9ᵗʰ MEETING OF THE SCIENTIFIC COMMITTEE

Held virtually, 27 September to 2 October 2021

SC9-JM06

PFA self-sampling report for the SPRFMO Science Committee 2021

European Union

9th Meeting of the Scientific Committee (SC9-JM06)

PFA selfsampling report for the SPRFMO Science Committee 2021

Martin Pastoors, 27/08/2021

PFA report 2021_07 / SC9-JMxx

Executive 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 from 2015 to 2021. The Pelagic Freezer-trawler Association (PFA) is an association that has nine member companies that together operate 15 (in 2021) freezer trawlers in six European countries (www.pelagicfish.eu). In 2015, the PFA has initiated a self-sampling program that expands the ongoing monitoring programs on board of pelagic freezer-trawlers aimed at assessing the quality of fish. The expansion in the self-sampling program consists of recording of haul information, recording the species compositions by haul and regularly taking length measurements 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. During the fisheries in the Pacific, the self-sampling program has been carried out during all trips and all hauls.

The self-sampling program 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 southern rays bream. During 2021, catches of alfonsinos and redbait are also included in the selfsampling.

No PFA fisheries has been carried in the SPRFMO area in 2020, due to the global Corona crisis. As such, no results can be reported for 2020.

In the first half of 2021, three PFA vessels have been active in the SPRFMO convention area. After initial explorations and very limited catches in the southern fishing area, the vessels encountered fish in the northern area (around 20 degrees south). The fishing pattern was thereby substantially different from previous years. The highest catch rates (catch/day) of Jack mackerel were recorded in 2021 (216 ton/day).

1   Introduction

The Pelagic Freezer-trawler Association (PFA) is an association that has nine member companies that together operate 15 (in 2021) freezer trawlers in six European countries (www.pelagicfish.eu). In 2015, the PFA has initiated a self-sampling program that ex-pands the ongoing monitoring programs on board of pelagic freezer-trawlers aimed at assessing the quality of fish. The expansion in the self-sampling program consists of recording of haul information, recording the species compositions by haul and regularly taking length measurements 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 program is carried out by Martin Pastoors (PFA chief science officer) with support of Floor Quirijns (contractor). During the fisheries in the Pacific, the self-sampling program has carried out during all trips and all hauls. The self-sampling program 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 for Jack mackerel has been included in the self-sampling program. Reports on age age sampling have been reported as ALK by quarter and as worked up age distributions by quarter. While most of the data presented in this report was already included in the 2019 submission to SPRFMO (SC7-JM07), the current report encapsulates the complete data for 2019 and some further analyses.

In the first half of 2021, three PFA vessels have been active in the SPRFMO convention area. After initial explorations and very limited catches in the southern fishing area, the vessels encountered fish in the northern area (around 20 degrees south). The fishing pattern was thereby substantially different from previous years. In this report, data has been processed up to August 2021.

2   Overview of self-sampling methodology

The self-sampling program in the SPRFMO area has been implemented on vessels from the Netherlands, Germany, Lithuania and Poland during the years 2015-2021. All trips by all PFA vessels fishing in the south Pacific are being monitored by self-sampling, also when there is a scientific observer on board for a certain trip.

The self-sampling program 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 program.

3   Results

3.1   General

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 tot june 2019.

```
  year   nvessels    ntrips    ndays    nhauls    catch   catch/day    nlength
-------  ---------- --------  -------  --------  --------  ----------- ---------

   2016          1         4       93       167    10,284          110     6,905
   2017          2        10      273       609    29,652          108    20,829
   2018          1         5      130       236    10,234           78     4,692
   2019          1         3       85       162    12,114          142     7,680
  2021*          3         8      156       369    35,674          228    15,122
  (all)                   30      737     1,543    97,958                 55,228
```

*Table 3.1.1: PFA fisheries in the South Pacific. Self-sampling Summary of number of vessels, trips, days, hauls, catch (tonnes), catch per day and number of fish measured. * denotes incomplete year*

Catch and number of self-sampled hauls by year and division

```
  division     2016     2017     2018     2019    2021*       all    perc
----------  -------  -------  -------  -------  -------  --------  ------
    87.2.6    2,209   11,304    1,874    3,384   35,630    54,401     56%
    87.3.3    8,074   18,347    8,359    8,730       44    43,554     44%
     (all)   10,283   29,651   10,233   12,114   35,674    97,955    100%

Table: catch
```

```
  division    2016    2017   2018   2019   2021*      all      perc
----------  ------  ------  -----  -----  -------  -------  --------
    87.2.6      62     322     33     66      361      844     54.7%
    87.3.3     105     287    203     96        8      699     45.3%
     (all)     167     609    236    162      369    1,543    100.0%

Table: nhauls
```

*Table 3.1.2: PFA fisheries in the South Pacific. Self-sampling Summary of catch (top) and number of hauls (bottom) per year and division. * denotes incomplete year*

Catch and number of self-sampled hauls by year and month

```
month     2016      2017      2018      2019     2021*       all      perc
-------  --------  --------  --------  --------  --------  --------  ---------
   Jan         0         0       298         0         0       298      0.30%
   Feb         0         0       521         0         0       521      0.53%
   Mar         0     4,406       748       914         0     6,068      6.20%
   Apr     1,617     6,673     2,643     3,820     1,235    15,988     16.32%
   May     3,339     3,675     2,397     2,940    11,039    23,390     23.88%
   Jun     2,855     3,311     1,779       783     7,771    16,499     16.84%
   Jul     1,511     1,438     1,846     1,444    15,455    21,694     22.15%
   Aug       376     1,889         0     2,211       173     4,649      4.75%
   Sep       584     1,741         0         0         0     2,325      2.37%
   Oct         0     3,330         0         0         0     3,330      3.40%
   Nov         0     1,862         0         0         0     1,862      1.90%
   Dec         0     1,322         0         0         0     1,322      1.35%
 (all)    10,282    29,647    10,232    12,112    35,673    97,946    100.00%
```

Table: catch

```
month    2016    2017    2018    2019    2021*      all      perc
-------  ------  ------  ------  ------  -------  -------  ---------
   Jan       0       0      16       0        0       16      1.04%
   Feb       0       0      29       0        0       29      1.88%
   Mar       0      48      32       7        0       87      5.64%
   Apr      19      83      55      34       22      213     13.80%
   May      41      74      41      30      114      300     19.44%
   Jun      43      71      31      21      106      272     17.63%
   Jul      32      51      32      34      126      275     17.82%
   Aug      17      52       0      36        1      106      6.87%
   Sep      15      37       0       0        0       52      3.37%
   Oct       0      96       0       0        0       96      6.22%
   Nov       0      52       0       0        0       52      3.37%
   Dec       0      45       0       0        0       45      2.92%
 (all)     167     609     236     162      369    1,543    100.00%
```

Table: nhauls

*Table 3.1.3: PFA fisheries in the South Pacific. Self-sampling summary of catch (top) and number of hauls (bottom) per year and month. * denotes incomplete year*

Catch and number of self-sampled hauls by year and country (flag)

```
   flag     2016     2017     2018     2019    2021*      all     perc
------- -------- -------- -------- -------- -------- -------- ---------
    POL        0        0        0   12,114   19,469   31,583   32.24%
    LIT        0   16,019   10,234        0    4,415   30,668   31.31%
    DEU   10,284        0        0        0   11,790   22,074   22.53%
     NL        0   13,632        0        0        0   13,632   13.92%
  (all)   10,284   29,651   10,234   12,114   35,674   97,957  100.00%

Table: catch


   flag   2016   2017   2018   2019   2021*     all      perc
------- ------ ------ ------ ------ ------- ------- ---------
    LIT      0    429    236      0      39     704   45.625%
    POL      0      0      0    162     168     330   21.387%
    DEU    167      0      0      0     162     329   21.322%
     NL      0    180      0      0       0     180   11.666%
  (all)    167    609    236    162     369   1,543  100.000%

Table: nhauls
```

*Table 3.1.4: PFA fisheries in the South Pacific. Self-sampling summary of catch (top) and number of hauls (bottom) per year and month. * denotes incomplete year*

Catches by species and year (in tonnes).

```
species    english_name           scientific_name         2016      2017      2018      2019     2021*       all perc
---------  ---------------------  ----------------------  --------  --------  --------  --------  --------  -------- -------
cjm        jack mackerel          Trachurus murphyi        9,432    27,645     9,620    11,779    27,158    85,634 87.4%
mas        chub mackerel          Scomber japonicus          673     1,841       117       123     4,615     7,370 7.5%
bys        Splendid alfonsino     Beryx splendens              0         0         0         0     2,601     2,601 2.7%
emm        Redbait                Emmelichthys nitidus         0         0         0         0       899       899 0.9%
uba        blue fathead           Cubiceps caeruleus         146        84       208        45        43       527 0.5%
bru        rays bream             Brama australis             24        82       290       113        10       519 0.5%
emt        Redbaits               Emmelichthyidae              0         0         0         0       310       310 0.3%
bpq        NA                     Brama japonica               0         0         0        42         0        42 0.0%
msd        Mackerel scad          Decapterus macarellus        0         0         0         0        22        22 0.0%
bep        Eastern Pacific bonito Sarda chiliensis             0         0         0         2         6         8 0.0%
oth        NA                     NA                           8         0         0        10        10        28 0.0%
(all)      (all)                  (all)                   10,284    29,652    10,235    12,115    35,675    97,961 100.0%
```

Table 3.1.5: PFA fisheries in the South Pacific. Self-sampling Summary of total catch (tonnes) by species. OTH refers to all other species that are not the main target species, * denotes incomplete year

Haul positions

An overview of all self-sampled hauls in the PFA fisheries in the South Pacific. .
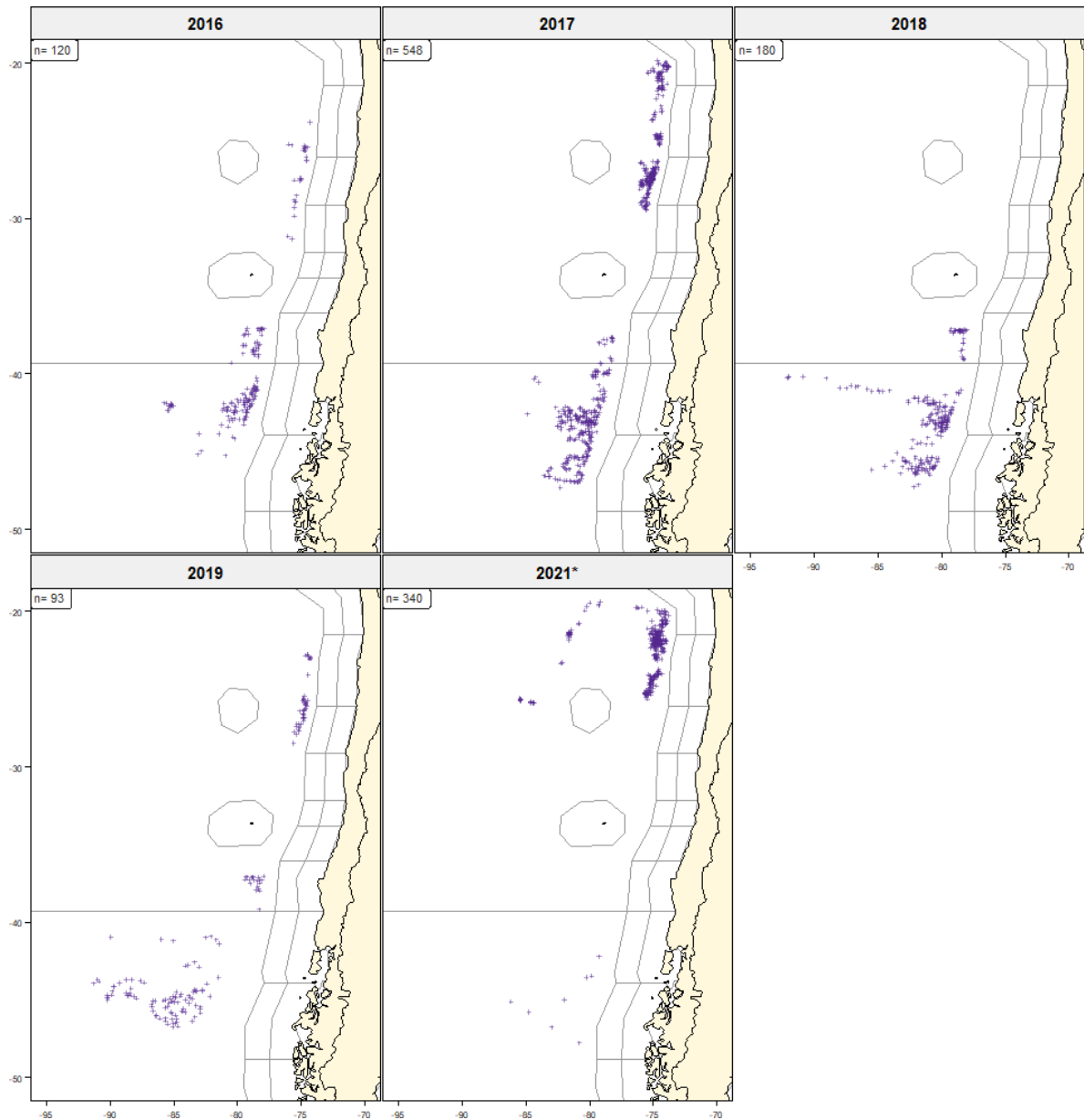
Figure 3.1.1: PFA fisheries in the South Pacific. Self-sampling haul positions. N indicaters the number of hauls. * denotes incomplete year

Temporal progression of the fishery by week and latitude/longitude

The temporal progression of the fishery of the fishery is shown by the average latitude and longitude from all haul positions within a certain week-year combination. The north-south distribution (left) shows that the main fishery in the southern area is mostly carried out until week 30 approximately, after which the fishery moves to the northern area. However, in some years (e.g. 2015) the move to the northern area was later than in other years. The east-wester distribution (right) shows that in some years the distribution has been more westwards (e.g. 2015, 2018, 2019) than in other years.
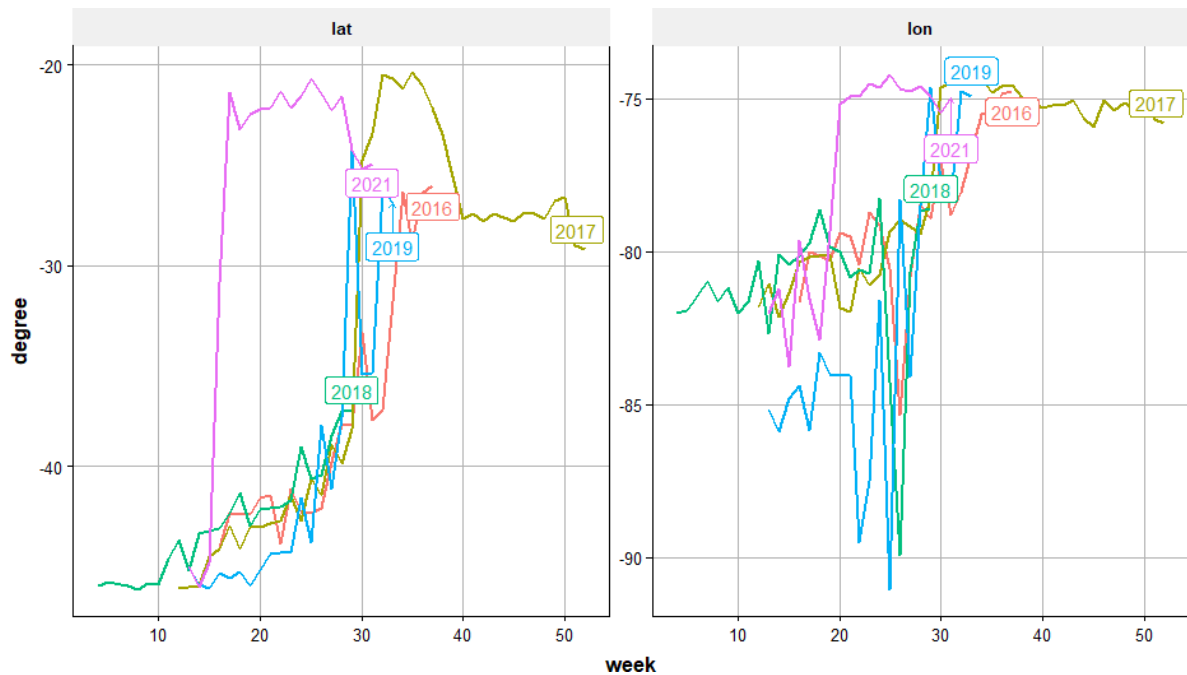
Figure 3.1.2: Temporal progression by week and latitude/longitude.

