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Yellowtail flounder, redfish (*Sebastes spp.*) and witch flounder indices from the Spanish Survey conducted in Divisions 3NO of the NAFO Regulatory Area

by

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#### **Abstract**

Since 1995, Spain carries out a spring stratified random bottom trawl survey in Div. 3NO of the NAFO Regulatory Area. Total mean catches, biomass and mean numbers for yellowtail flounder (*Limanda ferruginea*) are presented for the period 1995-2019, for redfish (*Sebastes spp.*) for the period 1997-2019 and for witch flounder (*Glyptocephalus cynoglossus*) for the period 2002-2019. Detailed indices are presented from 2015.

Yellowtail flounder indices do not show a clear trend between 1999 and 2016. The 2017-2019 values were lower than the 1998 one. There has not been good recruitment in recent years. Redfish indices oscillate greatly over time, probably because the gear does not sample adequately aggregating pelagic species. There was a sharp increase in 2009 and since then until 2015, biomass fluctuated maintaining higher values than before 2009. In 2016 biomass dropped and increase again in 2017-2019 to or below the 2012 level. The 3N division comprises around the 90% of the total biomass in the last years. Good year classes have not been registered recently. Abundance by Division shows since 2002 shows the same trend of the biomass; most of the abundance corresponds to Division 3N. Witch flounder is very scarce and its indices fluctuated throughout the series reaching a low level in 2014 and 2018, with an increasing trend in the middle time. The 2019 value is the lowest of the series, being less than 50% of 2014 value. Recruitment was quite good at the beginning of the series but poor in recent years.

### Material and methods

The Spanish Spring (May/June) survey in Div. 3NO of NAFO Regulatory Area was initiated by Spain in 1995. Until 2001, the survey was carried out on board the Spanish vessel C/V *Playa de Menduiña* (338 GT and 800 HP) using a *Pedreira* type bottom trawl. The R/V *Vizconde de Eza* replaced the C/V *Playa de Menduiña* in 2001, and the *Campelen* 1800 was implemented as survey gear. For more details about the technical specifications of the surveys, see Walsh *et al.* (2001) and González Troncoso *et al.* (2004).

In each haul, all the individuals caught were sorted by species and weighted. Random samples of the catch of each species were length measured (total length) to the nearest lower cm. The obtained length distribution was aggregated into 2 cm intervals (beginning with the pair number) and raised to the catch of each species.



Table 1 presents the number of valid tows, the depth strata covered and the dates of the total survey series. Table 2 shows the swept area and number of hauls by stratum for the last five years (2015-2019). To know the results of the rest of the years, see González-Troncoso *et al.* (2015).

The redfish series for total biomass and total mean catches and mean number per tow start in 1997 because sampling depth in 1995 and 1996 was shallower than 1000 meters so the data are not representative for this species. As all strata where the yellowtail flounder is caught were well surveyed, the series for this species are presented since 1995. As calibration for witch flounder data has not been done yet, only data from 2002 are presented. Data for yellowtail flounder and redfish were calibrated for the period 1995-2000 and notransformed from 2002 onwards, to create a combined 1995-2019 time-series. Regarding 2001, there are both calibrated (from the former vessel) and non-transformed data (from the new vessel). More information on the calibration method can be found in González-Troncoso *et al.* (2004).

Mean catch and variance per haul, biomass and length distribution by strata are presented for each species for the last five years (2015-2019). To see the results of the rest of the years, see González-Troncoso *et al.* (2015). Total biomass and mean catch per tow with SD and mean number per tow by year are presented for the total period series.

Figure 1 presents the maps with the distribution of the catches of the three species during the 2019 Spanish 3NO survey.

### Results

### Yellowtail flounder

After a moratorium between 1994 and 1997, the yellowtail flounder fishery has been under TAC. According to the Report of NAFO Scientific Council Meeting, stock size reached a minimum in the mid 1990's, but since 1994 has steadily increased and is now well above  $B_{msy}$ . There is very low risk of the stock being below  $B_{msy}$  or F being above  $F_{msy}$  (NAFO, 2019).

### **Mean Catches and Biomass**

Table 3 shows mean catch and SD per haul and stratum and Table 4 the biomass estimates by the swept area method and their SD by stratum for years 2015-2019 for yellowtail flounder. Total biomass (t) and stratified mean catch per tow (kg) and SD by year for the entire series are presented in Table 5 for 1995-2019. Table 6 presents the parameters a and b for the calculation of the length-weight relationship for years 2015-2019.

Yellowtail flounder biomass index showed no clear trend between 1999 and 2016. It increased substantially from 1997 to 1999, has maintained almost constant values until 2013 and then decreased in 2014-2019. The 2017-2019 values were lower than the 1998 one (Table 5; Figures 2 and 3).

# **Length Distribution**

The mean number per haul by year is presented in Table 7 and Figure 2 for 1995-2019 and Table 8 presents the same index by length, sex and year besides the sampled size and catch for the period 2015-2019. Figures 4 and 5 present theses indices for the entire period. The mean numbers are in concordance with the mean catches (Figure 2). There has not been good recruitment in recent years. In Figure 4, we can follow a length modal value since the beginning of the series, but the presence of juveniles is very low. This mode can be seen until 2009 when it reached 34-35 cm, and since 2010 the mode of the length distribution was about 30-34 cm. In 2013-2019 the mode was at 34-35 cm for females, and at 30-33 cm for males.



## Redfish

There are two species of redfish that have been commercially fished in Div. 3NO; the deep-sea redfish (*Sebastes mentella*) and the Acadian redfish (*Sebastes fasciatus*). Due to the difficulty to distinguish the two species, the catches are usually reported by genus as "redfish" (*Sebastes* spp.) in the commercial fishery statistics.

This stock in Div. 30 has been under TAC regulation since 1974. In September 2004, the Fisheries Commission adopted an annual TAC of 20 000 t in the entire area of Div. 30. The stock appears to have increased since the early 2000s. Catches were stable from 2009 to 2014. Survey index values have declined from those observed in 2012 when values were near time-series highs.

In 3N (the stock is 3LN) a moratorium was implemented from 1998 to 2009. The fishery was reopened in 2010 with the resultant increase of catches but the perception of the stock given by the available surveys has not been altered. Fishing mortality declined from 1991 to 1996, being from 1996 to 2016 at a level close to zero, with a marginal increase in 2018 (NAFO, 2019).

#### **Mean Catches and Biomass**

Redfish mean catches and SD are presented in Table 9 and biomass in Table 10 by stratum for 2015-2019. Annual biomass and stratified mean catch and SD per haul for years 1997-2019 are presented in Table 11 by Division. The length-weight relationship parameters a and b are presented in Table 12 for years 2015-2019.

Redfish indices oscillate greatly over time, probably because the gear does not sample adequately aggregating pelagic species. They showed a quick increase from 1997 to 2000, followed by a sudden drop until 2002, after which they have increased to the levels of the early years of the time series. The index increased nearly fivefold in 2009 in comparison with 2005. This was not just due to very large catches in few hauls, as redfish catch was over 1 ton in 11 of the 43 hauls in which redfish was caught. Furthermore, redfish catch was over 15 tons in three hauls. In 2015, an increase allowed biomass to reach the second highest value of the series. In this case, redfish catch was over 10 tons in 3 hauls. Then biomass dropped fourfold in 2016 and increase again in 2017-2019 to or below the 2012 level (Table 10; Figures 6 and 7).

Biomass and mean catch per haul and Division, the number of strata covered in each case, and the percentage of biomass in 3N respect to the total are presented in Table 11. Biomass is always larger in 3N than in 30 (Figure 8), although the percentage is very spread over the time. However, the mean catch per tow was higher in Division 30 until 2004. Since 2005, more than 83% of redfish biomass has occurred in Division 3N. In 2010, mean catch per tow in 30 was almost three times higher than in 2009, whereas in 3N was lower than in 2009. In 2013 and 2015, the increase in the total biomass was due to the increase in Division 3N. Last four years indices fluctuated. In 2018 and 2019, the 30 biomass is the third and the fourth lowest of the series, respectively.

### **Length Distribution**

Mean number per haul by year is presented in Table 13 and Figure 6 for 1997-2019. Table 14 presents this index per length with sample size and catch for the period 2015-2019. Figures 9 and 10 show the trend of the mean abundance per tow by length class. The y-axis upper limit of Figure 10 has been changed for years 1997-2008 to see the length distribution despite the large catches registered in the period 2009-2019. The last good year class was recorded in 2004 and this cohort can be tracked until 2019. In recent years there was only a discrete presence of juveniles. The clear 18 cm mode in 2009 (20 cm in 2011) seems to be a consequence of the 2004 recruitment. In 2012 and 2013 the mode is in 20-21 cm, in 22-23 cm for 2014-2018 and 24-26 cm in 2019.

Length distribution in thousands (abundance) by Division and year since 2002 is presented in Table 15, together with total abundance by Division and year, in order to see the structure of the population in each Division. Following the trend of the biomass, most of the abundance corresponds to Division 3N (Figure 11).



### Witch flounder

This stock occurs mainly in Div. 30, along the South-western slopes of the Grand Bank, but it seems to migrate seasonally onto the shallow banks. It has been fished mainly in winter and springtime, targeting the spawning concentrations. The stock size increased since 1994 to 2013 and then declined from 2013-2015 and has since increased slightly. In 2019 the stock is at 41%  $B_{msy}$  (60000t) There is 0.20 risk of the stock being below  $B_{lim}$  and a 0.02 risk of F being above  $F_{lim}$  (0.063). With the exception of the growth of the stock following improved recruitment in the late 1990s, it is unclear if the recruitment index is representative (NAFO, 2019).

### **Mean Catches and Biomass**

Witch flounder mean catches and SD by stratum are presented in Table 16 and biomass per stratum in Table 17 for 2015-2019. In Table 18 and Figures 12 and 13 the annual stratified mean catch per tow and biomass with SD are presented for the period 2002-2019. The length-weight relationship parameters a and b are presented in Table 19 for 2015-2019.

Witch flounder indices fluctuated throughout the period 2002-2019, reaching a low level in 2014 and 2018, with an increasing trend in the middle time. The 2019 value is the lowest of the series, being less than 50% of 2014 value. Highest values were found in 2004, 2010 and 2017 (Table 18; Figures 12 and 13).

## **Length Distribution**

Table 20 and Figures 14 and 15 present witch flounder mean number per tow and sex by year for 2002-2019, and Table 21 the same index by length with sample size and catch for the period 2015-2019. The best recruitment occurred in the period 2002-2005 and has been very poor since 2008. Some modes can be tracked in Figure 14, probably due to the recruitments at the beginning of the series. In 2012 and 2013 there was a quite good presence of individuals of lengths 34-42 cm, poorly found in 2014, but that can be followed in 2015-2017. In 2018 and 2019, the presence of all the length ranges is small.

## Acknowledges

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**Table 1.** Spanish spring bottom trawl surveys in NAFO Div. 3NO: 1995-2019.

Year	Vessel	Valid tows	Depth strata covered (m)	Dates
1995	C/V Playa de Menduíña	77	42-684	May 18-May 29
1996	C/V Playa de Menduíña	112	41-1135	May 07-May 24
1997	C/V Playa de Menduíña	128	42-1263	April 26-May 18
1998	C/V Playa de Menduíña	124	42-1390	May 06-May 26
1999	C/V Playa de Menduíña	114	41-1381	May 07-May 26
2000	C/V Playa de Menduíña	118	42-1401	May 07-May 28
2001(*)	R/V Vizconde de Eza	83	36-1156	May 03-May 24
2001(*)	C/V Playa de Menduíña	121	40-1500	May 05-May 23
2002	R/V Vizconde de Eza	125	38-1540	April 29-May 19
2003	R/V Vizconde de Eza	118	38-1666	May 11-June 02
2004	R/V Vizconde de Eza	120	43-1539	June 06-June 24
2005	R/V Vizconde de Eza	119	47-1485	June 10-June 29
2005	R/V Vizconde de Eza	119	47-1485	June 10-June 29
2006	R/V Vizconde de Eza	120	45-1480	June 7-June 27
2007	R/V Vizconde de Eza	110	45-1374	May 29-June 19
2008	R/V Vizconde de Eza	122	45-1374	May 27-June 16
2009	R/V Vizconde de Eza	109	45-1374	May 31–June 18
2010	R/V Vizconde de Eza	95	45-1374	May 30-June 18
2011	R/V Vizconde de Eza	122	44-1450	June 5-June 24
2012	R/V Vizconde de Eza	122	44-1450	June 3-June 21
2013	R/V Vizconde de Eza	122	44-1450	June 1-June 21
2014	R/V Vizconde de Eza	122	44-1450	June 2-June 21
2015	R/V Vizconde de Eza	122	44-1450	May 31-June 19
2016	R/V Vizconde de Eza	115	44-1450	May 30-June 18
2017	R/V Vizconde de Eza	113	44-1450	May 23-June 11
2018	R/V Vizconde de Eza	114	44-1450	June 2-June 21
2019	R/V Vizconde de Eza	115	44-1450	June 8-June 24

(\*)For the calculation of the series, 83 hauls were taken from the R/V *Vizconde de Eza* and 40 hauls from the C/V *Playa de Menduíña* (123 hauls in total)



**Table 2.** Swept area and number of hauls by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. Swept area in square miles. n.s. means stratum not surveyed.

	20	)15	20	)16	20	)17	20	)18	20	)19
•	Swept	Tow								
Stratum	area	number								
353	0.0401	3	0.0356	3	0.0360	3	0.0338	3	0.0386	3
354	0.0390	3	0.0345	3	0.0356	3	0.0341	3	0.0383	3
355	0.0263	2	0.0233	2	0.0225	2	0.0233	2	0.0263	2
356	0.0255	2	0.0225	2	0.0233	2	0.0225	2	0.0248	2
357	0.0233	2	0.0233	2	0.0233	2	0.0236	2	0.0251	2
358	0.0349	3	0.0338	3	0.0364	3	0.0345	3	0.0383	3
359	0.0855	7	0.0593	5	0.0596	5	0.0589	5	0.0634	5
360	0.2363	20	0.1995	17	0.2044	17	0.1939	17	0.2213	17
374	0.0229	2	0.0233	2	0.0236	2	0.0225	2	0.0255	2
375	0.0341	3	0.0360	3	0.0364	3	0.0356	3	0.0383	3
376	0.1159	10	0.0945	8	0.0975	8	0.0908	8	0.1043	8
377	0.0233	2	0.0233	2	0.0251	2	0.0233	2	0.0263	2
378	0.0225	2	0.0225	2	0.0236	2	0.0229	2	0.0259	2
379	0.0225	2	0.0229	2	0.0244	2	0.0225	2	0.0263	2
380	0.0229	2	0.0236	2	0.0236	2	0.0225	2	0.0263	2
381	0.0236	2	0.0229	2	0.0229	2	0.0225	2	0.0255	2
382	0.0458	4	0.0465	4	0.0360	3	0.0450	4	0.0645	5
721	0.0240	2	0.0225	2	0.0229	2	0.0229	2	0.0263	2
722	0.0259	2	0.0229	2	0.0233	2	0.0236	2	0.0255	2
723	0.0233	2	0.0225	2	0.0229	2	0.0240	2	0.0248	2
724	0.0236	2	0.0233	2	0.0240	2	0.0233	2	0.0244	2
725	0.0229	2	0.0229	2	0.0244	2	0.0233	2	0.0255	2
726	0.0229	2	0.0225	2	0.0233	2	0.0225	2	0.0259	2
727	0.0225	2	0.0225	2	0.0229	2	0.0225	2	0.0248	2
728	0.0225	2	0.0229	2	0.0229	2	0.0225	2	0.0248	2
752	0.0225	2	0.0236	2	0.0236	2	0.0233	2	0.0266	2
753	0.0233	2	0.0229	2	0.0233	2	0.0236	2	0.0248	2
754	0.0225	2	0.0225	2	0.0218	2	0.0225	2	0.0240	2
755	0.0450	4	0.0458	4	0.0338	3	0.0338	3	0.0356	3
756	0.0229	2	0.0225	2	0.0229	2	0.0229	2	0.0251	2
757	0.0229	2	0.0225	2	0.0225	2	0.0225	2	0.0263	2
758	0.0221	2	0.0221	2	0.0229	2	0.0225	2	0.0259	2
759	0.0229	2	0.0229	2	0.0225	2	0.0225	2	0.0251	2
760	0.0225	2	0.0229	2	0.0236	2	0.0356	3	0.0255	2
761	0.0240	2	0.0225	2	0.0236	2	0.0124	1	0.0236	2
762	0.0229	2	0.0225	2	0.0229	2	0.0225	2	0.0255	2
763	0.0341	3	0.0338	3	0.0353	3	0.0345	3	0.0383	3
764	0.0251	2	0.0225	2	0.0229	2	0.0225	2	0.0248	2
765	0.0236	2	0.0229	2	0.0225	2	0.0233	2	0.0251	2
766	0.0236	2	0.0229	2	0.0225	2	0.0229	2	0.0248	2
767	0.0229	2	0.0229	2	0.0229	2	0.0236	2	0.0244	2



**Table 3.** Yellowtail flounder mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. n.s. means stratum not surveyed.

