	48000	0.024
2018	q1	87	cjm	46	35602	0.018
2018	q1	87	cjm	47	23881	0.012
2018	q1	87	cjm	48	6948	0.003
2018	q1	87	cjm	49	6936	0.003
2018	q1	87	cjm	50	1287	0.001
2018	q1	87	cjm	51	2278	0.001
2018	q2	87	cjm	27	16529	0.002
2018	q2	87	cjm	28	30311	0.003
2018	q2	87	cjm	29	6833	0.001
2018	q2	87	cjm	30	19828	0.002
2018	q2	87	cjm	31	71039	0.007
2018	q2	87	cjm	32	199350	0.02
2018	q2	87	cjm	33	710428	0.07
2018	q2	87	cjm	34	1379183	0.137
2018	q2	87	cjm	35	1725563	0.171
2018	q2	87	cjm	36	1500740	0.149
2018	q2	87	cjm	37	1256934	0.125
2018	q2	87	cjm	38	858804	0.085
2018	q2	87	cjm	39	473015	0.047
2018	q2	87	cjm	40	321800	0.032
2018	q2	87	cjm	41	168593	0.017
2018	q2	87	cjm	42	171484	0.017
2018	q2	87	cjm	43	188379	0.019
2018	q2	87	cjm	44	123622	0.012
2018	q2	87	cjm	45	146120	0.014
2018	q2	87	cjm	46	181767	0.018
2018	q2	87	cjm	47	140504	0.014
2018	q2	87	cjm	48	145571	0.014
2018	q2	87	cjm	49	93566	0.009
2018	q2	87	cjm	50	76749	0.008
2018	q2	87	cjm	51	57029	0.006
2018	q2	87	cjm	52	19559	0.002
2018	q3	87	cjm	24	2589	0.001
2018	q3	87	cjm	25	79650	0.032
2018	q3	87	cjm	26	119217	0.048
2018	q3	87	cjm	27	154058	0.062
2018	q3	87	cjm	28	55178	0.022
2018	q3	87	cjm	29	76922	0.031
2018	q3	87	cjm	30	82964	0.034
2018	q3	87	cjm	31	136128	0.055
2018	q3	87	cjm	32	143787	0.058
2018	q3	87	cjm	33	139124	0.056

2018	q3	87	cjm	34	223564	0.09
2018	q3	87	cjm	35	159564	0.065
2018	q3	87	cjm	36	189489	0.077
2018	q3	87	cjm	37	192535	0.078
2018	q3	87	cjm	38	125023	0.051
2018	q3	87	cjm	39	176935	0.072
2018	q3	87	cjm	40	133321	0.054
2018	q3	87	cjm	41	83570	0.034
2018	q3	87	cjm	42	54369	0.022
2018	q3	87	cjm	43	48472	0.02
2018	q3	87	cjm	44	29761	0.012
2018	q3	87	cjm	45	23732	0.01
2018	q3	87	cjm	46	12409	0.005
2018	q3	87	cjm	47	12873	0.005
2018	q3	87	cjm	48	3135	0.001
2018	q3	87	cjm	49	3135	0.001
2018	q3	87	cjm	50	5035	0.002
2018	q3	87	cjm	52	5035	0.002

year	quarter	area	species	length	catchnumber	prop
2019	q1	87	cjm	33	45966	0.04
2019	q1	87	cjm	34	85978	0.074
2019	q1	87	cjm	35	112508	0.097
2019	q1	87	cjm	36	143080	0.124
2019	q1	87	cjm	37	123412	0.107
2019	q1	87	cjm	38	127053	0.11
2019	q1	87	cjm	39	151731	0.131
2019	q1	87	cjm	40	67866	0.059
2019	q1	87	cjm	41	132366	0.114
2019	q1	87	cjm	42	72723	0.063
2019	q1	87	cjm	43	66662	0.058
2019	q1	87	cjm	44	7818	0.007
2019	q1	87	cjm	45	10884	0.009
2019	q1	87	cjm	46	10311	0.009
2019	q2	87	cjm	29	5279	0.001
2019	q2	87	cjm	30	10337	0.001
2019	q2	87	cjm	31	22437	0.003
2019	q2	87	cjm	32	33838	0.005
2019	q2	87	cjm	33	56958	0.008
2019	q2	87	cjm	34	205005	0.027
2019	q2	87	cjm	35	280845	0.038
2019	q2	87	cjm	36	300096	0.04
2019	q2	87	cjm	37	499050	0.067
2019	q2	87	cjm	38	385925	0.052
2019	q2	87	cjm	39	567085	0.076
2019	q2	87	cjm	40	578599	0.077
2019	q2	87	cjm	41	802702	0.107
2019	q2	87	cjm	42	700637	0.094
2019	q2	87	cjm	43	639401	0.085
2019	q2	87	cjm	44	739730	0.099
2019	q2	87	cjm	45	518797	0.069
2019	q2	87	cjm	46	318902	0.043
2019	q2	87	cjm	47	428675	0.057
2019	q2	87	cjm	48	104386	0.014
2019	q2	87	cjm	49	166795	0.022
2019	q2	87	cjm	50	69931	0.009
2019	q2	87	cjm	51	23441	0.003
2019	q2	87	cjm	52	11315	0.002
2019	q2	87	cjm	53	7012	0.001
2019	q2	87	cjm	54	1699	0
2019	q3	87	cjm	18	32095	0.001
2019	q3	87	cjm	19	99621	0.004
2019	q3	87	cjm	20	1231056	0.048
2019	q3	87	cjm	21	5052806	0.197

2019	q3	87	cjm	22	12782371	0.498
2019	q3	87	cjm	23	4530410	0.176
2019	q3	87	cjm	24	524814	0.02
2019	q3	87	cjm	25	22642	0.001
2019	q3	87	cjm	26	22526	0.001
2019	q3	87	cjm	27	15015	0.001
2019	q3	87	cjm	28	38287	0.001
2019	q3	87	cjm	29	59480	0.002
2019	q3	87	cjm	30	205249	0.008
2019	q3	87	cjm	31	199717	0.008
2019	q3	87	cjm	32	144083	0.006
2019	q3	87	cjm	33	77784	0.003
2019	q3	87	cjm	34	79276	0.003
2019	q3	87	cjm	35	64596	0.003
2019	q3	87	cjm	36	45463	0.002
2019	q3	87	cjm	37	53219	0.002
2019	q3	87	cjm	38	47911	0.002
2019	q3	87	cjm	39	48635	0.002
2019	q3	87	cjm	40	55394	0.002
2019	q3	87	cjm	41	24987	0.001
2019	q3	87	cjm	42	41070	0.002
2019	q3	87	cjm	43	41886	0.002
2019	q3	87	cjm	44	37383	0.001
2019	q3	87	cjm	45	38662	0.002
2019	q3	87	cjm	46	17127	0.001
2019	q3	87	cjm	47	22071	0.001
2019	q3	87	cjm	48	13266	0.001
2019	q3	87	cjm	49	4565	0
2019	q3	87	cjm	50	2634	0
2019	q3	87	cjm	52	2364	0