Catch of the main target species
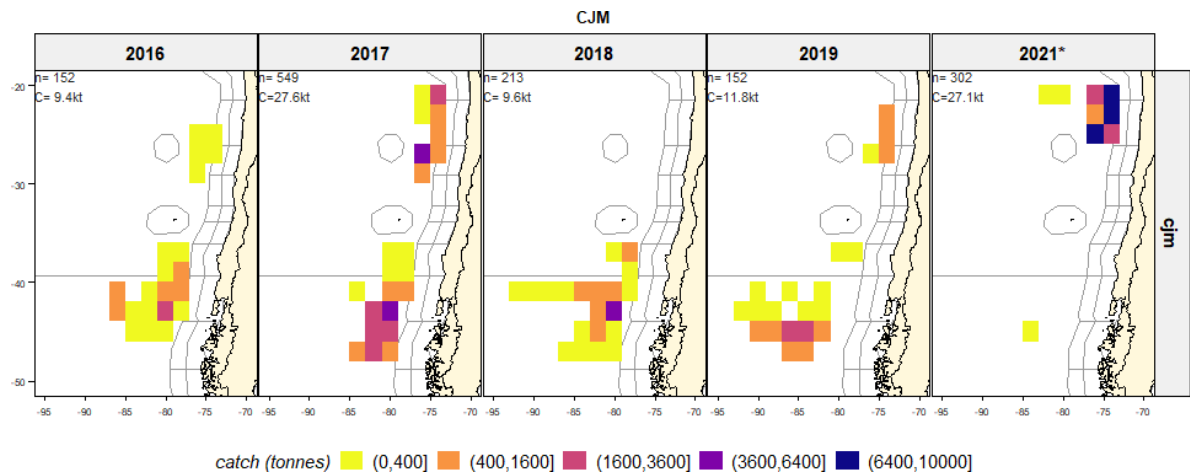
*Figure 3.1.3: PFA fisheries in the South Pacific. Self-sampling catch per species and per rectangle. N indicates the number of hauls. Catch refers to the total catch per year. * denotes incomplete year*

Catch of the bycatch species
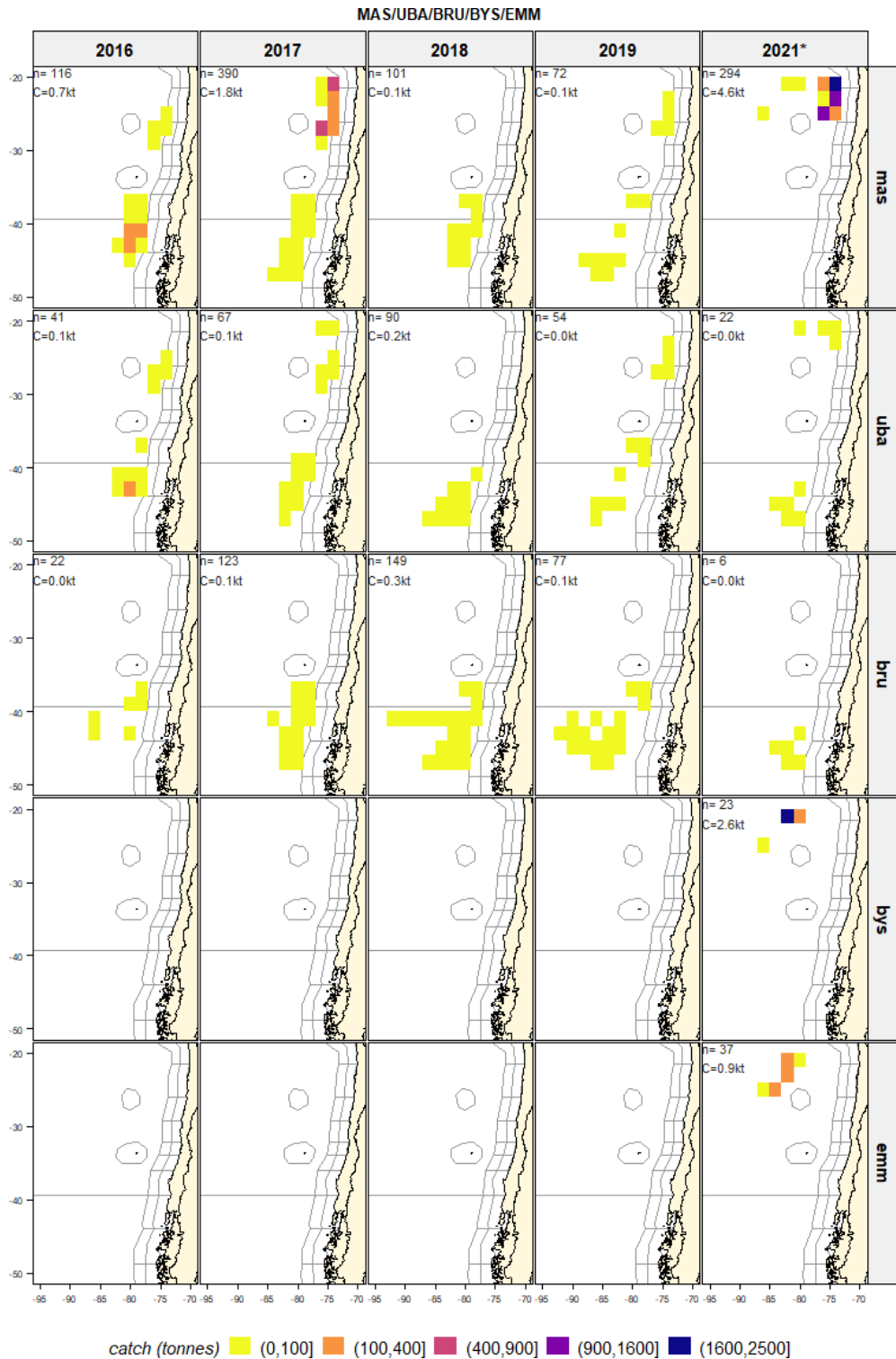
Figure 3.1.4: PFA fisheries in the South Pacific. Self-sampling bycatch per species and per rectangle. N indicates the number of hauls. Catch refers to the total bycatch per year. * denotes incomplete year

Catch rates (catch/day) for the main target species
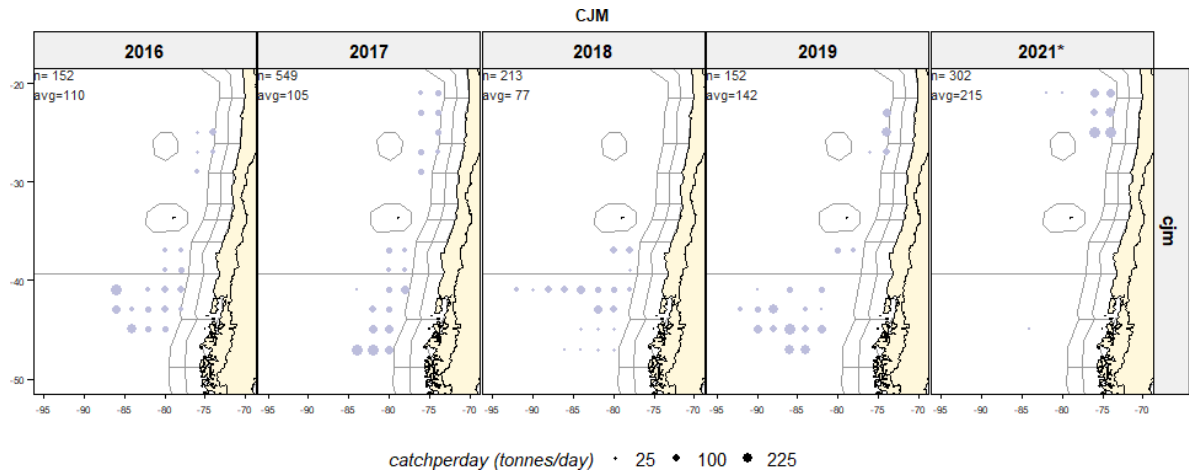
Figure 3.1.5: Average catch per day, per species and per rectangle. N indicates the number of hauls; avg refers to the average catch per day; * denotes incomplete year

Catchrate (catch/day) per rectangle for the bycatch species
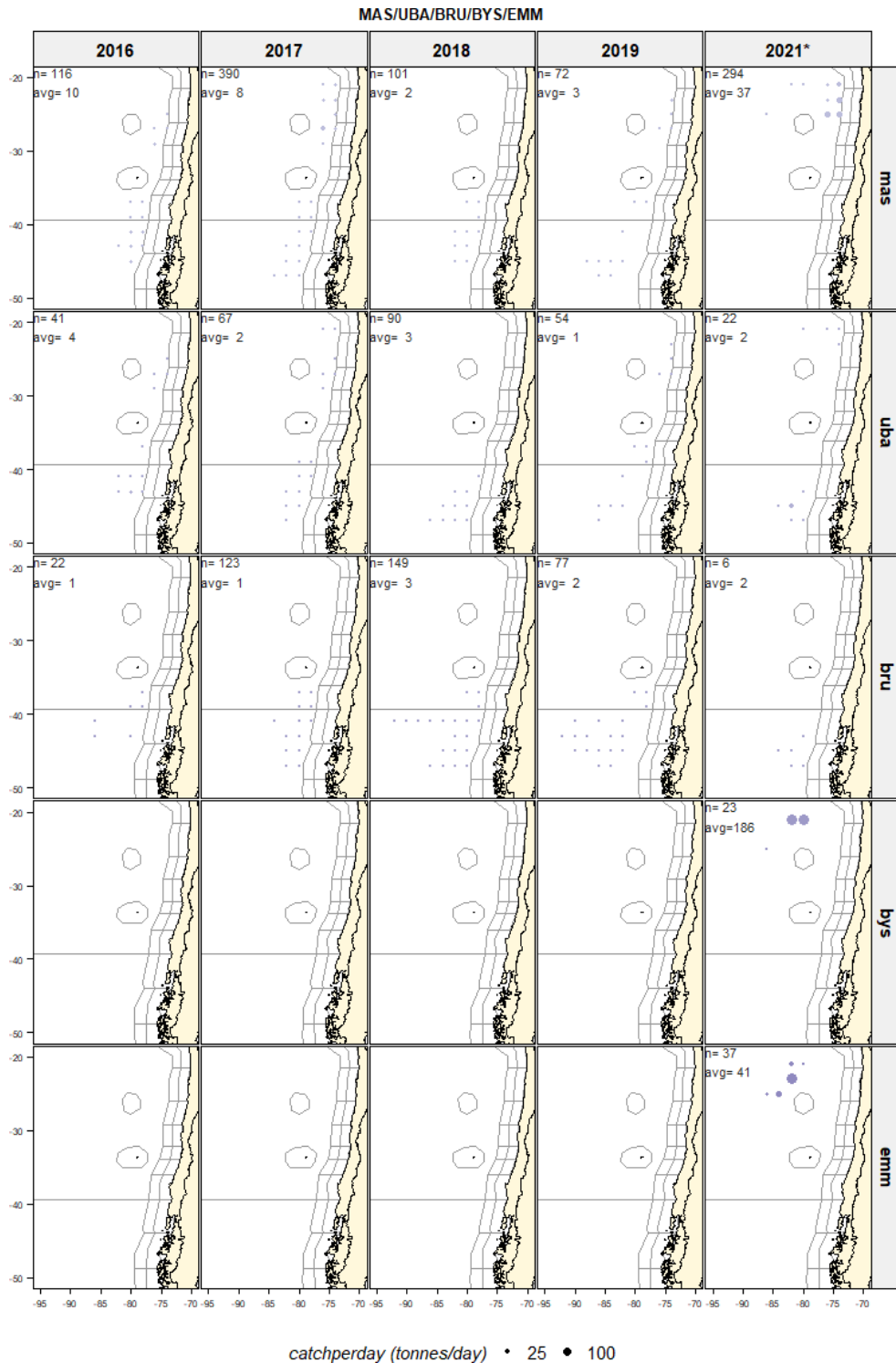
Figure 3.1.6: Average catch per day, per species and per rectangle for bycatch species. N indicates the number of hauls; avg refers to the average catch per day; * denotes incomplete year

Average fishing depth by rectangle
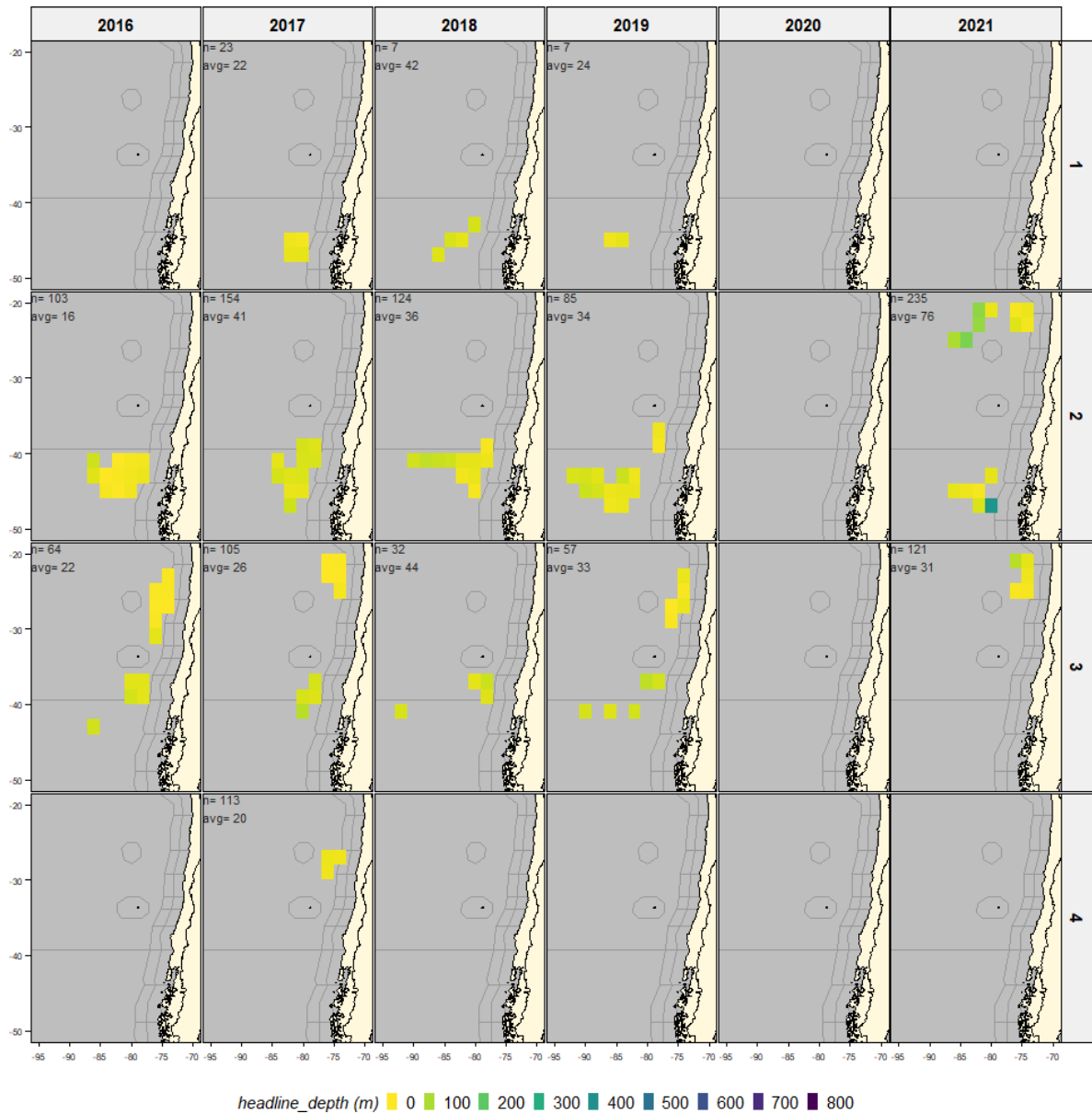
Figure 3.1.7: PFA fisheries in the South Pacific. Average fishing depth (m) by year and quarter. N indicates the number of hauls. Avg refers to the average fishing depth. * denotes incomplete year