	20	15	20	16	20	17	20	18	20	19
	Y. flounder									
Stratum	Mean catch	SD								
353	34.18	48.09	7.82	13.54	27.50	23.33	3.40	5.56	0.00	0.00
354	2.28	3.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
356	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
357	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
358	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
359	2.27	2.92	0.24	0.36	0.05	0.11	0.44	0.46	0.00	0.00
360	286.35	205.84	277.57	501.85	260.47	349.29	179.78	128.90	97.45	142.67
374	220.08	96.88	227.62	23.37	3.49	4.50	168.18	114.08	81.72	7.95
375	195.40	124.81	84.61	24.64	45.17	54.99	44.41	23.76	37.26	6.16
376	553.63	422.74	722.38	520.54	309.79	234.89	506.07	308.21	191.10	117.71
377	7.53		0.76	1.07	0.36	0.51	0.00	0.00	0.52	0.74
378	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
379	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
382	0.00	0.00	0.33		0.25		0.00	0.00	0.00	0.00
721	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
722	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
723	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
724	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
725	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
726	0.00	0.00	0.00		0.00		0.00	0.00	0.00	
727	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
728	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
752	0.00		0.00		0.00		0.00	0.00	0.00	
753	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
754	0.00		0.00		0.00		0.00	0.00	0.00	0.00
755	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
756	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
757	0.00		0.00		0.00		0.00	0.00	0.00	
758	0.00		0.00		0.00		0.00	0.00	0.00	
759	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
760	0.00		0.00		0.00		0.00	0.00	0.00	
761	0.00		0.00		0.00		0.00	-	0.00	
762	0.00		0.00		0.00		0.00	0.00	0.00	
763	0.00		0.00		0.00		0.00	0.00	0.00	
764	0.00		0.00		0.00		0.00	0.00	0.00	
765	0.00		0.00		0.00		0.00	0.00	0.00	
766	0.00		0.00		0.00		0.00	0.00	0.00	
767	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



**Table 4.** Yellowtail flounder survey biomass (t) by stratum in NAFO Div. 3NO: 2015-2019. n.s. means stratum not surveyed.

Strata	2015	2016	2017	2018	2019	Strata	2015	2016	2017	2018	2019
353	688	177	616	81	0	725	0	0	0	0	0
354	43	0	0	0	0	726	0	0	0	0	0
355	0	0	0	0	0	727	0	0	0	0	0
356	0	0	0	0	0	728	0	0	0	0	0
357	0	0	0	0	0	752	0	0	0	0	0
358	0	0	0	0	0	753	0	0	0	0	0
359	78	9	2	16	0	754	0	0	0	0	0
360	67463	65826	60296	43872	20839	755	0	0	0	0	0
374	4118	4190	63	3199	1372	756	0	0	0	0	0
375	4655	1911	1010	1014	792	757	0	0	0	0	0
376	63736	81580	33908	59513	19562	758	0	0	0	0	0
377	65	6	3	0	4	759	0	0	0	0	0
378	0	0	0	0	0	760	0	0	0	0	0
379	0	0	0	0	0	761	0	0	0	0	0
380	0	0	0	0	0	762	0	0	0	0	0
381	0	0	0	0	0	763	0	0	0	0	0
382	0	10	7	0	0	764	0	0	0	0	0
721	0	0	0	0	0	765	0	0	0	0	0
722	0	0	0	0	0	766	0	0	0	0	0
723	0	0	0	0	0	767	0	0	0	0	0
724	0	0	0	0	0						



**Table 5.** Yellowtail flounder survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by year in NAFO Div. 3NO: 1995-2019.

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Biomass	9264	43349	38697	122601	197012	144685	182704	148487	136775	169978	156472	160145	160731
SD	2484	6032	8527	31359	22938	19097	25847	23368	19287	18869	15271	16458	18852
MCPT	16.22	59.54	47.74	137.32	232.41	167.76	210.84	164.28	148.92	190.05	176.42	189.32	202.64
SD	4.37	8.41	10.69	34.70	27.41	22.21	30.58	24.92	20.84	21.27	17.06	19.83	23.61
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	-
Biomass	160146	183412	189687	203833	195606	187969	136484	140845	153708	95905	107695	42569	
SD	17297	25736	22611	30743	23679	22493	29519	18915	34788	22868	15055	8578	

214.17

25.35

173.79

38.52

159.25

21.37

175.03

40.46

112.03 118.41 53.55

25.20 16.47 10.75



MCPT

SD

178.27

19.00

209.43

29.75

224.54

26.30

231.22

35.18

221.33

26.27

**Table 6.** Yellowtail flounder length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. E(x) means Error of the parameter x.

			Ma	les					Fem	ales					To	tal		
Year	a	b	E(a)	E (b)	R2	N	a	b	E(a)	E (b)	R2	N	a	b	E(a)	<b>E</b> ( <b>b</b> )	R2	N
2015	0.00491	3.16089	0.2087	0.0646	0.988	506	0.0069	3.0678	0.0797	0.0233	0.998	611	0.0066	3.0784	0.0242	0.0383	0.997	1144
2016	0.01051	2.94093	0.0867	0.0270	0.998	311	0.0086	3.0047	0.0584	0.0175	0.999	441	0.0110	2.9338	0.0740	0.0225	0.998	756
2017	0.00720	3.03484	0.1616	0.0513	0.993	284	0.0056	3.1206	0.0840	0.0249	0.998	402	0.0063	3.0871	0.0838	0.0256	0.997	689
2018	0.00406	3.21763	0.1175	0.0359	0.999	358	0.0044	3.2050	0.0893	0.0262	0.999	436	0.0038	3.2409	0.0658	0.0194	0.999	794
2019	0.00721	3.05949	0.1319	0.0401	0.995	390	0.0049	3.1766	0.0964	0.0280	0.998	547	0.0059	3.1268	0.0646	0.0192	0.999	937

**Table 7.** Yellowtail flounder mean number per tow by year in Spanish Spring surveys in NAFO Div. 3NO: 1995-2019. Indet. means indeterminate.

	19	5			1996				1997				1998				1999				2000				2001		
	Males Fem	les Inde	t. Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	31.12 47.	6.14	84.62	73.11	188.83	13.23	275.17	134.85	147.98	0.00	282.83	279.83	343.35	1.61	624.79	508.72	539.70	4.48	1052.90	332.06	376.36	0.00	708.42	328.27	428.33	6.98	763.57
	20	2			2003				2004				2005				2006				2007				2008		
	Males Fem	les Inde	t. Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	256.56 333	09 0.8	590.46	215.96	271.49	0.72	488.17	322.91	336.03	1.19	660.14	275.52	308.25	0.30	584.07	281.15	354.69	0.60	636.44	317.34	365.53	0.10	682.97	295.11	335.10	0.15	630.35
	20	9			2010				2011				2012				2013				2014				2015		
	Males Fem		t. Total	Males	2010 Females	Indet.	Total	Males	2011 Females	Indet.	Total	Males	2012 Females	Indet.	Total	Males	2013 Females	Indet.	Total	Males	2014 Females	Indet.	Total	Males	2015 Females	Indet.	Total
MNPT		les Inde	t. Total 6 697.37	Males 368.83	Females		Total 782.92				Total 732.34	Males 315.50		Indet. 0.75	Total 754.73	Males 294.58	Females	Indet. 0.79	Total 689.43	Males 226.69			Total 520.50	Males 219.81			Total 468.62
MNPT	Males Fem	les Inde			Females				Females		10111		Females		101111		Females				Females				Females		
MNPT	Males Fem	les Inde			Females				Females		10111		Females		101111		Females				Females				Females		
MNPT	Males Fem 298.01 398	les Inde 88 0.48	697.37	368.83	Females 414.09	0.00	782.92		Females 426.42 2018	0.00	10111	315.50	Females 438.48	0.75	754.73		Females				Females				Females		



**Table 8.** Yellowtail flounder mean number per tow by length class and year. Spanish Spring Survey on NAFO 3NO: 2015-2019. Indet. means indeterminate.

		201	15			201	6			201	7			201	8			201	.9	
Lenght (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.090	0.090	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.066	0.012	0.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.065	0.000	0.023	0.088	0.000	0.048	0.024	0.071	0.009	0.000	0.012	0.021	0.000	0.274	0.000	0.274	0.000	0.000	0.000	0.000
12	0.393	0.168	0.000	0.561	0.290	0.111	0.000	0.401	0.256	0.282	0.000	0.538	0.274	0.468	0.000	0.742	0.016	0.009	0.000	0.024
14	0.429	0.083	0.000	0.512	0.242	0.174	0.000	0.417	0.674	0.638	0.000	1.312	0.824	0.112	0.000	0.936	0.101	0.117	0.000	0.218
16	0.171	0.746	0.000	0.918	0.087	0.024	0.000	0.110	1.004	1.284	0.000	2.288	0.042	0.387	0.000	0.429	0.047	0.086	0.000	0.134
18	0.566	0.407	0.000	0.973	0.322	0.329	0.000	0.651	1.132	1.845	0.000	2.977	1.512	1.004	0.000	2.517	0.501	0.258	0.000	0.759
20	2.428	1.127	0.000	3.555	1.779	0.121	0.000	1.900	4.426	4.100	0.000	8.526	4.222	4.365	0.000	8.587	0.515	0.586	0.000	1.101
22	2.189	1.347	0.000	3.536	1.926	1.404	0.000	3.330	2.020	2.289	0.000	4.309	4.981	4.255	0.000	9.236	0.796	1.208	0.000	2.004
24	2.731	2.106	0.000	4.837	4.847	2.475	0.000	7.321	2.101	1.182	0.000	3.283	6.089	6.847	0.000	12.937	1.755	2.982	0.000	4.738
26	7.828	4.621	0.000	12.449	6.958	4.266	0.000	11.224	4.675	2.929	0.000	7.604	3.499	3.694	0.000	7.193	4.205	4.045	0.000	8.251
28	26.388	9.768	0.000	36.156	20.890	7.345	0.000	28.235	11.436	5.626	0.000	17.062	8.696	5.002	0.000	13.697	4.049	3.702	0.000	7.751
30	65.705	25.661	0.000	91.366	58.091	25.110	0.000	83.201	35.663	7.758	0.000	43.421	25.823	8.614	0.000	34.437	8.801	3.305	0.000	12.106
32	68.516	53.570	0.000	122.086	81.325	46.999	0.000	128.323	54.496	27.290	0.000	81.785	45.404	24.524	0.000	69.928	20.368	5.990	0.000	26.358
34	32.700	54.184	0.000	86.884	37.685	66.522	0.000	104.207	29.456	42.583	0.000	72.039	27.260	45.645	0.000	72.905	18.071	13.492	0.000	31.563
36	8.310	43.816	0.000	52.126	9.676	58.832	0.000	68.507	6.127	40.587	0.000	46.715	9.287	47.535	0.000	56.823	5.043	18.210	0.000	23.253
38	1.097	27.918	0.000	29.014	2.072	39.605	0.000	41.677	1.238	23.231	0.000	24.469	1.484	24.834	0.000	26.318	0.801	13.923	0.000	14.724
40	0.218	14.529	0.000	14.747	1.008	13.539	0.000	14.547	0.124	10.879	0.000	11.002	0.024	9.924	0.000	9.948	0.162	5.979	0.000	6.142
42	0.027	6.371	0.000	6.399	0.037	5.483	0.000	5.520	0.000	5.154	0.000	5.154	0.217	3.461	0.000	3.679	0.000	2.497	0.000	2.497
44	0.048	1.564	0.000	1.612	0.000	1.819	0.000	1.819	0.000	1.644	0.000	1.644	0.000	2.211	0.000	2.211	0.010	0.627	0.000	0.637
46	0.000	0.532	0.000	0.532	0.000	0.454	0.000	0.454	0.000	0.432	0.000	0.432	0.000	0.579	0.000	0.579	0.000	0.100	0.000	0.100
48	0.000	0.154	0.000	0.154	0.000	0.037	0.000	0.037	0.000	0.028	0.000	0.028	0.017	0.093	0.000	0.110	0.010	0.044	0.000	0.055
50	0.000	0.027	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.066	0.000	0.066	0.000	0.008	0.000	0.008	0.000	0.000	0.000	0.000
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	219.809	248.701	0.113	468.623	227.233	274.697	0.024	501.954	154.837	179.893	0.024	334.754	139.656	193.837	0.000	333.493	65.253	77.161	0.000	142.414
								24				25				25				20
Nº samples:	2021	402.4		44	1505	2466		34		2224		35	1010	2022		35		221.5		28
Nº Ind.:	3831	4834	4	8669	1595	2466	1	4062	1675	2234	2	3911	1918	3032	0	4950	1567	2315	0	3882
Sampled catch:				3023				1489				1387				1844				1512
Range:				6-50				10-48				9-51				10-50				12-49
Total catch:				12 122				11234				7133				7587				3462
Total hauls:				122				115				113				114				115



**Table 9.** Redfish mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. n.s. means stratum not surveyed.

	201	5	201	6	201	7	201	8	201	9
	Redfish	Redfish	Redfish	Redfish	Redfish	Redfish	Redfish	Redfish	Redfish	Redfish
Stratum	Mean catch	SD	Mean catch	SD	Mean catch	SD	Mean catch	SD	Mean catch	SD
353	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.07	0.00	0.00
354	972.97	883.47	482.34	791.85	540.03	923.90	1.26	1.15	0.75	1.14
355	1954.04	1984.34	513.80	79.20	708.98	623.84	35.22	32.22	16.55	3.68
356	707.30	62.72	210.70	127.84	1146.51	193.97	301.03	103.63	429.98	90.90
357	3886.69	2152.38	835.95	247.78	2502.83	2277.84	5876.23	3065.60	5134.54	5570.52
358	16765.95	10954.46	3706.23	3517.46	6005.13	4962.78	5435.00	7779.65	2006.12	749.42
359	356.78	723.22	1.55	1.46	1379.60	3054.66	119.55	248.28	2.91	4.55
360	0.00	0.00	0.37	1.37	0.00	0.00	0.07	0.29	0.00	0.00
374	0.00	0.00	0.00	0.00	2.63	3.71	0.00	0.00	0.00	0.00
375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
376	0.00	0.00	0.49	1.20	0.00	0.00	0.00	0.00	0.00	0.00
377	0.00	0.00	0.00	0.00	1.30	1.84	3.09	3.27	180.00	254.56
378	6175.36	8441.67	164.55	220.41	3472.11	4099.57	811.36	920.67	1995.33	1230.71
379	3080.27	3492.78	611.70	12.55	318.93	10.01	5747.14	1716.66	4189.49	1349.32
380	1175.26	110.17	607.60	758.98	3.91	1.82	1062.54	1501.58	843.98	700.71
381	25.28	28.59	0.03	0.04	0.29	0.38	0.54	0.74	0.03	0.04
382	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.53	1.19
721	445.63	481.01	106.80	1.27	148.93	42.46	362.65	29.84	369.90	433.17
722	5.07	7.17	14.68	16.72	5.92	2.66	20.91	28.86	52.07	73.16
723	576.35	407.93	437.23	319.80	1544.42	1811.07	1633.62	1493.64	610.69	733.96
724	72.34	86.36	1.71	1.07	40.04	6.88	221.00	275.42	9.36	3.83
725	633.76	720.63	1138.33	1230.83	391.65	321.52	253.61	157.39	139.65	13.36
726	35.40	29.27	18.44	1.68	50.81	37.60	21.44	17.13	33.00	43.47
727	207.30	73.40	208.40	230.66	195.29	45.17	116.90	153.16	9.47	9.16
728	10.11	13.28	9.40	1.98	4.30	1.85	82.65	100.62	10.81	6.20
752	0.00	0.00	0.25	0.35	1.74	1.84	1.57	2.22	0.00	0.00
753	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.40	3.39
754	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
755	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
756	0.73	0.00	1.62	2.28	0.00	0.00	2.39	3.37	0.00	0.00
757	0.38	0.54	1.74	2.46	0.41	0.58	0.00	0.00	0.00	0.00
758	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
759	0.00	0.00	2.42	3.42	0.00	0.00	0.00	0.00	0.00	0.00
760	0.00	0.00	0.07	0.09	0.36	0.51	0.00	0.00	0.34	0.48
761	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00
762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
763	0.00	0.00	0.00	0.00	0.09	0.15	0.00	0.00	1.45	1.37
764	0.00	0.00	0.00	0.00	0.07	0.09	0.00	0.00	0.00	0.00
765	1.02	1.44	0.00	0.00	0.35	0.49	0.00	0.00	0.00	0.00
766	0.00	0.00	3.30	4.67	0.00	0.00	0.59	0.83	0.00	0.00
767	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



**Table 10.**Redfish survey biomass (t) by stratum in NAFO Div. 3NO: 2015-2019. n.s. means stratum not surveyed.

Strata	2015	2016	2017	2018	2019	Strat	a 2015	2016	2017	2018	2019
353	0	0	0	1	0	725	5818	10450	3374	2291	1150
354	18412	10318	11187	27	15	726	223	118	315	137	184
355	11017	3271	4663	224	93	727	1769	1778	1639	998	73
356	2607	880	4635	1258	1633	728	70	64	29	573	68
357	54832	11793	35309	81583	67030	752	0	3	19	18	0
358	324502	74125	111435	106337	35402	753	0	0	0	0	27
359	12297	55	48706	4274	97	754	0	0	0	0	0
360	0	87	0	17	0	755	0	0	0	0	0
374	0	0	48	0	0	756	6	14	0	21	0
375	0	0	0	0	0	757	3	16	4	0	0
376	0	56	0	0	0	758	0	0	0	0	0
377	0	0	10	27	1371	759	0	27	0	0	0
378	76300	2033	40857	9860	21438	760	0	1	5	0	4
379	29023	5669	2774	54151	33835	761	0	0	0	0	0
380	9864	4938	32	9067	6173	762	0	0	0	0	0
381	308	0	4	7	0	763	0	0	2	0	30
382	0	0	0	0	14	764	0	0	1	0	0
721	2414	617	846	2061	1832	765	11	0	4	0	0
722	33	108	43	149	343	766	0	42	0	7	0
723	7685	6024	20930	21101	7649	767	0	0	0	0	0
724	759	18	414	2357	95	-					



**Table 11.** Redfish survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by year and Division in NAFO Div. 3NO: 1997-2019.

