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Divisions 3LNO Yellowtail Flounder (*Limanda ferruginea*) in the 2011 and 2012 Canadian Stratified Bottom Trawl Surveys

by

D. Maddock Parsons

Northwest Atlantic Fisheries Centre, Science Branch
Department of Fisheries and Oceans, 80 East White Hills Road
St. John's, Newfoundland AlC 5Xl

Abstract

Abundance and biomass indices of Grand Bank yellowtail flounder in NAFO Divisions 3LNO were derived from annual multi-species, random-stratified bottom trawl surveys conducted by Canada during the spring of 1984-2012 and during the autumn from 1990 to 2012. The majority of the stock is found in depths less than 93 m and in Div. 3NO. Stock size and geographical range of yellowtail flounder declined from the mid-1980s to the mid-1990s, but since 1995 surveys show that the stock size has increased dramatically and has again expanded its northward range in 3L to re-occupy habitats on the northern Grand Bank. Abundance and biomass estimates from the spring and autumn surveys remained high, increasing from the decline observed in the 2009 surveys.

Introduction

Annual multi-species, stratified-random bottom trawl surveys have been conducted by the Newfoundland region of the Canadian Department of Fisheries and Oceans on the Grand Bank, in NAFO Divs. 3LNO, during the spring (April-June) of each year since 1971. Since 1990, a second series of surveys has been carried out on the Grand Bank during the fall period, from October to December. However, since 1971 there have been two changes in survey gears and only one set of conversion factors has been developed for the 1984-1995 time series. Consequently only data from 1984 to 2012 will be presented here.

From both the spring and fall surveys, swept area abundance and biomass estimates are derived for yellowtail flounder (*Limanda ferruginea*) and serve as fishery-independent indices of stock size. Because catchability of the standard survey trawl is unknown and assumed to be <=1.0 (Walsh, 1996), the indices are considered to be relative estimates of stock size.

Materials and Methods

Survey design

The stratification scheme is based on depth and shown in Fig. 1 (see Doubleday, 1981, for a review of procedures). The timing of the spring surveys, the frequency of fishing sets in the inshore strata (beginning in 1997) and the range of depths surveyed are shown in Table 1.

The 1984-2012 spring and the 1990-1994 fall surveys covered depths from 45 to 731 m. Beginning in the fall of 1995 with the use of the new Campelen survey trawl, the coverage of the fall surveys extended to 1 500m. Due to mechanical problems with the CCG *Teleost* survey vessel, only sets in the deepwater strata of Div. 3L were fished in 1995 (Table 2). Fall surveys of Divisions 3NO have had poor coverage in deep water strata in several years (see

Brodie and Stansbury, 2007 and Healey and Brodie, 2009), but this is thought to have negligible effect on the abundance and biomass estimates of yellowtail flounder in most years, because the stock is found almost exclusively in depths less than 93m. Nevertheless, the exclusion of these deepwater sets does slightly overestimate the overall mean catch per tow by NAFO division in affected years. In the 2006 spring survey, there were also fewer sets in some strata in 3N, and stratum 373 was not surveyed. In recent years, this stratum contributed significant biomass to the total index and missing this stratum, coupled with reduced coverage in other important strata, the 2006 estimates of abundance and biomass may not be comparable to estimates in other years. In addition, in years 1995, 2002-2005, some northern portions of the surveys have overlapped into January of the following calendar year due to mechanical problems with the survey vessels. These delays are not expected to affect yellowtail flounder estimates because of its shallow water distribution in the southern section of the survey area.

Survey gears and vessels

From 1971 to 1982 the surveys of the Grand Bank were conducted by the 54 m side trawler, the FRV A. T. Cameron (ATC) using a two bridle Yankee 41.5 otter trawl rigged with rubber disk footgear. In 1983, this trawl was replaced by the three bridle Engel 145 Hi-Lift otter trawl rigged with large steel bobbin footgear and, at the same time, the A.T. Cameron was replaced by the 50 m stern trawler, the CCGS Wilfred Templeman (WT). Occasionally the W. Templeman's sister ship, the CCGS Alfred Needler (AN) took part in the surveys. In 1995, the old standard Engel trawl was replaced by a three bridle Campelen 1800 shrimp trawl rigged with 35 cm diameter rockhopper footgear. The Yankee and the Engel trawls were both towed at 3.5 kts, while the Campelen is towed at 3.0 kts (McCallum and Walsh, 1996). The Campelen trawl surveys of the Grand Bank began in the fall of 1995 aboard the CCGS Wilfred Templeman. The Campelen trawl also replaced the Yankee 41 shrimp trawl used in the annual fall juvenile groundfish surveys from 1985-94 (McCallum and Walsh, 1996). Beginning in the fall of 1996, the 63 m stern trawler, CCGS Teleost, began fishing mostly the deepwater survey sets of the annual fall surveys beyond 731 m in Div. 3LNO; however, shallower sets have also been fished when necessary (Table 2). In addition, the CCGS Alfred Needler has taken part in the fall surveys in some years. The Campelen trawl onboard the 2 other survey vessels is identical in construction and rigging as the one on the Wilfred Templeman. Since 1993, the geometry and performance of all bottom trawl surveys have been monitored by Scanmar trawl mounted acoustic instrumentation (Walsh and McCallum, 1995; McCallum and Walsh, 2001).

Time series

Conversion factors have been derived from comparative fishing trials to convert the 1984-95 spring and 1990-94 fall Engel trawl survey data into Campelen trawl units and were presented in Walsh *et al.* (1998a, 1998b). Survey data from 1971-82 have not been converted to Campelen trawl units and the unconverted time series can be found in the 1997 assessment paper (see Walsh *et al*., 1997). Conversion factors into Campelen trawl units for yellowtail flounder have also been derived for the 1985-94 late summer-early fall juvenile groundfish series and the abundance and biomass data are found in a 2005 NAFO SCR paper (see Walsh, 2005). However, additional conversions of the database will be needed and consequently only annual spring and fall survey data from 1984 and 1990 onward will be reported here.

Fishing and catch protocols

The Campelen carries out 15 minute tows using a towing speed of 3.0 knots and covers an average tow distance of 0.75 nautical miles. The catches are standardized to distance towed. The average wingspread used in estimating swept area abundance indices is 16.84 m and the average swept area is estimated to be 24 950 m^2. After each set, all species in the catch are separated, counted and weighed. From each haul, the total catch or a sub-sample is taken to collect biological data on size, age, maturity and feeding for all commercial species.

Results

Canadian Spring Surveys 1984-2012

Abundance and biomass trends:

Tables 4 to 15 give the survey catch rates by NAFO division in the form of stratified mean number and weight-per-tow, abundance and biomass indices with confidence limits. The large majority of the biomass is found in shallow

strata (< 93m), and for brevity, only data for strata less than 184m are shown. Totals in each table are calculated using all sampled strata in each division, and percent of biomass in strata deeper than 183m are included in the biomass table for each division. Biomass > 183m was negligible in all years surveyed. Table 28 gives combined estimates for Div. 3LNO from 1984-2012. Figure 2 show plots of the abundance and biomass estimates, as well as mean number and weight per tow, of surveys from 1984-2012. The 1999 survey estimate was thought to be a 'year effect' (Walsh *et al*., 2000; STACFIS, 2000). Tables 3a and 3b identify large fishing sets that may contribute to variation seen around some of the estimates of stock size in a given year. In 2006, problems with the survey vessel resulted in reduced coverage. Although priority was given to surveying important yellowtail flounder habitat, several key strata (eg 373 and 338) that had significant catch in previous surveys, were not sampled. Estimates from this survey should not be compared with other surveys in the time series which covered the majority of the yellowtail flounder stock area.

In Div. 3L, there was a continuous decline in abundance and biomass from 1985 to "0.0 t" in 1995 (Tables 6, 7, and 28; Fig. 2). From 1996 to 1998, the stock showed a marginal increase to stabilize at an average biomass level of 500 t and then increased (by 5550%) to a level of 28 kt in 1999 (Table 7; Fig. 2). From 2000-2002 the abundance and biomass declined once more and by 2002 the biomass index was 600 t (1.6 million fish). From 2002 the abundance and biomass indices were variable but increased dramatically to the highest estimates in the time series in 2006 at 251.5 million fish and 85.7 kt biomass. Biomass and abundance estimates then declined in 3L and in 2009 were 13.2 Kt and 47 million fish. From 2010-2012 estimates increased steadily to 89 Kt and 238 million fish, currently the highest biomass (and second highest abundance) estimate in the series. When the estimates are high most of the yellowtail flounder are generally found in stratum 363 and stratum 372.

Most of the 3LNO yellowtail flounder stock is found in NAFO division 3N. Here, the majority of the stock was distributed in and around the Southeast Shoal area (strata 375, 376, 360 and 361 in Fig. 1), although in recent surveys, the abundance and biomass increased in strata north of the Shoal, in particular strata 362 and 373 (Tables 10 and 11) and in several recent years, large sets were taken in the 93-183m depth range (strata 359 and 377). The biomass index declined gradually from 168 kt (435 million fish) in 1984 to 46 kt (135 million fish) by 1994, a decline of 73% (Fig. 2). For the same period, the high abundance estimate of 478 million fish in 1989, was mainly due to the strong 1985 and 1986 year-classes which was not reflected in the biomass estimate for that survey. After a slight increase from 1994 to 1995, the survey biomass in 1996 jumped by 80% to 104 kt (475 million fish) followed by a continued increase to a high of 238 500 t (965 million fish) in 1999 (Fig. 2). Since 1999, the survey abundance and biomass estimates were variable, but have shown a general increasing trend. The 2012 abundance estimate is the highest in the series (1.19 trillion fish) and second highest biomass estimate (315 kt). The 2006 survey results may not be comparable to other years since several strata were not surveyed that have had large yellowtail catch in the past (eg strata 373).

Large catches in several strata in some years have contributed to the high variability seen around some estimates in the time series. Tables 3a and 3b outlines large sets (> 400kg or >900 fish) in surveys since 1996.

In Div. 3O, the abundance and biomass have shown a somewhat stable but slightly declining trend from 1984 to 1995, excepting 1993 which has a higher value, but wide confidence limits (Tables 14 and 15; Fig. 2). The biomass index showed moderate fluctuations around an average value of 26 kt (59 million fish) for the period 1984-95. In 1996, the survey biomass dramatically increased by 492 % from 12 kt (29 million fish) in 1995 to 71 kt (162 million fish). Since 1996, estimates of biomass and abundance have been variable, but have shown an increasing trend and in the recent 6 years have varied about 80-100 kt and 250-310 million fish, with the exception of 2009 which was lower than the recent period. In this year, survey catches were low in 2 important strata (351 and 352).In Div. 3O most of the biomass is generally found in these two strata (see Fig.1) which border Div. 3N. In 2005, for example, 83% of the biomass estimate is due to catch in strata 351 and 352. Whether some of the annual fluctuations are related to movement between Div. 3N and 3O is unknown.

In the spring surveys of Div. 3LNO the majority of the survey abundance and biomass was found in Div. 3N so total stock trends mimic that of Div. 3N. From 1989-1998 there have been negligible amounts in Div. 3L until the 1999 survey (Tables 6, 7 and 28; Fig. 2) and, in recent years, there has been a substantial increase in the biomass estimate compared to the first two years of the survey. Biomass in Div. 3LNO increased rapidly in the late 1990s from the lowest levels in the mid-1990s (Table 28). Between 1999 and 2007, abundance and biomass estimates were variable

but continued to increase (Fig. 2). Large catches probably contributed to the high variability around the estimates in several years, although only 1999 was thought to be a year effect (Walsh *et al*., 2000; STACFIS, 2000).

Since 2005, the majority of the biomass has been located in and around strata 351 and 352 of Div. 3O and in strata 360, 361, 375 and 376, the Southeast Shoal area in Div. 3N. Large catches (>400 kg) were taken in strata 360, 362, 373 and 376 (Tables 3a and 3b). Most of the decline observed in the 2009 survey estimates (seen in all Divisions) can be attributed to two strata in 3N (361 and 373). Biomass and abundance have increased year over year since 2009 to the highest in the time series in 2012; estimates are 1.7 million fish and 490 kt.

Canadian Fall Surveys, 1990-2012

Several recent surveys have had problems resulting in reduced coverage, particularly in deep water strata and also reduced sampling of some strata (see Table 2 and Healey and Brodie, 2009). Abundance and biomass indices of yellowtail flounder are unaffected by the reduced coverage, given that the majority of the stock is found in strata that have been sampled consistently. But mean number and mean weight per tow indices will be overestimated in years of poor survey coverage in deep water strata.

Abundance and biomass trends:

Tables 16-27 show stratified mean number and weight per tow, and abundance and biomass indices with 95% confidence limits, by stratum and division for the fall surveys, 1990-2012. Again, for brevity, only data for strata less than 184m are shown. Totals for the entire division are given in each table, and percent of biomass in strata deeper than 183m are included in the biomass table for each division, and those amounts were negligible in all years surveyed. Figure 3 shows plots of the abundance and biomass estimates, mean numbers and weights per tow by division from 1990-2012. Overall estimates by division and for 3LNO combined are given in Table 29.

In Div. 3L, abundance and biomass were very low and variable without trend from 1990-1995, reaching an estimate close to zero in 1994 (Fig. 3). Noteworthy is that a "0.0" t biomass was also estimated for the 1995 spring series. From 1990 to 95 the abundance varied around an average level of 2 million fish and then tripled to 6 million fish in 1995 and 1996. The biomass varied around an average level of 1 kt from 1990-1997 before increasing to about 26 kt in 2001 (Table 29). Abundance increased from 1997 (6M) to 75 million fish in 2001. A drop in both the abundance and biomass indices (of 56% and 46% respectively) in 2002 was followed by a general increase to the series high in 2010 (36k t; 135 million fish). There was an exception to the increasing trend in 2009, when there was a considerable drop in abundance and biomass (to 17kt and 45 million fish). In this year, 4 of 5 main strata showed declines. Estimates in 2011 and 2012 remain high. Estimates have wide confidence limits since 2001, and may be due in part to most of the biomass occurring in 2 strata (363 and 372, which border 3N, account for upwards of 90% of biomass estimates in some years). These increases in biomass in Div. 3L are thought to be the result of an extension of the range of yellowtail flounder with increasing stock size. There are obvious within year differences in the amount of yellowtail flounder caught in this Division and this is reflected in the high variability around the estimates for 1999-2001 and 2003-2012.

From 1990-92, the Div. 3N stock size fluctuated around an average value of 47 kt before doubling in size in 1993 to 94 kt (Table 29). The stock increased steadily to 369 kt in 2001 (Table 29; Fig. 3). Values have varied around 250 kt since, with the estimates in 2007 highest in the series at 378 kt. Similarly, the survey abundance from 1990-94 fluctuated around an average size of 222 million fish before showing a strong increasing in 1995 to 509 million fish and reaching 1.3 billion fish in 2001, representing an overall increase of 160% (Table 29; Fig 3). From 2001-2012, both the abundance and biomass estimates have varied around a level of 1.0 billion fish and 270 kt biomass, respectively (Fig. 3). In 2010, estimates are near the highest in the time series.

Large survey sets (>900 fish or >400kg per tow) are given in table 3. In Div. 3N most large sets were taken in strata 360 and 376 between 1996 and 2000. Since then, the number of large sets has been increasing and found in more strata. In 2010 for example, 5 large sets were recorded in strata 376, and one in 360, and two other stata also had large sets. Similar to the spring surveys strata 360, 361, 362, 373 and 376 account for most of the biomass in this Division.

In Div. 3O, both the abundance and biomass index showed no obvious trend from 1990-96, with abundance fluctuating around an average value of 55 million fish and biomass fluctuating around an average level of 20 kt (Tables 26 and 27: Fig. 3). Then in 1997, the biomass level jumped by 205% to 26 kt (159 million fish). Since then estimates have been stable but variable at about 600 million fish and 60 kt. In 2012 abundance and biomass increased to the highest obsevered level in the series (113 kt; 342 million fish). Although confidence limits are wide for these estimates, the increases were seen in several strata.

A large catch of 1200 fish (463 Kg) in the western stratum, 338, may have contributed to the large variability around the 2001 fall estimate. Even though the estimate of stock size was low in 2002 there were 3 large catches taken on the Southeast shoal strata. In several years, there were catches (>1 000 fish) (Tables 3a and 3b) taken in the surveys (weight range of 200-400 kg) and these large sets likely contributed to wide confidence limits in those years. Similar to the spring surveys, most of the biomass in this division was found in strata 351 and 352 which borders Div. 3N.

In the fall surveys of Div. 3LNO, similar to the spring surveys, the majority of the stock was found in Div. 3N. The abundance and biomass in this division has shown a general upward trend since the start of the surveys (Table 29 and Fig. 3). Since 1993, when the survey biomass was estimated to be 113 kt (372 million fish), estimates increased to a high of 476 kt (1.2 billion fish) in 2001, representing a 321% increase in stock biomass. The biomass in the Southeast Shoal's strata, 375 and 376, contribute significantly to the overall biomass: 22% on average in the last 3 years, and the large catches in these strata contribute to the high variability around these two survey estimates. Since 2001, indices have been variable but stable about 350kt and (1.2 billion fish). 2011 and 2012 estimates of biomass and abundance remain high.

Distribution

Yellowtail flounder are concentrated mainly in Div. 3N and the bordering areas of Div. 3O and to a lesser extent the border of Div. 3LN, similar to most years in the time series. Figures 4 and 5 show the standard number and weight from the catches of individual fishing sets from the spring and fall Campelen surveys for 2011 and 2012. A time series of distribution plots (1984-2010) can be found in Maddock Parsons (2011).