Average temperature at fishing depth by rectangle
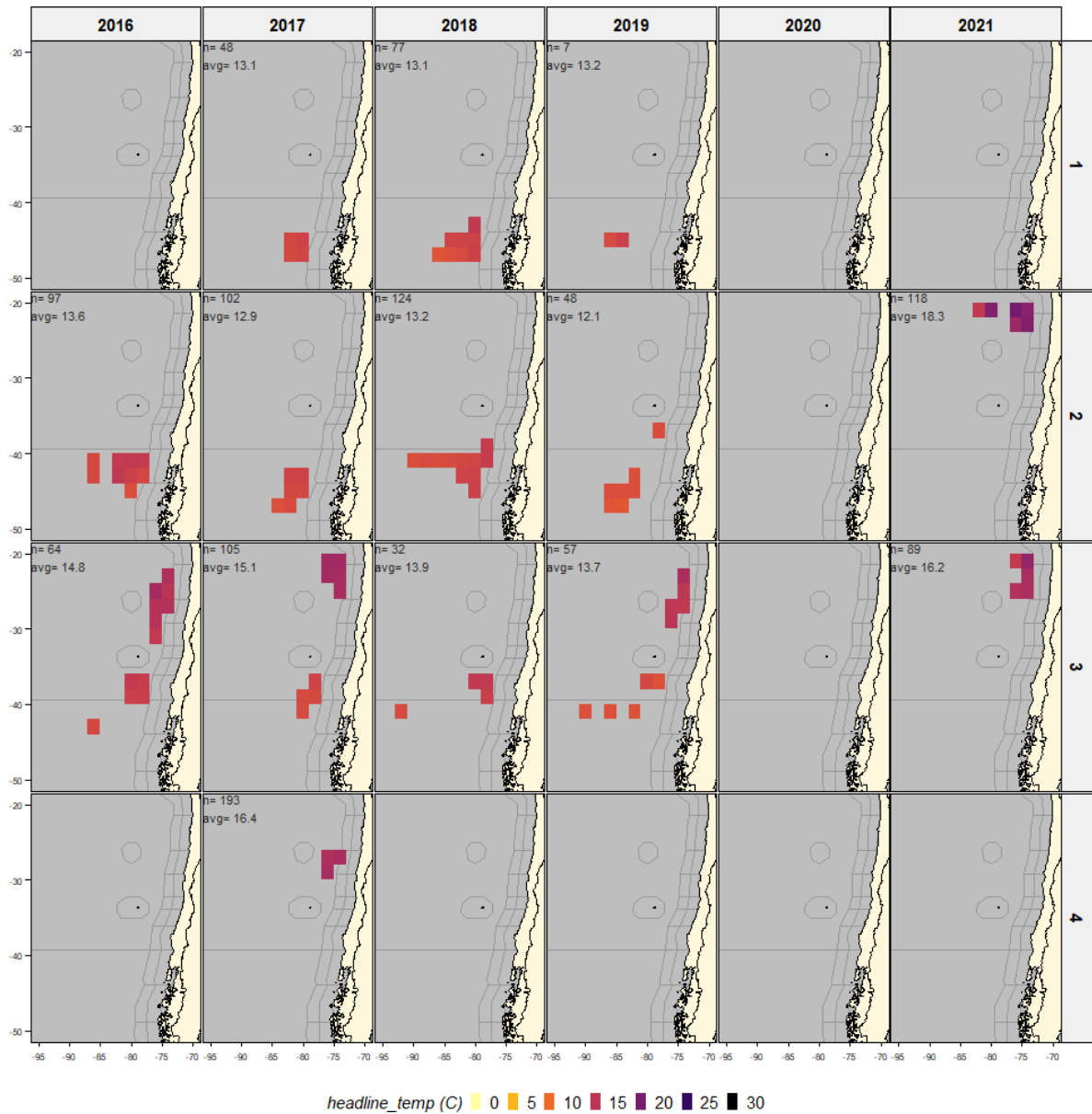
Figure 3.1.8: PFA fisheries in the South Pacific. Average temperature at fishing depth (C) by year and quarter. N indicates the number of hauls. Avg refers to the average temperature. * denotes incomplete year

Average windspeed by rectangle
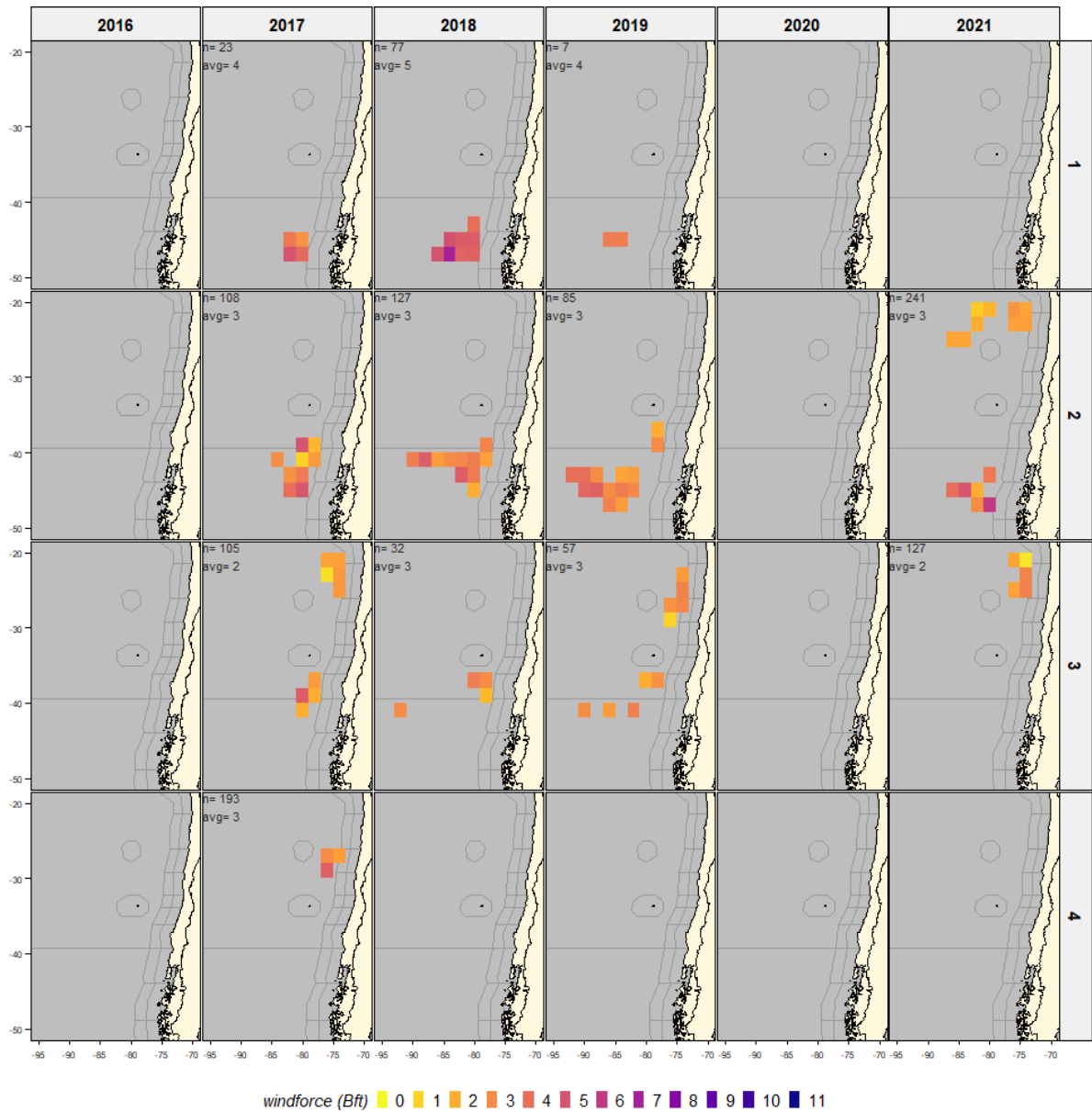
Figure 3.1.9: PFA fisheries in the South Pacific. Average wind speed (Bft) by year and quarter. N indicates the number of hauls. Avg refers to the average wind speed. * denotes incomplete year

3.2 Jack mackerel (CJM, Trachurus murphyi)

The main Jack mackerel fishery takes place during months 3, 4, 5, 6, 7, 8, 9. The self-sampling activities for the Jack mackerel fishery during the years 2016 - 2021 (processed up to 01/08/2021) covered 30 fishing trips with 1369 hauls, a total catch of 85633 tonnes and 47369 individual length measurements. The main fishing areas are 87.2.6, 87.3.3.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	catchperc	nlength	catchperday
cjm	87.2.6	2016	1	3	34	54	2,054	22	2,974	60
cjm	87.2.6	2017	2	5	129	299	9,673	35	12,367	75
cjm	87.2.6	2018	1	1	19	32	1,705	18	592	90
cjm	87.2.6	2019	1	1	34	62	3,158	27	4,259	93
cjm	87.2.6	2021*	3	7	125	302	27,154	100	10,580	217
cjm	87.3.3	2016	1	2	52	98	7,378	78	3,141	142
cjm	87.3.3	2017	2	7	134	250	17,972	65	7,264	134
cjm	87.3.3	2018	1	5	106	181	7,915	82	3,345	75
cjm	87.3.3	2019	1	3	49	90	8,621	73	2,835	176
cjm	87.3.3	2021*	1	1	1	1	3	0	12	3
cjm	(all)	2016		5	86	152	9,432	100	6,115	110
cjm	(all)	2017		12	263	549	27,645	100	19,631	105
cjm	(all)	2018		6	125	213	9,620	100	3,937	77
cjm	(all)	2019		4	83	152	11,779	100	7,094	142
cjm	(all)	2021*		8	126	303	27,157	100	10,592	216
cjm	(all)	(all)		35	683	1,369	85,633		47,369	125

Table 3.2.1: Jack mackerel. Self-sampling summary with the number of days, hauls, trips, vessels, catch (tonnes), number of fish measured, catch rates (ton/effort). * denotes in-complete year

Jack mackerel (CJM). Catch by rectangle
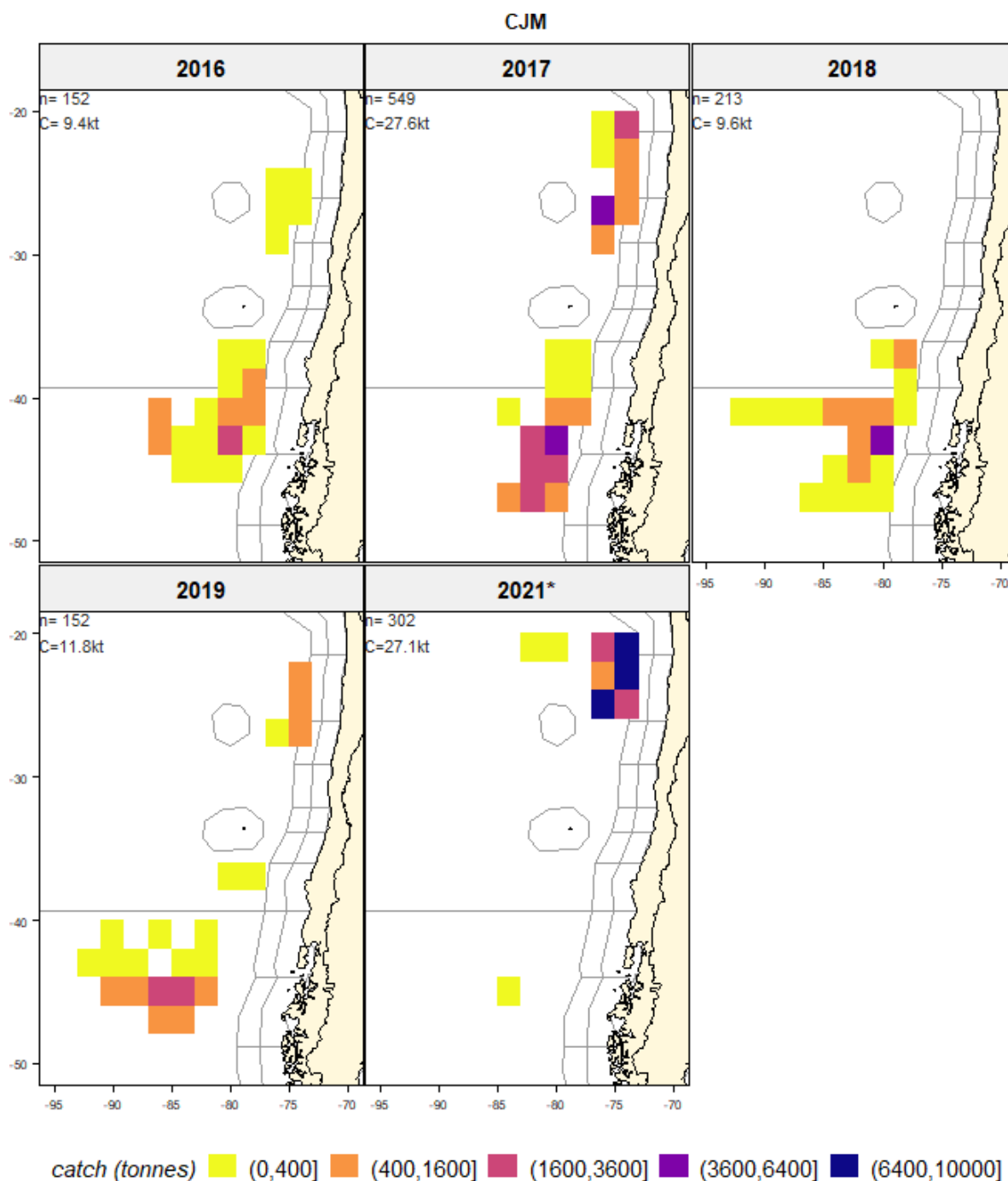
Figure 3.2.1: Jack mackerel. Catch per per rectangle. N indicates the number of hauls; Catch refers to the total catch per year. * denotes incomplete year
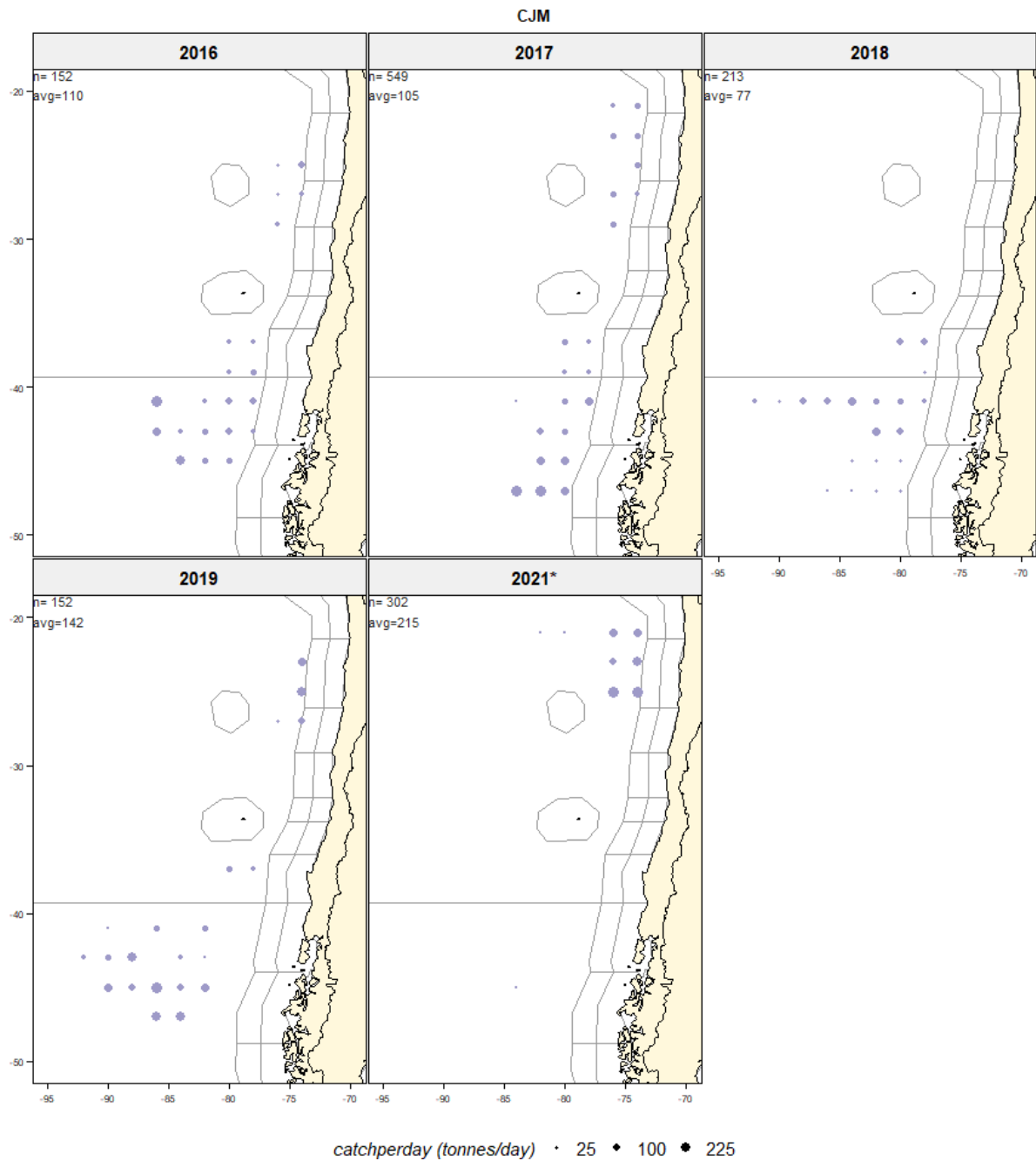
Jack mackerel (CJM). Average catch per day