Div	Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
3NO	Biomass	5947	40909	76564	99226	63350	11172	15714	35275	157716	103029	98805	74172
	SD	988	20512	27740	33453	41460	2374	3224	7332	52646	23332	15893	26168
	MCPT	6.79	43.25	85.45	112.71	73.14	12.43	17.21	38.60	175.79	118.76	125.66	82.20
	SD	1.15	19.50	29.56	40.03	48.13	2.60	3.55	8.05	58.86	27.83	20.19	29.14
	Nº Strata	36	41	41	41	41	41	41	41	41	41	36	41
3N	Biomass	4753	22540	46459	68928	53855	7620	11031	27016	146918	87830	87602	68059
	SD	353	17632	25022	33109	41371	2106	3199	7174	52267	22675	15364	25890
	MCPT	6.14	26.32	58.78	90.12	71.16	9.62	13.83	33.95	187.61	115.44	124.79	86.51
	SD	0.46	18.33	30.08	45.16	55.00	2.61	4.05	9.06	67.31	30.96	22.09	33.12
	Nº Strata	27	31	31	31	31	31	31	31	31	31	28	31
30	Biomass	1194	18369	30105	30298	9494	3552	4684	8259	10797	15199	11203	6113
	SD	922	10490	12129	6073	2702	1117	369	1326	2728	5279	3362	3258
	MCPT	11.41	159.86	269.16	268.32	86.80	31.74	40.55	70.63	94.35	141.64	132.90	52.55
	SD	8.68	87.87	107.03	54.27	24.47	9.78	3.10	11.68	24.19	52.04	39.93	28.27
	Nº Strata	9	10	10	10	10	10	10	10	10	10	8	10
3N/To	tal (%) Biomass	80	55	61	69	85	68	70	77	93	85	89	92

Div	Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
3NO	Biomass	763980	431296	487655	294033	458716	190832	557954	132505	287284	296546	178556
	SD	145765	69575	107982	62954	76825	54478	143611	44195	84550	97593	51184
	MCPT	670.46	506.43	543.17	320.52	502.58	240.24	628.14	145.51	330.49	331.74	220.53
	SD	172.93	81.06	124.68	72.27	79.94	69.17	164.37	46.90	98.46	106.48	65.66
	Nº Strata	39	37	41	41	41	41	41	41	41	41	41
3N	Biomass	735743	359536	418305	265238	429532	178055	523461	117270	265904	292819	174641
	SD	143334	58306	99454	60304	76128	54133	143235	43583	83567	85221	51604
	MCPT	721.67	473.94	533.85	330.89	539.18	256.34	669.86	147.23	350.85	375.19	247.00
	SD	194.48	76.53	132.71	80.20	91.06	79.00	187.34	52.24	111.75	121.94	75.16
	Nº Strata	30	29	31	31	31	31	31	31	31	31	31
30	Biomass	28238	71760	69350	28795	29184	12778	34493	15235	21379	3727	3916
	SD	16762	37821	41858	16754	7503	3927	12527	10014	12196	12371	1583
	MCPT	280.98	772.76	607.40	249.04	250.43	129.36	340.74	133.66	190.25	32.41	38.17
	SD	163.87	402.81	362.85	140.90	64.52	39.61	125.38	85.91	103.27	3.37	15.71
	Nº Strata	9	8	10	10	10	10	10	10	10	10	10
3N/Tot	tal (%) Biomass	96	83	86	90	94	93	94	89	93	99	98



**Table 12.** Redfish length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. E(x) means Error of the parameter x.

			Ma	iles					Fem	ales					To	tal		
Year	a	b	E(a)	E(b)	R2	N	a	b	E(a)	E(b)	R2	N	a	b	E(a)	E(b)	R2	N
2015	0.00757	3.17016	0.1274	0.0387	0.995	517	0.0087	3.1206	0.1057	0.0315	0.997	502	0.0073	3.1798	0.092	0.0283	0.997	1095
2016	0.01212	3.01441	0.0982	0.0308	0.997	339	0.0100	3.0707	0.0981	0.0307	0.997	382	0.0128	2.9877	0.2684	0.0892	0.967	751
2017	0.01640	2.93220	0.0997	0.0306	0.998	283	0.0156	2.9555	0.1401	0.0434	0.997	265	0.0140	2.9828	0.0516	0.0167	0.999	668
2018	0.00917	3.10609	0.1077	0.0346	0.9978	576	0.0095	3.0930	0.0868	0.0279	0.9985	489	0.0100	3.0804	0.0992	0.0318	0.9979	1105
2019	0.00899	3.11169	0.1428	0.0439	0.9939	549	0.0181	2.9013	0.1610	0.0483	0.9920	499	0.0074	3.1665	0.1374	0.0440	0.9927	1083

**Table 13.** Redfish mean number per tow by year in Spanish Spring surveys in NAFO Div. 3NO: 1997-2019. Indet. means indeterminate.

	1997	1998	1999	2000	2001	2002	2003
	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total
MNPT	22.38 14.94 0.00 37.32	108.36 114.09 0.02 222.47	289.50 200.84 0.39 490.73	518.31 326.79 0.00 845.10	279.45 158.85 1.10 439.41	46.49 37.53 1.05 85.06	71.00 46.21 0.82 118.03
	2004	2005	2006	2007	2008	2009	2010
	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total
MNPT	122.61 94.97 19.57 237.15	573.80 502.15 95.21 1171.16	398.90 293.94 247.70 940.54	368.68 313.47 3.01 685.15	329.78 259.80 2.00 591.59	3754.48 2846.50 3.64 6604.62	2009.91 1807.51 0.23 3817.65
	2011	2011	2012	2013	2014	2015	2016
	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total	Males Females Indet. Total
MNPT	2385.24 1906.21 9.10 4300.55	2385.24 1906.21 9.10 4300.55	1184.89 981.01 0.31 2166.20	2034.96 1542.08 0.38 3577.42	742.09 639.39 0.41 1381.88	2120.95 1721.56 11.42 3853.93	475.14 409.51 0.26 884.92
			1104.07 701.01 0.51 2100.20	2031.70 1312.00 0.30 3377.12	742.07 037.37 0.41 1301.00	2120.93 1721.30 11.42 3033.93	T/3.1T T07.31 0.20 00T.72
			1101.07 701.01 0.51 2100.20	2031,70 1312.00 0.30 3377.12	742.07 037.37 0.41 1301.00	2120.93 1/21.30 11.42 3033.93	7/3.17 707.31 0.20 004.72
	2016	2017	2018	2019	142.07 037.37 0.41 1301.00	2120.75 1721.50 11.42 3055.75	4/3.14 40/.31 0.20 004.72
					142.07 037.37 0.41 1301.00	2120.53 1721.30 11.42 3033.53	773.17 707.31 0.20 007.72



**Table 14.** Redfish mean number per tow by length class and year. Spanish Spring Survey on NAFO 3NO: 2015-2019. Indet. means indeterminate.

		20	15			20	16			20	17			20	18			20	19	
Lenght (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.000	0.000	0.174	0.174	0.000	0.000	0.051	0.051	0.000	0.000	0.522	0.522	0.000	0.000	0.023	0.023	0.000	0.000	0.096	0.096
6	0.000	0.000	9.091	9.091	0.000	0.000	0.068	0.068	0.000	0.000	1.414	1.414	0.135	0.065	0.594	0.795	0.000	0.016	0.141	0.157
8	0.000	0.000	2.003	2.003	0.654	0.000	0.030	0.684	0.103	0.000	2.273	2.376	0.455	0.271	0.680	1.406	0.000	0.000	0.189	0.189
10	0.000	0.094	0.046	0.140	2.414	0.108	0.017	2.539	2.049	0.017	2.794	4.860	0.295	0.135	0.015	0.445	0.036	0.000	0.085	0.121
12	0.010	0.000	0.065	0.075	3.306	0.205	0.096	3.607	0.521	0.394	2.895	3.810	0.567	0.428	0.036	1.031	2.661	0.725	0.081	3.467
14	0.729	0.061	0.036	0.826	0.024	0.104	0.000	0.129	1.928	3.715	4.102	9.745	1.346	1.645	0.000	2.991	8.267	3.908	0.169	12.344
16	1.054	0.190	0.000	1.244	1.001	0.096	0.000	1.097	3.574	0.280	1.024	4.878	0.491	0.568	0.000	1.058	8.122	4.140	0.028	12.290
18	97.663	29.361	0.000	127.025	5.055	9.300	0.000	14.355	13.894	5.673	0.000	19.567	6.094	1.182	0.000	7.276	3.345	3.545	0.000	6.890
20	960.679	291.918	0.000	1252.597	178.277	46.371	0.000	224.648	224.661	62.895	0.000	287.556	115.665	7.446	0.000	123.111	18.751	5.932	0.000	24.683
22	803.867	668.544	0.000	1472.411	232.550	148.387	0.000	380.938	524.060	265.947	0.000	790.006	618.083	102.038	0.000	720.121	170.654	28.413	0.000	199.067
24	171.811	428.572	0.000	600.384	40.976	126.419	0.000	167.396	163.745	346.359	0.000	510.104	235.460	301.058	0.000	536.518	150.791	124.569	0.000	275.360
26	72.813	151.935	0.000	224.748	6.659	47.352	0.000	54.011	24.377	123.100	0.000	147.476	36.221	207.276	0.000	243.497	37.150	225.909	0.000	263.059
28	3.194	78.432	0.000	81.626	2.794	17.318	0.000	20.112	3.004	32.317	0.000	35.321	5.991	55.082	0.000	61.074	5.463	116.183	0.000	121.646
30	1.919	46.678	0.000	48.597	0.547	8.397	0.000	8.944	0.866	8.863	0.000	9.729	1.521	21.102	0.000	22.624	0.240	37.628	0.000	37.868
32	3.066	18.828	0.000	21.894	0.267	3.708	0.000	3.975	0.380	2.558	0.000	2.938	1.374	9.091	0.000	10.465	0.170	13.246	0.000	13.416
34	2.027	4.225	0.000	6.252	0.251	1.081	0.000	1.332	0.393	0.749	0.000	1.142	0.721	2.097	0.000	2.818	0.319	0.269	0.000	0.587
36	0.944	1.598	0.000	2.542	0.121	0.442	0.000	0.563	0.226	0.290	0.000	0.516	0.350	0.645	0.000	0.995	0.296	0.246	0.000	0.542
38	0.760	0.756	0.000	1.516	0.104	0.159	0.000	0.263	0.243	0.140	0.000	0.383	0.103	0.342	0.000	0.445	0.153	0.232	0.000	0.385
40	0.391	0.198	0.000	0.590	0.132	0.041	0.000	0.174	0.077	0.074	0.000	0.151	0.034	0.019	0.000	0.053	0.126	0.148	0.000	0.274
42	0.024	0.112	0.000	0.137	0.012	0.020	0.000	0.032	0.027	0.047	0.000	0.073	0.000	0.004	0.000	0.004	0.027	0.088	0.000	0.115
44	0.000	0.054	0.000	0.054	0.000	0.000	0.000	0.000	0.004	0.010	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.013
46	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
52	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
54	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.000	0.000	0.020	0.000	0.000	0.000	0.000
62	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.000	0.016	0.000	0.000	0.000	0.000
64	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.004
Total	2120.954	1721.558	11.415	3853.927	475.144	409.509	0.262	884.915	964.130	853.427	15.025	1832.582	1024.927	710.511	1.348	1736.786	406.575	565.210	0.789	972.573
N° samples:				43				49				46				46				42
Nº Ind.:	3508	4328	1318	9154	1614	2108	22	3744	3013	3302	221	6536	3133	2410	183	5726	2640	2464	113	5217
Sampled catch:				1977				1162				1460				1298				1242
Range:				5-44				5-43				5-45				5-63				5-64
Total catch:				93699				22361				47617				50017				34097
Total hauls:				122				115				114				114				115



**Table 15.** Redfish total abundance (thousands) by length class and year by Division. Spanish Spring Survey on NAFO 3NO: 2002-2019. Indet. means indeterminate.

