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The Norwegian fishery for northern shrimp (*Pandalus borealis*) in the Barents Sea and round Svalbard 1970-2018

by

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Abstract

The resource of northern shrimp (*Pandalus borealis*) in the Barents Sea is considered as one stock unit. The fishery is multinational. Catches have ranged between 19 and 128 ktons since the mid-1970s. Historically Norway has accounted for the major part (~75-95%) of the landings, however, in the recent 5-year period the Norwegian proportion has decreased to less than 50% while EU, Russia, Greenland and Iceland shares the other half. The fishery is managed partly by TAC (Russian zone) and by effort control (Norwegian and Svalbard zone). Discard of small shrimp and by-catch of other species is believed to be low.

Overall catches have declined from 80 ktons in 2000 to 20 ktons in 2014 partly due to a downturn in market prices for shrimp products, and a major restructuring of the fleet. The bulk of the landings have been taken more easterly recent years than seen earlier in the 2000s and the recent decreases in catches can also be attributed to the displacement of shrimp biomass eastwards requiring new fishing grounds to be developed. Since 2013 catches have started to increase again and is projected to reach about 45000 tons in 2018

A standardized catch-per-unit-effort series derived from Norwegian logbook data (and used as an index of fishable stock biomass dynamics) have been fluctuating at a relatively high level since 2005 however the 2012-16 values are lower, below the average of the time series. The 2017 value is up again and the 2018 value, based on only partial data for the year, is the by far the highest of the time series. But, it is uncertain whether the 2018 value is a good reflection of stock biomass.

Introduction

The resource of northern shrimp (*Pandalus borealis*) in the Barents Sea and in the Svalbard zone (ICES Div. I and II) is for assessment purposes considered as one stock (Fig. 1). Norwegian and Russian vessels exploit the stock in the entire area while vessels from other nations are restricted to the Svalbard fisheries zone.

The fishery was initiated in 1970 by Norwegian vessels. As the fishery developed, vessels from several nations joined and catches reached 128 ktons in 1984 (Fig. 2). Since 2000 annual catch have declined reaching a low of 20 ktons in 2013; Norwegian vessels accounted for around 46-92% of the total catches in that period and vessels from Russia, Iceland, Greenland and the EU for the rest (Table 1). Since 2013 overall catches have started to increase again and is projected to reach about 45000 tons in 2018, Norwegian vessels now responsible for about one third of these.

The fishery is regulated by TACs in the Russian zone and effort control in the Norwegian and Svalbard zones: licenses are required for the Russian and Norwegian vessels and the fleets operating in the Svalbard zone are regulated by number of effective fishing days and number of vessels by country. Minimum cod-end mesh size is 35 mm. Other species and small shrimp are protected by mandatory sorting grids and by the temporary closing of areas with excessive by-catch of juvenile cod, haddock, Greenland halibut, redfish and shrimp <15 mm carapace length (measured in catch samples taken by independent observers).

A major restructuring of the Norwegian fleet towards fewer and larger vessels has taken place mid1990s to late 2010s. The fleet is now largely composed of a few large offshore factory trawlers (>6000HP (HP=engine horsepower)) and a small group of <500HP vessels mainly fishing inshore. Trawling is mainly performed using two or three trawls simultaneously.

The present paper updates available information derived from catch statistics, logbooks and catch sampling from the Norwegian trawl fishery for shrimp in the Barents Sea (ICES Div. I and II).

Materials and methods

Logbook data from Norwegian vessels were analyzed to show the spatial and temporal distribution of the fishery and fleet composition. Derived catch-per-unit-effort (CPUE) data were used in multiplicative models to calculate standardized annual catch rate indices (Hvingel *et al*., 2000).

The CPUE indices included the following variables: (1) vessel fishing power, (2) seasonal availability of shrimp, (3) spatial availability of shrimp, (4) gear type (single, double or triple trawl) and (5) annual mean CPUE. The calculations were done using the SAS statistical software (Anon., 1988). The area definition used is similar to the stratification used in the 1980-2004 survey (Hvingel, 2007). The multiplicative model was represented in logarithmic form as:

$$\ln\left(CPUE_{kjmhi}\right) = \ln\left(u\right) + \ln\left(V_k\right) + \ln\left(S_j\right) + \ln\left(A_m\right) + \ln(G_h) + \ln\left(Y_i\right) + e_{kjmhi}$$

Where $CPUE_{kjmhi}$ is the mean CPUE for vessel k, fishing in area m in month j during year i with geartype h (k = 1,...,n; m = 1,...,a; j = 1,...,s; i = 1,...,y; h=1,2,3); ln(u) is overall mean ln($CPUE$); V_k is the effect of the kth vessel; S_j is the effect of the jth month; A_m is effect of the mth area; G_h is the effect of gear type h; Y_i is the effect of the ith year; e_{kjmhi} is the error term assumed to be normally distributed N(0,σ^2/n) where n is the number of observations in the cell. The standardized CPUE indices are the antilog of the year coefficients.

Results

Spatial and seasonal distribution

The fishery has mainly been conducted in the Hopen area (central Barents Sea) which, along with the Svalbard shelf, and on the Goosebank (south east Barents Sea) is considered the most important fishing ground (Fig. 1 and 3). However, since 2008 logbook data show a decreased activity in the Hopen Deep, coupled with increased effort further east in international waters in the so-called “Loop Hole”. Information from the industry points to higher densities of shrimp in this area and area closures in the traditional Hopen Deep due to bycatch of juvenile fish as the main reasons for the change in fishing pattern. In recent years, several fish stocks have increased substantially in the Barents Sea and as a consequence the by-catch restrictions (area closures) have had an increasing effect on the distribution of the shrimp fishery.

The fishery takes place in all months but may in certain years be restricted by ice conditions. The lowest intensity is generally seen in October through March, the highest in April to August (Fig. 4). In 2016-17 seasonal effort distribution is like the 2006-2015 average.

Landings

Fishery in offshore areas began in 1970 and catches increased over the following 15 years from 5 to 128 ktons (Fig 2). Catches then declined rapidly. A new peak was seen in 1990 and again in 2000 at 83 ktons. Since 2000 catches have declined to 20 ktons in 2013. Since 2013 catches have started to increase again and is projected

to reach about 45000 tons in 2018 (based on data until July, logbooks and information from the industry). The 2000 to 2013 decline in catches is partly attributed to reduced market prices for shrimp products, and a major restructuring of the fleet. The increase in catch after 2013 follows an increase in prices for shrimp products.

Discards and bycatch. Discard of shrimp cannot be quantified but is believed to be small as the fishery is not limited by quotas. Bycatch rates of other species are estimated from at-sea inspections and research surveys and are corrected for differences in gear selection pattern (AFWG 2017). Area-specific bycatch rates are then multiplied by the corresponding shrimp catches from logbooks to give an overall bycatch estimate. Revised and updated discards estimates (1983–2017) of cod, haddock and redfish juveniles in the commercial shrimp fishery in the Barents Sea were available in 2018 (Table 2, Fig. 7). Since the introduction of the Nordmøre sorting grid in 1992, only small individuals of cod, haddock, Greenland halibut, and redfish, in the 5–25 cm size range, are caught as bycatch.

Fleet composition and gear
A major restructuring of the fleet towards fewer and larger vessels has taken place from the mid-1990s to late 2010s. An average vessel had before that period around 1000 HP. By the end of the 2010s this value had increased to about 6000 HP (Fig. 5). This fishery was originally a "single-trawl-fishery". Since the early 2000s most fishery has been conducted by using two or three trawls simultaneously.

Standardized CPUE
The fishery dependent index of stock density in the fished areas – the standardized CPUE – is indicative of shrimp greater than 16 mm cpl., i.e. of the older male and the female stock combined (Hvingel and Thangstad 2008). The standardized CPUE declined by 60% from a maximum in 1984 to the lowest value of the time series in 1987 (Table 3, Fig. 8). Since then it has shown an overall increasing trend until 2010. After 2010 it decreased below the average.

The 2018 value based on only partial data for the year (until July) is record high. Ancillary Information from the industry reports of abnormally high catch rates in the beginning of the season in the Russian zone and later in Hopen. However, after July, i.e. from the period of 2018 that is not yet included in the GLM analysis, catch rates are down to 1/3 of what they were earlier in the season. A comparison of recent years unstandardized CPUEs to the standardized, which typically are reasonably well correlated, points to the 2018 value being an outlier (Fig. 9). It is uncertain whether the preliminary 2018 standardized CPUE index value is a good reflection of stock biomass.

Details and diagnostics of the GLM model fit are given in appendix 1.

References

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Table 1. Nominal landings ('000 tons) by nation (2018 catch is estimated based on data until July).