In the 2005-2012 surveys, yellowtail flounder were most abundant in Division 3N, particularly in strata on the Southeast Shoal (375 & 376) and those immediately to the west (strata 360 & 361). These strata straddle the Canadian 200 mile (360 km) limit and extend into the Regulatory Area (Fig. 1). Observed distributions were comparable with earlier descriptions of the distribution of this stock (see Maddock Parsons, 2011). Yellowtail flounder also appear to be more abundant in the Regulatory Area of Division 3N in recent surveys than years previous to 1999 and the northward distribution of the stock has extended to Div. 3L, similar to mid-1980s when the stock size was high (Simpson and Walsh 2004). Brodie *et al.* (1998) noted that the northward range extension of yellowtail flounder on the Grand Bank contracted with decreasing stock size during the mid to late 1980s and early 1990s so that the bulk of the stock was south of 45°N. Simpson and Walsh (2004) have shown that the observed range contraction of yellowtail flounder at low population levels represents selection for preferred habitats in the southern area of the Bank where depth and temperature are important covariates affecting the spatial pattern. During periods of large increases in stock size, the range of yellowtail flounder expanded into less favourable habitats to north and to a lesser extent, westward in support of MacCall's Basin hypothesis. Depth, but not temperature, played an influential role. Recent tag returns from the 1998-2000 fisheries also confirmed the northward extension of the stock in recent years (Walsh *et al.*, 2001b; Walsh *et al*., 2006).

Figure 6 shows a plot of the proportion of biomass north of 45^{o} N from 1973 to 2012. The range of the stock has extended northward since 1995. In most years since 1996, the proportion of biomass north of 45^{o} N is higher in the spring than in the fall. One obvious exception is the spring of 2002, when the proportion of biomass is much lower than in fall 2002, and is close to the low values in the early 1990s. The surrounding data suggest that the 2002 spring point is anomalous. With the exception of the 2009 spring survey, which only estimated 21% of the biomass north of 45°N, recent surveys showed 30 to 40% of the biomass in the northern part of the stock area.

Colbourne and Walsh (2006) noted that in 1990-2005 surveys the centroid of the biomass of yellowtail flounder located within Div. 3NO was found over the Southeast Shoal of the Grand Bank. This area corresponds to some of the warmest bottom temperatures found anywhere on the Grand Banks. The authors reported that spring bottom

temperatures in this region range from a minimum of 1-2°C during cold years (1990) to 3-4°C during warm years (1998 and 1999). Fall bottom temperatures are in general warmer than spring values ranging from 2-3^{o}C in most years to maximum values of between 7-8°C during extreme years (1999). Since 1999, with the exception of 2002, survey catch rates of yellowtail have remained significantly higher than those before 1995. With the exception of 2003 spring bottom temperatures have also been higher than they were in the early 1990s. The cold temperature values observed in the spring of 2003 were anomalous and lasted from April to June and were above average during the remainder of the year (Colbourne *et al*., 2004). However there is no indication that the temperature had a limiting factor in the northward distribution of yellowtail flounder in the 2002 spring survey (See Fig. 12); and 2004 fall survey (Fig. 12 and 13; Colbourne and Walsh, 2006a). Temperature correlations have not been examined since 2006.

There was a steady increase in the abundance of yellowtail flounder coinciding with a northward expansion of the stock from 1995 up to 2007 that also coincided with an increasing trend in bottom temperatures (until 2006, at least). Colbourne and Walsh (2006) noted that these results indicate a temperature preference for yellowtail towards the warm water habitat of the Grand Banks. The 2004-2005 surveys showed increasing frequency of catches in the northern areas, especially Div. 3L in the spring (which continued in 2006 and 2007) with some catches being taken in less than 0°C in the fall of 2004. Temperature data has not been examined for the 2006 -2012 survey data in relation to yellowtail distribution. Vessel problems resulted in reduced coverage in the 2006 spring survey and estimates from that survey may not be comparable to those in other years.

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Table 1. Summary of the Canadian RV Spring surveys 1984-2012. Survey gear changed from Engel to Campelen in autumn of 1995.

		3L		3N		3O		3LNO	
Year	Ship	Nsets	Depth Range	Nsets	Depth Range	Nsets	Depth Range	1st set	Last set
1984	A. Needler	37	67 - 185 m	61	39 - 360 m	56	66 - 350 m	28-Apr	21-May
1985	W. Templeman	221	63 - 705 m	36	52 - 310 m			11-Apr	26-May
	A. Needler			49	46 - 320 m	93	67 - 355 m		
1986	W. Templeman	211	64 - 339 m	101	41 - 354 m	102	66 - 326 m	18-Apr	25-May
1987	W. Templeman	181	61 - 356 m	91	46 - 344 m	100	65 - 356 m	23-Apr	01-Jun
1988	W. Templeman	160	65 - 558 m	77	41 - 330 m	84	66 - 335 m	21-Apr	24-May
1989	W. Templeman	205	64 - 350 m	94	45 - 352 m	101	66 - 337 m	20-Apr	28-May
1990	W. Templeman	156	63 - 346 m	85	42 - 320 m	93	65 - 340 m	22-Apr	04-Jun
1991	W. Templeman	143	66 - 685 m	93	40 - 645 m	116	65 - 635 m	19-Apr	29-May
1992	W. Templeman	178	64 - 710 m	94	44 - 625 m	91	66 - 630 m	22-Apr	07-Jun
1993	W. Templeman	181	64 - 680 m	85	40 - 695 m	81	66 - 620 m	27-Apr	10-Jun
1994	W. Templeman	160	64 - 911 m	76	44 - 895 m	81	66 - 862 m	30-Apr	10-Jun
1995	W. Templeman	151	65 - 646 m	89	42 - 668 m	85	65 - 640 m	03-May	14-Jun
1996	W. Templeman	188	66 - 664 m	82	42 - 665 m	86	65 - 685 m	07-May	27-Jun
1997	W. Templeman	158	60 - 681 m	71	35 - 689 m	81	62 - 669 m	30-Apr	26-Jun
1998	W. Templeman	163	53 - 721 m	88	38 - 682 m	93	64 - 657 m	12-May	30-Jun
1999	W. Templeman	177	41 - 692 m	82	40 - 659 m	86	62 - 679 m	11-May	29-Jun
2000	W. Templeman	134	61 - 681 m	81	45 - 664 m	83	61 - 694 m	11-May	29-Jun
2001	W. Templeman	154	34 - 695 m	79	40 - 650 m	79	64 - 699 m	29-Apr	24-Jun
2002	W. Templeman	146	42 - 710 m	79	40 - 641 m	79	63 - 628 m	27-Apr	22-Jun
2003	W. Templeman	156	62 - 698 m	79	39 - 681 m	79	63 - 726 m	08-May	26-Jun
2004	W. Templeman	151	47 - 710 m	79	44 - 675 m	79	61 - 636 m	12-May	26-Jun
2005	W. Templeman	133	64 - 672 m	78	45 - 691 m	79	66 - 719 m	09-May	29-Jun
2006	W. Templeman	141	60 - 701 m	4	68 - 77 m	3	75 - 84 m	10-Jun	30-Jun
	A. Needler			18	46 - 68 m	29	64 - 103 m		
2007	W. Templeman	97	61 - 702 m	79	44 - 636 m	79	64 - 719 m	03-May	12-Jul
	Teleost	40	66 - 171 m						
2008	W. Templeman	79	60 - 684 m	71	40 - 623 m	80	64 - 704 m	23-May	30-Jun
	Teleost	43	97 - 641 m						
2009	A. Needler	61	63 - 676 m	78	44 - 668 m	79	64 - 674 m	13-May	23-Jun
	Teleost	81	61 - 694 m						
2010	A. Needler	130	59 - 715 m	78	39 - 714 m	80	60 - 673 m	08-May	25-Jun
2011	A. Needler	144	57 - 723 m	79	40 - 673 m	78	63 - 716 m	08-May	22-Jun
2012	A. Needler	132	60 - 723 m	78	38 - 666 m	79	63 - 656 m	27-Apr	19-Jun

Table 2. Summary of the Canadian RV Autumn surveys 1990-2012. Survey gear changed from Engel to Campelen in autumn 1995.

		3L		3N		3O		3LNO	
Year	Ship	Nsets	Depth Range	Nsets	Depth Range	Nsets	Depth Range	1st set	Last set
1990	G. Atlantica W. Templeman	161	65 - 695 m	80	47 - 310 m	91	63 - 495 m	18-Oct	09-Dec
1991	G. Atlantica W. Templeman	219	63 - 680 m	67	42 - 638 m	84	65 - 715 m	19-Oct	02-Dec
1992	G. Atlantica W. Templeman	215	63 - 693 m	34	40 - 437 m	54	66 - 450 m	20-Oct	29-Nov
1993	G. Atlantica W. Templeman	153	64 - 670 m	70	44 - 670 m	75	64 - 676 m	24-Oct	04-Dec
1994	G. Atlantica W. Templeman	200	65 - 715 m	73	42 - 641 m	75	65 - 696 m	25-Oct	07-Dec
1995	W. Templeman Teleost	161 5	63 - 640 m 733 - 1210 m	90	40 - 650 m	81	63 - 730 m	26-Sep	25-Jan
1996	W. Templeman A. Needler Teleost	180 31	51 - 671 m 805 - 1433 m	 54 13	 37 - 309 m 390 - 1147 m	19 15 24	65 - 139 m 63 - 304 m 68 - 690 m	09-Oct	12-Dec
1997	W. Templeman Teleost	134 71	35 - 714 m 161 - 1436 m	74	41 - 769 m	73	64 - 611 m	26-Sep	20-Dec
1998	W. Templeman Teleost	172 32	34 - 675 m 691 - 1437 m	78 12	42 - 1079 m 834 - 1447 m	87	61 - 1076 m	10-Oct	16-Dec
1999	W. Templeman Teleost	169 1	63 - 1407 m 1366 - 1366 m	68	39 - 664 m	75	58 - 692 m	13-Oct	12-Dec
2000	W. Templeman Teleost	102 74	42 - 447 m 152 - 1430 m	70 24	46 - 642 m 747 - 1419 m	76 24	62 - 654 m 752 - 1424 m	11-Oct	18-Dec
2001	W. Templeman A. Needler Teleost	169 2 34	38 - 702 m 187 - 203 m 146 - 1457 m	70 24	45 - 660 m 739 - 1410 m	75 22	67 - 703 m 803 - 1391 m	22-Sep	06-Dec
2002	W. Templeman Teleost	176 30	35 - 670 m 763 - 1431 m	70 24	44 - 675 m 811 - 1429 m	75 24	65 - 696 m 775 - 1504 m	05-Oct	02-Dec
2003	W. Templeman Teleost	175 30	32 - 702 m 753 - 1446 m	70	43 - 727 m	75 8	63 - 650 m 761 - 1382 m	23-Sep	20-Jan
2004	W. Templeman Teleost	143 4	44 - 653 m 151 - 522 m	69	40 - 659 m	76	63 - 634 m	31-Oct	19-Dec
2005	W. Templeman A. Needler Teleost	120 57 7	50 - 706 m 121 - 667 m 803 - 1351 m	69 17	42 - 633 m 776 - 1445 m	75 24	60 - 649 m 754 - 1410 m	04-Oct	29-Jan
2006	W. Templeman Teleost	151 34	61 - 641 m 111 - 1401 m	70	46 - 650 m	74	63 - 674 m	30-Sep	18-Dec
2007	W. Templeman Teleost	120 48	61 - 694 m 81 - 1424 m	69 25	48 - 652 m 775 - 1419 m	75 24	64 - 632 m 753 - 1410 m	06-Oct	20-Dec
2008	W. Templeman A. Needler Teleost	83 43	62 - 664 m 71 - 332 m	64	38 - 643 m	66	60 - 661 m	03-Oct	13-Nov
2009	A. Needler Teleost	130 30	62 - 682 m 784 - 1385 m	64 11	42 - 708 m 798 - 1409 m	76 24	60 - 696 m 768 - 1397 m	02-Oct	20-Dec
2010	A. Needler Teleost	141 55	58 - 657 m 100 - 1448 m	68 4	40 - 614 m 855 - 1219 m	75	61 - 667 m	30-Sep	20-Dec
2011	A. Needler Teleost	104 12	61 - 663 m 201 - 529 m	70	43 - 673 m	75	64 - 692 m	29-Sep	18-Dec
2012	A. Needler	142	65 - 725 m	70	39 - 641 m	75	62 - 631 m	30-Sep	03-Dec

Table 3a. Large sets (>900 fish or >400 kg per set) for Canadian spring and autumn surveys 1996-2004.

		season	div	Data			
		Spring		Fall			
		3N		3N		3O	
year	strata	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
1996	360	1340	191				
	361	977	148				
				950	307		
	375	1150	119				
	376			1116	124		
				964	146		
1997	360			4260	1518		
	361			2066	905		
	375	1261	221				
	376	980	179				
				1156	135		
		2293	238				
				1325	217		
				1800	317		
1998	360	1685	310				
				1006	211		
	361	1164	251				
				2978	858		
	362	2832	892				
	375	1226	292				
	376			1281	307		
		1007	188				
1999	360	4262	1333				
		3242	905				
				972	253		
	361	1140	146				
	362			938	198		
				1772	241		
		1169	217				
		1858	1019				
	375	1029	130				
	376	1540	267				
				1753	360		
		1023	182				
		1295	148				
2000	352					924	235
	360			1060	238		
	362	1274	400				
	373	2294	901				
	375			1020	232		
	376			2784	1365		
				4386	839		
				7988	2299		
2001	338					2384	927
	360	1404	304				
		1043	226				
		1008	280				
	361	998	243				
				1275	376		
	362	1657	346				
		1388	242				
				2866	848		
	373	9648	3308				
	376	1080	306				
		1370	293				
		4768	987				
				8486	1778		
				4162	1033		
				6356	1662		
2002	360	979	234				
		2948	865				
		1096	269				
		1200	376				
		1118	332				
				3284	1484		
				1190	315		
	361			990	285		
				987	249		
	362			1289	296		
	375			1103	296		
	376			1365	298		
				1367	259		
2003	351					1345	255
	353					993	340
	360	922	288				
				2720	985		
		1105	291				
	361			1355	339		
				972	240		
	373	906	319				
	376	1976	394				
				3255	950		
		1004	305				
		1677	377				
2004	351					929	233
	360			1151	286		
				901	397		
		1088	321				
		1904	962				
	361	990	220				
	362			1492	225		
	373			943	385		
	375			4236	890		
				4302	1037		
				1452	241		
	376	1227	316				
				1170	348		
				1764	255		

Table 3b. Large sets (>900 fish or >400 kg per set) for Canadian spring and autumn surveys 2004-2012.

		season	div	Data									
		Spring						Fall					
		3L		3N		3O		3L		3N		3O	
year	strata	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
2005	352											1001	388
	360			2386	838								
	361			1014	266								
	362			964	328								
	373			934	376								
	375									1515	293		
	376			3338	963								
										4436	990		
										4900	865		
										8946	1689		
										7228	1206		
2006	360			954	317					3518	1543		
				1527	352								
				3168	1093								
	362			1366	396								
	376									1149	322		
										1569	315		
										5058	1011		
				3248	821								
2007	360			4138	847								
				1175	234								
										4280	1298		
										1409	390		
										1145	330		
										1410	358		
										915	196		
	361									946	167		
	362			982	302								
	373			922	395								
										1292	365		
				921	375								
	375									1201	302		
	376			957	250								
				1350	262								
										3540	818		
										2216	342		
										2662	828		
2008	352											1084	212
	360									955	220		
				3062	945								
				6186	2064								
	361			944	132								
	362									1107	253		
				1063	357								
	373			2056	811								
	375									1070	316		
	376			1477	307								
										3578	1117		
				1278	328								
2009	373			2550	825								
	375									990	243		
										1405	302		
				1128	302								
	376									1081	243		
				2646	801								
				1334	260								
2010	338					1302	391						
	360									1033	233		
				908	236								
				3842	985								
	372							948	207				
	373			2892	990								
										3244	897		
	374			2634	1073								
	375									1463	264		
										4858	862		
	376									1747	397		
										1336	362		
										5734	1401		
				1650	359								
										1429	301		
				1130	266								
				2938	884								
				1134	273								
2011	360			1018	256								
				974	362								
				3820	1505								
										1241	316		
	373			1260	389								
	374									3682	1725		
				918	247								
	376									903	155		
				1033	252								
				1379	236								
2012	351											4474	1540
	360									1015	188		
				1224	319								
				4468	1157								
				3207	803								
				2918	813								
				1253	304								
	362			1622	312								
	363	2331	942										
		2194	875										
	373			3694	1011								
	375									1131	259		
	376									1274	374		
				4622	1118								
	377									3320	830		

Table 4. Mean number per tow of yellowtail flounder by stratum for Division 3L (strata <184m only) from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784															0	0		0	0		0								
57 - 92	350	3.2	7.4	4.4	1.3	2.8	1.4	0.3	1.5	0.1	0	0.1	0	1.6	0	0	33.2	21.5	4.5	0.3	8.4	11.9	22.2	9.7	10.5	44.0	2.5	0.0	92.0	65.1
	363	45.6	27.6	14.5	13.1	9.9	3.4	7.6	1.3	0.2	0	0	0	4.4	1.0	0	94.8	97.9	13.7	0.7	207.7	55.7	209.8	390.7	386.3	177.8	82.0	41.1	218.5	614.6
	371		0.7	0.7	0	0.8	0.2	0	0.4	0	0	0	0	0.4	0	0	2.5	0	0	0	0	0.8	56.0	9.8	3.5	0.3	0.0	16.7	14.5	13.0
	372	96.6	117.1	62.0	24.4	13.9	19.5	8.0	4.0	0.6	0.7	0.1	0	2.5	2.4	4.5	47.3	28.2	19.1	3.8	113.8	63.1	142.5	394.3	162.6	126.1	77.1	284.0	223.8	152.1
	384		7.7	2.5	1.9	0.4	0.2	0	0	0	0	0	0	0	0.8	0	0	0.5	0.8	0.3	0.3	0.3	0	23.3	3.3	2.0	0.0	8.0	13.1	44.5
	785															0.5	0		0	1.0		1.5								
93 - 183	328	0	0	0	0.1	0	0	0.1	0.2	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0.2	0		0	0.2	0	0.3
	341	0	0.2	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2	0	0.2	0.2	1.3	3.8	3.6	21.0	0.4	0.0	1.2	9.5
	342	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343		0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	348		0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.2	0.2	0.0	0.0	0.0	0.2
	349	0.2	0.1	2.3	0.2	0.1	0	0	0	0	0	0.1	0	0.1	0	0	18.0	2.6	0	0	0.4	0	0.3	16.9	78.3	1.7	0.0	0.2	0.6	6.3
	364	1.6	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	2.9	0.5	0	0	0	0	1.9	22.3	0.3	28.0	0.0	0.6	0.1	12.9
	365		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	370		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.2
	385		0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0.3	0.1	0.0	0.0	0.0	0.0	0
	390		0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.0	0	0.0	0.0
	786															0.5	0		0			0							0.0	
	787															0	0		0			0							0.5	
	788																0													
	790																0													
	793																0													
	794																0				0									
	797																0				0									
	799																					0								
3L (all strata)		22.1	9.4	5.3	2.4	1.6	1.6	0.9	0.4	0.1	0.0	0.0	0.0	0.5	0.2	0.3	9.6	7.6	2.1	0.3	16.9	7.0	21.7	47.1	33.3	21.6	22.6	23.6	29.7	46.3
Upper CI		39.3	14.6	7.8	3.6	2.4	2.6	1.6	0.7	0.1	0.1	0.0	0.0	0.7	0.4	0.8	15.6	11.3	4.2	0.6	30.2	13.0	37.5	64.2	48.1	28.9	16.7	35.4	43.7	68.2
Lower CI		5.0	4.2	2.8	1.2	0.9	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.2	0.1	-0.2	3.6	3.9	0.0	0.0	3.6	1.0	5.8	30.1	18.4	14.2	0.8	6.7	15.7	24.5