_		2002		2	003		200	4		2005			2006			2007			2008			200	09			2010	
Leng	_	30	3NO		16 OS	VO 3	N 30	3NO	3N	30	3NO	3N	30	3NO	3N	30	3NO	3N	30	3NO	3N		0	3NO	3N	30	3NO
4	29	0	29	42	0	42	0	0 (	0	0		(		_	0	•	0	48				31	0	31	106	0	106
6	726	43	769	428	0		653 92		607	406		49			229		3781	546				115	73	188	89	0	89
8	131	12	143	131	32		396 899		2013			780			369		3193	211					681	1247	12	15	27
10	61	0	61	135	15		593 128		35799						291		555	438			129			13252	12	0	12
12 14	125 734	0 23	125 757	123 774	0 64		138 200 584 118		4287 4609			118480 6757		122921 99372	8675 46902	1573 5006	10248 51909	1527 18189			268 786			27855 83135	18 150	0	150
16	4160	732	- 1				402 135					3785		50708		15372				152863		311 288		300111	93890		110457
18	10453	3442	- 1				326 364				174244	44352		50862		10467	49655	1	2 5448			508 117			898104		
20	13463	8295	- 1	18058 11			775 80°				141733			139995		10299	53250		4946		6950		782 7		817919		
22		10144		5054 10			641 1037		I		170042			137859		13426	95074		10878			343 21			293054		354580
24	5805	2815	8621	9743 3	844 13	3586 19	847 825	8 28105	I		150807	56333		70460		11182			9288		3356				222493		249495
26	2366	298	2664	4561	708 5	269 12	458 565	8 18116	67260	3914	71174	38066	4318	42384	49687	4884	54570	41454	3137	44591	1704	124 3	550 1	73973	112364	6967	119331
28	1987	118	2105	1939	213 2	2152 10	449 249	2 12940	42356	1691	44047	19299	1375	20674	24839	2397	27236	15101	908	16010	700	800	846	70854	45699	2080	47779
30	1270	153	1423				997 70		17495	514		9822			20358			5532			262			26661	23031	457	23488
32	1123	125	1248	979			488 28		7835	210		539			17150			4357				132	28	6460	10924	132	11056
34	433	68	501	549	91			7 2504	3442	62		2540			9784		10465	2955				239	21	4261	6129	141	6270
36	188	33	221	208	23			649	2466	8		908			7544		8020	988				387	30	4917	2279	61	2341
38 40	32	4	36	96 62	18 14		128 118	4 132 0 118	I	8		330 264			2102 267		2318 326	386 160				371 99	0	371 99	1160 786	20 0	1180 786
40	6	0	6	36	0	36	0	0 (	224	0		50					90	64				99 121	0	121	193	0	193
44	0	0	ő	16	0	16	9	0 9	21	0		1			11	-	11	16				37	0	37	164	0	164
46	0	0	ő	0	0	0	0	0 (	0	0				_	0		0	0				0	0	0	0	0	0
48	0	0	0	0	0	0	0	0 (	0	0	0	(	) (	0	0	_	0	0		) 0		0	0	0	0	0	0
50	0	0	0	0	0	0	0	0 (	0	0	0	(	) (	0	0	0	0	0	0	0		0	0	0	0	0	0
52	0	0	0	0	0	0	0	0 (	0	0	0	(	) (	0	0	0	0	12	2 0	12		0	0	0	0	0	0
54	0	0	0	0	0	0	0	0 (	0	0	0	(	) (	0	0	0	0	0		0		0	0	0	0	0	0
56	0	0	0	0	0	0	0	0 (	0	0		(	) (	0	0	0	0	0	) 0	0		0	0	0	0	0	0
58	0	0	0	0	0	0	0	0 (	0	0			) (	0	0	0	0	0	) 0	) 0		0	0	0	0	0	0
60	0	0	0	0	0	0	0	0 (	0	0	_		) (	0	0		0	0	) (	) (		0	0	0	0	0	0
62 64	0	0	١	0	0	0	0	0 (	0	0	-			•	0	_	0	0	) 0	-		0	0	0	0	0	0
Total	FOACE				•	•		0 (				_	,		•	•	500504				40004	•	•	97696 2	0528578	536755	2445222
· · · · · · · ·	Lb //lbb		7277216	075/ 32		170 1/0	USE EE34		1816316	07190		16/10/20/			AGE /GE			1/10/01//			1/10/10/	100			T	0040	, <del>, , , , ,</del>
		2011			2012			2013			2014			2015		2	016		2	2017			2018			2019 3O	
Length 4	3N 0		3NO 0	3N	2012 30	3NO	3N 0			3N 17	2014	BNO 17		2015		2			2	2017	8NO 444	3N 21		3NO 21	3N	2019 30	3NO 77
Length	3N	2011 30 0 0	3NO 0 154	3N	2012 30	3NO 0	3N	2013 30 0 0		3N	2014 30 3 0 105	BNO	3N	2015 30 : 0 0	BNO	3N :	016 3O 3N 0 0	NO 3 44 59	2 BN	2017 30 3	8NO 444 1202	3N	2018 30	3NO 21 727	3N 77 110		
Length 4 6 8	3N 0 154 114	2011 30 0 0 23	3NO 0 154 137	3N 0	2012 30 0 36 153	3NO 0 36 169	3N 0 288 49	2013 30 0 0 375	3NO 0 288 424	3N 17 11 4	2014 30 3 0 105 95	3NO 17 116 98	3N 146 7665 625	2015 30 : 0 0 0 1063	3NO 146 7665 1689	3N 3 44 59 26	016 3O 3N 0 0 569	VO 3 44 59 595	2 BN 444 1202 343	2017 30 3 0 0 1677	8NO 444 1202 2020	3N 21 676 788	2018 30 0 50 497	3NO 21 727 1285	3N 77 110 134	30 0 16 17	3NO 77 126 151
Length 4 6 8 10	3N 0 154 114 134	2011 30 0 0 23 88	3NO 0 154 137 222	3N 0 0	2012 30 0 36 153 66	3NO 0 36 169 71	3N 0 288 49 16	2013 30 0 0 375 201	3NO 0 288 424 217	3N 17 11 4 13	2014 30 3 0 105 95 151	17 116 98 164	3N 146 7665 625 118	2015 30 : 0 0 0 1063 0	146 7665 1689 118	3N 3 44 59 26 963	016 3O 3N 0 0 569 1247 2	NO 3 44 59 595 2210	28N 444 1202 343 2680	2017 30 3 0 0 1677 1451	8NO 444 1202 2020 4131	3N 21 676 788 100	2018 30 0 50 497 306	3NO 21 727 1285 407	3N 77 110 134 80	30 0 16 17 17	3NO 77 126 151 97
Length 4 6 8 10 12	3N 0 154 114 134 1566	2011 30 0 0 23 88 862	3NO 0 154 137 222 2427	3N 0 0 16 5	2012 30 0 36 153 66 7	3NO 0 36 169 71 45	3N 0 288 49 16 0	2013 30 0 0 375 201 182	3NO 0 288 424 217 182	17 11 4 13 13	2014 30 3 0 105 95 151 20	17 116 98 164 33	3N 146 7665 625 118 64	0 0 0 0 1063 0 0	146 7665 1689 118 64	3N 3 44 59 26 963 1 1961 1	016 3O 3N 0 0 569 1247 2 1180 3	44 59 595 2210	28N 444 1202 343 2680 895	2017 30 3 0 0 1677 1451 2343	444 1202 2020 4131 3238	3N 21 676 788 100 170	2018 30 0 50 497 306 772	3NO 21 727 1285 407 942	3N 77 110 134 80 2712	30 0 16 17 17 68	3NO 77 126 151 97 2779
Length 4 6 8 10 12	3N 0 154 114 134 1566 11796	2011 30 0 0 23 88 862 12893	3NO 0 154 137 222 2427 24688	3N 0 16 5 38 1469	2012 30 0 36 153 666 7 1456	3NO 36 169 71 45 2924	3N 0 288 49 16 0	2013 30 0 0 375 201 182 272	3NO 0 288 424 217 182 289	3N 17 11 4 13 13	2014 30 3 0 105 95 151 20 114	17 116 98 164 33 114	3N 146 7665 625 118 64 30	0 0 0 1063 0 0 666	146 7665 1689 118 64 697	23N 344 59 26 963 11961 14	016 30 3N 0 0 569 1247 2 1180 3 98	44 59 595 2210 1140 112	28N 444 1202 343 2680 895 6978	0 0 0 0 1677 1451 2343 1306	444 1202 2020 4131 3238 8284	3N 21 676 788 100 170 1095	2018 30 0 50 497 306 772 1639	3NO 21 727 1285 407 942 2734	3N 77 110 134 80 2712 9725	30 0 16 17 17 68 172	3NO 77 126 151 97 2779 9897
Length 4 6 8 10 12 14	3N 0 154 114 134 1566 11796 90336	2011 30 0 0 23 88 862 12893 21129	3NO 0 154 137 222 2427 24688 111466	3N 0 16 5 38 1469	2012 30 0 36 153 66 7 1456 15480	3NO 36 169 71 45 2924 26823	3N 0 288 49 16 0 16 1730	2013 30 0 0 375 201 182 272 3400	3NO 0 288 424 217 182 289 5130	3N 17 11 4 13 13 0 3816	2014 30 3 0 105 95 151 20 114 156	3NO 17 116 98 164 33 114 3971	3N 146 7665 625 118 64 30 126	2015 30 0 0 1063 0 0 666 923	146 7665 1689 118 64 697 1049	23N 3 44 59 26 963 1 1961 14 48	016 30 3N 0 0 569 1247 2 1180 3 98 907	NO 3 44 59 595 2210 140 112 955	28N 444 1202 343 2680 895 6978 3547	2017 30 3 0 0 1677 1451 2343 1306 600	444 1202 2020 4131 3238 8284 4147	3N 21 676 788 100 170 1095 299	2018 30 50 497 306 772 1639 668	3NO 21 727 1285 407 942 2734 967	3N 77 110 134 80 2712 9725 9562	30 0 16 17 17 68 172 291	3NO 77 126 151 97 2779 9897 9853
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Length 4 6 8 10 12 14 16 18	3N 0 154 114 134 1566 11796 90336 917914	2011 30 0 0 23 88 862 12893 21129 84854 254651	3NO 0 154 137 222 2427 24688 111466 1002768	3N 0 0 16 5 38 1469 11344 208465 899647	2012 30 0 36 153 666 7 1456 15480 37213	3NO 0 36 169 71 45 2924 26823 245678 1026181	3N 0 288 49 16 0 16 1730 155268	2013 30 0 0 375 201 182 272 3400 19352	3NO 0 288 424 217 182 289 5130 174619 5	3N 17 11 4 13 13 0 3816 55258	2014 30 3 0 105 95 151 20 114 156 2887 25175 3	3NO 17 116 98 164 33 114 3971 58144 72064	3N 146 7665 625 118 64 30 126 99656	2015 30 0 0 1063 0 0 666 923 7443 1 51187 10	146 7665 1689 118 64 697 1049 07099 56110 17	3N 3 44 59 26 963 1 1961 1 4 48 8809 3 71925 23	016 30 3N 0 0 569 1247 2 1180 3 98 907 3689 12	NO 3 44 59 595 1210 112 955 1498 11 582 22	28N 444 1202 343 2680 895 6978 3547 5247 9245 1	2017 30 3 0 0 1677 1451 2343 1306 600 1385 15182 24	444 1202 2020 4131 3238 8284 4147 16632 44427	3N 21 676 788 100 170 1095 299 5975	2018 30 50 497 306 772 1639 668 675 1615	3NO 21 727 1285 407 942 2734 967 6650 112523	3N 77 110 134 80 2712 9725 9562 5170	30 0 16 17 17 68 172 291 354 1325	3NO 77 126 151 97 2779 9897 9853 5524
Length 4 6 8 10 12 14 16 18 20	3N 0 154 114 134 1566 11796 90336 917914 1700255	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253	3NO 154 137 222 2427 24688 111466 1002768 1954907	3N 0 0 16 5 38 1469 11344 208465 899647 385092	2012 30 0 36 153 66 17 1456 15480 37213 126534 51381	3NO 0 36 169 71 45 2924 26823 245678 1026181 436473	3N 0 288 49 16 0 16 1730 155268 1498464	2013 30 0 0 375 201 182 272 3400 19352 99446 19 69696 10	3NO 288 424 217 182 289 5130 174619 597911 34058086 35	3N 17 11 4 13 13 0 3816 55258 46889 2	2014 30 3 0 105 95 151 20 114 156 2887 225175 3 229779 3	17 116 98 164 33 114 3971 58144 72064	3N 146 7665 625 118 64 30 126 99656 994923	2015 30 0 0 1063 0 0 666 923 7443 1 61187 10 06948 12	146 7665 1689 118 64 697 1049 07099 566110 17 41443 28	26 963 1961 14 48 8809 371925 23 23 24 25 26 26 26 27 28 28 28 28 28 28 28 28 28 28	016 30 3N 0 0 569 1247 2 1180 3 98 907 3689 12 3657 195	NO 3 44 59 595 210 1140 112 955 498 1: 582 22: 650 62	28N 444 1202 343 2680 895 6978 3547 5247 9245 17094 4	2017 30 3 0 0 1677 1451 2343 1306 600 1385 15182 24 14423 61	8NO 444 1202 2020 4131 3238 8284 4147 16632 14427 71516	3N 21 676 788 100 170 1095 299 5975 110908	2018 3O 50 497 306 772 1639 668 675 1615 6073	3NO 21 727 1285 407 942 2734 967 6650 112523 658188	3N 77 110 134 80 2712 9725 9562 5170 18464 153034	30 0 16 17 17 68 172 291 354 1325 6565	3NO 77 126 151 97 2779 9897 9853 5524 19789
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Length 4 6 8 10 12 14 16 18 20 22 24 26 28	3N 0 154 114 134 1566 11796 90336 917914 1700255 347710 104230 46197 28110	2011 30 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204	3NO 0 154 137 222 2427 24688 111466 1002768 1954907 468963 140168 50309 29314	3N 0 0 16 5 38 1469 11344 208465 899647 385092 113740 56674 45882	2012 30 36 153 66 1456 15480 37213 126534 51381 7862 2725 754	3NO 36 169 71 45 2924 26823 245678 1026181 436473 121602 59399 46636	3N 0 288 49 16 0 16 1730 155268 1498464 988390 176150 57377 21984	2013 30 0 0 375 201 182 272 3400 19352 99446 11 69696 11 12582 2797 1797	3NO 0 288 424 217 182 289 5130 174619 597911 34058086 38188732 1460174 423781 2	17 11 4 13 13 0 3816 55258 16889 2 11409 1 13918 24019	2014 30 3 0 105 95 151 20 114 156 2887 5 25175 3 29779 3 12868 15 3617 4 1831 5	17 116 98 164 33 114 3971 58144 72064 83053 115 54277 47535	3N 146 7665 625 118 64 30 126 99656 994923 134495 1175081 183619 66752	0 0 1063 0 0 6666 923 7443 1 51187 10 06948 12 31124 5 5874 1 2070	3NO 146 7665 1689 118 64 697 1049 07099 656110 17 41443 28 06205 12 89494 4	26 963 1961 14 48 8809 371925 2385433 468563 171925	016 30 3N 0 0 569 1247 2 1180 3 98 907 3689 12 3657 195 5217 331 7175 145 2146 47 1063 17	NO 3 44 59 595 210 1140 112 955 498 1 5582 22 650 62 737 39 7023 11:	28N 444 1202 343 2680 895 6978 3547 5247 9245 17094 48980 3822 16878	2017 30 3 0 0 1677 1451 2343 1306 600 1385 4515182 244423 634615 431535 113344 33144	8NO 444 1202 2020 4131 3238 8284 4147 16632 44427 71516 33596 25357 30023	3N 21 676 788 100 170 1095 299 5975 110908 652116 483483 219674 54839	2018 3O 50 497 306 772 1639 668 675 1615 6073 6893 2882 982	3NO 21 727 1285 407 942 2734 967 6650 112523 658188 490376 222556 55821	3N 77 110 134 80 2712 9725 9562 5170 18464 153034 213900 207885 96521	30 0 16 17 17 68 172 291 354 1325 6565 6866 3019 1007	3NO 77 126 151 97 2779 9897 9853 5524 19789 159598 220766 210903 97528
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Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36	3N 0 154 114 134 1566 11796 90336 917914 1700255 347710 104230 46197 28110 12351 3926 1752 986	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4	3NO 1544 1377 2222 2427 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 1811	3N 0 0 16 5 38 1469 11344 208465 899647 385092 113740 56674 45882 22445 6645 3826 2405	2012 30 0 36 153 666 7 7 1456 15480 37213 126534 51381 7862 2725 754 278 52 39 32	3NO 0 36 169 71 45 2924 26823 245678 1026181 436473 121602 59399 46636 22724 6697 3865 2441	3N 0 288 49 16 0 16 1730 155268 1498464 988390 176150 57377 21984 19399 5702 3023 4555	2013 30 0 0 375 201 182 272 3400 19352 99446 112582 2797 1797 485 71 17 0	3NO 0 288 424 217 182 289 5130 5130 5597911 34 60174 4 23781 2 23781 2 3781 2 3781 3 3040 4555	3N 17 11 4 13 13 0 3816 55258 16889 2 53273 2 11409 1 14446 6561 1774 1001	2014 30 3 0 105 95 151 20 114 156 2887 5 25175 3 29779 3 12868 15 3617 4 1831 5 851 330 26 32	17 116 98 164 33 114 3971 58144 472064 47535 25850 115297 6890 1801 1033	3N 146 7665 625 118 64 30 99656 99656 994923 175081 175081 183619 66752 40843 18353 5261 2144	2015 30 0 0 0 1063 0 0 6666 923 7443 1 51187 10 106948 12 31124 5 5874 1 106 111 0	3NO 146 7665 1689 118 64 697 1049 07099 56110 17 41443 28 89494 4 68822 1 40974 18460 5272 2144	2 3 3 N 3 4 4 5 9 2 6 9 6 3 1 1 9 6 1 1 4 4 8 8 8 0 9 3 1 1 9 2 5 2 3 3 6 2 1 1 0 9 2 4 3 3 4 6 4 3 3 6 2 1 1 0 9 2 4 3 3 6 2 1 1 0 9 2 4 3 3	016   0   0   0   0   0   0   0   0   0	NO 3 44 59 595 595 1210 1112 112 955 22 650 62 7737 39 115 510 2 7787 460 440 490	20 2 343 444 1202 343 2680 895 6978 3547 5247 99245 1 77094 4 8980 3 3822 1 6878 7585 2312 958 424	2017 3O 3 0 0 1677 1451 2343 1306 600 1385 4315182 244423 615182 244423 615182 4311535 1155 1	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 25357 30023 8270 2497 971 438	3N 21 676 788 100 170 1095 299 5975 110908 652116 483483 219674 54839 20327 9482 2538 906	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4	3NO 21 727 1285 407 942 2734 967 6650 112523 658188 490376 222556 55821 20678 9565 2575 910	3N 77 110 134 80 2712 9725 9562 5170 18464 153034 213900 207885 96521 30174 10660 439 427	30 0 16 17 17 68 172 291 354 1325 6565 6866 3019 1007 186 97 32 7	3NO 77 126 151 97 2779 9897 9853 5524 19789 159598 220766 210903 97528 30360 10756 471 434
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38	3N 0 154 114 134 1566 11796 90336 917914 1700255 347710 104230 46197 28110 12351 3926 1752 986 360	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4 22	3NO 0 154 137 222 2427 24688 111466 1954907 468963 140168 50309 29314 15646 4198 1811 990 382	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 153 666 7 1456 15480 37213 1265384 17862 2725 754 278 29 39 32	3NO 0 36 169 71 45 2924 26823 245678 1026181 436473 121602 59399 46636 22724 6697 3665 2441	3N 0 288 49 166 0 16 1730 155268 1498464 988390 176150 57377 21984 19399 5702 3023 4555 509	2013 30 0 0 375 201 182 272 3400 19352 99446 112582 2797 1797 485 71 17 0 4	3NO 0 288 424 217 182 289 5130 174619 5597911 34 058086 35 188732 14 60174 4 23781 2 19884 1 5773 3040 4555 513	3N 17 11 4 13 13 0 0 3816 55258 16889 2 53273 2 11409 1 13918 24019 14446 6561 1774 1001 258	2014 30 3 0 105 95 151 20 114 156 2887 1 2519779 3 3617 3 3617 3 3617 3 361	17 116 98 164 33 114 3971 58144 472064 47535 25850 115297 6890 1801 1033 264	3N 146 7665 625 118 64 30 126 99656 99656 99656 134495 14783619 666752 40843 18363 5261 2144 1278	2015 0 0 1063 0 0 666 923 7443 1 1016948 12270 131 106 11 0 0	3NO 146 7665 1689 118 64 697 1049 26610 17 41443 28 22 14 40974 18460 5272 2144 1278	2 3 3 N 3 4 4 5 9 2 6 9 6 3 1 1 9 6 1 1 4 4 8 8 8 0 9 3 1 1 9 2 5 2 3 3 6 2 1 1 0 9 2 4 3 3 1 8 6	016  0 0  0 0  0 0  1247 2  1180 3  98  907  907  1351  1416  47  99  68  1 57  42	10   3   44   59   595   595   595   595   1140   112   2140   112   2140   112   2140   112   2140   112   2140   112	20 2 343 444 1202 343 2680 895 6978 3547 5247 99245 1 77094 4 8980 3 3822 1 6878 7585 2312 958 424 318	30 3 0 0 1677 1451 2343 1306 600 1385 244423 6451 44423 665 185 185 185 13 144 7	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 25357 30023 8270 2497 971 438 325	3N 21 676 788 100 170 1095 299 5975 1602016 483483 219674 54839 20327 9482 2538 906 407	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4	3NO 21 727 1285 407 942 2734 967 6650 1125238 490376 222556 20678 9565 2575 910 407	3N 77 110 134 80 2712 9725 9562 5170 18464 153034 213900 207885 96521 30174 10660 439 427	30 16 17 17 68 172 291 354 1325 6565 6866 3019 1007 186 97 32 7 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 159598 220766 210903 97528 30360 10756 471 434 309
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40	3N 0 154 114 134 1566 90336 917914 1700255 347710 12351 3926 1752 986 360 119	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4	3NO 0 154 137 222 2427 24688 111466 1002768 1954907 468963 140168 50309 29314 15646 4198 1811 990 382 127	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 153 666 7 7 1456 15480 37213 12653841 7862 2725 754 278 278 39 32	3NO 0 36 169 71 45 2924 26823 245678 1026181 436473 121602 59399 46636 227244 6697 3865 2441 798 162	3N 0 2888 49 166 0 0 16: 1730 155268 1498464 988390 176150 57377 21984 19399 5702 3023 4555 509	2013 30 0 0 375 201 182 272 3400 19352 99446 112582 2797 1797 485 71 17 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 0 0 3816 55258 16889 2 53273 2 11409 1 13918 24019 14446 6561 1774 1001 258 106	2014 30 3 0 105 95 151 20 114 156 2887 2 25175 3 3617 4 330 3617 4 330 26 32 5 5	17 116 98 164 33 114 3971 472064 472064 47256 6890 1801 1033 264 111	3N 146 7665 625 118 64 30 126 99656 994923 134495 1175081 40843 183619 66752 40843 18353 5261 2144 1278 497	2015 30 0 0 1063 0 0 666 923 7443 1 1018748 1211124 5 5 5 6 6 1 1 1 1 1 1 1 1 1 1 1 1 1	3NO 146 7665 1689 118 64 697 1049 26610 17 41443 26 8824 4 1278 497	2 3 N 3 4 4 5 9 2 6 9 6 3 1 1 9 6 1 1 4 4 8 8 8 8 9 3 1 1 1 9 2 5 2 3 3 6 2 1 1 9 2 4 3 3 1 8 6 1 4 0	016  0 0  0 0  0 0  1247 2  1180 3  98  907  907  1952  1175  142  11  11	10   3   3   44   59   595   595   595   595   1140   112   295   5662   225   662   27737   397   3	2 2 343 2680 895 6978 33547 75247 99245 1 4789940 3 3822 1 958 424 318 125	0 0 0 1677 1451 2343 3106 600 1385 244423 61 4451 45 185 11 3 144 7 4	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128	3N 21 676 788 100 170 1095 299 5975 110918 483483 219674 54839 20327 9482 2538 906 407 49	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4	3NO 21 727 1285 407 942 2734 967 6650 112523 658188 490376 222556 55821 20678 9565 2575 910	3N 77 110 134 800 2712 9725 9562 5170 18464 213900 207885 96521 30174 10660 439 427 309 219	30 16 17 17 68 172 291 354 1325 6565 6866 3019 1007 186 97 32 7 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38	3N 0 154 114 134 1566 11796 90336 917914 1700255 347710 104230 46197 28110 12351 3926 1752 986 360	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4 22 8	3NO 0 154 137 222 2427 24688 111466 1954907 468963 140168 50309 29314 15646 4198 1811 990 382	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 153 66 7 7 14566 15480 37213 126534 2725 2725 754 278 52 39 32 31 11 4 4 0	3NO 0 366 1699 711 45 2924 26823 245678 1026181 2121602 59399 46636 22724 6697 3865 24411 1622 24411 1622 24411 1622 24411 1622	3N 0 2888 49 166 0 0 16: 1730 155268 1498464 988390 176150 57377 21984 19399 5702 3023 4555 509	2013 30 0 0 375 201 182 272 3400 19352 99446 112582 2797 1797 485 71 17 0 4	3NO 0 288 424 217 182 289 5130 174619 5597911 34 058086 35 188732 14 60174 4 23781 2 19884 1 5773 3040 4555 513	3N 17 11 4 13 13 0 0 3816 55258 16889 2 53273 2 11409 1 13918 24019 14446 6561 1774 1001 258	2014 30 3 0 105 95 151 20 114 156 2887 1 2519779 3 3617 3 3617 3 3617 3 361	17 116 98 164 33 114 3971 58144 472064 47535 25850 115297 6890 1801 1033 264	3N 146 7665 625 118 64 30 126 99656 99656 99656 134495 14783619 666752 40843 18363 5261 2144 1278	2015 0 0 1063 0 0 666 923 7443 1 1016948 12270 131 106 11 0 0	146 7665 1689 118 64 697 1049 07099 56110 1741443 28822 14144 1278 497 115	2 3 3 N 3 4 4 5 9 2 6 9 6 3 1 1 9 6 1 1 4 4 8 8 8 0 9 3 1 1 9 2 5 2 3 3 6 2 1 1 0 9 2 4 3 3 1 8 6	016  0 0  0 0  0 0  1247 2  1180 3  98  907  907  1351  1416  47  99  68  1 57  42	10   3   44   59   595   595   595   595   1140   112   2140   112   2140   112   2140   112   2140   112   2140   112	20 2 343 444 1202 343 2680 895 6978 3547 5247 99245 1 77094 4 8980 3 3822 1 6878 7585 2312 958 424 318	30 3 0 0 1677 1451 2343 1306 600 1385 244423 6451 44423 665 185 185 185 13 144 7	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 25357 30023 8270 2497 971 438 325	3N 21 676 788 100 170 1095 299 5975 1602016 483483 219674 54839 20327 9482 2538 906 407	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4 0 0	3NO 21 727 1285 407 942 2734 967 6650 1125238 490376 222556 20678 9565 2575 910 407	3N 777 1100 1344 80 9725 9562 5170 18464 153034 123390 207885 96521 30174 10660 439 427 309 219 92	30 16 17 17 68 172 291 354 1325 6565 6866 3019 1007 186 97 32 7 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 159598 220766 210903 97528 30360 10756 471 434 309
