Stock Assessment Update: Status of the U.S. petrale sole resource in 2014

by

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SAFE
April 2016

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Executive Summary

Stock

This update assessment reports the status of the petrale sole (*Eopsetta jordani*) resource off the coast of California, Oregon, and Washington using data through 2014. While petrale sole are modeled as a single stock, the spatial aspects of the coast-wide population are addressed through geographic separation of data sources/fleets where possible. There is currently no genetic evidence suggesting distinct biological stocks of petrale sole off the U.S. coast. The limited tagging data available to describe adult movement suggests that petrale sole may have some homing ability for deep water spawning sites but also have the ability to move long distances between spawning sites, inter-spawning season, as well as seasonally.

Catches

While records do not exist, the earliest catches of petrale sole are reported in 1876 in California and 1884 in Oregon. In this assessment, fishery removals have been divided among four fleets: 1) winter North trawl, 2) summer North trawl, 3) winter South trawl, and 4) summer South trawl. Landings for the North fleet are defined as fish landed in Washington and Oregon ports. Landings for the South fleet are defined as fish landed in California ports. Recent annual catches during 1981–2014 range between 749-2,903 mt (Table a, Figure a). Petrale sole are caught nearly exclusively by trawl fleets; non-trawl gears contribute less than 3% of the catches. Based on the 2005 assessment, annual catch limits (ACLs) were reduced to 2499 mt for 2007-2008. Following the 2009 assessment ACLs were further reduced to a low of 976 mt for 2011 and have subsequently increased to a high value of 2,341 for 2014. From the inception of the fishery through the war years, the vast majority of catches occurred between March and October (the summer fishery), when the stock is dispersed over the continental shelf. The post-World War II period witnessed a steady decline in the amount and proportion of annual catches occurring during the summer months (March-October). Conversely, petrale catch during the winter season (November–February), when the fishery targets spawning aggregations, has exhibited a steadily increasing trend since the 1940s. From the mid-1980s through the early 2000s, catches during the winter months were roughly equivalent to or exceeded catches throughout the remainder of the year, whereas during the past 10 years the relative catches during the winter and summer have been more variable across years (Figure a).

Table a: Recent Catches based on the November 1 – October 31 fishing year.

Fishing Year	North Catch (mt)	South Catch (mt)	Total Catch (mt)
2004	1,759	444	2,204
2005	2,032	871	2,903
2006	1,549	579	2,128
2007	1,466	879	2,346
2008	1,196	933	2,130
2009	1,488	720	2,208
2010	550	199	749
2011	645	117	762
2012	884	232	1,116
2013	1516	408	1,925
2014	1713	628	2,341

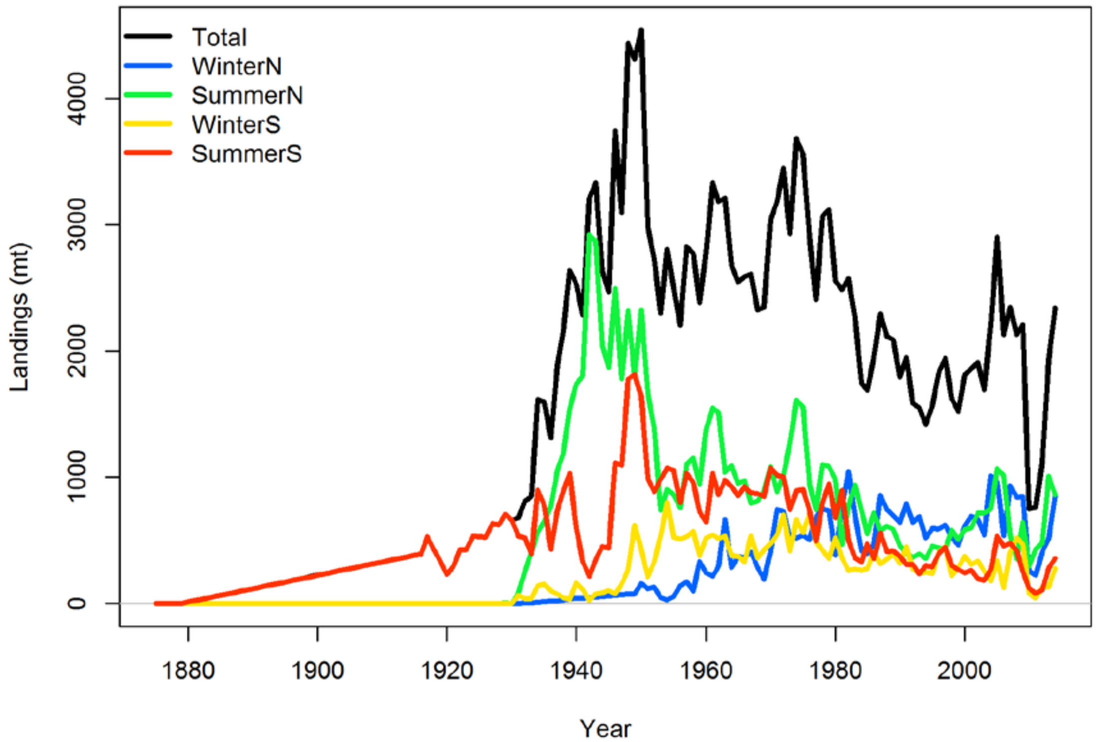

Figure a: Catch History up to 2014.

Data and assessment

The previous stock assessment for petrale sole was developed during 2013 (Haltuch et al. 2013) using Stock Synthesis 3, an integrated length-age structured model (Methot and Wetzel, 2013). The current assessment has been upgraded to a newer version of SS (3.24u) and is structured as an annual model with the fishing year beginning on November 1 and ending on October 31. The fisheries are structured seasonally based on winter (November to February) and summer (March to October) fishing seasons due to the development and growth of the wintertime fishery, which began in the 1950s. In recent decades wintertime catches have often exceeded summertime catches. The fisheries are modeled as North Winter and North Summer, where the north includes both Washington and Oregon, and South Winter and South Summer, which encompasses California fisheries. The model includes catch, length- and age-frequency data from the trawl fleets described above as well as standardized winter fishery catch-per-unit-effort (CPUE) indices. While the impact of rapidly changing regulations in the trawl fishery after 2000 can make fishery-based CPUE indices unreliable, the standardized fishery CPUE indices attempt to account for the impact of some of the management changes. Biological data are derived from both port and on-board observer sampling programs. The National Marine Fisheries Service (NMFS) early (1980, 1983, 1986, 1989, 1992) and late (1995, 1998, 2001, and 2004) Triennial bottom trawl survey and the Northwest Fisheries Science Center (NWFSC) trawl survey (2003–2014) relative biomass indices and biological sampling provide fishery independent information on relative trend and demographics of the petrale sole stock.

The base case assessment model includes parameter uncertainty from a variety of sources, but likely underestimates the uncertainty in recent trends and current stock status. For this reason, in addition to asymptotic confidence intervals (based upon the model's analytical estimate of the variance near the converged solution), results from models that reflect alternate states of nature regarding the rate of female natural mortality are presented as a decision table.

2015 Model update changes

The base stock assessment model structure is consistent with the 2013 assessment, except as noted here. Additions to the model include 1) landings data for 2013 – 2014, 2) commercial composition data (age and length) for 2013 – 2014, 3) NWFSC groundfish trawl survey CPUE index for 2013 – 2014, and 4) age and length composition data from the NWFSC groundfish trawl survey. Modifications from the previous assessment model include 1) use of new PacFIN code to assemble commercial length composition data, 2) a lognormal instead of gamma error structure in the delta generalized linear mixed- model (delta-GLMM) used to estimate survey CPUE for the NWFSC groundfish trawl survey, 3) length-weight relationship parameters estimated outside of the stock assessment model from the NWFSC groundfish trawl survey data up to 2014 and input as fixed values, 4) early commercial age data for OR and WA were not combined, consistent with the 2011 assessment, 5) fitting using SS3.24u, and 6) model tuning to re-weight data. PacFIN code is used to assemble commercial length composition data to ensure consistency across assessments, and the annual length compositions were visually compared with the old method to ensure consistency. A lognormal error structure for survey CPUE was chosen by model selection (wAIC) when fit using the delta-GLMM modeling approach approved by the SSC. Length-weight parameters were fit using all of the most recent survey data. Finally, early commercial age data were not combined for Oregon and Washington data as this is more reproducible for future assessments and is consistent with assessments prior to 2013.

Table b: Key parameter estimates and likelihood of models representing the transition between 2013 assessment and 2015 update. SSB and recruitment are measured in metric tons.

Parameter	2013 base	Catches	Survey	Discards	Comm. lengths	2015 base
Total likelihood	1454.30	1336.65	1485.54	1441.68	1404.69	1509.18
Unfished SSB (thousands)	32.43	32.56	34.31	34.03	34.68	33.48
Unfished Recruitment (billions)	0.02	0.02	0.01	0.01	0.01	0.02
SSB at target SPR	8.74	8.91	9.63	9.54	9.63	9.38
F at target SPR	0.16	0.16	0.15	0.15	0.15	0.16
SSB at MSY (thousands)	7.15	7.06	6.99	6.93	7.28	6.92
F at MSY	0.19	0.19	0.20	0.20	0.19	0.21
Depletion (2015)	0.29	0.28	0.31	0.31	0.31	0.31
F (2015)	0.16	0.16	0.14	0.14	0.14	0.15
SPR Ratio (2015)	0.69	0.70	0.69	0.69	0.68	0.67
h	0.86	0.87	0.90	0.90	0.89	0.90
Female M	0.15	0.15	0.14	0.14	0.14	0.15

Stock biomass

Petrale sole were lightly exploited during the early 1900s, but by the 1950s the fishery was well developed and showing clear signs of depletion and declines in catches and biomass (Figures a, b). The rate of decline in spawning biomass accelerated through the 1930s–1970s reaching minimums generally around or below 10% of the unexploited levels during the 1980s through the early 2000s (Figure b). The petrale sole spawning stock biomass is estimated to have increased slightly from the late 1990s, peaking in 2005, in response to above average recruitment (Table c, Figure b). However, poor recruitments during the period of stock increase resulted in stock declines between 2005 and 2010 (Table c), resulting in harvests that, in hindsight, were greater than those suggested by the current harvest policy. Since 2010 the total biomass of the stock has increased as large recruitments during 2007 and 2008 appear to be moving into the population. The estimated relative depletion level in 2015 is 30.70% of unfished biomass (~95% asymptotic interval: 22.2% - 39.2%, ~ 75% interval based on the range of states of nature: 27.3%-34.5%), corresponding to 10,290 mt (~95% asymptotic interval: 8,453 – 12,126 mt, states of nature interval: 9,969 – 10,572 mt) of female spawning biomass in the base model (Table c). The base model indicates that the spawning biomass was generally below 25% of the unfished level between the 1960s and 2013 and was rebuilt above this target in 2014.

Table c: Recent trend in beginning of the year biomass and depletion

Fishing Year	Spawning Biomass (mt)	~95% confidence interval	Range of states of nature	Estimated depletion	~95% confidence interval	Range of states of nature
2006	4,129	3727 - 4531	3943 – 4363	12.3%	9.3% - 15.4%	10.8% - 14.3%%
2007	4,050	3639 - 4460	3866 – 4278	12.1%	9.1% - 15.1%	10.6% - 14.0%
2008	3,744	3316 - 4172	3560 – 3968	11.2%	8.3% - 14.1%	9.7% - 13.0%
2009	3,546	3076 - 4015	3354 – 3775	10.6%	7.7% - 13.5%	9.2% - 12.3%
2010	3,388	2832 - 3943	3171 – 3641	10.1%	7.1% - 13.1%	8.7% - 11.9%
2011	4,306	3599 - 5012	4048 – 4601	12.9%	9.1% - 16.6%	11.1% - 15.0%
2012	5,826	4888 - 6762	5513 – 6174	17.4%	12.5% - 22.4%	15.1% - 20.2%
2013	7,711	6469 - 8952	7348 – 8100	23.0%	16.6% - 29.5%	20.1% - 26.5%
2014	9,300	7739 - 10860	8927 – 9674	27.8%	20.1% - 35.5%	24.4% - 31.6%
2015	10,290	8453 - 12126	9969 - 10572	30.7%	22.2% - 39.2%	27.3% - 34.5%

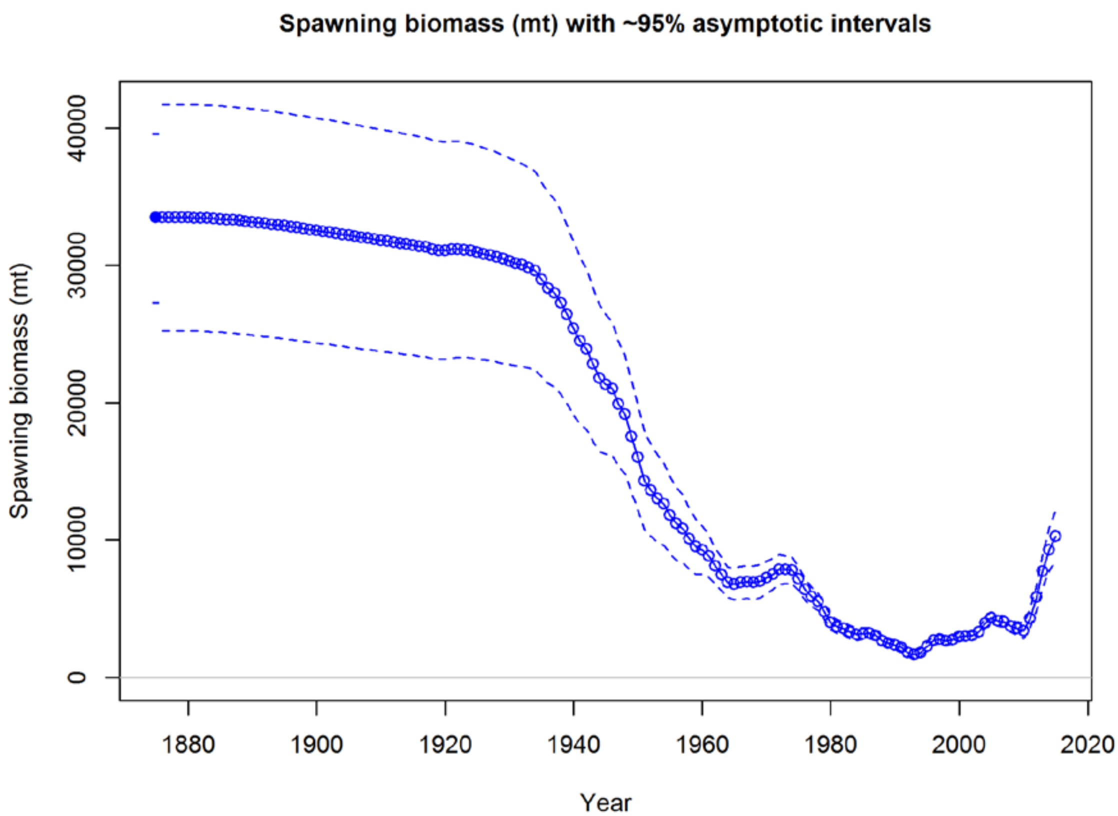

Figure b: Biomass time series.

Recruitment

Annual recruitment was treated as stochastic, and estimated as annual deviations from log-mean recruitment where mean recruitment is the fitted Beverton-Holt stock recruitment curve. The time-series of estimated recruitments shows a relationship with the decline in spawning biomass, punctuated by larger recruitments (Figure c). The three strongest recruitments during the last 10 years are estimated to be from 2006, 2007, and 2008, with the 2007 and 2008 year classes being the third-largest and largest recruitments estimated during the assessed period. The three weakest recruitments are estimated to be from 2005, 2010, and 2011 (Table d, Figure c).

Table d: Recent recruitment

Fishing Year	Estimated recruitment (1,000's)	~95% confidence interval	Range of states of nature
2006	18,473.4	13007 - 26238	15197 – 23106
2007	22,001.5	15431 - 31370	18138 – 27394
2008	29,150.8	20580 - 41292	24171 – 36029
2009	12,881.4	8514 - 19488	10751 – 15753
2010	9,733.2	6132 - 15449	8176 – 11780
2011	9,719.8	5727 - 16498	8125 – 11791
2012	13,972.0	7599 - 25689	11507 – 17142
2013	13,061.5	6061 - 28149	10590 – 16218
2014	14,451.6	6371 - 32781	11559 – 18224
2015	14,580.9	6415 - 33142	11619 – 18467

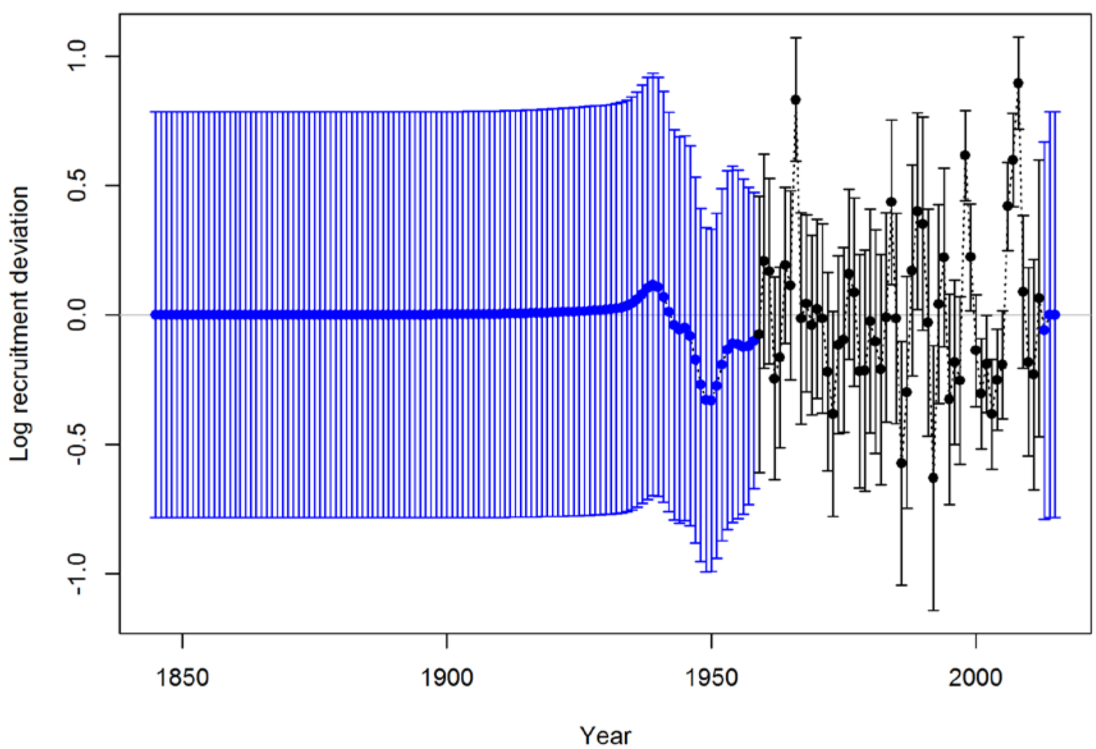

Figure c: Recruitment time series.

Exploitation status

The abundance of petrale sole was estimated to have dropped below the $SB_{25\%}$ management target during the 1960s and stayed under that level through the beginning of 2013 (Figure d). The stock declined below the $SB_{12.5\%}$ overfished threshold from the early 1980s until the early 2000s. In 1984 the stock dropped below 10% of the unfished spawning biomass and did not rise above the 10% level until 2001 (Figure d). From 2000 to 2005 the stock increased, reaching a peak of 14.2% of unfished biomass in 2005, then declining through 2010, and again increasing from 2011-2014 (Table e, Figure d). Fishing mortality rates in excess of the current F-target for flatfish of $SPR_{30\%}$ are estimated to have begun during the 1950s and continued until 2010 (Table e, Figures e, f). Current F (catch/biomass of age-3 and older fish) is estimated to be 0.15 during 2015 (Table e, Figures e, f). The model is projected from 2015 to 2026 assuming F meets management targets.

Table e: Recent trend in spawning potential ratio (entered as 1-SPR) and summary exploitation rate (catch divided by biomass of age-3 and older fish).

Fishing Year	Estimated 1-SPR (%)	~95% confidence interval	Harvest rate (proportion)	~95% confidence interval
2005	0.86	0.81 - 0.91	0.32	0.29 - 0.35
2006	0.82	0.77 - 0.88	0.26	0.23 - 0.29
2007	0.83	0.78 - 0.89	0.29	0.26 - 0.32
2008	0.83	0.77 - 0.89	0.28	0.24 - 0.31
2009	0.85	0.79 - 0.90	0.28	0.24 - 0.32
2010	0.67	0.58 - 0.76	0.10	0.08 - 0.12
2011	0.58	0.49 - 0.68	0.06	0.05 - 0.08
2012	0.60	0.50 - 0.69	0.08	0.06 - 0.09
2013	0.66	0.57 - 0.74	0.11	0.09 - 0.13
2014	0.66	0.57 - 0.74	0.13	0.10 - 0.15
2015	0.67	0.59 - 0.76	0.15	0.12 - 0.17

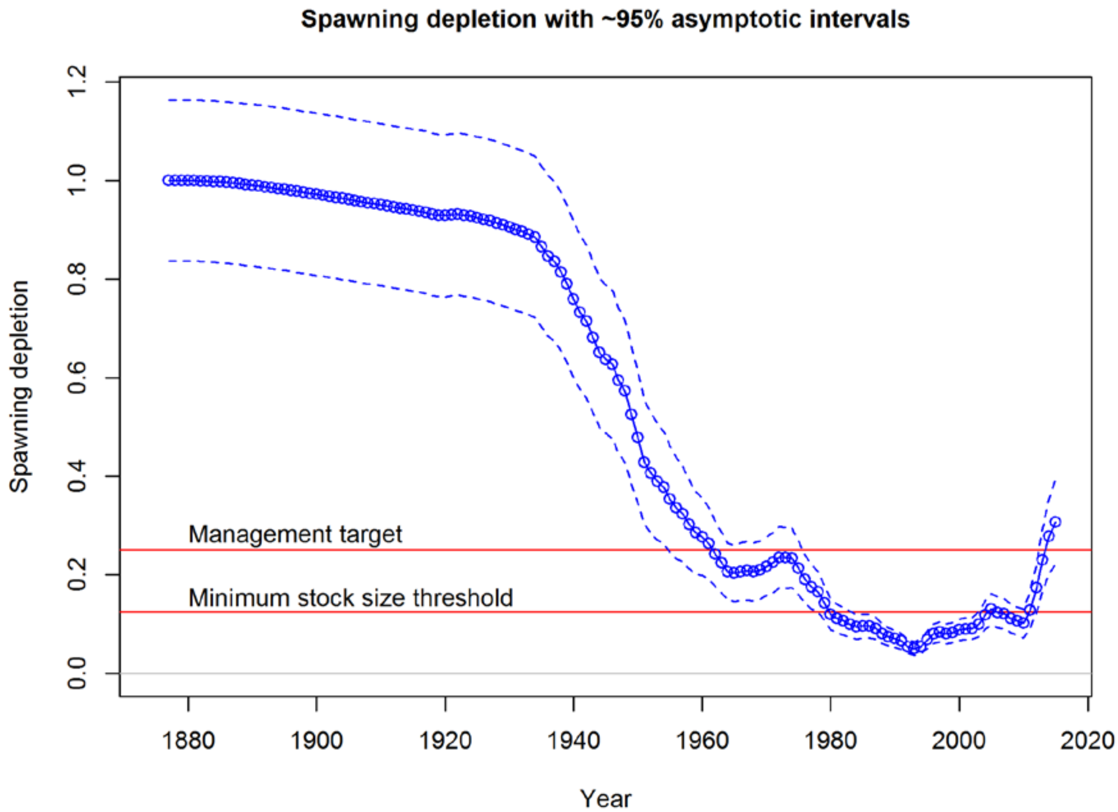

Figure d. Estimated relative depletion with approximate 95% asymptotic confidence intervals (dashed lines).

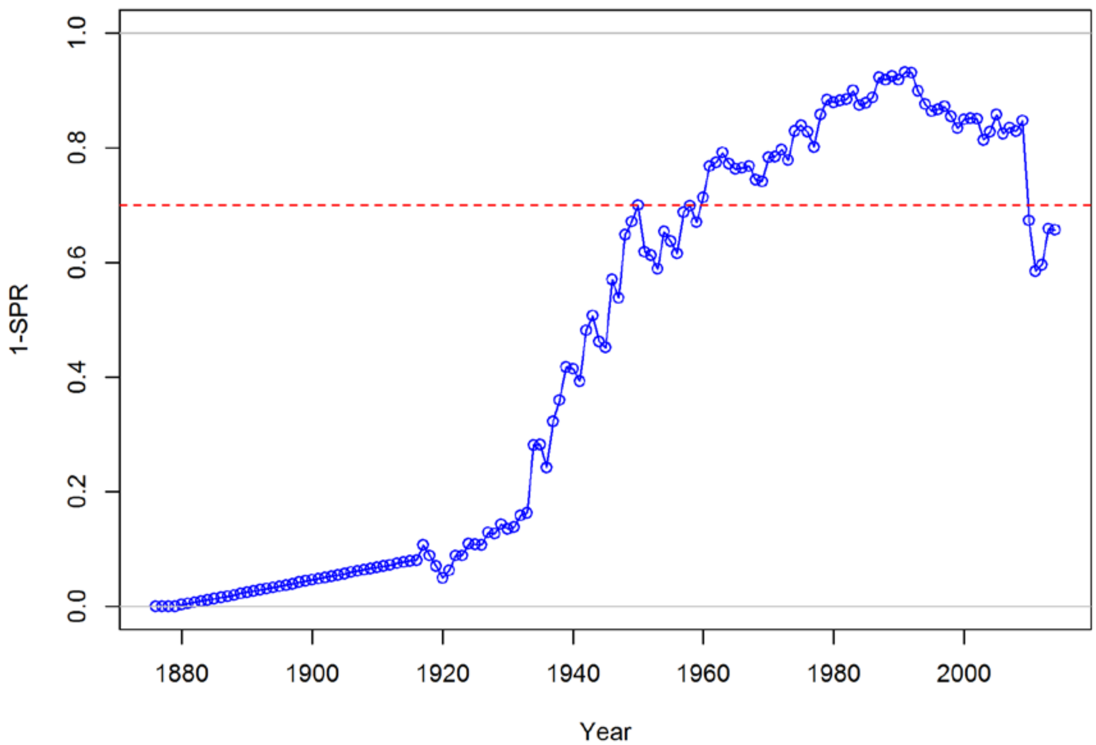

Figure e. Estimated spawning potential ratio (SPR). One minus SPR is plotted so that higher exploitation rates occur on the upper portion of the y-axis. The management target is plotted as a red horizontal line and values above this reflect harvests in excess of the overfishing proxy based on the $SPR_{30\%}$ harvest rate. The last year in the time series is 2014.

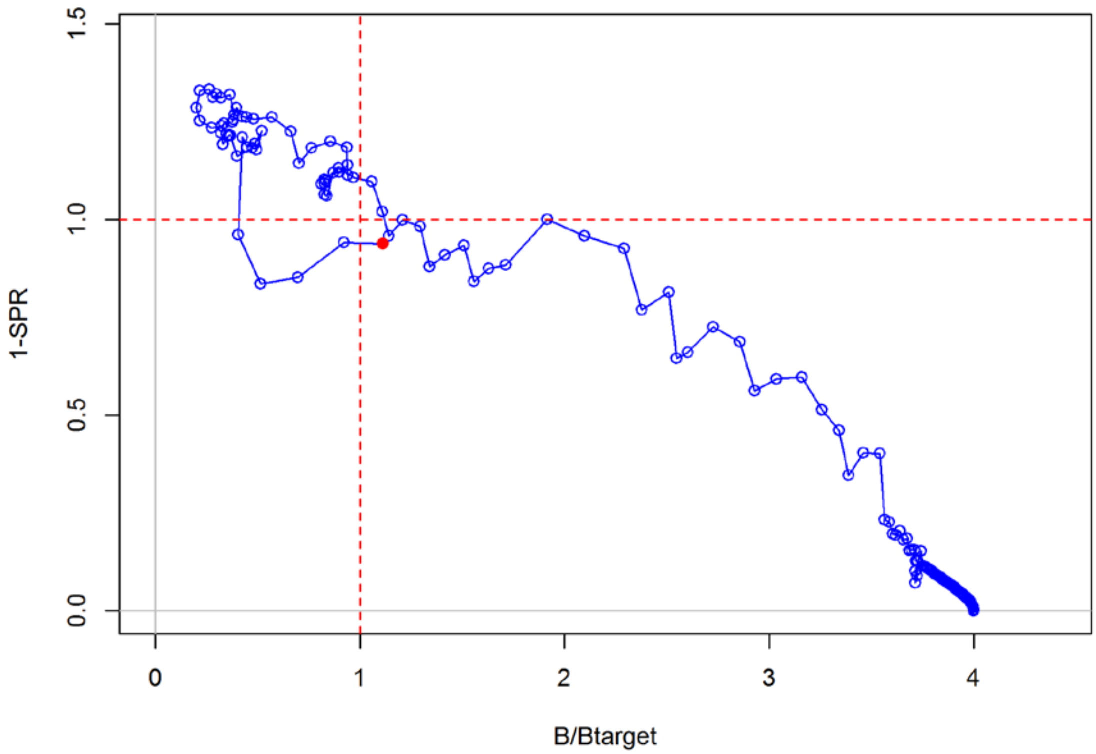

Figure f. Phase plot of estimated relative (1-SPR) vs. relative spawning biomass for the base case model. The relative (1-SPR) is (1-SPR) divided by SPR 30% (the SPR target). Relative depletion is the annual spawning biomass divided by the spawning biomass corresponding to 25% of the unfished spawning biomass. The red point indicates 2014.

Ecosystem considerations

Ecosystem factors have not been explicitly modeled in this assessment, but there are several aspects of the California current ecosystem that may impact petrale sole population dynamics and warrant further research. Castillo (1992) and Castillo et al. (1995) suggest that density-independent survival of early life stages is low and show that offshore Ekman transportation of eggs and larvae may be an important source of variation in year-class strength in the Columbia INPFC area. The effects of the Pacific Decadal Oscillation (PDO) on California current temperature and productivity (Mantua et al. 1997) may also contribute to non-stationary recruitment dynamics for petrale sole. The prevalence of a strong late 1990s year-class for many West Coast groundfish species suggests that environmentally driven recruitment variation may be correlated among species with relatively diverse life history strategies. Although current research efforts along these lines are limited, a more explicit exploration of ecosystem processes may be possible in future petrale sole stock assessments if resources are available for such investigations.

Reference points

Pacific coast flatfish, including petrale sole, are considered overfished when a stock falls below 12.5% of unfished spawning biomass and rebuilt when it reaches 25% of unfished spawning biomass.

Unfished spawning stock biomass was estimated to be 34,637 mt in 2015 in the base case model (Figure b). The target stock size ($SB_{25\%}$) is therefore 8,660 mt which gives a catch of 2,781s mt (Table f, Figure b). Model estimates of spawning biomass at MSY are slightly lower than those specified under the current harvest control rule. Maximum sustained yield (MSY) applying recent fishery selectivity and allocations was estimated at 2,800 mt, occurring at a spawning stock biomass of 6,922 mt (SPR = 0.23) (Table f).

Table f. Summary of reference points for the base case model.

Quantity	Estimate	~95% Confidence Interval
Unfished Spawning biomass (mt)	33,476	6,160
Unfished age 3+ biomass (mt)	53,261	8,696
Unfished recruitment (R0)	15,482	6,135
Depletion (2015)	0.31	0.09
Reference points based on $SB_{25\%}$		
Proxy spawning biomass ($B_{25\%}$)	8,369	1,540
SPR resulting in $B25_{\%}$ ($SPR_{30\%}$)	0.27	0.02
Exploitation rate resulting in $B_{25\%}$	0.18	0.02
Yield with *SPR* at $B_{25\%}$ (mt)	2,951	262
Reference points based on SPR proxy for MSY		
Spawning biomass	9,382	2,020
SPR_{proxy}	0.3	0
Exploitation rate corresponding to SPR_{proxy}	0.16	0.03
Yield with SPR_{proxy} at SB_{SPR} (mt)	2,911	302
Reference points based on estimated MSY values		
Spawning biomass at *MSY* (SB_{MSY})	6,922	1,842
SPR_{MSY}	0.23	0.07
Exploitation rate corresponding to SPR_{MSY}	0.21	0.03
MSY (mt)	2,975	234

Management performance

The 2009 stock assessment estimated petrale sole to be at 11.6% of unfished spawning stock biomass in 2010. Based on the 2009 stock assessment, the 2010 coast-wide ACL was reduced to 1,200 mt to reflect the overfished status of the stock and the 2011 coast-wide overfishing limit (OFL) and ACL were set at 1,021 mt and 976 mt, respectively (Table g). Recent coast-wide annual landings have not exceeded the ACL. The 2005, 2009, 2011, and 2013 stock assessments estimate that petrale sole have been below the $SB_{25\%}$ management target since the 1960s and below the overfished threshold between the early 1980s and the early 2000s with fishing mortality rates in excess of the current F-target for flatfish of $SPR_{30\%}$ since the mid-1930s. The length of time that the petrale sole stock had been below the 25 percent of unfished level while sustaining relatively stable annual landings led the 2009 STAR panel and SSC to investigate new reference points for all flatfish managed by the PFMC. The end result was that new reference points were specified for flatfish. The new reference points are as follows: the target reference point is 25 percent of the unfished biomass, the overfished reference point is 12.5 percent of the unfished level, the limit reference point is 5% of the unfished level, and the F target is $F_{30\%}$. This 2015 assessment update estimates that petrale sole have rebuilt above the $SB_{25\%}$ management target.

Table g: Recent trend in total catch and commercial landings (mt) based on the calendar year relative to the management guidelines. Estimated total catch reflects the commercial landings plus the model estimated discarded biomass for the calendar year.

Calendar Year	OFL (mt)	ACL (mt)	Commercial Landings (mt)	Estimated Total Catch (mt)
2005	2,762	2,762	2,903	3,179
2006	2,762	2,762	2,128	1,946
2007	3,025	2,499	2,346	2,258
2008	2,919	2,499	2,130	2,121
2009	2,811	2,433	2,208	2,711
2010	2,751	1,200	749	873
2011	1,021	976	762	740
2012	1,279	1,160	1,116	1,033
2013	2,711	2,592	1,925	1,836
2014	2,774	2,652	2,341	2,267
2015	3,073	2,816		
2016	3,208	2,910		

Unresolved problems and major uncertainties

Parameter uncertainty is explicitly captured in the asymptotic confidence intervals reported throughout this assessment for key parameters and management quantities. These intervals reflect the uncertainty in the model fit to the data sources included in the assessment, but do not include uncertainty associated with alternative model configurations, weighting of data sources (a combination of input sample sizes and relative weighting of likelihood components), or fixed parameters.

There are a number of major uncertainties regarding model parameters that have been explored via sensitivity analysis. The most notable explorations involved the sensitivity of model estimates to 1) value of female natural mortality, 2) removal of final year's Northwest Fishery Science Center (NWFSC) survey index and composition data, 3) use and treatment of revised winter commercial CPUE indices, and 4) removal of time blocks on catchability (q) parameters.

To date a comprehensive reconstruction of Washington landings has not been completed for West Coast groundfish. This is an issue as early Washington landings for petrale sole may have been larger than the current data indicate (T. Tsou, pers. comm.). This assessment would benefit from the completion of a comprehensive groundfish catch reconstruction for the state of Washington.

Decision table

The forecast of stock abundance and yield was developed using the base model. The total catches in 2015 and 2016 are set to the PFMC adopted ACLs. The exploitation rate for 2017 and beyond is based upon an SPR of 30% (Table h). The 25:5 control rule for flatfish reduces forecasted yields below those corresponding to $F_{30\%}$ if the stocks are estimated to be lower than the management target of $SB_{25\%}$. The average 2012-2014 exploitation rates were used to distribute catches among the fisheries. Uncertainty in the forecasts is based upon the three states of nature based on the likelihood profile of female M, chosen using a change of 1.2 NLL units (75% interval) from the minimum value to correspond to the midpoints of the lower 25% probability and upper 25% probability regions from the base model and are low (0.12, rounded to the second decimal place) and high (0.17, rounded to the second decimal place) values for female natural mortality. Each forecast scenario includes random variability in future recruitment deviations. Current base model medium-term forecasts project that the stock, under the current control rule, will increase through 2017 as recent large recruitments continue to mature into the spawning biomass, reaching a stock depletion of 31% during 2016-2017 (Tables g and h). In the absence of strong recruitments into the future, the stock is then expected to decline and stabilize around a stock depletion of 28% (Tables h and i). Catches during the projection period under the current control rule are projected to be approximately between 2700 mt - 3100 mt, while a control rule with an SPR of 34% and a target biomass of 30% of the unfished biomass produces catches that range between 2600 mt - 2700 mt, and under a control rule with an SPR of 45% and a target biomass of 40% of the unfished biomass catches range between 1700 mt - 2200 mt (Tables h and i).

Table h: Projection of potential OFL, ACL, landings, and catch, summary biomass (age-3 and older), spawning biomass, and depletion projected with status quo catches in 2015 and 2016, and catches at the ACL from 2017 forward. The 2015 and 2016 ACL's are values specified by the PFMC and not predicted by this assessment. The ACL from 2015 forward is the calculated total catch determined by F_{SPR}.

Year	Predicted OFL (mt)	ACL Catch (mt)	Age 3+ biomass (mt)	Spawning Biomass (mt)	Depletion (%)
2015	3,195	2,816	19,355	10,290	0.31
2016	3,303	2,910	19,360	10,512	0.31
2017	3,280	3,150	19,182	10,358	0.31
2018	3,152	3,027	18,747	9,964	0.30
2019	3,042	2,921	18,458	9,669	0.29
2020	2,976	2,857	18,324	9,509	0.28
2021	2,950	2,832	18,301	9,460	0.28
2022	2,949	2,831	18,336	9,474	0.28
2023	2,960	2,842	18,392	9,514	0.28
2024	2,973	2,854	18,446	9,558	0.29
2025	2,985	2,866	18,489	9,595	0.29
2026	2,993	2,874	18,521	9,621	0.29
Equilibrium				8,369	0.27

Table i: Summary table of 12-year projections beginning in 2017 for alternate states of nature based on an axis uncertainty. Columns range over low, mid, and high state of nature, and rows range over different assumptions of catch levels.

			State of nature					
			Low Female M = 0.120		Base case Female M = 0.145		High Female M = 0.170	
Relative probability			0.25		0.5		0.25	
Manage-ment decision	Year	Catch (mt)	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion
ABC 25:5 Rule	2017	3112	10242	0.280	10358	0.309	10342	0.338
	2018	3028	9957	0.272	9964	0.298	9846	0.322
	2019	2940	9707	0.266	9669	0.289	9463	0.309
	2020	2872	9542	0.261	9510	0.284	9243	0.302
	2021	2828	9460	0.259	9460	0.282	9163	0.299
	2022	2802	9438	0.258	9474	0.282	9172	0.300
	2023	2788	9453	0.259	9515	0.284	9225	0.301
	2024	2780	9489	0.260	9558	0.286	9292	0.303
	2025	2775	9534	0.261	9595	0.288	9356	0.306
	2026	2772	9583	0.262	9622	0.290	9412	0.307
SPR target = 0.34	2017	2627	10242	0.280	10358	0.309	10342	0.338
	2018	2629	10502	0.287	10262	0.307	9818	0.321
	2019	2615	10727	0.293	10207	0.305	9459	0.309
	2020	2605	10951	0.300	10228	0.306	9290	0.303
	2021	2602	11176	0.306	10312	0.308	9261	0.302
	2022	2607	11390	0.312	10426	0.311	9305	0.304
	2023	2615	11582	0.317	10543	0.315	9371	0.306
	2024	2624	11749	0.321	10649	0.318	9429	0.308
	2025	2632	11890	0.325	10738	0.321	9468	0.309
	2026	2639	12007	0.329	10810	0.323	9491	0.310
SPR target = 0.45	2017	1711	10242	0.280	10358	0.309	10342	0.338
	2018	1804	10801	0.296	10820	0.323	10667	0.348
	2019	1877	11314	0.310	11256	0.336	10988	0.359
	2020	1941	11803	0.323	11690	0.349	11336	0.370
	2021	1998	12269	0.336	12120	0.362	11698	0.382
	2022	2050	12704	0.348	12528	0.374	12051	0.394
	2023	2096	13102	0.358	12904	0.385	12376	0.404
	2024	2136	13462	0.368	13244	0.396	12667	0.414
	2025	2171	13784	0.377	13549	0.405	12924	0.422
	2026	2200	14071	0.385	13819	0.413	13150	0.429

Research and data needs

Progress on a number of research topics and data issues would substantially improve the ability of this assessment to reliably and precisely model petrale sole population dynamics in the future:

1. In the past many assessments have derived historical catches independently. The states of California and Oregon have completed comprehensive historical catch reconstructions. At the time of this assessment, a comprehensive historical catch reconstruction is not available for Washington. Completion of a Washington catch reconstruction would provide the best possible estimated catch series that accounts for all the catch and better resolves historical catch uncertainty for flatfish as a group.
2. Due to limited data, new studies on both the maturity and fecundity relationships for petrale sole would be beneficial.
3. Where possible, historical otolith samples aged using a combination of surface and break-and-burn methods should be re-aged using the break-and-burn method. Early surface read otoliths should also be re-aged using the break-and-burn method. Historical otoliths aged with a standard method will allow the further evaluation of the potential impacts of consistent under ageing using surface methods, changes in selectivity during early periods of time without any composition information, and potential changes in growth.
4. The effect of the implementation of the IFQ (catch shares) program that began during 2011 on fleet behavior, including impacts on discards, fishery selectivity, and fishing locations would benefit from further study.
5. Studies on stock structure and movement of petrale sole, particularly with regard to the winter-summer spawning migration of petrale sole and the likely seasonal trans-boundary movement of petrale sole between U.S. and Canadian waters.
6. The extent of spatial variability on productivity processes such as growth, recruitment, and maturity is currently unknown and would benefit from further research.

Rebuilding projections

This assessment indicates that petrale sole are rebuilt above the overfished threshold of 25% of unfished biomass at the start of 2015 and are projected to stay above this threshold under current management.

Table j. Summary table of the results.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Comm. landings (mt)	2,903	2,128	2,346	2,130	2,208	749	762	1,116	1,925	2,341
Total Est. catch (mt)	2,999	2,209	2,397	2,172	2,320	909	780	1,134	1,953	2,356
OFL (mt)	2,762	2,762	3,025	2,919	2,811	2,751	1,021	1,279	2,711	2,774
ACL (mt)	2,762	2,762	2,499	2,499	2,433	1,200	976	1,160	2,592	2,652
1-SPR	0.86	0.82	0.83	0.83	0.85	0.67	0.58	0.60	0.66	0.66
Exploitation rate	0.32	0.26	0.29	0.28	0.28	0.1	0.06	0.08	0.11	0.13
Age 3+ biomass (mt)	20,047	20,215	20,119	19,750	19,418	19,169	19,001	18,892	18,822	18,774
Spawning Biomass	4,130	4,051	3,745	3,547	3,388	4,306	5,826	7,711	9,300	10,290
~95% CI	3727 - 4531	3639 - 4460	3316 - 4172	3076 - 4015	2832 - 3943	3599 - 5012	4888 - 6762	6469 - 8952	7739 - 10860	8453 - 12126
Recruits (mt)	9,381	18,473	22,002	29,151	12,881	9,733	9,720	13,972	13,058	14,452
~95% CI	6049 - 12713	13007 - 26238	15432 - 31370	20580 - 41292	8515 - 19489	6133 - 15449	5727 - 16498	7600 - 25689	6059 - 28143	6372 - 32781
Depletion (%)	12.99%	12.30%	12.10%	11.20%	10.60%	10.10%	12.90%	17.40%	23%	27.80%
~95% CI	9.8% - 16.1%	9.3% - 15.4%	9.1% - 15.1%	8.3% - 14.1%	7.7% - 13.5%	7.1% - 13.1%	9.1% - 16.6%	12.5% - 22.4%	16.6% - 29.5%	20.1% - 35.5%

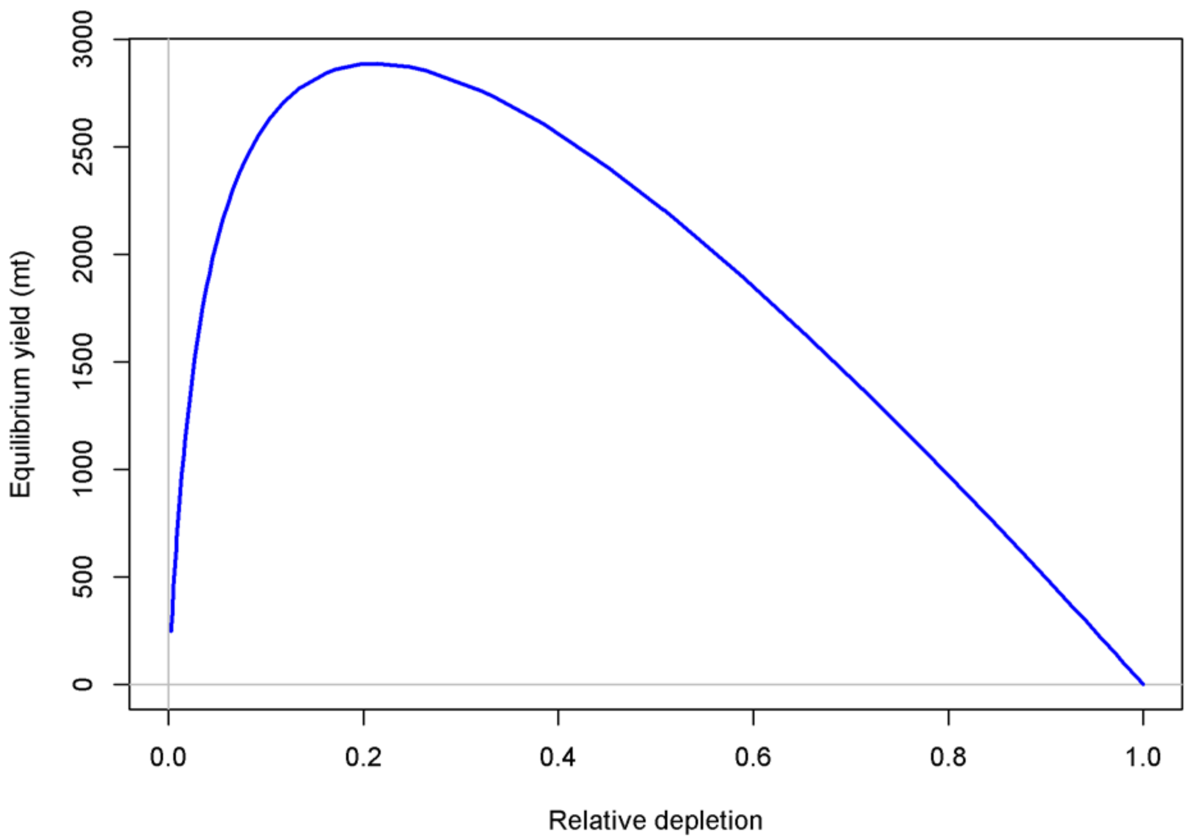

Figure g. Equilibrium yield curve. Values are based on 2014 fishery selectivity and distribution.

1 Introduction

1.1 Basic Information

Petrale sole (*Eopsetta jordani*) is a right-eyed flounder in the family Pleuronectidae ranging from the western Gulf of Alaska to the Coronado Islands, northern Baja California, (Hart 1973; Kramer et al. 1995; Love et al. 2005) with a preference for soft substrates at depths ranging from 0-550 m (Love et al. 2005). Common names include brill, California sole, Jordan's flounder, cape sole, round nose sole, English sole, soglia, petorau, nameta, and tsubame garei (Smith 1937; Hart 1973; Gates and Frey 1974; Love 1996; Eschmeyer and Herald 1983). In northern and central California petrale sole are dominant on the middle and outer continental shelf (Allen et al. 2006). PacFIN fishery logbook data show that adults are caught in depths from 18 to 1,280 m off the U.S. West Coast with a majority of the catches of petrale sole being taken between 70–220 m during March through October, and between 290–440 m during November through February.

There is little information regarding the stock structure of petrale sole off the U.S. Pacific coast. No genetic research has been undertaken for petrale sole and there is no other published research indicating separate stocks of petrale sole within U.S. waters. Tagging studies show adult petrale sole can move up to 350 - 390 miles, having the ability to be highly migratory with the possibility for homing ability (Alverson 1957; MBC Appl. Environ. Sci. 1987). Juveniles show little coast-wide or bathymetric movement while studies suggest that adults generally move inshore and northward onto the continental shelf during the spring and summer to feeding grounds and offshore and southward during the fall and winter to deep water spawning grounds (Hart 1973; MBC Appl. Environ. Sci. 1987; Horton 1989; Love 1996). Adult petrale sole can tolerate a wide range of bottom temperatures (Perry et al., 1994).

Tagging studies indicate some mixing of adults between different spawning groups. DiDonato and Pasquale (1970) reported that five fish tagged on the Willapa Deep grounds during the spawning season were recaptured during subsequent spawning seasons at other deepwater spawning grounds, as far south as Eureka (northern California) and the Umpqua River (southern Oregon). However, Pederson (1975) reported that most of the fish (97%) recaptured from spawning grounds in winter were originally caught and tagged on those same grounds.

Mixing of fish from multiple deep water spawning grounds likely occurs during the spring and summer when petrale sole are feeding on the continental shelf. Fish that were captured, tagged, and released off the northwest Coast of Washington during May and September were subsequently recaptured during winter from spawning grounds off Vancouver Island (British Columbia, 1 fish), Heceta Bank (central Oregon, 2 fish), Eureka (northern California, 2 fish), and Halfmoon Bay (central California, 2 fish) (Pederson, 1975). Fish tagged south of Fort Bragg (central California) during July 1964 were later recaptured off Oregon (11 fish), Washington (6 fish), and Swiftsure Bank (southwestern tip of Vancouver Island, 1 fish) (D. Thomas, California Department of Fish and Game, Menlo Park, CA, cited by Sampson and Lee, 1999).

The highest densities of spawning adults off of British Columbia, as well as of eggs, larvae and juveniles, are found in the waters around Vancouver Island. Adults may utilize nearshore areas as summer feeding grounds and non-migrating adults may stay there during winter (Starr and Fargo, 2004).

Past assessments completed by Demory (1984), Turnock et al. (1993), and Sampson and Lee (1999) considered petrale sole in the Columbia and U.S.-Vancouver INPFC areas a single stock. Sampson and Lee (1999) assumed that petrale sole in the Eureka and Monterey INPFC areas represented two additional distinct socks. The 2005 petrale sole assessment assumed two stocks, northern (U.S.-Vancouver and Columbia INPFC areas) and southern (Eureka, Monterey and Conception INPFC areas), to maintain continuity with previous assessments. Three stocks (West Coast Vancouver Island, Queen Charlotte Sound, and Heceta Strait) are considered for petrale sole in the waters off British Columbia, Canada (Starr and Fargo, 2004). The 2009, 2011, 2013, and 2015 assessments integrate the previously separate north-south assessments to provide a coast-wide status evaluation. The decision to conduct a single-area assessment is based on strong evidence of a mixed stock from tagging studies, a lack of genetic studies on stock structure, and a lack of evidence for differences in growth between the 2005 northern and southern assessment areas and from examination of the fishery size-at-age data, as well as confounding differences in data collection between Washington, Oregon, and California. This 2015 assessment provides a coast-wide status evaluation for petrale sole using data through 2014.

Fishing fleets are separated both geographically and seasonally to account for spatial and seasonal patterns in catch given the coast-wide assessment area. The petrale sole fisheries possess a distinct seasonality, with catches peaking during the winter months, so the fisheries are divided into winter (November-February) and summer (March-October) fisheries (Figure 2). Note that the “fishing year” for this assessment (November 1 to October 31) differs from the standard calendar year. The U.S.-Canadian border is the northern boundary for the assessed stock, although the basis for this choice is due to political and current management needs rather than the population dynamics. Given the lack of clear information regarding the status of distinct biological populations, this assessment treats the U.S. petrale sole resource from the Mexican border to the Canadian border as a single coast-wide stock.

1.2 Map

A map showing the scope of the assessment and depicting boundaries for fisheries or data collection strata is provided in Figure 3.

1.3 Life History

Petrale sole spawn during the winter at several discrete deepwater sites (270-460 m) off the U.S. West Coast, from November to April, with peak spawning taking place from December to February (Harry 1959; Best 1960; Gregory and Jow 1976; Castillo et al. 1993; Garrison and Miller 1982; Reilly et al. 1994; Castillo 1995; Love 1996; Moser 1996a; Casillas et al. 1998). Females spawn once each year and fecundity varies with fish size, with one large female laying as many as 1.5 million eggs (Porter, 1964). Petrale sole eggs are planktonic, ranging in size from 1.2 to 1.3 mm, and are found in deep water habitats at water temperatures of 4–10 degrees C and salinities of 25–30 ppt (Best 1960; Ketchen and Forrester, 1966; Alderdice and Forrester 1971; Gregory and Jow 1976). The duration of the egg stage can range from approximately 6 to 14 days (Alderdice and Forrester 1971; Hart 1973; Love 1996, Casillas et al. 1998). The most favorable conditions for egg incubation and larval growth are 6–7 degrees C and 27.5–29.5 ppt (Ketchen and Forrester, 1966; Alderdice and Forrester, 1971; Castillo et al., 1995). Predators of petrale sole eggs include planktonic invertebrates and pelagic fishes (Casillas et al. 1998).

Petrale sole larvae are planktonic, ranging in size from approximately 3 to 20 mm, and are found up to 150 km offshore foraging upon copepod eggs and nauplii (Hart 1973; Moser 1996a; MBS Appl. Env. Sci 198; Casillas et al. 1998). The larval duration, including the egg stage, spans approximately 6 months with larvae settling at about 2.2 cm in length on the inner continental shelf (Pearcy 1977). Juveniles are benthic and found on sandy or sand-mud bottoms (Eschmeyer and Herald 1983; MBS Appl. Environ. Sci. 1987) and range in size from approximately 2.2 cm to the size at maturity, 50% of the population is mature at approximately 38 cm and 41 cm for males and females, respectively (Casillas et al. 1998). No specific areas have been identified as nursery grounds for juvenile petrale sole. In the waters off British Columbia, Canada larvae are usually found in the upper 50 m far offshore, juveniles at 19–82 m and large juveniles at 25–125 m (Starr and Fargo 2004).

Adult petrale sole achieve a maximum size of around 50 cm and 63 cm for males and females, respectively (Best 1963; Pedersen 1975). The maximum length reported for petrale sole is 70 cm (Hart

1973; Eschmeyer and Herald 1983; Love et al. 2005) while the maximum observed break-and-burn age is 31 years (Haltuch et al. 2013).

1.4 Ecosystem Considerations

Petrale sole juveniles are carnivorous, foraging on annelid worms, clams, brittle star, mysids, sculpin, amphipods, and other juvenile flatfish (Ford 1965; Casillas et al. 1998; Pearsall and Fargo 2007). Predators on juvenile petrale sole include adult petrale sole as well as other larger fish (Ford 1965; Casillas et al. 1998) while adults are preyed upon by marine mammals, sharks, and larger fishes (Trumble 1995; Love 1996; Casillas et al. 1998).

One of the ambushing flatfishes, adult petrale sole have diverse diets that become more piscivorous at larger sizes (Allen et al. 2006). Adult petrale sole are found on sandy and sand-mud bottoms (Eschmeyer and Herald 1983) foraging for a variety of invertebrates including, crab, octopi, squid, euphausiids, and shrimp, as well as anchovies. hake, herring, sand lance, and other smaller rockfish and flatfish (Ford 1965; Hart 1973; Kravitz et al. 1977; Birtwell et al. 1984; Reilly et al. 1994; Love 1996; Pearsall and Fargo 2007). In Canadian waters evidence suggests that petrale sole tend to prefer herring (Pearsall and Fargo 2007). On the continental shelf petrale sole generally co-occur with English sole, rex sole, Pacific sanddab, and rock sole (Kravitz et al. 1977).

Ecosystem factors have not been explicitly modeled in this assessment, but there are several aspects of the California current ecosystem that may impact petrale sole population dynamics and warrant further research. Castillo (1992) and Castillo et al. (1995) suggest that density-independent survival of early life stages is low and show that offshore Ekman transportation of eggs and larvae may be an important source of variation in year-class strength in the Columbia INPFC area. The effects of the Pacific Decadal Oscillation (PDO) on California current temperature and productivity (Mantua et al. 1997) may also contribute to non-stationary recruitment dynamics for petrale sole. The prevalence of a strong late 1990s year-class for many West Coast groundfish species suggests that environmentally driven recruitment variation may be correlated among species with relatively diverse life history strategies. Although current research efforts along these lines are limited, a more explicit exploration of ecosystem processes may be possible in future petrale sole stock assessments.

1.5 Fishery Information

Petrale sole have been caught in the flatfish fishery off the U.S. Pacific coast since the late 19th century. The fishery first developed off of California where, prior to 1876, fishing in San Francisco Bay was by hand or set lines and beach seining (Scofield 1948). By 1880 two San Francisco based trawler companies were running a total of six boats, extending the fishing grounds beyond the Golden Gate Bridge northward to Point Reyes (Scofield 1948). Steam trawlers entered the fishery during 1888 and 1889, and four steam tugs based out of San Francisco were sufficient to flood market with flatfish (Scofield 1948). By 1915 San Francisco and Santa Cruz trawlers were operating at depths of about 45–100 m with catches averaging 10,000 lbs per tow or 3,000 lbs per hour (Scofield 1948). Flatfish comprised approximately 90% of the catch with 20–25% being discarded as unmarketable (Scofield 1948). During 1915 laws were enacted that prohibited dragging in California waters and making it illegal to possess a trawl net from Santa Barbara County southward (Scofield 1948). By 1934 twenty 56–72 foot diesel engine trawlers operated out of San Francisco fishing between about 55 and 185 m (Scofield 1948). From 1944-1947 the number of California trawlers fluctuated between 16 and 46 boats (Scofield 1948). Although the flatfish fishery in California was well developed by the 1950s and 1960s, catch statistics were not reported until 1970 (Heimann and Carlisle 1970). In this early California report petrale sole landings during 1916 to 1930 were not separated from the total flatfish landings. During 1931–68, the landings of petrale sole averaged about 700 mt annually.

The earliest trawl fishing off Oregon began during 1884-1885, and the fishery was solidly established by 1937, with the fishery increasing rapidly during WWII (Harry and Morgan, 1961). Initially trawlers stayed close to the fishing grounds adjacent to Newport and Astoria, operating at about 35–90 m between Stonewall Bank and Depoe Bay. Fishing operations gradually extended into deep water. For example, Newport-based trawlers were commonly fishing at about 185 m in 1949, at about 185–365 m by 1952, and at about 550 m by 1953.

Alverson and Chatwin (1957) describe the history of the petrale sole fishery off of Washington and British Columbia with fishing grounds ranging from Cape Flattery to Destruction Island. Petrale catches off of Washington were small until the late 1930s with the fishery extending to about 365 m following the development of deepwater rockfish fisheries during the 1950s.

By the 1950s the petrale sole fishery was showing signs of depletion with reports suggesting that petrale sole abundance had declined by at least 50% from 1942 to 1947 (Harry 1956). Sampson and Lee (1999) reported that three fishery regulations were implemented during 1957–67: 1) a winter closure off Oregon, Washington and British Columbia, 2) a 3,000 lb. per trip limit, and 3) no more than two trips per month during 1957. With the 1977 enactment of the Magnuson Fishery Conservation and Management Act (MFCMA) the large foreign-dominated fishery that had developed since the late 1960s was replaced by the domestic fishery that continues today. Petrale sole are harvested almost exclusively by bottom trawls in the U.S. West Coast groundfish fishery. Recent petrale sole catches exhibit marked seasonal variation, with substantial portions of the annual harvest taken from the spawning grounds during December and January. Evidence suggests that the winter fishery on the deepwater spawning grounds developed sporadically during the 1950s and 1960s as fishers discovered new locations (e.g., Alverson and Chatwin, 1957; Ketchen and Forrester, 1966). Both historical and current petrale sole fisheries have primarily relied upon trawl fleets. Fishery removals were divided among four fleets: 1) winter North trawl, 2) summer North trawl, 3) winter South trawl, and 4) summer South trawl. Landings for the North fleet are defined as fish landed in Washington and Oregon ports. Landings for the South fleet are defined as fish landed in California ports.

Historical landings reconstructions show peak catches from the summer fishery occurred during the 1940s and 1950s and subsequently declined, during which time the fleet moved to fishing in deeper waters during the winter. After the period of peak landings during the 1940s and 1950s, total landings were somewhat stable until about the late 1970s, and then generally declined until the mid-2000s. (Table 1, Figure 2). During 2009 the fishery was declared overfished and during 2010 management restrictions limited the catch to 701 mt (Table 1, Figure 2).

1.6 Summary of Management History and Performance

Beginning in 1983 the Pacific Fishery Management Council (PFMC) established coast-wide annual catch limits (ACLs) for the annual harvests of petrale sole in the waters off the US West Coast (see, for example, PFMC, 2002). Previous assessments of petrale sole in the U.S.-Vancouver and Columbia INPFC areas have been conducted by Demory (1984), Turnock et al. (1993), Sampson and Lee (1999), and Lai at al. (2005) (Figure 3). Based on the 1999 assessment a coast-wide ACL of 2,762 mt was specified and remained unchanged between 2001 and 2006 (Table 2).

The 2005 assessment of petrale sole split the stock into two areas, the northern area that included U.S.-Vancouver and Columbia INPFC areas and the southern area that included the Eureka, Monterey and Conception INPFC areas (Lai et al. 2005) (Figure 3). While petrale sole stock structure is not well understood, CPUE and geographical differences between states were used to support the use of two separate assessment areas. In 2005 petrale sole were estimated to be at 34 and 29 percent of unfished spawning stock biomass in the northern and southern areas, respectively. In spite of different models and data, the biomass trends were qualitatively similar in both areas, providing support for a coast-wide stock.

Based on the 2005 stock assessment results, ACLs were set at 3025 mt and 2919 mt for 2007 and 2008, respectively, with an ACT of 2499 mt for both years (Table 2). The 2009 coast-wide stock assessment estimated that the petrale sole stock had declined from its 2005 high to 11.6% of the unfished spawning stock biomass, resulting in an overfished declaration for petrale sole and catch restrictions. Recent coast-wide annual landings have not exceeded the ACL (PFMC 2006) (Table 2).

The 2005 stock assessment estimated that petrale sole had been below the Pacific Council's minimum stock size threshold of 25 percent of unfished biomass from the mid-1970s until just prior to the completion of the assessment, with estimated harvest rates in excess of the target fishing mortality rate implemented for petrale sole at that time ($F_{40\%}$). However, the 2005 stock assessment determined that the stock was in the precautionary zone and was not overfished (i.e., the spawning stock biomass (SB) was not below 25% of the unfished spawning stock biomass (SB_0)). In comparison to the 1999 assessment of petrale sole, the 2005 assessment represented a significant change in the perception of petrale sole stock status. The stock assessment conducted in 1999 (Washington-Oregon only) estimated the spawning stock biomass in 1998 at 39 percent of unfished stock biomass. Although the estimates of 1998 spawning-stock biomass were little changed between the 1999 and 2005 (Northern area) assessments, the estimated depletion in the 2005 assessment was much lower. The change in status between the 1999 and 2005 analyses was due to the introduction of a reconstructed catch history in 2005, which spanned the entire period of removals. The 1999 stock assessment used a catch history that started in 1977, after the bulk of the removals from the fishery had already taken place. Thus the 1999 stock assessment produced a more optimistic view of the petrale stock's level of depletion. The stock's estimated decline in status between the 2005 and 2009 assessments was driven primarily by a significant decline in the trawl-survey index over that period. The 2011 assessment concluded that the stock status continued to be below the target of 25% of unfished biomass.

The fishery for petrale sole (and groundfish in general) has been altered substantially by changes in fishery regulations implemented since 1998. Specifically, in 1996, the PFMC implemented 2-month cumulative vessel landing limits to reduce discards. Beginning in 2000, restrictions were placed on the use of large footropes (more than 8"). Large footrope gear has been prohibited from the waters inside of 275 m (150 fm) following the advent of rockfish conservation areas delineated by depth-based management lines. Although the January and February months of the winter petrale sole fishery have not been subject to vessel landing limits until recently, the 2-month limits restricted petrale sole landings from March through October, and beginning in 2006 during November and February. The areas in which the winter petrale sole fishery has been allowed to operate have also been restricted by actions designed to reduce bycatch of slope rockfish. Effectively, many of the more marginal petrale sole winter fishing grounds were closed while the main fishing areas have remained open. Additionally, industry members indicated that after the 2003 vessel buyback program fishing effort for petrale sole during the winter declined. The skippers also indicated that small petrale limits during 2010 lead to large changes targeting strategies for petrale sole.

Area closures have been used by the PFMC for groundfish management since 2001. Current major area closures are: i) the Cowcod Conservation Areas (CCAs): adopted during 2000 and implemented in 2001; ii) the Yelloweye Rockfish Conservation Areas (YRCAs): the first was adopted during 2002 and implemented in 2003; and iii) the Rockfish Conservation Areas (RCAs) for several rockfish species: adopted during 2002, implemented as an emergency regulation during fall of 2002 and through regulatory amendment in 2003. Since then, RCAs have been specified continuously for regions north and south of 40º10' N latitude for trawl and fixed-gear groups (Figure 2). The boundaries of the RCAs are delineated by depth-based management lines, and may be changed throughout the year in an effort to achieve fishery management objectives. The area between 180 m and 275 m has been continuously closed to most all bottom groundfish trawling since the implementation of the RCAs.

Vessels with exempted fishing permits (EFPs) issued under 50 CFR part 600 are allowed to operate in some conservation areas. Oregon EFP vessels were allowed to fish in the RCA using more selective ‘pineapple’ trawl gear (this gear has a longer headrope than footrope, allowing some rockfish a chance to escape capture) from February–October during 2003 and 2004. In pilot experiments, this gear was found to reduce the CPUE of some overfished rockfish and increase CPUE of flatfish relative to standard commercial flatfish gear (King et al. 2004). Beginning in 2005, this modified “selective flatfish” trawl gear has been required shoreward of the RCA, north of 40º10’N latitude. The skippers present at the 2011 pre-assessment workshop in Newport, OR indicated that, prior to the use of the pineapple trawl fishing took place around the clock. However, when using the pineapple trawl gear they only fish during the day because the skippers are unable to catch fish at night. The ACLs for several species under rebuilding plans have resulted in limited harvests of other groundfish in recent years.

Port sampling conducted by each state routinely samples market categories to determine the species composition of these mixed-species categories. Since 1967, various port sampling programs have been utilized by state and federal marine fishery agencies to determine the species compositions of the commercial groundfish landings off the U.S. Pacific coast (Sampson and Crone 1997). Current port sampling programs use stratified multi-stage sampling designs to evaluate the species compositions of the total landings in each market category, as well as for obtaining biological data on individual species (Crone 1995, Sampson and Crone 1997).

An IFQ program, referred to as catch shares, was implemented for the trawl fleet beginning in 2011, resulting in changes in fleet behavior and the distribution of fishing effort.

1.7 Fisheries off Canada, Alaska, and/or Mexico

The Canadian fishery developed rapidly during the late 1940s to mid-1950s following the discovery of petrale sole spawning aggregations off the West Coast of Vancouver Island (Anon. 2001). Annual landings of petrale sole in British Columbia peaked at 4,800 mt in 1948 but declined significantly after the mid-1960s (Anon. 2001). By the 1970s, analysis conducted by Pederson (1975) suggested that petrale abundance was low and abundance remained low into the 1990s. In the early 1990s vessel trip quotas were established to try to halt the decline in petrale sole abundance (Anon. 2001). Winter quarter landings of petrale sole were limited to 44,000 lb. per trip during 1985–91; to 10,000 lb. per trip during 1991–95; and to 2,000 lb. per trip in 1996. Biological data collected during 1980-1996 showed a prolonged decline in the proportion of young fish entering the population (Anon. 2001). Therefore, no directed fishing for petrale sole has been permitted in Canada since 1996 due to a continuing decline in long term abundance (Fargo, 1997, Anon. 2001). Current landings of petrale sole in Canada are very low due to the effect of the non-directed fishery. As of 2005 petrale sole off of British Columbia were treated as three “stocks” and were still considered to be at low levels. The recent assessments for the Canadian stocks have been based on catch histories and limited biological data.

The most recent assessment of petrale sole in British Columbia uses a single area combined sex delay-difference stock assessment model with knife edge recruitment (at 6 or 7 years old) and tuned to fishery CPUE, mean fish weight of the commercial landings, and a number of fishery independent surveys beginning in the early 1980s (P. Starr, pers. comm.). Stock predictions are based on average recruitment (P. Starr, pers. comm.) This assessment suggests that the stock is currently above the target reference point and that there is some evidence for above average recruitment (about 10% above average) since about 1996 (P. Starr, pers. comm.). Petrale sole in Canadian waters appear to have similar life history characteristics (Starr and Fargo 2004). The Canadian assessment has not been updated since the U.S. petrale sole 2011 assessment.

In Alaska petrale sole are not targeted in the Bering Sea/Aleutian Island fisheries and are managed as a minor species in the “Other Flatfish” stock complex.

2 Assessment

2.1 Data

The following sources of data were used in building this assessment:

1) Fishery independent data including bottom trawl survey-based indices of abundance and biological data (age and length) from 2003-2014 (NWFSC survey) and 1980-2004 (Triennial survey).
2) Estimates of fecundity, maturity, length-weight relationships and ageing error from various sources.
3) Commercial landings from 1876-2014.
4) Estimates of discard length frequencies, mean weight, and fraction discarded in the fishery obtained from the West Coast Groundfish Observer Program (WCGOP) from 2002–2014 and the study by Pikitch et al (1988).
5) Fishery CPUE (North and South fleets, 1987-2009).

Data availability by source and year is presented in Figure 1. A description of each of the specific data sources is presented below.

2.1.1 Fishery Independent Data: NWFSC trawl survey

Three sources of information are produced by this survey: an index of relative abundance, length-frequency distributions, and age-frequency distributions. Only years in which the NWFSC survey included the continental shelf (55-183 m) are considered (2003-2014), since the highest percent of positive survey tows with petrale sole are found on the continental shelf.

The NWFSC survey is based on a random-grid design; covering the coastal waters from a depth of 55 m to 1,280 m (Keller et al. 2007). This design uses four industry chartered vessels per year, assigned to a roughly equal number of randomly selected grid cells and divided into two 'passes' of the coast that are executed from north to south. Two vessels fish during each pass, which are conducted from late May to early October each year. This design therefore incorporates both vessel-to-vessel differences in catchability as well as variance associated with selecting a relatively small number (~700) of possible cells from a very large set of possible cells spread from the Mexican to the Canadian border. Much effort has been expended on appropriate analysis methods for this type of data, culminating in the West Coast trawl survey workshop held in Seattle in November, 2006.

The NWFSC survey commonly encounters petrale sole along the U.S. West Coast, except south of Point Conception (Table 3, Figure 4, Figure 5). The survey did not fish shallower than 54 m and no petrale sole were caught deeper than 550 m. Figure 6 shows that the percentage of positive tows and the catch rate by depth peak around 100 m and decline as depth increases. The prevalence and density of petrale are generally higher in the northern latitudes (Figure 6).

Petrale sole are known to form winter spawning aggregations in deep water. It could therefore be expected that larger petrale sole would also appear more frequently in deep water. Figure 7 displays the mean fish length per tow of petrale sole against tow depth and shows that the mean length of females increases initially with depth and then levels out (even though the survey was conducted during the summer rather than winter). This trend of increasing size at depth is also apparent for males. Given the ontogenetic shift of increasing size at depth, the 2005 assessment (Lai et al. 2005) re-stratified the survey data into three depth strata. This assessment uses a similar approach, developed during the 2009 assessment, implementing a piece-wise linear regression (Neter et al., 1985) of year- and sex-specific mean length and depth data to aid in choosing a depth stratum boundary (Appendix A).

The NWFSC index of abundance is estimated using a delta-generalized linear mixed model (delta-GLMM, Maunder and Punt 2004), implemented using the software from Thorson and Ward (2013). For every tow, the delta-GLMM approach explicitly models both the probability that it encounters the target species (using a logistic regression) and the expected catch for an encounter (using a generalized linear model). The product of these two components yields an estimate of overall abundance (Pennington 1983). Year was always included in both model components (because it is the design variable); strata and strata:year interactions are included as fixed effects. Vessels participating in the survey are selected from the population of all possible commercial vessels in an open-bid for the sampling contract. Because of this, a delta-mixed model implementation was necessary to treat vessels (in the form of vessel:year interactions) as random effects for the NWFSC slope and combined shelf-slope surveys (Helser et al. 2004). Lognormal and gamma error structures were considered for the model component representing positive catches, while a Bernoulli error structure was assumed for the presence/absence model component. Additionally, an option to model extreme catch events (ECEs, defined as hauls with extraordinarily large catches) as a mixture distribution was explored (Thorson et al. 2011). This mixture approach has been shown to improve precision for estimated indices of abundance in simulated data in some cases (Thorson et al. 2012). However, as petrale sole are commonly encountered in the trawl survey the ECE model was not necessary. Model convergence was evaluated using the effective sample size of all estimated parameters (>500 was sought) and visual inspection of trace plots and autocorrelation plots (where a maximum lag-1 autocorrelation of <0.2 was sought). Model goodness-of-fit was evaluated using Bayesian posterior predictive checks and Q-Q plots. This method for constructing survey abundance indices was reviewed by the Pacific Fishery Management Council’s Scientific and Statistical Committee (SSC). The SSC endorsed the analysis and recommended using this approach in stock assessments. When implementing the GLMM approach, it is recommended that there are at least three positive tows in each stratum/year combination. Based on the ontogenetic shift of increasing size at depth the survey tows were stratified into three depth zones (54.86–100 m, 100–183 m and 183–549 m) for each INPFC area (Figure 8). Since the Eureka Deep and Vancouver Deep strata had fewer than three observations in some years, these areas were combined with the Columbia deep area. The lognormal model with no strata:year interactions was chosen as it provided a lower deviance and better fit to the data compared to models with the gamma error distribution and random strata:year interactions (Figure 9). The coast-wide biomass index increases from 2003 to 2004, followed by a general decline through 2008 and 2009, and increases during 2009 through 2014 (Table 4, Figure 10). Additionally, all models included survey pass as a covariate to account for the incomplete sampling which occurred during 2013, during the second pass of the NWFSC shelf and slope trawl survey. The survey was cut short and all stations south of 37°N were not sampled. Because of this, there were no data for strata between 32°N and 36°N in pass 2. Strata between 36°N and 40.5°N were considered representative and were included in the model.

Length bins from 12 to 62 cm in 2 cm increments were used to summarize the length frequency of the survey catches in each year. Table 3 shows the number of lengths taken by the survey. The first bin includes all observations less than 14 cm and the last bin includes all fish larger than 62 cm. The length frequency distributions for the NWFSC survey from 2003-2014 generally show a strong cohort growing through 2005 and smaller fish entering the population beginning in 2007 (

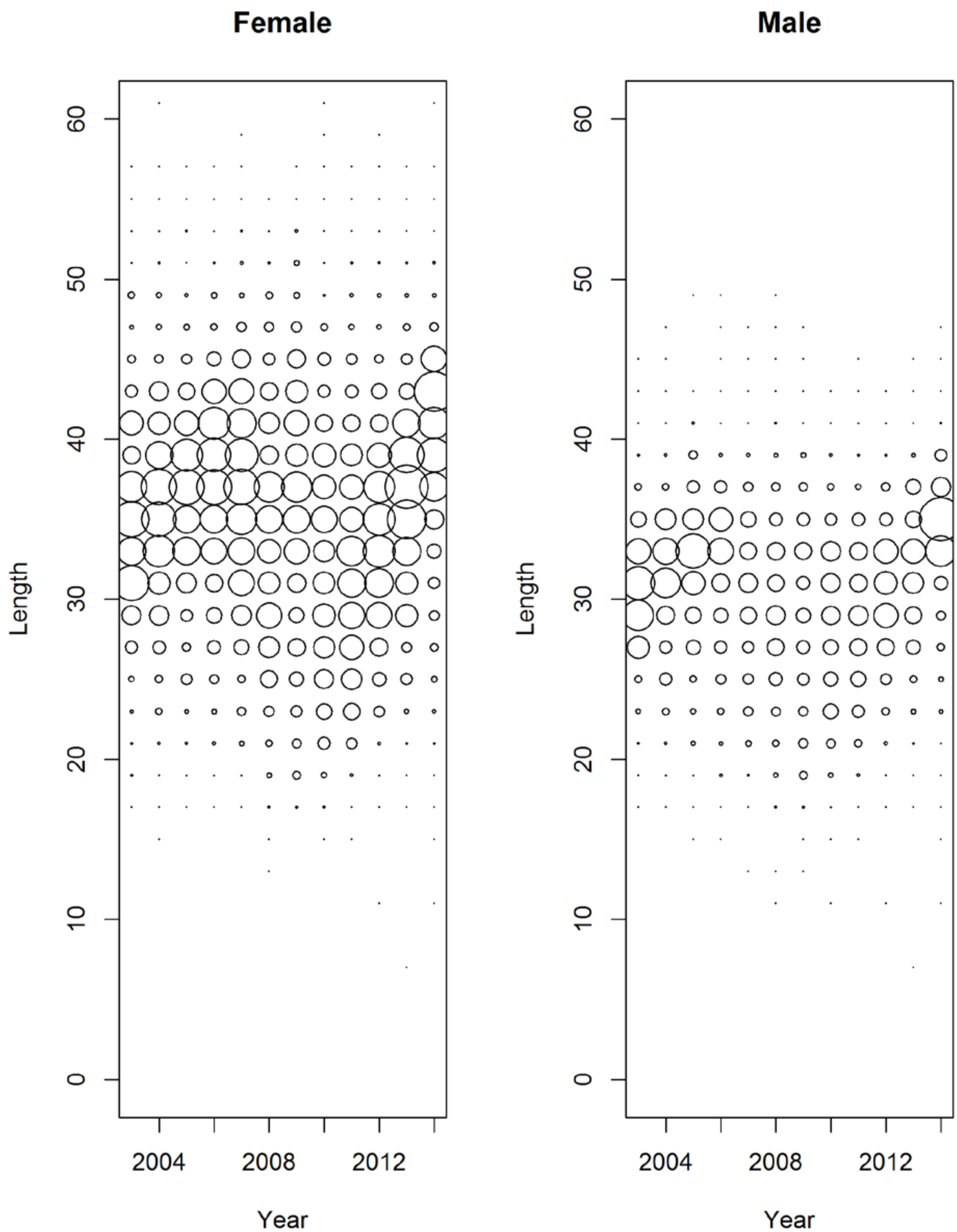

Figure 11). Age-frequency data from the NWFSC survey (Figure 12) were included in the model as conditional age-at-length distributions by sex and year. Individual length- and age-observations can be thought of as entries in an age-length key (matrix), with age across the columns and length down the

rows. The approach consists of tabulating the sums within rows as the standard length-frequency distribution and, instead of also tabulating the sums to the age margin, instead the distribution of ages in each row of the age-length key is treated as a separate observation, conditioned on the row (length) from which it came. This approach has several benefits for analysis above the standard use of marginal age compositions. First, age structures are generally collected as a subset of the fish that have been measured. If the ages are to be used to create an external age-length key to transform the lengths to ages, then the uncertainty due to sampling and missing data in the key are not included in the resulting age-compositions used in the stock assessment. If the marginal age compositions are used with the length compositions in the assessment, the information content on sex-ratio and year class strength is largely double-counted as the same fish are contributing to likelihood components that are assumed to be independent. Using conditional age distributions for each length bin allows only the additional information provided by the limited age data (relative to the generally far more numerous length observations) to be captured, without creating a 'double-counting' of the data in the total likelihood. The second major benefit of using conditional age-composition observations is that in addition to being able to estimate the basic growth parameters (L_{minAge}, L_{maxAge}, K) inside the assessment model, the distribution of lengths at a given age, governed by two parameters for the standard deviation of length at a young age and the standard deviation at an older age, is also quite reliably estimated. This information could only be derived from marginal age-composition observations where very strong and well-separated cohorts existed and where they were quite accurately aged and measured; rare conditions at best. By fully estimating the growth specifications within the stock assessment model, this major source of uncertainty is included in the assessment results, and bias due to size-based selectivity is avoided. Therefore, to retain objective weighting of the length and age data, and to fully include the uncertainty in growth parameters (and avoid potential bias due to external estimation where size-based selectivity is operating) conditional age-at-length compositions were developed using the NWFSC trawl survey age data.

Age distributions included bins from age 1 to age 17, with the last bin including all fish of greater age (Figure 12). These data show the growth trajectory of females reaching a maximum size near 60 cm and males reaching a maximum size of about 54 cm (Figure 13). The marginal NWFSC age-compositions, which allow for easier viewing of strong cohorts, show the strong 1998 cohort ageing from 2003 to 2007, with younger fish appearing in 2008-2014 (Figure 13). The exception to this is the female composition in 2005, where only one female fish was aged from the tow with the largest catch rate. The expansion of numbers to tow can greatly affect the marginal age distribution, but does not have as much effect on the conditional age-at-length data.

2.1.2 Fishery Independent Data: Triennial trawl survey

The triennial shelf trawl survey conducted by NMFS starting in 1977 is the second source of fishery-independent data regarding the abundance of petrale sole (Dark and Wilkins 1994). The sampling methods used in the survey over the 21-year period are most recently described in Weinberg et al. (2002); the basic design was a series of equally spaced transects from which searches for tows in a specific depth range were initiated (Figure 14). In general, all of the surveys were conducted in the mid-summer through early fall, although survey timing between years was variable (Figure 15). While the AFSC conducted all of the previous triennial surveys, the 2004 survey was conducted by the NWFSC FRAM division following the AFSC survey protocols. Haul depths ranged from 91–457 m during the 1977 survey with no hauls shallower than 91 m. In all subsequent years the survey sampled depths from 55–366 m. Given the different depths surveyed during 1977, the results from the 1977 survey are not included in this assessment. Water hauls (Zimmermann et al., 2003) and tows located in Canadian and Mexican waters were also excluded from the analyses for this assessment. Due to changes in survey timing, the triennial data have been split into independent early (1980-1992) and late (1995-2004) survey time series. The splitting of this time series was investigated during the 2009 STAR panel due to the changes in survey timing and the expected change in petrale sole catchability because of the stock's seasonal onshore-offshore migrations (Cook et al. 2009). For these reasons, as well as because the split improved fits to the split time series and made small changes to the estimation of the selectivity curves, the 2009 STAR panel supported the split.

As with the NWFSC trawl survey, petrale sole were encountered throughout the West Coast (Table 5, Figure 16). Larger catch rates were observed around depths of 100 m but no trend in catch rate was apparent over latitude, other than low catch rates in the Conception INPFC area which was only partially sampled (Figure 17). An analysis of the mean length by depth also showed evidence of an ontogenetic movement of petrale to deeper water (Figure 18), and depth stratification similar to the strata used for the NWFSC survey was used for the triennial survey. Similarly, to the NWFSC survey, the early and late Triennial trawl survey indices of abundance are based on a general linear model (GLM); however, random vessel effects are not included in the modeling of this survey. The early triennial was partitioned into five strata using INPFC area and two depth strata (55 m -100 m and 100 m – 400 m): Vancouver-Columbia shallow, Eureka shallow, Vancouver-Columbia-Eureka deep, Monterey-Conception shallow, and Monterey-Conception deep. The late triennial survey data are partitioned into seven strata, using INPFC areas and two depth strata (55 m -100 m and 100 m – 500 m) as follows: Vancouver-Columbia shallow, Vancouver- Columbia deep, Eureka shallow, Eureka deep, Monterey-Conception shallow, Monterey deep, and Conception deep. Strata were determined based on having an adequate sample size in each year-strata combination. The models fit the data well (Figure 19, Figure 20), and the estimated biomass indices are given in Table 4 and Figure 21.

Size distributions were calculated following the same procedures as the NWFSC survey. The numbers of fish and number of hauls represented in each year of the survey are presented in Table 5. The length frequency distributions generally show little trend, although there is evidence of small fish in 1992 and large fish in 2004 (Figure 22).

There are no petrale sole age data from the triennial survey.

2.1.3 Fishery Independent Data: Other

A series of trawl surveys was conducted by the ODFW during 1971–74, the data from which are stored in the survey database at the Alaska Fishery Science Center (RACEBASE). However, the data from these surveys are not included in the assessment owing to their very limited temporal and spatial coverage.

2.1.4 Biological Data: Weight-Length

The weight-length relationship is based on the standard power function: $W = aL^b$ where W is weight in grams and L is length in centimeters. The parameters from the 1999, 2005, and 2009 assessments (Sampson and Lee 1999; Lai et al. 2005) were re-estimated using data from the NWFSC survey (Figure 23). The previous assessments used length and weight data from ODFW (1971–86), WDFW market samples, and the ODFW flatfish surveys (1971–72; Demory et al., 1976). New length and weight data from the NWFSC survey for this year's assessment estimate the following length-weight relationships for males, W=0.00000309$L^{3.354155}$, and females, W=0.00000208296$L^{3.471914}$.

More recent length-weight parameters estimated for the British Columbia petrale sole suggest that petrale sole in British Columbia generally weigh less at a given size than petrale sole of the U.S. West Coast (Starr and Fargo 2004).

2.1.5 Biological Data: Maturity and Fecundity

Petrale sole maturity-at-length information is generally sparse in space and time, has not been collected in a systematic fashion across time, is of varying quality, and does not always agree between studies. It is possible that maturity may have changed over time. However, it is not possible to assess this quantitatively owing to differences in when historical samples on which maturity ogives could be based were taken, and how maturity stage (visual vs. histological) was determined. The 2005 petrale sole assessment used the most recent study for the West Coast of the U.S. that was based on observations collected during 2002 from Oregon and Washington (Hannah et al. 2002). The maturity observations were fitted to a logistic model:

$p_l - \frac{e^{B_0+B_l^1}}{1+e^{B_0+B_l^1}}$ where p_l is the proportion of natural fish at length *l*, and B_0 and B_1 are the regression coefficients. Parameter estimates from the Hannah et al. (2002) are: β_0= -24.593, β_1=0.743. The length at 50% maturity for females is 33.1 cm (Figure 24).

2.1.6 Biological Data: Natural Mortality

The instantaneous rate of natural mortality for a wild fish population is notoriously difficult to estimate. One accepted method is to examine the age distribution of an unexploited or lightly exploited stock. This method cannot readily be applied to petrale sole given the long history of exploitation off the U.S. West Coast. Ketchen and Forrester (1966) estimated that the natural mortality coefficients were 0.18–0.26 yr^{-1} for males and 0.19–0.21 yr^{-1} for females based on a catch curve analysis of 1943-1945 Washington trawl data from Swiftsure Bank, off the southwest corner of Vancouver Island. However, petrale sole catches were relatively high during mid-1940s through the 1950s. Starr and Fargo (2004) estimated the instantaneous rate of natural mortality (*M*) using Hoenig's method (Hoenig 1983): $\ln(M) = 1.44 - 0.984\ln(t_{\max})$ where *M* is natural mortality and t_{max} is the maximum age of petrale sole. *M* values of 0.22 and 0.15 were estimated given maximum ages of 20 and 30 years, respectively. An archived set of commercial samples, collected from Northern California between the late 1950s and early 1980s, recently found that multiple samples were aged between 20-31 years old, suggesting a similar range of *M* values for U.S. West Coast petrale sole. U.S. stock assessments prior to 2009 and current British Columbia stock assessments assumed a value of *M* = 0.2 for both sexes. A recent meta-analysis produced the following normal prior distributions for females (mean = 0.151, sd = 0.16) and males (0.206, sd = 0.218) (Hamel, 2014). These Hamel priors are used for *M* in this stock assessment.

2.1.7 Biological Data: Length at age

Sager and Summler (1982) summarize the growth of petrale sole in length using several growth functions. Female petrale sole can grow to 70 cm total length, with males being smaller. Petrale sole can live to at least 30 years, although more recent data show that few are aged to be older than 17 yrs. This information on growth is subject to error for two reasons: 1) growth determination is difficult because two ageing techniques (otolith surface and break-and-burn [BB]) were used in the past, and 2) the observed lengths of young fish may be positively biased due to gear selectivity. Pederson (1975) estimated growth parameters for several locations (see Table 6 of Turnock et al. (1993)). Sampson and Lee (1999) estimated parameter values of the von Bertalanffy growth curve using data based on BB readings for petrale sole older than age 3 and ODFW survey observations (1970–74) for younger ages. In the 2005 stock assessment, the mean length-at-age data used to estimate parameters for the growth equation were obtained from the 2004 NMFS triennial survey. The empirical estimate of the CV of length-at-age in the 2004 survey, used in Lai et al. (2005), is 0.08, the same value that was used by Sampson and Lee (1999).

Beginning with the 2009 assessment, length at age has been estimated inside the stock assessment model. Starting parameter values for the estimation were determined by fitting the von-Bertalanffy model ($L_i = L_\infty e^{(-k[t-t_0])}$) where L_i is length in cm at age *i*, *t* is age in years, *k* is the rate of increase in growth, t_0 is the intercept, and L_∞ is the mean maximum length estimated from the NWFSC survey data (Figure 13). Exploration of the NWFSC survey residuals across age and time did not show any evidence of time variation in growth (Cadigan et al. 2013).

2.1.8 Biological Data: Sex ratios

Both the triennial and NWFSC survey sex ratios for petrale sole are generally about 50% each males and females. There is no indication of changes in sex ratio over time in the recent survey data. Canadian data from the most recent published stock assessment also suggests sex ratios of petrale sole in British Columbia are generally 50% males and 50% females (Starr and Fargo 2004). The fishery data show a somewhat higher proportion of females to males, as might be expected given dimorphic growth and winter fisheries that target spawning aggregations.

2.1.9 Biological Data: Ageing precision and bias

Historically petrale sole have been aged using the otolith surface ageing technique by all three state agencies that provide age data (WA, OR, and CA). At some point during the 1980s, the Oregon and Washington protocols for ageing petrale sole were: i) surface readings for all males, ii) surface readings for females up to age 10, and iii) BB readings for any females that appeared to be older than 10 years (Lai et al. 2005). However, age readers often failed to track gender, resulting in inconsistent application of the previously described aging protocol (Bob Hannah, ODFW, pers. comm.). Otoliths that were difficult to read and appeared older were also broken and burned, resulting in break-and-burn ages for fish younger than 7 (Bob Hannah, ODFW, pers. comm.). The Cooperative Aging Project (CAP) formed in Newport, Oregon during 1996 and started ageing petrale sole for the 1999 stock assessment. During 1999, otolith samples collected by ODFW between 1981 and 1999 were aged by three different age readers in the CAP using a combination of surface and BB techniques. The samples were not randomly distributed between age readers, that is, one reader aged all females, one reader aged primarily males (and some females), and one reader read both. Furthermore, while two of the age readers produced surface ages, one age reader was using a ‘combination’ ageing method where otoliths that appeared to be younger than about 10 years were surface aged and those that appeared older were broken and burned. The multitude of problems with the 1981-1999 age data for Oregon resulted in most of these data being removed from the 2005 stock assessment during the STAR panel review (Lai et al. 2005). Oregon otoliths aged for the 2005 stock assessment were solely surface aged. The Washington Department of Fish and Wildlife (WDFW) continued to use the ‘combination’ ageing method for all commercial otolith samples through 2008.

An unpublished study in 1981–82 by W. Barss (ODFW, Newport) indicated that ages based on otolith surface readings are biased relative to ages based on break-and-burn readings for male petrale sole, with significant under-ageing for males older than about 10 years. However, the same study suggested that ages based on surface and break-and-burn (BB) readings were similar for females. Turnock et al. (1993) reported differences between ages based on surface and break-and-burn readings for males and also argued that there was no apparent bias for females. This unpublished information informed the ageing error used in the 1993 and 1999 assessments (Turnock et al., 1993; Sampson and Lee, 1999). However, given the variety of ageing protocols for petrale sole, the results from early ageing bias and precision studies were reanalyzed for the 2009 stock assessment and have been applied to subsequent stock assessments.

The CAP laboratory conducted more recent comparisons, of surface and BB readings and the ‘combination’ and break-and-burn methods by the WDFW, for the 2005 petrale sole stock assessment. Lai et al. (2005) concluded that CAP ages based on surface readings are younger than those based on BB readings, but the differences were not statistically significant. However, the results of the CAP study are not consistent with those from the WDFW data analyzed by Lai et al. (2005). Nevertheless, both data sets suggested that the differences in age estimates between the surface and break-and-burn techniques are smaller than implied by the ageing error matrix reported by Turnock et al. (1993). The September 2005 STAR Panel discussed the ageing error matrices used in the 2005 stock assessment and the implied ageing error coefficients of variation. It was concluded that the 2005 ageing error matrices are not informative and should be used with caution because the ageing method is not standardized between agencies.

Currently, Oregon commercial samples from 2000 to 2004 are exclusively surface aged. Oregon commercial samples from 2007 forward, WDFW samples from 2009 forward, and NWFSC survey otoliths were aged using the break-and-burn method for most fish except those very young fish (generally age 0-3 year olds that are very clear) (P. MacDonald, pers. comm.), for which the age readers believe surface ages are reliable. It is common procedure for the CAP lab to surface read young fish with clear otoliths, no matter the species.

In order to conduct a comprehensive estimation of ageing bias and imprecision, the 2009 assessment compiled and analyzed all of the available double-read data from the state of Oregon, the CAP, and the WDFW, as well information from a bomb radiocarbon age validation study for petrale sole off the U.S. West Coast (Table 6) (Haltuch et al. 2013). In the 2009 analysis, all sources of ageing information were revisited both through inspection of the various cross- and double-read efforts as well as through simultaneous estimation of bias and imprecision for all studies in a rigorous statistical framework programmed in AD Model Builder (Otter Research Ltd. 2005) by A. Punt, University of Washington (Punt et al. 2008). This program estimates the underlying age distribution of a sample and can do this for multiple samples simultaneously. The most important assumption of the estimation technique is that at least one ageing method must be unbiased, so it is therefore not an age-validation. Functional forms can be explored for each method for both the age bias (none, linear, type 2) and imprecision (constant CV, or type 2 increase in CV with age) as well as the choice of minus and plus ages. Model selection is based on AIC. Sample sizes for these analyses are on the order of hundreds of double and triple reads.

The 2009 ageing error analysis compressed data sets with three or more reads down into double-read data for analyses, because this reduced the number of age compositions, improving model performance. However, since 2009 the ageing error model has been improved to better deal with otoliths with more than two reads. Therefore, both the 2011 and 2013 analyses used the triple-read data available from the bomb radiocarbon study. The WDFW ageing lab was able to re-age most of the otoliths used for the bomb radiocarbon study, both break-and-burn and surface ages, so the estimation of ageing error for the Washington commercial samples was much improved during the 2011 assessment compared to the 2009 assessment.

Results from the bomb radiocarbon study indicated that age reader #1 break-and-burn ages are unbiased (Haltuch et al. 2013). Therefore, these ages are used as the unbiased 'radiocarbon' ages in the age error analysis. Sex and age reader information is available for some, but not all, of the samples. In order to increase the power of the analysis and reduce the total number of data sets in the analysis, samples are pooled over age reader and sex.

The ageing error analyses found that the best fit model included a non-linear bias, except for the combination age reads from both labs and the WDFW break-and-burn age reads, which had linear bias. The best fit models for the CAP break-and-burn and surface ages and the WDFW surface ages fit the standard deviation of the ageing bias as a non-linear function, but the best fit models for both the CAP and WDFW combination age reads as well as the WDFW break-and-burn reads fit a linear function for the standard deviation. Generally, all of the ageing methods applied to petrale sole are negatively biased (under ageing), particularly for older ages (Table 6, Figure 26). The break-and-burn and combination ages show a smaller negative bias at older ages than the surface ages. The WDFW break-and-burn and combination ages show very little bias while the surface ages show stronger negative bias, particularly after approximately age 13 (Table 6, Figure 26).

Prior age error analyses pooled all surface age reads for the CAP and WDFW labs, regardless of the time period in which those ages were produced. However, the 2013 stock assessment (Haltuch et al. 2013) evaluated the possibility that surface age reads done prior to the advent of break-and-burn ageing were likely to produce younger surface age reads in comparison to surface age reads as break-and-burn age methods were being developed and researchers were realizing that surface reads produced negatively biased ages (i.e., older surface ages are likely to be more bias than more recent surface reads).

2.1.10 Biological Data: Research removals

Catches of petrale sole for research purposes are very small in comparison to the trawl fishery catches and are therefore included in the total catches.

2.1.11 Biological Data: Ecosystem data

Some studies suggest potential qualitative ecosystem relationships for petrale sole that could be included in future stock assessments, particularly with respect to a link between recruitment success and sea surface temperature (Alderdice and Forrester, 1971; Hollowed and Wooster, 1992). However, recent, rigorous analysis of these relationships are lacking, and time series of potentially relevant environmental data are not readily available for evaluation within the stock assessment.

2.1.12 Fishery Dependent Data: Landings

All landings for the 2015 assessment were summarized by port of landing, where available, as well as for a northern fleet consisting of Washington and Oregon and a southern fleet consisting of California. Landings for Washington and Oregon are summed into a single northern fleet due to the fact that vessels commonly fish and land in each other’s waters and ports. In contrast, the 2009 and 2011 stock assessments summarized landings by catch area for each state individually. The CDFG and SWFSC provided comprehensive landings reconstruction for the California commercial fishery (Ralston et al. 2009). In some cases, early CDFG data were only recorded by general catch area and subsequently allocated to port complexes. The ODFW and the NWFSC also recently completed a historical landings reconstruction that is limited to providing annual catches based on the port of landing (Gertseva et al. 2010). The California and Oregon landings reconstructions represent the best available data on landings in each state. At the time of this assessment, a comprehensive historical catch reconstruction is not available for Washington. In 2009, WDFW provided improved landings data for a few years previously reconstructed by Lai et al. (2005). The landings used in this assessment begin in 1916 with the commercial landings data obtained from the following sources:

1. The PacFIN database (1981–2014 for CA and WA; 1987-2014 for OR);
2. The Pacific Marine Fisheries Commission (PMFC) Data Series for 1956-1980 (PMFC, 1979) for Washington. A comprehensive set of these data were not available for the 2005 stock assessment. The paper document was key punched after the 2007 round of assessments and is generally accepted as the best data currently available for WA catches during this period.
3. State of California landings reconstruction extending from 1931-1980 (Ralston et al. 2009). CDFG Fish Bulletins for 1916–1930 landings (Heimann and Carlisle, 1970) as reconstructed by Lai et al. (2005). The California fishery began in 1876 but no landings data are available from 1876-1915. Therefore, a linear interpolation between landings of 1 ton in 1876 and the landings recorded for 1916 are used to filling this period. Lai et al. (2005) and Haltuch et al. (2009) found that this early assumed increase in the petrale sole fishery did not impact the model;
4. Oregon landings reconstruction for 1932 to 1986 (Gertseva et al. 2010);
5. WDFW landings reconstruction for 1935, 1939 and 1949– 1969 (pers. comm. T. Tsou and G. Lippert). These catches from WDFW grey literature are much larger than the catches used for Washington in the 2005 (Lai et al. 2005) stock assessment. Therefore, landings for the early years that have not yet been reconstructed by WDFW are filled in by interpolating between the years with landings data;

Landings data from 1981 (1986 for Oregon) – 2014 were extracted from PacFIN (26 January 2015), as updates and corrections to the PacFIN database can cause small changes to this portion of the catch history. Monthly data are mostly unavailable for the early petrale fisheries. In years where monthly landings data were not available, all landings are assumed to be from the summer fishery because it is likely that most of the fleets operating early in the development of the fishery did not fish in deep water during winter.

Landings for the fishing year, beginning on 1 November, are summarized by fleet in Table 1 and Figure 2. The landings of petrale sole by gear types other than groundfish-trawl have been inconsequential, averaging less than 2.5% of the coast-wide landings. The non-trawl landings are included in the trawl landings but do not include discarded petrale sole (Table 7, Table 8). The post-World War II period witnessed a steady decline in the amount and proportion of annual landings occurring during the summer months (March-October). Conversely, petrale landings during the winter season (November–February), when the fishery targets spawning aggregations, has exhibited a steadily increasing trend since the 1940's. In the past few decades there has been a distinct seasonality in petrale sole landings that corresponds to the targeting of spawning aggregations during winter. Due to the seasonal harvesting pattern, landings in this assessment, as in previous assessments, are separated into two time periods: winter (November-February) and summer (March–October).

Although they are not used in this assessment, the Canadian landings of petrale sole can be found in Starr and Fargo (2004).

2.1.13 Fishery Dependent Data: Discards

The catch statistics in Table 1 do not include discards. Prior to the 2001 creation of the Northwest Fishery Science Center West Coast Groundfish Observer Program (NWFSC WCGOP), data on fishery discard for petrale sole was sparse and of mostly questionable quality. While several historical studies report discard estimates, in most cases the original data and estimation methods, which likely varied between studies, are not reported.

A limited 1950 study of Astoria, Oregon based trawlers estimated that 32.5% of the "number" of the petrale sole caught were discarded (Harry 1956). However, the details of the data collection as well as the original data are missing, so this value is not used in the assessment. A 1977–81 study reported annual discard factors for the U.S Vancouver and Columbia INPFC areas (total catch weight / retained catch) that ranged from 1.1 to 1.4 with an average value of 1.21 (meaning 17% of the total catch weight was discarded) (Demory 1984). However, Demory (1984) did not provide the data used to derive the discard factor ($f = 1 + Discard/Retained$) from which the discard rate (*f*) is derived. Therefore, the Demory measures of discard are not used. Scofield (1948) reported that 20–25% of the catches of sole in California were discarded during the 1940s and 1950s, but no specific date, data sources, or analyses were reported, so this value is not used in the assessment. Data collected by Pikitch et al. (1988) off the Oregon coast during 1986-1987 inform discard rates for the Oregon fisheries. Due to different analyses producing different discard rates for the Pikitch et al. (1988) data (Sampson and Lee 1999, D. Erickson , pers. comm. 2011) the NWFSC completed a comprehensive reanalysis of the data in preparation for the 2015 stock assessment cycle NWFSC staff (Table 7, J. Wallace , pers. comm.).

Discard observations for the trawl fleet from the WCGOP provide yearly discard rates (Table 8) and average weight of the discard (Table 9) based on at-sea observer data for 2002-2014 (2014 includes only the first half of the winter fishing season). While discard rates for petrale sole have been small historically, during 2011 the trawl fishery transitioned into an ITQ program referred to as catch shares, with 100% observer coverage, resulting in many fleets with zero or near-zero discard rates for 2011-2014. Length data are available from both the Pikitch et al. (1988) data (sex-specific) as well as from the WCGOP data as of 2006 (sexes combined), providing length compositions of the discard (Figure 27-Figure 33). These length compositions are used to estimate the retention curves for each fleet.

Several studies have reported retention curves for petrale sole. TenEyck and Demory (1975) reported that the age-at-50%-retention is 5.6 years for male petrale sole and 5.1 years for females, equivalent to a ~ 30 cm length-at-50%-retention. Turnock et al. (1993) estimated a logistic length-retention curve using the unpublished data collected during a mesh-size study (Wallace et al., 1996), and reported that the length-at-50%-retention was 21.3 cm. Sampson and Lee (1999) estimated the length-at-50%-retention to be 28.6 cm for males and 29.5 cm for females, based on unpublished data from the discard study by Pikitch et al. (1988).

2.1.14 Fishery Dependent Data: Foreign landings

The impact of landings of petrale sole by foreign fishing fleets prior to the institution of the exclusive economic zone (EEZ) of the U.S. West Coast is currently not quantified and remains an area for research.

2.1.15 Fishery Dependent Data: Logbooks

Sampson and Lee (1999) used commercial logbook data from PacFIN to construct delta-GLM-based standardized CPUE indices of abundance for the Oregon fleets from 1987-1997. These indices were also used in the 2005 northern area stock assessment (Lai et al. 2005) and in the 2009 coast-wide stock assessment. The logbook data for the years prior to 1987 were not included, because information on fishing location is not available for much of these data. Beginning in 1998, the West Coast groundfish fishery has been subjected to a series of regulatory changes that would render extension of the Sampson and Lee index unreliable.

Lai et al. (2005) produced delta-GLM-based indices of abundance for the 2005 southern area assessment using data filtered in a similar manner to Sampson and Lee (1999). However, the southern area CPUE indices used more vessels that had been in the fishery a relatively short amount of time and extended the index to 2004, well beyond the time where regulatory changes began to restrict the groundfish fishery. These problems with the CPUE indices were noted during the 2005 STAR panel review.

Due to multiple changes in management beginning in the early 2000s and resulting changes in fishing behavior, for which limited data are available, and spatial closures, the 2009 stock assessment did not include commercial CPUE indices. One example of a regulatory induced change in fishing behavior is the switch from fishing around the clock to fishing only during the day with the selective flatfish trawl (‘pineapple trawl’) that began to be used in 2003 and was used coast-wide by 2005. Many of these types of changes are not well documented or are not documented at all in the logbook data.

Management and fishing behavior changes beginning during the early 2000s suggest that the changes in CPUE are likely not proportional to changes in stock abundance. In addition to the impact of changing management actions and resulting changes in fishing behavior on commercial CPUE, the winter fleets were not analyzed due to the likelihood that changes in winter catch rates would not be proportional to changes in spawning stock biomass because of the spawning aggregations that are the target of the winter fishery (Hilborn and Walters 2001). However, in 2009 plots of raw CPUE (lbs/hour) for all fleets were calculated for comparison with the fishery independent NWFSC survey index. The downturn in the NWFSC survey index (from the summer season) between 2005 and 2008 was also apparent in the raw CPUE from the summer fisheries, although the magnitude of the changes in the CPUE was much larger than those from the survey (Haltuch et al. 2009). During the 2009 assessment review process there were concerns regarding the lack of a recent CPUE analysis for all fleets, regardless of the management impacts on the fishery. Therefore, the 2011 assessment attempted to conduct a CPUE analysis that considers some of the management impacts on the petrale fleet (Haltuch et al. 2011).

While the 2011 analysis attempted to account for the impact of management measures on the fishery it was unable to account for changes in fishing behavior, or changes in spawning aggregation dynamics with stock size during the winter spawning/fishing season. Changes in the CPUE indices from approximately the years 2000-2003 forward could be due to management measures, fishing behavior, and spawning aggregation dynamics (winter only) that were not captured in the analysis. For example, industry reports that the 2003 vessel buyback removed some of the less productive vessels in the fleet, but there is no information on the skippers that fished those vessels, many of which may have switched to fishing on different vessels. The 2011 CPUE analysis was also unable to capture changes in fishing behavior and targeting strategies for petrale sole and the Dover-thornyhead-sablefish deep water fishery, which likely increased, as rockfish fishing opportunities became increasingly limited between the late 1990s and the present. During the summer, the spatial management restrictions have changed on an annual basis and are captured only at a gross level. During the winter, the spatial areas that have remained open to fishing since 2003 have been more stable, however, little is known about petrale sole spawning aggregation dynamics and how these spawning aggregation dynamics change as the stock increased from historical low levels in the 1990s to higher levels in the mid-2000s. Ancillary evidence suggests that the timing of spawning (historically December - February) has shifted to be later in the winter season. This issue may have been captured by limiting the data used in the analysis to January-February. However little is known about how the timing of peak spawning, the duration of the spawning season, size of spawning aggregations, and density of spawning aggregations change with changes in the size of the spawning stock. It was not possible to capture these dynamics in the CPUE analysis completed for the 2011 stock assessment as there was a lack of understanding between how changes in catch rates and changes in the true population are related.

During the 2011 STAR review, the summer CPUE was excluded from the stock assessment model as a viable index due to the annual changes in spatial management. While the summer CPUE indices were removed from the 2011 assessment, the general trends in the commercial summer CPUE were similar to the trend from the NWFSC fishery independent survey during the period of overlap. STAR panel discussions lead to the inclusion of the winter CPUE indices, modeled with a power function, due to the more consistent spatial management during the winter, regardless of the possible issues with spawning aggregation dynamics. CPUE calculations described in the 2013 assessment were retained for this assessment (Haltuch et al. 2013).

2.1.16 Fishery Dependent Data: Biological sampling

Commercial landings and the biological characteristics of these landings were not consistently sampled for scientific purposes until the mid-1950s. Statewide sampling of landed catches began in 1955 in Washington, 1966 in Oregon, and sporadically in 1948 in California. The first rigorous monitoring programs that included routine collection of biological data (e.g., sex, age, size, maturity, etc.) began in 1980. Currently, port biologists employed by each state fishery agency (California Department Fish and Game, Oregon Department of Fish and Wildlife - ODFW, and Washington Department of Fish and Wildlife - WDFW) collect species-composition information and biological data from the landed catches of commercial trawling vessels. The sampling sites are commonly processing facilities located at ports in California, Oregon and Washington. The monitoring programs currently in place vary between the states but are generally based on stratified, multistage sampling designs.

The PacFIN BDS database contains data from ODFW (1966–present) and WDFW (1955– present), but only 2001– present data from CDFG. The CDFG dataset for the years prior to 2000 was extracted and provided from CALCOM by Brenda Erwin (CDFG). Demory and Bailey (1967) provide length compositions for the Columbia INPFC area for 1949–51, 1960, and 1963–65. However, no information is provided on the total size of the landings or sampling protocol, making it impossible to expand the raw length data. Therefore, the Demory and Bailey (1967) data are not used in the current assessment.

Commercial length-frequency distributions based on the fishing year were developed for each state for which observations were available, following the same bin structure as was used for research observations. For each fleet, the raw observations (compiled from the PacFIN and CalCOM databases) were expanded to the sample level, to allow for any fish that were not measured, then to the trip level to account for the relative size of the landing from which the sample was obtained. The expanded length observations were then expanded by the landings in each state for the combined WA and OR fleet. Age frequencies were computed in the same manner, except that age observations for WA and OR were not combined due to aging error considerations. Length and age data collected from commercial landings for each fleet are summarized by the number of tows (Table 10 -Table 11). Figure 37 - Figure 44 show plots of the commercial length and age composition data.

2.1.17 Ecosystem data

This update assessment was unable to generate new analyses to evaluate potential ecosystem data and methodologies for this stock assessment for consistency with the last full assessment.

2.2 History of Modeling Approaches Used for this Stock

2.2.1 Previous assessments

United States

Early stock assessments only assessed petrale sole in the combined U.S.-Vancouver and Columbia INPFC areas, i.e. petrale in these areas were treated as a unit stock, using time series of data that began during the 1970s (Demory 1984, Turnock et al. 1993). The first assessment used stock reduction analysis and the second assessment used the length-based Stock Synthesis model (Methot 1989). The third petrale sole assessment utilized the hybrid length-and-age-based Stock Synthesis 1 model, using data from 1977–1998 (Sampson and Lee 1999). During the 1999 stock assessment an attempt was made to include separate area assessments for the Eureka and Monterey INPFC areas but acceptable models could not be configured due to a lack of data (Sampson and Lee 1999).

The 2005 petrale sole assessment was conducted as two separate stocks, the northern stock encompassing the U.S. Vancouver and Columbia INPFC areas and the southern stock including the Eureka, Monterey and Conception INPFC areas, using Stock Synthesis 2, a length-age structured model (Methot 2000). Both the northern- and southern-area models specified the fishing year as beginning on November 1 and continuing through October 31 of the following year, with a November–February winter fishery and a March–October summer fishery. Landings prior to 1957 were assumed to have been taken during the summer season in years where monthly data were not available to split the catches seasonally. The complete catch history was reconstructed for petrale sole for the 2005 stock assessment, with the northern area model starting in 1910 and the southern area model in 1876. In 2005, the STAR panel noted that the petrale sole stock trends were similar in both northern and southern areas, in spite of the different modeling choices made for each area, and that a single coast-wide assessment should be considered. The 2009 and 2011 assessments treated petrale sole as a single coast-wide stock, with the fleets and landings structured by state (WA, OR, CA) area of catch. During the 2011 STAR panel concerns were raised regarding the difficulty of discriminating landings from Washington and Oregon waters, particularly in light of the OR historical landings reconstruction that includes a summary of data by port of landing but not by catch area, due to the fact that the OR and WA vessels commonly fish in each other’s waters and land in each other’s ports. The availability of the historical comprehensive landings reconstruction for OR by port of landing lead the STAR panel to recommend combining the Washington and Oregon fleets within the coast-wide stock assessment using port of landing rather than catch area. Starting with the 2013 stock assessment, the coast-wide stock assessment now summarizes petrale sole landings by the port of landing and combines Washington and Oregon into a single fleet. This 2015 assessment update is the same as the 2013 in this approach.

Canada

Ketchen and Forrester (1966) conducted the first assessment of petrale sole off British Columbia. A recent series of petrale sole assessments in Canadian waters were conducted by Tyler and Fargo (1990), Fargo (1997, 1999), Fargo et al. (2000), Starr and Fargo (2004), and Starr (2009). The 2004 stock assessment of petrale sole was based on three areas: the West Coast of Vancouver Island, Queen Charlotte Sound, and Hecate Strait (Starr and Fargo, 2004). In the most recent 2006 assessment in British Columbia petrale sole are assessed using a single area, combined sex, delay-difference stock assessment model with knife edge recruitment (at 6 or 7 years old) (Starr 2009). The model is tuned to fishery CPUE, mean fish weight of the commercial landings, and a number of fishery independent surveys beginning in the early 1980s. Stock predictions are based on average recruitment.

2.2.2 GAP and GMT input

The GMT representative on the 2009 petrale sole STAR panel compiled a history of regulatory actions that impacted the petrale sole fishery, and more generally the groundfish fishery. The GAP representative provided ancillary information on the comparative catches of petrale sole by the fishery, indicating that during the 1980s catch rates were very poor but that recently catch rates have much improved (B. Pettinger, pers. comm.). The GAP representative, as well as other fishery participants, who were present at the 2009 STAR panel, provided invaluable information regarding the history of the fishery and the timing of the impact of management regulations on fleet behavior. This information from the 2009 STAR panel GAP representative and fleet members was used to make decisions regarding the time blocking of fishery selectivity in the model. Information provided by the GAP and GMT representatives regarding the fishery for petrale sole helped guide the use of the commercial CPUE indices during the 2011 stock assessment. No new information has been obtained since commentary from industry representatives at the 2013 PFMC GAP meeting that is fully described in the 2013 assessment (Haltuch et al. 2013).

2.3 Response to STAR Panel Recommendations

STAR panel research and modeling recommendations are not applicable to this 2015 update assessment. Recommendations provided by the 2013 STAR panel will be addressed in the next full assessment.

2.4 Model Description

2.4.1 Transition from 2013 stock assessment to 2015 stock assessment update

As with the 2011 and 2013 petrale sole stock assessments, the current model is implemented as a single-area model. The current assessment has been upgraded to a new version of SS (V3.24U). A thorough description of the 2013 assessment model, which is used in this assessment update, is presented separately below; this section linking the two models is intended to clearly identify where substantive changes were made. These changes include:

1. A new generalized code for processing biological data from PacFIN is used to work up the commercial length compositions.
2. The addition of data for 2013 and 2014.
3. Early commercial age composition data are split for OR and WA using the same methods implemented in the 2009 and 2011 full assessment; in 2013 these data were combined.

2.4.2 Summary of data for fleets and areas

Fishery removals were divided among four fleets: 1) winter North trawl, 2) summer North trawl, 3) winter South trawl, and 4) summer South trawl. Landings for the North fleet are defined as fish landed in Washington and Oregon ports. Landings for the South fleet are defined as fish landed in California ports. Other removals are very small and are included in the trawl fishery removals. The data available for each fleet are described in Figure 1.

2.4.3 Modeling software

This assessment used the Stock Synthesis 3 modeling framework written by Dr. Richard Methot at the NWFSC (Methot and Wetzel, 2013). The most recent version (SS-V3.24U) was used, since it included improvements and corrections to older versions.

2.4.4 Data weighting

Indices of relative abundance all had variance estimates generated as part of the analysis of raw catch data. These variances are converted to standard deviations in log space for use in the model; additional variances for the indices of abundance were estimated inside the model. The number of trawl tows was used as the initial input sample sizes for length and marginal age compositional data. The number of fish aged was used as the input sample sizes for the survey conditional age-at-length compositions.

This assessment follows the iterative re-weighting approach to developing consistency between the input composition sample sizes (or standard errors) and the effective sample sizes based on model fit. This approach attempts to reduce the potential for particular data sources to have a disproportionate effect on total model fit, while creating estimates of uncertainty that are commensurate with the uncertainty inherent in the input data. Iterative re-weighting was applied to all compositional data. This consisted of comparing the mean input sample size for compositional data with the mean effective sample size based on model fit. A single iteration was completed using a multiplicative scalar to tune the input sample sizes for all length- or age-compositions for a given fleet or survey such that the ratio between the input sample sizes and the model effective sample sizes were approximately one (Stewart and Hamel 2014).

A second weighting issue arises when both length and age data are included from the same individual fish and samples. In this case, it is appealing to treat the age data as conditional to the length observations, as for the survey data, to avoid duplication of information. However, due to unacceptably long run times, this approach was not used for the commercial age samples. Instead the lambda values (a direct multiplier on the likelihood component), were reduced to 0.5 for length and age data for fleets where both types of data are available. This is consistent with many other West Coast groundfish assessments. Sensitivity to completing the iterative re-weighting of compositional data and then adjusting the lambdas to 0.5 and vice-versa produced nearly identical model results.

The value of σ_R was determined using an iterative procedure to ensure that the value of σ_R assumed by the assessment model and the empirical variance in recruitment were self-consistent. This involved setting σ_R to an initial value, fitting the model and calculating the variance of the recruitment deviations for the years for which recruitments are estimated in the model, then replacing the assumed value of σ_R by the calculated value. Very little iterative reweighting was necessary for σ_R.

2.4.5 Priors

Priors were applied only to parameters for steepness (h, Figure 45) and natural mortality (M, Figure 46). The steepness prior is based on the Myers (Myers et al. 1999) meta-analysis of flatfish steepness and the natural mortality prior is based on a meta-analysis completed by Hamel (2015).

2.4.6 General model specifications

Stock synthesis has a broad suite of structural options available. Where possible, the ‘default’ or most commonly used approaches are applied to this stock assessment. The assessment is sex-specific, including the estimation of separate growth curves, natural mortality, and selectivity for males and females. Therefore, the assessment only tracks female spawning biomass for use in calculating stock status.

This is a coast-wide assessment that captures seasons and regions using fleets to structure landings. The time-series of landings begins during 1876, at the documented start of the fishery. The sex-ratio at birth is fixed at 1:1, although by allowing increased natural mortality for males, size-based selectivity, and dimorphic growth, the sex ratio can vary.

The internal population dynamics include ages 0-40, where age 40 is the ‘plus-group’. As there is little growth occurring at age 40, the data use a plus group of age 17; there are relatively few observations in the age compositions that are greater than age 17.

The following likelihood components are included in this model: catch, indices, discards, mean weight of the discards, length compositions, age compositions, recruitments, parameter priors, and parameter soft bounds. See the SS technical documentation for details (Methot and Wetzel 2013).

Model data, control, starter, and forecast files can be found in Appendices A-D.

2.4.7 Estimated and fixed parameters

A full list of all estimated and fixed parameters is provided in Table 12. Time-invariant, sex-specific growth is estimated in this assessment with the length at age 1 assumed to be equal for males and females. The log of the unexploited recruitment level for the Beverton-Holt stock-recruit function is treated as an estimated parameter. Annual recruitment deviations are estimated beginning in 1845 in order to obtain more reasonable estimates of uncertainty in recruitment variability (and therefore derived quantities such as unfished spawning biomass) in the early years of the model. Asymptotic selectivity is used for both the triennial and NWFSC surveys and for all fishing fleets in the base case model. Selectivity and retention for the fishing fleets is modeled as time-varying using time blocks (Table 13). The survey catchability parameters are calculated analytically (set as scaling factors) such that the estimate is median unbiased, which is comparable to the way *q* is treated in most groundfish assessments. The commercial CPUE catchability and power parameters are estimated.

2.5 Model Selection and Evaluation

2.5.1 Key assumptions and structural choices

All structural choices for stock assessment models are likely to be important under some circumstances. In the 2013 assessment model on which this assessment update was based these choices were generally made to 1) be as objective as possible and 2) follow generally accepted methods of approaching similar models and data. The relative effect on assessment results of each of these choices is often unknown; however, an effort is made to explore alternate choices through sensitivity analysis. Major choices in the structuring of the full stock assessment model on which this update was based included a coast-wide model with seasonal fleet structure for two regions, north and south, splitting the triennial survey into an early and late time period, and estimates of selectivity and retention curves for each fleet.

2.5.2 Alternate models explored

Comparison of key model assumptions include comparisons based on nested models (e.g., asymptotic vs. domed selectivity, constant vs. time-varying selectivity). Many variations on the base case model were explored for the 2013 full assessment and are fully described in the 2013 assessment (Haltuch et al. 2013). Model exploration in the 2015 assessment update is limited by the Terms of Reference, though sensitivity and retrospective analyses were performed and are reported in Section 2.7.

2.5.3 Convergence

Convergence testing through use of over dispersed starting values often requires very extreme values to actually explore new areas of the multivariate likelihood surface. For this reason, a good target for convergence testing is to ‘jitter’ or randomly adjust starting values between reasonable upper and lower bounds by a factor. Jitter is a SS option that allows for the generation of a uniform random number equal to the product of the input value and the range between upper and lower parameter bounds for each parameter. These random numbers are then added to initial parameter values in the input files and the model minimization started at these new conditions. The SS jitter option was used to explore the identification of a global best estimate for the base model and none of these trials found a different global minimum. A total of 100 jittered model runs, using a jitter value of 0.01 resulted in 74% of the model runs returning to the base case and 24% finding local minima. 2% of the model runs found a slightly better solution (base likelihood = 1509.18, "better" likelihood = 1509.03). A comparison of both models revealed that their results are virtually identical (Figure 47).

2.6 Base-Model Results

The biological parameters estimated from the base-case model (Table 14, Figure 48) are similar to those estimated in past assessments for petrale sole (Haltuch et al. 2009, Haltuch et al. 2011, Haltuch et al, 2013). Female and male petrale sole have similar growth trajectories until about age 5; beyond age 5, females grow to a maximum size of approximately 55 cm while males grow to approximately 45 cm (Figure 48). Both sexes show a similar distribution of lengths-at-age and relative CVs at age. Natural mortality for females is estimated to be lower, 0.146, compared to males, 0.15 (Table 15). This slight difference in sex-specific natural mortality suggests that the sex ratios will be dominated by females at older ages.

Estimated selectivity curves for the NWFSC and triennial surveys were generally similar, although in the later years, the triennial survey selected a slightly higher fraction of small petrale sole than in the early years (Figure 49 -Figure 54). The catchability values for the NWFSC and the early and late triennial surveys are different, 3.57 and 0.56 and 0.78, respectively (Table 15). The catchability estimates are similar to those estimated in past assessments. A power function was used to relate the winter commercial CPUE indices to the population size. The estimates of the exponents in these power functions (Beta parameters) for the winter north and winter south are -0.16 and -1.01 respectively (Table 15). The ~95% confidence intervals suggest that the model cannot clearly discriminate between estimates of Beta greater than or less than zero for the winter north fishery, however the Beta parameter estimate for the winter south fishery is significantly different from zero (Table 16). Like the 2013 assessment, this assessment models the change in petrale effort that took place between 2003 and 2004 due to the vessel buyback program with a time step in *q* between these years (P. Leipzig, pers. comm.).

Selectivity curves for the fishing fleets largely showed, as expected, a tendency towards larger fish being caught in the winter fisheries and smaller fish being captured in the summer fisheries (Figure 55 -Figure 62). Time blocks were implemented to account for some of the residual patterns in the composition data that are likely due to the impact of changing management regulations. Time blocks beginning in 1973, 1983, 1993, 2003, and 2011 are used to estimate different selectivity curves for each fleet and sex (Figure 63 -Figure 70). These time blocks were chosen based on changes in fishing practices, the timing of management measures implemented for the groundfish fishery (Appendix C), and the implementation of the trawl ITQ program. Similarly to selectivity, time blocks were also implemented for fishery retention to account for management impacts driving changes in discard practices (Figure 71 -Figure 78). Time blocks were implemented for data collected during the early years of the WCGOP observer program (2003-2008 for summer and 2003-2009 for winter), the period of time in which catch limits were decreased and the fishery was being declared overfished (2009-2010 for summer and 2010 for winter), and the implementation of the trawl IFQ program (2011-2014). During the 2011-2014 IFQ period discards in the winter fishery are essentially zero and the discard rates for the summer fisheries are very small (Table 8).

The base-case model was able to fit the triennial and NWFSC fishery independent indices of abundance, as well as the winter commercial CPUE indices well (Figure 79 -Figure 83). The estimated additional standard deviations for the early triennial and late triennial were 0.18 and 0.18, respectively (Table 15). The estimated additional standard deviations for the winter north and winter south indices in earlier model runs were deemed to be too small in comparison to those from the surveys. Therefore, the maximum standard deviation from the NWFSC survey was added to the bootstrap standard errors from the CPUE analysis. Fits to the fishery independent length and age distributions are good (Figure 84-Figure 88). Slight residual patterns in the last few years of NWFSC survey compositions (Figure 89-Figure 92) suggest that there are proportionally more large fish in the population than expected, potentially as an artifact of fish from large recruitments in 2006, 2007, and 2008 entering adulthood.

The discard rates for petrale sole are generally quite small, resulting in small values for the standard deviations around the weights. The standard deviations on the discard ratios, particularly those that had only partial observer coverage during 2003-2010, from WCGOP data are likely underestimates; therefore, a small additional standard deviation is added to the estimates provided by the WCGOP. Model fits to the discard rates are generally good, with the exception of some observations for the summer south fleet (Figure 93 -Figure 96). The time series of estimated total discards from the model were an order of magnitude less than the landed catches. The fits to the average weight of the discarded catch and the summer fleets and WCGOP discard length compositions are good (Figure 97 -Figure 100). Fits to the Pikitch discard length compositions are poor, but the sample sizes are very small (Figure 101); fits to the WCGOP length compositions are reasonable (Figure 101).

The model fits the time aggregated fishery dependent length compositions well even though it fails to fit some specific years during periods of strong recruitments and early in the data when a higher proportion of large fish are observed in the population (Appendix E). The Pearson residuals reflect the noise in the data both within and between years. The model does not fit the time aggregated fishery age compositions as well as the lengths, in many cases missing the peak of the age distributions (Appendix E). The fishery length- and age-frequency data required some tuning of input sample sizes to make the average effective sample sizes equal to or greater than average input sample sizes (Appendix E). The lack of fit, particularly in the early years of length and age comps could be due to ageing methodologies applied at that time as the more recent, improved, age and length data do not show the same lack of fit.

The estimated recruitment deviations show relatively low variability. The recruitment variability was fixed at a value of 0.4, which is similar to the output values from previous stock assessments. The choice of start year for estimating the main recruitment deviations, 1959, is based on the availability of more reliable length and age composition data. Early recruitment deviations begin in 1845 but are not bias corrected until 1945, shortly before the first age and length compositions became available. The time-series of estimated recruitments shows a weak relationship with the decline in spawning biomass, punctuated by larger recruitments (Table 16-Table 17, Figure 103 -Figure 105). The three weakest recruitments since 1959 are estimated to be from 1986, 1987, and 1992, while the five strongest recruitments since 1959 are estimated to be from 1966, 1998, and 2006-2008 (Table 16-Table 17, Figure 103 -Figure 105). Until 2006, the most recent large recruitment event was estimated to be in 1998; this was the recruitment that supported the increase in the stock and the fishery through 2005. The estimate of stock-recruitment steepness is 0.90 (Table 15), which is similar to the value estimated in the 2013 assessment. The estimate of stock-recruit steepness appears to be increasing with each assessment, though slightly; however, this seems to be expected given the recent extremely high recent recruitment events.

The biomass time series shows a strong decline from the late-1930s through the mid-1960s, followed by a small recovery through the mid-1970s, and another decline to its lowest point during the early 1990s (Table 16-Table 17, Figure 106). This general pattern of stock decline is coincident with increasing catches and the movement of the fishery from the south to the north, and from summer fishing in shallow waters to winter fishing on spawning aggregations in deeper waters (Figure 2). From the mid-1990s through 2005 the stock increased slightly, then declined through 2010 (Table 16-Table 17, Figure 106). The stock has increased strongly since 2010 in response to three years of strong recruitment.

2.7 Uncertainty and Sensitivity Analyses

The base-case assessment model includes parameter uncertainty from a variety of sources, but underestimates the considerable uncertainty in recent trend and current stock status. For this reason, in addition to asymptotic confidence intervals (based upon the model's analytical estimate of the variance near the converged solution), two alternate states of nature regarding the female rate of natural mortality are presented in a decision table. Much additional exploration of uncertainty was performed prior to and during the STAR panel review in 2013. Results from a more limited set of sensitivity runs conducted with the 2015 update assessment are described below.

2.7.1 Sensitivity analyses

Sensitivity analyses were performed to determine the model behavior under different assumptions than those of the base case model. The model provided highly consistent behavior in the numerous sensitivity model runs that were explored. Results from the base case and sensitivity runs are shown in Table 18 and selected models in Figure 108 - Figure 109. The sensitivity model runs produce similar trajectories of stock decline and recovery, with the estimates of unfished biomass falling within the 95% confidence intervals from the base model run. The base model stock status was estimated at 31% during 2015 while the model sensitivities ranged from 27% to 35%. The largest range in results was obtained from the model runs with low and high values of female *M* that were used as the axis of uncertainty for the decision table (Table 18, Figure 108). Sensitivities exploring removal of the last year's survey data were all generally similar to the base model results (Table 18, Figure 109).

2.7.2 Retrospective analysis

A five-year retrospective analysis was conducted by running the model using data only through 2010, 2011, 2012, 2013 and 2014 (Figure 110). Although the different runs showed variation in R0, no retrospective pattern was identified. Mohn's rho for this analysis is -0.012, which means there is no concern regarding a retrospective pattern in this assessment (Hurtado-Ferro et al. 2014).

2.7.3 Historical assessment analysis

Comparisons between the base model estimates for spawning biomass, total biomass, summary (Age 3+) biomass stock depletion from the 2013 assessment and the 2015 update are similar, with differences in the estimated R_0 being driven by the available data (Figure 111).

2.7.4 Likelihood profiles

Likelihood profiles for steepness, log unfished recruitment, and female natural mortality were completed to investigate the uncertainty in the estimates of *h* and female *M* (Figure 112 -Figure 113). Plausible (i.e. a delta-negative log likelihood <= 1.96) values for *h* range from approximately 0.8 to 1.0 while values for female *M* range from approximately 0.12 to 0.17. The length and age composition data most strongly inform the estimates of *M*. The length and recruitment data inform the estimate of *h*, with the age and prior information suggesting a lower value for *h* and the length and index data suggesting a higher *h* value. Likelihood profiles for R_o show a strong influence of length and recruitment data, with prior information suggesting a higher value for R_0 and age data suggesting a lower value. (Figure 114).