Figure 3.2.2: Jack mackerel. Average catch per day per rectangle. N indicates the number of hauls; avg refers to the overall average catch per day
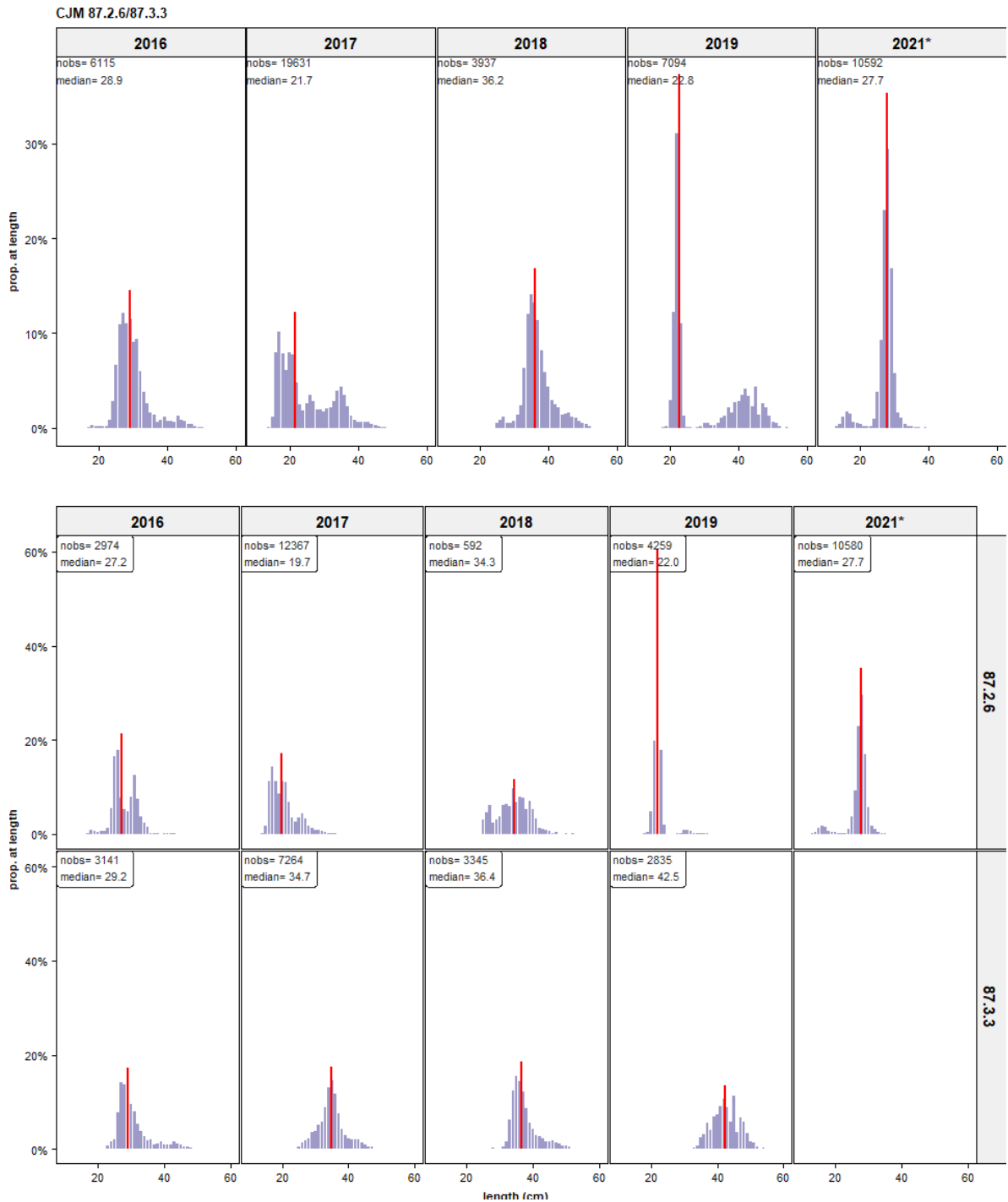
Jack mackerel (CJM). Length distributions of the catch

Figure 3.2.3: Jack mackerel. Length distributions by year (top) and by year and division (bottom). Nobs refers to the number of observations; median denotes the median length

Jack mackerel (CJM). Length frequencies by year and quarter
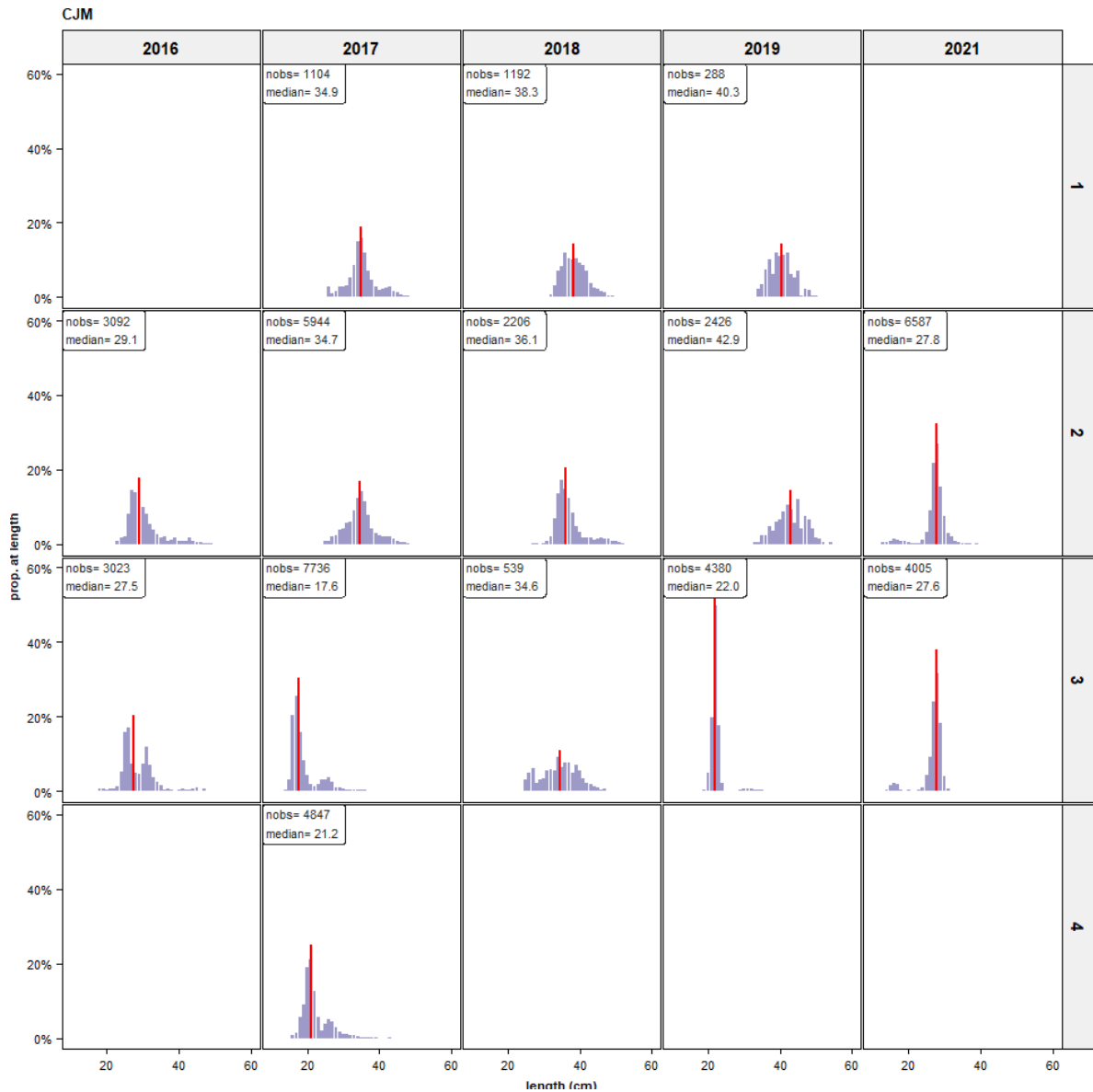
Figure 3.2.4: Jack mackerel. Length distributions by year (top) and by year and division (bottom). Nobs refers to the number of observations; median denotes the median length

Jack mackerel (CJM). Length distribution by latitude (5 degree groups)
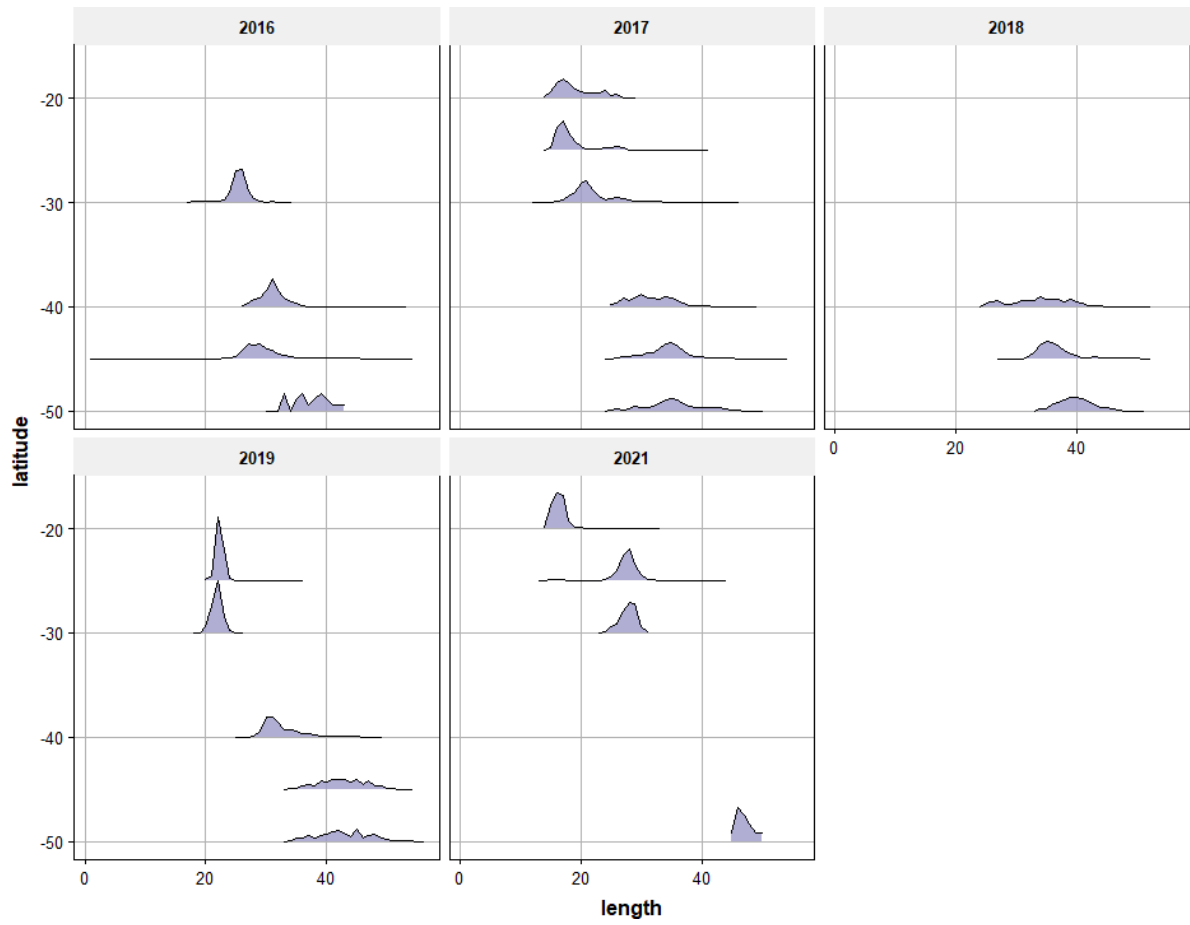
Figure 3.2.5: Jack mackerel. Length distributions by year and 5 degree latitude group.