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42	3N 0 154 1144 1566 11796 90336 917914 1700255 347710 10230 46197 28110 12351 3926 1752 986 396 119 32	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4 22 8 0	3NO 0 154 1377 2222 246888 1114666 1002768 1954907 468963 140168 50309 29314 15646 41988 1811 1990 382 127 32	3N C C C 5 5 38 1469 113444 208465 899647 385092 113744 45882 22445 6645 2409 7817 155 122 C C	2012 30 0 36 153 66 67 7 14565 15480 37213 1265344 2725 754 278 52 39 32 31 14 4	3NO 0 366 1699 711 455 2924 26823 245678 436473 121602 59399 46636 22724 6697 3865 2441 7988 162 162 162 162 162 162 162 163 163 163 163 163 163 163 163	3N 0 2888 49 16 16 1730 155268 498390 1772 21984 19339 5702 3023 45559 172 115	2013 30 0 0 375 201 182 272 3400 19352 99446 1: 69696 1: 12582 2797 1797 485 71 17 0 4 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 0 3816 55258 16889 2 33273 2 11409 1 13918 24019 14446 6561 1774 1001 258 106 25	2014 30 3 0 105 95 151 20 114 156 2887 2 291779 3 3617 4 330 3617 4 330 362 363 363 363 363 363 363 363	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 994923 134495 1175081 183619 66752 40843 18353 5261 1278 497 115	2015 30 0 1063 0 0 666 923 7443 131187 106948 122070 131 106 0 0 0 0 1063 0 0 1063 1063 1063 1063 1064 106	3NO 146 7665 1689 118 64 697 1049 26610 17 41443 26 8824 4 1278 497	2 3 N 3 44 59 26 963 11961 14 48 8809 3 11925 23 11925 23 3362 11092 433 186 140 24	016  0 0 0 569  0 0 7 569  180 907  3089 1227 2 2 111  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3   44   59   595   595   595   1140   1150   1151   115	2 2 3 4 4 4 4 1 1 2 0 2 3 4 3 3 8 2 5 6 9 7 8 7 5 2 4 7 7 8 9 9 4 5 3 3 8 2 2 1 1 2 9 5 8 4 2 4 4 3 1 8 1 2 5 5 5 5 1 4 4 4 4 4 5 5 5 5 1 5 5 1 4 4 4 4	0 0 1677 1451 2343 1306 1600 1385 244423 61 1535 17 1451 17 1855 17 18	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 676 788 100 1700 1700 1955 299 5975 110908 652116 483483 219674 54839 20327 9482 2538 6407 49 3	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4 0 0	3NO 21 727 1285 4077 942 27344 967 6650 112523 658188 490376 55821 20678 95655 2575 910 407 499 3	3N 777 1100 1344 80 9725 9562 5170 18464 153034 153034 10560 439 427 309 219 92 91 92 91 91 92 91	30 16 17 17 68 172 291 354 1325 6565 6866 3019 1007 186 97 32 7 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44	3N 0 154 114 1566 11796 90336 917914 1700255 347710 12351 3926 1752 986 360 319 319 32 6	2011 30 0 0 23 88 86 212893 21129 84854 4254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0	3NO 1545 137 222 2427 24688 111466 1002768 1954907 468963 140168 50309 29314 15646 4198 1811 990 382 127 32 6	3N C C C C E E E E E E E E E E E E E E E E	2012 30 0 36 153 6 7 1456 15480 37213 126534 2725 2725 2725 39 32 11 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 36 1699 711 45 2924 26823 245678 436473 121602 22724 6697 3865 2441 798 162 12 0 0 0	3N 0 2888 49 166 0 0 166 1730 155268 1498464 988390 176150 3023 3023 4555 509 172 115 3 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 112582 2797 1797 485 71 17 0 0 0 4	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 0 3816 55258 16889 2 33273 2 11409 1 13918 24019 14446 6561 1774 1001 258 106 25 0	2014 30 3 0 105 95 151 20 114 156 2887 3 3292789 3 3617 3 3617 3 3617 3 3617 3 30 26 5 5 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 999423 334495 11 34495 11 183619 66752 40843 18363 5261 2144 1278 497 115 45	2015 0 0 1063 0 0 666 923 7443 1 5187 10 60 11 10 10 10 10 10 10 10 10 1	8NO 1446 7665 1689 64 697 1049 077099 661101 17443 28 29494 468822 14441278 1278 45 645 645 645 645 645 645 645 645 645	26 963 44 59 963 48 8809 3 1961 44 48 8809 3 1952 23 3362 1092 433 486 140 24 0	016  0 0 0 569  1247 2 189  907  9689 1227 398  907  9689 1227 331  1175 1456  7 99 3  657  42  11  4  0	NO   3   44   59   595	2 2 3 4 4 4 4 1 2 0 2 3 4 3 2 6 8 0 9 5 8 9 5 8 5 2 3 1 2 2 3 1 2 9 5 8 8 1 2 5 5 5 8 8	0 0 1677 1451 2343 1306 600 1385 244425 244425 15182 244425 1685 13 1344 7 4 7	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 100 170 1095 299 5975 110908 652116 652116 548348 20327 9482 2538 906 407 49 3 0	2018 30 50 497 306 772 1639 668 675 1615 6073 6893 2882 982 351 84 37 4 0 0 0 0	3NO 21 727 12855 4077 942 27344 9676 6650 112523 658188 9565 9565 2575 910 4077 49 3 3 0	3N 777 1100 1344 800 800 95622 5170 1104 1153034 1153034 110660 439 4277 3099 219 92 111 0 0	30 16 17 17 68 172 291 1325 6565 6866 3019 1007 186 97 32 7 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46	3N 0 154 1154 134 1566 11796 90336 917914 1700255 347710 12351 3926 1752 9866 360 0 119 32 6 6 0	2011 30 0 0 23 88 86 212893 21129 84854 4254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 18111 990 382 1277 32 6	3N C C C C E E E E E E E E E E E E E E E E	2012 30 0 36 153 6 7 1456 6 7 1456 53 126534 2725 2725 2725 2725 2725 111 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 36 1699 711 45 2924 26823 245678 1026181 121602 53399 46636 22724 6697 3865 2441 798 162 0 0 0 796	3N 0 2888 49 166 0 0 166 1730 155268 1498464 988390 176150 3023 3023 4555 509 172 115 3 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 1: 69696 1: 12582 2797 485 71 17 0 4 0 0 4	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 0 3816 55258 16889 2 33273 2 11409 1 11774 1001 258 106 25 0 0	2014 30 3 0 105 95 151 20 114 156 2887 329779 3 328617 330 26 32 5 5 0 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 999423 134495 11 183619 66752 40843 18353 5261 1274 497 497 115 45 0	2015 0 0 1063 0 0 666 923 7443 1 13187 106 11 0 0 0 0 1063 0 0 1063 1063 1063 1063 1063 1063 1064 1	8NO 1466 7665 1689 118 64 697 1049 977099 56110 114443 282 28245 44443 282 28245 4497 115 45 0	26 2 3 3 N 3 4 4 4 5 9 9 6 3 4 4 8 8 8 0 9 6 3 1 1 9 6 1 4 4 8 8 8 0 9 6 3 1 1 9 6 1 4 8 7 5 2 1 0 9 2 4 3 3 1 1 8 6 1 1 4 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1	016 016 0 0 0 0 0 1247 2 1180 3 98 907 15669 1227 331 11063 17 235 7 99 3 668 1 11 4 0 0	NO   3   44   59   595	2 2 3 4 4 4 4 4 1 2 0 2 3 4 3 2 6 8 0 8 9 5 8 6 9 7 8 3 5 4 7 7 0 9 4 4 5 2 3 1 2 3 1 8 1 2 5 5 5 8 8 0 0	0 0 0 1677 1451 2343 1306 600 1385 244423 6455 113 144 7 4 4 7 4 0 0	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 8 100 100 1070 1095 299 5975 110908 652116 483483 20327 9482 2538 906 407 49 3 3 0 0 0 0	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4 0 0 0 0	3NO 21 727 12855 4077 942 27344 967 66500 112523 222556 55821 20678 95655821 2077 4077 43 3 0 0 0	3N 777 1100 1344 800 800 97652 5170 18464 213900 439 96521 30174 10660 439 92 219 92 210 0 0 0 0 0	30 16 17 17 68 172 291 1325 6565 6866 3019 1007 186 97 32 7 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52	3N 0 154 114 1566 11796 90336 917914 1700255 347710 104230 104230 12351 3926 360 119 32 6 0 0	2011 30 0 0 23 88 862 12893 21129 84854 4254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 18111 990 382 1277 32 6	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 153 6 7 1456 6 7 1456 53 126534 1265	3NO 0 36 1699 711 45 2924 26823 245678 10261818 121602 59399 46636 227724 6697 3865 2441 798 162 0 0 0 796 0	3N 0 2888 49 166 0 0 166 1730 155268 1498464 988390 176150 57377 21984 19399 5702 3023 4555 509 172 115 3 0 0 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 1! 69696 1! 12582 2797 1797 485 71 17 0 4 0 0 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 13 0 3816 55258 16889 2 253273 2 211409 1 13918 24019 14446 66561 1774 1001 258 106 25 0 0	2014 30 3 0 105 95 151 20 114 156 2887 4 25175 3 29779 3 12868 11 330 26 32 5 5 0 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 994923 134495 1175081 18353 5261 2144 1278 497 1115 45 0	2015 0 0 1063 0 0 666 923 7443 11187 101 101 101 101 101 101 101 10	8NO 1466 7665 1689 118 64 697 1049 07099 56110 11 41443 28 68822 1 4868822 1 4278 497 115 45 0 0	2 2 3 N 3 4 4 59 26 963 1961 14 48 8809 3 1955 23 362 1092 433 186 140 0 0 0 0	016 016 0 0 0 0 0 0 12247 2 1180 3 98 907 125667 195668 127 1311 1175 146 47 0 0 0 0	NO   3   44   59   595	289 1444 1202 343 343 2680 6978 3547 5247 9245 1 77094 4 3882 1 125 55 8 0 0 0	0 1677 1451 1306 600 1385 2442 1306 600 1385 244423 144615 14615 13 144615 13 1447 7 4 7 4 0 0	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 1000 1700 1095 299 5975 110908 652116 483483 906 407 49 3 0 0 0 0 0 0 0	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4 0 0 0 0 0	3NO 21 727 12855 4077 6650 112523 658188 490376 55821 20678 9565 2575 910 407 49 3 3 0 0 0 0	3N 777 1100 1344 800 800 97652 5170 18464 213900 439 96521 30174 10660 439 92 219 92 210 0 0 0 0 0	30 16 17 17 68 172 291 354 1325 6565 6866 3019 1007 186 97 32 7 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 8 50 52 54	3N 0 154 114 11566 11796 90336 917914 1700255 347710 104230 10525 1752 9866 3600 119 32 6 0 0 0 0 0 0	2011 30 0 0 23 88 862 12893 21129 84854 4254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 18111 990 382 1277 32 6	3N 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2012 30 0 36 66 7 7 1456 15480 37213 11265344 51381 77862 2725 754 278 39 32 31 11 4 4 0 0 0 0 0 0	3NO 0 366 169 711 45 2924 28823 245678 1026181 436473 127602 59399 46636 22724 6697 38655 2441 798 162 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 0 2888 49 166 0 0 166 1730 155268 1498464 988390 176150 57377 21984 4555 509 172 1115 3 0 0 0 0 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 112582 2797 1797 485 71 17 0 4 0 0 0 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 3 3 0 0 3816 55258 66889 2 53273 2 11409 1 11774 1001 1774 1001 258 106 25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2014 30 3 0 105 95 151 20 114 156 2887 4 25175 3 29779 3 12868 1 330 26 32 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 99923 134495 11,75081 1,75081 1,83619 183619 18363 5261 2144 1278 497 115 45 0 0	2015 30 0 1063 0 0 666 923 7443 111187 1016948 122070 1106 11 0 0 0 0 0 0 0 0 0 0 0 0 0	8NO 146 7665 1689 118 64 697 1049 97099 56110 17 41443 28 2680824 14 1278 497 115 45 0 0 0 0 0	2 2 3 N 3 4 4 5 9 2 6 9 6 3 1 1 9 6 1 1 4 4 8 8 9 5 1 1 9 2 5 2 5 1 1 9 2 5 2 5 1 1 9 2 5 2 1 1 4 8 7 7 5 5 2 1 3 3 6 2 4 4 3 3 1 8 6 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	016 00 3N	NO   3   44   59   595	28 N 4444 1202 895 6978 3547 5247 9245 1 78984 3 3822 1 958 424 318 125 55 8 0 0 0 0 0 0 0	0 0 0 1677 14451 2343 1306 600 1385 244423 615182 244423 685 131 14 7 4 0 0 0 0 0 0 0 0 0	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 100 170 1095 299 5975 110908 2110908 2110908 2110908 20327 9482 2538 906 407 49 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2018 30 50 497 306 668 675 1615 6073 6893 2882 982 3511 84 37 4 0 0 0 0 0 0 0	3NO 21 727 12855 4077 6650 112523 658188 490376 55821 20678 9565 2575 910 407 49 3 3 0 0 0 0	3N 777 1100 1344 800 800 95622 5170 18464 153034 213900 207885 966221 30174 10660 439 922 111 0 0 0 0 0 0 0	30 16 17 17 68 172 291 354 1325 6565 6666 3019 1007 186 97 32 7 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 8 50 52 54 56	3N 0 154 1154 1156 1156 1156 1156 1156 1156	2011 30 0 0 23 8 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 18111 990 382 1277 32 6	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 66 7 7 1456 15480 37213 126534 51381 7862 2725 754 278 52 39 32 11 14 0 0 0 0 0 0 0	3NO 0 366 169 711 45 2924 26823 245678 1026181 436473 121602 59399 46636 22724 6697 788 162 12 0 0 0 796 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 0 288 49 166 0 0 166 1730 155268 1498464 49 1838390 5702 3023 4555 500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 1: 69696 1: 12582 2797 1797 485 71 17 0 0 4 0 0 0 0 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 4 13 13 13 0 3816 55258 66889 2 14409 14446 6561 17774 1001 258 106 25 0 0 0 9 9 0 9 0 0	2014 30 30 5 0 105 95 151 20 114 156 2887 1825 1575 3 3617 3 3617 3 3617 3 3617 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 999493 175081 175081 183619 66752 40843 18363 5261 2144 497 115 45 0 0 0 0	0 0 0 1063 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8NO 146 7665 1689 118 64 697 1049 977099 56110 171443 22 26829 11868822 11868822 1186882 11878 497 115 45 0 0 0 0 0 0 0	2 2 3 N 3 4 4 5 9 2 6 9 6 3 1 1 9 6 1 1 4 4 8 8 8 8 9 9 3 1 1 9 5 1 2 1 5 1 5 1 2 1 1 2 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1	016 00 3N	NO   3   44   59   595	28 N 4444 1202 895 6978 3547 75247 79245 1 78980 3 3822 1 6878 555 8 0 0 0 0 0 0 0 0 0 0	0 0 0 1677 14451 2343 1306 600 1385 2444615 444615 444615 444615 47 7 4 4 0 0 0 0 0 0 0 0 0 0 0	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 100 170 1095 299 5975 110908 20327 9482 2538 906 407 49 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 21 727 12855 4077 6650 112523 658188 490376 55821 20678 9565 2575 910 407 49 3 3 0 0 0 0	3N 777 1100 1344 153034 10650 4399 219 922 111 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 16 17 17 68 172 291 1325 6565 6866 3019 1007 186 97 0 0 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58	3N 0 154 1154 1566 11796 90336 917914 1700255 347710 12351 3926 1752 986 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2011 30 0 0 23 88 862 12893 21129 84854 2254651 1204 3296 271 59 4 22 8 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 18111 990 382 1277 32 6	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 656 7 7 1456 15480 37213 126534 51381 7862 2725 2725 2725 39 32 11 4 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 36 1699 711 45 2924 26823 245678 13260 13260 13865 22724 6697 3865 2441 798 162 12 0 0 796 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 0 2888 49 166 0 0 166 1730 155268 4988390 17752 1984 19399 5702 3023 4555 509 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 112582 2797 1797 485 71 17 0 4 0 0 0 0 0 0 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 0 3816 55258 16889 25 11409 14446 6561 1774 1001 1001 25 0 0 0 9 0 0	2014 30 3 0 105 95 151 20 114 156 2887 3 329779 3 3617 3 3617 3 3617 3 3617 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 6994923 134495 11 11 11 11 11 11 11 11 11 1	2015 0 0 1063 0 0 666 923 7443 1 1187 106 11 0 0 0 0 0 0 0 0 0 0 1063 1063 1063 1064 10	8NO 146 7665 1689 118 64 697 1049 977099 56110 171443 22 26829 11868822 11868822 1186882 11878 497 115 45 0 0 0 0 0 0 0	2 2 3 N 3 4 4 5 9 6 6 9 6 3 7 1 9 6 1 9 6 7 1 9 6 1 9 6 1 9 6 7 1 9 6 1	016 016 0 0 0 5569 1247 2 1180 3 98 907 125657 1957 1151 146 47 10063 17 235 7 42 111 4 0 0 0 0 0 0 0 0	NO   3   44   59   595	28 N 4444 1202 895 6978 3547 5247 9245 1 78980 3 3822 1 6878 424 318 125 55 8 0 0 0 0 0 0 0 0 0 0 0	30 3 0 0 1677 14451 2343 1306 600 1385 244425 15182 244425 14425 14425 185 13 144 7 4 7 4 7 4 0 0 0 0	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 8 100 1770 1995 299 5975 110908 652116 483483 219674 54839 906 407 49 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2018 30 50 497 1639 668 675 1615 6073 2882 982 351 84 37 4 0 0 0 0 0 0 0 0	3NO 21 727 1285 407 942 2734 967 6650 112523 658188 9565 2575 910 407 49 3 3 0 0 0 0 0 0 0 0	3N 777 1100 1344 800 2712 9725 5170 18464 153034 10560 439 4277 309 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 16 17 17 17 68 172 291 354 1325 6565 6866 97 32 7 0 0 0 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 40 42 44 46 48 50 52 54 56 58 60	3N 0 154 1154 134 1566 11796 90336 917914 1700255 347710 12351 3926 1752 986 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0 0 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 18111 990 382 1277 32 6	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 153 6 7 1456 7 1456 15480 37213 126534 2785 2725 2725 2725 39 32 111 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 36 1699 711 45 2924 26823 245678 436473 121602 22724 6697 3865 2441 7988 162 12 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 0 2888 49 166 0 0 166 1730 155268 4988390 176150 3023 4555 509 1722 115 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 1: 69696 1: 12582 2797 485 71 17 0 4 0 0 0 0 0 0 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 0 3816 55258 56889 2 33273 2 13918 24019 14446 6561 1774 1001 258 0 0 0 0 9 0 0	2014 30 3 0 105 95 151 20 114 156 2887 3 329778 3 3617 3 3617 3 3617 3 0 0 0 0 0 0 0 0 0 0 0 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 999493 1175081 1175081 12144 1218 497 115 45 0 0 0 0	0 0 0 1063 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8NO 146 7665 1689 118 64 697 1049 977099 56110 171443 22 26829 11868822 11868822 1186882 11878 497 115 45 0 0 0 0 0 0 0	2 3N 3 44 59 26 26 26 26 26 27 27 27 27 27 27 27 27 27 27 27 27 27	016 30 3N 3N 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NO   3   44   59   595	28 N 444 1202 343 343 2680 895 6978 3547 5247 9245 1 78984 3 3822 1 6878 424 318 125 55 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 3 0 0 1677 1451 2343 1306 600 1385 244423 665 185 13 144 7 4 7 4 0 0 0 0 0	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 8 100 170 170 195 5975 110908 652116 652116 652116 407 499 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 18	2018 30 50 497 306 772 1639 668 675 1615 6073 2882 982 351 84 37 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 21 727 12855 4077 942 27344 967 6650 112523 658188 4903766 2225565 9100 0 0 0 0 0 0 0 188	3N 777 1100 1344 800 800 2712 9725 5170 18664 153034 4277 3099 219 92 111 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 16 17 17 17 68 172 291 354 1325 6565 6866 97 32 7 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 8 40 42 44 46 48 50 52 54 56 58 60 62	3N 0 154 1154 134 1566 11796 90336 917914 1700255 347710 12351 3926 360 119 32 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 29314 15646 4198 18111 990 382 1277 32 6	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 153 67 7 1456 7 1456 15480 37213 126534 2725 2725 2725 2725 39 32 111 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 36 1699 711 45 2924 26823 245678 1026181 436473 121602 59399 46636 22724 6697 3865 2441 798 162 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 0 2888 49 166 1730 155268 1498464 988390 176150 57377 21984 19399 5702 1155 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 1! 69696 1! 12582 2797 1797 485 71 17 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 288 424 217 182 289 5130 174619 5 60174 4 23781 2 3781 2 3781 4 4555 513 172	3N 17 11 4 13 13 0 3816 55258 16889 23273 21 13918 124019 14446 6561 1774 1001 258 0 0 0 0 0 0 0 0 0 0 0 0 0	2014 30 3 0 105 95 151 20 114 156 2887 329779 3 312868 11 330 26 32 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0	17 116 98 164 33 114 3971 472064 472764 564277 6890 1801 1033 264 1111 25	3N 146 7665 625 118 64 30 126 99656 994923 134495 1175861 2144 1278 497 1115 45 0 0 0 0 0 0 0	2015 30 1 0 0 1063 0 0 666 923 7443 1 13187 10 2070 1311 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8NO 146 7665 1689 118 64 697 1049 977099 56110 171443 22 26829 11868822 11868822 1186882 11878 497 115 45 0 0 0 0 0 0 0	2 2 3N 3 44 59 26 36 31 1961 14 48 8809 3 31 1961 14 48 8809 3 31 1961 14 48 77 2 4 33 362 1092 433 186 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	016  0 0 30 3N  0 0  0 0 98  12247 2 1180 3  98  9907 15669 1226657 195  15217 331  1546 47  157 42  111 4  0 0 0  0 0 0  0 0 0  0 0 0  0 0 0	NO   3   44   59   595	28 N 444 1202 343 343 2680 6978 3547 5247 9245 1 78980 3 38822 1 86878 125 55 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 1677 1330 3 3 0 1 1451 2343 1306 600 1385 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	NO 444 1202 2020 4131 3238 8284 4147 71516 33596 225357 30023 8270 2497 971 438 325 128 62	3N 21 676 788 8 1000 1095 2999 5975 110998 652116 483483 20327 9482 2538 906 407 49 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2018 30 50 497 772 1639 668 675 1615 6073 2882 351 84 37 4 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 21 727 12855 4077 12855 4077 66500 1125232 658188 490376 558212 20678 95655 910 4077 49 3 3 0 0 0 0 0 0 0 1881 1551	3N 777 1100 1344 800 800 95622 5170 18464 213900 4207885 96521 11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 16 17 17 68 172 291 354 1325 6565 6866 6866 3019 1007 32 7 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92
Length 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 60 62 64	3N 0 154 114 134 1566 11796 90336 917914 1700255 347710 104230 104230 105 105 105 105 105 105 105 105 105 10	2011 30 0 0 23 88 862 12893 21129 84854 254651 121253 35938 4112 1204 3296 271 59 4 22 8 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 1544 1377 2222 24277 24688 1114666 1002768 1954907 468963 140168 50309 293141 156466 4198 18111 990 3822 1277 322 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3N C C C C C C C C C C C C C C C C C C C	2012 30 0 36 153 6 7 1456 6 7 1456 53 126534 126534 17662 2725 754 278 52 2725 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 0 36 6199 711 45 45 42924 26823 245678 1026181 121602 59399 46636 22724 6697 3865 2441 798 162 12 0 0 0 7966 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 0 2888 49 166 1730 155268 49 188390 176150 57377 21984 4555 509 172 1155 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2013 30 0 0 375 201 182 272 3400 19352 99446 1: 69696 1: 12582 2797 485 71 17 0 4 0 0 0 0 0 0 0	3NO 0 288 424 217 182 289 5130 174619 5 5130 158086 33 3040 4555 513 172 2115 7 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 17 11 4 13 13 0 3816 55258 66889 2 53273 2 14409 14446 6561 1774 1001 258 106 25 0 0 0 0 9 0 0 0	2014 30 3 0 105 95 151 20 114 156 2887 4 25175 3 29779 3 12868 11 330 26 32 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0	17 116 98 164 33 114 3971 58144 72064 1475735 525850 1801 1033 264 1111 25 0 0 0 0 9 9	3N 146 7665 625 118 64 30 126 99656 999923 (34495 1175081 1278 497 115 45 0 0 0 0 0 0 0 0 0	2015 30 0 1063 0 0 6666 923 7443 1 11187 10 1069148 12 2070 131 06 11 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8NO 146 7665 1689 118 64 697 1049 97099 56110 17 41443 28 2680824 14 1278 497 115 45 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 2 3N 3 44 59 26 963 1961 14 48 8809 3 1955 23 362 1092 433 186 140 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	016 30 3N 3N 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	No   3   3   44   59   595	28 N 444 1202 343 343 2680 6978 3547 5247 9245 1 7094 4 8980 3 352 1 125 55 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 1677 1451 2343 1306 600 1385 244423 66 14615 13 144 7 7 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NO 444 1202 2020 2020 444131 3238 8284 4147 71516 625357 30023 8270 2497 971 438 325 128 62 12 0 0 0 0 0 0 0	3N 21 676 788 1000 1770 1095 299 5975 110908 652116 483483 219674 49 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2018 30 0 50 497 306 6772 1639 668 675 1615 6073 28822 9822 351 84 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 21 727 12855 4077 12855 4077 66500 1125232 658188 490376 558212 226576 910 407 499 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3N 777 1100 1344 800 800 9762 5170 18464 153034 213900 207885 96521 30174 106600 439 922 111 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 16 17 17 68 172 291 354 1325 6565 6866 3019 1007 186 97 32 7 0 0 0 0 0 0 0 0 0 0 0 0 0	3NO 77 126 151 97 2779 9897 9853 5524 19789 220766 210903 97528 30360 10756 471 434 309 219 92