3 Rebuilding parameters

The petrale sole stock was previously overfished, but was rebuilt above the target threshold in 2014. See both the previous stock assessment as well as the most recent rebuilding plan for petrale sole for further information (Haltuch et al. 2013, Haltuch 2011).

4 Reference Points

The 2009 stock assessment estimated petrale sole to be at 11.6% of unfished spawning stock biomass in 2010. Based on the 2009 stock assessment, the 2010 coast-wide ACL was reduced to 1,200 mt to reflect the overfished status of the stock and the 2011 coast-wide OFL and ACL were set at 1,021 mt and 976 mt, respectively (Table 19). Recent coast-wide annual landings have not exceeded the ACL. The 2005, 2009, 2011, and 2013 stock assessments estimated that petrale sole have been below 25 percent of unfished biomass from the 1960s until recently, with estimated harvest rates in excess of a fishing mortality rate of $F_{30\%}$. The length of time that the petrale sole stock had been below the 25 percent of unfished level while sustaining relatively stable annual landings lead the 2009 STAR panel and SSC to investigate new reference points for all flatfish managed by the PFMC. The end result was that new reference points were specified for flatfish. The new reference points are as follows: the target reference point is 25 percent of the unfished biomass, the overfished reference point is 12.5 percent of the unfished level, the limit reference point is 5% of the unfished level, and the F target is $F_{30\%}$. The 2013 assessment continued to estimate that petrale sole have been below the $SB_{25\%}$ management target since the 1960s and below the new overfished threshold between the early 1980s and the early 2000s with fishing mortality rates in excess of the current F-target for flatfish of $SPR_{30\%}$ since the mid-1930s (Figure 115 -Figure 116). This 2015 update assessment shows that the petrale sole stock was rebuilt above the $SB_{25\%}$ management target in 2014.

While the base model indicates that the spawning biomass was generally below 25% of the unfished level between the 1960s and 2012, the total biomass of the stock has increased since 2010 as large recruitments during the late 2000s move into the population (Figure 117). The estimated relative depletion level in 2015 is 30.7% (~95% asymptotic interval: 22.2% - 39.2%, ~ 75% interval based on the range of states of nature: 27.3%-34.5%), corresponding to 10,290 mt (~95% asymptotic interval: 8,453 – 12,126 mt, states of nature interval: 9,969 – 10,572 mt) of female spawning biomass in the base model (Table 19). Unfished spawning stock biomass was estimated to be 33,476 (+-6,160) mt in the base case model. The target stock size (SB25%) is 8,369 mt which gives a catch of 2,951 mt. Current F (catch/biomass of age-3 and older fish) is estimated to have been 0.15 during 2015. Model estimates of spawning biomass at MSY are slightly lower than those specified under the current harvest control rule. Maximum sustained yield (MSY) applying recent fishery selectivity and allocations was estimated at 2,975 mt, occurring at a spawning stock biomass of 6,922 mt (SPR = 0.23).

5 Harvest Projections and Decision Tables

The forecast of stock abundance and yield was developed using the base model. The total catches in 2015 and 2016 are set to the PFMC adopted ACLs (Table 19). The exploitation rate for 2017 and beyond is based upon an SPR of 30%. The 25:5 control rule reduces forecasted yields below those corresponding to $F_{30\%}$ if the stocks are estimated to be lower than the management target of $SB_{25\%}$. The average 2012-2014 exploitation rate was used to distribute catches among the fisheries.

Current medium-term projections of expected petrale sole catch, spawning biomass and depletion from the base model using the 25-5 control rule predict an increasing trend in abundance and catch through 2017 followed by a small decline as spawning biomass and stock depletion stabilize in later years, with ACL values for 2017 set at 3,091 mt under the 25-5 harvest policy (Table 19). The stock is expected to remain above the target stock size of $SB_{25\%}$ during the projection period, assuming average recruitment based on the stock-recruit curve.

Uncertainty in the forecasts is based upon the three states of nature agreed upon at the STAR panel. The states of nature were based on the likelihood profile of female M, chosen using a change of 1.2 NLL units (75% interval) from the minimum value to correspond to the midpoints of the lower 25% probability and upper 25% probability regions, from the base model and are low (0.12, rounded to the second decimal place) and high (0.17, rounded to the second decimal place) values for female natural mortality. Each forecast scenario includes random variability in future recruitment deviations. Current medium-term forecasts based on the alternative states of nature also project that the stock, under the current control rule as applied to the base model, will increase through 2016-2017 as large recruitments move into the population, reaching peak stock depletion between 28.2% and 30.9%. In an absence of strong recruitments into the future the stock is then expected to decline between 2017-2018 and 2024.

Two alternative catch projections were evaluated based on GMT requests made during the 2013 full stock assessment, with both catch scenarios being more conservative than the current harvest control rule. Catches during the projection period under the current control rule are projected to be approximately between 2700 mt - 3200 mt, while a control rule with an SPR of 34% and a target biomass of 30% of the unfished biomass produces catches that range between 2600 mt - 2700 mt, and under a control rule with an SPR of 45% and a target biomass of 40% of the unfished biomass catches range between 1700 mt - 2200 mt (Table 20). Both alternative catch scenarios are more conservative than implementing the current control rule, with the second option extending the period of stock increases.

6 Regional Management Considerations

Currently petrale sole are managed using a coast-wide harvest; therefore, this assessment does not provide a recommended method for allocating harvests regionally. The resource is modeled as a single stock. There is currently no genetic evidence that there are distinct biological stocks of petrale sole off the U.S. coast and the limited tagging data that describes adult movement suggests that movement may be significant across depth and latitude.

7 Research Needs

Progress on a number of research topics would substantially improve the ability of this assessment to reliably and precisely model petrale sole population dynamics in the future and provide better monitoring of progress toward rebuilding:

1. In the past many assessments have derived historical catches independently. The states of California and Oregon have completed comprehensive historical catch reconstructions. At the time of this assessment, a comprehensive historical catch reconstruction is not available for Washington. Completion of a Washington catch reconstruction would provide the best possible estimated catch series that accounts for all the catch and better resolves historical catch uncertainty for flatfish as a group.
2. Due to limited data, new studies on both the maturity and fecundity relationships for petrale sole would be beneficial.
3. The effect of the implementation of the IFQ (catch shares) program that began during 2011 on fleet behavior, including impacts on discards, fishery selectivity, and fishing locations would benefit from further study.
4. Studies are needed on stock structure and movement of petrale sole, particularly with regard to the winter-summer spawning migration of petrale sole and the likely trans-boundary movement of petrale sole between U.S. and Canadian waters seasonally.
5. The extent of spatial variability on productivity processes such as growth, recruitment, and maturity is currently unknown and would benefit from further research.

8 Acknowledgments

This assessment draws heavily on the text and analyses from previous petrale sole assessments and has benefited greatly from the efforts of all authors contributing to those analyses. Comments and suggestions from Jim Hastie improved the quality of this document.

Many people at various state and federal agencies assisted with assembling the data sources included in this assessment. Beth Horness provided summary statistics from the NWFSC survey. Jim Thorson provided R code for generating GLMM-based indices of abundance from the triennial and NWFSC trawl surveys. John Wallace provided the reanalysis of the data from the Pikitch discard study. Jason Jannot, Allan Hicks, and Andi Stevens provided discard data from the West Coast Groundfish Observer Program. Patrick McDonald coordinated ageing efforts. Andi Stephens and Kelli Johnson provided the generalized PacFIN biological data code used to work up length composition data.

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10 Tables

Table 1. Total landed catches (mt) of petrale sole by fleet and season used in the assessment model. See text for a description of sources.

Fishing year	North Winter	North Summer	South Winter	South Summer	Total Winter	Total Summer
1876	0.00	0.00	0.00	1.00	0	1
1877	0.00	0.00	0.00	1.00	0	1
1878	0.00	0.00	0.00	1.00	0	1
1879	0.00	0.00	0.00	1.00	0	1
1880	0.00	0.00	0.00	11.55	0	11.55
1881	0.00	0.00	0.00	22.10	0	22.1
1882	0.00	0.00	0.00	32.65	0	32.65
1883	0.00	0.00	0.00	43.20	0	43.2
1884	0.00	0.00	0.00	53.75	0	53.75
1885	0.00	0.00	0.00	64.30	0	64.3
1886	0.00	0.00	0.00	74.85	0	74.85
1887	0.00	0.00	0.00	85.40	0	85.4
1888	0.00	0.00	0.00	95.95	0	95.95
1889	0.00	0.00	0.00	106.50	0	106.5
1890	0.00	0.00	0.00	117.05	0	117.05
1891	0.00	0.00	0.00	127.60	0	127.6
1892	0.00	0.00	0.00	138.15	0	138.15
1893	0.00	0.00	0.00	148.71	0	148.71
1894	0.00	0.00	0.00	159.26	0	159.26
1895	0.00	0.00	0.00	169.81	0	169.81
1896	0.00	0.24	0.00	180.36	0	180.6
1897	0.00	0.20	0.00	190.91	0	191.11
1898	0.00	0.15	0.00	201.46	0	201.61
1899	0.00	0.15	0.00	212.01	0	212.16
1900	0.00	0.15	0.00	222.56	0	222.71
1901	0.00	0.14	0.00	233.11	0	233.25
1902	0.00	0.14	0.00	243.66	0	243.8
1903	0.00	0.13	0.00	254.21	0	254.34
1904	0.00	0.13	0.00	264.76	0	264.89
1905	0.00	0.13	0.00	275.31	0	275.44
1906	0.00	0.12	0.00	285.86	0	285.98
1907	0.00	0.12	0.00	296.41	0	296.53
1908	0.00	0.11	0.00	306.96	0	307.07
1909	0.00	0.11	0.00	317.51	0	317.62
1910	0.00	0.10	0.00	328.06	0	328.16
1911	0.00	0.10	0.00	338.61	0	338.71
1912	0.00	0.10	0.00	349.16	0	349.26
1913	0.00	0.09	0.00	359.71	0	359.8
1914	0.00	0.09	0.00	370.26	0	370.35
1915	0.00	0.08	0.00	380.81	0	380.89
1916	0.00	0.08	0.00	386.42	0	386.5
1917	0.00	0.08	0.00	526.41	0	526.49
1918	0.00	0.07	0.00	423.85	0	423.92
1919	0.00	0.07	0.00	333.44	0	333.51
1920	0.00	0.06	0.00	230.49	0	230.55
1921	0.00	0.06	0.00	293.76	0	293.82
1922	0.00	0.05	0.00	424.78	0	424.83
1923	0.00	0.05	0.00	427.36	0	427.41

Fishing year	North Winter	North Summer	South Winter	South Summer	Total Winter	Total Summer
1924	0.00	0.05	0.00	532.86	0	532.91
1925	0.00	0.04	0.00	528.47	0	528.51
1926	0.00	0.04	0.00	521.67	0	521.71
1927	0.00	0.04	0.00	632.04	0	632.08
1928	0.00	0.00	0.00	620.09	0	620.09
1929	0.00	1.54	0.00	706.04	0	707.58
1930	0.00	1.23	0.00	658.83	0	660.06
1931	0.00	81.45	63.39	530.88	63.39	612.33
1932	1.99	250.88	36.40	519.91	38.39	770.79
1933	5.96	408.43	38.57	392.08	44.53	800.51
1934	9.93	567.86	139.41	896.36	149.34	1464.22
1935	13.90	649.96	155.38	777.21	169.28	1427.17
1936	15.88	769.79	95.49	431.51	111.37	1201.3
1937	19.75	1051.41	74.53	741.05	94.28	1792.46
1938	27.49	1186.87	47.86	890.00	75.35	2076.87
1939	35.22	1544.54	30.84	1028.96	66.06	2573.5
1940	39.09	1736.58	161.81	596.70	200.9	2333.28
1941	41.40	1802.66	110.81	331.17	152.21	2133.83
1942	46.00	2919.25	24.37	215.56	70.37	3134.81
1943	50.61	2867.31	71.66	344.72	122.27	3212.03
1944	55.21	2046.97	85.53	446.91	140.74	2493.88
1945	59.82	1866.05	101.75	439.34	161.57	2305.39
1946	64.43	2492.36	71.91	1115.57	136.34	3607.93
1947	69.03	1777.99	153.68	1092.66	222.71	2870.65
1948	73.64	2314.74	272.66	1778.02	346.3	4092.76
1949	75.94	1808.65	616.96	1812.18	692.9	3620.83
1950	156.21	2322.24	424.24	1638.09	580.45	3960.33
1951	117.97	1665.62	208.45	992.79	326.42	2658.41
1952	131.01	1390.43	326.31	881.70	457.32	2272.13
1953	46.07	737.10	533.36	981.17	579.43	1718.27
1954	26.56	903.36	800.58	1073.40	827.14	1976.76
1955	57.14	862.59	525.58	1051.75	582.72	1914.34
1956	137.25	759.22	508.30	800.73	645.55	1559.95
1957	170.95	1103.29	527.21	1027.18	698.16	2130.47
1958	99.18	1152.19	567.97	957.29	667.15	2109.48
1959	332.10	946.78	379.04	723.17	711.14	1669.95
1960	240.87	1374.20	519.64	643.74	760.51	2017.94
1961	216.66	1546.63	542.06	1028.73	758.72	2575.36
1962	294.86	1511.89	514.91	859.37	809.77	2371.26
1963	663.29	1038.41	534.03	977.64	1197.32	2016.05
1964	282.32	1090.04	377.62	926.80	659.94	2016.84
1965	370.46	950.39	373.69	852.88	744.15	1803.27
1966	366.06	971.69	324.88	924.63	690.94	1896.32
1967	408.63	793.42	532.28	874.08	940.91	1667.5
1968	284.40	810.62	360.61	870.76	645.01	1681.38
1969	190.34	887.30	421.00	848.00	611.34	1735.3
1970	411.71	1081.31	472.00	1071.00	883.71	2152.31
1971	742.62	882.61	540.00	1016.00	1282.62	1898.61
1972	730.42	1016.88	703.00	1000.00	1433.42	2016.88
1973	497.47	1271.83	417.00	742.00	914.47	2013.83
1974	516.99	1610.53	665.00	893.00	1181.99	2503.53
1975	538.95	1559.16	561.00	901.00	1099.95	2460.16
1976	505.73	951.12	713.00	737.00	1218.73	1688.12

Year	North Winter	North Summer	South Winter	South Summer	Total Winter	Total Summer
1977	682.08	742.77	484.00	495.00	1166.08	1237.77
1978	746.25	1097.75	419.00	801.00	1165.25	1898.75
1979	734.31	1085.56	353.00	945.00	1087.31	2030.56
1980	382.50	976.23	518.00	680.00	900.5	1656.23
1981	760.67	467.91	359.66	895.22	1120.33	1363.13
1982	1041.19	770.69	261.53	502.07	1302.72	1272.76
1983	696.32	935.35	272.60	361.12	968.92	1296.47
1984	415.77	739.01	259.83	328.99	675.6	1068
1985	392.13	552.89	273.26	471.13	665.39	1024.02
1986	474.12	714.44	402.91	355.06	877.03	1069.5
1987	854.04	572.67	311.09	556.08	1165.13	1128.75
1988	742.90	610.43	349.11	411.04	1092.01	1021.47
1989	695.99	583.01	392.60	414.73	1088.59	997.74
1990	640.66	459.82	319.43	372.68	960.09	832.5
1991	792.58	397.34	448.01	310.12	1240.59	707.46
1992	639.53	365.97	271.71	307.26	911.24	673.23
1993	685.39	392.08	237.09	233.99	922.48	626.07
1994	518.13	355.43	245.86	299.41	763.99	654.84
1995	591.37	453.92	235.56	287.43	826.93	741.35
1996	591.03	439.75	405.92	393.94	996.95	833.69
1997	621.05	430.04	447.63	442.28	1068.68	872.32
1998	522.14	577.35	220.73	300.46	742.87	877.81
1999	463.34	504.25	286.80	266.64	750.14	770.89
2000	610.16	585.53	373.62	241.46	983.78	826.99
2001	691.41	596.99	308.34	260.30	999.75	857.29
2002	666.97	713.85	335.16	195.12	1002.13	908.97
2003	544.48	713.44	256.21	179.67	800.69	893.11
2004	1009.91	749.51	177.24	267.16	1187.15	1016.67
2005	963.68	1068.76	337.18	533.41	1300.86	1602.17
2006	537.45	1011.62	125.28	453.54	662.73	1465.16
2007	930.38	536.11	404.35	474.86	1334.73	1010.97
2008	842.46	353.82	519.44	414.02	1361.9	767.84
2009	846.71	641.75	469.66	250.38	1316.37	892.13
2010	258.09	292.34	77.60	120.95	335.69	413.29
2011	221.60	423.11	39.59	77.70	261.19	500.81
2012	406.05	477.71	124.46	107.63	530.51	585.34
2013	509.04	1007.26	130.10	278.35	639.14	1285.60
2014	852.90	860.31	273.40	354.19	1126.30	1214.49

Table 2. Recent trends in estimated total petrale sole catch and commercial landings (mt) relative to management guidelines.

Year	OFL (mt) for the Calendar Year	ACL (mt) for the Calendar Year	Commercial Landings (mt) for the Calendar Year	Estimated Total Catch (mt) for the Calendar Year	Estimated Total Catch (mt) for the Fishing Year
2002	2,762	2,762	1,911	2,157	2,068
2003	2,762	2,762	1,694	1,691	1,787
2004	2,762	2,762	2,204	2,411	2,282
2005	2,762	2,762	2,903	3,179	2,999
2006	2,762	2,762	2,128	1,946	2,209
2007	3,025	2,499	2,346	2,258	2,397
2008	2,919	2,499	2,130	2,121	2,172
2009	2,811	2,433	2,208	2,711	2,320
2010	2,751	1,200	749	873	909
2011	1,021	976	762	740	780
2012	1,279	1,160	1,116	1,033	1,134
2013	2,711	2,592	1,925	1,836	1,953
2014	2,774	2,652	2,341	2,267	2,361
2015	3,073	2,816			2,816
2016	3,208	2,910			2,910

[1] Estimated total catches reflect the commercial landings plus the model estimated annual discard biomass (commercial landings * retained catch/total catch) for the fishing year. The total amounts of discard may differ from those reported in the NWFSC reports on total catch for some years.

Table 3. Summary of the tow data from the NWFSC survey.

Year	Number of tows	Number of tows with petrale	Percent of tows with petrale
2003	541	198	37%
2004	470	215	46%
2005	637	279	44%
2006	641	247	39%
2007	688	258	38%
2008	681	258	38%
2009	682	279	41%
2010	714	325	46%
2011	697	323	46%
2012	701	299	43%
2013	471	220	47%
2014	685	333	49%

Year	Number of tows with lengths	Percent petrale tows with lengths	Number of lengths
2003	197	99%	2837
2004	212	99%	3346
2005	277	99%	4551
2006	247	100%	3725
2007	258	100%	3435
2008	258	100%	3053
2009	278	100%	3440
2010	325	100%	6052
2011	322	100%	6187
2012	298	100%	5407
2013	219	100%	3446
2014	332	100%	4822

Year	Number of tows with ages	Percent petrale tows with ages	Number of ages
2003	173	87%	765
2004	167	78%	723
2005	236	85%	750
2006	236	96%	778
2007	197	76%	695
2008	226	88%	749
2009	259	93%	779
2010	297	91%	801
2011	291	90%	804
2012	272	91%	790
2013	218	99%	844

Table 4. Indices of biomass (mt) and standard errors (of the natural log of biomass).

	Triennial		NWFSC	
Year	Estimate (B)	SE(logB)	Estimate (B)	SE(logB)
1980	1864	0.329		
1981				
1982				
1983	2300	0.128		
1984				
1985				
1986	2193	0.146		
1987				
1988				
1989	3234	0.109		
1990				
1991				
1992	2126	0.117		
1993				
1994				
1995	2407	0.148		
1996				
1997				
1998	3548	0.112		
1999				
2000				
2001	3832	0.115		
2002				
2003			18697	0.126
2004	9713	0.141	22866	0.120
2005			22056	0.113
2006			19276	0.118
2007			19428	0.117
2008			15981	0.121
2009			15893	0.117
2010			22700	0.108
2011			30022	0.105
2012			36628	0.121
2013			51165	0.123
2014			58504	0.108

Table 5. Summary of the tow data from the Triennial survey.

Year	Number of tows	Number of tows with petrale	Percent of tows with petrale
1980	301	139	46
1983	479	250	52
1986	483	268	55
1989	440	275	63
1992	421	251	60
1995	441	209	47
1998	468	291	62
2001	466	256	55
2004	383	244	64

Year	Number of tows with lengths	Percent petrale tows with lengths	Number of lengths
1980	1	1	16
1983	2	1	30
1986	36	13	540
1989	141	51	1419
1992	116	46	1015
1995	145	69	1369
1998	236	81	2624
2001	254	99	3016
2004	239	98	4676

Table 6. The estimates of bias and imprecision (SD of observed age at true age) from the best fit models that are used for the various age reading methods in the assessment.

	CAP								WDFW					
	Break and Burn		Surface		Surface pre 1990		Combo		Break and Burn		Surface		Combo	
True Age	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev
0.5	0.262	0.169	0.159	0.119	0.000	0.000	0.475	0.127	0.503	0.151	0.132	0.103	0.488	0.133
1.5	1.346	0.169	1.271	0.119	0.711	0.000	1.425	0.127	1.510	0.151	1.323	0.103	1.465	0.133
2.5	2.406	0.229	2.353	0.179	2.020	0.082	2.375	0.254	2.516	0.301	2.470	0.206	2.442	0.267
3.5	3.442	0.293	3.406	0.246	3.241	0.168	3.325	0.382	3.522	0.452	3.577	0.309	3.418	0.400
4.5	4.454	0.363	4.429	0.320	4.381	0.259	4.274	0.509	4.529	0.602	4.643	0.413	4.395	0.534
5.5	5.443	0.439	5.424	0.402	5.444	0.354	5.224	0.636	5.535	0.753	5.672	0.516	5.371	0.667
6.5	6.409	0.521	6.393	0.492	6.435	0.456	6.174	0.763	6.541	0.903	6.663	0.619	6.348	0.801
7.5	7.353	0.610	7.335	0.592	7.361	0.562	7.124	0.890	7.548	1.054	7.618	0.722	7.325	0.934
8.5	8.275	0.706	8.251	0.703	8.224	0.675	8.074	1.017	8.554	1.204	8.539	0.825	8.301	1.068
9.5	9.177	0.810	9.142	0.825	9.030	0.793	9.024	1.145	9.560	1.355	9.427	0.928	9.278	1.201
10.5	10.058	0.923	10.008	0.959	9.782	0.919	9.974	1.272	10.567	1.505	10.283	1.031	10.255	1.335
11.5	10.918	1.045	10.851	1.108	10.483	1.051	10.924	1.399	11.573	1.656	11.108	1.135	11.231	1.468
12.5	11.759	1.177	11.671	1.273	11.137	1.190	11.873	1.526	12.579	1.806	11.904	1.238	12.208	1.602
13.5	12.581	1.320	12.469	1.455	11.748	1.337	12.823	1.653	13.586	1.957	12.671	1.341	13.185	1.735
14.5	13.384	1.475	13.244	1.656	12.318	1.492	13.773	1.781	14.592	2.107	13.410	1.444	14.161	1.869
15.5	14.168	1.643	13.999	1.878	12.849	1.656	14.723	1.908	15.599	2.258	14.122	1.547	15.138	2.002
16.5	14.935	1.824	14.733	2.123	13.345	1.828	15.673	2.035	16.605	2.408	14.809	1.650	16.114	2.135
17.5	15.684	2.021	15.447	2.395	13.808	2.010	16.623	2.162	17.611	2.559	15.471	1.753	17.091	2.269
18.5	16.416	2.234	16.141	2.694	14.239	2.202	17.573	2.289	18.618	2.710	16.110	1.857	18.068	2.402
19.5	17.131	2.465	16.816	3.026	14.642	2.405	18.522	2.416	19.624	2.860	16.725	1.960	19.044	2.536
20.5	17.830	2.715	17.473	3.392	15.018	2.618	19.472	2.544	20.630	3.011	17.318	2.063	20.021	2.669
21.5	18.513	2.985	18.112	3.796	15.369	2.844	20.422	2.671	21.637	3.161	17.890	2.166	20.998	2.803
22.5	19.180	3.278	18.733	4.243	15.696	3.081	21.372	2.798	22.643	3.312	18.441	2.269	21.974	2.936
23.5	19.832	3.595	19.338	4.737	16.001	3.332	22.322	2.925	23.649	3.462	18.972	2.372	22.951	3.070
24.5	20.470	3.938	19.926	5.283	16.286	3.597	23.272	3.052	24.656	3.613	19.485	2.475	23.927	3.203
25.5	21.092	4.310	20.497	5.887	16.552	3.876	24.222	3.180	25.662	3.763	19.979	2.579	24.904	3.337
26.5	21.700	4.712	21.054	6.553	16.800	4.170	25.171	3.307	26.668	3.914	20.455	2.682	25.881	3.470
27.5	22.295	5.148	21.595	7.290	17.031	4.481	26.121	3.434	27.675	4.064	20.913	2.785	26.857	3.604
28.5	22.876	5.620	22.121	8.104	17.247	4.808	27.071	3.561	28.681	4.215	21.356	2.888	27.834	3.737

	CAP								WDFW					
	Break and Burn		Surface		Surface pre 1990		Combo		Break and Burn		Surface		Combo	
True Age	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev	Bias	Stdev
29.5	23.443	6.131	22.633	9.004	17.448	5.154	28.021	3.688	29.688	4.365	21.782	2.991	28.811	3.871
30.5	23.998	6.684	23.130	9.998	17.636	5.519	28.971	3.815	30.694	4.516	22.193	3.094	29.787	4.004
31.5	24.539	7.283	23.615	11.097	17.811	5.903	29.921	3.943	31.700	4.666	22.589	3.197	30.764	4.137
32.5	25.069	7.932	24.086	12.312	17.975	6.309	30.871	4.070	32.707	4.817	22.971	3.301	31.740	4.271
33.5	25.586	8.634	24.544	13.653	18.127	6.737	31.821	4.197	33.713	4.967	23.340	3.404	32.717	4.404
34.5	26.092	9.395	24.989	15.136	18.270	7.188	32.770	4.324	34.719	5.118	23.695	3.507	33.694	4.538
35.5	26.586	10.218	25.423	16.775	18.403	7.665	33.720	4.451	35.726	5.268	24.037	3.610	34.670	4.671
36.5	27.068	11.110	25.844	18.586	18.527	8.167	34.670	4.579	36.732	5.419	24.367	3.713	35.647	4.805
37.5	27.540	12.076	26.254	20.587	18.642	8.697	35.620	4.706	37.738	5.570	24.685	3.816	36.624	4.938
38.5	28.001	13.121	26.653	22.799	18.750	9.256	36.570	4.833	38.745	5.720	24.991	3.919	37.600	5.072
39.5	28.451	14.253	27.041	25.243	18.851	9.846	37.520	4.960	39.751	5.871	25.287	4.023	38.577	5.205
40.5	28.891	15.479	27.418	27.944	18.945	10.468	38.470	5.087	40.757	6.021	25.572	4.126	39.553	5.339

Table 7. Pikitch discard ratios.

Fishing	North winter		North summer	
Year	Mean	SD	Mean	SD
1985	0.0222	0.1103	0.0346	0.0419
1986	0.0215	0.1162	0.0343	0.0432
1987	0.0270	0.1186	0.0315	0.045

Table 8. WCGOP petrale sole discard ratios (discard/discard+retained) and bootstrap estimated standard deviations for the commercial fisheries used in the model.

Fishing	North winter		North summer		South winter		South summer	
Year	Mean	SD	Mean	SD	Mean	SD	Mean	SD
2002	0.0066	0.0028	0.2118	0.0270	0.0348	0.0247	0.0580	0.0159
2003	0.0075	0.0186	0.1454	0.0898	0.0062	0.0026	0.0365	0.0126
2004	0.0014	0.0007	0.0911	0.0323	0.0249	0.0525	0.0333	0.0150
2005	0.0006	0.0001	0.0404	0.0090	0.0061	0.0055	0.0120	0.0034
2006	0.0123	0.0213	0.0785	0.0173	0.0752	0.0430	0.0379	0.0158
2007	0.0037	0.0015	0.1070	0.0200	0.0176	0.0139	0.0654	0.0213
2008	0.0275	0.0144	0.0536	0.0113	0.0101	0.0058	0.0263	0.0147
2009	0.0274	0.0158	0.2024	0.0623	0.0212	0.0146	0.0230	0.0083
2010	0.2089	0.0545	0.0886	0.0264	0.2781	0.0598	0.0557	0.0117
2011	0.0012	0.0213	0.0315	0.0213	0.0009	0.0213	0.0411	0.0213
2012	0.0006	0.0213	0.0145	0.0213	0.0034	0.0213	0.0131	0.0213
2013	0.0008	0.0213	0.0231	0.0213	0.0004	0.0213	0.0044	0.0213
2014	0.0017	0.0213			0.0001	0.0213		

Table 9. WCGOP petrale sole mean weight of the discards.

Fishing	North winter		North summer		South summer		South winter	
Year	Mean	CV	Mean	CV	Mean	CV	Mean	CV
2002	0.411	0.438	0.241	0.673	0.410	0.484	0.190	1.170
2003	0.327	0.489	0.234	0.893	0.178	0.492	0.175	0.432
2004	0.363	0.449	0.274	0.406	0.261	0.494	0.183	0.921
2005	0.310	0.649	0.305	0.508	0.279	0.545	0.251	0.395
2006	0.417	0.530	0.267	0.488	0.284	0.657	0.319	0.552
2007	0.380	0.354	0.260	0.821	0.216	0.528	0.369	0.629
2008	0.522	0.336	0.244	0.873	0.296	0.569	0.219	0.530
2009	0.417	0.435	0.217	0.633	0.554	0.236	0.213	1.213
2010	0.602	0.482	0.258	0.700	0.417	0.949	0.184	0.661
2011	0.276	0.685	0.246	0.883	0.310	0.218	0.246	0.827
2012	0.330	0.505	0.312	1.204	0.202	1.166	0.227	0.605
2013	0.448	1.564	0.297	1.486	0.275	1.028	0.234	0.612
2014	0.307	0.738			0.419	0.181		

Table 10. Summary of number of tows generating length-frequency distributions used in the assessment model for the trawl fleets.

Year	North Winter	North Summer	South Winter	South Summer
1948				4
1949			10	4
1955	1	3		
1956	1	8		
1957	10	11		
1958	1	3		
1959	2			
1960		2		
1961		1		
1962				3
1963				
1964	4	3	1	22
1965	3	2	2	14
1966	2	37	8	33
1967	4	44	20	44
1968	15	66	11	87
1969	14	61	14	49
1970	11	64	13	29
1971	12	24	7	37
1972	4	33	23	39
1973	4	25	12	41
1974	5	56	31	35
1975	12	27	11	19
1976	3	6	12	26
1977	2	21	8	38
1978	4	21	17	33
1979	2	23	7	13
1980	9	44	6	81
1981	10	37	36	65
1982	5	17	26	34
1983	4	1	26	33

Year	North Winter	North Summer	South Winter	South Summer
1984	3		13	19
1985		5	19	34
1986	3	9	12	32
1987	7	16	20	29
1988	4	8	12	12
1989	10	13	18	18
1990	4	11	4	2
1991	11	7	24	2
1992	4	11	12	
1993	7	8		
1994	9	9	1	
1995	8	2		
1996	3	4		
1997	5	12		
1998	5	22		
1999	9	15		
2000	14	24		
2001	18	18		9
2002	9	31	15	10
2003	20	35	7	30
2004	27	30	12	15
2005	25	35	9	36
2006	16	51	26	47
2007	37	46	42	103
2008	61	36	58	97
2009	43	66	62	62
2010	38	59	31	52
2011	33	47	18	23
2012	35	44	32	40
2013	44	52	37	43
2014	50	59	22	
2015	13			

Table 11. Summary of the number of tows and the ageing agency and ageing method applied to generate age-frequency distributions used in the assessment model for the trawl fleets.

North Winter				North Summer				South Winter				South Summer			
Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N
1964	W	CAP Early Surface	3	1960	W	CAP Early Surface	1	1966	C	CAP Early Surface	8	1966	C	CAP Early Surface	27
1965	W	CAP Early Surface	3	1961	W	CAP Early Surface	1	1967	C	CAP Early Surface	13	1967	C	CAP Early Surface	11
1967	O	CAP Early Surface	4	1964	W	CAP Early Surface	2	1969	C	CAP Early Surface	8	1968	C	CAP Early Surface	56
1968	W	CAP Early Surface	4	1965	W	CAP Early Surface	2	1970	C	CAP Early Surface	10	1969	C	CAP Early Surface	31
1968	O	CAP Early Surface	11	1966	W	CAP Early Surface	3	1971	C	CAP Early Surface	6	1970	C	CAP Early Surface	29
1969	W	CAP Early Surface	5	1966	O	CAP Early Surface	32	1972	C	CAP Early Surface	23	1971	C	CAP Early Surface	37
1969	O	CAP Early Surface	9	1967	W	CAP Early Surface	5	1973	C	CAP Early Surface	12	1972	C	CAP Early Surface	38
1970	W	CAP Early Surface	1	1967	O	CAP Early Surface	39	1974	C	CAP Early Surface	29	1973	C	CAP Early Surface	38
1970	O	CAP Early Surface	7	1968	W	CAP Early Surface	15	1975	C	CAP Early Surface	9	1974	C	CAP Early Surface	34
1971	W	CAP Early Surface	1	1968	O	CAP Early Surface	41	1976	C	CAP Early Surface	12	1975	C	CAP Early Surface	18
1971	O	CAP Early Surface	4	1969	W	CAP Early Surface	9	1977	C	CAP Early Surface	8	1976	C	CAP Early Surface	23
1972	W	CAP Early Surface	4	1969	O	CAP Early Surface	48	1978	C	CAP Early Surface	9	1977	C	CAP Early Surface	33
1973	W	CAP Early Surface	4	1970	W	CAP Early Surface	13	1979	C	CAP Early Surface	5	1978	C	CAP Early Surface	32
1974	W	CAP Early Surface	5	1970	O	CAP Early Surface	48	1980	C	CAP Early Surface	6	1979	C	CAP Early Surface	11
1975	W	CAP Early Surface	11	1971	W	CAP Early Surface	17	1981	C	CAP Early Surface	18	1980	C	CAP Early Surface	50

Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N
1976	W	CAP Early Surface	3	1971	O	CAP Early Surface	5	1982	C	CAP Early Surface	1	1981	C	CAP Early Surface	27
1977	W	CAP Early Surface	1	1972	W	CAP Early Surface	16	1983	C	CAP Early Surface	12	1982	C	CAP Early Surface	18
1977	O	CAP Early Surface	1	1972	O	CAP Early Surface	16	1984	C	CAP Early Surface	6	1983	C	CAP Early Surface	8
1978	W	CAP Early Surface	3	1973	W	CAP Early Surface	10	1985	C	CAP Early Surface	2	1984	C	CAP Early Surface	3
1978	O	CAP Early Surface	1	1973	O	CAP Early Surface	14	1986	C	CAP BB	4	1985	C	CAP Early Surface	4
1980	W	CAP Early Surface	1	1974	W	CAP Early Surface	35	1987	C	CAP BB	10	1986	C	CAP BB	16
1980	O	CAP Early Surface	6	1974	O	CAP Early Surface	12	1988	C	CAP BB	5	1987	C	CAP BB	12
1981	W	CAP Early Surface	3	1975	W	CAP Early Surface	14	1989	C	CAP BB	2	1988	C	CAP BB	6
1981	O	CAP Combo	5	1975	O	CAP Early Surface	10	1990	C	CAP BB	2	1990	C	CAP BB	1
1982	O	CAP Combo	5	1976	W	CAP Early Surface	5	1991	C	CAP BB	15	2003	C	CAP BB	5
1983	O	CAP Combo	3	1977	W	CAP Early Surface	1	1992	C	CAP BB	1	2004	C	CAP BB	4
1984	O	CAP Combo	2	1977	O	CAP Early Surface	18	2003	C	CAP BB	1	2005	C	CAP BB	10
1986	O	CAP BB	3	1978	W	CAP Early Surface	2	2004	C	CAP BB	1	2006	C	CAP BB	7
1987	O	CAP Combo	7	1978	O	CAP Early Surface	14	2005	C	CAP BB	3	2007	C	CAP BB	5
1988	O	CAP Combo	4	1979	W	CAP Early Surface	3	2006	C	CAP BB	2	2008	C	CAP BB	18
1989	O	CAP BB	10	1979	O	CAP Early Surface	18	2008	C	CAP BB	3	2009	C	CAP BB	3
1990	O	CAP BB	4	1980	W	CAP Early Surface	16	2009	C	CAP BB	4	2011	C	CAP BB	8
1991	O	CAP Combo	11	1980	O	CAP Early Surface	22	2012	C	CAP BB	10	2012	C	CAP BB	1

Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N
1992	O	CAP Combo	4	1981	O	CAP Combo	37	2013	C	CAP BB	2	2013	C	CAP BB	3
1993	O	CAP Combo	7	1982	O	CAP Combo	16	2014	C	CAP BB	1				
1994	O	CAP Combo	9	1983	O	CAP Combo	1								
1995	O	CAP Combo	8	1985	O	CAP BB	5								
1996	O	CAP Combo	3	1986	O	CAP BB	9								
1997	O	CAP Combo	5	1987	O	CAP Combo	16								
1998	W	WDFW Combo	1	1988	O	CAP Combo	8								
1998	O	CAP BB	1	1989	O	CAP BB	12								
1998	O	CAP Surface	3	1990	O	CAP BB	11								
1999	W	WDFW Combo	2	1991	O	CAP Combo	7								
1999	O	CAP BB	4	1992	O	CAP Combo	11								
2000	W	WDFW Combo	5	1993	O	CAP Combo	8								
2000	O	CAP BB	1	1994	O	CAP Combo	9								
2001	W	WDFW Combo	6	1995	O	CAP Combo	2								
2002	W	WDFW Combo	5	1996	O	CAP Combo	4								
2002	O	CAP Surface	4	1997	O	CAP Combo	11								
2003	W	WDFW Combo	5	1998	W	WDFW Combo	11								
2003	O	CAP Surface	7	1998	O	CAP BB	6								

Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N
2004	W	WDFW Combo	7	1998	O	WDFW Combo	5								
2004	O	CAP Surface	8	1999	W	WDFW Combo	9								
2005	W	WDFW Combo	5	1999	O	CAP BB	4								
2006	W	WDFW Combo	5	2000	W	WDFW Combo	12								
2007	W	WDFW Combo	5	2001	W	WDFW Combo	10								
2007	O	CAP BB	4	2001	O	CAP Surface	1								
2008	W	WDFW Combo	3	2002	W	WDFW Combo	10								
2008	O	CAP BB	4	2002	O	CAP Surface	10								
2009	W	WDFW BB	3	2003	W	WDFW Combo	19								
2009	W	WDFW Combo	3	2003	O	CAP Surface	7								
2009	O	CAP BB	28	2004	W	WDFW Combo	18								
2010	W	WDFW BB	4	2004	O	CAP Surface	6								
2010	O	CAP BB	21	2005	W	WDFW Combo	18								
2011	W	WDFW BB	1	2006	W	WDFW Combo	14								
2011	O	CAP BB	11	2007	W	WDFW Combo	16								
2012	W	WDFW BB	2	2007	O	CAP BB	8								
2012	O	CAP BB	12	2008	W	WDFW Combo	17								
2013	W	CAP BB	6	2008	O	CAP BB	9								

Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N	Year	Agency	Method	N
2014	W	CAP BB	2	2009	W	WDFW BB	8								
2015	W	CAP BB	2	2009	W	WDFW Combo	1								
2012	O	CAP BB	30	2009	O	CAP BB	31								
2013	O	CAP BB	33	2010	W	WDFW BB	4								
2014	O	CAP BB	44	2010	O	CAP BB	30								
				2011	W	WDFW BB	11								
				2011	O	CAP BB	31								
				2012	W	WDFW BB	10								
				2013	W	WDFW BB	10								
				2014	W	WDFW BB	10								
				2013	W	WDFW BB	36								
				2014	W	WDFW BB	17								

Table 12. Description of model parameters in the base-case assessment model.

Parameter	Number estimated	Bounds (low, high)	Prior (Mean, SD) Type
Natural mortality (*M*, female)	1	(0.005, 0.5)	(-1.888, 0.33) Lognormal
Natural mortality (*M*, male)	1	(000.5, 0.6)	(-1.58, 0.33) Lognormal
Stock and recruitment			
Ln(R_0)	1	(5, 20)	-
Steepness (*h*)	1	(0.2, 1)	(.8,.09) Normal
σ_r	-	-	-
Ln(Early Recruitment Deviations): 1845-1958	114	(-4, 4)	-
Ln(Main Recruitment Deviations): 1959-2011	53	(-4, 4)	-
Ln(Forecast Recruitment Deviations): 2012-2026	15	(-4, 4)	-
Indices			
Ln(*q*) – NWFSC survey	-	Analytic solution	
Ln(*q*) – Triennial survey (early and late)	-	Analytic solution	
Ln (q) – North winter commercial CPUE	2	(-20, 5)	-
Ln (q) – South winter commercial CPUE	2	(-20, 5)	-
Beta (power) – North winter commercial CPUE	1	(-5, 5)	-
Beta (power) – South winter commercial CPUE	1	(-5, 5)	-
Extra SD – Early Triennial	1	(0.001, 2)	-
Extra SD – Late Triennial	1	(0.001, 2)	-
Selectivity (asymptotic, sex specific, with retention curves)			
Fisheries:			
Length at peak selectivity	4	(15, 75)	-
Width of top (as logistic)	-		-
Ascending width (as exp(width))	4	(-4, 12)	-
Descending width (as exp(width))	-		-
Initial selectivity (as logistic)	-		-
Final selectivity (as logistic)	-		-
Male 1	4	(-15, 15)	-
Male 2	4	(-15, 15)	-
Male 3	-		-
Male 4	-		-
Male 5	-		-
Retention 1	4	(10, 40)	-
Retention 2	4	(0.1, 10)	-
Retention 3	4	(0.001, 1)	-
Retention 4	-		-
Selectivity time block parameters (Peak)	20	(-3, 2)	-
Retention time block parameters (Inflection, Slope, Asymptote)	36	(-3, 4)	-
Surveys:			-
Length at peak selectivity	3	(15, 61)	-
Width of top (as logistic)	-		-
Ascending width (as exp(width))	3	(-4, 12)	-
Descending width (as exp(width))	-		-
Initial selectivity (as logistic)	-		-
Final selectivity (as logistic)	-		-
Male 1	3	(-15, 15)	-
Male 2	3	(-15, 15)	-
Male 3	-		-
Male 4	-		-
Male 5	-		-

Parameter	Number estimated	Bounds (low, high)	Prior (Mean, SD) Type
	Individual growth		
Females:			
Length at age min	1	(10, 45)	-
Length at age max	1	(35, 80)	-
von Bertalanffy *K*	1	(0.04, 0.5)	-
CV of length at age min	1	(0.01, 1)	-
CV of length at age max	1	(0.01, 1)	-
Males:			
Length at age min	1	(-1, 2)	-
Length at age max	1	(-1, 2)	-
von Bertalanffy K	1	(0.04, 0.5)	-
CV of length at age min	1	(0.01, 1)	-
CV of length at age max	1	(0.01, 1)	-
Total: 118 + 182 recruitment deviations = 300 estimated parameters			

Table 13. Time blocks

Block Pattern					
#1 Selectivity	1973-1982	1983-1992	1993-2002	2003-2010	2011-2014
#2 Retention, Winter			2003-2009	2010-2010	2011-2014
#3 Retention, Summer			2003-2008	2009-2010	2011-2014

Table 14. Estimates of the growth parameters from the base case model. Age min is 2 years and Age max is 17.

Parameter	Value
Females:	
Length at age min	15.80
Length at age max	54.41
von Bertalanffy *K*	0.13
CV of length at age min	0.19
CV of length at age max	0.03
Males:	
Length at age min	16.55
Length at age max	43.20
von Bertalanffy *K*	0.20
CV of length at age min	0.14
CV of length at age max	0.05

Table 15. Petrale sole catchability, power, index extra standard deviation, and productivity parameters.

Parameter	Value	~95% CI	
Catchability, Power, Extra SD:			
NWFSC survey catchability (*q*)	3.57		
Triennial survey catchability (*q*) early, late	0.56, 0.78		
North winter commercial CPUE (*q*)	0.001, 1.77	0.000005, 0.20	1.23, 2.56
South winter commercial CPUE (*q*)	0.90, 2.17	0.011, 72.60	1.39, 3.39
North winter commercial CPUE (*Beta*)	-0.17	-0.82, 0.49	
South winter commercial CPUE (*Beta*)	-1.01	-1.56, -0.46	
Q_extraSD Triennial survey early	0.18	-0.03, 0.38	
Q_extraSD Triennial survey late	0.18	-0.04, 0.40	
Productivity:			
LogR_0	9.64	9.25, 10,04	
Steepness (*h*)	0.90	0.80, 1.00	
Female natural mortality (*M*)	0.15	0.11, 0.18	
Male natural mortality (*M*)	0.15	0.12, 0.19	

Table 16. Time-series of population estimates from the base case model.fm

Fishing year	Total biomass (mt)	Spawning biomass (mt)	Depletion	Age-0 recruits	Total catch (mt)	1-SPR	Relative exploitation rate
1876	53,805	33,477	1.00	15,483	1	0	0
1877	53,804	33,476	1.00	15,483	1	0	0
1878	53,803	33,475	1.00	15,483	1	0	0
1879	53,802	33,475	1.00	15,483	1	0	0
1880	53,802	33,474	1.00	15,483	12	0	0
1881	53,791	33,467	1.00	15,484	22	0	0
1882	53,770	33,453	1.00	15,483	33	0.01	0
1883	53,741	33,434	1.00	15,483	44	0.01	0
1884	53,703	33,408	1.00	15,483	55	0.01	0
1885	53,657	33,378	1.00	15,483	65	0.01	0
1886	53,605	33,342	1.00	15,483	76	0.02	0
1887	53,546	33,302	0.99	15,483	87	0.02	0
1888	53,482	33,258	0.99	15,482	97	0.02	0
1889	53,413	33,211	0.99	15,482	108	0.02	0
1890	53,339	33,160	0.99	15,482	119	0.02	0
1891	53,261	33,107	0.99	15,482	130	0.03	0
1892	53,179	33,051	0.99	15,481	140	0.03	0
1893	53,095	32,993	0.99	15,481	151	0.03	0
1894	53,007	32,932	0.98	15,481	162	0.03	0
1895	52,918	32,870	0.98	15,481	172	0.04	0
1896	52,826	32,807	0.98	15,481	183	0.04	0
1897	52,731	32,741	0.98	15,481	194	0.04	0
1898	52,636	32,675	0.98	15,481	205	0.04	0
1899	52,539	32,608	0.97	15,481	216	0.04	0
1900	52,440	32,539	0.97	15,482	226	0.05	0
1901	52,341	32,470	0.97	15,482	237	0.05	0
1902	52,241	32,400	0.97	15,483	248	0.05	0
1903	52,140	32,330	0.97	15,484	258	0.05	0.01
1904	52,038	32,259	0.96	15,485	269	0.05	0.01
1905	51,936	32,188	0.96	15,487	280	0.06	0.01
1906	51,834	32,116	0.96	15,489	291	0.06	0.01
1907	51,731	32,044	0.96	15,491	301	0.06	0.01
1908	51,628	31,972	0.96	15,493	312	0.06	0.01
1909	51,525	31,899	0.95	15,496	323	0.07	0.01
1910	51,422	31,827	0.95	15,500	333	0.07	0.01
1911	51,319	31,754	0.95	15,504	344	0.07	0.01
1912	51,216	31,682	0.95	15,508	355	0.07	0.01
1913	51,114	31,609	0.94	15,514	366	0.07	0.01
1914	51,012	31,537	0.94	15,520	376	0.08	0.01
1915	50,910	31,465	0.94	15,526	387	0.08	0.01
1916	50,809	31,393	0.94	15,534	393	0.08	0.01
1917	50,714	31,325	0.94	15,542	535	0.11	0.01
1918	50,493	31,174	0.93	15,550	431	0.09	0.01
1919	50,390	31,099	0.93	15,561	339	0.07	0.01
1920	50,388	31,091	0.93	15,573	234	0.05	0
1921	50,494	31,155	0.93	15,587	299	0.06	0.01
1922	50,539	31,180	0.93	15,602	432	0.09	0.01
1923	50,459	31,123	0.93	15,617	435	0.09	0.01
1924	50,385	31,069	0.93	15,633	542	1-0.11	0.01

Fishing year	Total biomass (mt)	Spawning biomass (mt)	Depletion	Age-0 recruits	Total catch (mt)	1-SPR	Relative exploitation rate
1925	50,216	30,953	0.92	15,649	537	0.11	0.01
1926	50,065	30,847	0.92	15,666	530	0.11	0.01
1927	49,937	30,755	0.92	15,685	643	0.13	0.01
1928	49,716	30,601	0.91	15,704	631	0.13	0.01
1929	49,527	30,468	0.91	15,724	720	0.14	0.01
1930	49,273	30,291	0.90	15,747	671	0.14	0.01
1931	49,090	30,159	0.90	15,775	688	0.14	0.01
1932	48,916	30,032	0.90	15,813	821	0.16	0.02
1933	48,642	29,834	0.89	15,864	856	0.16	0.02
1934	48,373	29,635	0.89	15,951	1,639	0.28	0.03
1935	47,393	28,966	0.87	16,101	1,621	0.28	0.03
1936	46,510	28,352	0.85	16,338	1,329	0.24	0.03
1937	45,997	27,967	0.84	16,667	1,909	0.32	0.04
1938	45,013	27,263	0.81	17,035	2,178	0.36	0.05
1939	43,895	26,453	0.79	17,274	2,670	0.42	0.06
1940	42,453	25,407	0.76	17,095	2,565	0.41	0.06
1941	41,288	24,524	0.73	16,408	2,310	0.39	0.06
1942	40,531	23,906	0.71	15,472	3,229	0.48	0.08
1943	39,043	22,816	0.68	14,693	3,366	0.51	0.09
1944	37,554	21,784	0.65	14,399	2,665	0.46	0.07
1945	36,796	21,312	0.64	14,426	2,497	0.45	0.07
1946	36,194	21,000	0.63	13,946	3,793	0.57	0.11
1947	34,330	19,889	0.59	12,641	3,141	0.54	0.09
1948	33,071	19,164	0.57	11,429	4,516	0.65	0.14
1949	30,453	17,559	0.52	10,704	4,413	0.67	0.15
1950	27,890	16,017	0.48	10,594	4,631	0.7	0.17
1951	25,093	14,333	0.43	11,091	3,039	0.62	0.12
1952	23,801	13,621	0.41	11,976	2,785	0.61	0.12
1953	22,723	13,025	0.39	12,584	2,363	0.59	0.11
1954	22,029	12,627	0.38	12,809	2,892	0.65	0.13
1955	20,850	11,835	0.35	12,686	2,572	0.64	0.13
1956	20,056	11,214	0.33	12,487	2,277	0.62	0.12
1957	19,640	10,817	0.32	12,446	2,919	0.69	0.15
1958	18,707	10,113	0.30	12,598	2,874	0.7	0.16
1959	17,908	9,536	0.28	12,787	2,455	0.67	0.14
1960	17,599	9,282	0.28	16,892	2,869	0.71	0.17
1961	16,997	8,842	0.26	16,120	3,451	0.77	0.21
1962	15,985	8,103	0.24	10,522	3,297	0.77	0.21
1963	15,274	7,482	0.22	11,279	3,349	0.79	0.23
1964	14,589	6,912	0.21	15,899	2,806	0.77	0.2
1965	14,424	6,802	0.20	14,688	2,663	0.76	0.19
1966	14,429	6,905	0.21	30,158	2,689	0.76	0.19
1967	14,536	6,968	0.21	12,966	2,731	0.77	0.2
1968	14,875	6,905	0.21	13,719	2,442	0.74	0.18
1969	15,706	7,002	0.21	12,660	2,497	0.74	0.16
1970	16,554	7,278	0.22	13,523	3,218	0.78	0.2
1971	16,657	7,523	0.22	13,080	3,333	0.78	0.21
1972	16,498	7,856	0.23	10,701	3,598	0.8	0.22
1973	15,891	7,852	0.23	9,089	3,093	0.78	0.2

Fishing year	Total biomass (mt)	Spawning biomass (mt)	Depletion	Age-0 recruits	Total catch (mt)	1-SPR	Relative exploitation rate
1974	15,490	7,839	0.23	11,867	3,905	0.83	0.26
1975	14,067	7,156	0.21	11,970	3,765	0.84	0.27
1976	12,588	6,387	0.19	15,213	3,094	0.83	0.25
1977	11,656	5,865	0.18	14,029	2,544	0.8	0.23
1978	11,313	5,529	0.17	10,251	3,271	0.86	0.3
1979	10,386	4,759	0.14	10,053	3,390	0.88	0.34
1980	9,380	4,006	0.12	11,788	2,842	0.88	0.32
1981	8,839	3,708	0.11	10,725	2,738	0.88	0.32
1982	8,338	3,548	0.11	9,550	2,752	0.88	0.35
1983	7,822	3,315	0.10	11,520	2,534	0.9	0.34
1984	7,389	3,150	0.09	17,745	1,977	0.87	0.28
1985	7,427	3,188	0.10	11,349	1,948	0.88	0.28
1986	7,530	3,218	0.10	6,509	2,205	0.89	0.32
1987	7,423	3,051	0.09	8,446	2,652	0.92	0.37
1988	6,788	2,669	0.08	13,087	2,420	0.92	0.37
1989	6,236	2,484	0.07	16,134	2,361	0.92	0.4
1990	5,695	2,343	0.07	15,129	2,032	0.92	0.39
1991	5,525	2,190	0.07	10,122	2,237	0.93	0.45
1992	5,295	1,803	0.05	5,219	1,923	0.93	0.4
1993	5,376	1,667	0.05	9,937	1,687	0.9	0.33
1994	5,722	1,817	0.05	12,252	1,544	0.88	0.28
1995	6,189	2,281	0.07	7,614	1,675	0.86	0.29
1996	6,531	2,695	0.08	9,207	1,925	0.87	0.31
1997	6,611	2,795	0.08	8,661	2,047	0.87	0.32
1998	6,548	2,676	0.08	20,417	1,737	0.85	0.28
1999	6,795	2,761	0.08	13,899	1,617	0.83	0.25
2000	7,341	2,971	0.09	9,865	1,912	0.85	0.29
2001	7,842	3,014	0.09	8,380	1,977	0.85	0.27
2002	8,400	3,058	0.09	9,431	2,068	0.85	0.26
2003	8,869	3,323	0.10	7,919	1,787	0.81	0.21
2004	9,500	3,962	0.12	9,381	2,282	0.83	0.25
2005	9,554	4,350	0.13	10,118	2,999	0.86	0.32
2006	8,785	4,129	0.12	18,473	2,209	0.82	0.26
2007	8,653	4,050	0.12	22,002	2,397	0.83	0.29
2008	8,541	3,744	0.11	29,151	2,172	0.83	0.28
2009	9,056	3,546	0.11	12,881	2,320	0.85	0.28
2010	9,995	3,388	0.10	9,733	909	0.67	0.1
2011	12,593	4,306	0.13	9,720	780	0.58	0.06
2012	15,413	5,826	0.17	13,972	1,134	0.6	0.08
2013	17,773	7,711	0.23	13,062	1,953	0.66	0.11
2014	19,129	9,300	0.28	14,452	2,361	0.66	0.13
2015	19,824	10,290	0.31	14,580		0.69	0.16

Table 17. Asymptotic standard deviation estimates for spawning biomass and recruitment.

Fishing year	SD Spawning biomass (mt)	SD Age-0 recruits (1000s)	Year	SD Spawning biomass (mt)	SD Age-0 recruits (1000s)	Year	SD Spawning biomass (mt)	SD Age-0 recruits (1000s)
1876	4,198	6,940	1923	3,995	7,063	1970	604	2,955
1877	4,199	6,940	1924	3,980	7,078	1971	581	2,919
1878	4,200	6,940	1925	3,962	7,094	1972	553	2,466
1879	4,200	6,940	1926	3,943	7,110	1973	518	2,149
1880	4,201	6,940	1927	3,921	7,128	1974	482	2,483
1881	4,201	6,940	1928	3,896	7,147	1975	438	2,600
1882	4,203	6,940	1929	3,868	7,167	1976	395	3,083
1883	4,204	6,940	1930	3,836	7,188	1977	354	3,080
1884	4,205	6,940	1931	3,801	7,214	1978	317	2,680
1885	4,207	6,940	1932	3,762	7,245	1979	285	2,690
1886	4,207	6,939	1933	3,719	7,285	1980	264	2,924
1887	4,208	6,939	1934	3,671	7,348	1981	254	2,654
1888	4,207	6,939	1935	3,614	7,448	1982	245	2,429
1889	4,207	6,939	1936	3,550	7,603	1983	237	2,719
1890	4,206	6,939	1937	3,482	7,815	1984	225	3,433
1891	4,204	6,939	1938	3,403	8,048	1985	209	2,663
1892	4,203	6,939	1939	3,315	8,183	1986	190	1,740
1893	4,200	6,939	1940	3,216	8,033	1987	170	2,157
1894	4,198	6,939	1941	3,108	7,558	1988	154	3,077
1895	4,195	6,939	1942	2,993	6,941	1989	144	3,620
1896	4,192	6,939	1943	2,866	6,443	1990	137	3,623
1897	4,189	6,939	1944	2,729	6,248	1991	131	2,538
1898	4,185	6,939	1945	2,592	6,262	1992	125	1,476
1899	4,181	6,940	1946	2,458	5,983	1993	126	2,148
1900	4,177	6,940	1947	2,324	5,226	1994	135	2,498
1901	4,173	6,941	1948	2,201	4,552	1995	146	1,826
1902	4,169	6,942	1949	2,076	4,151	1996	154	1,883
1903	4,164	6,942	1950	1,952	4,059	1997	154	1,830
1904	4,159	6,944	1951	1,829	4,259	1998	152	3,167
1905	4,154	6,945	1952	1,720	4,668	1999	153	2,333
1906	4,149	6,947	1953	1,618	4,960	2000	154	1,707
1907	4,143	6,949	1954	1,524	5,001	2001	153	1,457
1908	4,137	6,951	1955	1,435	4,826	2002	155	1,593
1909	4,131	6,954	1956	1,349	4,572	2003	168	1,439
1910	4,125	6,957	1957	1,255	4,344	2004	189	1,700
1911	4,118	6,960	1958	1,144	4,117	2005	201	1,917
1912	4,111	6,965	1959	1,021	4,056	2006	205	3,334
1913	4,103	6,969	1960	898	4,362	2007	210	4,015
1914	4,096	6,975	1961	777	3,811	2008	218	5,220
1915	4,087	6,981	1962	674	2,650	2009	240	2,752
1916	4,078	6,988	1963	607	2,629	2010	283	2,327
1917	4,069	6,995	1964	575	3,367	2011	360	2,672
1918	4,058	7,003	1965	579	3,500	2012	478	4,448
1919	4,046	7,012	1966	601	5,535	2013	633	5,320
1920	4,035	7,023	1967	620	3,288	2014	796	6,312
1921	4,022	7,036	1968	625	3,024			
1922	4,010	7,050	1969	619	2,812			

Table 18. Results from sensitivity model runs.

Label	Base	High M	Low M	No 2014 length comp	No 2014 survey CPUE	No 2014 age comp
TOTAL_like	1509.18	1510.76	1510.15	1461.53	1510.63	1456.71
Survey_like	-77.81	-77.16	-78.09	-77.36	-75.91	-77.94
Discard_like	-167.79	-167.95	-167.84	-167.76	-167.82	-167.80
Mean_body_wt_like	-80.70	-80.70	-80.71	-80.70	-80.71	-80.70
Length_comp_like	826.03	827.23	826.36	778.78	826.62	824.62
Age_comp_like	1033.34	1032.98	1032.74	1032.53	1032.75	982.59
SR_BH_steep	0.90	0.82	0.95	0.89	0.89	0.90
NatM_p_1_Fem_GP_1	0.15	0.17	0.13	0.40	0.40	0.40
L_at_Amin_Fem_GP_1	15.72	15.71	15.78	0.15	0.15	0.15
L_at_Amax_Fem_GP_1	54.41	54.52	54.33	15.67	15.74	15.58
VonBert_K_Fem_GP_1	0.13	0.13	0.14	54.41	54.40	54.50
CV_young_Fem_GP_1	0.19	0.19	0.19	0.13	0.13	0.13
CV_old_Fem_GP_1	0.03	0.03	0.03	0.19	0.19	0.19
NatM_p_1_Mal_GP_1	0.15	0.18	0.13	0.03	0.03	0.02
L_at_Amin_Mal_GP_1	16.50	16.46	16.53	0.16	0.16	0.15
L_at_Amax_Mal_GP_1	43.20	43.27	43.13	16.52	16.51	16.39
VonBert_K_Mal_GP_1	0.20	0.20	0.20	43.21	43.19	43.26
CV_young_Mal_GP_1	0.14	0.14	0.14	0.20	0.20	0.20
CV_old_Mal_GP_1	0.05	0.05	0.05	0.14	0.14	0.14
SSB_Unfished_thou_mt	33.48	30.62	36.55	32.52	33.06	33.70
Bratio_2014	0.28	0.32	0.24	0.28	0.27	0.28
Bratio_2015	0.31	0.35	0.27	0.32	0.30	0.31
F_2014	0.13	0.12	0.13	0.12	0.13	0.13
F_2015	0.15	0.14	0.15	0.14	0.15	0.15
SSB_Btgt_thou_mt	8.37	7.66	9.14	8.13	8.27	8.43
SPR_Btgt	0.27	0.29	0.26	0.27	0.27	0.27
Fstd_Btgt	0.18	0.18	0.17	0.18	0.18	0.18
TotYield_Btgt_thou_mt	2.95	2.92	2.88	2.97	2.94	2.96
SSB_SPRtgt_thou_mt	9.38	7.94	10.64	9.00	9.19	9.46
Fstd_SPRtgt	0.16	0.18	0.14	0.17	0.16	0.16
TotYield_SPRtgt_thou_mt	2.91	2.91	2.81	2.94	2.91	2.91
SSB_MSY_thou_mt	6.92	7.26	6.78	6.88	6.98	6.99
SPR_MSY	0.23	0.28	0.20	0.24	0.24	0.23
Fstd_MSY	0.21	0.19	0.21	0.21	0.21	0.21
TotYield_MSY_thou_mt	2.98	2.92	2.92	2.99	2.96	2.98
RetYield_MSY	2945	2890	2896	2960	2928	2948

Table 19. Projection of potential petrale sole OFL, ACL, spawning biomass and depletion for the base case model based on the SPR= 0.3 fishing mortality target and $F_{30\%}$ overfishing limit/target (OFL). Assuming the ACLs of 2,816 and 2,910 mt are attained in 2015 and 2016.

Year	Predicted OFL (mt)	ACL Catch (mt)	Age 3+ biomass (mt)	Spawning Biomass (mt)	Depletion (%)
2015	3072	2816	19355	10290	0.31
2016	3206	2910	19360	10512	0.31
2017	3280	3150	19182	10358	0.31
2018	3152	3027	18747	9964	0.30
2019	3042	2921	18458	9669	0.29
2020	2976	2857	18324	9509	0.28
2021	2950	2832	18301	9460	0.28
2022	2949	2831	18336	9474	0.28
2023	2960	2842	18392	9514	0.28
2024	2973	2854	18446	9558	0.29
2025	2985	2866	18489	9595	0.29
2026	2993	2874	18521	9621	0.29

Table 20. Decision table of 12-year projections for alternate states of nature (columns) and management options (rows) beginning in 2017. Relative probabilities of each state of nature are based on low and high values for the rate of female natural mortality.

			State of nature					
			Low Female M = 0.12		Base case Female M = 0.14		High Female M = 0.16	
Relative probability			0.25		0.5		0.25	
Manage-ment decision	Year	Catch (mt)	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion
ABC 25:5 Rule	2017	3112	10242	0.280	10358	0.309	10342	0.338
	2018	3028	9957	0.272	9964	0.298	9846	0.322
	2019	2940	9707	0.266	9669	0.289	9463	0.309
	2020	2872	9542	0.261	9510	0.284	9243	0.302
	2021	2828	9460	0.259	9460	0.282	9163	0.299
	2022	2802	9438	0.258	9474	0.282	9172	0.300
	2023	2788	9453	0.259	9515	0.284	9225	0.301
	2024	2780	9489	0.260	9558	0.286	9292	0.303
	2025	2775	9534	0.261	9595	0.288	9356	0.306
	2026	2772	9583	0.262	9622	0.290	9412	0.307
SPR target = 0.34; Biomass target = 0.3	2017	2627	10242	0.280	10358	0.309	10342	0.338
	2018	2629	10502	0.287	10262	0.307	9818	0.321
	2019	2615	10727	0.293	10207	0.305	9459	0.309
	2020	2605	10951	0.300	10228	0.306	9290	0.303
	2021	2602	11176	0.306	10312	0.308	9261	0.302
	2022	2607	11390	0.312	10426	0.311	9305	0.304
	2023	2615	11582	0.317	10543	0.315	9371	0.306
	2024	2624	11749	0.321	10649	0.318	9429	0.308
	2025	2632	11890	0.325	10738	0.321	9468	0.309
	2026	2639	12007	0.329	10810	0.323	9491	0.310
SPR target = 0.45; Biomass target = 0.4	2017	1711	10242	0.280	10358	0.309	10342	0.338
	2018	1804	10801	0.296	10820	0.323	10667	0.348
	2019	1877	11314	0.310	11256	0.336	10988	0.359
	2020	1941	11803	0.323	11690	0.349	11336	0.370
	2021	1998	12269	0.336	12120	0.362	11698	0.382
	2022	2050	12704	0.348	12528	0.374	12051	0.394
	2023	2096	13102	0.358	12904	0.385	12376	0.404
	2024	2136	13462	0.368	13244	0.396	12667	0.414
	2025	2171	13784	0.377	13549	0.405	12924	0.422
	2026	2200	14071	0.385	13819	0.413	13150	0.429

11 Figures

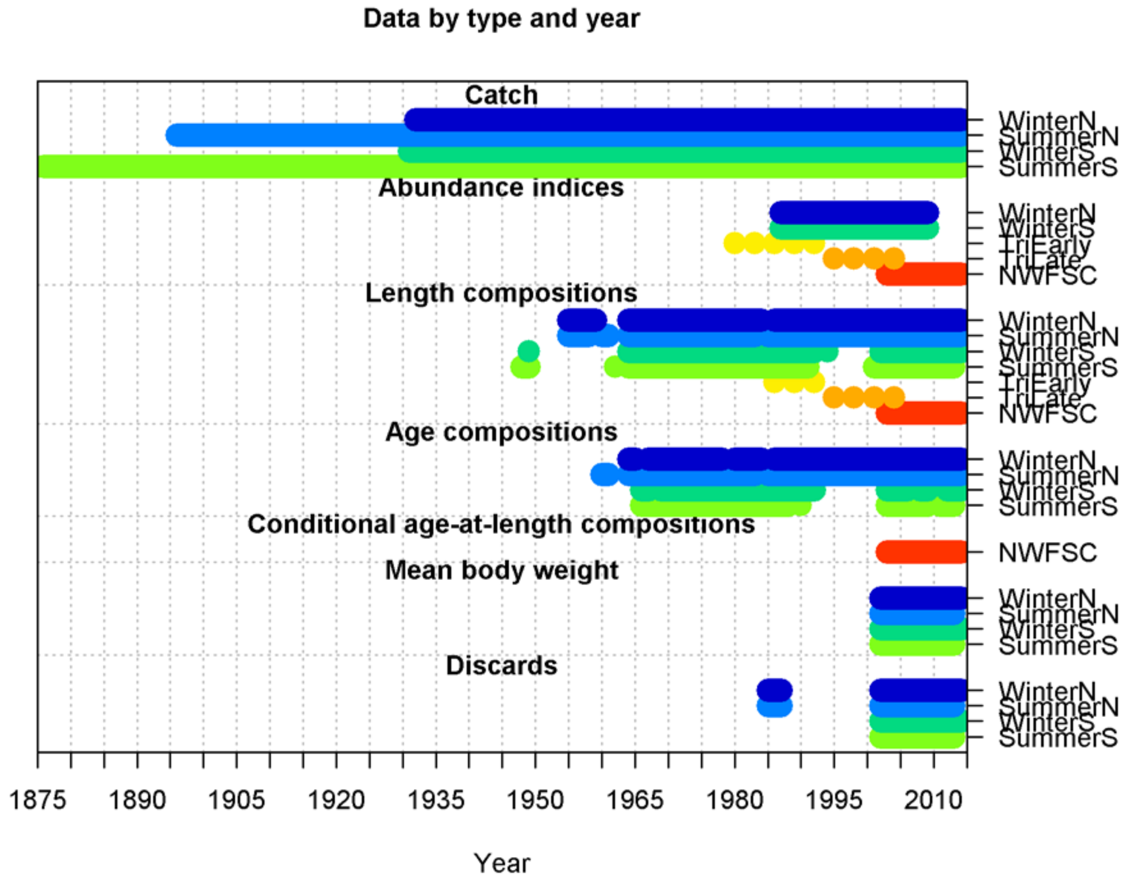


Figure 1 - Data used in this assessment.

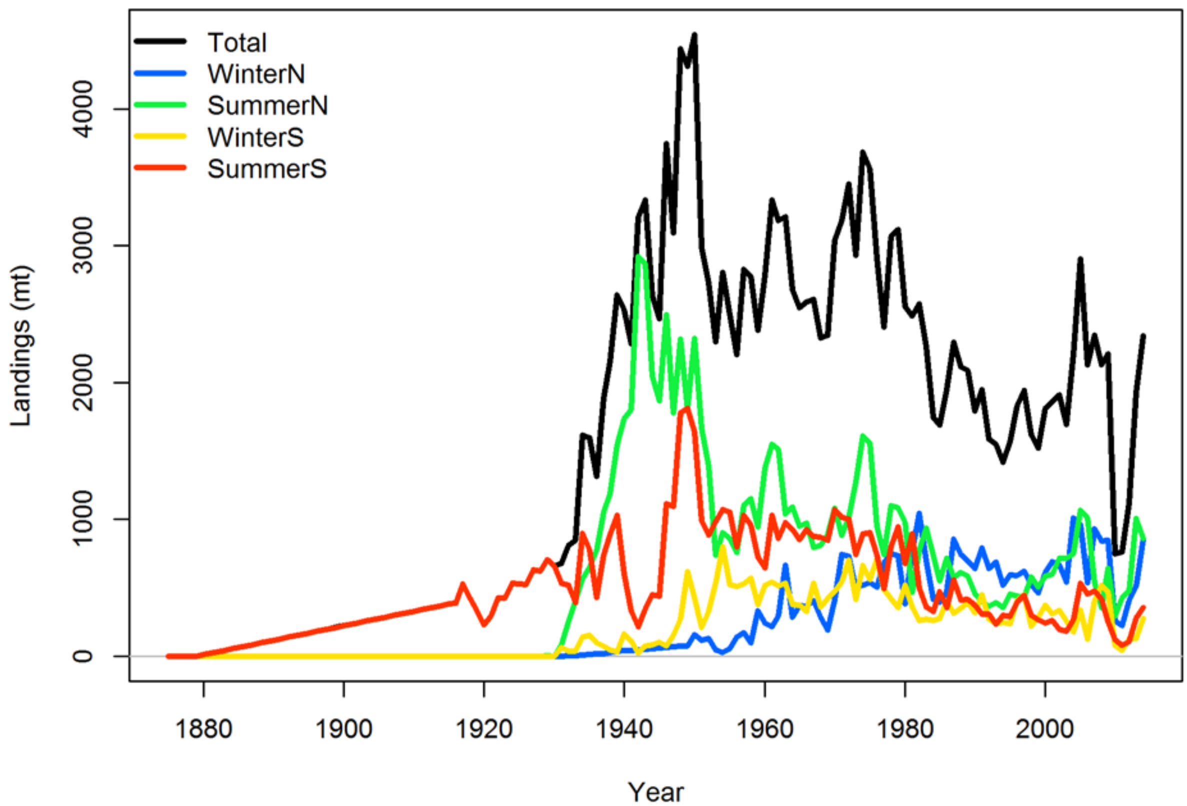


Figure 2. Time series of total landings and landings for each fleet**.**

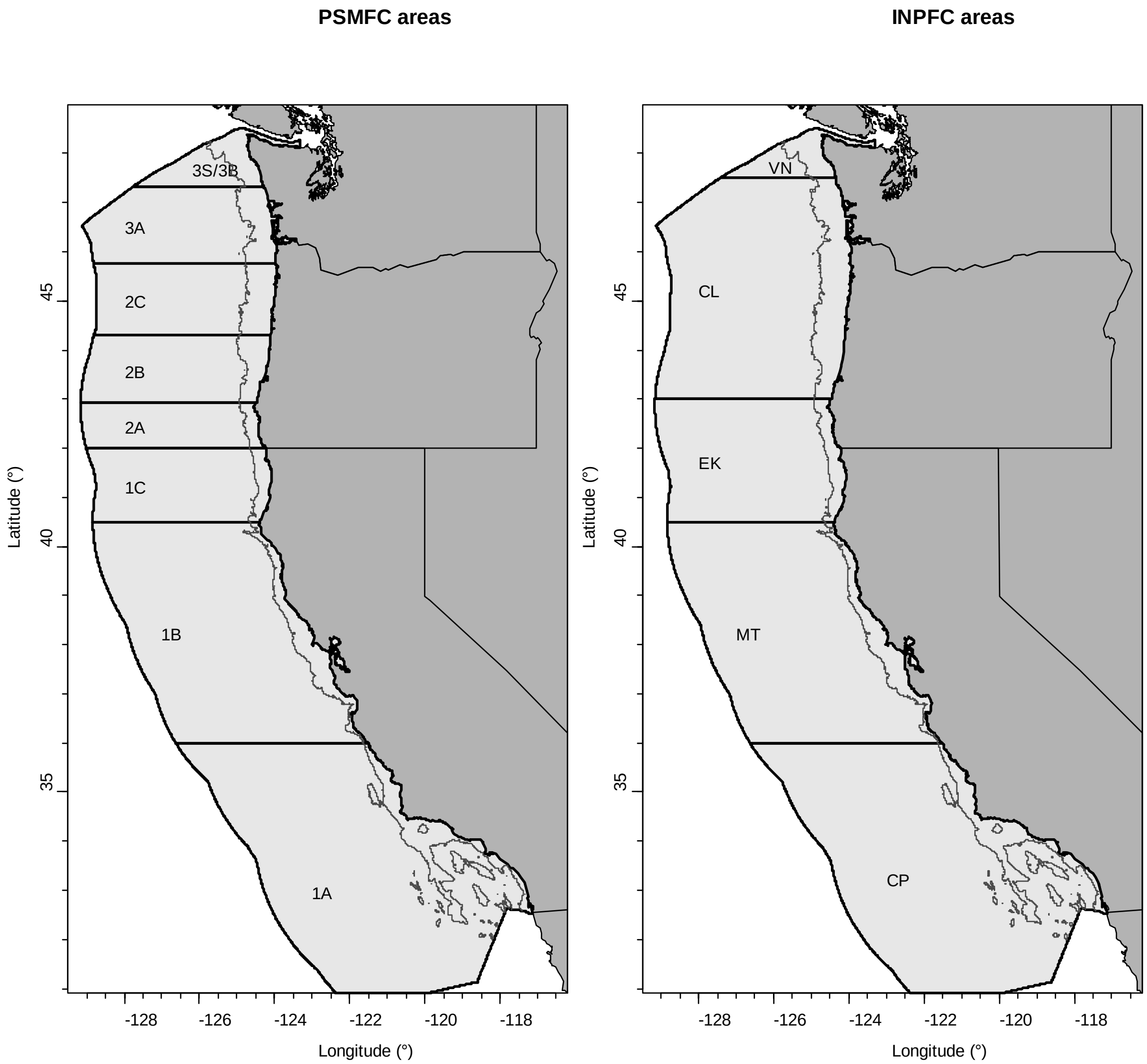


Figure 3. Map showing PSMFC and INPFC boundaries. The solid gray line off the coast is the 300 fathom depth contour.

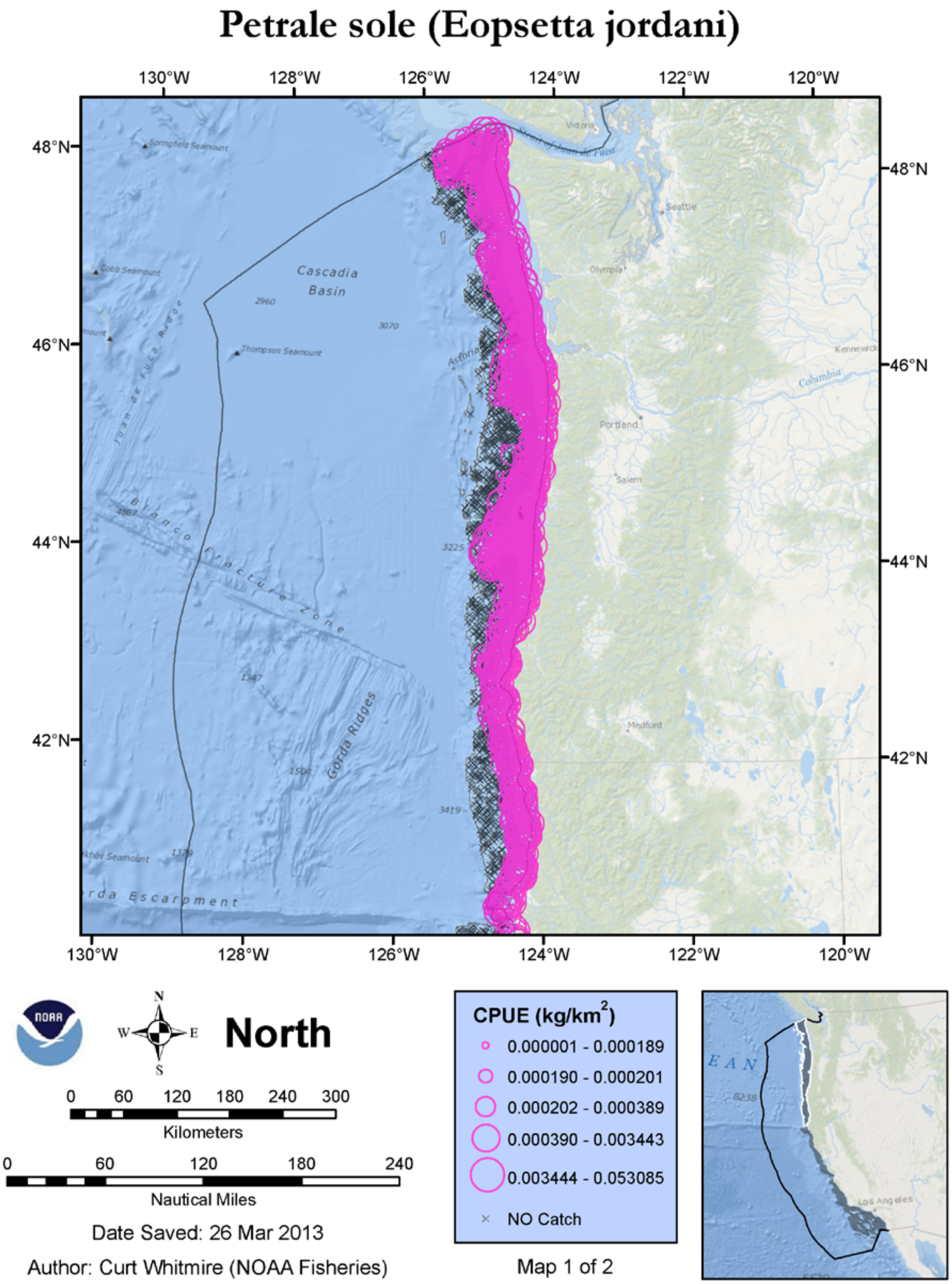


Figure 4. NWFSC survey catch rates, north.

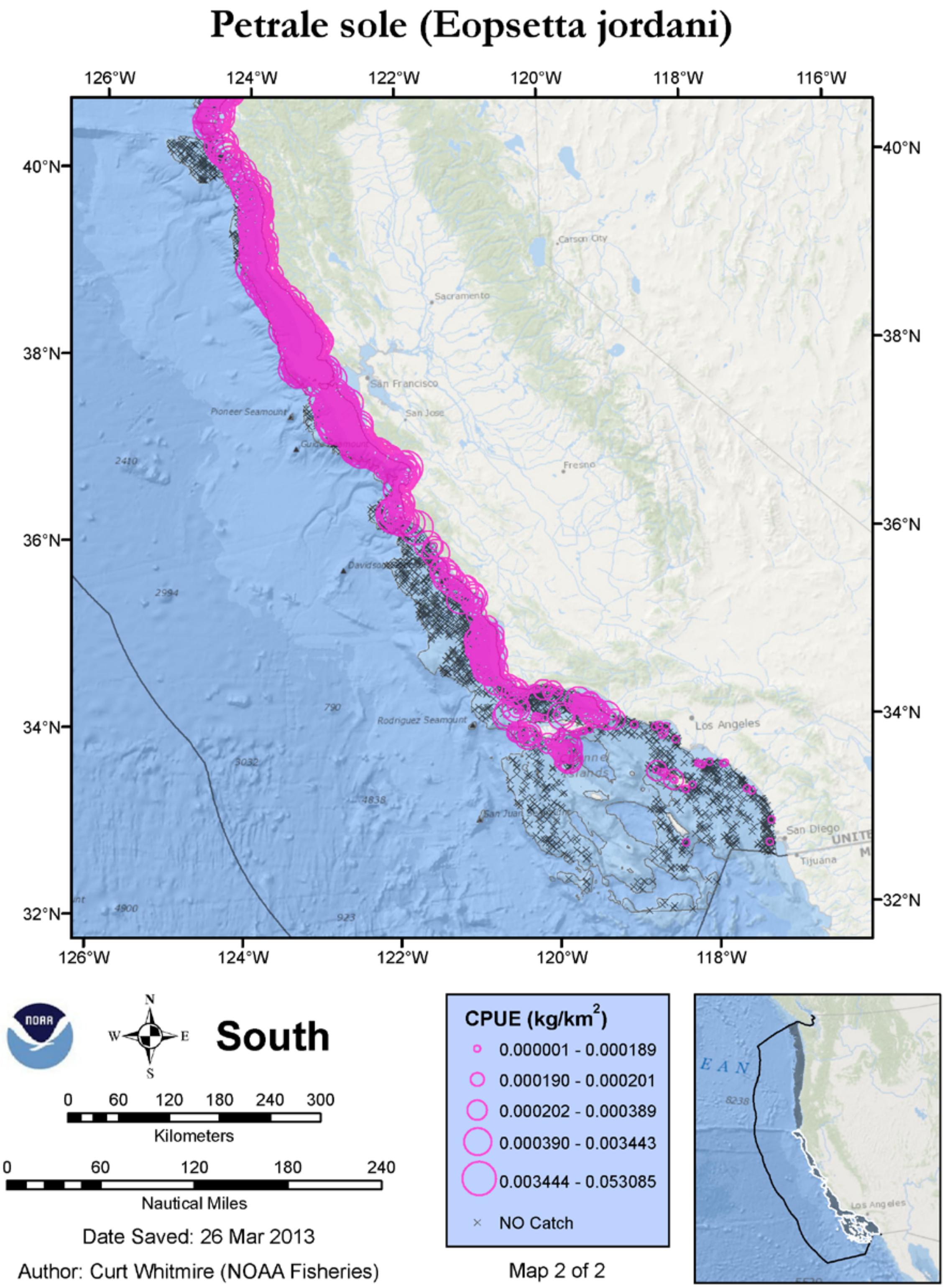


Figure 5. NWFSC survey catch rates, south.

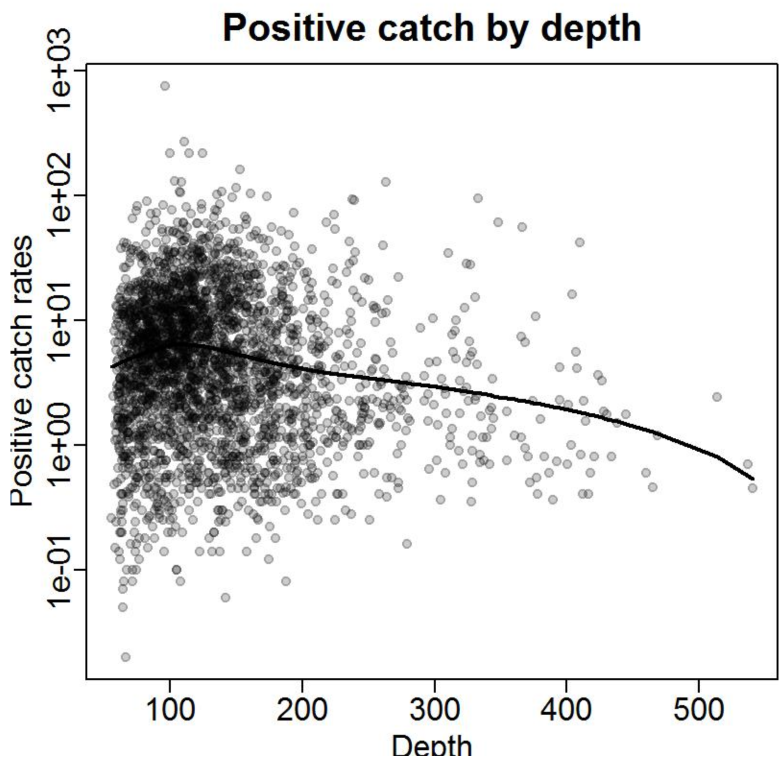


Figure 6. Plots of the catch rates for all positive tows over depth for the NWFSC survey.

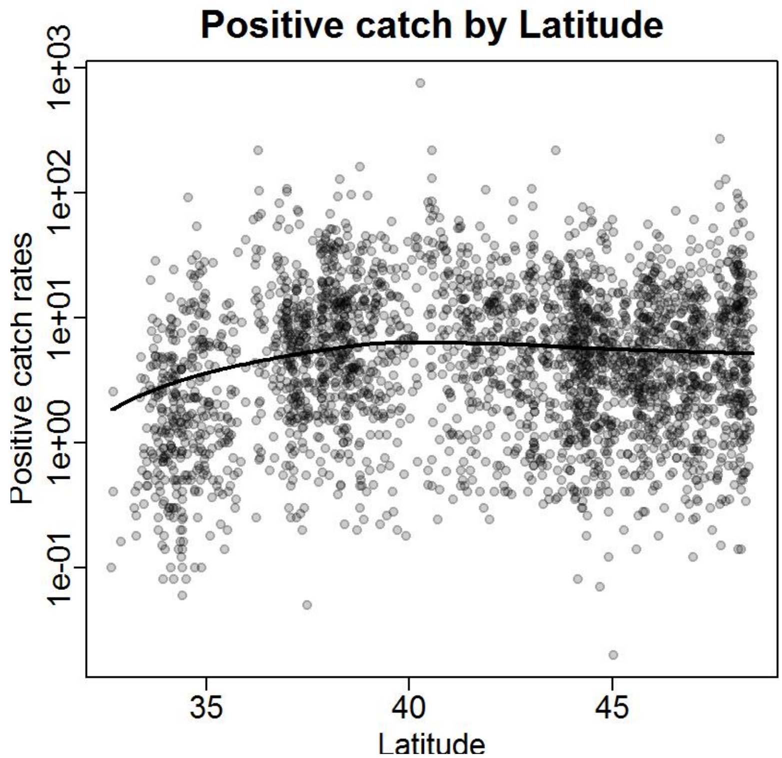


Figure 7. Plots of the catch rates for all positive tows over latitude for the NWFSC survey.

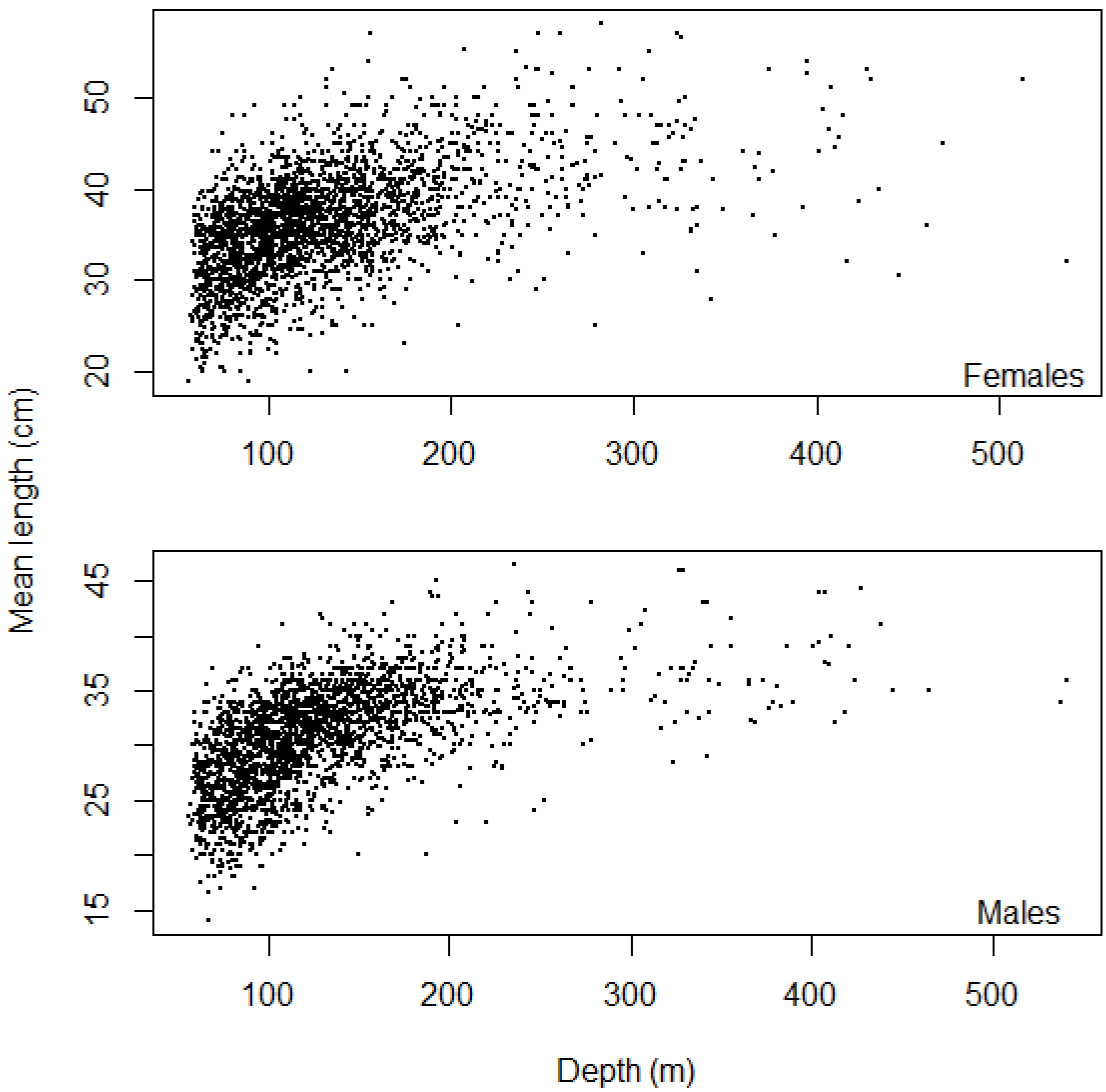


Figure 8. NWFSC survey mean length per tow by depth for females and males.

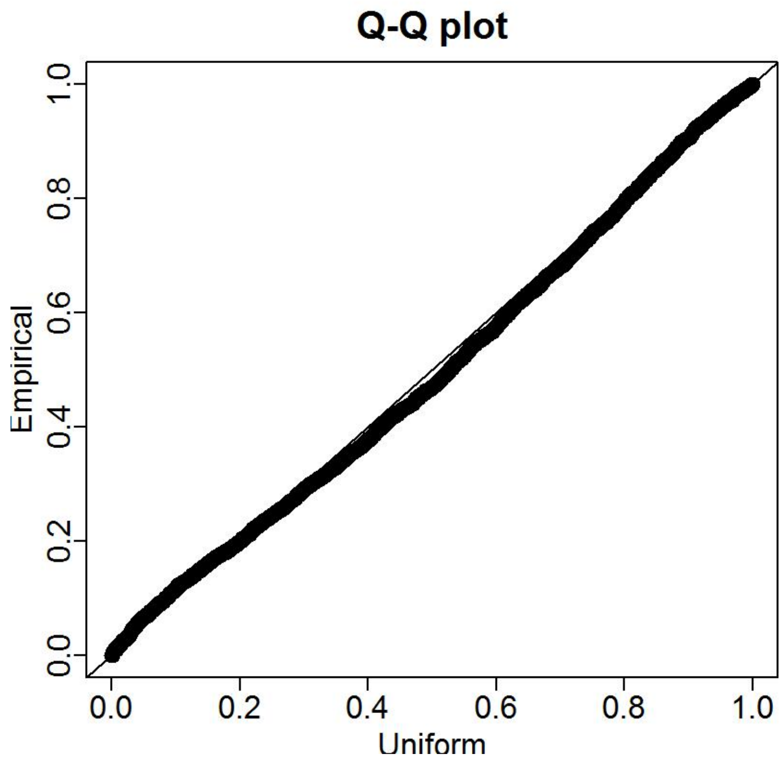


Figure 9. NWFSC GLMM Q-Q plot.

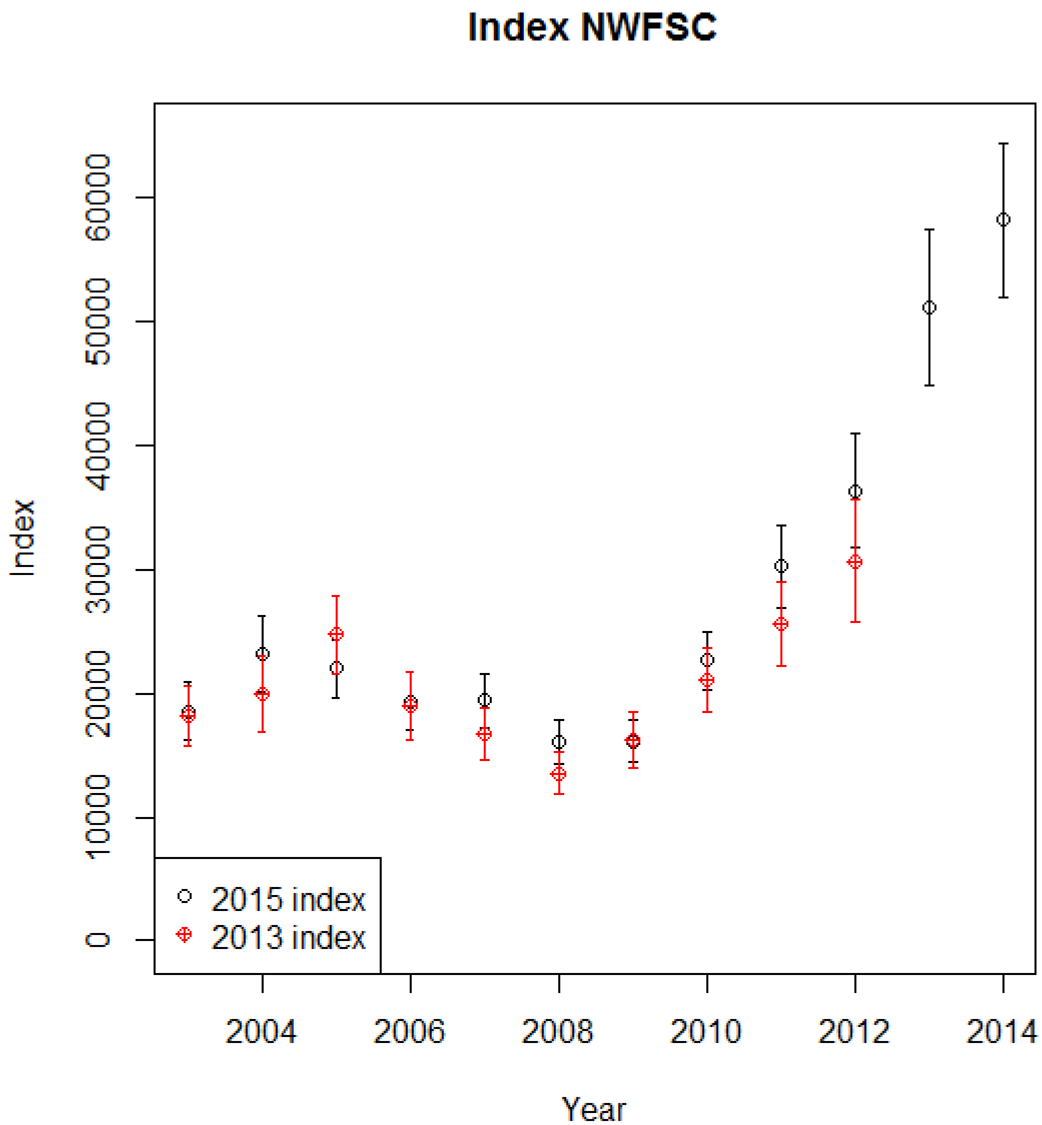


Figure 10. GLMM biomass median estimates from the NWFSC survey.

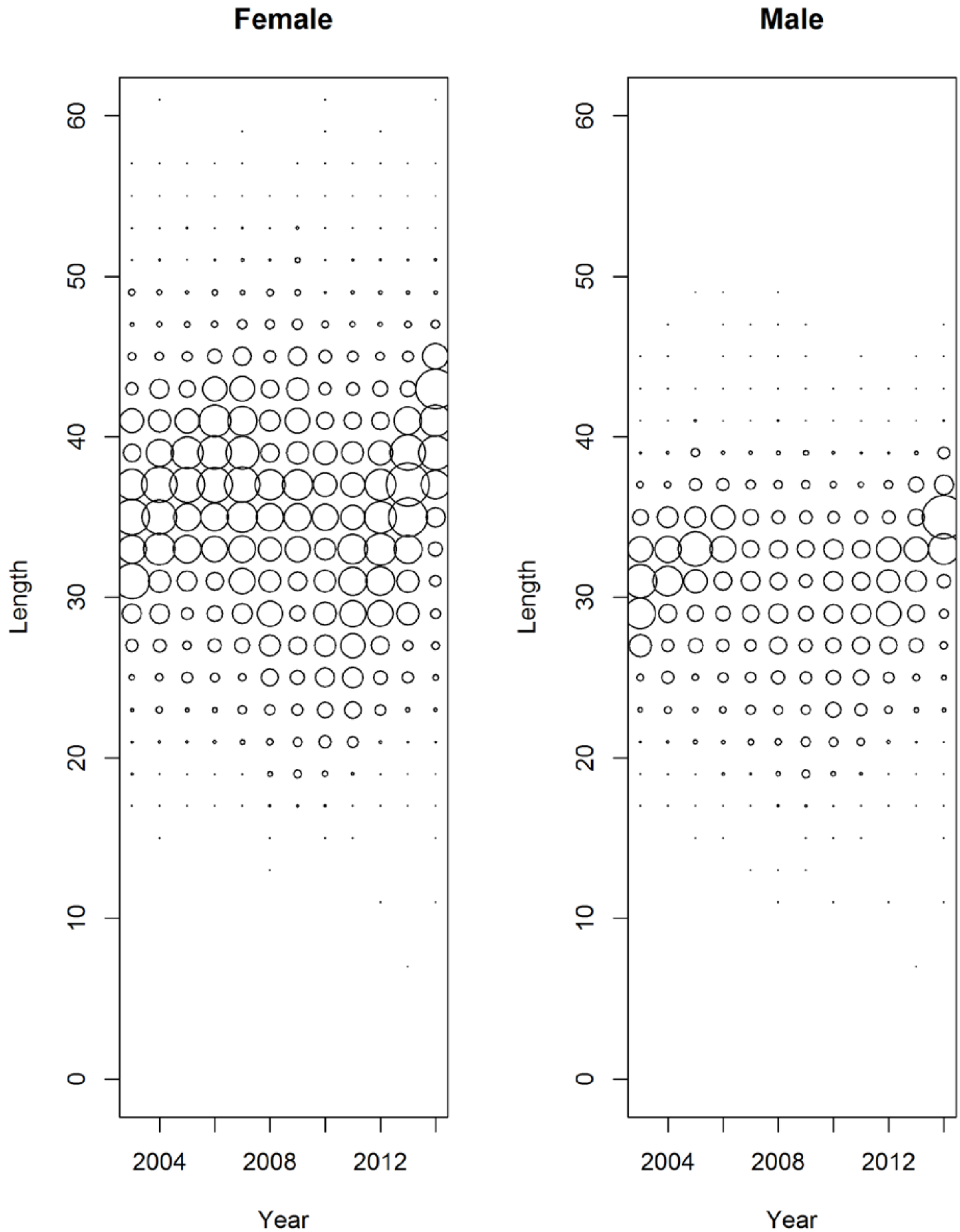


Figure 11. Female (left panel) and male (right panel) length frequencies for the NWFSC survey.

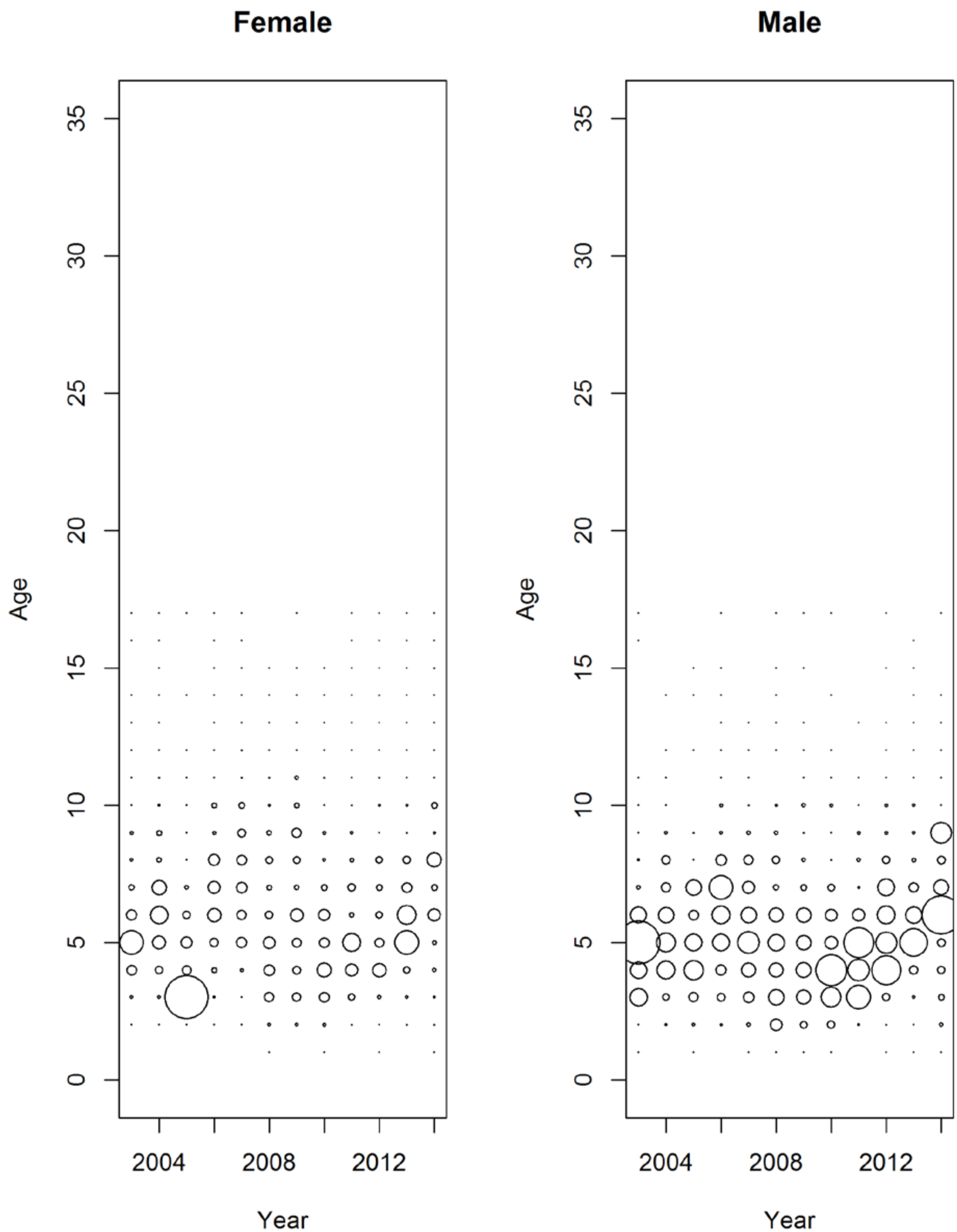


Figure 12. Female (left panel) and male (right panel) age frequencies from the NWFSC survey.

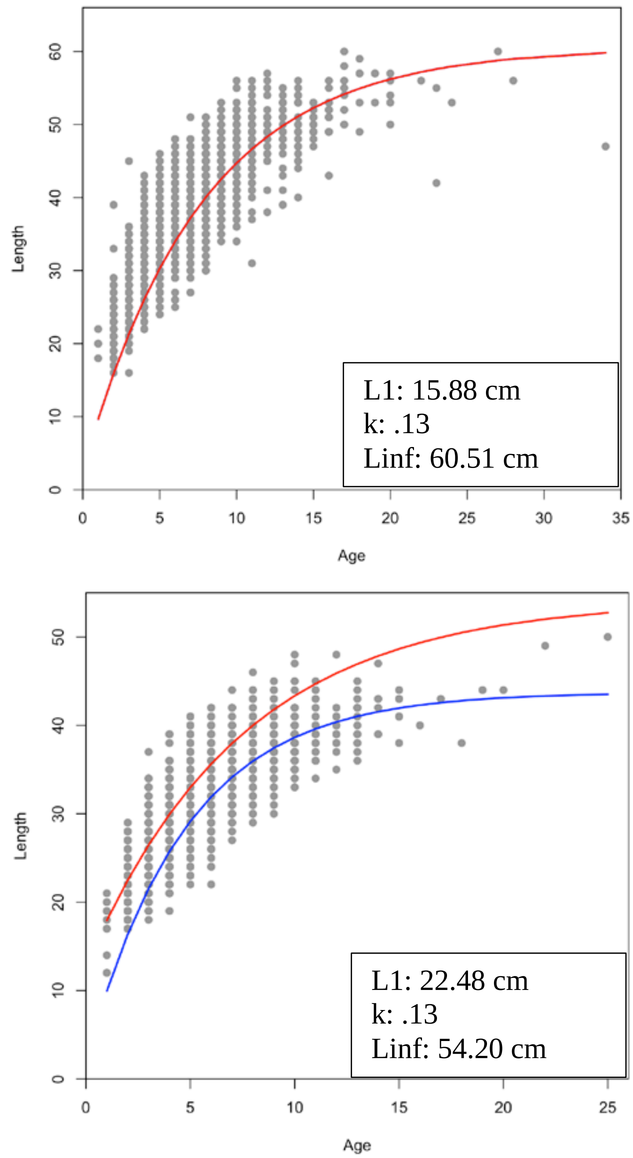


Figure 13. Length at age for females (top) and males (bottom) from the NWFSC survey with fits to the von Bertalanffy growth curve. The blue line depicts the starting values, while the red line depicts the final fit.

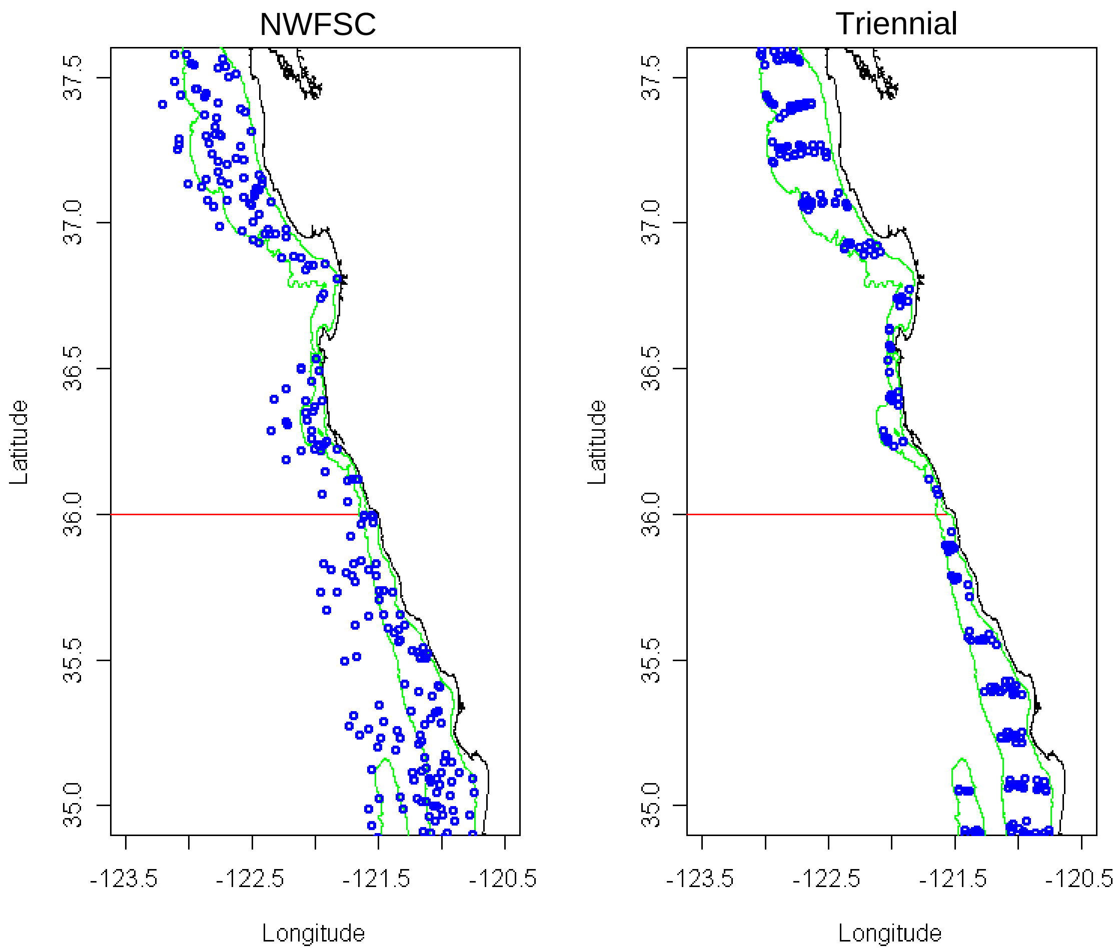


Figure 14. Survey tow locations in 2004, showing the difference in station design for the NWFSC trawl survey relative to the Triennial trawl survey.

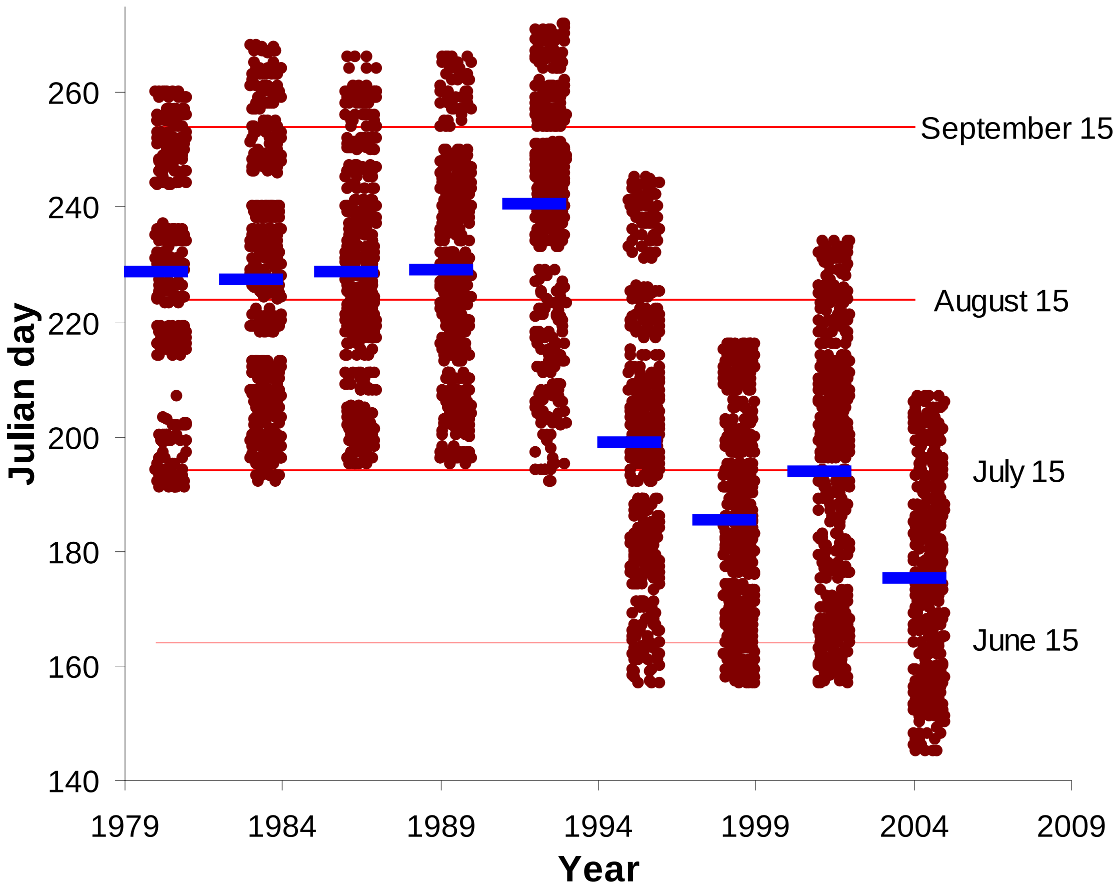


Figure 15. Distribution of dates of operation for the triennial survey (1980-2004). Solid bars show the mean date for each survey year, points represent individual hauls dates, but are jittered to allow better delineation of the distribution of individual points.

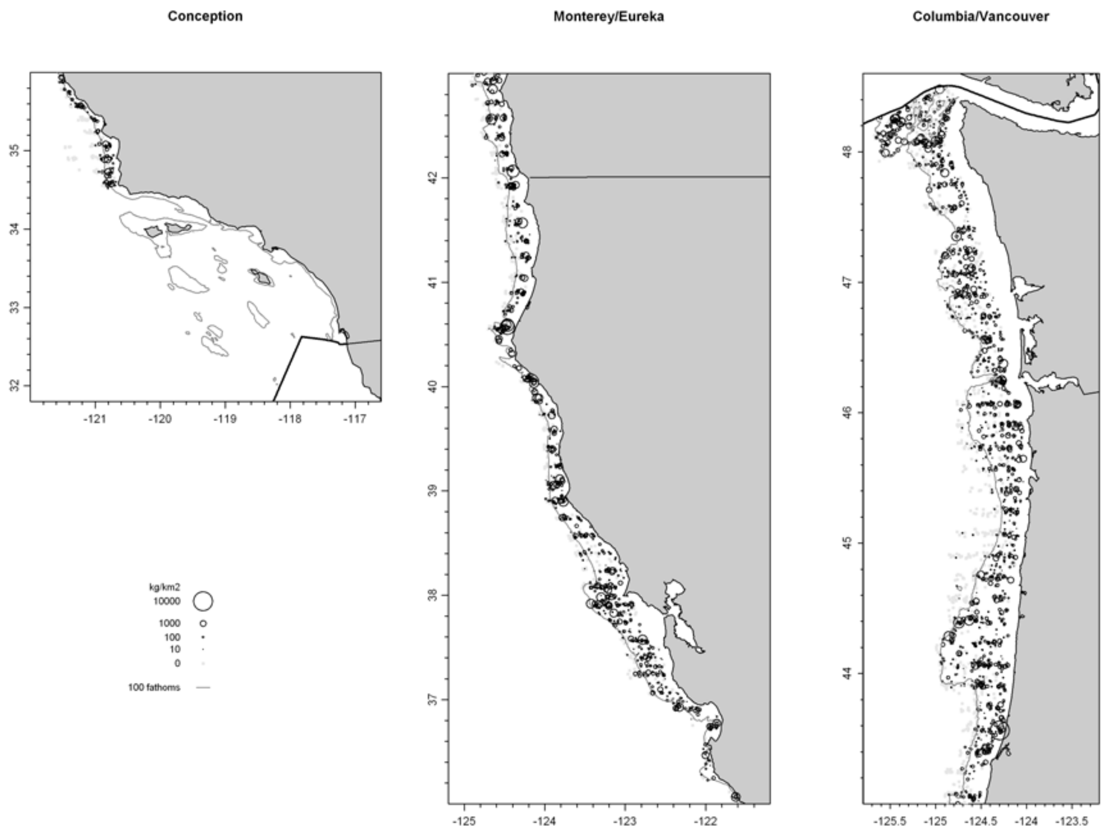


Figure 16. Catch rates over all years for the Triennial survey.

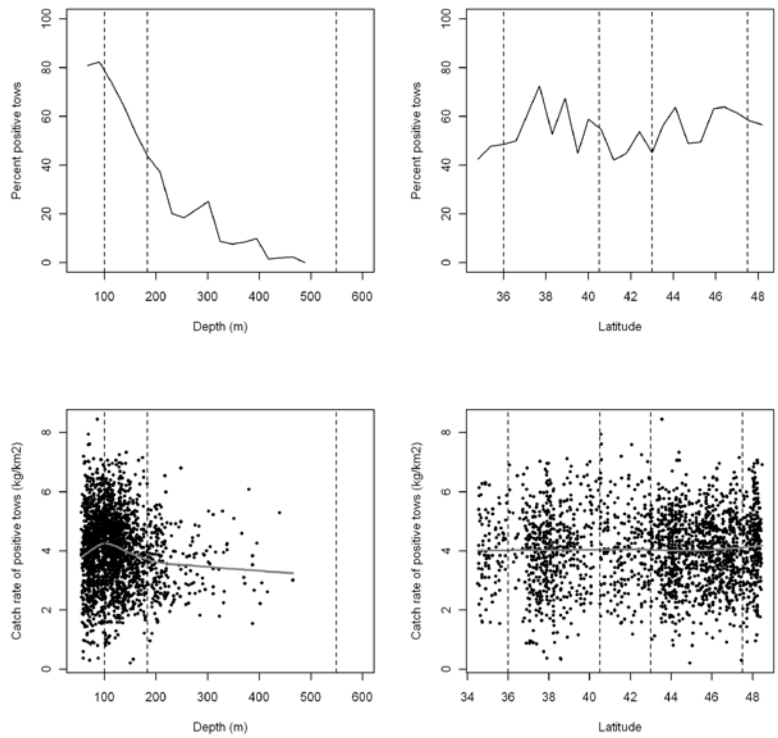


Figure 17. Plots of the percentage of positive tows and the catch rates for all positive tows over depth and latitude for the triennial survey.

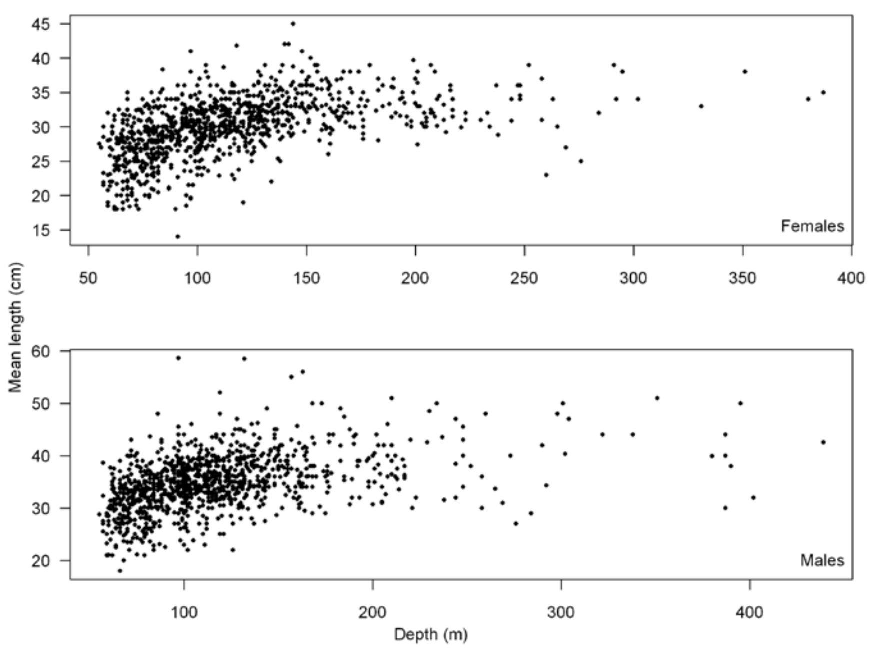


Figure 18. The mean length per tow from the triennial trawl survey data plotted over depth for females and males.

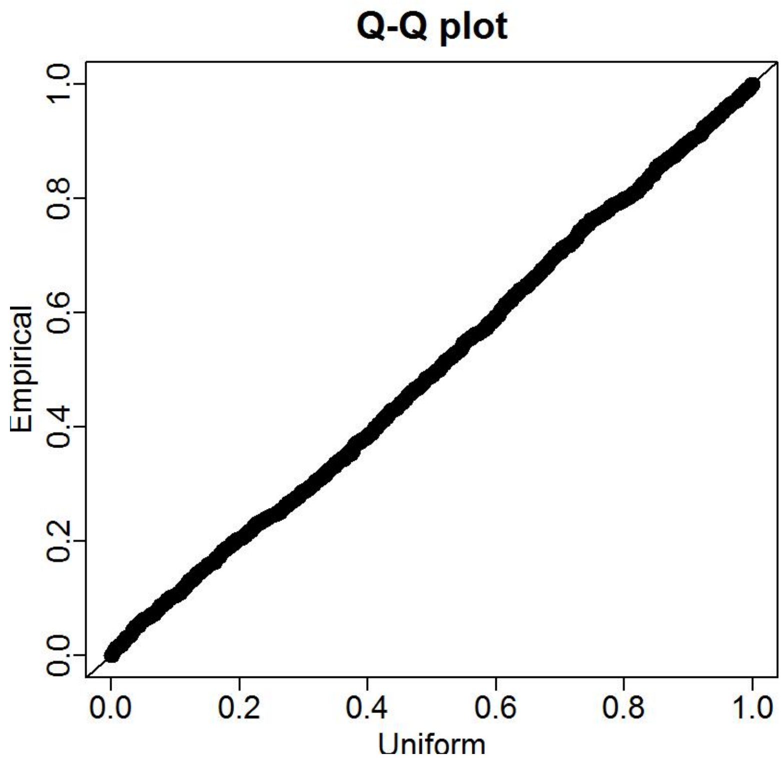


Figure 19. Early triennial survey GLM Q-Q plot.

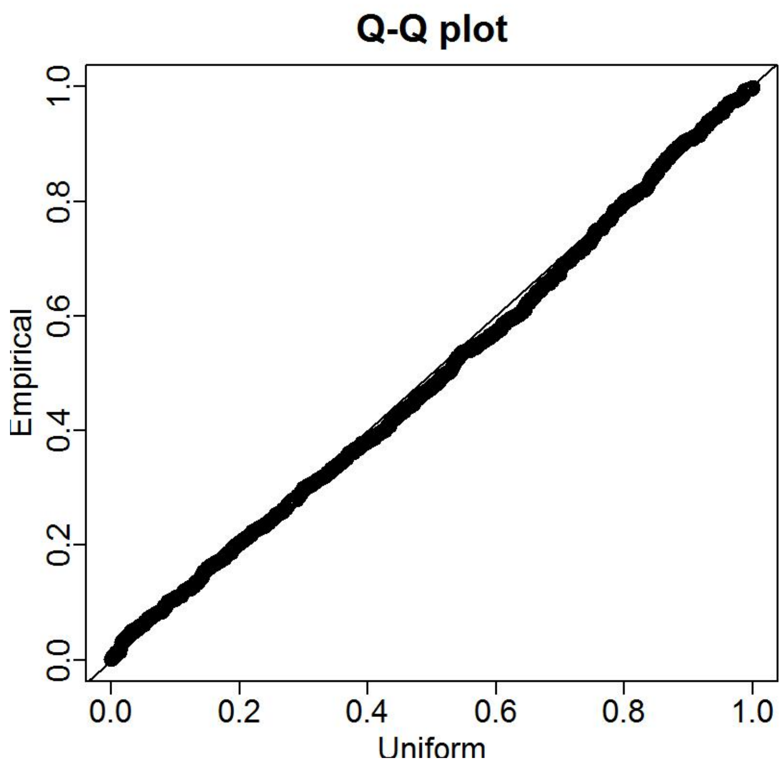
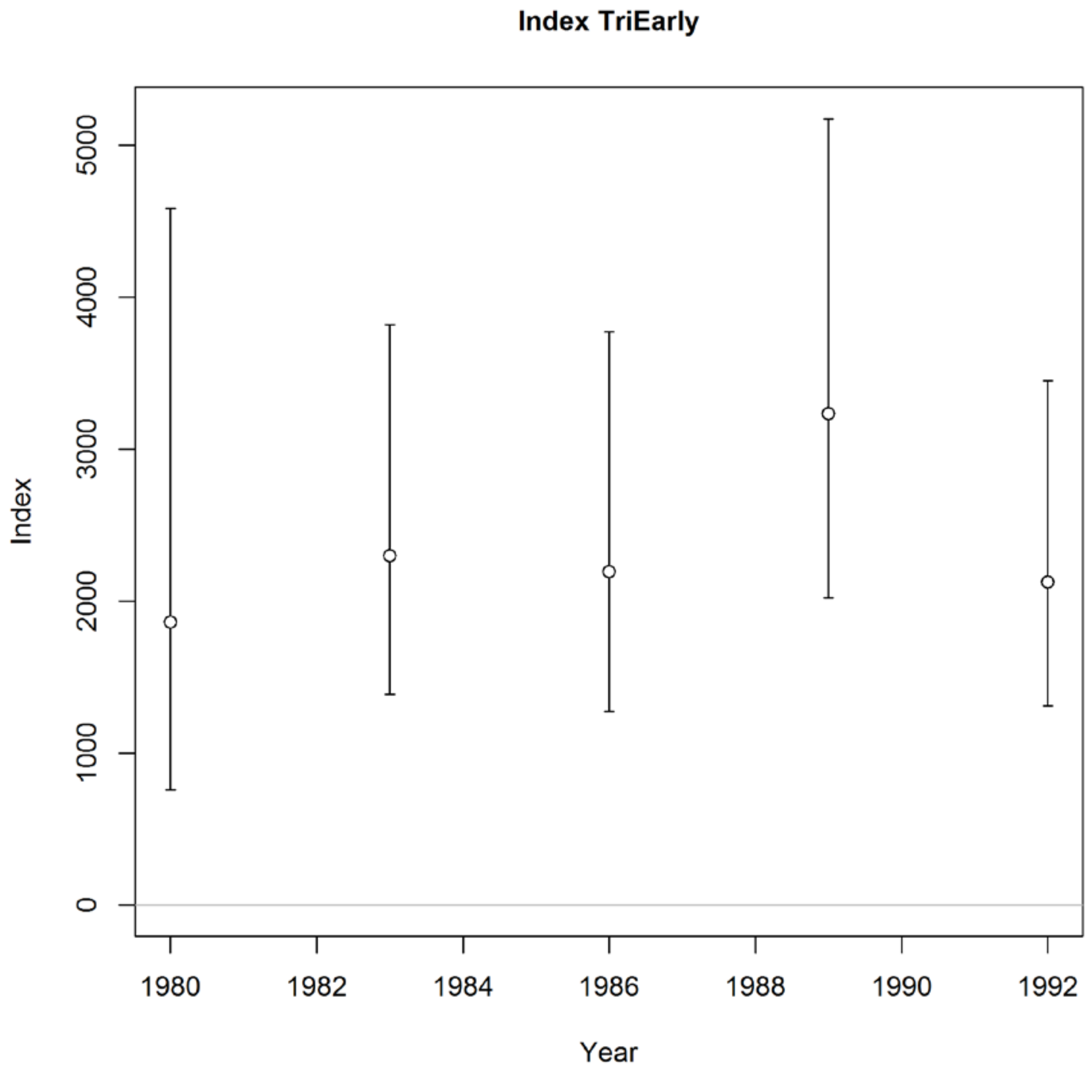


Figure 20. Late triennial survey GLM Q-Q plot.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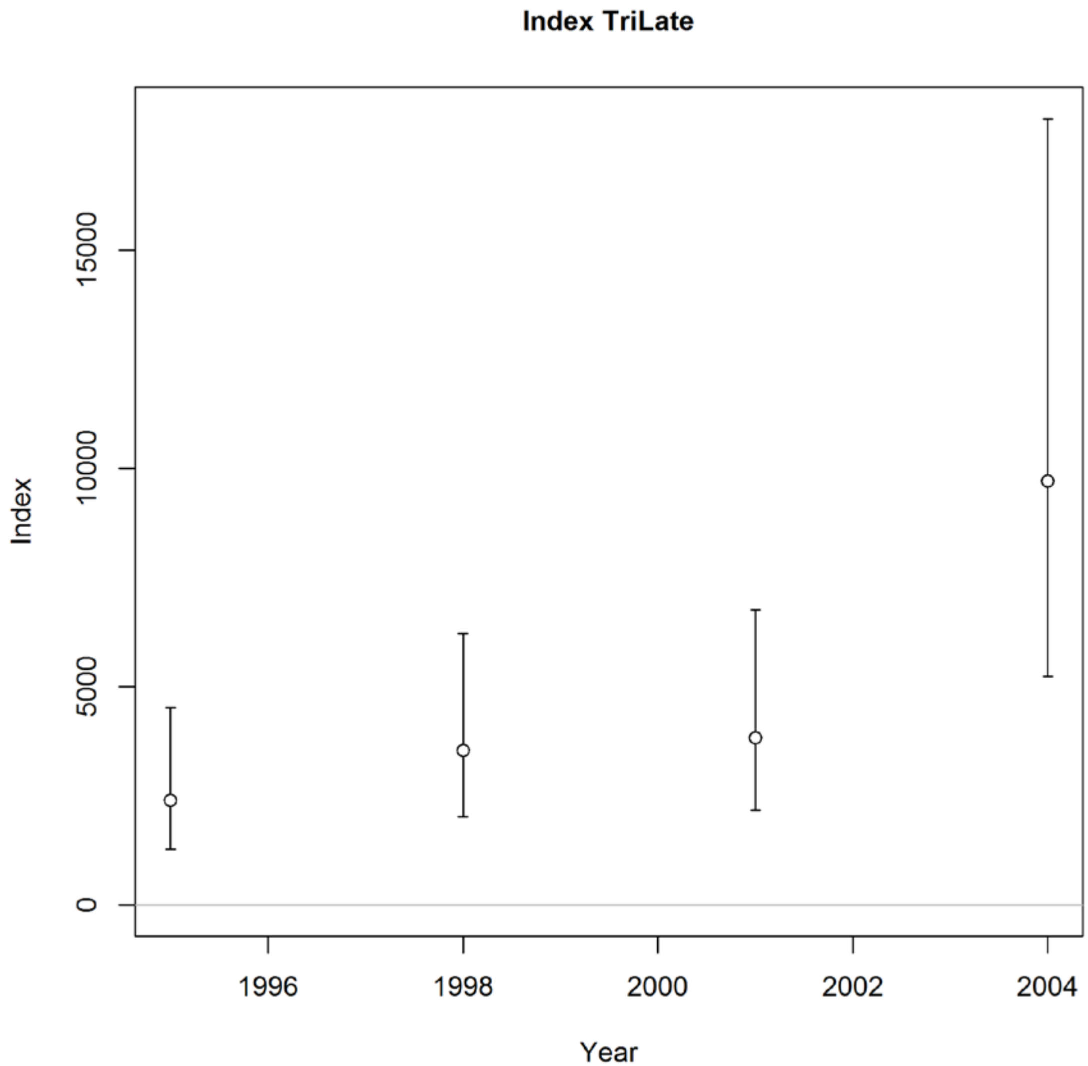


Figure 21. GLMM biomass estimates from the early (top panel) and late (bottom panel) Triennial survey.