Year	Norway	Russia	Others	Total
1970	5.508	0	0	5.508
1971	5.116	0	0.026	5.142
1972	6.772	0	0	6.772
1973	6.921	0	0	6.921
1974	8.008	0	0	8.008
1975	8.197	0	0.002	8.199
1976	9.752	0	0	9.752
1977	14.700	0	4.854	19.554
1978	20.484	18.27	0.189	38.943
1979	25.435	10.474	0.39	36.299
1980	35.061	11.219	0	46.280
1981	32.713	9.886	1.011	43.610
1982	43.451	15.552	3.835	62.838
1983	70.798	29.105	4.903	104.806
1984	76.636	43.180	8.246	128.062
1985	82.123	32.104	10.262	124.489
1986	48.569	10.216	6.538	65.323
1987	31.353	6.690	5.324	43.367
1988	32.021	12.32	4.348	48.689
1989	47.064	12.252	3.432	62.748
1990	54.182	20.295	6.687	81.164
1991	39.663	29.434	6.156	75.253
1992	39.657	20.944	8.021	68.622
1993	32.663	22.397	0.806	55.866
1994	20.162	7.108	1.063	28.333
1995	19.337	3.564	2.319	25.220
1996	25.445	5.747	3.320	34.512
1997	29.079	1.493	5.163	35.735
1998	44.792	4.895	6.103	55.790
1999	52.612	10.765	12.293	75.670
2000	55.333	19.596	5.768	80.697
2001	43.031	5.846	8.408	57.285
2002	48.799	3.790	8.899	61.488
2003	34.172	2.776	2.277	39.225
2004	35.918	2.410	4.406	42.734
2005	37.253	0.435	4.930	42.618
2006	27.352	0.004	2.271	29.627
2007	25.558	0.192	4.181	29.931
2008	20.662	0.417	7.109	28.188
2009	19.784	0.000	7.488	27.272
2010	16.779	0.000	8.419	25.198
2011	19.928	0.000	10.298	30.226
2012	14.158	0.000	10.598	24.756
2013	8.846	1.067	9.336	19.249
2014	10.234	0.741	9.989	20.964
2015	16.618	1.151	16.253	34.022
2016	10.896	2.490	16.223	29.609
2017	7.010	3.849	18.894	29.753
2018	16.000	10.000	19.000	45.000

Table 2. Estimated bycatch (no. in millions) and index of bycatch (bycatch number/total shrimp catch in weight). No data for polar cod; data for Greenland halibut not updated. (Source Arctic Fisheries Working Group, ICES).

	Absolute # in millions					index (#bycatch/shrimp catch in weight)				
Year	Cod	Redfish	Haddock	Gr. Halibut	Polar cod	Cod	Redfish	Haddock	Gr. Halibut	Polar cod
1982	9.23	316.66	0.18			0.21	7.29	0.00		
1983	16.46	298.04	82.90			0.23	4.21	1.17		
1984	8.20	641.96	59.46			0.11	8.38	0.78		
1985	86.00	439.63	53.88			1.05	5.35	0.66		
1986	24.03	458.55	24.20			0.49	9.44	0.50		
1987	24.67	105.23	0.64			0.79	3.36	0.02		
1988	6.91	58.40	2.94			0.22	1.82	0.09		
1989	13.98	109.14	8.05			0.30	2.32	0.17		
1990	22.44	134.19	18.95			0.41	2.48	0.35		
1991	23.53	289.71	34.33			0.59	7.30	0.87		
1992	24.30	387.43	18.50			0.61	9.77	0.47		
1993	30.90	98.75	1.91			0.95	3.02	0.06		
1994	19.00	137.60	9.00			0.94	6.82	0.45		
1995	34.96	23.70	2.31			1.81	1.23	0.12		
1996	114.86	188.86	2.50			4.51	7.42	0.10		
1997	156.98	23.06	3.72			5.40	0.79	0.13		
1998	73.12	65.13	4.85			1.63	1.45	0.11		
1999	39.32	4.98	4.21			0.75	0.09	0.08		
2000	65.39	27.56	44.58	13.94		1.18	0.50	0.81	0.25	
2001	23.43	10.09	2.70	7.57		0.54	0.23	0.06	0.18	
2002	21.54	15.83	4.07	0.19		0.44	0.32	0.08	0.00	
2003	11.91	7.49	6.21	0.59		0.35	0.22	0.18	0.02	
2004	14.20	6.60	77.48	0.33		0.40	0.18	2.16	0.01	
2005	17.60	2.84	110.63			0.47	0.08	2.97		
2006	29.27	75.99	53.46			1.07	2.78	1.95		
2007	39.71	13.42	259.07			1.55	0.52	10.14		
2008	63.04	8.72	190.09			3.05	0.42	9.20		
2009	5.80	43.64	24.01			0.29	2.21	1.21		
2010	11.21	4.96	65.71			0.67	0.30	3.92		
2011	2.85	12.62	13.57			0.14	0.63	0.68		
2012	9.53	1.67	24.58			0.67	0.12	1.74		
2013	4.52	1.99	10.09			0.51	0.22	1.14		
2014	17.85	12.34	44.94			1.74	1.21	4.39		
2015	23.61	31.45	101.07			1.40	1.87	6.00		
2016	3.01	44.19	16.61			0.17	2.46	0.92		
2017	2.50	90.34	11.69			0.07	2.42	0.31		

Table 3. Realized catch-per-unit-effort (CPUE) and effort (hrs. trawled), and standardized (see text) CPUE and effort. Based on Norwegian logbook data; 2018 values are estimated based on data until July.

year	Absolute		Standardised	
	CPUE	Effort	CPUE	Effort
	kg/hr	'000 hrs	index	index
1980	186	189	1.00	1.00
1981	216	152	1.19	0.79
1982	198	219	1.15	1.18
1983	231	306	1.31	1.73
1984	250	306	1.38	2.01
1985	231	356	1.14	2.36
1986	154	315	0.68	2.09
1987	116	270	0.53	1.76
1988	113	282	0.57	1.83
1989	143	330	0.72	1.88
1990	150	361	0.74	2.38
1991	171	230	0.78	2.09
1992	211	188	0.90	1.64
1993	209	159	0.98	1.24
1994	173	116	0.80	0.76
1995	150	129	0.67	0.81
1996	191	133	0.84	0.89
1997	228	127	0.80	0.96
1998	294	153	0.97	1.24
1999	295	178	1.02	1.60
2000	283	195	0.91	1.92
2001	356	121	0.92	1.35
2002	412	119	0.91	1.47
2003	386	88	0.89	0.95
2004	402	89	0.76	1.21
2005	611	61	1.05	0.88
2006	754	36	1.15	0.56
2007	840	30	1.04	0.62
2008	801	26	1.07	0.57
2009	794	25	1.10	0.54
2010	841	20	1.02	0.53
2011	777	26	1.15	0.57
2012	605	23	0.81	0.66
2013	534	17	0.70	0.60
2014	478	21	0.67	0.68
2015	476	35	0.74	1.00
2016	442	25	0.68	0.94
2017	635	11	0.88	0.73
2018	696	29	1.72	0.56

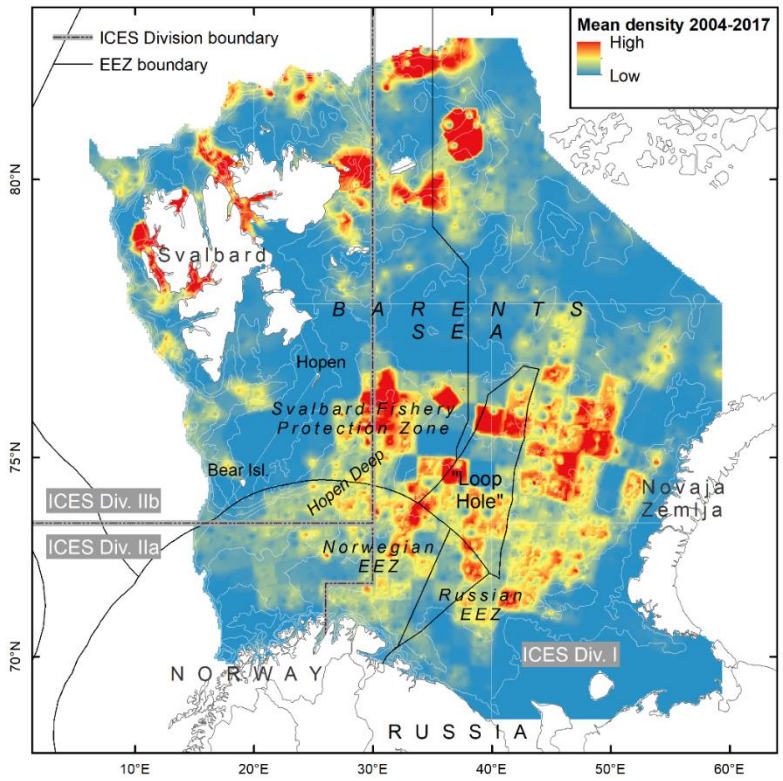

Fig. 1. Shrimp in the Barents Sea: stock distribution. Survey density index (kg/km^2), mean of recent 14 years of data.