3.3 Chub mackerel (MAS, *Scomber japonicus*)

The Chub mackerel fishery takes place from March to September. Overall, the self-sampling activities for the Chub mackerel fisheries during the years 2016 ? 2021 covered 29 fishing trips with 974 hauls, a total catch of 7369 tonnes and 4015 individual length measurements.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	catchperc	nlength	catchperday
mas	87.2.6	2016	1	3	28	42	137	20	304	5
mas	87.2.6	2017	2	5	106	209	1,587	86	878	15
mas	87.2.6	2018	1	1	18	30	69	58	60	4
mas	87.2.6	2019	1	1	31	55	120	97	78	4
mas	87.2.6	2021*	3	7	125	295	4,615	100	2,243	37
mas	87.3.3	2016	1	2	39	74	537	80	267	14
mas	87.3.3	2017	2	7	114	181	254	14	136	2
mas	87.3.3	2018	1	4	49	71	49	42	49	1
mas	87.3.3	2019	1	3	16	17	3	3	0	0
mas	(all)	2016		5	67	116	674	100	571	10
mas	(all)	2017		12	220	390	1,841	100	1,014	8
mas	(all)	2018		5	67	101	118	100	109	2
mas	(all)	2019		4	47	72	123	100	78	3
mas	(all)	2021*		7	125	295	4,615	100	2,243	37
mas	(all)	(all)		33	526	974	7,371		4,015	14

*Table 3.3.1: Chub mackerel. Self-sampling summary with the number of days, hauls, trips, vessels, catch (tonnes), number of fish measured, catch rates (ton/effort). * denotes in-complete year*
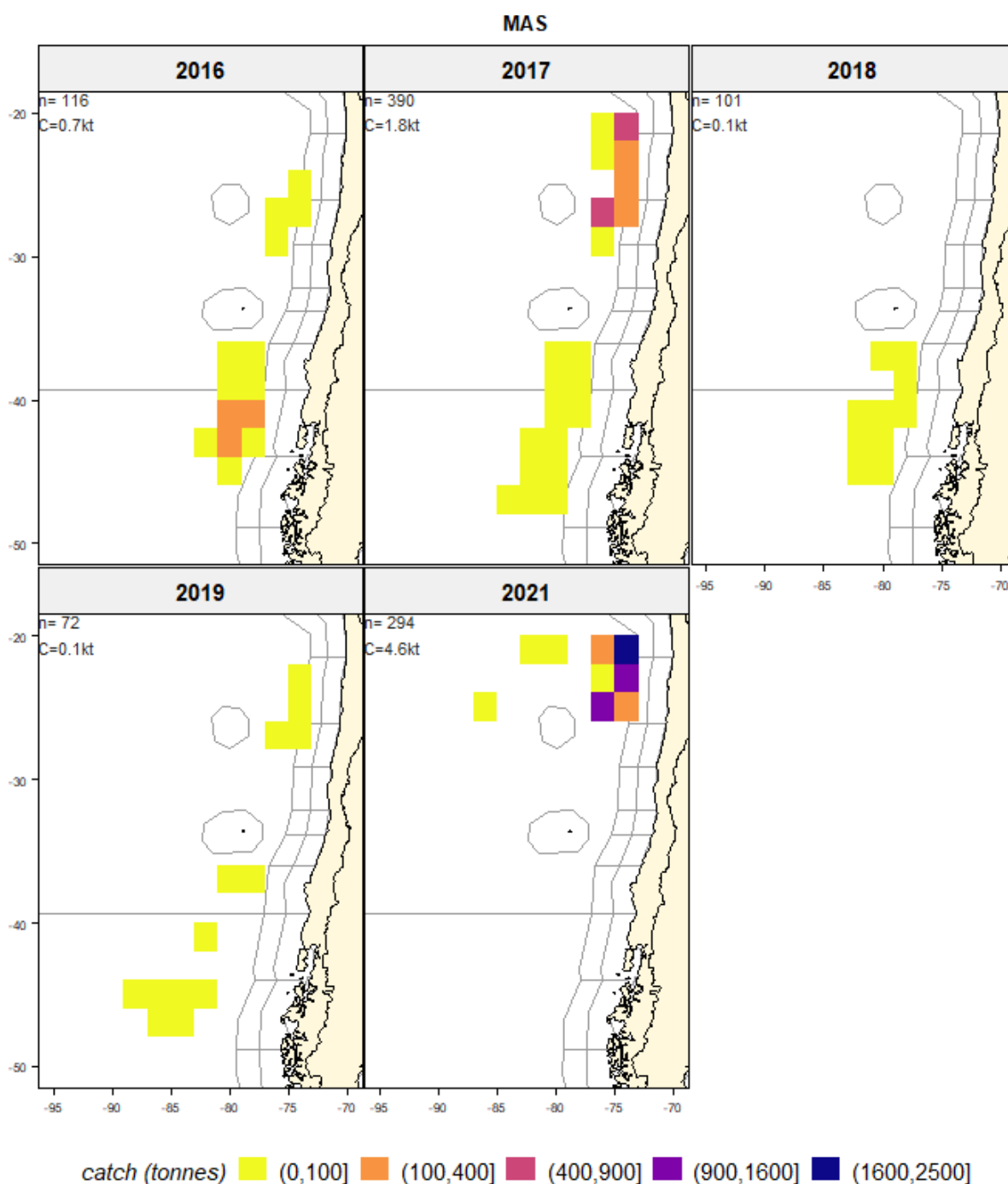
Chub mackerel (MAS). Catch by rectangle

Figure 3.3.1: Chub mackerel. Catch per per rectangle. N indicates the number of hauls; Catch refers to the total catch per year.
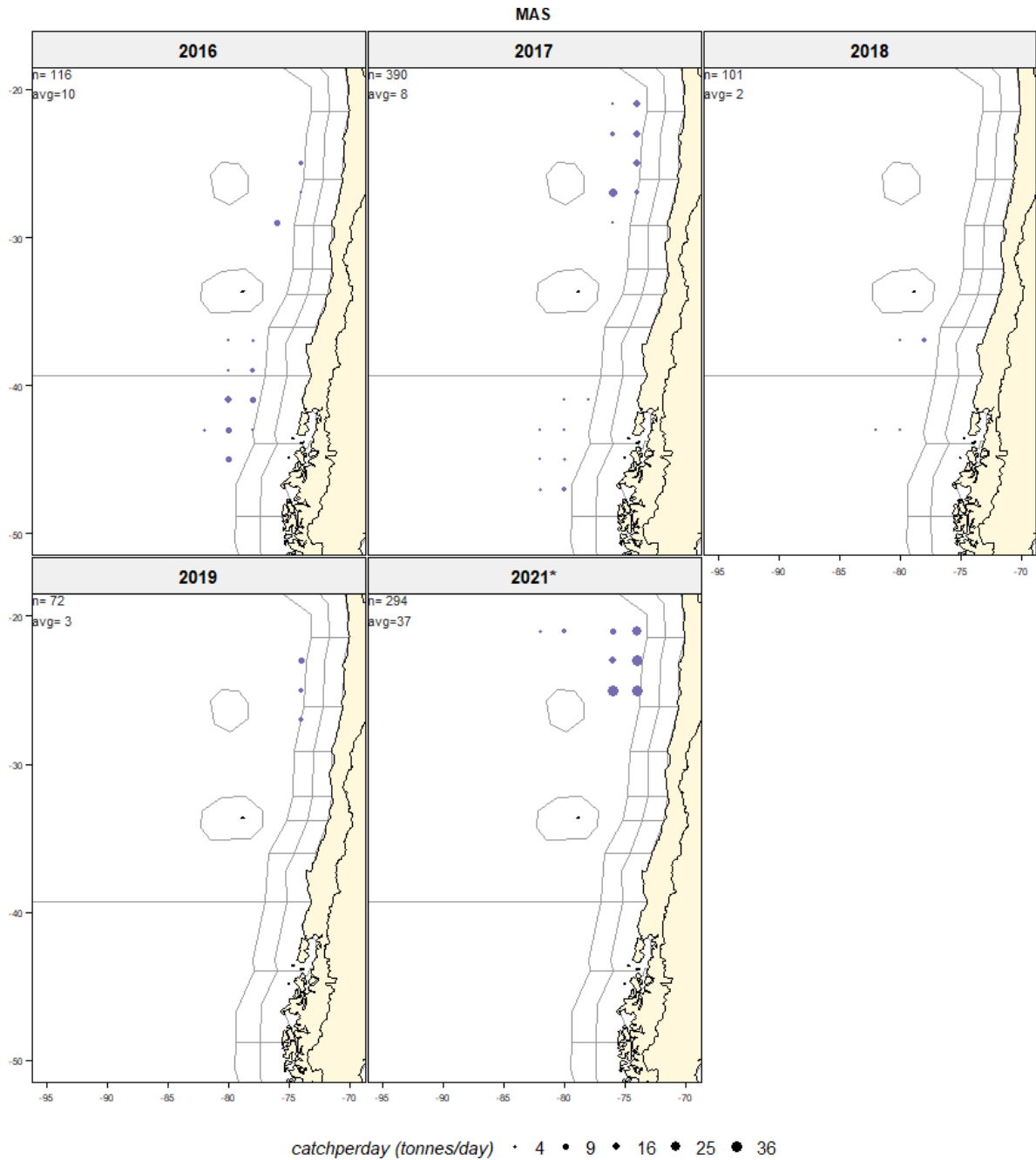
Chub mackerel (MAS). Average catch per day

Figure 3.3.2: Chub mackerel. Average catch per day per rectangle. N indicates the number of hauls; avg refers to the overall average catch per day

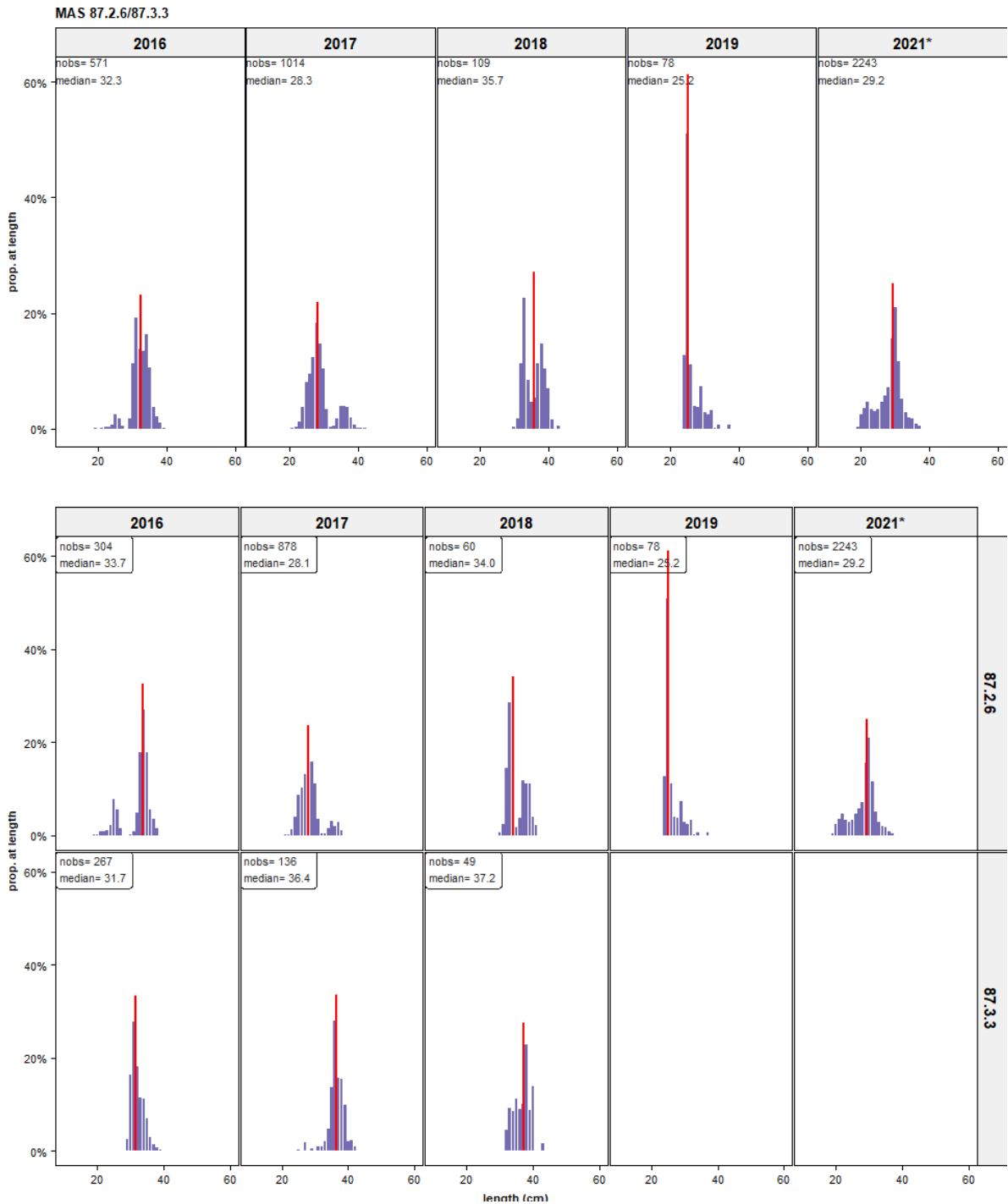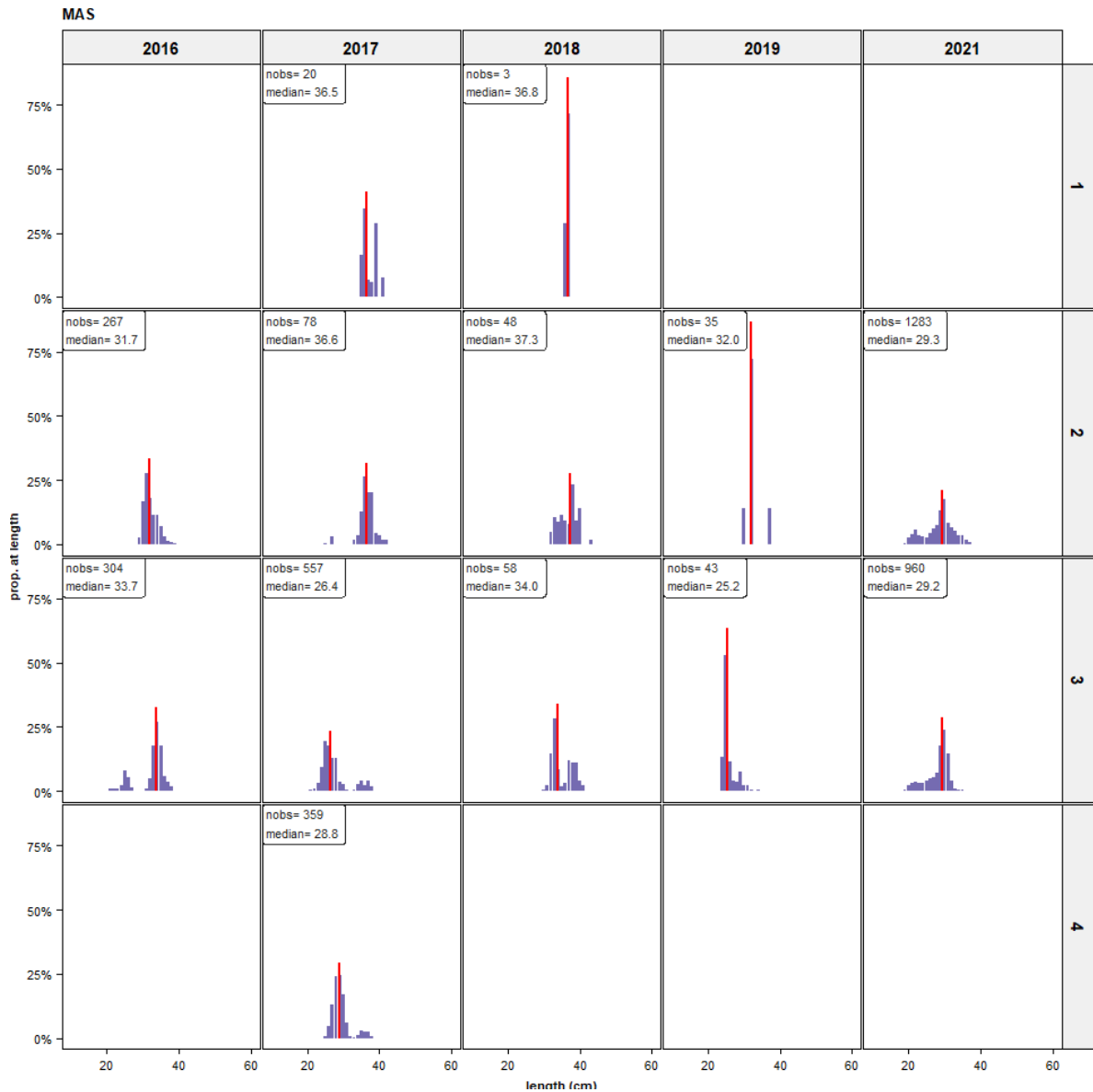## Chub mackerel (MAS). Length distributions of the catch

Figure 3.3.3: Chub mackerel. Length distributions by year (top) and by year and division (bottom). Nobs refers to the number of observations; median denotes the median length

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

Figure 3.3.4: Chub mackerel. Length distributions by year (top) and by year and division (bottom). Nobs refers to the number of observations; median denotes the median length