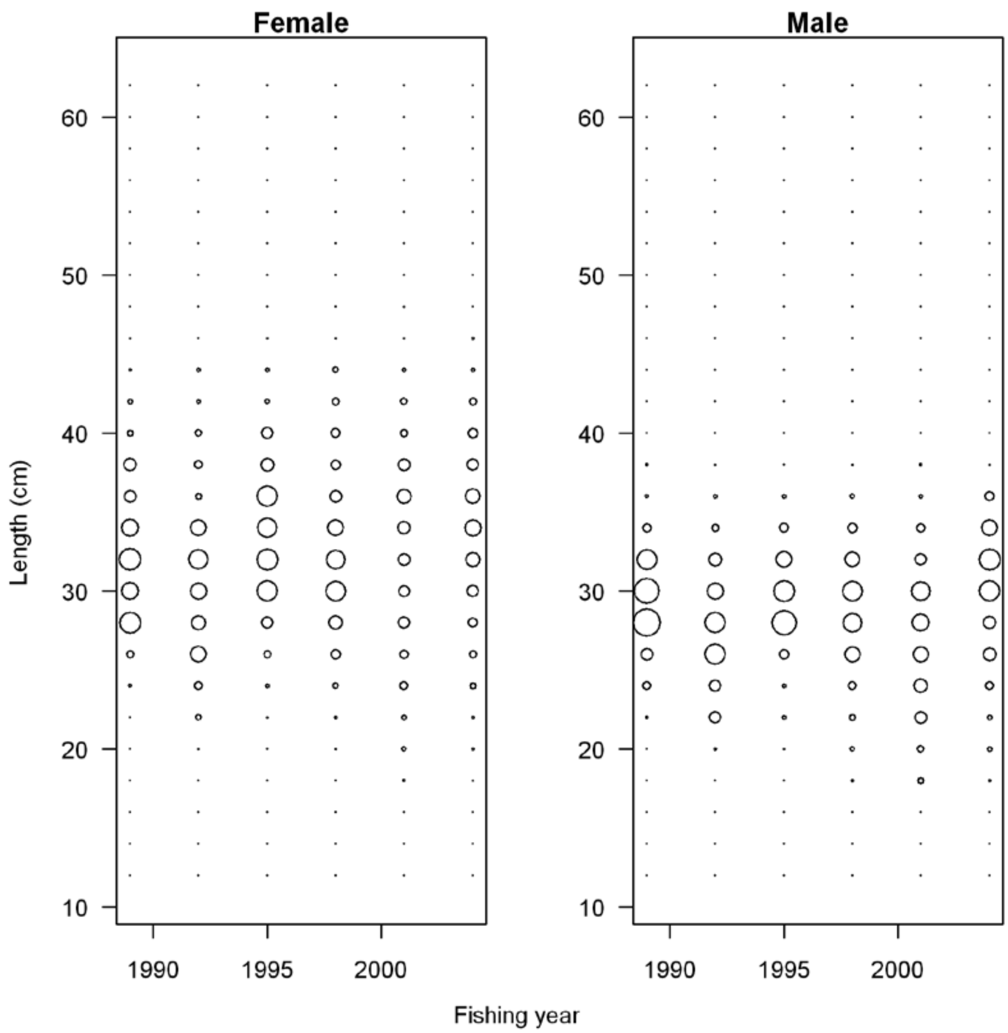


Figure 22. Plots of length frequencies from the triennial survey.

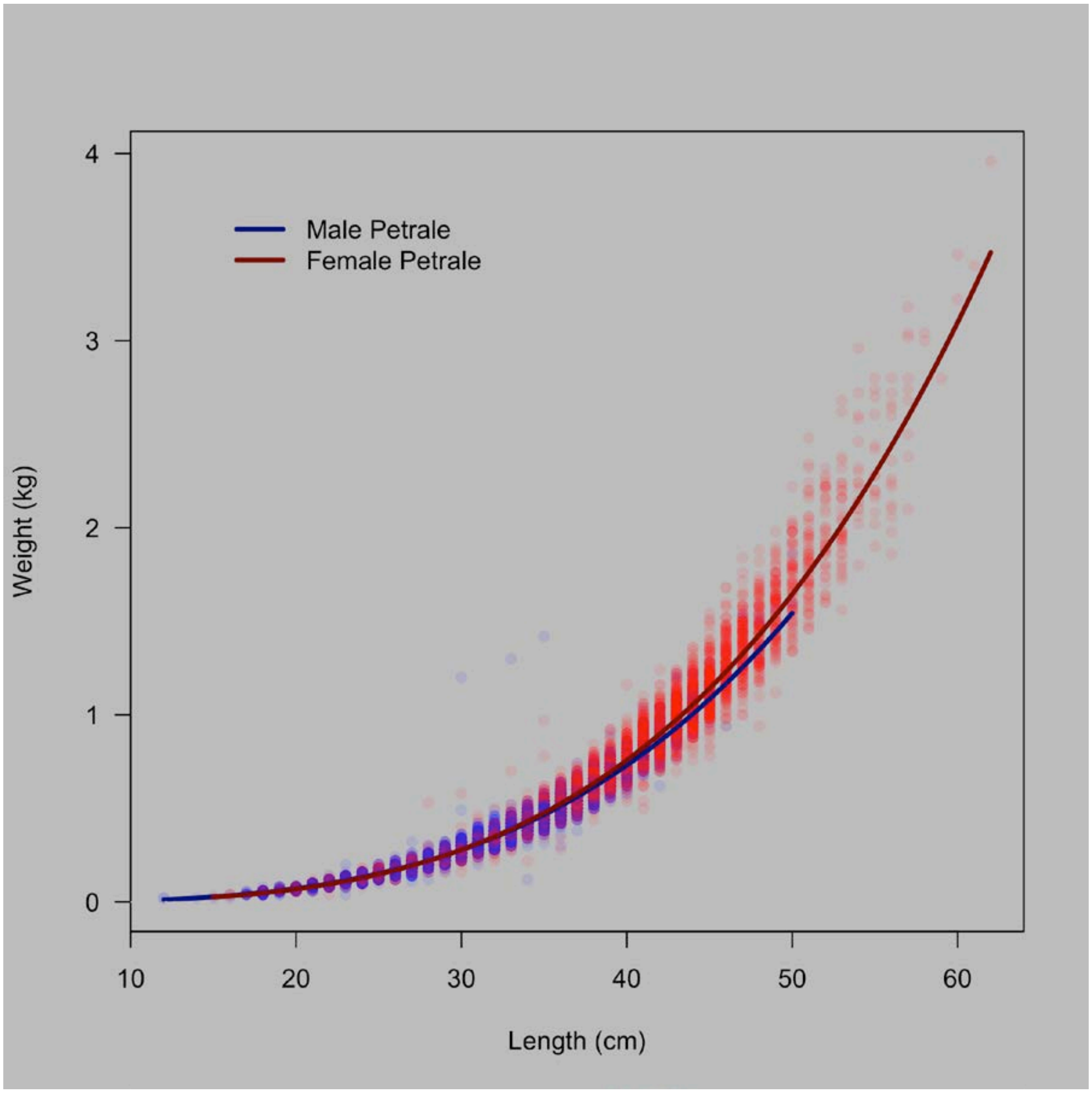


Figure 23. Petrale sole length-weight relationship.

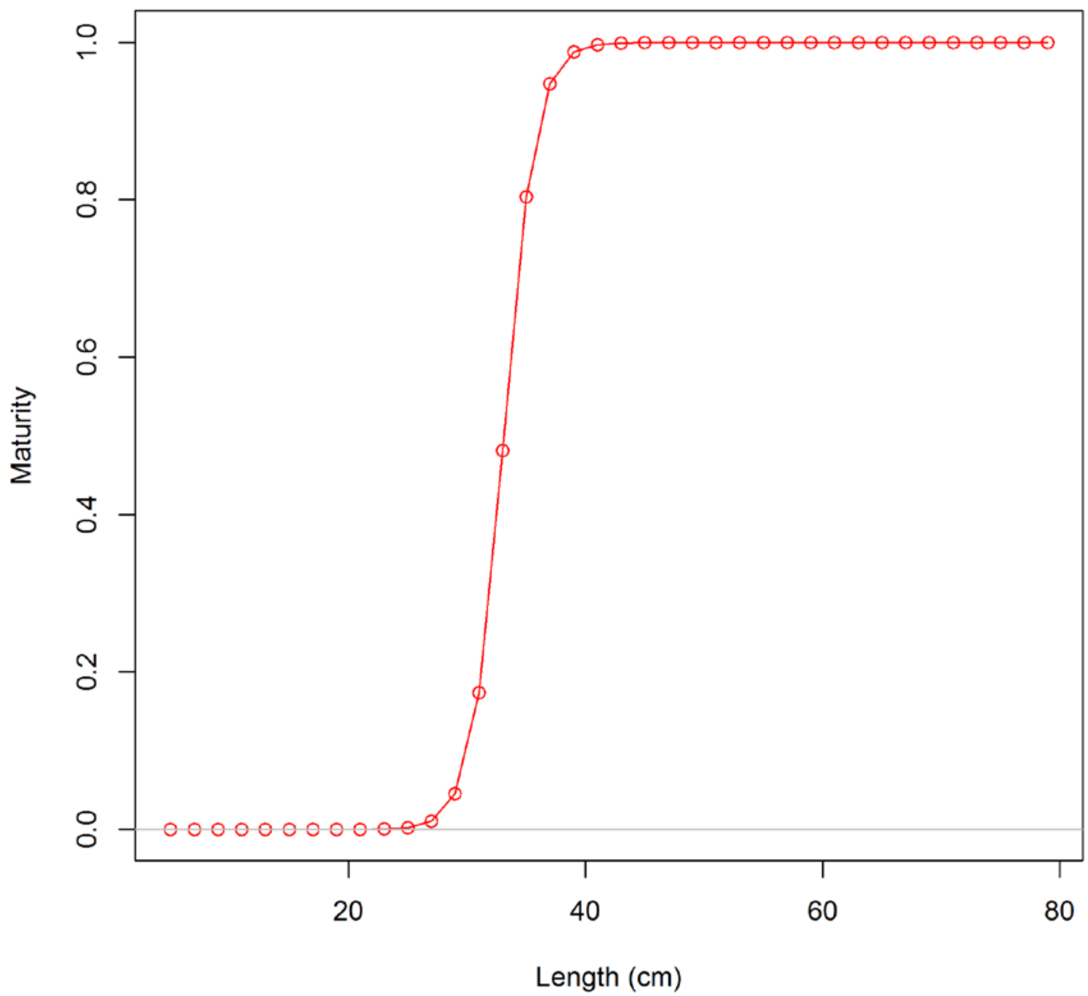


Figure 24. Petrale sole maturity ogive (females only).

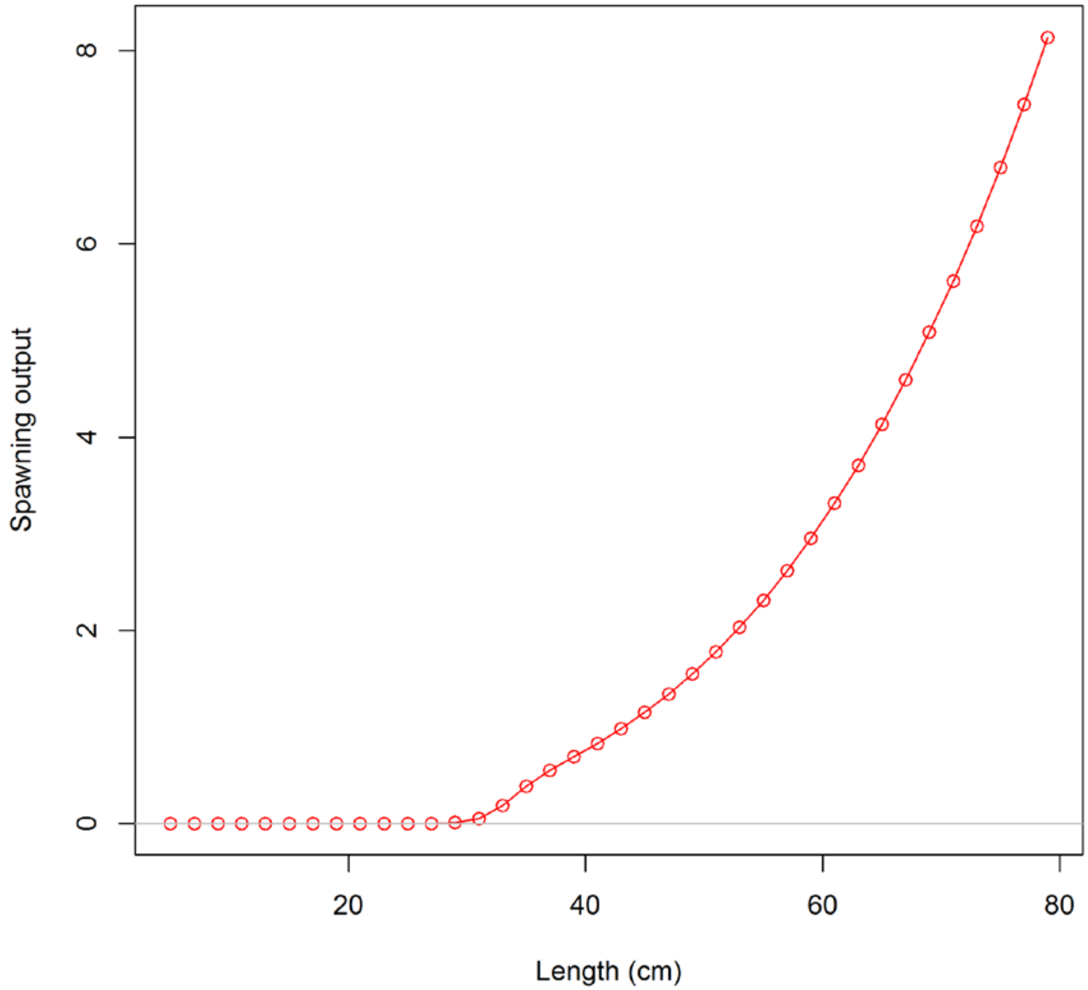


Figure 25. Petrale sole spawning output as a function of length.

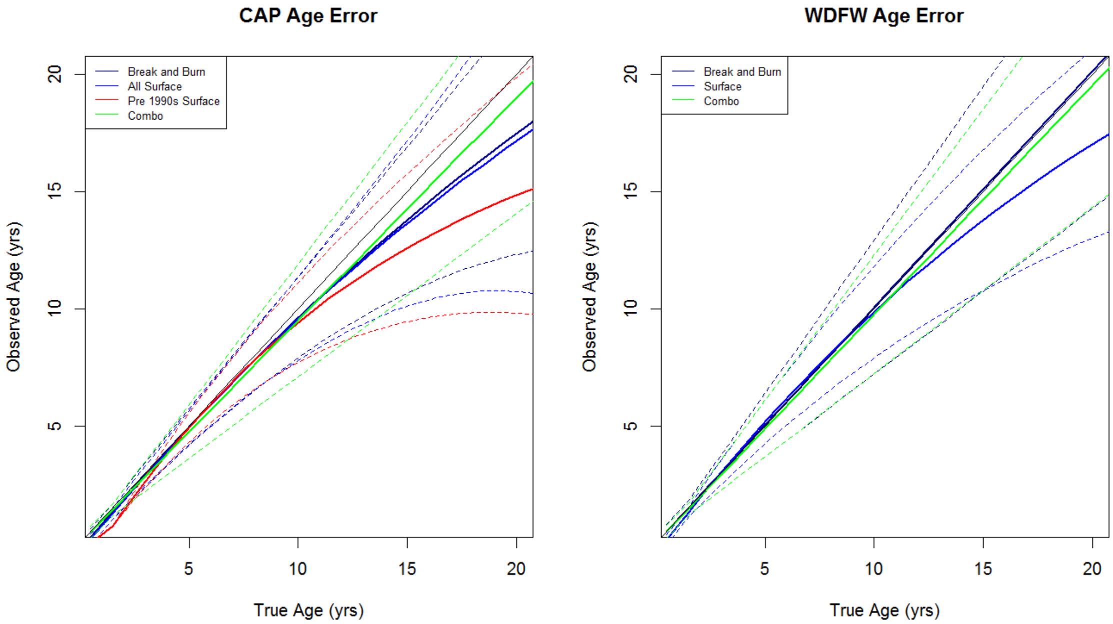


Figure 26. Plots of bias and imprecision for each data set. The 1:1 line is the dark bold line.

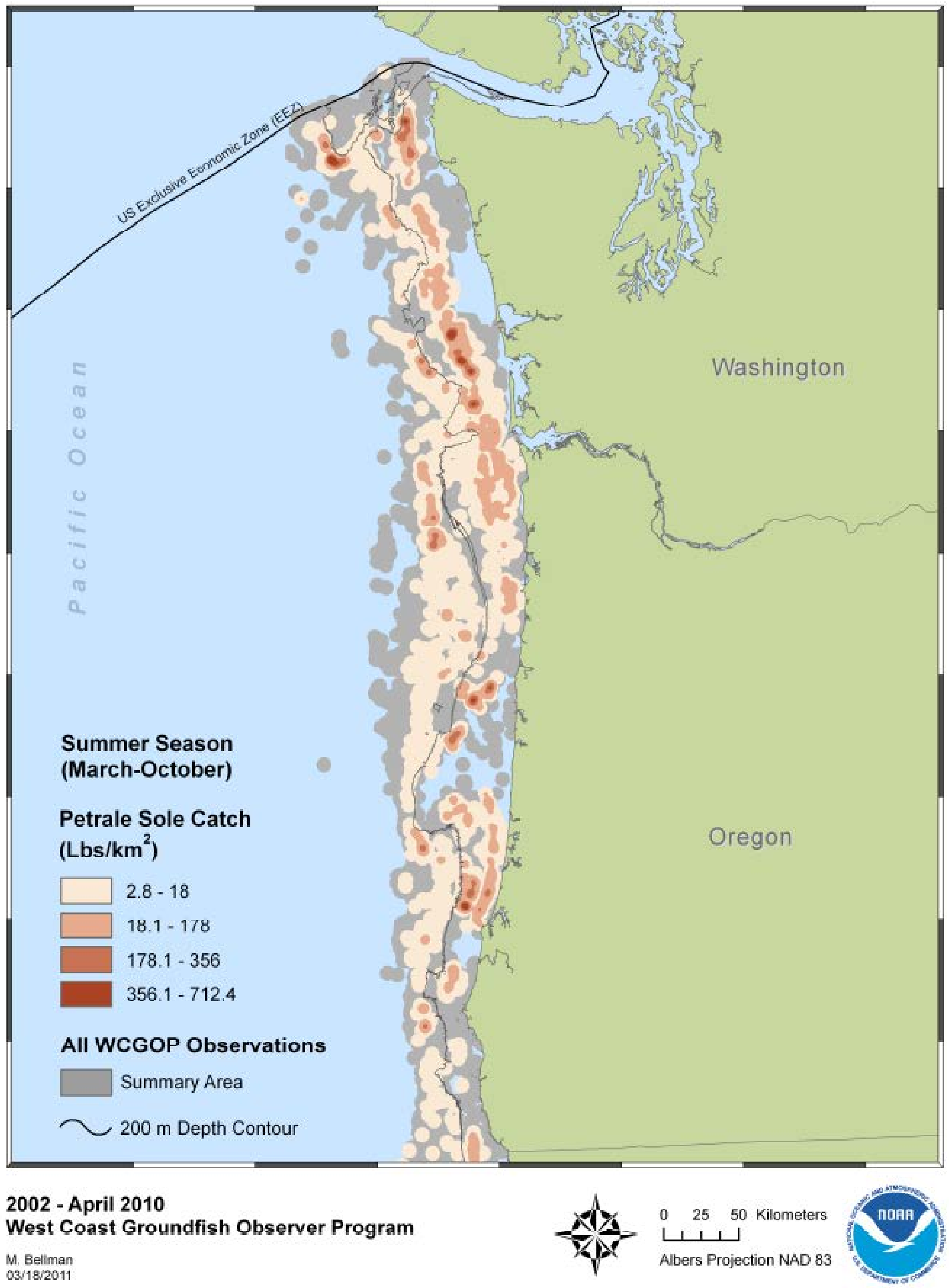


Figure 27. Spatial distribution of northern petrale sole catch (lbs/km2), in the summer (March-October) season, observed by the West Coast Groundfish Observer Program from 2002 – April 2010 and the summary area of all observed fishing events. The range of catch (minimum to maximum value) was mapped; the two highest classifications were defined by dividing the maximum value in half, and the resulting value in half, and the remaining observations were then allocated into equal proportions into the two lowest classifications.

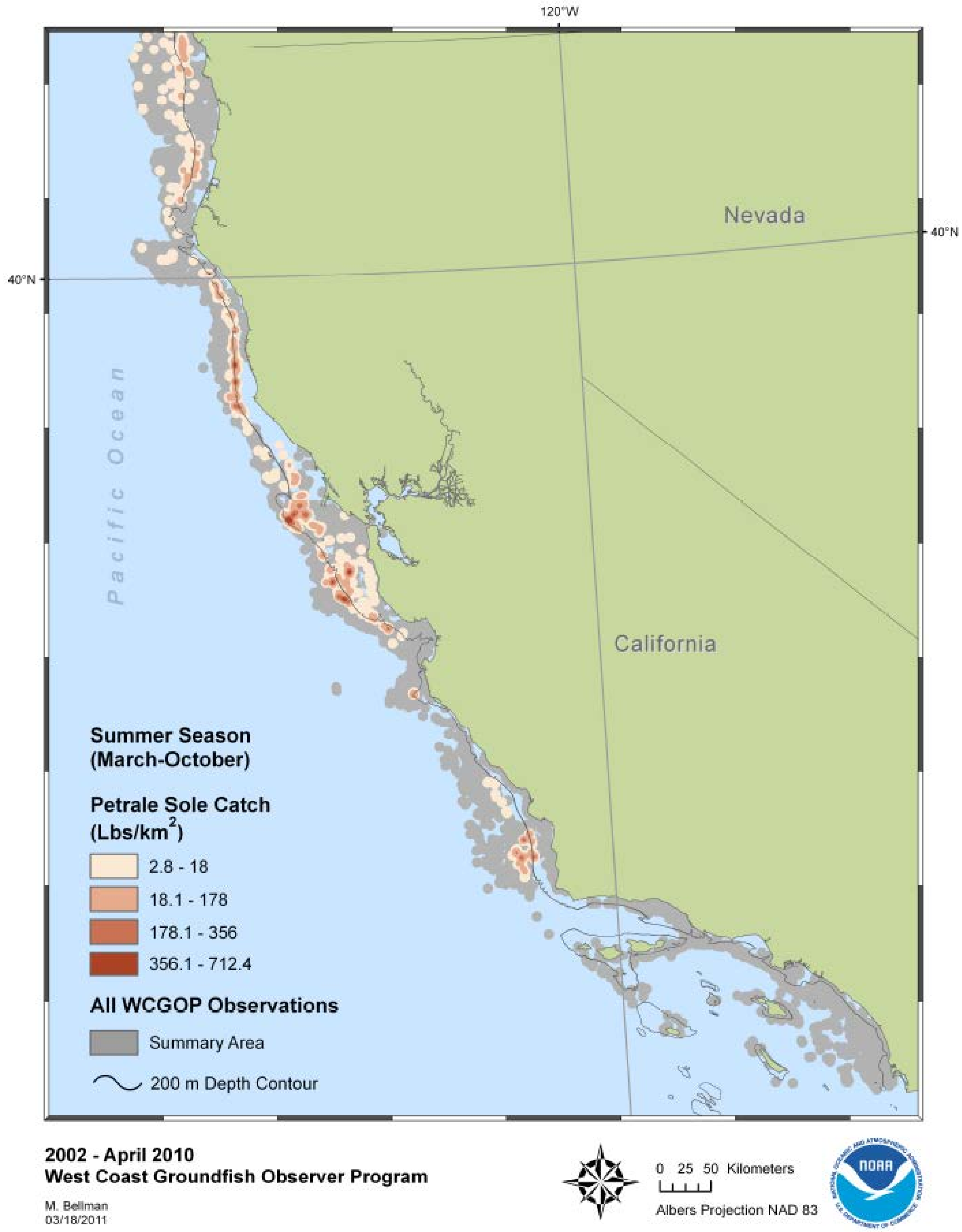


Figure 28. Spatial distribution of southern petrale sole catch (lbs/km2), in the summer (March-October) season, observed by the West Coast Groundfish Observer Program from 2002 – April 2010 and the summary area of all observed fishing events. The range of catch (minimum to maximum value) was mapped; the two highest classifications were defined by dividing the maximum value in half, and the resulting value in half, and the remaining observations were then allocated into equal proportions into the two lowest classifications.

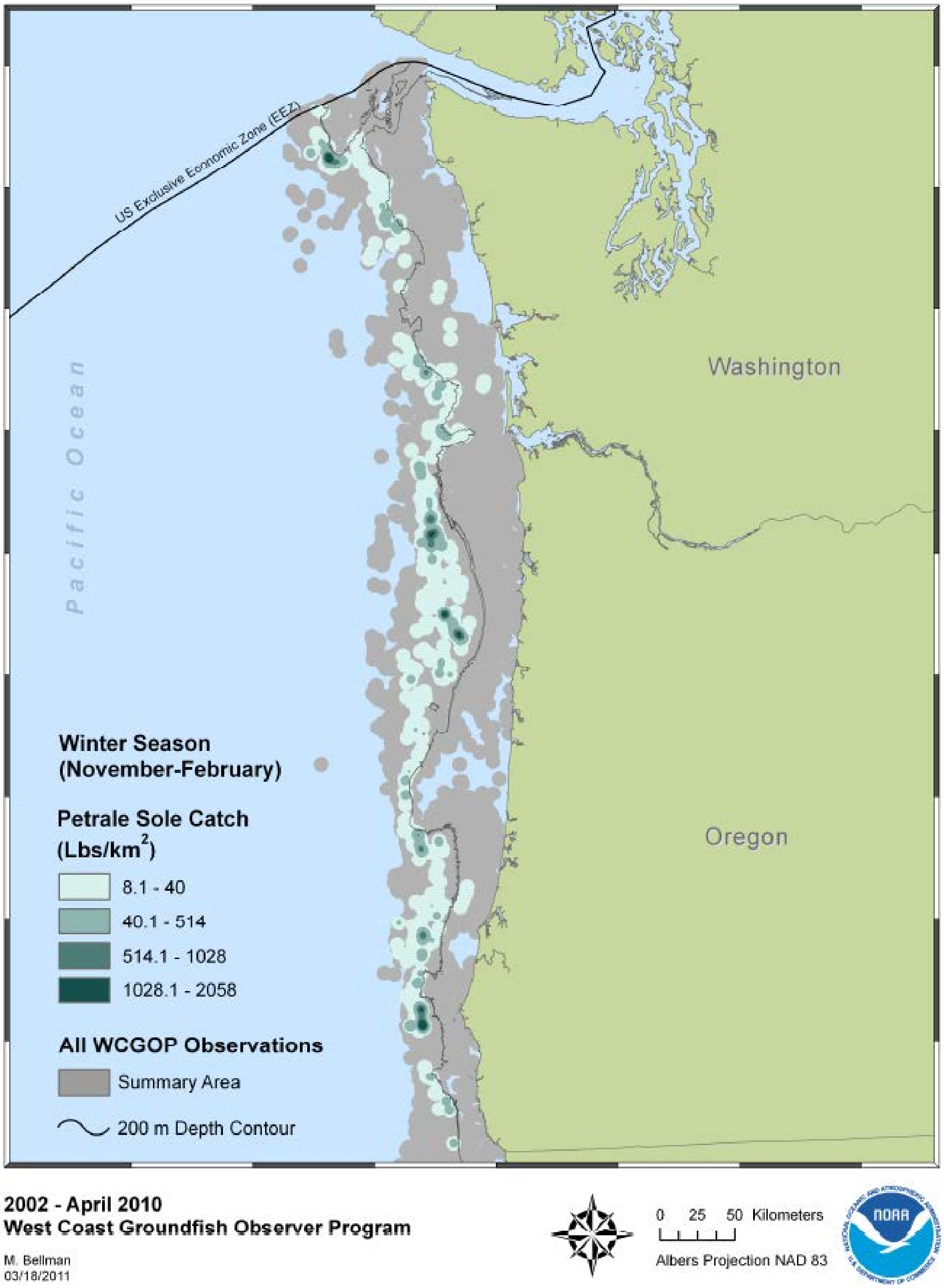


Figure 29. Spatial distribution of northern petrale sole catch (lbs/km2), in the winter season (November-February), observed by the West Coast Groundfish Observer Program from 2002 – April 2010 and the summary area of all observed fishing events. The range of catch (minimum to maximum value) was mapped; the two highest classifications were defined by dividing the maximum value in half, and the resulting value in half, and the remaining observations were then allocated into equal proportions into the two lowest classifications.

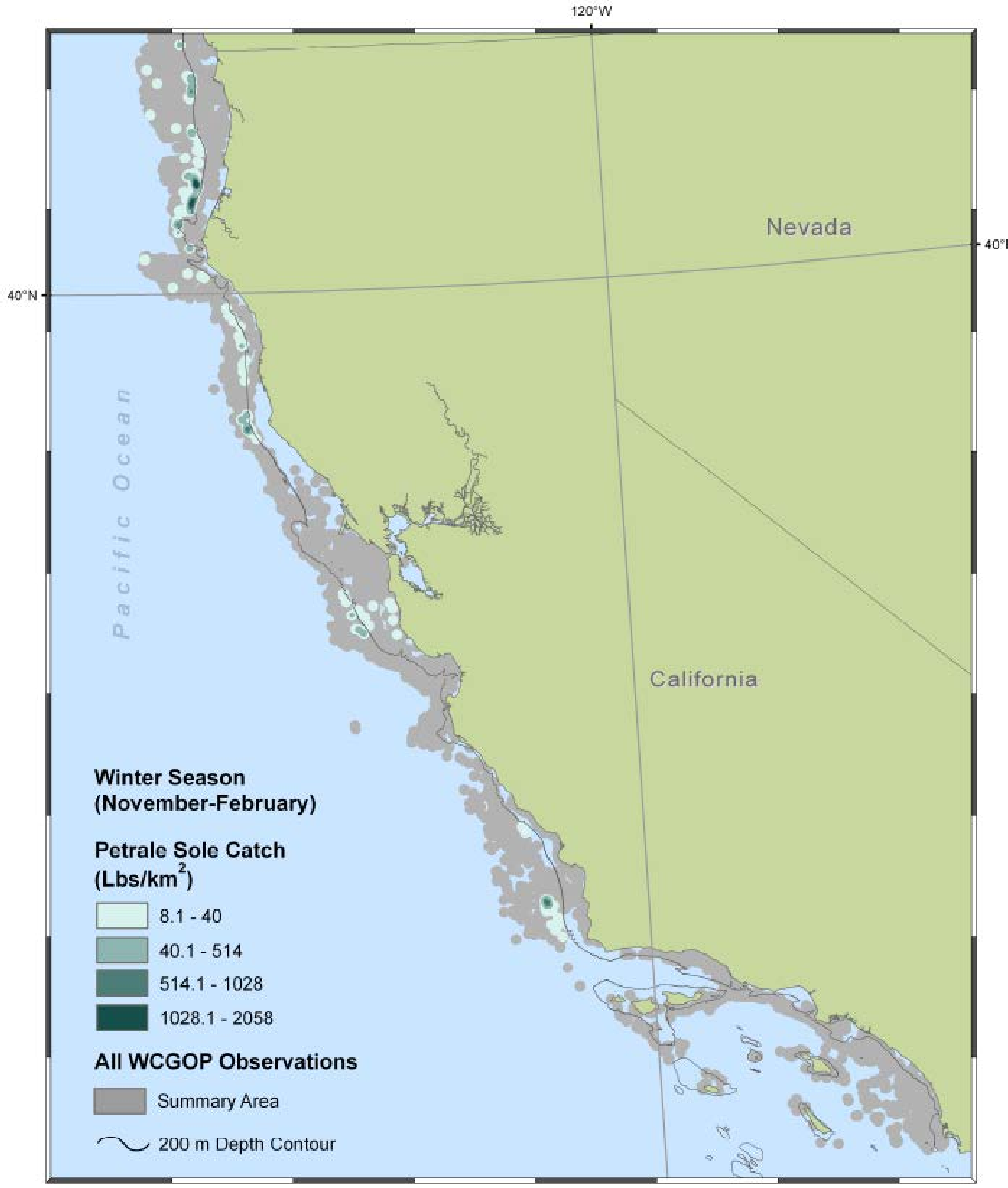


Figure 30. Spatial distribution of southern petrale sole catch (lbs/km2), in the winter season (November-February), observed by the West Coast Groundfish Observer Program from 2002 – April 2010 and the summary area of all observed fishing events. The range of catch (minimum to maximum value) was mapped; the two highest classifications were defined by dividing the maximum value in half, and the resulting value in half, and the remaining observations were then allocated into equal proportions into the two lowest classifications.

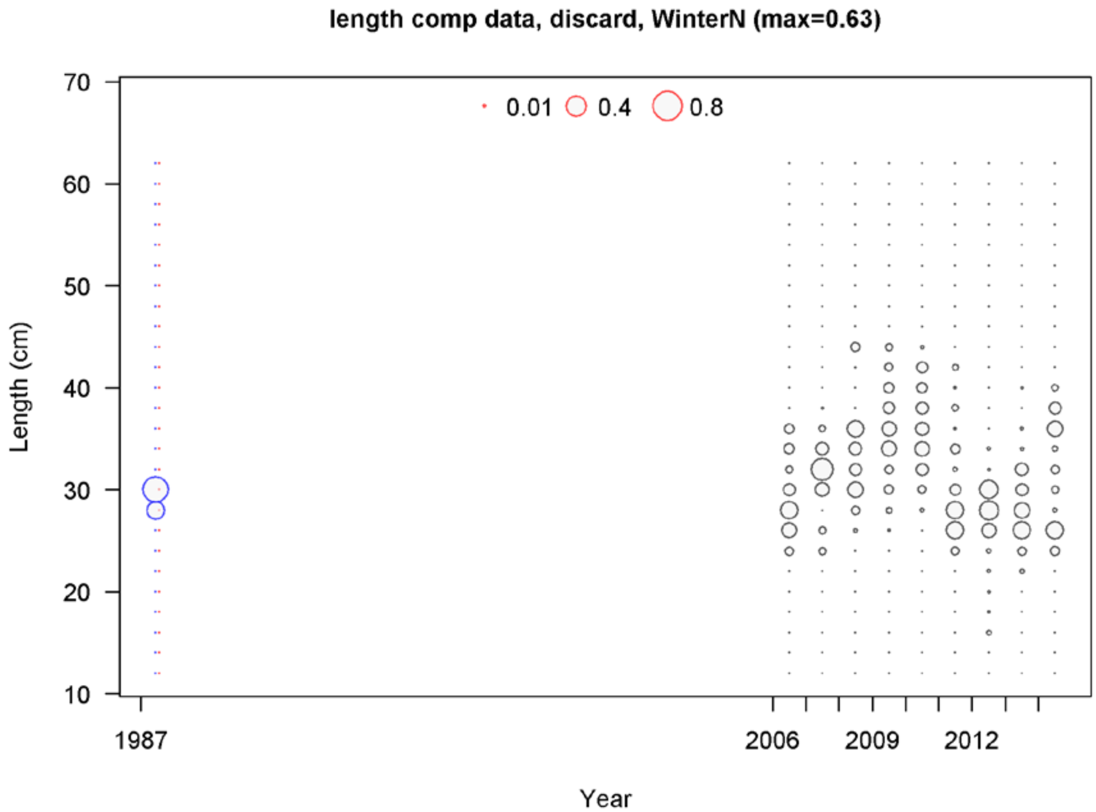


Figure 31. Aggregated Pikitch and WCGOP winter north discard length compositions, sexes combined.

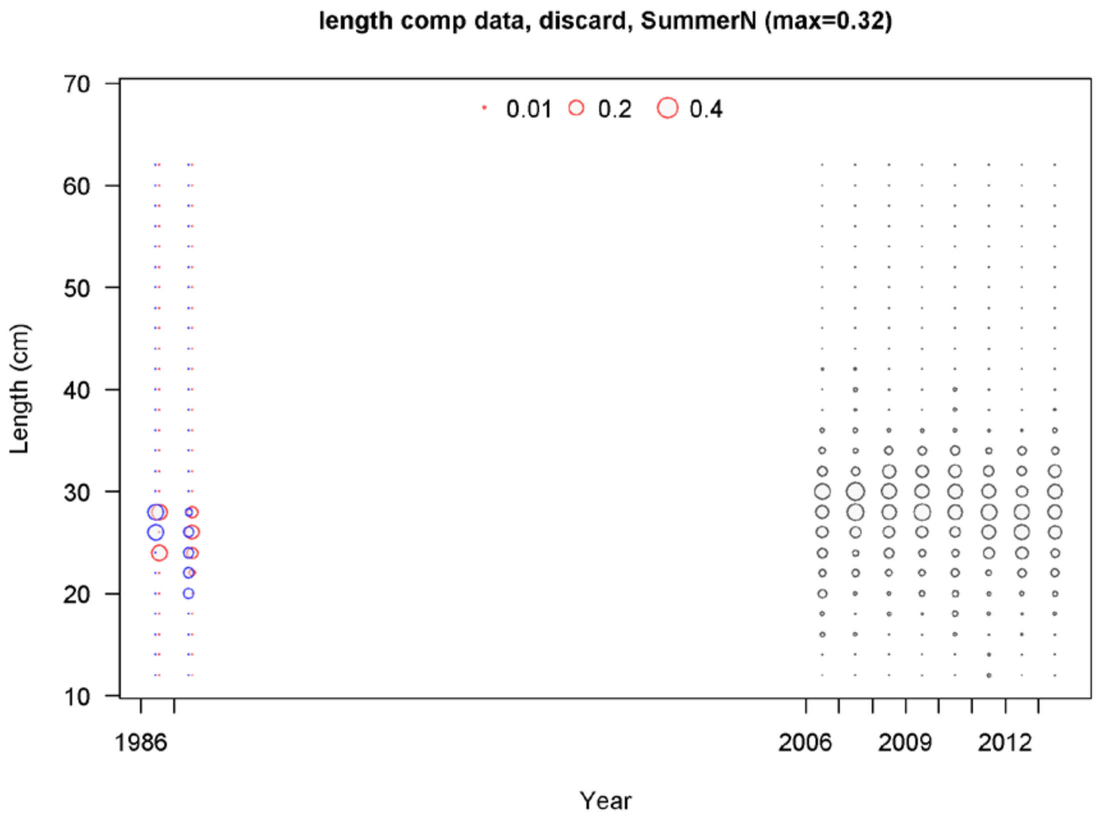


Figure 32. Aggregated Pikitch and WCGOP summer north discard length compositions, sexes combined.

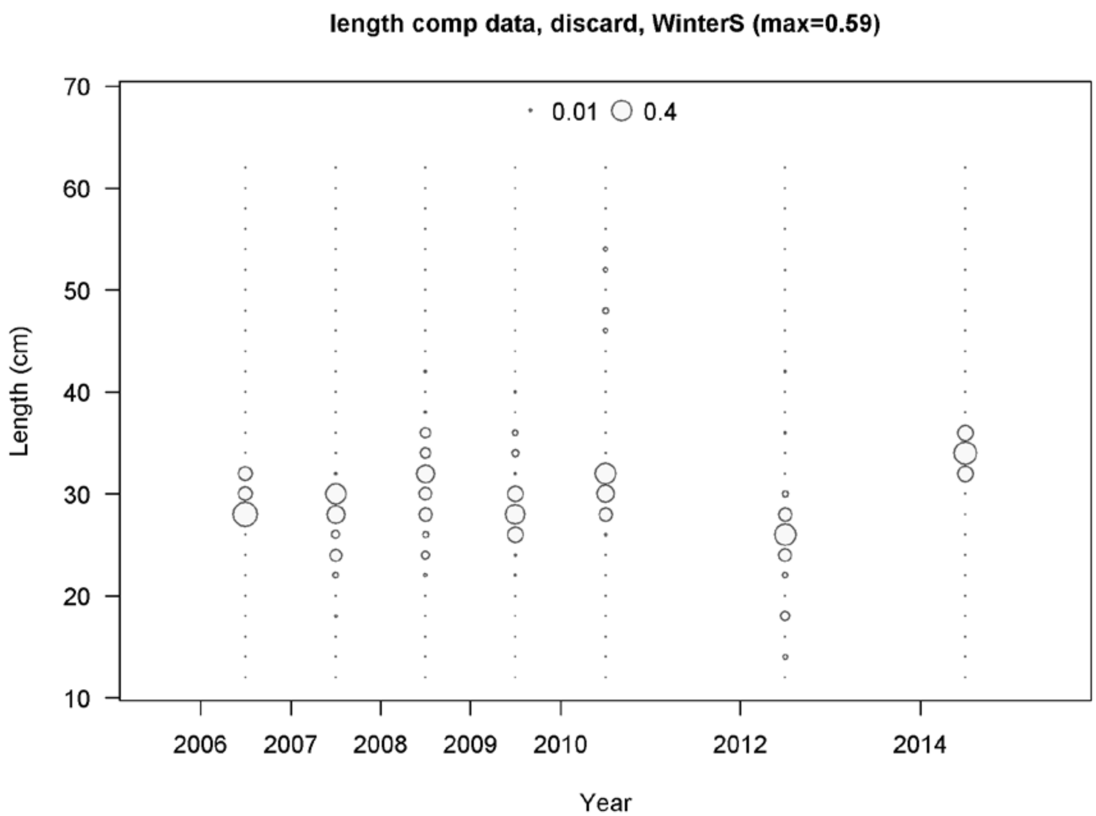


Figure 33. **WCGOP winter south discard length compositions, sexes combined.**

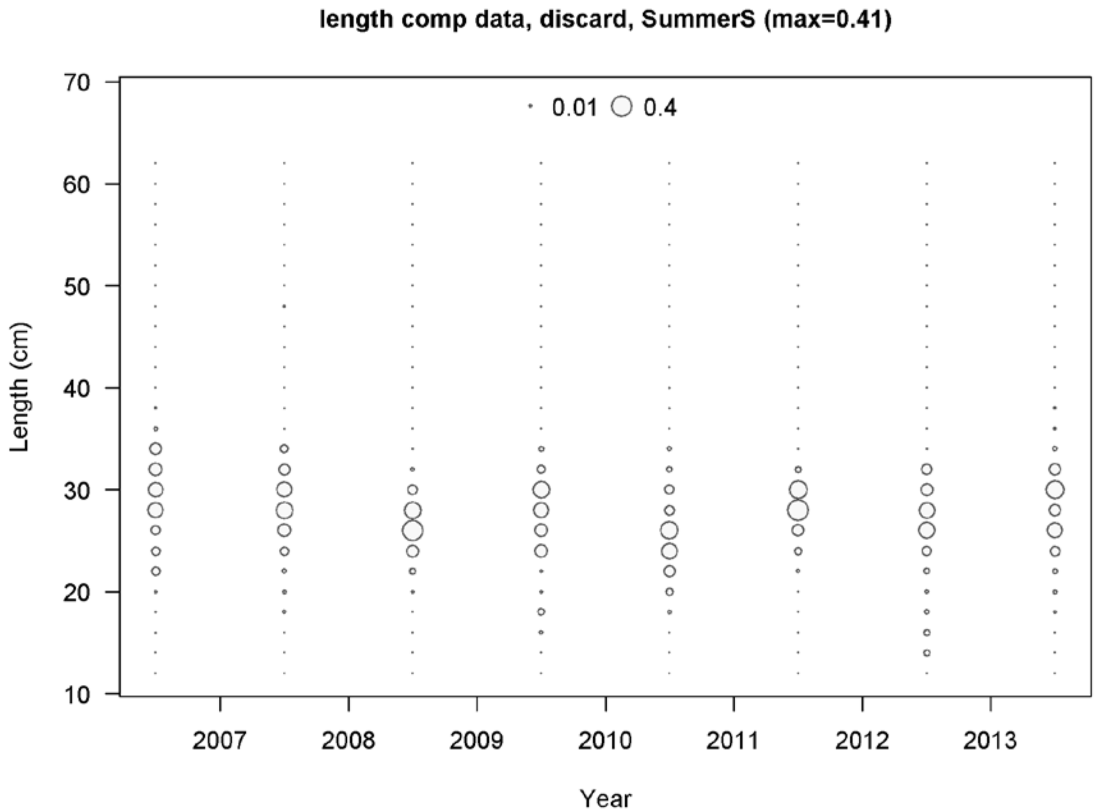


Figure 34 - WGCOP discard length composition data for summer south fishery, sexes combined.

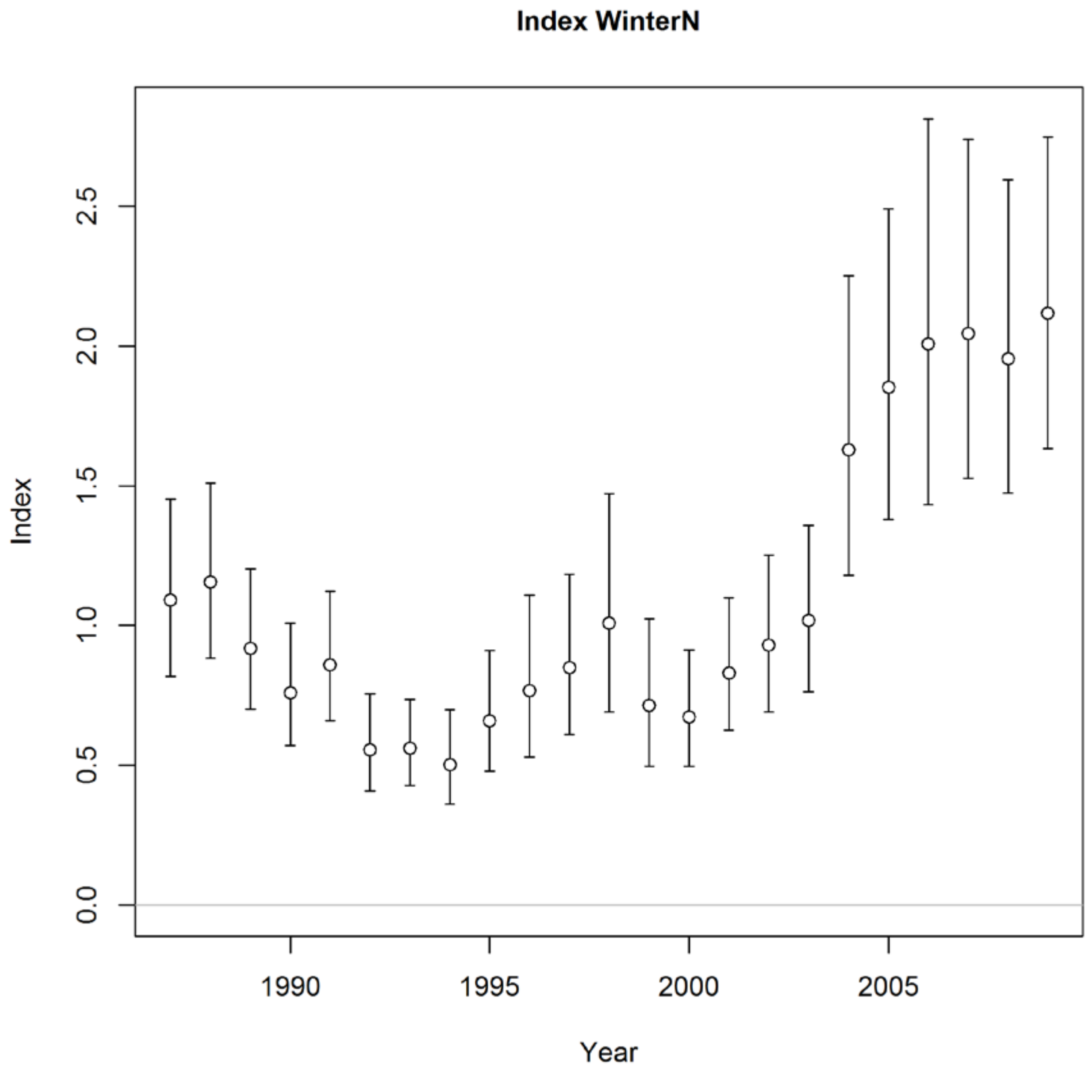


Figure 35. Winter north standardized commercial CPUE index.

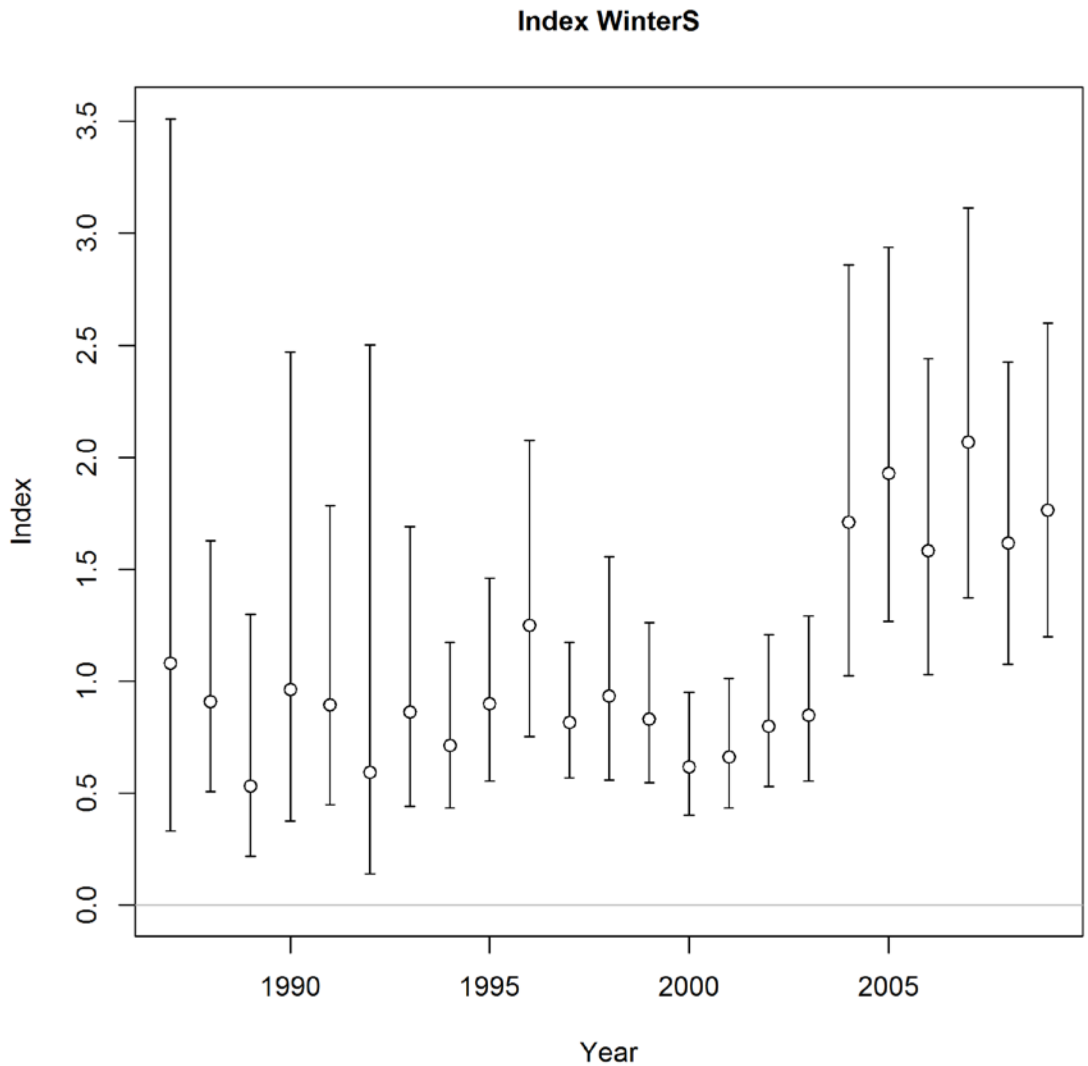


Figure 36. Winter south standardized CPUE index.

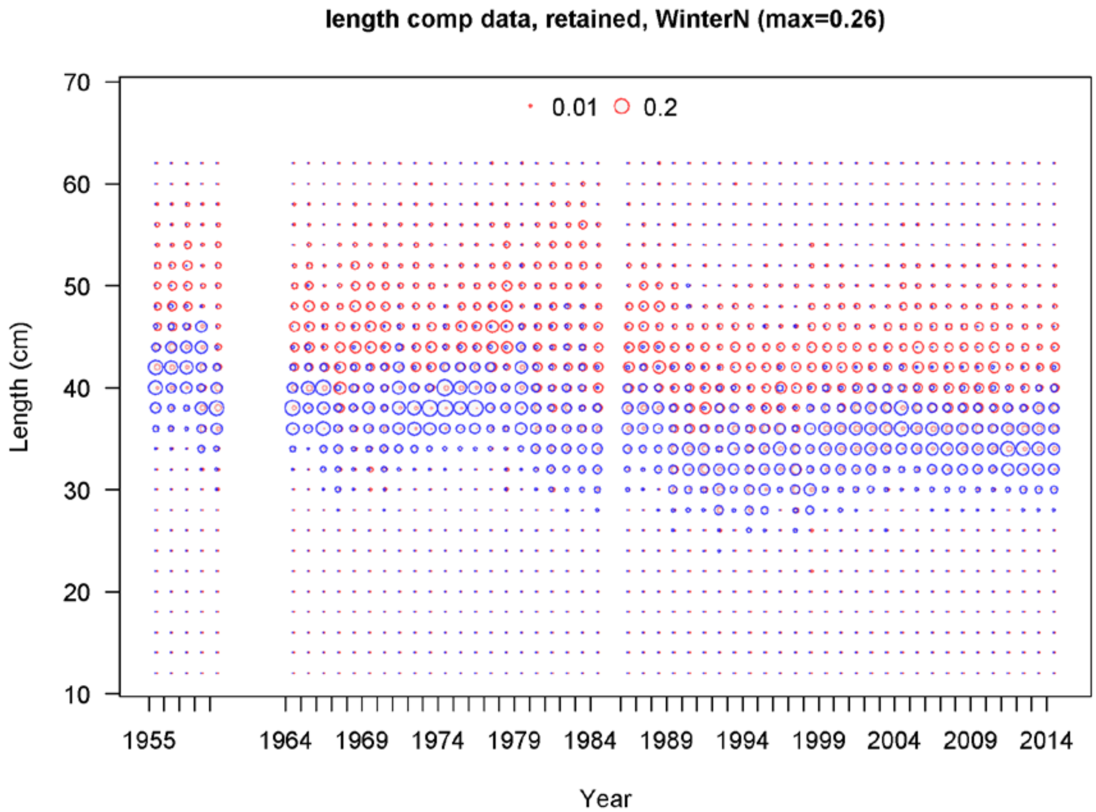


Figure 37.Winter north length-frequency data, females (red) and males (blue).

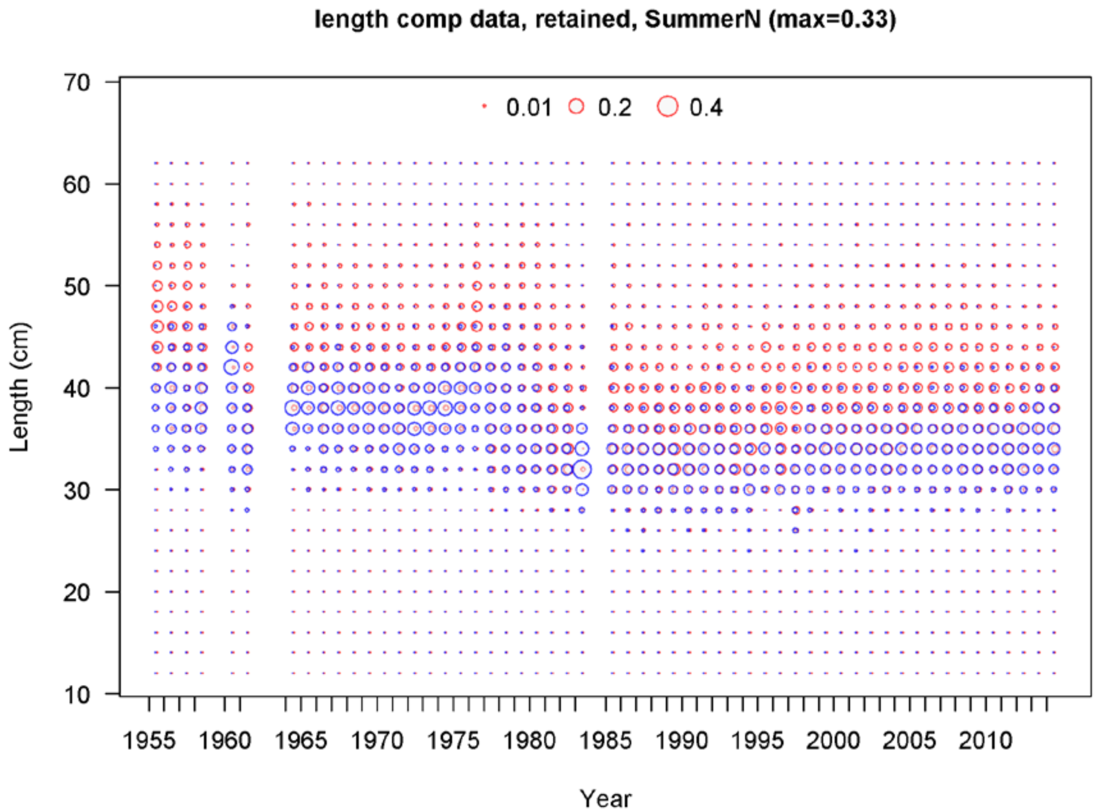


Figure 38. Summer north length-frequency data, females (red) and males (blue).

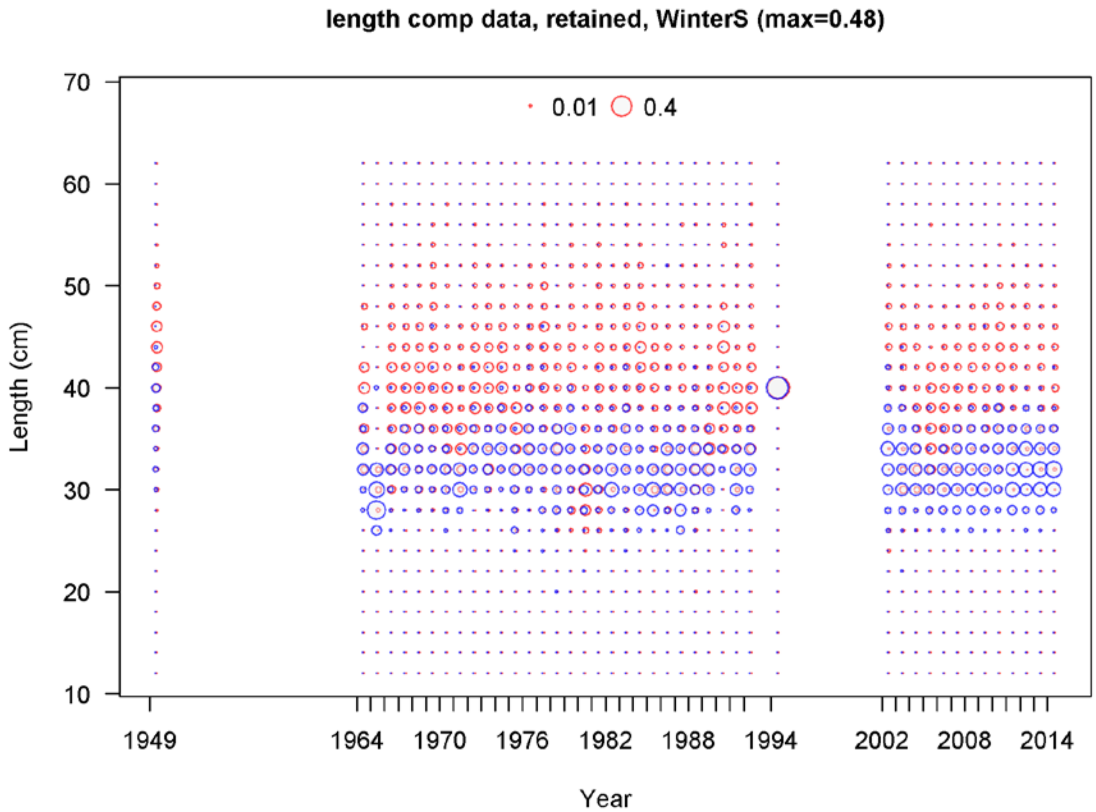


Figure 39. Winter south length-frequency data, females (red), males (blue).

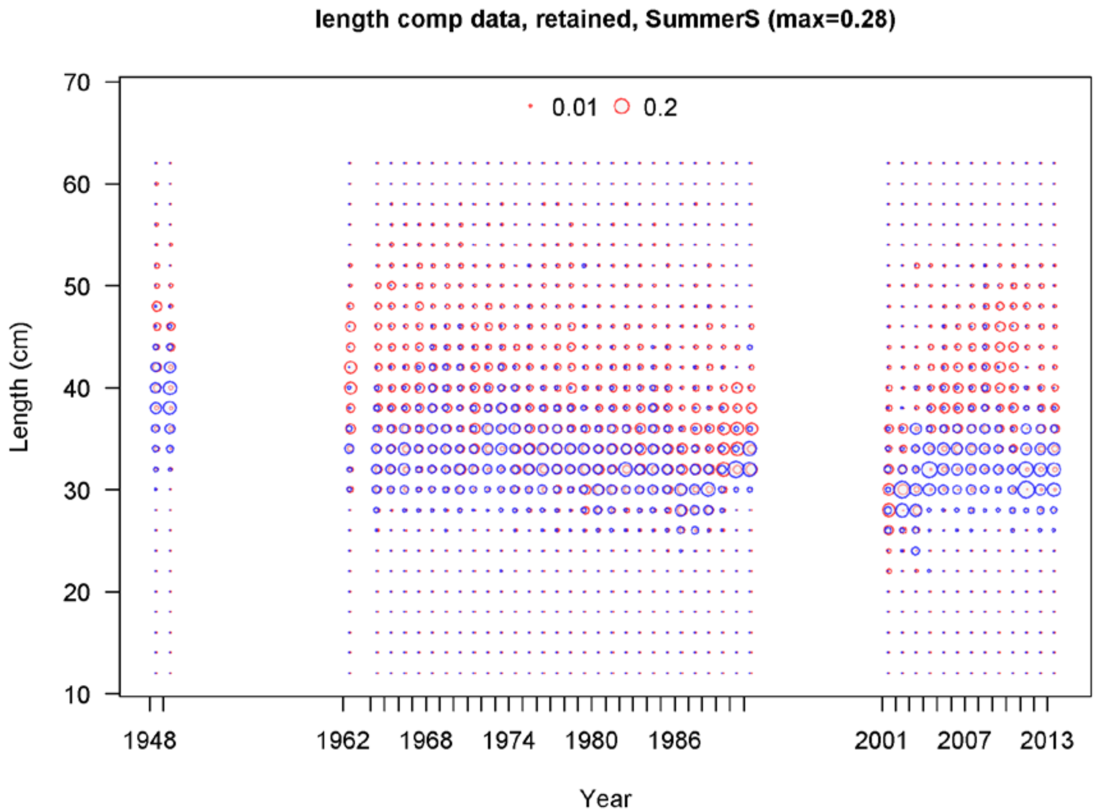


Figure 40. Summer south length-frequency data, females (red) and males (blue).

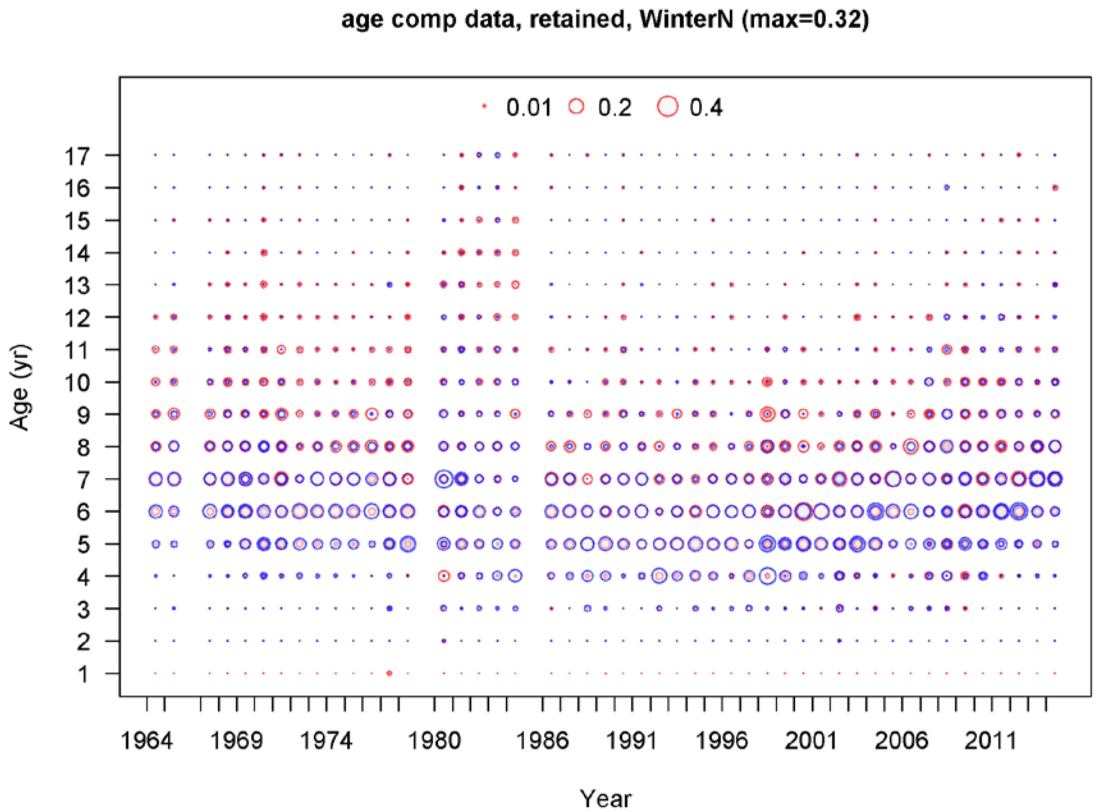


Figure 41. Winter north age-frequency data, females (red) and males (blue).

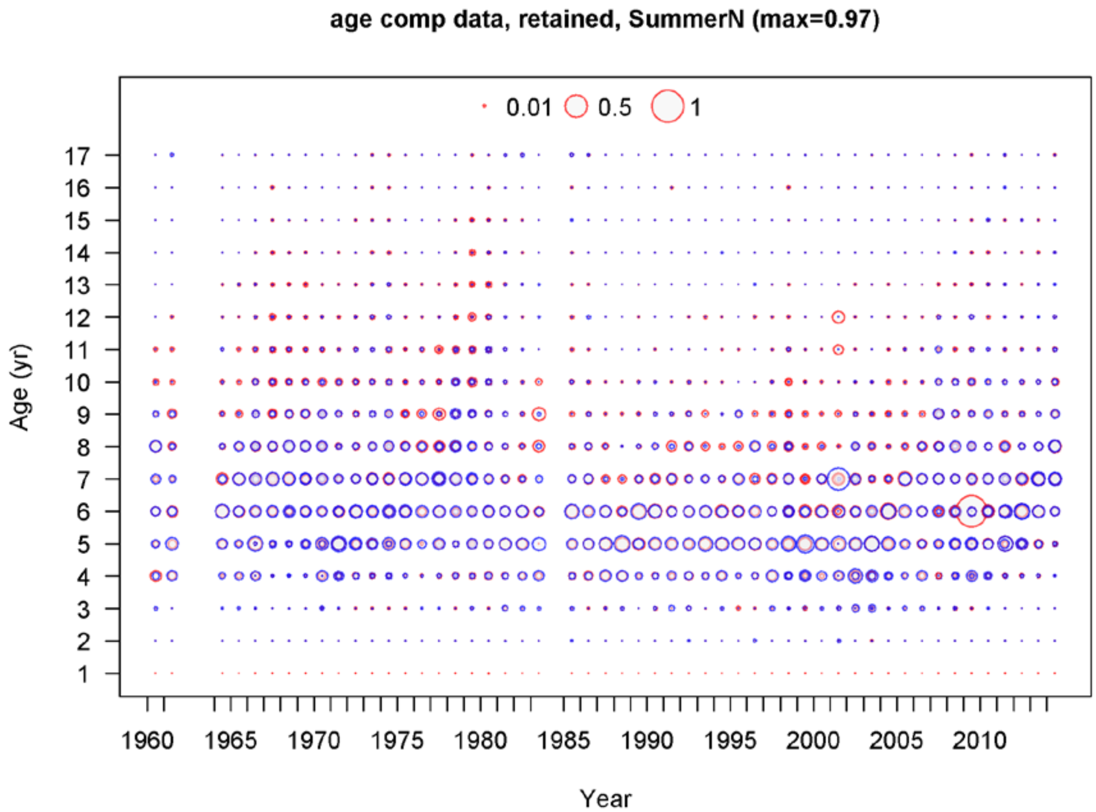


Figure 42. Summer north age-frequency data, females (red) and males (blue).

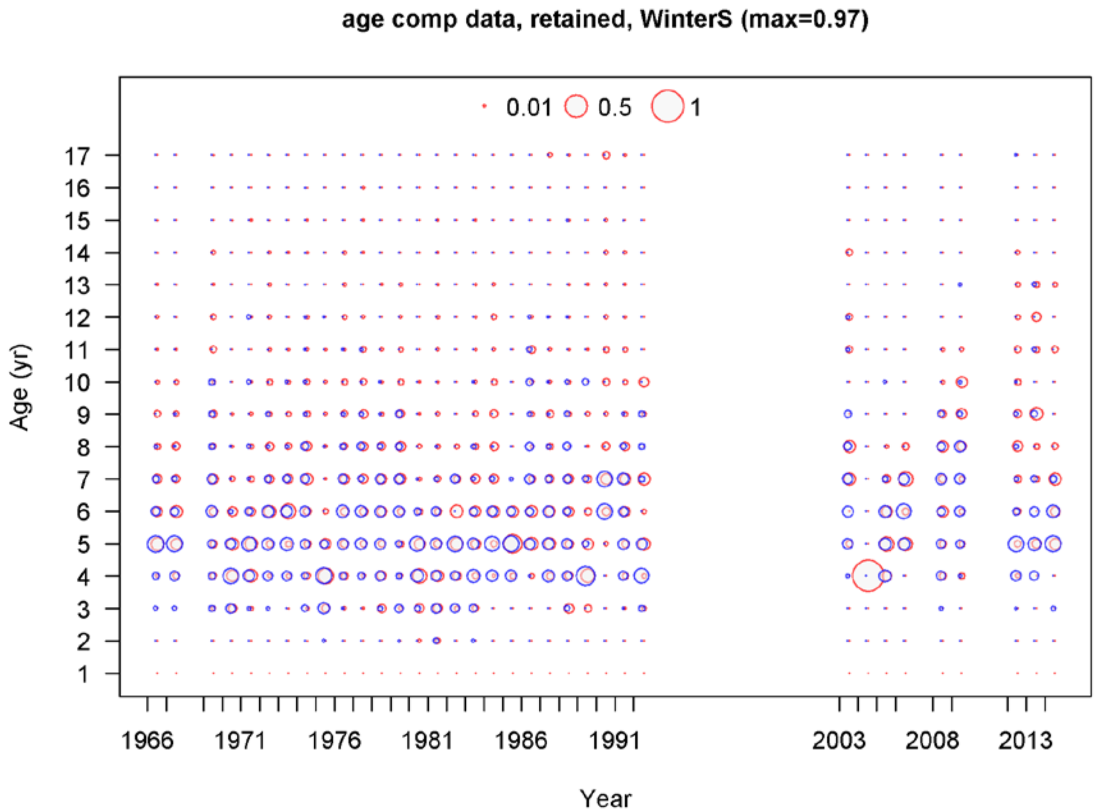


Figure 43. Winter south age-frequency data, females (red) and males (blue).

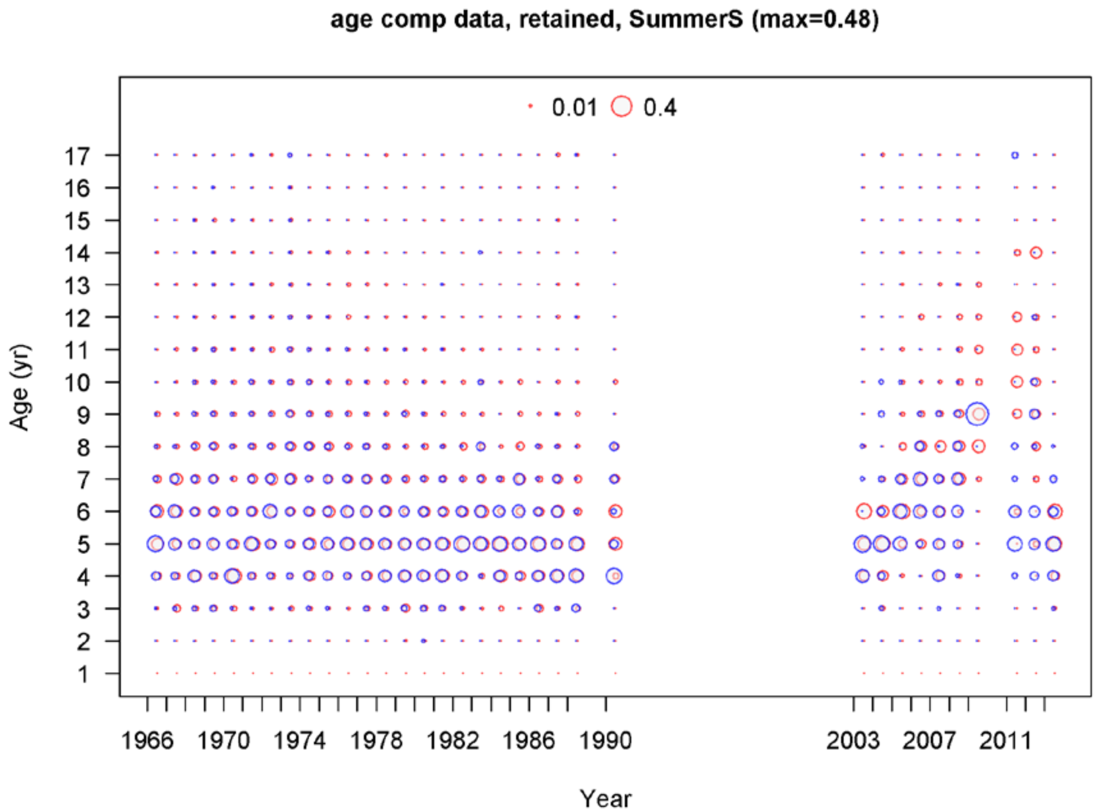


Figure 44. Summer south age-frequency data, females (red) and males (blue).

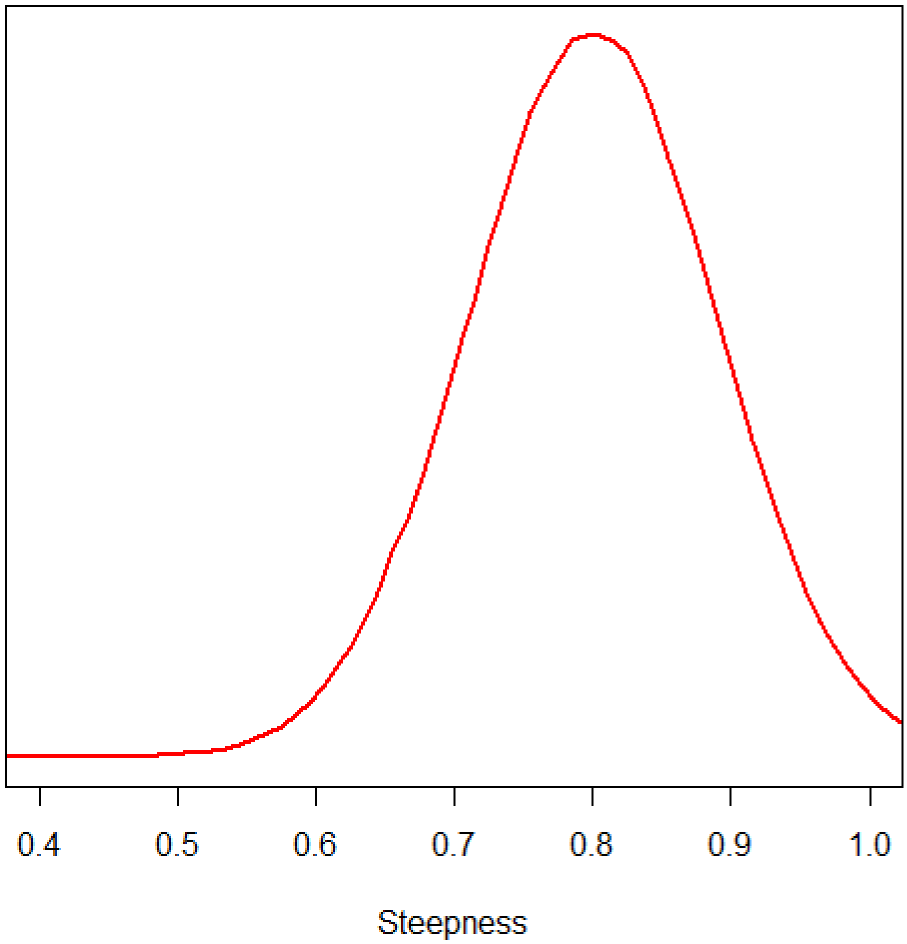


Figure 45. Prior for steepness

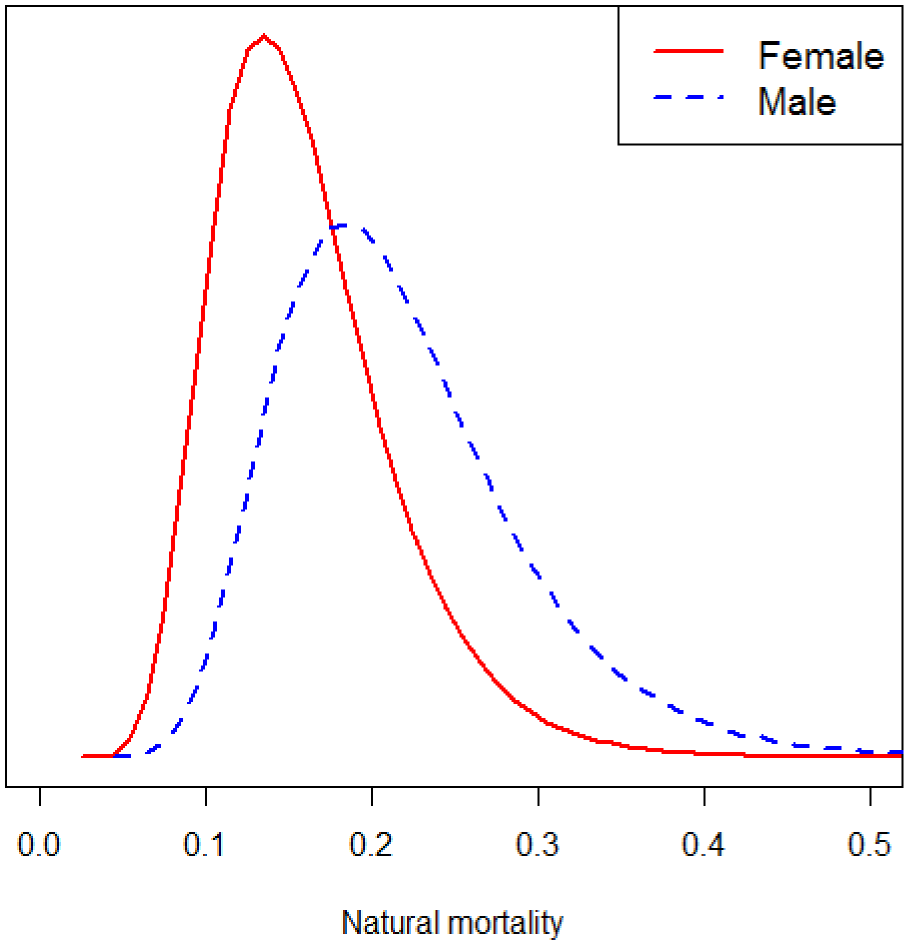


Figure 46. Priors for female (red solid line) and male (blue dashed line) for M.

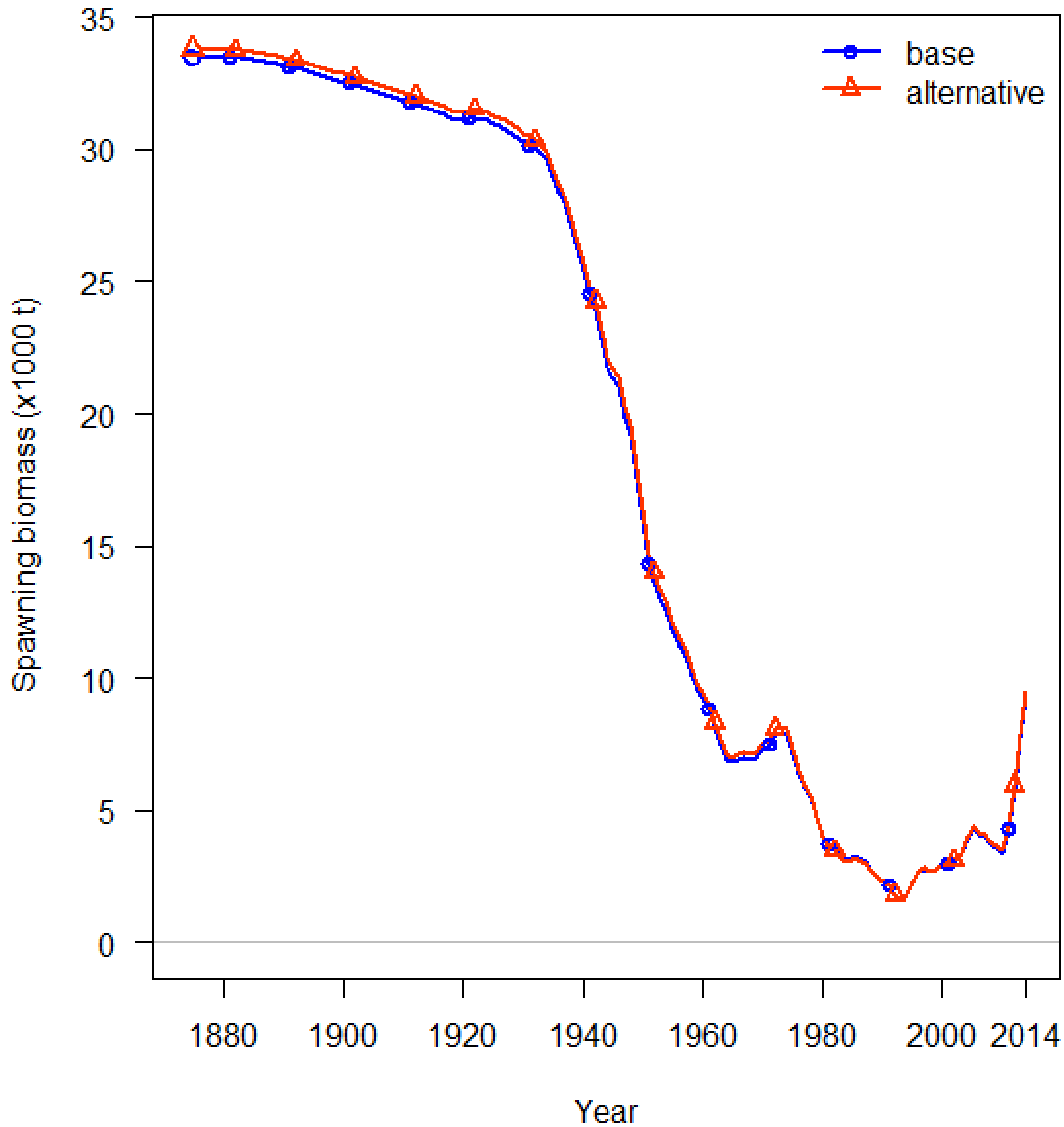


Figure 47 – Comparison between base model (likelihood = 1509.18) and alternative model found during convergence testing (likelihood = 1509.03). The alternative model identifies a slightly higher unfished spawning stock biomass, but differences in recent years are negligible.

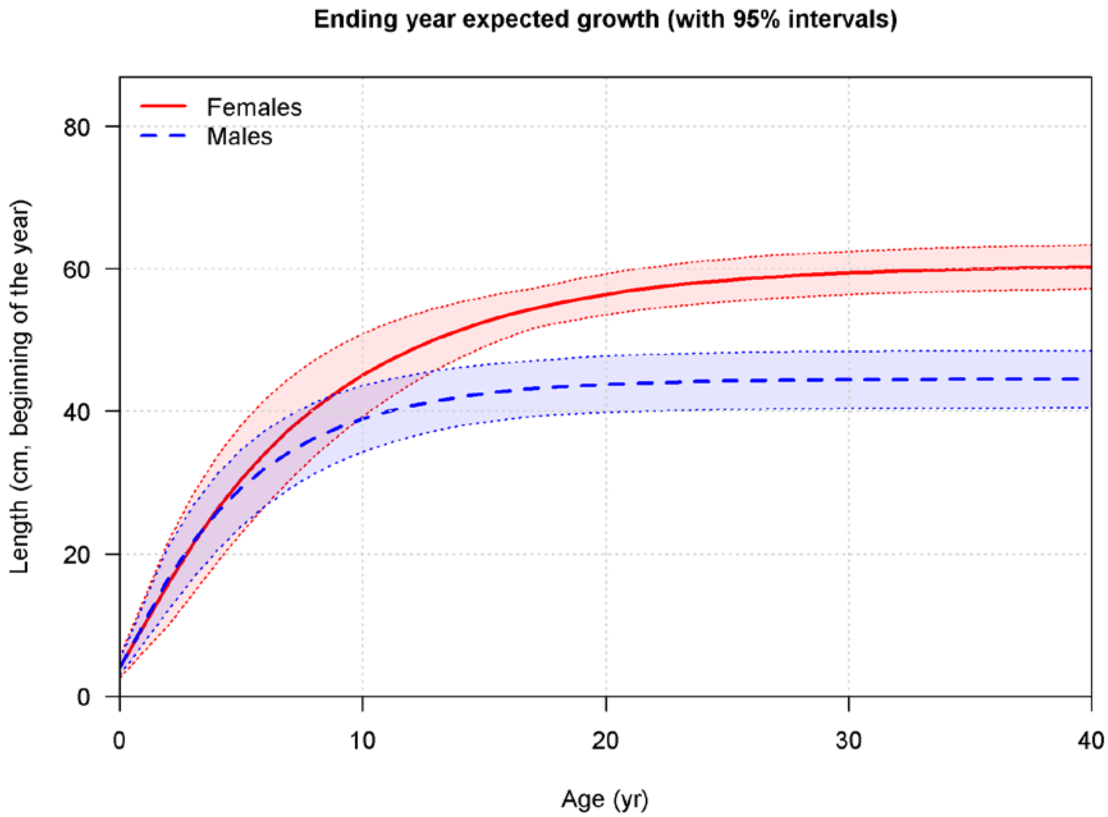


Figure 48. The growth curve for females (upper solid line) and males (lower solid line) with ~95% interval (dashed lines) indicating the estimated variability of length-at-age for the base case model.

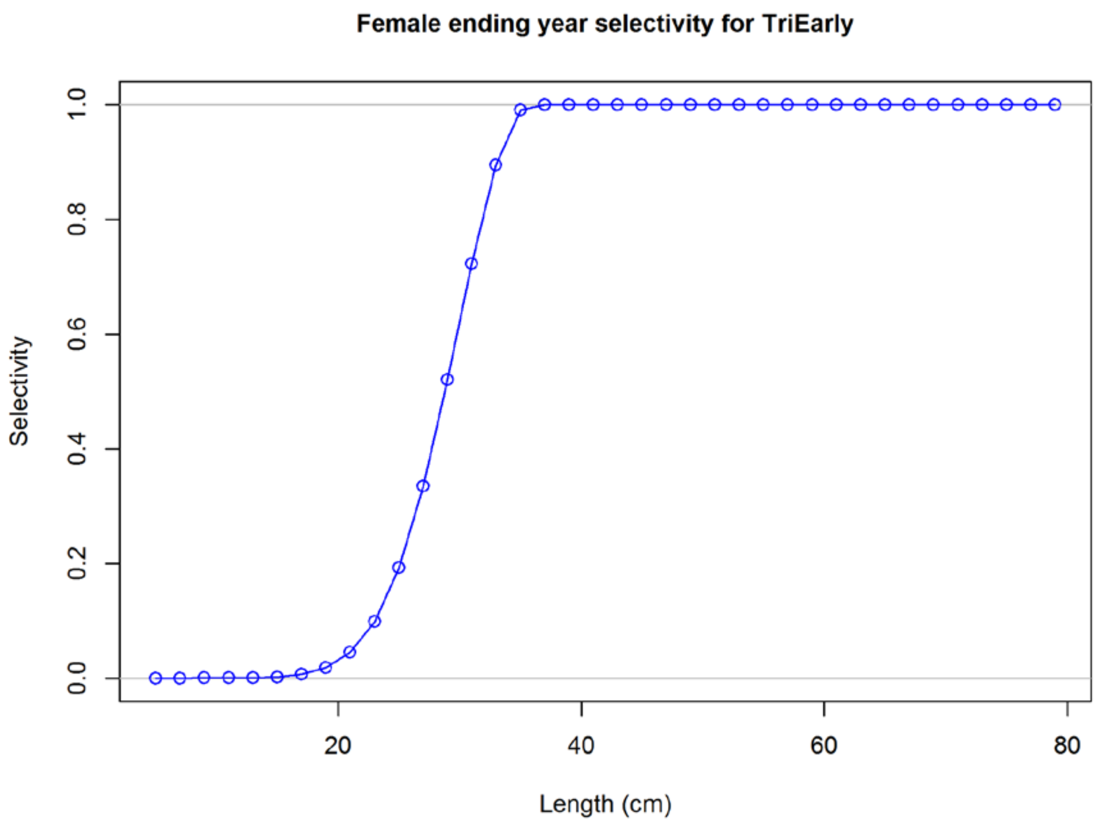


Figure 49. Estimated length-based selectivity curves for the early triennial survey, females.

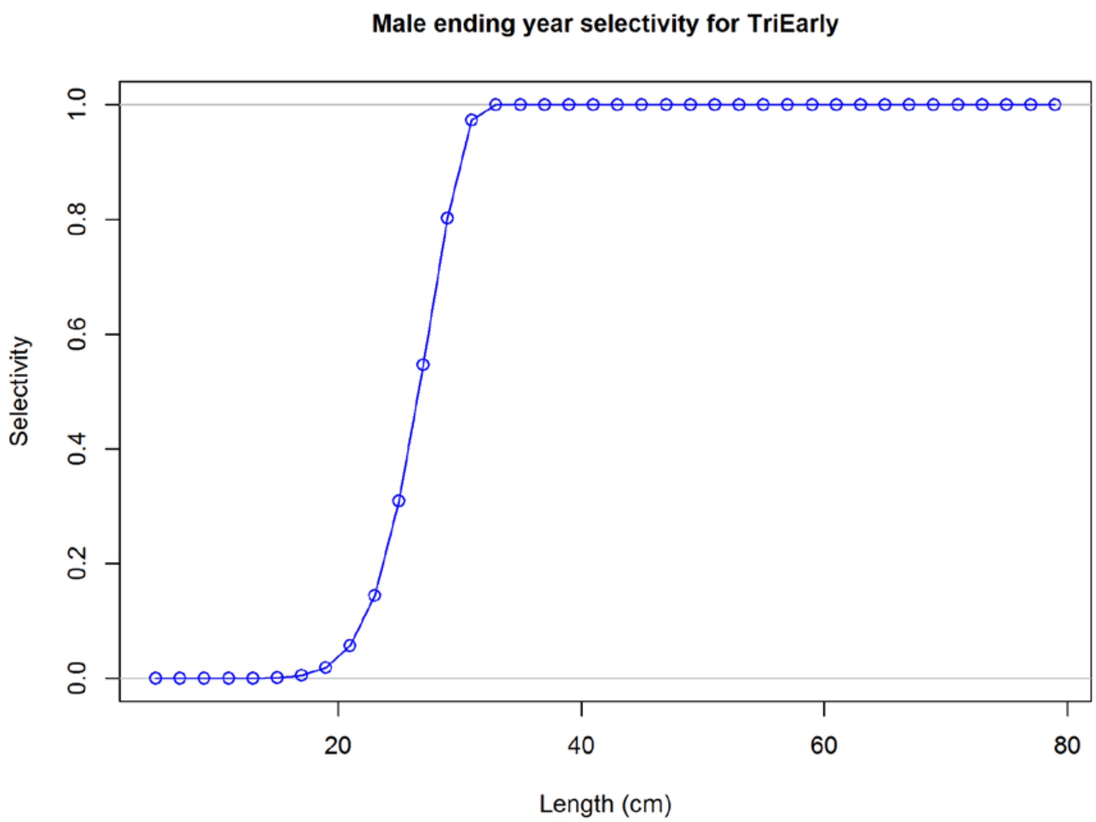


Figure 50. Estimated length-based selectivity curves for the early triennial survey, males.

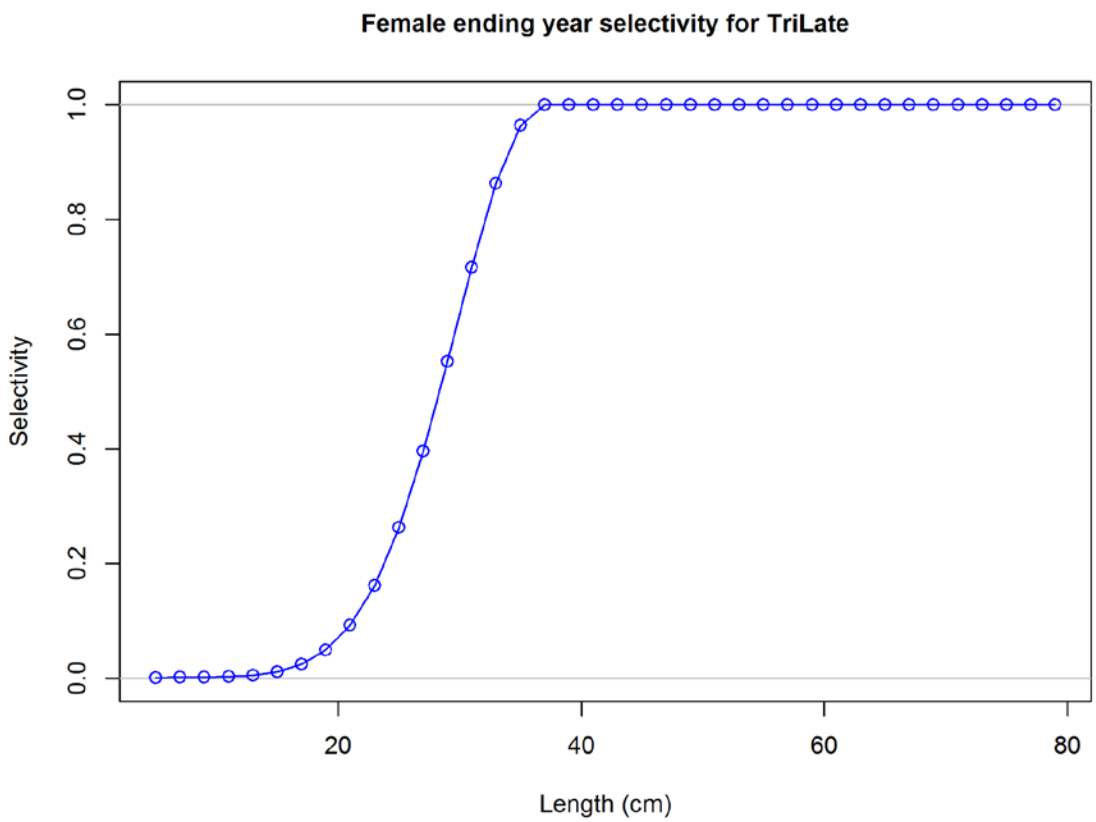


Figure 51. Estimated length-based selectivity curves for the late triennial survey, females.

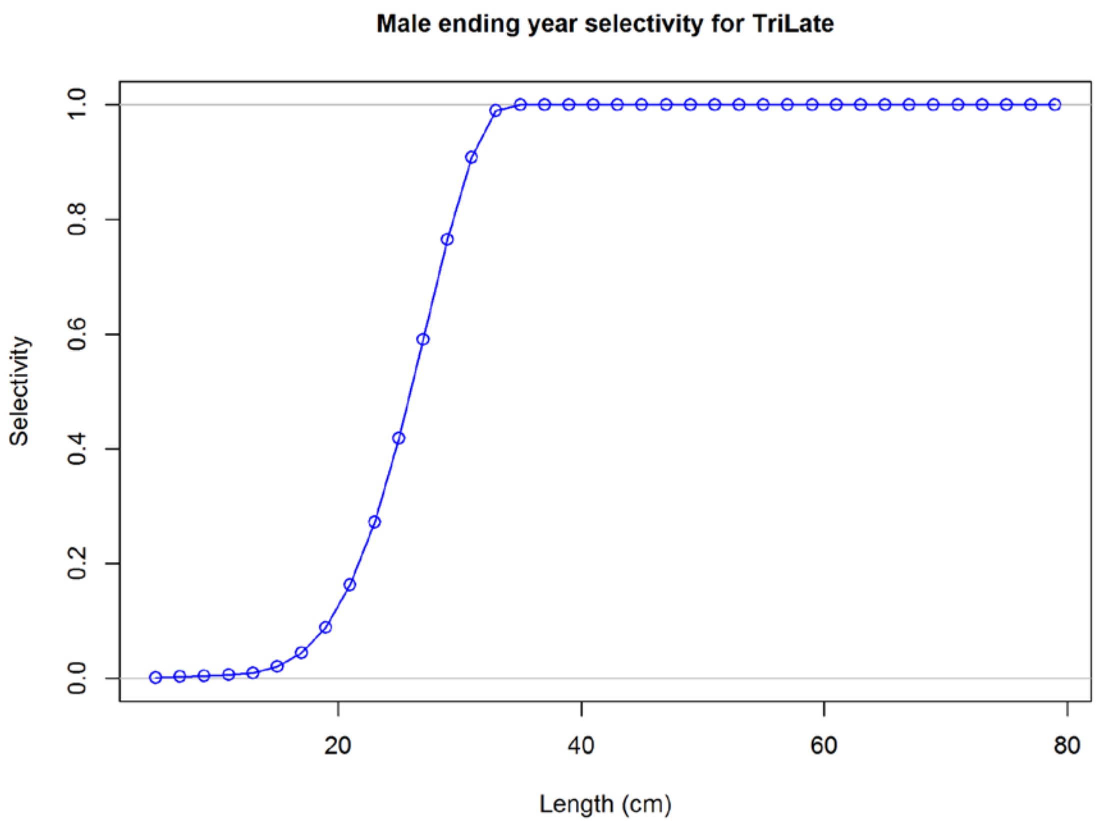


Figure 52. Estimated length-based selectivity curves for the late triennial survey, males.

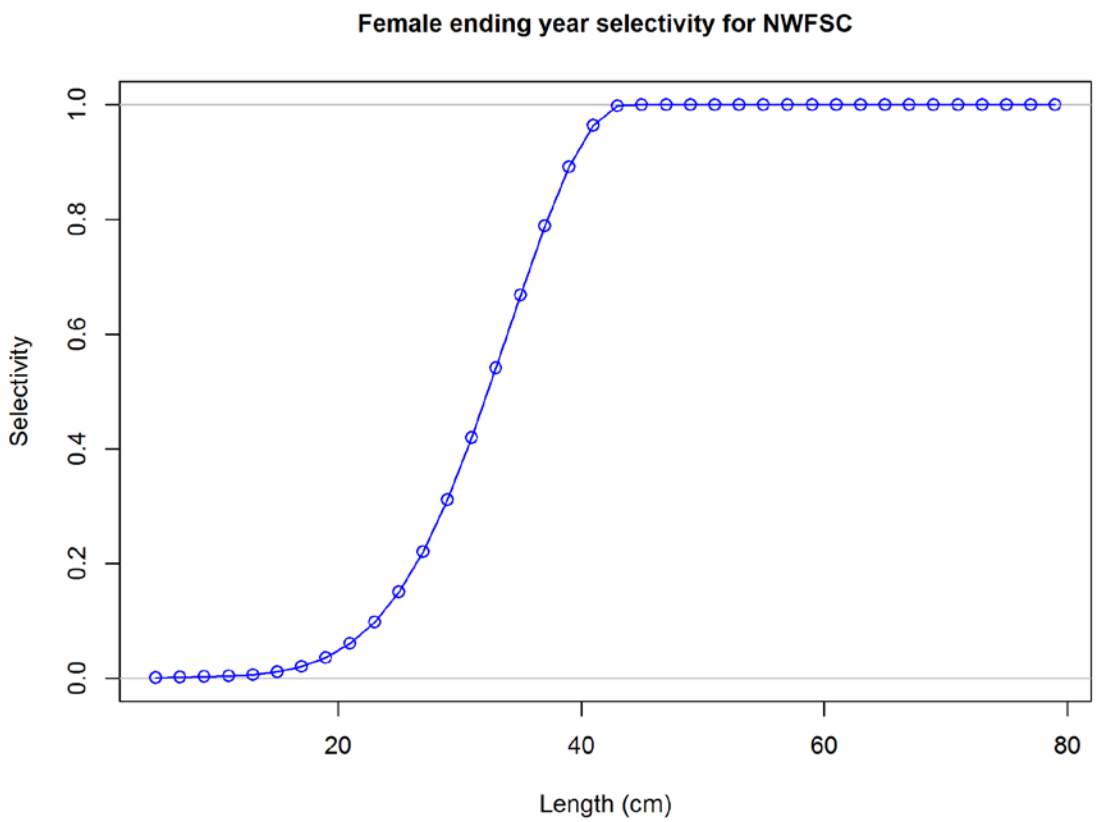


Figure 53. Estimated length-based selectivity curves for the NWFSC survey, females.

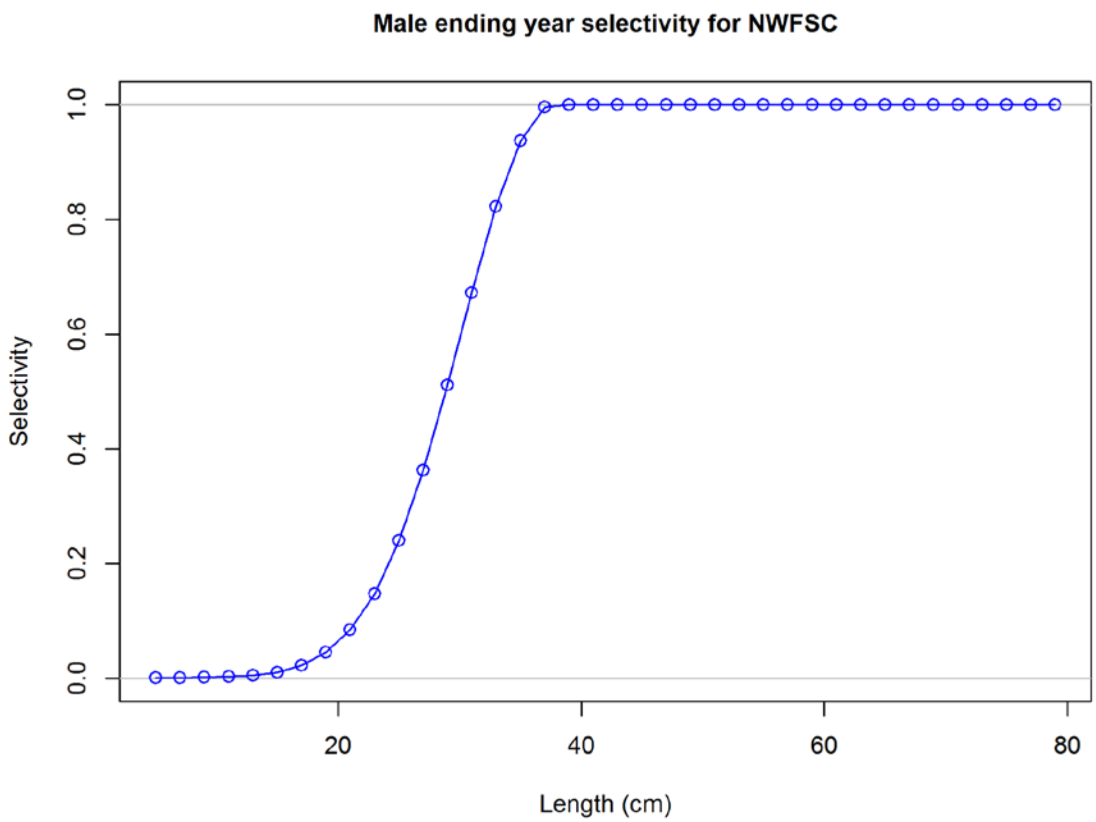


Figure 54. Estimated length-based selectivity curves for the NWFSC survey, males.

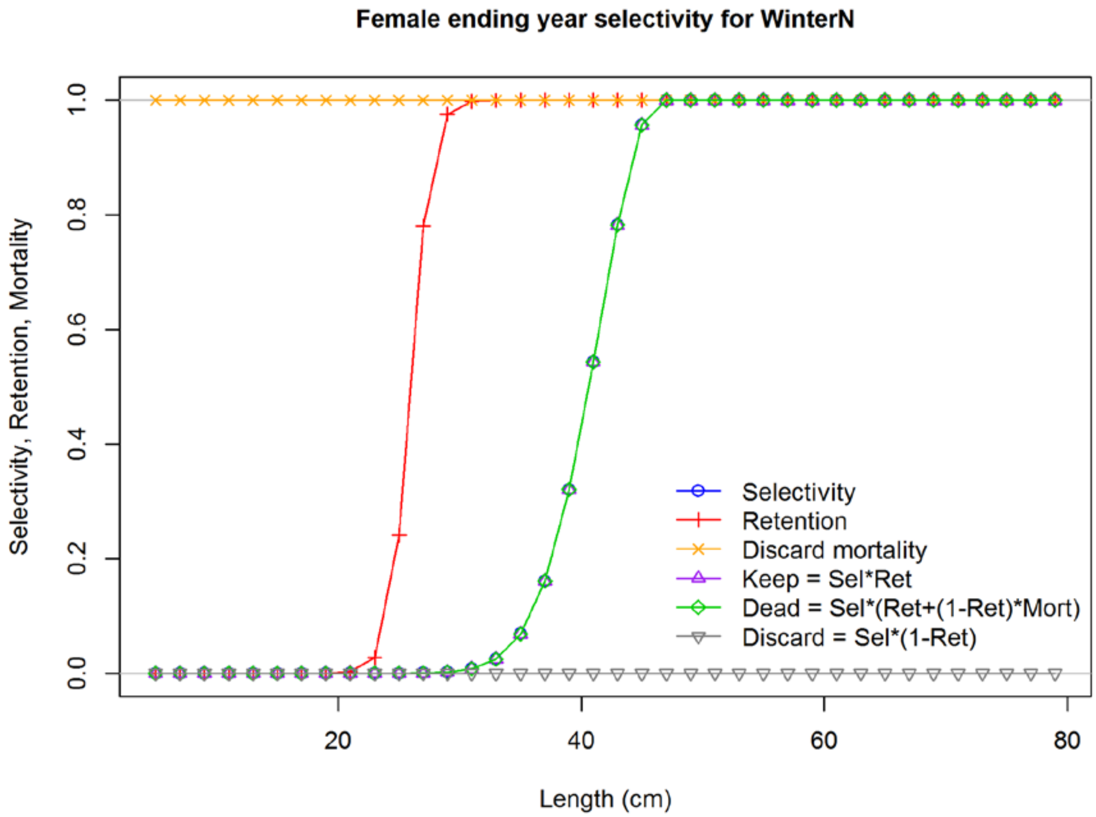


Figure 55. Estimated end year length-based selectivity curves for the winter north fleet, females.

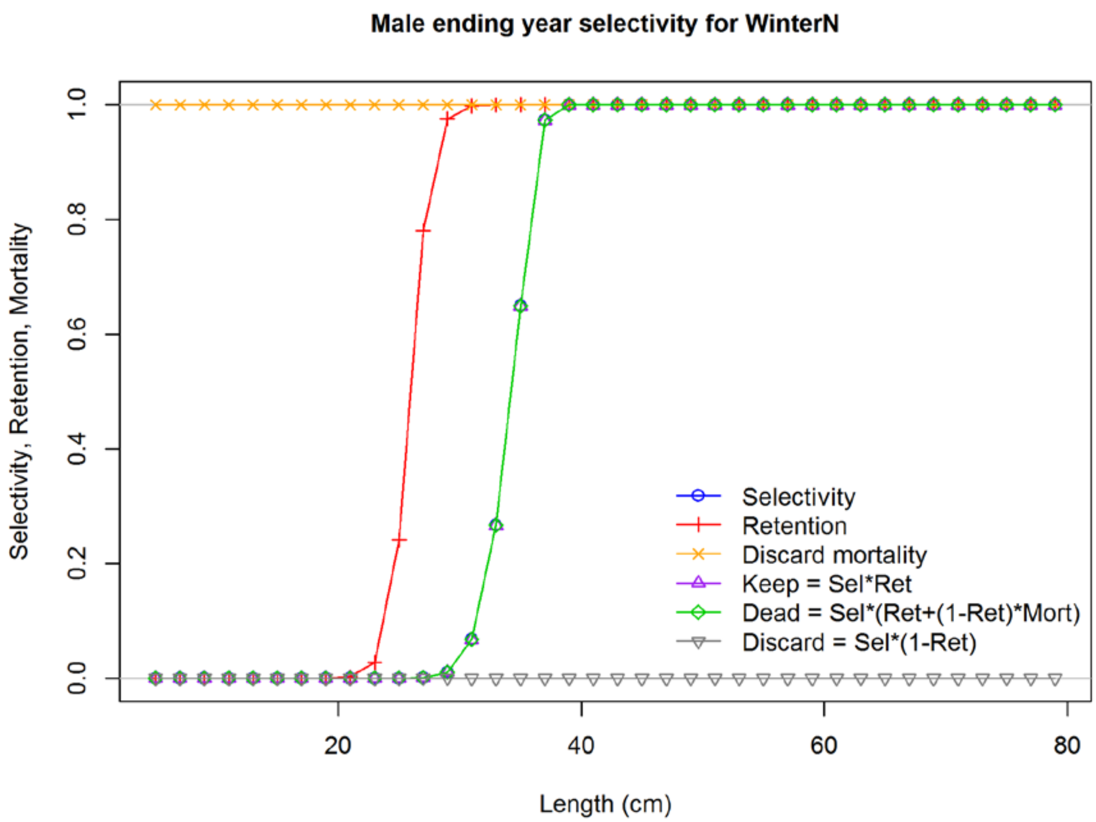


Figure 56. Estimated end year length-based selectivity curves for the winter north fleet, males.

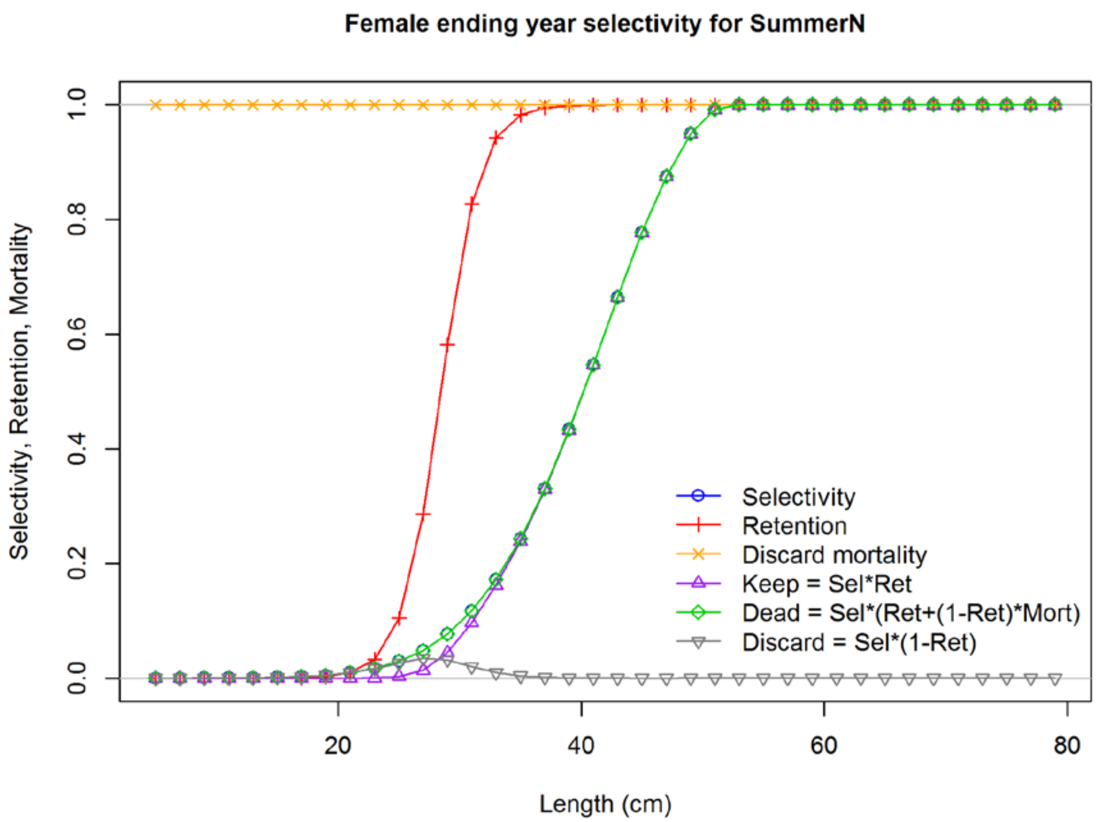


Figure 57. Estimated end year length-based selectivity curves for the summer north fleet, females.

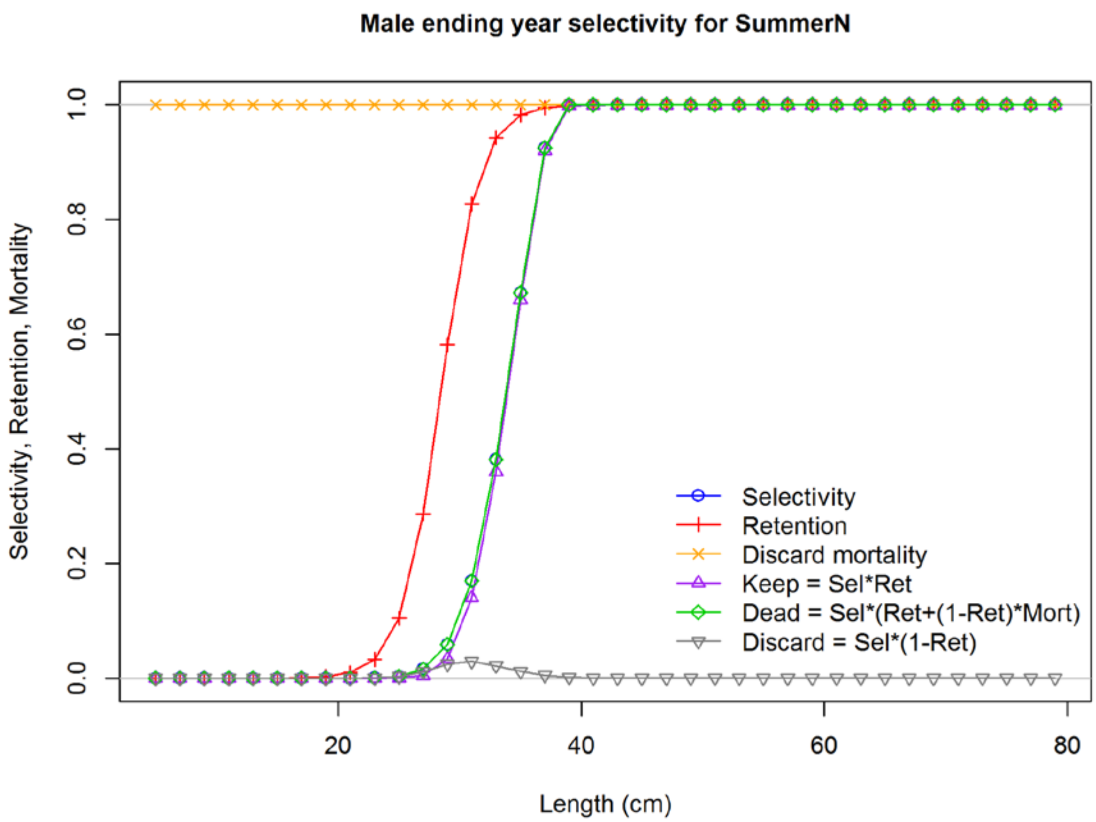


Figure 58. Estimated end year length-based selectivity curves for the summer north fleet, males.

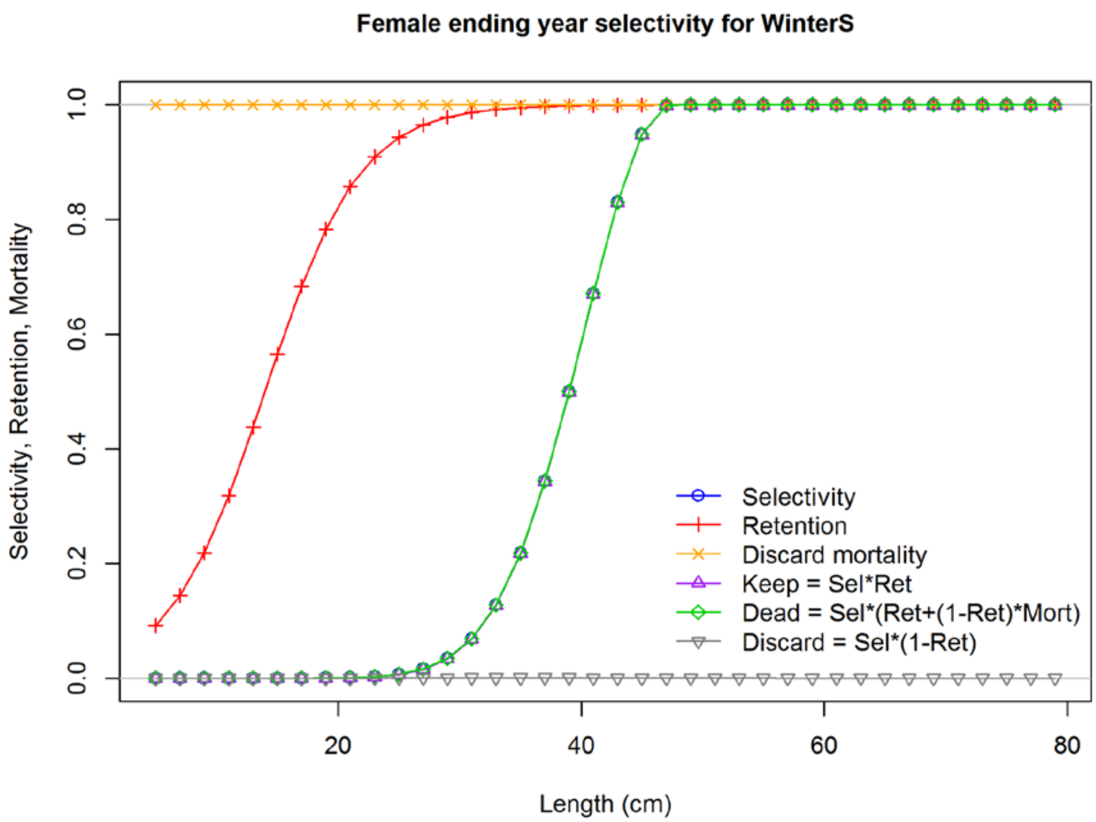


Figure 59. Estimated end year length-based selectivity curves for the winter south fleet, females.

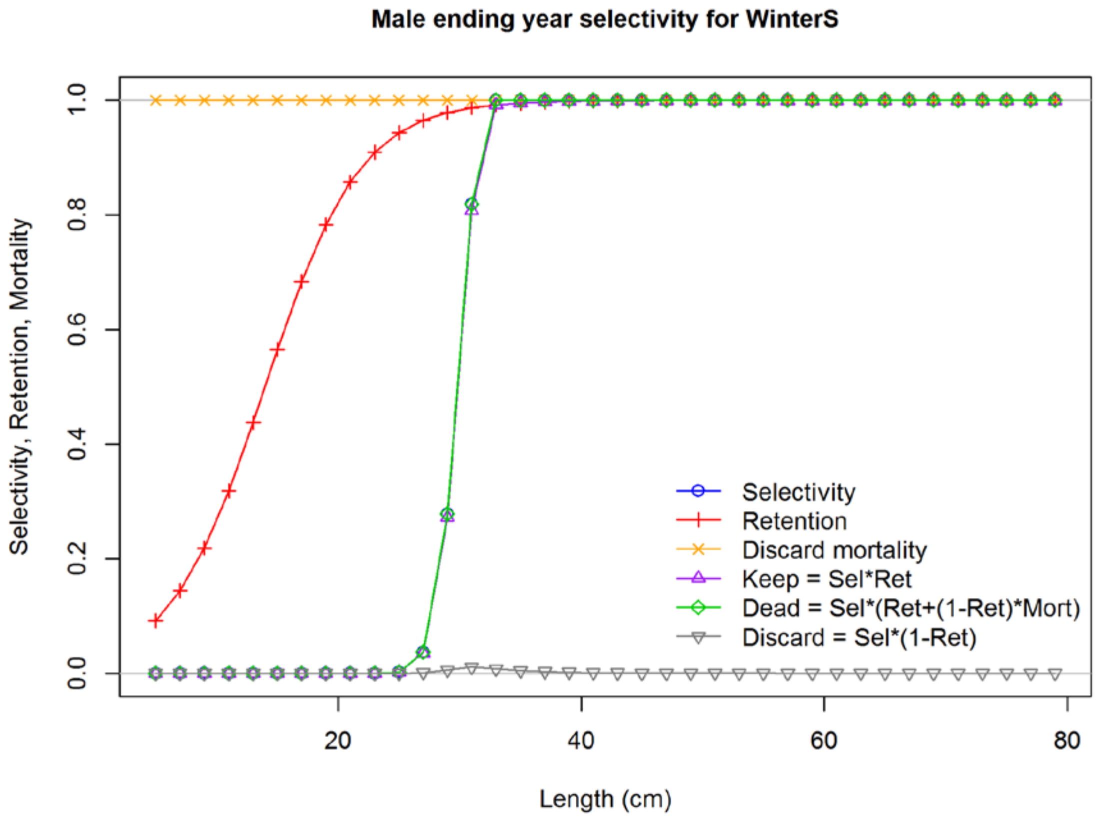


Figure 60. Estimated end year length-based selectivity curves for the winter south fleet, males.

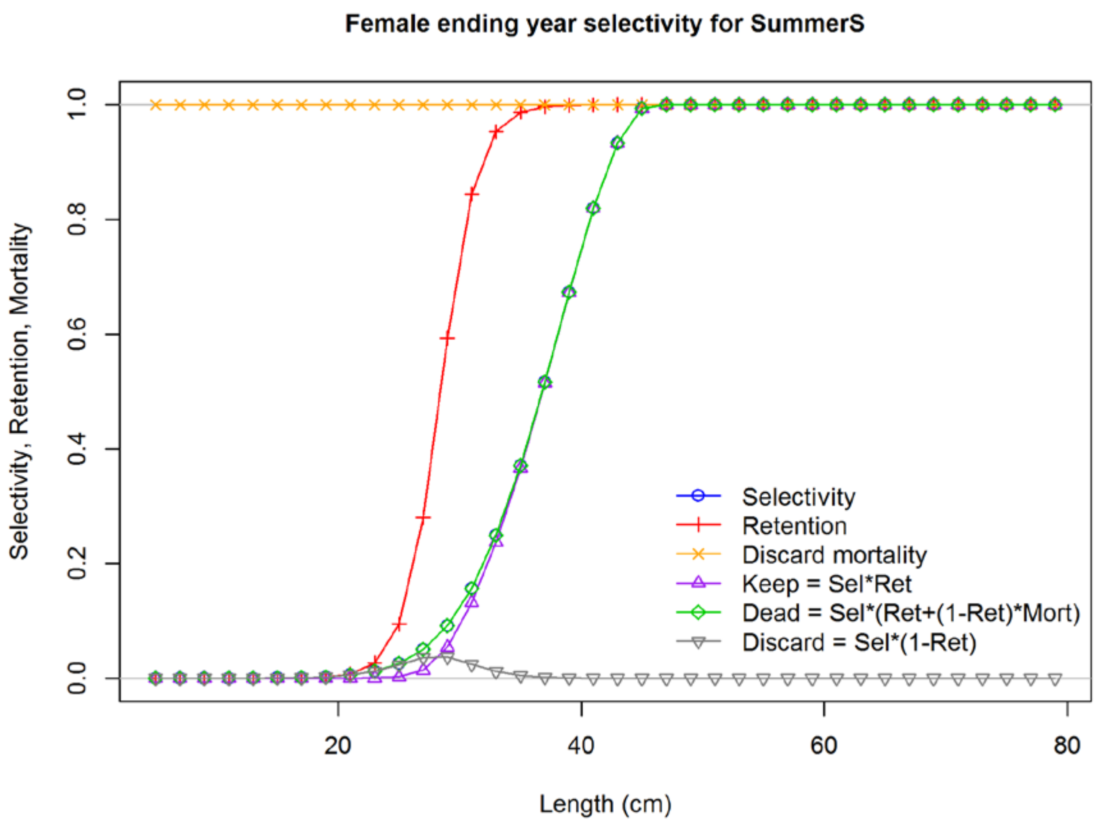


Figure 61. Estimated end year length-based selectivity curves for the summer south fleet, females.

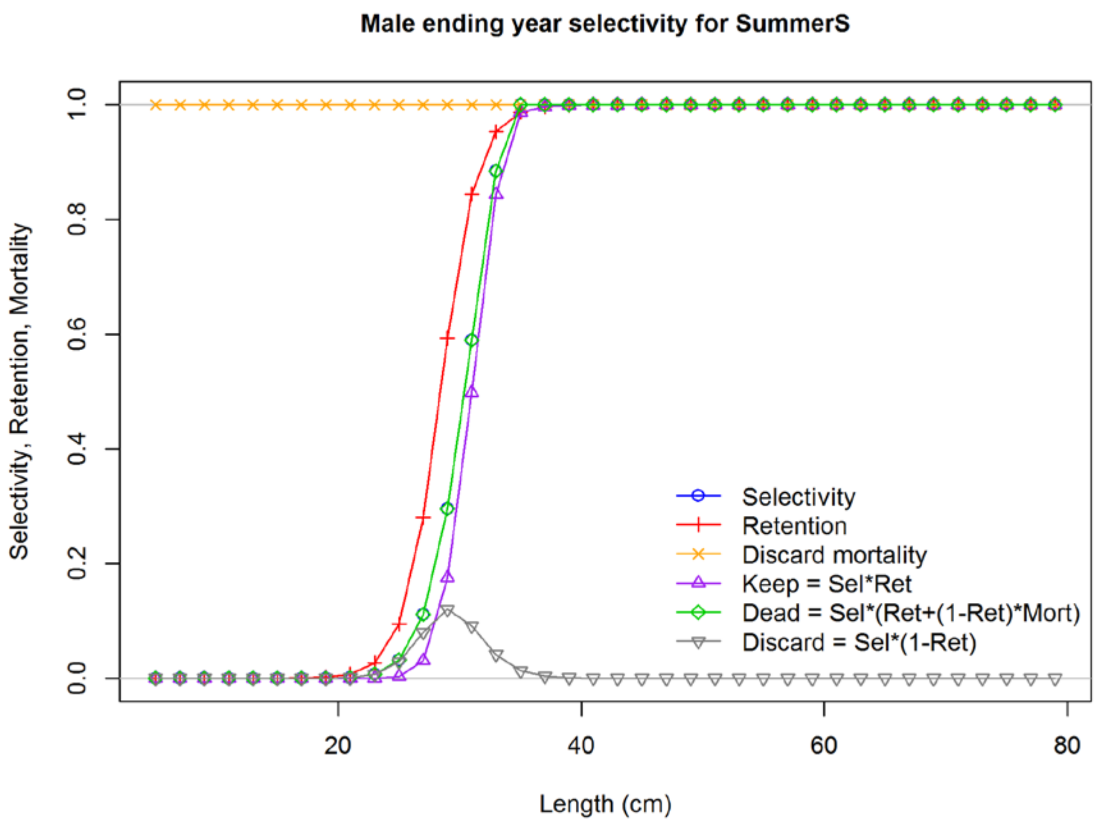


Figure 62. Estimated end year length-based selectivity curves for the summer south fleet, males.