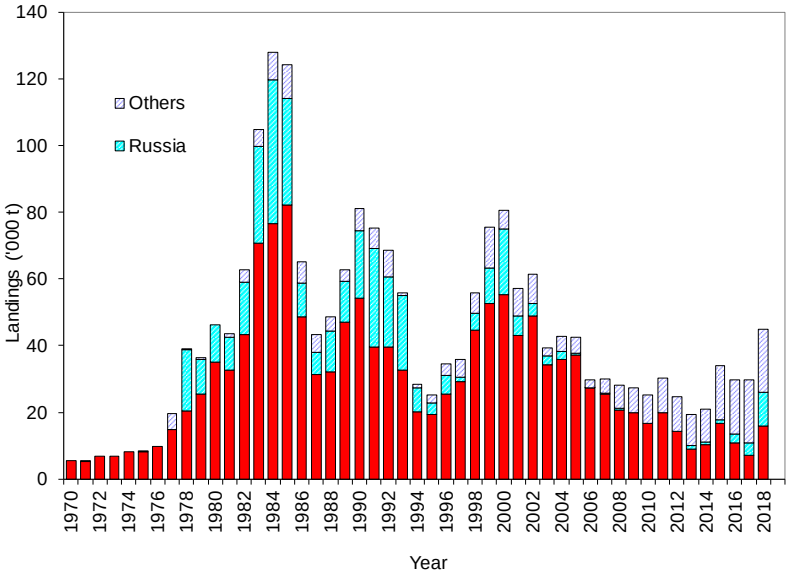

Fig. 2. Shrimp in the Barents Sea: Total annual landings. The 2018 projected value is estimated based on data until July and information from the industry.

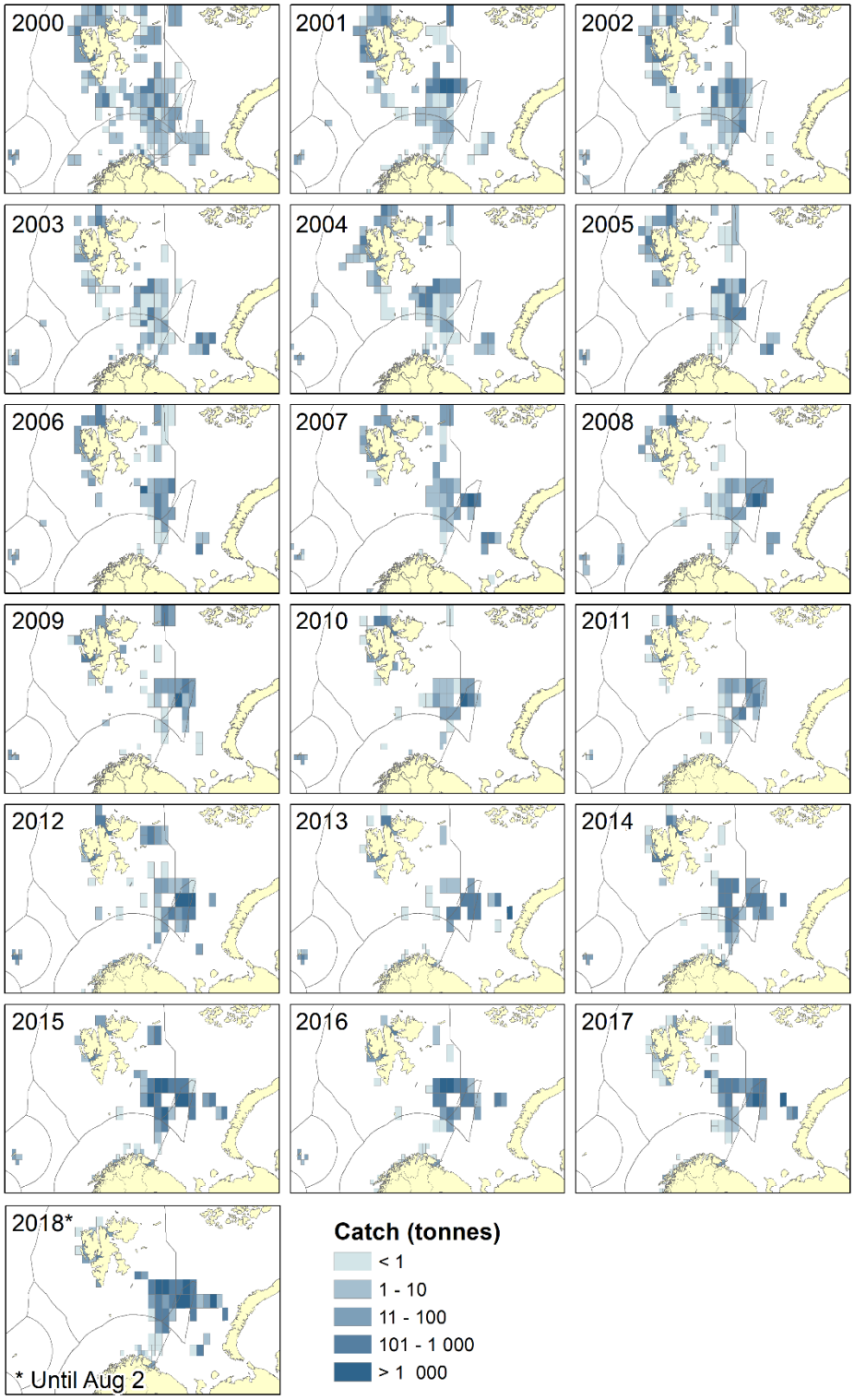

Fig. 3. Distribution of catches by Norwegian vessels since 2000 based on logbook information. (*only data until June)

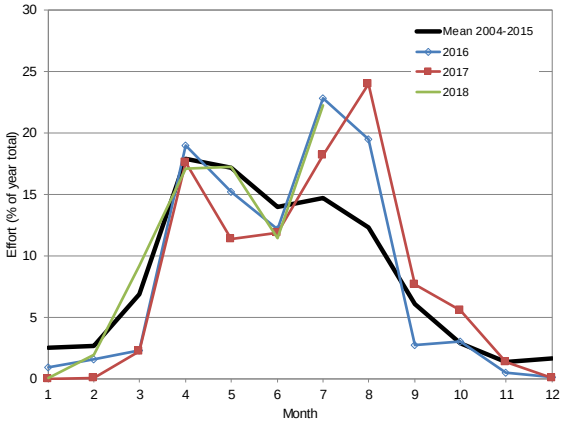

Fig. 4. Shrimp in the Barents Sea: Seasonal distribution of Norwegian fishing effort (hours trawled in a month as a percentage of total effort of the year) 2016-2018 and mean 2004-2015.

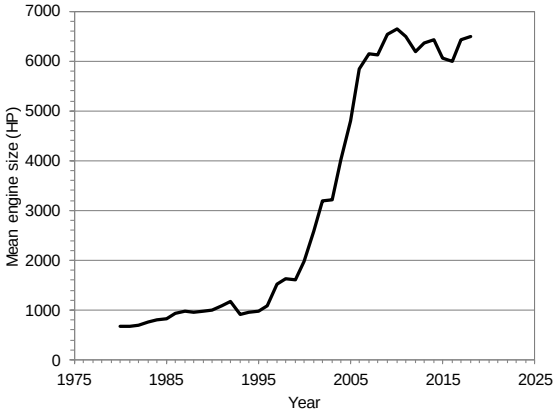

Fig. 5. Shrimp in the Barents Sea: Mean engine size (horse powers) pr. hour of trawled by Norwegian vessels.

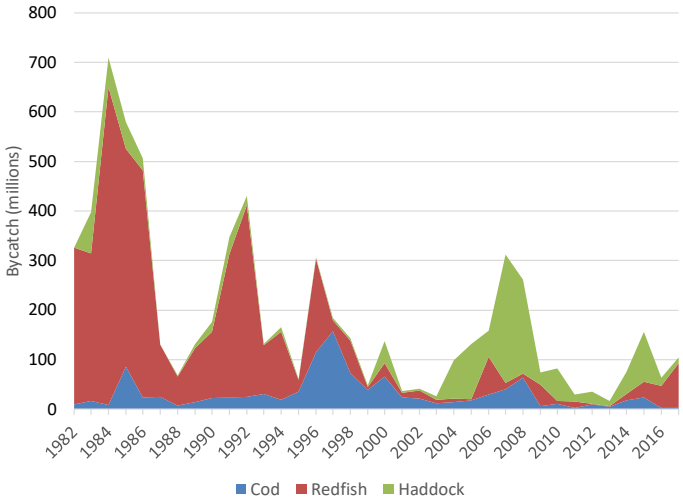

Fig 6. Shrimp in ICES SA 1 and 2: Estimated bycatch of cod, haddock and redfish in the Norwegian shrimp fishery (million individuals). The sorting grid was introduced in 1992 and has been mandatory since.

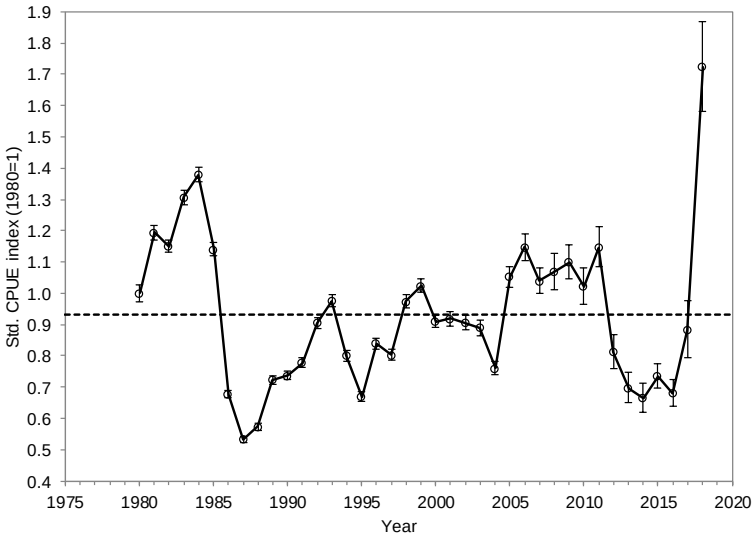

Fig 7. Shrimp in the Barents Sea: Standardized CPUE +/- one standard error.