Chub mackerel (MAS). Length distribution by latitude (5 degree groups)
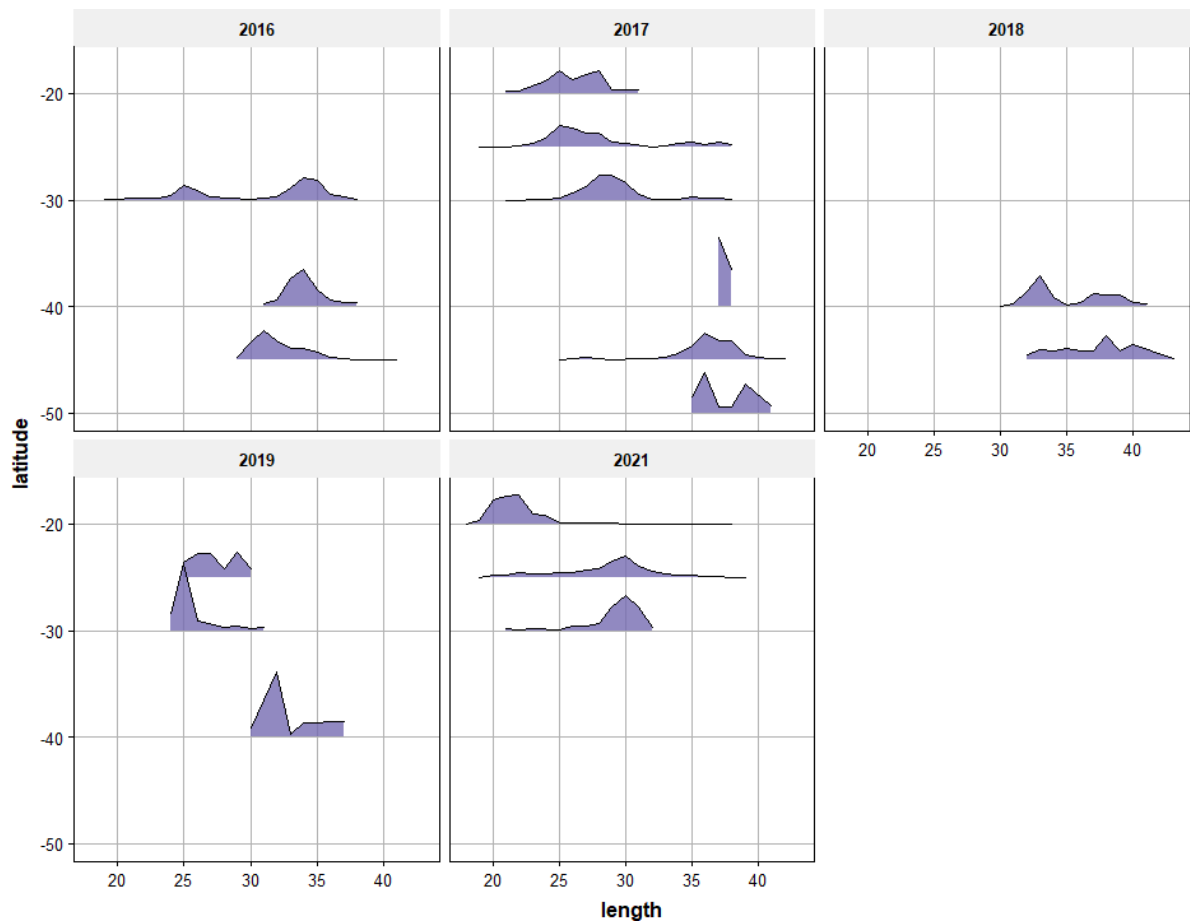
3.4   Southern rays bream (BRU, Brama australis)

The Southern rays bream fishery takes place from March to September. Overall, the self-sampling activities for the Southern rays bream fisheries during the years 2016 ? 2021 covered 18 fishing trips with 377 hauls, a total catch of 518 tonnes and 411 individual length measurements.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	catchperc	nlength	catchperday
bru	87.2.6	2016	1	2	10	10	13	52	16	1
bru	87.2.6	2017	2	2	8	12	5	7	11	1
bru	87.2.6	2018	1	1	18	27	101	35	69	6
bru	87.2.6	2019	1	2	15	18	29	26	19	2
bru	87.3.3	2016	1	1	8	12	12	48	9	1
bru	87.3.3	2017	2	6	82	111	76	93	52	1
bru	87.3.3	2018	1	5	96	122	189	65	198	2
bru	87.3.3	2019	1	3	47	59	84	74	14	2
bru	87.3.3	2021*	1	1	6	6	10	100	23	2
bru	(all)	2016		3	18	22	25	100	25	1
bru	(all)	2017		8	90	123	81	100	63	1
bru	(all)	2018		6	114	149	290	100	267	3
bru	(all)	2019		5	62	77	113	100	33	2
bru	(all)	2021*		1	6	6	10	100	23	2
bru	(all)	(all)		23	290	377	519		411	2

Table 3.4.1: Southern rays bream. Self-sampling summary with the number of days, hauls, trips, vessels, catch (tonnes), number of fish measured, catch rates (ton/effort). * denotes incomplete year

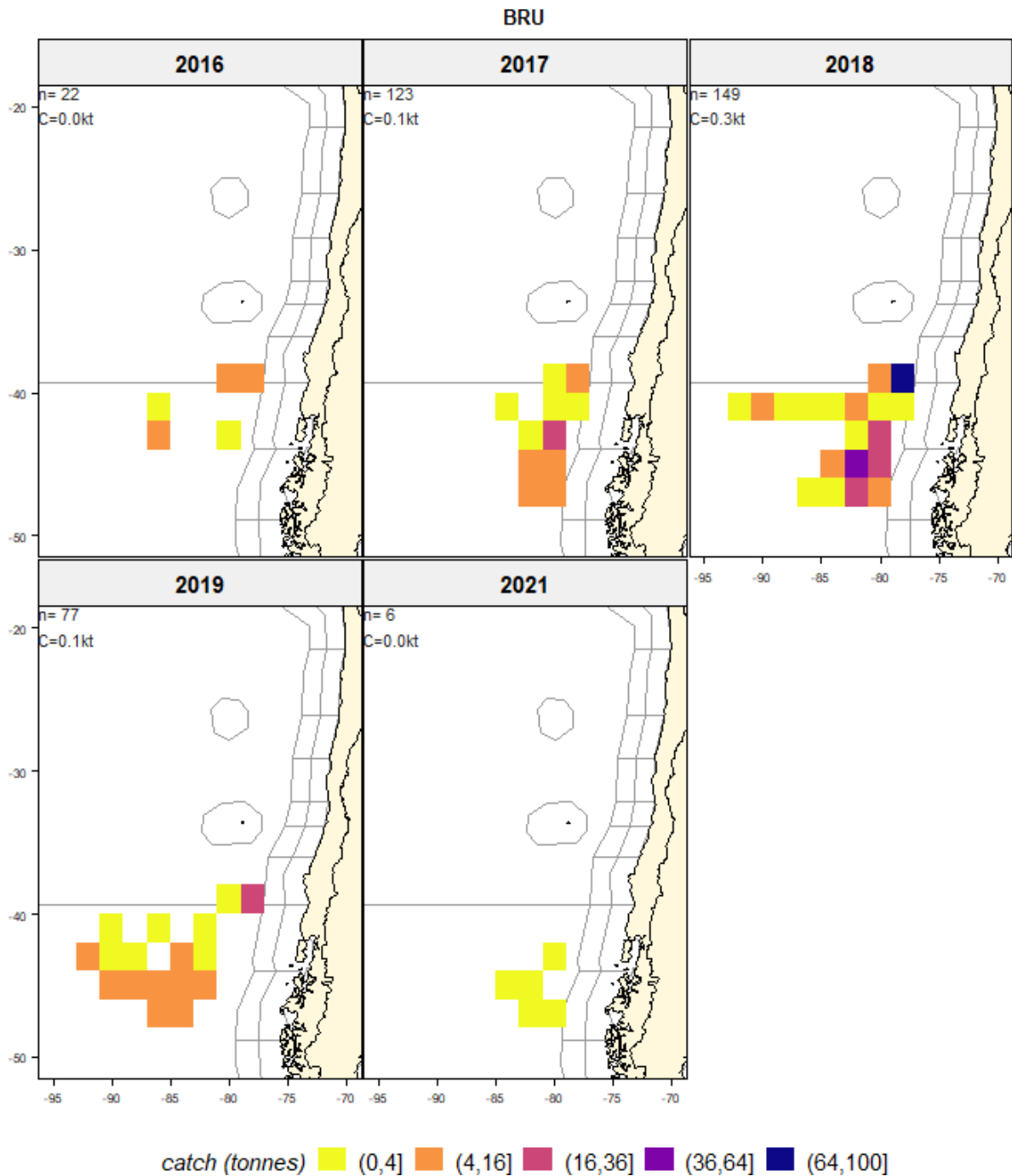# Southern rays bream (BRU). Catch by rectangle

Figure 3.4.1: Southern rays bream. Catch per per rectangle. N indicates the number of hauls; Catch refers to the total catch per year.

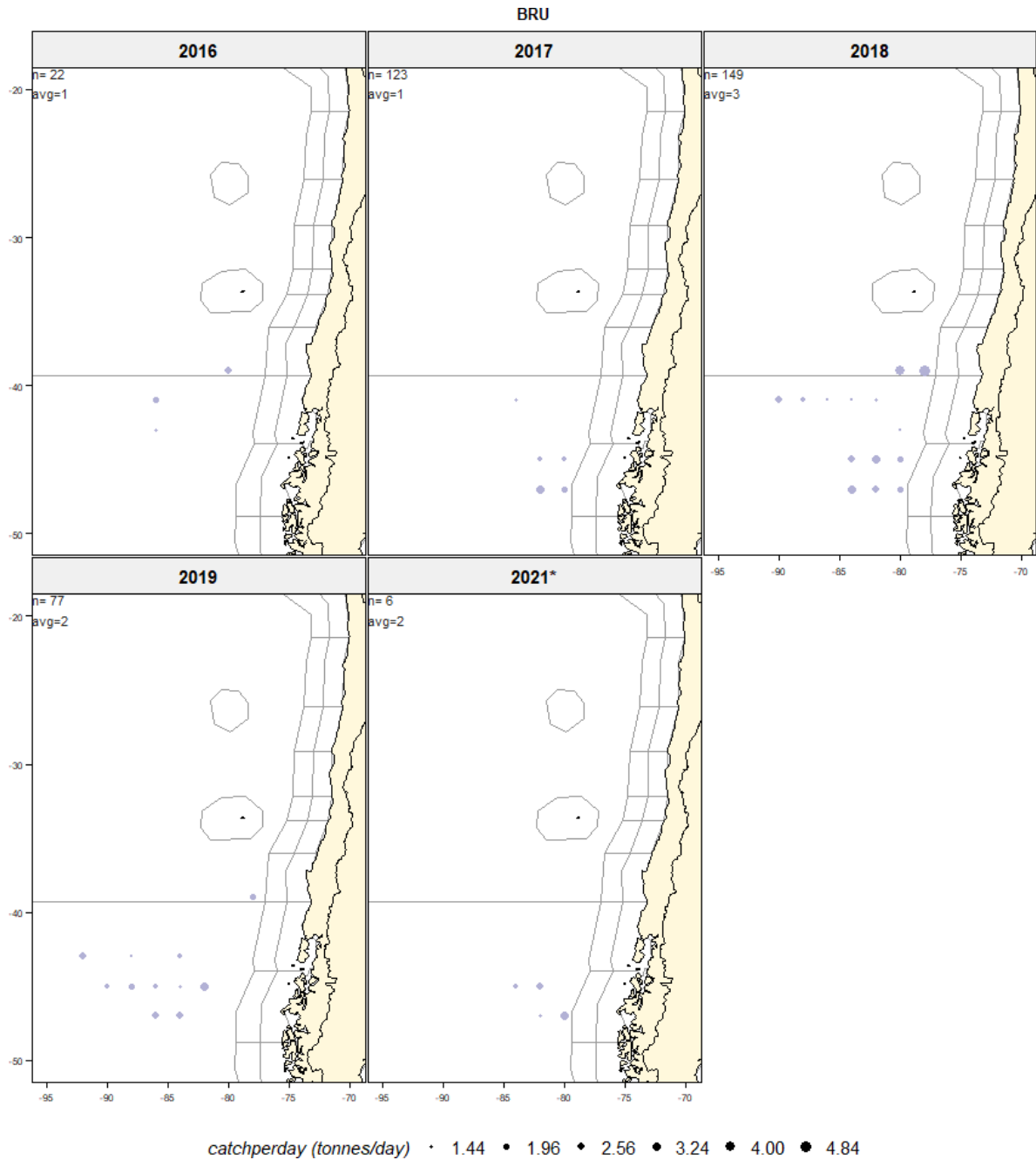## Southern rays bream (BRU). Average catch per day

Figure 3.4.2: Southern rays bream. Average catch per day per rectangle. N indicates the number of hauls; avg refers to the overall average catch per day