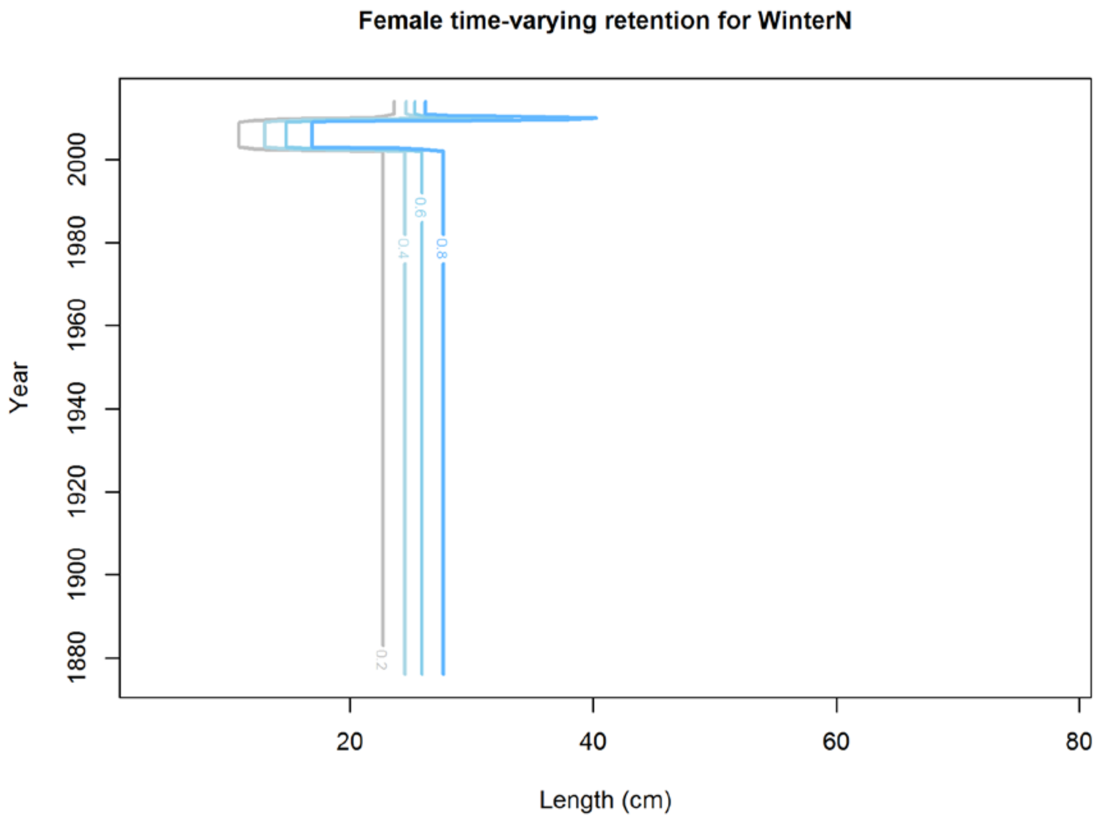


Figure 63. Estimated time varying length-based selectivity curves for the winter north fleet, females.

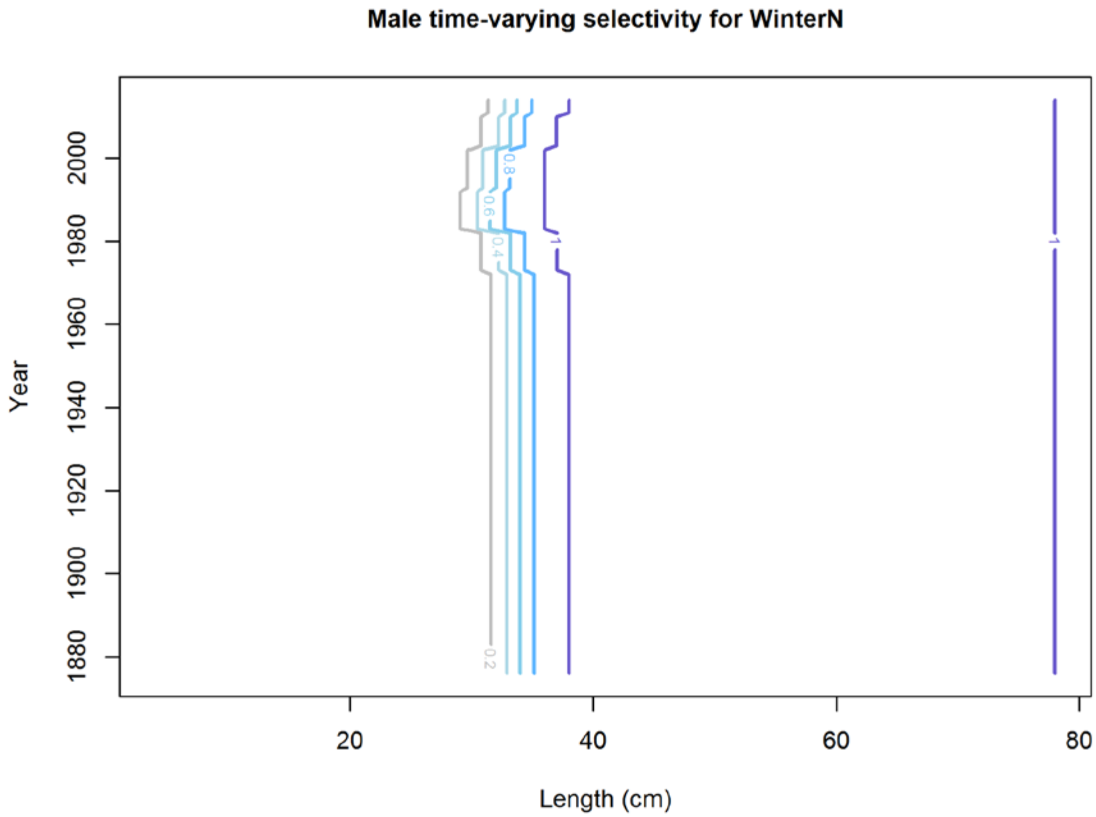


Figure 64.Estimated time varying length-based selectivity curves for the winter north fleet, males.

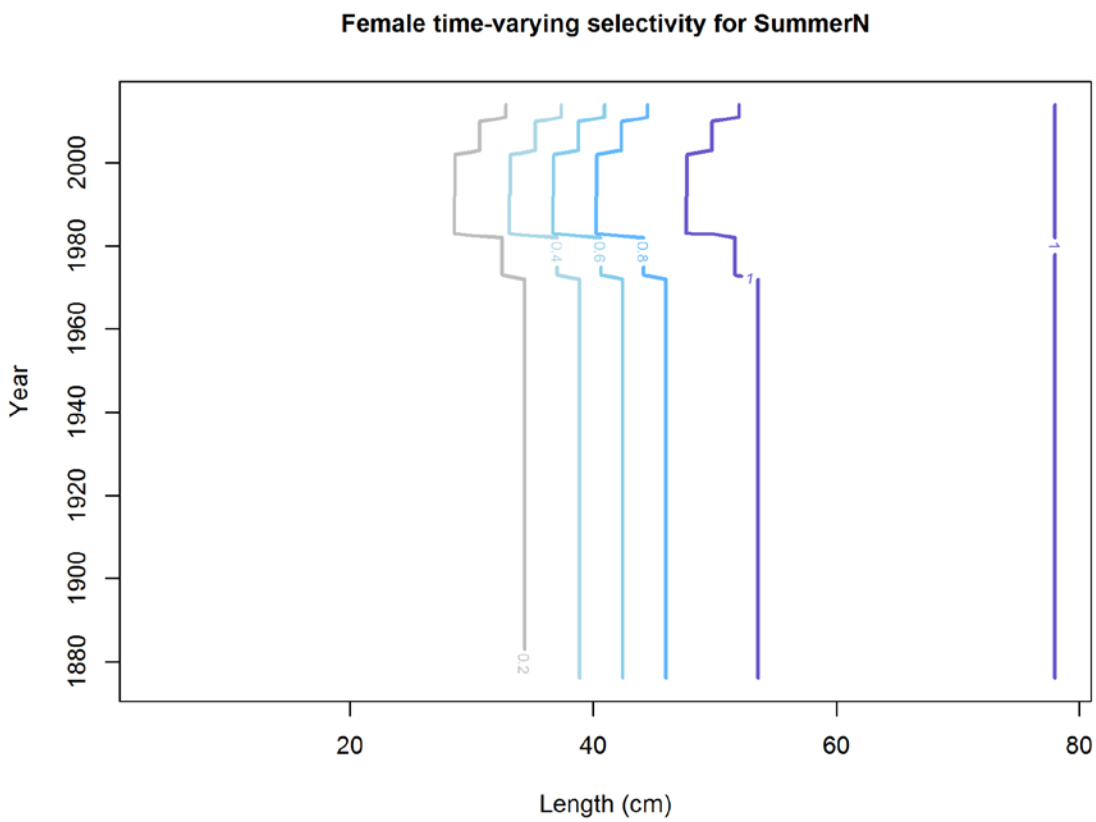


Figure 65. Estimated time varying length-based selectivity curves for the summer north fleet, females.

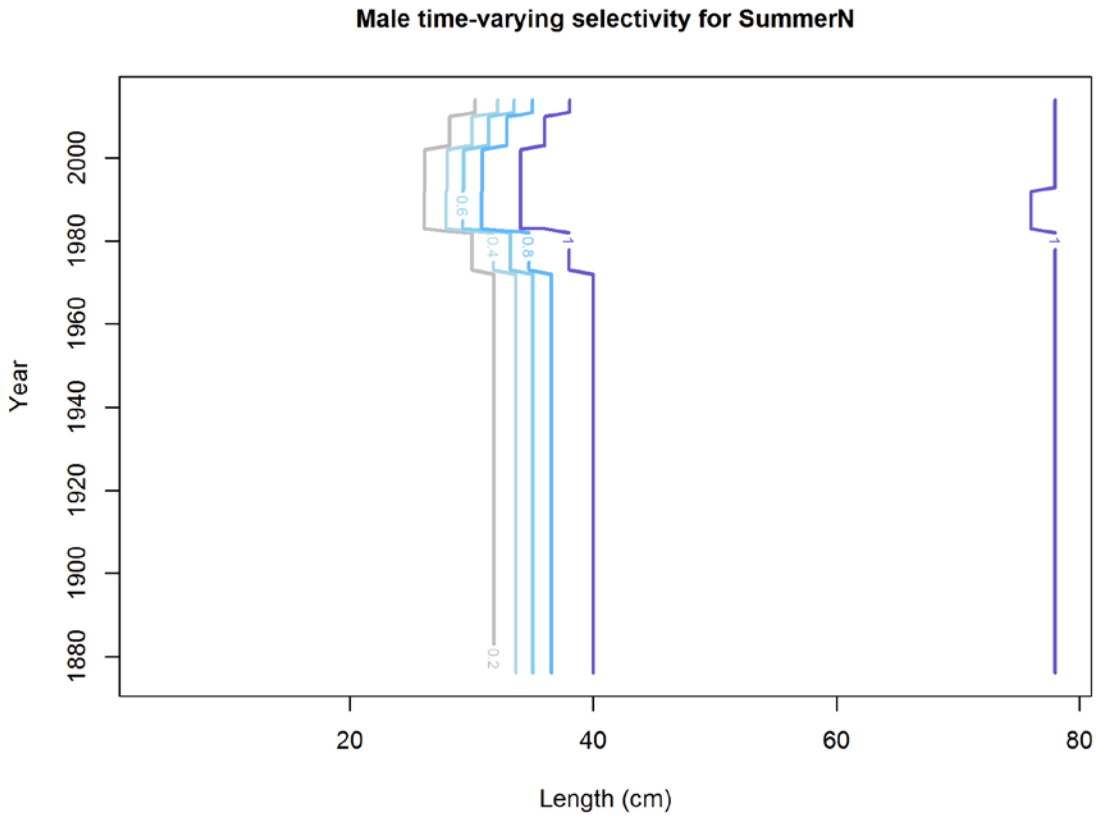


Figure 66. Estimated time varying length-based selectivity curves for the summer north fleet, males.

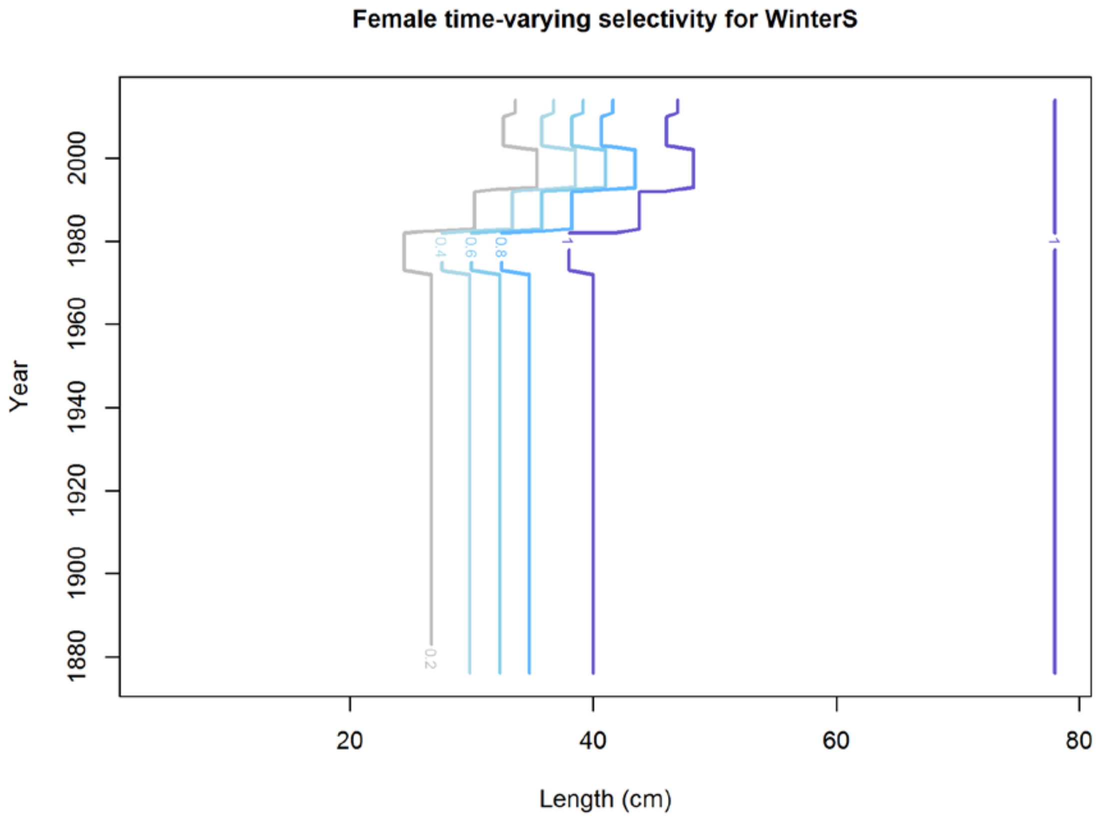


Figure 67. Estimated time varying length-based selectivity curves for the winter south fleet, females.

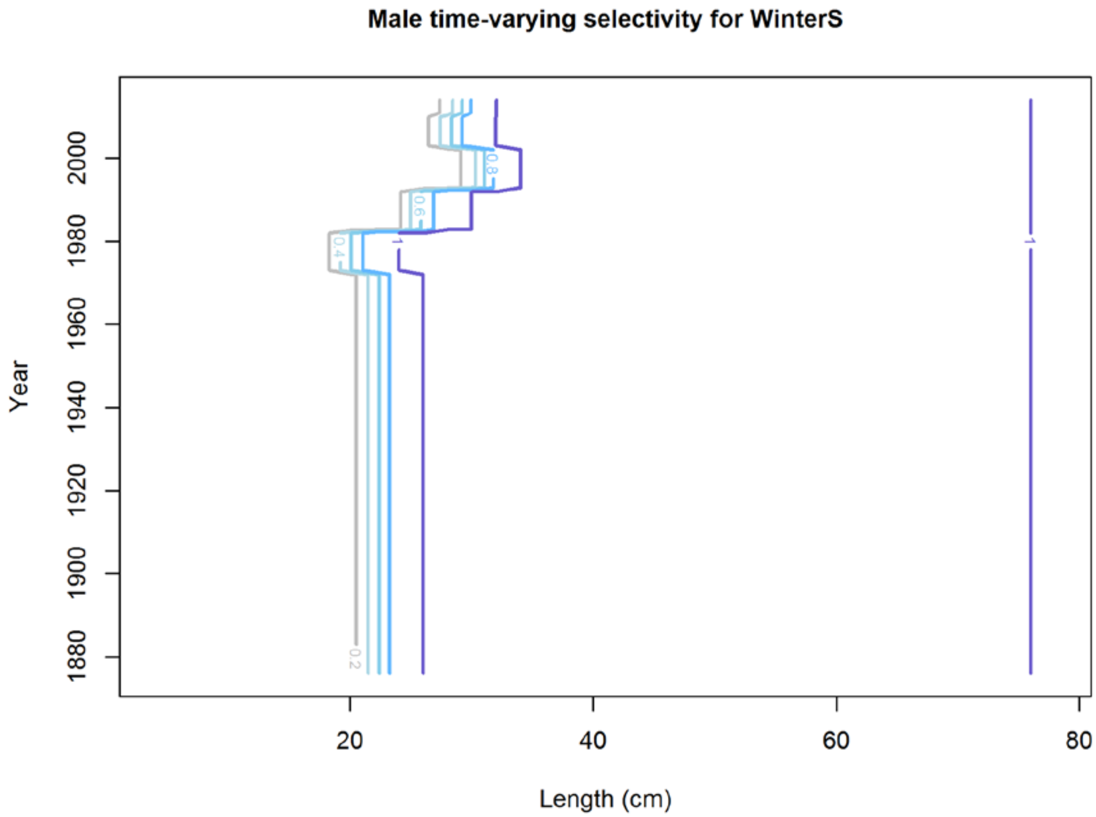


Figure 68.Estimated time varying length-based selectivity curves for the winter south fleet, males.

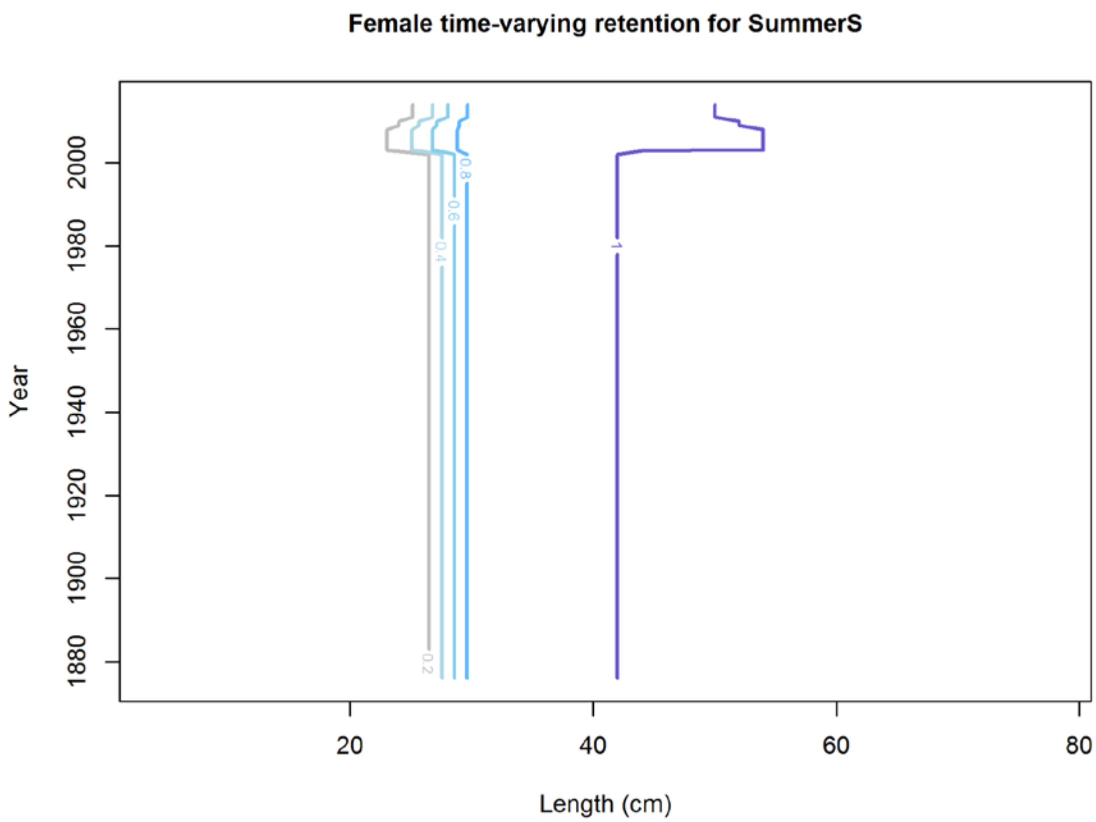


Figure 69. Estimated time varying length-based selectivity curves for the summer south fleet, females.

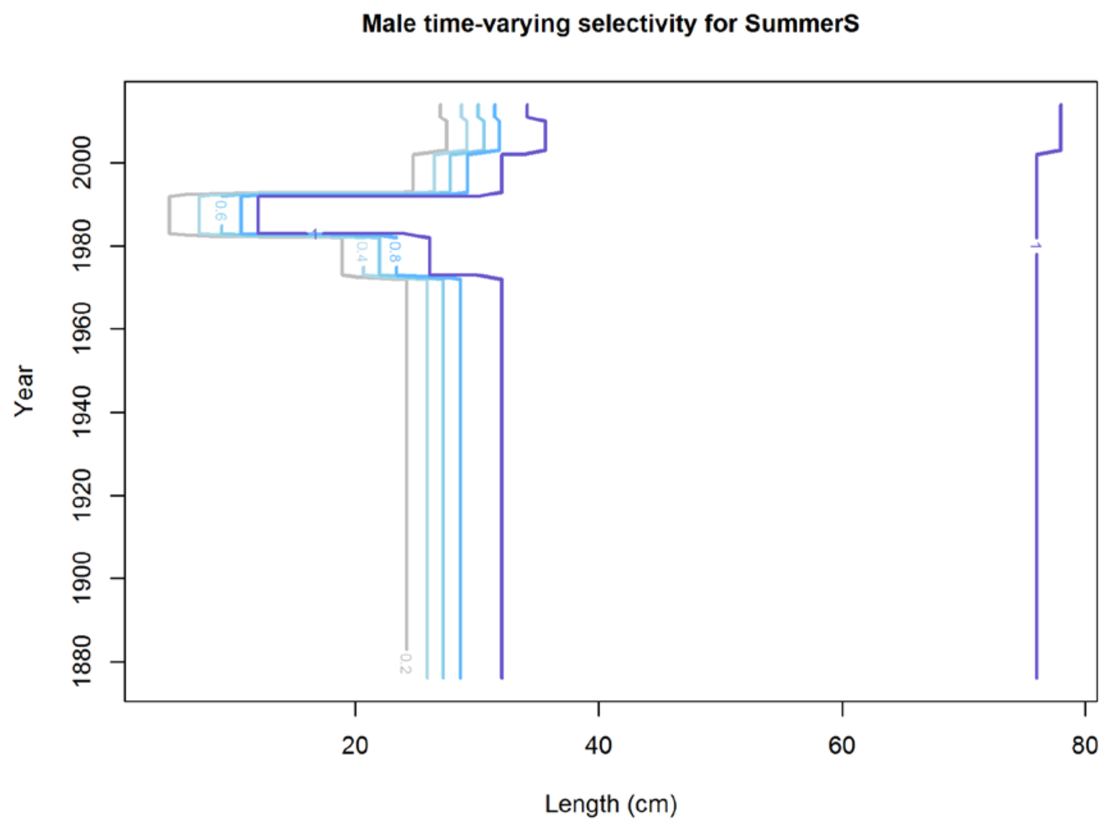


Figure 70. Estimated time varying length-based selectivity curves for the summer south fleet, males.

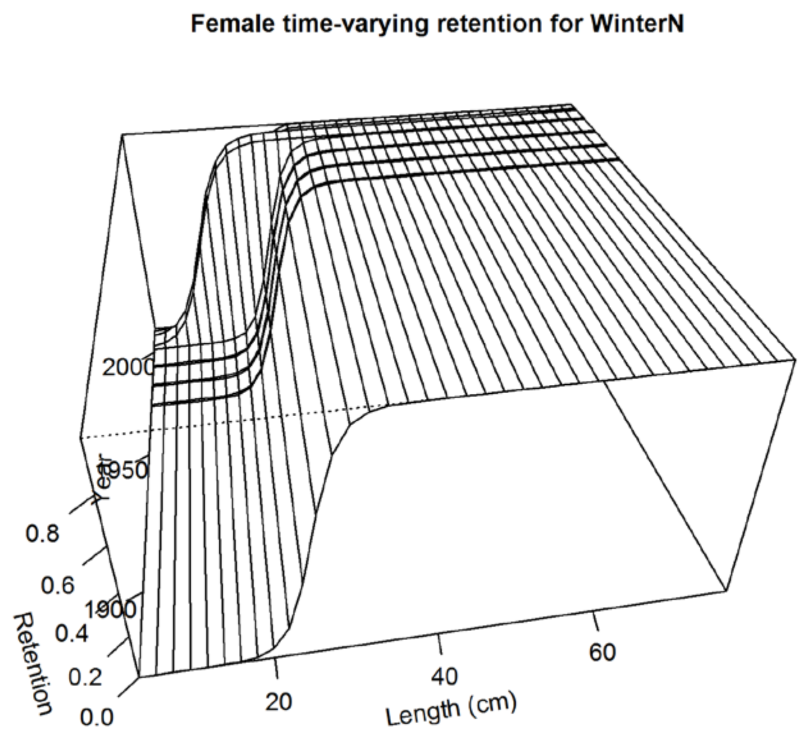


Figure 71. Estimated time varying length-based retention curves for the winter north fleet, females.

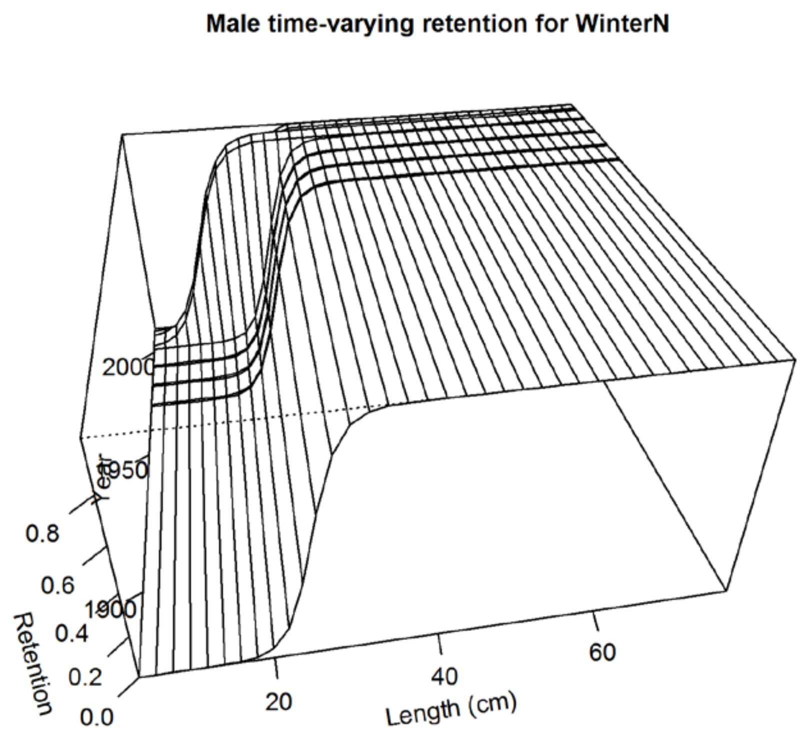


Figure 72.Estimated time varying length-based retention curves for the winter north fleet, males.

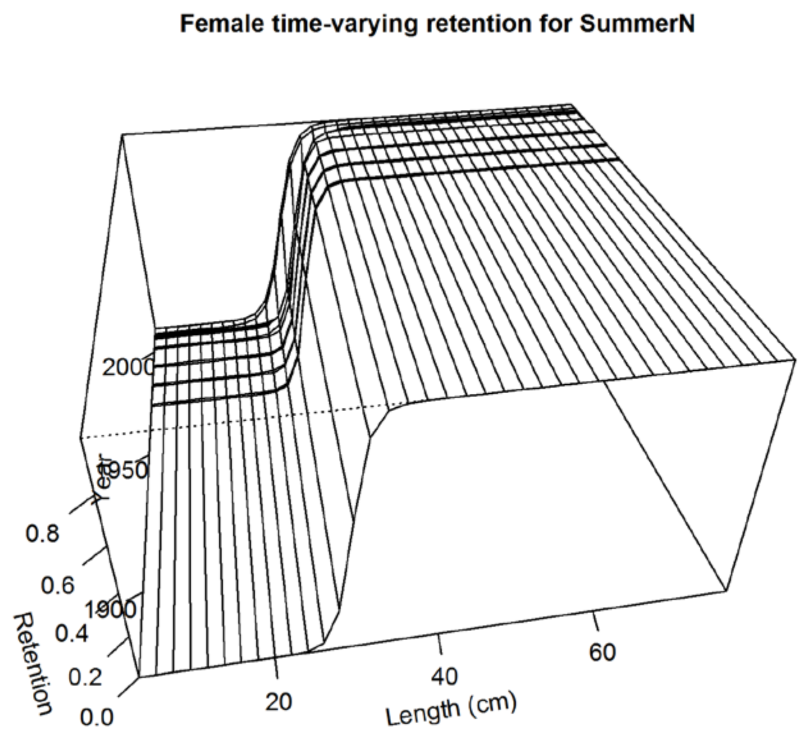


Figure 73. Estimated time varying length-based retention curves for the summer north fleet, females.

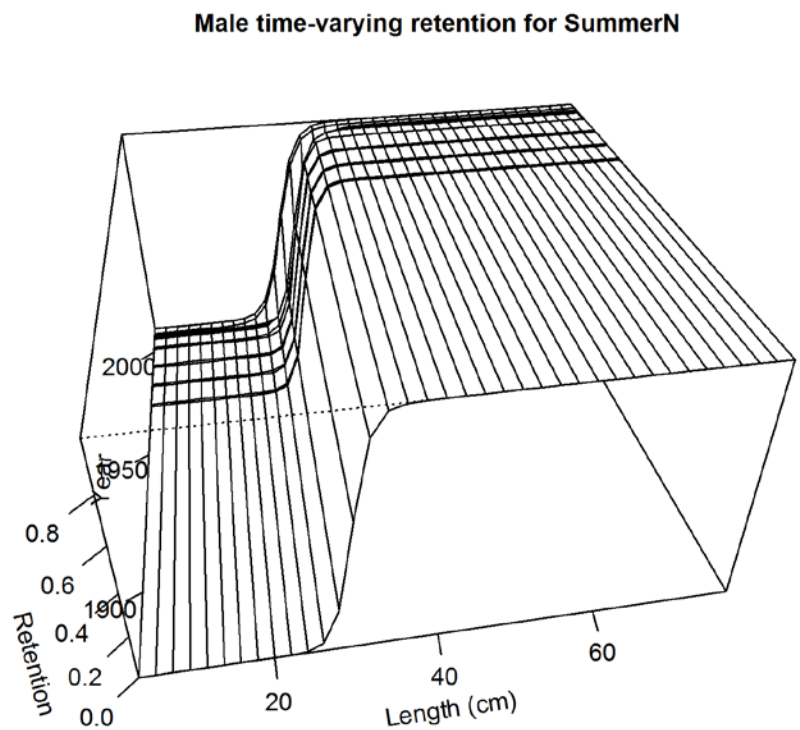


Figure 74. Estimated time varying length-based retention curves for the summer north fleet, males.

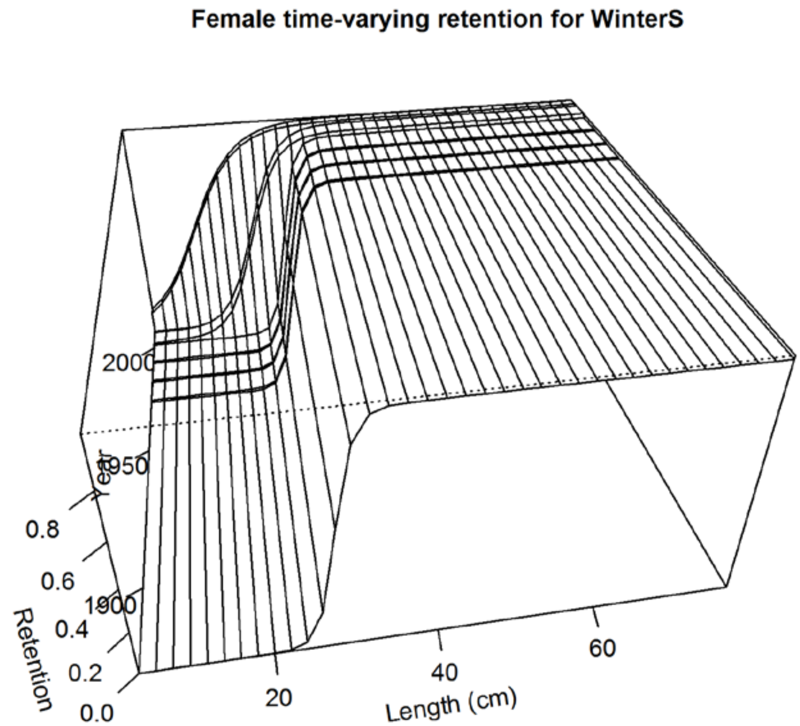


Figure 75. Estimated time varying length-based retention curves for the winter south fleet, females.

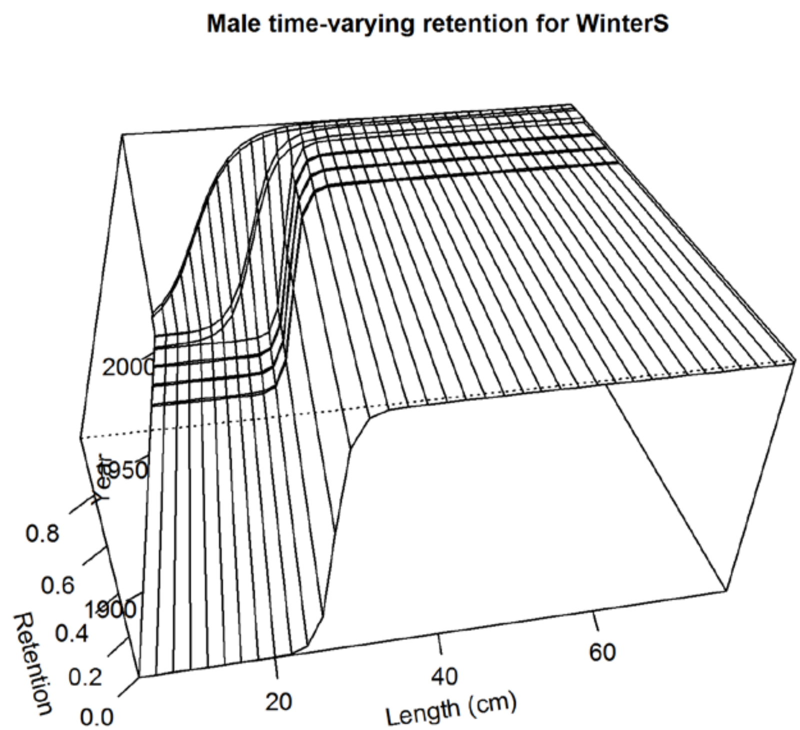


Figure 76.Estimated time varying length-based retention curves for the winter south fleet, males.

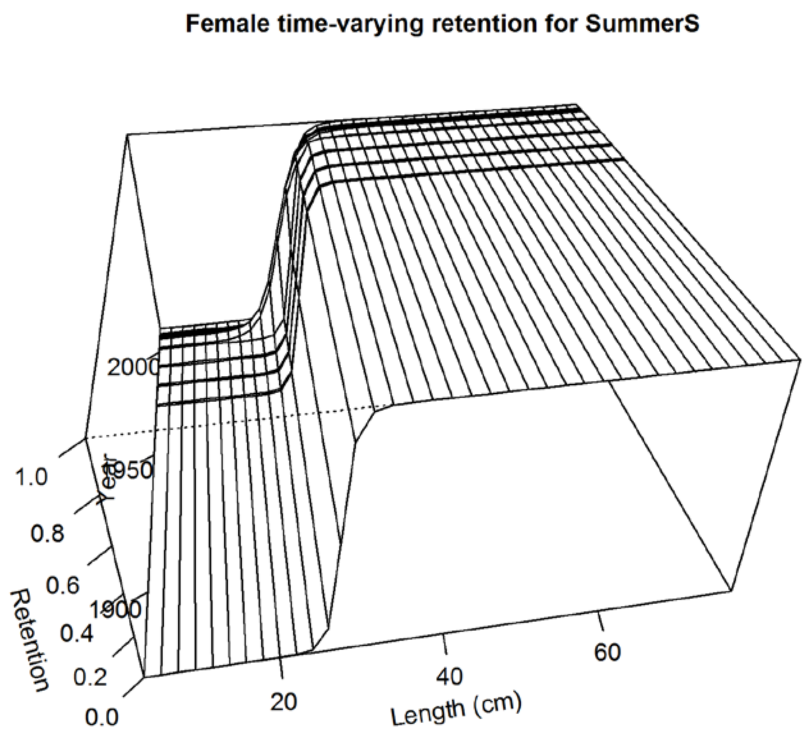


Figure 77. Estimated time varying length-based retention curves for the summer south fleet, females.

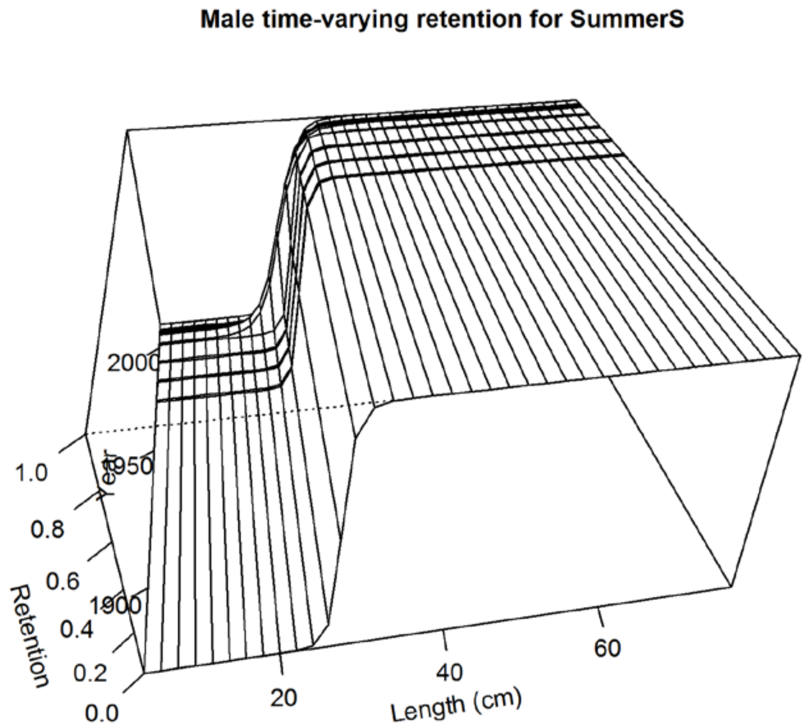


Figure 78. Estimated time varying length-based retention curves for the summer south fleet, males.

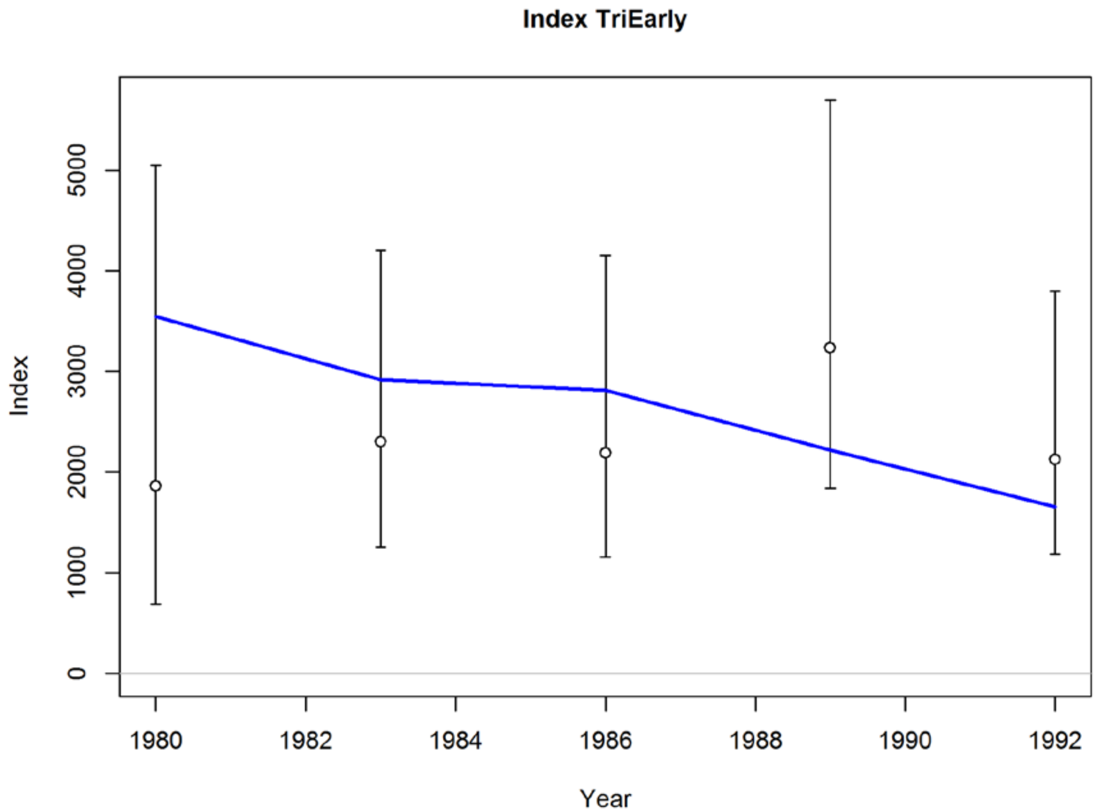


Figure 79. Fit to the early triennial.

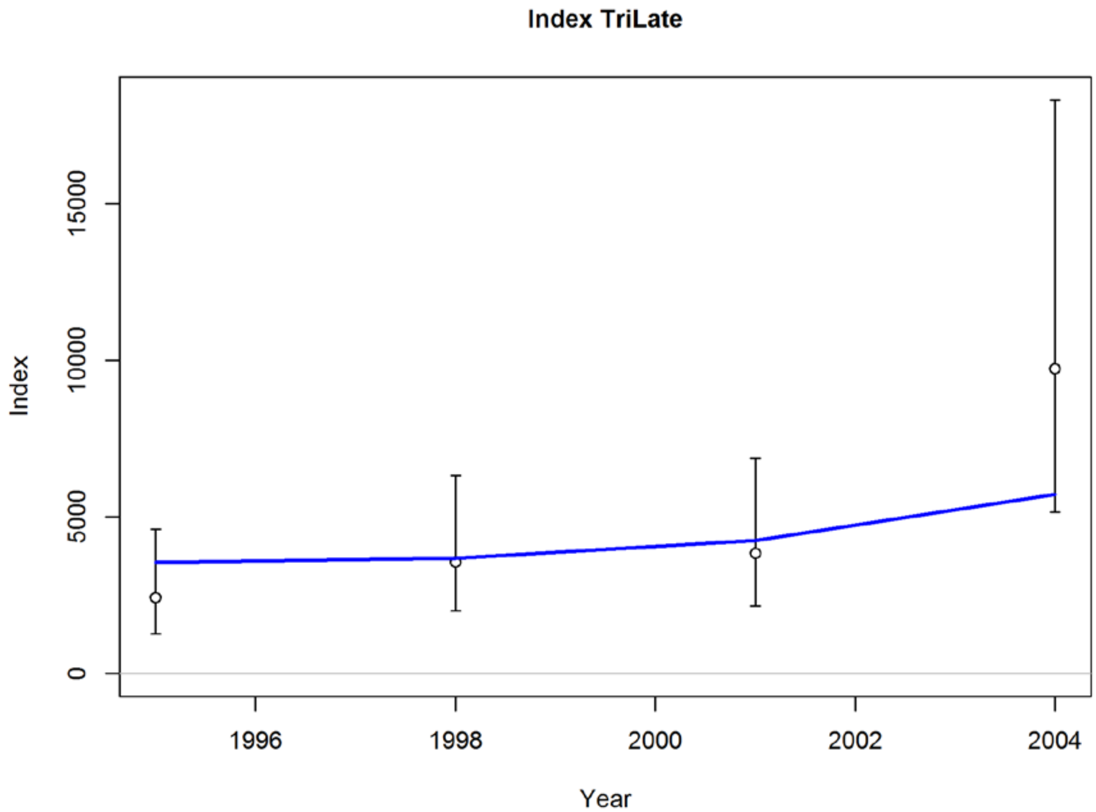


Figure 80. Fit to the late triennial.

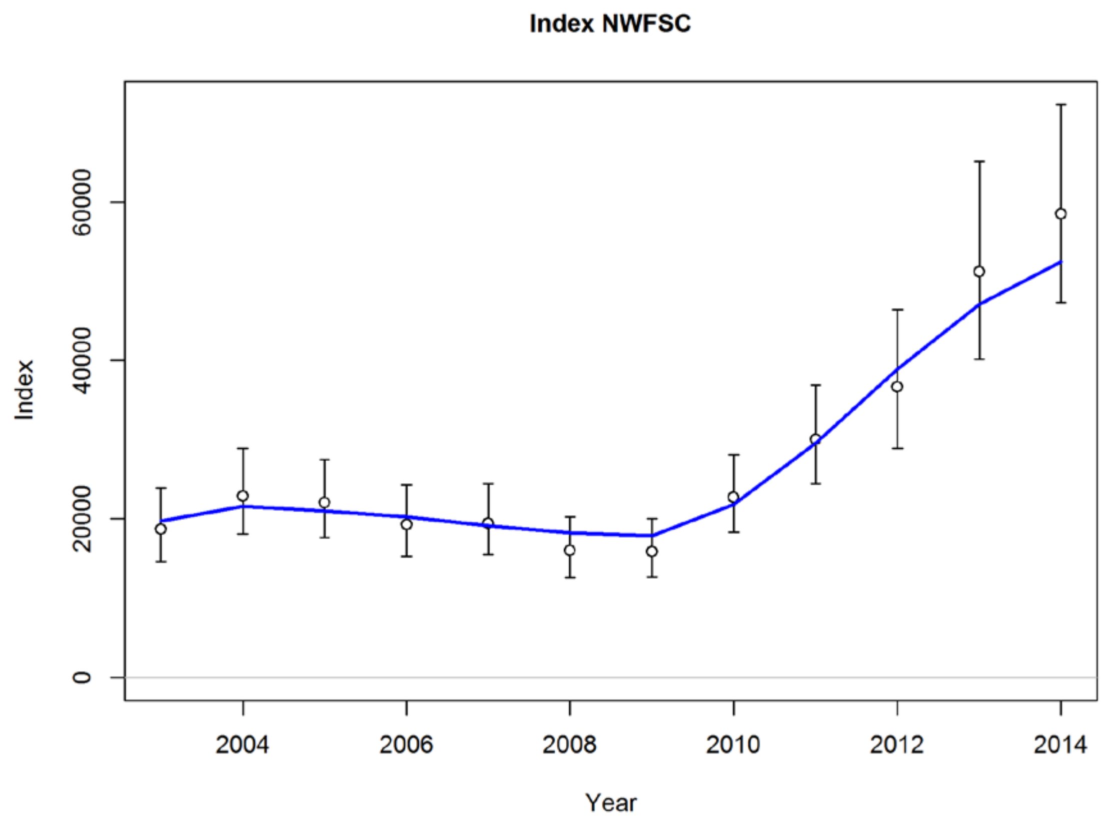


Figure 81. Fit to NWFSC survey.

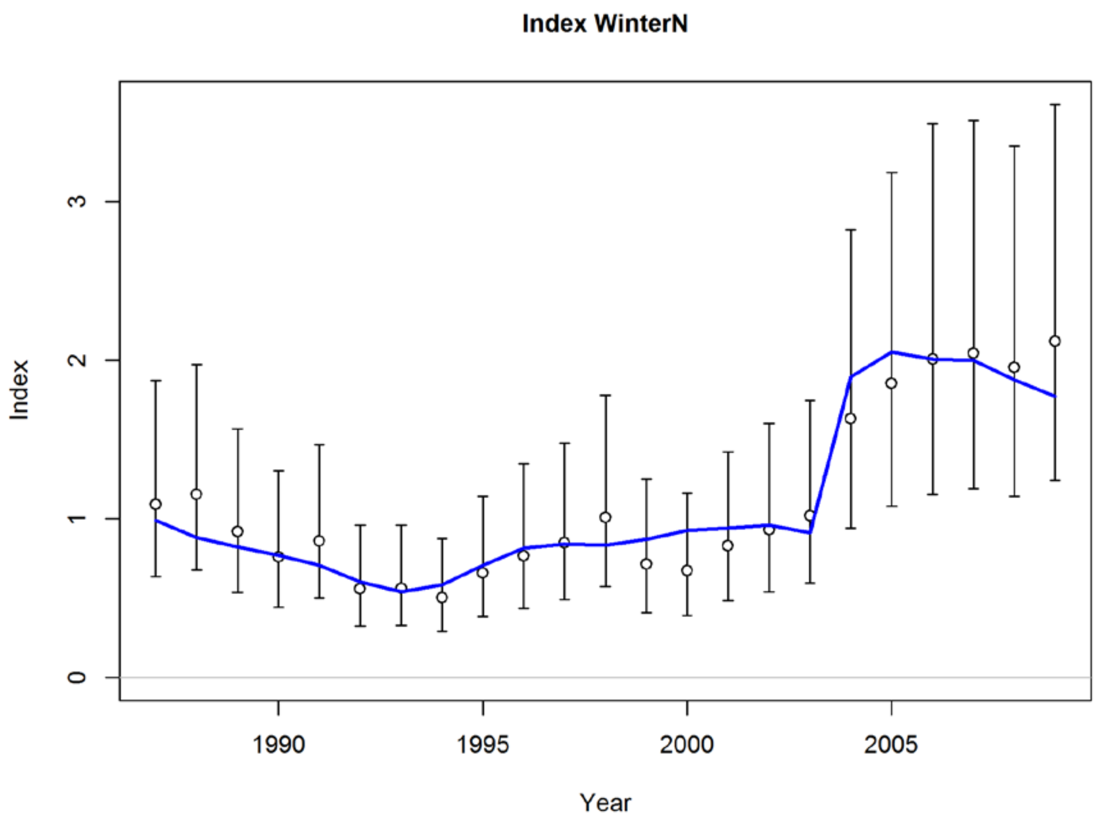


Figure 82. Fit to winter north commercial CPUE.

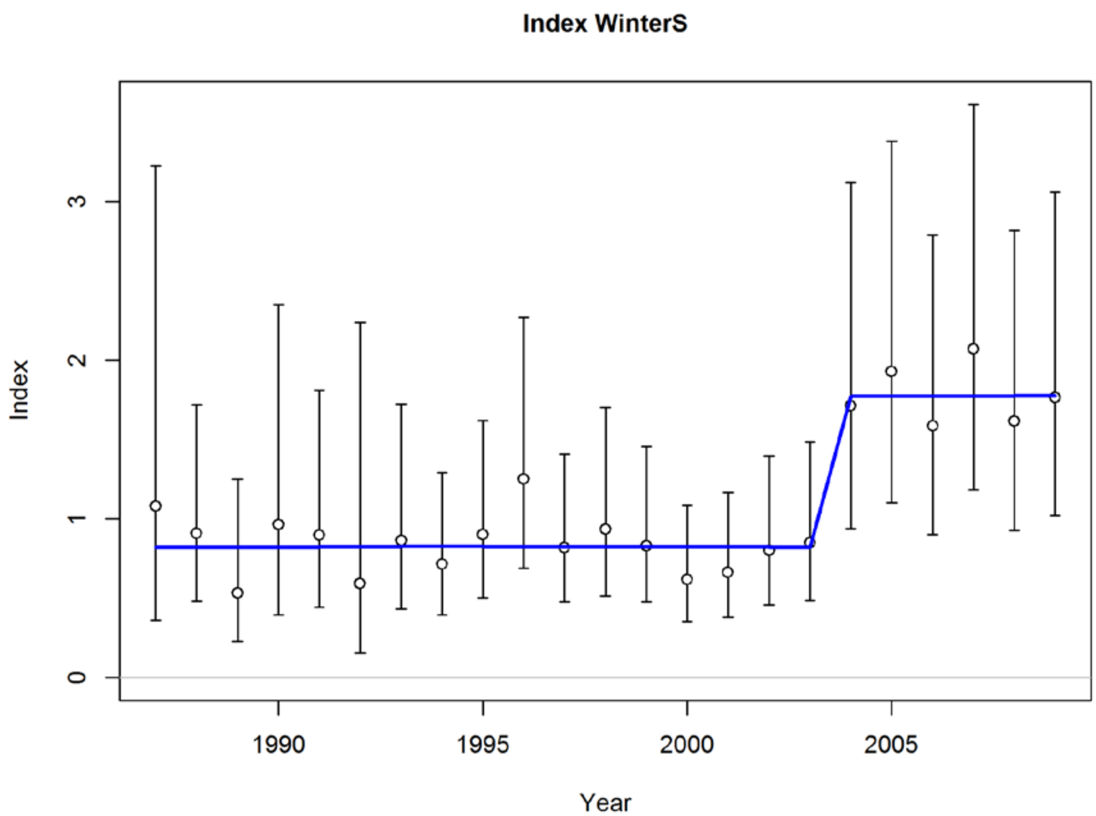


Figure 83. Fit to winter south commercial CPUE.

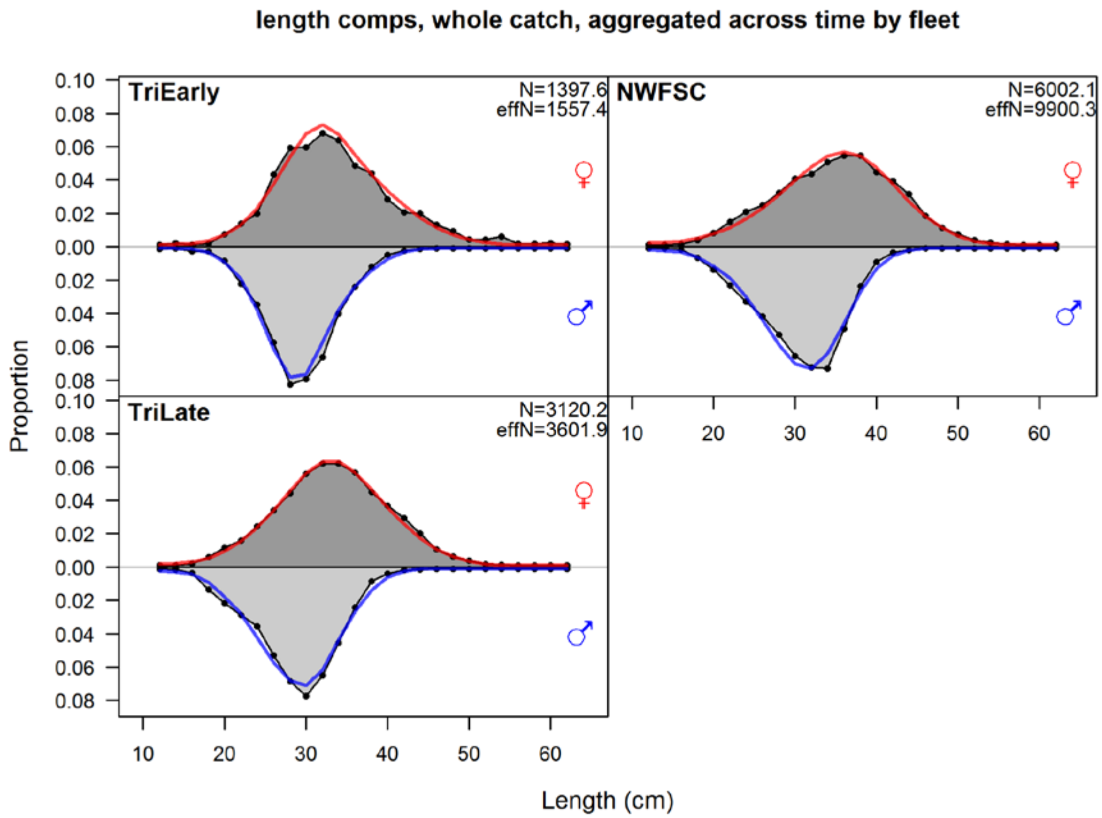


Figure 84. Fit to the composite survey length-frequencies, both sexes.

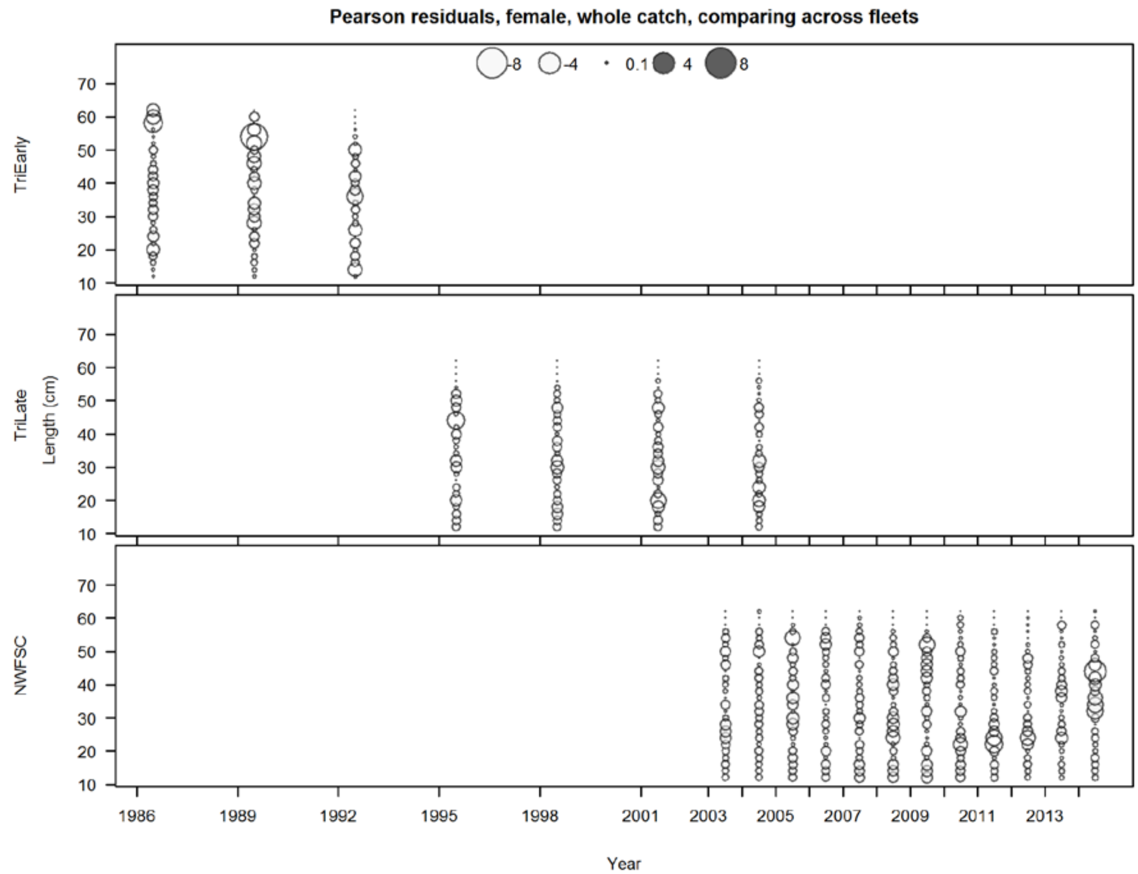


Figure 85. Pearson residuals for the fit to survey length-frequencies, comparing across fleets, females.

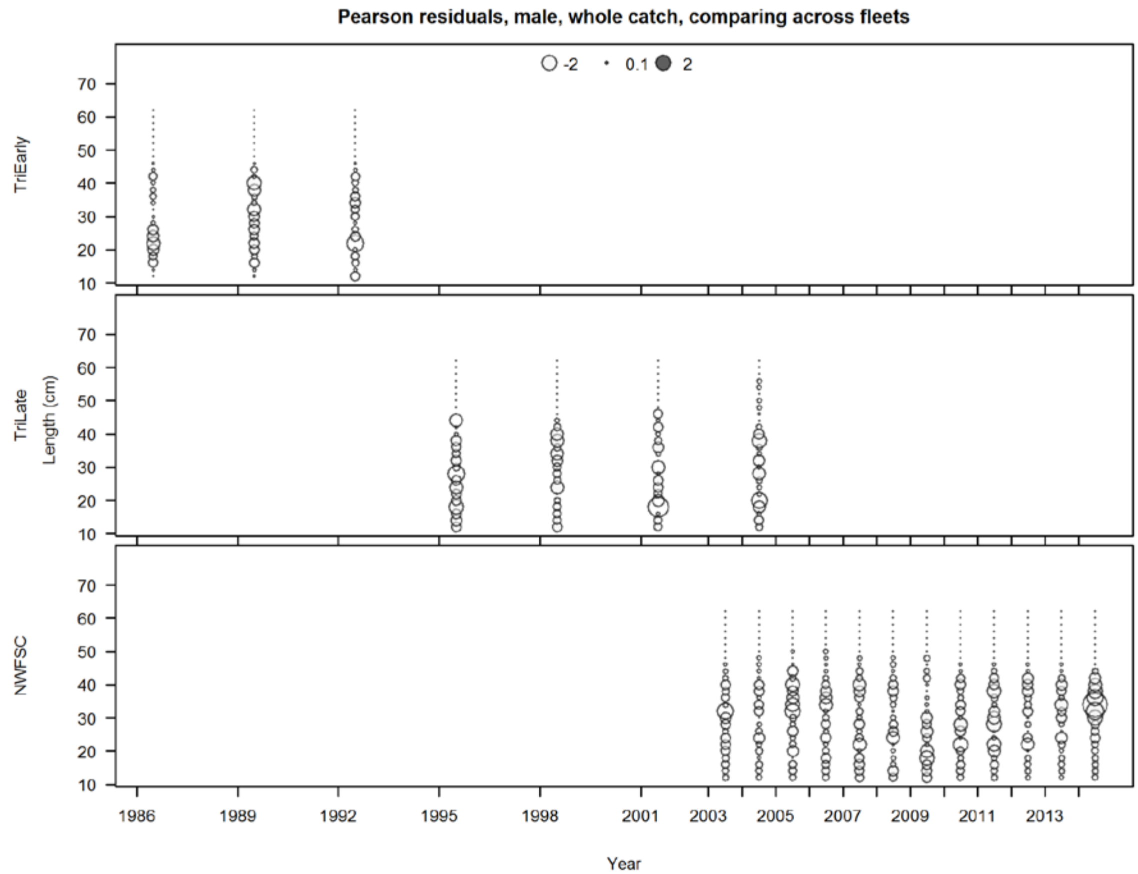


Figure 86. Pearson residuals for the fit to survey length-frequencies, males.

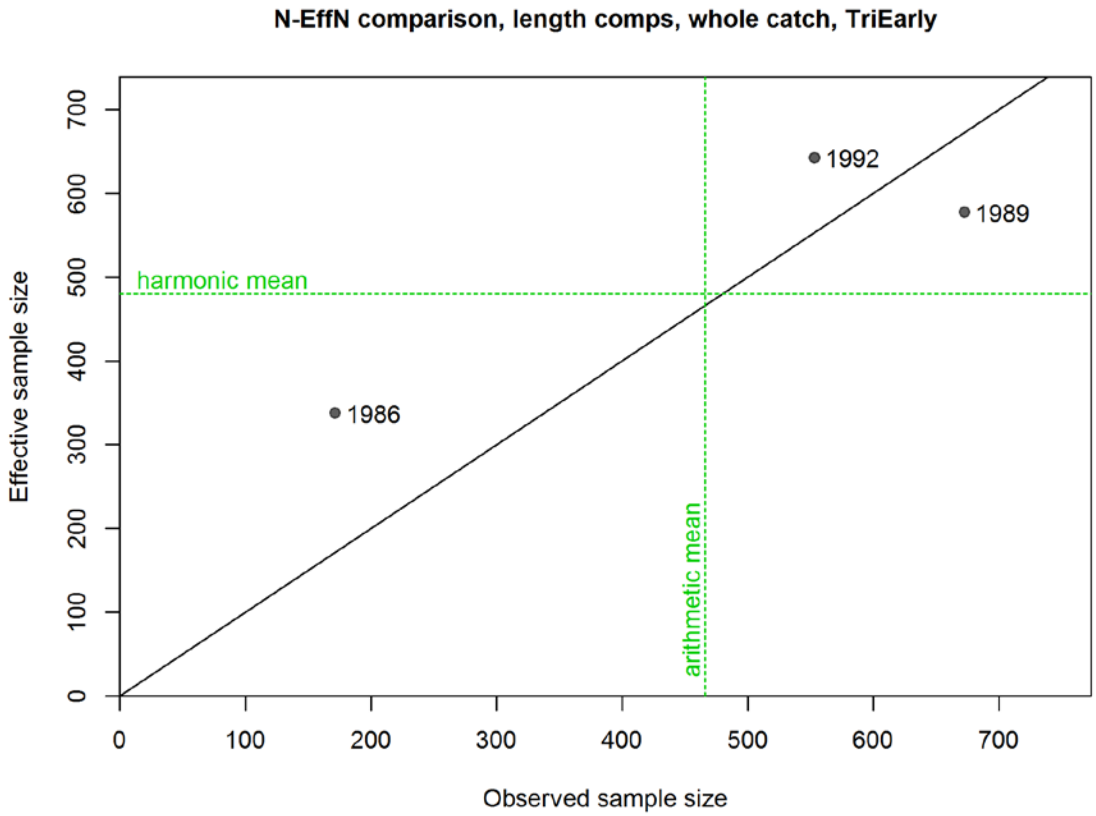


Figure 87. Observed and effective sample sizes for the early triennial survey length-frequency observations, both sexes.

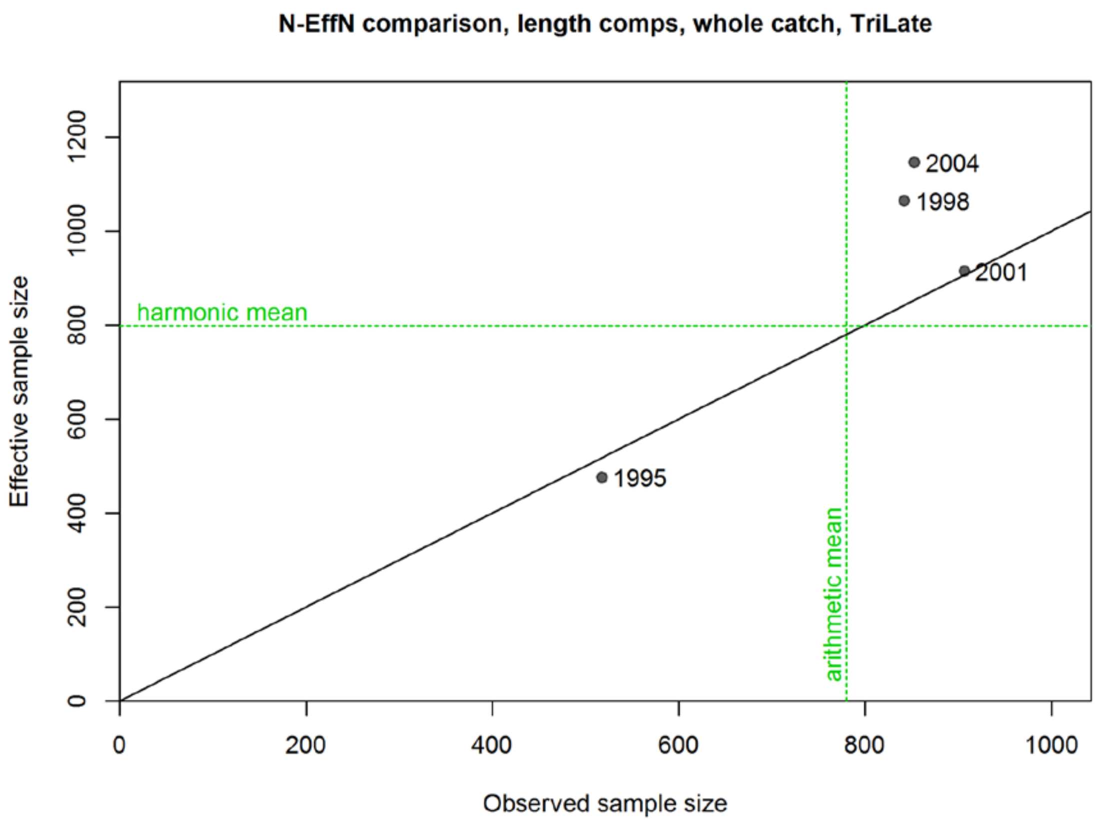


Figure 88. Observed and effective sample sizes for the late triennial survey length-frequency observations, both sexes.

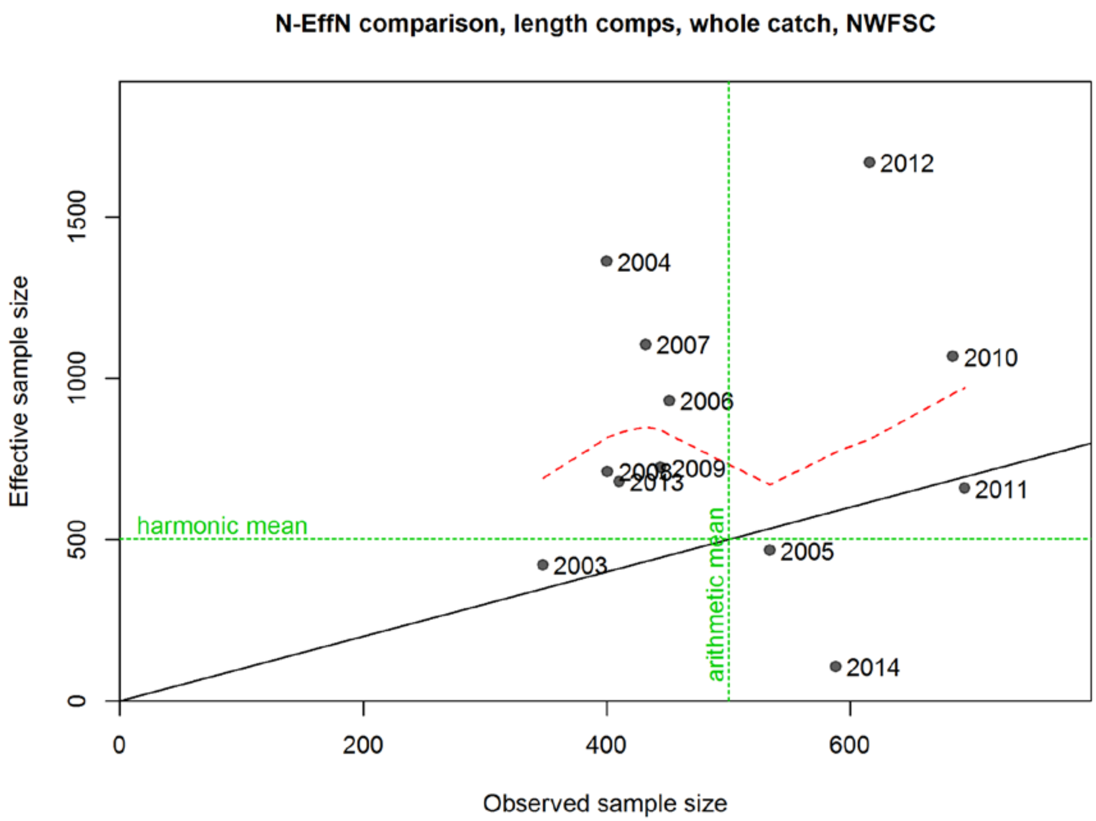


Figure 89. Observed and effective sample sizes for the NWFSC length-frequency observations, both sexes.

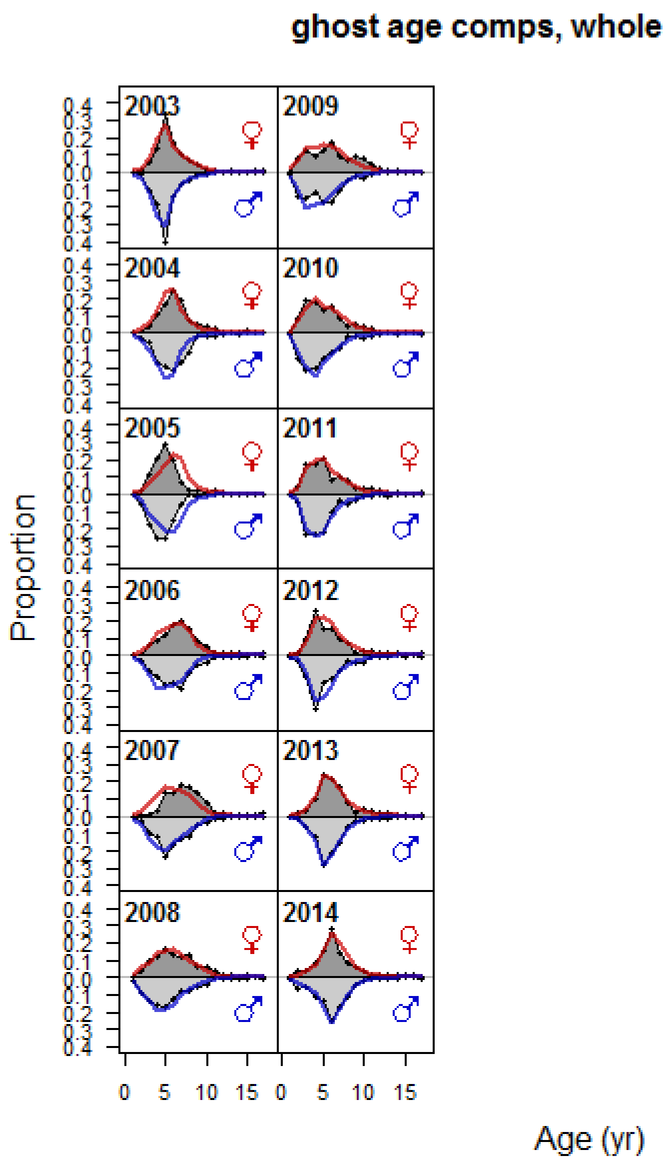
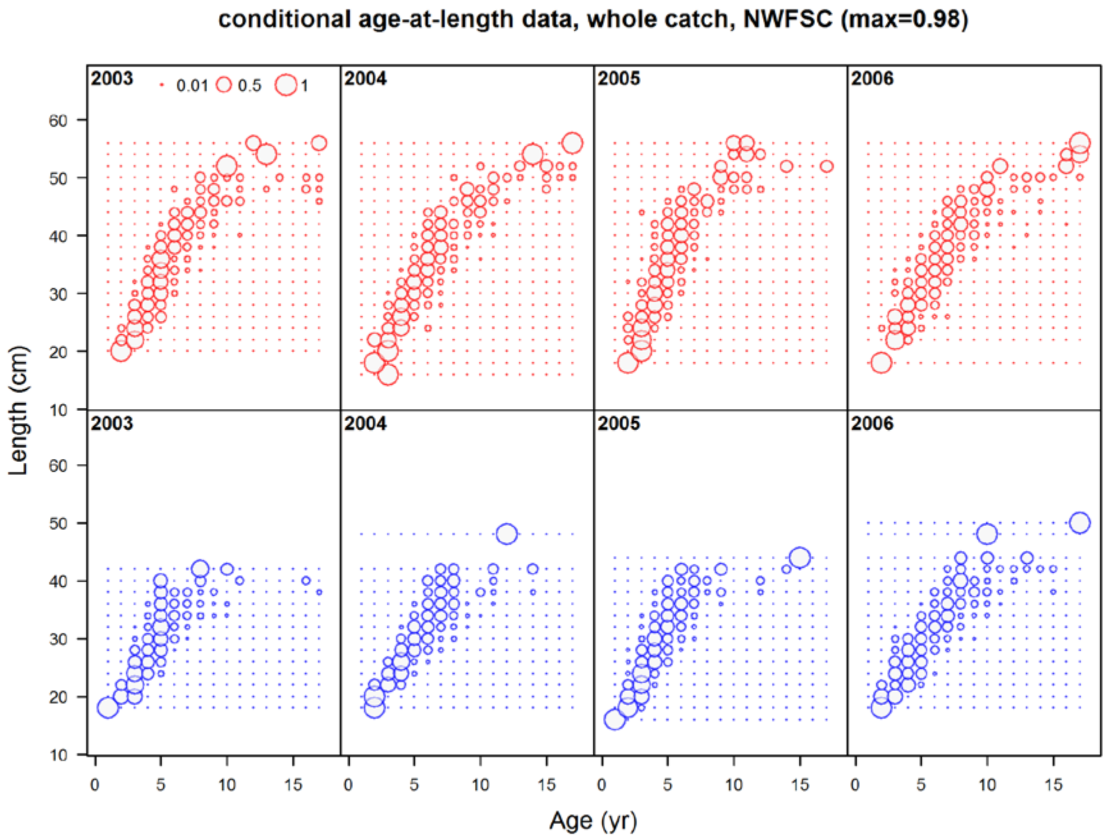
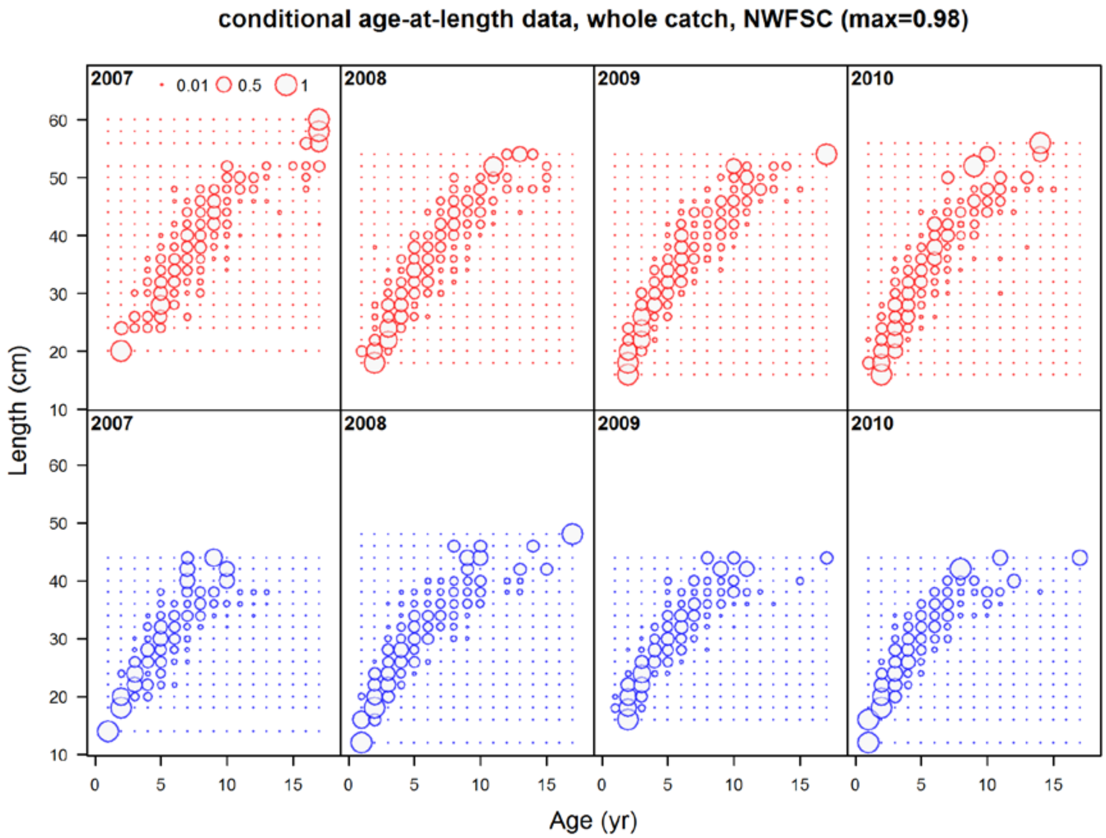


Figure 90. Model fits to the NWFSC marginal age-at-length data.



conditional age-at-length data, whole catch, NWFSC (max=0.98)
2003
0.01
0.5
1
2004
2005
2006
2003
2004
2005
2006
Length (cm)
Age (yr)


conditional age-at-length data, whole catch, NWFSC (max=0.98)
2007
0.01
0.5
1
2008
2009
2010
Length (cm)
Age (yr)

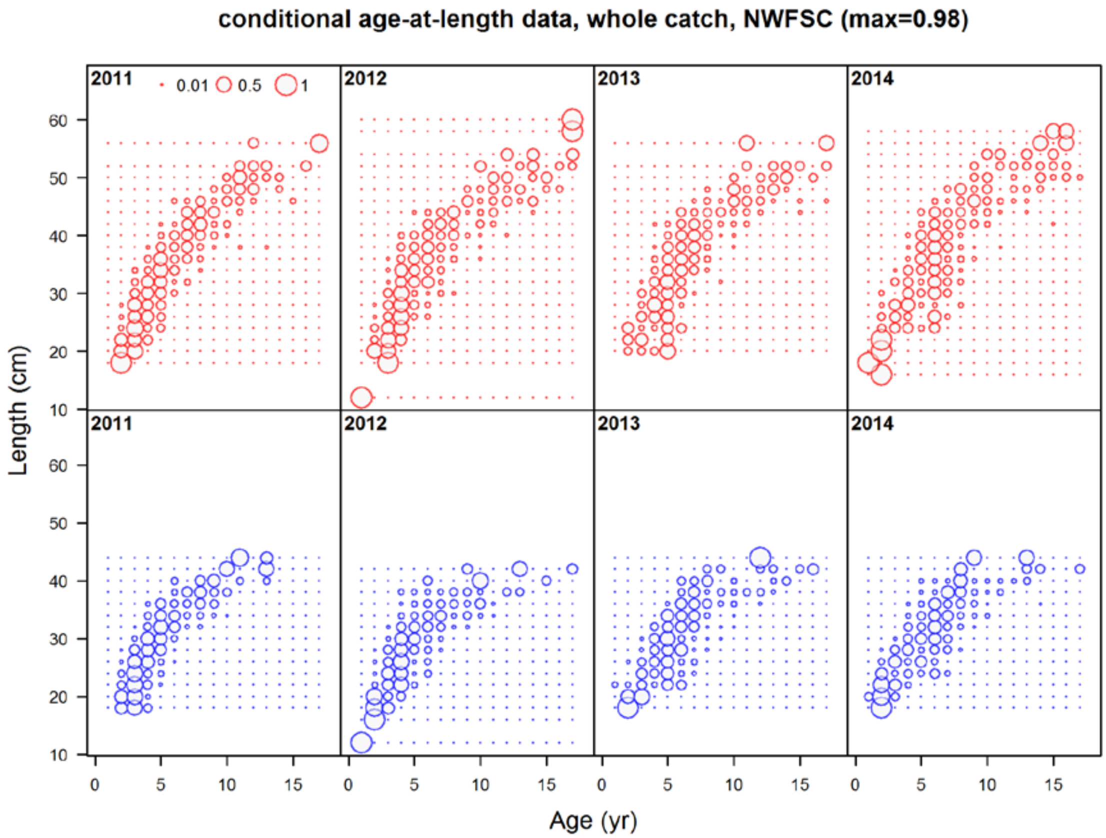
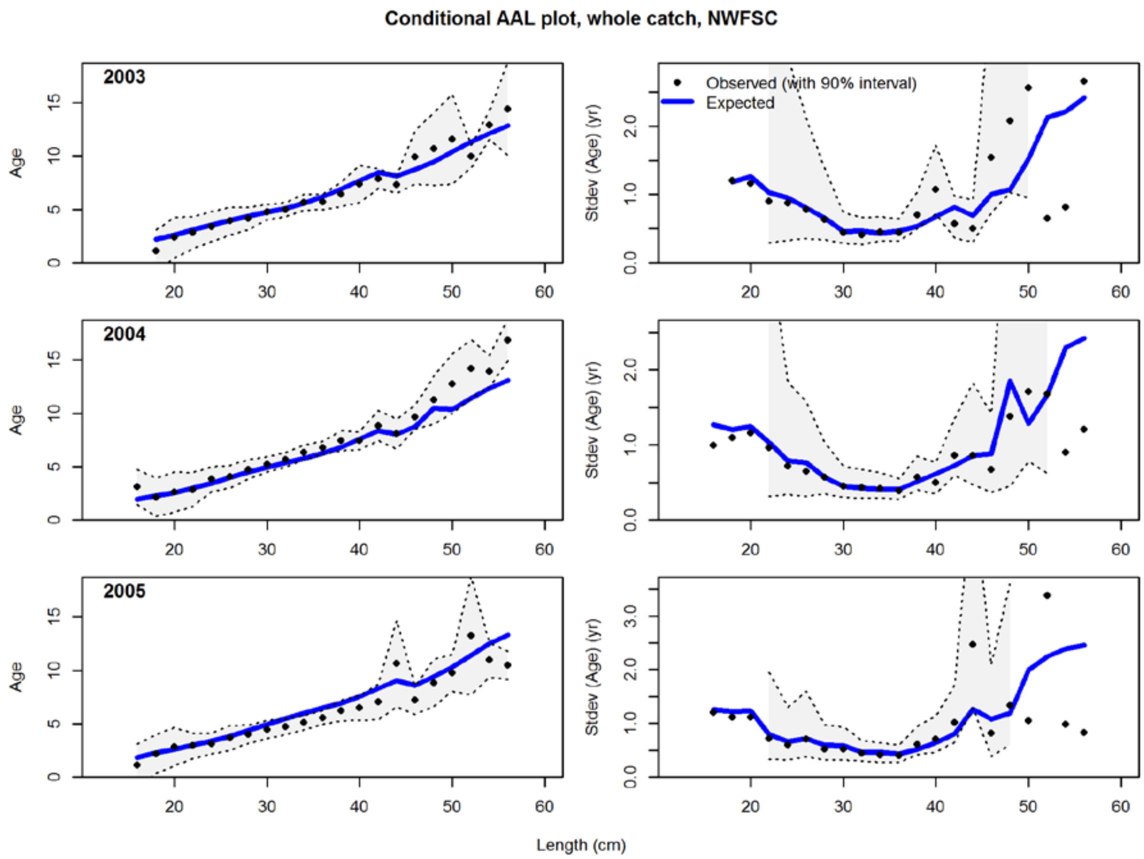
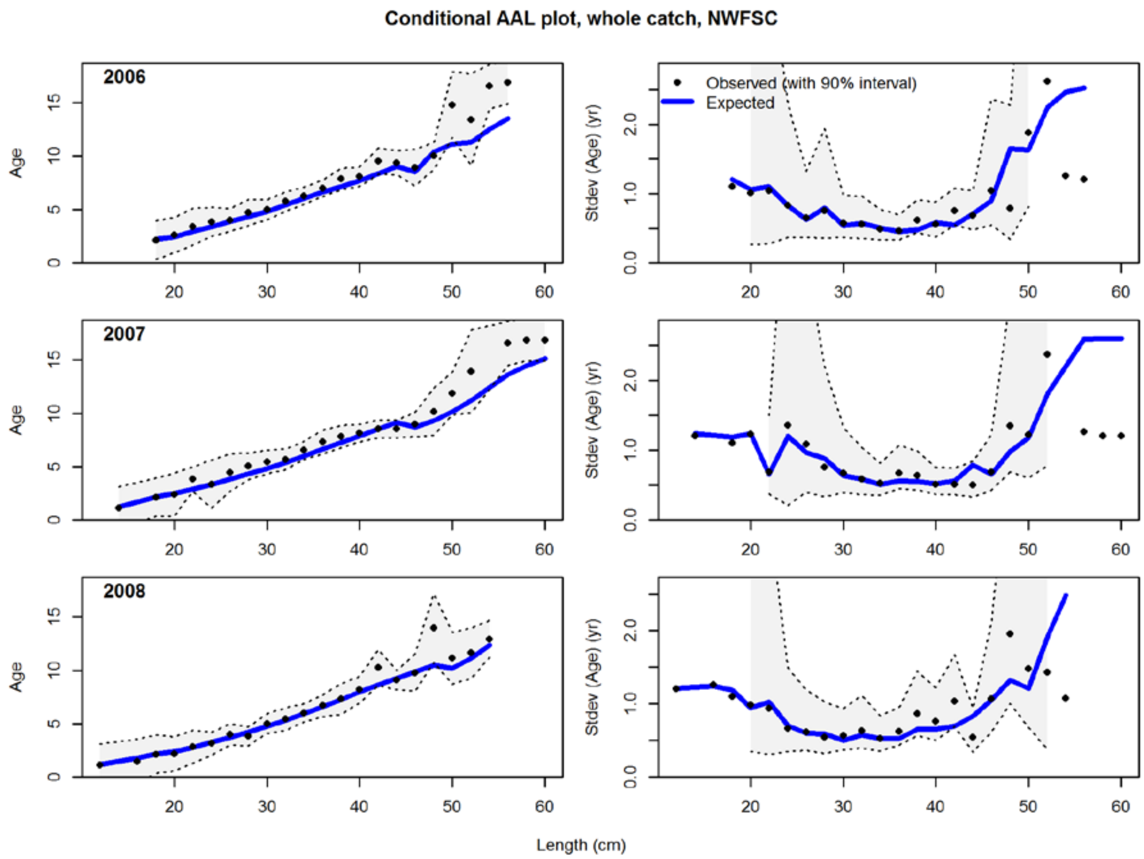
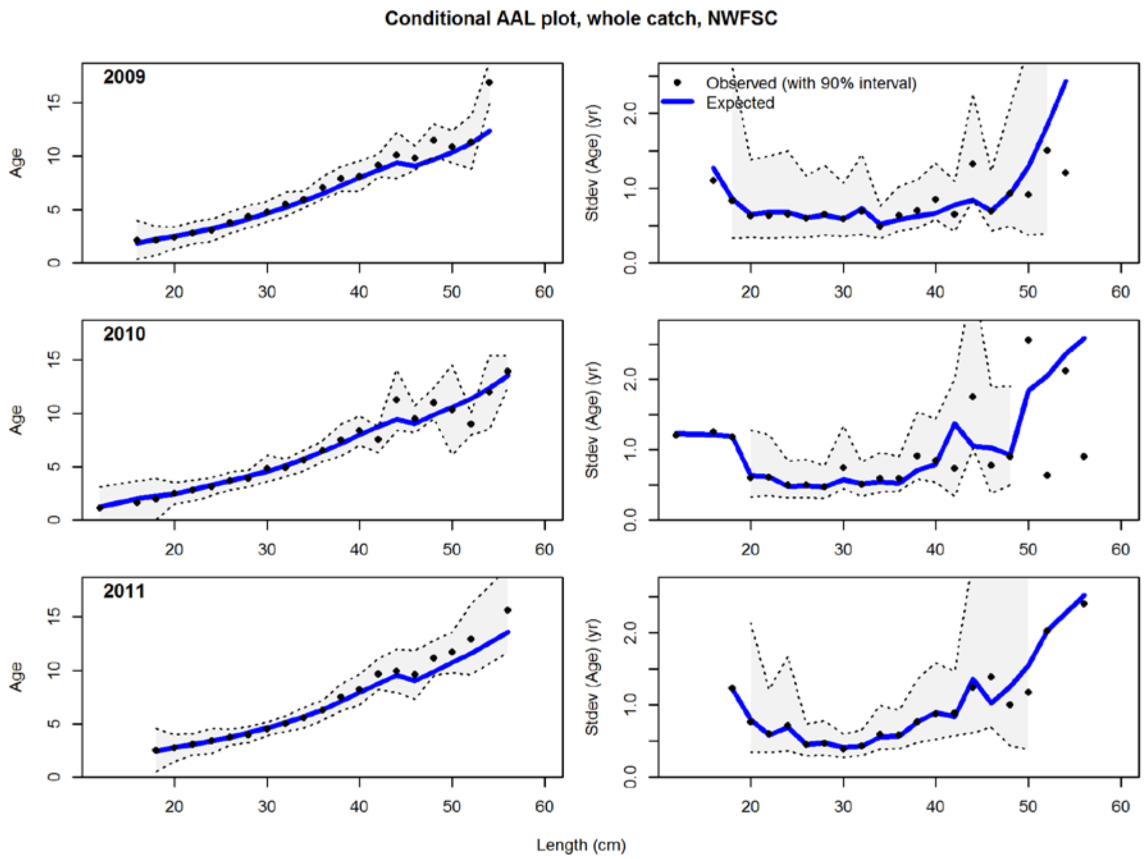


Figure 91. Pearson residuals for the fit to the NWFSC survey conditional age-at-length frequencies, red (female) and blue (male).


Conditional AAL plot, whole catch, NWFSC
2003
2004
2005
Age
Stdev (Age) (yr)
Observed (with 90% interval)
Expected
Length (cm)



Conditional AAL plot, whole catch, NWFSC
2006
2007
2008
Age
Stdev (Age) (yr)
Observed (with 90% interval)
Expected
Length (cm)



Conditional AAL plot, whole catch, NWFSC
2009
2010
2011
Age
Stdev (Age) (yr)
Observed (with 90% interval)
Expected
Length (cm)

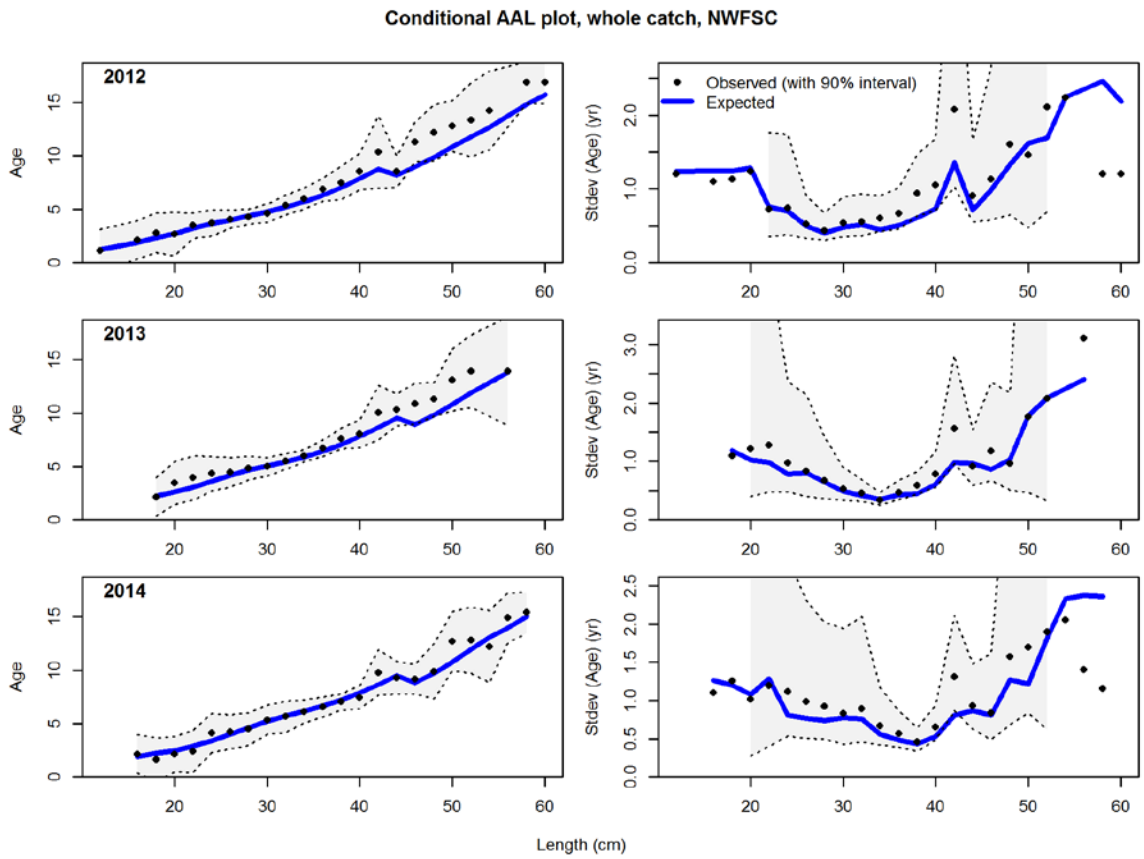


Figure 92. Conditional age-at-length and standard deviations of age-at-length for the NWFSC survey, females and males.

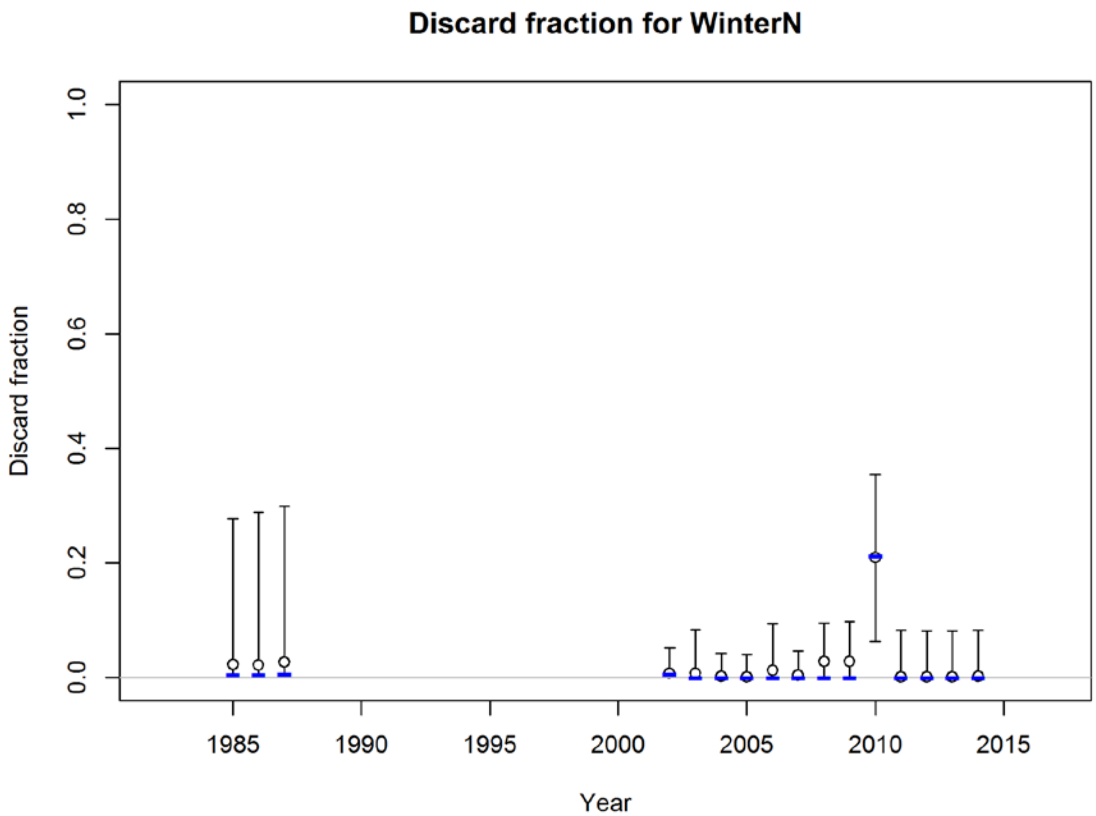


Figure 93. Winter north fits to the discard ratios.

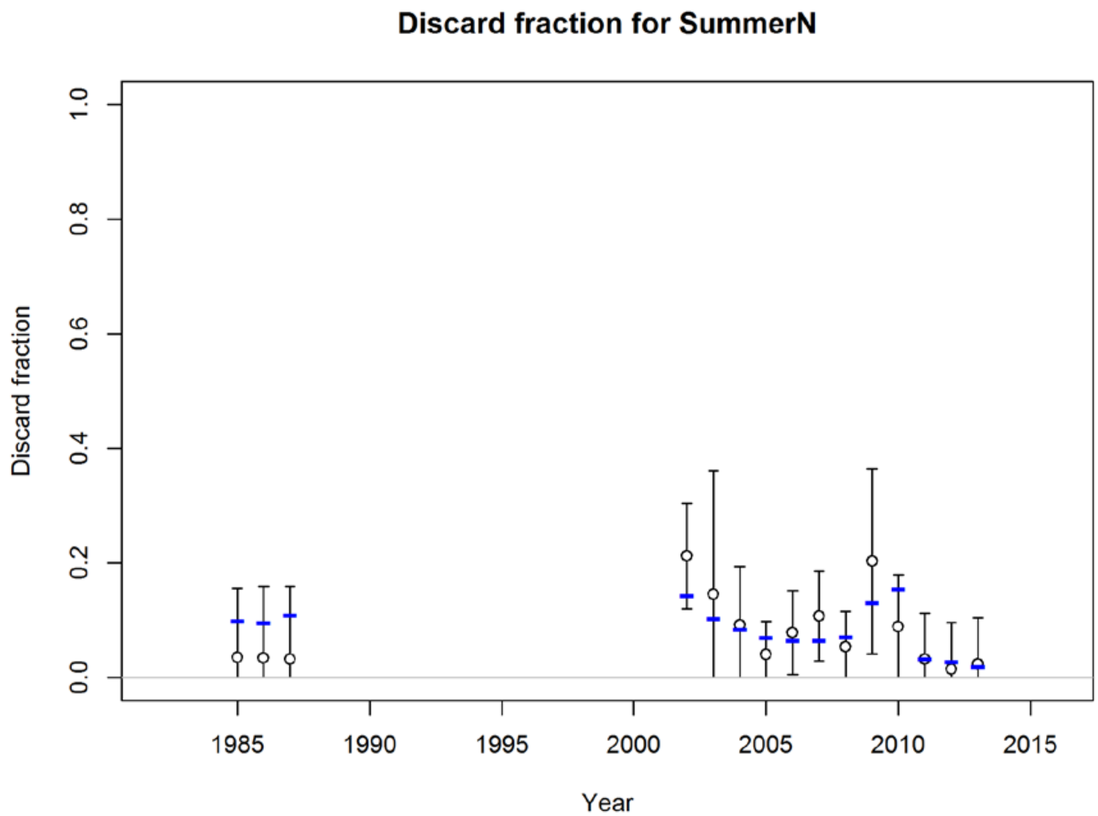


Figure 94. Summer north fits to the discard ratios.

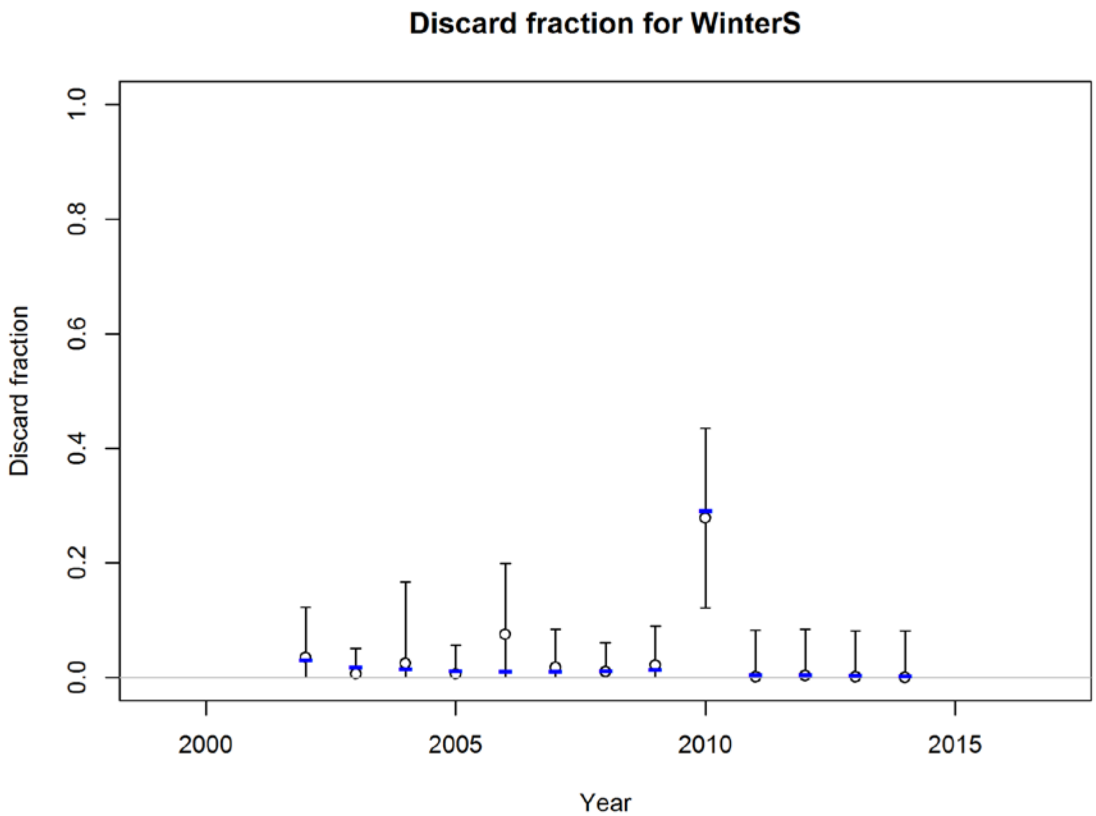


Figure 95. Winter south fits to the discard ratios.

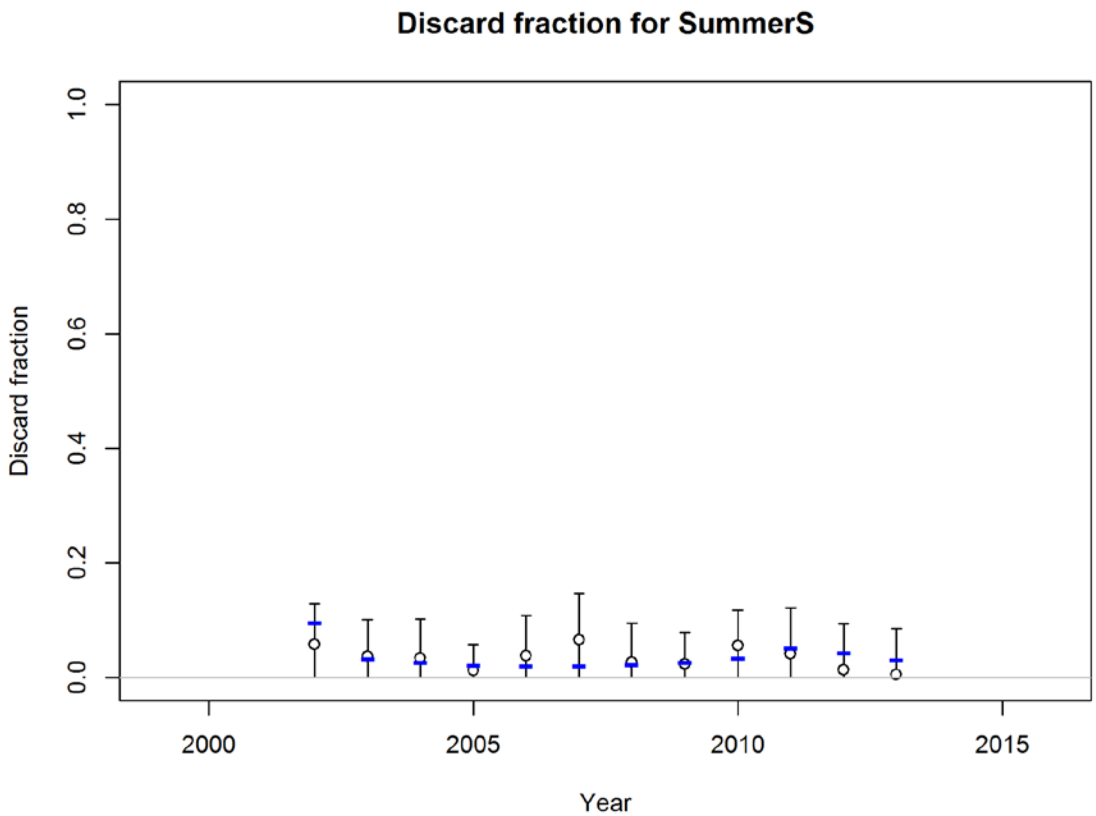


Figure 96. Summer south fits to the discard ratios.

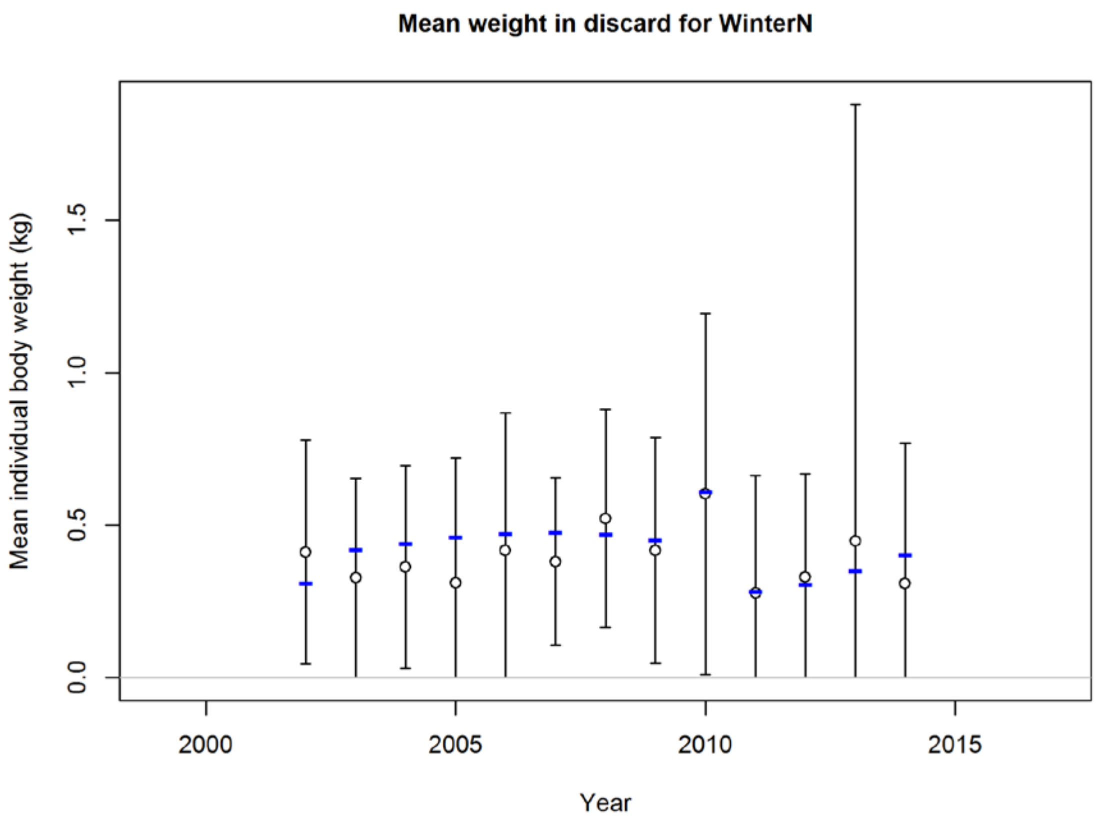


Figure 97. Winter north fit to the mean weight of the discards.

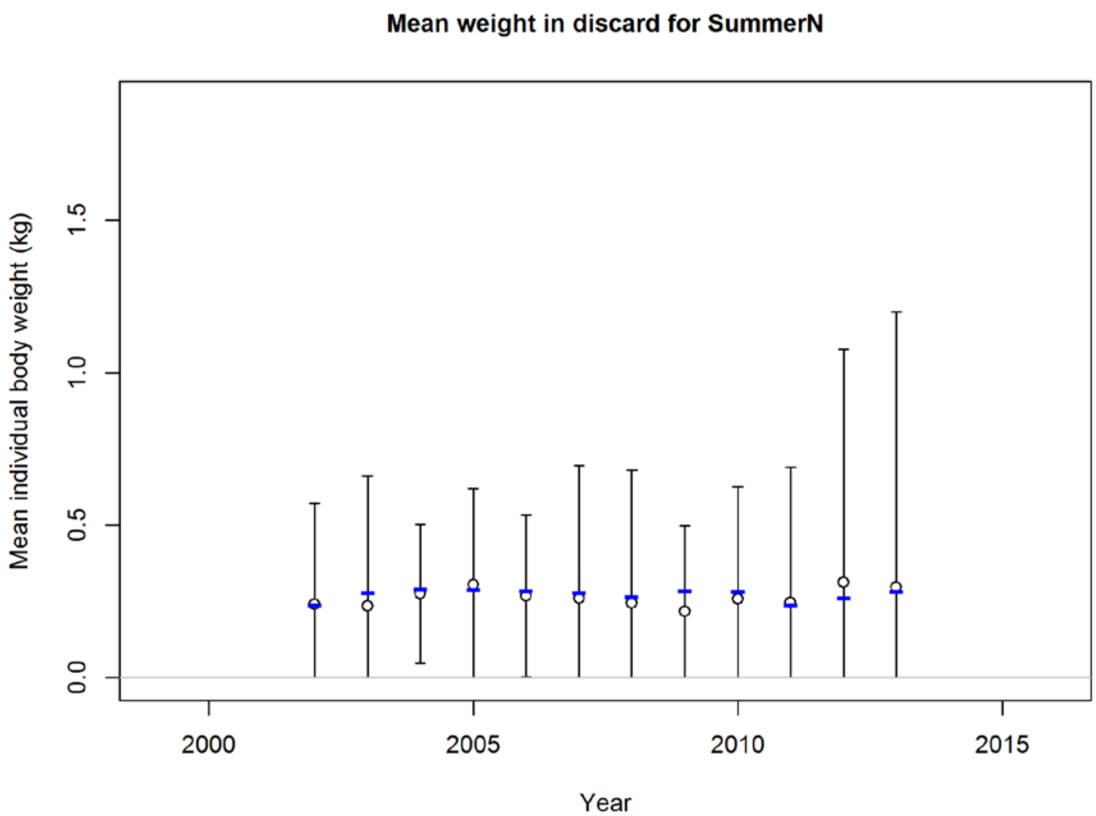


Figure 98. Summer north fit to the mean weight of the discards.

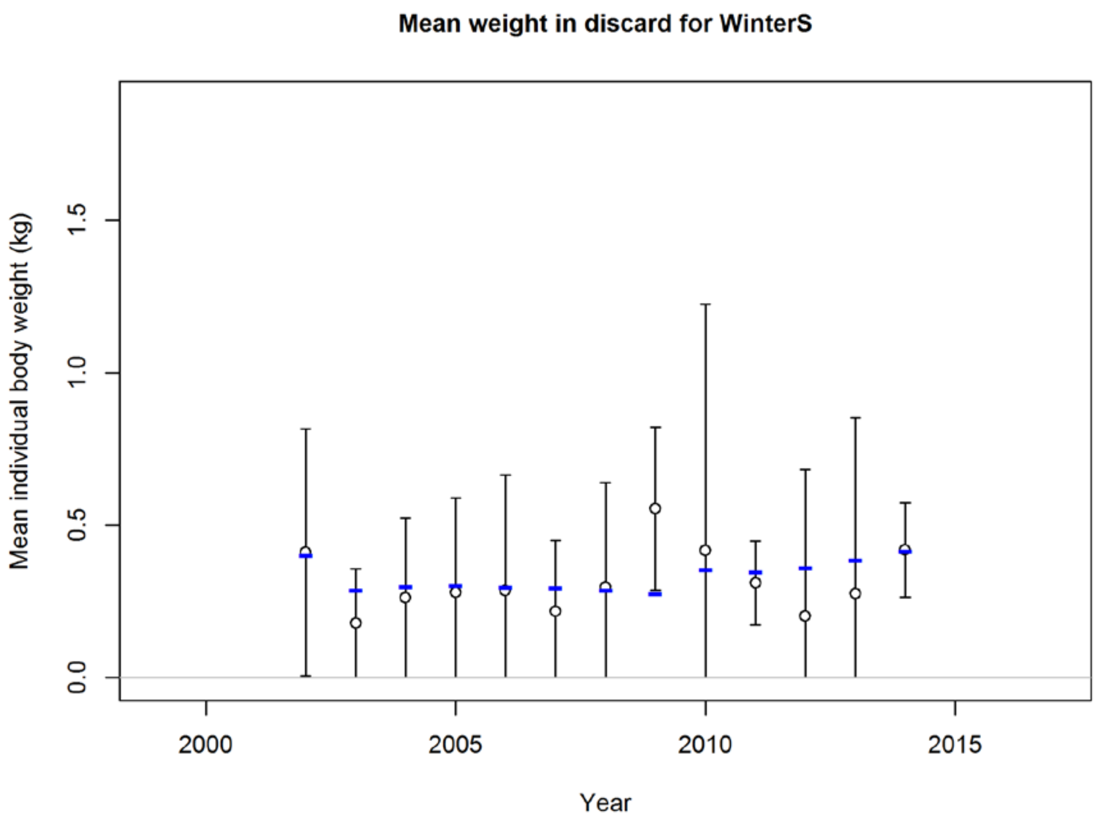


Figure 99. Winter south fit to the mean weight of the discards.

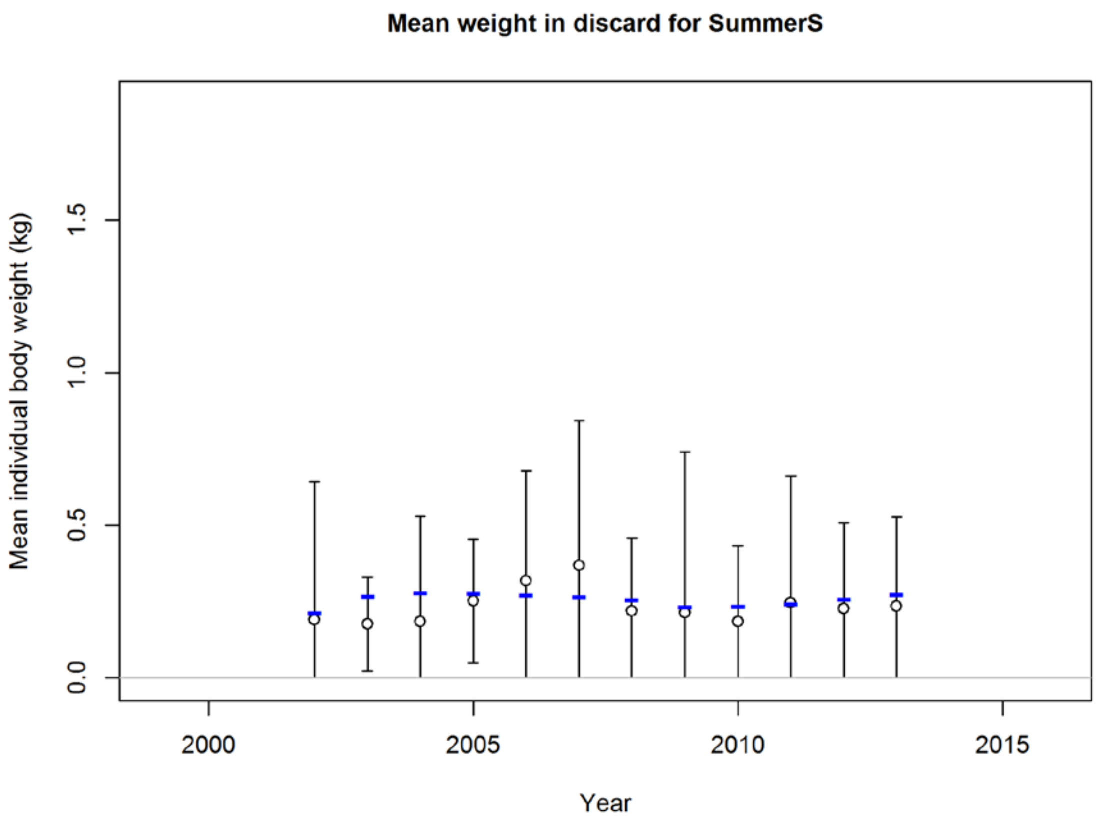


Figure 100. Summer south fit to the mean weight of the discards.

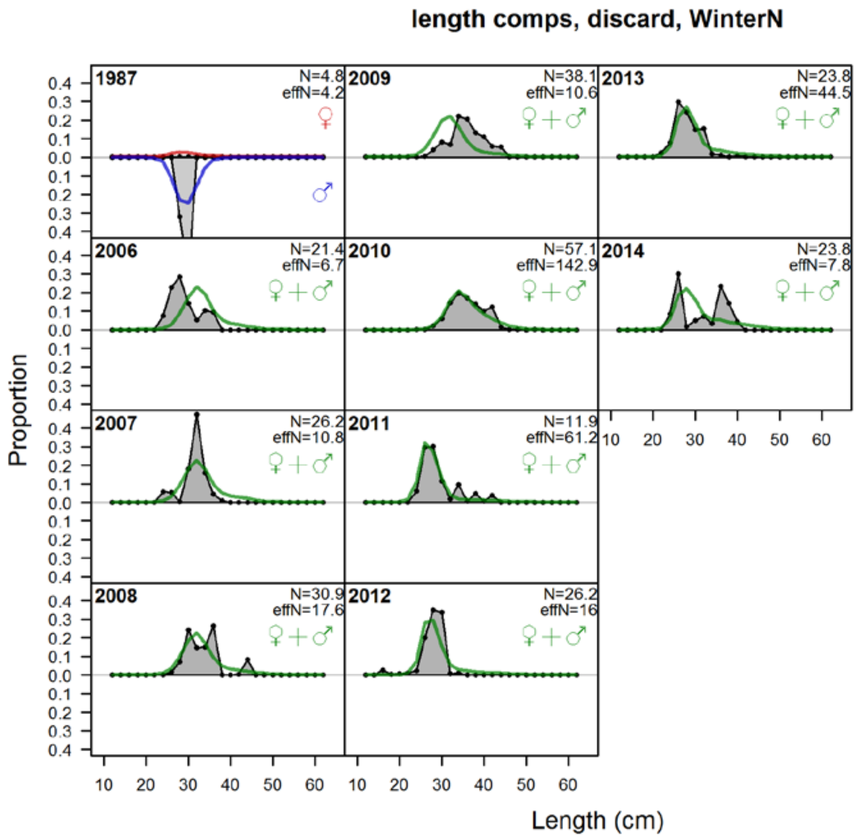


Figure 101. Winter north Pikitch and WCGOP discard length compositions fits. Pikitch is separated by sex (red denotes female, blue denotes male), WCGOP (green) are aggregated across sex.

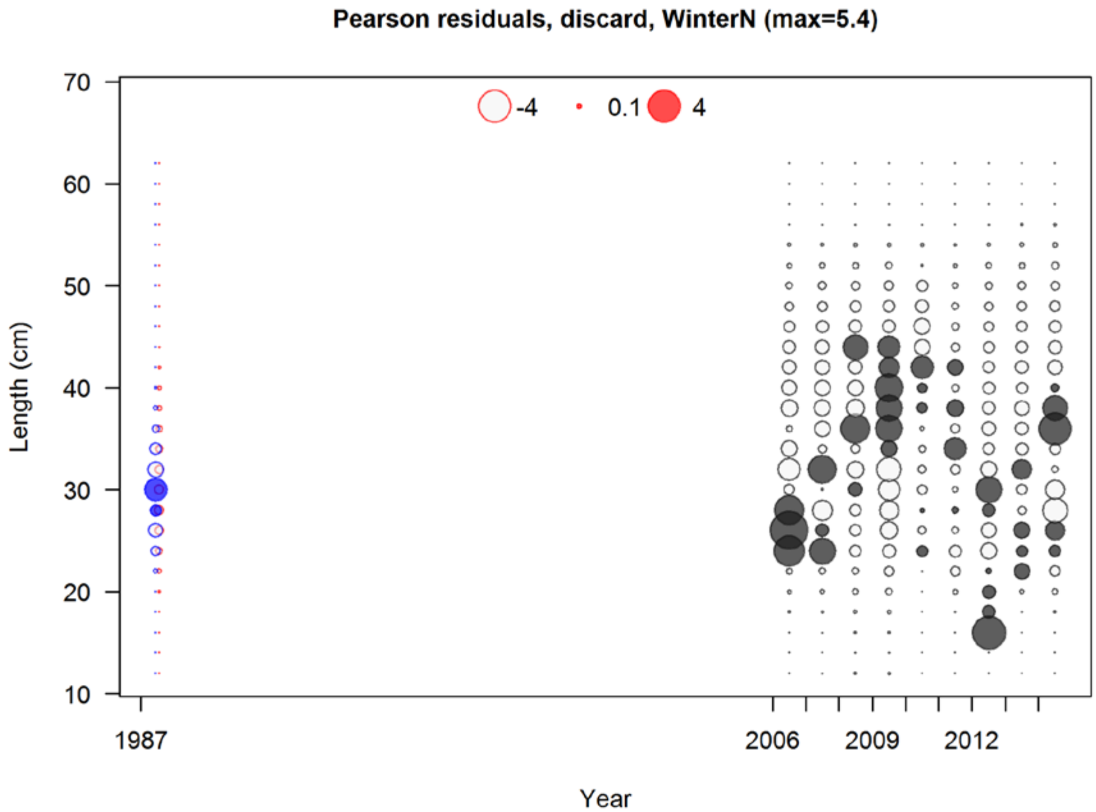


Figure 102. Pearson residuals discard length compositions.

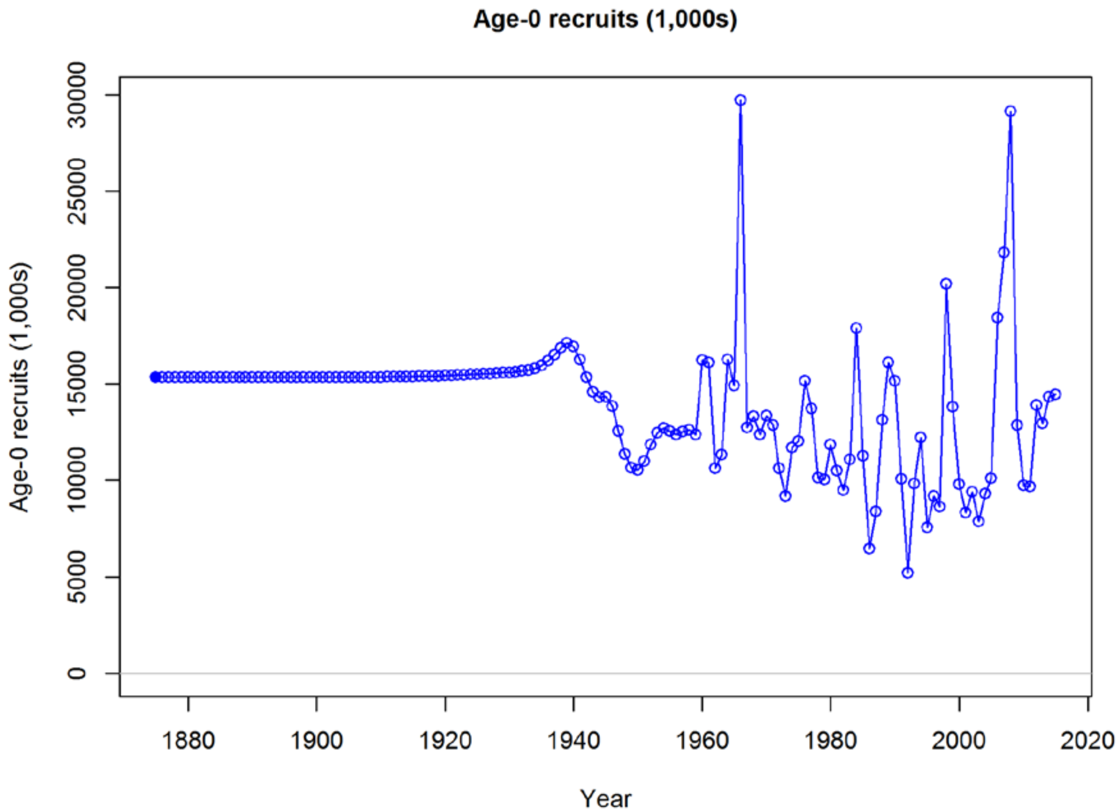


Figure 103 . Recruitment deviations from the base case model run.

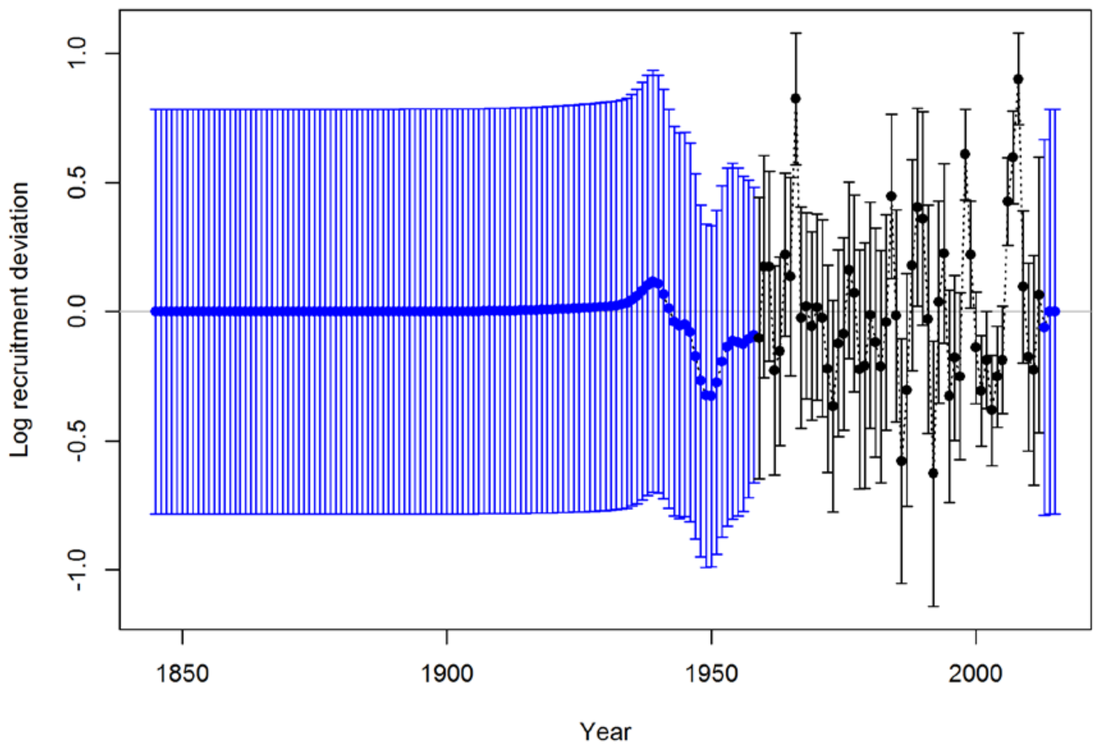


Figure 104. Time series of estimated petrale sole recruitments for the base case model (round points) with approximate asymptotic 95% confidence interval (horizontal lines).

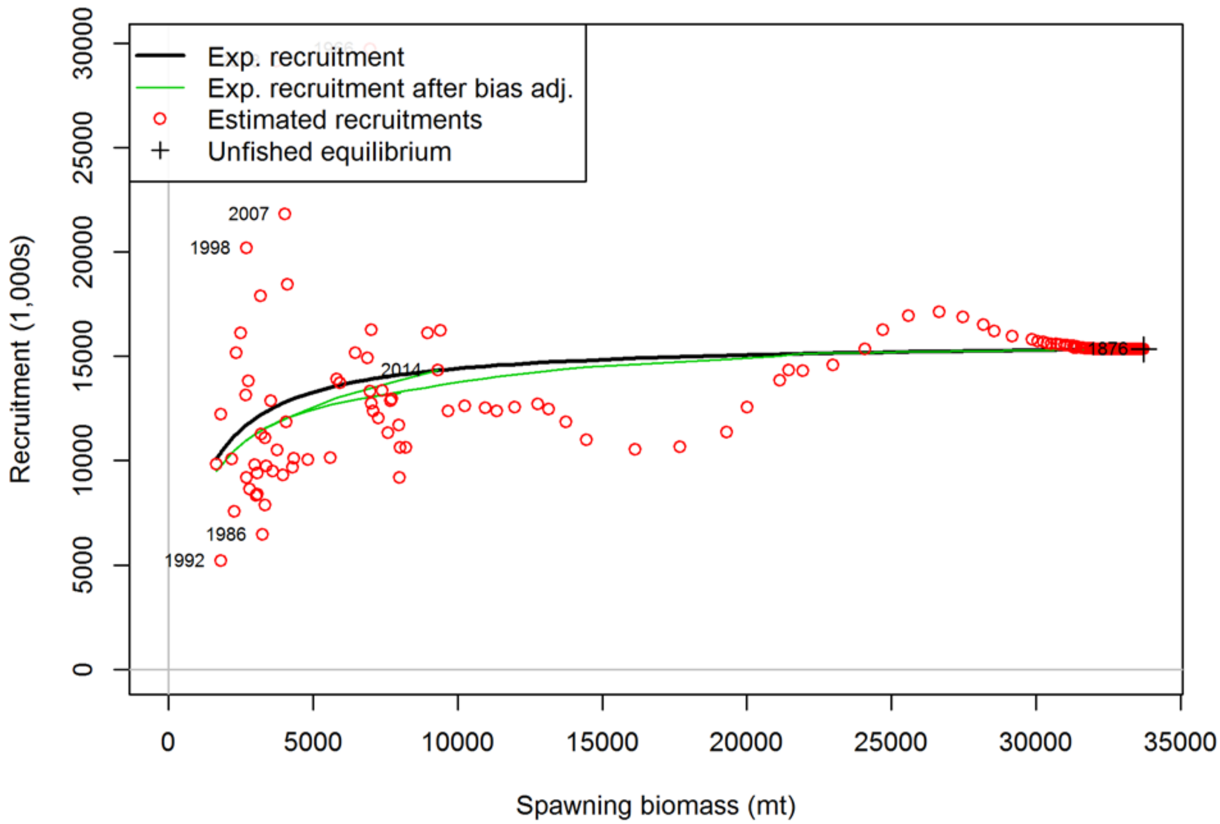


Figure 105. Stock-recruit function with predicted recruitments (points) and bias-corrected expectation (light line).