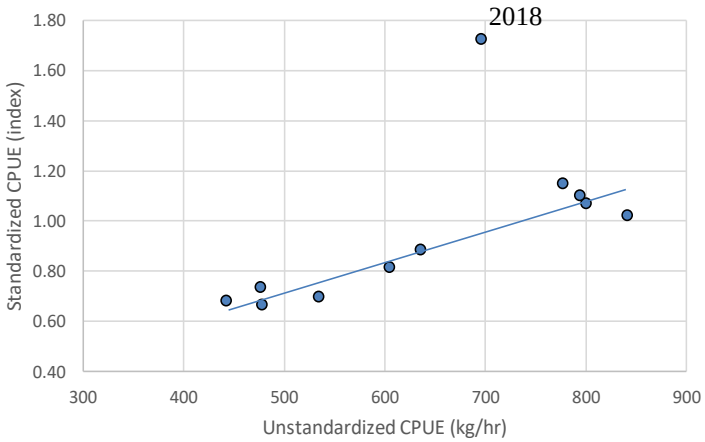

Fig. 8. Shrimp in the Barents Sea: Standardized vs unstandardized CPUE 2008 to 2018.

Appendix 1. Output from GLM-run of the Barents Sea index. Gear 55=single trawl, gear 58=double trawl, gear 59= triple trawl. Strata definitions see Hvingel 2007. Vessels are individual vessel identification code.

Class Level Information

Class	Levels	Values
strata	8	A B C D E F G H
gear	4	55 58 59 61
vessel	433	A 0003O AA0023HS F 0001BD F 0001BDN F 0001L F 0001SV F 0002BD F 0003V F 0004V F 0007LB F 0007M F 0009V F 0010BD F 0017BD F 0018NK F 0018NKN F 0019BD F 0020BD F 0020NK F 0023HV F 0024BD F 0025A F 0025M F 0025NK F 0026LB F 0027M F 0032BD F 0032LB F 0034BD F 0038L F 0040V F 0042NK F 0044VS F 0055G F 0056B F 0057NK F 0060NK F 0061NK F 0062HV F 0077NK F 0080G F 0086NK F 0090BDN F 0090KD F 0091LB F 0092B F 0092NK F 0096V F 0097L F 0100M F 0100NK F 0101L F 0107VS F 0109HV F 0110L F 0111H F 0112M F 0125BD F 0128NK F 0136HV F 0144H F 0144S F 0148P F 0156V F 0156V N F 0157S F 0178NK F 0180G F 0180NK F 0184VS F 0197HV F 0200SV F 0202M F 0220BD F 0220M F 0221A F 0234NK F 0250NK F 0270NK F 0300M F 0300NK F 0301L N F 0321A F 0330NK F 0394L F 0415NK F 0415NKN H 0001B H 0010FE H 0020L H 0090AV M 0001A M 0001VN M 0002HØ M 0002VD M 0003A M 0003SM M 0006MD M 0007HØ M 0008S M 0010H• N M 0014H• M 0016A N M 0019A M 0019H• M 0020G M 0020H• M 0020S M 0023HØ M 0023VD M 0028VD M 0031G M 0032VD M 0033VN M 0034FI M 0037G M 0043H• M 0043VD M 0049H M 0053H• M 0059H M 0070M M 0071H• M 0079HØ M 0081H• M 0081H• N M 0081VD M 0088HØ M 0096H• M 0099AV M 0099H• M 0100AE M 0102S M 0106H M 0114F M 0114S• M 0165G M 0170A M 0199H• M 0206H M 0300HØ M 0306HØ M 0360HØ M 0402H M 0444H• M 0450SM M 0450SMN M 0490SM M 0553H• N 0001H N 0001• N 0002BRN N 0002H N 0002LN N 0002V N 0004AH N 0004V N 0005BR N 0005BRN N 0006H N 0007TN N 0007VV N 0007• N 0008A N 0009VV N 0010H N 0010MS N 0012V N 0014TS N 0014TSN N 0015TS N 0016ME N 0017BR N 0017BRN N 0017VV N 0020VR N 0021BR N 0021L N 0022V N 0025VV N 0026ME N 0026• N 0030H N 0030H N N 0033H N 0034HR N 0035H N 0037MS N 0038V N 0041V N 0043V N 0044RT N 0045H N 0045H N N 0050H N 0055H N 0062H N 0062VV N 0068V N 0072MS N 0077F N 0077F N N 0078H N 0080A N 0081B• N 0085• N 0094LF N 0100• N 0100Ø N 0110RT N 0111VR N 0111• N 0120• N 0148VV N 0148VVN N 0160VV N 0160VVN N 0165MS N 0173MS N 0180L N 0183ME N 0210A N 0230A N 0266V N 0271• N 0294V N 0300VV N 0415V N 0415V N N 0431A N 0540ME N 0550SG NT0008V NT0150V NT0177V NT0444V NT0480V R 0001ESN R 0009ES R 0010ESN R 0045U R 0048U R 0051U R 0064B R 0091K R 0116K ST0041R ST0048HE ST0050R ST0086O ST0086O N ST0092O ST0183F T 0001H T 0001I N T 0001K T 0001K N T 0001S T 0001T T 0002H T 0002H N T 0002K T 0002LK T 0002LKN T 0002T T 0003LK T 0004SA T 0005K T 0005LK T 0005T T 0006L T 0006LK T 0006S T 0006T T 0006T N T 0007T T 0007TK T 0008S T 0008S N T 0008T T 0008TK T 0009LK T 0009T N T 0010LKN T 0011K T 0012I T 0012K T 0015T T 0016T T 0017T T 0017T N T 0018LK T 0018T T 0020K T 0020SA T 0022I T 0022T T 0023T T 0024T T 0028BG T 0028LK T 0028TN T 0029LK T 0029LKN T 0031I T 0031L T 0031SK T 0033B T 0033T T 0035T T 0036LK T 0036T T 0037S T 0038T T 0039H T 0039T T 0040LK T 0040T T 0041L T 0041T T 0042BG T 0042T T 0044T N T 0045T T 0046BG T 0047LK T 0048T T 0049L T 0050B T 0050K T 0050L T 0051LK T 0052S T 0055G T 0058T T 0058T N T 0060I T 0060K T 0061T T 0061T N T 0062T T 0063BG T 0064SA T 0068G T 0070LK T 0070SK T 0070T T 0070T N T 0077T T 0080LK T 0081L T 0081T T 0086T T 0088B T 0088L T 0090T T 0092S T 0092S N T 0094I T 0095LK T 0097L T 0097T T 0099T T 0099T N T 0100D T 0100D N T 0100I T 0102BG T 0106T T 0111BG T 0122LK T 0122LKN T 0124LK T 0133T T 0137BG T 0137BGN T 0138TN T 0145LK T 0150BG T 0150T T 0150T N T 0156BG T 0160L T 0161N T 0165T N T 0170L T 0170T T 0170TK T 0171K T 0181K T 0182BG T 0183T T 0195L T 0198LK T 0200N T 0201BG T 0207BG T 0225N T 0228KD T 0228LK T 0230T T 0242T N T 0245LK T 0303T T 0320S T 0320T T 0320T N T 0345LK T 0350T T 0359T T 0360LK T 0429T N T 0440K T 0566S T 0569LK T 0805T T 0854T VA0002K VA0016S VA0034K VA0041K VA0046K VA0057K VA0066K VA0079K VA0087K VA0090FS VA0095K N VA0120K VA0156K • 0001H • 0061H • 0199H
year	39	1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2080
month	12	1 2 3 4 5 6 7 8 9 10 11 12

Number of Observations Read	210898
Number of Observations Used	210898

Weight: effort

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	493	1040184.956	2109.909	549.27	<.0001
Error	210404	808228.526	3.841		
Corrected Total	210897	1848413.482			

R-Square	Coeff Var	Root MSE	lncpue Mean
0.562745	37.58746	1.959928	5.214313

Source	DF	Type I SS	Mean Square	F Value	Pr > F
strata	7	225985.2547	32283.6078	8404.31	<.0001
year	38	470403.0184	12379.0268	3222.60	<.0001
gear	4	29648.6926	7412.1731	1929.59	<.0001
vessel	433	255122.7859	589.1981	153.38	<.0001
month	11	59025.2047	5365.9277	1396.90	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
strata	7	16661.2700	2380.1814	619.63	<.0001
year	38	148859.1159	3917.3452	1019.79	<.0001
gear	4	0.1145	0.0286	0.01	0.9999
vessel	433	2268.9865	5.2402	1.36	<.0001
month	11	59025.2047	5365.9277	1396.90	<.0001