**Table 16.** Witch flounder mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. n.s. means stratum not surveyed.

	20	)15	20	016	20	)17	20	18	20	19
	W. flounder									
Stratum	Mean catch	SD								
353	3.83	3.32	9.04	12.20	0.00	23.33	5.23	4.95	0.00	0.00
354	2.15	2.69	7.07	7.52	27.83	0.00	0.85	0.60	0.36	0.32
355	2.05	0.06	1.74	0.52	6.48	0.00	0.07	0.09	0.39	0.33
356	3.85	5.35	1.26	0.79	1.90	0.00	0.27	0.39	0.00	0.00
357	0.96	0.25	5.13	5.30	1.91	0.00	0.73	1.03	0.60	0.84
358	4.60	4.48	50.02	55.56	8.29	0.00	0.32	0.55	3.01	2.64
359	18.27	21.53	4.01	6.05	37.44	0.11	5.12	8.26	3.86	2.31
360	0.35	0.63	0.00	0.00	0.00	349.29	0.28	0.47	0.00	0.00
374	0.00	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00
375	0.00	0.00	0.00	0.00	0.00	54.99	0.00	0.00	0.00	0.00
376	0.00	0.00	0.00	0.00	0.00	234.89	0.30	0.86	0.00	0.00
377	0.78	1.10	0.00	0.00	0.00	0.51	0.00	0.00	0.90	1.27
378	2.83	2.07	0.28	0.40	3.25	0.00	0.00	0.00	0.42	0.59
379	0.29	0.40	0.58	0.82	1.69	0.00	0.21	0.30	0.58	0.82
380	0.73	0.10	1.20	0.65	0.00	0.00	0.00	0.00	0.30	0.37
381	1.24	1.18	0.00	0.00	0.00	0.00	0.00	0.00	1.03	1.45
382	0.00	0.00	0.00	0.00	0.23	0.43	0.00	0.00	0.00	0.00
721	0.76	0.22	1.18	0.99	0.55	0.00	0.75	0.94	0.09	0.12
722	1.19	0.08	1.22	0.08	0.58	0.00	0.57	0.47	0.18	0.25
723	4.71	1.86	2.77	3.72	4.26	0.00	6.78	9.26	2.07	2.92
724	8.16	4.06	7.20	4.53	1.84	0.00	3.39	3.14	1.62	1.29
725	7.12	5.54	10.09	12.18	6.89	0.00	0.09	0.12	3.24	3.20
726	2.95	0.26	6.17	6.54	2.60	0.00	5.34	3.00	1.88	2.66
727	0.78	0.52	11.86	10.24	34.08	0.00	6.40	6.80	2.77	3.81
728	11.70	7.50	22.92	21.46	10.18	0.00	6.48	9.16	3.63	4.39
752	9.88	5.51	14.46	12.22	8.53	0.00	13.49	19.08	0.21	0.00
753	0.81	1.13	0.00	0.00	1.14	0.00	1.19	1.68	0.00	0.00
754	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
755	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
756	5.15	3.29	16.99	22.22	5.87	0.00	1.23	1.02	3.01	4.26
757	3.29	4.65	0.40	0.56	4.96	0.00	3.86	0.00	0.28	0.40
758	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
759	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	16.15	20.72	3.04	2.14	5.15	0.00	4.04	3.50	0.08	0.11
761	2.61	0.94	0.91	1.28	2.27	0.00	8.24	-	2.51	1.76
762	0.45	0.64	0.89	1.26	0.00	0.00	0.11	0.15	0.00	0.00
763	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
764	0.68	0.14	1.10	0.85	1.45	0.00	1.37	1.26	0.36	0.33
765	0.37	0.24	0.17	0.03	0.97	0.00	2.08	2.94	0.27	0.37
766	0.25	0.35	0.00	0.00	0.00	0.00	0.06	0.08	0.16	0.23
767	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00



**Table 17.** Witch flounder survey biomass (t) by stratum in NAFO Div. 3NO: 2015-2019. n.s. means stratum not surveyed.

Strata	2015	2016	2017	2018	2019	Strata	2015	2016	2017	2018	2019
353	77	205	0	125	0	725	65	93	59	1	27
354	41	151	576	18	7	726	19	40	16	34	10
355	12	11	43	0	2	727	7	101	286	55	21
356	14	5	8	1	0	728	81	156	69	45	23
357	13	72	27	10	8	752	115	160	95	152	2
358	89	1000	154	6	53	<b>753</b>	10	0	13	14	0
359	630	142	1322	183	128	<b>754</b>	0	0	0	0	0
360	82	0	0	68	0	755	0	0	0	0	0
374	0	0	0	0	0	<b>756</b>	46	152	52	11	24
375	0	0	0	0	0	757	29	4	45	35	2
376	0	0	0	36	0	<b>758</b>	0	0	0	0	0
377	7	0	0	0	7	759	0	0	0	0	0
378	35	3	38	0	4	<b>760</b>	221	41	67	52	1
379	3	5	15	2	5	761	37	14	33	114	36
380	6	10	0	0	2	762	8	17	0	2	0
381	15	0	0	0	12	763	0	0	0	0	0
382	0	0	7	0	0	764	5	10	13	12	3
721	4	7	3	4	0	765	4	2	11	22	3
722	8	9	4	4	1	766	3	0	0	1	2
723	63	38	58	88	26	767	0	0	1	0	0
724	86	77	19	36	16						

**Table 18.** Witch flounder survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by year and Division in NAFO Div. 3NO: 2002-2019.