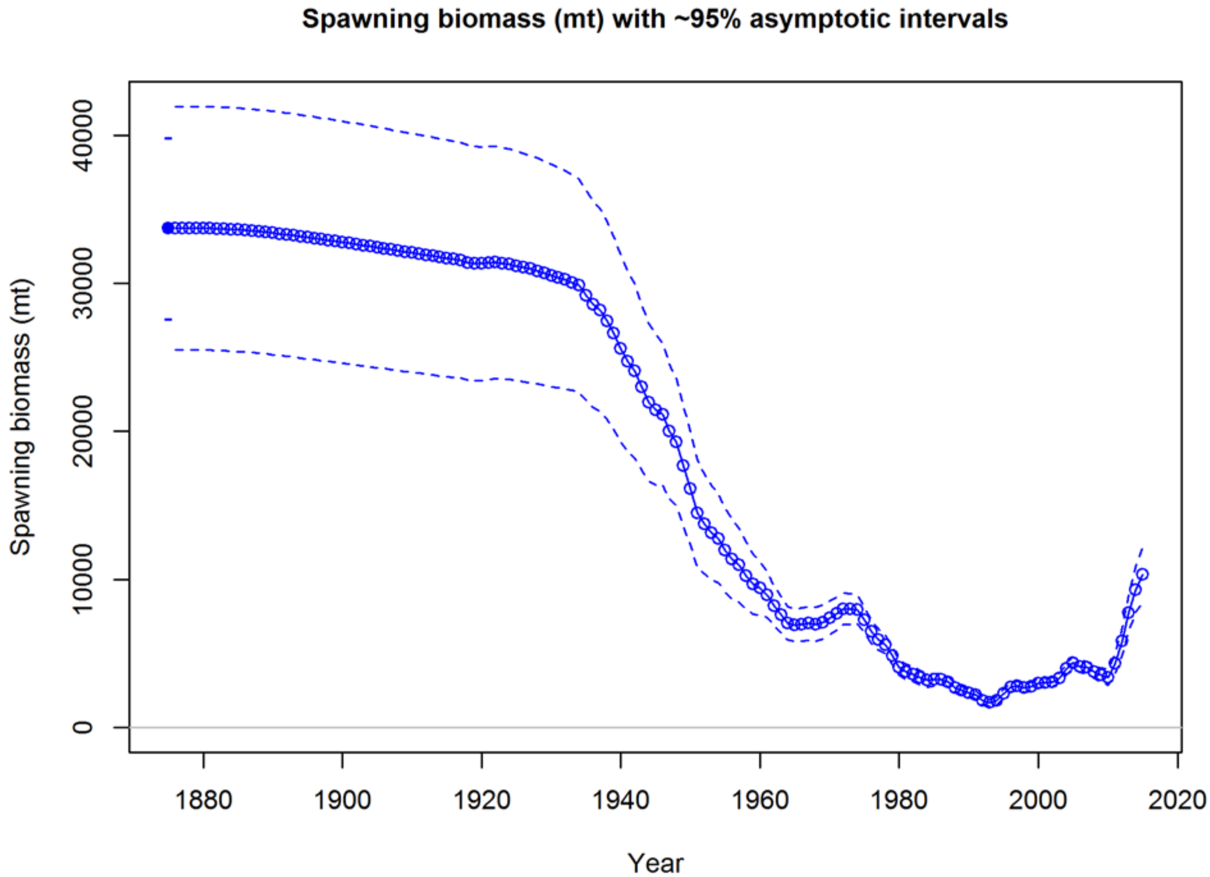


Figure 106. Estimated spawning biomass time-series for the base case model (solid line) with approximate asymptotic 95% confidence interval (dashed lines).

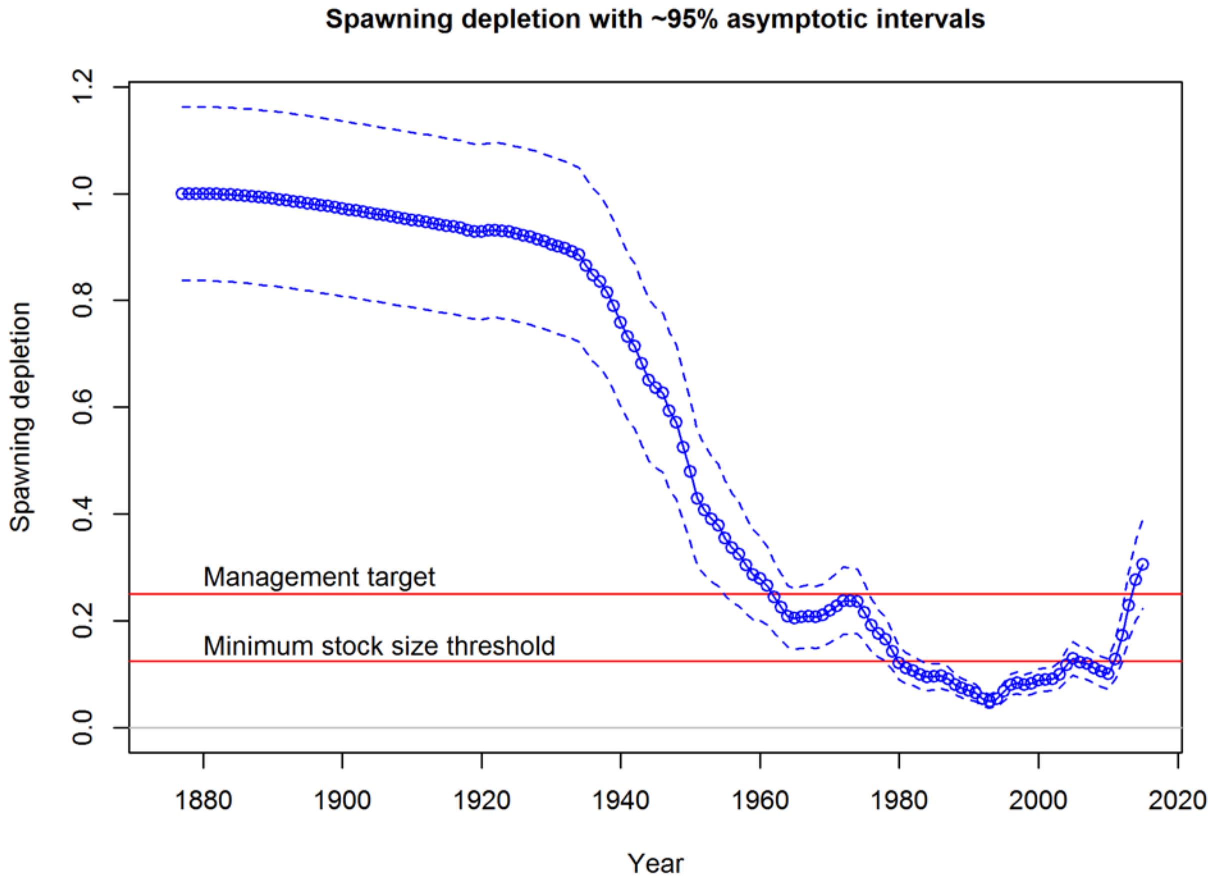


Figure 107. Time series of depletion level as estimated in the base case model (round points) with approximate asymptotic 95% confidence interval (dashed lines).

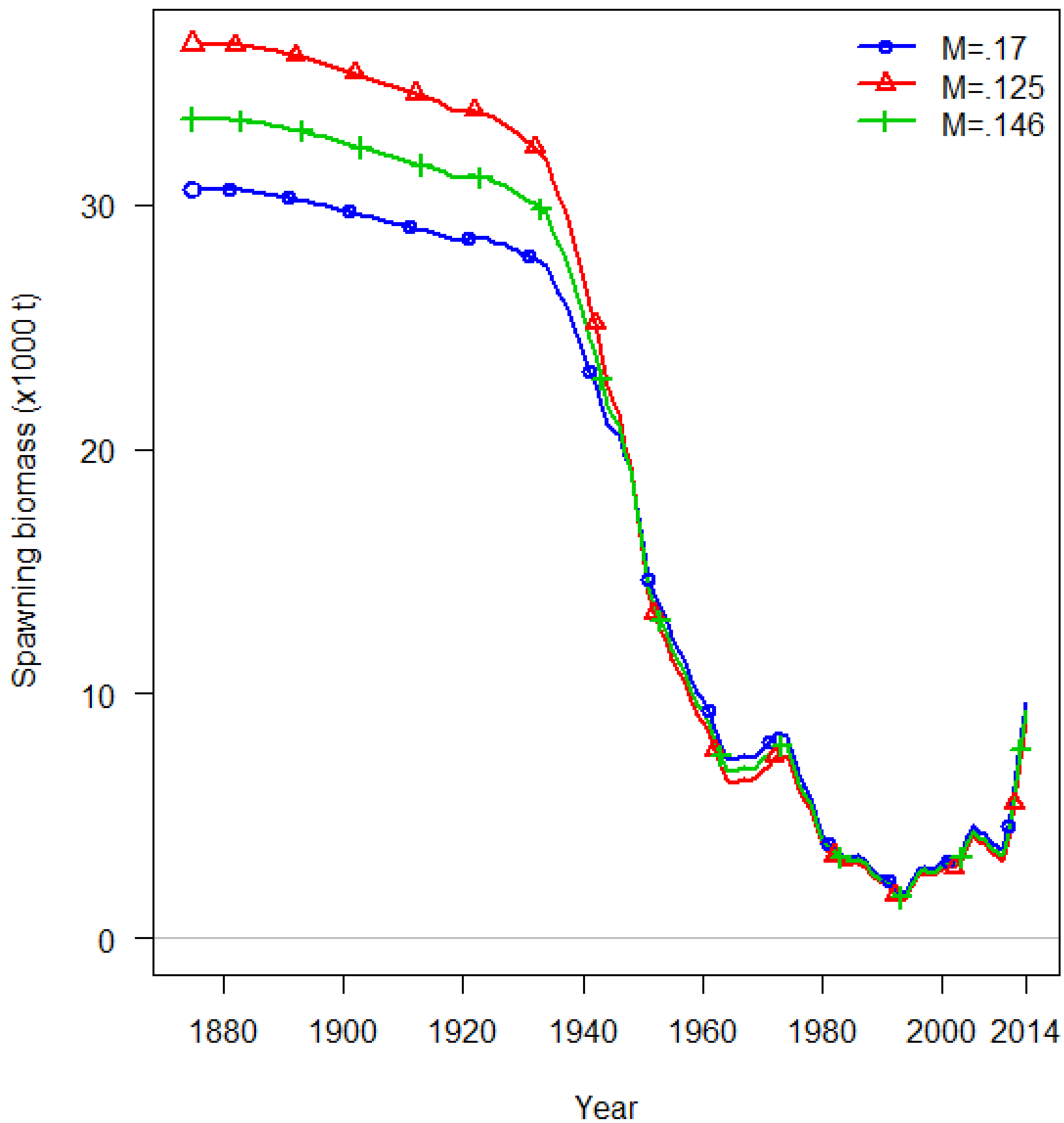


Figure 108. Spawning biomass for sensitivity to model structure for the base model (blue), model with high female *M* (red), and low female *M* (green).

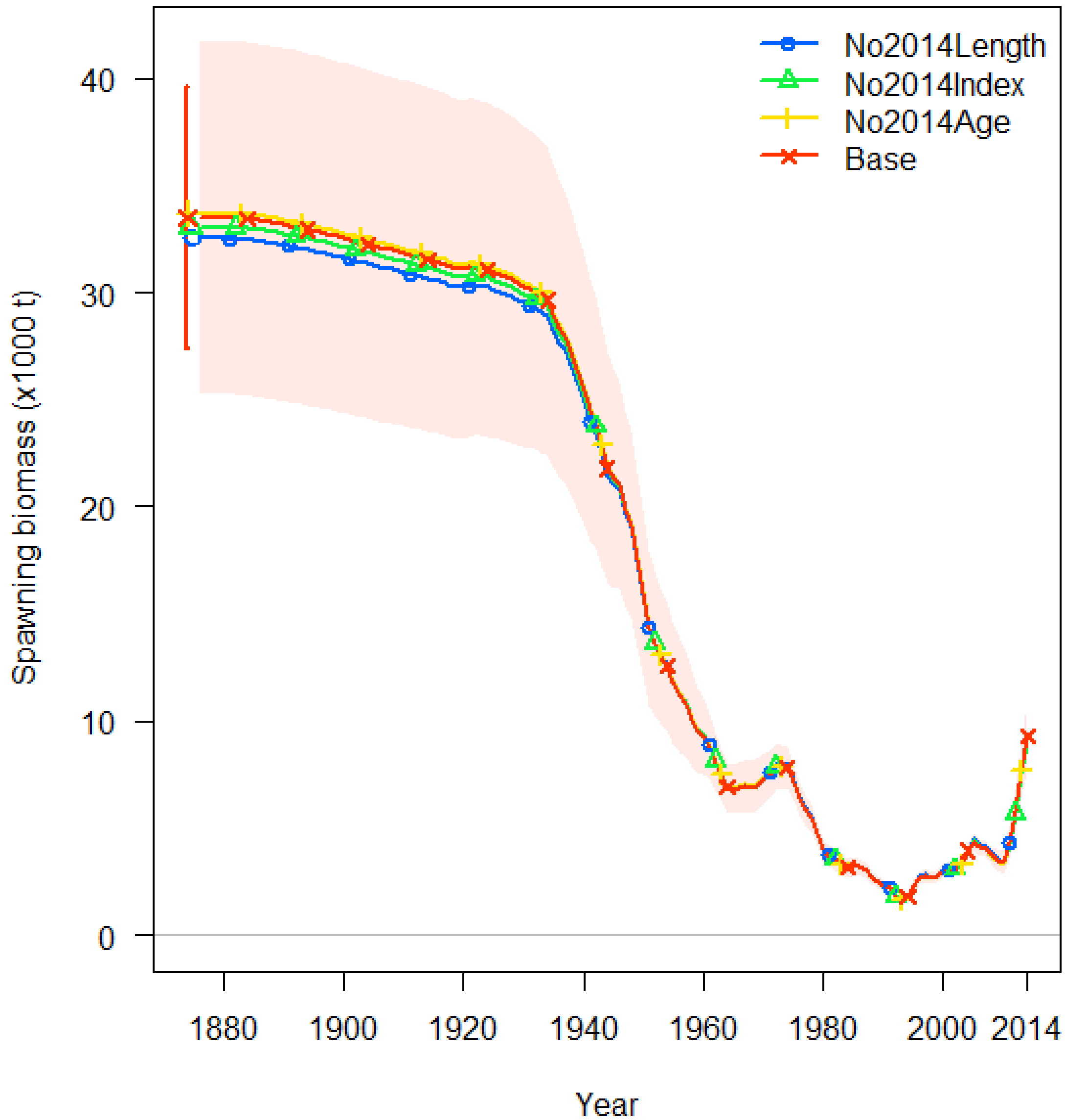


Figure 109. Spawning biomass for sensitivity to removal of 2014 length compositions (blue), removal of 2014 survey index estimate (green), removal of 2014 conditional age-at-length data (yellow), and base model (red).

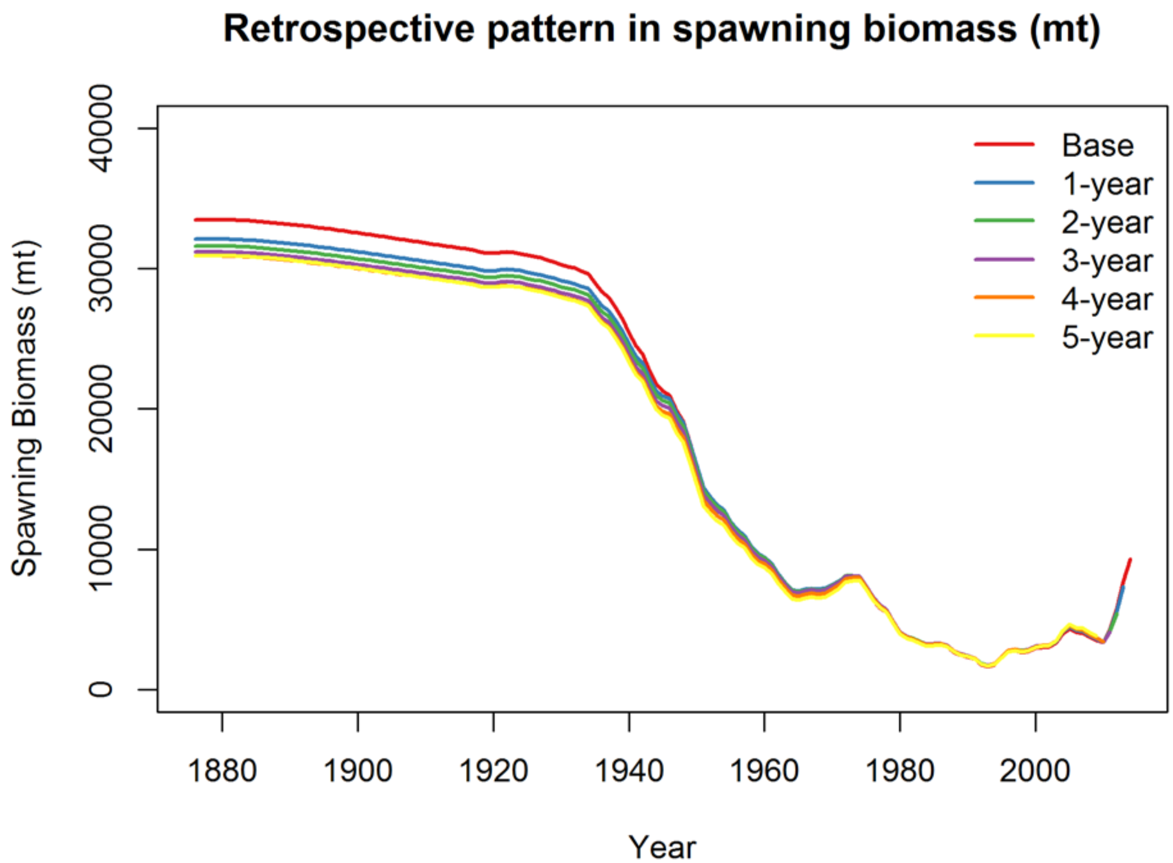
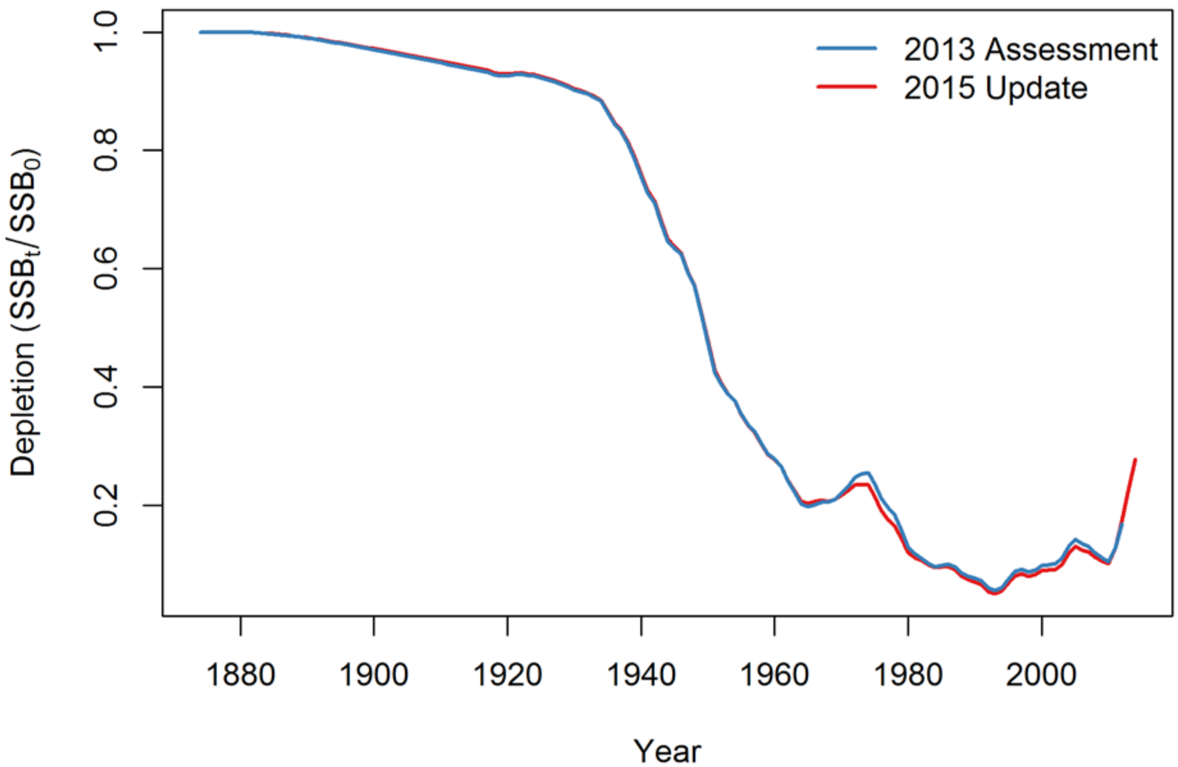
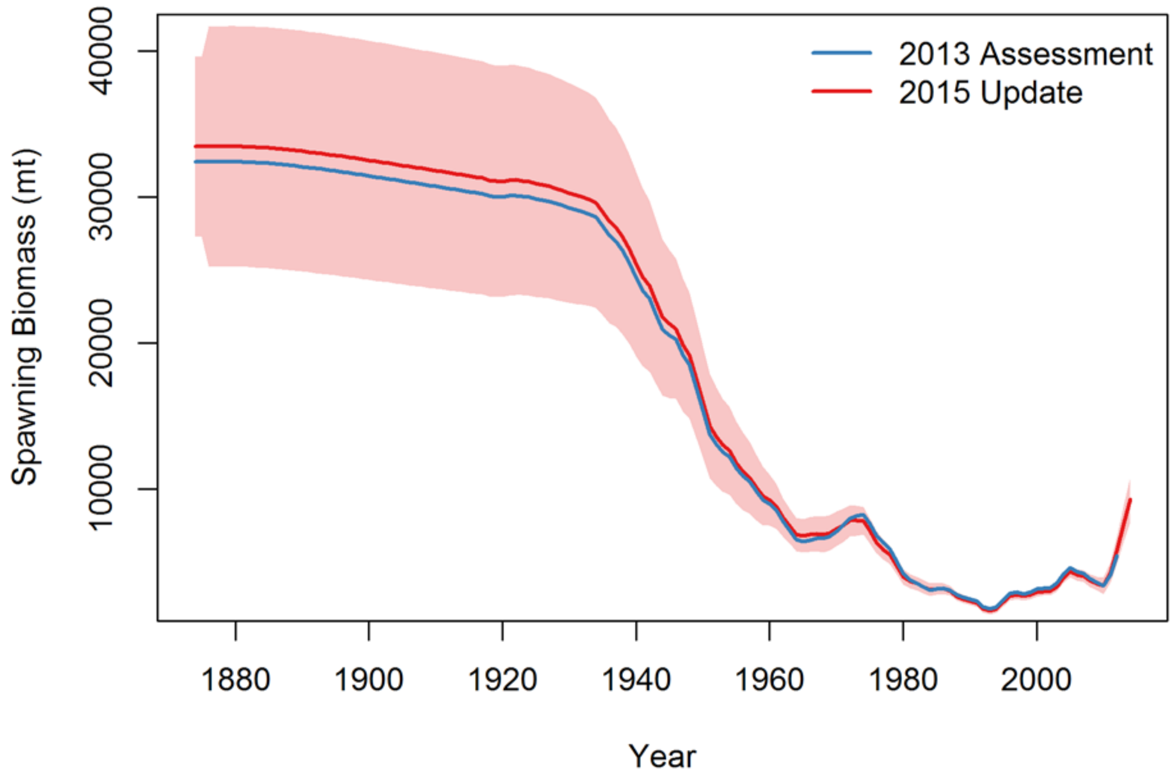


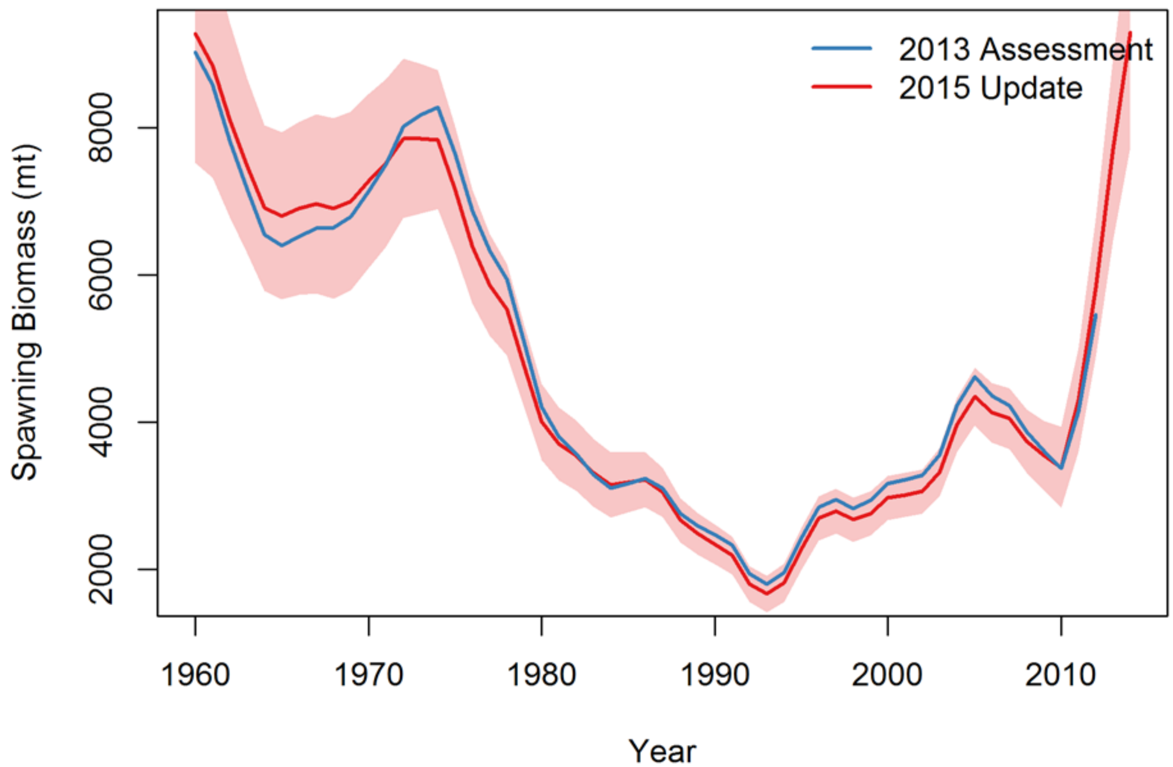
Figure 110. Retrospective analysis results for spawning biomass. Runs of the retrospective analysis sequentially exclude the last *n* years of data given to the model (here excluding between 1 and 5 years). The Base model includes all years of data.

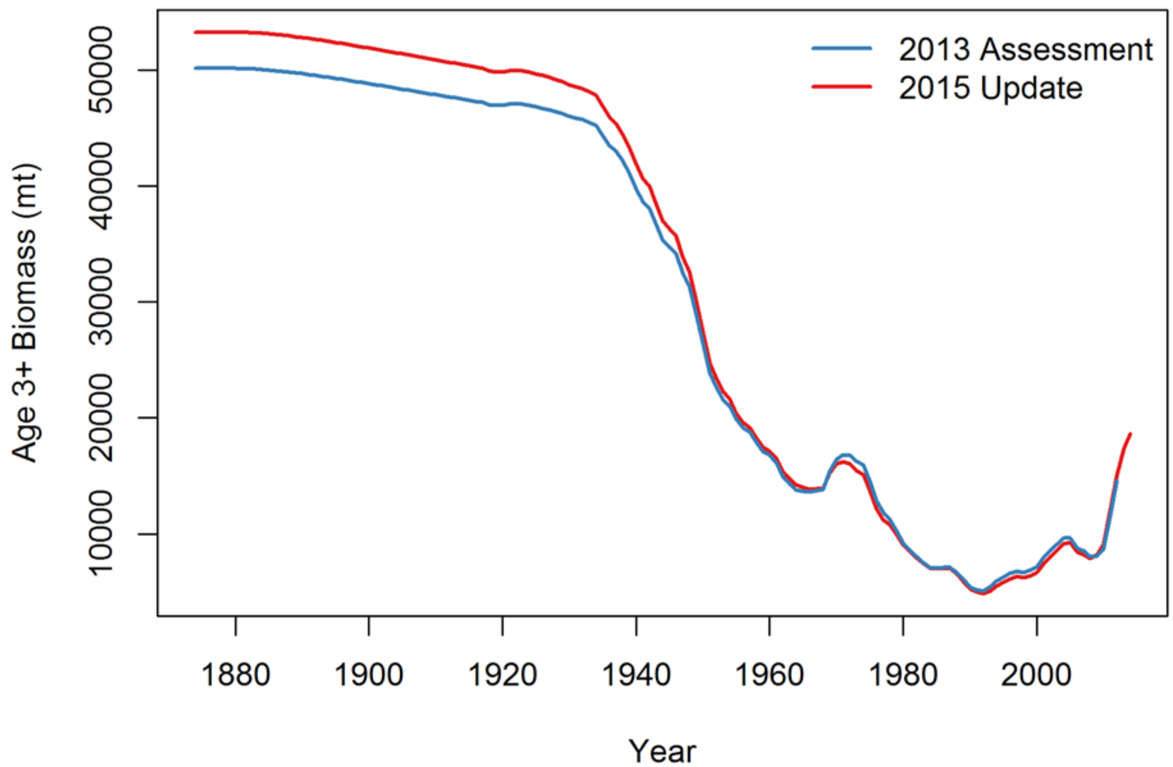


2013 Assessment
2015 Update
Depletion (SSB_t/SSB_0)
1.0
0.8
0.6
0.4
0.2
1880
1900
1920
1940
1960
1980
2000
Year



2013 Assessment
2015 Update
Spawning Biomass (mt)
10000
20000
30000
40000
1880
1900
1920
1940
1960
1980
2000
Year


2013 Assessment
2015 Update
Spawning Biomass (mt)
2000
4000
6000
8000
1960
1970
1980
1990
2000
2010
Year



2013 Assessment
2015 Update
Age 3+ Biomass (mt)
50000
40000
30000
20000
10000
1880
1900
1920
1940
1960
1980
2000
Year

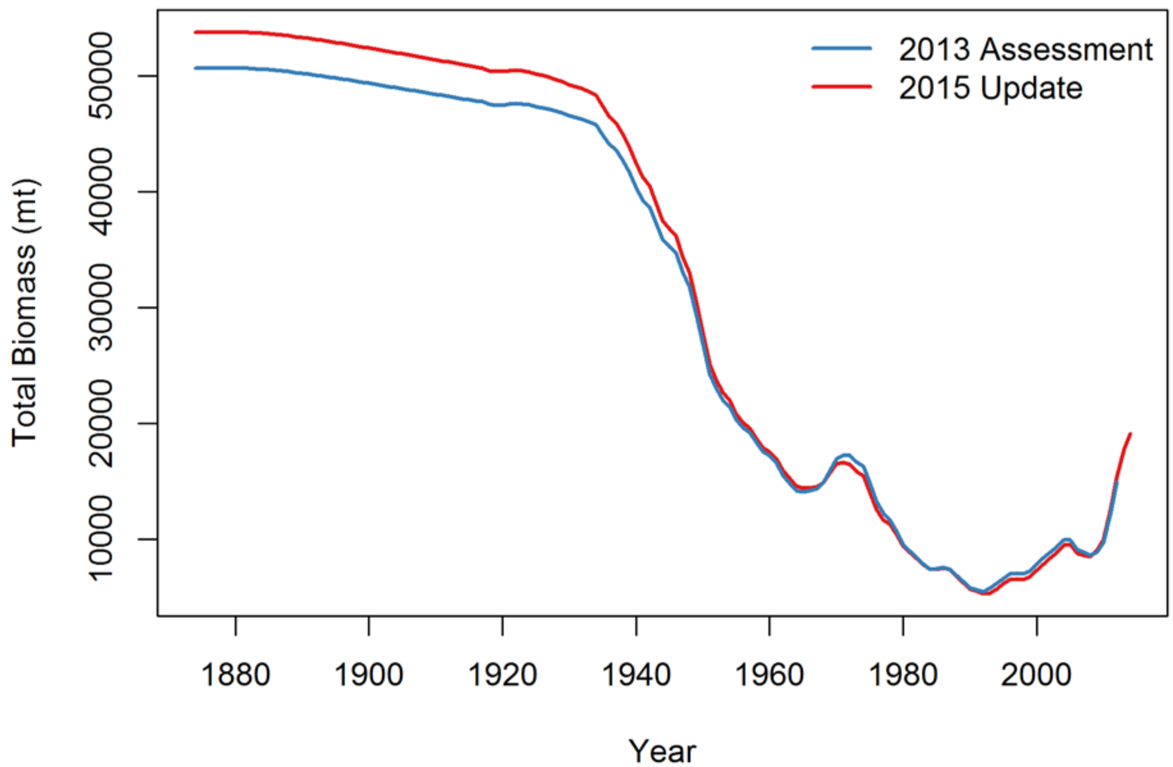


Figure 111. Comparisons of the model estimated stock depletion, spawning biomass, last 50 years of spawning biomass, summary (age 3+) biomass, and total biomass for the 2013 assessment and 2015 update models. Confidence intervals, when shown, correspond to the 2015 base model.

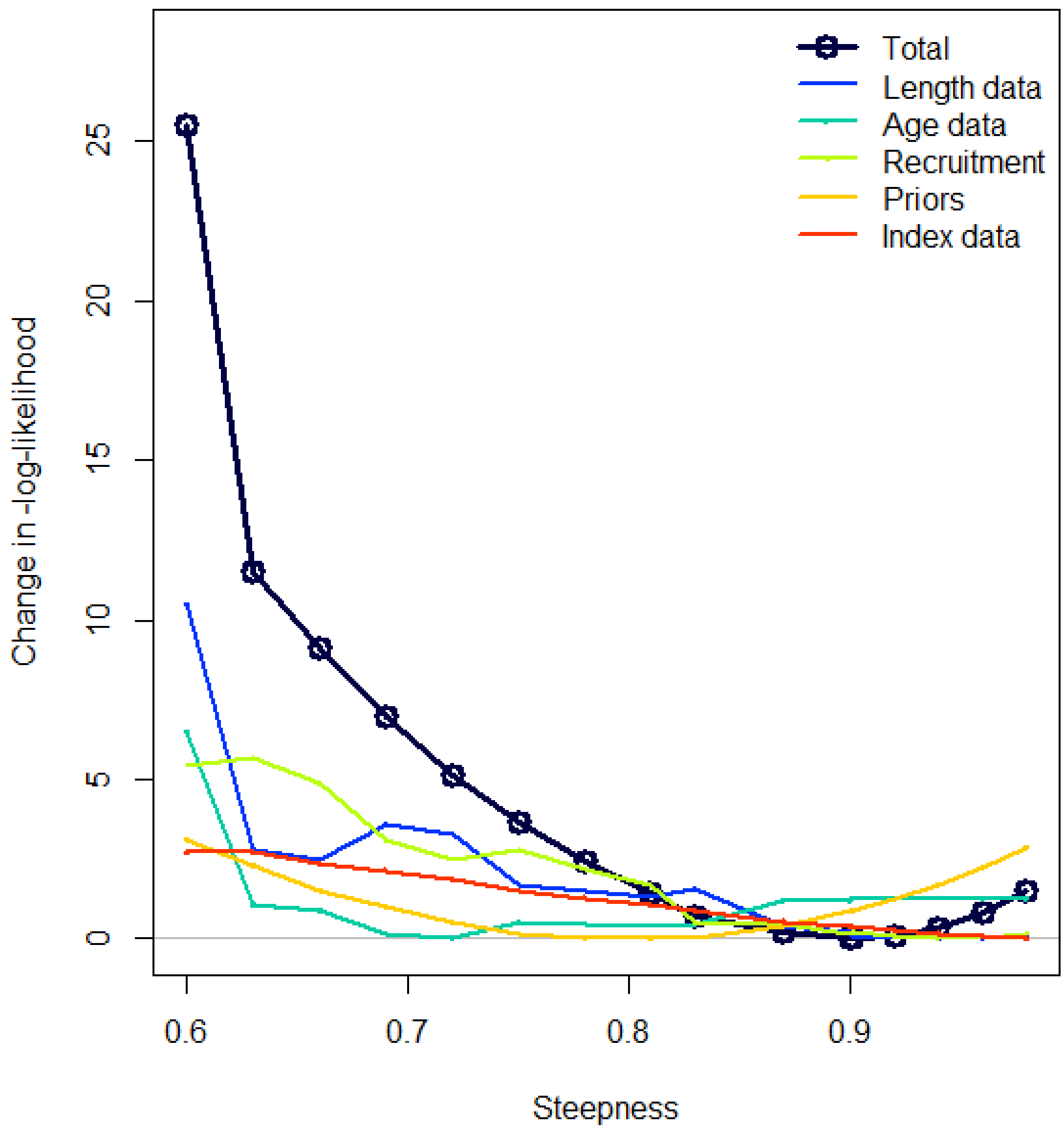


Figure 112. Likelihood profile for the stock-recruitment steepness (h).

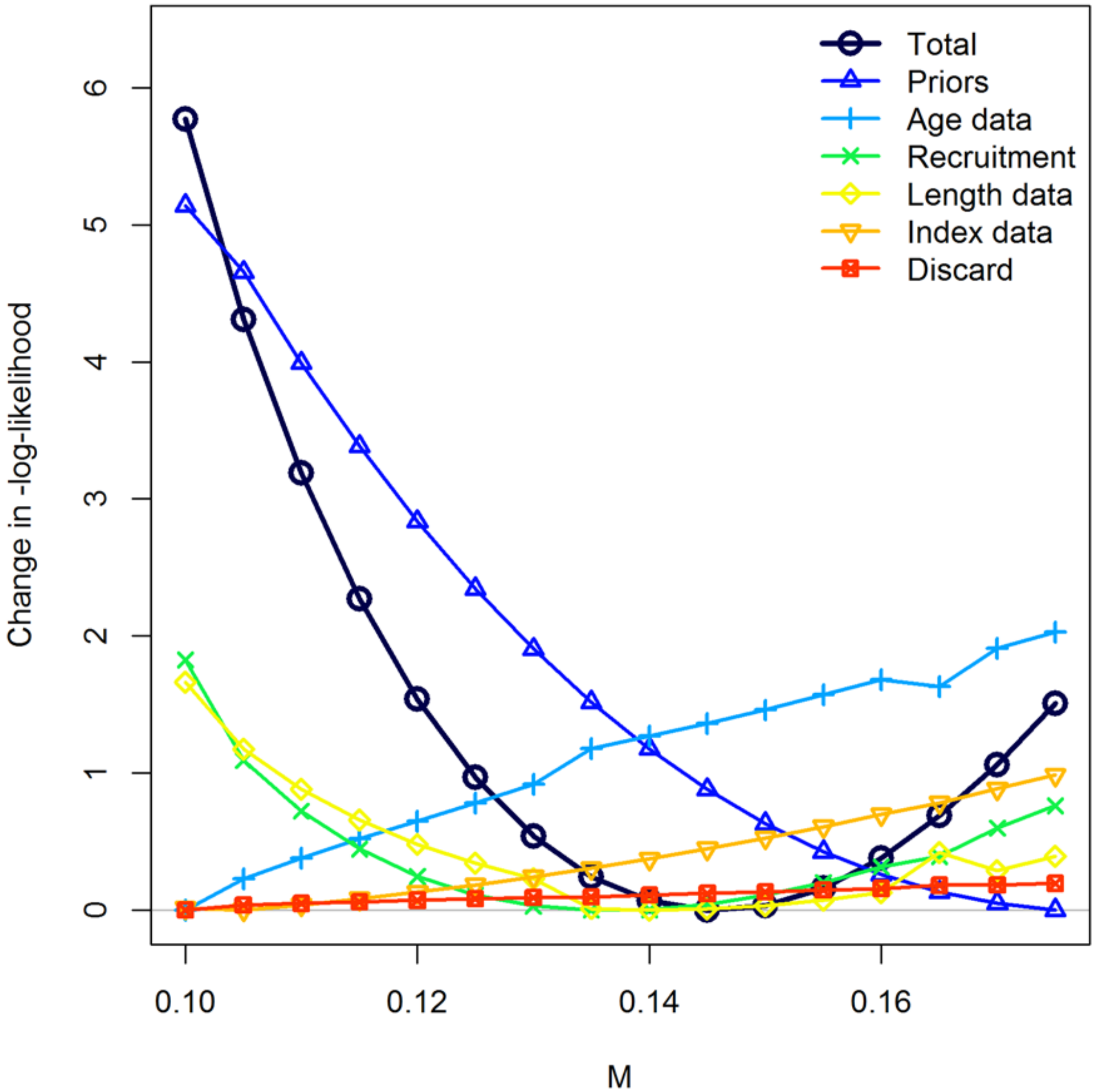


Figure 113. Likelihood profile for female natural mortality (M).

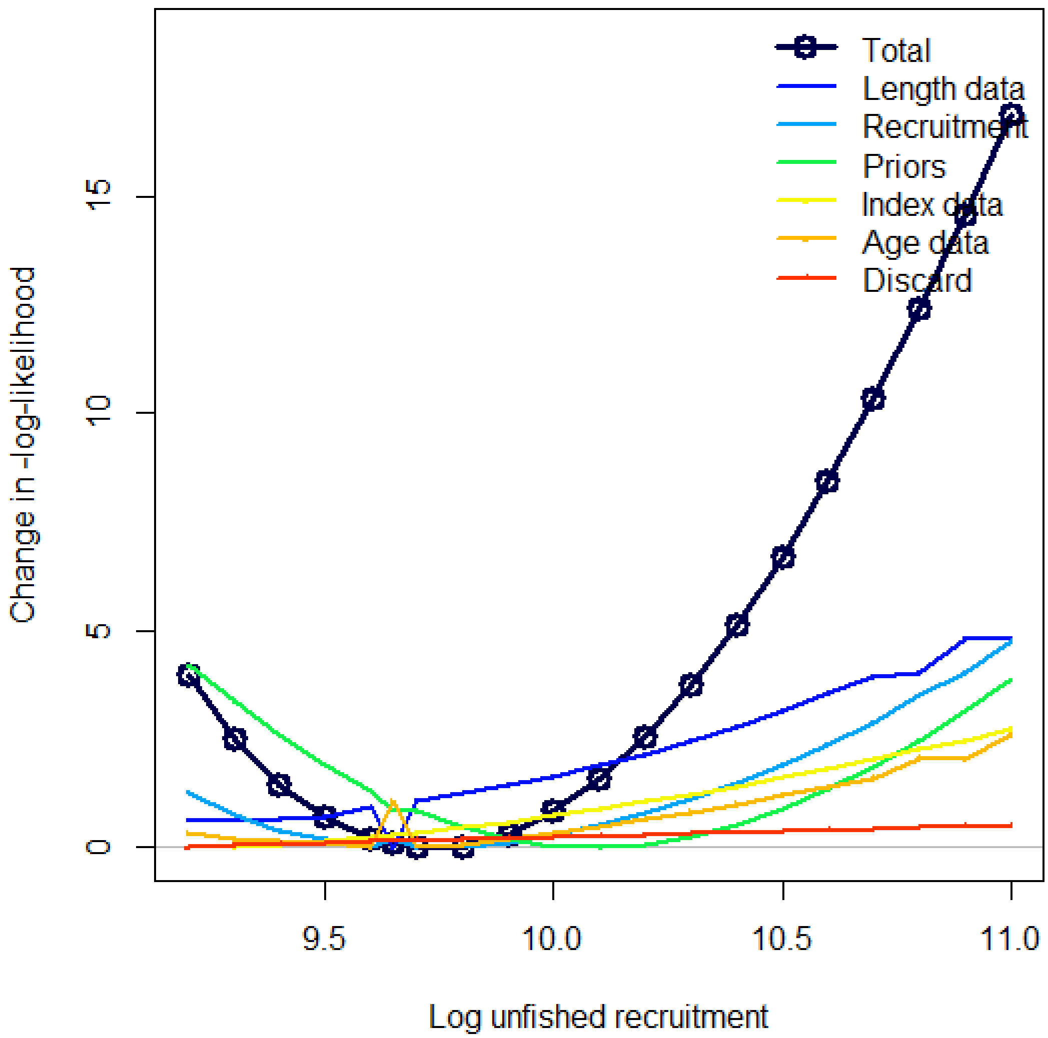


Figure 114. Likelihood profile for unfished recruitment (Ro) for total likelihoods.

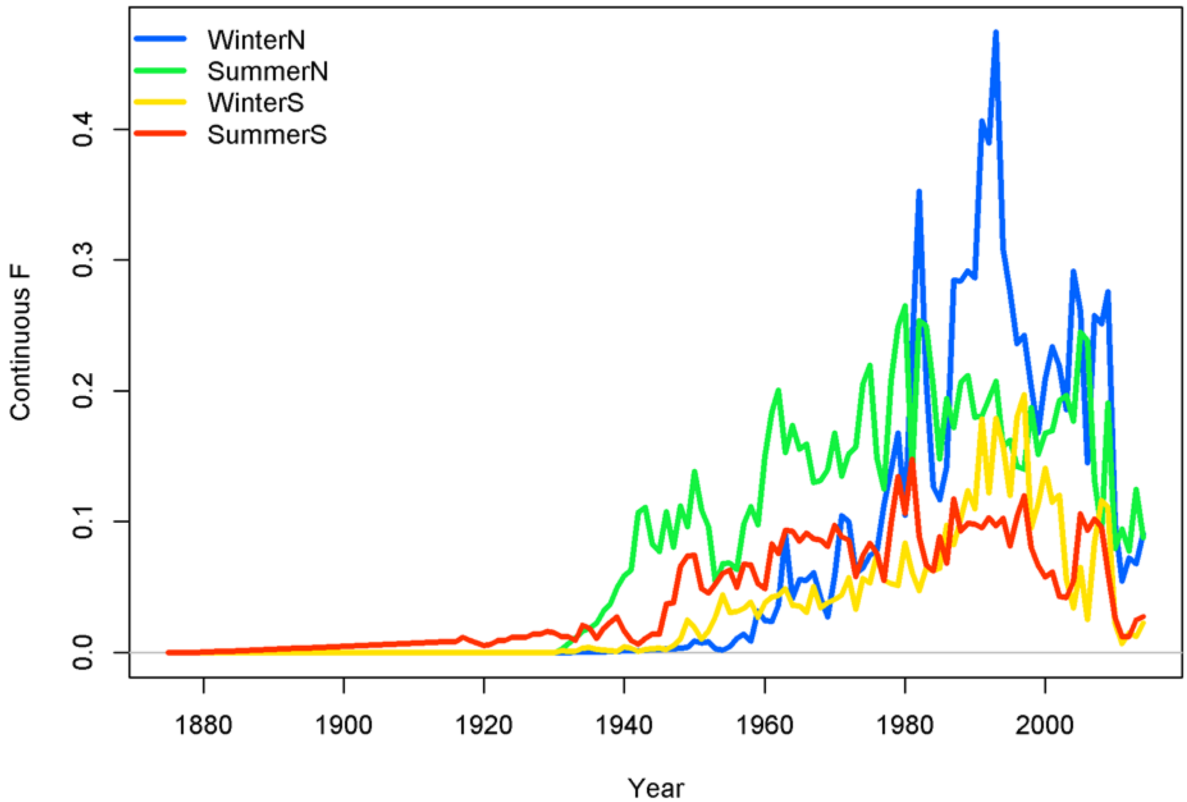


Figure 115. F time-series for each fleet.

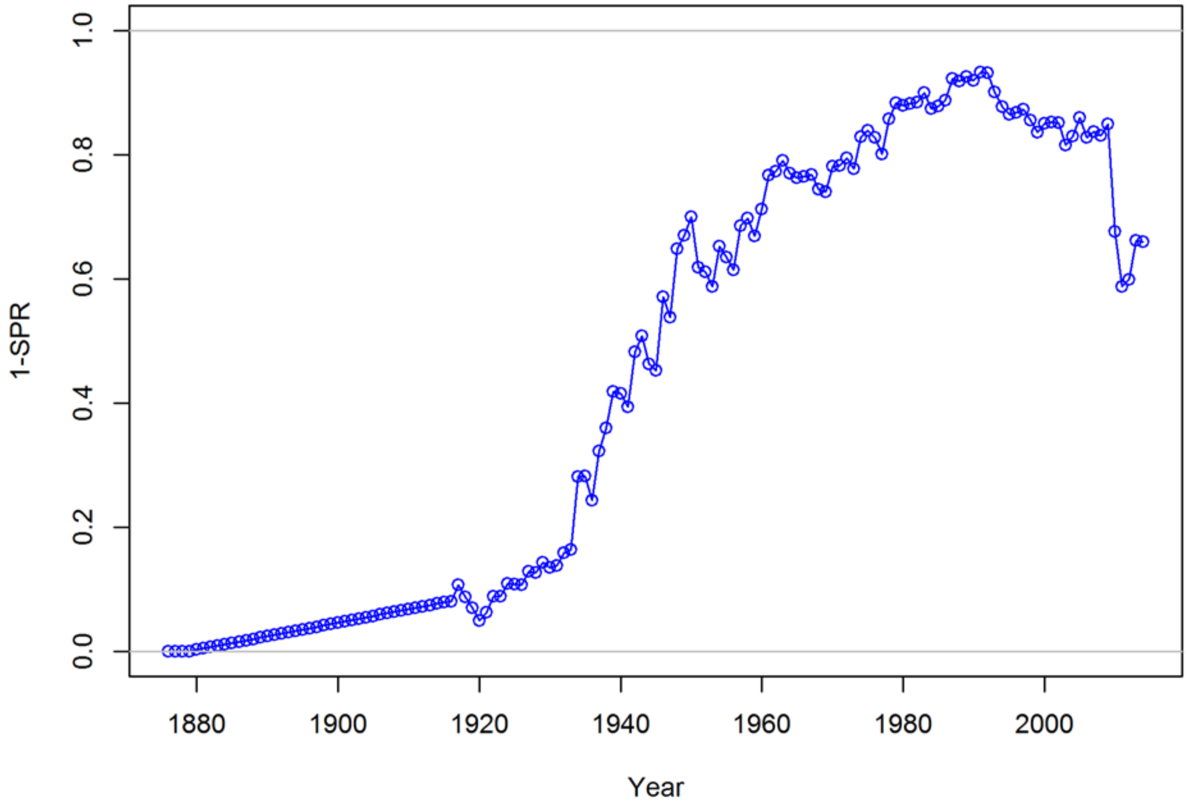


Figure 116. Time series of estimated spawning potential ratio (displayed as 1-SPR). Values of SPR above 0.7 reflect harvests in excess of the current overfishing proxy. The last year in the time series is 2014.

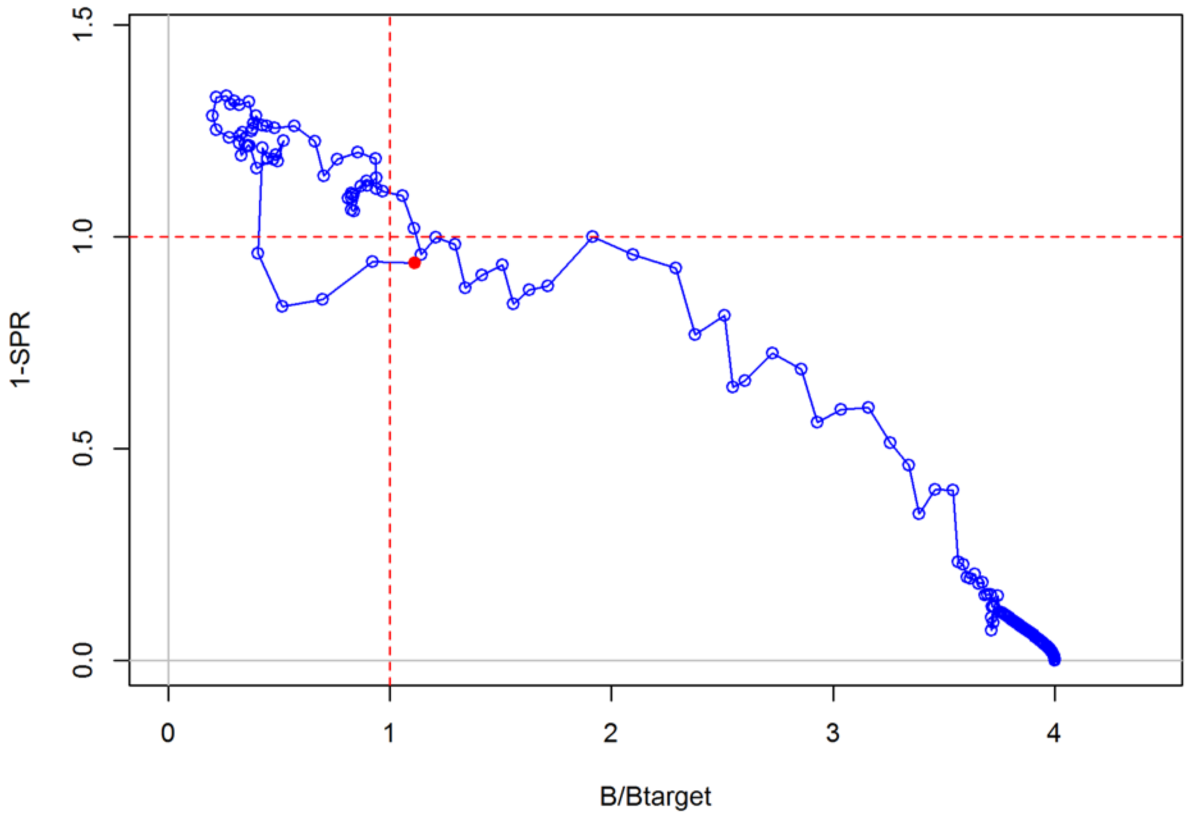


Figure 117. Phase plot of estimated fishing intensity vs. relative spawning biomass for the base case model. Fishing intensity is the relative exploitation rate divided by the level corresponding to the overfishing proxy (0.125). Relative spawning biomass is annual spawning biomass relative to virgin spawning biomass divided by the 25% rebuilding target.

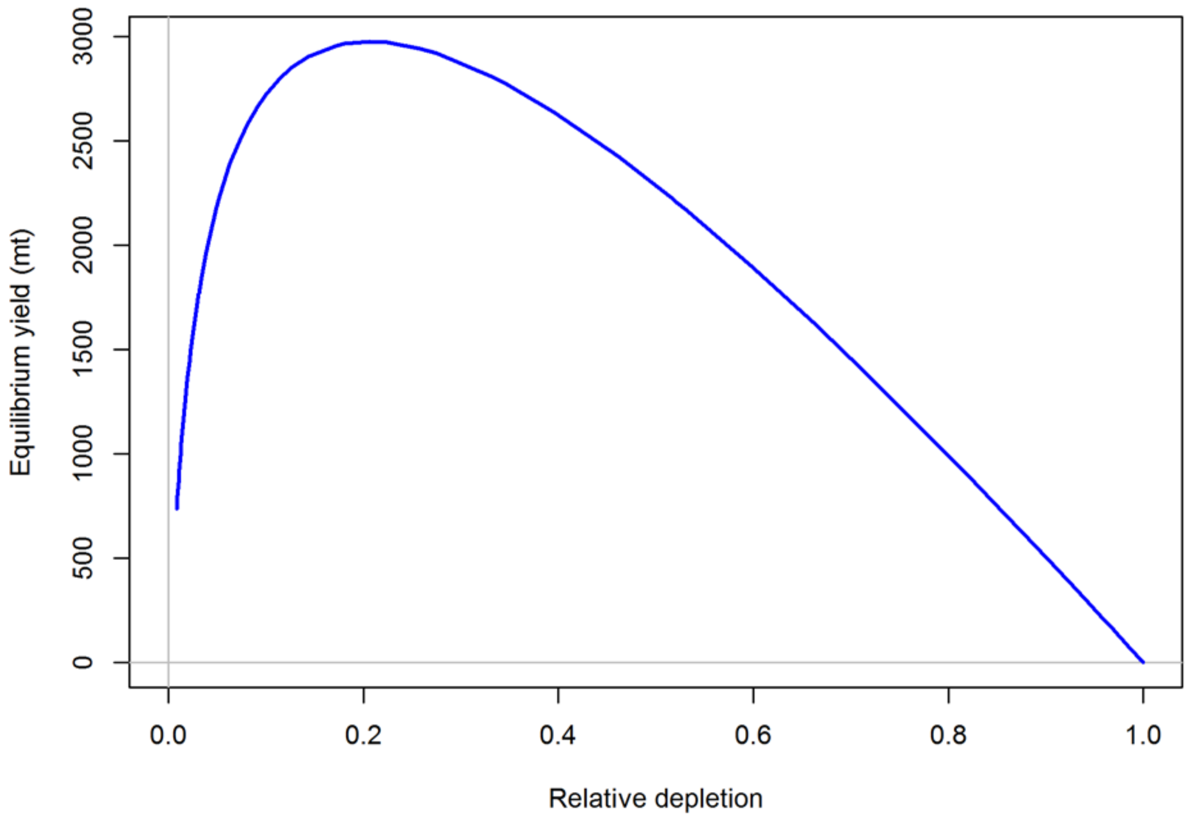


Figure 118. Equilibrium yield curve for the base case model. Values are based on 2014 fishery selectivity.

Appendix A. SS data file

```
#C data file created using the SS_writedat function in the R package r4ss
#C should work with SS version:
#C file write time: 2015-04-27 21:23:15
#
1876 #_styr
2014 #_endyr
1 #_nseas
12 #_months_per_seas
1 #_spawn_seas
4 #_Nfleet
3 #_Nsurveys
1 #_N_areas
WinterN%SummerN%WinterS%SummerS%TriEarly%TriLate%NWFSC #_fleetnames
0.16 0.67 0.16 0.67 0.73 0.67 0.67 #_surveytiming_in_season
1 1 1 1 1 1 1 #_area_assignments_for_each_fishery_and_survey
1 1 1 1 #_units of catch:  1=bio; 2=num
0.01 0.01 0.01 0.01 #_se of log(catch) only used for init_eq_catch and for Fmethod 2 and 3
2 #_Ngenders
40 #_Nages
0 0 0 0 #_init_equil_catch_for_each_fishery
139 #_N_lines_of_catch_to_read
 #_WinterN   SummerN  WinterS   SummerS year seas
    0.0000    0.0000   0.0000    1.0000 1876    1
    0.0000    0.0000   0.0000    1.0000 1877    1
    0.0000    0.0000   0.0000    1.0000 1878    1
    0.0000    0.0000   0.0000    1.0000 1879    1
    0.0000    0.0000   0.0000   11.5500 1880    1
    0.0000    0.0000   0.0000   22.1000 1881    1
    0.0000    0.0000   0.0000   32.6500 1882    1
    0.0000    0.0000   0.0000   43.2000 1883    1
    0.0000    0.0000   0.0000   53.7500 1884    1
    0.0000    0.0000   0.0000   64.3000 1885    1
    0.0000    0.0000   0.0000   74.8500 1886    1
    0.0000    0.0000   0.0000   85.4000 1887    1
    0.0000    0.0000   0.0000   95.9500 1888    1
    0.0000    0.0000   0.0000  106.5000 1889    1
    0.0000    0.0000   0.0000  117.0500 1890    1
    0.0000    0.0000   0.0000  127.6000 1891    1
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    0.0000    0.0000   0.0000  148.7100 1893    1
    0.0000    0.0000   0.0000  159.2600 1894    1
    0.0000    0.0000   0.0000  169.8100 1895    1
    0.0000    0.2420   0.0000  180.3600 1896    1
    0.0000    0.1980   0.0000  190.9100 1897    1
    0.0000    0.1540   0.0000  201.4600 1898    1
    0.0000    0.1500   0.0000  212.0100 1899    1
    0.0000    0.1460   0.0000  222.5600 1900    1
    0.0000    0.1420   0.0000  233.1100 1901    1
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0.0000	0.1380	0.0000	243.6600	1902	1
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0.0000	0.1250	0.0000	275.3100	1905	1
0.0000	0.1210	0.0000	285.8600	1906	1
0.0000	0.1170	0.0000	296.4100	1907	1
0.0000	0.1130	0.0000	306.9600	1908	1
0.0000	0.1080	0.0000	317.5100	1909	1
0.0000	0.1040	0.0000	328.0600	1910	1
0.0000	0.1000	0.0000	338.6100	1911	1
0.0000	0.0960	0.0000	349.1600	1912	1
0.0000	0.0920	0.0000	359.7100	1913	1
0.0000	0.0880	0.0000	370.2600	1914	1
0.0000	0.0830	0.0000	380.8100	1915	1
0.0000	0.0790	0.0000	386.4200	1916	1
0.0000	0.0750	0.0000	526.4100	1917	1
0.0000	0.0710	0.0000	423.8500	1918	1
0.0000	0.0670	0.0000	333.4400	1919	1
0.0000	0.0630	0.0000	230.4900	1920	1
0.0000	0.0580	0.0000	293.7600	1921	1
0.0000	0.0540	0.0000	424.7800	1922	1
0.0000	0.0500	0.0000	427.3600	1923	1
0.0000	0.0460	0.0000	532.8600	1924	1
0.0000	0.0420	0.0000	528.4700	1925	1
0.0000	0.0380	0.0000	521.6700	1926	1
0.0000	0.0350	0.0000	632.0400	1927	1
0.0000	0.0005	0.0000	620.0900	1928	1
0.0000	1.5420	0.0000	706.0400	1929	1
0.0000	1.2250	0.0000	658.8300	1930	1
0.0000	81.4510	63.3930	530.8790	1931	1
1.9900	250.8780	36.3960	519.9120	1932	1
5.9600	408.4310	38.5660	392.0800	1933	1
9.9300	567.8550	139.4080	896.3630	1934	1
13.9000	649.9570	155.3830	777.2060	1935	1
15.8800	769.7860	95.4920	431.5060	1936	1
19.7500	1051.4080	74.5250	741.0460	1937	1
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39.0900	1736.5810	161.8070	596.6960	1940	1
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46.0000	2919.2540	24.3680	215.5560	1942	1
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59.8200	1866.0470	101.7530	439.3430	1945	1
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69.0300	1777.9870	153.6800	1092.6550	1947	1
73.6400	2314.7440	272.6620	1778.0180	1948	1
75.9400	1808.6450	616.9580	1812.1790	1949	1
156.2100	2322.2370	424.2380	1638.0870	1950	1
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46.0700	737.1030	533.3600	981.1670	1953	1
26.5600	903.3630	800.5800	1073.4030	1954	1
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518.1270	355.4280	245.8610	299.4060	1994	1
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522.1430	577.3510	220.7340	300.4580	1998	1
463.3440	504.2480	286.8020	266.6430	1999	1
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666.9720	713.8500	335.1600	195.1150	2002	1
544.4840	713.4440	256.2100	179.6700	2003	1

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 1009.9120  749.5070 177.2370  267.1600 2004    1
  963.6820 1068.7630 337.1810  533.4140 2005    1
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  258.0860  292.3430  77.6020  120.9520 2010    1
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  406.0490  477.7070 124.4597  107.6337 2012    1
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67 #_N_cpue
 #_Fleet Units Errtype
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      6     1      0
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   2007    1     7 19427.651 0.1166931
   2008    1     7 15981.420 0.1210665
   2009    1     7 15893.292 0.1172802
   2010    1     7 22700.295 0.1083686
   2011    1     7 30022.088 0.1049619
   2012    1     7 36628.374 0.1206441
   2013    1     7 51164.860 0.1231240
   2014    1     7 58503.691 0.1079538
4 #_N_discard_fleets
#_discard_units (1=same_as_catchunits(bio/num); 2=fraction; 3=numbers)
#_discard_errtype:  >0 for DF of T-dist(read CV below); 0 for normal with CV; -1 for normal with se; -2 for lognormal
 #_Fleet units errtype
      1     2      -1
      2     2      -1
      3     2      -1
      4     2      -1
56 #_N_discard
 #_Yr Seas Flt      Discard       Std_in
 2002    1   4 5.804275e-02 0.0158718752
 2009    1   4 2.302831e-02 0.0083137997
 2006    1   4 3.788526e-02 0.0157847545
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2003	1	4	3.647794e-02	0.0126047477
2010	1	4	5.569107e-02	0.0116598759
2007	1	4	6.539404e-02	0.0212666851
2004	1	4	3.334540e-02	0.0149641580
2008	1	4	2.627212e-02	0.0147352113
2005	1	4	1.196813e-02	0.0034022853
2002	1	3	3.481377e-02	0.0247339228
2003	1	3	6.171857e-03	0.0025614838
2004	1	3	2.485650e-02	0.0524907748
2005	1	3	6.108124e-03	0.0055178034
2009	1	3	2.122202e-02	0.0146282416
2006	1	3	7.518581e-02	0.0430006926
2010	1	3	2.781167e-01	0.0598054563
2007	1	3	1.761218e-02	0.0138895470
2008	1	3	1.009229e-02	0.0057704619
2004	1	2	9.112957e-02	0.0322877576
2005	1	2	4.042911e-02	0.0090358138
2002	1	2	2.117863e-01	0.0269649681
2006	1	2	7.848130e-02	0.0172967940
2003	1	2	1.453871e-01	0.0897680074
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2008	1	2	5.360256e-02	0.0112924794
2009	1	2	2.024402e-01	0.0623488138
2010	1	2	8.858009e-02	0.0263901691
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2009	1	1	2.737923e-02	0.0157924140
2006	1	1	1.226874e-02	0.0212815439
2003	1	1	7.488344e-03	0.0186022169
2010	1	1	2.088643e-01	0.0544966931
2011	1	2	3.154648e-02	0.0212815439
2011	1	1	1.180981e-03	0.0212815439
2012	1	2	1.452187e-02	0.0212815439
2012	1	1	6.365219e-04	0.0212815439
2013	1	2	2.308618e-02	0.0212815439
2013	1	1	8.126963e-04	0.0212815439
2014	1	1	1.664830e-03	0.0212815439
2011	1	4	4.106251e-02	0.0212815439
2011	1	3	8.848846e-04	0.0212815439
2012	1	4	1.306217e-02	0.0212815439
2012	1	3	3.372607e-03	0.0212815439
2013	1	4	4.425084e-03	0.0212815439
2013	1	3	4.336132e-04	0.0212815439
2014	1	3	5.819262e-05	0.0212815439
1985	1	1	2.220000e-02	0.1103000000
1986	1	1	2.150000e-02	0.1162000000
1987	1	1	2.700000e-02	0.1186000000
1985	1	2	3.460000e-02	0.0419000000

1986   1   2 3.430000e-02 0.0432000000
1987   1   2 3.150000e-02 0.0450000000
50 #_N_meanbodywt
30 #_DF_for_meanbodywt_T-distribution_like
#_Year Seas Fleet Partition   Value   CV
2002 1 1 1 0.411026658 0.4381554
2003 1 1 1 0.32676651 0.4889882
2004 1 1 1 0.362789005 0.4486696
2005 1 1 1 0.310043024 0.6491677
2006 1 1 1 0.416909424 0.5297191
2007 1 1 1 0.380402467 0.3535249
2008 1 1 1 0.521605119 0.3359184
2009 1 1 1 0.416504766 0.4352434
2010 1 1 1 0.601793435 0.4820733
2011 1 1 1 0.276154673 0.6847128
2012 1 1 1 0.329648483 0.5045706
2013 1 1 1 0.448384385 1.5641988
2014 1 1 1 0.307026963 0.7379473
2002 1 2 1 0.240700798 0.6732064
2003 1 2 1 0.234371388 0.8927288
2004 1 2 1 0.274415576 0.4056363
2005 1 2 1 0.304606357 0.5076305
2006 1 2 1 0.266863034 0.48805
2007 1 2 1 0.260193604 0.8212914
2008 1 2 1 0.244109037 0.8731706
2009 1 2 1 0.216963029 0.6328237
2010 1 2 1 0.257626552 0.6995183
2011 1 2 1 0.245881411 0.8826657
2012 1 2 1 0.31150738 1.2041718
2013 1 2 1 0.2972455 1.4858454
2002 1 3 1 0.409893245 0.4842769
2003 1 3 1 0.178165263 0.4920468
2004 1 3 1 0.260807851 0.4936663
2005 1 3 1 0.278659407 0.5445798
2006 1 3 1 0.283975094 0.656571
2007 1 3 1 0.216014686 0.5278411
2008 1 3 1 0.295577904 0.5688094
2009 1 3 1 0.55420291 0.2361757
2010 1 3 1 0.416889225 0.949054
2011 1 3 1 0.309999268 0.2179714
2012 1 3 1 0.201938843 1.1657691
2013 1 3 1 0.275450531 1.0277812
2014 1 3 1 0.419008183 0.1812581
2002 1 4 1 0.189748886 1.1697121
2003 1 4 1 0.175114107 0.431599
2004 1 4 1 0.18349139 0.9209211
2005 1 4 1 0.251375117 0.3945907
2006 1 4 1 0.31859076 0.5523757
2007 1 4 1 0.36898844 0.6286909
2008 1 4 1 0.219401154 0.5304866
2009 1 4 1 0.212725139 1.2128883

2010 1 4 1 0.183743861 0.6612776
2011 1 4 1 0.245775353 0.8271926
2012 1 4 1 0.227151505 0.6053573
2013 1 4 1 0.234392613 0.6122213

2 # length bin method: 1=use databins; 2=generate from binwidth,min,max below; 3=read vector
2 # binwidth for population size comp
4 # minimum size in the population (lower edge of first bin and size at age 0.00)
78 # maximum size in the population (lower edge of last bin)
-1 #_comp_tail_compression
0.001 #_add_to_comp
0 #_combine males into females at or below this bin number
26 #_N_lbins
#_lbin_vector
12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62
253 #_N_Length_comp_observations
#_Yr Seas FltSvy Gender Part Nsamp f12 f14 f16 f18 f20 f22 f24 f26 f28 f30 f32 f34 f36 f38 f40 f42 f44 f46 f48 f50 f52 f54 f56 f58 f60 f62 m12 m14 m16 m18 m20 m22 m24 m26 m28 m30 m32 m34 m36 m38 m40 m42 m44 m46 m48 m50 m52 m54 m56 m58 m60 m62
Winter N
1955 1 1 3 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 133.1138252 532.4553007 798.682951 931.7967762 965.0752325 831.9614073 698.8475822 299.5061066 332.7845629 66.55691259 0 0 0 0 0 0 0 0 0 0 0 0 66.55691259 698.8475822 1863.593552 3194.731804 3660.630192 1364.416708 366.0630192 66.55691259 0 0 0 0 0 0 0
1956 1 1 3 2 1 0 0 0 0 0 0 0 0 0 0 0 0 171.6355332 400.4829108 286.059222 686.5421327 1087.025043 2116.838243 2860.59222 3489.922508 3032.227753 1945.202709 572.1184439 171.6355332 171.6355332 57.21184439 0 0 0 0 0 0 0 0 0 0 0 114.4236888 343.2710664 1373.084265 2288.473776 3775.98173 7037.05686 5034.642307 1659.143487 915.3895103 57.21184439 0 0 0 0 0 0
1957 1 1 3 2 10 0 0 0 0 0 0 0 0 0 0 0 0 0 6.009469078 71.39556706 204.228511 607.5044788 1066.165412 2372.614943 4146.4482 4136.128908 4478.690907 3146.637274 1217.835302 875.0823143 223.2368051 63.39554886 0 0 0 0 0 0 0 0 78.94363972 0 1.589877098 75.57604208 964.0095801 2307.185506 7496.026378 9624.884906 7783.936203 2482.130564 663.0975759 132.2504275 70.57116704 0 39.47181986 0 0 0
1958 1 1 3 2 1 0 0 0 0 0 0 0 0 0 0 54.98871108 54.98871108 549.8871108 384.9209775 659.8645329 549.8871108 219.9548443 164.9661332 164.9661332 329.9322665 109.9774222 164.9661332 54.98871108 54.98871108 0 0 0 0 0 0 0 0 0 0 0 0 54.98871108 714.853244 989.7967994 1869.616177 824.8306662 1264.740355 1924.604888 1484.695199 54.98871108 0 0 0 0 0 0 0
1959 1 1 3 2 2 0 0 0 0 0 0 0 0 32.610384 163.05192 231.1279072 361.5694432 562.9421855 1391.274908 1470.771772 1582.87902 1553.123855 713.3702558 906.1773406 947.3533821 1101.839645 992.5876159 521.766144 100.6863712 35.46560318 0 0 0 0 0 0 0 0 0 32.610384 163.05192 293.493456 1070.881507 3872.664158 6429.042805 3955.016241 1699.493733 422.7320189 70.93120635 68.07598718 35.46560318 0 0 0 0 0 0
1964 1 1 3 2 4 0 0 0 0 0 0 0 0 0 0 0 0 0 30.66478025 807.0208237 1453.298928 2705.156807 2861.062806 3823.529852 1959.25993 1586.372535 697.9278128 49.82121429 204.1452334 242.5801867 0 0 0 0 0 0 0 0 0 0 0 0 202.2332114 1753.179018 5939.901734 9027.923196 4487.358753 1605.505312 721.7366671 0 0 0 0 0 0 0 0 0

1965 1 1 3 2 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 147.3843485 1714.502187 2466.24458 4164.381312
4251.222218 4513.543968 2900.987301 1558.162708 868.2245994 349.4466198 147.3843485 0 0 0 0 0
0 0 0 0 0 0 0 0 294.7686971 3075.207303 4139.628654 7275.379398 2262.921467 1434.554141
147.3843485 0 154.7946736 0 0 0 0 0 0
1966 1 1 3 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 66.55691259 299.5061066 808.3139437 532.4553007
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1976 1 1 3 2 3 0 0 0 0 0 0 0 0 0 0 0 0 0 197.3663102 799.6600406 2320.586185 4976.815471 5481.119 3624.8416 2846.072649 839.4451412 645.2521727 394.7326204 214.2907221 59.88285428 0 0 0 0 0 0 0 0 0 0 0 1139.652748 7284.306763 15780.30465 10430.72394 6685.733707 1043.832909 393.1459495 0 0 0 0 0 0 0 0
1977 1 1 3 2 2 0 0 0 0 0 0 0 0 0 0 0 242.5801867 1169.400946 485.1603734 2519.46235 5661.245544 8137.207906 10327.09009 5418.665358 3384.363381 1636.141579 597.2405966 1393.561392 398.1603978 199.0801989 398.1603978 0 0 0 0 0 0 0 0 0 0 1567.561343 3688.863296 5698.085024 7545.066035 5647.924529 1455.48112 485.1603734 242.5801867 0 0 0 0 0 0 0
1978 1 1 3 2 4 0 0 0 0 0 0 0 0 173.2129374 866.0646871 1385.703499 519.6388123 1905.342312 1116.347319 2102.354277 4104.999468 10043.58306 11134.55952 8892.954505 8185.219721 4249.057611 3796.849676 2263.466112 346.4539144 559.4440534 266.9275506 0 0 0 0 0 0 0 173.2129374 0 354.9891743 363.5524737 988.5645729 3709.605599 6912.433369 5725.061916 1706.781566 1334.637753 400.3913259 346.4539144 0 0 0 0 0 0 0
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1980 1 1 3 2 9 0 0 0 0 0 0 0 0 9.155874013 36.62349605 816.9649208 2781.904766 3423.381313 6392.929876 8528.431342 12239.85135 8485.863785 8427.43875 5288.466473 5575.268424 6787.923637 3099.645939 2909.30897 482.3102143 253.80929 300.9577716 0 0 0 0 0 0 242.5801867 0 458.6995758 3830.746108 11659.06899 14600.77081 12933.79709 9554.349718 4706.428629 2160.969206 494.3162474 517.1727048 251.7360607 0 0 0 0 0 0
1981 1 1 3 2 10 0 0 0 0 0 0 0 0 62.64721426 2308.516109 2983.109521 4262.473752 4081.530227 7984.803839 6117.117996 5799.232795 5257.707786 8057.657793 7367.445529 5131.314735 5818.250873 6541.113516 5513.413642 2678.508849 1790.681185 269.005244 0 0 0 0 0 0 0 0 13.38091291 2570.587379 8459.777847 10386.2564 8130.579678 6431.546275 5783.865738 2975.382244 1817.815986 539.858087 754.1656173 0 0 316.8996618 222.9584253 74.31947509 0 0
1982 1 1 3 2 5 0 0 0 0 0 0 0 0 242.5801867 0 485.1603734 2910.96224 2910.96224 5175.151593 4609.023547 6550.310703 5256.442097 4772.250218 3397.091108 4609.66921 4205.79934 3721.28463 2831.285893 2426.770361 323.5478594 323.5478594 0 0 0 0 0 0 0 0 727.74056 1455.48112 4851.603734 8732.88672 7600.95346 10512.56136 6711.600386 2910.96224 3638.7028 1293.868606 1940.641493 0 0 0 0 0 0 0
1983 1 1 3 2 4 0 0 0 0 0 0 0 0 0 0 727.74056 242.5801867 3938.998002 2910.96224 3603.985229 5879.639495 3453.837629 4354.723234 2448.799311 4146.860618 5209.61395 4689.736006 6029.787096 2633.664483 1848.208908 0 0 0 0 0 0 0 0 0 242.5801867 2425.801867 5244.331521 6630.3775 5590.621612 3927.277876 4146.860618 3927.277876 3361.405043 1212.900933 1120.468348 693.0229893 0 0 0 0 0 0
1984 1 1 3 2 3 0 0 0 0 0 0 0 0 242.5801867 485.1603734 485.1603734 1698.061307 2668.382053 6549.66504 8975.466907 9218.047094 8005.14616 6792.245227 4123.863173 2910.96224 2425.801867 1455.48112 2183.22168 242.5801867 727.74056 0 0 0 0 0 0 0 0 0 970.3207467 4366.44336 7277.4056 10430.94803 9218.047094 6307.084854 485.1603734 970.3207467 242.5801867 242.5801867 242.5801867 0 0 0 0 0 0 0
1986 1 1 3 2 3 0 0 0 0 0 0 0 0 0 144.0153884 236.5795711 473.1591422 1244.68729 2579.264152 5014.512916 7186.744973 5851.156503 4315.112431 3601.036104 812.6411249 1258.351524 242.5801867 0 242.5801867 0 0 0 0 0 0 0 0 0 0 0 853.7541018 2273.231528 4963.06171 7405.202421 7503.767219 4675.922265 962.6571289 524.610348 144.0153884 0 0 0 0 0 0 0 0
1987 1 1 3 2 7 0 0 0 0 0 0 0 0 0 0 219.889893 219.889893 1342.029652 3259.980851 5177.932051 6106.316327 11685.53581 8914.159447 9454.783133 7022.217845 2832.068255 1415.204301 1212.900933 88.97671089 177.9534218 0 0 0 0 0 0 0 0 0 0 462.4700797 1432.790826 6197.077501 12107.97869 13633.19035 7085.184958 3994.609644 1148.274168 88.97671089 0 0 0 0 0 0 0 0

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1989 1 1 3 2 10 0 0 0 0 0 0 0 242.5801867 485.1603734 3396.122613 6549.66504 6064.504667 7003.14855 7488.308923 8606.179265 9787.403335 8785.405724 3575.349073 4598.188823 4598.188823 632.7099688 664.3868325 453.4835096 0 0 0 0 0 0 0 0 0 485.1603734 2183.22168 8247.726347 9608.176876 11127.01172 6032.827803 6486.311313 970.3207467 1423.804256 242.5801867 0 0 0 0 0 0 0 0 0
1990 1 1 3 2 4 0 0 0 0 0 0 0 0 0 242.5801867 242.5801867 1455.48112 4064.327897 3519.632248 3336.587337 3549.399886 2881.194602 1910.873855 455.3927352 0 0 0 0 0 0 0 0 0 0 0 0 0 0 970.3207467 2668.382053 6004.969391 6856.219585 2489.776225 2643.053497 1489.68784 1064.062743 212.8125485 0 727.74056 485.1603734 0 0 0 0 0 0
1991 1 1 3 2 11 0 0 0 0 0 0 0 0 0 2910.96224 6792.245227 5336.764107 6792.245227 12371.58952 9945.787654 7277.4056 7277.4056 3153.542427 1455.48112 242.5801867 485.1603734 242.5801867 0 0 242.5801867 0 0 0 0 0 0 0 242.5801867 0 970.3207467 3881.282987 12129.00933 13099.33008 5579.344294 1698.061307 727.74056 485.1603734 0 0 0 0 0 0 0 0 0 0
1992 1 1 3 2 4 0 0 0 0 0 0 0 242.5801867 1212.900933 1212.900933 727.74056 1033.359036 1455.48112 2578.611105 2425.801867 1365.710171 1212.900933 1212.900933 970.3207467 0 0 0 0 0 0 0 0 0 0 0 0 242.5801867 152.8092381 3100.077109 4996.826255 4637.742461 1491.78675 2066.718072 2578.611105 970.3207467 242.5801867 0 0 0 0 0 0 0 0 0 0
1993 1 1 3 2 7 0 0 0 0 0 0 0 0 0 242.5801867 0 485.1603734 1940.641493 2668.382053 3881.282987 5336.764107 4366.44336 2668.382053 1940.641493 485.1603734 0 0 0 242.5801867 0 0 0 0 0 0 0 0 0 727.74056 2668.382053 5579.344294 7277.4056 7277.4056 4123.863173 970.3207467 0 0 0 0 0 0 0 0 0 0 0
1994 1 1 3 2 9 0 0 0 0 0 242.5801867 0 0 1698.061307 3832.891744 3808.696122 4051.276309 6477.078175 4973.205812 4949.01019 6501.273797 4803.21249 2644.186432 2401.606245 970.3207467 0 0 0 0 0 0 0 0 0 0 0 242.5801867 0 1940.641493 6307.084854 7665.783487 6258.69361 5312.568485 4123.863173 1698.061307 485.1603734 242.5801867 0 0 0 0 0 0 0 0 0
1995 1 1 3 2 8 0 0 0 0 0 0 0 0 0 242.5801867 970.3207467 2910.96224 5094.18392 6792.245227 5821.92448 5579.344294 4366.44336 1698.061307 485.1603734 727.74056 242.5801867 0 0 0 0 0 0 0 0 0 0 0 0 485.1603734 4366.44336 8975.466907 8005.14616 8490.306534 6064.504667 1455.48112 0 0 0 242.5801867 0 0 0 0 0 0 0 0
1996 1 1 3 2 3 0 0 0 0 0 0 0 0 0 0 242.5801867 412.7398406 1553.220241 1625.640774 3178.861015 1480.799708 1553.220241 242.5801867 170.1596539 242.5801867 0 170.1596539 0 0 0 0 0 0 0 0 0 0 0 0 655.3200272 2451.120455 3834.181042 2671.917285 655.3200272 825.4796811 242.5801867 0 0 0 0 0 0 0 0 0 0
1997 1 1 3 2 5 0 0 0 0 0 0 0 0 1418.004888 2873.486009 4421.642389 2518.477127 2555.953359 2200.944477 4906.802762 4291.490897 2388.325635 485.1603734 0 652.7880969 0 0 0 0 0 0 0 0 0 0 0 0 727.74056 1175.424702 4216.538434 5989.552204 4571.547315 1660.585075 485.1603734 0 0 0 242.5801867 0 0 0 0 0 0 0 0
1998 1 1 3 2 5 0 0 0 0 0 242.5801867 0 242.5801867 0 727.74056 242.5801867 242.5801867 0 970.3207467 3638.7028 3153.542427 3881.282987 2183.22168 1698.061307 242.5801867 727.74056 727.74056 0 0 0 0 0 0 0 0 0 0 0 2668.382053 6064.504667 2183.22168 3153.542427 4851.603734 2183.22168 485.1603734 0 0 0 0 0 0 0 0 0 0
1999 1 1 3 2 9 0 0 0 0 0 0 0 0 0 242.5801867 974.3662625 1541.735203 2183.22168 2183.22168 4859.694765 6232.967318 5825.969996 3729.002399 2105.058628 1212.900933 242.5801867 242.5801867 0 0 0 0 0 0 0 0 0 0 0 485.1603734 2183.22168 5908.178563 10525.29314 11890.47466 5583.389809 2910.96224 970.3207467 0 0 0 0 0 0 0 0 0
2000 1 1 3 2 14 0 0 0 0 0 0 0 0 242.5801867 907.7707161 1919.619668 2899.181556 3142.01354 6338.736618 6958.739709 9987.673272 7308.410917 5875.826654 3398.926093 2384.487179

877.2720654 0 0 0 0 0 0 0 0 0 0 0 0 260.4944739 1994.384355 2886.581079 10124.16232 12987.30795 13518.35047 6215.570946 1762.330179 229.4782468 0 0 0 0 0 0 0 0 0 0
2001 1 1 3 2 18 0 0 0 0 0 0 0 0 0 485.1603734 1212.900933 3396.122613 4366.44336 6184.549897 13626.67081 12551.59948 8608.028871 3780.522696 3971.093472 576.1747502 362.3412942 0 0 111.8829068 0 0 0 0 0 0 0 0 0 0 1212.900933 4123.863173 10430.94803 16038.71703 21445.2766 13943.5959 3968.147295 527.4233878 0 0 0 0 0 0 0 0 0 0
2002 1 1 3 2 9 0 0 0 0 0 0 0 0 0 280.6473052 2105.709517 2619.692573 2737.506196 4626.415347 6290.13611 5808.018599 5059.843377 1455.48112 1355.059297 460.8156331 0 0 0 0 0 0 0 0 0 0 0 0 242.5801867 242.5801867 4324.466164 8838.229543 13863.16451 14088.3529 10996.53862 5402.845387 727.74056 0 0 0 0 0 0 0 0 0 0
2003 1 1 3 2 20 0 0 0 0 0 0 0 0 0 954.3006517 1326.34365 4212.128335 5659.451911 7689.618841 9339.617005 7719.314801 8757.651488 7289.787984 1929.431939 970.3207467 485.1603734 250.4441662 0 0 242.5801867 242.5801867 0 0 0 0 0 0 485.1603734 0 1737.674769 5266.576849 13239.55931 18800.41577 12801.11634 7281.924005 1698.061307 727.74056 0 0 0 0 0 0 0 0 0
2004 1 1 3 2 27 0 0 0 0 0 0 0 0 13.39243165 133.9243165 93.74702152 1023.890473 1888.285036 3800.185205 9877.171264 10866.08393 9914.025876 6777.473079 9987.034313 6696.527857 3077.733066 694.3076844 642.4898131 0 0 0 0 0 0 0 0 0 0 485.1603734 1195.038341 6878.568344 20503.01834 39481.55995 34532.78885 9232.848417 3421.114641 0 314.6588795 0 157.3294398 157.3294398 0 0 0 0 0
2005 1 1 3 2 25 0 0 0 0 0 0 0 0 27.4334507 270.0136374 1249.478868 2498.957735 3945.294372 7656.208836 14527.01417 19070.73814 19528.48827 9954.229254 5155.474379 4689.575421 2532.352944 199.4830798 541.8765556 242.5801867 0 0 0 0 0 0 0 0 242.5801867 0 9.144483567 1958.930461 6700.747472 18298.84934 22234.3975 15912.28253 5074.43603 851.3895407 242.5801867 0 0 0 0 0 0 0 0 0
2006 1 1 3 2 16 0 0 0 0 0 0 0 0 5.799167525 44.4426004 822.2127208 1376.750897 3220.916438 8297.093591 9085.616114 11457.04457 9843.822897 7600.435901 4246.527416 1289.02497 419.4509367 176.87075 0 0 0 0 0 0 0 0 0 0 0 0 496.7587084 2437.400202 10802.20702 19621.10764 23019.93602 10792.84608 2592.613022 738.8705283 242.5801867 176.87075 242.5801867 0 0 0 0 0 0 0
2007 1 1 3 2 37 0 0 0 0 0 0 0 0 9.14377074 220.1846151 2202.436932 3450.444714 10703.14696 21572.91099 26857.95745 25294.51599 19545.02798 11606.0024 5318.147716 2704.331612 1698.061307 522.2610657 260.4507122 242.5801867 242.5801867 0 0 0 0 242.5801867 0 242.5801867 0 1063.226689 6770.583773 26459.38712 39455.93337 32068.0684 18520.59048 5364.929536 1221.836196 242.5801867 0 0 0 0 0 0 0 0 0
2008 1 1 3 2 61 0 0 0 0 0 0 0 0 0 36.58532229 1258.340054 9941.894431 20134.61895 35063.5723 41750.55923 36704.34121 29141.7544 17600.6948 10095.51399 3866.919554 2549.196913 1212.900933 0 242.5801867 0 0 0 0 0 0 0 0 0 242.5801867 3153.542427 13497.37001 39224.83793 58818.86538 48833.78695 27485.73143 10777.424 2137.066997 970.3207467 43.54453524 242.5801867 0 0 0 0 0 0 0
2009 1 1 3 2 43 0 0 0 0 17.69777799 0 0 17.69777799 265.4666698 963.000379 1226.357286 5406.889044 16244.35049 23569.95281 29066.12205 21620.27014 21223.49619 21579.95033 7148.661973 4301.171184 1536.494779 1520.240941 855.1424096 0 0 0 0 0 0 0 0 0 242.5801867 1023.414081 7705.106691 24158.56349 36545.39091 32127.6738 19727.94183 7325.647237 1236.704805 458.2585408 485.1603734 0 0 0 0 0 0 0 0
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158.3705185 0 0 0 0 0 0 0 0 0 0 7.446603083 0 0 4579.699031 24190.73161 33445.26148 22992.62257
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15875.82416 13817.28148 11813.96266 5206.817635 3050.068362 2396.403455 1626.063892
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40511.32158 50997.25595 45359.89757 35437.76549 12598.54661 2277.429135 850.1022265
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25428.64837 29922.89877 23848.25127 16938.93625 8417.471776 3884.006364 2440.325059
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2015 1 1 3 2 13 0 0 0 0 0 0 0 0 0 0 200.9619403 727.74056 786.6032837 2405.786828 3208.652264
5750.930557 5918.294349 6481.689482 3779.07996 1345.241141 843.2346609 147.4264165 0 0 0 0 0 0
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3888.690619 337.0907801 352.7470876 63.22145452 0 0 0 0 0 0 0
 # Summer N
1955 1 2 3 2 3 0 0 0 0 0 0 0 0 0 0 0 0 88.77383722 88.77383722 1010.273364 3055.508154 6746.169542
14150.62244 16385.02951 13409.29983 11303.98016 7835.180907 3615.137285 1239.164016
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2425.801867 1698.061307 1455.48112 242.5801867 485.1603734 242.5801867 0 0 242.5801867 0 0 0 0
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1964 1 2 3 2 3 0 0 0 0 0 0 0 0 0 0 0 242.5801867 485.1603734 1212.900933 3091.173212 5315.987754
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1698.061307 3881.282987 2910.96224 3396.122613 1940.641493 485.1603734 485.1603734 727.74056
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31580.75977 27871.94195 28825.67951 32409.64019 24045.97104 19604.90795 15497.64365
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1982 1 2 3 2 17 0 0 0 0 0 0 0 0 1491.344304 11404.91982 34402.40019 37211.92214 28934.04316
29784.8517 20364.32659 14968.48018 9396.396074 9106.234743 3702.663601 2053.150377
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1983 1 2 3 2 1 0 0 0 0 0 0 0 0 242.5801867 0 485.1603734 0 0 485.1603734 970.3207467 242.5801867
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4851.603734 2668.382053 242.5801867 242.5801867 0 242.5801867 0 0 0 0 0 0 0 0 0
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7498.99725 10421.44057 7657.774471 4112.13677 4413.496544 2546.992828 1031.674319
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8369.896724 12253.61999 5393.925129 2196.218944 1162.538735 1330.712761 242.5801867
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2031.207217 647.309619 350.6796838 593.2598705 350.6796838 242.5801867 54.04974855 0 0 0 0 0 0
0 762.9691716 2000.869597 9715.700224 17990.85607 16251.4589 9007.356776 3390.030752
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1988 1 2 3 2 8 0 0 0 0 0 0 206.4051428 242.5801867 2232.153422 4306.84997 6528.325214
10130.85297 8226.40305 7788.079369 5377.11272 5217.577327 2185.316729 1225.657631
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14050.98448 8150.596628 4672.212662 5097.576012 2003.830609 425.3633496 1153.10391
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1990 1 2 3 2 11 0 0 0 0 0 0 0 485.1603734 2668.382053 4366.44336 12851.15265 13082.53836
15717.33697 10651.13925 10386.1701 2899.767759 1449.88388 1455.48112 242.5801867 0 0 0 0 0 0
0 0 0 0 0 0 0 0 485.1603734 4609.023547 9460.62728 15717.33697 15722.93421 6775.453506
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1991 1 2 3 2 7 0 0 0 0 0 0 0 242.5801867 727.74056 1698.061307 3396.122613 4366.44336 5094.18392
5579.344294 7277.4056 3153.542427 1455.48112 2668.382053 1455.48112 242.5801867 242.5801867
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1992 1 2 3 2 11 0 0 0 0 0 0 0 242.5801867 1940.641493 4292.917731 8585.835463 8659.361092
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1993 1 2 3 2 8 0 0 0 0 0 0 0 0 843.2483504 2390.912199 6043.282818 6065.603964 7128.380281
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4350.622661 2698.527577 2304.599377 1854.092667 212.9081625 191.594141 242.5801867
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1995 1 2 3 2 2 0 0 0 0 0 0 0 0 0 727.74056 485.1603734 970.3207467 1940.641493 1698.061307
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1996 1 2 3 2 4 0 0 0 0 0 0 0 0 0 1698.061307 4366.44336 4609.023547 5336.764107 5336.764107
3638.7028 2183.22168 970.3207467 485.1603734 0 0 0 242.5801867 0 0 0 0 0 0 0 0 0 0 0 0 0
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1997 1 2 3 2 12 0 0 0 0 0 0 242.5801867 1651.040406 5859.557061 5404.879901 6165.923829
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1998 1 2 3 2 22 0 0 0 0 0 0 0 41.7391363 1782.657101 3563.825382 8567.175198 13542.3173 11340.31789 9324.864413 13676.58126 14039.15944 11352.54568 4652.202003 2028.346483 1457.322211 655.5292742 242.5801867 0 0 0 0 0 0 0 0 0 0 0 3264.570719 10343.27531 16912.79364 16239.19759 15544.87259 7431.082075 3127.540719 974.4056146 412.9490875 0 242.5801867 0 0 0 0 0 0 0
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2000 1 2 3 2 24 0 0 0 0 0 0 0 485.1603734 1212.900933 4052.975925 8254.760067 11263.62152 19684.63529 19845.09861 19316.3447 14488.74348 10502.13634 5305.898932 3872.166829 1381.21418 633.3780262 0 0 0 0 0 0 0 0 0 0 0 242.5801867 2672.852957 11561.92608 18085.26058 22901.76004 15199.25374 4487.369894 2715.592372 0 242.5801867 0 0 0 0 0 0 0 0
2001 1 2 3 2 18 0 0 0 0 0 0 0 0 17.32212036 858.6479733 5897.161844 12843.54022 9631.556373 13698.55465 9793.304558 9070.930568 5181.081289 1894.80134 1497.812357 830.7171502 946.5160115 735.5256388 485.1603734 0 0 0 0 0 0 0 0 0 485.1603734 242.5801867 762.3848007 3920.371233 11113.41489 15348.45485 8577.93451 6148.598696 811.680808 22.20604254 102.9765902 0 0 0 0 0 0 0 0 0
2002 1 2 3 2 31 0 0 0 0 0 0 0 363.87028 1737.258321 6977.76101 13772.07555 18563.45994 21271.13152 26420.65848 21107.51552 17644.78492 15219.95379 6646.940853 2862.65743 1452.875625 727.74056 757.1013874 242.5801867 0 0 0 0 0 0 0 0 0 0 1383.651897 3298.178032 9763.545202 23564.90223 24444.13637 18474.72184 8763.074829 3557.429385 262.265296 545.7707472 0 242.5801867 0 0 0 0 0 0 0
2003 1 2 3 2 35 0 0 0 0 0 0 15.66599076 15.66599076 1304.944965 7578.664106 17147.15406 22271.61235 18457.45832 17714.32738 16432.27945 11811.94624 13131.78314 5490.173069 3021.063442 1212.900933 758.14302 199.906882 0 227.5516941 242.5801867 0 0 0 0 0 0 242.5801867 0 450.3485627 2113.598059 11191.41523 22188.24725 27720.60411 19674.32095 6758.16278 5114.884981 344.7436168 518.9175209 0 0 242.5801867 0 0 0 0 0 0
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1949 1 3 3 2 10 0 0 0 0 0 0 0 33.27845629 133.1138252 232.9491941 366.0630192 332.7845629 532.4553007 898.5183199 1064.910601 1464.252077 1863.593552 1797.03664 1031.632145 632.2906696 266.2276503 133.1138252 33.27845629 33.27845629 0 33.27845629 0 0 0 0 0 0 33.27845629 33.27845629 232.9491941 532.4553007 332.7845629 798.682951 698.8475822 1264.581339 798.682951 266.2276503 0 0 0 0 0 0 0 0
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1969 1 3 3 2 14 0 0 0 0 0 0 0 0 166.3922815 399.3414755 565.733757 565.733757 1164.74597 831.9614073 1564.087446 1763.758184 1231.302883 698.8475822 898.5183199 499.1768444 499.1768444 332.7845629 199.6707378 33.27845629 0 0 0 0 0 0 0 0 0 0 133.1138252 532.4553007 1297.859795 698.8475822 465.8983881 366.0630192 266.2276503 133.1138252 66.55691259 166.3922815 33.27845629 0 0 0 0 0 0 0
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1971 1 3 3 2 7 0 0 0 0 0 0 0 0 0 1191.005382 2432.101988 4172.719964 4292.766385 1345.285025 1413.439373 1362.626669 1132.037072 682.493133 99.83536888 66.55691259 156.3436522 0 0 0 0 0 0 0 0 0 0 0 0 1445.272315 7000.648794 5467.943637 416.4987694 727.74056 33.27845629 242.5801867 242.5801867 0 0 0 0 0 0 0 0 0 0
1972 1 3 3 2 23 0 0 0 0 0 170.1473373 0 0 165.6665889 557.0802827 1552.183995 4907.356831 7987.705074 13773.05369 12436.38318 9222.985252 8292.764419 5066.437182 2819.474525 2547.026159 2195.69296 864.4537065 381.4874242 107.7801638 93.87181846 0 0 0 0 0 0 0 0 0 130.305007 5917.63001 7406.463754 11939.92412 5461.412849 2138.268598 692.4898497 421.2046155 328.5621151 79.32135652 0 0 0 0 0 0 0 0
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8730.105758 7495.474657 5306.112064 3290.450117 1751.041146 1358.579737 242.5801867
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9658.575368 14150.2637 8788.682621 8331.888574 4307.487069 1091.61084 1647.733899 363.87028
0 121.2900933 0 0 0 0 0 0 0 0 0 120.2567535 1507.851031 12444.71163 28885.91307 29354.60903
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10264.94191 18799.51958 21863.10624 20514.9991 15145.0827 12243.33917 6773.135295
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5069.968274 9256.633128 14098.65831 15373.48054 14400.71675 13028.64033 13029.1462
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2010 1 3 3 2 31 0 0 71.42809925 0 0 0 0 0 28.90251585 512.134971 1943.02012 2167.574488 3661.24814 5364.828985 4722.070903 6124.192658 5344.213054 5314.025058 3831.286531 2636.777458 94.20580982 478.7805279 0 0 0 0 0 0 0 0 0 0 101.4821098 473.3390298 2459.963075 5290.374115 5786.840484 8446.284167 7846.495871 5003.436679 1226.535017 0 0 0 0 0 0 0 0 0 0 0
2011 1 3 3 2 18 0 0 0 0 0 0 0 0 0 354.6925986 253.1731203 1286.60345 1635.338171 1692.406005 2496.258517 2667.368848 2882.852582 1069.722043 1116.599357 1175.483476 284.0552778 522.0760784 0 1.916622996 1.916622996 0 0 0 0 0 0 0 0 149.5259298 4456.182888 11210.6289 8582.775191 7316.488554 3709.122034 713.7025228 361.3146055 0 0 0 0 0 0 0 0 1.916622996 1.916622996 0
2012 1 3 3 2 32 0 0 0 0 9.174340972 63.42652397 95.13978595 126.8530479 0 0 153.2721679 1805.26673 3237.541496 1500.984652 3406.898321 3242.797264 2747.194542 3884.750619 3813.40446 2175.300228 487.5804633 113.9620355 0 0 0 0 0 0 0 0 96.00716819 63.42652397 95.13978595 1253.026127 5266.507124 17846.67942 25242.47124 22333.38845 11730.23015 4761.029472 1038.515201 2.783963107 0 0 0 0 0 113.9620355 0 0 0 0
2013 1 3 3 2 37 0 0 0 0 0 0 0 0 167.1863846 453.9200717 1628.743465 2559.14553 4148.717792 6937.149286 4512.514227 8090.141393 4870.390668 3243.618794 2403.252254 1086.994386 599.3472614 59.13728705 0 0 0 0 0 0 0 0 0 0 0 1272.196618 11220.43553 32432.49776 36561.17186 21765.10492 12155.71084 3861.3968 970.3207467 374.8658351 0 0 242.5801867 0 0 0 0 0 0 0
2014 1 3 3 2 22 0 0 0 0 0 0 0 146.1846211 0 479.2174309 1542.255651 2927.56367 4964.848355 6912.350331 8247.726347 4560.507509 7034.825414 4123.863173 1698.061307 1698.061307 485.1603734 0 0 0 0 0 0 0 0 0 0 0 0 235.9925106 5218.155324 29211.49384 41941.29652 20416.85131 9883.309283 2313.153721 0 533.6764107 0 0 0 0 0 0 0 0 0 0
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1948 1 4 3 2 4 0 0 0 0 0 0 0 0 0 0 0 66.55691259 166.3922815 133.1138252 133.1138252 399.3414755 499.1768444 232.9491941 399.3414755 698.8475822 166.3922815 199.6707378 33.27845629 66.55691259 0 66.55691259 0 0 0 0 0 0 0 0 0 0 33.27845629 199.6707378 332.7845629 465.8983881 798.682951 765.4044948 599.0122133 232.9491941 33.27845629 33.27845629 0 0 0 0 0 0 0
1949 1 4 3 2 4 0 0 0 0 0 0 0 0 0 0 0 66.55691259 33.27845629 166.3922815 99.83536888 133.1138252 133.1138252 332.7845629 432.6199318 133.1138252 133.1138252 0 66.55691259 0 0 0 0 0 0 0 0 0 0 0 0 0 0 99.83536888 332.7845629 632.2906696 965.0752325 1131.467514 732.1260385 299.5061066 133.1138252 33.27845629 0 0 0 0 0 0 0
1962 1 4 3 2 3 0 0 0 0 0 0 0 0 0 0 166.3922815 133.1138252 166.3922815 465.8983881 399.3414755 765.4044948 732.1260385 366.0630192 499.1768444 232.9491941 66.55691259 66.55691259 0 0 0 0 0 0 0 0 0 0 0 0 0 99.83536888 133.1138252 432.6199318 166.3922815 33.27845629 66.55691259 0 0 0 0 0 0 0 0 0 0 0
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1965 1 4 3 2 14 0 0 0 0 0 0 0 0 133.1138252 565.733757 1064.910601 1364.416708 1530.80899 1297.859795 1131.467514 865.2398636 1098.189058 931.7967762 998.3536888 1264.581339 432.6199318 432.6199318 133.1138252 66.55691259 0 0 0 0 0 0 0 0 0 0 33.27845629 1064.910601 1630.644358 1397.695164 1131.467514 565.733757 133.1138252 99.83536888 33.27845629 0 0 0 0 0 0 0 0 0
1966 1 4 3 2 33 0 0 0 0 0 0 0 66.55691259 232.9491941 1031.632145 1963.428921 2762.111872 3660.630192 3560.794823 3161.453348 1930.150465 1530.80899 965.0752325 532.4553007 465.8983881 232.9491941 266.2276503 199.6707378 33.27845629 0 0 0 0 0 0 0 0 0 33.27845629

698.8475822 3727.187105 6422.742065 7088.311191 3860.30093 1364.416708 465.8983881
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1967 1 4 3 2 44 0 0 0 0 0 0 0 33.27845629 565.733757 1331.138252 2529.162678 3527.516367
4891.933075 4559.148512 5657.33757 5823.729851 4259.642406 2828.668785 3793.744017
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1968 1 4 3 2 87 0 0 0 0 0 0 0 33.27845629 599.0122133 2096.542746 5590.780657 6422.742065
6223.071327 5990.122133 7188.146559 6489.298977 4758.81925 3261.288717 2329.491941
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1969 1 4 3 2 49 0 0 0 0 0 0 0 99.83536888 399.3414755 1464.252077 2529.162678 3427.680998
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1971 1 4 3 2 37 0 0 0 0 0 0 0 1.253056235 14.08924205 91.68704156 455.6114285 769.8595066
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1976 1 4 3 2 26 0 0 0 0 33.27845629 33.27845629 0 66.55691259 366.0630192 1064.910601
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1977 1 4 3 2 38 0 0 0 1 0 0 7.085714286 56.28571429 91.29142857 361.0701188 437.3222933 474.8168166 402.7736116 285.9290277 202.0000332 239.6029029 159.6609187 155.3797636 93.87991701 61.10432156 71.62549606 27.89365697 12.90739694 17.3672617 0 1.6 0 0 0 0 0 0 5 18.2 74.72 274.0945234 439.7097926 579.152021 400.0703336 229.898514 68.33727461 37.26606427 12.71530203 1.085714286 0 0 0 0 0 0 0 0
1978 1 4 3 2 33 0 0 0 0 0 0 0 43.42763874 252.8990252 1060.522328 1892.007936 2608.195996 2316.184393 2356.250586 3439.823779 2022.731361 2222.724869 2149.981428 695.8876274 730.4558933 707.7072905 471.5154838 437.2064522 84.55386289 0 0 0 0 0 0 0 0 3.394994559 157.6253858 321.7573449 1326.761128 2917.932319 3789.678358 1512.323383 1430.306193 312.7886067 26.90420669 0 0 0 0 0 0 0 0 0 0
1979 1 4 3 2 13 0 0 0 0 0 0 26.60714286 83.22619048 607.0119048 1031.205415 997.8125581 788.8758755 867.4067848 230.0357143 358.3333333 269.5357143 204.0119048 109.2738095 55.45238095 75.57142857 46.72619048 86.53571429 33.01190476 28.8452381 0 0 0 0 0 0 20 0 13.39285714 69.76190476 338.3571429 772.2773495 1421.408808 1198.275073 489.10866 356.3809524 194.3928571 45.86904762 38.19047619 45.86904762 45.86904762 6.904761905 161.8690476 0 0 0 0 0
1980 1 4 3 2 81 0 0 0 0 0 4.005763689 0 226.9913054 1016.879116 2016.160531 1861.662951 1487.97553 1063.587329 1075.79026 714.2380898 698.9534493 412.2629244 306.5517976 190.0660809 131.007038 101.9654179 79.03458213 56.02881844 3.515850144 2.930835735 2 0 0 0 0 0 14.38040346 227.1297228 1288.806754 2444.682284 1798.277886 1519.577704 762.0368911 298.3831168 177.2997118 38.07204611 17.21037464 0 5.495677233 1.729106628 0 0 0 0 0 0
1981 1 4 3 2 65 0 0 0 0 0 0 6.612890886 28.18223155 323.0531141 731.3647133 800.8396531 1073.113604 847.1417439 697.618419 621.6724589 465.775988 336.8737938 157.9199638 93.60405736 94.48844058 81.12591815 43.28716334 39.44036376 0 1 0 0 0 0 0 0 0 1 144.8043949 594.8754503 1115.889739 924.4322303 1126.665964 757.4596671 324.449705 168.7358395 59.37889298 39.95662819 16.60685554 0 6.260930395 0 0 0 0 0 0
1982 1 4 3 2 34 0 0 0 0 0 0 5.891696751 20.10430381 172.8379746 250.2934908 394.6073084 599.6481832 472.8441163 282.5676473 262.2411325 231.8444774 115.5262585 155.1605237 51.1550497 61.36770649 36.17998086 13.19648863 12.68592058 25.1699876 5.588760165 1.010830325 0 0 0 0 0 0 1 19.58546257 75.97737573 467.2536914 1155.380701 617.3385839 325.2584083 68.30306414 30.83547779 26.15162455 3.631768953 0 0 0 0 0 0 0 0 0
1983 1 4 3 2 33 0 0 0 0 0 1 0 18.52028855 53.65915239 142.7619477 344.9909829 399.9702435 347.632101 268.4364292 168.1758341 120.9891794 116.4806132 39.43462579 27.45897205 44.5166817 11.17493237 25.39675383 6 2.583408476 0 0 0 0 0 0 0 0 1 13.33273219 88.01983769 248.5437331 325.6988278 230.4490532 96.38412985 47.54102795 69.15509468 19.77637511 6.590622182 6.590622182 3.795311091 1 1 3.832281335 0 3.832281335 0 0
1984 1 4 3 2 19 0 0 0 0 0 0 0 16.66604874 41.56083086 87.37444403 162.534188 206.8824192 221.7631681 175.1985663 122.5425332 56.4078885 23.16023739 33.55489614 32.53412463 30.96142433 0 14.60830861 12.07715134 0 0 0 0 0 0 0 1 0 2 23.96358817 86.50148368 291.6749508 372.625866 278.1303171 184.6973294 194.5192878 85.6231454 34.83086053 29.98219585 0 0 0 0 0 0 0 0 0
1985 1 4 3 2 34 0 0 0 0 0 0 85.85162659 174.2618367 668.0647152 1277.942374 1594.099235 1565.814272 1307.052892 1007.814728 934.345162 501.0105543 559.0009299 183.8414881 63.49687599 88.68091819 180.0223787 97.50950358 0 2.970454305 0 0 0 0 0 0 0 0 6.766917293 180.8918865 374.4064112 1015.427076 1540.937123 1296.834933 695.0624731 328.1606295 263.6256988 35.03759398 94.60150376 0 0 0 0 0 0 0 0 0
1986 1 4 3 2 32 0 0 0 0 0 0 7.226013649 467.3450301 1460.642812 1349.591333 1549.710309 1674.275491 661.9390819 538.5061875 176.3596559 125.6329452 90.11081083 80.9474263 56.05823233 41.0082978 40.92471697 17.23034228 0 0 0 0 0 0 0 0 0 100.9324268 709.0594484

1822.499366 2241.380334 987.3094152 582.0159601 249.0667753 24.56197965 17.85596776 0 0 0 0 0 0 0 0 0 0 0
1987 1 4 3 2 29 0 0 0 0 0 0 74.54761905 234.467131 1346.297825 939.6835296 2972.475969 1798.530819 3287.843875 2148.312486 1133.043238 418.2127545 540.82751 91.35006435 123.1134295 303.5673863 19.72338936 13.71428571 5.476190476 115.3406593 0 0 0 0 0 0 0 0 74.54761905 1502.796764 2574.404977 3185.404891 2784.812592 1389.6167 498.1230875 226.7946347 167.3401793 124.812058 0 0 0 0 0 0 0 0 0 0
1988 1 4 3 2 12 0 0 0 0 0 0 0 133.9436115 679.3692057 518.3202417 951.4408141 722.9529131 892.9393863 286.9677608 278.5833239 389.3136987 231.5920489 351.249219 159.8777366 33.08457842 106.3002607 0 0 0 0 0 0 0 0 0 0 0 0 66.97180577 941.6132101 1979.554184 885.7474487 235.3600173 192.3970609 126.7036955 60.62400137 0 0 0 60.62400137 0 0 0 0 0 0 0
1989 1 4 3 2 18 0 0 0 0 0 0 0 47.44624746 142.3387424 357.4931335 1679.191224 1195.685131 1379.284843 784.1047543 424.3443633 100.5030704 183.2978551 107.106806 55.45704267 26.79310345 13.39655172 26.79310345 26.79310345 0 0 0 0 0 0 0 0 0 0 38.20796413 248.9791822 428.8758838 708.4491047 417.862614 203.9745763 133.2501461 13.39655172 82.25014611 13.39655172 0 0 0 0 0 0 0 0 0
1990 1 4 3 2 2 0 0 0 0 0 0 0 0 0 0 167.6810526 391.2557895 335.3621053 167.6810526 223.5747368 0 55.89368421 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 55.89368421 558.9368421 111.7873684 55.89368421 0 0 0 0 0 0 0 0 0 0 0 0 0
1991 1 4 3 2 2 0 0 0 0 0 0 0 0 0 0 26 15.6 31.2 20.8 10.4 5.2 0 5.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 5.2 41.6 41.6 5.2 0 0 0 5.2 0 0 0 0 0 0 0 0 0
2001 1 4 3 2 9 0 0 0 0 0 231.3333333 175.8666667 756.2101227 1407.490623 1172.422364 810.3202144 446.1123553 712.252837 387.8720297 371.2887795 153.7129412 154.9127651 69.84093637 54.74069628 47.1252501 1.693877551 0 0 0 0 0 0 0 0 0 0 0 343.4479165 494.915784 255.1188125 424.4688052 183.9454439 124.7680113 33.19868657 0 0 0 22.71568627 0 0 0 0 0 0 0
2002 1 4 3 2 10 0 0 0 0 0 0 38.68 386.8810145 18.39558405 1144.449783 648.302935 590.2027731 938.7113285 20.9566365 70.08144796 78.96817496 40.33623516 0 14.42307692 35.68817496 0 21.26509804 0 0 0 0 0 0 0 0 0 0 38.68 236.9555072 1876.228111 3017.925193 840.6741903 141.2955888 120.540244 51.34509804 13.74509804 0 0 0 0 0 0 0 0 0 0
2003 1 4 3 2 30 0 0 0 0 0 137.1683673 0 363.7332206 817.3034305 354.8714508 158.723322 300.8308503 182.4489996 254.1283673 275.9303226 213.9083673 37.1 20.11333333 8.333333333 141.5017007 277.3367347 0 0 0 0 0 0 0 0 0 0 0 692.0834014 552.9468815 1629.518576 1728.838022 600.7288634 785.8076531 1412.283424 19.6 137.1683673 0 0 0 0 0 0 0 0 0 0
2004 1 4 3 2 15 0 0 0 0 0 0 0 8.8 23.86666667 173.1954688 80.62913101 835.874623 1717.287181 1634.219929 1073.0433 887.034065 827.9864407 132 102.3457349 146.5806323 223.2940895 0 0 0 0 0 0 0 0 0 260 7.861538462 140.6666667 527.3575386 3349.554771 5741.102787 2978.298982 976.8866549 575.3924339 346.8639605 0 0 0 0 0 68.58418367 0 0 0 0 0
2005 1 4 3 2 36 0 0 0 0 0 0 14.25 0 455.1833333 600.6056912 2277.618859 2109.435543 4531.692822 6268.659677 5555.388395 3806.496416 1709.193364 1077.397652 913.7298743 491.5348982 503.2490228 77.27272727 0 0 0 0 0 0 0 0 0 0 0 153.9803922 624.9384848 5972.753095 8284.211349 9259.240397 3384.709115 1037.745939 1451.325682 576.6188007 403.1289705 255.7738944 182.6831756 185.9690781 0 0 0 0 0 0
2006 1 4 3 2 47 0 0 0 0 0 0 0 2.8 2.8 68.19932261 597.659639 3501.35584 4374.184678 4751.67862 4641.264337 3541.129656 2309.999316 1270.983033 830.4820251 14.92307692 126.4641837 187.9638133 0 57.88 0 0 0 0 0 0 0 0 38.04 171.2782609 1009.387174 3490.876584 6022.548349 6244.157583 2942.830914 660.6452416 584.2067702 6.836562648 0 0 0 0 68.58418367 68.58418367 0 0 0 0
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Discards
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2.878900e-04 0.000000e+00 0.000000e+00 0.000000e+00 2.878900e-04   0.00000000 0.000000e+00
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0.000000e+00 0.000000e+00 0.00000000 0.0000000 0.000000000
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0.000000e+00 0.000000e+00 0.00000000 0.0000000 0.000000000
2009   1   4   0   1   39 0.000000000 0.000000000 0.011901966 0.050318865 8.728108e-03
7.775951e-03 1.615711e-01 1.538271e-01 2.321163e-01 2.813226e-01 6.478912e-02 2.764897e-02
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1.538271e-01 2.321163e-01 2.813226e-01 6.478912e-02 2.764897e-02 0.000000e+00 0.000000e+00
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2.673058e-03 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00   0.00000000 0.000000e+00
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2011   1   4   0   1   61 0.000000000 0.000328040 0.000000000 0.000820100 1.082532e-03
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4.920600e-04 6.560800e-04 1.640200e-04 4.920600e-04 0.000000e+00   0.00000000 1.640200e-04
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2012   1   4   0   1   36 0.000000000 0.041076643 0.041076643 0.020538321 1.292481e-02
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Surveys

1986 1 5 3 0 108 0.000000000 0.000000000 0.000000000 0.000000000 1.659696e+00 1.004134e+00 8.354633e-01 2.303782e+00 4.058277e+00 4.182472e+00 4.791801e+00 7.882880e+00 7.350428e+00 6.827802e+00 5.986836e+00 4.478384e+00 3.434614e+00 1.309063e+00 1.233235e+00 0.1166741 1.601341e-01 1.166741e-01 0.000000e+00 7.794960e-01 4.666962e-01 3.500223e-01 0.000000000 0.000000000 0.310924100 0.000000000 1.740464e+00 1.373429e-01 1.674172e+00 3.482537e+00 6.477298e+00 7.342662e+00 6.517345e+00 5.345761e+00 4.046476e+00 2.455775e+00 8.926017e-01 8.997406e-02 1.581051e-01 0.000000e+00 0.000000e+00 0.00000000 0.000000e+00 0.000000e+00 0.000000e+00 0.00000000 0.0000000 0.000000000

1989 1 5 3 0 423 0.000000000 0.000000000 0.000000000 0.105206900 3.588284e-01 5.028671e-01 1.216939e+00 3.259815e+00 6.730053e+00 6.187266e+00 7.194915e+00 6.631582e+00 6.421608e+00 5.175934e+00 2.302481e+00 1.904650e+00 1.934135e+00 1.895010e+00 1.199030e+00 0.2007844 6.157935e-01 1.053951e+00 2.077864e-01 0.000000e+00 1.142395e-01 0.000000e+00 0.000000000 0.000000000 0.182808100 0.246769490 2.584429e-01 7.893970e-01 3.079195e+00 4.484612e+00 9.072959e+00 1.009383e+01 8.410339e+00 4.135139e+00 2.788852e+00 8.127312e-01 1.065291e-01 3.255231e-01 0.000000e+00 0.000000e+00 0.000000e+00 0.00000000 0.000000e+00 0.000000e+00 0.000000e+00 0.00000000 0.0000000 0.000000000

1992 1 5 3 0 348 0.000000000 0.324743680 0.000000000 0.139490100 8.133533e-01 2.479073e+00 3.320116e+00 6.583255e+00 6.061974e+00 6.792710e+00 7.625509e+00 6.235333e+00 2.576828e+00 3.017801e+00 2.672970e+00 1.521939e+00 1.628344e+00 5.814746e-01 3.306431e-01 0.5680355 6.839995e-02 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.117928940 0.000000000 0.174963900 0.190412560 1.122245e+00 4.707390e+00 4.696595e+00 8.496584e+00 8.701460e+00 6.313356e+00 5.073841e+00 3.679695e+00 1.466543e+00 1.232811e+00 6.198415e-01 0.000000e+00 6.434122e-02 0.000000e+00 0.000000e+00 0.00000000 0.000000e+00 0.000000e+00 0.000000e+00 0.00000000 0.0000000 0.000000000

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1998 1 6 3 0 708 0.000000000 0.000000000 0.000000000 0.158627200 6.080436e-01 1.243772e+00 2.296380e+00 4.126429e+00 5.761948e+00 7.596899e+00 7.509087e+00 6.218312e+00 4.620368e+00 3.801603e+00 3.741353e+00 3.456325e+00 2.447267e+00 1.005962e+00 2.621760e-01 0.2705981 0.000000e+00 4.432060e-02 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.106685270 0.233006600 1.090448400 1.834526e+00 2.668915e+00 3.175284e+00 6.063336e+00 7.278262e+00 7.960775e+00 6.496720e+00 4.838427e+00 2.206804e+00 6.758900e-01 1.366078e-01 6.484532e-02 0.000000e+00 0.000000e+00 0.000000e+00 0.00000000 0.000000e+00 0.000000e+00 0.000000e+00 0.00000000 0.0000000 0.000000000

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1.184818e+00 2.362008e+00 2.879266e+00 3.638375e+00 4.819311e+00 5.524271e+00 7.105853e+00
6.528354e+00 5.366425e+00 4.132320e+00 3.020990e+00 1.742089e+00 1.346894e+00 3.893162e-01
0.3487207 1.216825e-01 5.431382e-02 4.138902e-02 0.000000e+00 0.000000e+00 0.000000e+00
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5.016838e+00 5.432054e+00 8.442793e+00 9.185533e+00 6.038449e+00 3.555717e+00 7.214951e-01
3.462715e-01 1.457303e-01 4.220321e-02 0.000000e+00 2.931007e-02 0.02697880 0.000000e+00
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2003 1 7 3 0 589 0.000000000 0.000000000 0.000000000 0.424100167 3.195291e-01
5.635955e-01 8.134883e-01 1.615675e+00 2.712508e+00 5.769493e+00 6.234768e+00 5.569111e+00
6.064936e+00 4.827237e+00 3.713921e+00 3.440911e+00 2.209293e+00 8.414282e-01 9.209778e-01
0.7645901 2.457300e-01 1.903007e-01 7.202294e-02 0.000000e+00 0.000000e+00 0.000000e+00
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5.660651e+00 6.699402e+00 5.635954e+00 5.890281e+00 3.651681e+00 1.818366e+00 1.206537e+00
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17 #_N_agebins
#_agebin_vector
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
8 #_N_ageerror_definitions
#_age0 age1 age2 age3 age4 age5 age6 age7 age8 age9 age10
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age23 age24 age25 age26 age27 age28 age29 age30 age31 age32 age33 age34
age35 age36 age37 age38 age39 age40
-1.00000e+00 -1.00000e+00 -1.0000000 -1.000000 -1.000000 -1.000000 -1.000000 -1.000000 -1.000000
-1.000000 -1.000000 -1.00000 -1.00000 -1.00000 -1.00000 -1.00000 -1.00000 -1.00000 -1.00000 -
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0.810078 0.922792 1.04484 1.17699 1.32008 1.47503 1.64280 1.82446 2.02116 2.23416 2.46478
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39.75100 40.75740
1.50528e-01 1.50528e-01 0.3010560 0.451584 0.602112 0.752640 0.903168 1.053700 1.204220
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0.00000e+00 7.11119e-01 2.0199500 3.241120 4.380510 5.443580 6.435460 7.360910 8.224380
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14.64220 15.01800 15.36860 15.69580 16.00100 16.28580 16.55160 16.79950 17.03080 17.24670
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18.85090 18.94480
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2.61831 2.84369 3.08144 3.33223 3.59680 3.87589 4.17030 4.48087 4.80848 5.15408 5.51866
5.90324 6.30894 6.73691 7.18836 7.66461 8.16699 8.69695 9.25600 9.84574 10.46790
642 #_N_agecomp
3 #_Lbin_method: 1=poplenbins; 2=datalenbins; 3=lengths
1 #_combine males into females at or below this bin number
#_Yr Seas FltSvy Gender Part Ageerr Lbin_lo Lbin_hi Nsamp f1 f2 f3 f4
f5 f6 f7 f8 f9 f10 f11 f12 f13 f14 f15 f16
f17 m1 m2 m3 m4 m5 m6 m7 m8 m9 m10
m11 m12 m13 m14 m15 m16 m17
1964 1 1 3 2 8 -1 -1 3 0 0 0 0 0.2721122 6.573742347 12.00959265 9.290545396 7.881887647
6.740743997 4.566818808 2.120332604 0.272112185 0 0.272112185 0 0 0 0 0 0.714468 5.713214498
17.49785199 17.24532099 5.818892223 2.602128049 0.40812423 0 0 0 0 0 0 0
1965 1 1 3 2 8 -1 -1 3 0 0 0 0 0 2.98064871 11.58155609 7.359659324 13.47192024 5.880098019
4.782990741 3.11335415 0.249748606 0 0.330275711 0.249748606 0 0 0 0.318522766 0 3.628023512
11.09118954 17.70773806 10.47411948 3.970689513 1.034984633 0.739747672 0.716461867
0.318522766 0 0 0 0

1968 1 1 3 2 8 -1 -1 4 0 0 0 0.078169 1.096804002 5.99587616 11.68443677 5.78992266 6.878280712 7.724625714 4.498328218 2.868142185 1.959895268 1.207121992 0.140228415 0.078168985 0 0 0 0 0.818535751 5.071745509 16.13356653 15.22740653 6.085909821 4.827357608 1.468382538 0.367095636 0 0 0 0 0 0
1969 1 1 3 2 8 -1 -1 5 0 0 0 0.1038739 0.709078749 7.957855838 16.12656733 10.50680333 6.80031214 4.039259294 2.062547302 1.561216368 0.13248568 0 0 0 0 0 0 0.216913025 0.773962449 5.481892992 19.14945997 17.67077897 4.971688488 1.518391148 0.216913025 0 0 0 0 0 0 0
1970 1 1 3 2 8 -1 -1 1 0 0 0 0 1.8292683 4.268292701 2.439024401 6.707317052 7.317073152 6.707317052 3.658536586 4.878048781 4.878048781 4.268292686 1.829268295 0.6097561 0.6097561 0 0 0 4.411764701 17.647059 5.882353001 4.411764501 11.76470588 2.941176451 2.941176471 0 0 0 0 0 0 0
1971 1 1 3 2 8 -1 -1 1 0 0 0 0 0 2.380952399 19.04761904 11.90476189 14.28571429 2.380952399 0 0 0 0 0 0 0 0 0 0 0.42016805 13.44537799 11.34453799 12.60504199 7.563025207 3.781512598 0.840336135 0 0 0 0 0 0 0
1972 1 1 3 2 8 -1 -1 4 0 0 0 0.35135425 4.451257851 13.79729685 5.851259602 5.894702102 4.794758351 3.789592751 4.346877731 2.179733436 1.996033231 1.16146945 0.488884625 0.448389885 0.448389885 0 0 0.0739438 3.443638301 14.530216 23.24275901 6.784813002 1.815332981 0.1092969 0 0 0 0 0 0 0 0
1973 1 1 3 2 8 -1 -1 4 0 0 0 0.268535551 2.149471207 9.676265433 16.93588041 10.21554054 3.360254712 3.226495561 2.150997037 1.47881046 0.537749257 0 0 0 0 0 0 0 1.416860305 9.919554534 15.79155705 15.99101056 5.464667849 0.809561503 0.606788037 0 0 0 0 0 0 0
1974 1 1 3 2 8 -1 -1 5 0 0 0 0.285815949 1.437853797 10.64567698 14.13969687 12.68834613 4.629824891 1.765817197 2.271162746 1.384307112 0.553782979 0 0.19771521 0 0 0 0 0 1.305432347 10.26552848 18.61281096 13.29761047 4.640748426 1.320052697 0.259002579 0.19920945 0.099604725 0 0 0 0 0
1975 1 1 3 2 8 -1 -1 11 0 0 0 0.0886525 1.68439715 7.71276595 14.62765955 12.67730495 7.26950355 2.9255319 1.24113475 1.063829785 0.35460993 0.35460993 0 0 0 0 0 0 0.7070707 10 16.3636365 15.050505 5.454545455 1.8181818 0.505050505 0.1010101 0 0 0 0 0 0
1976 1 1 3 2 8 -1 -1 3 0 0 0 0 0 5.405405386 5.855855835 16.21621616 14.41441436 4.054054039 2.702702698 0.450450449 0.900900898 0 0 0 0 0 0 0 0.265957449 3.72340449 23.13829794 14.62765946 7.446808491 0.531914899 0.265957444 0 0 0 0 0 0 0
1977 1 1 3 2 8 -1 -1 1 0 0 0 0 1.85185185 5.555555549 16.66666665 9.259259249 5.555555549 5.555555549 3.086419755 0.61728395 1.2345679 0 0 0 0.61728395 0 0 2.77777778 0 13.888889 16.6666665 13.888889 0 0 0 0 0 2.777777778 0 0 0 0
1978 1 1 3 2 8 -1 -1 3 0 0 0 0 0 3.19389564 8.419284724 13.96523631 7.235199678 6.032068081 4.223268162 2.960360656 2.273233518 1.192290141 0.505163003 0 0 0 0 0 0.435850549 14.54590095 13.84334646 10.28495247 4.83997762 4.839977635 1.209994406 0 0 0 0 0 0 0
1980 1 1 3 2 8 -1 -1 1 0 0 0 0.66666665 5.333333349 13.33333335 3.33333335 7.333333349 4.666666649 4.666666649 3.333333335 0.666666665 4.666666664 1.333333335 0.666666665 0 0 0 0 0 0 16.6666665 0 33.3333335 0 0 0 0 0 0 0 0 0 0
1981 1 1 3 2 8 -1 -1 3 0 0 0 0.30481445 2.824034047 4.986845095 10.01708099 6.856223794 3.599833397 2.870871847 2.425824063 3.337094512 4.346796921 4.630436521 0.848568324 2.264415853 0.687160119 0 0 0 0.21209325 5.795240995 13.97555349 16.10338399 2.442161023 0.848373049 2.230067768 4.569270741 2.017974513 0.212093257 0 0.212093255 1.381694744 0
1998 1 1 3 2 5 -1 -1 1 0 0 0 0 3.703703712 12.96296299 7.407407424 16.6666667 5.555555568 1.851851856 1.851851856 0 0 0 0 0 0 0 0 0 2.173913057 26.08695658 8.695652028 4.347826014 6.521739151 2.173913057 0 0 0 0 0 0 0 0
1999 1 1 3 2 5 -1 -1 2 0 0 0.855083503 4.380437566 3.420334013 8.333333381 12.28622915 11.43114564 7.744530779 0 1.548906151 0 0 0 0 0 0 0 0 0.437854137 12.03716799 16.46566506 14.71424855 4.758798018 1.586266056 0 0 0 0 0 0 0 0 0

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2003 1 1 3 2 5 -1 -1 5 0 0 0.221284426 3.30543341 6.49661582 9.578910979 11.76054394 11.18547983 3.670544761 0 0 3.670544751 0 0 0.11064221 0 0 0 0.03658406 0.161998235 0.519402552 23.62957657 13.51571254 7.282035522 4.85469039 0 0 0 0 0 0 0 0 0
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2007 1 1 3 2 5 -1 -1 5 0 0.096374475 1.920879914 6.737814148 3.636999249 8.018540348 7.930265198 8.176825948 9.925325797 1.710815649 0.135343595 1.710815659 0 0 0 0 0 0 0 1.36652206 4.010041649 12.524556 10.912391 12.373064 8.813425322 0 0 0 0 0 0 0 0 0
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2009 1 1 3 2 7 -1 -1 3 0 0 0.73665954 6.384382699 2.701084999 8.340997748 7.113231849 5.494142949 5.494142949 8.241214398 4.120607199 1.373535735 0 0 0 0 0 0 0 0 1.4380973 4.699934499 13.6619245 15.8190705 10.06668119 3.595243299 0.719048655 0 0 0 0 0 0
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2011 1 1 3 2 7 -1 -1 1 0 0 0 1.724137951 0 5.172413802 13.79310345 13.79310345 5.172413802 6.896551702 1.724137931 1.724137931 0 0 0 0 0 0 0 0 0 11.764706 25.00000001 10.2941175 2.205882356 0.7352941 0 0 0 0 0 0 0 0
2012 1 1 3 2 7 -1 -1 2 0 0 0 0.752408099 5.155666344 14.60340068 23.53781712 0.37620405 1.393625898 2.787251847 0 1.393625923 0 0 0 0 0 0 0 0 0.488684599 6.896964491 29.94222596 12.67212498 0 0 0 0 0 0 0 0 0 0
2013 1 1 3 2 7 -1 -1 6 0 0 0 1.074117148 4.296468643 5.151580091 18.13819687 15.27388447 2.426301046 2.426301046 0 1.213150528 0 0 0 0 0 0 0 0 0.1525284 0.610113499 5.93079049 26.51008546 12.92037102 3.359296444 0.25840742 0 0.25840742 0 0 0 0 0
2014 1 1 3 2 7 -1 -1 2 0 0 0 0 0.470632599 1.647214198 19.62478772 14.52195478 2.353163096 5.808781891 0 0.23531631 2.433758331 0.23531631 0 2.433758331 0.23531631 0 0 0 0.14971855 1.698182497 3.096927995 20.27974897 13.93617494 4.645391643 4.645391648 0 0 1.548463882 0 0 0 0

2015 1 1 3 2 7 -1 -1 2 0 0 0 0 0 1.315789455 14.47368426 11.8421053 18.42105272 1.315789455 0
2.631578955 0 0 0 0 0 0 0 0 0 0.806451503 8.870967535 17.74193557 17.74193556 3.225806463
1.612903231 0 0 0 0 0 0 0
1960 1 2 3 2 8 -1 -1 1 0 0 0 12.49999996 4.166666638 8.333333326 4.166666638 12.49999996
2.083333344 4.166666638 2.083333329 0 0 0 0 0 0 0 0 1.736111105 5.902777783 6.249999982
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8.490566006 2.830188685 1.886792445 0.94339622 0 0 0 0 0 0 0 0 10.6382978 15.95744692
8.510638456 5.319148973 4.255319128 4.255319128 0 0 0 0 0 0 0 1.06382978
1964 1 2 3 2 8 -1 -1 2 0 0 0 1.586290853 7.070723913 15.92453558 13.34234467 4.094939158
3.234208856 2.176681604 0.725560536 0.725560536 0.725560536 0 0 0.196796925 0.196796925 0 0
0.350488326 4.466751608 11.33817402 19.85664554 7.735796014 3.146496816 1.222760102
0.700976646 1.051464972 0.13044586 0 0 0 0 0
1965 1 2 3 2 8 -1 -1 2 0 0 0 3.572840091 3.213909292 11.60926012 13.21456797 6.072181385
5.178147937 2.854978543 2.319875894 0.535102629 1.429136031 0 0 0 0 0 0 0.953175933
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0 0
1966 1 2 3 2 8 -1 -1 3 0 0 0.30818859 6.671855261 15.66482768 8.032308763 7.896263413
6.36366666 1.264679152 1.745010953 0.752422526 0.616377176 0.616377176 0.068022675 0 0 0 0 0
0.318227641 9.669043265 22.92175904 8.286998513 6.01782051 2.145791183 0.576714301
0.06364553 0 0 0 0 0 0 0
1967 1 2 3 2 8 -1 -1 5 0 0 0 0 2.225306848 7.215507942 5.734974294 5.465487044 9.07284569
7.457383692 3.932747476 4.57700485 1.424709273 1.364103543 0.559503819 0.970425409 0 0 0 0
0.643342849 6.021680493 11.72513999 11.47818699 9.988263599 3.838440996 3.672339121
2.053379523 0.434419925 0.144806641 0 0 0 0
1968 1 2 3 2 8 -1 -1 15 0 0 0.07377601 0.312327902 2.381063616 9.679548114 13.23450474
7.778995701 5.182954034 4.905010282 3.01813507 1.478771425 0.933691571 0.650161549
0.300581727 0.061236995 0.00924161 0 0 0.299606597 1.150814858 4.944274033 14.9150611
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1969 1 2 3 2 8 -1 -1 9 0 0 0 0 2.117289796 7.113371288 11.86569178 10.53523593 6.550433639
4.971851291 2.632606715 1.356723288 2.524076226 0.323212529 0.00950741 0 0 0 0 0 1.301777248
9.922992983 11.94282098 13.03242548 6.463998669 5.109049941 1.607589437 0.614919919 0
0.004425452 0 0 0 0
1970 1 2 3 2 8 -1 -1 13 0 0 0.968467614 6.691791795 11.32967819 6.805702795 6.922879995
6.752528495 3.955771847 2.858930798 2.425354228 0.792393754 0.29906071 0.118183605
0.079256135 0 0 0 0 2.051988583 12.69241669 16.37655549 7.903805494 4.534952997 3.615692407
1.703122799 0.41355102 0.38582455 0.161045005 0 0.161045005 0 0 0
1971 1 2 3 2 8 -1 -1 17 0 0.005045095 0.299850885 6.388258995 14.07051939 11.66963889
5.762938195 5.061220846 3.503009447 1.990416598 0.471551045 0.39257187 0.196890215
0.188088465 0 0 0 0 0 0.41424859 9.186951543 23.87726048 10.70636149 4.138261997 1.062318139
0.5888952 0.01774189 0.007960735 0 0 0 0 0 0
1972 1 2 3 2 8 -1 -1 16 0 0 0.07652223 1.518055251 7.969853156 14.35681331 8.191105506
4.795814104 3.732674753 4.942930754 2.074349107 0.998400816 0.64755306 0.234385265
0.461542665 0 0 0 0 0.0617552 4.258680703 15.61203901 17.21348151 6.560592505 2.506280707
1.892669101 1.460801676 0.304453745 0.12924586 0 0 0 0 0
1973 1 2 3 2 8 -1 -1 10 0 0 0 2.204474703 8.193911912 12.58872047 12.83235662 5.900891109
2.621710654 2.321752753 1.549381897 0.925004956 0.362637136 0.271977955 0.090377885
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1974 1 2 3 2 8 -1 -1 35 0 0 0 2.425606454 8.268487665 15.22615948 12.97080627 6.467075212
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0 0 0.25687441 4.336044258 16.89087303 17.46835253 8.725742016 1.826855788 0.414755901 0.03734439 0.008663645 0.034493945 0 0 0 0 0
1975 1 2 3 2 8 -1 -1 14 0 0 0 0.300662451 5.752959122 9.758575938 13.97289795 8.374111082 6.624961076 2.106863758 1.265040495 0.744375278 0.594044047 0.275555686 0.07070914 0 0.159244181 0 0 0.140161301 1.043364854 10.67486454 16.69081006 14.13613705 4.270337777 2.148965508 0.412639022 0.342558371 0 0.140161299 0 0 0 0
1976 1 2 3 2 8 -1 -1 5 0 0 0 1.104073655 1.138630505 7.27678158 14.06806406 11.52501765 8.216044284 2.927236312 2.430071055 0.788448653 0.525632432 0 0 0 0 0 0 0.430665042 0.841479003 7.626203532 14.44952456 14.86206456 7.066573644 2.199348209 1.357869206 1.16627206 0 0 0 0 0 0
1977 1 2 3 2 8 -1 -1 1 0 0 0 0 0 0 13.33333333 11.66666663 14.99999997 3.333333344 6.666666653 0 0 0 0 0 0 0 0 0 0 6.428571488 11.42857148 19.99999996 7.857142841 1.428571447 1.428571427 0.714285714 0.714285714 0 0 0 0 0
1978 1 2 3 2 8 -1 -1 2 0 0 0 0 1.438726305 3.681409613 11.69604304 9.808780085 7.286747826 5.75490522 5.306368544 2.78433628 1.34560998 0.448536662 0.448536662 0 0 0 0 0 0.898453203 3.193099011 4.022665014 8.50232103 13.52677035 10.77513334 6.088815507 2.495002754 0.497739572 0 0 0 0 0
1979 1 2 3 2 8 -1 -1 3 0 0 0 0 1.730533698 1.894543698 3.615804096 3.350440246 6.949344942 10.15267459 5.730730253 6.736021672 3.474672466 4.300701595 1.912785463 0 0.151747255 0 0 0 0 5.622789994 6.417952993 13.70411598 8.968936005 6.962403642 4.470920625 2.505030392 1.078280314 0.269570079 0 0 0 0
1980 1 2 3 2 8 -1 -1 16 0 0 0 0.497871 3.86785675 7.846903549 7.610427499 6.982378799 4.3902129 3.7626184 3.93773873 3.58768039 3.912069905 1.59608928 1.03734695 0.754800565 0.21600525 0 0 0 1.2611163 5.715525499 13.2487135 7.400224499 5.999990179 4.2714704 4.217086675 4.187635295 1.855972735 0.666255859 0.81471858 0.353687185 0 0.00760333
1998 1 2 3 2 5 -1 -1 11 0 0 0.326455034 4.599703331 13.18359435 12.5334176 9.812082759 5.718070026 2.37241869 0.884720746 0.359997059 0.0221603 0 0 0.187379849 0 0 0 0 0.898761186 6.177302274 17.11243043 13.29731294 4.91043548 5.077781084 2.48880859 0 0.037168275 0 0 0 0 0 0
1999 1 2 3 2 5 -1 -1 9 0 0.211241166 0.836909262 9.790726573 14.37872828 8.869867871 9.172394822 2.300862356 2.221272455 1.113445353 0.739590142 0.211241166 0.07686036 0 0.07686036 0 0 0 0.05848037 1.88238534 13.40300858 18.57717254 10.97847153 3.403262008 0.826880837 0.13901275 0.390839696 0.139012775 0.062460625 0 0 0 0 0.139012775
2000 1 2 3 2 5 -1 -1 12 0 0 0.329219913 2.747960135 11.77367318 15.78023276 9.115856499 6.227543365 2.297096037 1.096018544 0.460795092 0.171604169 0 0 0 0 0 0 0 1.348892808 9.537595697 17.10984691 11.62993944 8.831215451 1.542510001 0 0 0 0 0 0 0 0 0
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1987 1 1 3 2 4 -1 -1 7 0 0 0 0.9497869 5.443900399 10.31234535 14.56062835 12.33703485 4.3440227 1.07189235 0.17580073 0.42378181 0.04214877 0 0.254360295 0 0.08429754 0 0 0 6.007609299 12.626068 16.1237905 10.2952 3.605335615 0.9201075 0.42188905 0 0 0 0 0 0 0
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1970 1 4 3 2 8 -1 -1 29 0 0 2.905027242 21.00354172 9.983475108 6.132333805 2.995631552 2.065478352 1.700432101 1.675830501 0.418846125 0.4868755 0.076871385 0.39459089 0.028052855 0.046305065 0.08670777 0 0 1.321398181 21.60789267 9.719594508 8.499754507 1.141693001 2.689997662 1.718990001 0.894476291 0.490733135 0.468220615 0.52423713 0.042600955 0.722323661 0.015733625 0.14235409
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1980 1 4 3 2 8 -1 -1 50 0.049244175 0.888104125 3.256926646 10.13721445 12.59607235 9.257065753 5.139587302 3.772226801 1.600756051 1.1724345 0.911673835 0.80129537 0.195780125 0.06172527 0.159893305 0 0 0 1.441599261 3.846148211 13.5107109 14.42056301 10.1991765 3.479302001 1.257317855 1.3051045 0.369531665 0 0.170546025 0 0 0 0 0
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2006 1 4 3 2 2 -1 -1 7 0 0 0 0.243947649 8.556928215 8.782556064 12.4237347 11.1868504
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0 4.313027139 0 0 0 0 0 0 3.380405795 20.37866797 14.37066048 3.380405995 4.457674739 0 0 0 0 0 0
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2003 1 7 1 0 2 34 34 47.0 0.00000000 0.000000e+00 0.00000000 17.02127660
57.4468085 17.0212766 6.3829787 2.1276596 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 17.02127660 57.446809 17.021277 6.3829787 2.127660e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 1 0 2 36 36 52.0 0.00000000 0.000000e+00 0.00000000 11.53846154
71.1538462 7.6923077 9.6153846 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 11.53846154 71.153846 7.692308 9.6153846 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 1 0 2 38 38 49.0 0.00000000 0.000000e+00 0.00000000 4.08163265
36.7346939 38.7755102 14.2857143 4.0816327 2.0408163 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 4.08163265 36.734694 38.775510 14.2857143 4.081633e+00 2.040816e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 1 0 2 40 40 36.0 0.00000000 0.000000e+00 0.00000000 0.00000000
22.2222222 38.8888889 22.2222222 11.1111111 2.7777778 0.00000000 2.77777778 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 22.222222 38.888889 22.2222222 1.111111e+01 2.777778e+00 0.00000000
2.77777778 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 1 0 2 42 42 29.0 0.00000000 0.000000e+00 0.00000000 0.00000000
3.4482759 31.0344828 34.4827586 17.2413793 13.7931035 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 3.448276 31.034483 34.4827586 1.724138e+01 1.379310e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2003 1 7 1 0 2 44 44 23.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 21.7391304 34.7826087 34.7826087 8.6956522 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 21.739130 34.7826087 3.478261e+01 8.695652e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 1 0 2 46 46 12.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 8.3333333 16.6666667 25.0000000 25.00000000 16.66666667 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 8.33333333 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 8.3333333 1.666667e+01 2.500000e+01 25.00000000
16.66666667 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 8.33333333
2003 1 7 1 0 2 48 48 13.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 7.6923077 0.0000000 23.0769231 30.7692308 0.00000000 7.69230769 0.00000000
7.692308e+00 0.000000e+00 0.000000e+00 15.384615380 7.69230769 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 7.692308 0.0000000 2.307692e+01 3.076923e+01 0.00000000
7.69230769 0.000000e+00 7.69230769 0.00000000 0.00000000 15.38461538 7.69230769
2003 1 7 1 0 2 50 50 8.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 25.0000000 12.5000000 12.50000000 12.50000000 0.00000000
0.000000e+00 1.250000e+01 0.000000e+00 12.500000000 12.50000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 2.500000e+01 1.250000e+01 12.50000000
12.50000000 0.000000e+00 0.00000000 12.50000000 0.00000000 12.50000000 12.50000000
2003 1 7 1 0 2 52 52 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 100.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 100.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 1 0 2 54 54 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
1.000000e+02 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 100.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 1 0 2 56 56 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 50.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 50.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 5.000000e+01 0.00000000 0.00000000 0.00000000 0.00000000 50.00000000
2004 1 7 1 0 2 16 16 1.0 0.00000000 0.000000e+00 100.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
100.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 1 0 2 18 18 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 1 0 2 20 20 1.0 0.00000000 0.000000e+00 100.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
100.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

 2004   1   7   1   0   2   22   22   7.0   0.00000000 4.285714e+01 57.14285714   0.00000000
0.0000000   0.0000000 0.0000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000 42.85714286
57.14285714 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   24   24 12.0   0.00000000 0.000000e+00 33.33333333 58.33333333
0.0000000   8.3333333 0.0000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
33.33333333 58.33333333 0.000000 8.333333 0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   26   26 13.0   0.00000000 0.000000e+00 15.38461538 69.23076923
15.3846154   0.0000000 0.0000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
15.38461538 69.23076923 15.384615 0.000000 0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   28   28 24.0   0.00000000 0.000000e+00 16.66666667 45.83333333
20.8333333 12.5000000 4.1666667   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
16.66666667 45.83333333 20.833333 12.500000 4.1666667 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   30   30 37.0   0.00000000 0.000000e+00   2.70270270 32.43243243
40.5405405 18.9189189 5.4054054   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
2.70270270 32.43243243 40.540541 18.918919 5.4054054 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   32   32 40.0   0.00000000 0.000000e+00   0.00000000 17.50000000
50.0000000 25.0000000 7.5000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 17.50000000 50.000000 25.000000 7.5000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   34   34 45.0   0.00000000 0.000000e+00   0.00000000   2.22222222
33.3333333 44.4444444 13.3333333   6.6666667   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 2.22222222 33.333333 44.444444 13.3333333 6.666667e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   36   36 55.0   0.00000000 0.000000e+00   0.00000000   0.00000000
16.3636364 45.4545454 23.6363636 12.7272727   0.0000000   1.81818182 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 0.00000000 16.363636 45.454545 23.6363636 1.272727e+01 0.000000e+00   1.81818182
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   38   38 48.0   0.00000000 0.000000e+00   0.00000000   0.00000000
10.4166667 31.2500000 47.9166667   8.3333333   2.0833333   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 0.00000000 10.416667 31.250000 47.9166667 8.333333e+00 2.083333e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2004   1   7   1   0   2   40   40 44.0   0.00000000 0.000000e+00   0.00000000   0.00000000
4.5454545 29.5454545 34.0909091 13.6363636 13.6363636   2.27272727 2.27272727   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 0.00000000 4.545455 29.545455 34.0909091 1.363636e+01 1.363636e+01   2.27272727
2.27272727 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000

2004 1 7 1 0 2 42 42 39.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 23.0769231 30.7692308 20.5128205 12.8205128 10.25641026 2.56410256 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 23.076923 30.7692308 2.051282e+01 1.282051e+01 10.25641026
2.56410256 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 1 0 2 44 44 17.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 17.6470588 35.2941176 0.0000000 17.6470588 29.41176471 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 17.647059 35.2941176 0.000000e+00 1.764706e+01 29.41176471
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 1 0 2 46 46 17.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 17.6470588 29.4117647 29.41176471 17.64705882 5.88235294
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 1.764706e+01 2.941176e+01 29.41176471
17.64705882 5.882353e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 1 0 2 48 48 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 42.8571429 14.28571429 28.57142857 0.00000000
0.000000e+00 0.000000e+00 1.428571e+01 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 4.285714e+01 14.28571429
28.57142857 0.000000e+00 0.00000000 0.00000000 14.28571429 0.00000000 0.00000000
2004 1 7 1 0 2 50 50 11.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 9.0909091 0.0000000 0.00000000 27.27272727 18.18181818
9.090909e+00 0.000000e+00 1.818182e+01 9.090909091 9.09090909 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 9.090909e+00 0.000000e+00 0.00000000
27.27272727 1.818182e+01 9.09090909 0.00000000 18.18181818 9.09090909 9.09090909
2004 1 7 1 0 2 52 52 8.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 12.50000000 0.00000000 0.00000000
2.500000e+01 0.000000e+00 3.750000e+01 12.500000000 12.50000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 12.50000000
0.00000000 0.000000e+00 25.00000000 0.00000000 37.50000000 12.50000000 12.50000000
2004 1 7 1 0 2 54 54 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 1.000000e+02 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 100.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 1 0 2 56 56 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2005 1 7 1 0 2 18 18 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 20 20 1.0 0.00000000 0.000000e+00 100.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
100.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2005 1 7 1 0 2 22 22 11.0 0.00000000 1.818182e+01 81.81818182 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 18.18181818
81.81818182 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 24 24 16.0 0.00000000 1.875000e+01 68.75000000 12.50000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 18.75000000
68.75000000 12.50000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 26 26 15.0 0.00000000 2.000000e+01 33.33333333 33.33333333
13.3333333 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 20.00000000
33.33333333 33.33333333 13.333333 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 28 28 23.0 0.00000000 0.000000e+00 26.08695652 56.52173913
17.3913043 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
26.08695652 56.52173913 17.391304 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 30 30 25.0 0.00000000 0.000000e+00 12.00000000 60.00000000
20.0000000 8.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
12.00000000 60.00000000 20.000000 8.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 32 32 40.0 0.00000000 2.500000e+00 17.50000000 32.50000000
35.0000000 12.5000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 2.50000000
17.50000000 32.50000000 35.000000 12.500000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 34 34 39.6 0.00000000 0.000000e+00 0.00000000 34.34343434
53.0303030 10.1010101 2.5252525 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 34.34343434 53.030303 10.101010 2.5252525 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 36 36 46.0 0.00000000 0.000000e+00 2.17391304 15.21739130
47.8260870 30.4347826 2.1739130 2.1739130 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.17391304 15.21739130 47.826087 30.434783 2.1739130 2.173913e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 38 38 40.0 0.00000000 0.000000e+00 0.00000000 10.00000000
42.5000000 35.0000000 12.5000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 10.00000000 42.500000 35.000000 12.5000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 40 40 35.0 0.00000000 0.000000e+00 0.00000000 8.57142857
28.5714286 45.7142857 17.1428571 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 8.57142857 28.571429 45.714286 17.1428571 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2005 1 7 1 0 2 42 42 30.0 0.00000000 0.000000e+00 0.00000000 13.33333333
36.6666667 30.0000000 20.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 13.33333333 36.666667 30.000000 20.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 44 44 15.0 0.00000000 0.000000e+00 6.66666667 0.00000000
20.0000000 33.3333333 13.3333333 20.0000000 6.6666667 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
6.66666667 0.00000000 20.000000 33.333333 13.3333333 2.000000e+01 6.666667e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 46 46 12.0 0.00000000 0.000000e+00 0.00000000 0.00000000
8.3333333 25.0000000 16.6666667 41.6666667 8.3333333 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 8.333333 25.000000 16.6666667 4.166667e+01 8.333333e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 48 48 11.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 9.0909091 36.3636364 0.0000000 9.0909091 18.18181818 18.18181818 9.09090909
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 9.090909 36.3636364 0.000000e+00 9.090909e+00 18.18181818
18.18181818 9.090909e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 50 50 4.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 50.0000000 25.00000000 25.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 5.000000e+01 25.00000000
25.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 52 52 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 33.3333333 0.00000000 0.00000000 0.00000000
0.000000e+00 3.333333e+01 0.000000e+00 0.000000000 33.33333333 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 3.333333e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 33.33333333 0.00000000 0.00000000 33.33333333
2005 1 7 1 0 2 54 54 4.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 25.00000000 50.00000000 25.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 25.00000000
50.00000000 2.500000e+01 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 1 0 2 56 56 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 50.00000000 50.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 50.00000000
50.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 18 18 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 22 22 6.0 0.00000000 0.000000e+00 83.33333333 16.66666667
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
83.33333333 16.66666667 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2006 1 7 1 0 2 24 24 10.6 0.00000000 9.433962e+00 33.96226415 47.16981132
9.4339623 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 9.43396226
33.96226415 47.16981132 9.433962 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 26 26 18.6 0.00000000 0.000000e+00 51.61290323 32.25806452
5.3763441 5.3763441 5.3763441 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
51.61290323 32.25806452 5.376344 5.376344 5.3763441 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 28 28 12.0 0.00000000 0.000000e+00 0.00000000 50.00000000
33.3333333 16.6666667 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 50.00000000 33.333333 16.666667 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 30 30 29.0 0.00000000 0.000000e+00 10.34482759 31.03448276
31.0344828 27.5862069 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
10.34482759 31.03448276 31.034483 27.586207 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 32 32 28.0 0.00000000 0.000000e+00 7.14285714 17.85714286
28.5714286 32.1428571 14.2857143 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
7.14285714 17.85714286 28.571429 32.142857 14.2857143 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 34 34 38.0 0.00000000 0.000000e+00 2.63157895 5.26315789
34.2105263 34.2105263 23.6842105 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.63157895 5.26315789 34.210526 34.210526 23.6842105 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 36 36 49.0 0.00000000 0.000000e+00 0.00000000 4.08163265
24.4897959 26.5306122 30.6122449 10.2040816 4.0816327 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 4.08163265 24.489796 26.530612 30.6122449 1.020408e+01 4.081633e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 38 38 47.0 0.00000000 0.000000e+00 0.00000000 0.00000000
6.3829787 27.6595745 36.1702128 14.8936170 10.6382979 2.12765957 0.00000000 2.12765957
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 6.382979 27.659574 36.1702128 1.489362e+01 1.063830e+01 2.12765957
0.00000000 2.127660e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 40 40 38.0 0.00000000 0.000000e+00 0.00000000 0.00000000
2.6315789 21.0526316 31.5789474 18.4210526 18.4210526 5.26315789 0.00000000 0.00000000
2.631579e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 2.631579 21.052632 31.5789474 1.842105e+01 1.842105e+01 5.26315789
0.00000000 0.000000e+00 2.63157895 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 1 0 2 42 42 57.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 8.7719298 19.2982456 47.3684211 14.0350877 3.50877193 3.50877193 0.00000000
1.754386e+00 0.000000e+00 0.000000e+00 1.754385965 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 8.771930 19.2982456 4.736842e+01 1.403509e+01 3.50877193
3.50877193 0.000000e+00 1.75438596 0.00000000 0.00000000 1.75438596 0.00000000

 2006   1   7   1   0   2   44   44 44.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   2.2727273 27.2727273 31.8181818 18.1818182 11.36363636 4.54545455   2.27272727
0.000000e+00 2.272727e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 0.00000000 0.000000 2.272727 27.2727273 3.181818e+01 1.818182e+01 11.36363636
4.54545455 2.272727e+00   0.00000000   2.27272727   0.00000000 0.00000000   0.00000000
 2006   1   7   1   0   2   46   46 15.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000 20.0000000 33.3333333 13.3333333 20.00000000 6.66666667   0.00000000
0.000000e+00 6.666667e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 0.00000000 0.000000 0.000000 20.0000000 3.333333e+01 1.333333e+01 20.00000000
6.66666667 0.000000e+00   0.00000000   6.66666667   0.00000000 0.00000000   0.00000000
 2006   1   7   1   0   2   48   48 10.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000 0.0000000 10.0000000 20.0000000 50.00000000 0.00000000 10.00000000
1.000000e+01 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 1.000000e+01 2.000000e+01 50.00000000
0.00000000 1.000000e+01 10.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2006   1   7   1   0   2   50   50 10.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000 0.0000000   0.0000000   0.0000000 30.00000000 0.00000000 10.00000000
2.000000e+01 2.000000e+01 1.000000e+01 0.000000000 10.00000000   0.0000000   0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 30.00000000
0.00000000 1.000000e+01 20.00000000 20.00000000 10.00000000 0.00000000 10.00000000
 2006   1   7   1   0   2   52   52   2.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000 0.0000000   0.0000000   0.0000000   0.00000000 50.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 50.000000000   0.00000000   0.0000000   0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00   0.00000000
50.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 50.00000000   0.00000000
 2006   1   7   1   0   2   54   54   3.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000 0.0000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 33.333333330 66.66666667   0.0000000   0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 33.33333333 66.66666667
 2006   1   7   1   0   2   56   56   2.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000 0.0000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000   0.0000000   0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000 100.00000000
 2007   1   7   1   0   2   20   20   1.0   0.00000000 1.000000e+02   0.00000000   0.00000000
0.0000000   0.0000000 0.0000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2007   1   7   1   0   2   24   24   5.0   0.00000000 4.000000e+01 20.00000000 20.00000000
20.0000000   0.0000000 0.0000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000 40.00000000
20.00000000 20.00000000 20.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000
 2007   1   7   1   0   2   26   26   8.0   0.00000000 0.000000e+00 25.00000000 25.00000000
37.5000000   0.0000000 12.5000000   0.0000000   0.0000000   0.00000000 0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000   0.00000000   0.0000000   0.00000000
25.00000000 25.00000000 37.500000 0.000000 12.5000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000 0.00000000   0.00000000

2007 1 7 1 0 2 28 28 10.0 0.00000000 0.000000e+00 0.00000000 0.00000000
80.0000000 20.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 80.000000 20.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 30 30 20.0 0.00000000 0.000000e+00 10.00000000 10.00000000
45.0000000 15.0000000 5.0000000 15.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
10.00000000 10.00000000 45.000000 15.000000 5.0000000 1.500000e+01 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 32 32 26.0 0.00000000 0.000000e+00 0.00000000 15.38461538
34.6153846 30.7692308 11.5384615 7.6923077 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 15.38461538 34.615385 30.769231 11.5384615 7.692308e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 34 34 40.0 0.00000000 0.000000e+00 0.00000000 7.50000000
22.5000000 32.5000000 22.5000000 12.5000000 0.0000000 2.50000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 7.50000000 22.500000 32.500000 22.5000000 1.250000e+01 0.000000e+00 2.50000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 36 36 37.0 0.00000000 0.000000e+00 0.00000000 5.40540540
18.9189189 27.0270270 24.3243243 16.2162162 2.7027027 5.40540540 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 5.40540540 18.918919 27.027027 24.3243243 1.621622e+01 2.702703e+00 5.40540540
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 38 38 40.0 0.00000000 0.000000e+00 0.00000000 0.00000000
10.0000000 15.0000000 30.0000000 32.5000000 10.0000000 2.50000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 10.000000 15.000000 30.0000000 3.250000e+01 1.000000e+01 2.50000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 40 40 50.0 0.00000000 0.000000e+00 0.00000000 0.00000000
4.0000000 10.0000000 36.0000000 26.0000000 12.0000000 8.00000000 2.00000000 0.00000000
0.000000e+00 2.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 4.000000 10.000000 36.0000000 2.600000e+01 1.200000e+01 8.00000000
2.00000000 0.000000e+00 0.00000000 2.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 42 42 51.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 7.8431373 15.6862745 21.5686275 35.2941176 17.64705882 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 1.96078431 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 7.843137 15.6862745 2.156863e+01 3.529412e+01 17.64705882
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 1.96078431
2007 1 7 1 0 2 44 44 32.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 18.7500000 21.8750000 40.6250000 15.62500000 0.00000000 0.00000000
0.000000e+00 3.125000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 18.7500000 2.187500e+01 4.062500e+01 15.62500000
0.00000000 0.000000e+00 0.00000000 3.12500000 0.00000000 0.00000000 0.00000000
2007 1 7 1 0 2 46 46 25.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 4.0000000 8.0000000 24.0000000 40.0000000 12.00000000 4.00000000 4.00000000
4.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 4.000000 8.0000000 2.400000e+01 4.000000e+01 12.00000000
4.00000000 4.000000e+00 4.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2007 1 7 1 0 2 48 48 14.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 7.1428571 0.0000000 14.2857143 21.4285714 14.28571429 21.42857143 14.28571429
0.000000e+00 0.000000e+00 0.000000e+00 7.142857143 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 7.142857 0.0000000 1.428571e+01 2.142857e+01 14.28571429
21.42857143 1.428571e+01 0.00000000 0.00000000 0.00000000 7.14285714 0.00000000
2007 1 7 1 0 2 50 50 13.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 23.07692308 30.76923077 23.07692308
7.692308e+00 0.000000e+00 0.000000e+00 15.384615380 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 23.07692308
30.76923077 2.307692e+01 7.69230769 0.00000000 0.00000000 15.38461538 0.00000000
2007 1 7 1 0 2 52 52 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 28.57142857 0.00000000 0.00000000
1.428571e+01 0.000000e+00 1.428571e+01 14.285714290 28.57142857 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 28.57142857
0.00000000 0.000000e+00 14.28571429 0.00000000 14.28571429 14.28571429 28.57142857
2007 1 7 1 0 2 56 56 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 33.333333330 66.66666667 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 33.33333333 66.66666667
2007 1 7 1 0 2 58 58 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2007 1 7 1 0 2 60 60 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2008 1 7 1 0 2 18 18 3.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 20 20 7.6 26.31578947 6.052632e+01 13.15789474 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 26.3157895 60.52631579
13.15789474 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 22 22 7.0 0.00000000 2.857143e+01 71.42857143 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 28.57142857
71.42857143 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 24 24 15.0 0.00000000 6.666667e+00 73.33333333 20.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 6.66666667
73.33333333 20.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2008 1 7 1 0 2 26 26 21.0 0.00000000 9.523810e+00 28.57142857 42.85714286
14.2857143 4.7619048 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 9.52380952
28.57142857 42.85714286 14.285714 4.761905 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 28 28 22.0 0.00000000 9.090909e+00 36.36363636 45.45454545
9.0909091 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 9.09090909
36.36363636 45.45454545 9.090909 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 30 30 33.0 0.00000000 0.000000e+00 15.15151515 33.33333333
27.2727273 15.1515151 9.0909091 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
15.15151515 33.33333333 27.272727 15.151515 9.0909091 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 32 32 27.0 0.00000000 0.000000e+00 11.11111111 22.22222222
29.6296296 29.6296296 3.7037037 3.7037037 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
11.11111111 22.22222222 29.629630 29.629630 3.7037037 3.703704e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 34 34 36.0 0.00000000 0.000000e+00 2.77777778 8.33333333
50.0000000 22.2222222 5.5555556 8.3333333 2.7777778 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.77777778 8.33333333 50.000000 22.222222 5.5555556 8.333333e+00 2.777778e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 36 36 43.0 0.00000000 0.000000e+00 0.00000000 16.27906977
25.5813954 27.9069767 13.9534884 11.6279070 4.6511628 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 16.27906977 25.581395 27.906977 13.9534884 1.162791e+01 4.651163e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 38 38 32.0 0.00000000 3.125000e+00 0.00000000 0.00000000
34.3750000 25.0000000 25.0000000 6.2500000 6.2500000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 3.12500000
0.00000000 0.00000000 34.375000 25.000000 25.0000000 6.250000e+00 6.250000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 40 40 35.0 0.00000000 0.000000e+00 0.00000000 0.00000000
17.1428571 17.1428571 25.7142857 25.7142857 11.4285714 2.85714286 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 17.142857 17.142857 25.7142857 2.571429e+01 1.142857e+01 2.85714286
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 42 42 35.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 31.4285714 34.2857143 14.2857143 17.14285714 2.85714286 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 31.4285714 3.428571e+01 1.428571e+01 17.14285714
2.85714286 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 1 0 2 44 44 28.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 7.1428571 10.7142857 32.1428571 17.8571429 25.00000000 3.57142857 0.00000000
3.571429e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 7.142857 10.7142857 3.214286e+01 1.785714e+01 25.00000000
3.57142857 0.000000e+00 3.57142857 0.00000000 0.00000000 0.00000000 0.00000000