Table 5. Mean weight (kg) per tow of yellowtail flounder by stratum for Division 3L (strata <184m only) from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784															0	0		0	0		0								
57 - 92	350	1.4	3.5	2.0	0.6	1.4	0.6	0.2	0.7	0.1	0	0.1	0	0.7	0	0	16.3	8.4	2.1	0.0	2.6	4.6	7.9	3.7	3.9	15.4	0.9	0.0	31.4	23.2
	363	22.2	12.6	6.9	6.3	4.5	1.6	3.4	0.6	0.1	0	0	0	2.2	0.5	0	51.6	43.6	5.3	0.1	77.6	23.7	84.0	144.1	135.2	71.0	22.4	16.1	75.5	236.8
	371		0.4	0.3	0	0.4	0.1	0	0.1	0	0	0	0	0.1	0	0	1.4	0	0	0	0	0.3	20.9	4.4	1.2	0.1	0.0	7.1	6.4	5.6
	372	46.5	48.2	28.7	11.2	6.2	9.9	4.0	2.0	0.3	0.3	0.1	0	1.1	0.7	1.4	24.2	12.0	7.0	1.5	43.0	23.8	50.9	121.9	55.8	45.9	22.0	67.5	77.3	48.3
	384		3.7	1.5	1.2	0.2	0.1	0	0	0	0	0	0	0	0.5	0	0	0.2	0.3	0.3	0.0	0.2	0	11.8	1.8	0.6	0.0	3.6	6.0	23.4
	785															0.0	0		0	0.2		0.8								
93 - 183	328	0	0	0	0.0	0	0	0.1	0.1	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0.1	0		0	0.2	0	0.2
	341	0	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.0	0.1	0.3	1.2	1.1	7.1	0.1	0.0	0.6	3.2
	342	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343		0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	348		0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	349	0.1	0.0	1.0	0.1	0.1	0	0	0	0	0	0.0	0	0.1	0	0	7.9	1.0	0	0	0.1	0	0.1	5.3	24.0	0.5	0.0	0.1	0.4	1.7
	364	0.7	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	1.4	0.2	0	0	0	0	0.7	9.5	0.1	10.5	0.0	0.2	0.0	4.8
	365		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	370		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
	385		0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0	0.0	0
	390		0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0.0	0	0.0	0.0
	786															0.2	0		0			0							0.0	
	787															0	0		0			0							0.2	
	788																0													
	790																0													
	793																0													
	794																0				0									
	797																0				0									
	799																					0								
3L (all strata)		10.7	4.0	2.5	1.1	0.7	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.1	0.1	5.0	3.3	0.8	0.1	6.3	2.8	8.2	16.0	11.4	8.1	2.5	5.5	10.3	17.2
Upper CI		19.0	6.0	3.6	1.7	1.1	1.3	0.8	0.4	0.1	0.1	0.0	0.0	0.3	0.1	0.2	8.0	4.8	1.6	0.2	10.9	5.2	13.9	21.9	16.3	11.1	4.8	8.8	15.1	26.0
Lower CI		2.3	1.9	1.4	0.6	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	1.9	1.7	0.0	0.0	1.7	0.3	2.4	10.2	6.5	5.1	0.2	2.1	5.6	8.4

Table 6. Abundance (millions) of yellowtail flounder by stratum for Division 3L (strata <184m only) from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784															0	0		0	0		0								
57 - 92	350	0.9	2.1	1.2	0.4	0.8	0.4	0.1	0.4	0.0	0	0.0	0	0.4	0	0	9.4	6.1	1.3	0.1	2.4	3.4	6.3	2.8	3.0	12.5	0.7	0.0	26.2	18.6
	363	11.2	6.8	3.6	3.2	2.4	0.8	1.9	0.3	0.1	0	0	0	1.1	0.2	0	23.2	24.0	3.3	0.2	50.8	13.6	51.4	95.7	94.6	43.5	20.1	10.1	53.5	150.5
	371		0.1	0.1	0	0.1	0.0	0	0.1	0	0	0	0	0.1	0	0	0.4	0	0	0	0	0.1	8.6	1.5	0.5	0.0	0.0	2.6	2.2	2.0
	372	32.7	39.6	21.0	8.3	4.7	6.6	2.7	1.4	0.2	0.2	0.0	0	0.8	0.8	1.5	16.0	9.6	6.5	1.3	38.5	21.4	48.2	133.4	55.0	42.7	26.1	96.1	75.7	51.5
	384		1.2	0.4	0.3	0.1	0.0	0	0	0	0	0	0	0	0.1	0	0	0.1	0.1	0.0	0.0	0.0	0	3.6	0.5	0.3	0.0	1.2	2.0	6.9
	785															0.0	0		0	0.1		0.1								
93 - 183	328	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0		0	0.0	0	0.1
	341	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0.0	0.0	0.3	0.8	0.8	4.5	0.1	0.0	0.3	2.0
	342	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343		0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	348		0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
	349	0.0	0.0	0.7	0.1	0.0	0	0	0	0	0	0.0	0	0.0	0	0	5.2	0.8	0	0	0.1	0	0.1	4.9	22.8	0.5	0.0	0.0	0.2	1.8
	364	0.6	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	1.1	0.2	0	0	0	0	0.7	8.7	0.1	10.9	0.0	0.2	0.1	5.0
	365		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	370		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	385		0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0	0.0	0
	390		0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.0	0	0.0	0.0
	786															0.0	0		0			0							0.0	
	787															0	0		0			0							0.0	
	788																0													
	790																0													
	793																0													
	794																0				0									
	797																0				0									
	799																					0								
3L (all strata)		45.4	49.9	26.9	12.3	8.1	7.9	4.7	2.2	0.3	0.2	0.1	0	2.5	1.2	1.6	55.4	40.7	11.5	1.6	92.0	38.7	115.6	251.5	177.5	115.3	47.0	110.3	160.3	238.5
Upper CI		80.7	77.5	39.7	18.4	11.9	13.2	8.3	3.6	0.7	0.7	0.3	0	3.8	2.0	4.3	89.9	60.3	23.1	3.1	164.3	72.0	200.1	342.6	256.8	154.5	89.4	185.4	236.0	351.0
Lower CI		10.2	22.3	14.2	6.2	4.3	2.7	1.1	0.8	-0.1	-0.2	0.0	0	1.2	0.4	-1.1	20.9	21.0	-0.1	0.1	19.6	5.4	31.2	160.5	98.3	76.0	4.5	35.1	84.6	125.9

Table 7. Biomass (kt) of yellowtail flounder by stratum for Division 3L (strata <184m only) from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784															0	0		0	0		0								
57 - 92	350	0.4	1.0	0.6	0.2	0.4	0.2	0.0	0.2	0.0	0	0.0	0	0.2	0	0	4.6	2.4	0.6	0.0	0.7	1.3	2.3	1.1	1.1	4.4	0.3	0.0	8.9	6.6
	363	5.4	3.1	1.7	1.6	1.1	0.4	0.8	0.1	0.0	0	0	0	0.5	0.1	0	12.6	10.7	1.3	0.0	19.0	5.8	20.6	35.3	33.1	17.4	5.5	4.0	18.5	58.0
	371		0.1	0.0	0	0.1	0.0	0	0.0	0	0	0	0	0.0	0	0	0.2	0	0	0	0	0.0	3.2	0.7	0.2	0.0	0.0	1.1	1.0	0.9
	372	15.7	16.3	9.7	3.8	2.1	3.4	1.3	0.7	0.1	0.1	0.0	0	0.4	0.2	0.5	8.2	4.1	2.4	0.5	14.5	8.0	17.2	41.2	18.9	15.5	7.5	22.9	26.2	16.3
	384		0.6	0.2	0.2	0.0	0.0	0	0	0	0	0	0	0	0.1	0	0	0.0	0.0	0.0	0.0	0.0	0	1.8	0.3	0.1	0.0	0.6	0.9	3.6
	785															0.0	0		0	0.0		0.0								
93 - 183	328	0	0	0	0.0	0	0	0.0	0.0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0		0	0.0	0	0.0
	341	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.0	0.0	0.1	0.3	0.2	1.5	0.0	0.0	0.1	0.7
	342	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343		0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
	348		0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	349	0.0	0.0	0.3	0.0	0.0	0	0	0	0	0	0.0	0	0.0	0	0	2.3	0.3	0	0	0.0	0	0.0	1.5	7.0	0.2	0.0	0.0	0.1	0.5
	364	0.3	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.1	0	0	0	0	0.3	3.7	0.1	4.1	0.0	0.1	0.0	1.9
	365		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	370		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
	385		0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0	0.0	0
	390		0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0.0	0.0
	786															0.0	0		0			0							0.0	
	787															0	0		0			0							0.0	
	788																0													
	790																0													
	793																0													
	794																0				0									
	797																0				0									
	799																					0								
3L (all strata)		21.9	21.1	12.6	5.8	3.7	4.0	2.2	1.1	0.2	0.1	0.0	0	1.1	0.5	0.5	28.5	17.5	4.4	0.6	34.3	15.3	43.6	85.7	60.9	43.2	13.2	28.6	55.8	88.6
Upper CI		38.9	32.0	18.3	8.5	5.4	6.8	4.0	1.8	0.4	0.3	0.1	0	1.7	0.8	1.3	46.2	25.8	8.9	1.2	59.2	29.1	74.3	116.7	87.0	59.1	25.5	46.1	81.6	133.9
Lower CI		4.8	10.2	6.8	3.1	2.1	1.2	0.5	0.4	-0.1	-0.1	0.0	0	0.5	0.1	-0.3	10.8	9.3	0.0	-0.1	9.5	1.5	12.9	54.6	34.9	27.4	0.9	11.1	30.0	43.2
% biomass >183m		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 8. Mean number per tow of yellowtail flounder by stratum (< 184 m only) for Division 3N from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	373.6	165.6	409.6	208.3	118.5	82.3	259.5	21.5	340.3	135.7	29.0	139.7	603.3	487.2	411.6	476.4	359.0	301.6	213.4	395.0	286.2	240.0	302.3	463.9	420.3	523.8	185.2	334.6	510.7
	376	91.5	220.3	162.3	719.6	125.7	977.0	521.3	764.1	183.7	35.0	2.3	10.8	67.8	1029.8	524.8	911.0	349.5	1145.8	243.8	1092.6	768.7	830.8	753.7	851.7	878.0	996.4	1122.5	937.2	893.2
57 - 92	360	289.7	155.3	32.3	33.0	7.0	480.3	91.7	50.1	140.2	41.9	6.8	133.2	364.7	126.2	374.4	680.3	215.7	549.4	730.8	600.1	470.3	465.8	975.2	522.9	1012.6	357.2	754.9	691.8	1043.8
	361	338.6	171.0	101.4	130.1	166.6	142.3	293.3	242.9	63.6	237.9	451.0	276.7	453.6	427.2	455.7	586.7	544.0	639.2	375.3	526.2	472.4	415.1	443.5	386.0	421.6	357.2	211.2	520.1	418.0
	362	227.1	74.4	159.9	103.3	73.3	50.9	79.4	53.7	7.5	86.8	2.3	0.6	169.3	210.5	300.0	507.9	519.1	522.6	55.6	263.2	307.9	456.0	773.8	406.8	350.7	174.3	262.2	363.6	397.5
	373	122.0	58.1	28.2	38.7	34.6	20.8	2.5	13.4	0.1	0.1	3.0	0	7.8	1.9	11.1	103.1	311.8	680.9	32.9	273.6	55.4	315.6		365.9	407.8	211.6	388.0	213.8	416.4
	374	59.7	38.5	14.8	7.6	4.2	0.2	1.8	0.4	1.0	0	0	3.3	15.3	10.7	5.8	248.7	225.5	88.3	31.3	279.7	225.3	254.0	240.0	679.1	346.5	463.3	650.3	595.5	199.7
	383	3.7	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3		10.0	70.0	1.8	52.0	42.0	244.5
93 - 183	359	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	2.5	0	0	0	0	0		17.5	38.5	0.0	6.2	5.3	298.0
	377	0	0	0	0	6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0	0	0	4.0		423.9	84.5	0.5	22.5	195.7	334.0
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.5		0	0.0	0	0.0	0	0.0
3N (all strata)		189.7	104.6	100.0	128.1	58.9	208.4	133.1	111.7	79.3	60.4	51.5	66.1	198.0	233.2	240.4	402.1	289.6	466.4	220.0	381.0	287.4	342.4	660.7	397.1	464.2	313.0	396.0	402.9	496.9
Upper CI		251.2	135.1	141.7	202.2	86.3	335.7	206.4	165.4	127.0	103.6	89.1	101.0	254.8	349.9	324.1	499.8	356.3	660.0	287.5	467.6	357.7	421.9	872.1	490.9	559.3	388.4	489.3	489.8	625.2
Lower CI		128.2	74.1	58.3	53.9	31.6	81.2	59.9	57.9	31.6	17.1	13.8	31.3	141.1	116.5	156.7	304.4	222.8	272.8	152.6	294.5	217.2	262.9	449.3	303.4	369.1	237.7	302.8	315.9	368.6

note: 2006 survey coverage was poor in important yellowtail flounder strata and results are likely not comaparable to other survey years.

Table 9. Mean weight (kg) per tow of yellowtail flounder by stratum (< 184 m only) for Division 3N from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	150.0	78.2	181.6	103.8	50.6	21.2	84.3	11.7	118.4	49.5	12.1	59.7	78.7	87.5	90.8	100.2	70.1	84.6	65.6	133.9	94.2	81.4	98.7	145.4	101.8	137.8	55.5	104.6	132.9
	376	30.0	66.8	66.8	78.7	12.6	121.7	70.9	143.7	22.4	5.1	0.6	2.8	5.4	123.6	99.6	150.2	72.8	253.5	50.4	266.0	209.3	245.6	214.2	210.1	212.8	275.5	284.1	211.8	224.2
57 - 92	360	106.6	46.3	11.2	7.4	2.5	61.0	12.1	12.1	25.3	8.8	2.5	39.6	68.1	39.1	77.8	186.0	63.5	146.3	213.5	191.2	178.4	152.2	303.8	126.8	328.7	97.9	206.8	218.1	273.2
	361	126.7	59.9	38.3	58.1	70.2	43.5	105.0	82.3	29.6	82.5	163.9	108.5	106.1	102.5	122.4	123.3	129.2	164.5	102.8	163.7	131.9	102.6	123.4	118.9	85.7	89.7	50.9	113.0	95.3
	362	86.8	32.1	61.2	40.3	35.1	24.6	30.3	24.4	2.9	40.9	1.3	0.3	83.5	97.1	111.8	166.3	162.4	123.6	12.5	84.3	78.5	138.3	245.8	129.8	102.3	51.1	77.8	98.9	101.3
	373	52.9	26.4	13.9	17.8	18.2	11.1	0.9	7.1	0.0	0.0	0.9	0	1.9	1.0	3.2	31.9	121.1	228.0	8.1	95.6	17.1	125.2		142.5	148.4	68.0	132.8	66.8	128.3
	374	30.1	21.1	8.9	4.3	2.3	0.1	0.5	0.2	0.6	0	0	1.1	7.1	3.0	1.2	69.0	74.3	23.9	10.3	103.4	99.2	115.1	90.1	294.1	127.6	172.2	257.4	172.6	75.9
	383	2.0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7		4.1	29.6	0.3	19.7	14.0	81.5
93 - 183	359	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	1.1	0	0	0	0	0		6.3	12.3	0.0	1.8	1.4	85.0
	377	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	1.7		165.9	25.2	0.2	8.2	54.6	102.1
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1		0	0.0	0	0.0	0	0
3N (all strata)		73.1	38.4	41.5	34.1	22.4	34.1	33.0	28.8	20.8	21.1	18.9	24.1	43.3	51.0	59.8	99.3	82.2	124.1	61.4	116.7	90.3	109.8	203.7	121.9	137.6	88.9	115.3	111.1	132.2
Upper CI		97.3	48.7	58.9	47.8	31.1	50.3	47.1	39.7	33.2	36.0	33.2	36.3	54.0	72.2	80.2	127.4	103.5	186.4	80.0	138.4	115.1	136.4	258.0	147.4	167.5	111.2	144.7	141.2	164.0
Lower CI		48.9	28.1	24.0	20.5	13.7	18.0	18.9	17.9	8.4	6.2	4.6	11.9	32.6	29.8	39.5	71.3	60.9	61.8	42.7	95.0	65.5	83.2	149.3	96.5	107.7	66.6	85.9	81.1	100.5