Parameter	Estimate		Standard Error	t Value	Pr > |t|
Intercept	3.919306738	B	14909.55269	0.00	0.9998
strata A	-0.095983299	B	0.00547	-17.54	<.0001
strata B	0.057828987	B	0.00485	11.93	<.0001
strata C	0.062026965	B	0.00452	13.73	<.0001
strata D	0.014959881	B	0.00950	1.58	0.1152
strata E	0.186889046	B	0.00376	49.65	<.0001
strata F	0.025064340	B	0.00985	2.54	0.0110
strata G	0.010099977	B	0.00560	1.80	0.0713
strata H	0.000000000	B	.	.	.
year 1981	0.177956014	B	0.00981	18.15	<.0001
year 1982	0.139759589	B	0.00859	16.27	<.0001
year 1983	0.267116055	B	0.00832	32.10	<.0001
year 1984	0.321551708	B	0.00854	37.64	<.0001
year 1985	0.131964567	B	0.00866	15.24	<.0001
year 1986	-0.390514619	B	0.00894	-43.68	<.0001
year 1987	-0.630159768	B	0.00948	-66.44	<.0001
year 1988	-0.555527087	B	0.00918	-60.54	<.0001
year 1989	-0.325063377	B	0.00883	-36.80	<.0001
year 1990	-0.305318083	B	0.00878	-34.76	<.0001
year 1991	-0.250238456	B	0.00927	-26.98	<.0001
year 1992	-0.100111286	B	0.00956	-10.47	<.0001
year 1993	-0.024870333	B	0.01002	-2.48	0.0131
year 1994	-0.222762118	B	0.01108	-20.11	<.0001
year 1995	-0.401144551	B	0.01111	-36.10	<.0001
year 1996	-0.174780248	B	0.01077	-16.23	<.0001

Parameter	Estimate		Standard Error	t Value	Pr > |t|
year 1997	-0.219201994	B	0.01097	-19.99	<.0001
year 1998	-0.026744200	B	0.01072	-2.49	0.0126
year 1999	0.024539299	B	0.01056	2.32	0.0201
year 2000	-0.095190554	B	0.01106	-8.60	<.0001
year 2001	-0.083892453	B	0.01239	-6.77	<.0001
year 2002	-0.098810273	B	0.01297	-7.62	<.0001
year 2003	-0.116243527	B	0.01406	-8.27	<.0001
year 2004	-0.273753162	B	0.01402	-19.53	<.0001
year 2005	0.050806038	B	0.01568	3.24	0.0012
year 2006	0.137467819	B	0.01821	7.55	<.0001
year 2007	0.038342100	B	0.01939	1.98	0.0480
year 2008	0.066172922	B	0.02652	2.50	0.0126
year 2009	0.095645435	B	0.02441	3.92	<.0001
year 2010	0.021099330	B	0.02805	0.75	0.4520
year 2011	0.136820568	B	0.02784	4.91	<.0001
year 2012	-0.206907682	B	0.03351	-6.17	<.0001
year 2013	-0.360791472	B	0.03498	-10.31	<.0001
year 2014	-0.407167144	B	0.03514	-11.59	<.0001
year 2015	-0.307615667	B	0.02750	-11.19	<.0001
year 2016	-0.383759212	B	0.03238	-11.85	<.0001
year 2017	-0.124518737	B	0.05179	-2.40	0.0162
year 2018	0.543988757	B	0.04160	13.08	<.0001
year 2080	0.000000000	B	.	.	.
gear 55	-0.339430305		15189.47489	-0.00	1.0000
gear 58	-0.274305152		15189.47489	-0.00	1.0000
gear 59	-0.191697081		15189.47489	-0.00	1.0000
gear 61	-0.167434026		15189.47492	-0.00	1.0000
vessel A 0003O	-0.746769932		2939.50631	-0.00	0.9998
vessel AA0023HS	1.187920131		2939.50628	0.00	0.9997
vessel F 0001BD	1.383537573		2939.50628	0.00	0.9996
vessel F 0001BDN	1.604731862		2939.50628	0.00	0.9996
vessel F 0001L	2.454639437		2939.50628	0.00	0.9993
vessel F 0001SV	1.688365970		2939.50628	0.00	0.9995
vessel F 0002BD	1.737603111		2939.50628	0.00	0.9995
vessel F 0003V	1.238865579		2939.50628	0.00	0.9997
vessel F 0004V	1.181858989		2939.50628	0.00	0.9997
vessel F 0007LB	1.404487175		2939.50628	0.00	0.9996
vessel F 0007M	1.626127377		2939.50628	0.00	0.9996
vessel F 0009V	1.363292834		2939.50628	0.00	0.9996
vessel F 0010BD	2.075810966		2939.50628	0.00	0.9994
vessel F 0017BD	2.351293395		2939.50628	0.00	0.9994

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel F 0018NK	1.427473186	2939.50628	0.00	0.9996
vessel F 0018NKN	1.122008644	2939.50628	0.00	0.9997
vessel F 0019BD	1.173449014	2939.50628	0.00	0.9997
vessel F 0020BD	0.891817394	2939.50628	0.00	0.9998
vessel F 0020NK	0.977499847	2939.50628	0.00	0.9997
vessel F 0023HV	0.900819240	2939.50628	0.00	0.9998
vessel F 0024BD	1.741872322	2939.50628	0.00	0.9995
vessel F 0025A	2.716490311	2939.50628	0.00	0.9993
vessel F 0025M	1.577415190	2939.50628	0.00	0.9996
vessel F 0025NK	0.838125263	2939.50628	0.00	0.9998
vessel F 0026LB	1.599581374	2939.50628	0.00	0.9996
vessel F 0027M	1.575675355	2939.50628	0.00	0.9996
vessel F 0032BD	1.530026934	2939.50628	0.00	0.9996
vessel F 0032LB	0.795141299	2939.50628	0.00	0.9998
vessel F 0034BD	2.223640699	2939.50628	0.00	0.9994
vessel F 0038L	1.061669344	2939.50628	0.00	0.9997
vessel F 0040V	1.294383837	2939.50628	0.00	0.9996
vessel F 0042NK	1.267637280	2939.50628	0.00	0.9997
vessel F 0044VS	1.117200338	2939.50628	0.00	0.9997
vessel F 0055G	1.426541738	2939.50628	0.00	0.9996
vessel F 0056B	1.295889952	2939.50628	0.00	0.9996
vessel F 0057NK	0.774540803	2939.50628	0.00	0.9998
vessel F 0060NK	1.448305223	2939.50628	0.00	0.9996
vessel F 0061NK	1.062056824	2939.50628	0.00	0.9997
vessel F 0062HV	1.858622250	2939.50628	0.00	0.9995
vessel F 0077NK	1.375003991	2939.50628	0.00	0.9996
vessel F 0080G	1.667656263	2939.50628	0.00	0.9995
vessel F 0086NK	1.037595074	2939.50628	0.00	0.9997
vessel F 0090BDN	1.518531299	2939.50628	0.00	0.9996
vessel F 0090KD	1.236777838	2939.50628	0.00	0.9997
vessel F 0091LB	1.141673837	2939.50628	0.00	0.9997
vessel F 0092B	1.492362252	2939.50628	0.00	0.9996
vessel F 0092NK	1.491869236	2939.50628	0.00	0.9996
vessel F 0096V	1.573715093	2939.50628	0.00	0.9996
vessel F 0097L	1.362340587	2939.50628	0.00	0.9996
vessel F 0100M	1.724334386	2939.50628	0.00	0.9995
vessel F 0100NK	1.381632839	2939.50628	0.00	0.9996
vessel F 0101L	1.024962699	2939.50628	0.00	0.9997
vessel F 0107VS	1.078087984	2939.50628	0.00	0.9997
vessel F 0109HV	1.285614769	2939.50628	0.00	0.9997
vessel F 0110L	1.295518689	2939.50628	0.00	0.9996

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel F 0111H	1.396235963	2939.50628	0.00	0.9996
vessel F 0112M	1.185832730	2939.50628	0.00	0.9997
vessel F 0125BD	1.031173205	2939.50628	0.00	0.9997
vessel F 0128NK	1.383909962	2939.50628	0.00	0.9996
vessel F 0136HV	1.756491826	2939.50628	0.00	0.9995
vessel F 0144H	0.752755280	2939.50628	0.00	0.9998
vessel F 0144S	0.869110350	2939.50628	0.00	0.9998
vessel F 0148P	1.165361523	2939.50628	0.00	0.9997
vessel F 0156V	1.651668656	2939.50628	0.00	0.9996
vessel F 0156V N	1.604543001	2939.50628	0.00	0.9996
vessel F 0157S	1.194549132	2939.50628	0.00	0.9997
vessel F 0178NK	1.400291957	2939.50628	0.00	0.9996
vessel F 0180G	1.774275072	2939.50628	0.00	0.9995
vessel F 0180NK	1.774913657	2939.50628	0.00	0.9995
vessel F 0184VS	1.543825193	2939.50628	0.00	0.9996
vessel F 0197HV	1.082946000	2939.50628	0.00	0.9997
vessel F 0200SV	1.792088151	2939.50628	0.00	0.9995
vessel F 0202M	1.364925191	2939.50628	0.00	0.9996
vessel F 0220BD	2.301712540	2939.50628	0.00	0.9994
vessel F 0220M	1.490480690	2939.50628	0.00	0.9996
vessel F 0221A	2.415071582	2939.50628	0.00	0.9993
vessel F 0234NK	1.053183815	2939.50628	0.00	0.9997
vessel F 0250NK	0.976540097	2939.50628	0.00	0.9997
vessel F 0270NK	1.362064557	2939.50628	0.00	0.9996
vessel F 0300M	1.272887355	2939.50628	0.00	0.9997
vessel F 0300NK	1.080835521	2939.50628	0.00	0.9997
vessel F 0301L N	0.815334474	2939.50628	0.00	0.9998
vessel F 0321A	2.673384801	2939.50628	0.00	0.9993
vessel F 0330NK	0.797531140	2939.50628	0.00	0.9998
vessel F 0394L	1.429834598	2939.50628	0.00	0.9996
vessel F 0415NK	0.964125810	2939.50628	0.00	0.9997
vessel F 0415NKN	1.199575999	2939.50628	0.00	0.9997
vessel H 0001B	0.714382466	2939.50628	0.00	0.9998
vessel H 0010FE	0.880390694	2939.50628	0.00	0.9998
vessel H 0020L	1.703131317	2939.50628	0.00	0.9995
vessel H 0090AV	1.803227364	2939.50628	0.00	0.9995
vessel M 0001A	2.076218855	2939.50628	0.00	0.9994
vessel M 0001VN	1.899927823	2939.50628	0.00	0.9995
vessel M 0002HØ	2.645705916	2939.50628	0.00	0.9993
vessel M 0002VD	-0.295381956	2939.50629	-0.00	0.9999
vessel M 0003A	1.672094127	2939.50628	0.00	0.9995