```
 2008    1     7     1    0     2     46     46  20.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000 15.0000000  25.0000000  30.0000000  15.00000000 15.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000 15.0000000 2.500000e+01 3.000000e+01  15.00000000
15.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2008    1     7     1    0     2     48     48  14.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000  14.2857143   7.1428571  35.71428571  0.00000000  14.28571429
7.142857e+00 1.428571e+01 7.142857e+00  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 1.428571e+01 7.142857e+00  35.71428571
0.00000000 1.428571e+01   7.14285714  14.28571429   7.14285714  0.00000000   0.00000000
 2008    1     7     1    0     2     50     50  11.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000  18.1818182   0.0000000  18.18181818 27.27272727  18.18181818
0.000000e+00 0.000000e+00 1.818182e+01  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 1.818182e+01 0.000000e+00  18.18181818
27.27272727 1.818182e+01   0.00000000   0.00000000  18.18181818  0.00000000   0.00000000
 2008    1     7     1    0     2     52     52   6.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000 83.33333333   0.00000000
0.000000e+00 0.000000e+00 1.666667e+01  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
83.33333333 0.000000e+00   0.00000000   0.00000000  16.66666667  0.00000000   0.00000000
 2008    1     7     1    0     2     54     54   4.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000  25.00000000
5.000000e+01 2.500000e+01 0.000000e+00  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 2.500000e+01  50.00000000  25.00000000   0.00000000  0.00000000   0.00000000
 2009    1     7     1    0     2     16     16   1.0   0.00000000 1.000000e+02   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000 100.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2009    1     7     1    0     2     18     18   9.0   0.00000000 1.000000e+02   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000 100.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2009    1     7     1    0     2     20     20  16.0   0.00000000 7.500000e+01  25.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000  75.00000000
25.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2009    1     7     1    0     2     22     22  15.0   0.00000000 2.666667e+01  66.66666667   6.66666667
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000  26.66666667
66.66666667  6.66666667  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2009    1     7     1    0     2     24     24  14.6   0.00000000 2.739726e+01  65.75342466   6.84931507
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000  27.39726027
65.75342466  6.84931507  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
```

2009 1 7 1 0 2 26 26 20.0 0.00000000 0.000000e+00 70.00000000 15.00000000
15.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
70.00000000 15.00000000 15.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 28 28 19.0 0.00000000 0.000000e+00 31.57894737 52.63157895
15.7894737 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
31.57894737 52.63157895 15.789474 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 30 30 24.0 0.00000000 0.000000e+00 25.00000000 33.33333333
33.3333333 8.3333333 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
25.00000000 33.33333333 33.333333 8.333333 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 32 32 17.0 0.00000000 0.000000e+00 0.00000000 23.52941176
41.1764706 29.4117647 5.8823529 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 23.52941176 41.176471 29.411765 5.8823529 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 34 34 37.6 0.00000000 0.000000e+00 0.00000000 18.61702128
39.8936170 26.5957447 9.5744681 0.0000000 5.3191489 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 18.61702128 39.893617 26.595745 9.5744681 0.000000e+00 5.319149e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 36 36 36.0 0.00000000 0.000000e+00 0.00000000 2.77777778
22.2222222 38.8888889 25.0000000 8.3333333 2.7777778 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 2.77777778 22.222222 38.888889 25.0000000 8.333333e+00 2.777778e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 38 38 37.0 0.00000000 0.000000e+00 0.00000000 0.00000000
10.8108108 40.5405405 18.9189189 13.5135135 13.5135135 2.70270270 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 10.810811 40.540541 18.9189189 1.351351e+01 1.351351e+01 2.70270270
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 40 40 38.0 0.00000000 0.000000e+00 0.00000000 0.00000000
5.2631579 39.4736842 13.1578947 13.1578947 18.4210526 10.52631579 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 5.263158 39.473684 13.1578947 1.315789e+01 1.842105e+01 10.52631579
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 42 42 31.0 0.00000000 0.000000e+00 0.00000000 0.00000000
3.2258065 19.3548387 9.6774194 12.9032258 29.0322581 22.58064516 3.22580645 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 3.225806 19.354839 9.6774194 1.290323e+01 2.903226e+01 22.58064516
3.22580645 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 44 44 29.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 6.8965517 20.6896552 24.1379310 17.2413793 20.68965517 10.34482759 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 6.896552 20.6896552 2.413793e+01 1.724138e+01 20.68965517
10.34482759 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2009 1 7 1 0 2 46 46 26.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 3.8461538 3.8461538 3.8461538 26.9230769 30.76923077 23.07692308 3.84615385
0.000000e+00 3.846154e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 3.846154 3.8461538 3.846154e+00 2.692308e+01 30.76923077
23.07692308 3.846154e+00 0.00000000 3.84615385 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 48 48 15.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 6.6666667 0.0000000 13.33333333 26.66666667 33.33333333
1.333333e+01 0.000000e+00 6.666667e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 6.666667e+00 0.000000e+00 13.33333333
26.66666667 3.333333e+01 13.33333333 0.00000000 6.66666667 0.00000000 0.00000000
2009 1 7 1 0 2 50 50 9.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 11.1111111 22.22222222 44.44444444 11.11111111
1.111111e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 1.111111e+01 22.22222222
44.44444444 1.111111e+01 11.11111111 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 52 52 6.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 50.00000000 16.66666667 0.00000000
1.666667e+01 1.666667e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 50.00000000
16.66666667 0.000000e+00 16.66666667 16.66666667 0.00000000 0.00000000 0.00000000
2009 1 7 1 0 2 54 54 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2010 1 7 1 0 2 16 16 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 18 18 3.0 33.33333333 6.666667e+01 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 33.3333333 66.66666667
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 20 20 17.0 0.00000000 5.294118e+01 47.05882353 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 52.94117647
47.05882353 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 22 22 19.0 5.26315789 3.157895e+01 57.89473684 5.26315789
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 5.2631579 31.57894737
57.89473684 5.26315789 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 24 24 30.0 0.00000000 2.666667e+01 50.00000000 20.00000000
3.3333333 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 26.66666667
50.00000000 20.00000000 3.333333 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2010 1 7 1 0 2 26 26 29.0 0.00000000 1.379310e+01 34.48275862 44.82758621
3.4482759 3.4482759 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 13.79310345
34.48275862 44.82758621 3.448276 3.448276 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 28 28 33.0 0.00000000 6.060606e+00 42.42424242 39.39393939
12.1212121 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 6.06060606
42.42424242 39.39393939 12.121212 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 30 30 24.0 0.00000000 0.000000e+00 20.83333333 41.66666667
16.6666667 12.5000000 4.1666667 0.0000000 0.0000000 0.00000000 4.16666667 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
20.83333333 41.66666667 16.666667 12.500000 4.1666667 0.000000e+00 0.000000e+00 0.00000000
4.16666667 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 32 32 34.0 0.00000000 0.000000e+00 17.64705882 32.35294118
35.2941176 11.7647059 2.9411765 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
17.64705882 32.35294118 35.294118 11.764706 2.9411765 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 34 34 35.0 0.00000000 0.000000e+00 11.42857143 22.85714286
34.2857143 17.1428571 11.4285714 2.8571429 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
11.42857143 22.85714286 34.285714 17.142857 11.4285714 2.857143e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 36 36 44.0 0.00000000 0.000000e+00 2.27272727 11.36363636
27.2727273 43.1818182 11.3636364 0.0000000 2.2727273 0.00000000 2.27272727 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.27272727 11.36363636 27.272727 43.181818 11.3636364 0.000000e+00 2.272727e+00 0.00000000
2.27272727 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 38 38 30.0 0.00000000 0.000000e+00 0.00000000 6.66666667
16.6666667 56.6666667 10.0000000 6.6666667 0.0000000 0.00000000 0.00000000 0.00000000
3.333333e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 6.66666667 16.666667 56.666667 10.0000000 6.666667e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 3.33333333 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 40 40 29.0 0.00000000 0.000000e+00 0.00000000 0.00000000
3.4482759 24.1379310 41.3793103 17.2413793 13.7931035 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 3.448276 24.137931 41.3793103 1.724138e+01 1.379310e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 42 42 11.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 45.4545454 27.2727273 9.0909091 18.1818182 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 45.454545 27.2727273 9.090909e+00 1.818182e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 44 44 20.0 0.00000000 0.000000e+00 0.00000000 0.00000000
5.0000000 5.0000000 15.0000000 25.0000000 15.0000000 25.00000000 5.00000000 5.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 5.000000 5.000000 15.0000000 2.500000e+01 1.500000e+01 25.00000000
5.00000000 5.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2010 1 7 1 0 2 46 46 13.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 7.6923077 7.6923077 38.4615385 23.07692308 23.07692308 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 7.6923077 7.692308e+00 3.846154e+01 23.07692308
23.07692308 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 48 48 17.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 11.7647059 35.29411765 29.41176471 5.88235294
5.882353e+00 5.882353e+00 5.882353e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 1.176471e+01 35.29411765
29.41176471 5.882353e+00 5.88235294 5.88235294 5.88235294 0.00000000 0.00000000
2010 1 7 1 0 2 50 50 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 33.3333333 0.0000000 0.0000000 0.00000000 33.33333333 0.00000000
3.333333e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 33.3333333 0.000000e+00 0.000000e+00 0.00000000
33.33333333 0.000000e+00 33.33333333 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 52 52 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 100.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 1.000000e+02 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 54 54 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 50.00000000 0.00000000 0.00000000
0.000000e+00 5.000000e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 50.00000000
0.00000000 0.000000e+00 0.00000000 50.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 1 0 2 56 56 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 1.000000e+02 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 100.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 18 18 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 20 20 10.6 0.00000000 4.339623e+01 56.60377358 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 43.39622642
56.60377358 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 22 22 19.0 0.00000000 3.684211e+01 42.10526316 21.05263158
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 36.84210526
42.10526316 21.05263158 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 24 24 14.0 0.00000000 7.142857e+00 64.28571429 14.28571429
14.2857143 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 7.14285714
64.28571429 14.28571429 14.285714 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2011 1 7 1 0 2 26 26 34.0 0.00000000 5.882353e+00 38.23529412 38.23529412
17.6470588 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 5.88235294
38.23529412 38.23529412 17.647059 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 28 28 32.0 0.00000000 3.125000e+00 43.75000000 31.25000000
21.8750000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 3.12500000
43.75000000 31.25000000 21.875000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 30 30 45.0 0.00000000 0.000000e+00 22.22222222 35.55555556
31.1111111 11.1111111 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
22.22222222 35.55555556 31.111111 11.111111 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 32 32 45.0 0.00000000 0.000000e+00 13.33333333 37.77777778
35.5555556 4.4444444 8.8888889 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
13.33333333 37.77777778 35.555556 4.444444 8.8888889 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 34 34 31.0 0.00000000 0.000000e+00 9.67741935 12.90322581
51.6129032 22.5806452 0.0000000 3.2258065 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
9.67741935 12.90322581 51.612903 22.580645 0.0000000 3.225806e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 36 36 37.0 0.00000000 0.000000e+00 0.00000000 13.51351351
43.2432432 16.2162162 18.9189189 8.1081081 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 13.51351351 43.243243 16.216216 18.9189189 8.108108e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 38 38 26.0 0.00000000 0.000000e+00 0.00000000 3.84615385
23.0769231 19.2307692 30.7692308 11.5384615 3.8461538 0.00000000 3.84615385 0.00000000
3.846154e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 3.84615385 23.076923 19.230769 30.7692308 1.153846e+01 3.846154e+00 0.00000000
3.84615385 0.000000e+00 3.84615385 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 40 40 24.0 0.00000000 0.000000e+00 0.00000000 0.00000000
8.3333333 20.8333333 29.1666667 25.0000000 12.5000000 4.16666667 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 8.333333 20.833333 29.1666667 2.500000e+01 1.250000e+01 4.16666667
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 42 42 32.0 0.00000000 0.000000e+00 0.00000000 0.00000000
3.1250000 6.2500000 28.1250000 40.6250000 9.3750000 12.50000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 3.125000 6.250000 28.1250000 4.062500e+01 9.375000e+00 12.50000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 1 0 2 44 44 13.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 30.7692308 30.7692308 30.7692308 0.00000000 7.69230769 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 30.7692308 3.076923e+01 3.076923e+01 0.00000000
7.69230769 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

```
 2011    1      7      1    0      2      46      46  13.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   7.6923077  7.6923077  23.0769231   7.6923077  23.07692308 15.38461538   7.69230769
0.000000e+00 0.000000e+00 7.692308e+00  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  7.692308  7.6923077 2.307692e+01 7.692308e+00  23.07692308
15.38461538 7.692308e+00   0.00000000   0.00000000   7.69230769  0.00000000   0.00000000
 2011    1      7      1    0      2      48      48  10.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000  10.0000000  20.00000000 30.00000000  30.00000000
0.000000e+00 1.000000e+01 0.000000e+00  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 1.000000e+01  20.00000000
30.00000000 3.000000e+01   0.00000000  10.00000000   0.00000000  0.00000000   0.00000000
 2011    1      7      1    0      2      50      50   7.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000  14.28571429 42.85714286  14.28571429
1.428571e+01 1.428571e+01 0.000000e+00  0.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00  14.28571429
42.85714286 1.428571e+01  14.28571429  14.28571429   0.00000000  0.00000000   0.00000000
 2011    1      7      1    0      2      52      52   4.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000 25.00000000  25.00000000
2.500000e+01 0.000000e+00 0.000000e+00 25.000000000   0.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
25.00000000 2.500000e+01  25.00000000   0.00000000   0.00000000 25.00000000   0.00000000
 2011    1      7      1    0      2      56      56   4.0   0.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000  25.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000  75.00000000   0.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 2.500000e+01   0.00000000   0.00000000   0.00000000  0.00000000  75.00000000
 2012    1      7      1    0      2      12      12   0.6 100.00000000 0.000000e+00   0.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000 100.0000000   0.00000000
0.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2012    1      7      1    0      2      18      18   1.0   0.00000000 0.000000e+00 100.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000   0.00000000
100.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2012    1      7      1    0      2      20      20   2.0   0.00000000 5.000000e+01  50.00000000   0.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000  50.00000000
50.00000000  0.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2012    1      7      1    0      2      22      22  13.0   0.00000000 1.538462e+01  53.84615385  30.76923077
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000  15.38461538
53.84615385 30.76923077  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
 2012    1      7      1    0      2      24      24  14.0   0.00000000 1.428571e+01  35.71428571  50.00000000
0.0000000   0.0000000  0.0000000   0.0000000   0.0000000   0.00000000  0.00000000   0.00000000
0.000000e+00 0.000000e+00 0.000000e+00  0.000000000   0.00000000   0.0000000  14.28571429
35.71428571 50.00000000  0.000000  0.000000  0.0000000 0.000000e+00 0.000000e+00   0.00000000
0.00000000 0.000000e+00   0.00000000   0.00000000   0.00000000  0.00000000   0.00000000
```

2012 1 7 1 0 2 26 26 27.0 0.00000000 3.703704e+00 18.51851852 59.25925926
11.1111111 7.4074074 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 3.70370370
18.51851852 59.25925926 11.111111 7.407407 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 28 28 42.0 0.00000000 2.380952e+00 21.42857143 50.00000000
19.0476191 7.1428571 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 2.38095238
21.42857143 50.00000000 19.047619 7.142857 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 30 30 32.0 0.00000000 0.000000e+00 18.75000000 56.25000000
9.3750000 3.1250000 9.3750000 3.1250000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
18.75000000 56.25000000 9.375000 3.125000 9.3750000 3.125000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 32 32 31.0 0.00000000 0.000000e+00 3.22580645 29.03225806
29.0322581 32.2580645 6.4516129 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
3.22580645 29.03225806 29.032258 32.258065 6.4516129 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 34 34 46.0 0.00000000 0.000000e+00 4.34782609 39.13043478
26.0869565 17.3913043 13.0434783 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
4.34782609 39.13043478 26.086957 17.391304 13.0434783 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 36 36 43.0 0.00000000 0.000000e+00 2.32558139 13.95348837
30.2325581 30.2325581 11.6279070 9.3023256 0.0000000 2.32558139 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.32558139 13.95348837 30.232558 30.232558 11.6279070 9.302326e+00 0.000000e+00 2.32558139
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 38 38 39.0 0.00000000 0.000000e+00 0.00000000 15.38461538
20.5128205 33.3333333 17.9487179 10.2564103 0.0000000 2.56410256 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 15.38461538 20.512821 33.333333 17.9487179 1.025641e+01 0.000000e+00 2.56410256
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 40 40 36.0 0.00000000 0.000000e+00 0.00000000 8.33333333
13.8888889 25.0000000 16.6666667 25.0000000 5.5555556 2.77777778 0.00000000 2.77777778
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 8.33333333 13.888889 25.000000 16.6666667 2.500000e+01 5.555556e+00 2.77777778
0.00000000 2.777778e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 42 42 13.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 23.0769231 30.7692308 23.0769231 0.0000000 15.38461538 7.69230769 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 23.076923 30.7692308 2.307692e+01 0.000000e+00 15.38461538
7.69230769 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 44 44 24.0 0.00000000 0.000000e+00 0.00000000 0.00000000
4.1666667 8.3333333 16.6666667 37.5000000 4.1666667 8.33333333 16.66666667 0.00000000
0.000000e+00 4.166667e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 4.166667 8.333333 16.6666667 3.750000e+01 4.166667e+00 8.33333333
16.66666667 0.000000e+00 0.00000000 4.16666667 0.00000000 0.00000000 0.00000000

2012 1 7 1 0 2 46 46 14.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 28.5714286 7.14285714 14.28571429 21.42857143
7.142857e+00 2.142857e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 2.857143e+01 7.14285714
14.28571429 2.142857e+01 7.14285714 21.42857143 0.00000000 0.00000000 0.00000000
2012 1 7 1 0 2 48 48 9.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 11.1111111 11.11111111 22.22222222 11.11111111
2.222222e+01 0.000000e+00 1.111111e+01 11.111111110 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 1.111111e+01 11.11111111
22.22222222 1.111111e+01 22.22222222 0.00000000 11.11111111 11.11111111 0.00000000
2012 1 7 1 0 2 50 50 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 28.57142857 28.57142857
0.000000e+00 1.428571e+01 2.857143e+01 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
28.57142857 2.857143e+01 0.00000000 14.28571429 28.57142857 0.00000000 0.00000000
2012 1 7 1 0 2 52 52 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 28.57142857 0.00000000 0.00000000
1.428571e+01 2.857143e+01 0.000000e+00 14.285714290 14.28571429 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 28.57142857
0.00000000 0.000000e+00 14.28571429 28.57142857 0.00000000 14.28571429 14.28571429
2012 1 7 1 0 2 54 54 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 33.33333333
0.000000e+00 3.333333e+01 0.000000e+00 0.000000000 33.33333333 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
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2012 1 7 1 0 2 58 58 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2012 1 7 1 0 2 60 60 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2013 1 7 1 0 2 20 20 7.0 0.00000000 1.428571e+01 14.28571429 14.28571429
57.1428571 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 14.28571429
14.28571429 14.28571429 57.142857 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 22 22 8.0 0.00000000 2.500000e+01 37.50000000 0.00000000
37.5000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 25.00000000
37.50000000 0.00000000 37.500000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 24 24 13.0 0.00000000 3.076923e+01 7.69230769 7.69230769
30.7692308 23.0769231 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 30.76923077
7.69230769 7.69230769 30.769231 23.076923 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2013 1 7 1 0 2 26 26 12.0 0.00000000 0.000000e+00 25.00000000 33.33333333
41.6666667 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
25.00000000 33.33333333 41.666667 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 28 28 17.0 0.00000000 0.000000e+00 11.76470588 52.94117647
29.4117647 5.8823529 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
11.76470588 52.94117647 29.411765 5.882353 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 30 30 30.0 0.00000000 0.000000e+00 16.66666667 20.00000000
36.6666667 23.3333333 3.3333333 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
16.66666667 20.00000000 36.666667 23.333333 3.3333333 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 32 32 44.0 0.00000000 0.000000e+00 2.27272727 25.00000000
50.0000000 20.4545455 0.0000000 0.0000000 2.2727273 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.27272727 25.00000000 50.000000 20.454545 0.0000000 0.000000e+00 2.272727e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 34 34 70.0 0.00000000 0.000000e+00 0.00000000 12.85714286
28.5714286 34.2857143 20.0000000 4.2857143 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 12.85714286 28.571429 34.285714 20.0000000 4.285714e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 36 36 56.0 0.00000000 0.000000e+00 0.00000000 8.92857143
26.7857143 32.1428571 23.2142857 8.9285714 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 8.92857143 26.785714 32.142857 23.2142857 8.928571e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 38 38 68.0 0.00000000 0.000000e+00 0.00000000 2.94117647
26.4705882 25.0000000 33.8235294 8.8235294 0.0000000 2.94117647 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 2.94117647 26.470588 25.000000 33.8235294 8.823529e+00 0.000000e+00 2.94117647
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 40 40 50.0 0.00000000 0.000000e+00 0.00000000 0.00000000
12.0000000 26.0000000 34.0000000 22.0000000 2.0000000 4.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 12.000000 26.000000 34.0000000 2.200000e+01 2.000000e+00 4.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 42 42 25.0 0.00000000 0.000000e+00 0.00000000 4.00000000
8.0000000 20.0000000 28.0000000 16.0000000 8.0000000 8.00000000 8.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 4.00000000 8.000000 20.000000 28.0000000 1.600000e+01 8.000000e+00 8.00000000
8.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 44 44 30.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 20.0000000 13.3333333 16.6666667 20.0000000 10.00000000 10.00000000 6.66666667
0.000000e+00 0.000000e+00 3.333333e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 20.000000 13.3333333 1.666667e+01 2.000000e+01 10.00000000
10.00000000 6.666667e+00 0.00000000 0.00000000 3.33333333 0.00000000 0.00000000

2013 1 7 1 0 2 46 46 19.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 5.2631579 10.5263158 5.2631579 26.31578947 21.05263158 15.78947368
5.263158e+00 0.000000e+00 5.263158e+00 0.000000000 5.26315789 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 5.2631579 1.052632e+01 5.263158e+00 26.31578947
21.05263158 1.578947e+01 5.26315789 0.00000000 5.26315789 0.00000000 5.26315789
2013 1 7 1 0 2 48 48 15.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 6.6666667 0.0000000 33.33333333 13.33333333 13.33333333
2.666667e+01 6.666667e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 6.666667e+00 0.000000e+00 33.33333333
13.33333333 1.333333e+01 26.66666667 6.66666667 0.00000000 0.00000000 0.00000000
2013 1 7 1 0 2 50 50 6.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 16.66666667 0.00000000 16.66666667
1.666667e+01 3.333333e+01 0.000000e+00 16.666666670 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 16.66666667
0.00000000 1.666667e+01 16.66666667 33.33333333 0.00000000 16.66666667 0.00000000
2013 1 7 1 0 2 52 52 5.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 20.00000000 0.00000000
2.000000e+01 2.000000e+01 2.000000e+01 0.000000000 20.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
20.00000000 0.000000e+00 20.00000000 20.00000000 20.00000000 0.00000000 20.00000000
2013 1 7 1 0 2 56 56 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 50.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 50.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
50.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 50.00000000
2014 1 7 1 0 2 16 16 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 18 18 1.0 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 20 20 6.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 22 22 3.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 24 24 12.0 0.00000000 1.666667e+01 25.00000000 25.00000000
8.3333333 25.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 16.66666667
25.00000000 25.00000000 8.333333 25.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2014 1 7 1 0 2 26 26 14.0 0.00000000 1.428571e+01 28.57142857 14.28571429
0.0000000 35.7142857 7.1428571 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 14.28571429
28.57142857 14.28571429 0.000000 35.714286 7.1428571 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 28 28 16.0 0.00000000 6.250000e+00 31.25000000 43.75000000
6.2500000 6.2500000 0.0000000 6.2500000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 6.25000000
31.25000000 43.75000000 6.250000 6.250000 0.0000000 6.250000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 30 30 14.0 0.00000000 7.142857e+00 0.00000000 28.57142857
14.2857143 35.7142857 14.2857143 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 7.14285714
0.00000000 28.57142857 14.285714 35.714286 14.2857143 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 32 32 14.0 0.00000000 0.000000e+00 14.28571429 21.42857143
7.1428571 35.7142857 14.2857143 7.1428571 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
14.28571429 21.42857143 7.142857 35.714286 14.2857143 7.142857e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 34 34 27.0 0.00000000 0.000000e+00 3.70370370 22.22222222
18.5185185 29.6296296 22.2222222 3.7037037 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
3.70370370 22.22222222 18.518519 29.629630 22.2222222 3.703704e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 36 36 41.0 0.00000000 0.000000e+00 0.00000000 4.87804878
31.7073171 39.0243902 9.7560976 9.7560976 4.8780488 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 4.87804878 31.707317 39.024390 9.7560976 9.756098e+00 4.878049e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 38 38 62.0 0.00000000 0.000000e+00 0.00000000 3.22580645
24.1935484 41.9354839 20.9677419 6.4516129 1.6129032 0.00000000 1.61290323 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 3.22580645 24.193548 41.935484 20.9677419 6.451613e+00 1.612903e+00 0.00000000
1.61290323 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 40 40 58.0 0.00000000 0.000000e+00 0.00000000 5.17241379
25.8620690 41.3793103 22.4137931 5.1724138 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 5.17241379 25.862069 41.379310 22.4137931 5.172414e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 42 42 35.0 0.00000000 0.000000e+00 0.00000000 0.00000000
8.5714286 25.7142857 17.1428571 22.8571429 14.2857143 8.57142857 0.00000000 0.00000000
0.000000e+00 0.000000e+00 2.857143e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 8.571429 25.714286 17.1428571 2.285714e+01 1.428571e+01 8.57142857
0.00000000 0.000000e+00 0.00000000 0.00000000 2.85714286 0.00000000 0.00000000
2014 1 7 1 0 2 44 44 37.0 0.00000000 0.000000e+00 0.00000000 0.00000000
10.8108108 27.0270270 16.2162162 18.9189189 8.1081081 13.51351351 2.70270270 0.00000000
2.702703e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 10.810811 27.027027 16.2162162 1.891892e+01 8.108108e+00 13.51351351
2.70270270 0.000000e+00 2.70270270 0.00000000 0.00000000 0.00000000 0.00000000

2014 1 7 1 0 2 46 46 21.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 9.5238095 4.7619048 14.2857143 38.0952381 14.28571429 9.52380952 4.76190476
4.761905e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 9.523810 4.7619048 1.428571e+01 3.809524e+01 14.28571429
9.52380952 4.761905e+00 4.76190476 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 48 48 10.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 10.0000000 30.0000000 10.0000000 20.00000000 0.00000000 10.00000000
1.000000e+01 1.000000e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 10.0000000 3.000000e+01 1.000000e+01 20.00000000
0.00000000 1.000000e+01 10.00000000 10.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 50 50 13.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 15.3846154 23.07692308 0.00000000 7.69230769
0.000000e+00 2.307692e+01 7.692308e+00 15.384615380 7.69230769 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 1.538462e+01 23.07692308
0.00000000 7.692308e+00 0.00000000 23.07692308 7.69230769 15.38461538 7.69230769
2014 1 7 1 0 2 52 52 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 14.2857143 0.00000000 14.28571429 14.28571429
1.428571e+01 1.428571e+01 1.428571e+01 14.285714290 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 1.428571e+01 0.00000000
14.28571429 1.428571e+01 14.28571429 14.28571429 14.28571429 14.28571429 0.00000000
2014 1 7 1 0 2 54 54 4.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 25.00000000 25.00000000 0.00000000
2.500000e+01 0.000000e+00 2.500000e+01 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 25.00000000
25.00000000 0.000000e+00 25.00000000 0.00000000 25.00000000 0.00000000 0.00000000
2014 1 7 1 0 2 56 56 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 5.000000e+01 0.000000e+00 50.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 50.00000000 0.00000000 50.00000000 0.00000000
2014 1 7 1 0 2 58 58 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 5.000000e+01 50.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 50.00000000 50.00000000 0.00000000
2003 1 7 2 0 2 18 18 1.0 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 20 20 4.0 0.00000000 5.000000e+01 50.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 50.00000000
50.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 22 22 7.0 0.00000000 2.857143e+01 71.42857143 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 28.57142857
71.42857143 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2003 1 7 2 0 2 24 24 12.0 0.00000000 0.000000e+00 58.33333333 33.33333333
8.3333333 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
58.33333333 33.33333333 8.333333 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 26 26 28.0 0.00000000 0.000000e+00 39.28571429 39.28571429
21.4285714 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
39.28571429 39.28571429 21.428571 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 28 28 55.0 0.00000000 0.000000e+00 21.81818182 34.54545455
41.8181818 1.8181818 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
21.81818182 34.54545455 41.818182 1.818182 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 30 30 71.0 0.00000000 0.000000e+00 5.63380282 28.16901408
47.8873239 16.9014085 1.4084507 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
5.63380282 28.16901408 47.887324 16.901408 1.4084507 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 32 32 64.0 0.00000000 0.000000e+00 1.56250000 12.50000000
64.0625000 15.6250000 6.2500000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
1.56250000 12.50000000 64.062500 15.625000 6.2500000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 34 34 78.0 0.00000000 0.000000e+00 0.00000000 8.97435897
35.8974359 24.3589744 15.3846154 8.9743590 3.8461538 2.56410256 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 8.97435897 35.897436 24.358974 15.3846154 8.974359e+00 3.846154e+00 2.56410256
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 36 36 36.0 0.00000000 0.000000e+00 0.00000000 5.55555556
41.6666667 19.4444444 13.8888889 11.1111111 2.7777778 5.55555556 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 5.55555556 41.666667 19.444444 13.8888889 1.111111e+01 2.777778e+00 5.55555556
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2003 1 7 2 0 2 38 38 17.0 0.00000000 0.000000e+00 0.00000000 0.00000000
41.1764706 17.6470588 17.6470588 5.8823529 11.7647059 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 5.88235294 0.0000000 0.00000000
0.00000000 0.00000000 41.176471 17.647059 17.6470588 5.882353e+00 1.176471e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 5.88235294
2003 1 7 2 0 2 40 40 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
42.8571429 0.0000000 0.0000000 28.5714286 0.0000000 0.00000000 14.28571429 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 14.285714290 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 42.857143 0.000000 0.0000000 2.857143e+01 0.000000e+00 0.00000000
14.28571429 0.000000e+00 0.00000000 0.00000000 0.00000000 14.28571429 0.00000000
2003 1 7 2 0 2 42 42 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 66.6666667 0.0000000 33.33333333 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 6.666667e+01 0.000000e+00 33.33333333
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2004 1 7 2 0 2 18 18 2.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 20 20 5.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 22 22 10.0 0.00000000 3.000000e+01 50.00000000 20.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 30.00000000
50.00000000 20.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 24 24 17.0 0.00000000 0.000000e+00 41.17647059 52.94117647
5.8823529 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
41.17647059 52.94117647 5.882353 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 26 26 25.0 0.00000000 0.000000e+00 20.00000000 68.00000000
8.0000000 4.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
20.00000000 68.00000000 8.000000 4.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 28 28 31.0 0.00000000 0.000000e+00 0.00000000 38.70967742
38.7096774 16.1290323 6.4516129 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 38.70967742 38.709677 16.129032 6.4516129 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 30 30 36.0 0.00000000 0.000000e+00 0.00000000 19.44444444
38.8888889 30.5555556 5.5555556 5.5555556 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 19.44444444 38.888889 30.555556 5.5555556 5.555556e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 32 32 52.0 0.00000000 0.000000e+00 0.00000000 3.84615385
36.5384615 32.6923077 17.3076923 7.6923077 1.9230769 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 3.84615385 36.538462 32.692308 17.3076923 7.692308e+00 1.923077e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 34 34 49.0 0.00000000 0.000000e+00 0.00000000 0.00000000
14.2857143 30.6122449 34.6938776 14.2857143 4.0816327 2.04081633 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 14.285714 30.612245 34.6938776 1.428571e+01 4.081633e+00 2.04081633
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 36 36 35.0 0.00000000 0.000000e+00 0.00000000 0.00000000
5.7142857 28.5714286 31.4285714 28.5714286 2.8571429 0.00000000 2.85714286 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 5.714286 28.571429 31.4285714 2.857143e+01 2.857143e+00 0.00000000
2.85714286 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2004 1 7 2 0 2 38 38 18.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 16.6666667 33.3333333 22.2222222 0.0000000 16.66666667 5.55555556 0.00000000
0.000000e+00 5.555556e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 16.666667 33.3333333 2.222222e+01 0.000000e+00 16.66666667
5.55555556 0.000000e+00 0.00000000 5.55555556 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 40 40 8.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 25.0000000 25.0000000 37.5000000 0.0000000 0.00000000 12.50000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 25.000000 25.0000000 3.750000e+01 0.000000e+00 0.00000000
12.50000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 42 42 4.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 25.0000000 25.0000000 0.0000000 0.00000000 25.00000000 0.00000000
0.000000e+00 2.500000e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 25.0000000 2.500000e+01 0.000000e+00 0.00000000
25.00000000 0.000000e+00 0.00000000 25.00000000 0.00000000 0.00000000 0.00000000
2004 1 7 2 0 2 48 48 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 100.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 1.000000e+02 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 16 16 1.0 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 18 18 9.0 0.00000000 8.888889e+01 11.11111111 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 88.88888889
11.11111111 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 20 20 14.0 0.00000000 5.000000e+01 50.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 50.00000000
50.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 22 22 16.0 0.00000000 2.500000e+01 68.75000000 6.25000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 25.00000000
68.75000000 6.25000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 24 24 22.0 0.00000000 4.545455e+00 77.27272727 18.18181818
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 4.54545455
77.27272727 18.18181818 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 26 26 28.0 0.00000000 3.571429e+00 32.14285714 46.42857143
17.8571429 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 3.57142857
32.14285714 46.42857143 17.857143 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2005 1 7 2 0 2 28 28 36.0 0.00000000 2.777778e+00 27.77777778 44.44444444
22.2222222 2.7777778 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 2.77777778
27.77777778 44.44444444 22.222222 2.777778 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 30 30 60.0 0.00000000 0.000000e+00 8.33333333 50.00000000
25.0000000 13.3333333 3.3333333 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
8.33333333 50.00000000 25.000000 13.333333 3.3333333 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 32 32 76.0 0.00000000 0.000000e+00 5.26315789 26.31578947
43.4210526 19.7368421 5.2631579 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
5.26315789 26.31578947 43.421053 19.736842 5.2631579 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 34 34 51.4 0.00000000 0.000000e+00 3.89105058 18.28793774
36.9649805 31.1284047 9.7276265 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
3.89105058 18.28793774 36.964981 31.128405 9.7276265 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 36 36 32.0 0.00000000 0.000000e+00 0.00000000 6.25000000
34.3750000 37.5000000 18.7500000 0.0000000 3.1250000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 6.25000000 34.375000 37.500000 18.7500000 0.000000e+00 3.125000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 38 38 17.0 0.00000000 0.000000e+00 0.00000000 5.88235294
23.5294118 17.6470588 23.5294118 5.8823529 17.6470588 0.00000000 0.00000000 5.88235294
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 5.88235294 23.529412 17.647059 23.5294118 5.882353e+00 1.764706e+01 0.00000000
0.00000000 5.882353e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 40 40 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
28.5714286 14.2857143 28.5714286 14.2857143 0.0000000 0.00000000 0.00000000 14.28571429
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 28.571429 14.285714 28.5714286 1.428571e+01 0.000000e+00 0.00000000
0.00000000 1.428571e+01 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 42 42 6.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 33.3333333 16.6666667 0.0000000 33.3333333 0.00000000 0.00000000 0.00000000
0.000000e+00 1.666667e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 33.333333 16.6666667 0.000000e+00 3.333333e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 16.66666667 0.00000000 0.00000000 0.00000000
2005 1 7 2 0 2 44 44 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 1.000000e+02 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 100.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 18 18 5.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2006 1 7 2 0 2 20 20 6.0 0.00000000 5.000000e+01 50.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 50.00000000
50.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 22 22 13.0 0.00000000 2.307692e+01 23.07692308 46.15384615
7.6923077 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 23.07692308
23.07692308 46.15384615 7.692308 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 24 24 26.4 0.00000000 0.000000e+00 39.39393939 30.30303030
26.5151515 3.7878788 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
39.39393939 30.30303030 26.515152 3.787879 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 26 26 18.4 0.00000000 0.000000e+00 29.34782609 38.04347826
32.6086957 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
29.34782609 38.04347826 32.608696 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 28 28 25.0 0.00000000 0.000000e+00 12.00000000 40.00000000
28.0000000 16.0000000 4.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
12.00000000 40.00000000 28.000000 16.000000 4.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 30 30 48.0 0.00000000 0.000000e+00 12.50000000 25.00000000
29.1666667 18.7500000 10.4166667 2.0833333 2.0833333 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
12.50000000 25.00000000 29.166667 18.750000 10.4166667 2.083333e+00 2.083333e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 32 32 55.0 0.00000000 0.000000e+00 1.81818182 0.00000000
29.0909091 34.5454546 23.6363636 10.9090909 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
1.81818182 0.00000000 29.090909 34.545455 23.6363636 1.090909e+01 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 34 34 60.0 0.00000000 0.000000e+00 0.00000000 0.00000000
16.6666667 25.0000000 41.6666667 6.6666667 5.0000000 5.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 16.666667 25.000000 41.6666667 6.666667e+00 5.000000e+00 5.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 36 36 56.0 0.00000000 0.000000e+00 0.00000000 0.00000000
1.7857143 14.2857143 37.5000000 25.0000000 12.5000000 7.14285714 1.78571429 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 1.785714 14.285714 37.5000000 2.500000e+01 1.250000e+01 7.14285714
1.78571429 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 38 38 20.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 15.0000000 15.0000000 20.0000000 25.0000000 15.00000000 5.00000000 0.00000000
0.000000e+00 0.000000e+00 5.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 15.000000 15.0000000 2.000000e+01 2.500000e+01 15.00000000
5.00000000 0.000000e+00 0.00000000 0.00000000 5.00000000 0.00000000 0.00000000

2006 1 7 2 0 2 40 40 12.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 16.6666667 50.0000000 16.6666667 8.33333333 0.00000000 8.33333333
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 16.6666667 5.000000e+01 1.666667e+01 8.33333333
0.00000000 8.333333e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 42 42 9.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 11.1111111 22.2222222 0.0000000 11.11111111 11.11111111 11.11111111
1.111111e+01 1.111111e+01 1.111111e+01 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 11.1111111 2.222222e+01 0.000000e+00 11.11111111
11.11111111 1.111111e+01 11.11111111 11.11111111 11.11111111 0.00000000 0.00000000
2006 1 7 2 0 2 44 44 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 33.3333333 0.0000000 33.33333333 0.00000000 0.00000000
3.333333e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 3.333333e+01 0.000000e+00 33.33333333
0.00000000 0.000000e+00 33.33333333 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 48 48 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 100.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 100.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2006 1 7 2 0 2 50 50 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2007 1 7 2 0 2 14 14 1.0 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 18 18 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 20 20 6.0 0.00000000 6.666667e+01 16.66666667 16.66666667
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 66.66666667
16.66666667 16.66666667 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 22 22 16.0 0.00000000 0.000000e+00 50.00000000 31.25000000
12.5000000 6.2500000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
50.00000000 31.25000000 12.500000 6.250000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 24 24 16.0 0.00000000 1.250000e+01 62.50000000 6.25000000
18.7500000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 12.50000000
62.50000000 6.25000000 18.750000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2007 1 7 2 0 2 26 26 26.0 0.00000000 0.000000e+00 26.92307692 34.61538462
26.9230769 7.6923077 3.8461538 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
26.92307692 34.61538462 26.923077 7.692308 3.8461538 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 28 28 20.0 0.00000000 0.000000e+00 5.00000000 45.00000000
30.0000000 15.0000000 5.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
5.00000000 45.00000000 30.000000 15.000000 5.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 30 30 43.0 0.00000000 0.000000e+00 2.32558139 9.30232558
51.1627907 27.9069767 9.3023256 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.32558139 9.30232558 51.162791 27.906977 9.3023256 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 32 32 46.0 0.00000000 0.000000e+00 0.00000000 15.21739130
39.1304348 26.0869565 10.8695652 6.5217391 0.0000000 2.17391304 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 15.21739130 39.130435 26.086957 10.8695652 6.521739e+00 0.000000e+00 2.17391304
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 34 34 57.0 0.00000000 0.000000e+00 0.00000000 3.50877193
15.7894737 24.5614035 26.3157895 22.8070175 3.5087719 1.75438596 0.00000000 1.75438596
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 3.50877193 15.789474 24.561404 26.3157895 2.280702e+01 3.508772e+00 1.75438596
0.00000000 1.754386e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 36 36 55.0 0.00000000 0.000000e+00 0.00000000 0.00000000
10.9090909 10.9090909 12.7272727 30.9090909 14.5454546 10.90909091 5.45454545 1.81818182
1.818182e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 10.909091 10.909091 12.7272727 3.090909e+01 1.454545e+01 10.90909091
5.45454545 1.818182e+00 1.81818182 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 38 38 17.0 0.00000000 0.000000e+00 0.00000000 0.00000000
11.7647059 0.0000000 23.5294118 23.5294118 23.5294118 0.00000000 5.88235294 5.88235294
5.882353e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 11.764706 0.000000 23.5294118 2.352941e+01 2.352941e+01 0.00000000
5.88235294 5.882353e+00 5.88235294 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 40 40 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 50.0000000 0.0000000 0.0000000 50.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 50.0000000 0.000000e+00 0.000000e+00 50.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 42 42 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 50.0000000 0.0000000 0.0000000 50.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 50.0000000 0.000000e+00 0.000000e+00 50.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2007 1 7 2 0 2 44 44 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 33.3333333 0.0000000 66.6666667 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 33.3333333 0.000000e+00 6.666667e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2008 1 7 2 0 2 12 12 1.0 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 16 16 3.0 66.66666667 3.333333e+01 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 66.6666667 33.33333333
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 18 18 8.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 20 20 17.4 11.49425287 5.402299e+01 34.48275862 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 11.4942529 54.02298851
34.48275862 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 22 22 16.0 0.00000000 3.750000e+01 50.00000000 12.50000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 37.50000000
50.00000000 12.50000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 24 24 25.0 0.00000000 3.200000e+01 44.00000000 20.00000000
4.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 32.00000000
44.00000000 20.00000000 4.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 26 26 34.0 0.00000000 2.941176e+00 26.47058824 38.23529412
26.4705882 5.8823529 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 2.94117647
26.47058824 38.23529412 26.470588 5.882353 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 28 28 27.0 0.00000000 0.000000e+00 29.62962963 51.85185185
18.5185185 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
29.62962963 51.85185185 18.518519 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 30 30 40.0 0.00000000 0.000000e+00 10.00000000 20.00000000
32.5000000 27.5000000 0.0000000 7.5000000 2.5000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
10.00000000 20.00000000 32.500000 27.500000 0.0000000 7.500000e+00 2.500000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 32 32 54.0 0.00000000 0.000000e+00 3.70370370 16.66666667
29.6296296 22.2222222 14.8148148 11.1111111 1.8518519 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
3.70370370 16.66666667 29.629630 22.222222 14.8148148 1.111111e+01 1.851852e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2008 1 7 2 0 2 34 34 42.0 0.00000000 0.000000e+00 0.00000000 2.38095238
28.5714286 26.1904762 23.8095238 14.2857143 4.7619048 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 2.38095238 28.571429 26.190476 23.8095238 1.428571e+01 4.761905e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 36 36 36.0 0.00000000 0.000000e+00 2.77777778 5.55555556
11.1111111 11.1111111 19.4444444 16.6666667 19.4444444 13.88888889 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.77777778 5.55555556 11.111111 11.111111 19.4444444 1.666667e+01 1.944444e+01 13.88888889
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 38 38 26.0 0.00000000 0.000000e+00 0.00000000 3.84615385
7.6923077 7.6923077 11.5384615 19.2307692 15.3846154 23.07692308 0.00000000 3.84615385
7.692308e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 3.84615385 7.692308 7.692308 11.5384615 1.923077e+01 1.538462e+01 23.07692308
0.00000000 3.846154e+00 7.69230769 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 40 40 11.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 9.0909091 9.0909091 18.1818182 18.1818182 27.27272727 0.00000000 9.09090909
9.090909e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 9.090909 9.0909091 1.818182e+01 1.818182e+01 27.27272727
0.00000000 9.090909e+00 9.09090909 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 42 42 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 33.3333333 0.00000000 0.00000000 0.00000000
3.333333e+01 0.000000e+00 3.333333e+01 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 3.333333e+01 0.00000000
0.00000000 0.000000e+00 33.33333333 0.00000000 33.33333333 0.00000000 0.00000000
2008 1 7 2 0 2 44 44 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 50.0000000 50.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 5.000000e+01 50.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 46 46 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 33.3333333 0.0000000 33.33333333 0.00000000 0.00000000
0.000000e+00 3.333333e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 3.333333e+01 0.000000e+00 33.33333333
0.00000000 0.000000e+00 0.00000000 33.33333333 0.00000000 0.00000000 0.00000000
2008 1 7 2 0 2 48 48 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 100.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 100.00000000
2009 1 7 2 0 2 16 16 2.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 18 18 23.0 17.39130435 6.956522e+01 13.04347826 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 17.3913043 69.56521739
13.04347826 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2009 1 7 2 0 2 20 20 33.0 6.06060606 6.363636e+01 30.30303030 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 6.0606061 63.63636364
30.30303030 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 22 22 21.0 0.00000000 4.285714e+01 57.14285714 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 42.85714286
57.14285714 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 24 24 20.4 0.00000000 9.803922e+00 75.49019608 9.80392157
4.9019608 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 9.80392157
75.49019608 9.80392157 4.901961 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 26 26 31.0 0.00000000 0.000000e+00 38.70967742 35.48387097
22.5806452 3.2258065 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
38.70967742 35.48387097 22.580645 3.225806 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 28 28 42.0 0.00000000 2.380952e+00 7.14285714 40.47619048
26.1904762 21.4285714 0.0000000 2.3809524 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 2.38095238
7.14285714 40.47619048 26.190476 21.428571 0.0000000 2.380952e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 30 30 37.0 0.00000000 0.000000e+00 2.70270270 21.62162162
40.5405405 24.3243243 10.8108108 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.70270270 21.62162162 40.540541 24.324324 10.8108108 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 32 32 59.0 0.00000000 0.000000e+00 1.69491525 13.55932203
25.4237288 38.9830508 13.5593220 5.0847458 0.0000000 1.69491525 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
1.69491525 13.55932203 25.423729 38.983051 13.5593220 5.084746e+00 0.000000e+00 1.69491525
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 34 34 49.4 0.00000000 0.000000e+00 0.00000000 0.00000000
24.2914980 36.4372470 29.1497976 8.0971660 2.0242915 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 24.291498 36.437247 29.1497976 8.097166e+00 2.024291e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 36 36 24.0 0.00000000 0.000000e+00 0.00000000 0.00000000
8.3333333 12.5000000 33.3333333 16.6666667 16.6666667 4.16666667 4.16666667 0.00000000
4.166667e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 8.333333 12.500000 33.3333333 1.666667e+01 1.666667e+01 4.16666667
4.16666667 0.000000e+00 4.16666667 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 38 38 23.0 0.00000000 0.000000e+00 0.00000000 0.00000000
4.3478261 13.0434783 8.6956522 13.0434783 13.0434783 30.43478261 13.04347826 4.34782609
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 4.347826 13.043478 8.6956522 1.304348e+01 1.304348e+01 30.43478261
13.04347826 4.347826e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2009 1 7 2 0 2 40 40 8.0 0.00000000 0.000000e+00 0.00000000 0.00000000
12.5000000 0.0000000 25.0000000 12.5000000 12.5000000 25.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 1.250000e+01 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 12.500000 0.000000 25.0000000 1.250000e+01 1.250000e+01 25.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 12.50000000 0.00000000 0.00000000
2009 1 7 2 0 2 42 42 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 50.0000000 0.00000000 50.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 5.000000e+01 0.00000000
50.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2009 1 7 2 0 2 44 44 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 33.3333333 0.0000000 33.33333333 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 33.33333333 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 3.333333e+01 0.000000e+00 33.33333333
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 33.33333333
2010 1 7 2 0 2 12 12 1.0 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 16 16 2.0 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 18 18 8.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 20 20 27.0 0.00000000 6.666667e+01 33.33333333 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 66.66666667
33.33333333 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 22 22 41.0 0.00000000 4.634146e+01 41.46341463 12.19512195
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 46.34146341
41.46341463 12.19512195 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 24 24 42.0 0.00000000 2.857143e+01 50.00000000 14.28571429
7.1428571 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 28.57142857
50.00000000 14.28571429 7.142857 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 26 26 53.0 0.00000000 7.547170e+00 32.07547170 49.05660377
11.3207547 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 7.54716981
32.07547170 49.05660377 11.320755 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2010 1 7 2 0 2 28 28 37.0 0.00000000 0.000000e+00 32.43243243 37.83783784
21.6216216 8.1081081 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
32.43243243 37.83783784 21.621622 8.108108 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 30 30 40.0 0.00000000 0.000000e+00 12.50000000 32.50000000
25.0000000 17.5000000 12.5000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
12.50000000 32.50000000 25.000000 17.500000 12.5000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 32 32 56.0 0.00000000 0.000000e+00 7.14285714 23.21428571
28.5714286 30.3571429 10.7142857 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
7.14285714 23.21428571 28.571429 30.357143 10.7142857 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 34 34 44.0 0.00000000 0.000000e+00 2.27272727 13.63636364
25.0000000 20.4545455 27.2727273 4.5454545 4.5454545 2.27272727 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.27272727 13.63636364 25.000000 20.454545 27.2727273 4.545455e+00 4.545455e+00 2.27272727
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 36 36 25.0 0.00000000 0.000000e+00 0.00000000 0.00000000
16.0000000 28.0000000 28.0000000 8.0000000 0.0000000 16.00000000 4.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 16.000000 28.000000 28.0000000 8.000000e+00 0.000000e+00 16.00000000
4.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 38 38 21.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 19.0476191 19.0476191 9.5238095 9.5238095 23.80952381 14.28571429 0.00000000
0.000000e+00 4.761905e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 19.047619 19.0476191 9.523810e+00 9.523810e+00 23.80952381
14.28571429 0.000000e+00 0.00000000 4.76190476 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 40 40 5.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 20.0000000 20.0000000 20.0000000 0.00000000 0.00000000 40.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 20.0000000 2.000000e+01 2.000000e+01 0.00000000
0.00000000 4.000000e+01 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 42 42 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 100.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 1.000000e+02 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2010 1 7 2 0 2 44 44 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 50.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 50.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
50.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 50.00000000
2011 1 7 2 0 2 18 18 6.0 0.00000000 3.333333e+01 50.00000000 16.66666667
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 33.33333333
50.00000000 16.66666667 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2011 1 7 2 0 2 20 20 16.4 0.00000000 3.902439e+01 54.87804878 6.09756098
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 39.02439024
54.87804878 6.09756098 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 22 22 36.0 0.00000000 1.666667e+01 61.11111111 19.44444444
2.7777778 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 16.66666667
61.11111111 19.44444444 2.777778 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 24 24 33.0 0.00000000 1.212121e+01 60.60606061 18.18181818
9.0909091 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 12.12121212
60.60606061 18.18181818 9.090909 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 26 26 52.0 0.00000000 3.846154e+00 44.23076923 40.38461538
9.6153846 1.9230769 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 3.84615385
44.23076923 40.38461538 9.615385 1.923077 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 28 28 47.0 0.00000000 2.127660e+00 25.53191489 40.42553191
29.7872340 2.1276596 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 2.12765957
25.53191489 40.42553191 29.787234 2.127660 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 30 30 51.0 0.00000000 0.000000e+00 7.84313726 43.13725490
37.2549020 11.7647059 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
7.84313726 43.13725490 37.254902 11.764706 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 32 32 46.0 0.00000000 0.000000e+00 2.17391304 15.21739130
47.8260870 26.0869565 4.3478261 4.3478261 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
2.17391304 15.21739130 47.826087 26.086957 4.3478261 4.347826e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 34 34 56.0 0.00000000 0.000000e+00 0.00000000 12.50000000
30.3571429 28.5714286 10.7142857 10.7142857 5.3571429 1.78571429 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 12.50000000 30.357143 28.571429 10.7142857 1.071429e+01 5.357143e+00 1.78571429
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 36 36 34.0 0.00000000 0.000000e+00 0.00000000 5.88235294
23.5294118 14.7058823 14.7058823 23.5294118 17.6470588 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 5.88235294 23.529412 14.705882 14.7058823 2.352941e+01 1.764706e+01 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 38 38 12.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 8.3333333 25.0000000 33.3333333 16.6666667 16.66666667 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 8.333333 25.0000000 3.333333e+01 1.666667e+01 16.66666667
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2011 1 7 2 0 2 40 40 8.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 12.5000000 0.0000000 25.0000000 37.5000000 0.00000000 12.50000000 0.00000000
1.250000e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 12.500000 0.0000000 2.500000e+01 3.750000e+01 0.00000000
12.50000000 0.000000e+00 12.50000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 42 42 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 50.00000000 0.00000000 0.00000000
5.000000e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 50.00000000
0.00000000 0.000000e+00 50.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2011 1 7 2 0 2 44 44 3.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 66.66666667 0.00000000
3.333333e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
66.66666667 0.000000e+00 33.33333333 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 12 12 0.4 100.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 100.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 16 16 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 18 18 3.0 0.00000000 6.666667e+01 33.33333333 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 66.66666667
33.33333333 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 20 20 5.0 0.00000000 6.000000e+01 20.00000000 20.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 60.00000000
20.00000000 20.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 22 22 22.0 0.00000000 9.090909e+00 31.81818182 50.00000000
9.0909091 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 9.09090909
31.81818182 50.00000000 9.090909 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 24 24 25.0 0.00000000 4.000000e+00 36.00000000 44.00000000
4.0000000 12.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 4.00000000
36.00000000 44.00000000 4.000000 12.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 26 26 54.0 0.00000000 3.703704e+00 22.22222222 59.25925926
3.7037037 11.1111111 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 3.70370370
22.22222222 59.25925926 3.703704 11.111111 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2012 1 7 2 0 2 28 28 54.0 0.00000000 1.851852e+00 18.51851852 42.59259259
20.3703704 12.9629630 3.7037037 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 1.85185185
18.51851852 42.59259259 20.370370 12.962963 3.7037037 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 30 30 64.0 0.00000000 0.000000e+00 6.25000000 40.62500000
34.3750000 12.5000000 6.2500000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
6.25000000 40.62500000 34.375000 12.500000 6.2500000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 32 32 53.0 0.00000000 0.000000e+00 3.77358491 20.75471698
26.4150943 24.5283019 16.9811321 3.7735849 3.7735849 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
3.77358491 20.75471698 26.415094 24.528302 16.9811321 3.773585e+00 3.773585e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 34 34 46.0 0.00000000 0.000000e+00 0.00000000 8.69565217
13.0434783 21.7391304 26.0869565 6.5217391 15.2173913 6.52173913 2.17391304 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 8.69565217 13.043478 21.739130 26.0869565 6.521739e+00 1.521739e+01 6.52173913
2.17391304 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 36 36 35.0 0.00000000 0.000000e+00 0.00000000 2.85714286
8.5714286 14.2857143 17.1428571 17.1428571 11.4285714 25.71428571 2.85714286 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 2.85714286 8.571429 14.285714 17.1428571 1.714286e+01 1.142857e+01 25.71428571
2.85714286 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 38 38 13.0 0.00000000 0.000000e+00 0.00000000 7.69230769
7.6923077 7.6923077 7.6923077 15.3846154 15.3846154 7.69230769 0.00000000 15.38461538
1.538462e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 7.69230769 7.692308 7.692308 7.6923077 1.538462e+01 1.538462e+01 7.69230769
0.00000000 1.538462e+01 15.38461538 0.00000000 0.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 40 40 5.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 20.0000000 0.0000000 0.0000000 0.0000000 60.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 2.000000e+01 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 20.000000 0.0000000 0.000000e+00 0.000000e+00 60.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 20.00000000 0.00000000 0.00000000
2012 1 7 2 0 2 42 42 4.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 25.0000000 0.00000000 0.00000000 0.00000000
5.000000e+01 0.000000e+00 0.000000e+00 0.000000000 25.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 2.500000e+01 0.00000000
0.00000000 0.000000e+00 50.00000000 0.00000000 0.00000000 0.00000000 25.00000000
2013 1 7 2 0 2 18 18 1.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 20 20 7.0 0.00000000 4.285714e+01 57.14285714 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 42.85714286
57.14285714 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2013 1 7 2 0 2 22 22 13.0 7.69230769 7.692308e+00 23.07692308 7.69230769
30.7692308 23.0769231 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 7.6923077 7.69230769
23.07692308 7.69230769 30.769231 23.076923 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 24 24 21.0 0.00000000 0.000000e+00 28.57142857 19.04761905
38.0952381 9.5238095 4.7619048 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
28.57142857 19.04761905 38.095238 9.523810 4.7619048 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 26 26 24.0 0.00000000 4.166667e+00 16.66666667 25.00000000
37.5000000 8.3333333 8.3333333 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 4.16666667
16.66666667 25.00000000 37.500000 8.333333 8.3333333 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 28 28 43.0 0.00000000 0.000000e+00 4.65116279 20.93023256
32.5581395 37.2093023 2.3255814 2.3255814 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
4.65116279 20.93023256 32.558140 37.209302 2.3255814 2.325581e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 30 30 60.0 0.00000000 0.000000e+00 3.33333333 23.33333333
51.6666667 13.3333333 5.0000000 1.6666667 1.6666667 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
3.33333333 23.33333333 51.666667 13.333333 5.0000000 1.666667e+00 1.666667e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 32 32 65.0 0.00000000 0.000000e+00 0.00000000 15.38461538
26.1538461 29.2307692 24.6153846 1.5384615 1.5384615 1.53846154 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 15.38461538 26.153846 29.230769 24.6153846 1.538462e+00 1.538462e+00 1.53846154
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 34 34 50.0 0.00000000 0.000000e+00 0.00000000 0.00000000
38.0000000 26.0000000 26.0000000 8.0000000 0.0000000 2.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 38.000000 26.000000 26.0000000 8.000000e+00 0.000000e+00 2.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 36 36 41.0 0.00000000 0.000000e+00 0.00000000 0.00000000
4.8780488 29.2682927 26.8292683 19.5121951 7.3170732 9.75609756 0.00000000 2.43902439
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 4.878049 29.268293 26.8292683 1.951220e+01 7.317073e+00 9.75609756
0.00000000 2.439024e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 38 38 23.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 13.0434783 30.4347826 4.3478261 13.0434783 8.69565217 13.04347826 13.04347826
4.347826e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 13.043478 30.4347826 4.347826e+00 1.304348e+01 8.69565217
13.04347826 1.304348e+01 4.34782609 0.00000000 0.00000000 0.00000000 0.00000000
2013 1 7 2 0 2 40 40 11.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 18.1818182 18.1818182 27.2727273 0.0000000 9.09090909 0.00000000 0.00000000
9.090909e+00 1.818182e+01 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 18.181818 18.1818182 2.727273e+01 0.000000e+00 9.09090909
0.00000000 0.000000e+00 9.09090909 18.18181818 0.00000000 0.00000000 0.00000000

2013 1 7 2 0 2 42 42 7.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 14.2857143 14.2857143 0.00000000 0.00000000 14.28571429
1.428571e+01 0.000000e+00 1.428571e+01 28.571428570 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 1.428571e+01 1.428571e+01 0.00000000
0.00000000 1.428571e+01 14.28571429 0.00000000 14.28571429 28.57142857 0.00000000
2013 1 7 2 0 2 44 44 1.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 100.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 1.000000e+02 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 18 18 2.0 0.00000000 1.000000e+02 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 100.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 20 20 6.0 16.66666667 6.666667e+01 16.66666667 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 16.6666667 66.66666667
16.66666667 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 22 22 12.0 0.00000000 5.833333e+01 33.33333333 8.33333333
0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 58.33333333
33.33333333 8.33333333 0.000000 0.000000 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 24 24 28.0 0.00000000 3.214286e+01 10.71428571 17.85714286
10.7142857 21.4285714 7.1428571 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 32.14285714
10.71428571 17.85714286 10.714286 21.428571 7.1428571 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 26 26 17.0 0.00000000 1.176471e+01 35.29411765 11.76470588
29.4117647 11.7647059 0.0000000 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 11.76470588
35.29411765 11.76470588 29.411765 11.764706 0.0000000 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 28 28 34.0 0.00000000 2.941176e+00 20.58823529 29.41176471
8.8235294 20.5882353 14.7058823 2.9411765 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 2.94117647
20.58823529 29.41176471 8.823529 20.588235 14.7058823 2.941176e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 30 30 31.0 0.00000000 0.000000e+00 3.22580645 19.35483871
29.0322581 32.2580645 16.1290323 0.0000000 0.0000000 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
3.22580645 19.35483871 29.032258 32.258065 16.1290323 0.000000e+00 0.000000e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 32 32 62.0 0.00000000 0.000000e+00 0.00000000 17.74193548
17.7419355 40.3225806 14.5161290 8.0645161 1.6129032 0.00000000 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 17.74193548 17.741935 40.322581 14.5161290 8.064516e+00 1.612903e+00 0.00000000
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

2014 1 7 2 0 2 34 34 69.0 0.00000000 0.000000e+00 0.00000000 5.79710145
15.9420290 30.4347826 26.0869565 10.1449275 5.7971014 5.79710145 0.00000000 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 5.79710145 15.942029 30.434783 26.0869565 1.014493e+01 5.797101e+00 5.79710145
0.00000000 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 36 36 51.0 0.00000000 0.000000e+00 0.00000000 3.92156863
9.8039216 33.3333333 17.6470588 19.6078431 11.7647059 1.96078431 0.00000000 0.00000000
0.000000e+00 1.960784e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 3.92156863 9.803922 33.333333 17.6470588 1.960784e+01 1.176471e+01 1.96078431
0.00000000 0.000000e+00 0.00000000 1.96078431 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 38 38 31.0 0.00000000 0.000000e+00 0.00000000 0.00000000
3.2258065 6.4516129 38.7096774 29.0322581 9.6774194 3.22580645 9.67741935 0.00000000
0.000000e+00 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 3.225806 6.451613 38.7096774 2.903226e+01 9.677419e+00 3.22580645
9.67741935 0.000000e+00 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 40 40 16.0 0.00000000 0.000000e+00 0.00000000 0.00000000
6.2500000 6.2500000 6.2500000 43.7500000 6.2500000 6.25000000 6.25000000 6.25000000
1.250000e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 6.250000 6.250000 6.2500000 4.375000e+01 6.250000e+00 6.25000000
6.25000000 6.250000e+00 12.50000000 0.00000000 0.00000000 0.00000000 0.00000000
2014 1 7 2 0 2 42 42 5.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 40.0000000 0.0000000 0.00000000 0.00000000 0.00000000
2.000000e+01 2.000000e+01 0.000000e+00 0.000000000 20.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 4.000000e+01 0.000000e+00 0.00000000
0.00000000 0.000000e+00 20.00000000 20.00000000 0.00000000 0.00000000 20.00000000
2014 1 7 2 0 2 44 44 2.0 0.00000000 0.000000e+00 0.00000000 0.00000000
0.0000000 0.0000000 0.0000000 0.0000000 50.0000000 0.00000000 0.00000000 0.00000000
5.000000e+01 0.000000e+00 0.000000e+00 0.000000000 0.00000000 0.0000000 0.00000000
0.00000000 0.00000000 0.000000 0.000000 0.0000000 0.000000e+00 5.000000e+01 0.00000000
0.00000000 0.000000e+00 50.00000000 0.00000000 0.00000000 0.00000000 0.00000000
0 #_N_MeanSize_at_Age_obs
0 #_N_environ_variables
0 #_N_environ_obs
0 #_N_sizefreq_methods
0 #_do_tags
0 #_morphcomp_data
#
999

Appendix B. SS control file

#C 2015 Assessent of Petrale (Fish600 people) run with SS3.24O
#_data_and_control_files: petrale15.dat // petrale15.ctl
1 #_N_Growth_Patterns
1 #_N_Morphs_Within_GrowthPattern
#_Cond 1 #_Morph_between/within_stdev_ratio (no read if N_morphs=1)
#_Cond 1 #vector_Morphdist_(-1_in_first_val_gives_normal_approx)

#Recruitment occurs in season 2 (summer)
#1 # N recruitment designs goes here if N_GP*nseas*area>1
#0 # placeholder for recruitment interaction request
#1 2 1 # recruitment design element for GP=1, seas=2, area=1

#_Cond 0 # N_movement_definitions goes here if N_areas > 1
#_Cond 1.0 # first age that moves (real age at begin of season, not integer) also cond on do_migration>0
#_Cond 1 1 1 2 4 10 # example move definition for seas=1, morph=1, source=1 dest=2, age1=4, age2=10

3 #_Nblock_Patterns
5 3 3 #_blocks_per_pattern
begin and end years of blocks
1973 1982 1983 1992 1993 2002 2003 2010 2011 2014 # For selectivities of all fleets
2003 2009 2010 2010 2011 2014 # For retention of winter fleets
2003 2008 2009 2010 2011 2014 # For retention of summer fleets

0.5 #_fracfemale
0 #_natM_type:_0=1Parm;
1=N_breakpoints;_2=Lorenzen;_3=agespecific;_4=agespec_withseasinterpolate
#2 #_N_breakpoints
4 15 # age(real) at M breakpoints

1 # GrowthModel: 1=vonBert with L1&L2; 2=Richards with L1&L2; 3=not implemented; 4=not implemented
2 #_Growth_Age_for_L1 (minimum age for growth calcs
17 #_Growth_Age_for_L2 (999 to use as Linf) (maximum age for growth calcs)
0.0 #_SD_add_to_LAA
0 #_CV_Growth_Pattern: 0 CV=f(LAA); 1 CV=F(A); 2 SD=F(LAA); 3 SD=F(A)
1 #_maturity_option: 1=length logistic; 2=age logistic; 3=read age-maturity matrix by growth_pattern; 4=read age-fecundity
#_placeholder for empirical age-maturity by growth pattern
3 #_First_Mature_Age
1 #_fecundity option:(1)eggs=Wt*(a+b*Wt);(2)eggs=a*L^b;(3)eggs=a*Wt^b
0 #hermaphrodite
1 #_parameter_offset_approach (1=none, 2= M, G, CV_G as offset from female-GP1, 3=like SS2 V1.x)
1 #_env/block/dev_adjust_method (1=standard; 2=with logistic trans to keep within base parm bounds)

#_growth_parms
#GP_1_Female
#LO HI INIT PRIOR PR_type SD PHASE env-var use_dev dev_minyr dev_maxyr dev_stddev Block Block_Fxn

0.005 0.50 0.145 -1.888 3 0.3333 6 0 0 0 0 0.5 0 0 #1
F_M_young
10 45 15.8 17.18 -1 10 2 0 0 0 0 0.5 0 0 #2
F_L@Amin (Amin is age entered above)
35 80 54.4 58.7 -1 10 3 0 0 0 0 0.5 0 0 #3
F_L@Amax
0.04 0.5 0.13 0.13 -1 0.8 2 0 0 0 0 0.5 0 0 #4 F_VBK
0.01 1.00 0.19 3.0 -1 0.8 3 0 0 0 0 0.5 0 0 #5
CV@LAAFIX
0.01 1.0 0.03 0.0 -1 1 4 0 0 0 0 0 0 0 #
CV@LAAFIX2
#GP_1:::Male (Direct Estimation)
0.005 0.60 0.15 -1.580 3 0.3326 6 0 0 0 0 0.5 0 0 #1
M_M_young
10 45 16.6 17.18 -1 10 2 0 0 0 0 0.5 0 0 #2
M_L@Amin (Amin is age entered above)
35 80 43.2 58.7 -1 10 3 0 0 0 0 0.5 0 0 #3
M_L@Amax
0.04 0.5 0.20 0.13 -1 0.8 2 0 0 0 0 0.5 0 0 #4 M_VBK
0.01 1.00 0.14 3.0 -1 0.8 3 0 0 0 0 0.5 0 0 #5
M_CV@LAAFIX
0.01 1.0 0.05 0.0 -1 1 4 0 0 0 0 0 0 0 #
M_CV@LAAFIX2
#LW_female
#LO HI INIT PRIOR PR_type SD PHASE env-var use_dev dev_minyr dev_maxyr
dev_stddev Block Block_Fxn
-3 3 2.08296E-06 2.08296E-06 0 0.8 -3 0 0 0 0 0.5 0 0
#WL_intercept_female
1 5 3.473703 3.473703 0 0.8 -3 0 0 0 0 0.5 0 0 #WL_slope_female
#Female_maturity
10 50 33.1 33.1 0 0.8 -3 0 0 0 0 0.5 0 0 #mat_intercept #L50
-3 3 -0.743 -0.743 0 0.8 -3 0 0 0 0 0.5 0 0 #mat_slope From Hannah
et al 2002
#Fecundity___Assume_same_as_spawning_biomass
-3 3 1 1 0 1 -3 0 0 0 0 0.5 0 0 #mat_intercept #L50
-3 3 0 0 0 1 -3 0 0 0 0 0.5 0 0 #mat_slope
#LW_Male
-3 3 3.05E-06 3.05E-06 0 0.8 -3 0 0 0 0 0.5 0 0 #WL_intercept_male
-3 5 3.360544 3.360544 0 0.8 -3 0 0 0 0 0.5 0 0 #WL_slope_slope_male

#LO HI INIT PRIOR PR_type SD PHASE env-var use_dev dev_minyr dev_maxyr dev_stddev
Block Block_Fxn
#Allocate_R_by_areas_x_gmorphs
0 1 1 0.2 0 9.8 -3 0 0 0 0 0.5 0 0 #frac to GP 1 in area 1
#Allocate_R_by_areas_(1_areain_this_case)
0 1 1 1 0 9.8 -3 0 0 0 0 0.5 0 0 #frac R in area 1
#Allocate_R_by_season_(2seasons_in_this_case)
#LO HI INIT PRIOR PR_type SD PHASE env-var use_dev dev_minyr dev_maxyr dev_stddev Block
Block_Fxn
-4 4 0 1 0 9.8 -3 0 0 0 0 0.5 0 0 #frac R in season 1

```
#CohortGrowDev
#SS3 manual says it must be given a value of 1 and a negative phase
#LO HI  INIT  PRIOR  PR_type SD  PHASE  env-var use_dev dev_minyr dev_maxyr dev_stddev Block Block_Fxn
0   1   1     1     -1     0   -4     0      0      0       0       0        0     0

#_Cond 0  #custom_MG-env_setup (0/1)
#_Cond -2 2 0 0 -1 99 -2 #_placeholder when no MG-environ parameters

#_Cond 0  #custom_MG-block_setup (0/1)
#_Cond -2 2 0 0 -1 99 -2 #_placeholder when no MG-block parameters

#_seasonal_effects_on_biology_parms
0 0 0 0 0 0 0 0 0 0 #_femwtlen1,femwtlen2,L1,K,Malewtlen1,malewtlen2,L1,K
#_Cond -2 2 0 0 -1 99 -2 #_placeholder when no seasonal MG parameters

#_Cond -4 #_MGparm_Dev_Phase

#_Spawner-Recruitment
3   #_SR_function
#_LO    HI  INIT    PRIOR   PR_type SD    PHASE
5       20  9.64    9       -1      10    1      #Ln(R0)
0.2     1   0.90    0.8     0       0.09  5      #steepness(h)
0       2   0.4     0.9     0       5     -99    #sigmaR
-5      5   0       0       0       1     -99    #Env_link_parameter
-5      5   0       0       0       0.2   -2     # SR_R1_offset
0       0   0       0       -1      0     -99    # SR_autocorr
0       #_SR_env_link
0       #_SR_env_target_0=none;1=devs;_2=R0;_3=steepness

1       #do_recdev:  0=none; 1=devvector; 2=simple deviations

1959    # first year of main recr_devs; early devs can preceed this era
2012    # last year of main recr_devs; forecast devs start in following year
1       #_recdev phase
1       # (0/1) to read 13 advanced options
1845    #_Cond 0 #_recdev_early_start (0=none; neg value makes relative to recdev_start)
3       #_recdev_early_phase
0       #_Cond 0 #_forecast_recruitment phase (incl. late recr) (0 value resets to maxphase+1)
1       #_Cond 1 #_lambda for prior_fore_recr occurring before endyr+1
1944    #_last_early_yr_nobias_adj_in_MPD
1964    #_first_yr_fullbias_adj_in_MPD
2011    #_last_yr_fullbias_adj_in_MPD
2014    #_first_recent_yr_nobias_adj_in_MPDadj_in_MPD (-1 to override ramp and set biasadj=1.0 for all estimated recdevs)
0.80    #max bias
0       #period of cycles in recruitment
-4      #min rec_dev
4       #max rec_dev
0 #67   #_read_recdevs
#_end of advanced SR options
```

```
#Fishing Mortality info
0.3     # F ballpark for tuning early phases
-2001   # F ballpark year (neg value to disable)
3       # F_Method:  1=Pope; 2=instan. F; 3=hybrid (hybrid is recommended)
4       # max F or harvest rate, depends on F_Method
# no additional F input needed for Fmethod 1
# read overall start F value; overall phase; N detailed inputs to read for Fmethod 2
# NUM ITERATIONS, FOR CONDITION 3
5       # read N iterations for tuning for Fmethod 3 (recommend 3 to 7)
#Fleet Year Seas F_value se phase (for detailed setup of F_Method=2)

#_initial_F_parms
#_LO HI INIT PRIOR PR_type  SD PHASE
0   1   0   0.0001  0       99  -1  #Fleet1_(WinterN)
0   1   0   0.0001  0       99  -1  #Fleet2_(SummerN)
0   1   0   0.0001  0       99  -1  #Fleet3_(WinterS)
0   1   0   0.0001  0       99  -1  #Fleet4_(SummerS)

#_Q_setup
#D=devtype(<0=mirror, 0/1=none, 2=cons, 3=rand, 4=randwalk)
#E=0=num/1=bio, F=err_type
#DISCUSS WHICH OPTION FOR Q (0 OR 1, OR 2)
#do power, env-var, extra SD, dev type
#do power for commercial CPUE, estimating extra SD, estimating q
1   0   0   4      #Fleet1_(WinterN)
0   0   0   0      #Fleet2_(SummerN)
1   0   0   4      #Fleet3_(WinterS)
0   0   0   0      #Fleet4_(SummerS)
0   0   1   0      #Fleet5 Triennial
0   0   1   0      #Fleet6 Triennial
0   0   0   0      #Fleet7 NWFSC

1 #_Cond 0 #_If q has random component, then 0=read one parm for each fleet with random q; 1=read a
parm for each year of index
#LO HI INIT  PRIOR  PR_type  SD  PHASE
-5          5  0.38  0      -1       99  3            #(log) power parameter N Winter
-5          5  0.16  0      -1       99  3            #(log) power parameter S Winter
#parameter lines for extra SD for fishery CPUE and surveys
#Prior type -1 = none, 0=normal, 1=symmetric beta, 2=full beta, 3=lognormal
#-5       5          0.4         0.5       -1  99  5          #
#-5       5          0.4         0.5       -1  99  5          #
0.001    2          0.28      0.22      -1         99         5          #
0.001    2          0.15      0.16      -1         99         4          #
#-1       2          0   0.06 -1         99         5          #
#parameter lines for winter index q's
#LO  HI INIT  PRIOR  PR_type  SD  PHASE
-20         5  -9    0      -1       99   1    #estimate q parameter N Winter
-20  5   0   -1      -1       99  -1    #1988
-20  5   0   -1      -1       99  -1    #1989
-20  5   0   -1      -1       99  -1    #1990
```

```
-20  5   0   -1      -1       99  -1    #1991
-20  5   0   -1      -1       99  -1    #1992
-20  5   0   -1      -1       99  -1    #1993
-20  5   0   -1      -1       99  -1    #1994
-20  5   0   -1      -1       99  -1    #1995
-20  5   0   -1      -1       99  -1    #1996
-20  5   0   -1      -1       99  -1    #1997
-20  5   0   -1      -1       99  -1    #1998
-20  5   0   -1      -1       99  -1    #1999
-20  5   0   -1      -1       99  -1    #2000
-20  5   0   -1      -1       99  -1    #2001
-20  5   0   -1      -1       99  -1    #2002
-20  5   0   -1      -1       99  -1    #2003
-20  5   0   -1      -1       99   7    #2004
-20  5   0   -1      -1       99  -7    #2005
-20  5   0   -1      -1       99  -7    #2006
-20  5   0   -1      -1       99  -7    #2007
-20  5   0   -1      -1       99  -7    #2008
-20  5   0   -1      -1       99  -7    #2009

-20         5  -6    0      -1       99   1    #estimate q parameter S Winter
-20  5   0   -1      -1       99  -1    #1988
-20  5   0   -1      -1       99  -1    #1989
-20  5   0   -1      -1       99  -1    #1990
-20  5   0   -1      -1       99  -1    #1991
-20  5   0   -1      -1       99  -1    #1992
-20  5   0   -1      -1       99  -1    #1993
-20  5   0   -1      -1       99  -1    #1994
-20  5   0   -1      -1       99  -1    #1995
-20  5   0   -1      -1       99  -1    #1996
-20  5   0   -1      -1       99  -1    #1997
-20  5   0   -1      -1       99  -1    #1998
-20  5   0   -1      -1       99  -1    #1999
-20  5   0   -1      -1       99  -1    #2000
-20  5   0   -1      -1       99  -1    #2001
-20  5   0   -1      -1       99  -1    #2002
-20  5   0   -1      -1       99  -1    #2003
-20  5   0   -1      -1       99   7    #2004
-20  5   0   -1      -1       99  -7    #2005
-20  5   0   -1      -1       99  -7    #2006
-20  5   0   -1      -1       99  -7    #2007
-20  5   0   -1      -1       99  -7    #2008
-20  5   0   -1      -1       99  -7    #2009

#Seltype(1,2*Ntypes,1,4)    #SELEX_&_RETENTION_PARAMETERS
#Size_Slectivity,_enter_4_cols
#N_sel  Do_retain  Do_male Special
24      1          3       0       #Fleet(WinterN)
24      1          3       0       #Fleet(SummerN)
24      1          3       0       #Fleet(WinterS)
24      1          3       0       #Fleet(SummerS)
```

```
24      0         3       0       #Triennial early
24      0         3       0       #Triennial late
24      0         3       0       #NWFSC

#Age_selectivity    #set_to_1
10      0         0       0       #Fleet(WinterN)
10      0         0       0       #Fleet(SummerN)
10      0         0       0       #Fleet(WinterS)
10      0         0       0       #Fleet(SummerS)
10      0         0       0       #Triennial early
10      0         0       0       #Triennial late
10      0         0       0       #NWFSC