Table 10. Abundance (millions) of yellowtail flounder by stratum (< 184 m only) for Division 3N from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	81.9	36.3	89.8	45.6	26.0	18.0	56.9	4.7	74.6	29.7	6.4	30.6	132.2	106.8	90.2	104.4	78.7	66.1	46.8	86.6	62.7	52.6	66.3	101.7	92.1	114.8	40.6	73.3	111.9
	376	18.9	45.4	33.5	148.4	25.9	201.5	107.5	157.6	37.9	7.2	0.5	2.2	14.0	212.3	108.2	187.9	72.1	236.3	50.3	225.3	158.5	171.3	155.4	175.6	181.0	205.5	231.5	193.3	184.2
57 - 92	360	119.2	63.9	13.3	13.6	2.9	197.7	37.7	20.6	57.7	17.2	2.8	54.8	150.1	51.9	154.1	280.0	88.8	226.1	300.8	247.0	193.6	191.7	401.4	215.2	416.8	147.0	310.7	284.7	429.6
	361	86.3	43.6	25.8	33.2	42.5	36.3	74.8	61.9	16.2	60.6	115.0	70.5	115.6	108.9	116.2	149.5	138.7	162.9	95.7	134.1	120.4	105.8	113.0	98.4	107.5	91.0	53.8	132.6	106.6
	362	78.7	25.8	55.4	35.8	25.4	17.7	27.5	18.6	2.6	30.1	0.8	0.2	58.7	73.0	104.0	176.1	180.0	181.1	19.3	91.2	106.7	158.1	268.2	141.0	121.6	60.4	90.9	126.0	137.8
	373	42.3	20.1	9.8	13.4	12.0	7.2	0.9	4.6	0.0	0.0	1.0	0	2.7	0.6	3.8	35.7	108.1	236.0	11.4	94.8	19.2	109.4		126.8	141.3	73.4	134.5	74.1	144.4
	374	7.6	4.9	1.9	1.0	0.5	0.0	0.2	0.1	0.1	0	0	0.4	2.0	1.4	0.7	31.8	28.9	11.3	4.0	35.8	28.9	32.5	30.7	87.0	44.4	59.3	83.3	76.3	25.6
	383	0.3	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2		0.9	6.5	0.2	4.8	3.9	22.7
93 - 183	359	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0.1	0	0	0	0	0		1.0	2.2	0.0	0.4	0.3	17.3
	377	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.1		5.8	1.2	0.0	0.3	2.7	4.6
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3		0	0.0	0	0.0	0	0
3N (all strata)		435.3	240.1	229.5	291.0	135.3	478.3	305.5	268.1	189.2	145.0	126.4	158.8	475.3	554.9	577.2	965.4	695.3	1119.9	528.3	914.9	690.1	822.0	1035.0	953.5	1114.6	751.6	950.9	967.3	1184.6
Upper CI		576.5	310.0	325.1	459.6	198.0	770.4	473.6	397.2	303.0	248.8	218.8	242.5	611.8	832.5	778.1	1200.0	855.6	1584.8	690.4	1122.6	858.8	1012.9	1366.1	1178.6	1343.0	932.5	1174.8	1176.1	1490.4
Lower CI		294.1	170.1	133.9	122.5	72.5	186.2	137.4	139.0	75.3	41.1	34.0	75.1	338.8	277.3	376.4	730.9	535.0	655.1	366.3	707.1	521.4	631.1	703.9	728.4	886.1	570.7	726.9	758.5	878.8

Table 11. Biomass (kt) of yellowtail flounder by stratum (< 184 m only) for Division 3N from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	32.9	17.1	39.8	22.8	11.1	4.6	18.5	2.6	25.9	10.8	2.7	13.1	17.3	19.2	19.9	21.9	15.4	18.5	14.4	29.3	20.6	17.8	21.6	31.9	22.3	30.2	12.2	22.9	29.1
	376	6.2	13.8	13.8	16.2	2.6	25.1	14.6	29.6	4.6	1.1	0.1	0.6	1.1	25.5	20.5	31.0	15.0	52.3	10.4	54.8	43.2	50.7	44.2	43.3	43.9	56.8	58.6	43.7	46.2
57 - 92	360	43.9	19.0	4.6	3.1	1.0	25.1	5.0	5.0	10.4	3.6	1.0	16.3	28.0	16.1	32.0	76.5	26.2	60.2	87.9	78.7	73.4	62.6	125.0	52.2	135.3	40.3	85.1	89.8	112.4
	361	32.3	15.3	9.8	14.8	17.9	11.1	26.8	21.0	7.5	21.0	41.8	27.7	27.1	26.1	31.2	31.4	32.9	41.9	26.2	41.7	33.6	26.1	31.5	30.3	21.9	22.9	13.0	28.8	24.3
	362	30.1	11.1	21.2	14.0	12.2	8.5	10.5	8.5	1.0	14.2	0.5	0.1	28.9	33.7	38.8	57.6	56.3	42.9	4.3	29.2	27.2	47.9	85.2	45.0	35.4	17.7	27.0	34.3	35.1
	373	18.3	9.1	4.8	6.2	6.3	3.8	0.3	2.5	0.0	0.0	0.3	0	0.6	0.3	1.1	11.1	42.0	79.0	2.8	33.1	5.9	43.4		49.4	51.4	23.6	46.0	23.2	44.5
	374	3.9	2.7	1.1	0.6	0.3	0.0	0.1	0.0	0.1	0	0	0.1	0.9	0.4	0.1	8.8	9.5	3.1	1.3	13.2	12.7	14.7	11.5	37.7	16.3	22.0	33.0	22.1	9.7
	383	0.2	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2		0.4	2.7	0.0	1.8	1.3	7.6
93 - 183	359	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0.1	0	0	0	0	0		0.4	0.7	0.0	0.1	0.1	4.9
	377	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.0		2.3	0.3	0.0	0.1	0.8	1.4
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1		0	0.0	0	0.0	0	0
3N (all strata)		167.7	88.2	95.1	77.5	51.4	78.3	75.7	69.1	49.6	50.8	46.3	57.9	103.9	121.3	143.7	238.5	197.3	297.9	147.3	280.2	216.7	263.7	319.1	292.8	330.4	213.5	276.9	402.9	496.9
Upper CI		223.2	111.9	135.2	108.5	71.4	115.4	108.1	95.3	79.1	86.5	81.5	87.2	129.7	171.7	192.6	305.8	248.4	447.6	192.1	332.2	276.3	327.5	404.2	353.8	402.2	267.1	347.5	489.8	625.2
Lower CI		112.1	64.5	55.1	46.6	31.4	41.2	43.3	42.9	20.1	15.0	11.2	28.6	78.2	70.9	94.8	171.1	146.2	148.3	102.5	228.2	157.2	199.8	234.0	231.7	258.5	160.0	206.3	315.9	368.6
% biomass >183m		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 12. Mean number per tow of yellowtail flounder by stratum (< 184 m only) for Division 3O from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	1.0	14.8	5.0	1.5	1.1	2.0	1.2	9.2	0	0.1	0	0	1.8	0.6	0.5	0.6	47.2	1.6	6.0	10.3	8.9	8.4	14.7	36.4	24.7	5.5	14.7	34.2	9.1
	331	50.0	62.3	5.3	26.5	9.0	25.0		1.0	0	2.0	5.5	0.5	1.5	5.3	1.0	69.8	43.5	30.0	17.0	86.5	36.5	45.5		25.5	83.5	39.0	199.0	136.5	69.0
	338	30.0	22.2	10.6	4.1	48.9	13.2	11.3	17.1	18.0	13.0	5.0	10.0	66.0	68.1	54.3	63.7	43.2	148.8	28.7	30.2	15.6	21.0	53.6	144.8	44.0	215.7	322.3	68.7	147.3
	340	6.0	13.6	16.3	40.8	10.0	6.4	17.7	5.4	3.2	2.8	0	0.2	0	9.0	1.6	8.8	44.0	11.4	13.6	82.2	7.8	39.4	131.5	97.0	133.3	26.8	37.2	109.1	113.2
	351	80.0	85.6	80.7	39.5	75.2	43.5	52.4	24.5	7.2	5.8	0.3	0.8	28.5	65.3	50.7	324.2	105.3	147.5	70.8	105.9	199.7	297.9	241.0	230.4	303.9	9.3	142.8	314.5	312.0
	352	63.7	55.6	73.0	103.4	47.2	50.7	77.9	78.4	50.8	226.1	55.6	36.0	312.6	177.4	246.3	279.7	268.4	217.9	294.0	458.8	331.0	247.6	379.2	388.9	188.1	129.8	184.4	299.9	116.4
	353	2.0	98.5	32.1	148.5	3.0	9.6	20.7	26.7	10.0	66.5	1.8	70.2	122.2	175.0	190.6	188.2	92.4	124.9	80.6	36.0	228.7	82.8	147.1	104.3	126.8	9.8	263.8	110.9	256.3
93 - 183	329	0	0	0	0.1	0	0	0	0.4	0	0.2	0	0	0	0	0	0.3	0.2	0	0	0	0	0		0.2	0.0	0.0	0.0	0.4	3
	332	0	0.6	14.2	9.2	0.3	30.4	1.8	1.3	1.0	13.3	0.3	1.5	6.5	1.3	7.5	4.8	0	4.3	22.0	5.7	0	1.7		1.0	3.0	0.7	1.7	4.7	1.0
	337	0	0	1.0	1.2	2.3	2.8	0	0	1.0	7.0	0.3	0.5	3.0	15.9	0.5	0.9	2.0	0	8.7	0	0	4.4		0	1.7	0	5.0	4	0.7
	339	1.0	0.3	0.3	0.3	0	0	1.0	0	0	0	0	0	0	0	0	0.9	2.0	27.0	1.0	11.0	0	6.5	32.0	2.9	1.5	1.0	1.5	0.4	16.0
	354	0	1.0	0	0	0	0.5	0	3.0	0	0	0	0.7	2.0	0.5	0	0.4	1.0	0	0	0	1.0	0		4.0	1.5	0.0	1.1	2.7	0.0
3O (all strata)		25.8	34.2	28.5	36.9	24.2	18.9	23.9	19.7	11.0	39.8	8.5	11.2	63.3	54.6	60.5	105.4	73.1	77.3	63.1	95.3	93.2	89.0	169.8	121.4	98.2	46.2	106.7	117.7	105.4
Upper CI		42.0	46.2	39.5	52.6	34.6	26.1	36.5	30.0	15.9	80.5	17.3	19.3	87.3	89.1	83.0	141.2	96.8	113.3	102.9	122.6	130.1	124.3	238.8	161.3	121.5	78.2	162.6	156.5	142.8
Lower CI		9.6	22.1	17.5	21.2	13.9	11.8	11.2	9.3	6.1	-0.9	-0.4	3.2	39.4	20.1	38.1	69.7	49.4	41.2	23.3	68.0	56.3	53.7	100.8	81.4	74.9	14.2	50.7	78.8	68.0

note: 2006 survey coverage was poor in important yellowtail flounder strata and results are likely not comaparable to other survey years.

Table 13. Mean weight (kg) per tow of yellowtail flounder by stratum (< 184 m only) for Division 3O from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	0.6	6.7	2.6	0.7	0.6	1.1	0.7	4.0	0	0.1	0	0	0.9	0.2	0.2	0.3	23.7	0.7	1.9	2.0	3.0	3.0	6.7	11.9	10.0	2.3	4.0	17.5	4.2
	331	21.7	29.5	2.8	13.2	4.6	14.8		0.6	0	1.4	2.8	0.2	0.5	1.6	0.0	27.3	19.1	10.0	6.5	38.7	12.3	19.5		10.9	37.3	16.1	80.3	53.6	32.6
	338	12.7	10.6	5.4	1.9	19.6	6.4	5.6	5.1	8.1	5.3	2.7	4.9	30.8	24.8	21.2	27.6	18.1	53.9	12.6	11.5	5.9	9.1	19.0	49.8	17.7	101.3	106.9	28.2	64.7
	340	2.9	6.6	7.5	18.3	4.7	3.2	8.5	2.7	1.6	1.5	0	0.0	0	3.4	0.8	4.2	17.8	4.4	3.1	20.3	2.3	16.4	43.2	29.2	38.2	7.9	10.0	27.9	34.7
	351	35.8	37.5	33.8	17.3	32.4	20.0	24.2	11.6	3.2	2.4	0.1	0.3	13.6	26.6	18.0	89.7	34.9	44.3	13.7	28.1	60.8	100.9	79.9	59.1	99.7	2.2	42.5	94.9	78.4
	352	28.1	24.5	30.0	42.9	21.3	22.7	31.5	38.3	19.9	93.0	22.7	15.4	129.7	72.0	83.5	110.1	100.0	75.3	93.6	136.5	97.5	89.1	118.3	107.1	63.9	36.9	60.2	104.0	40.9
	353	1.1	43.2	15.9	75.7	1.6	4.9	9.9	13.0	4.6	29.8	1.1	31.8	60.5	56.3	90.8	103.2	41.8	24.9	37.7	14.0	92.7	33.9	65.2	36.8	39.1	2.9	91.3	42.7	84.0
93 - 183	329	0	0	0	0.0	0	0	0	0.2	0	0.1	0	0	0	0	0	0.1	0.1	0	0	0	0	0		0.1	0.0	0.0	0.0	0.2	1
	332	0	0.3	7.7	5.0	0.1	11.9	0.8	0.7	0.5	6.1	0.2	0.9	3.5	0.5	2.3	1.8	0	2.2	10.0	2.4	0	0.8		0.7	1.1	0.2	1.3	1.6	0.4
	337	0	0	0.6	0.6	1.0	1.7	0	0	0.4	4.4	0.2	0.2	2.0	6.4	0.2	0.5	1.0	0	4.2	0	0	1.9		0	0.4	0	2.5	2	0.3
	339	0.6	0.2	0.1	0.2	0	0	0.4	0	0	0	0	0	0	0	0	0.5	0.7	11.7	0.4	2.9	0	2.6	10.4	0.9	0.6	0.3	0.4	0.1	5.1
	354	0	0.6	0	0	0	0.1	0	1.6	0	0	0	0.3	0.9	0.4	0	0.1	0.6	0	0	0	0.7	0		1.9	0.4	0.0	0.4	0.7	0.0
3O (all strata)		11.4	15.2	12.4	16.7	10.5	8.7	10.5	9.2	4.6	16.7	3.6	5.0	27.6	20.8	22.7	38.7	28.3	24.9	20.2	28.2	29.7	31.9	56.9	35.0	32.6	17.4	35.0	39.5	33.6
Upper CI		18.5	20.6	16.8	23.9	14.7	11.6	15.8	14.3	6.7	33.3	7.0	8.7	37.7	32.5	31.4	51.3	36.8	36.0	32.8	35.6	39.5	44.8	81.1	45.9	40.5	34.0	51.9	52.4	44.2
Lower CI		4.4	9.9	7.9	9.5	6.3	5.9	5.2	4.1	2.4	0.1	0.2	1.3	17.6	9.2	14.1	26.1	19.7	13.9	7.7	20.9	19.9	19.0	32.6	24.0	24.8	0.8	18.1	26.6	22.9

Table 14. Abundance (millions) of yellowtail flounder by stratum (< 184 m only) for Division 3O from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	0.3	4.3	1.4	0.4	0.3	0.6	0.3	2.6	0	0.0	0	0	0.5	0.2	0.1	0.2	13.6	0.5	1.7	3.0	2.6	2.4	4.2	10.5	7.1	1.6	4.2	9.8	2.6
	331	3.1	3.9	0.3	1.7	0.6	1.6		0.1	0	0.1	0.3	0.0	0.1	0.3	0.1	4.4	2.7	1.9	1.1	5.4	2.3	2.9		1.6	5.2	2.4	12.5	8.6	4.3
	338	7.8	5.8	2.8	1.1	12.8	3.4	2.9	4.5	4.7	3.4	1.3	2.6	17.2	17.8	14.2	16.6	11.3	38.9	7.5	7.9	4.1	5.5	14.0	37.8	11.5	56.3	84.2	17.9	38.4
	340	1.4	3.2	3.8	9.6	2.4	1.5	4.2	1.3	0.8	0.7	0	0.0	0	2.1	0.4	2.1	10.4	2.7	3.2	19.4	1.8	9.3	31.0	22.9	31.5	6.3	8.8	25.7	26.7
	351	27.7	29.7	28.0	13.7	26.1	15.1	18.2	8.5	2.5	2.0	0.1	0.3	9.9	22.7	17.6	112.4	36.5	51.1	24.5	36.7	69.2	103.3	83.5	79.9	105.3	3.2	49.5	109.0	108.2
	352	22.6	19.7	25.9	36.7	16.7	18.0	27.7	27.8	18.0	80.3	19.7	12.8	110.9	63.0	87.4	99.3	95.3	77.3	104.3	162.8	117.5	87.9	134.6	138.0	66.8	46.1	65.4	106.4	41.3
	353	0.4	17.4	5.7	26.2	0.5	1.7	3.6	4.7	1.8	11.7	0.3	12.4	21.6	30.9	33.6	33.2	16.3	22.0	14.2	6.3	40.3	14.6	25.9	18.4	22.4	1.7	46.5	19.6	45.2
93 - 183	329	0	0	0	0.0	0	0	0	0.1	0	0.0	0	0	0	0	0	0.1	0.0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.1	1
	332	0	0.1	2.0	1.3	0.0	4.4	0.3	0.2	0.1	1.9	0.0	0.2	0.9	0.2	1.1	0.7	0	0.6	3.2	0.8	0	0.2		0.1	0.4	0.1	0.2	0.7	0.1
	337	0	0	0.1	0.2	0.3	0.4	0	0	0.1	0.9	0.0	0.1	0.4	2.1	0.1	0.1	0.3	0	1.1	0	0	0.6		0	0.2	0	0.7	0	0.1
	339	0.1	0.0	0.0	0.0	0	0	0.1	0	0	0	0	0	0	0	0	0.1	0.2	2.2	0.1	0.9	0	0.5	2.6	0.2	0.1	0.1	0.1	0.0	1.3
	354	0	0.1	0	0	0	0.0	0	0.2	0	0	0	0.0	0.1	0.0	0	0.0	0.1	0	0	0	0.1	0		0.3	0.1	0.0	0.1	0.2	0.0
3O (all strata)		63.5	84.1	70.1	90.9	59.7	46.7	57.3	50.0	28.0	101.1	21.9	28.5	161.7	139.4	154.5	269.1	186.5	197.2	161.0	243.2	237.9	227.1	295.9	309.7	250.6	117.9	272.2	298.6	269.1
Upper CI		103.4	113.8	97.2	129.5	85.2	64.2	87.6	76.3	40.4	204.4	44.7	49.1	222.7	227.5	211.7	360.3	247.1	289.1	262.5	312.8	332.0	317.1	416.1	411.6	310.1	199.6	414.9	397.0	364.5
Lower CI		23.5	54.5	43.0	52.3	34.2	29.2	26.9	23.6	15.6	-2.2	-1.0	8.0	100.6	51.4	97.3	177.9	126.0	105.2	59.4	173.6	143.8	137.1	175.6	207.8	191.2	36.2	129.5	200.1	173.6

Table 15. Biomass (kt) of yellowtail flounder by stratum (< 184 m only) for Division 3O from Spring surveys 1984-2012.

