The status of rougheye rockfish (*Sebastes aleutianus*) and blackspotted rockfish (*S. melanostictus*) as a complex along the U.S. West Coast in 2013

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1/6/2014

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Executive Summary

Stock

This is an assessment of rougheye rockfish (*Sebastes aleutianus*) that reside in the waters off California, Oregon, and Washington from the U.S.-Canadian border in the north to the U.S.-Mexico border in the south. Rougheye rockfish are more common north of the California-Oregon border and are also harvested in waters off British Columbia and the Gulf of Alaska. Although catches north of the U.S.-Canada border were not included in this assessment, it is not certain if those populations contribute to the biomass of rougheye rockfish off of the U.S. West Coast possibly through adult migration and/or larval dispersion.

The depth and geographic distribution of blackspotted rockfish (*S. melanostictus*) overlaps with rougheye rockfish and it is very difficult to visually distinguish between the two species. It has only been from recent genetic studies in the early 2000's that two separate species have been identified and described. Consequently, the vast majority of data that are available include pooled contributions from both rougheye rockfish and blackspotted rockfish. Due to the difficulty in distinguishing these two species and the lack of historical separation of the species in all of the data, this assessment combines any data for blackspotted rockfish with rougheye rockfish and provides management advice for the two species combined. In this assessment, the term "rougheye rockfish" refers to rougheye and blackspotted rockfishes unless specified.

Landings

Rougheye rockfish are landed as part of the minor slope rockfish species complex. Because landings from the complex need not be sorted into component species for purposes of fish-ticket reporting, species composition sampling of this 'market' category is required to determine the amount of landed catch. The uncertainty in species composition is greater in past years, thus landings of rougheye rockfish are not well known further back in history.

The historical reconstruction of landings for rougheye rockfish suggests that fixed gear fisheries have caught rougheye rockfish since the turn of the 20th century and landings in the trawl fishery are estimated to have increased into the 1940's. Landings remained relatively constant throughout the 1950's and into the 1960's before the foreign trawl fleet increased catches into the 1970's. The declaration of the exclusive economic zone resulted in the buildup of a domestic fleet and landings increased rapidly into the late 1980's and early 1990's. Subsequently, landings declined in the late 1990's and have been between 100 and 200 metric tons in recent years. Trawl, long-line, and Pacific whiting at-sea trawl fisheries make up the majority of the catch.

Rougheye rockfish are a desirable market species and discarding has been low, historically. However, management restrictions (e.g., trip limits) have resulted in increased discarding since 2000. Trawl rationalization was introduced in 2011, and since then very little discarding of rougheye rockfish has occurred. Discards were estimated in the model with the assistance of observer data, and total catches are reported elsewhere, as opposed to landings.

Table a: Recent landings for trawl and hook & line (mt) from Washington, Oregon, and California. Catches (mt) from the Pacific whiting at-sea fishery as determined by onboard observers are also shown.

	Trawl			Hook & Line			At-sea	Total
Year	WA	OR	CA	WA	OR	CA		
2003	9.96	45.25	0.69	18.33	2.32	1.25	2.16	79.95
2004	8.60	50.40	0.08	31.44	0.00	0.00	13.69	104.21
2005	7.15	38.43	0.05	40.59	5.31	3.12	35.95	130.59
2006	12.72	34.92	0.07	51.85	2.40	1.85	6.64	110.46
2007	12.42	49.35	0.56	48.55	2.79	3.11	29.08	145.85
2008	9.37	45.22	0.39	43.59	9.68	1.06	75.58	184.88
2009	17.16	51.45	0.30	76.87	19.60	5.23	9.30	179.90
2010	18.35	65.24	0.17	44.89	21.88	1.79	21.57	173.90
2011	10.32	46.79	0.19	39.67	17.95	1.95	80.95	197.83
2012	15.66	64.15	0.00	30.27	17.71	0.00	54.00	181.78