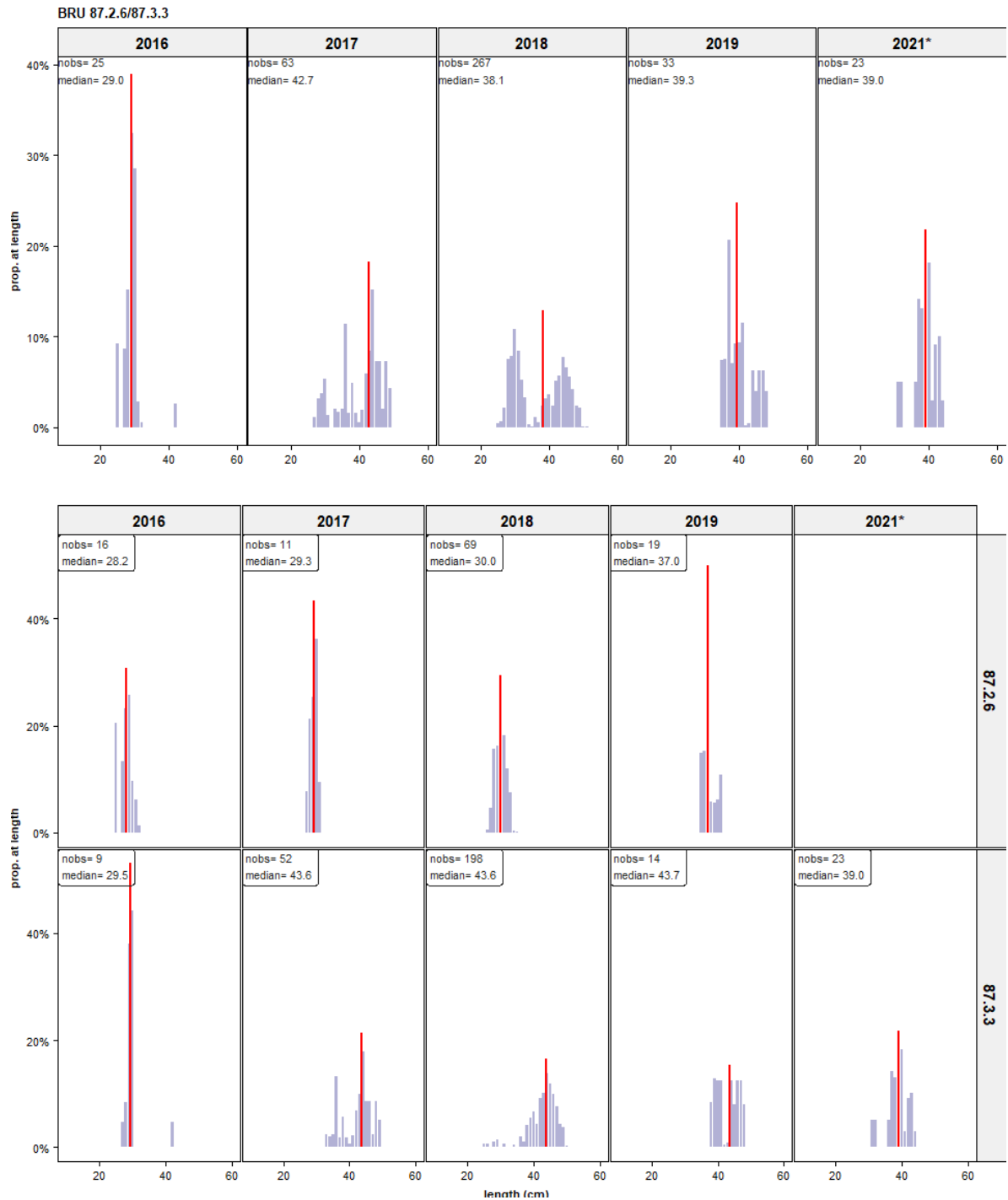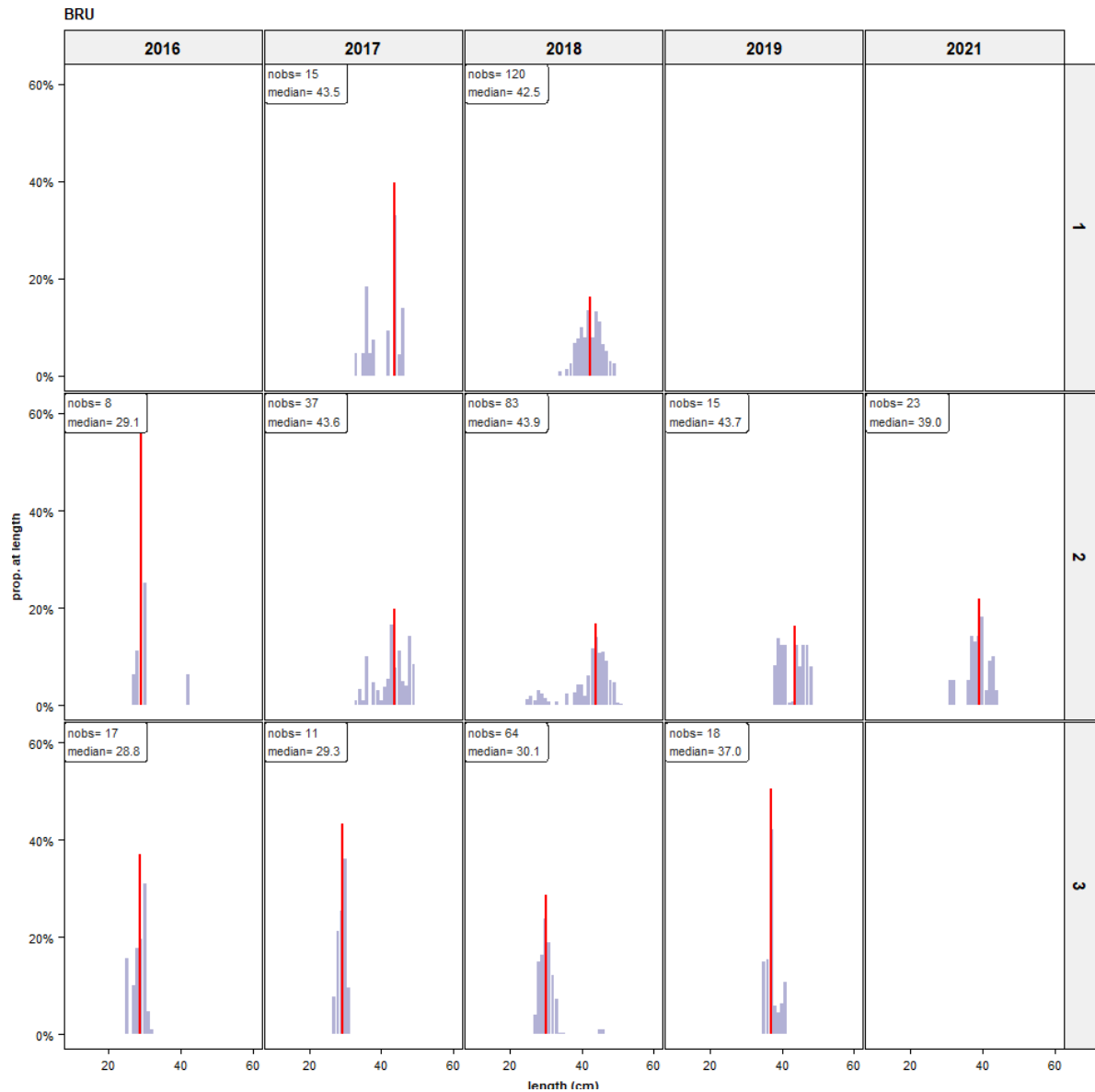## Southern rays bream (BRU). Length distributions of the catch

Figure 3.4.3: *Southern rays bream. Length distributions by year (top) and by division (bottom). Nobs refers to the number of observations; median denotes the median length*

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

Figure 3.4.4: Southern rays bream. Length distributions by year (top) and by year and division (bottom). Nobs refers to the number of observations; median denotes the median length

Southern rays bream (BRU). Length distribution by latitude (5 degree groups)
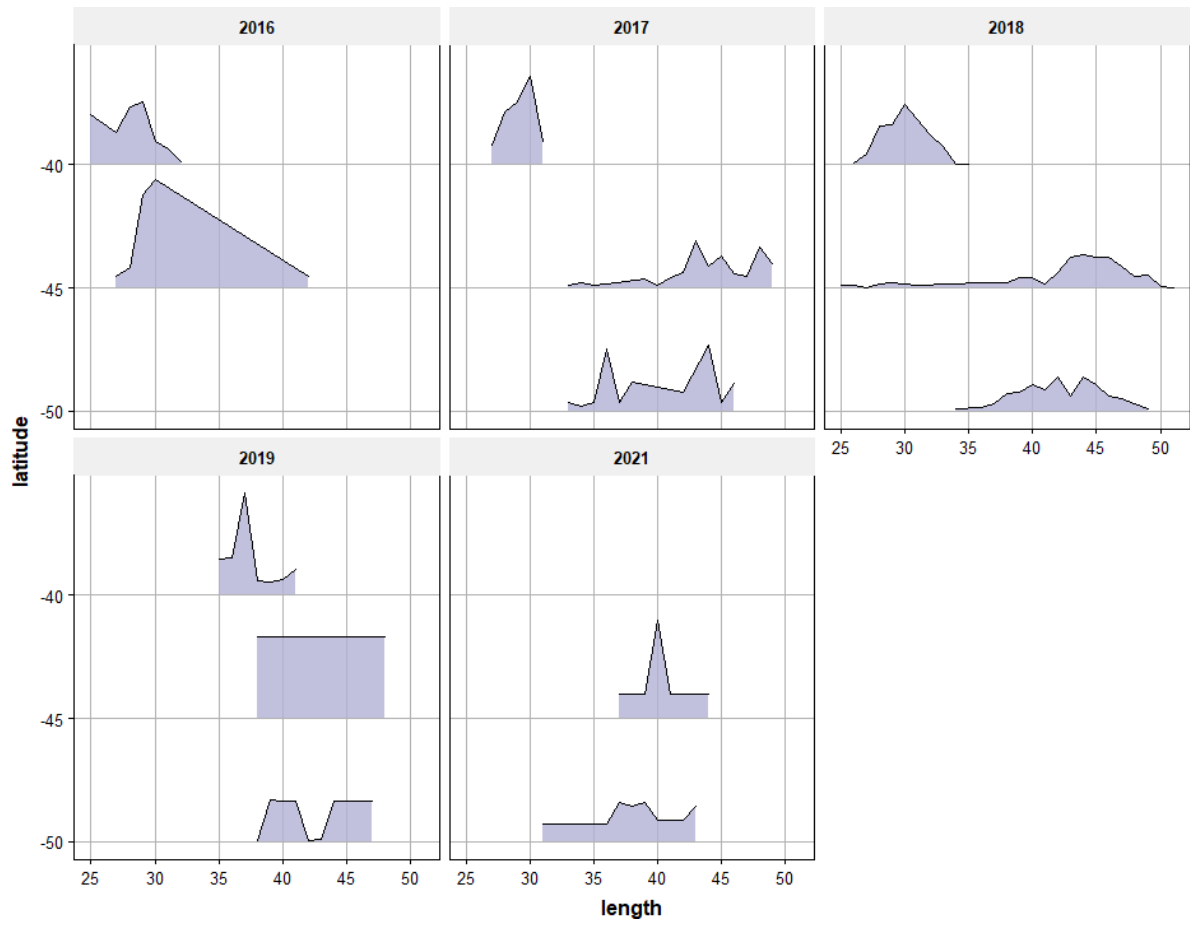
3.5 Blue fathead (UBA, Cubiceps caeruleus)

The Blue fathead fishery takes place from March to September. Overall, the self-sampling activities for the Blue fathead fisheries during the years 2016 ? 2021 covered 24 fishing trips with 274 hauls, a total catch of 526 tonnes and 1492 individual length measurements.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	catchperc	nlength	catchperday
uba	87.2.6	2016	1	2	8	8	4	3	29	1
uba	87.2.6	2017	2	4	20	24	39	47	36	2
uba	87.2.6	2019	1	2	30	44	42	94	400	1
uba	87.2.6	2021*	2	3	14	16	13	31	145	1
uba	87.3.3	2016	1	2	26	33	142	97	160	5
uba	87.3.3	2017	2	5	36	43	45	53	85	1
uba	87.3.3	2018	1	4	70	90	208	100	379	3
uba	87.3.3	2019	1	2	10	10	3	6	0	0
uba	87.3.3	2021*	1	1	6	6	30	69	258	5
uba	(all)	2016		4	34	41	146	100	189	4
uba	(all)	2017		9	56	67	84	100	121	2
uba	(all)	2018		4	70	90	208	100	379	3
uba	(all)	2019		4	40	54	45	100	400	1
uba	(all)	2021*		4	20	22	43	100	403	2
uba	(all)	(all)		25	220	274	526		1,492	2

Table 3.5.1: Blue fathead. Self-sampling summary with the number of days, hauls, trips, vessels, catch (tonnes), number of fish measured, catch rates (ton/effort). * denotes incomplete year
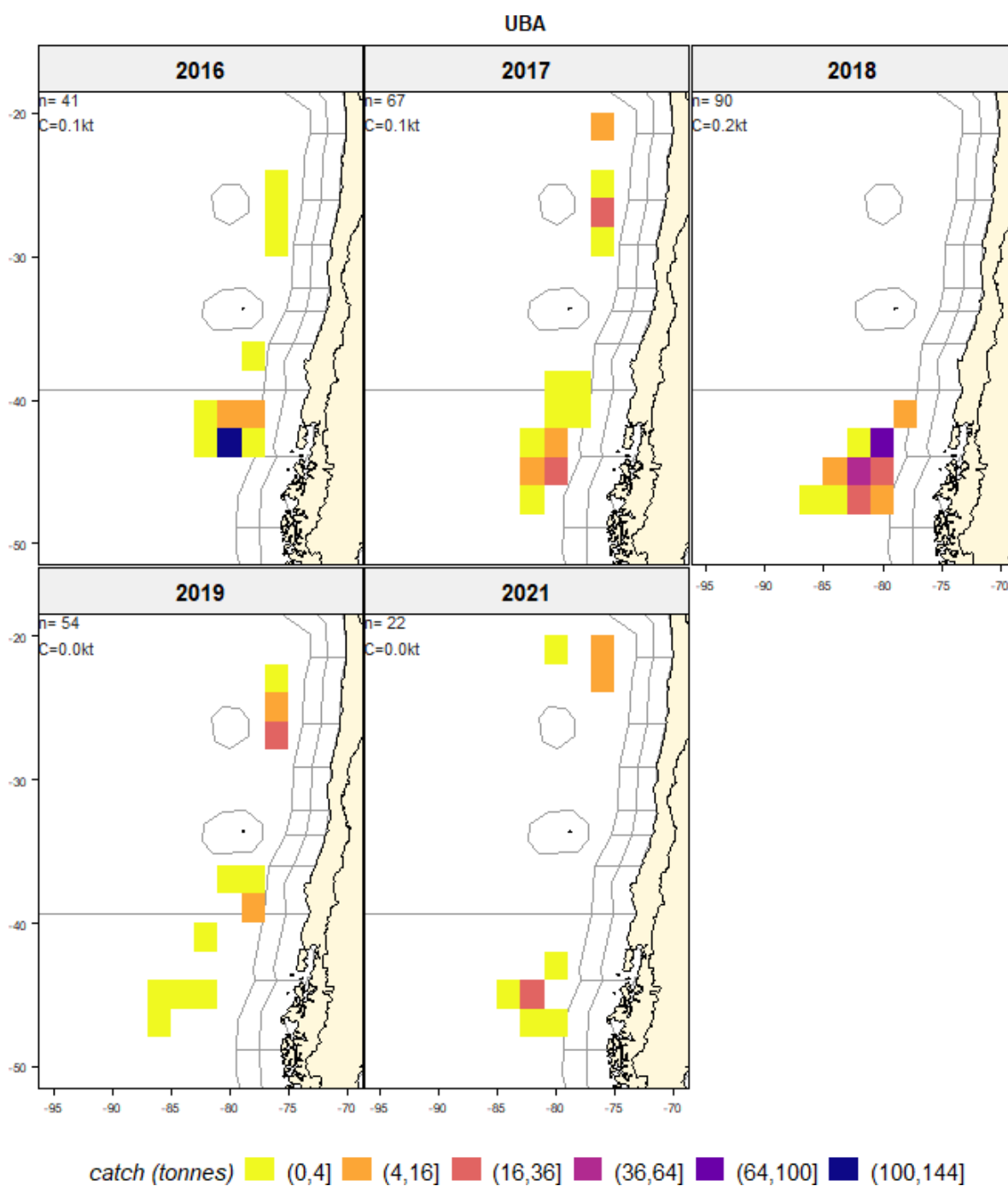
Blue fathead (UBA). Catch by rectangle

Figure 3.5.1: Blue fathead. Catch per per rectangle. N indicates the number of hauls; Catch refers to the total catch per year.
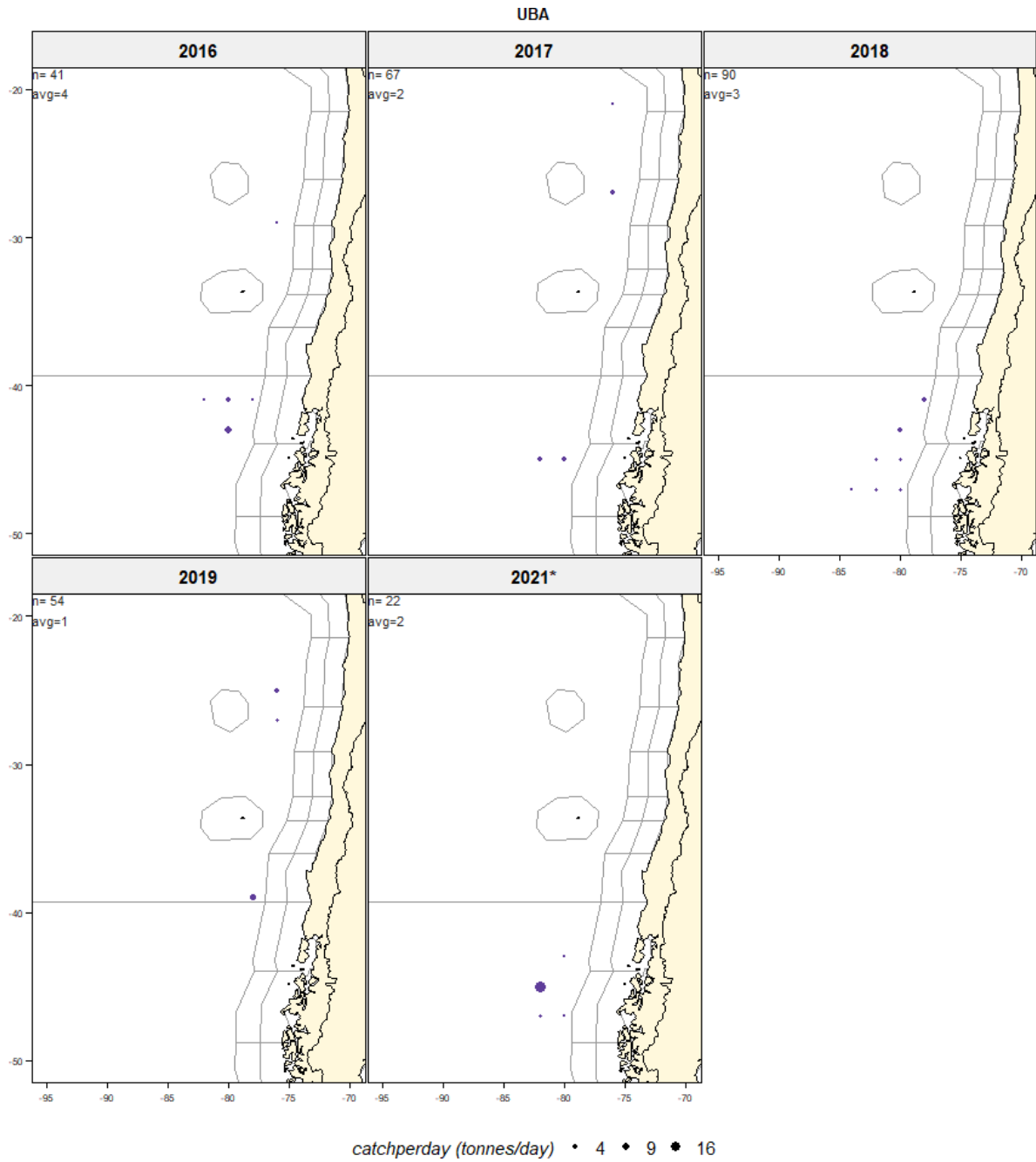
Blue fathead (UBA). Average catch per day