Range	Str	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	0.2	1.9	0.7	0.2	0.2	0.3	0.2	1.1	0	0.0	0	0	0.3	0.1	0.0	0.1	6.8	0.2	0.5	0.6	0.9	0.9	1.9	3.4	2.9	0.7	1.2	5.0	1.2
	331	1.4	1.9	0.2	0.8	0.3	0.9		0.0	0	0.1	0.2	0.0	0.0	0.1	0.0	1.7	1.2	0.6	0.4	2.4	0.8	1.2		0.7	2.3	1.0	5.0	3.4	2.0
	338	3.3	2.8	1.4	0.5	5.1	1.7	1.4	1.3	2.1	1.4	0.7	1.3	8.0	6.5	5.5	7.2	4.7	14.1	3.3	3.0	1.6	2.4	5.0	13.0	4.6	26.4	27.9	7.4	16.9
	340	0.7	1.5	1.8	4.3	1.1	0.8	2.0	0.6	0.4	0.4	0	0.0	0	0.8	0.2	1.0	4.2	1.0	0.7	4.8	0.5	3.9	10.2	6.9	9.0	1.9	2.4	6.6	8.2
	351	12.4	13.0	11.7	6.0	11.2	6.9	8.4	4.0	1.1	0.8	0.0	0.1	4.7	9.2	6.2	31.1	12.1	15.4	4.8	9.7	21.1	35.0	27.7	20.5	34.6	0.8	14.7	32.9	27.2
	352	10.0	8.7	10.7	15.2	7.5	8.0	11.2	13.6	7.1	33.0	8.1	5.5	46.0	25.6	29.7	39.1	35.5	26.7	33.2	48.4	34.6	31.6	42.0	38.0	22.7	13.1	21.4	36.9	14.5
	353	0.2	7.6	2.8	13.4	0.3	0.9	1.7	2.3	0.8	5.3	0.2	5.6	10.7	9.9	16.0	18.2	7.4	4.4	6.6	2.5	16.4	6.0	11.5	6.5	6.9	0.5	16.1	7.5	14.8
93 - 183	329	0	0	0	0.0	0	0	0	0.0	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0		0.0	0.0	0.0	0.0	0.0	0
	332	0	0.0	1.1	0.7	0.0	1.7	0.1	0.1	0.1	0.9	0.0	0.1	0.5	0.1	0.3	0.3	0	0.3	1.4	0.3	0	0.1		0.1	0.2	0.0	0.2	0.2	0.1
	337	0	0	0.1	0.1	0.1	0.2	0	0	0.1	0.6	0.0	0.0	0.3	0.8	0.0	0.1	0.1	0	0.5	0	0	0.2		0	0.1	0	0.3	0	0.0
	339	0.1	0.0	0.0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0.1	0.9	0.0	0.2	0	0.2	0.8	0.1	0.0	0.0	0.0	0.0	0.4
	354	0	0.0	0	0	0	0.0	0	0.1	0	0	0	0.0	0.1	0.0	0	0.0	0.0	0	0	0	0.0	0		0.1	0.0	0.0	0.0	0.0	0.0
3O (all strata)		28.2	37.5	30.5	41.2	25.8	21.5	25.1	23.3	11.6	42.4	9.2	12.7	70.6	53.2	58.0	98.7	72.1	63.6	51.6	72.0	75.8	81.5	99.1	89.3	83.3	44.4	89.2	100.2	85.6
Upper CI		45.6	50.7	41.4	59.0	36.2	28.5	37.8	36.3	17.0	84.5	18.0	22.2	96.3	82.9	80.2	130.8	93.9	91.9	83.7	90.7	100.8	114.4	141.4	117.3	103.3	86.9	132.3	133.0	112.8
Lower CI		10.8	24.3	19.5	23.5	15.5	14.4	12.4	10.3	6.2	0.3	0.5	3.3	44.9	23.5	35.9	66.6	50.4	35.4	19.5	53.2	50.8	48.5	56.9	61.4	63.2	2.0	46.1	67.4	58.4
% biomass >183m		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.09	0.54	0.01	0.22	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 16. Mean number per tow of yellowtail flounder by stratum for Division 3L (strata < 184 m only) from Fall Surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784							0.5	0	0		41.5	1.0	0	0.5	0	1.5							
57 - 92	350	5.9	0.7	0.5	0	0.1	0.4	0.3	0	0.4	1.3	3.1	12.4	18.4	29.3	17.3	2.9	3.3	0.5	35.8	0.4	10.0	49.3	85.7
	363	5.5	1.1	2.0	0	0.3	5.2	3.5	1.2	38.4	73.8	119.5	114.2	34.7	95.5	101.7	99.6	30.2	111.5	96.6	125.0	142.0	105.9	43.0
	371	0.2	0	0	0	0	0	0	0	0	0	0	0.3	1.3	0.3	0.3	0.3	0.8	0	14.7	0	3.8	23	25.0
	372	3.9	4.8	3.8	7.7	0	6.4	16.9	17.2	10.2	6.5	18.0	125.8	55.8	79.9	98.4	29.0	136.2	187.0	83.7	28.6	282.3	112.4	159.5
	384	0	0.2	0	0.1	0	0	0	0	0.3	0	0	0.3	0.3	0	0	22.0	10.5	0	112.3	30	10.0	134	0.8
	785							0	0	0		1.5	3.5	1.5	1.0	0	0							
93 - 183	328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0
	342	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	348	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0.0	0	0.0	0
	349	0	0	0	0	0	0	0	0	0	0	0	0.1	0.7	0	0	0	19.7	0.1	0.0	0.0	0.0	0.9	0
	364	0	0	0.2	0	0	0	0	0	0	0	0	0.1	0	0	0.5	0.6	0	0.2	0	0.0	1	1.6	1.0
	365	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0
	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0
	385	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	786							0.5	0	0.5		5.5	0	0	0	0	0.5							
	787							0	0	1.0		0	0	0	0	0	0	0						
	788							0	0	0		0	0	0	0	0	0	0				0		
	790							0	0	0		0	0	0	1.0	0	0					0.0		
	793							0	0	0		0	0	0	0	1.1	0					0.0		
	794							0	0	0			0	0	0	0	0	0				0		
	797							0	0	0		0	0	0	0	0	0	0				0		
	799							0	0	0		0	0	0	0	1.5	0	0				0		
3L (all strata)		0.8	0.4	0.4	0.5	0.0	0.7	1.1	1.0	2.1	3.5	6.1	11.7	5.2	9.2	13.4	6.6	10.2	15.3	15.3	7.6	22.0	19.4	17.5
Upper CI		1.6	0.6	0.6	1.3	0.1	1.3	2.2	2.7	5.0	8.6	11.2	18.4	8.0	16.2	21.3	12.4	16.0	26.0	23.6	16.1	39.1	30.0	29.3
Lower CI		0.0	0.2	0.2	-0.3	0.0	0.1	-0.1	-0.7	-0.8	-1.6	1.0	5.0	2.4	2.3	5.4	0.8	4.5	4.6	7.1	-1.0	4.9	8.8	5.7

Table 17. Mean weight (kg) per tow of yellowtail flounder by stratum for Division 3L (strata < 184 m only) from Fall Surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784							0.0	0	0		4.0	0.1	0	0.1	0	0.1							
57 - 92	350	2.6	0.3	0.3	0	0.0	0.2	0.2	0	0.3	0.7	1.1	4.1	5.8	9.1	5.8	1.1	1.2	0.2	10.2	0.2	3.3	16.0	26.0
	363	2.7	0.5	0.9	0	0.1	2.3	1.5	0.6	15.9	36.3	41.8	41.1	12.7	35.1	35.9	32.3	10.8	35.0	30.2	42.9	44.0	29.6	12.6
	371	0.1	0	0	0	0	0	0	0	0	0	0	0.1	0.3	0.1	0.1	0.1	0.4	0	5.8	0	1.7	10	8.8
	372	1.9	2.3	1.7	3.3	0	1.9	5.4	3.3	3.6	1.4	5.3	41.9	25.5	21.8	34.6	12.0	46.3	57.1	29.0	10.6	67.9	40.2	40.7
	384	0	0.1	0	0.1	0	0	0	0	0.0	0	0	0.1	0.1	0	0	10.8	4.3	0	43.4	15	5.2	52	0.5
	785							0	0	0		0.4	0.2	0.2	0.4	0	0							
93 - 183	328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0
	342	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	348	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.0	0	0.0	0
	349	0	0	0	0	0	0	0	0	0	0	0	0.1	0.3	0	0	0	6.4	0.0	0.0	0.0	0.0	0.2	0
	364	0	0	0.2	0	0	0	0	0	0	0	0	0.0	0	0	0.2	0.3	0	0.1	0	0.0	0	0.5	0.3
	365	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0
	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0.1
	385	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	786							0.0	0	0.2		0.3	0	0	0	0	0.1							
	787							0	0	0.0		0	0	0	0	0	0	0						
	788							0	0	0		0	0	0	0	0	0	0				0		
	790							0	0	0		0	0	0	0.1	0	0					0.0		
	793							0	0	0		0	0	0	0	0.9	0					0.0		
	794							0	0	0			0	0	0	0	0	0				0		
	797							0	0	0		0	0	0	0	0	0	0				0		
	799							0	0	0		0	0	0	0	0.4	0	0				0		
3L (all strata)		0.4	0.2	0.2	0.2	0.0	0.2	0.4	0.2	0.8	1.6	2.0	4.0	2.1	2.9	4.7	2.4	3.5	4.7	5.2	2.8	5.8	6.7	4.8
Upper CI		0.8	0.3	0.3	0.5	0.0	0.4	0.8	0.5	2.0	4.0	3.8	6.2	3.4	5.4	7.5	4.2	5.5	7.8	7.8	5.9	10.4	10.2	8.0
Lower CI		0.0	0.1	0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.4	-0.8	0.3	1.8	0.8	0.5	1.9	0.6	1.5	1.6	2.6	-0.3	1.2	3.1	1.7

Table 18. Abundance (millions) of yellowtail flounder by stratum for Division 3L (strata < 184 m only) from Fall surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784							0.0	0	0		1.5	0.0	0	0.0	0	0.1							
57 - 92	350	1.7	0.2	0.1	0	0.0	0.1	0.1	0	0.1	0.4	0.9	3.5	5.3	8.3	4.9	0.8	0.9	0.1	10.2	0.1	2.8	14.0	24.4
	363	1.3	0.3	0.5	0	0.1	1.3	0.9	0.3	9.4	18.1	29.3	28.0	8.5	23.4	24.9	24.4	7.4	27.3	23.7	30.6	34.8	25.9	10.5
	371	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.0	0.0	0.0	0.1	0	2.3	0	0.6	3	3.9
	372	1.3	1.6	1.3	2.6	0	2.2	5.7	5.8	3.4	2.2	6.1	42.6	18.9	27.0	33.3	9.8	46.1	63.3	28.3	9.7	95.5	38.0	54.0
	384	0	0.0	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	3.4	1.6	0	17.3	5	1.5	21	0.1
	785							0	0	0		0.1	0.2	0.1	0.1	0	0							
93 - 183	328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
	342	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	348	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.0	0	0.0	0
	349	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0	0	0	5.7	0.0	0.0	0.0	0.0	0.2	0
	364	0	0	0.1	0	0	0	0	0	0	0	0	0.0	0	0	0.2	0.2	0	0.1	0	0.0	0	0.6	0.4
	365	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0
	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0
	385	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	786							0.0	0	0.0		0.1	0	0	0	0	0.0							
	787							0	0	0.1		0	0	0	0	0	0	0						
	788							0	0	0		0	0	0	0	0	0	0				0		
	790							0	0	0		0	0	0	0.0	0	0					0.0		
	793							0	0	0		0	0	0	0	0.0	0					0.0		
	794							0	0	0			0	0	0	0	0	0				0		
	797							0	0	0		0	0	0	0	0	0	0				0		
	799							0	0	0		0	0	0	0	0.0	0	0				0		
3L (all strata)		4.4	2.1	2.0	2.6	0.1	3.6	6.7	6.1	13.1	20.6	37.9	74.5	33.1	58.9	63.4	38.8	61.9	91.0	81.9	45.1	135.7	103.0	93.4
Upper CI		8.7	3.3	3.1	6.6	0.3	6.8	14.1	16.9	31.6	50.5	69.4	117.2	51.2	103.0	101.2	72.8	96.9	154.5	125.9	95.9	241.4	159.1	156.2
Lower CI		0.1	1.0	0.9	-1.4	-0.1	0.3	-0.7	-4.7	-5.4	-9.2	6.5	31.8	15.0	14.8	25.6	4.7	26.9	27.4	37.9	-5.7	30.0	47.0	30.5

Table 19. Biomass (kt) of yellowtail flounder by stratum for Division 3L (strata < 184 m only) from Fall surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
30 - 56	784							0.0	0	0		0.1	0.0	0	0.0	0	0.0							
57 - 92	350	0.8	0.1	0.1	0	0.0	0.0	0.0	0	0.1	0.2	0.3	1.2	1.7	2.6	1.6	0.3	0.4	0.0	2.9	0.0	0.9	4.6	7.4
	363	0.7	0.1	0.2	0	0.0	0.6	0.4	0.2	3.9	8.9	10.2	10.1	3.1	8.6	8.8	7.9	2.7	8.6	7.4	10.5	10.8	7.3	3.1
	371	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.1	0	0.9	0	0.3	2	1.4
	372	0.6	0.8	0.6	1.1	0	0.6	1.8	1.1	1.2	0.5	1.8	14.2	8.6	7.4	11.7	4.1	15.7	19.3	9.8	3.6	23.0	13.6	13.8
	384	0	0.0	0	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0	1.7	0.7	0	6.7	2	0.8	8	0.1
	785							0	0	0		0.0	0.0	0.0	0.0	0	0							
93 - 183	328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
	342	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	348	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0.0	0
	349	0	0	0	0	0	0	0	0	0	0	0	0.0	0.1	0	0	0	1.9	0.0	0.0	0.0	0.0	0.1	0
	364	0	0	0.1	0	0	0	0	0	0	0	0	0.0	0	0	0.1	0.1	0	0.0	0	0.0	0	0.2	0.1
	365	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	0	0	0	0	0
	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0
	385	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	786							0.0	0	0.0		0.0	0	0	0	0	0.0							
	787							0	0	0.0		0	0	0	0	0	0	0						
	788							0	0	0		0	0	0	0	0	0	0				0		
	790							0	0	0		0	0	0	0.0	0	0					0.0		
	793							0	0	0		0	0	0	0	0.0	0					0.0		
	794							0	0	0			0	0	0	0	0	0				0		
	797							0	0	0		0	0	0	0	0	0	0				0		
	799							0	0	0		0	0	0	0	0.0	0	0				0		
3L (all strata)		2.1	1.0	0.9	1.1	0.0	1.2	2.2	1.3	5.2	9.6	12.5	25.5	13.6	18.6	22.2	14.1	21.2	28.0	27.8	16.5	35.9	35.3	25.8
Upper CI		4.1	1.6	1.5	2.7	0.1	2.2	5.3	3.1	12.8	23.6	23.4	39.7	21.7	34.2	35.5	24.7	33.6	46.2	41.8	35.0	64.1	53.9	42.8
Lower CI		0.0	0.4	0.4	-0.5	0.0	0.3	-0.8	-0.5	-2.4	-4.4	1.6	11.3	5.4	3.0	9.0	3.5	8.9	9.8	13.7	-2.0	7.6	16.7	8.8
% biomass >183m		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Table 20. Mean number per tow of yellowtail flounder by stratum for Division 3N (strata < 184 m only) from Fall Surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	40.7	58.0		76.5	329.8	398.5	216.7	212.6	310.9	372.8	460.5	643.3	545.5	488.5	1552.0	847.8	350.3	668.0	536.4	783.0	1378.3	281.5	653.6
	376	323.3	342.8	323.0	674.8	206.3	711.6	831.3	873.3	782.2	722.5	2047.0	2539.0	1001.9	993.9	1099.3	3188.8	1443.8	1490.0	950.3	739.3	1844.8	476.7	771.3
57 - 92	360	83.3	92.8	49.5	219.7	100.9	171.3	392.1	406.2	498.8	490.6	458.3	319.4	578.3	546.3	513.3	253.3	457.0	1112.3	463.6	284.9	550.8	531.9	300.0
	361	85.4	269.5	269.8	316.6	385.2	450.0	415.8	397.3	528.5	262.0	146.8	737.6	692.0	617.3	359.2	124.3	135.7	555.8	139.3	183.2	507.2	206.1	168.8
	362	47.6	60.7	6.7	1.9	6.8	245.0	75.6	307.3	139.4	572.0	202.7	571.4	434.7	339.1	536.3	250.3	279.0	231.1	288.2	331.8	210.4	332.6	320.0
	373	1.2	2.5	0	0	7.1	13.8	0	35.3	35.4	63.5	69.9	307.9	189.0	142.9	221.7	156.2	195.6	526.8	214.0	183.6	543.8	222.3	266.3
	374	0	1.0		0	0	0	30.0	18.0	15.7	182.3	130.3	202.3	108.3	64.7	192.3	155.0	362.3	493.8	436.5	321.0	171.5	799.3	826.3
	383	0	0		0	0	0	0	0	0	0	0	0	0	0	3.5	0	1.5	178.2	150.0	0.0	147.0	293.5	331.0
93 - 183	359	0	0	0	0	0	0	0	0	0	0	0	0	11.5	0.5	10.5	1.0	17.5	22.7	31.5	14.5	1.0	0.0	128.5
	377	0		0	0	0	0	0	3.0	2.0	3.5	4.5	0	0	0	38.0	467.7	355.0	660.0	74.5	48.5	28.4	338.0	830.0
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88.9	6	6.7	0	10.9	0.0
3N (all strata)		65.9	92.1	86.4	137.7	108.0	212.0	215.0	256.7	241.2	312.4	320.3	489.5	361.7	364.8	485.5	446.1	339.1	526.6	327.8	282.7	558.4	316.2	344.6
Upper CI		108.2	151.7	198.7	227.0	179.3	294.2	302.9	321.4	313.7	423.2	494.3	673.2	462.3	464.7	611.3	575.2	463.4	634.8	452.9	363.8	687.3	415.7	423.5
Lower CI		23.6	32.5	-25.8	48.4	36.7	129.8	127.2	191.9	168.7	201.7	146.4	305.9	261.1	264.9	359.6	317.0	214.7	418.4	202.8	201.6	429.6	216.7	265.8