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
Biomass	1784	3145	3348	2633	2570	1480	2118	1872	3239
SD	426	690	523	488	629	229	481	423	777
MCPT	2.00	3.42	3.66	2.95	3.01	1.84	2.32	2.13	3.82
SD	0.49	0.75	0.56	0.56	0.73	0.28	0.52	0.48	0.91
Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Biomass	1428	2763	2078	903	1834	2526	3033	1132	426
SD	248	648	367	134	376	737	1199	251	74
MCPT	1.58	3.06	2.32	1.09	2.11	2.79	3.47	1.27	0.52
SD	0.28	0.74	0.41	0.16	0.42	0.78	1.35	0.28	0.09



**Table 19.** Witch flounder length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. E(x) means Error of the parameter x.

			Ma	les					Fem	ales					To	tal		
Year	a	b	E(a)	E(b)	R2	N	a	b	E(a)	E(b)	R2	N	a	b	E(a)	E(b)	R2	N
2015	0.00103	3.51249	0.1701	0.0489	0.995	306	0.00154	3.39857	0.0807	0.0230	0.998	440	0.00206	3.31598	0.1112	0.0329	0.996	762
2016	0.00102	3.49955	0.1145	0.0327	0.998	222	0.00147	3.40745	0.1089	0.0314	0.997	354	0.00209	3.30679	0.2052	0.0610	0.985	584
2017	0.00104	3.49803	0.1432	0.0405	0.997	247	0.00120	3.45370	0.0990	0.0286	0.998	299	0.00173	3.35493	0.0907	0.0263	0.998	595
2018	0.00167	3.37049	0.1496	0.0444	0.997	149	0.00210	3.30161	0.1524	0.0447	0.996	279	0.00230	3.28003	0.1309	0.0384	0.997	430
2019	0.00101	3.50260	0.3344	0.0953	0.984	77	0.00116	3.46937	0.2019	0.0555	0.994	116	0.00194	3.32737	0.1299	0.0373	0.996	196

**Table 20.** Witch flounder mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 2002-2019. Indet. means indeterminate.

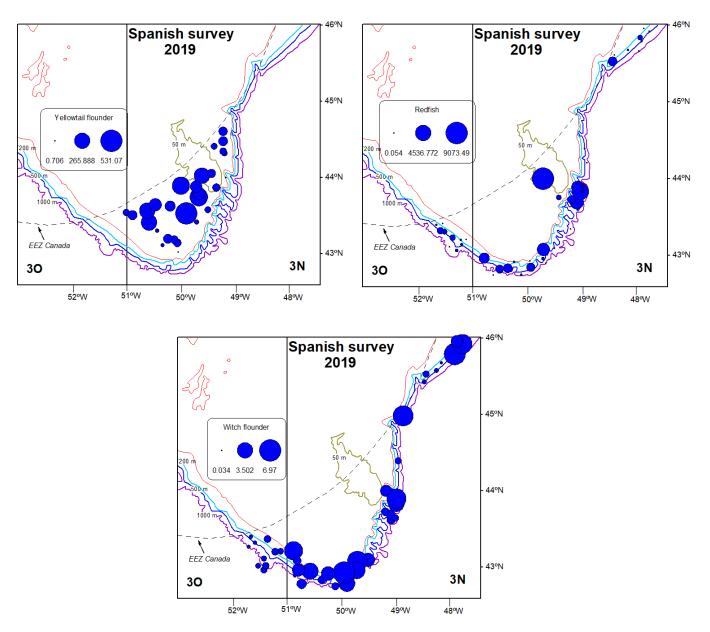
		20	02			20	03			20	04			20	05			200	06		200	7	
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet. Total	Males	Females	Indet. Tota	ıl
MNPT	2.602 3.488 0.459 6.548		6.548	4.499	5.864	0.057	10.420	4.182	6.088	0.211	10.480	4.160	5.570	0.605	10.336	3.384	4.937	0.040 8.360	1.952	3.050	0.061 5.06	3	
	2008					20	09			20	10			20	11			201	2		201	3	
				Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet. Total	Males	Females	Indet. Tota	ıl
MNPT	2.061	3.384	0.027	5.472	2.352	4.107	0.043	6.502	3.538	5.411	0.000	8.949	1.326	2.529	0.033	3.887	3.350	4.078	0.056 7.483	2.009	3.908	0.159 6.07	6
		20	14			20	15			20	16			20	17			201	8		201	9	
	2014  Males Females Indet. Total			Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet. Total	Males	Females	Indet. Tota	ıl
MNPT	0.756	1.626	0.012	2.395	1.941	2.810	0.125	4.875	2.466	3.419	0.046	5.931	3.611	3.773	0.034	7.418	1.435	2.125	0.007 3.567	0.552	0.722	0.012 1.28	6



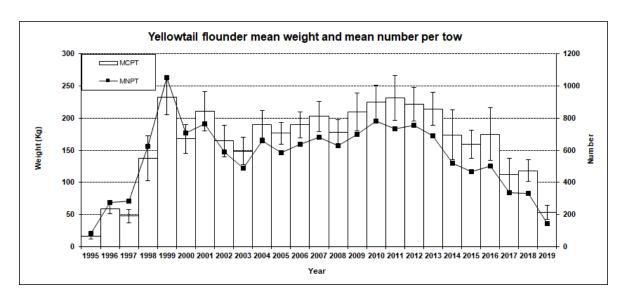
**Table 21.** Witch flounder mean number per tow by length class and year. Spanish Spring Surveys in NAFO Div. 3NO: 2015-2019. Indet. means indeterminate.

		201	5			201	6			2017	7			2013	8			201	9	
Lenght (cm.)	Males	Females	Indet.	Total																
4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.064	0.064	0.000	0.000	0.028	0.028	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005	0.000	0.000	0.004	0.004
8	0.000	0.000	0.042	0.042	0.000	0.006	0.000	0.006	0.000	0.000	0.008	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.008
10	0.000	0.000	0.000	0.000	0.000	0.026	0.008	0.033	0.000	0.000	0.019	0.019	0.000	0.007	0.000	0.007	0.000	0.000	0.000	0.000
12	0.000	0.008	0.000	0.008	0.007	0.008	0.010	0.025	0.000	0.000	0.000	0.000	0.022	0.021	0.000	0.042	0.000	0.000	0.000	0.000
14	0.009	0.000	0.000	0.009	0.002	0.000	0.000	0.002	0.000	0.000	0.007	0.007	0.022	0.053	0.007	0.082	0.003	0.000	0.000	0.003
16	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.003	0.008	0.000	0.011	0.013	0.033	0.000	0.046	0.000	0.000	0.000	0.000
18	0.022	0.018	0.000	0.040	0.000	0.014	0.000	0.014	0.010	0.012	0.000	0.022	0.000	0.005	0.000	0.005	0.000	0.004	0.000	0.004
20	0.006	0.000	0.000	0.006	0.012	0.012	0.000	0.024	0.006	0.030	0.000	0.036	0.008	0.039	0.000	0.047	0.007	0.000	0.000	0.007
22	0.016	0.014		0.030	0.000	0.040		0.040	0.000	0.028		0.028	0.024	0.014	0.000	0.039	0.005	0.005		0.010
24	0.010	0.025	0.000	0.036	0.016	0.004	0.000	0.020	0.008	0.028	0.000	0.036	0.035	0.031	0.000	0.066	0.007	0.000	0.000	0.007
26	0.037	0.004	0.000	0.042	0.025	0.037	0.000	0.061	0.024	0.044	0.000	0.069	0.048	0.030	0.000	0.078	0.009	0.014	0.000	0.023
28	0.057	0.058	0.000	0.115	0.070	0.062	0.000	0.132	0.108	0.050	0.000	0.158	0.154	0.100	0.000	0.254	0.037	0.040	0.000	0.077
30	0.118	0.114	0.000	0.232	0.105	0.153	0.000	0.257	0.129	0.112	0.000	0.241	0.203	0.188	0.000	0.391	0.059	0.056	0.000	0.115
32	0.179	0.099	0.000	0.278	0.086	0.132	0.000	0.218	0.105	0.128	0.000	0.233	0.264	0.157	0.000	0.421	0.074	0.061	0.000	0.135
34	0.245	0.196	0.004	0.445	0.127	0.163	0.000	0.290	0.210	0.104	0.000	0.314	0.156	0.188	0.000	0.344	0.065	0.044	0.000	0.109
36	0.352	0.259	0.000	0.611	0.280	0.181	0.000	0.461	0.341	0.125	0.000	0.466	0.081	0.137	0.000	0.218	0.037	0.053	0.000	0.089
38	0.339	0.268	0.000	0.607	0.428	0.244	0.000	0.672	0.790	0.344	0.000	1.134	0.117	0.195	0.000	0.312	0.074	0.035	0.000	0.109
40	0.358	0.423	0.000	0.781	0.518	0.440	0.000	0.958	1.029	0.629	0.000	1.658	0.096	0.151	0.000	0.247	0.067	0.084	0.000	0.151
42	0.110	0.384	0.004	0.497	0.423	0.571	0.000	0.994	0.617	0.643	0.000	1.260	0.121	0.119	0.000	0.240	0.062	0.105	0.000	0.167
44	0.040	0.377	0.007	0.425	0.276	0.673	0.000	0.949	0.111	0.628	0.000	0.739	0.025	0.172	0.000	0.197	0.038	0.093	0.000	0.131
46	0.026	0.262	0.000	0.287	0.072	0.322	0.000	0.394	0.100	0.379	0.000	0.479	0.025	0.225	0.000	0.250	0.008	0.045	0.000	0.053
48	0.016	0.176		0.196	0.019	0.144	0.000	0.164	0.020	0.256		0.276	0.017	0.156	0.000	0.173	0.000	0.044	0.000	0.044
50	0.000	0.063	0.000	0.063	0.000	0.090	0.000	0.090	0.000	0.143	0.000	0.143	0.004	0.035	0.000	0.039	0.000	0.031	0.000	0.031
52	0.000	0.042		0.042	0.000	0.048		0.048	0.000	0.048	0.000	0.048	0.000	0.025	0.000		0.000	0.009	0.000	0.009
54	0.000	0.012	0.000	0.012	0.000	0.035	0.000	0.035	0.000	0.033	0.000	0.033	0.000	0.014	0.000	0.014	0.000	0.000	0.000	0.000
56	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.024	0.000	0.024	0.000	0.000	0.000	0.000
58	0.000	0.000	0.000		0.000	0.006		0.006	0.000	0.000		0.000	0.000	0.000	0.000		0.000	0.000	0.000	
60	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	0.000		0.000	0.000		0.000
62	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	0.000		0.000	0.000	0.000	
64	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.941	2.810	0.125	4.875	2.466	3.419	0.046	5.931	3.611	3.773	0.034	7.418	1.435	2.125	0.007	3.567	0.552	0.722	0.012	1.286
Nº samples:				69				50				51				50				42
Nº Ind.:		443	21		330	513	8	851	360	455	6		171	303	2	476	78	115	3	
Sampled catch:				336				401				387				180				81
Range:				7-54				6-59				8-55				7-57				7-53
Total catch:				346				442				509				181				82
Total hauls:				122				115				113				114				115

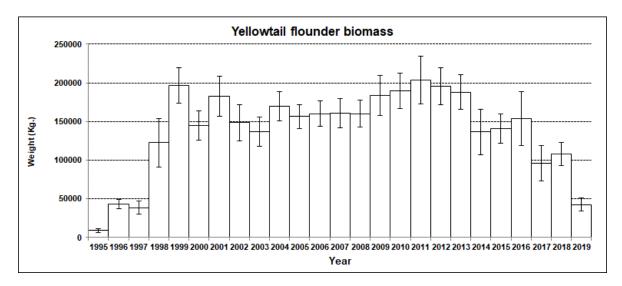




**Figure 1.** Position of the hauls and the catch of yellowtail flounder, redfish and witch flounder during the 2019 Spanish 3NO survey. Note that the scale is different in the three graphs.

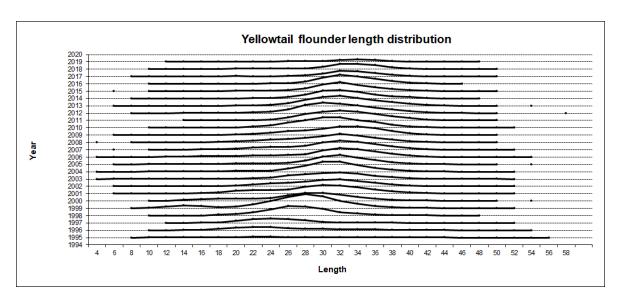


**Figure 2.** Yellowtail flounder stratified mean catches in Kg and  $\pm$ SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1995-2019.



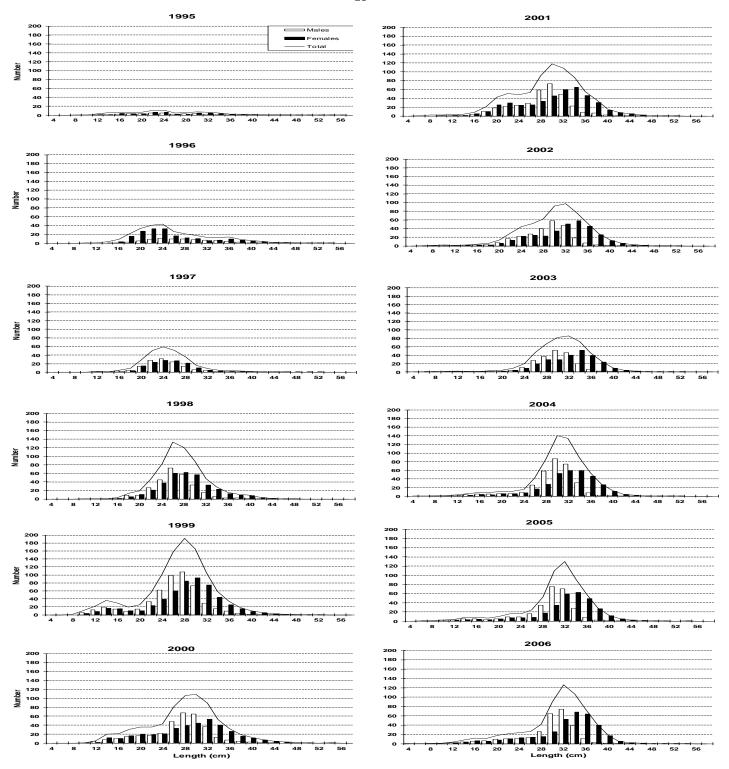
**Figure 3.** Yellowtail flounder biomass calculated by the swept area method in tons and  $\pm$ SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1995-2019.