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel M 0003SM	1.908909606	2939.50628	0.00	0.9995
vessel M 0006MD	1.330837869	2939.50628	0.00	0.9996
vessel M 0007HØ	2.506968019	2939.50628	0.00	0.9993
vessel M 0008S	1.488781989	2939.50628	0.00	0.9996
vessel M 0010H• N	1.565885100	2939.50628	0.00	0.9996
vessel M 0014H•	1.936530203	2939.50628	0.00	0.9995
vessel M 0016A N	1.478035325	2939.50628	0.00	0.9996
vessel M 0019A	2.104507073	2939.50628	0.00	0.9994
vessel M 0019H•	1.275970834	2939.50628	0.00	0.9997
vessel M 0020G	1.240477521	2939.50628	0.00	0.9997
vessel M 0020H•	1.834324185	2939.50628	0.00	0.9995
vessel M 0020S	1.362372283	2939.50628	0.00	0.9996
vessel M 0023HØ	2.502637370	2939.50628	0.00	0.9993
vessel M 0023VD	2.321868810	2939.50628	0.00	0.9994
vessel M 0028VD	1.528530254	2939.50628	0.00	0.9996
vessel M 0031G	1.313054066	2939.50628	0.00	0.9996
vessel M 0032VD	1.598362592	2939.50628	0.00	0.9996
vessel M 0033VN	2.625746635	2939.50628	0.00	0.9993
vessel M 0034FI	1.214071321	2939.50628	0.00	0.9997
vessel M 0037G	2.193557835	2939.50628	0.00	0.9994
vessel M 0043H•	2.255740563	2939.50628	0.00	0.9994
vessel M 0043VD	2.159083848	2939.50628	0.00	0.9994
vessel M 0049H	0.819344552	2939.50628	0.00	0.9998
vessel M 0053H•	1.894238844	2939.50628	0.00	0.9995
vessel M 0059H	2.438276378	2939.50628	0.00	0.9993
vessel M 0070M	1.342393703	2939.50628	0.00	0.9996
vessel M 0071H•	0.986515670	2939.50628	0.00	0.9997
vessel M 0079HØ	2.220251043	2939.50628	0.00	0.9994
vessel M 0081H•	1.885017378	2939.50628	0.00	0.9995
vessel M 0081H• N	2.544987607	2939.50628	0.00	0.9993
vessel M 0081VD	1.881571244	2939.50628	0.00	0.9995
vessel M 0088HØ	2.301865715	2939.50628	0.00	0.9994
vessel M 0096H•	2.113215116	2939.50628	0.00	0.9994
vessel M 0099AV	1.081622644	2939.50628	0.00	0.9997
vessel M 0099H•	2.180785136	2939.50628	0.00	0.9994
vessel M 0100AE	1.332212681	2939.50628	0.00	0.9996
vessel M 0102S	2.353420500	2939.50628	0.00	0.9994
vessel M 0106H	2.267172699	2939.50628	0.00	0.9994
vessel M 0114F	1.157327845	2939.50629	0.00	0.9997
vessel M 0114S•	1.453949098	2939.50628	0.00	0.9996
vessel M 0165G	1.035644228	2939.50628	0.00	0.9997

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel M 0170A	1.348775145	2939.50628	0.00	0.9996
vessel M 0199H•	1.403377104	2939.50628	0.00	0.9996
vessel M 0206H	1.754803166	2939.50628	0.00	0.9995
vessel M 0300HØ	2.644149531	2939.50628	0.00	0.9993
vessel M 0306HØ	2.628982906	2939.50628	0.00	0.9993
vessel M 0360HØ	2.485266479	2939.50628	0.00	0.9993
vessel M 0402H	1.724679923	2939.50628	0.00	0.9995
vessel M 0444H•	1.560405483	2939.50628	0.00	0.9996
vessel M 0450SM	2.967938293	2939.50628	0.00	0.9992
vessel M 0450SMN	1.747090013	2939.50628	0.00	0.9995
vessel M 0490SM	1.598596562	2939.50628	0.00	0.9996
vessel M 0553H•	1.872418209	2939.50628	0.00	0.9995
vessel N 0001H	1.255025622	2939.50628	0.00	0.9997
vessel N 0001•	1.133399112	2939.50628	0.00	0.9997
vessel N 0002BRN	0.978106121	2939.50628	0.00	0.9997
vessel N 0002H	2.005602164	2939.50628	0.00	0.9995
vessel N 0002LN	1.211296632	2939.50628	0.00	0.9997
vessel N 0002V	1.187116285	2939.50628	0.00	0.9997
vessel N 0004AH	0.927269004	2939.50628	0.00	0.9997
vessel N 0004V	1.042361506	2939.50628	0.00	0.9997
vessel N 0005BR	1.385496638	2939.50628	0.00	0.9996
vessel N 0005BRN	1.226211608	2939.50628	0.00	0.9997
vessel N 0006H	0.890240348	2939.50628	0.00	0.9998
vessel N 0007TN	1.250009845	2939.50628	0.00	0.9997
vessel N 0007VV	2.305862419	2939.50628	0.00	0.9994
vessel N 0007•	1.498431616	2939.50628	0.00	0.9996
vessel N 0008A	2.352318582	2939.50628	0.00	0.9994
vessel N 0009VV	1.425453902	2939.50628	0.00	0.9996
vessel N 0010H	2.411989429	2939.50628	0.00	0.9993
vessel N 0010MS	1.147807340	2939.50628	0.00	0.9997
vessel N 0012V	1.352355445	2939.50628	0.00	0.9996
vessel N 0014TS	1.562067723	2939.50628	0.00	0.9996
vessel N 0014TSN	1.808884028	2939.50628	0.00	0.9995
vessel N 0015TS	1.672153038	2939.50628	0.00	0.9995
vessel N 0016ME	1.082787493	2939.50628	0.00	0.9997
vessel N 0017BR	1.218927111	2939.50628	0.00	0.9997
vessel N 0017BRN	1.921448042	2939.50628	0.00	0.9995
vessel N 0017VV	0.915711890	2939.50628	0.00	0.9998
vessel N 0020VR	1.146318752	2939.50628	0.00	0.9997
vessel N 0021BR	1.107199034	2939.50628	0.00	0.9997
vessel N 0021L	1.389561320	2939.50628	0.00	0.9996

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel N 0022V	1.191705204	2939.50628	0.00	0.9997
vessel N 0025VV	1.588670900	2939.50628	0.00	0.9996
vessel N 0026ME	1.313952311	2939.50628	0.00	0.9996
vessel N 0026•	1.458620771	2939.50628	0.00	0.9996
vessel N 0030H	1.960605893	2939.50628	0.00	0.9995
vessel N 0030H N	2.440838603	2939.50628	0.00	0.9993
vessel N 0033H	1.010401039	2939.50628	0.00	0.9997
vessel N 0034HR	1.224306467	2939.50628	0.00	0.9997
vessel N 0035H	2.207788941	2939.50628	0.00	0.9994
vessel N 0037MS	1.259500861	2939.50628	0.00	0.9997
vessel N 0038V	0.996922161	2939.50628	0.00	0.9997
vessel N 0041V	1.459924625	2939.50628	0.00	0.9996
vessel N 0043V	1.542953630	2939.50628	0.00	0.9996
vessel N 0044RT	1.743770020	2939.50628	0.00	0.9995
vessel N 0045H	1.055475519	2939.50628	0.00	0.9997
vessel N 0045H N	2.106615062	2939.50628	0.00	0.9994
vessel N 0050H	2.801252127	2939.50628	0.00	0.9992
vessel N 0055H	1.329907827	2939.50628	0.00	0.9996
vessel N 0062H	1.891561967	2939.50628	0.00	0.9995
vessel N 0062VV	1.451115789	2939.50628	0.00	0.9996
vessel N 0068V	1.252440999	2939.50628	0.00	0.9997
vessel N 0072MS	1.090364985	2939.50628	0.00	0.9997
vessel N 0077F	1.301346745	2939.50628	0.00	0.9996
vessel N 0077F N	1.104844196	2939.50628	0.00	0.9997
vessel N 0078H	0.921084724	2939.50628	0.00	0.9997
vessel N 0080A	2.033388591	2939.50628	0.00	0.9994
vessel N 0081B•	1.063487544	2939.50628	0.00	0.9997
vessel N 0085•	1.034706901	2939.50628	0.00	0.9997
vessel N 0094LF	1.121960616	2939.50628	0.00	0.9997
vessel N 0100•	1.563500772	2939.50628	0.00	0.9996
vessel N 0100Ø	2.333122489	2939.50628	0.00	0.9994
vessel N 0110RT	1.584250968	2939.50628	0.00	0.9996
vessel N 0111VR	1.238416701	2939.50628	0.00	0.9997
vessel N 0111•	1.494455175	2939.50628	0.00	0.9996
vessel N 0120•	1.716115122	2939.50628	0.00	0.9995
vessel N 0148VV	1.272745601	2939.50628	0.00	0.9997
vessel N 0148VVN	1.219932997	2939.50628	0.00	0.9997
vessel N 0160VV	0.961715743	2939.50628	0.00	0.9997
vessel N 0160VVN	1.165842282	2939.50628	0.00	0.9997
vessel N 0165MS	0.765850095	2939.50628	0.00	0.9998
vessel N 0173MS	0.902389333	2939.50628	0.00	0.9998