Table 21. Mean weight (kg) per tow of yellowtail flounder by stratum for Division 3N (strata < 184 m only) from Fall Surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	14.6	23.1		36.4	142.0	67.7	54.8	70.1	87.1	112.2	115.8	177.8	149.1	142.0	347.5	195.8	95.5	190.5	145.2	190.7	302.2	92.7	159.9
	376	97.2	53.0	52.3	151.7	49.4	118.6	117.2	157.4	174.3	182.9	607.1	597.5	229.7	278.9	242.0	593.7	325.1	339.2	255.4	172.4	440.4	95.4	213.7
57 - 92	360	16.4	20.1	19.5	60.3	27.3	39.6	89.4	114.8	136.4	147.5	148.2	102.6	203.7	174.0	168.3	91.8	171.9	298.3	113.3	84.0	153.5	132.9	76.3
	361	37.3	77.0	95.3	116.9	161.0	133.7	122.5	142.9	146.3	69.6	40.7	234.5	185.3	153.4	83.3	30.7	33.3	135.0	36.6	37.4	123.4	50.5	36.8
	362	19.5	18.6	3.0	1.0	3.0	35.0	23.0	79.7	54.1	101.3	50.6	157.9	97.8	91.5	104.4	63.7	68.2	54.7	70.8	64.7	48.1	87.7	76.3
	373	0.6	1.4	0	0	2.5	2.8	0	12.2	15.6	20.5	23.4	119.2	66.4	51.2	79.2	42.8	66.3	151.8	61.8	54.7	157.7	67.3	81.9
	374	0	0.9		0	0	0	8.2	6.2	7.9	78.1	40.6	67.4	34.1	24.6	84.2	84.4	121.1	186.0	170.1	133.8	59.1	343.0	218.0
	383	0	0		0	0	0	0	0	0	0	0	0	0	0	0.9	0	0.7	82.0	58.8	0.0	61.0	116.8	121.4
93 - 183	359	0	0	0	0	0	0	0	0	0	0	0	0	5.4	0.2	4.5	0.3	7.9	6.9	9.4	4.5	0.4	0.0	32.8
	377	0		0	0	0	0	0	1.4	0.4	1.0	1.1	0	0	0	14.7	196.8	176.1	228.3	28.6	16.9	8.9	89.9	207.5
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.6	3	2.7	0	4.0	0.0
3N (all strata)		20.6	22.1	24.1	39.6	39.8	42.8	47.1	68.4	66.3	81.1	94.1	137.3	101.5	105.7	122.2	101.7	96.7	140.7	89.5	72.0	140.6	90.7	91.1
Upper CI		35.6	36.6	43.7	62.6	66.4	56.5	65.0	87.1	85.0	101.8	143.9	177.0	136.0	135.7	152.3	125.5	136.3	169.8	133.9	96.0	169.4	142.8	112.5
Lower CI		5.6	7.6	4.6	16.6	13.1	29.1	29.3	49.6	47.5	60.5	44.4	97.7	67.1	75.7	92.1	77.9	57.2	111.6	45.0	48.0	111.9	38.6	69.7

Table 22. Abundance (millions) of yellowtail flounder by stratum for Division 3N (strata < 184 m only) from Fall surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	8.9	12.7		16.8	72.3	87.3	47.5	46.6	68.1	81.7	100.9	141.0	119.5	107.1	340.1	185.8	76.8	146.4	117.5	171.6	302.0	61.7	143.2
	376	66.7	70.7	66.6	139.1	42.5	146.7	171.4	180.1	161.3	149.0	422.1	523.6	206.6	204.9	226.7	657.5	297.7	307.2	196.0	152.4	380.4	98.3	159.0
57 - 92	360	34.3	38.2	20.4	90.4	41.5	70.5	161.4	167.2	205.3	201.9	188.6	131.4	238.0	224.9	211.2	104.2	188.1	457.8	190.8	117.2	226.7	218.9	123.5
	361	21.8	68.7	68.8	80.7	98.2	114.7	106.0	101.3	134.7	66.8	37.4	188.0	176.4	157.4	91.6	31.7	34.6	141.7	35.5	46.7	129.3	52.5	43.0
	362	16.5	21.0	2.3	0.6	2.3	84.9	26.2	106.5	48.3	198.3	70.3	198.1	150.7	117.6	185.9	86.8	96.7	80.1	99.9	115.0	72.9	115.3	110.9
	373	0.4	0.9	0	0	2.5	4.8	0	12.2	12.3	22.0	24.2	106.7	65.5	49.6	76.8	54.1	67.8	182.6	74.2	63.7	188.5	77.1	92.3
	374	0	0.1		0	0	0	3.8	2.3	2.0	23.4	16.7	25.9	13.9	8.3	24.6	19.9	46.4	63.2	55.9	41.1	22.0	102.4	105.8
	383	0	0		0	0	0	0	0	0	0	0	0	0	0	0.3	0	0.1	16.5	13.9	0.0	13.6	27.2	30.7
93 - 183	359	0	0	0	0	0	0	0	0	0	0	0	0	0.7	0.0	0.6	0.1	1.0	1.3	1.8	0.8	0.1	0.0	7.4
	377	0		0	0	0	0	0	0.0	0.0	0.0	0.1	0	0	0	0.5	6.4	4.9	9.1	1.0	0.7	0.4	4.6	11.4
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.9	1	0.6	0	1.0	0.0
3N (all strata)		148.5	212.3	158.0	327.7	259.3	509.0	516.3	616.2	632.1	743.1	860.3	1314.7	971.3	869.6	1158.6	1146.7	814.1	1414.2	787.1	709.9	1335.9	759.2	827.5
Upper CI		243.8	349.7	363.3	540.0	430.5	706.4	727.2	771.6	822.2	1006.5	1327.5	1808.0	1241.5	1107.7	1458.9	1478.6	1112.6	1704.9	1087.3	913.5	1644.1	998.0	1016.8
Lower CI		53.3	74.9	-47.2	115.3	88.2	311.5	305.4	460.8	442.0	479.7	393.1	821.4	701.1	631.5	858.3	814.9	515.6	1123.6	486.9	506.2	1027.7	520.3	638.2

Table 23. Biomass (kt) of yellowtail flounder by stratum for Division 3N (strata < 184 m only) from Fall surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
<=56	375	3.2	5.1		8.0	31.1	14.8	12.0	15.4	19.1	24.6	25.4	39.0	32.7	31.1	76.2	42.9	20.9	41.7	31.8	41.8	66.2	20.3	35.0
	376	20.1	10.9	10.8	31.3	10.2	24.4	24.2	32.5	35.9	37.7	125.2	123.2	47.4	57.5	49.9	122.4	67.0	69.9	52.7	35.6	90.8	19.7	44.1
57 - 92	360	6.7	8.3	8.0	24.8	11.2	16.3	36.8	47.2	56.1	60.7	61.0	42.2	83.8	71.6	69.3	37.8	70.8	122.8	46.6	34.6	63.2	54.7	31.4
	361	9.5	19.6	24.3	29.8	41.0	34.1	31.2	36.4	37.3	17.7	10.4	59.8	47.2	39.1	21.2	7.8	8.5	34.4	9.3	9.5	31.4	12.9	9.4
	362	6.8	6.4	1.0	0.3	1.0	12.1	8.0	27.6	18.8	35.1	17.5	54.8	33.9	31.7	36.2	22.1	23.6	19.0	24.5	22.4	16.7	30.4	26.5
	373	0.2	0.5	0	0	0.9	1.0	0	4.2	5.4	7.1	8.1	41.3	23.0	17.8	27.4	14.8	23.0	52.6	21.4	19.0	54.7	23.3	28.4
	374	0	0.1		0	0	0	1.1	0.8	1.0	10.0	5.2	8.6	4.4	3.2	10.8	10.8	15.5	23.8	21.8	17.1	7.6	43.9	27.9
	383	0	0		0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.1	7.6	5.4	0.0	5.7	10.8	11.3
93 - 183	359	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.0	0.3	0.0	0.5	0.4	0.5	0.3	0.0	0.0	1.9
	377	0		0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.2	2.7	2.4	3.1	0.4	0.2	0.1	1.2	2.9
	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3	0	0.2	0	0.4	0.0
3N (all strata)		46.5	50.9	44.1	94.2	95.5	102.8	113.2	164.2	173.6	193.0	252.8	368.9	272.7	252.0	291.6	261.5	232.3	377.8	214.8	180.7	336.4	217.7	218.7
Upper CI		80.3	84.4	79.9	148.9	159.5	135.7	80.3	209.2	222.7	242.1	386.5	475.3	365.1	323.5	363.4	322.6	327.2	456.0	321.6	241.0	405.2	342.8	270.2
Lower CI		12.6	17.4	8.4	39.5	31.5	69.9	12.6	119.1	124.5	143.8	119.1	262.5	180.2	180.5	219.7	200.3	137.3	299.7	108.1	120.5	267.6	92.6	167.3
% Biomass > 183 m		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.03	0.00	0.00	0.00	0.02	0.01

Table 24. Mean number per tow of yellowtail flounder by stratum for Division 3O (strata < 184 m only) from Fall Surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	1.3	0.1	1.3	3.3	0.1	8.2	0.2	7.3	1.7	23.8	3.3	20.0	8.3	22.3	18.0	15.2	10.2	55.3	23.8	37.0	64.0	79.8	52.9
	331	6.7	29.0	8.0	16.0	0	2.0	0	1.0	3.5	14.0	3.5	29.1	41.0	3.0	50.5	41.0	28.0	48.5	11.5	5.1	15.4	13.5	79.5
	338	8.5	20.0	2.0	8.8	0.3	97.0	0.5	38.2	31.2	35.8	78.0	260.0	6.4	72.2	2.7	10.1	76.5	8.6	35.9	7.9	10.8	17.8	145.3
	340	5.6	36.0	0.3	5.0	1.6	4.8	0	28.2	23.2	37.3	4.8	47.6	94.6	31.0	74.1	107.2	36.6	176.3	196.8	131.3	7.7	24.8	160.7
	351	36.9	15.9	1.8	35.3	7.0	15.8	11.6	107.3	207.4	135.3	272.6	171.1	170.8	446.1	247.7	114.9	191.9	286.9	264.5	114.4	117.1	187.7	421.9
	352	47.9	172.4	150.5	56.7	69.7	121.9	134.3	249.0	269.9	255.0	369.7	288.0	192.3	283.3	255.5	296.9	177.0	232.0	384.8	125.6	286.9	164.3	256.7
	353	28.0	0	0	8.7	0	8.7	7.0	82.8	0.5	73.5	30.0	70.0	53.0	253.0	23.8	46.8	42.9	38.3	31.7	94.9	103.3	83.8	36.8
93 - 183	329	1.0	0.1	0	0	0	0	0	0	0.4	0	0	0	0.2	0.2	0	0.2	0	0	0	0	0	1	0
	332	0.8	0.3	2.3	15.7	5.0	3.3	3.0	0	0.3	1.7	1.0	10.0	19.0	0	9.0	1.0	3.0	0.7	20.5	0.3	0.0	0.7	4.6
	337	0	1.0	0	0	0	0	19.0	1.3	5.3	0.3	0.9	0	0	0	3.4	16.0	7.3	0	0.0	0	0.0	9	1
	339	1.0	2.5	0	0	1.0	0	0.3	0.5	0		1.5	9.0	23.0	18.5	1.1	3.0	12.0	4.0	0.0	0.0	0.5	32.0	0
	354	1.0	0	0	0	0	0	1.8	0	0	0	0.5	0	0	0	0	0	0	2.9	0	0.0	1	0.5	22
3O (all strata)		16.1	33.1	22.7	16.4	11.2	31.2	22.7	62.7	69.0	71.4	91.5	95.3	61.4	127.1	81.9	68.7	68.1	90.8	117.6	52.6	72.4	69.2	134.1
Upper CI		24.0	52.3	51.5	27.3	21.4	50.5	37.7	84.4	98.8	97.2	131.3	156.2	86.7	191.9	128.8	109.8	99.9	131.4	179.8	73.2	110.2	98.6	240.4
Lower CI		8.1	14.0	-6.2	5.5	1.0	11.9	7.6	41.0	39.2	45.6	51.8	34.4	36.1	62.3	35.1	27.7	36.3	50.1	55.4	31.9	34.5	39.7	27.7

Table 25. Mean weight (kg) per tow of yellowtail flounder by stratum for Division 3O (strata < 184 m only) from Fall Surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	0.7	0.0	0.7	1.6	0.1	3.7	0.0	2.6	0.6	12.5	1.1	9.7	3.4	7.8	6.5	8.1	4.0	18.2	8.7	12.6	25.2	45.4	16.5
	331	3.8	14.9	4.6	8.8	0	0.6	0	0.3	1.2	1.9	1.1	6.9	12.7	1.5	20.0	14.9	12.3	17.3	4.8	1.7	6.5	4.9	18.9
	338	3.7	7.8	0.9	4.3	0.2	27.7	0.2	21.7	10.9	10.8	24.7	99.0	2.3	24.9	1.0	3.5	38.0	2.7	15.2	2.4	3.2	6.5	61.1
	340	2.7	16.8	0.2	1.3	0.8	2.0	0	10.9	9.2	11.0	2.1	13.8	38.8	9.0	28.5	33.7	11.0	68.6	60.3	35.8	2.5	7.0	55.9
	351	16.0	6.6	0.8	14.4	2.8	6.4	3.7	42.0	54.2	34.2	69.2	50.4	44.0	93.6	64.2	39.5	54.5	75.9	70.4	27.0	22.9	43.4	131.5
	352	19.6	59.2	51.3	23.5	26.1	38.6	42.8	74.6	80.2	66.1	102.8	76.4	62.6	108.8	75.4	107.3	43.4	69.3	88.0	34.1	61.2	54.7	82.8
	353	13.9	0	0	3.6	0	4.8	4.2	41.4	0.2	21.7	10.0	21.5	16.6	86.6	6.4	13.7	13.6	12.5	10.1	36.1	35.0	28.1	11.5
93 - 183	329	0.6	0.1	0	0	0	0	0	0	0.2	0	0	0	0.1	0.1	0	0.1	0	0	0	0	0	0	0
	332	0.4	0.2	1.0	7.3	2.6	0.9	1.7	0	0.0	0.5	0.4	3.4	6.2	0	2.9	0.4	1.1	0.4	6.7	0.1	0.0	0.2	1.8
	337	0	0.6	0	0	0	0	10.2	0.9	1.6	0.1	0.2	0	0	0	1.2	5.1	3.0	0	0.0	0	0.0	3	0
	339	0.5	1.1	0	0	0.5	0	0.1	0.3	0		0.6	2.6	8.2	4.9	0.4	0.7	4.0	1.1	0.0	0.0	0.2	11.0	0
	354	0.3	0	0	0	0	0	0.7	0	0	0	0.2	0	0	0	0	0	0	1.1	0	0.0	0	0.2	8
3O (all strata)		7.0	12.2	7.9	6.9	4.3	10.1	7.6	22.7	19.9	19.6	25.1	29.5	19.3	37.2	23.9	24.2	20.5	27.6	31.1	14.7	17.6	22.5	44.2
Upper CI		10.5	18.1	17.5	11.1	8.1	15.0	12.7	31.7	28.2	26.1	35.5	54.7	27.5	55.4	36.3	40.3	29.4	41.3	46.8	20.9	25.0	35.7	81.0
Lower CI		3.5	6.3	-1.7	2.7	0.5	5.1	2.5	13.6	11.6	13.1	14.7	4.4	11.0	19.0	11.4	8.1	11.6	13.8	15.4	8.6	10.2	9.3	7.5

Table 26. Abundance (millions) of yellowtail flounder by stratum for Division 3O (strata < 184 m only) from Fall surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	0.4	0.0	0.4	1.0	0.0	2.4	0.0	2.1	0.5	6.8	1.0	5.7	2.4	6.4	5.2	4.4	2.9	15.9	6.8	10.6	18.4	22.9	15.2
	331	0.4	1.8	0.5	1.0	0	0.1	0	0.1	0.2	0.9	0.2	1.8	2.6	0.2	3.2	2.6	1.8	3.0	0.7	0.3	1.0	0.8	5.0
	338	2.2	5.2	0.5	2.3	0.1	25.3	0.1	10.0	8.1	9.3	20.4	67.9	1.7	18.9	0.7	2.6	20.0	2.2	9.4	2.1	2.8	4.6	37.9
	340	1.3	8.5	0.1	1.2	0.4	1.1	0	6.7	5.5	8.8	1.1	11.2	22.3	7.3	17.5	25.3	8.6	41.6	46.5	31.0	1.8	5.9	37.9
	351	12.8	5.5	0.6	12.2	2.4	5.5	4.0	37.2	71.9	46.9	94.5	59.3	59.2	154.7	85.9	39.8	66.5	99.5	91.7	39.7	40.6	65.1	146.2
	352	17.0	61.2	53.4	20.1	24.7	43.3	47.7	88.4	95.8	90.5	131.2	102.2	68.2	100.5	90.7	105.4	62.8	82.3	136.6	44.6	101.8	58.3	91.1
	353	4.9	0	0	1.5	0	1.5	1.2	14.6	0.1	13.0	5.3	12.3	9.3	44.6	4.2	8.2	7.6	6.7	5.6	16.7	18.2	14.8	6.5
93 - 183	329	0.2	0.0	0	0	0	0	0	0	0.1	0	0	0	0.0	0.0	0	0.0	0	0	0	0	0	0	0
	332	0.1	0.0	0.3	2.3	0.7	0.5	0.4	0	0.0	0.2	0.1	1.4	2.7	0	1.3	0.1	0.4	0.1	2.9	0.0	0.0	0.1	0.7
	337	0	0.1	0	0	0	0	2.5	0.2	0.7	0.0	0.1	0	0	0	0.4	2.1	1.0	0	0.0	0	0.0	1	0
	339	0.1	0.2	0	0	0.1	0	0.0	0.0	0		0.1	0.7	1.9	1.5	0.1	0.2	1.0	0.3	0.0	0.0	0.0	2.6	0
	354	0.1	0	0	0	0	0	0.1	0	0	0	0.0	0	0	0	0	0	0	0.2	0	0.0	0	0.0	1
3O (all strata)		39.5	82.7	55.8	41.6	28.5	79.6	56.2	159.2	183.0	176.5	254.1	262.7	170.4	334.1	209.1	190.8	172.5	252.0	300.2	145.0	184.7	176.5	342.1
Upper CI		59.0	130.4	126.9	69.3	54.5	128.9	93.5	214.2	262.0	240.3	364.3	430.5	240.6	504.4	328.6	304.7	253.2	364.8	459.0	201.9	281.4	251.7	613.6
Lower CI		20.1	34.9	-15.3	13.9	2.5	30.4	18.8	104.1	103.9	112.8	143.8	95.0	100.2	163.8	89.6	76.9	91.9	139.1	0.0	0.0	0.0	0.0	0.0

Table 27. Biomass (kt) of yellowtail flounder by stratum for Division 3O (strata < 184 m only) from Fall surveys 1990-2012.