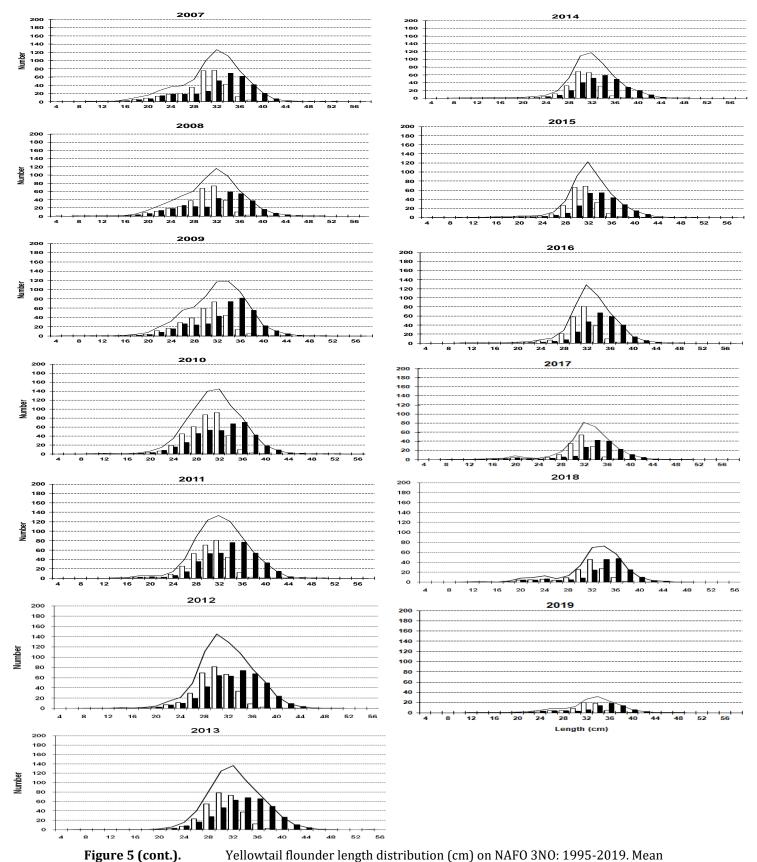


**Figure 4.** Yellowtail flounder mean number per tow by length (cm) on NAFO 3NO: 1995-2019. Data from 2015 to 2019 are in Table 8; data for 1995-2014 can be seen in SCR Doc 15/08.



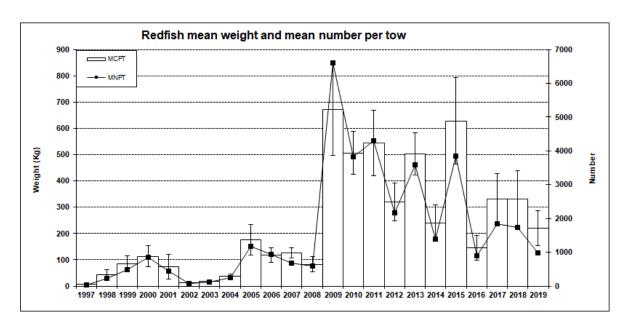


**Figure 5.** Yellowtail flounder length distribution (cm) on NAFO 3NO: 1995-2019. Mean numbers per tow. Data from 2015 to 2019 are in Table 8; data for 1995-2014 can be seen in SCR Doc 15/08.

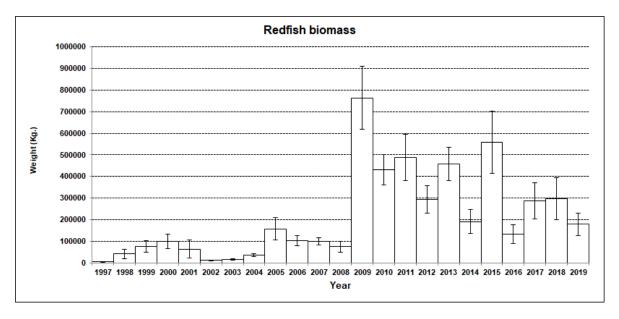


Yellowtail flounder length distribution (cm) on NAFO 3NO: 1995-2019. Mean numbers per tow. Data from 2015 to 2019 are in Table 8; data for 1995-2014 can be seen in SCR Doc 15/08.

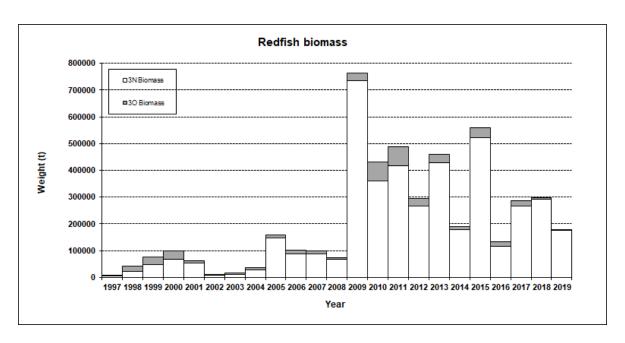




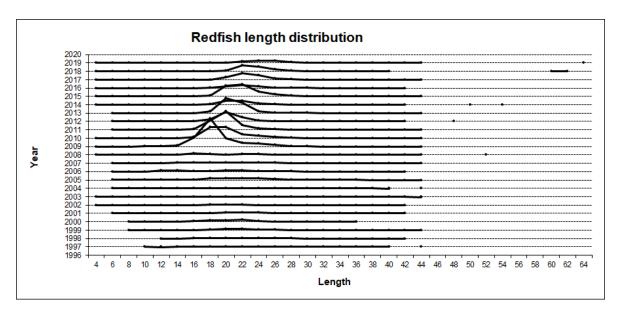
**Figure 6.** Redfish stratified mean catches in Kg and  $\pm$ SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2019.



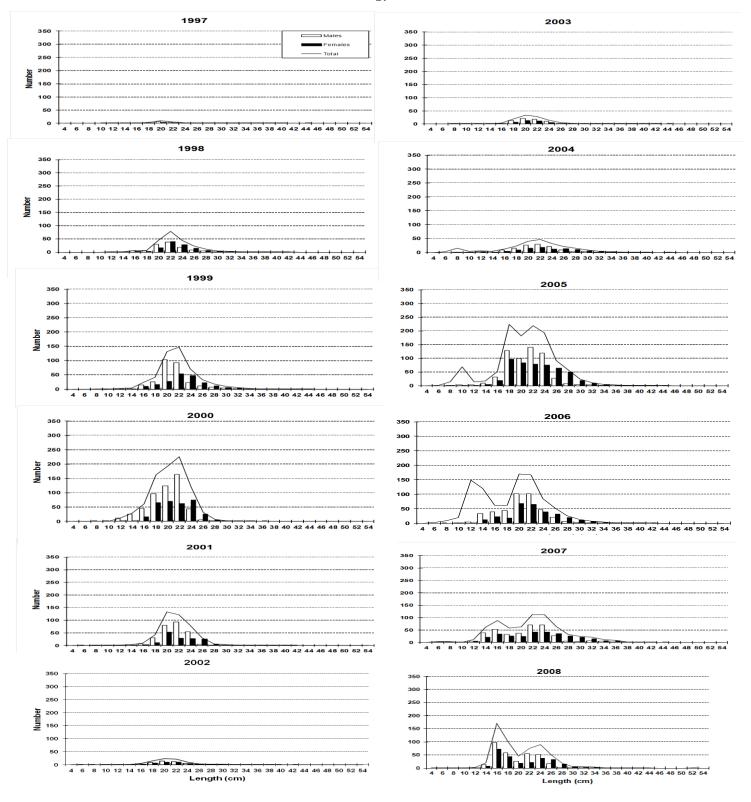
**Figure 7.** Redfish biomass calculated by the swept area method in tons and  $\pm$ SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2019.



**Figure 8.** Redfish biomass calculated by the swept area method in tons by year and Division. Spanish Spring surveys in NAFO Div. 3NO: 1997-2019.

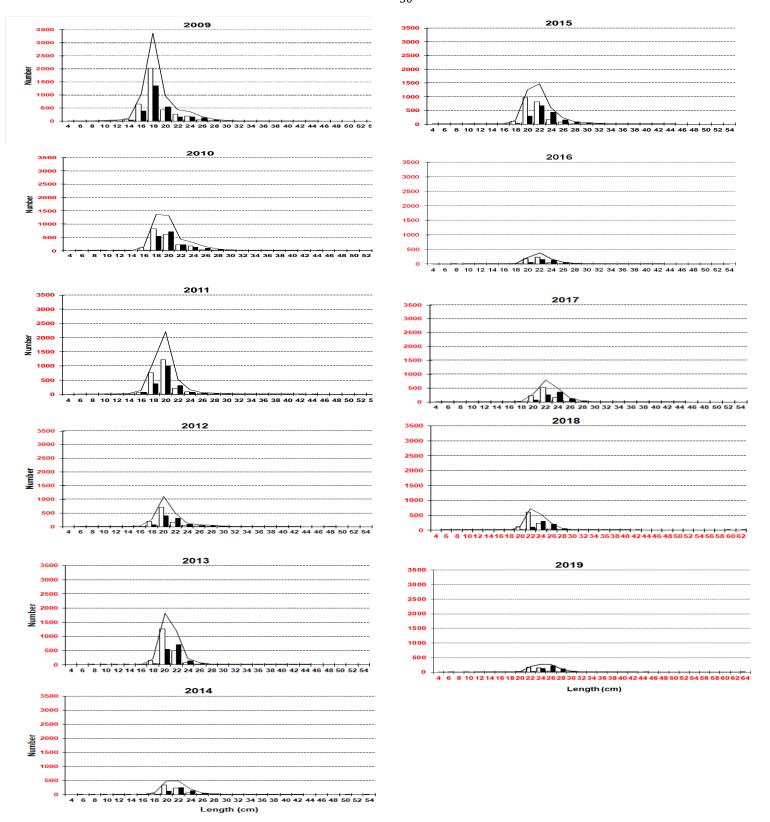


**Figure 9.** Redfish mean catches per tow by length (cm) on NAFO 3NO: 1997-2019. Data from 2015 to 2019 are in Table 14; the data for 1997-2014 can be seen in SCR Doc 15/08.



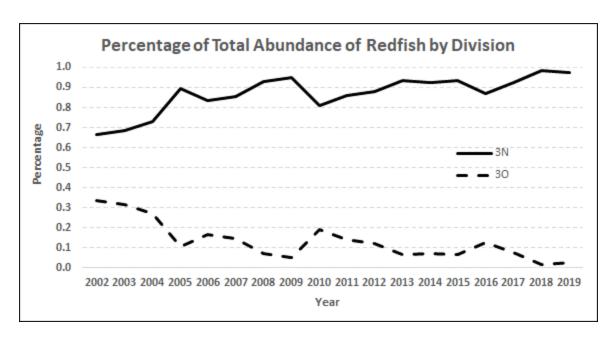
**Figure 10.** Redfish length distribution (cm) on NAFO 3NO: 1997-2019. Mean numbers per tow. Data from 2015 to 2019 are in Table 14; the data for 1997-2014 can be seen in SCR Doc 15/08. The 2010-2019 graphs have a different y-axis upper limit.



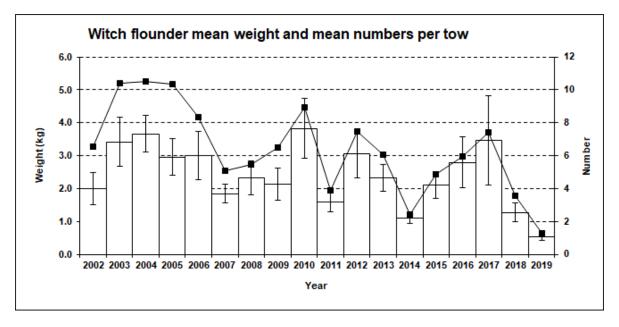


**Figure 10 (cont.).** Redfish length distribution (cm) on NAFO 3NO: 1997-2019. Mean numbers per tow. The data from 2015 to 2019 is in Table 8; the data for 1997-2014 can be seen in SCR Doc 15/08. The 2010-2019 graphs have a different y-axis upper limit.

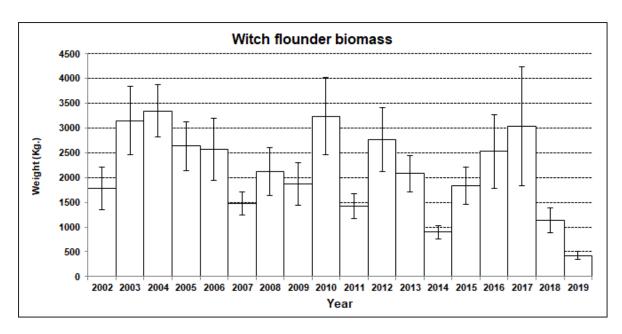




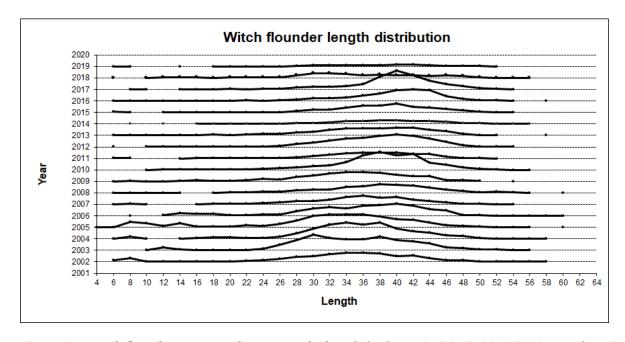
**Figure 11.** Redfish percentage of total abundance by Division and year. Spanish Spring surveys in NAFO Div. 3NO: 2002-2019.



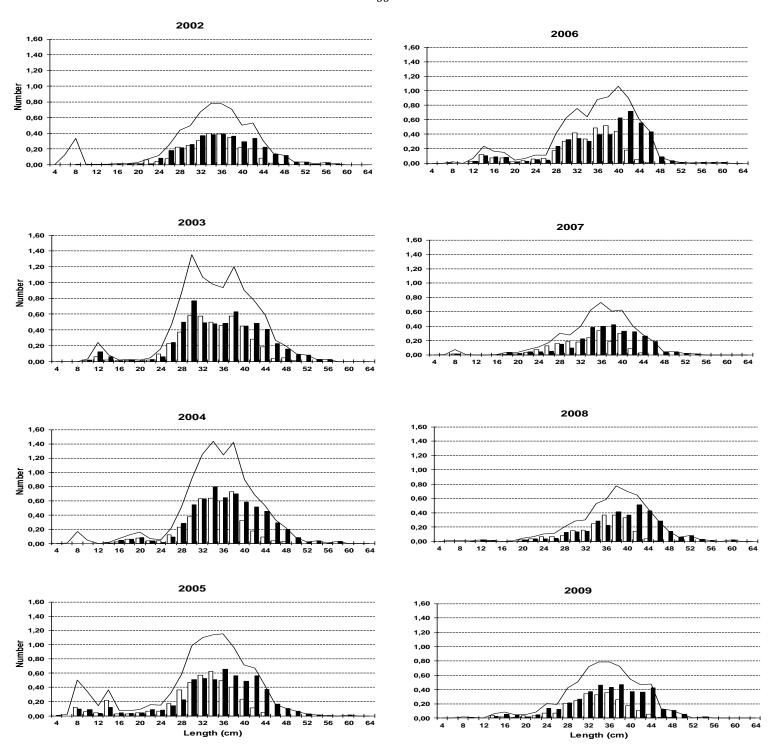
**Figure 12.** Witch flounder stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 2002-2019.



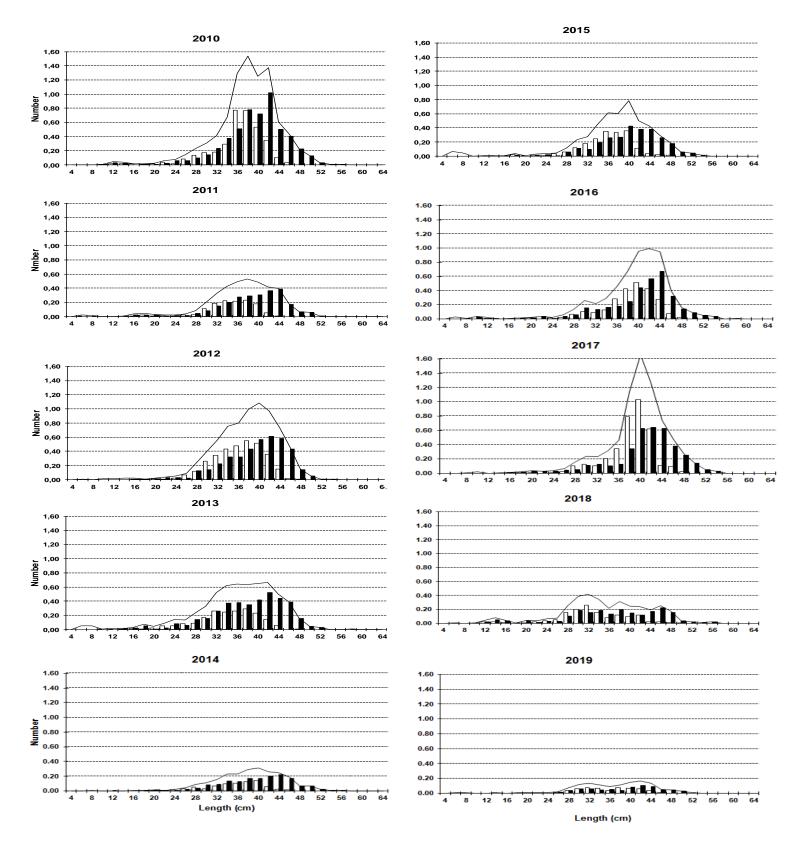
**Figure 13.** Witch flounder biomass calculated by the swept area method in tons and  $\pm$ SD by year. Spanish Spring surveys in NAFO Div. 3NO: 2002-2019.



**Figure 14.** Witch flounder mean number per tow by length (cm) on NAFO 3NO: 2002-2019. Data from 2015 to 2019 are in Table 19; data for 2002-2014 can be seen in SCR Doc 15/08.



**Figure 15.** Witch flounder length distribution (cm) on NAFO 3NO: 2002-2019. Mean numbers per tow. Data from 2015 to 2019 are in Table 19; data for 2002-2014 can be seen in SCR Doc 15/08.



**Figure 15 (cont.).** Witch flounder length distribution (cm) on NAFO 3NO: 2002-2019. Mean numbers per tow. Data from 2015 to 2019 are in Table 19; data for 2002-2014 can be seen in SCR Doc 15/08.