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel N 0180L	0.879168556	2939.50628	0.00	0.9998
vessel N 0183ME	1.043773150	2939.50628	0.00	0.9997
vessel N 0210A	1.014602561	2939.50628	0.00	0.9997
vessel N 0230A	1.840507369	2939.50628	0.00	0.9995
vessel N 0266V	0.929779305	2939.50628	0.00	0.9997
vessel N 0271•	1.382921410	2939.50628	0.00	0.9996
vessel N 0294V	1.116548641	2939.50628	0.00	0.9997
vessel N 0300VV	1.176975752	2939.50628	0.00	0.9997
vessel N 0415V	1.347146335	2939.50628	0.00	0.9996
vessel N 0415V N	1.247315878	2939.50628	0.00	0.9997
vessel N 0431A	1.830460526	2939.50628	0.00	0.9995
vessel N 0540ME	1.574628125	2939.50628	0.00	0.9996
vessel N 0550SG	1.604010316	2939.50628	0.00	0.9996
vessel NT0008V	1.747268198	2939.50628	0.00	0.9995
vessel NT0150V	1.443379144	2939.50628	0.00	0.9996
vessel NT0177V	1.193554679	2939.50628	0.00	0.9997
vessel NT0444V	1.327842036	2939.50628	0.00	0.9996
vessel NT0480V	1.463554486	2939.50628	0.00	0.9996
vessel R 0001ESN	-0.482838152	2939.50631	-0.00	0.9999
vessel R 0009ES	0.567416966	2939.50629	0.00	0.9998
vessel R 0010ESN	2.429462645	2939.50658	0.00	0.9993
vessel R 0045U	1.303626573	2939.50628	0.00	0.9996
vessel R 0048U	1.548484030	2939.50628	0.00	0.9996
vessel R 0051U	0.850624009	2939.50628	0.00	0.9998
vessel R 0064B	0.096179105	2939.50631	0.00	1.0000
vessel R 0091K	1.230716199	2939.50628	0.00	0.9997
vessel R 0116K	0.966644452	2939.50628	0.00	0.9997
vessel ST0041R	1.478463169	2939.50628	0.00	0.9996
vessel ST0048HE	1.444693523	2939.50628	0.00	0.9996
vessel ST0050R	1.359424936	2939.50628	0.00	0.9996
vessel ST0086O	1.533794892	2939.50628	0.00	0.9996
vessel ST0086O N	1.374173981	2939.50628	0.00	0.9996
vessel ST0092O	1.585011590	2939.50628	0.00	0.9996
vessel ST0183F	1.368897011	2939.50628	0.00	0.9996
vessel T 0001H	2.338044336	2939.50628	0.00	0.9994
vessel T 0001I N	1.392778038	2939.50628	0.00	0.9996
vessel T 0001K	1.236900827	2939.50628	0.00	0.9997
vessel T 0001K N	1.593332666	2939.50628	0.00	0.9996
vessel T 0001S	1.240602903	2939.50628	0.00	0.9997
vessel T 0001T	1.578178897	2939.50628	0.00	0.9996
vessel T 0002H	1.724923468	2939.50628	0.00	0.9995

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel T 0002H N	2.193401455	2939.50628	0.00	0.9994
vessel T 0002K	1.360229937	2939.50628	0.00	0.9996
vessel T 0002LK	1.379451415	2939.50628	0.00	0.9996
vessel T 0002LKN	2.430144051	2939.50628	0.00	0.9993
vessel T 0002T	1.354833328	2939.50628	0.00	0.9996
vessel T 0003LK	1.954262397	2939.50628	0.00	0.9995
vessel T 0004SA	1.590334167	2939.50628	0.00	0.9996
vessel T 0005K	1.141633090	2939.50628	0.00	0.9997
vessel T 0005LK	2.187929681	2939.50628	0.00	0.9994
vessel T 0005T	1.334613623	2939.50628	0.00	0.9996
vessel T 0006L	1.231569538	2939.50628	0.00	0.9997
vessel T 0006LK	2.050136340	2939.50628	0.00	0.9994
vessel T 0006S	1.173371997	2939.50628	0.00	0.9997
vessel T 0006T	1.674033379	2939.50628	0.00	0.9995
vessel T 0006T N	1.680712893	2939.50628	0.00	0.9995
vessel T 0007T	2.346156761	2939.50628	0.00	0.9994
vessel T 0007TK	1.400668379	2939.50628	0.00	0.9996
vessel T 0008S	1.536673699	2939.50628	0.00	0.9996
vessel T 0008S N	1.350968451	2939.50628	0.00	0.9996
vessel T 0008T	1.984796730	2939.50628	0.00	0.9995
vessel T 0008TK	1.665554587	2939.50628	0.00	0.9995
vessel T 0009LK	1.538933579	2939.50628	0.00	0.9996
vessel T 0009T N	2.060757927	2939.50628	0.00	0.9994
vessel T 0010LKN	1.984417148	2939.50628	0.00	0.9995
vessel T 0011K	1.420040219	2939.50628	0.00	0.9996
vessel T 0012I	1.463675821	2939.50628	0.00	0.9996
vessel T 0012K	1.246042234	2939.50628	0.00	0.9997
vessel T 0015T	1.855510318	2939.50628	0.00	0.9995
vessel T 0016T	1.365997827	2939.50628	0.00	0.9996
vessel T 0017T	1.482376445	2939.50628	0.00	0.9996
vessel T 0017T N	1.931569148	2939.50628	0.00	0.9995
vessel T 0018LK	1.567044794	2939.50628	0.00	0.9996
vessel T 0018T	1.467842391	2939.50628	0.00	0.9996
vessel T 0020K	1.412482698	2939.50628	0.00	0.9996
vessel T 0020SA	1.556143254	2939.50628	0.00	0.9996
vessel T 0022I	1.599134523	2939.50628	0.00	0.9996
vessel T 0022T	2.018486920	2939.50628	0.00	0.9995
vessel T 0023T	1.806911756	2939.50628	0.00	0.9995
vessel T 0024T	1.843602723	2939.50628	0.00	0.9995
vessel T 0028BG	1.122557952	2939.50628	0.00	0.9997
vessel T 0028LK	2.117072161	2939.50628	0.00	0.9994

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel T 0028TN	1.208137624	2939.50628	0.00	0.9997
vessel T 0029LK	1.255788880	2939.50628	0.00	0.9997
vessel T 0029LKN	1.123371058	2939.50628	0.00	0.9997
vessel T 0031I	1.305075864	2939.50628	0.00	0.9996
vessel T 0031L	1.032703094	2939.50628	0.00	0.9997
vessel T 0031SK	1.484165123	2939.50628	0.00	0.9996
vessel T 0033B	1.537586962	2939.50628	0.00	0.9996
vessel T 0033T	1.723992885	2939.50628	0.00	0.9995
vessel T 0035T	2.634821690	2939.50628	0.00	0.9993
vessel T 0036LK	1.475939225	2939.50628	0.00	0.9996
vessel T 0036T	1.287972097	2939.50628	0.00	0.9997
vessel T 0037S	1.682012575	2939.50628	0.00	0.9995
vessel T 0038T	1.346643799	2939.50628	0.00	0.9996
vessel T 0039H	1.398426807	2939.50628	0.00	0.9996
vessel T 0039T	1.065797988	2939.50628	0.00	0.9997
vessel T 0040LK	1.212494691	2939.50628	0.00	0.9997
vessel T 0040T	1.224391260	2939.50628	0.00	0.9997
vessel T 0041L	1.541294207	2939.50628	0.00	0.9996
vessel T 0041T	1.148501778	2939.50628	0.00	0.9997
vessel T 0042BG	1.494369197	2939.50628	0.00	0.9996
vessel T 0042T	1.187019935	2939.50628	0.00	0.9997
vessel T 0044T N	1.505866295	2939.50628	0.00	0.9996
vessel T 0045T	2.531815690	2939.50628	0.00	0.9993
vessel T 0046BG	1.331973257	2939.50628	0.00	0.9996
vessel T 0047LK	1.678071412	2939.50628	0.00	0.9995
vessel T 0048T	1.414982635	2939.50628	0.00	0.9996
vessel T 0049L	1.216397871	2939.50628	0.00	0.9997
vessel T 0050B	1.177702453	2939.50628	0.00	0.9997
vessel T 0050K	1.592115483	2939.50628	0.00	0.9996
vessel T 0050L	1.287019767	2939.50628	0.00	0.9997
vessel T 0051LK	1.385338818	2939.50628	0.00	0.9996
vessel T 0052S	1.245209680	2939.50628	0.00	0.9997
vessel T 0055G	1.571865161	2939.50628	0.00	0.9996
vessel T 0058T	1.247920153	2939.50628	0.00	0.9997
vessel T 0058T N	1.289809800	2939.50628	0.00	0.9996
vessel T 0060I	1.341553492	2939.50628	0.00	0.9996
vessel T 0060K	1.361840704	2939.50628	0.00	0.9996
vessel T 0061T	1.462801461	2939.50628	0.00	0.9996
vessel T 0061T N	1.739280102	2939.50628	0.00	0.9995
vessel T 0062T	1.361675769	2939.50628	0.00	0.9996
vessel T 0063BG	1.434846823	2939.50628	0.00	0.9996