Range	Str	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
57 - 92	330	0.2	0.0	0.2	0.5	0.0	1.1	0.0	0.8	0.2	3.6	0.3	2.8	1.0	2.2	1.9	2.3	1.2	5.2	2.5	3.6	7.2	13.0	4.7
	331	0.2	0.9	0.3	0.5	0	0.0	0	0.0	0.1	0.1	0.1	0.4	0.8	0.1	1.3	0.9	0.8	1.1	0.3	0.1	0.4	0.3	1.2
	338	1.0	2.0	0.2	1.1	0.1	7.2	0.0	5.7	2.8	2.8	6.4	25.9	0.6	6.5	0.3	0.9	9.9	0.7	4.0	0.6	0.8	1.7	15.9
	340	0.6	4.0	0.0	0.3	0.2	0.5	0	2.6	2.2	2.6	0.5	3.3	9.2	2.1	6.7	8.0	2.6	16.2	14.2	8.4	0.6	1.7	13.2
	351	5.5	2.3	0.3	5.0	1.0	2.2	1.3	14.5	18.8	11.9	24.0	17.5	15.2	32.5	22.3	13.7	18.9	26.3	24.4	9.4	7.9	15.0	45.6
	352	7.0	21.0	18.2	8.3	9.3	13.7	15.2	26.5	28.5	23.5	36.5	27.1	22.2	38.6	26.8	38.1	15.4	24.6	31.2	12.1	21.7	19.4	29.4
	353	2.4	0	0	0.6	0	0.8	0.7	7.3	0.0	3.8	1.8	3.8	2.9	15.3	1.1	2.4	2.4	2.2	1.8	6.4	6.2	5.0	2.0
93 - 183	329	0.1	0.0	0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	0	0	0
	332	0.1	0.0	0.1	1.0	0.4	0.1	0.2	0	0.0	0.1	0.1	0.5	0.9	0	0.4	0.1	0.2	0.1	1.0	0.0	0.0	0.0	0.3
	337	0	0.1	0	0	0	0	1.3	0.1	0.2	0.0	0.0	0	0	0	0.2	0.7	0.4	0	0.0	0	0.0	0	0
	339	0.0	0.1	0	0	0.0	0	0.0	0.0	0		0.0	0.2	0.7	0.4	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.9	0
	354	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0.1	0	0.0	0	0.0	0
3O (all strata)		17.3	30.5	19.4	17.5	10.9	25.7	18.9	57.5	52.8	48.4	69.7	81.4	53.5	97.7	60.9	67.1	52.0	76.5	79.4	40.7	44.9	57.4	112.9
Upper CI		25.9	45.2	43.1	28.1	20.7	38.4	31.5	80.5	74.8	64.5	98.6	150.9	76.4	145.6	92.7	111.8	74.6	114.6	119.4	57.7	63.9	91.2	206.7
Lower CI		8.6	15.8	-4.3	6.8	1.2	13.1	6.2	34.5	30.8	32.3	40.8	12.0	30.6	49.8	29.0	22.4	29.4	38.4	39.4	23.6	26.0	23.7	19.0
% Biomass > 183 m		0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 28. Estimates of abundance (millions), biomass ('000 tons), mean number and weight (kg) per tow for Spring surveys in NAFO Divisions 3LNO from 1984-2012.

	Spring Abundance (millions)				Spring Biomass ('000 tons)				Spring mean # per tow				Spring mean wt (kg) per tow			
	3L	3N	3O	3LNO	3L	3N	3O	3LNO	3L	3N	3O	3LNO	3L	3N	3O	3LNO
1984	45.4	435.3	63.5	544.2	21.9	167.7	28.2	217.7	22.1	189.7	25.8	79.9	10.7	73.1	11.4	32.0
1985	49.9	240.1	84.1	374.1	21.1	88.2	37.5	146.8	9.4	104.6	34.2	37.1	4.0	38.4	15.2	14.6
1986	26.9	229.5	70.1	326.5	12.6	95.1	30.5	138.2	5.3	100.0	28.5	33.3	2.5	41.5	12.4	14.1
1987	12.3	291.0	90.9	394.2	5.8	77.5	41.2	124.6	2.4	128.1	36.9	40.2	1.1	34.1	16.7	12.7
1988	8.1	135.3	59.7	203.1	3.7	51.4	25.8	81.0	1.6	58.9	24.2	20.7	0.7	22.4	10.5	8.2
1989	7.9	478.3	46.7	532.9	4.0	78.3	21.5	103.8	1.6	208.4	18.9	54.3	0.8	34.1	8.7	10.6
1990	4.7	305.5	57.3	367.4	2.2	75.7	25.1	103.1	0.9	133.1	23.9	37.7	0.4	33.0	10.5	10.6
1991	2.2	268.1	50.0	320.3	1.1	69.1	23.3	93.4	0.4	111.7	19.7	32.5	0.2	28.8	9.2	9.5
1992	0.3	189.2	28.0	217.4	0.2	49.6	11.6	61.4	0.1	79.3	11.0	21.2	0.0	20.8	4.6	6.0
1993	0.2	145.0	101.1	246.3	0.1	50.8	42.4	93.3	0.0	60.4	39.8	24.0	0.0	21.1	16.7	9.1
1994	0.1	126.4	21.9	148.4	0.0	46.3	9.2	55.6	0.0	51.5	8.5	14.1	0.0	18.9	3.6	5.3
1995	0.0	158.8	28.5	187.4	0.0	57.9	12.7	70.6	0.0	66.1	11.2	18.2	0.0	24.1	5.0	6.9
1996	2.5	475.3	161.7	639.4	1.1	103.9	70.6	175.6	0.5	198.0	63.3	62.1	0.2	43.3	27.6	17.1
1997	1.2	554.9	139.4	695.5	0.5	121.3	53.2	174.9	0.2	233.2	54.6	67.7	0.1	51.0	20.8	17.0
1998	1.6	577.2	154.5	733.3	0.5	143.7	58.0	202.2	0.3	240.4	60.5	69.9	0.1	59.8	22.7	19.3
1999	55.4	965.4	269.1	1289.9	28.5	238.5	98.7	365.7	9.6	402.1	105.4	120.4	5.0	99.3	38.7	34.1
2000	40.7	695.3	186.5	922.5	17.5	197.3	72.1	287.0	7.6	289.6	73.1	89.6	3.3	82.2	28.3	27.9
2001	11.5	1119.9	197.2	1328.5	4.4	297.9	63.6	366.0	2.1	466.4	77.3	126.6	0.8	124.1	24.9	34.9
2002	1.6	528.3	161.0	690.9	0.6	147.3	51.6	199.5	0.3	220.0	63.1	66.5	0.1	61.4	20.2	19.2
2003	92.0	914.9	243.2	1250.1	34.3	280.2	72.0	386.5	16.9	381.0	95.3	120.2	6.3	116.7	28.2	37.2
2004	38.7	690.1	237.9	966.7	15.3	216.7	75.8	307.9	7.0	287.4	93.2	92.0	2.8	90.3	29.7	29.3
2005	115.6	822.0	227.1	1164.8	43.6	263.7	81.5	388.8	21.7	342.4	89.0	113.2	8.2	109.8	31.9	37.8
2006	251.5	1035.0	295.9	1582.4	85.7	319.1	99.1	503.8	47.1	660.7	169.8	183.0	16.0	203.7	56.9	58.3
2007	177.5	953.5	309.7	1440.7	60.9	292.8	89.3	443.0	33.3	397.1	121.4	140.0	11.4	121.9	35.0	43.0
2008	115.3	1114.6	250.6	1480.4	43.2	330.4	83.3	456.9	21.6	464.2	98.2	143.8	8.1	137.6	32.6	44.4
2009	47.0	751.6	117.9	916.4	13.2	213.5	44.4	271.2	8.8	313.0	46.2	89.0	2.5	88.9	17.4	26.3
2010	110.3	950.9	272.2	1333.3	28.6	276.9	89.2	394.7	21.0	396.0	106.7	130.8	5.5	115.3	35.0	38.7
2011	160.3	967.3	298.6	1426.1	55.8	266.9	100.2	422.9	29.7	402.9	117.7	137.9	10.3	111.1	39.5	40.9
2012	238.5	1184.6	269.1	1692.1	88.6	315.3	85.6	489.4	46.3	496.9	105.4	167.8	17.2	132.2	33.6	48.5

Table 29. Estimates of abundance (millions), biomass ('000 tons), mean number and weight (kg) per tow for Fall surveys in NAFO Divisions 3LNO from 1990-2012.

	Fall Abundance (millions)				Fall Biomass ('000 tons)				Fall mean # per tow				Fall mean wt (kg) per tow			
	3L	3N	3O	3LNO	3L	3N	3O	3LNO	3L	3N	3O	3LNO	3L	3N	3O	3LNO
1990	4.4	148.5	39.5	192.5	2.1	46.5	17.3	65.8	0.8	65.9	16.1	19.3	0.4	20.6	7.0	6.6
1991	2.1	212.3	82.7	297.1	1.0	50.9	30.5	82.4	0.4	92.1	33.1	29.3	0.2	22.1	12.2	8.1
1992	2.0	158.0	55.8	215.9	0.9	44.1	19.4	64.5	0.4	86.4	22.7	22.4	0.2	24.1	7.9	6.7
1993	2.6	327.7	41.6	371.9	1.1	94.2	17.5	112.8	0.5	137.7	16.4	37.4	0.2	39.6	6.9	11.3
1994	0.1	259.3	28.5	287.9	0.0	95.5	10.9	106.4	0.0	108.0	11.2	28.0	0.0	39.8	4.3	10.3
1995	3.6	509.0	79.6	592.2	1.2	102.8	25.7	129.8	0.7	212.0	31.2	57.2	0.2	42.8	10.1	12.5
1996	6.7	516.3	56.2	579.1	2.2	113.2	18.9	134.3	1.1	215.0	22.7	51.6	0.4	47.1	7.6	12.0
1997	6.1	616.2	159.2	781.5	1.3	164.2	57.5	222.9	1.0	256.7	62.7	69.1	0.2	68.4	22.7	19.7
1998	13.1	632.1	183.0	828.2	5.2	173.6	52.8	231.6	2.1	241.2	69.0	71.1	0.8	66.3	19.9	19.9
1999	20.6	743.1	176.5	940.3	9.6	193.0	48.4	250.9	3.5	312.4	71.4	87.8	1.6	81.1	19.6	23.4
2000	37.9	860.3	254.1	1152.3	12.5	252.8	69.7	335.0	6.1	320.3	91.5	98.8	2.0	94.1	25.1	28.7
2001	74.5	1314.7	262.7	1651.9	25.5	368.9	81.4	475.8	11.7	489.5	95.3	139.8	4.0	137.3	29.5	40.3
2002	33.1	971.3	170.4	1174.8	13.6	272.7	53.5	339.7	5.2	361.7	61.4	99.3	2.1	101.5	19.3	28.7
2003	58.9	869.6	334.1	1262.6	18.6	252.0	97.7	368.3	9.2	364.8	127.1	110.9	2.9	105.7	37.2	32.3
2004	63.4	1158.6	209.1	1431.0	22.2	291.6	60.9	374.7	13.4	485.5	81.9	147.8	4.7	122.2	23.9	38.7
2005	38.8	1146.7	190.8	1376.3	14.1	261.5	67.1	342.7	6.6	446.1	68.7	122.7	2.4	101.7	24.2	30.6
2006	61.9	814.1	172.5	1048.5	21.2	232.3	52.0	305.5	10.2	339.1	68.1	95.4	3.5	96.7	20.5	27.8
2007	91.0	1414.2	252.0	1757.2	28.0	377.8	76.5	482.4	15.3	526.6	90.8	154.0	4.7	140.7	27.6	42.3
2008	81.9	787.1	300.2	1169.2	27.8	214.8	79.4	322.0	15.3	327.8	117.6	113.6	5.2	89.5	31.1	31.3
2009	45.1	709.9	145.0	900.0	16.5	180.7	40.7	237.8	7.6	282.7	52.6	80.2	2.8	72.0	14.7	21.2
2010	135.7	1335.9	184.7	1656.3	35.9	336.4	44.9	417.2	22.0	558.4	72.4	149.1	5.8	140.6	17.6	37.5
2011	103.0	759.2	176.5	1038.7	35.3	217.7	57.4	310.4	19.4	316.2	69.2	101.2	6.7	90.7	22.5	30.2
2012	93.4	827.5	342.1	1262.9	25.8	218.7	112.9	357.4	17.5	344.6	134.1	122.7	4.8	91.1	44.2	34.7

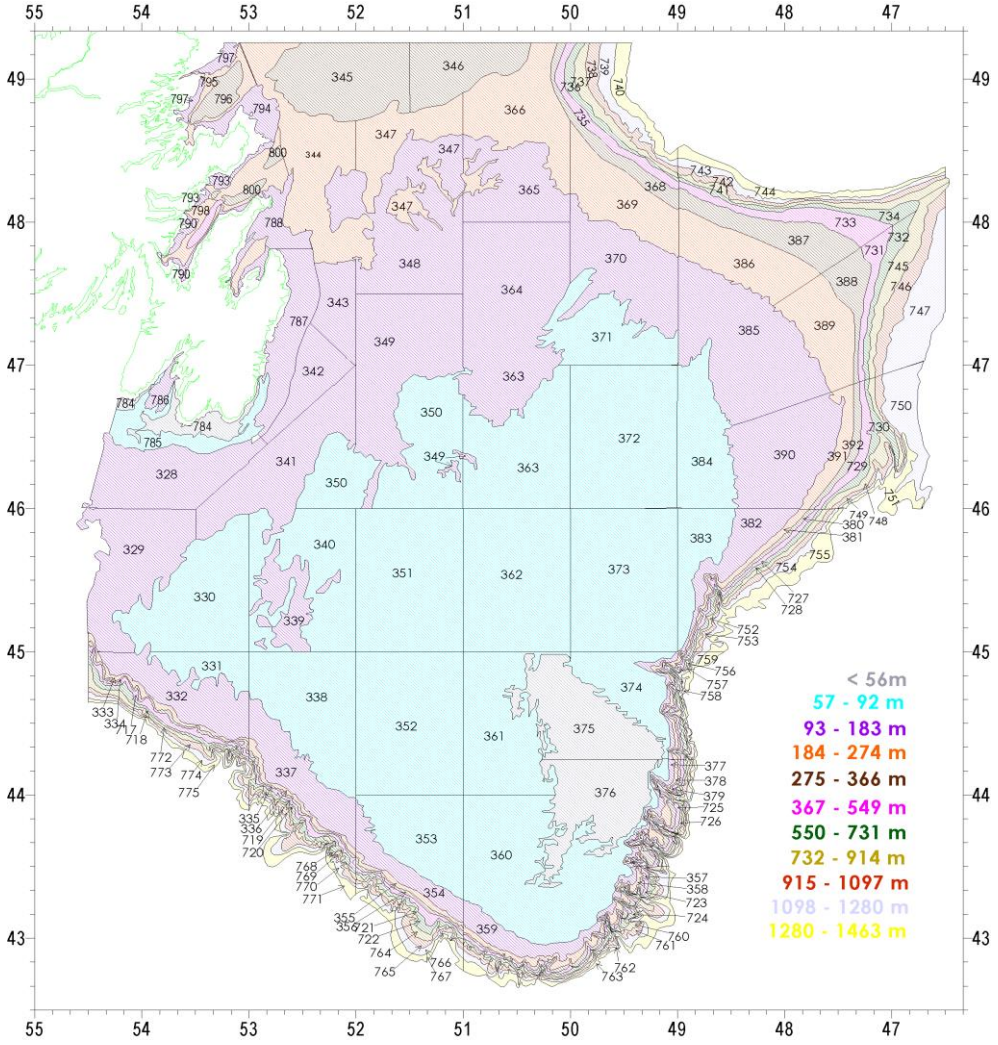

Figure 1. Designation of strata in NAFO divisions 3LNO.