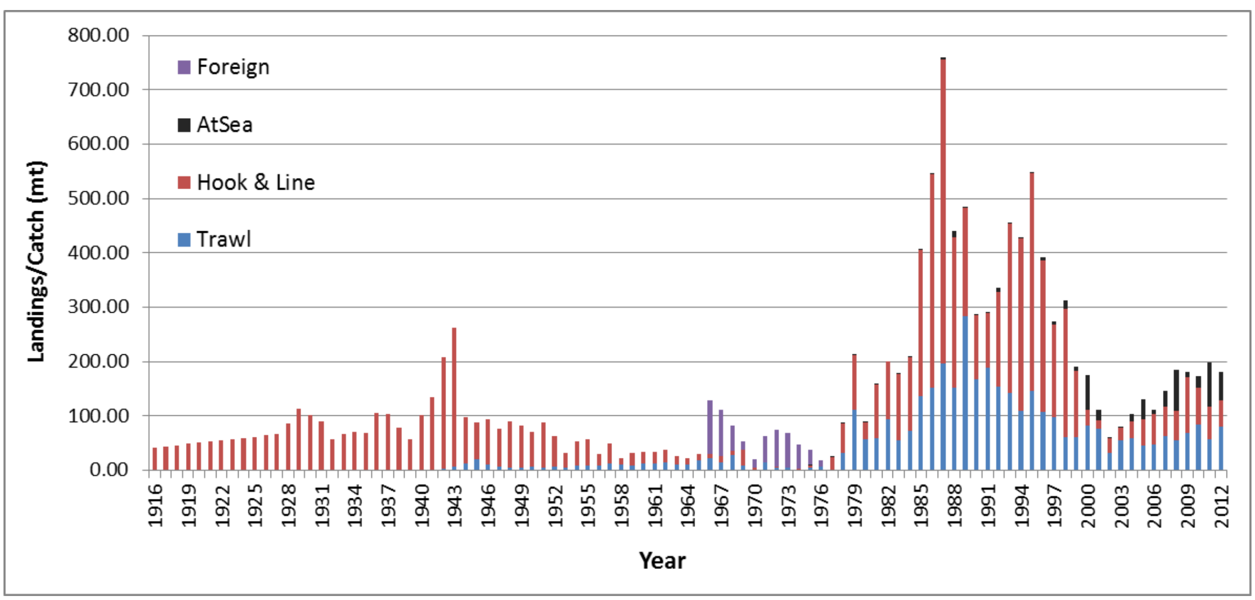

Figure a: Landings of rougheye rockfish from 1916 to 2012 for the trawl and hook & line fisheries, and catches of rougheye rockfish for the foreign (1966–1976), and Pacific whiting at-sea fisheries.

Data and assessment

This assessment is the first formal assessment model for rougheye rockfish on the U.S. West Coast and was conducted using the length- and age-structured model called Stock Synthesis (version 3.24o, pers. comm. Richard Methot, NMFS). The coastwide population was modeled assuming parameters for combined sexes (a single sex model) from 1916 to 2013, and forecasted beyond 2013. Three fishing fleets were specified within the model: 1) a shore-based trawl fleet with foreign catches between 1966–1976 added to the domestic trawl catches, 2) a hook & line fleet, and 3) a foreign and at-sea fleet that targets Pacific whiting. Data from four fishery-independent surveys were also included in the model: 1) the triennial survey which was conducted from 1980–2004 in depths less than 500 meters, 2) a slope survey executed by the Alaska Fishery Science Center in 1996, 1997, and 1999-2001 which took place in waters north of 43° N latitude and between 183 and 1,280 meters in depth, 3) a Northwest Fishery Science Center (NWFSC) slope survey which occurred from 1999–2002 and included nearly the entire coastline in depths from 183 to 1280 meters, and 4) the NWFSC shelf/slope survey which has been surveying the entire U.S. West Coast in depths between 55 and 1,280 meters since 2003.

The data used in the assessment model consisted of survey abundance indices, length compositions, discard data, and ages. Model-based biomass indices and length compositions were determined for each survey, except for the NWFSC slope survey which did not record rockfish lengths. Length data were also available from the fisheries in recent years. Age data for all years of the NWFSC shelf/slope survey and the years 2008 and 2011 from the trawl and at-sea fisheries were input as age-at-length. Discard data for the trawl and hook & line fisheries were available for 2002–2011 in the form of discarded biomass, length compositions, and average weights. No data were available to inform discarding practices of rougheye rockfish prior to 2002, although anecdotal information suggests little discarding occurred before trip limits were implemented in the 1990's. The variances and sample sizes on all of the data were tuned to the expected variability in the model predictions.

The base model estimated parameters for selectivity and retention curves based on length for the trawl and hook & line fishing fleets, selectivity curves for the at-sea fleet and the four surveys, a length-at-age relationship, natural mortality, and recruitment deviations starting in 1900. A steepness parameter was fixed at 0.779 based on a steepness meta-analysis for west coast rockfishes (pers. comm. Jim Thorson, NWFSC) and was not estimated.

Uncertainty for the parameter estimates and derived quantities was determined in three ways. First, estimation uncertainty in the base model was determined using approximate asymptotic 95% confidence intervals based on maximum likelihood theory. Second, model uncertainty was investigated with various sensitivity runs where alternative model structures were implemented. Finally, the major axis of uncertainty was determined to define a range of states of nature and results are presented in a decision table.

Although there are many types of recent data available for rougheye rockfish, which were used in this assessment, there is little information about steepness, natural mortality, and historical recruitment. Estimates of steepness are uncertain partly because the stock has not been fished to low levels. Uncertainty in natural mortality is common in many fish stock assessments and because length and age data are available only for recent years, there is little information to accurately estimate natural mortality, thus estimated spawning biomass is also uncertain. Finally, there is little information about the levels of historical recruitment mostly due to a lack of historical length or age data. This uncertainty was included in the predictions from this assessment.