#Selectivity parameters
#Size_selectivity for FISHERY WINTER N
#FEMALE
#LO    HI  INIT    PRIOR   PR_TYPE SD  PHASE   env-var use_dev dev_yr1 dev_yr2 dev_sd  nblks
blk_pat #
15      75  46.6    43.1     -1      5   1  0   0   0   0   0.5  1   1   #PEAK (see Selex24.xls)
-5      3   3.0      0.7     -1      5  -3  0   0   0   0   0.5  0   0   #TOP (see Selex24.xls)
-4      12  3.9     3.42     -1      5   2  0   0   0   0   0.5  0   0   #ASC_WIDTH (see Selex24.xls)
-2      15  14.0    0.21     -1      5  -3  0   0   0   0   0.5  0   0   #DSC_WIDTH (see Selex24.xls)
-15     5   -999    -8.9     -1      5  -4  0   0   0   0   0.5  0   0   #INIT (see Selex24.xls)
-5      5   -999    0.15     -1      5  -4  0   0   0   0   0.5  0   0   #FINAL (see Selex24.xls)
#RETENTION
10      40  26.19    15     -1      9   1  0   0   0   0   0    2   1   # Retain_1 Inflection
0.1     10  1.701     3     -1      9   2  0   0   0   0   0    2   1   # Retain_2 Slope
0.001   1   0.9945    1     -1      9   4  0   0   0   0   0    2   1   # Retain_3 Asymptote
-10     10  0         0     -1      9  -2  0   0   0   0   0    0   0   # Retain_4 Male offset (additive)
#...DO_MALE (AS OFFSET)
-15     15 -8.8       0     -1      5   3  0   0   0   0   0.5  0   0   #PEAK (see Selex24.xls)
-15     15 -1.1       0     -1      5   4  0   0   0   0   0.5  0   0   #ASC_WIDTH (see Selex24.xls)
-15     15  0         0     -1      5  -4  0   0   0   0   0.5  0   0   #DSC_WIDTH (see Selex24.xls)
-15     15  0         0     -1      5  -4  0   0   0   0   0.5  0   0   #FINAL (see Selex24.xls)
-15     15  1         0     -1      5  -4  0   0   0   0   0.5  0   0   #APICAL SEL (see Selex24.xls)
#Size_selectivity for FISHERY SUMMER N
#FEMALE
#LO    HI  INIT    PRIOR   PR_TYPE SD  PHASE   env-var use_dev dev_yr1 dev_yr2 dev_sd  nblks
blk_pat #
15      75  53.8    43.1     -1      5   1  0   0   0   0   0.5  1   1   #PEAK (see Selex24.xls)
-5      3   3.0      0.7     -1      5  -3  0   0   0   0   0.5  0   0   #TOP (see Selex24.xls)
-4      12  5.3     3.42     -1      5   2  0   0   0   0   0.5  0   0   #ASC_WIDTH (see Selex24.xls)
-2      15  14.0    0.21     -1      5  -3  0   0   0   0   0.5  0   0   #DSC_WIDTH (see Selex24.xls)
-15     5   -999    -8.9     -1      5  -4  0   0   0   0   0.5  0   0   #INIT (see Selex24.xls)
-5      5   -999    0.15     -1      5  -4  0   0   0   0   0.5  0   0   #FINAL (see Selex24.xls)
#RETENTION
10      40  30.679   15     -1      9   1  0   0   0   0   0    3   1   # Retain_1 Inflection
0.1     10  1.1278   3      -1      9   2  0   0   0   0   0    3   1   # Retain_2 Slope
0.001   1   0.9999   1      -1      9   4  0   0   0   0   0    3   1   # Retain_3 Asymptote
-10     10  0        0      -1      9  -2  0   0   0   0   0    0   0   # Retain_4 Male offset (additive)
#...DO_MALE (AS OFFSET)
```

-20 15 -13.7 0 -1 -5 3 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-15 15 -1.9 0 -1 -5 4 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -4 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
-15 15 1 0 -1 5 -4 0 0 0 0 0.5 0 0 #APICAL SEL (see Selex24.xls)
#Size_selectivity for FISHERY WINTER S
#FEMALE
#LO HI INIT PRIOR PR_TYPE SD PHASE env-var use_dev dev_yr1 dev_yr2 dev_sd nblks blk_pat #
15 75 40.422 43.1 -1 5 1 0 0 0 0 0.5 1 1 #PEAK (see Selex24.xls)
-5 3 3.0 0.7 -1 5 -3 0 0 0 0 0.5 0 0 #TOP (see Selex24.xls)
-4 12 4.5999 3.42 -1 5 2 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-2 15 14.0 0.21 -1 5 -3 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 5 -999 -8.9 -1 5 -4 0 0 0 0 0.5 0 0 #INIT (see Selex24.xls)
-5 5 -999 0.15 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
#RETENTION
10 40 28.816 15 -1 9 1 0 0 0 0 0 2 1 # Retain_1 Inflection
0.1 10 1.1443 3 -1 9 2 0 0 0 0 0 2 1 # Retain_2 Slope
0.001 1 0.986 1 -1 9 4 0 0 0 0 0 2 1 # Retain_3 Asymptote
-10 10 0 0 -1 9 -2 0 0 0 0 0 0 0 # Retain_4 Male offset (additive)
#...DO_MALE (AS OFFSET)
-15 15 -14.995 0 -1 5 3 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-15 15 -2.4591 0 -1 5 4 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -4 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
-15 15 1 0 -1 5 -4 0 0 0 0 0.5 0 0 #APICAL SEL (see Selex24.xls)
#Size_selectivity for FISHERY SUMMER S
#FEMALE
#LO HI INIT PRIOR PR_TYPE SD PHASE env-var use_dev dev_yr1 dev_yr2 dev_sd nblks blk_pat #
15 75 43.0793 43.1 -1 5 1 0 0 0 0 0.5 1 1 #PEAK (see Selex24.xls)
-5 3 3.0 0.7 -1 5 -3 0 0 0 0 0.5 0 0 #TOP (see Selex24.xls)
-4 12 4.7717 3.42 -1 5 2 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-2 15 14.0 0.21 -1 5 -3 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 5 -999 -8.9 -1 5 -4 0 0 0 0 0.5 0 0 #INIT (see Selex24.xls)
-5 5 -999 0.15 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
#RETENTION
10 40 29.055 15 -1 9 1 0 0 0 0 0 3 1 # Retain_1 Inflection
0.1 10 0.976 3 -1 9 2 0 0 0 0 0 3 1 # Retain_2 Slope
0.001 1 0.9995 1 -1 9 4 0 0 0 0 0 3 1 # Retain_3 Asymptote
-10 10 0 0 -1 9 -2 0 0 0 0 0 0 0 # Retain_4 Male offset (additive)
#...DO_MALE (AS OFFSET)
-15 15 -11.004 0 -1 5 3 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-15 15 -1.4400 0 -1 5 4 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -4 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
-15 15 1 0 -1 5 -4 0 0 0 0 0.5 0 0 #APICAL SEL (see Selex24.xls)
#Size_selectivity for TRIENNIAL SURVEY early
#FEMALE
#LO HI INIT PRIOR PR_TYPE SD PHASE env-var use_dev dev_yr1 dev_yr2 dev_sd nblks blk_pat #

15 61 35.8319 43.1 -1 5 1 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-5 3 3.0 0.7 -1 5 -2 0 0 0 0 0.5 0 0 #TOP (see Selex24.xls)
-4 12 4.2596 3.42 -1 5 1 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-2 15 14.0 0.21 -1 5 -2 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 5 -999 -8.9 -1 5 -4 0 0 0 0 0.5 0 0 #INIT (see Selex24.xls)
-5 5 -999 0.15 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
#...DO_MALE (AS OFFSET)
-15 15 -3.7323 0 -1 5 2 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-15 15 -0.5322 0 -1 5 2 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -3 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -3 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
-15 15 1 0 -1 5 -4 0 0 0 0 0.5 0 0 #APICAL SEL (see Selex24.xls)
#Size_selectivity for TRIENNIAL SURVEY late
#FEMALE
#LO HI INIT PRIOR PR_TYPE SD PHASE env-var use_dev dev_yr1 dev_yr2 dev_sd nblks blk_pat #
15 61 36.9845 43.1 -1 5 1 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-5 3 3.0 0.7 -1 5 -2 0 0 0 0 0.5 0 0 #TOP (see Selex24.xls)
-4 12 4.6735 3.42 -1 5 1 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-2 15 14.0 0.21 -1 5 -2 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 5 -999 -8.9 -1 5 -4 0 0 0 0 0.5 0 0 #INIT (see Selex24.xls)
-5 5 -999 0.15 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
#...DO_MALE (AS OFFSET)
-15 15 -4.0542 0 -1 5 2 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-15 15 -0.1367 0 -1 5 2 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -3 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -3 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
-15 15 1 0 -1 5 -4 0 0 0 0 0.5 0 0 #APICAL SEL (see Selex24.xls)
#Size_selectivity for NWFSC SURVEY
#FEMALE
#LO HI INIT PRIOR PR_TYPE SD PHASE env-var use_dev dev_yr1 dev_yr2 dev_sd nblks blk_pat #
15 61 43.5877 43.1 -1 5 1 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-5 3 3.0 0.7 -1 5 -2 0 0 0 0 0.5 0 0 #TOP (see Selex24.xls)
-4 12 5.2029 3.42 -1 5 1 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-2 15 14.0 0.21 -1 5 -2 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 5 -999 -8.9 -1 5 -4 0 0 0 0 0.5 0 0 #INIT (see Selex24.xls)
-5 5 -999 0.15 -1 5 -4 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
#...DO_MALE (AS OFFSET)
-15 15 -5.8784 0 -1 5 2 0 0 0 0 0.5 0 0 #PEAK (see Selex24.xls)
-15 15 -0.4792 0 -1 5 2 0 0 0 0 0.5 0 0 #ASC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -3 0 0 0 0 0.5 0 0 #DSC_WIDTH (see Selex24.xls)
-15 15 0 0 -1 5 -3 0 0 0 0 0.5 0 0 #FINAL (see Selex24.xls)
-15 15 1 0 -1 5 -4 0 0 0 0 0.5 0 0 #APICAL SEL (see Selex24.xls)

1 #_custom block setup (0/1)
-3 2 0 0 -1 99 4 # SizeSel_1P_1_WinterN_BLK1add_1973
-3 2 0 0 -1 99 4 # SizeSel_1P_1_WinterN_BLK1add_1983
-3 2 0 0 -1 99 4 # SizeSel_1P_1_WinterN_BLK1add_1993
-3 2 0 0 -1 99 4 # SizeSel_1P_1_WinterN_BLK1add_2003
-3 2 0 0 -1 99 4 # SizeSel_1P_1_WinterN_BLK1add_2011

-3 2 0 0 -1 99 4 # Retain_1P_1_WinterN_BLK2add_2003
-3 2 0 0 -1 99 4 # Retain_1P_1_WinterN_BLK2add_2010
-3 2 0 0 -1 99 4 # Retain_1P_1_WinterN_BLK2add_2011
-3 2 0 0 -1 99 4 # Retain_1P_2_WinterN_BLK2add_2003
-3 2 0 0 -1 99 4 # Retain_1P_2_WinterN_BLK2add_2010
-3 2 0 0 -1 99 4 # Retain_1P_2_WinterN_BLK2add_2011
-3 2 0 0 -1 99 4 # Retain_1P_3_WinterN_BLK2add_2003
-3 2 0 0 -1 99 4 # Retain_1P_3_WinterN_BLK2add_2010
-3 2 0 0 -1 99 4 # Retain_1P_3_WinterN_BLK2add_2011
-3 2 0 0 -1 99 4 # SizeSel_2P_1_SummerN_BLK1add_1973
-3 2 0 0 -1 99 4 # SizeSel_2P_1_SummerN_BLK1add_1983
-3 2 0 0 -1 99 4 # SizeSel_2P_1_SummerN_BLK1add_1993
-3 2 0 0 -1 99 4 # SizeSel_2P_1_SummerN_BLK1add_2003
-3 2 0 0 -1 99 4 # SizeSel_2P_1_SummerN_BLK1add_2011
-3 2 0 0 -1 99 4 # Retain_2P_1_SummerN_BLK3add_2003
-3 2 0 0 -1 99 4 # Retain_2P_1_SummerN_BLK3add_2009
-3 2 0 0 -1 99 4 # Retain_2P_1_SummerN_BLK3add_2011
-3 2 0 0 -1 99 4 # Retain_2P_2_SummerN_BLK3add_2003
-3 2 0 0 -1 99 4 # Retain_2P_2_SummerN_BLK3add_2009
-3 2 0 0 -1 99 4 # Retain_2P_2_SummerN_BLK3add_2011
-3 2 0 0 -1 99 4 # Retain_2P_3_SummerN_BLK3add_2003
-3 2 0 0 -1 99 4 # Retain_2P_3_SummerN_BLK3add_2009
-3 2 0 0 -1 99 4 # Retain_2P_3_SummerN_BLK3add_2011
-3 2 0 0 -1 99 4 # SizeSel_3P_1_WinterCA_BLK1add_1973
-3 2 0 0 -1 99 4 # SizeSel_3P_1_WinterCA_BLK1add_1983
-3 2 0 0 -1 99 4 # SizeSel_3P_1_WinterCA_BLK1add_1993
-3 2 0 0 -1 99 4 # SizeSel_3P_1_WinterCA_BLK1add_2003
-3 2 0 0 -1 99 4 # SizeSel_3P_1_WinterCA_BLK1add_2011
-3 2 0 0 -1 99 4 # Retain_3P_1_WinterCA_BLK2add_2003
-3 2 0 0 -1 99 4 # Retain_3P_1_WinterCA_BLK2add_2010
-3 2 0 0 -1 99 4 # Retain_3P_1_WinterCA_BLK2add_2011
-3 2 0 0 -1 99 4 # Retain_3P_2_WinterCA_BLK2add_2003
-3 2 0 0 -1 99 4 # Retain_3P_2_WinterCA_BLK2add_2010
-3 2 0 0 -1 99 4 # Retain_3P_2_WinterCA_BLK2add_2011
-3 4 0 0 -1 99 4 # Retain_3P_3_WinterCA_BLK2add_2003
-3 2 0 0 -1 99 4 # Retain_3P_3_WinterCA_BLK2add_2010
-3 2 0 0 -1 99 4 # Retain_3P_3_WinterCA_BLK2add_2011
-3 2 0 0 -1 99 4 # SizeSel_4P_1_SummerCA_BLK1add_1973
-3 2 0 0 -1 99 4 # SizeSel_4P_1_SummerCA_BLK1add_1983
-3 2 0 0 -1 99 4 # SizeSel_4P_1_SummerCA_BLK1add_1993
-3 2 0 0 -1 99 4 # SizeSel_4P_1_SummerCA_BLK1add_2003
-3 2 0 0 -1 99 4 # SizeSel_4P_1_SummerCA_BLK1add_2011
-3 2 0 0 -1 99 4 # Retain_4P_1_SummerCA_BLK3add_2003
-3 2 0 0 -1 99 4 # Retain_4P_1_SummerCA_BLK3add_2009
-3 2 0 0 -1 99 4 # Retain_4P_1_SummerCA_BLK3add_2011
-3 2 0 0 -1 99 4 # Retain_4P_2_SummerCA_BLK3add_2003
-3 2 0 0 -1 99 4 # Retain_4P_2_SummerCA_BLK3add_2009
-3 2 0 0 -1 99 4 # Retain_4P_2_SummerCA_BLK3add_2011
-3 2 0 0 -1 99 4 # Retain_4P_3_SummerCA_BLK3add_2003
-3 2 0 0 -1 99 4 # Retain_4P_3_SummerCA_BLK3add_2009
-3 2 0 0 -1 99 4 # Retain_4P_3_SummerCA_BLK3add_2011

2   #logistic bounding

Tag loss and Tag reporting parameters go next
0 # TG_custom: 0=no read; 1=read if tags exist
#_Cond -6 6 1 1 2 0.01 -4 0 0 0 0 0 0 0 #_placeholder if no parameters

1 #_Variance_adjustments_to_input_values
0   0   0   0   0   0   0   #_add_to_survey_CV
0.02 0.02 0.02 0.02 0   0   0   #_add_to_discard_stddev
0   0   0   0   0   0   0   #_add_to_bodywt_CV
2.38 1.89 1.25 1.34 1.59 1.19 0.59   #_mult_by_lencomp_N
6.26 2.21 1.83 1.60 1   1   0.22 #_mult_by_agecomp_N
1   1   1   1   1   1   1   #_mult_by_size-at-age_N

15 #_maxlambdaphase
1 #_sd_offset

10 # number of changes to make to default Lambdas (default value is 1.0)
Like_comp codes: 1=surv; 2=disc; 3=mnwt; 4=length; 5=age; 6=SizeFreq; 7=sizeage; 8=catch;
9=init_equ_catch; 10=recrdev; 11=parm_prior; 12=parm_dev; 13=CrashPen; 14=Morphcomp; 15=Tag-comp; 16=Tag-negbin
#like_comp fleet/survey phase value sizefreq_method
1 1 1 1.0 1 #Winter N CPUE
1 3 1 1.0 1 #Winter S CPUE
5 1 1 0.5 1 #commercial age comps
5 2 1 0.5 1 #commercial age comps
5 3 1 0.5 1 #commercial age comps
5 4 1 0.5 1 #commercial age comps
4 1 1 0.5 1 #commercial lgth comps
4 2 1 0.5 1 #commercial lgth comps
4 3 1 0.5 1 #commercial lgth comps
4 4 1 0.5 1 #commercial lgth comps

0 # (0/1) read specs for more stddev reporting
1 1 -1 5 1 5 # selex type, len/age, year, N selex bins, Growth pattern, N growth ages
-5 16 27 38 46 # vector with selex std bin picks (-1 in first bin to self-generate)
1 2 14 26 40 # vector with growth std bin picks (-1 in first bin to self-generate)

999

Appendix C. SS starter file

#V3.24U
#C 2015 Assessent of Petrale (Fish600 people)
petrale15.dat
petrale15.ctl
0 # 0=use init values in control file; 1=use ss3.par
1 # run display detail (0,1,2)
1 # detailed age-structured reports in REPORT.SSO (0,1)

0 # write detailed info from first call to echoinput.sso (0,1)
0 # write parm values to ParmTrace.sso (0=no,1=good,active; 2=good,all; 3=every_iter,all_parms; 4=every,active)
1 # write to cumreport.sso (0=no,1=like&timeseries; 2=add survey fits)
0 # Include prior_like for non-estimated parameters (0,1)
1 # Use Soft Boundaries to aid convergence (0,1) (recommended)
1 # Number of datafiles to produce: 1st is input, 2nd is estimates, 3rd and higher are bootstrap
10 # Turn off estimation for parameters entering after this phase
10 # MCeval burn interval
2 # MCeval thin interval
0 # jitter initial parm value by this fraction
1874 # min yr for sdreport outputs (-1 for styr)
2026 # max yr for sdreport outputs (-1 for endyr; -2 for endyr+Nforecastyrs
0 # N individual STD years
#vector of year values

0.001 # final convergence criteria (e.g. 1.0e-04)
0 # retrospective year relative to end year (e.g. -4)
3 # min age for calc of summary biomass
1 # Depletion basis: denom is: 0=skip; 1=rel X*B0; 2=rel X*Bmsy; 3=rel X*B_styr
1 # Fraction (X) for Depletion denominator (e.g. 0.4)
4 # SPR_report_basis: 0=skip; 1=(1-SPR)/(1-SPR_tgt); 2=(1-SPR)/(1-SPR_MSY); 3=(1-SPR)/(1-SPR_Btarget); 4=rawSPR
1 # F_report_units: 0=skip; 1=exploitation(Bio); 2=exploitation(Num); 3=sum(Frates); 4=true F for range of ages
#COND 10 15 #_min and max age over which average F will be calculated with F_reporting=4
0 # F_report_basis: 0=raw; 1=F/Fspr; 2=F/Fmsy ; 3=F/Fbtgt
999 # check value for end of file

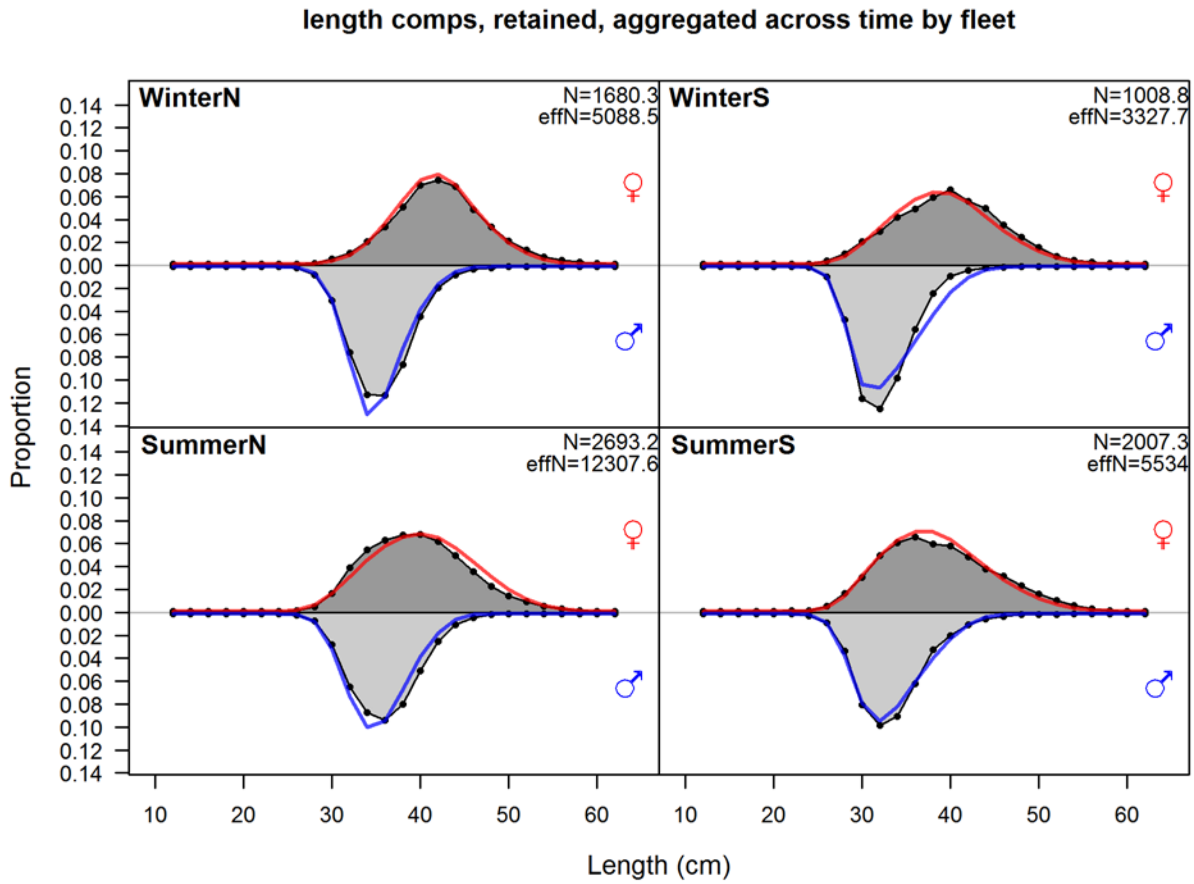
Appendix D. SS forecast file

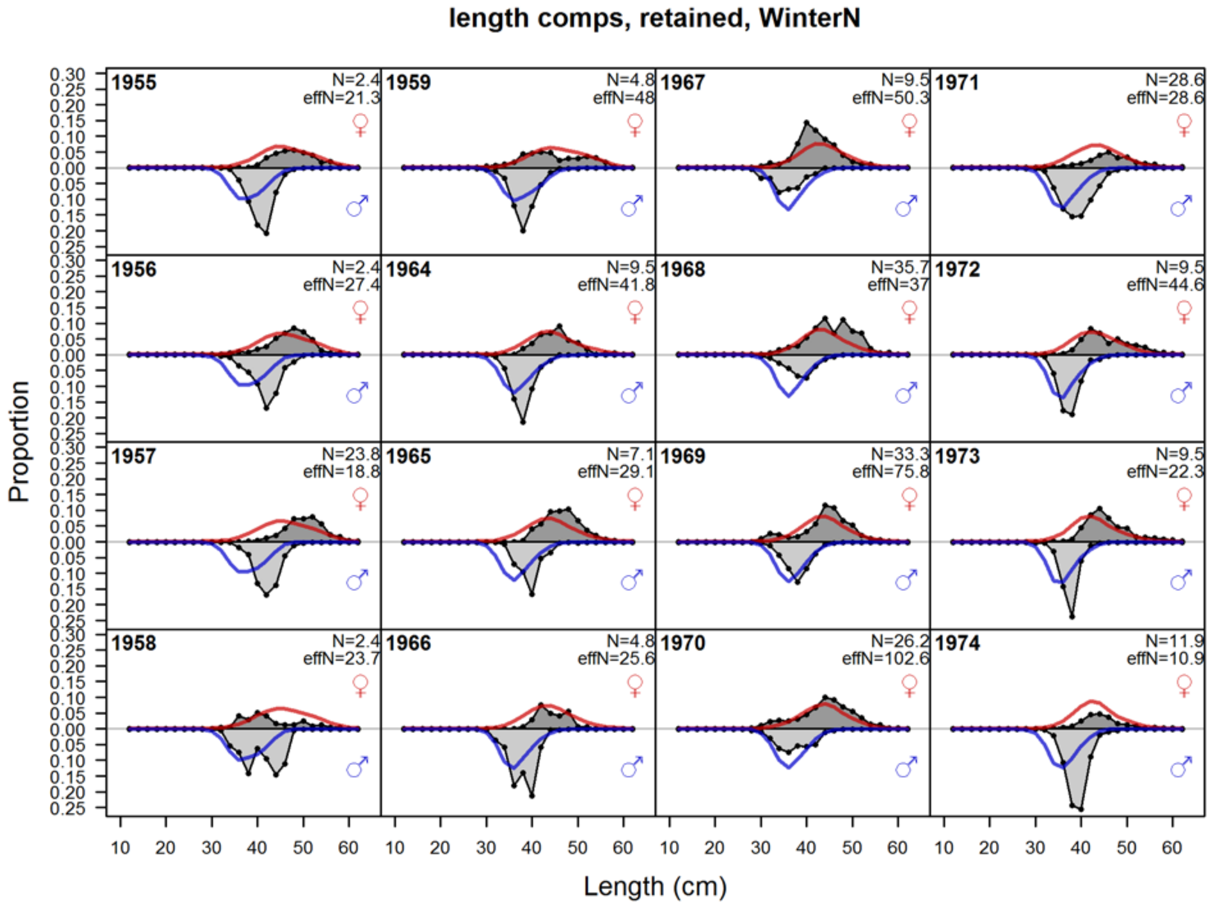
```
#V3.24U
#C
# for all year entries except rebuilder; enter either: actual year, -999 for styr, 0 for endyr, neg number for rel. endyr
1 # Benchmarks: 0=skip; 1=calc F_spr,F_btgt,F_msy
2 # MSY: 1= set to F(SPR); 2=calc F(MSY); 3=set to F(Btgt); 4=set to F(endyr)
0.3 # SPR target (e.g. 0.40)
0.25 # Biomass target (e.g. 0.40)
#_Bmark_years: beg_bio, end_bio, beg_selex, end_selex, beg_relF, end_relF (enter actual year, or values of 0 or -integer to be rel. endyr)
 0 0 0 0 0 0
#  2014 2014 2014 2014 2014 2014 # after processing
2 #Bmark_relF_Basis: 1 = use year range; 2 = set relF same as forecast below
#
1 # Forecast: 0=none; 1=F(SPR); 2=F(MSY) 3=F(Btgt); 4=Ave F (uses first-last relF yrs); 5=input annual F scalar
12 # N forecast years
1 # F scalar (only used for Do_Forecast==5)
#_Fcast_years:  beg_selex, end_selex, beg_relF, end_relF  (enter actual year, or values of 0 or -integer to be rel. endyr)
 0 0 -10 0
#  2014 2014 2004 2014 # after processing
1 # Control rule method (1=catch=f(SSB) west coast; 2=F=f(SSB) )
0.25 # Control rule Biomass level for constant F (as frac of Bzero, e.g. 0.40); (Must be > the no F level below)
0.05 # Control rule Biomass level for no F (as frac of Bzero, e.g. 0.10)
0.956 # Control rule target as fraction of Flimit (e.g. 0.75)
3 #_N forecast loops (1=OFL only; 2=ABC; 3=get F from forecast ABC catch with allocations applied)
3 #_First forecast loop with stochastic recruitment
0 #_Forecast loop control #3 (reserved for future bells&whistles)
0 #_Forecast loop control #4 (reserved for future bells&whistles)
0 #_Forecast loop control #5 (reserved for future bells&whistles)
2015  #FirstYear for caps and allocations (should be after years with fixed inputs)
0 # stddev of log(realized catch/target catch) in forecast (set value>0.0 to cause active impl_error)
1 # Do West Coast gfish rebuilder output (0/1)
2013 # Rebuilder:  first year catch could have been set to zero (Ydecl)(-1 to set to 1999)
2015 # Rebuilder:  year for current age structure (Yinit) (-1 to set to endyear+1)
1 # fleet relative F:  1=use first-last alloc year; 2=read seas(row) x fleet(col) below
# Note that fleet allocation is used directly as average F if Do_Forecast=4
2 # basis for fcast catch tuning and for fcast catch caps and allocation  (2=deadbio; 3=retainbio; 5=deadnum; 6=retainnum)
# Conditional input if relative F choice = 2
# Fleet relative F:  rows are seasons, columns are fleets
#_Fleet:  WinterN SummerN WinterS SummerS
#  0.424101 0.335624 0.111156 0.129119
# max totalcatch by fleet (-1 to have no max) must enter value for each fleet
 -1 -1 -1 -1
# max totalcatch by area (-1 to have no max); must enter value for each fleet
```

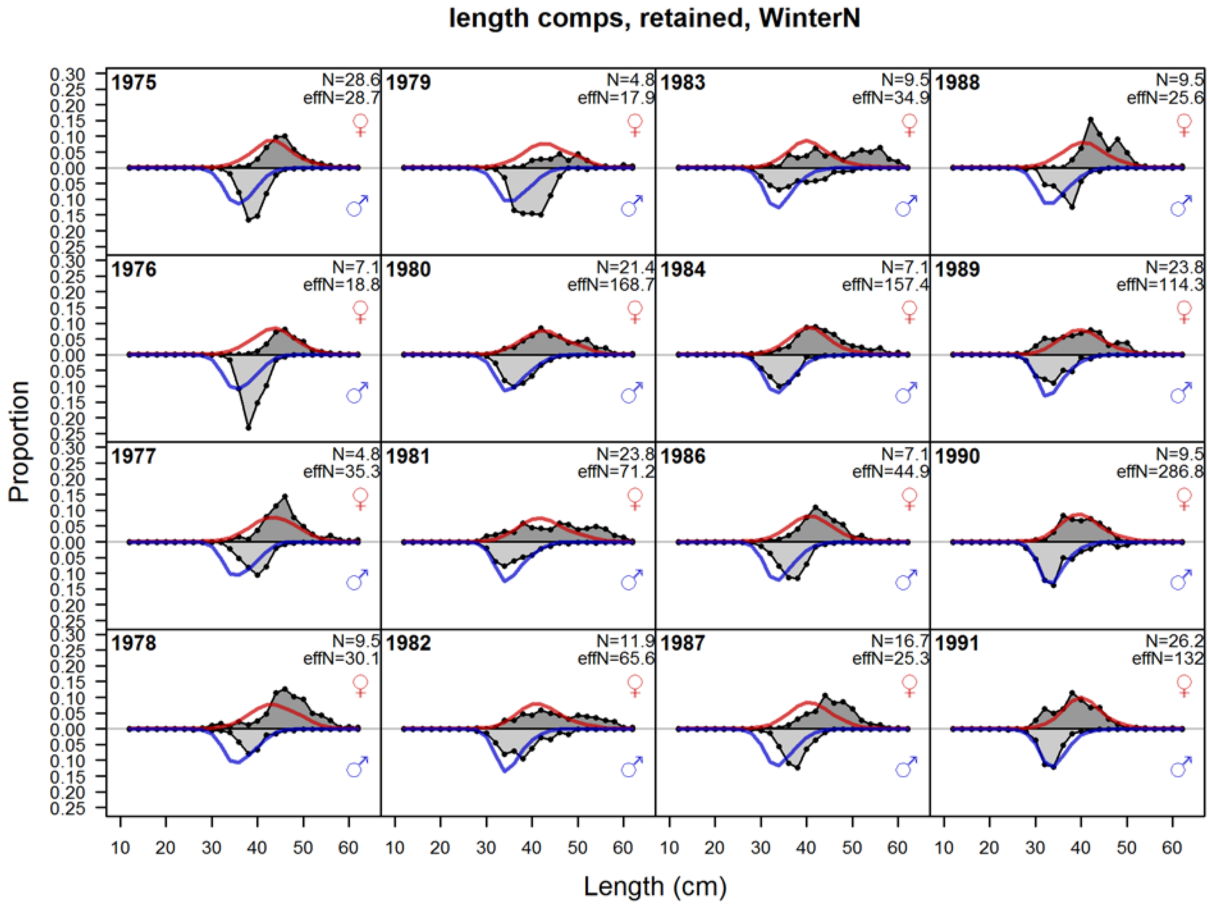
```
 -1
# fleet assignment to allocation group (enter group ID# for each fleet, 0 for not included in an alloc group)
 0 0 0 0
#_Conditional on >1 allocation group
# allocation fraction for each of: 0 allocation groups
# no allocation groups
8 # Number of forecast catch levels to input (else calc catch from forecast F)
-1 # code means to read fleet/time specific basis (2=dead catch; 3=retained catch; 99=F)  as below (units are from fleetunits; note new codes in SSV3.20)
# Input fixed catch values
#Year Seas Fleet Catch(or_F) Basis
 2015 1 1 899.12 2
 2015 1 2 1232.92 2
 2015 1 3 266.38 2
 2015 1 4 417.58 2
 2016 1 1 929.13 2
 2016 1 2 1274.07 2
 2016 1 3 275.27 2
 2016 1 4 431.52 2
#
999 # verify end of input
```

Appendix E. Fishery age and length composition fits

Appendix E.1. Fishery length composition fits

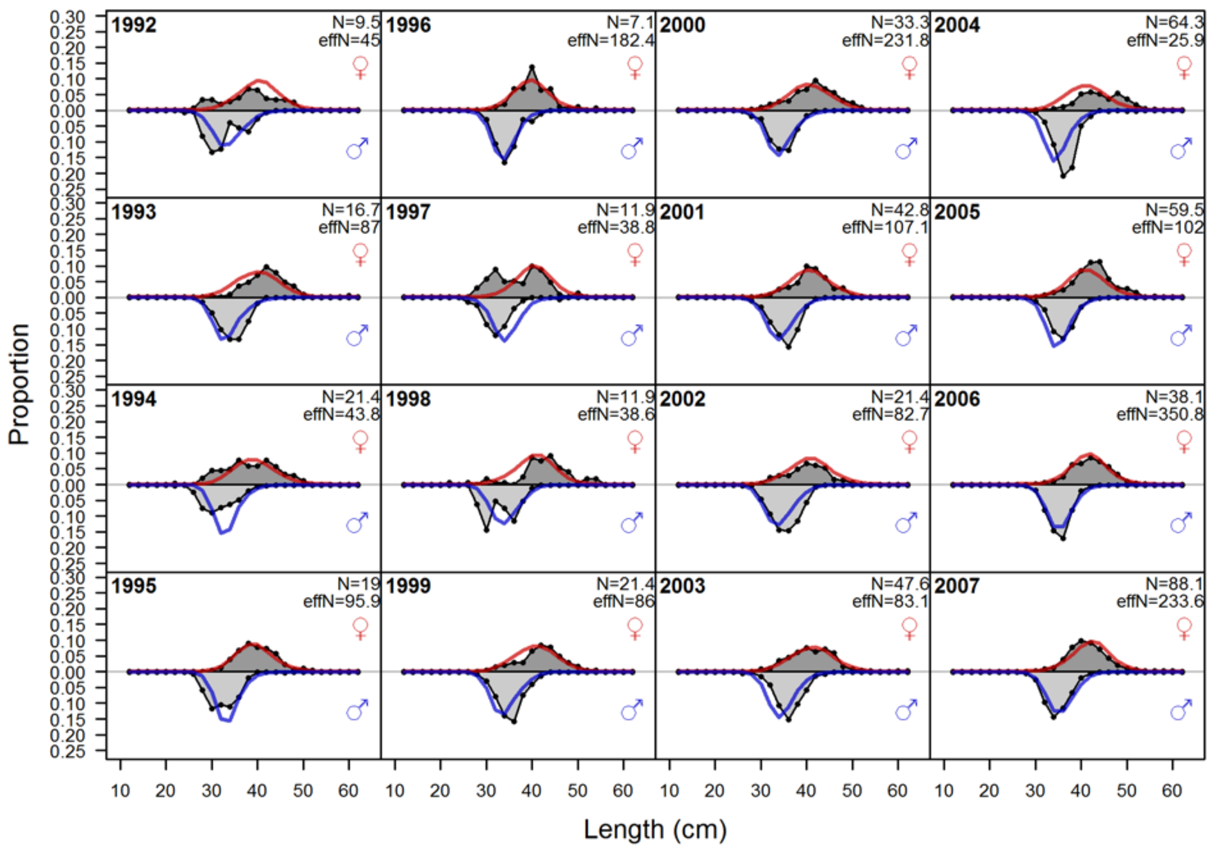


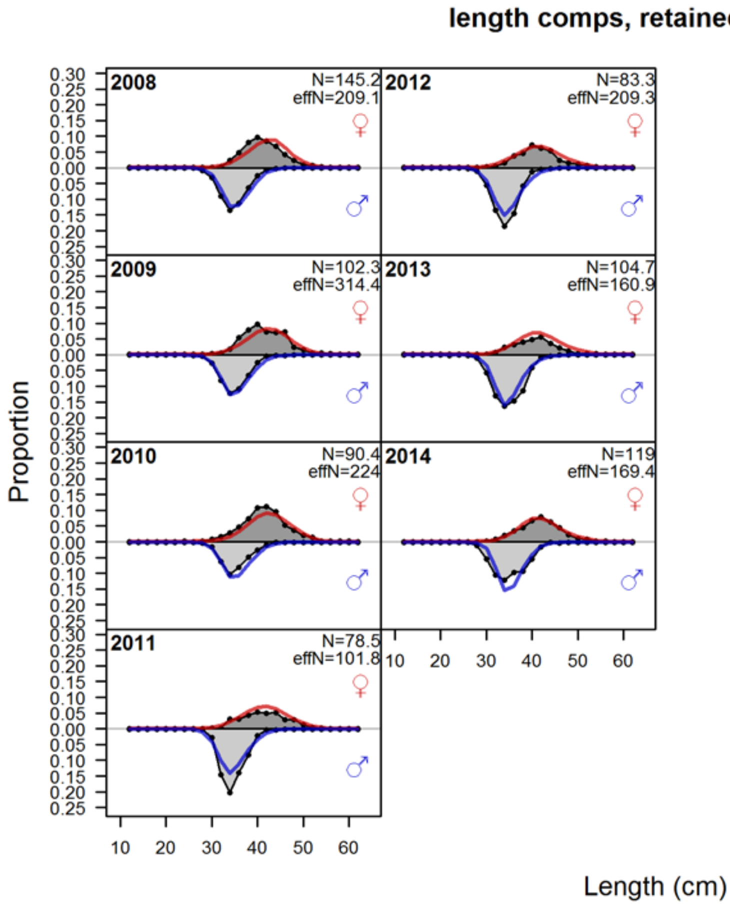

length comps, retained, WinterN
1955
N=2.4
effN=21.3
1959
N=4.8
effN=48
1967
N=9.5
effN=50.3
1971
N=28.6
effN=28.6
1956
N=2.4
effN=27.4
1964
N=9.5
effN=41.8
1968
N=35.7
effN=37
1972
N=9.5
effN=44.6
1957
N=23.8
effN=18.8
1965
N=7.1
effN=29.1
1969
N=33.3
effN=75.8
1973
N=9.5
effN=22.3
1958
N=2.4
effN=23.7
1966
N=4.8
effN=25.6
1970
N=26.2
effN=102.6
1974
N=11.9
effN=10.9
Proportion
Length (cm)

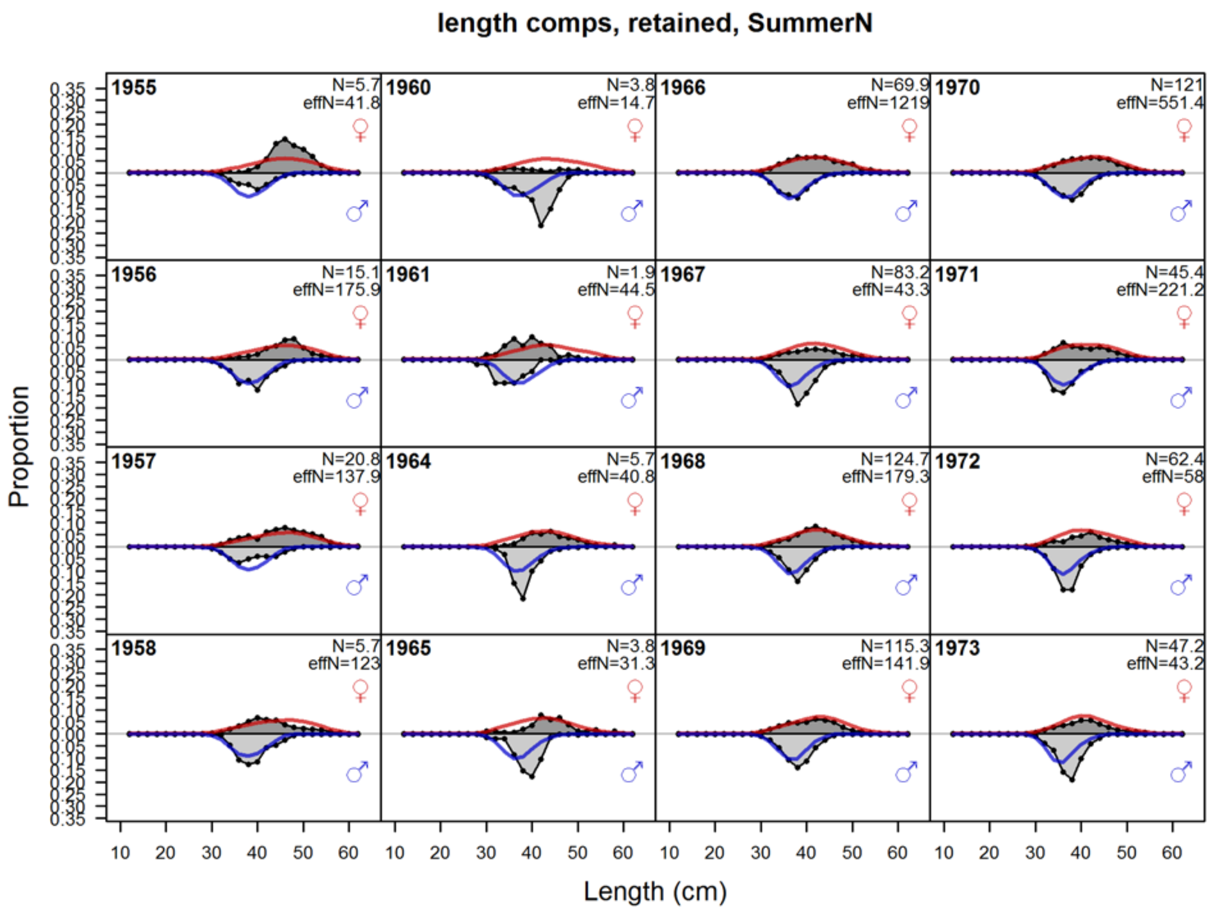


length comps, retained, WinterN
1975
N=28.6
effN=28.7
1979
N=4.8
effN=17.9
1983
N=9.5
effN=34.9
1988
N=9.5
effN=25.6
1976
N=7.1
effN=18.8
1980
N=21.4
effN=168.7
1984
N=7.1
effN=157.4
1989
N=23.8
effN=114.3
1977
N=4.8
effN=35.3
1981
N=23.8
effN=71.2
1986
N=7.1
effN=44.9
1990
N=9.5
effN=286.8
1978
N=9.5
effN=30.1
1982
N=11.9
effN=65.6
1987
N=16.7
effN=25.3
1991
N=26.2
effN=132
Proportion
Length (cm)

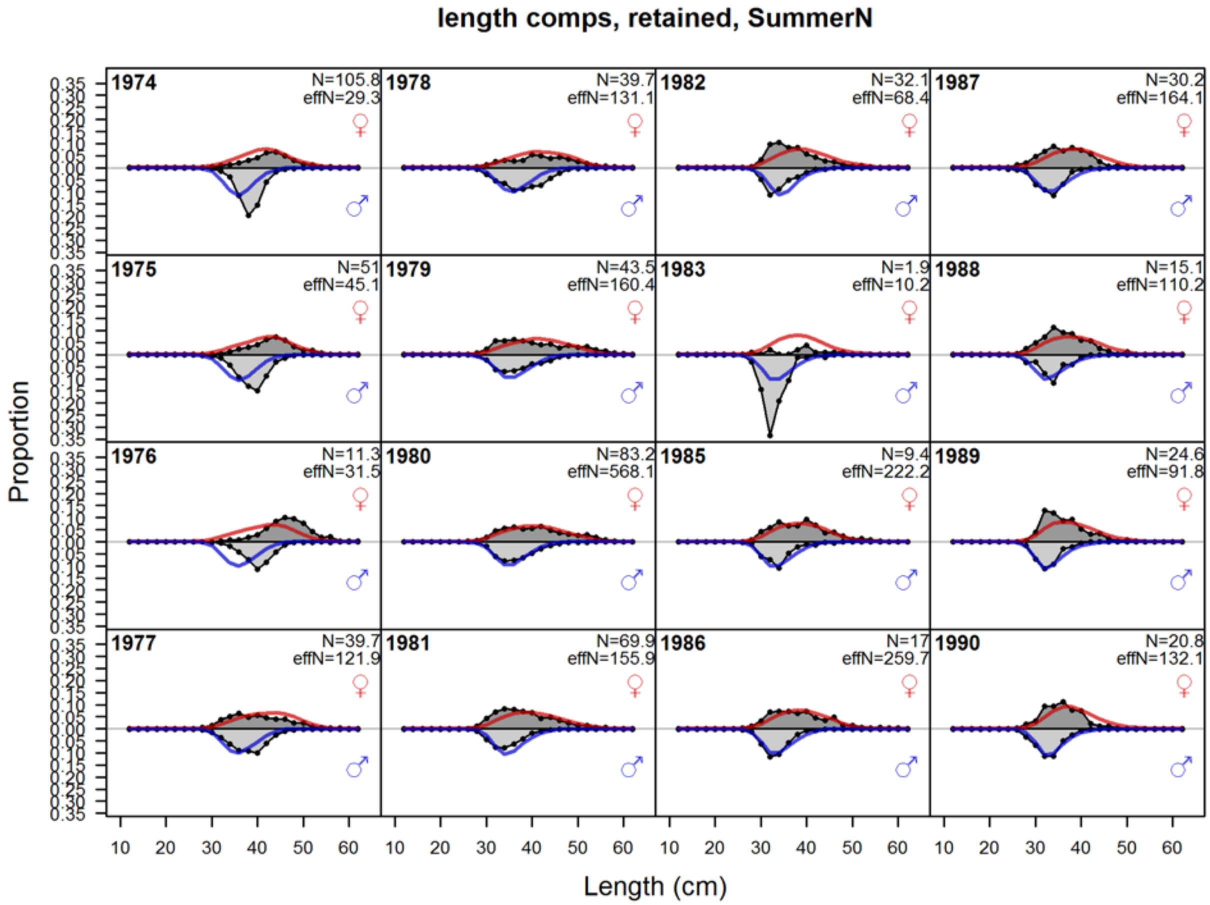
length comps, retained, WinterN



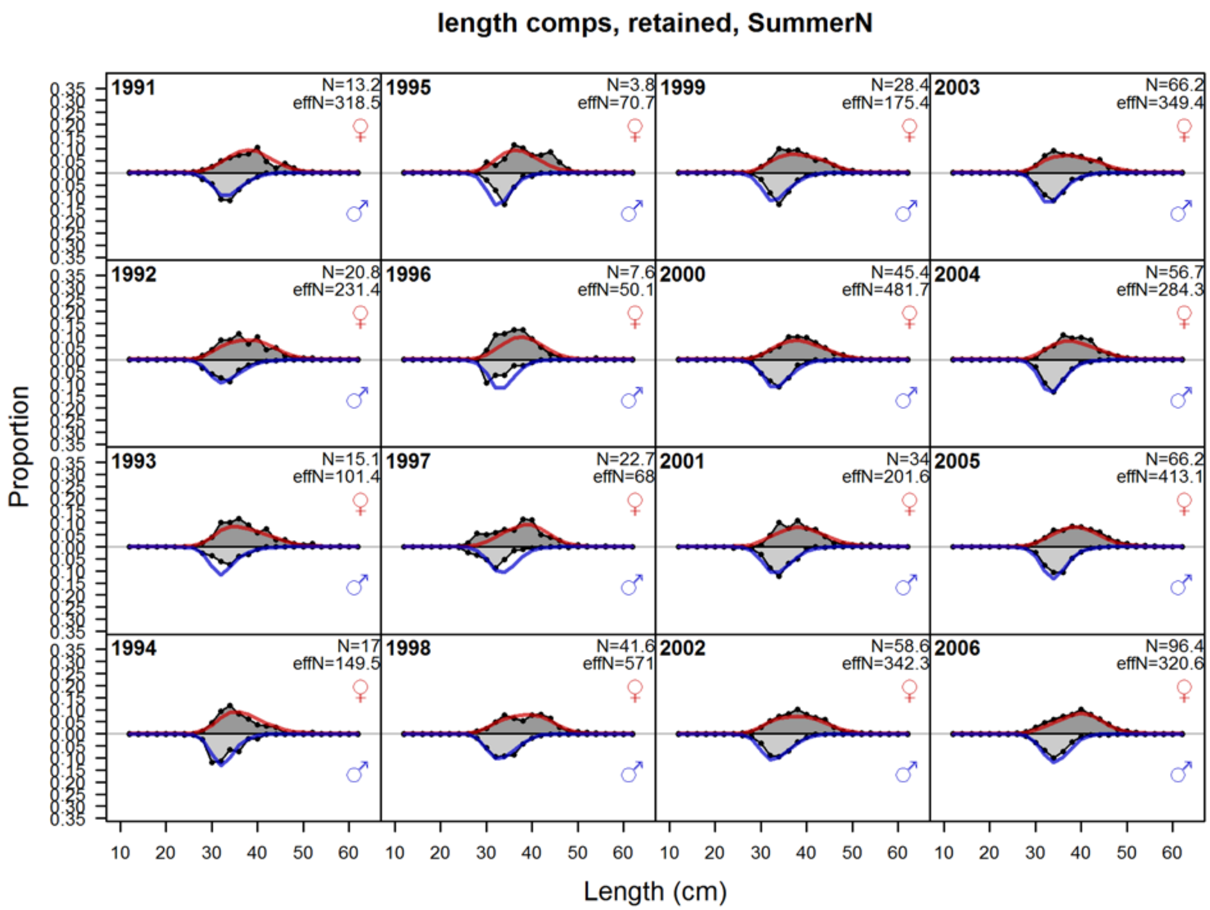

length comps, retained, WinterN
Proportion
Length (cm)
2008
N=145.2
effN=209.1
2012
N=83.3
effN=209.3
2009
N=102.3
effN=314.4
2013
N=104.7
effN=160.9
2010
N=90.4
effN=224
2014
N=119
effN=169.4
2011
N=78.5
effN=101.8



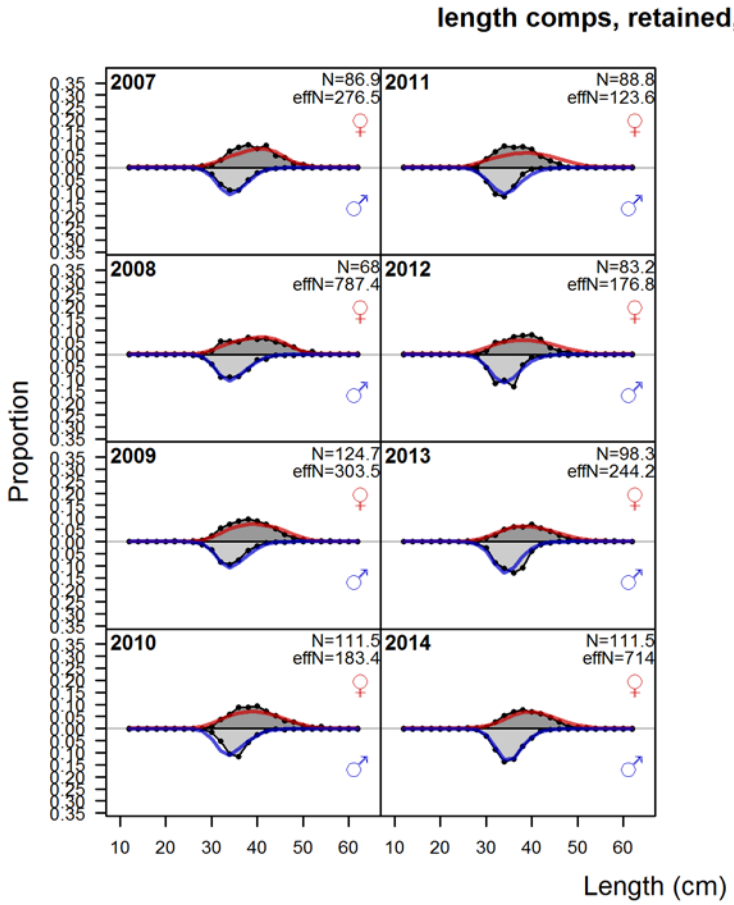
length comps, retained, SummerN
1955
N=5.7
effN=41.8
1960
N=3.8
effN=14.7
1966
N=69.9
effN=1219
1970
N=121
effN=551.4
1956
N=15.1
effN=175.9
1961
N=1.9
effN=44.5
1967
N=83.2
effN=43.3
1971
N=45.4
effN=221.2
1957
N=20.8
effN=137.9
1964
N=5.7
effN=40.8
1968
N=124.7
effN=179.3
1972
N=62.4
effN=58
1958
N=5.7
effN=123
1965
N=3.8
effN=31.3
1969
N=115.3
effN=141.9
1973
N=47.2
effN=43.2
Proportion
Length (cm)



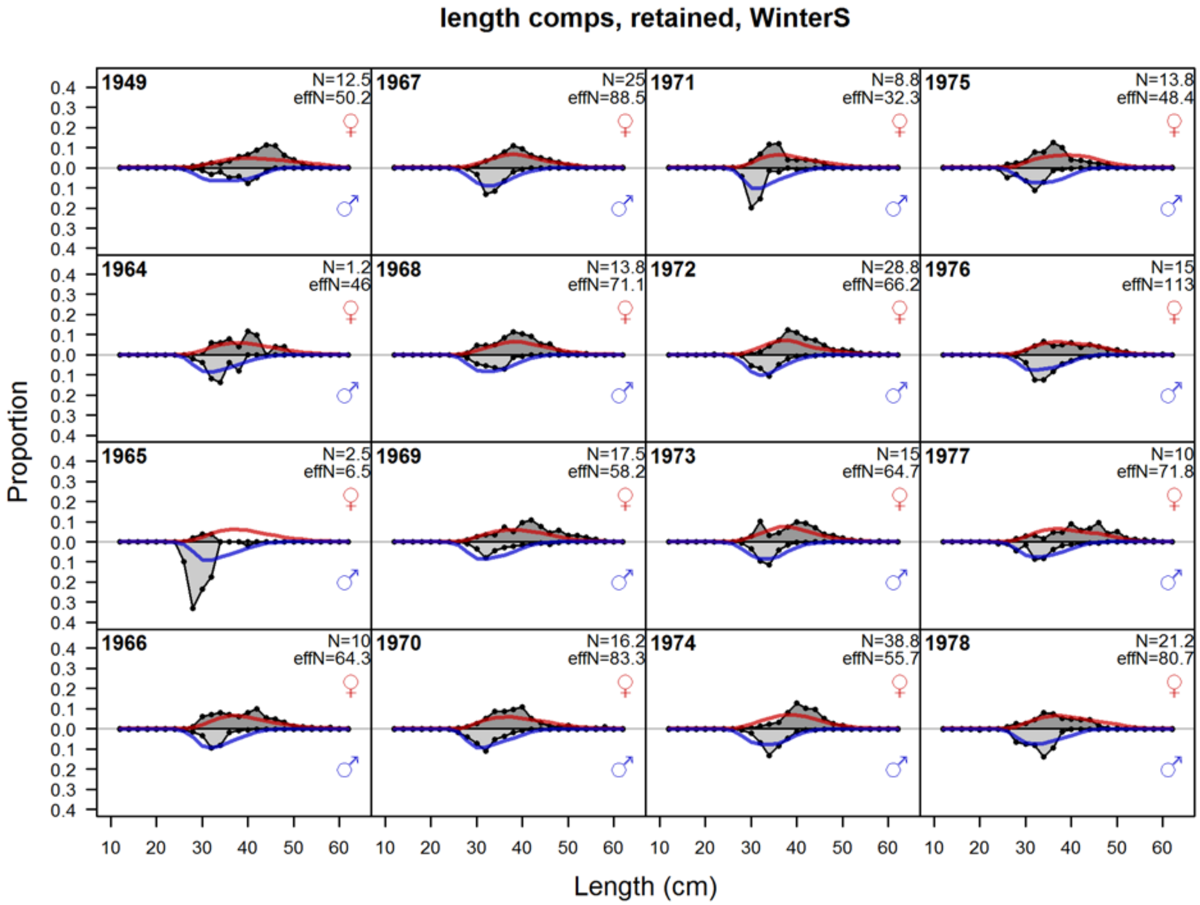
length comps, retained, SummerN
1974
N=105.8
effN=29.3
1978
N=39.7
effN=131.1
1982
N=32.1
effN=68.4
1987
N=30.2
effN=164.1
1975
N=51
effN=45.1
1979
N=43.5
effN=160.4
1983
N=1.9
effN=10.2
1988
N=15.1
effN=110.2
1976
N=11.3
effN=31.5
1980
N=83.2
effN=568.1
1985
N=9.4
effN=222.2
1989
N=24.6
effN=91.8
1977
N=39.7
effN=121.9
1981
N=69.9
effN=155.9
1986
N=17
effN=259.7
1990
N=20.8
effN=132.1
Proportion
Length (cm)



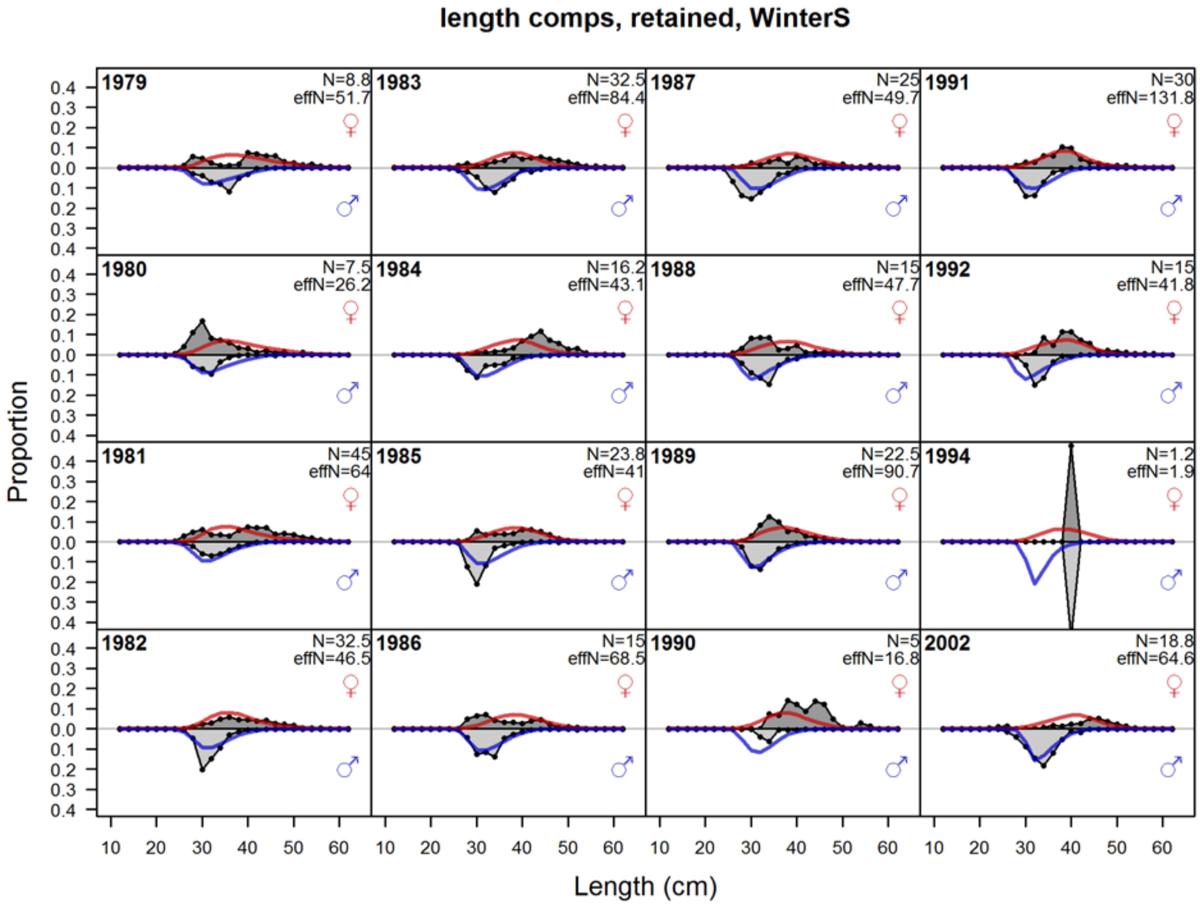
length comps, retained, SummerN
1991
N=13.2
effN=318.5
1995
N=3.8
effN=70.7
1999
N=28.4
effN=175.4
2003
N=66.2
effN=349.4
1992
N=20.8
effN=231.4
1996
N=7.6
effN=50.1
2000
N=45.4
effN=481.7
2004
N=56.7
effN=284.3
1993
N=15.1
effN=101.4
1997
N=22.7
effN=68
2001
N=34
effN=201.6
2005
N=66.2
effN=413.1
1994
N=17
effN=149.5
1998
N=41.6
effN=571
2002
N=58.6
effN=342.3
2006
N=96.4
effN=320.6
Proportion
Length (cm)



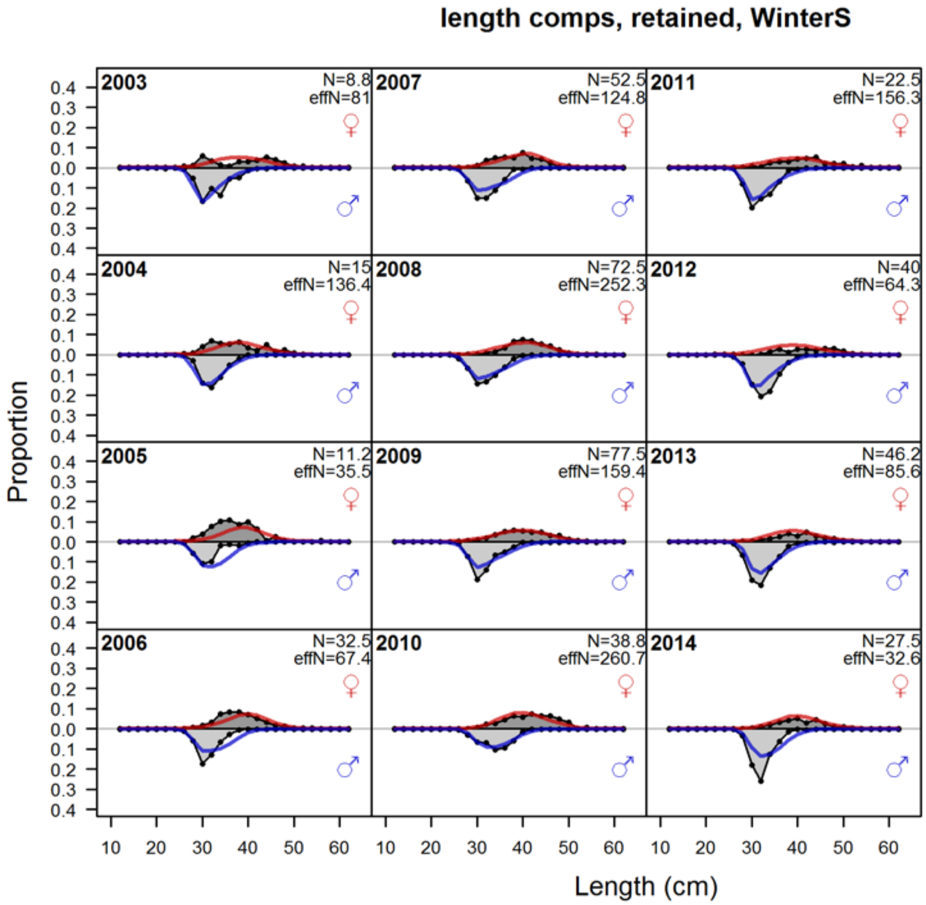
length comps, retained, SummerN
2007
N=86.9
effN=276.5
2011
N=88.8
effN=123.6
2008
N=68
effN=787.4
2012
N=83.2
effN=176.8
2009
N=124.7
effN=303.5
2013
N=98.3
effN=244.2
2010
N=111.5
effN=183.4
2014
N=111.5
effN=714
Proportion
Length (cm)

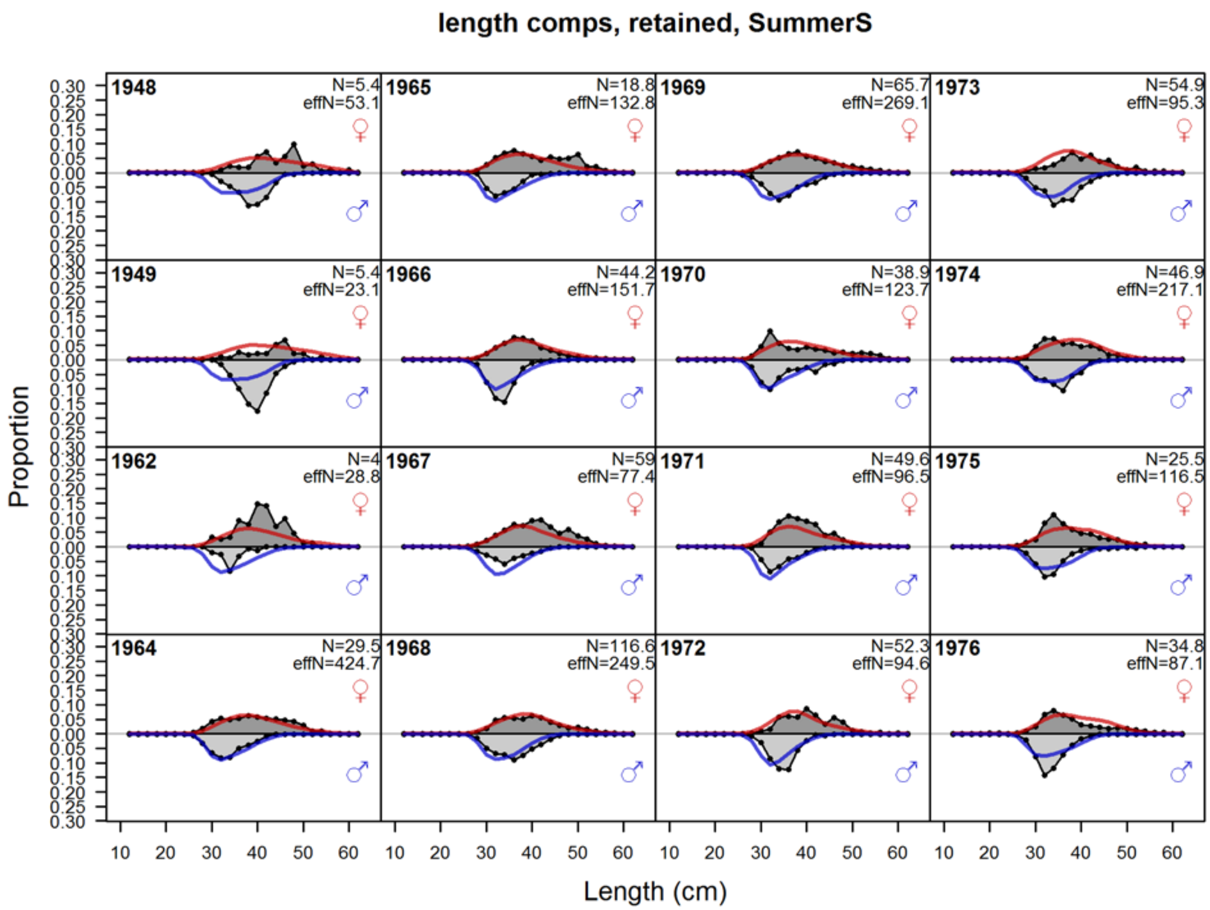


length comps, retained, WinterS
Proportion
Length (cm)
1949
N=12.5
effN=50.2
1967
N=25
effN=88.5
1971
N=8.8
effN=32.3
1975
N=13.8
effN=48.4
1964
N=1.2
effN=46
1968
N=13.8
effN=71.1
1972
N=28.8
effN=66.2
1976
N=15
effN=113
1965
N=2.5
effN=6.5
1969
N=17.5
effN=58.2
1973
N=15
effN=64.7
1977
N=10
effN=71.8
1966
N=10
effN=64.3
1970
N=16.2
effN=83.3
1974
N=38.8
effN=55.7
1978
N=21.2
effN=80.7

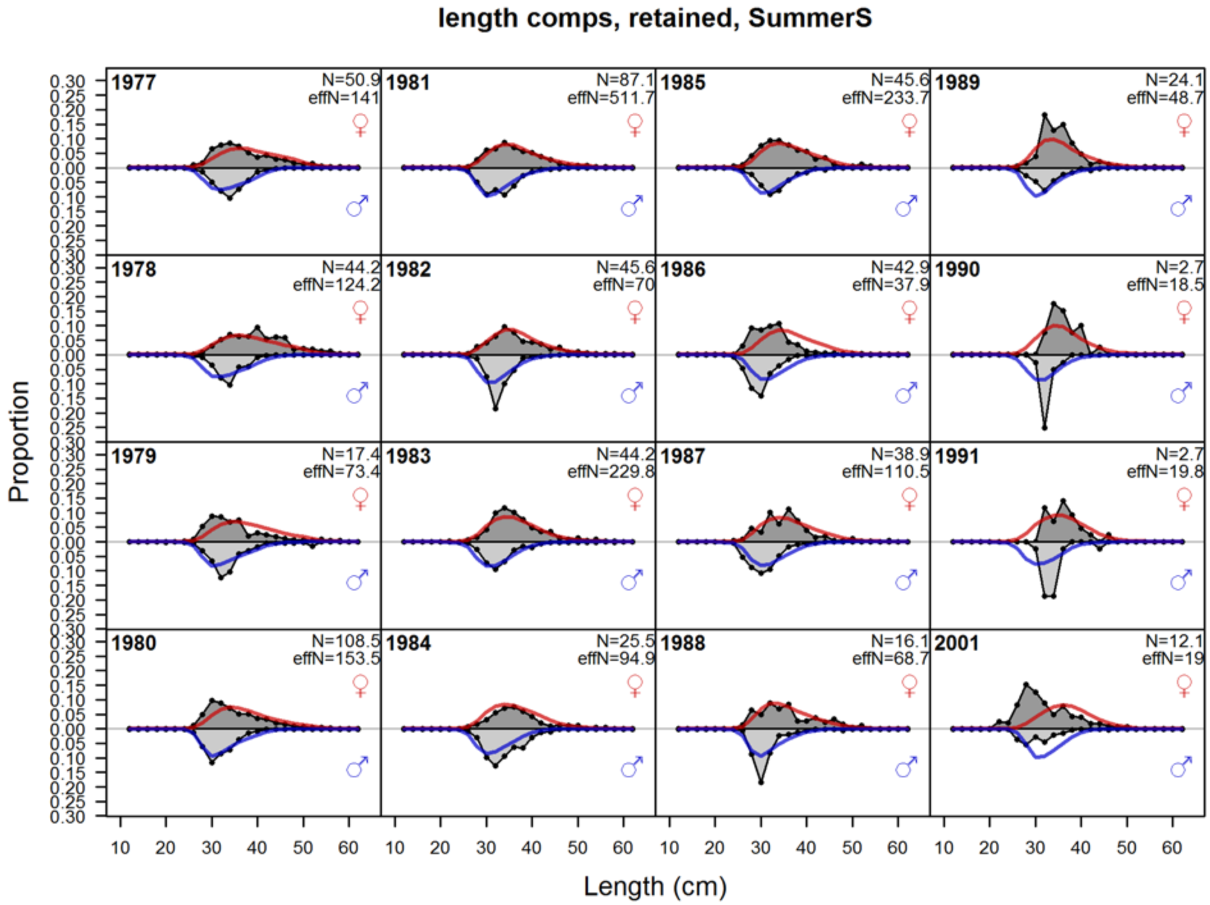


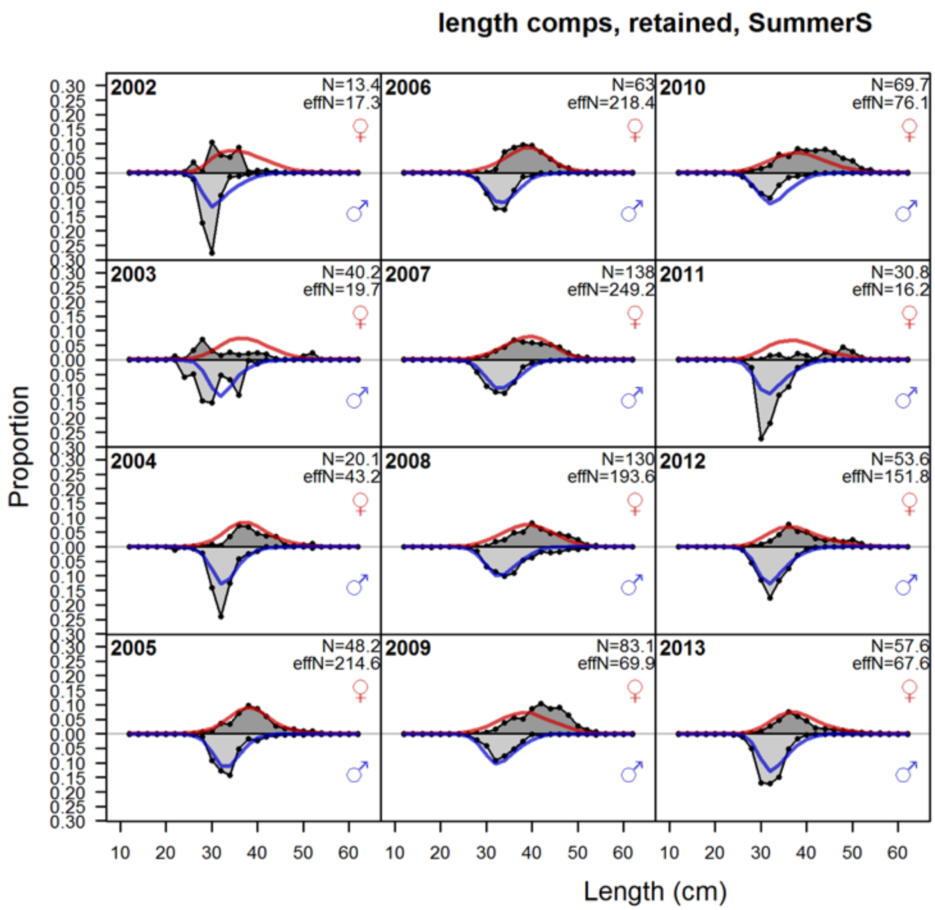
length comps, retained, WinterS
1979 N=8.8 effN=51.7
1983 N=32.5 effN=84.4
1987 N=25 effN=49.7
1991 N=30 effN=131.8
1980 N=7.5 effN=26.2
1984 N=16.2 effN=43.1
1988 N=15 effN=47.7
1992 N=15 effN=41.8
1981 N=45 effN=64
1985 N=23.8 effN=41
1989 N=22.5 effN=90.7
1994 N=1.2 effN=1.9
1982 N=32.5 effN=46.5
1986 N=15 effN=68.5
1990 N=5 effN=16.8
2002 N=18.8 effN=64.6
Proportion
Length (cm)


length comps, retained, WinterS
2003
N=8.8
effN=81
2007
N=52.5
effN=124.8
2011
N=22.5
effN=156.3
2004
N=15
effN=136.4
2008
N=72.5
effN=252.3
2012
N=40
effN=64.3
2005
N=11.2
effN=35.5
2009
N=77.5
effN=159.4
2013
N=46.2
effN=85.6
2006
N=32.5
effN=67.4
2010
N=38.8
effN=260.7
2014
N=27.5
effN=32.6
Proportion
Length (cm)

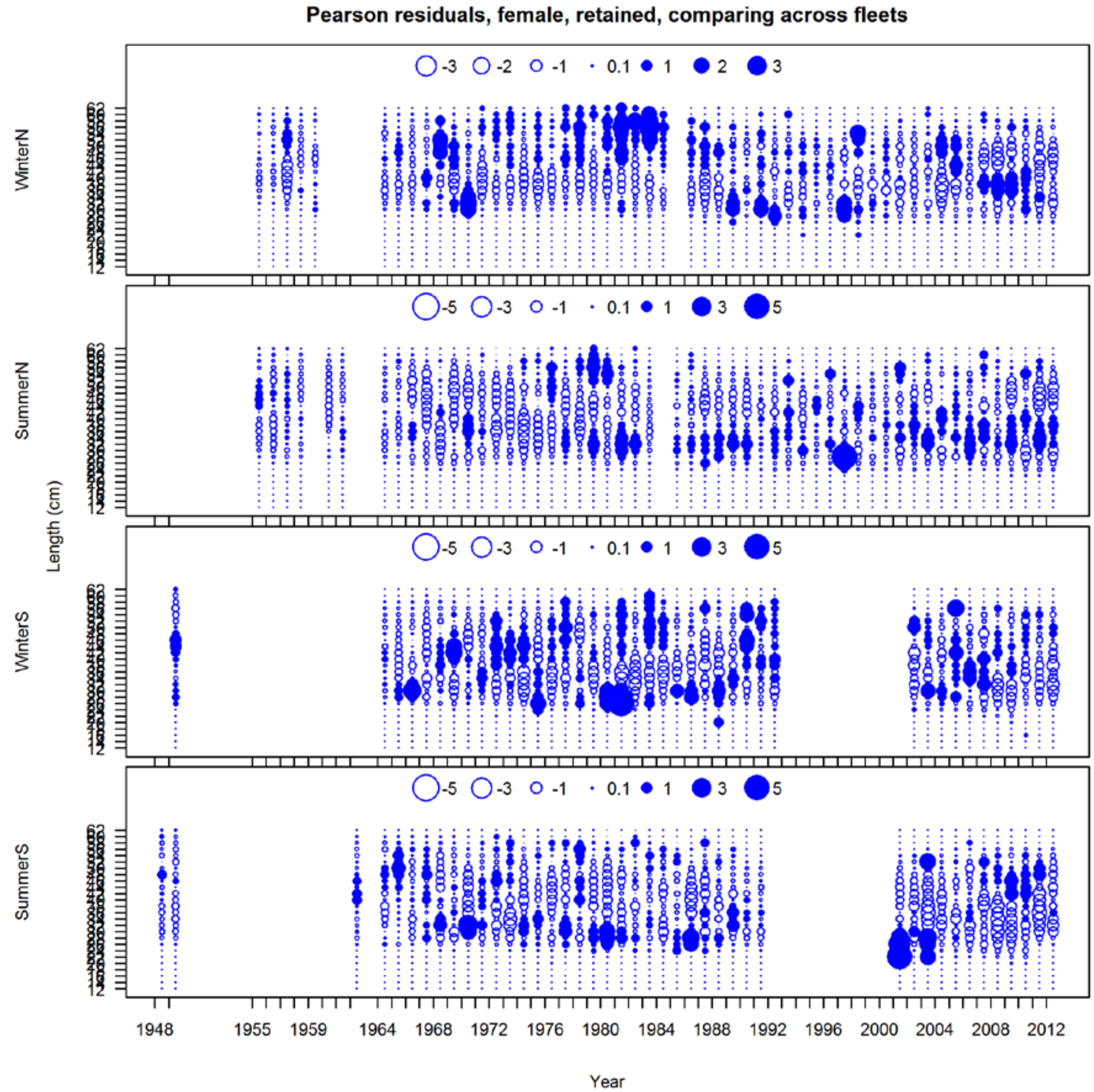


length comps, retained, SummerS
Proportion
Length (cm)
1948
N=5.4
effN=53.1
1965
N=18.8
effN=132.8
1969
N=65.7
effN=269.1
1973
N=54.9
effN=95.3
1949
N=5.4
effN=23.1
1966
N=44.2
effN=151.7
1970
N=38.9
effN=123.7
1974
N=46.9
effN=217.1
1962
N=4
effN=28.8
1967
N=59
effN=77.4
1971
N=49.6
effN=96.5
1975
N=25.5
effN=116.5
1964
N=29.5
effN=424.7
1968
N=116.6
effN=249.5
1972
N=52.3
effN=94.6
1976
N=34.8
effN=87.1


length comps, retained, SummerS
1977
N=50.9
effN=141
1981
N=87.1
effN=511.7
1985
N=45.6
effN=233.7
1989
N=24.1
effN=48.7
1978
N=44.2
effN=124.2
1982
N=45.6
effN=70
1986
N=42.9
effN=37.9
1990
N=2.7
effN=18.5
1979
N=17.4
effN=73.4
1983
N=44.2
effN=229.8
1987
N=38.9
effN=110.5
1991
N=2.7
effN=19.8
1980
N=108.5
effN=153.5
1984
N=25.5
effN=94.9
1988
N=16.1
effN=68.7
2001
N=12.1
effN=19
Proportion
Length (cm)

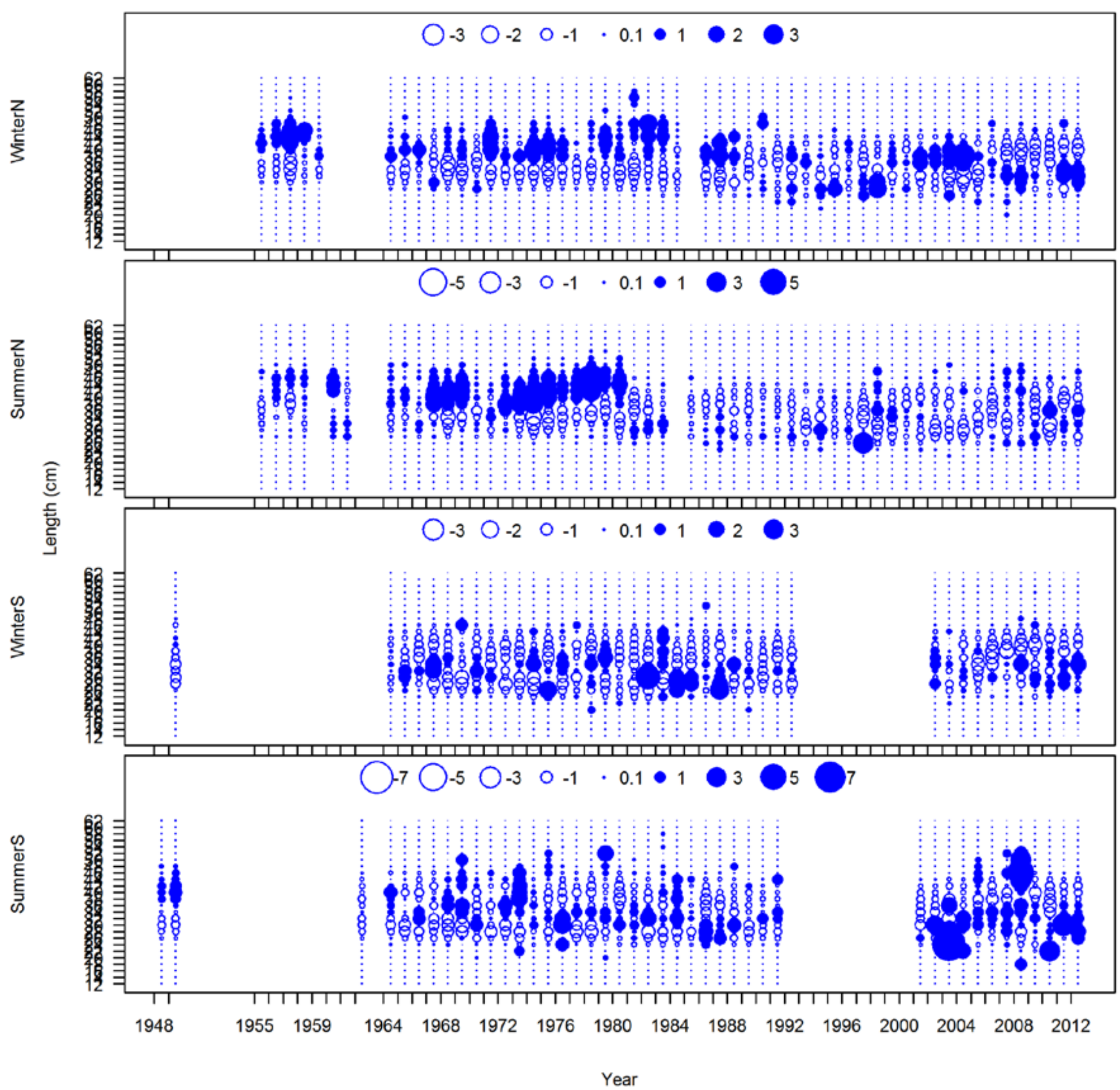


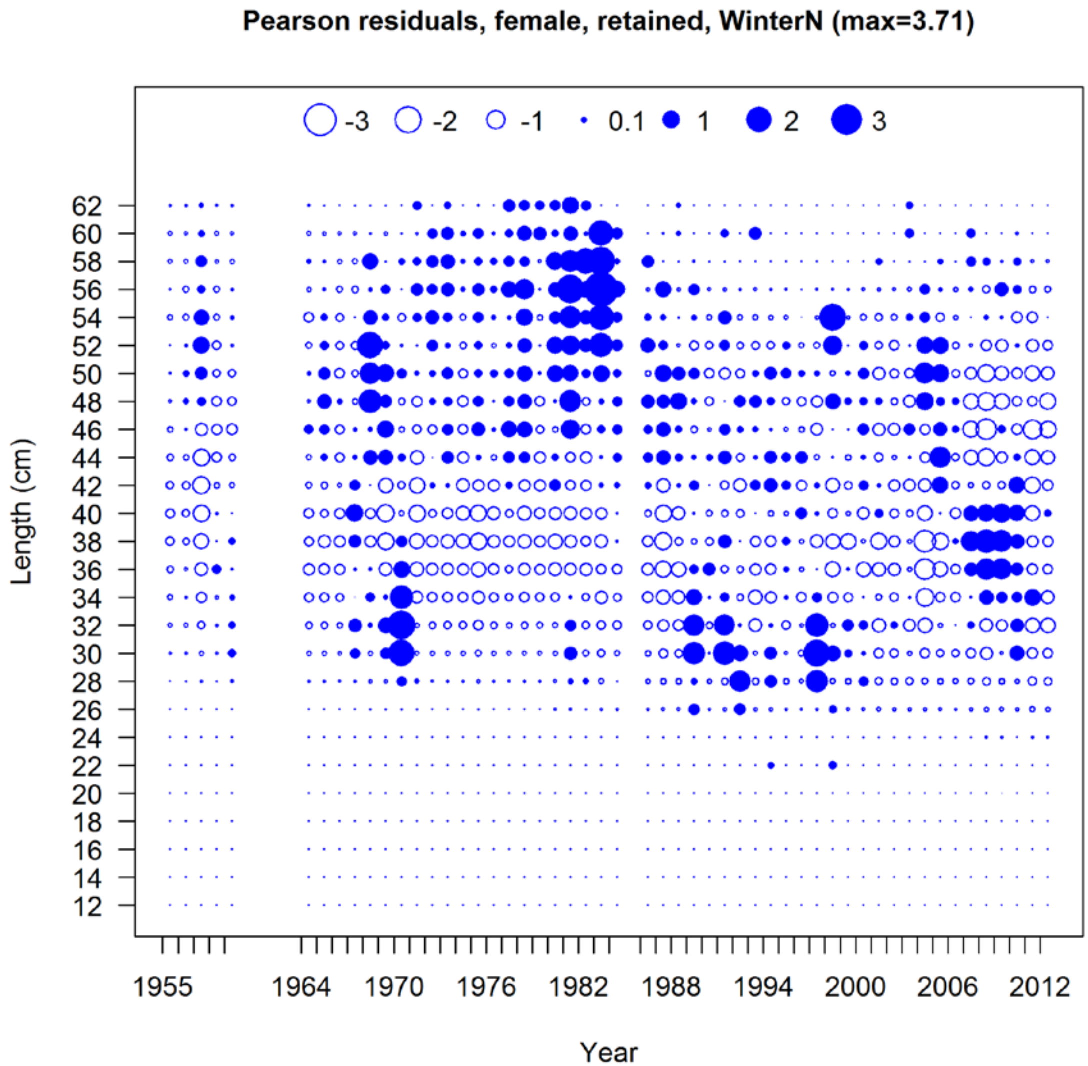
Appendix E.2. Fishery length composition Pearson residuals

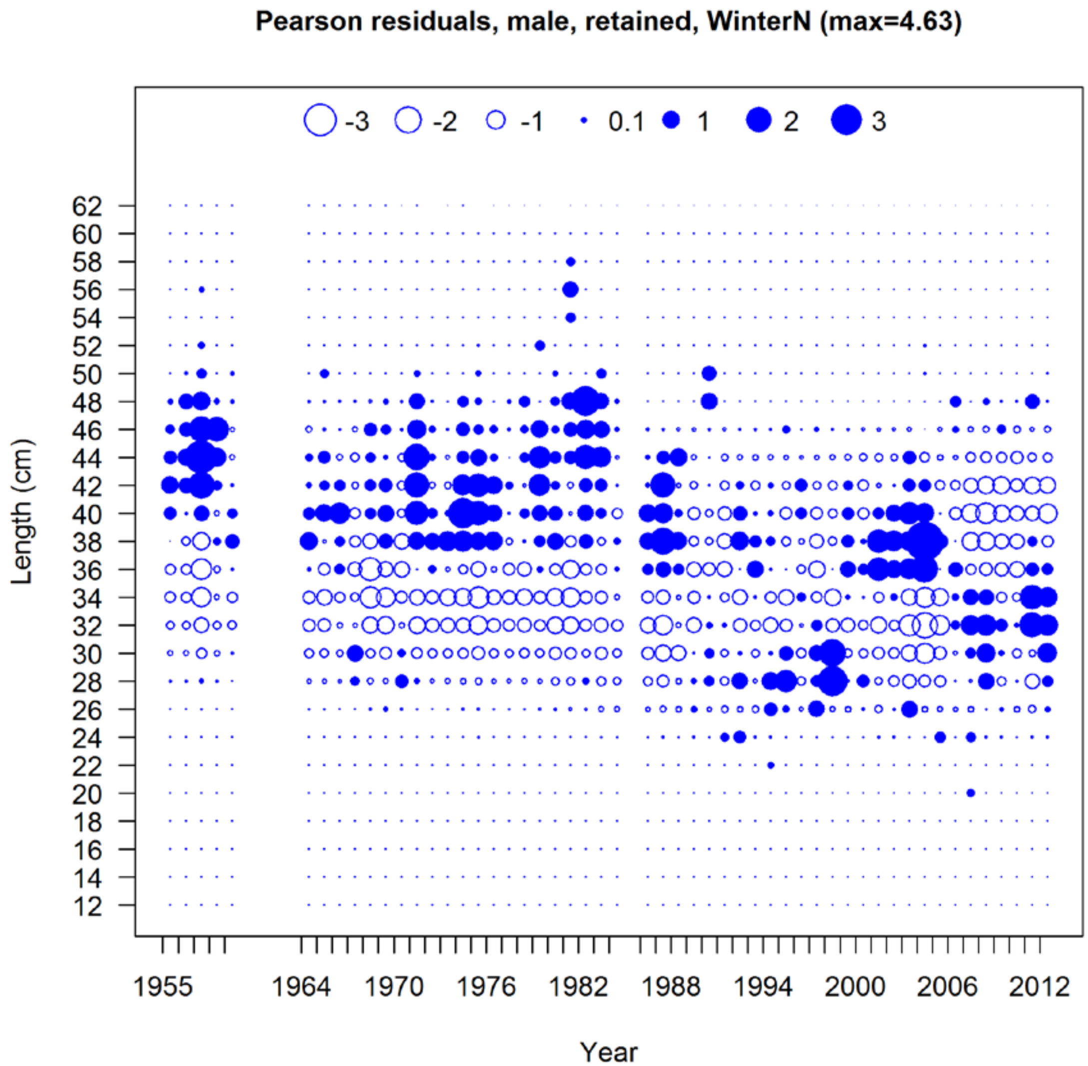


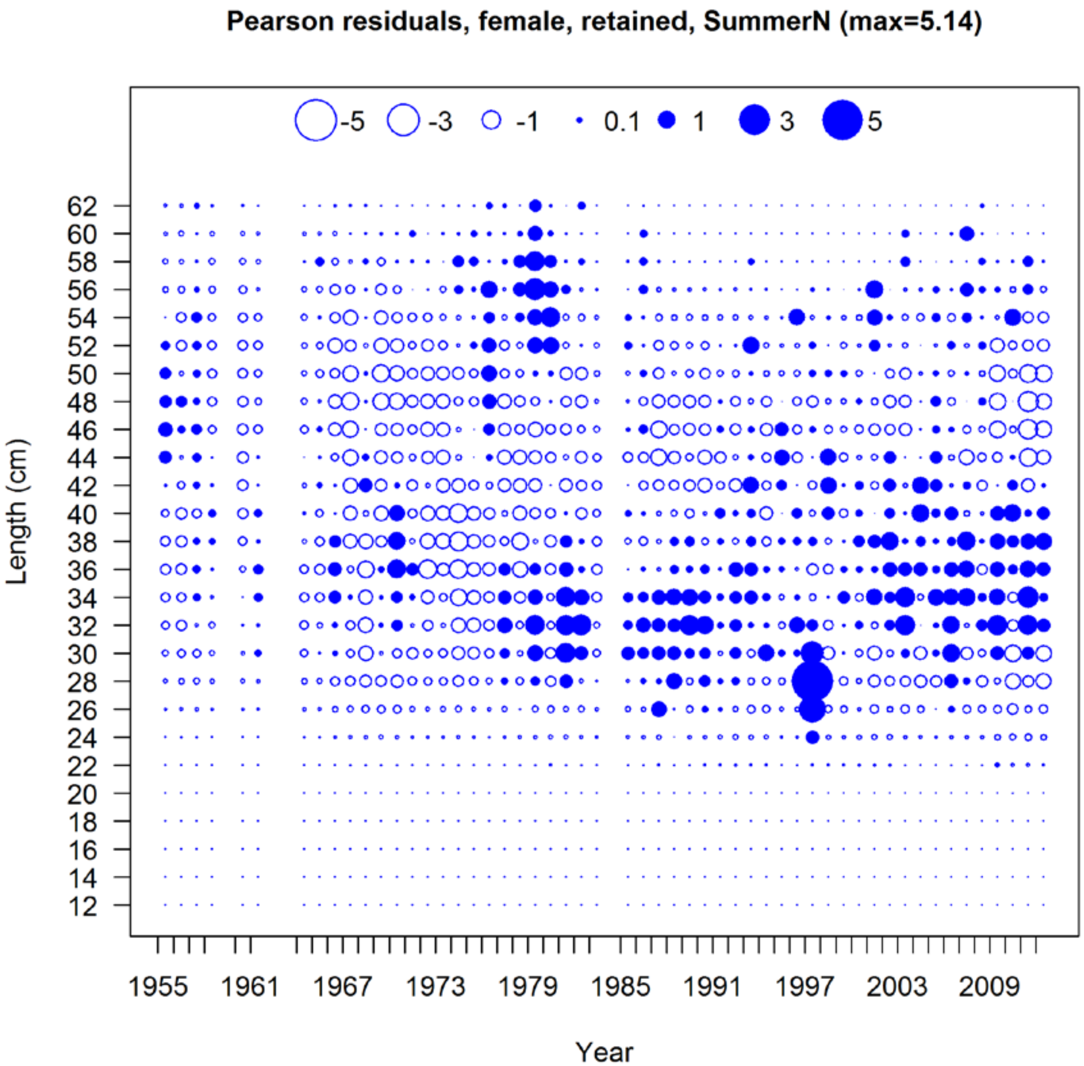
Pearson residuals, female, retained, comparing across fleets
WinterN
SummerN
WinterS
SummerS
Length (cm)
Year
-3 -2 -1 0.1 1 2 3
-5 -3 -1 0.1 1 3 5
1948 1955 1959 1964 1968 1972 1976 1980 1984 1988 1992 1996 2000 2004 2008 2012

Pearson residuals, male, retained, comparing across fleets

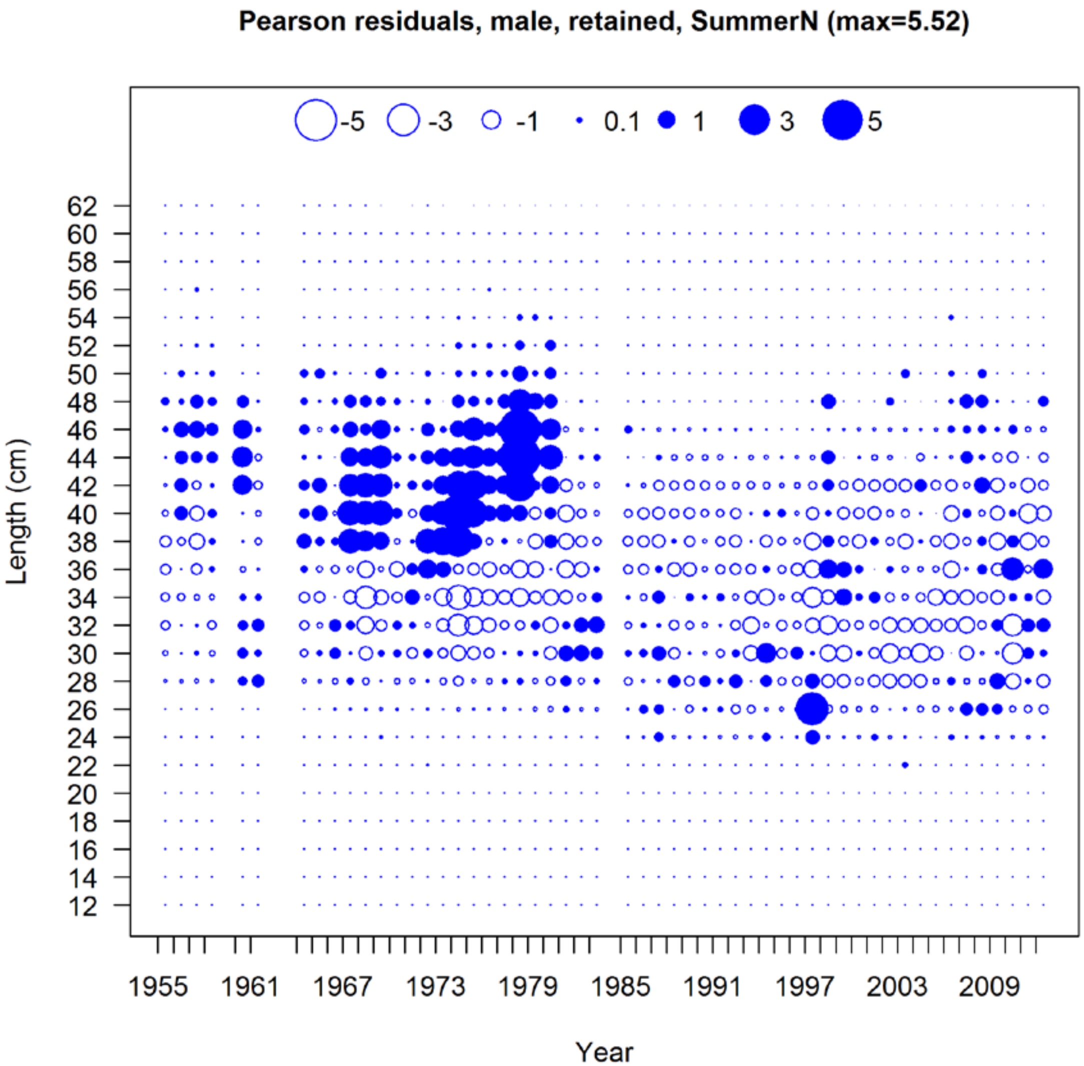



Pearson residuals, female, retained, WinterN (max=3.71)
-3
-2
-1
0.1
1
2
3
Length (cm)
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
1955
1964
1970
1976
1982
1988
1994
2000
2006
2012
Year

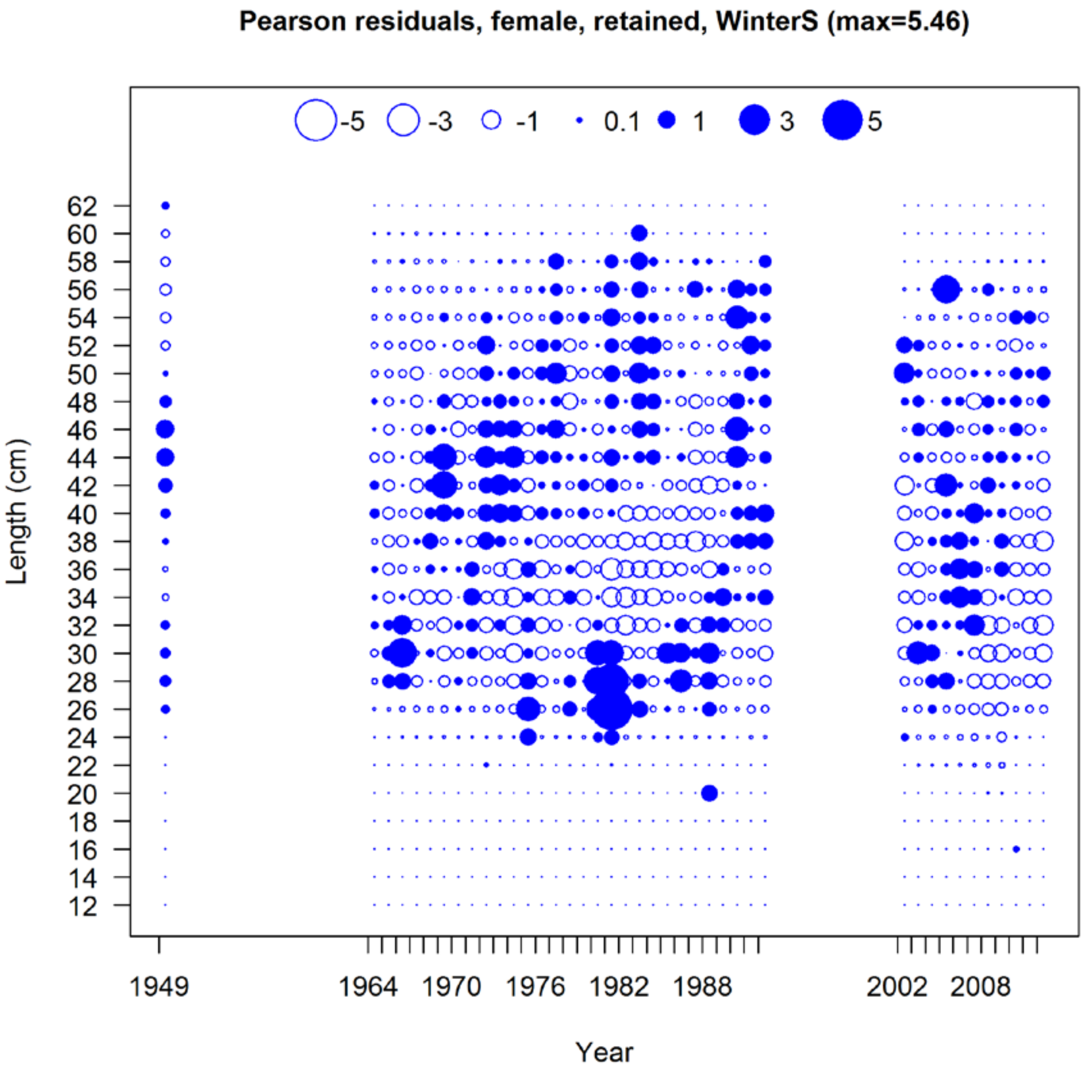

Pearson residuals, male, retained, WinterN (max=4.63)
-3
-2
-1
0.1
1
2
3
Length (cm)
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
1955
1964
1970
1976
1982
1988
1994
2000
2006
2012
Year



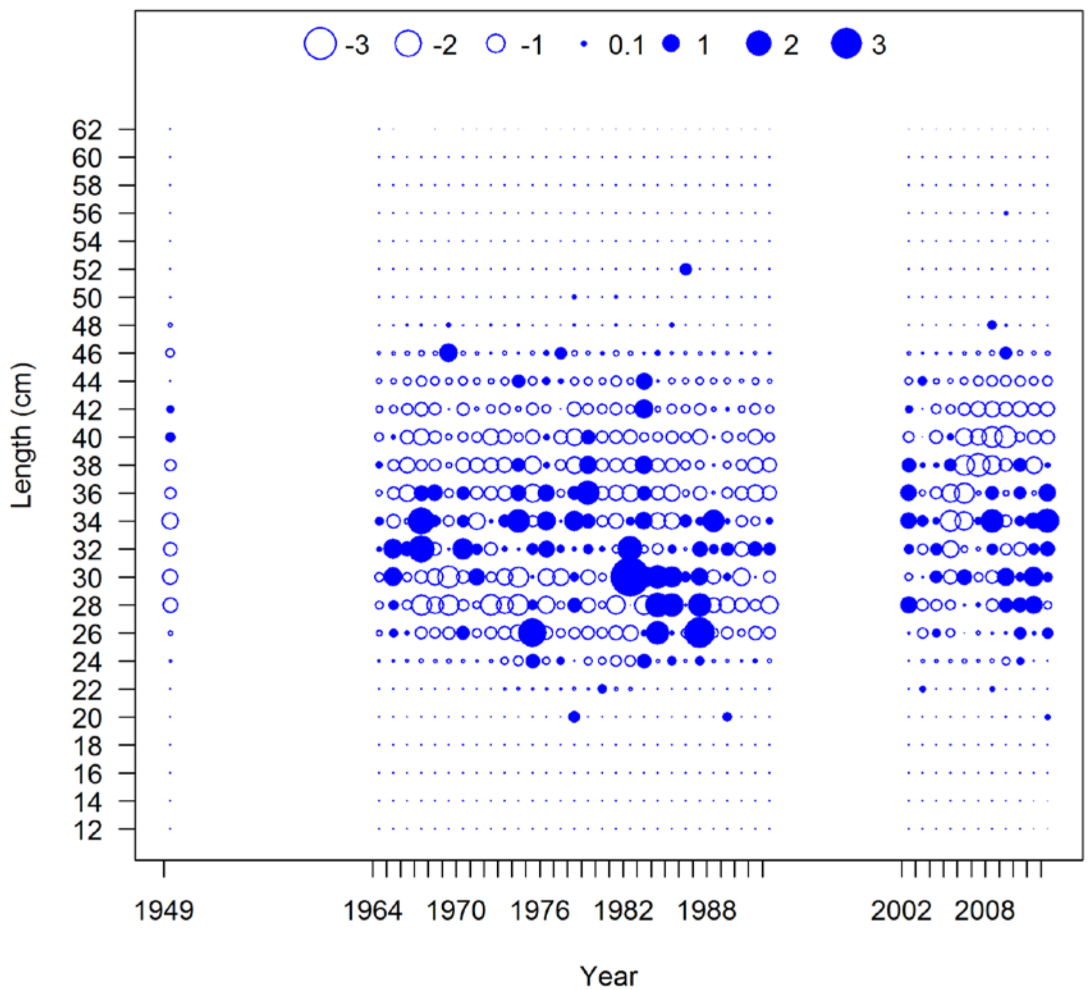
Pearson residuals, female, retained, SummerN (max=5.14)
-5
-3
-1
0.1
1
3
5
Length (cm)
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
1955
1961
1967
1973
1979
1985
1991
1997
2003
2009
Year

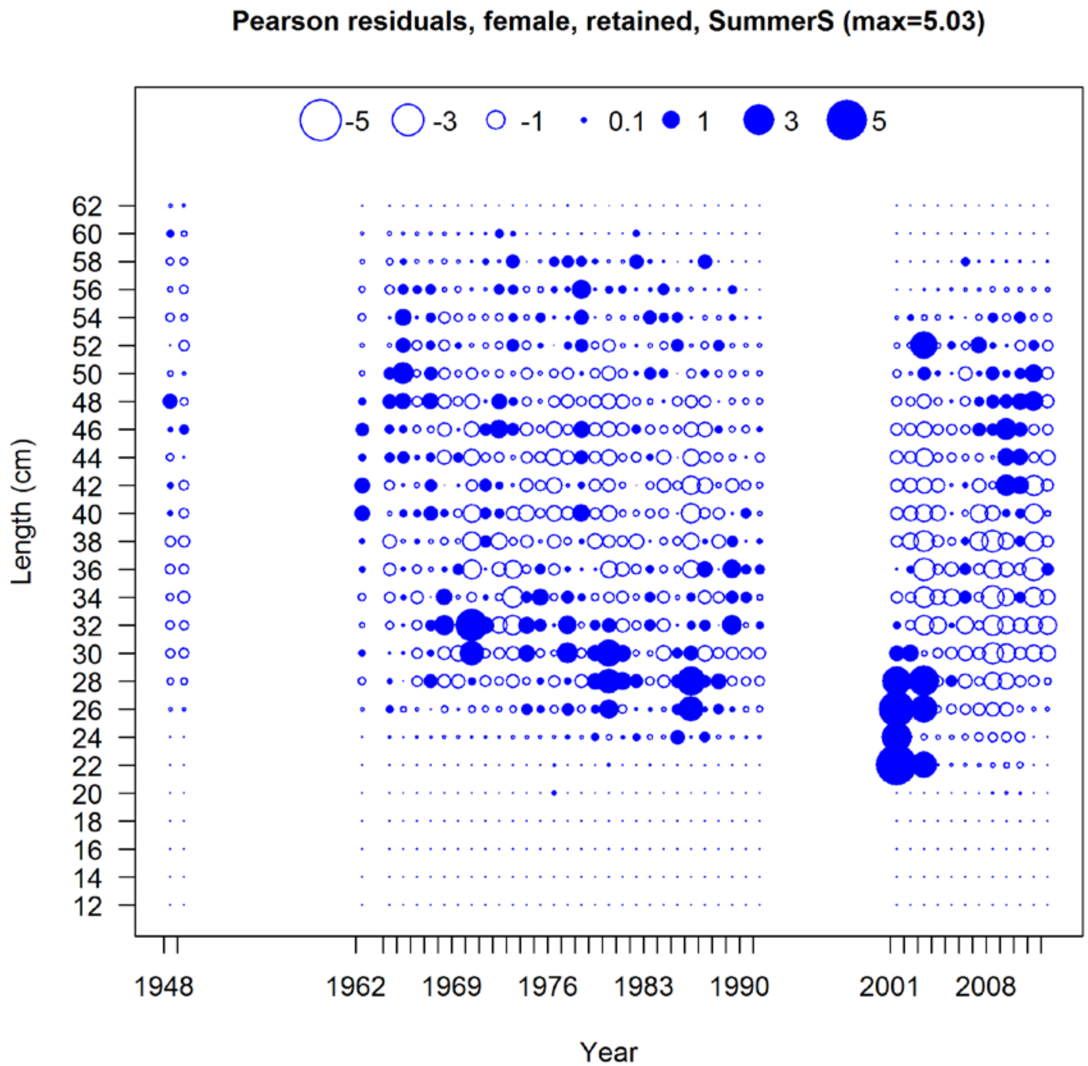


Pearson residuals, male, retained, SummerN (max=5.52)
-5
-3
-1
0.1
1
3
5
Length (cm)
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
1955
1961
1967
1973
1979
1985
1991
1997
2003
2009
Year

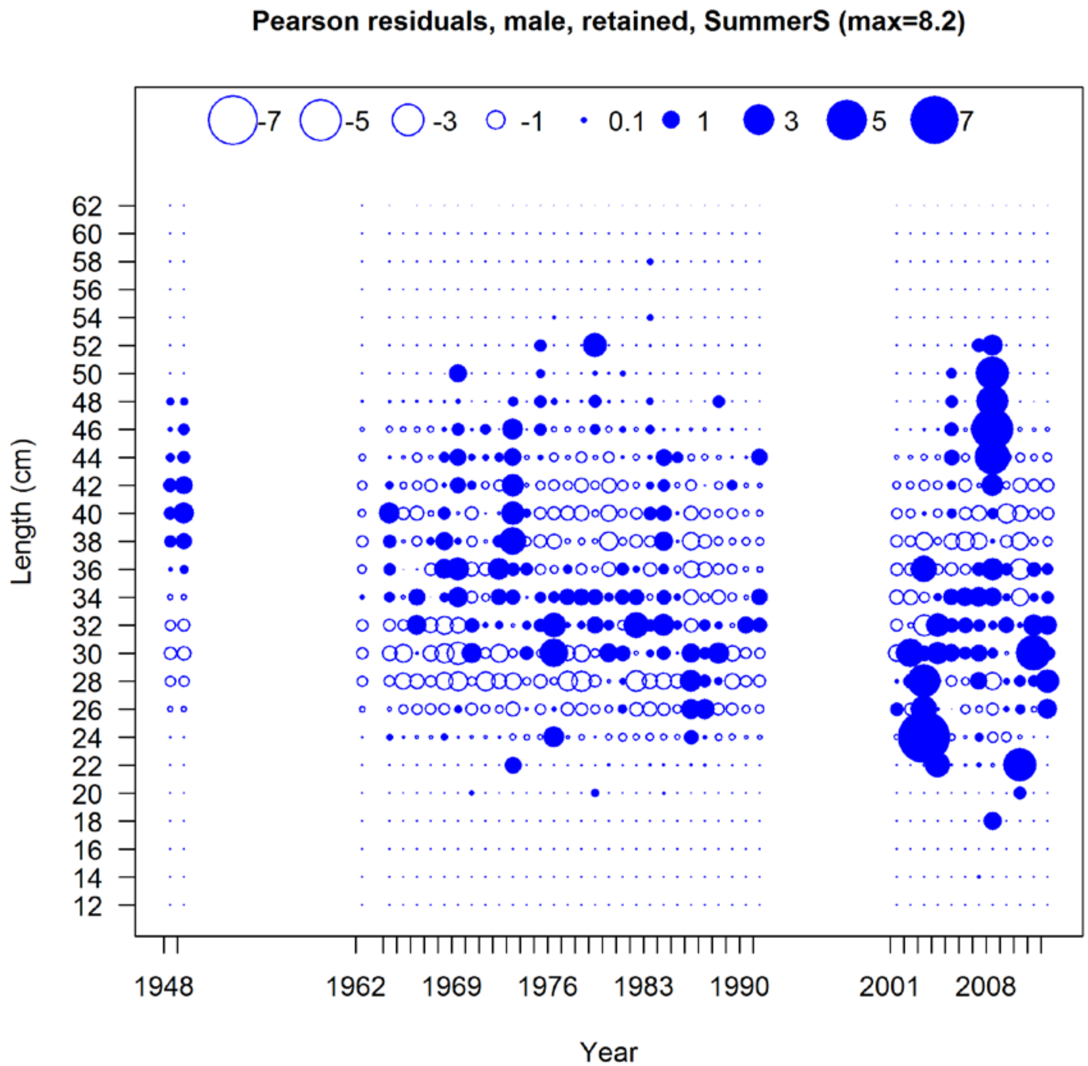

Pearson residuals, female, retained, WinterS (max=5.46)
-5
-3
-1
0.1
1
3
5
Length (cm)
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
1949
1964
1970
1976
1982
1988
2002
2008
Year

Pearson residuals, male, retained, WinterS (max=4.65)



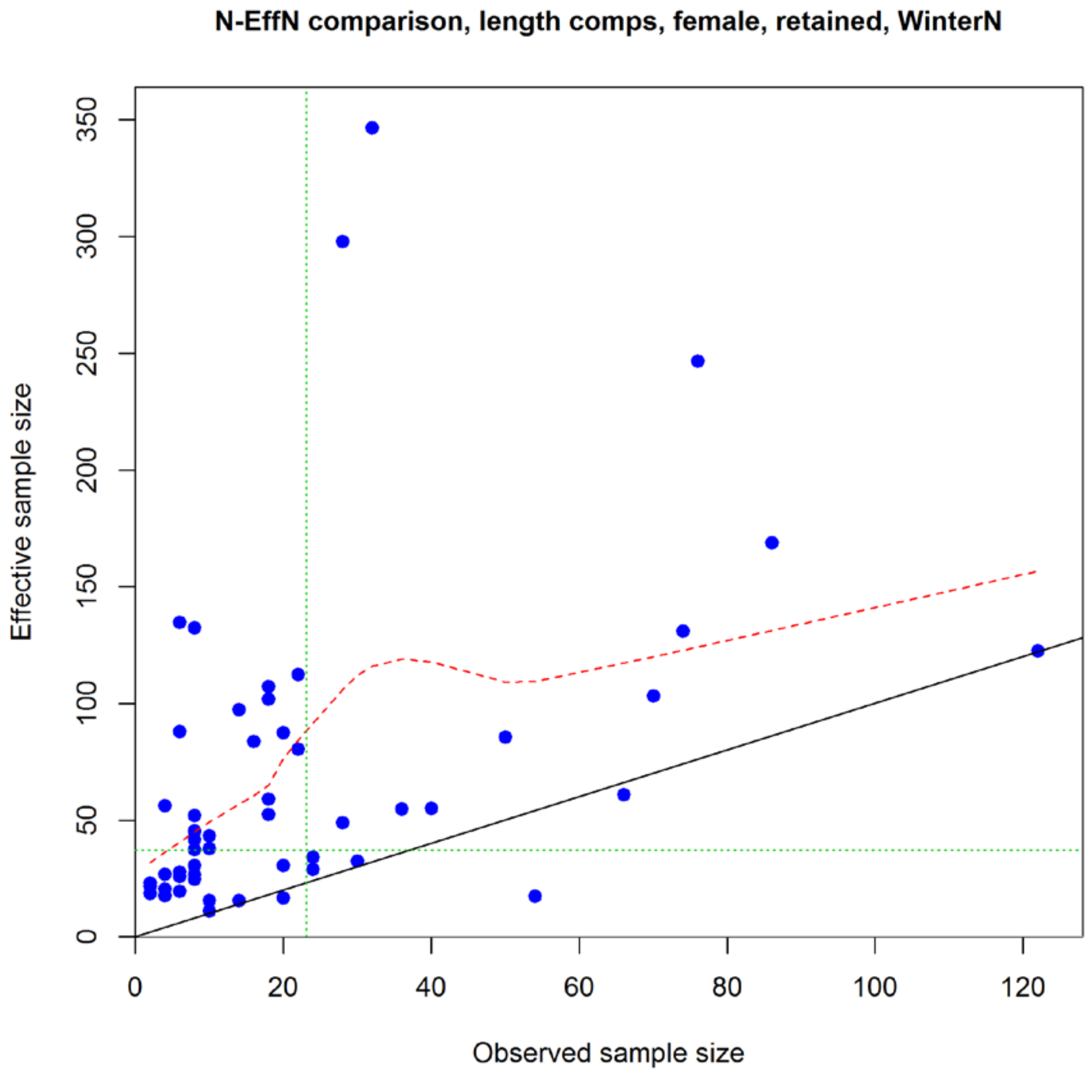


Pearson residuals, female, retained, SummerS (max=5.03)
-5
-3
-1
0.1
1
3
5
Length (cm)
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
1948
1962
1969
1976
1983
1990
2001
2008
Year

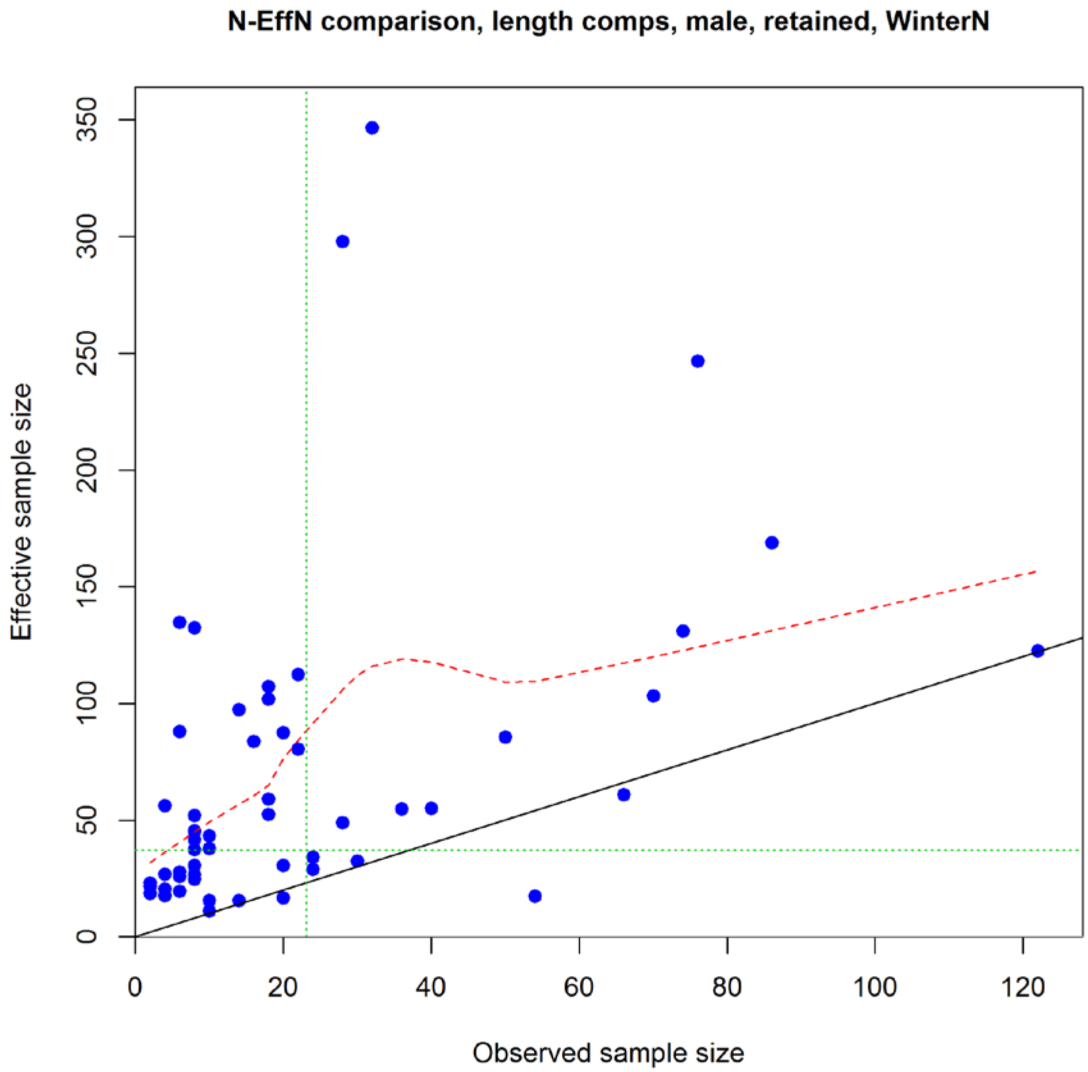


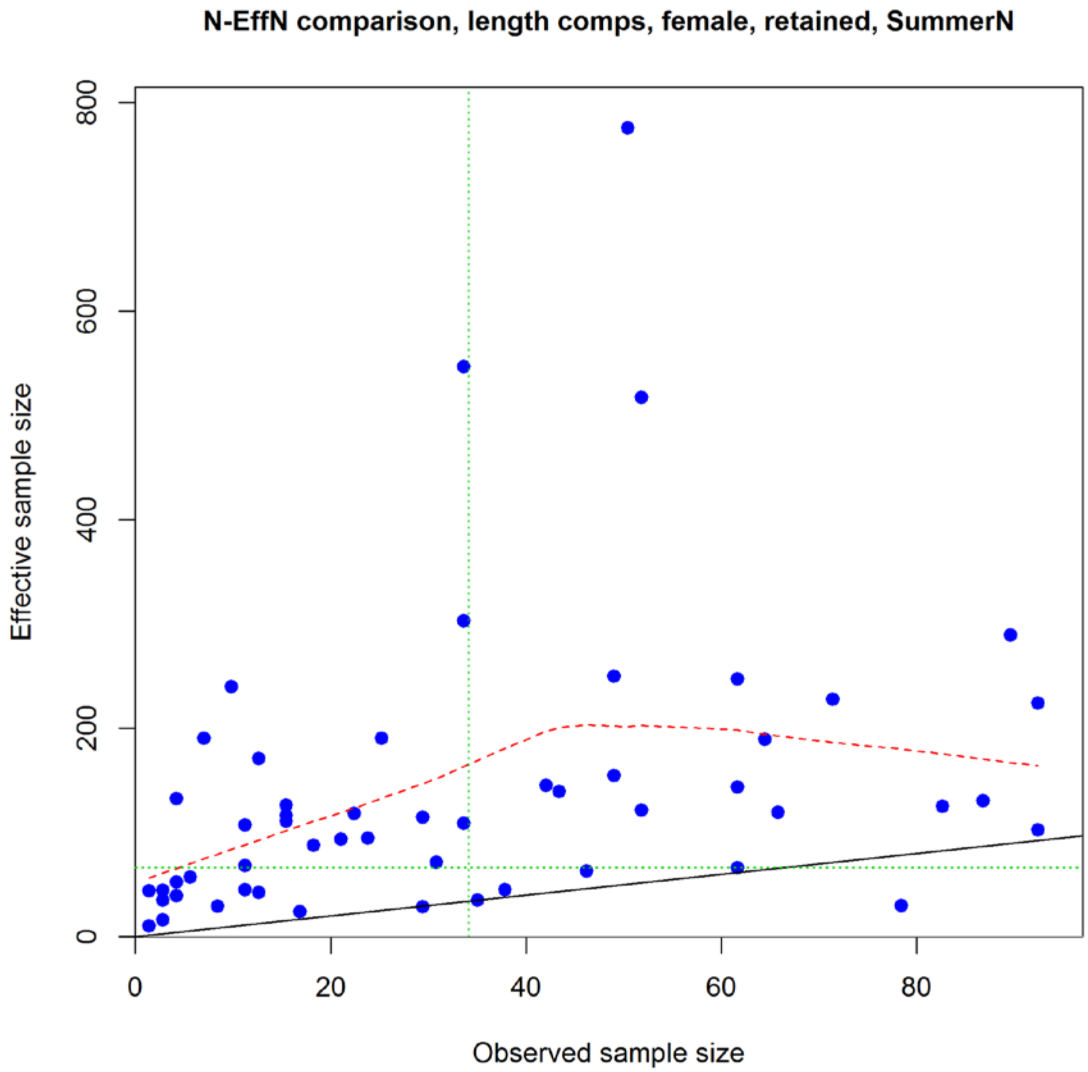
Pearson residuals, male, retained, SummerS (max=8.2)
-7
-5
-3
-1
0.1
1
3
5
7
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
Length (cm)
1948
1962
1969
1976
1983
1990
2001
2008
Year

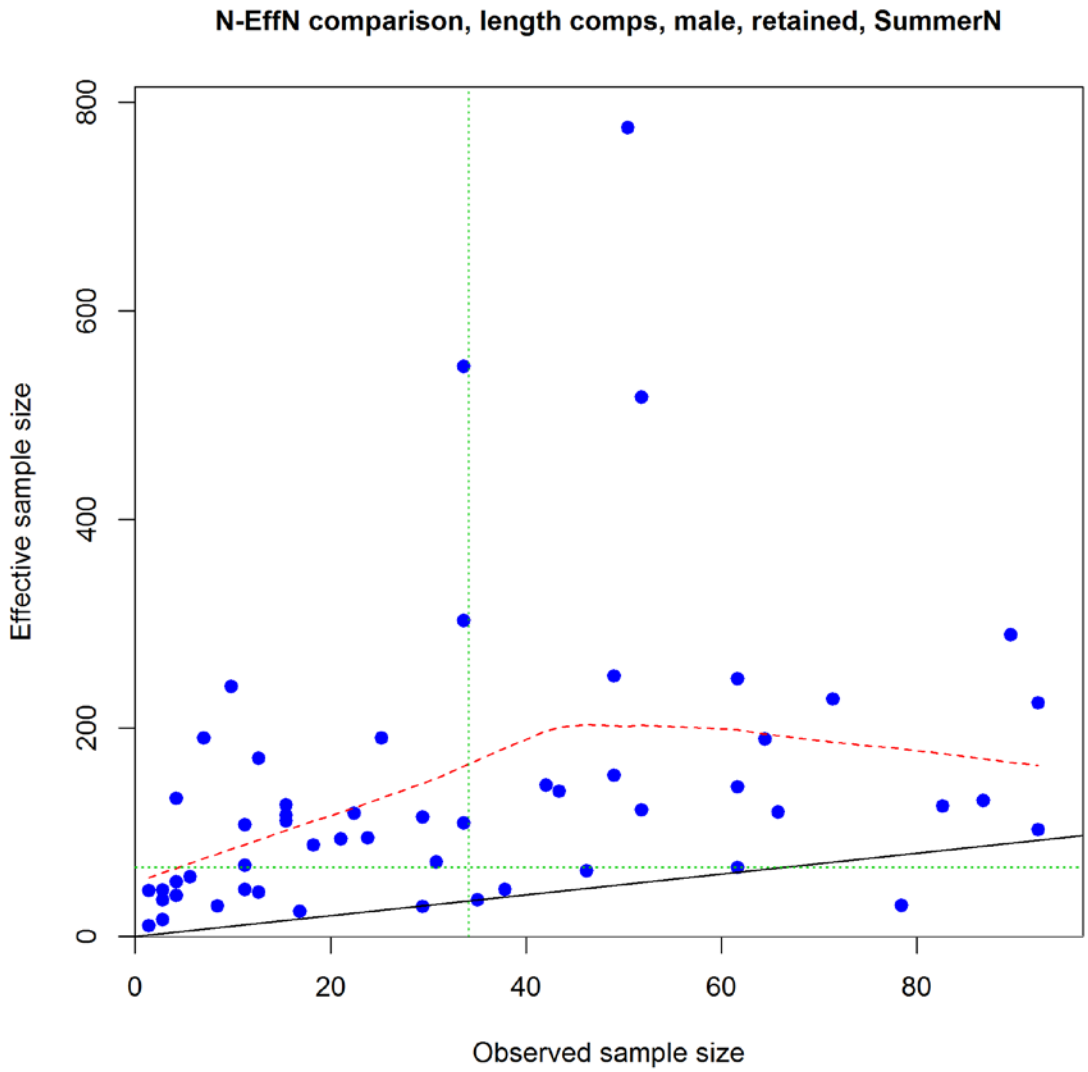
Appendix E.3. Fishery length composition effective sample sizes

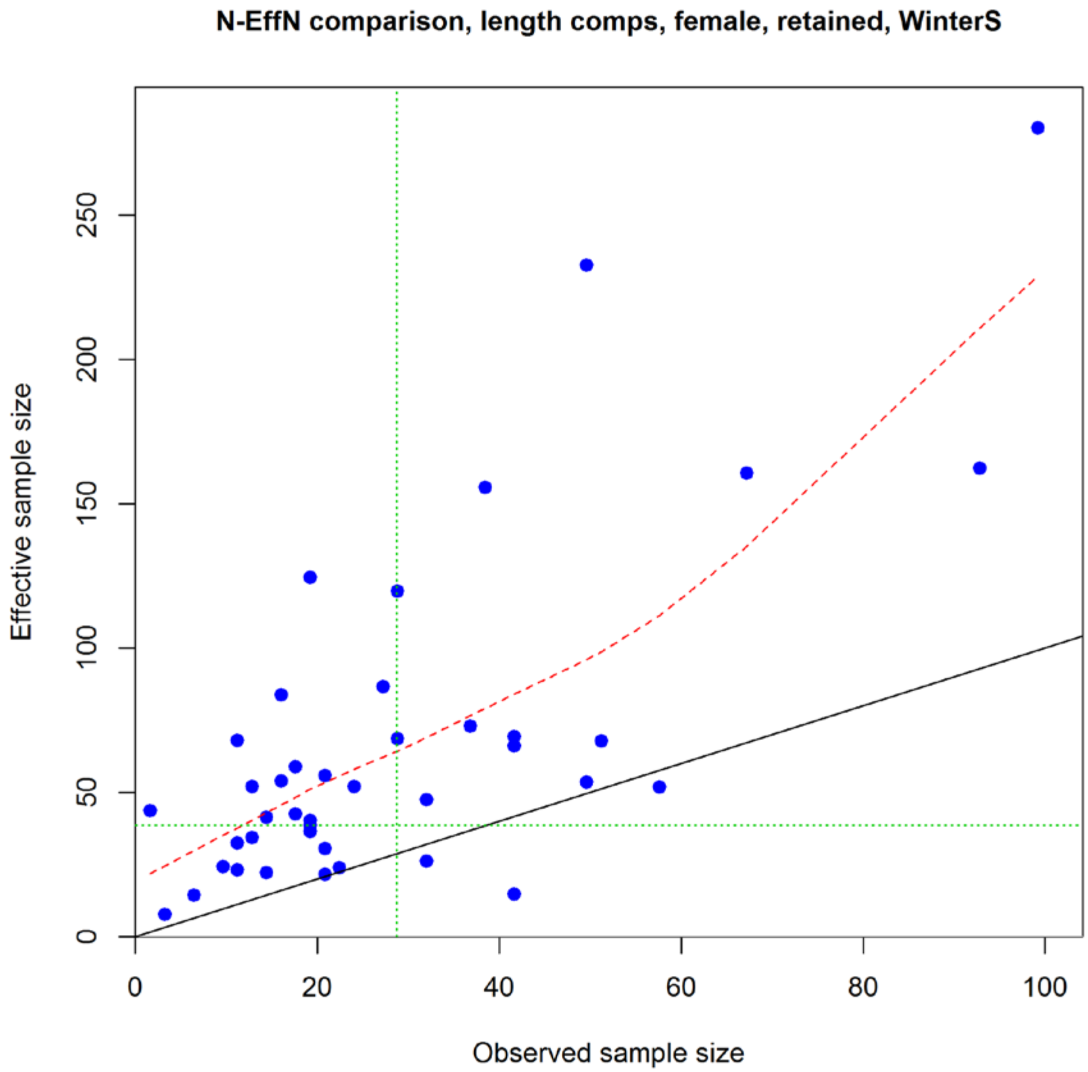


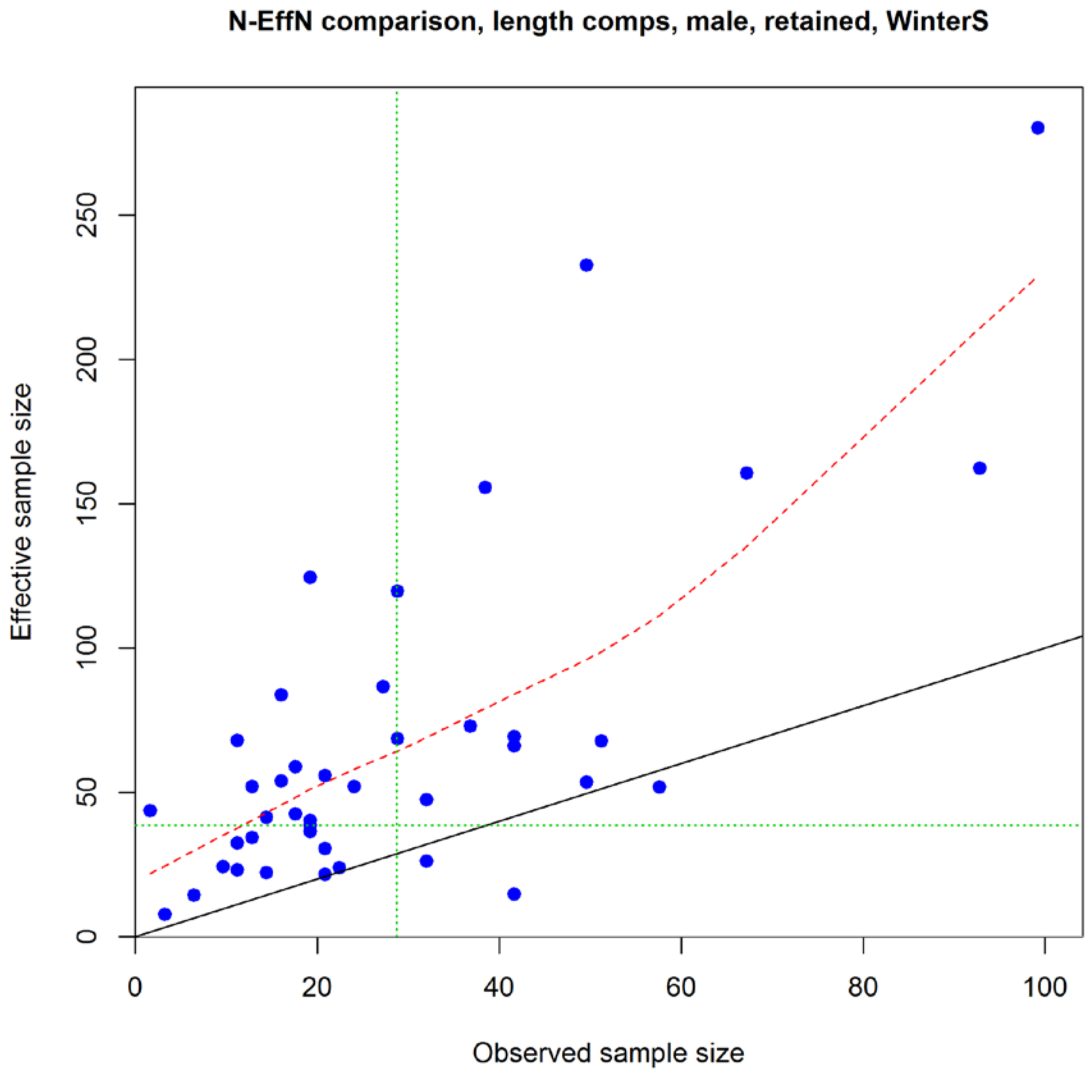
N-EffN comparison, length comps, female, retained, WinterN
Effective sample size
Observed sample size
0
50
100
150
200
250
300
350
0
20
40
60
80
100
120

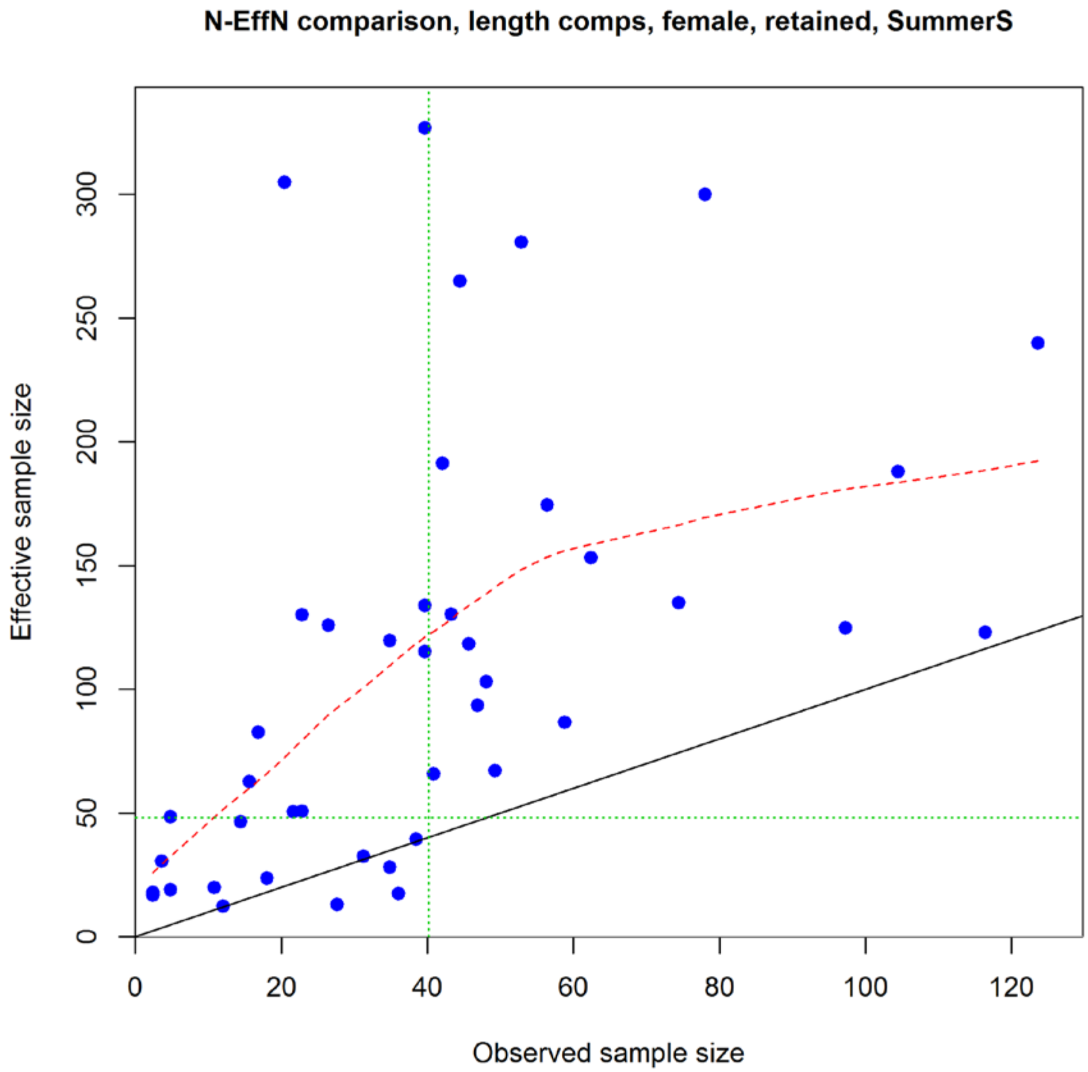

N-EffN comparison, length comps, male, retained, WinterN
Effective sample size
Observed sample size
0
50
100
150
200
250
300
350
0
20
40
60
80
100
120

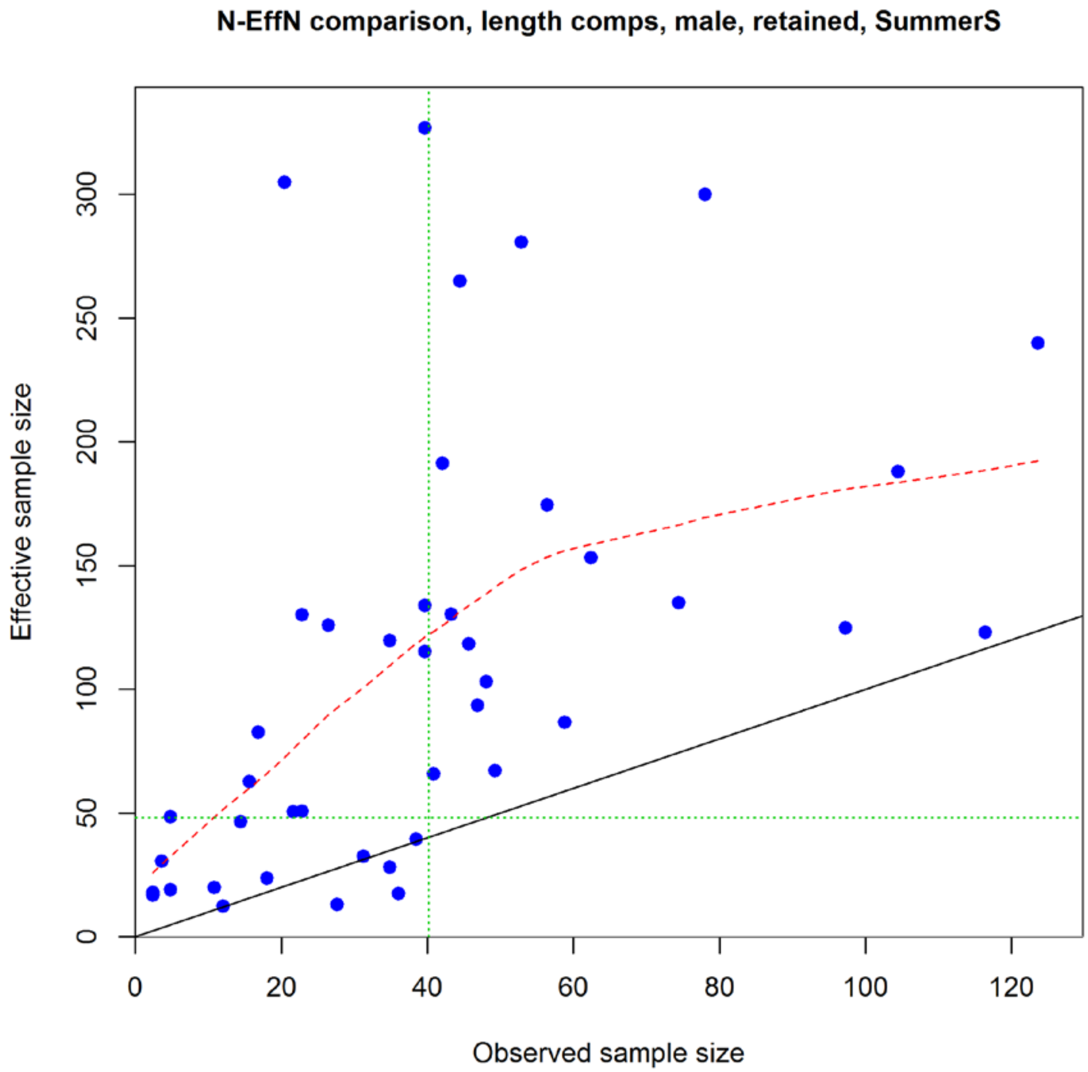

N-EffN comparison, length comps, female, retained, SummerN
Effective sample size
Observed sample size
0
200
400
600
800
0
20
40
60
80


N-EffN comparison, length comps, male, retained, SummerN
Effective sample size
Observed sample size
0
200
400
600
800
0
20
40
60
80

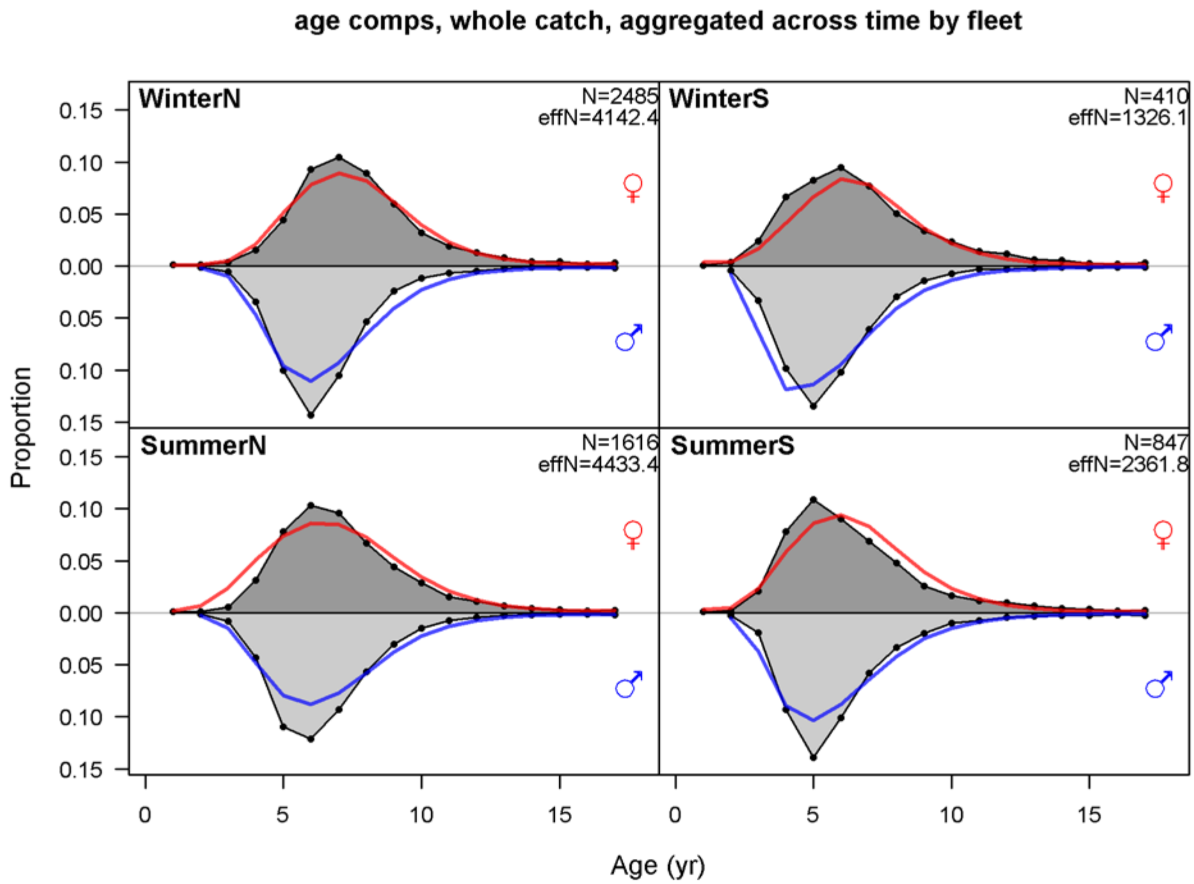

N-EffN comparison, length comps, female, retained, WinterS
Effective sample size
0
50
100
150
200
250
0
20
40
60
80
100
Observed sample size


N-EffN comparison, length comps, male, retained, WinterS
Effective sample size
Observed sample size
0
50
100
150
200
250
0
20
40
60
80
100


N-EffN comparison, length comps, female, retained, SummerS
Effective sample size
0
50
100
150
200
250
300
0
20
40
60
80
100
120
Observed sample size

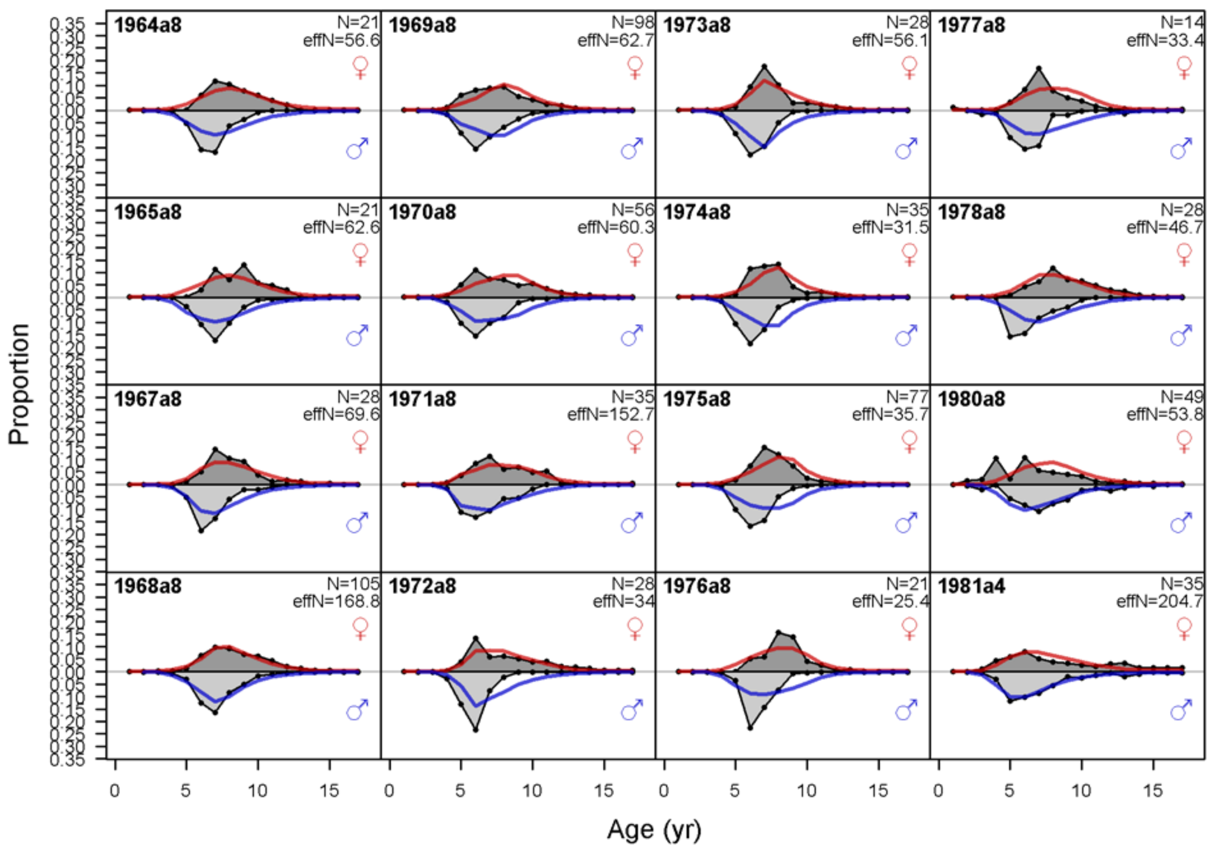

N-EffN comparison, length comps, male, retained, SummerS
Effective sample size
Observed sample size
0
50
100
150
200
250
300
0
20
40
60
80
100
120

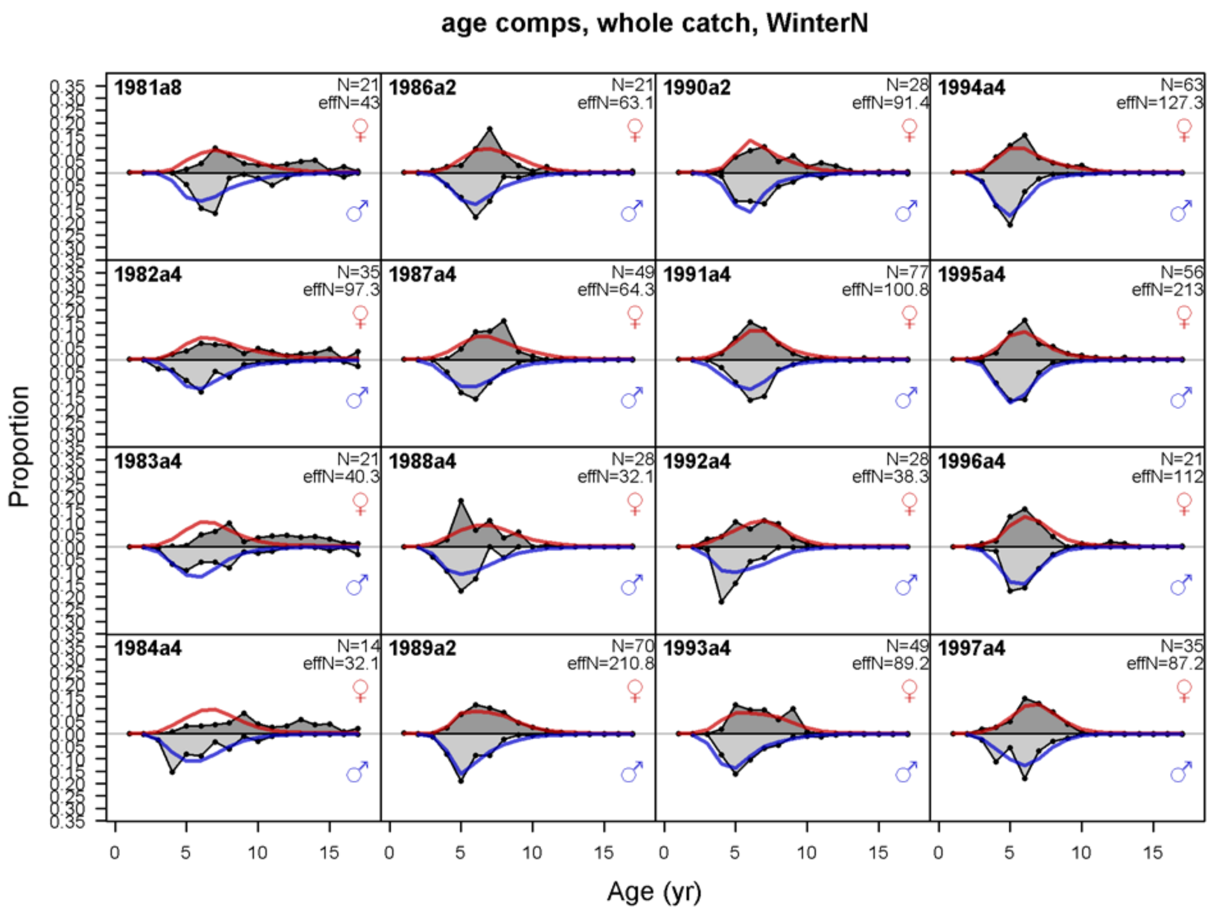
Appendix E.4. Fishery age composition fits



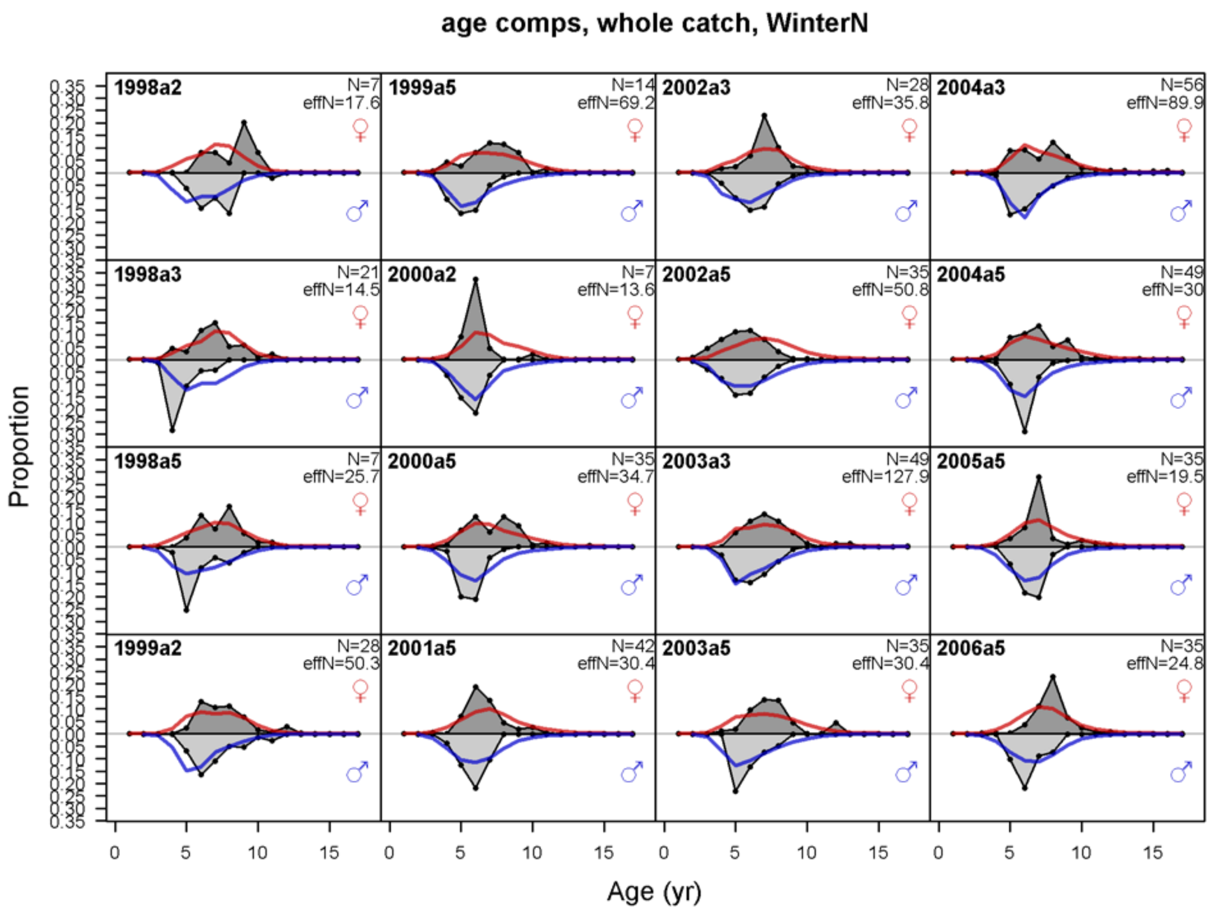
age comps, whole catch, aggregated across time by fleet
WinterN
N=2485
effN=4142.4
WinterS
N=410
effN=1326.1
SummerN
N=1616
effN=4433.4
SummerS
N=847
effN=2361.8
Proportion
Age (yr)
0.15
0.10
0.05
0.00
0
5
10
15

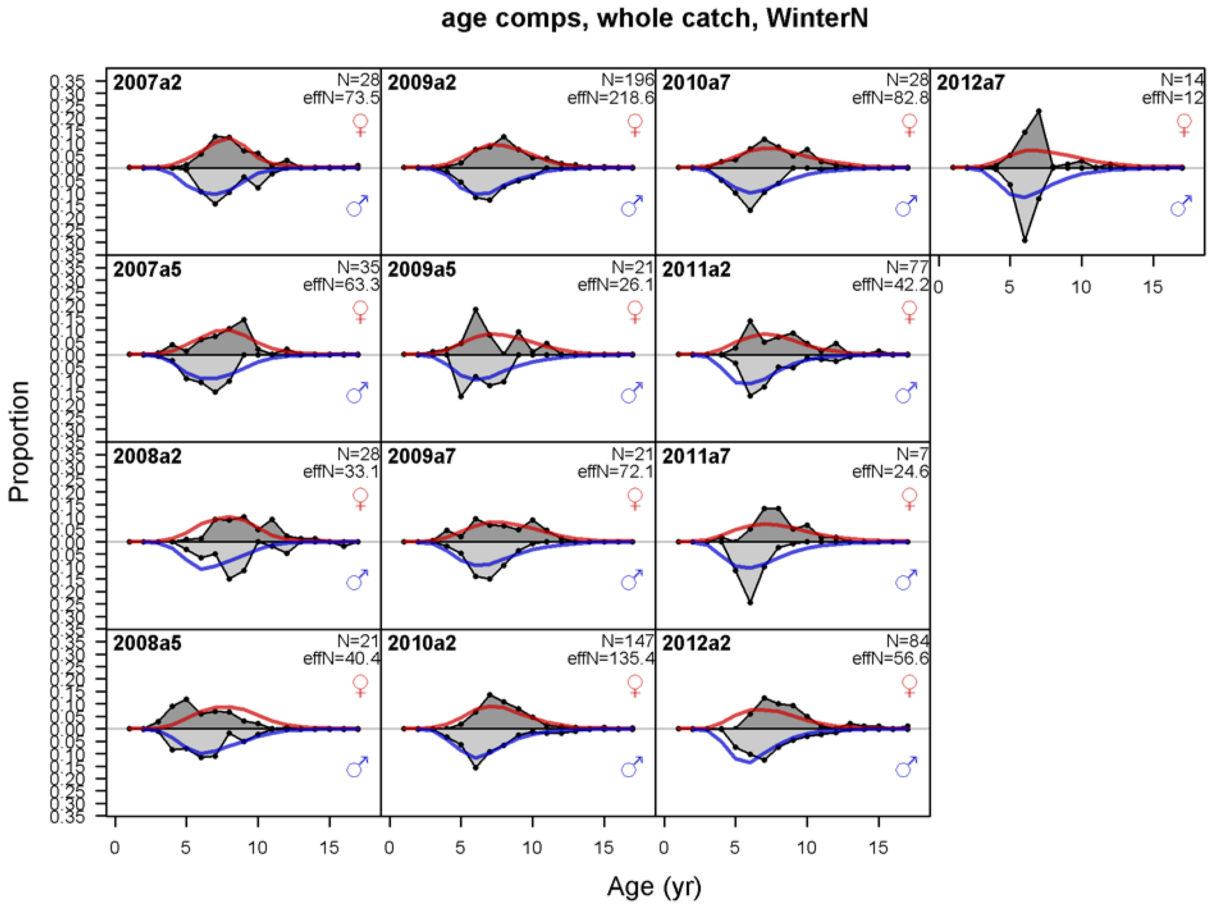
age comps, whole catch, WinterN

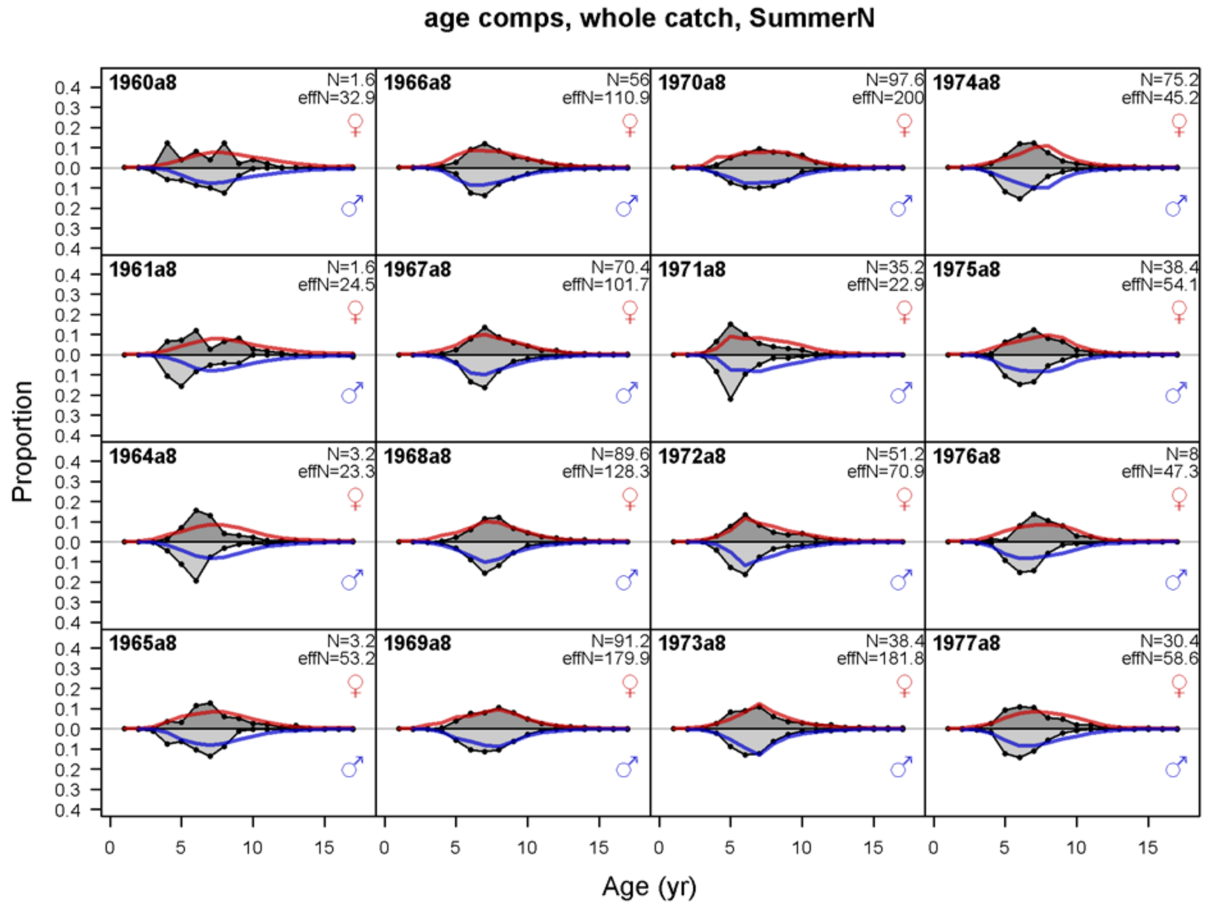




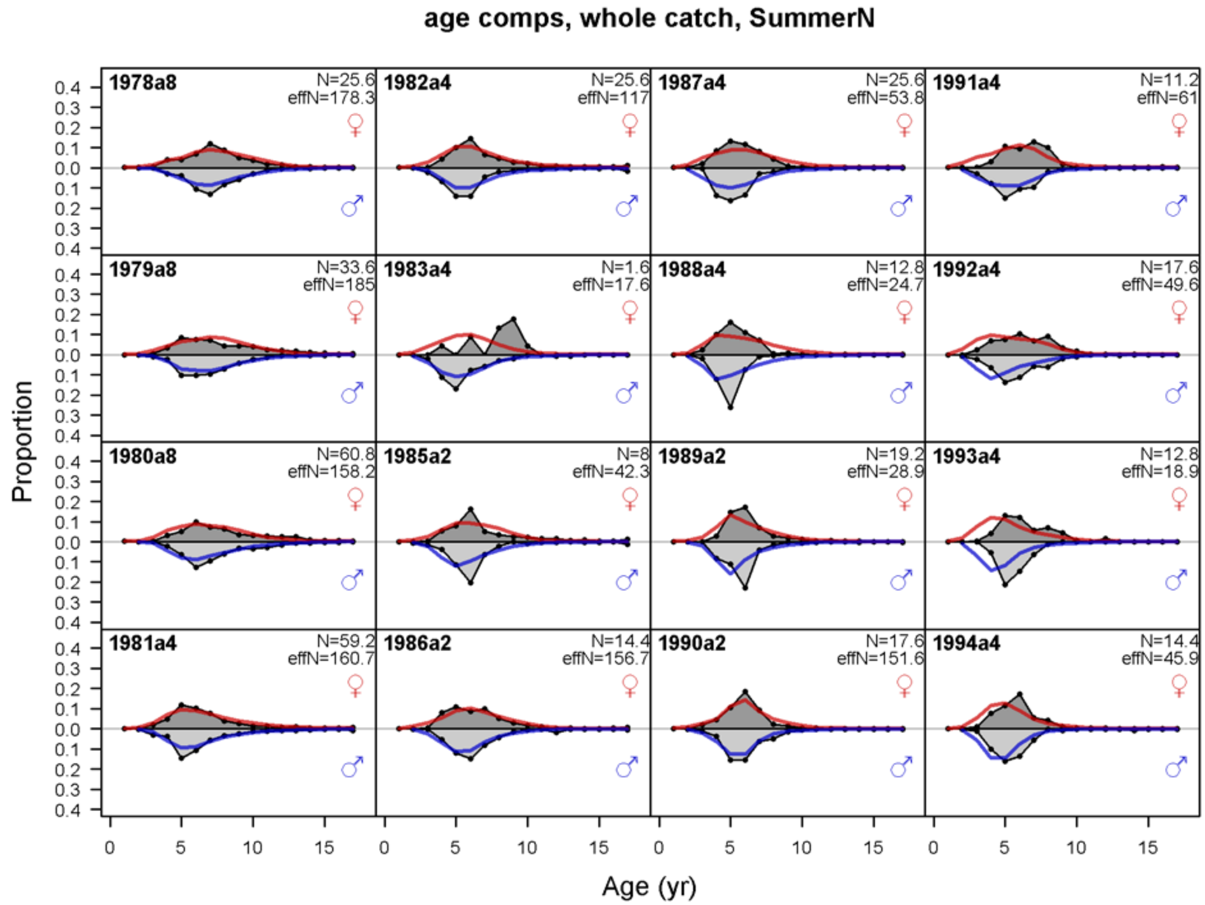
age comps, whole catch, WinterN
1981a8
N=21
effN=43
1986a2
N=21
effN=63.1
1990a2
N=28
effN=91.4
1994a4
N=63
effN=127.3
1982a4
N=35
effN=97.3
1987a4
N=49
effN=64.3
1991a4
N=77
effN=100.8
1995a4
N=56
effN=213
1983a4
N=21
effN=40.3
1988a4
N=28
effN=32.1
1992a4
N=28
effN=38.3
1996a4
N=21
effN=112
1984a4
N=14
effN=32.1
1989a2
N=70
effN=210.8
1993a4
N=49
effN=89.2
1997a4
N=35
effN=87.2
Proportion
Age (yr)


age comps, whole catch, WinterN
1998a2
N=7
effN=17.6
1999a5
N=14
effN=69.2
2002a3
N=28
effN=35.8
2004a3
N=56
effN=89.9
1998a3
N=21
effN=14.5
2000a2
N=7
effN=13.6
2002a5
N=35
effN=50.8
2004a5
N=49
effN=30
1998a5
N=7
effN=25.7
2000a5
N=35
effN=34.7
2003a3
N=49
effN=127.9
2005a5
N=35
effN=19.5
1999a2
N=28
effN=50.3
2001a5
N=42
effN=30.4
2003a5
N=35
effN=30.4
2006a5
N=35
effN=24.8
Proportion
Age (yr)


age comps, whole catch, WinterN
2007a2
N=28
effN=73.5
2009a2
N=196
effN=218.6
2010a7
N=28
effN=82.8
2012a7
N=14
effN=12
2007a5
N=35
effN=63.3
2009a5
N=21
effN=26.1
2011a2
N=77
effN=42.2
2008a2
N=28
effN=33.1
2009a7
N=21
effN=72.1
2011a7
N=7
effN=24.6
2008a5
N=21
effN=40.4
2010a2
N=147
effN=135.4
2012a2
N=84
effN=56.6
Proportion
Age (yr)

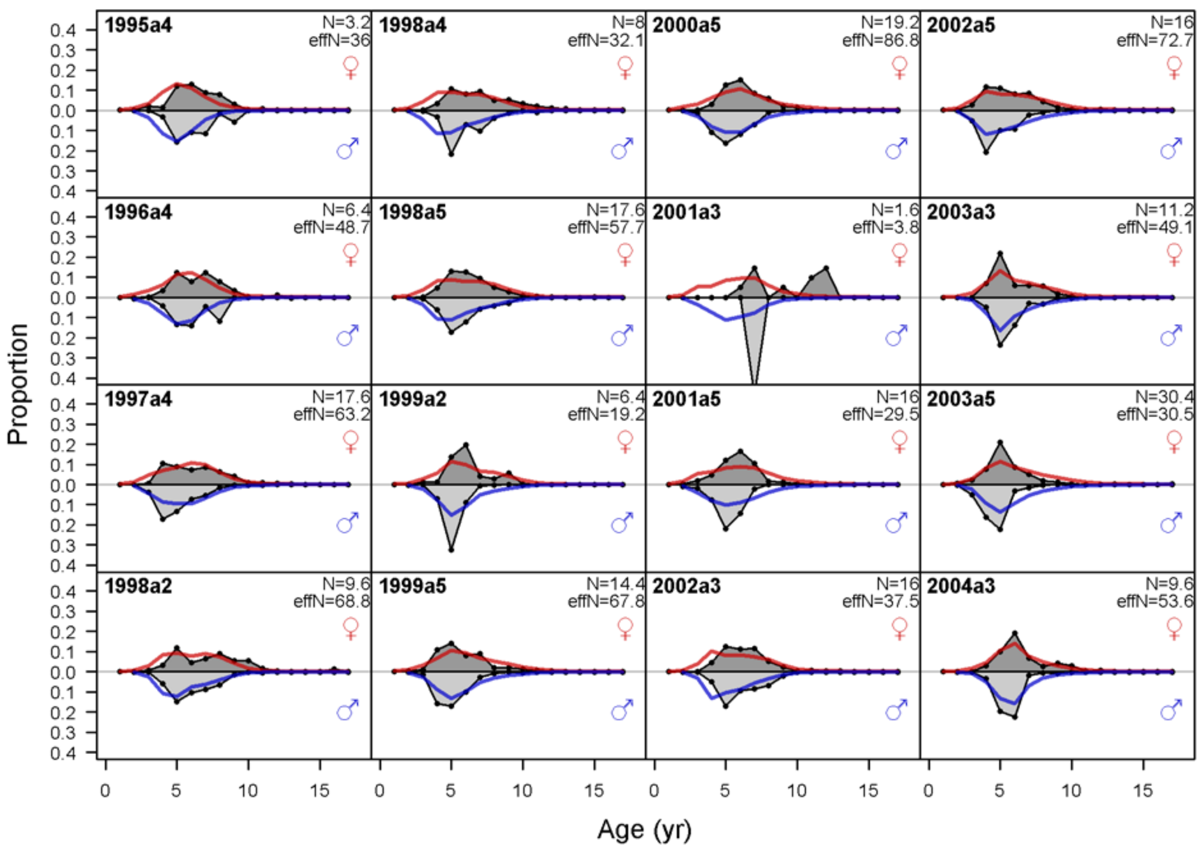


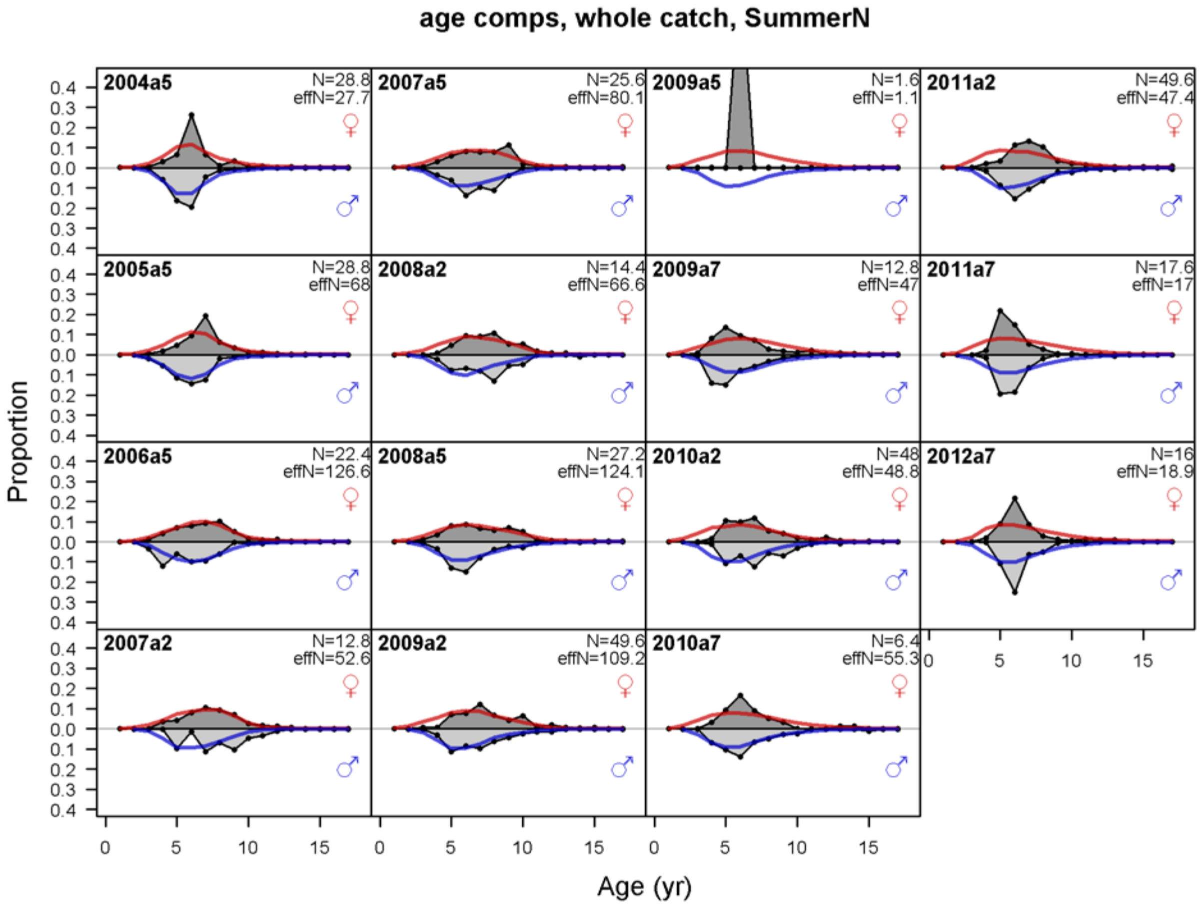
age comps, whole catch, SummerN
1960a8
N=1.6
effN=32.9
1966a8
N=56
effN=110.9
1970a8
N=97.6
effN=200
1974a8
N=75.2
effN=45.2
1961a8
N=1.6
effN=24.5
1967a8
N=70.4
effN=101.7
1971a8
N=35.2
effN=22.9
1975a8
N=38.4
effN=54.1
1964a8
N=3.2
effN=23.3
1968a8
N=89.6
effN=128.3
1972a8
N=51.2
effN=70.9
1976a8
N=8
effN=47.3
1965a8
N=3.2
effN=53.2
1969a8
N=91.2
effN=179.9
1973a8
N=38.4
effN=181.8
1977a8
N=30.4
effN=58.6
Proportion
Age (yr)

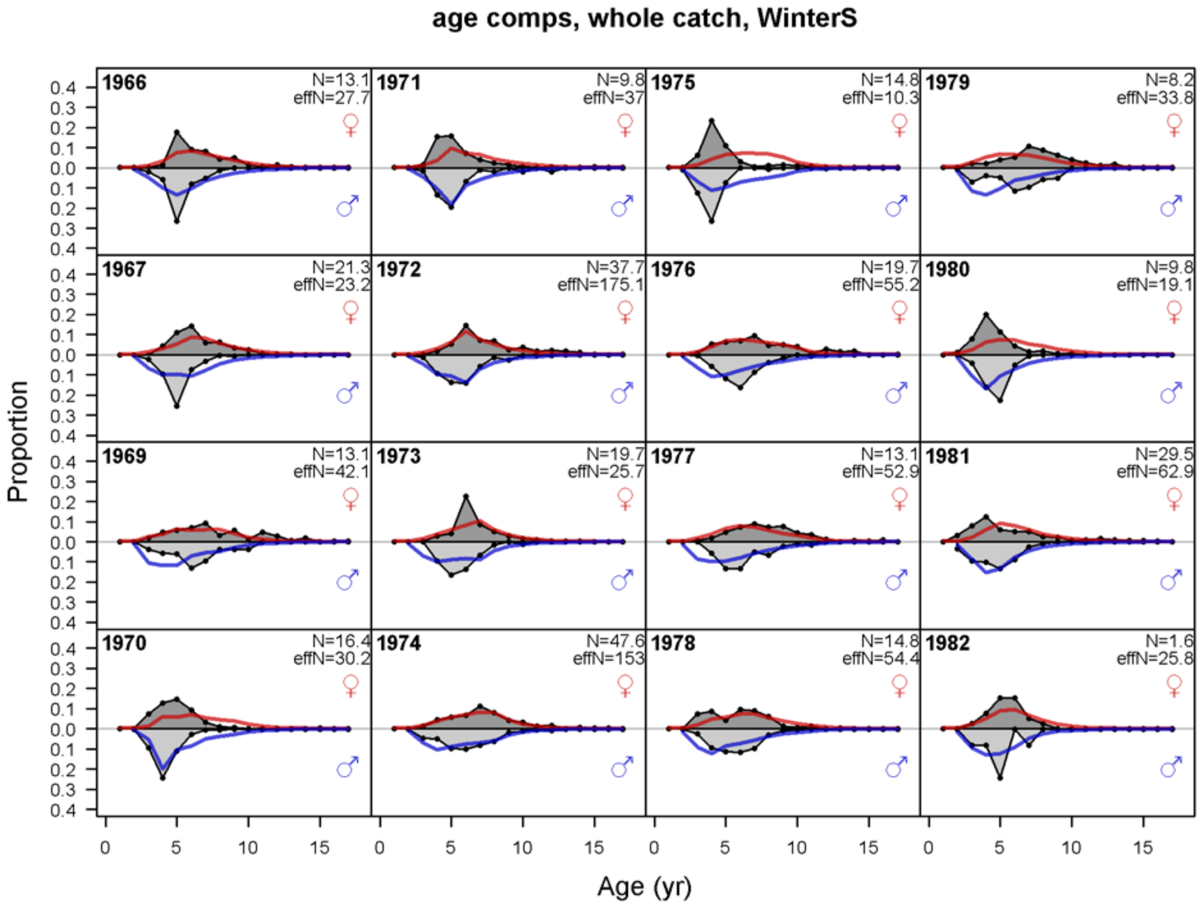


age comps, whole catch, SummerN
1978a8
N=25.6
effN=178.3
1982a4
N=25.6
effN=117
1987a4
N=25.6
effN=53.8
1991a4
N=11.2
effN=61
1979a8
N=33.6
effN=185
1983a4
N=1.6
effN=17.6
1988a4
N=12.8
effN=24.7
1992a4
N=17.6
effN=49.6
1980a8
N=60.8
effN=158.2
1985a2
N=8
effN=42.3
1989a2
N=19.2
effN=28.9
1993a4
N=12.8
effN=18.9
1981a4
N=59.2
effN=160.7
1986a2
N=14.4
effN=156.7
1990a2
N=17.6
effN=151.6
1994a4
N=14.4
effN=45.9
Proportion
Age (yr)

age comps, whole catch, SummerN

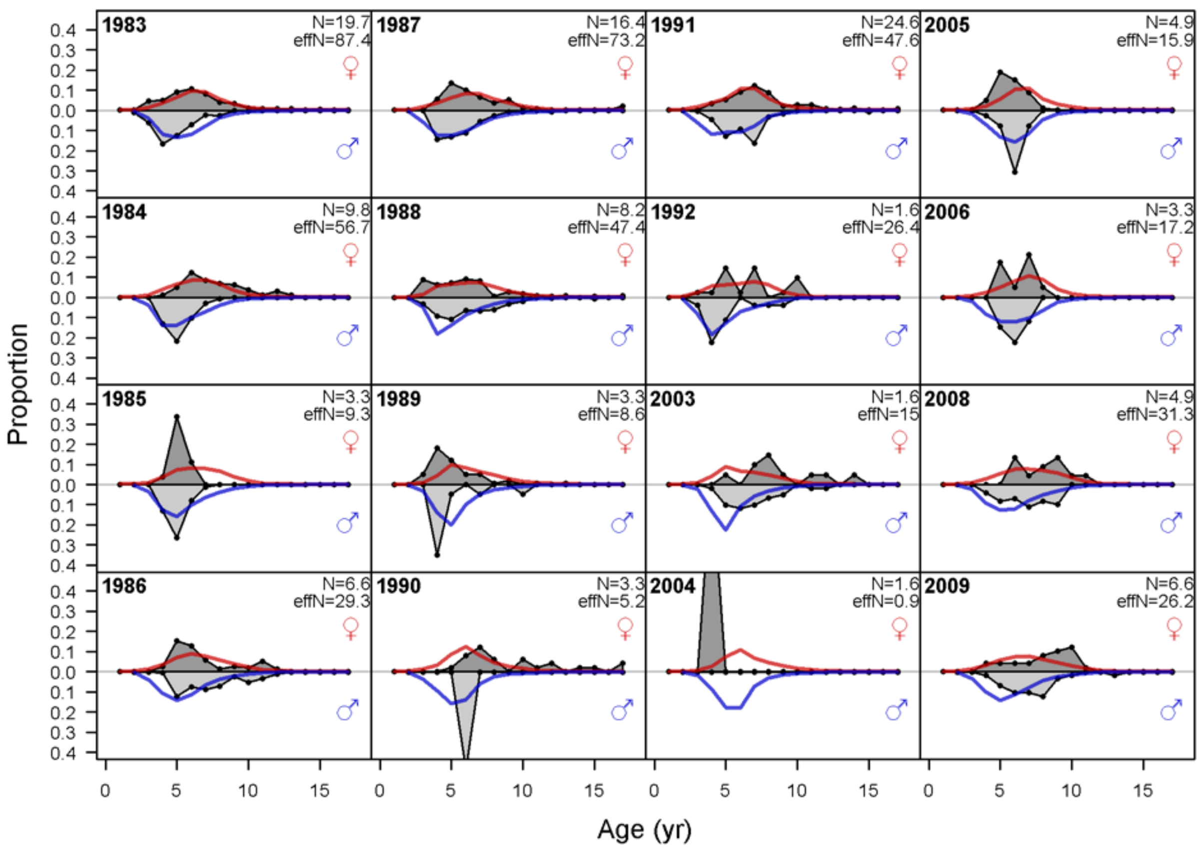



age comps, whole catch, SummerN
2004a5
N=28.8
effN=27.7
2007a5
N=25.6
effN=80.1
2009a5
N=1.6
effN=1.1
2011a2
N=49.6
effN=47.4
2005a5
N=28.8
effN=68
2008a2
N=14.4
effN=66.6
2009a7
N=12.8
effN=47
2011a7
N=17.6
effN=17
2006a5
N=22.4
effN=126.6
2008a5
N=27.2
effN=124.1
2010a2
N=48
effN=48.8
2012a7
N=16
effN=18.9
2007a2
N=12.8
effN=52.6
2009a2
N=49.6
effN=109.2
2010a7
N=6.4
effN=55.3
Proportion
Age (yr)

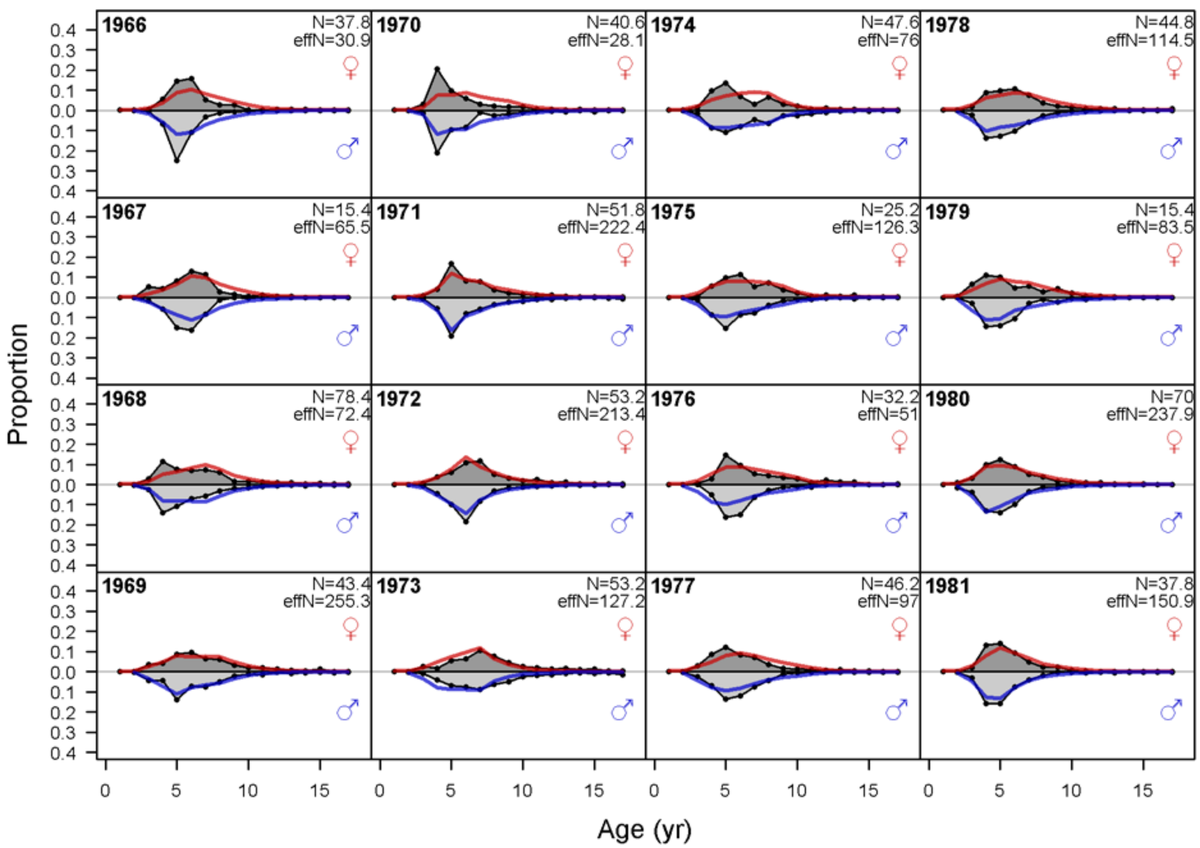


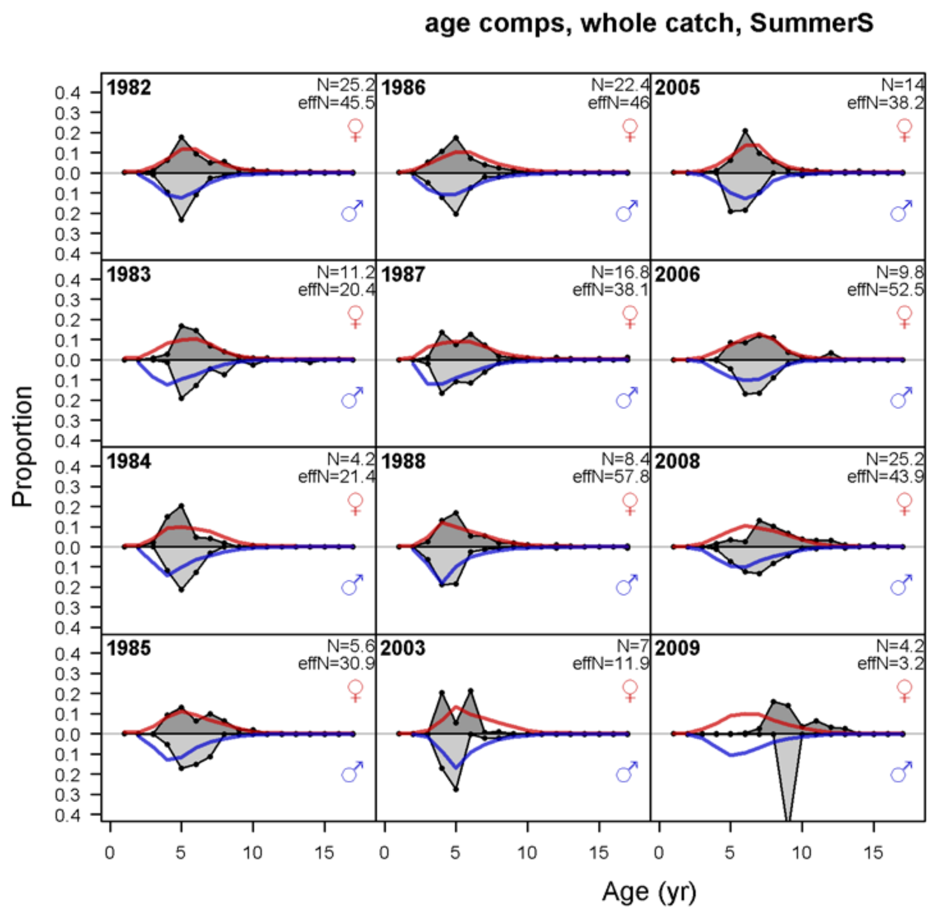
age comps, whole catch, WinterS
1966
N=13.1
effN=27.7
1971
N=9.8
effN=37
1975
N=14.8
effN=10.3
1979
N=8.2
effN=33.8
1967
N=21.3
effN=23.2
1972
N=37.7
effN=175.1
1976
N=19.7
effN=55.2
1980
N=9.8
effN=19.1
1969
N=13.1
effN=42.1
1973
N=19.7
effN=25.7
1977
N=13.1
effN=52.9
1981
N=29.5
effN=62.9
1970
N=16.4
effN=30.2
1974
N=47.6
effN=153
1978
N=14.8
effN=54.4
1982
N=1.6
effN=25.8
Proportion
Age (yr)

age comps, whole catch, WinterS

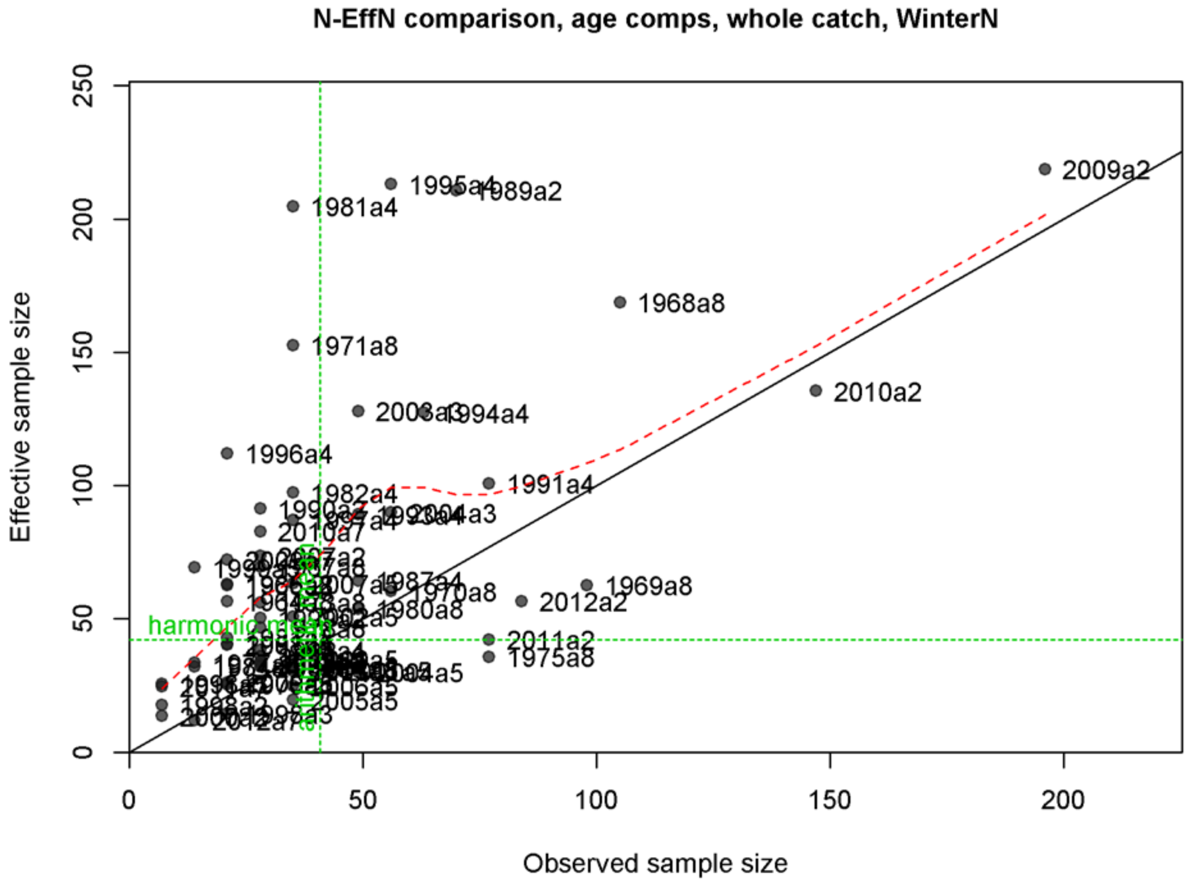


age comps, whole catch, SummerS

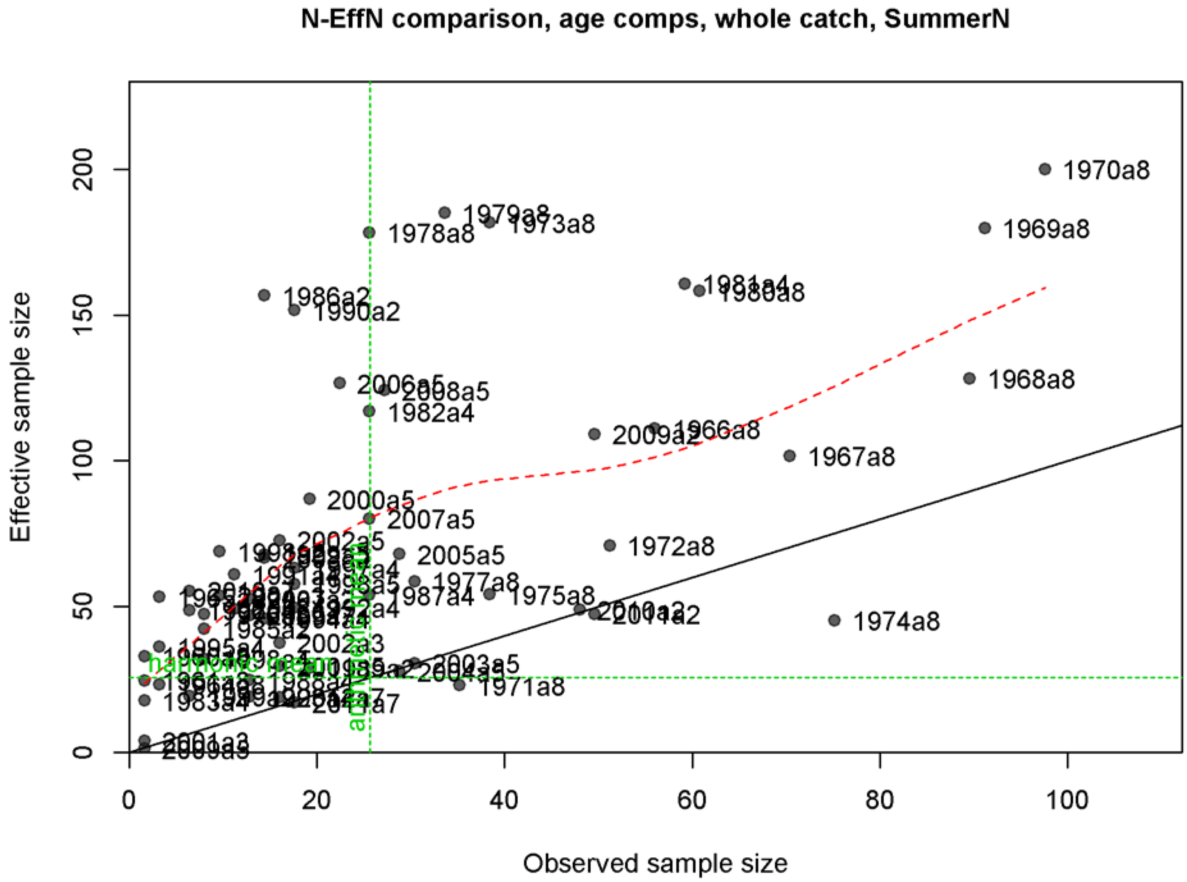


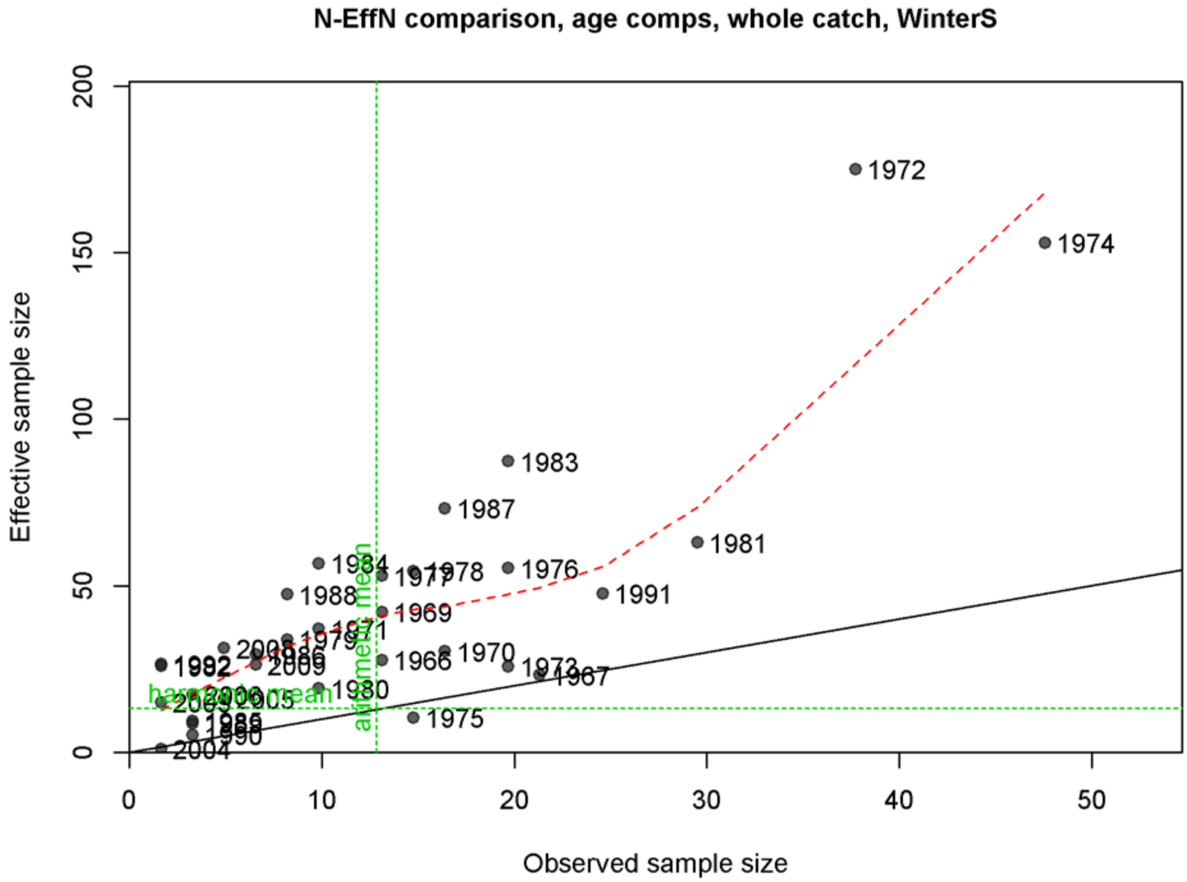


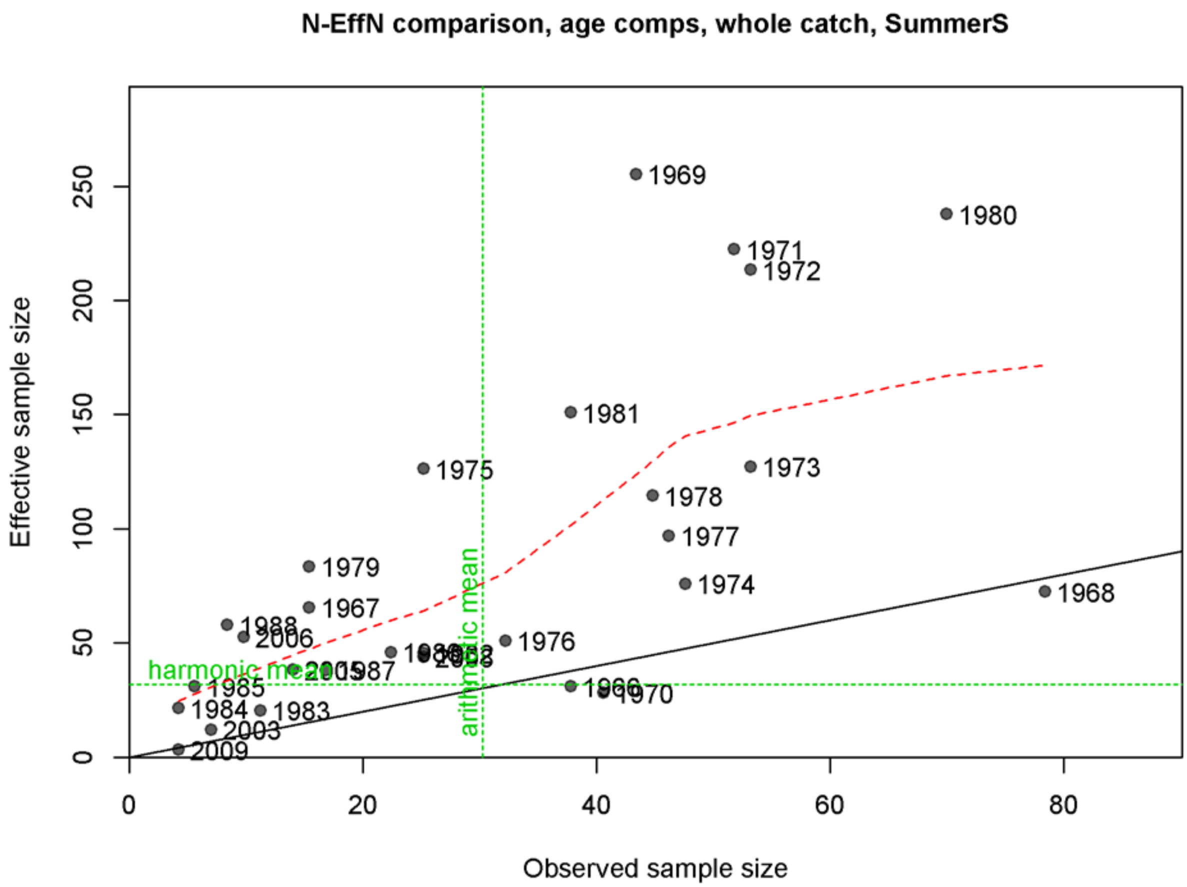
Appendix E.5. Fishery age composition effective sample sizes



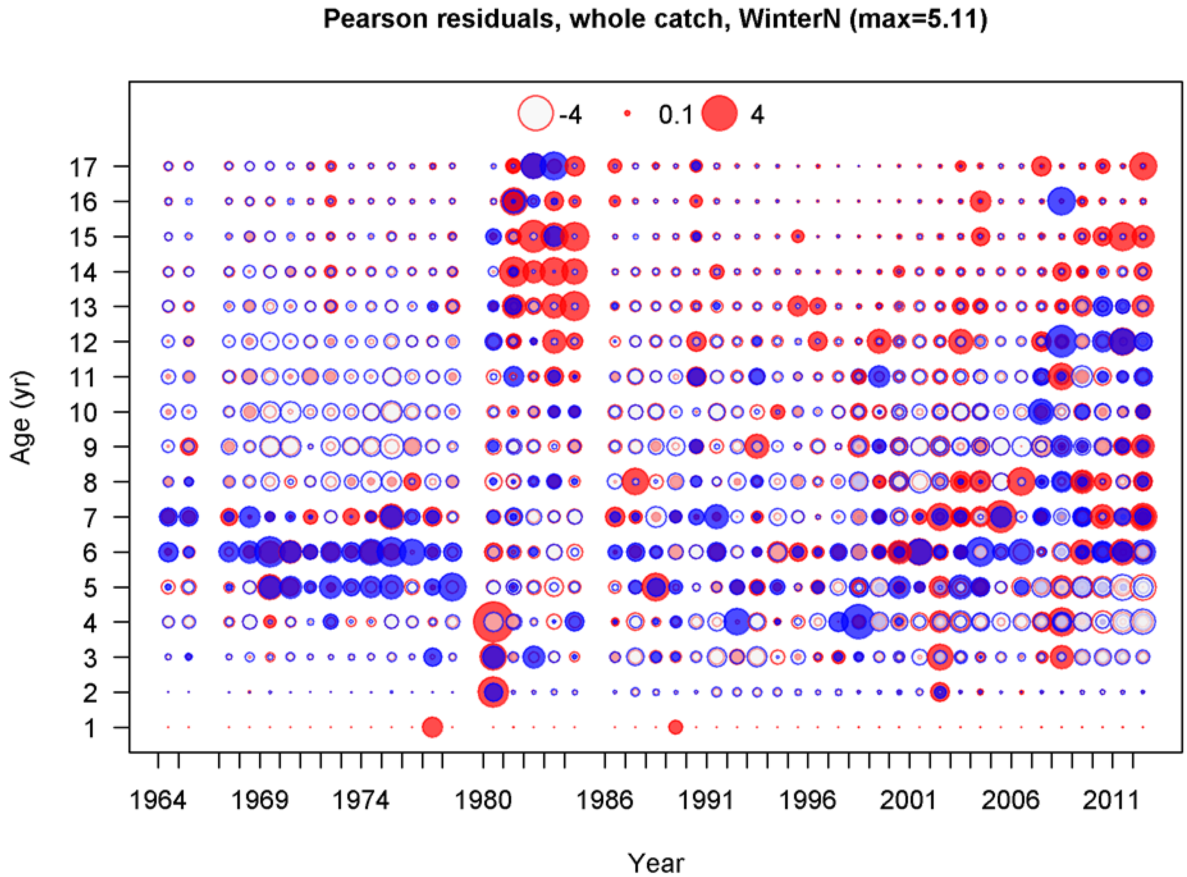
N-EffN comparison, age comps, whole catch, WinterN
Effective sample size
Observed sample size
harmonic mean
2009a2
1995a4
1989a2
1981a4
1968a8
1971a8
2010a2
1994a4
1996a4
1991a4
1982a4
2010a7
1969a8
1970a8
2012a2
1980a8
2011a2
1975a8
2005a5


N-EffN comparison, age comps, whole catch, SummerN
Effective sample size
Observed sample size
0
50
100
150
200
0
20
40
60
80
100
1970a8
1969a8
1979a8
1973a8
1978a8
1986a2
1990a2
1968a8
2006a5
2008a5
1982a4
1966a8
2009a2
1967a8
2000a5
2007a5
2002a5
2005a5
1972a8
1977a8
1987a4
1975a8
2011a2
1974a8
1985a2
1995a4
2002a3
2003a5
2004a3
1971a8
1983a4
harmonic mean
arithmetic mean

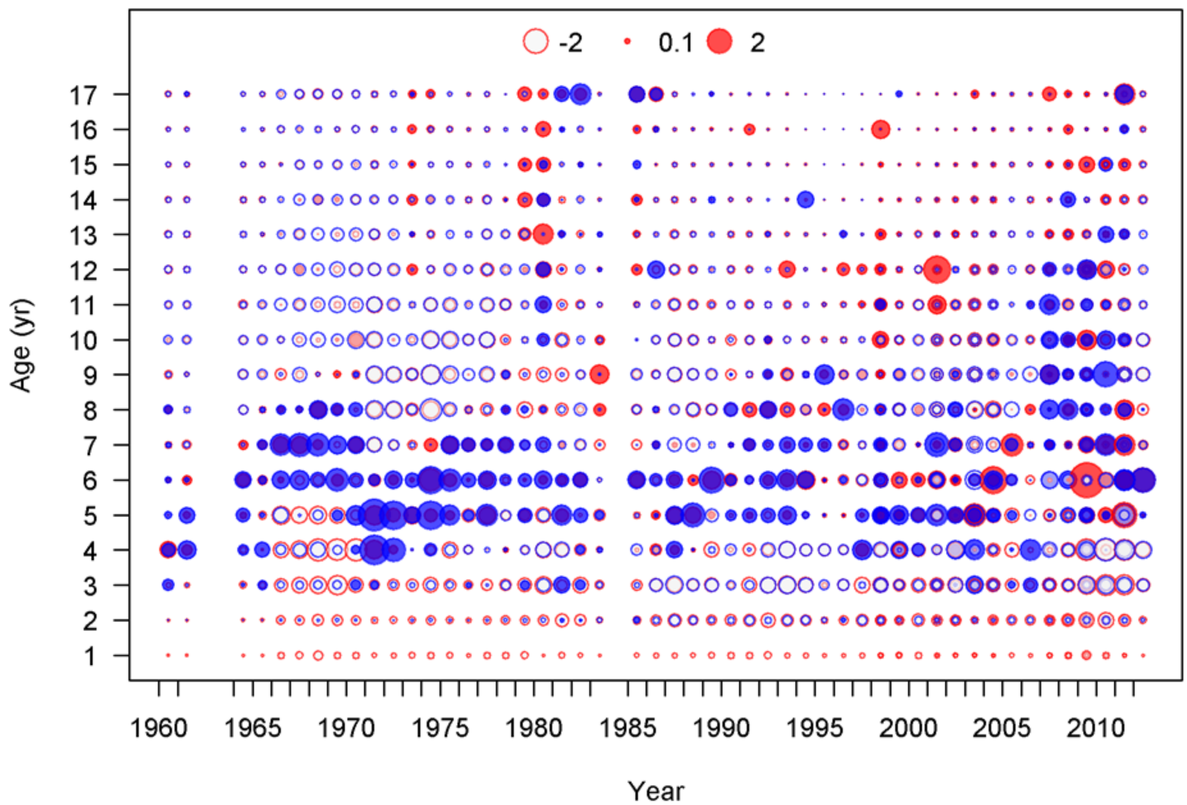

N-EffN comparison, age comps, whole catch, WinterS
Effective sample size
Observed sample size
harmonic mean
arithmetic mean
1972
1974
1983
1987
1981
1976
1991
1984
1978
1977
1988
1969
1971
1979
1970
1966
1973
1967
1980
1975
1992
2009
2005
2004



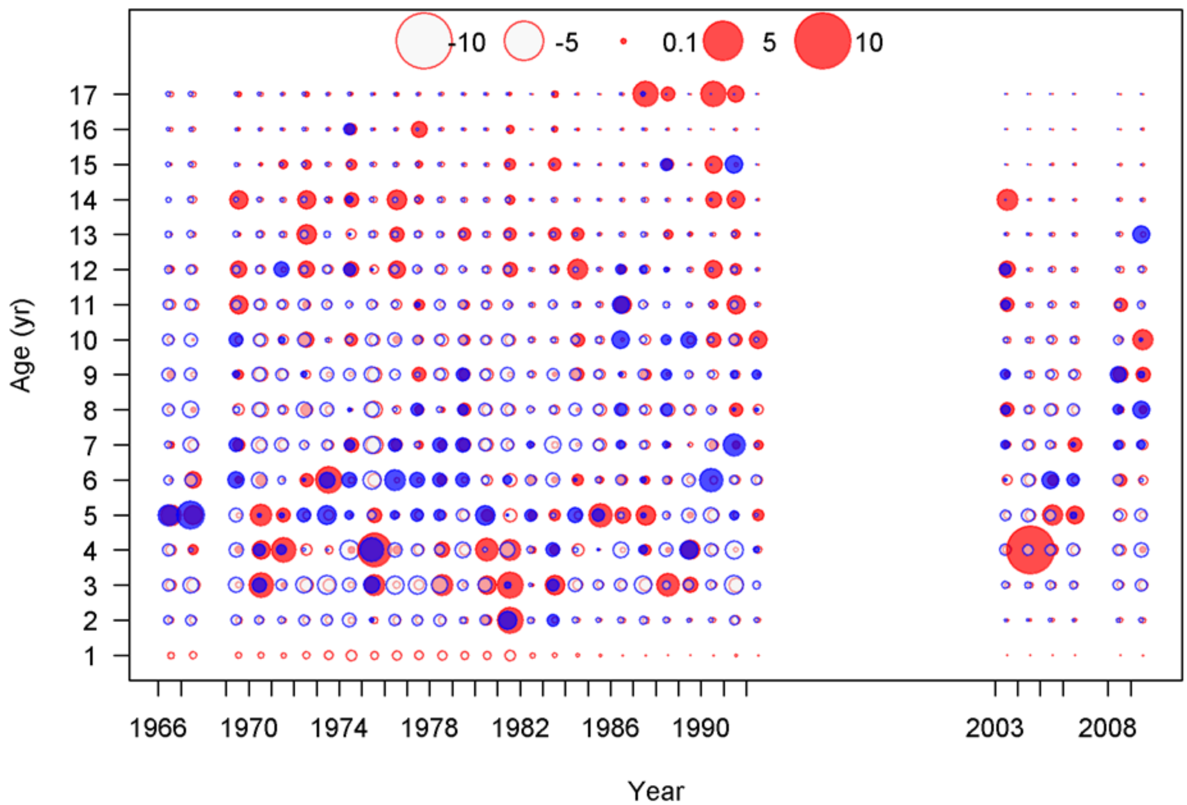
Appendix E.6. Fishery age composition Pearson residuals


Pearson residuals, whole catch, WinterN (max=5.11)
-4
0.1
4
Age (yr)
Year
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
1964
1969
1974
1980
1986
1991
1996
2001
2006
2011

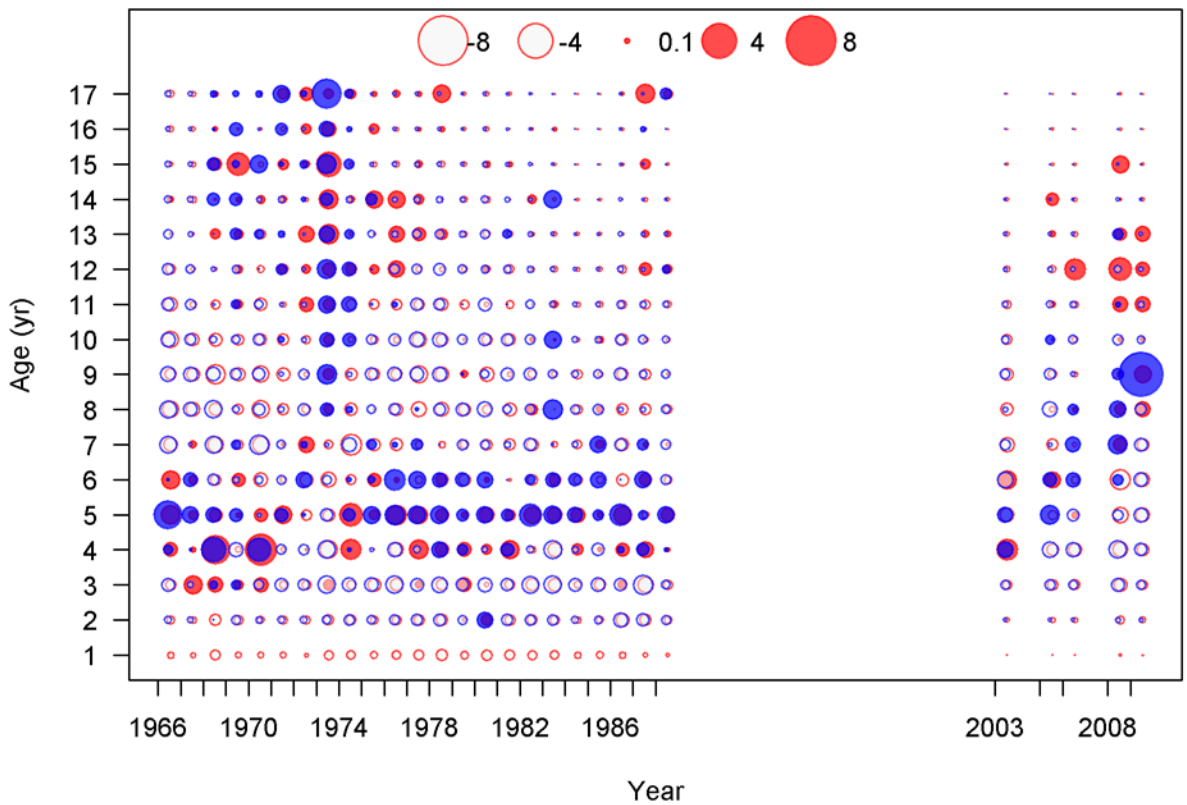
Pearson residuals, whole catch, SummerN (max=4.01)



Pearson residuals, whole catch, WinterS (max=7.39)



Pearson residuals, whole catch, SummerS (max=6.16)



Appendix F. Base model numbers at age

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1874	7309.5	6354.7	5524.6	4802.9	4175.5	3630.1	3155.9	2743.6	2385.2	2073.7	1802.8	1567.3	1362.6	1184.6	1029.8	895.3	778.3	676.7	588.3	511.4	444.6	386.5	336.1	292.2	254.0	220.8	192.0	166.9	145.1	126.1	109.7	95.3	82.9	72.1	62.6	54.5	47.3	41.2	35.8	31.1	207.0
1875	7309.5	6354.7	5524.6	4802.9	4175.5	3630.1	3155.9	2743.6	2385.2	2073.7	1802.8	1567.3	1362.6	1184.6	1029.8	895.3	778.3	676.7	588.3	511.4	444.6	386.5	336.1	292.2	254.0	220.8	192.0	166.9	145.1	126.1	109.7	95.3	82.9	72.1	62.6	54.5	47.3	41.2	35.8	31.1	207.0
1876	7309.8	6354.9	5524.8	4803.1	4175.6	3630.2	3155.9	2743.7	2385.3	2073.7	1802.8	1567.3	1362.6	1184.6	1029.8	895.3	778.4	676.7	588.3	511.4	444.6	386.5	336.1	292.2	254.0	220.8	192.0	166.9	145.1	126.1	109.7	95.3	82.9	72.1	62.6	54.5	47.3	41.2	35.8	31.1	207.0
1877	7309.9	6355.0	5524.8	4803.1	4175.6	3630.2	3155.9	2743.7	2385.2	2073.7	1802.8	1567.3	1362.5	1184.6	1029.8	895.3	778.3	676.7	588.3	511.4	444.6	386.5	336.0	292.1	254.0	220.8	192.0	166.9	145.1	126.1	109.7	95.3	82.9	72.1	62.6	54.5	47.3	41.2	35.8	31.1	207.0
1878	7309.9	6355.0	5524.8	4803.1	4175.6	3630.2	3155.9	2743.6	2385.2	2073.6	1802.7	1567.2	1362.5	1184.5	1029.8	895.3	778.3	676.7	588.3	511.4	444.6	386.5	336.0	292.1	254.0	220.8	192.0	166.9	145.1	126.1	109.7	95.3	82.9	72.1	62.6	54.5	47.3	41.2	35.8	31.1	207.0
1879	7310.0	6355.0	5524.8	4803.1	4175.7	3630.2	3155.9	2743.6	2385.2	2073.6	1802.7	1567.2	1362.5	1184.5	1029.8	895.3	778.3	676.6	588.3	511.4	444.6	386.5	336.0	292.1	254.0	220.8	192.0	166.9	145.1	126.1	109.7	95.3	82.9	72.1	62.6	54.5	47.3	41.2	35.8	31.1	207.0