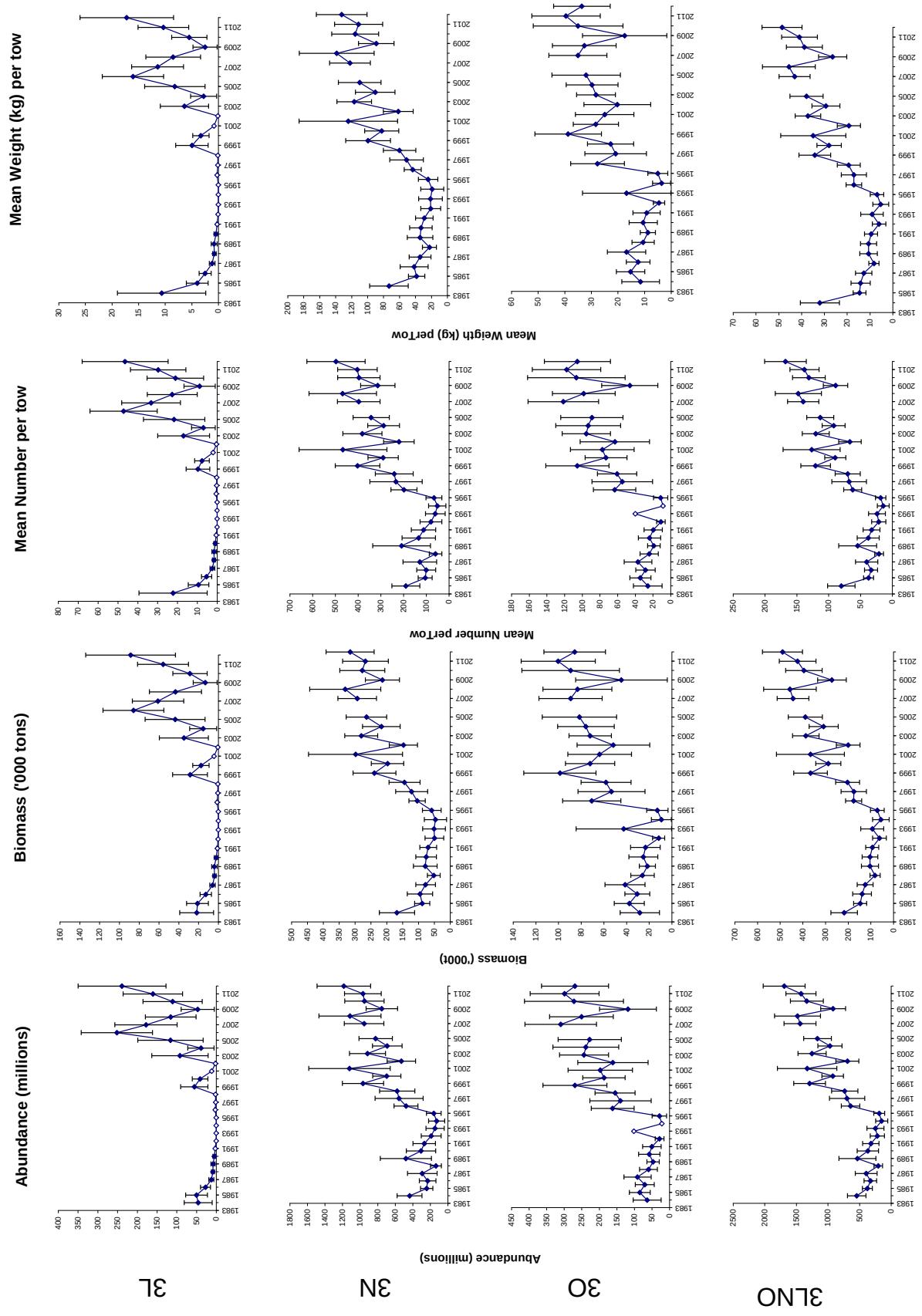

Figure 2. Abundance (millions), Biomass ('000 tons), Mean number and weight (kg) per tow for yellowtail flounder in spring surveys by NAFO division and for 3LNO combined from 1984-2012. Where lower 95% confidence limit is less than 0, error bars are omitted (hollow symbol)

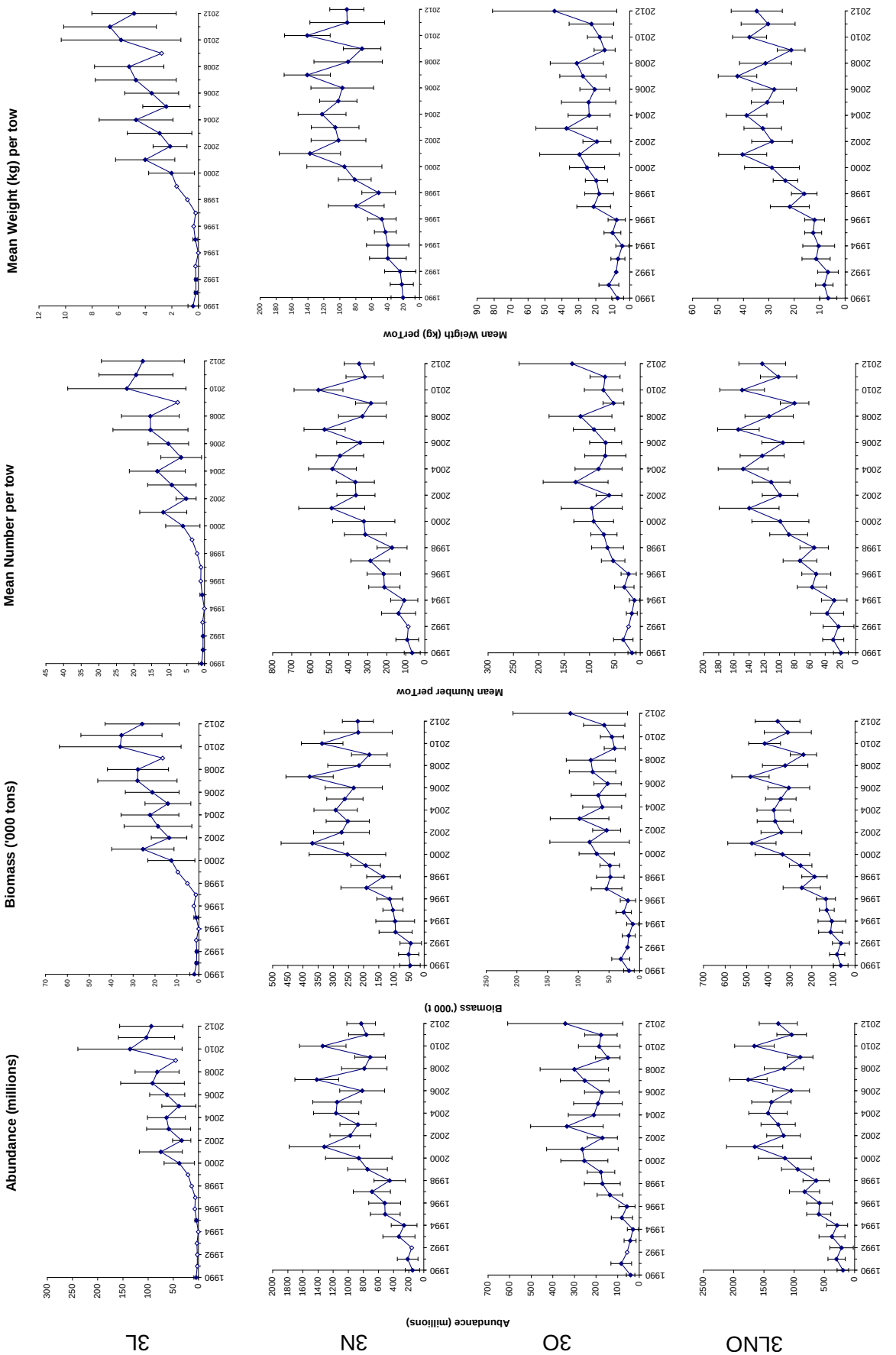

Figure 3. Abundance (millions), Biomass ('000 tons), Mean number and weight (kg) per tow for yellowtail flounder in fall surveys by NAFO division and for 3LNO combined from 1984-2012. Where lower 95% confidence limit is less than 0, error bars are omitted (hollow symbol)

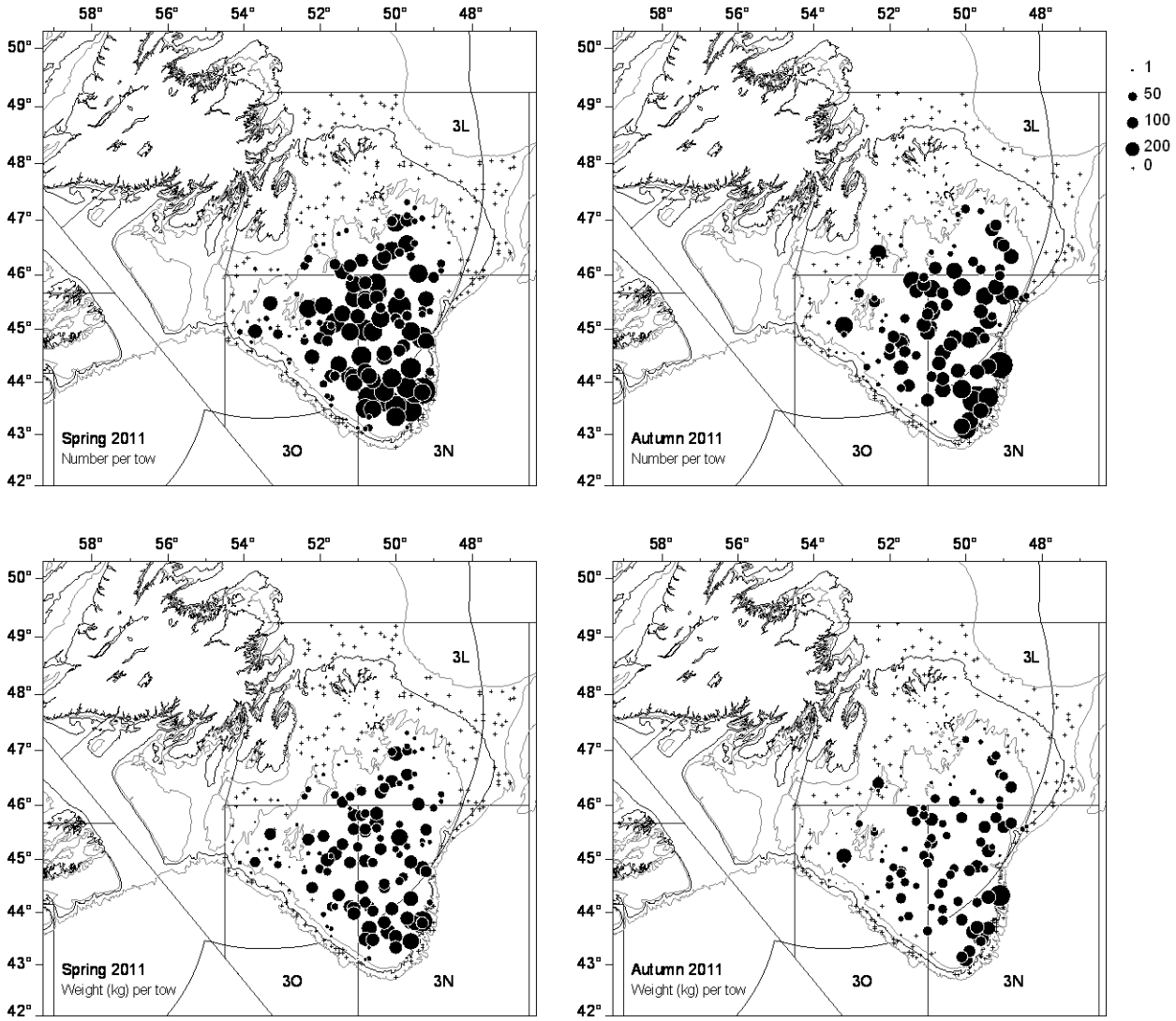

Figure 4. Yellowtail flounder in NAFO Divs. 3LNO: number and weight (kg) per tow for 2011 spring and autumn Canadian surveys.

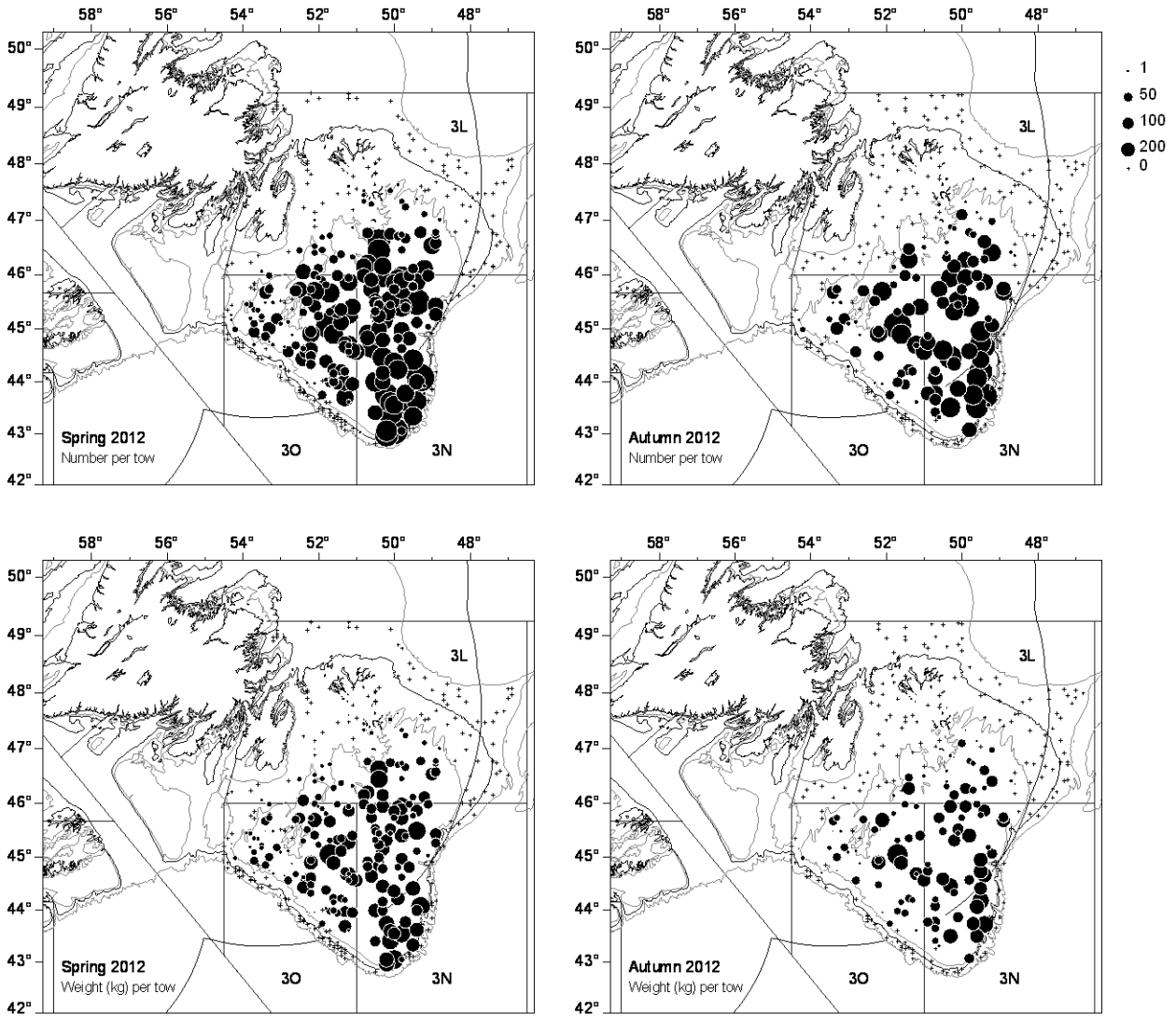

Figure 5. Yellowtail flounder in NAFO Divs. 3LNO: number and weight (kg) per tow for 2012 spring and autumn Canadian surveys.

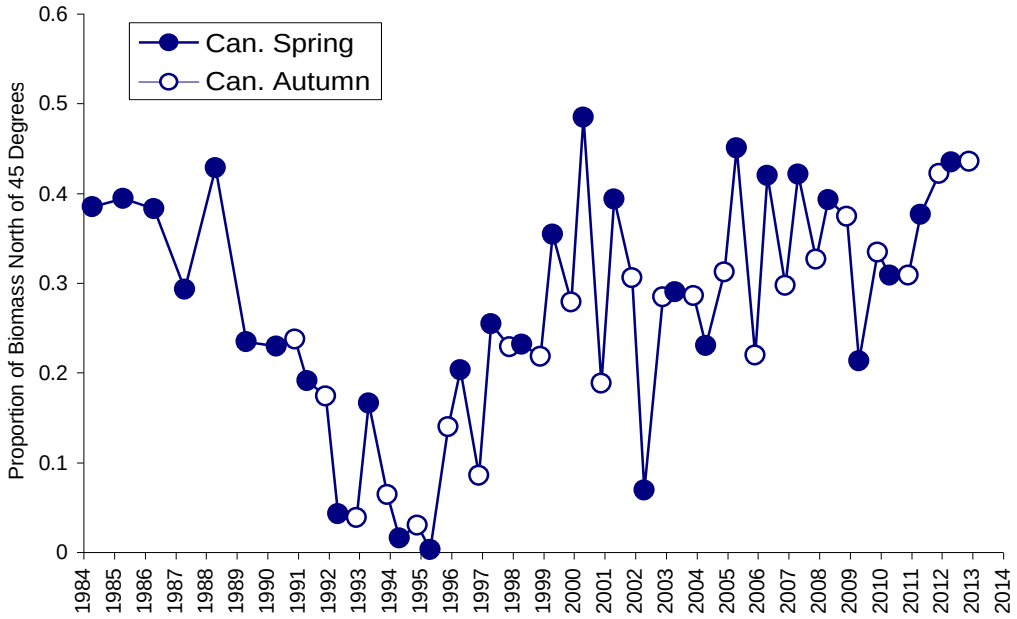

Figure 6. Proportion of yellowtail flounder caught north of 45^{o} N in Divs. 3LNO. All data up to 1990 are from spring surveys only.