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel T 0064SA	1.620797251	2939.50628	0.00	0.9996
vessel T 0068G	1.581529995	2939.50628	0.00	0.9996
vessel T 0070LK	1.425606832	2939.50628	0.00	0.9996
vessel T 0070SK	1.674625409	2939.50628	0.00	0.9995
vessel T 0070T	1.557165891	2939.50628	0.00	0.9996
vessel T 0070T N	1.592270549	2939.50628	0.00	0.9996
vessel T 0077T	1.532000712	2939.50628	0.00	0.9996
vessel T 0080LK	1.559861718	2939.50628	0.00	0.9996
vessel T 0081L	-1.122658859	2939.50632	-0.00	0.9997
vessel T 0081T	1.115300388	2939.50628	0.00	0.9997
vessel T 0086T	1.473828194	2939.50628	0.00	0.9996
vessel T 0088B	1.334769707	2939.50628	0.00	0.9996
vessel T 0088L	1.373901836	2939.50628	0.00	0.9996
vessel T 0090T	1.440251363	2939.50628	0.00	0.9996
vessel T 0092S	1.389305757	2939.50628	0.00	0.9996
vessel T 0092S N	1.436930256	2939.50628	0.00	0.9996
vessel T 0094I	1.280207217	2939.50628	0.00	0.9997
vessel T 0095LK	1.623416674	2939.50628	0.00	0.9996
vessel T 0097L	1.272668764	2939.50628	0.00	0.9997
vessel T 0097T	1.286905731	2939.50628	0.00	0.9997
vessel T 0099T	1.666014204	2939.50628	0.00	0.9995
vessel T 0099T N	1.575749868	2939.50628	0.00	0.9996
vessel T 0100D	1.342598061	2939.50628	0.00	0.9996
vessel T 0100D N	1.516018090	2939.50628	0.00	0.9996
vessel T 0100I	1.700267396	2939.50628	0.00	0.9995
vessel T 0102BG	1.352952778	2939.50628	0.00	0.9996
vessel T 0106T	1.510834729	2939.50628	0.00	0.9996
vessel T 0111BG	1.399760409	2939.50628	0.00	0.9996
vessel T 0122LK	1.242854571	2939.50628	0.00	0.9997
vessel T 0122LKN	1.007630368	2939.50628	0.00	0.9997
vessel T 0124LK	1.215586895	2939.50628	0.00	0.9997
vessel T 0133T	1.119684321	2939.50628	0.00	0.9997
vessel T 0137BG	1.463694479	2939.50628	0.00	0.9996
vessel T 0137BGN	1.478643873	2939.50628	0.00	0.9996
vessel T 0138TN	1.437561061	2939.50628	0.00	0.9996
vessel T 0145LK	1.627935830	2939.50628	0.00	0.9996
vessel T 0150BG	2.120030820	2939.50628	0.00	0.9994
vessel T 0150T	1.177590218	2939.50628	0.00	0.9997
vessel T 0150T N	1.077178514	2939.50628	0.00	0.9997
vessel T 0156BG	1.256703118	2939.50628	0.00	0.9997
vessel T 0160L	1.187542614	2939.50628	0.00	0.9997

Parameter	Estimate	Standard Error	t Value	Pr > |t|
vessel T 0161N	1.367047961	2939.50628	0.00	0.9996
vessel T 0165T N	1.427475975	2939.50628	0.00	0.9996
vessel T 0170L	1.511029136	2939.50628	0.00	0.9996
vessel T 0170T	0.954530852	2939.50628	0.00	0.9997
vessel T 0170TK	1.516414472	2939.50628	0.00	0.9996
vessel T 0171K	1.255148120	2939.50628	0.00	0.9997
vessel T 0181K	1.411492698	2939.50628	0.00	0.9996
vessel T 0182BG	1.270388627	2939.50628	0.00	0.9997
vessel T 0183T	1.415924538	2939.50628	0.00	0.9996
vessel T 0195L	0.868394204	2939.50628	0.00	0.9998
vessel T 0198LK	1.170098384	2939.50628	0.00	0.9997
vessel T 0200N	0.083653201	2939.50629	0.00	1.0000
vessel T 0201BG	1.148801696	2939.50628	0.00	0.9997
vessel T 0207BG	1.000345231	2939.50628	0.00	0.9997
vessel T 0225N	1.028225698	2939.50628	0.00	0.9997
vessel T 0228KD	1.613527428	2939.50628	0.00	0.9996
vessel T 0228LK	1.547604007	2939.50628	0.00	0.9996
vessel T 0230T	1.353398807	2939.50628	0.00	0.9996
vessel T 0242T N	1.049552691	2939.50628	0.00	0.9997
vessel T 0245LK	1.486606073	2939.50628	0.00	0.9996
vessel T 0303T	1.643193727	2939.50628	0.00	0.9996
vessel T 0320S	1.103415766	2939.50628	0.00	0.9997
vessel T 0320T	1.060313667	2939.50628	0.00	0.9997
vessel T 0320T N	1.100398094	2939.50628	0.00	0.9997
vessel T 0345LK	1.461753851	2939.50628	0.00	0.9996
vessel T 0350T	1.035540546	2939.50628	0.00	0.9997
vessel T 0359T	1.397907646	2939.50628	0.00	0.9996
vessel T 0360LK	1.098398376	2939.50628	0.00	0.9997
vessel T 0429T N	1.332415938	2939.50628	0.00	0.9996
vessel T 0440K	-0.174467794	2939.50635	-0.00	1.0000
vessel T 0566S	1.053435881	2939.50628	0.00	0.9997
vessel T 0569LK	0.910195340	2939.50628	0.00	0.9998
vessel T 0805T	1.331536632	2939.50628	0.00	0.9996
vessel T 0854T	1.704126462	2939.50628	0.00	0.9995
vessel VA0002K	1.433360108	2939.50628	0.00	0.9996
vessel VA0016S	-0.538965667	2939.50628	-0.00	0.9999
vessel VA0034K	1.003327351	2939.50629	0.00	0.9997
vessel VA0041K	0.888413715	2939.50629	0.00	0.9998
vessel VA0046K	-1.048338648	2939.50630	-0.00	0.9997
vessel VA0057K	0.880746158	2939.50628	0.00	0.9998
vessel VA0066K	0.672174942	2939.50628	0.00	0.9998

Parameter	Estimate		Standard Error	t Value	Pr > |t|
vessel VA0079K	0.928857149		2939.50628	0.00	0.9997
vessel VA0087K	0.822021109		2939.50628	0.00	0.9998
vessel VA0090FS	0.729485864		2939.50629	0.00	0.9998
vessel VA0095K N	0.084572325		2939.50631	0.00	1.0000
vessel VA0120K	1.199876896		2939.50628	0.00	0.9997
vessel VA0156K	-0.202162209		2939.50630	-0.00	0.9999
vessel • 0001H	0.818160680		2939.50628	0.00	0.9998
vessel • 0061H	0.780518298		2939.50628	0.00	0.9998
vessel • 0199H	0.269327721		2939.50630	0.00	0.9999
month 1	0.225887160	B	0.00917	24.64	<.0001
month 2	0.182228368	B	0.00954	19.10	<.0001
month 3	0.296687710	B	0.00893	33.24	<.0001
month 4	0.225393078	B	0.00808	27.90	<.0001
month 5	0.152958017	B	0.00768	19.92	<.0001
month 6	0.145819399	B	0.00765	19.06	<.0001
month 7	0.092005233	B	0.00770	11.95	<.0001
month 8	0.032563651	B	0.00773	4.21	<.0001
month 9	-0.142852080	B	0.00795	-17.96	<.0001
month 10	-0.373544292	B	0.00863	-43.27	<.0001
month 11	-0.179126398	B	0.00839	-21.34	<.0001
month 12	0.000000000	B	.	.	.

NOTE: 201261 obs hidden.