1880	7310.0	6355.1	5524.9	4803.1	4175.7	3630.2	3155.9	2743.6	2385.2	2073.6	1802.7	1567.2	1362.5	1184.5	1029.8	895.2	778.3	676.6	588.2	511.4	444.6	386.5	336.0	292.1	254.0	220.8	192.0	166.9	145.1	126.1	109.7	95.3	82.9	72.0	62.6	54.5	47.3	41.2	35.8	31.1	207.0
1881	7310.0	6355.1	5524.9	4803.2	4175.7	3630.1	3155.7	2743.3	2384.8	2073.2	1802.3	1566.8	1362.2	1184.2	1029.5	895.0	778.1	676.5	588.1	511.3	444.5	386.4	335.9	292.1	253.9	220.7	191.9	166.8	145.0	126.1	109.6	95.3	82.9	72.0	62.6	54.4	47.3	41.1	35.8	31.1	207.0
1882	7310.0	6355.1	5525.0	4803.2	4175.6	3629.9	3155.3	2742.6	2384.0	2072.4	1801.5	1566.2	1361.5	1183.7	1029.1	894.6	777.8	676.2	587.8	511.0	444.3	386.3	335.8	291.9	253.8	220.6	191.8	166.8	145.0	126.0	109.6	95.3	82.8	72.0	62.6	54.4	47.3	41.1	35.8	31.1	206.9
1883	7310.0	6355.1	5525.0	4803.2	4175.6	3629.7	3154.8	2741.9	2383.0	2071.3	1800.5	1565.2	1360.7	1182.9	1028.4	894.0	777.2	675.7	587.4	510.7	444.0	386.0	335.6	291.7	253.6	220.5	191.7	166.7	144.9	126.0	109.5	95.2	82.8	72.0	62.6	54.4	47.3	41.1	35.7	31.1	206.7
1884	7309.9	6355.1	5525.0	4803.2	4175.6	3629.6	3154.4	2741.1	2381.9	2070.0	1799.1	1563.9	1359.5	1181.9	1027.5	893.2	776.5	675.1	586.9	510.2	443.6	385.6	335.3	291.5	253.4	220.3	191.5	166.5	144.8	125.8	109.4	95.1	82.7	71.9	62.5	54.3	47.2	41.1	35.7	31.0	206.6
1885	7309.8	6355.0	5524.9	4803.2	4175.6	3629.4	3154.0	2740.4	2380.8	2068.6	1797.6	1562.4	1358.1	1180.6	1026.3	892.3	775.7	674.4	586.3	509.7	443.1	385.2	334.9	291.2	253.1	220.1	191.3	166.3	144.6	125.7	109.3	95.0	82.6	71.8	62.4	54.3	47.2	41.0	35.7	31.0	206.3
1886	7309.7	6354.9	5524.9	4803.2	4175.5	3629.2	3153.6	2739.6	2379.7	2067.2	1796.0	1560.7	1356.5	1179.1	1025.0	891.1	774.7	673.5	585.5	509.0	442.5	384.7	334.5	290.8	252.8	219.8	191.1	166.1	144.4	125.5	109.1	94.9	82.5	71.7	62.3	54.2	47.1	41.0	35.6	31.0	206.1
1887	7309.5	6354.8	5524.8	4803.1	4175.4	3629.0	3153.1	2738.8	2378.6	2065.8	1794.5	1559.0	1354.8	1177.5	1023.5	889.7	773.5	672.4	584.6	508.2	441.8	384.1	333.9	290.3	252.4	219.4	190.8	165.8	144.2	125.3	109.0	94.7	82.4	71.6	62.2	54.1	47.0	40.9	35.6	30.9	205.7
1888	7309.4	6354.7	5524.7	4803.0	4175.3	3628.8	3152.6	2738.0	2377.5	2064.4	1792.9	1557.3	1353.0	1175.7	1021.9	888.2	772.2	671.3	583.6	507.3	441.1	383.4	333.4	289.8	252.0	219.0	190.4	165.6	143.9	125.1	108.8	94.6	82.2	71.5	62.1	54.0	47.0	40.8	35.5	30.9	205.4
1889	7309.2	6354.6	5524.6	4803.0	4175.2	3628.5	3152.2	2737.2	2376.4	2063.1	1791.3	1555.6	1351.2	1173.9	1020.1	886.6	770.7	670.0	582.4	506.3	440.2	382.7	332.7	289.2	251.5	218.6	190.0	165.2	143.6	124.9	108.6	94.4	82.1	71.3	62.0	53.9	46.9	40.7	35.4	30.8	205.0
1890	7309.1	6354.4	5524.5	4802.9	4175.1	3628.3	3151.7	2736.4	2375.2	2061.6	1789.7	1553.8	1349.4	1172.1	1018.3	884.9	769.1	668.5	581.2	505.2	439.2	381.8	332.0	288.6	250.9	218.1	189.6	164.9	143.3	124.6	108.3	94.2	81.9	71.2	61.9	53.8	46.8	40.7	35.3	30.7	204.5
1891	7308.9	6354.3	5524.4	4802.8	4174.9	3628.0	3151.2	2735.6	2374.1	2060.2	1788.0	1552.1	1347.6	1170.3	1016.5	883.1	767.4	667.0	579.8	504.0	438.2	380.9	331.2	287.9	250.3	217.6	189.2	164.5	143.0	124.3	108.1	93.9	81.7	71.0	61.7	53.7	46.7	40.6	35.3	30.7	204.0
1892	7308.8	6354.2	5524.2	4802.6	4174.8	3627.8	3150.6	2734.7	2372.9	2058.8	1786.4	1550.4	1345.8	1168.4	1014.7	881.4	765.7	665.4	578.3	502.7	437.0	379.9	330.3	287.1	249.6	217.0	188.7	164.0	142.6	124.0	107.8	93.7	81.5	70.8	61.6	53.5	46.5	40.5	35.2	30.6	203.5
1893	7308.6	6354.0	5524.1	4802.5	4174.7	3627.5	3150.1	2733.9	2371.7	2057.3	1784.8	1548.6	1344.0	1166.6	1012.9	879.6	764.0	663.8	576.8	501.3	435.8	378.8	329.3	286.3	248.9	216.4	188.1	163.6	142.2	123.6	107.5	93.4	81.2	70.6	61.4	53.4	46.4	40.3	35.1	30.5	202.9
1894	7308.5	6353.9	5524.0	4802.4	4174.5	3627.2	3149.6	2733.0	2370.6	2055.9	1783.1	1546.8	1342.1	1164.8	1011.1	877.9	762.3	662.2	575.3	499.9	434.5	377.7	328.3	285.4	248.1	215.7	187.5	163.0	141.7	123.2	107.1	93.1	81.0	70.4	61.2	53.2	46.3	40.2	35.0	30.4	202.3
1895	7308.4	6353.8	5523.9	4802.3	4174.4	3626.9	3149.0	2732.2	2369.4	2054.4	1781.4	1545.0	1340.3	1162.9	1009.3	876.1	760.6	660.6	573.8	498.5	433.2	376.5	327.3	284.5	247.3	215.0	186.9	162.5	141.3	122.8	106.8	92.8	80.7	70.2	61.0	53.0	46.1	40.1	34.8	30.3	201.6
1896	7308.4	6353.7	5523.8	4802.2	4174.2	3626.7	3148.5	2731.3	2368.1	2052.9	1779.8	1543.2	1338.4	1161.1	1007.4	874.3	758.9	658.9	572.2	497.0	431.8	375.3	326.1	283.5	246.5	214.3	186.3	161.9	140.8	122.4	106.4	92.5	80.4	69.9	60.8	52.8	45.9	39.9	34.7	30.2	200.9
1897	7308.4	6353.7	5523.8	4802.2	4174.1	3626.4	3148.0	2730.4	2366.9	2051.4	1778.1	1541.4	1336.6	1159.2	1005.6	872.5	757.2	657.3	570.7	495.6	430.5	374.0	325.0	282.5	245.5	213.4	185.6	161.3	140.2	121.9	106.0	92.1	80.1	69.6	60.5	52.6	45.8	39.8	34.6	30.1	200.1
1898	7308.4	6353.7	5523.7	4802.1	4174.0	3626.1	3147.4	2729.5	2365.7	2049.9	1776.4	1539.6	1334.7	1157.3	1003.7	870.7	755.5	655.7	569.1	494.2	429.1	372.8	323.8	281.4	244.6	212.6	184.8	160.7	139.7	121.4	105.6	91.8	79.8	69.4	60.3	52.4	45.6	39.6	34.4	29.9	199.3
1899	7308.5	6353.7	5523.7	4802.0	4173.9	3625.8	3146.9	2728.6	2364.5	2048.4	1774.7	1537.8	1332.8	1155.4	1001.9	868.9	753.8	654.0	567.6	492.7	427.8	371.5	322.7	280.3	243.6	211.7	184.1	160.0	139.1	120.9	105.1	91.4	79.5	69.1	60.1	52.2	45.4	39.5	34.3	29.8	198.5
1900	7308.6	6353.8	5523.7	4802.0	4173.8	3625.6	3146.4	2727.8	2363.3	2046.9	1773.0	1536.0	1330.9	1153.5	1000.0	867.1	752.0	652.4	566.1	491.3	426.4	370.2	321.5	279.3	242.6	210.8	183.3	159.3	138.5	120.4	104.7	91.0	79.1	68.8	59.8	52.0	45.2	39.3	34.2	29.7	197.6
1901	7308.8	6353.9	5523.8	4802.0	4173.7	3625.4	3145.8	2726.9	2362.0	2045.4	1771.3	1534.1	1329.0	1151.6	998.1	865.3	750.3	650.7	564.5	489.8	425.1	369.0	320.4	278.2	241.7	210.0	182.4	158.6	137.8	119.8	104.2	90.6	78.7	68.4	59.5	51.7	45.0	39.1	34.0	29.5	196.7
1902	7309.1	6354.1	5523.9	4802.1	4173.7	3625.1	3145.3	2726.0	2360.8	2043.9	1769.5	1532.3	1327.2	1149.7	996.3	863.5	748.6	649.1	562.9	488.3	423.7	367.7	319.2	277.1	240.7	209.1	181.6	157.8	137.2	119.2	103.7	90.1	78.3	68.1	59.2	51.5	44.7	38.9	33.8	29.4	195.7
1903	7309.5	6354.3	5524.1	4802.2	4173.7	3624.9	3144.8	2725.2	2359.6	2042.4	1767.8	1530.4	1325.2	1147.8	994.4	861.6	746.8	647.4	561.4	486.9	422.3	366.5	318.0	276.1	239.7	208.2	180.8	157.1	136.5	118.6	103.1	89.6	77.9	67.8	58.9	51.2	44.5	38.7	33.6	29.3	194.7
1904	7310.0	6354.7	5524.3	4802.3	4173.7	3624.8	3144.4	2724.3	2358.4	2040.8	1766.1	1528.6	1323.3	1145.9	992.5	859.8	745.0	645.7	559.8	485.4	421.0	365.2	316.9	275.0	238.7	207.3	180.0	156.3	135.8	118.0	102.6	89.2	77.5	67.4	58.6	50.9	44.3	38.5	33.5	29.1	193.6
1905	7310.6	6355.1	5524.6	4802.5	4173.8	3624.6	3143.9	2723.5	2357.2	2039.3	1764.4	1526.8	1321.4	1144.0	990.6	858.0	743.3	644.1	558.2	483.9	419.6	363.9	315.7	273.9	237.7	206.4	179.2	155.6	135.1	117.4	102.0	88.7	77.1	67.0	58.3	50.6	44.0	38.3	33.3	28.9	192.5
1906	7311.4	6355.7	5525.0	4802.7	4173.9	3624.5	3143.5	2722.6	2356.0	2037.8	1762.7	1524.9	1319.5	1142.1	988.7	856.1	741.5	642.4	556.6	482.5	418.2	362.7	314.5	272.8	236.7	205.5	178.3	154.8	134.5	116.8	101.5	88.2	76.6	66.6	57.9	50.3	43.8	38.1	33.1	28.8	191.4
1907	7312.3	6356.3	5525.4	4803.1	4174.1	3624.5	3143.1	2721.8	2354.8	2036.3	1760.9	1523.1	1317.6	1140.1	986.8	854.3	739.8	640.7	555.1	481.0	416.9	361.4	313.4	271.8	235.8	204.6	177.5	154.1	133.8	116.2	100.9	87.7	76.2	66.2	57.6	50.0	43.5	37.8	32.9	28.6	190.2
1908	7313.4	6357.1	5526.0	4803.5	4174.3	3624.4	3142.7	2721.1	2353.6	2034.8	1759.2	1521.2	1315.7	1138.2	984.9	852.5	738.0	639.0	553.5	479.5	415.5	360.1	312.2	270.7	234.8	203.7	176.7	153.4	133.1	115.6	100.4	87.2	75.7	65.8	57.2	49.7	43.2	37.6	32.7	28.4	189.0
1909	7314.7	6358.1	5526.7	4804.0	4174.6	3624.5	3142.4	2720.3	2352.4	2033.4	1757.5	1519.4	1313.8	1136.3	983.0	850.6	736.2	637.4	551.9	478.0	414.1	358.8	311.0	269.6	233.8	202.8	175.9	152.6	132.4	115.0	99.8	86.7	75.3	65.4	56.8	49.4	42.9	37.3	32.5	28.2	187.8
1910	7316.2	6359.2	5527.5	4804.6	4175.0	3624.6	3142.1	2719.6	2351.3	2031.9	1755.8	1517.5	1311.9	1134.4	981.1	848.8	734.4	635.7	550.3	476.5	412.7	357.6	309.8	268.5	232.8	201.9	175.1	151.9	131.8	114.4	99.3	86.2	74.8	65.0	56.5	49.1	42.7	37.1	32.2	28.0	186.5
1911	7317.9	6360.5	5528.5	4805.3	4175.4	3624.7	3141.8	2718.9	2350.2	2030.5	1754.1	1515.7	1310.0	1132.4	979.2	846.9	732.7	634.0	548.7	475.0	411.4	356.3	308.7	267.5	231.8	201.0	174.2	151.1	131.1	113.7	98.7	85.7	74.4	64.6	56.1	48.8	42.4	36.8	32.0	27.8	185.2
1912	7319.9	6362.0	5529.6	4806.1	4176.0	3625.0	3141.7	2718.3	2349.1	2029.0	1752.5	1513.9	1308.1	1130.5	977.3	845.1	730.9	632.3	547.1	473.6	410.0	355.0	307.5	266.4	230.8	200.1	173.4	150.4	130.4	113.1	98.2	85.2	74.0	64.2	55.8	48.4	42.1	36.6	31.8	27.6	183.8
1913	7322.2	6363.8	5530.9	4807.1	4176.7	3625.3	3141.5	2717.7	2348.1	2027.6	1750.8	1512.0	1306.2	1128.6	975.4	843.2	729.1	630.6	545.5	472.1	408.6	353.7	306.3	265.3	229.8	199.1	172.6	149.6	129.7	112.5	97.6	84.7	73.5	63.8	55.4	48.1	41.8	36.3	31.5	27.4	182.4
1914	7324.8	6365.8	5532.5	4808.2	4177.5	3625.7	3141.5	2717.1	2347.1	2026.3	1749.2	1510.2	1304.3	1126.7	973.5	841.4	727.3	628.9	544.0	470.6	407.2	352.4	305.1	264.2	228.8	198.2	171.8	148.9	129.1	111.9	97.1	84.2	73.1	63.4	55.0	47.8	41.5	36.0	31.3	27.2	181.0
1915	7327.8	6368.0	5534.2	4809.5	4178.4	3626.2	3141.5	2716.6	2346.1	2024.9	1747.6	1508.5	1302.4	1124.8	971.6	839.5	725.6	627.2	542.4	469.1	405.8	351.2	303.9	263.1	227.8	197.3	171.0	148.1	128.4	111.3	96.5	83.7	72.6	63.0	54.7	47.5	41.2	35.8	31.1	27.0	179.6
1916	7331.0	6370.5	5536.2	4811.0	4179.5	3626.9	3141.7	2716.2	2345.2	2023.6	1746.0	1506.7	1300.5	1122.9	969.7	837.7	723.8	625.6	540.8	467.6	404.4	349.9	302.8	262.0	226.9	196.4	170.1	147.4	127.7	110.7	96.0	83.2	72.2	62.6	54.3	47.1	40.9	35.5	30.9	26.8	178.1
1917	7334.6	6373.4	5538.4	4812.7	4180.8	3627.7	3142.0	2716.1	2344.6	2022.6	1744.6	1505.1	1298.8	1121.1	967.9	835.9	722.1	623.9	539.2	466.2	403.1	348.6	301.6	261.0	225.9	195.6	169.3	146.7	127.1	110.1	95.4	82.7	71.7	62.2	54.0	46.8	40.6	35.3	30.6	26.6	176.6
1918	7338.0	6376.5	5540.8	4814.6	4181.6	3626.7	3138.7	2710.9	2338.3	2016.1	1738.3	1499.3	1293.4	1116.2	963.4	831.8	718.4	620.5	536.2	463.4	400.6	346.4	299.6	259.2	224.3	194.1	168.1	145.5	126.0	109.2	94.6	82.0	71.1	61.6	53.5	46.4	40.2	34.9	30.3	26.3	174.7
1919	7342.3	6379.4	5543.5	4816.8	4183.6	3628.9	3140.7	2712.0	2338.2	2014.9	1736.6	1497.2	1291.3	1114.0	961.3	829.8	716.4	618.7	534.5	461.8	399.1	345.0	298.3	258.0	223.2	193.2	167.2	144.7	125.3	108.6	94.0	81.5	70.6	61.2	53.1	46.0	39.9	34.7	30.1	26.1	173.1
1920	7347.6	6383.2	5546.1	4819.2	4186.0	3632.1	3145.2	2717.2	2343.1	2018.6	1739.0	1498.6	1292.1	1114.3	961.4	829.6	716.1	618.3	533.9	461.2	398.5	344.4	297.8	257.5	222.7	192.6	166.7	144.3	124.9	108.2	93.7	81.2	70.3	60.9	52.8	45.8	39.7	34.5	29.9	26.0	171.9
1921	7353.9	6387.8	5549.4	4821.5	4188.6	3635.7	3151.0	2725.2	2352.2	2027.2	1746.1	1504.1	1296.3	1117.6	963.9	831.5	717.6	619.4	534.8	461.8	398.9	344.7	297.9	257.5	222.7	192.6	166.6	144.2	124.8	108.0	93.6	81.0	70.2	60.8	52.7	45.7	39.6	34.4	29.8	25.9	171.1
1922	7360.3	6393.3	5553.4	4824.3	4190.2	3637.0	3152.3	2727.7	2356.3	2032.4	1751.1	1508.2	1299.2	1119.7	965.3	832.5	718.2	619.8	535.0	461.9	398.9	344.6	297.7	257.3	222.5	192.4	166.4	143.9	124.5	107.8	93.3	80.8	70.0	60.6	52.5	45.5	39.5	34.2	29.7	25.8	170.2
1923	7366.5	6398.9	5558.1	4827.7	4192.1	3636.4	3149.6	2723.6	2352.7	2030.4	1750.6	1508.2	1299.0	1119.0	964.3	831.4	717.0	618.6	533.8	460.8	397.8	343.6	296.8	256.4	221.6	191.6	165.7	143.3	124.0	107.3	92.8	80.4	69.6	60.3	52.2	45.2	39.2	34.0	29.5	25.6	168.7
1924	7373.2	6404.2	5563.0	4831.8	4195.0	3638.0	3149.0	2721.2	2349.0	2027.1	1748.8	1507.6	1298.9	1118.7	963.6	830.5	716.0	617.5	532.7	459.7	396.8	342.6	295.9	255.6	220.8	190.9	165.0	142.7	123.4	106.8	92.4	80.0	69.2	59.9	51.9	45.0	39.0	33.8	29.3	25.4	167.3
1925	7379.7	6410.0	5567.7	4836.0	4198.1	3638.9	3147.3	2716.5	2342.3	2019.4	1741.9	1502.5	1295.3	1115.9	961.1	827.9	713.5	615.1	530.5	457.7	395.0	340.9	294.3	254.2	219.6	189.7	164.0	141.8	122.6	106.0	91.7	79.4	68.7	59.5	51.5	44.6	38.6	33.5	29.0	25.2	165.6
1926	7386.8	6415.7	5572.7	4840.0	4201.7	3641.6	3148.2	2715.1	2338.3	2013.7	1735.4	1496.6	1291.0	1112.9	958.8	825.8	711.4	613.0	528.5	455.8	393.3	339.4	292.9	252.9	218.4	188.7	163.0	140.9	121.8	105.3	91.1	78.8	68.2	59.0	51.1	44.2	38.3	33.2	28.8	24.9	163.9
1927	7394.5	6421.9	5577.6	4844.4	4205.3	3644.8	3150.7	2716.0	2337.3	2010.5	1730.6	1491.2	1286.1	1109.3	956.3	823.9	709.6	611.3	526.8	454.2	391.7	337.9	291.6	251.7	217.3	187.7	162.1	140.1	121.1	104.7	90.5	78.3	67.7	58.6	50.7	43.9	38.0	32.9	28.5	24.7	162.3
1928	7402.3	6428.6	5583.0	4848.6	4208.5	3646.2	3150.1	2713.7	2333.2	2004.9	1723.6	1483.4	1278.2	1102.4	950.8	819.7	706.2	608.2	523.9	451.5	389.3	335.7	289.7	250.0	215.8	186.3	160.9	139.0	120.1	103.8	89.7	77.6	67.1	58.0	50.2	43.5	37.6	32.6	28.2	24.5	160.3
1929	7411.1	6435.4	5588.8	4853.3	4212.2	3649.1	3151.6	2713.6	2331.5	2001.7	1719.1	1477.7	1271.8	1095.8	945.1	815.2	702.8	605.4	521.4	449.2	387.1	333.7	287.8	248.3	214.3	185.0	159.7	137.9	119.1	102.9	89.0	76.9	66.5	57.5	49.8	43.1	37.3	32.3	27.9	24.2	158.4
1930	7421.0	6443.0	5594.7	4858.3	4215.9	3650.9	3151.5	2711.2	2327.5	1996.4	1712.9	1470.8	1264.3	1088.1	937.5	808.5	697.4	601.2	518.0	446.1	384.3	331.2	285.5	246.3	212.5	183.3	158.2	136.6	118.0	101.9	88.1	76.1	65.8	56.9	49.2	42.6	36.8	31.9	27.6	23.9	156.2
1931	7434.3	6451.6	5601.3	4863.4	4220.4	3654.8	3154.3	2712.9	2327.4	1994.8	1710.1	1467.0	1259.6	1082.7	931.8	802.9	692.4	597.3	514.9	443.6	382.1	329.1	283.6	244.5	210.9	181.9	157.0	135.5	117.0	101.1	87.3	75.4	65.2	56.4	48.7	42.1	36.5	31.5	27.3	23.6	154.2
1932	7452.6	6463.2	5608.8	4869.2	4224.9	3659.1	3158.5	2716.3	2329.6	1995.1	1708.6	1464.1	1255.7	1078.1	926.6	797.4	687.1	592.6	511.1	440.6	379.6	327.0	281.7	242.7	209.3	180.5	155.7	134.4	116.0	100.1	86.5	74.7	64.5	55.8	48.2	41.7	36.1	31.2	27.0	23.4	152.2

1933	7478.1	6479.1	5618.9	4875.7	4229.8	3662.7	3161.4	2718.2	2329.9	1993.5	1704.7	1458.6	1249.1	1070.9	919.2	790.0	679.8	585.8	505.2	435.7	375.7	323.6	278.7	240.1	206.9	178.4	153.9	132.7	114.5	98.9	85.4	73.7	63.7	55.0	47.6	41.1	35.5	30.7	26.6	23.0	149.7
1934	7523.1	6501.2	5632.7	4884.4	4235.8	3668.0	3166.3	2722.8	2333.0	1994.3	1703.0	1454.3	1243.1	1063.9	911.8	782.5	672.4	578.6	498.6	430.0	370.9	319.7	275.5	237.2	204.4	176.1	151.8	131.0	113.0	97.5	84.2	72.7	62.7	54.2	46.8	40.5	35.0	30.3	26.2	22.6	147.0
1935	7598.3	6540.4	5651.9	4895.9	4239.8	3662.1	3149.9	2698.1	2304.4	1964.9	1674.2	1426.7	1216.6	1039.0	888.8	761.5	653.4	561.5	483.2	416.3	359.1	309.7	267.0	230.0	198.1	170.7	147.1	126.8	109.4	94.3	81.4	70.3	60.7	52.4	45.3	39.1	33.8	29.2	25.3	21.9	141.7
1936	7715.8	6605.8	5686.0	4912.7	4250.0	3666.3	3146.1	2685.6	2284.7	1941.4	1649.5	1402.1	1192.9	1016.1	867.2	741.6	635.3	545.2	468.5	403.1	347.3	299.6	258.4	222.8	191.9	165.3	142.4	122.7	105.8	91.2	78.7	67.9	58.6	50.6	43.7	37.8	32.6	28.2	24.4	21.1	136.4
1937	7877.7	6707.9	5742.8	4942.5	4266.4	3681.0	3160.6	2696.7	2289.0	1938.1	1640.8	1390.3	1179.5	1002.2	853.0	727.8	622.3	533.1	457.4	393.0	338.2	291.4	251.3	216.8	186.9	161.0	138.7	119.5	102.9	88.8	76.6	66.0	57.0	49.2	42.5	36.7	31.7	27.4	23.7	20.5	132.1
1938	8055.1	6848.7	5831.6	4991.6	4290.1	3688.3	3159.9	2689.9	2276.1	1918.8	1616.2	1363.0	1151.8	975.4	827.8	704.3	600.8	513.6	440.0	377.5	324.4	279.2	240.5	207.5	178.9	154.3	132.9	114.5	98.6	85.0	73.3	63.2	54.5	47.0	40.6	35.1	30.3	26.2	22.6	19.5	126.0
1939	8162.7	7002.9	5954.0	5068.6	4331.6	3705.1	3159.1	2679.2	2258.5	1895.7	1588.4	1331.9	1119.6	944.1	798.5	677.3	576.1	491.4	420.1	359.9	308.8	265.4	228.4	196.8	169.7	146.4	126.2	108.7	93.6	80.7	69.5	59.9	51.7	44.6	38.5	33.2	28.7	24.8	21.4	18.5	119.0
1940	8068.5	7096.4	6088.0	5174.7	4396.6	3735.4	3162.6	2662.6	2230.3	1860.6	1549.1	1290.1	1077.0	902.8	760.0	642.3	544.7	463.2	395.1	337.8	289.4	248.3	213.4	183.6	158.2	136.4	117.7	101.5	87.4	75.3	64.8	55.9	48.2	41.6	35.8	30.9	26.7	23.1	19.9	17.2	110.5
1941	7747.4	7014.5	6169.3	5291.2	4489.4	3794.4	3194.0	2672.2	2222.3	1841.1	1522.0	1258.3	1042.7	867.6	725.8	610.4	515.7	437.2	371.9	317.2	271.2	232.3	199.3	171.3	147.4	127.0	109.5	94.5	81.4	70.2	60.4	52.1	44.9	38.7	33.4	28.8	24.8	21.4	18.5	16.0	102.5
1942	7341.2	6735.4	6098.1	5362.1	4592.2	3879.8	3253.9	2710.6	2242.1	1844.5	1513.8	1242.2	1021.4	843.3	700.2	585.2	492.0	415.6	352.3	299.7	255.6	218.5	187.2	160.6	138.0	118.8	102.3	88.3	76.1	65.6	56.5	48.7	41.9	36.2	31.2	26.9	23.2	20.0	17.3	14.9	95.5
1943	7043.1	6382.2	5855.4	5299.8	4652.0	3963.4	3315.6	2741.7	2246.5	1827.4	1480.7	1200.3	975.9	797.6	656.2	543.9	454.2	381.8	322.5	273.4	232.6	198.3	169.6	145.3	124.7	107.1	92.2	79.4	68.5	59.1	50.9	43.9	37.8	32.6	28.1	24.2	20.9	18.0	15.5	13.4	85.7
1944	6974.9	6123.0	5548.4	5088.6	4596.2	4009.6	3376.9	2780.1	2257.3	1816.6	1454.2	1163.1	933.9	754.5	614.4	504.5	417.9	348.9	293.3	247.7	210.0	178.6	152.4	130.3	111.6	95.8	82.3	70.8	61.0	52.6	45.4	39.1	33.7	29.0	25.0	21.6	18.6	16.0	13.8	11.9	76.1
1945	6974.8	6063.8	5323.1	4822.0	4414.0	3964.5	3423.0	2843.4	2305.7	1845.5	1466.9	1162.8	923.4	737.9	594.5	483.4	396.8	328.6	274.4	230.6	194.8	165.2	140.5	119.8	102.4	87.7	75.3	64.7	55.7	48.0	41.4	35.7	30.8	26.5	22.8	19.7	16.9	14.6	12.6	10.9	69.2
1946	6638.0	6063.7	5271.6	4626.3	4183.0	3808.1	3386.1	2884.8	2361.9	1889.3	1494.6	1177.0	926.8	732.7	584.0	469.9	381.9	313.4	259.6	216.7	182.2	153.9	130.5	111.0	94.6	80.9	69.3	59.5	51.1	44.0	37.9	32.7	28.2	24.3	20.9	18.0	15.5	13.4	11.5	10.0	63.3
1947	5977.4	5770.9	5271.5	4580.6	4006.7	3587.7	3209.8	2791.2	2324.2	1864.4	1466.6	1145.3	893.6	699.2	550.8	438.3	352.4	286.4	235.0	194.6	162.5	136.6	115.4	97.8	83.2	71.0	60.7	52.0	44.6	38.3	33.0	28.4	24.5	21.1	18.2	15.7	13.5	11.6	10.0	8.7	54.9
1948	5416.1	5196.6	5016.9	4580.6	3967.8	3438.7	3029.5	2656.3	2264.3	1853.7	1467.3	1142.8	886.2	688.2	537.1	422.5	336.0	270.2	219.5	180.2	149.2	124.6	104.7	88.4	75.0	63.8	54.4	46.5	39.8	34.2	29.4	25.3	21.8	18.8	16.2	14.0	12.0	10.4	8.9	7.7	48.7
1949	5092.1	4708.6	4517.6	4358.2	3958.9	3377.9	2852.0	2433.9	2069.9	1720.9	1382.3	1079.1	832.2	641.2	496.1	386.4	303.8	241.6	194.2	157.8	129.5	107.2	89.5	75.3	63.6	53.9	45.8	39.1	33.4	28.6	24.6	21.1	18.2	15.7	13.5	11.6	10.0	8.6	7.4	6.4	40.6
1950	5063.0	4426.9	4093.4	3923.9	3762.4	3357.4	2779.7	2265.0	1871.1	1551.7	1267.2	1005.3	778.0	596.7	458.2	354.0	275.6	216.6	172.2	138.5	112.5	92.3	76.5	63.8	53.7	45.3	38.4	32.7	27.9	23.8	20.4	17.5	15.1	13.0	11.2	9.6	8.3	7.2	6.2	5.3	33.5
1951	5319.4	4401.6	3848.5	3555.1	3386.5	3187.2	2754.0	2191.9	1719.0	1375.5	1113.4	893.2	699.8	537.2	410.1	314.2	242.5	188.8	148.4	118.0	94.8	77.1	63.2	52.4	43.7	36.8	31.0	26.3	22.4	19.1	16.3	14.0	12.0	10.3	8.9	7.6	6.6	5.7	4.9	4.2	26.6
1952	5754.1	4624.5	3826.5	3343.5	3075.5	2893.0	2663.3	2238.7	1733.5	1327.8	1043.0	832.5	661.3	514.9	393.8	300.1	229.8	177.3	138.0	108.5	86.3	69.3	56.3	46.2	38.3	32.0	26.9	22.7	19.2	16.4	14.0	11.9	10.2	8.8	7.5	6.5	5.6	4.8	4.2	3.6	22.5
1953	6057.9	5002.4	4020.3	3324.4	2892.3	2627.2	2417.9	2166.8	1773.9	1343.4	1011.5	784.6	620.8	490.4	380.5	290.6	221.3	169.4	130.8	101.8	80.0	63.6	51.1	41.5	34.1	28.2	23.6	19.8	16.7	14.2	12.1	10.3	8.8	7.5	6.5	5.6	4.8	4.1	3.6	3.1	19.2
1954	6192.8	5266.5	4348.8	3492.6	2874.5	2467.3	2191.2	1965.0	1721.2	1385.8	1038.0	775.9	599.0	472.5	372.6	288.9	220.6	168.0	128.6	99.2	77.2	60.7	48.3	38.8	31.5	25.9	21.4	17.9	15.0	12.7	10.8	9.2	7.8	6.7	5.7	4.9	4.2	3.6	3.1	2.7	16.9
1955	6155.5	5383.8	4578.4	3777.1	3014.8	2438.0	2032.6	1746.2	1521.1	1304.6	1036.0	769.1	571.5	439.5	345.9	272.4	211.2	161.2	122.7	94.0	72.5	56.4	44.4	35.3	28.4	23.0	18.9	15.7	13.1	11.0	9.3	7.9	6.7	5.7	4.9	4.2	3.6	3.1	2.7	2.3	14.3
1956	6050.3	5351.4	4680.4	3977.0	3262.9	2563.0	2018.0	1631.2	1363.1	1163.3	984.0	774.2	571.2	422.8	324.3	255.0	200.8	155.6	118.8	90.4	69.2	53.4	41.6	32.7	26.0	20.9	17.0	13.9	11.5	9.6	8.1	6.8	5.8	4.9	4.2	3.6	3.1	2.6	2.3	2.0	12.3
1957	6020.5	5260.0	4652.2	4065.9	3438.0	2781.0	2133.2	1633.1	1286.5	1054.0	887.0	743.3	581.2	427.1	315.5	241.8	190.0	149.6	115.9	88.5	67.4	51.6	39.8	31.0	24.3	19.4	15.6	12.6	10.4	8.6	7.2	6.0	5.1	4.3	3.7	3.1	2.7	2.3	2.0	1.7	10.6
1958	5994.5	5234.0	4572.7	4040.6	3509.1	2913.3	2284.3	1688.0	1248.0	956.2	767.8	637.2	529.0	411.2	301.2	222.1	170.1	133.7	105.2	81.5	62.2	47.4	36.3	28.0	21.8	17.1	13.6	10.9	8.9	7.3	6.0	5.0	4.2	3.6	3.0	2.6	2.2	1.9	1.6	1.4	8.6
1959	5962.8	5211.5	4550.1	3971.1	3485.6	2968.9	2385.1	1798.4	1281.3	920.3	690.5	546.4	448.9	370.2	286.7	209.6	154.5	118.3	92.9	73.2	56.7	43.3	33.0	25.2	19.5	15.2	11.9	9.5	7.6	6.2	5.1	4.2	3.5	3.0	2.5	2.1	1.8	1.5	1.3	1.1	7.0
1960	7900.7	5183.9	4530.5	3952.5	3431.6	2966.1	2459.4	1910.2	1392.4	963.7	676.8	499.8	391.3	319.4	262.5	203.0	148.3	109.3	83.7	65.8	51.8	40.1	30.6	23.3	17.9	13.8	10.7	8.4	6.7	5.4	4.4	3.6	3.0	2.5	2.1	1.8	1.5	1.3	1.1	0.9	5.7
1961	7738.7	6868.6	4506.5	3934.7	3410.9	2907.5	2433.8	1938.1	1445.1	1016.6	684.1	470.5	342.5	265.7	215.8	177.0	136.7	99.9	73.6	56.3	44.3	34.9	27.0	20.6	15.7	12.0	9.3	7.2	5.7	4.5	3.6	2.9	2.4	2.0	1.7	1.4	1.2	1.0	0.9	0.7	4.5
1962	5123.8	6727.8	5971.0	3912.5	3387.0	2863.9	2338.2	1855.7	1402.4	1000.5	680.3	446.5	301.9	217.4	167.7	135.8	111.2	85.9	62.7	46.2	35.4	27.8	21.9	17.0	12.9	9.9	7.5	5.8	4.5	3.6	2.8	2.3	1.9	1.5	1.3	1.1	0.9	0.7	0.6	0.5	3.3
1963	5436.0	4454.5	5848.5	5183.9	3368.1	2844.5	2303.2	1780.4	1337.1	963.0	661.4	437.3	281.6	188.1	134.6	103.5	83.7	68.5	52.9	38.6	28.5	21.8	17.1	13.5	10.4	8.0	6.1	4.7	3.6	2.8	2.2	1.7	1.4	1.1	0.9	0.8	0.6	0.5	0.5	0.4	2.3
1964	8047.6	4725.9	3872.4	5077.5	4460.3	2821.9	2273.0	1732.1	1258.0	894.4	617.3	411.4	266.8	170.0	112.9	80.6	61.9	50.0	41.0	31.6	23.1	17.0	13.0	10.2	8.1	6.2	4.8	3.6	2.8	2.1	1.7	1.3	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.3	1.6
1965	7304.0	6996.3	4108.3	3362.1	4371.4	3745.8	2269.1	1731.2	1249.9	866.9	594.8	400.1	262.1	168.2	106.6	70.6	50.3	38.6	31.2	25.6	19.8	14.4	10.6	8.1	6.4	5.0	3.9	3.0	2.3	1.7	1.3	1.0	0.8	0.7	0.5	0.4	0.3	0.3	0.2	0.2	1.2
1966	14367.1	6349.9	6082.1	3567.3	2896.5	3679.6	3026.3	1740.4	1259.7	868.9	581.6	389.0	257.3	166.9	106.6	67.3	44.6	31.8	24.4	19.7	16.1	12.5	9.1	6.7	5.1	4.0	3.2	2.5	1.9	1.4	1.1	0.8	0.7	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.9
1967	6350.8	12490.3	5520.1	5281.1	3073.2	2437.6	2971.1	2318.6	1264.4	874.0	581.5	379.3	249.5	163.4	105.4	67.1	42.4	28.0	20.0	15.3	12.4	10.2	7.8	5.7	4.2	3.2	2.5	2.0	1.5	1.2	0.9	0.7	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.6
1968	6398.1	5521.2	10858.1	4792.8	4546.9	2581.6	1961.6	2266.5	1677.7	875.0	584.7	380.1	244.2	159.2	103.8	66.8	42.5	26.8	17.8	12.7	9.7	7.9	6.4	5.0	3.6	2.7	2.0	1.6	1.3	1.0	0.7	0.6	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.5
1969	5881.0	5562.4	4799.7	9428.9	4131.2	3834.3	2095.5	1518.8	1675.1	1192.6	603.8	395.2	253.4	161.5	104.8	68.2	43.9	27.9	17.6	11.7	8.3	6.4	5.2	4.2	3.3	2.4	1.8	1.3	1.1	0.8	0.6	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.4
1970	6035.6	5112.8	4835.5	4167.8	8126.1	3482.8	3112.1	1623.6	1125.1	1195.7	827.8	411.0	265.4	168.8	107.1	69.4	45.1	29.0	18.4	11.6	7.7	5.5	4.2	3.4	2.8	2.2	1.6	1.2	0.9	0.7	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3
1971	5732.9	5247.2	4444.6	4198.1	3586.7	6813.6	2789.8	2353.7	1159.3	764.6	782.3	527.1	257.0	164.3	103.9	65.7	42.5	27.6	17.8	11.3	7.1	4.7	3.4	2.6	2.1	1.7	1.3	1.0	0.7	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.2
1972	4924.1	4984.0	4561.5	3859.1	3615.2	3013.7	5477.2	2117.1	1681.7	784.9	496.3	492.9	326.1	157.4	100.1	63.2	39.9	25.8	16.8	10.8	6.9	4.3	2.9	2.0	1.6	1.3	1.0	0.8	0.6	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.2
1973	4174.1	4280.8	4332.7	3960.0	3320.2	3028.7	2407.8	4116.5	1493.5	1121.7	501.1	307.2	299.2	195.8	94.0	59.6	37.6	23.8	15.4	10.0	6.4	4.1	2.6	1.7	1.2	0.9	0.8	0.6	0.5	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
1974	5297.0	3628.9	3721.2	3758.2	3396.1	2768.8	2419.5	1830.7	2984.4	1039.7	757.0	331.1	200.5	194.1	126.7	60.8	38.6	24.3	15.4	9.9	6.5	4.2	2.6	1.7	1.1	0.8	0.6	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
1975	5404.3	4605.0	3154.3	3224.9	3206.2	2788.4	2145.6	1757.0	1251.1	1939.1	650.3	461.4	198.8	119.4	115.3	75.2	36.1	22.9	14.4	9.1	5.9	3.8	2.5	1.6	1.0	0.7	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
1976	6748.7	4698.4	4002.7	2733.2	2748.4	2623.9	2146.0	1540.6	1181.7	796.6	1184.6	386.2	269.5	115.2	69.0	66.5	43.3	20.8	13.2	8.3	5.3	3.4	2.2	1.4	0.9	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
1977	5778.2	5867.2	4083.9	3468.7	2330.2	2252.8	2029.0	1556.9	1055.0	772.7	503.6	732.5	235.8	163.6	69.7	41.7	40.2	26.2	12.6	8.0	5.0	3.2	2.1	1.3	0.9	0.5	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	4505.4	5023.4	5100.0	3541.8	2971.3	1936.0	1784.6	1519.4	1102.9	712.4	503.1	320.2	459.8	147.2	101.9	43.4	26.0	25.0	16.3	7.8	5.0	3.1	2.0	1.3	0.8	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1979	4648.6	3916.9	4366.3	4418.3	3014.0	2419.2	1472.0	1252.6	986.2	669.3	410.6	280.3	175.0	249.1	79.5	54.9	23.4	14.0	13.5	8.8	4.2	2.7	1.7	1.1	0.7	0.4	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	5242.0	4041.3	3404.4	3779.7	3741.3	2416.8	1783.7	984.7	762.4	553.6	353.2	208.0	138.8	85.7	121.5	38.7	26.8	11.4	6.8	6.6	4.3	2.1	1.3	0.8	0.5	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	4570.9	4557.2	3512.5	2946.4	3197.5	2994.6	1780.0	1197.0	606.0	436.9	300.7	185.1	106.8	70.5	43.4	61.4	19.6	13.5	5.8	3.4	3.3	2.2	1.0	0.7	0.4	0.3	0.2	0.1	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
1982	3863.1	3973.8	3961.1	3040.7	2493.9	2560.5	2202.6	1186.7	725.6	338.8	229.9	152.3	91.9	52.6	34.6	21.3	30.1	9.6	6.6	2.8	1.7	1.6	1.1	0.5	0.3	0.2	0.1	0.1	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
1983	4475.5	3358.5	3454.0	3431.3	2585.9	2020.6	1907.1	1464.8	695.4	377.3	160.2	102.2	65.5	39.0	22.2	14.6	9.0	12.7	4.0	2.8	1.2	0.7	0.7	0.4	0.2	0.1	0.1	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
1984	6931.2	3890.9	2918.4	2986.2	2898.9	2067.2	1476.9	1247.2	856.8	371.3	189.7	78.1	49.2	31.4	18.7	10.6	7.0	4.3	6.1	1.9	1.3	0.6	0.3	0.3	0.2	0.1	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
1985	4192.2	6025.7	3381.3	2525.0	2532.3	2345.6	1554.9	1018.5	790.7	507.9	210.6	105.2	42.9	27.0	17.2	10.2	5.8	3.8	2.4	3.3	1.1	0.7	0.3	0.2	0.2	0.1	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
1986	2429.9	3644.5	5236.7	2925.3	2138.8	2044.4	1763.4	1078.4	655.3	480.0	297.0	120.9	59.9	24.4	15.3	9.8	5.8	3.3	2.2	1.3	1.9	0.6	0.4	0.2	0.1	0.1	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
1987	3189.4	2112.5	3167.2	4530.0	2476.6	1720.3	1516.7	1187.4	661.1	372.9	260.3	157.2	63.4	31.3	12.8	8.0	5.1	3.0	1.7	1.1	0.7	1.0	0.3	0.2	0.1	0.1	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
1988	4996.0	2772.8	1835.7	2736.6	3809.1	1951.8	1223.3	951.2	657.7	331.2	175.1	118.3	70.6	28.4	14.0	5.7	3.6	2.3	1.4	0.8	0.5	0.3	0.4	0.1	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	0.0
1989	6402.6	4343.4	2409.5	1586.4	2303.8	3007.5	1387.3	762.1	519.2	322.3	151.3	77.2	51.5	30.6	12.3	6.1	2.5	1.6	1.0	0.6	0.3	0.2	0.1	0.2	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	0.0
1990	6449.8	5566.2	3774.2	2081.5	1332.7	1807.0	2108.3	845.4	403.7	245.5	141.6	64.1	32.3	21.4	12.7	5.1	2.5	1.0	0.6	0.4	0.2	0.1	0.1	0.1	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	0.0
1991	4532.4	5607.2	4837.0	3262.3	1753.4	1053.9	1288.5	1321.0	465.3	200.0	113.6	63.4	28.3	14.2	9.4	5.6	2.3	1.1	0.5	0.3	0.2	0.1	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	0.0	0.0	0.0
1992	2548.2	3940.3	4872.7	4180.2	2741.5	1370.0	725.3	751.1	649.0	198.7	78.0	42.4	23.3	10.4	5.2	3.4	2.0	0.8	0.4	0.2	0.1	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	0.0	0.0	0.0	0.0

1993	4891.2	2215.4	3424.0	4209.7	3510.5	2143.7	949.1	429.8	379.2	287.2	80.7	30.4	16.2	8.9	4.0	2.0	1.3	0.8	0.3	0.2	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	0.0	0.0	0.0	0.0	0.0
1994	6006.7	4252.3	1925.4	2966.2	3583.1	2830.7	1547.2	580.4	217.3	161.4	107.9	28.2	10.3	5.5	3.0	1.3	0.7	0.4	0.3	0.1	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	0.0	0.0	0.0	0.0	0.0
1995	3656.4	5222.1	3695.9	1668.9	2532.3	2923.8	2114.3	1017.9	331.5	109.4	74.2	47.1	12.1	4.4	2.3	1.3	0.6	0.3	0.2	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	0.0	0.0	0.0	0.0	0.0	0.0
1996	4442.5	3178.8	4538.8	3204.1	1427.0	2079.9	2220.4	1434.9	609.5	177.5	54.1	35.0	21.8	5.5	2.0	1.1	0.6	0.3	0.1	0.1	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	0.0	0.0	0.0	0.0	0.0
1997	4187.6	3862.2	2763.0	3934.9	2737.9	1168.5	1569.5	1494.1	851.4	323.4	86.9	25.3	16.0	9.9	2.5	0.9	0.5	0.3	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0
1998	9820.3	3640.5	3357.0	2395.0	3358.5	2232.4	873.3	1039.0	866.4	439.3	153.4	39.3	11.2	7.0	4.3	1.1	0.4	0.2	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0
1999	6496.7	8537.5	3164.1	2909.5	2046.2	2757.1	1702.3	601.8	641.7	486.2	230.2	77.3	19.4	5.5	3.5	2.1	0.5	0.2	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0
2000	4720.5	5648.0	7420.6	2743.8	2492.9	1694.7	2142.8	1211.3	388.9	380.8	271.3	124.0	41.0	10.2	2.9	1.8	1.1	0.3	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0
2001	3981.7	4103.9	4909.1	6434.1	2349.5	2059.0	1305.3	1493.2	754.6	219.0	199.3	136.1	61.0	20.0	5.0	1.4	0.9	0.5	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0
2002	4514.2	3461.6	3566.9	4256.2	5507.8	1938.6	1581.7	905.1	923.3	421.1	113.5	99.0	66.3	29.5	9.7	2.4	0.7	0.4	0.3	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	0.0	0.0	0.0	0.0	0.0	0.0
2003	3852.6	3924.5	3008.6	3092.1	3642.8	4545.8	1491.0	1098.6	560.4	515.3	217.9	56.2	48.1	32.0	14.2	4.7	1.2	0.3	0.2	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	0.0	0.0	0.0	0.0	0.0	0.0
2004	4609.6	3349.3	3411.4	2611.2	2661.8	3059.2	3629.1	1102.2	741.1	346.2	297.1	120.2	30.3	25.7	17.1	7.6	2.5	0.6	0.2	0.1	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	0.0	0.0	0.0	0.0	0.0
2005	4750.6	4007.4	2911.4	2961.2	2249.5	2237.8	2438.0	2653.3	723.7	437.4	187.6	152.5	60.1	15.0	12.7	8.4	3.7	1.2	0.3	0.1	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	0.0	0.0	0.0	0.0	0.0
2006	8204.1	4130.1	3483.3	2525.6	2540.0	1862.6	1723.1	1682.2	1609.0	388.3	213.5	86.3	68.2	26.5	6.6	5.6	3.7	1.6	0.5	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	0.0	0.0	0.0	0.0	0.0	0.0
2007	11433.2	7132.4	3589.9	3022.2	2169.7	2119.2	1467.8	1250.4	1111.6	975.0	220.3	116.2	46.0	36.0	14.0	3.5	2.9	2.0	0.9	0.3	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	0.0	0.0	0.0	0.0	0.0
2008	15700.1	9939.7	6200.1	3116.7	2602.5	1817.1	1670.8	1053.5	802.3	641.2	518.4	111.4	57.4	22.5	17.6	6.8	1.7	1.4	1.0	0.4	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	0.0	0.0	0.0	0.0	0.0
2009	6517.0	13649.2	8640.7	5384.1	2686.5	2184.8	1438.9	1207.4	682.6	468.9	346.5	267.2	56.1	28.7	11.2	8.8	3.4	0.8	0.7	0.5	0.2	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	0.0	0.0	0.0	0.0
2010	5103.6	5665.7	11864.6	7498.9	4629.4	2241.1	1708.4	1017.3	756.2	380.4	238.6	166.6	125.0	26.0	13.2	5.2	4.0	1.6	0.4	0.3	0.2	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	0.0	0.0	0.0	0.0
2011	5143.0	4436.9	4925.3	10307.7	6492.5	3964.7	1875.8	1379.8	787.1	561.3	273.3	168.0	116.1	86.7	18.0	9.2	3.6	2.8	1.1	0.3	0.2	0.2	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	0.0	0.0	0.0
2012	7341.6	4471.2	3857.2	4279.9	8935.0	5585.9	3359.2	1552.7	1110.8	616.6	430.0	206.2	125.7	86.5	64.5	13.4	6.8	2.7	2.1	0.8	0.2	0.2	0.1	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	0.0	0.0
2013	6210.6	6382.5	3887.0	3351.9	3711.0	7691.3	4733.7	2777.4	1245.6	864.9	468.6	321.6	152.9	92.8	63.8	47.6	9.9	5.0	2.0	1.5	0.6	0.1	0.1	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	0.0	0.0
2014	6747.9	5399.3	5548.5	3377.0	2902.1	3178.8	6447.4	3842.6	2170.9	938.9	633.2	336.4	228.3	108.0	65.4	44.9	33.5	7.0	3.5	1.4	1.1	0.4	0.1	0.1	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	0.0
2015	6829.3	5866.4	4693.9	4821.3	2925.8	2490.0	2671.3	5246.8	3008.8	1637.7	687.7	455.0	239.3	161.7	76.3	46.2	31.7	23.7	4.9	2.5	1.0	0.8	0.3	0.1	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	0.0
2016	6853.2	5937.2	5099.9	4078.2	4174.6	2505.8	2084.8	2161.4	4077.0	2248.9	1187.0	488.4	319.5	167.2	112.7	53.2	32.2	22.1	16.5	3.4	1.7	0.7	0.5	0.2	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	0.0
2017	6853.1	5958.0	5161.4	4431.0	3531.3	3575.7	2098.6	1687.8	1681.2	3052.3	1633.4	845.0	343.9	223.9	116.9	78.8	37.2	22.5	15.5	11.5	2.4	1.2	0.5	0.4	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	0.0
2018	6838.4	5957.9	5179.5	4484.8	3838.0	3026.0	2993.6	1694.5	1304.9	1246.5	2189.8	1147.3	587.0	237.8	154.5	80.7	54.4	25.6	15.5	10.7	7.9	1.6	0.8	0.3	0.3	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
2019	6823.2	5945.1	5179.4	4500.6	3884.6	3288.8	2533.4	2417.3	1310.1	967.5	894.3	1538.1	797.0	405.9	164.1	106.6	55.6	37.5	17.7	10.7	7.4	5.5	1.1	0.6	0.2	0.2	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
2020	6810.8	5931.9	5168.3	4500.5	3898.2	3328.8	2753.4	2045.7	1868.9	971.4	694.1	628.1	1068.5	551.0	280.1	113.2	73.5	38.4	25.9	12.2	7.4	5.1	3.8	0.8	0.4	0.2	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
2021	6802.1	5921.1	5156.9	4490.9	3898.2	3340.4	2786.9	2223.3	1581.6	1385.7	696.9	487.5	436.4	738.7	380.3	193.3	78.1	50.7	26.5	17.8	8.4	5.1	3.5	2.6	0.5	0.3	0.1	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
2022	6796.6	5913.6	5147.5	4480.9	3889.8	3340.4	2796.7	2250.3	1719.0	1172.7	994.1	489.5	338.7	301.7	509.9	262.4	133.3	53.9	35.0	18.3	12.3	5.8	3.5	2.4	1.8	0.4	0.2	0.1	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
2023	6793.3	5908.8	5140.9	4472.7	3881.2	3333.2	2796.6	2258.2	1739.8	1274.5	841.3	698.3	340.0	234.2	208.2	351.8	181.0	92.0	37.2	24.1	12.6	8.5	4.0	2.4	1.7	1.2	0.3	0.1	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
2024	6791.3	5905.9	5136.8	4467.0	3874.1	3325.8	2790.6	2258.2	1746.0	1290.0	914.3	590.9	485.1	235.1	161.6	143.7	242.7	124.9	63.4	25.6	16.7	8.7	5.9	2.8	1.7	1.1	0.9	0.2	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
2025	6789.8	5904.1	5134.3	4463.4	3869.2	3319.8	2784.5	2253.4	1745.9	1294.5	925.5	642.2	410.5	335.4	162.3	111.5	99.1	167.4	86.1	43.8	17.7	11.5	6.0	4.0	1.9	1.2	0.8	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2026	6788.7	5902.9	5132.7	4461.2	3866.1	3315.6	2779.4	2248.4	1742.2	1294.5	928.7	650.0	446.1	283.8	231.5	112.0	76.9	68.4	115.5	59.4	30.2	12.2	7.9	4.1	2.8	1.3	0.8	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0