Figure 3.5.2: Blue fathead. Average catch per day per rectangle. N indicates the number of hauls; avg refers to the overall average catch per day

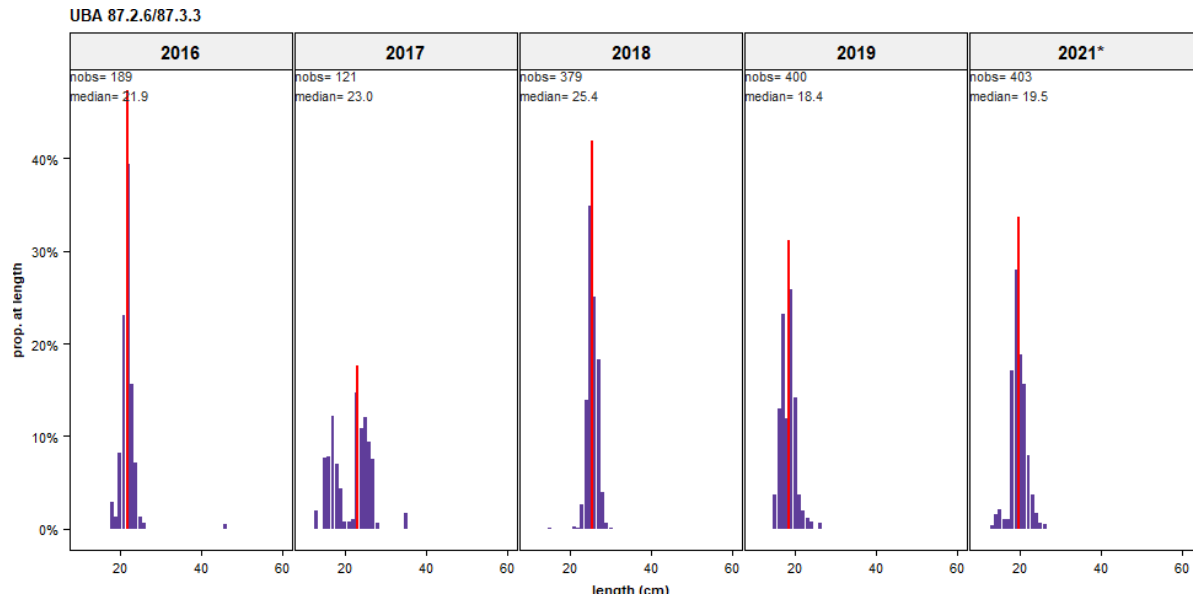**Blue fathead (UBA). Length distributions of the catch**

Figure 3.5.3: Blue fathead. Length distributions by year. Nobs refers to the number of observations; median denotes the median length

3.6 Splendid alfonsion (BYS, Beryx splendens)

During 2021, catches of Splendid alfonsion were taken in the SPRFMO area. The catches were taken in 2 fishing trips with 23 hauls, a total catch of 2601 tonnes and 431 individual length measurements.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	catchperc	nlength	catchperday
bys	87.2.6	2021*	2	2	14	23	2,601	100	431	186
bys	(all)	2021*		2	14	23	2,601	100	431	186
bys	(all)	(all)		2	14	23	2,601		431	186

*Table 3.6.1: Splendid alfonsion. Self-sampling summary with the number of days, hauls, trips, vessels, catch (tonnes), number of fish measured, catch rates (ton/effort). * denotes incomplete year*

Splendid alfonsion (BYS). Catch by rectangle, Catch rate and length distribution
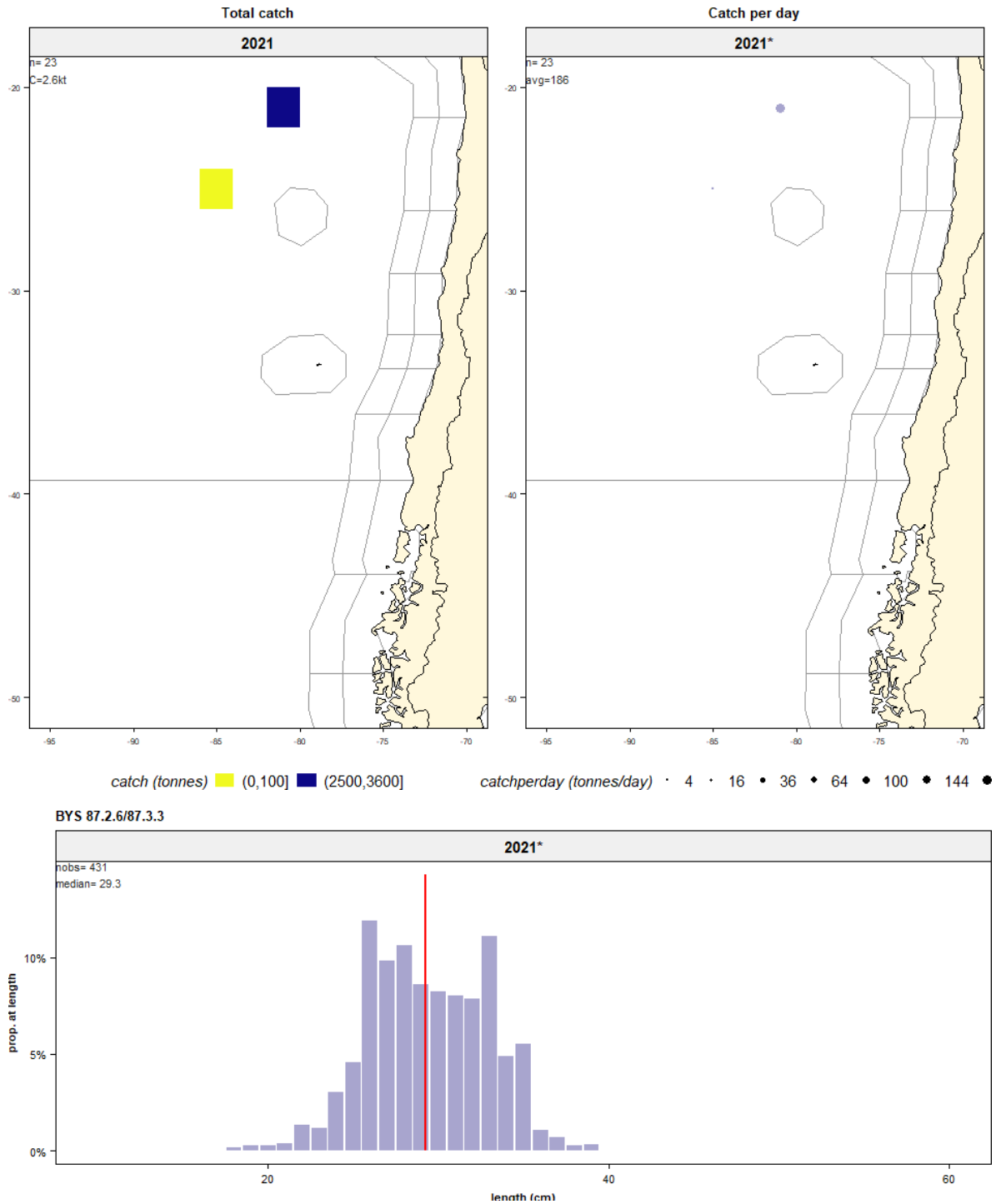

Figure 3.6.1: Splendid alfonsion. Catch per per rectangle (top left, N indicates the number of hauls, C is the total catch per year). Average catch per day per rectangle (top right, N indicates the number of hauls; avg refers to the overall average catch per day). Length distributions by year (bottom, Nobs refers to the number of observations, median denotes the median length)

3.7 Redbait (EMM, *Emmelichthys nitidus*)

During 2021, catches of Redbait were taken in the SPRFMO area. The catches were taken in 2 fishing trips with 37 hauls, a total catch of 899 tonnes and 806 individual length measurements.

species	division	year	nvessels	ntrips	ndays	nhauls	catch	catchperc	nlength	catchperday
emm	87.2.6	2021*	2	2	22	37	899	100	806	41
emm	(all)	2021*		2	22	37	899	100	806	41
emm	(all)	(all)		2	22	37	899		806	41

Table 3.7.1: Redbait. Self-sampling summary with the number of days, hauls, trips, vessels, catch (tonnes), number of fish measured, catch rates (ton/effort). * denotes incomplete year

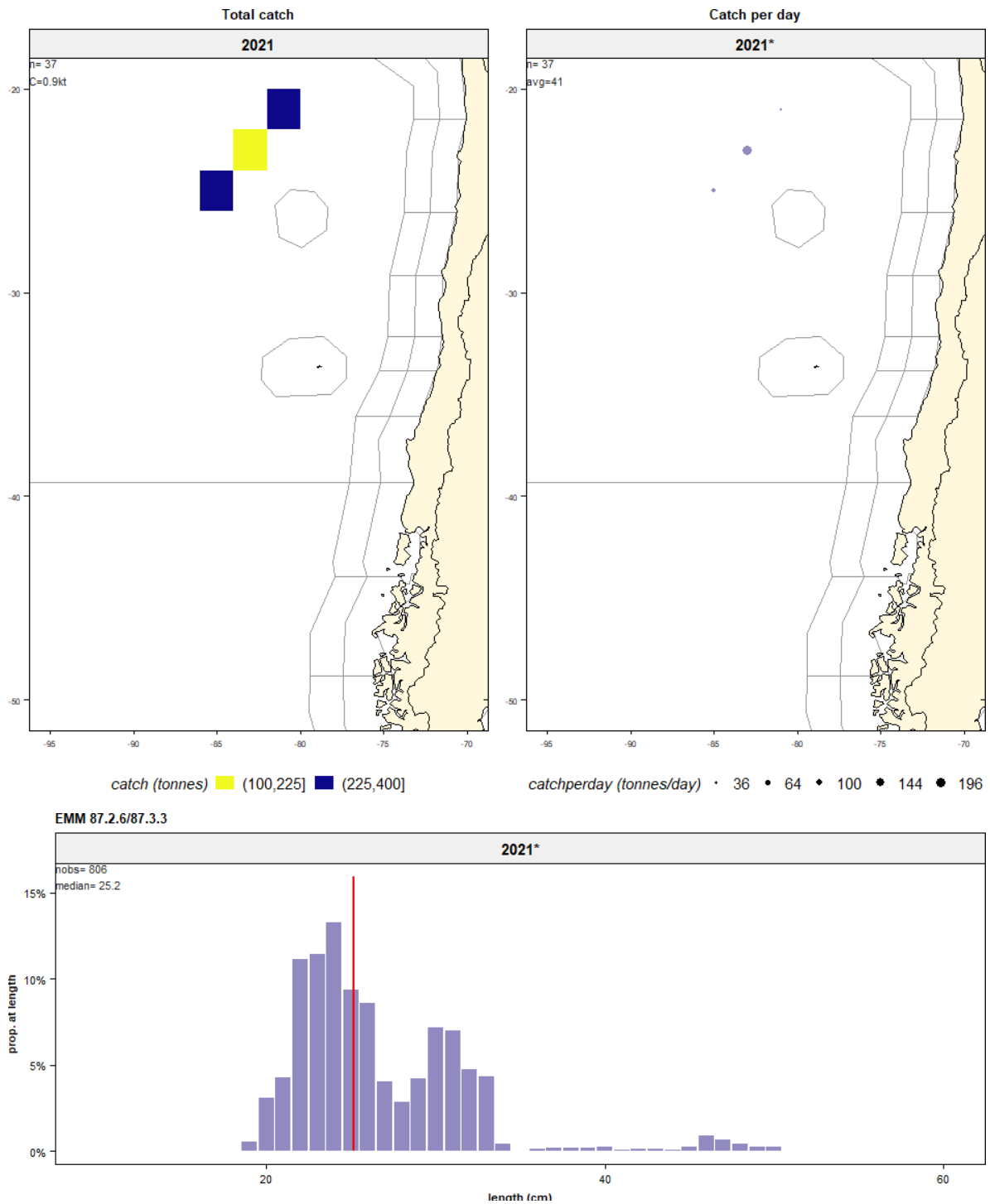**Redbait (EMM). Catch by rectangle, Catch rate and length distribution**

Figure 3.7.1: Redbait. Catch per per rectangle (top left, N indicates the number of hauls, C is the total catch per year). Average catch per day per rectangle (top right, N indicates the number of hauls; avg refers to the overall average catch per day). Length distributions by year (bottom, Nobs refers to the number of observations, median denotes the median length)

4   Discussion and conclusions

The PFA self-sampling program 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.

Although the information presented in this report does show a considerable overlap with the national report presented by EU - 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 program directly to the SPRFMO SC. The PFA self-sampling program 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 program, 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 program has developed in such a way that all information is available in standardized formats and allows for easy mapping and geo-spatial analysis.

During 2020, no PFA vessels have been active in the SPRFMO convention area due to the Corona crisis.

The length compositions of the jack mackerel catches in the southern area (division 87.3.3) show a bimodal distribution in 2015, after which the median length increases by year from 29.2 cm in 2016 to 42.5 cm in 2019. This is appears consistent with the recruitment of a strong cohort to the fishery in 2015 and followed thereafter. Hardly any catches and no samples were available in that area in 2021.

In the northern area (87.2.6) two recruitment pulses appear to from the catches, one in 2015 and the other, very strong, in 2019. Catches in 2021 in the northern area appear to be driven mostly by that strong year class.

Catch rates of jack mackerel, defined as the average catch (tonnes) per fishing day was highest in 2015 (160 ton/day), substantially lower in 2016 until 2018 (77-110 ton/day) and close to the value of 2015 again in 2019 (142 ton/day). Catch rates in the first half year of 2021 are the highest in the time series (216 ton/day) and contrary to earlier years, taken in the northern area.

The spatial distribution of the main fishing grounds has shown considerable changes over time. More extensive west-ward fishing explorations have been conducted in 2015, 2018 and 2019. In 2021 almost all catches of jack mackerel to date (August 2021) have been taken in the northern area.

While jack mackerel is the prime target species for the fishery, some bycatches are taken of chub mackerel (MAS), southern rays bream (BRU) and Blue fathead (UBA). Total catches of chub mackerel have been between 123 and 4,615 ton by year while median lengths have been between 25 and 36 cm. Total catches of southern rays bream (BRU) have been between 24 and 290 tonnes with median lengths between 29 and 43 cm. Total catches of Blue fathead (UBA) have been between 45 and 208 tonnes with median lengths between 29 and 43 cm.

In 2021, unexpected bycatches have been taken of Splendid alfonsino (BYS) and Redbait (EMM). Total catches of Splendid alfonsino (BYS) were 2,601 tonnes with median length around 29 cm. Total catches of Redbait (EMM) were 899 tonnes with median length around 25 cm.

A full report on the PFA self-sampling program 2015-2020 is available at https://www.pelagicfish.eu/media/pdf/PFA%202021_02%20Selfsampling%20report%202015-2020%20v1.pdf

5 Acknowledgements

6   More information

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