Stock biomass

The predicted spawning biomass from the base model generally showed a slight decline over the entire time series with a period of steeper decline during the 1980's and 1990's. Since 2000, the spawning biomass has stabilized and possibly increased because of reduced catches and above average recruitment in 1999. The 2013 spawning biomass relative to unfished equilibrium spawning biomass is above the target of 40% of unfished spawning biomass.

Approximate confidence intervals based on the asymptotic variance estimates show that the uncertainty in the estimated spawning biomass is high. The standard deviation of the log of the spawning biomass in 2013 is 0.30.

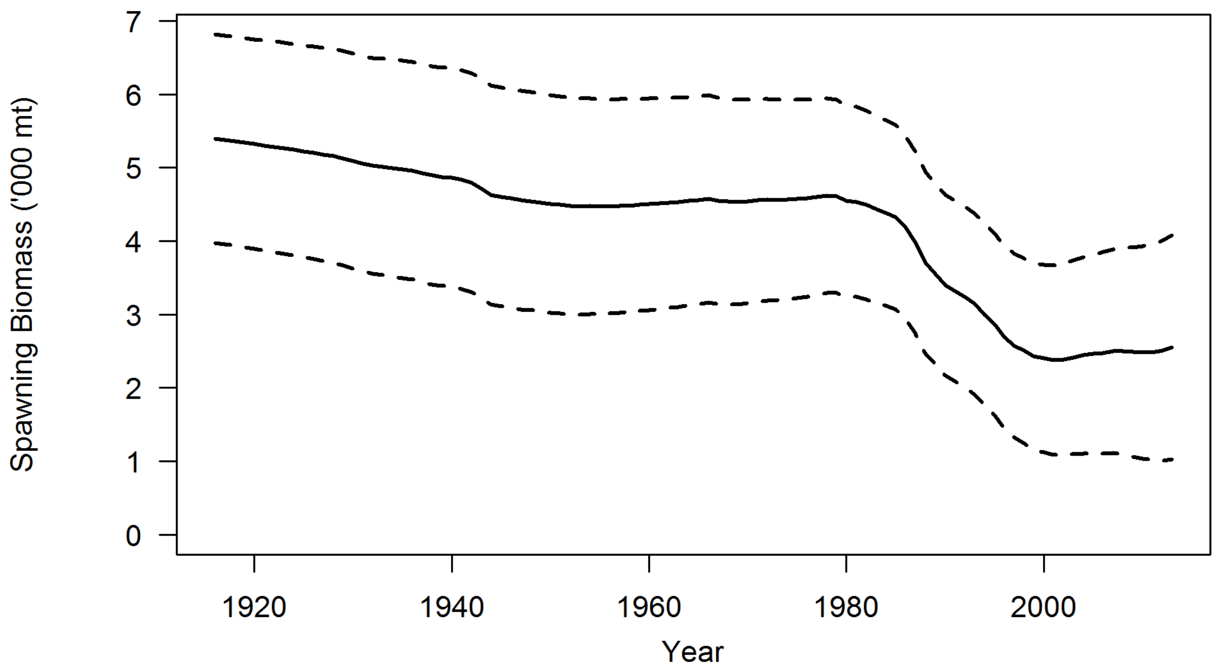

Figure b: Estimated female spawning biomass time-series from the base model (solid line) with an approximate asymptotic 95% confidence interval (thick dashed lines).

Table b: Recent trend in estimated female spawning biomass and relative depletion of the spawning biomass.

Year	Spawning Biomass (mt)	~95% confidence interval	Estimated depletion	~95% confidence interval
2004	2,444	1,108 – 3,780	45.31	31.4 – 59.3
2005	2,464	1,111 – 3,818	45.69	31.5 – 59.9
2006	2,477	1,106 – 3,847	45.92	31.5 – 60.3
2007	2,499	1,110 – 3,887	46.33	31.7 – 60.9
2008	2,498	1,092 – 3,904	46.32	31.4 – 61.2
2009	2,489	1,064 – 3,913	46.14	30.9 – 61.4
2010	2,483	1,038 – 3,929	46.04	30.4 – 61.7
2011	2,487	1,017 – 3,956	46.10	30.0 – 62.2
2012	2,511	1,014 – 4,008	46.56	30.1 – 63.0
2013	2,552	1,024 – 4,081	47.32	30.5 – 64.2

Recruitment

Recruitment deviations were estimated for the entire time series modeled. There is little information regarding recruitment prior to 1980, and the uncertainty in these estimates is expressed in the model. Estimates of recruitment appear to oscillate between periods of low and high recruitment. The four largest recruitments were estimated in 1999, 1998, 2001, and 1988, and the four smallest recruitments were estimated in 2002, 2006, 2005, and 1995. Recruitment predictions since 2002 were all below the unfished average of 485,000 fish.

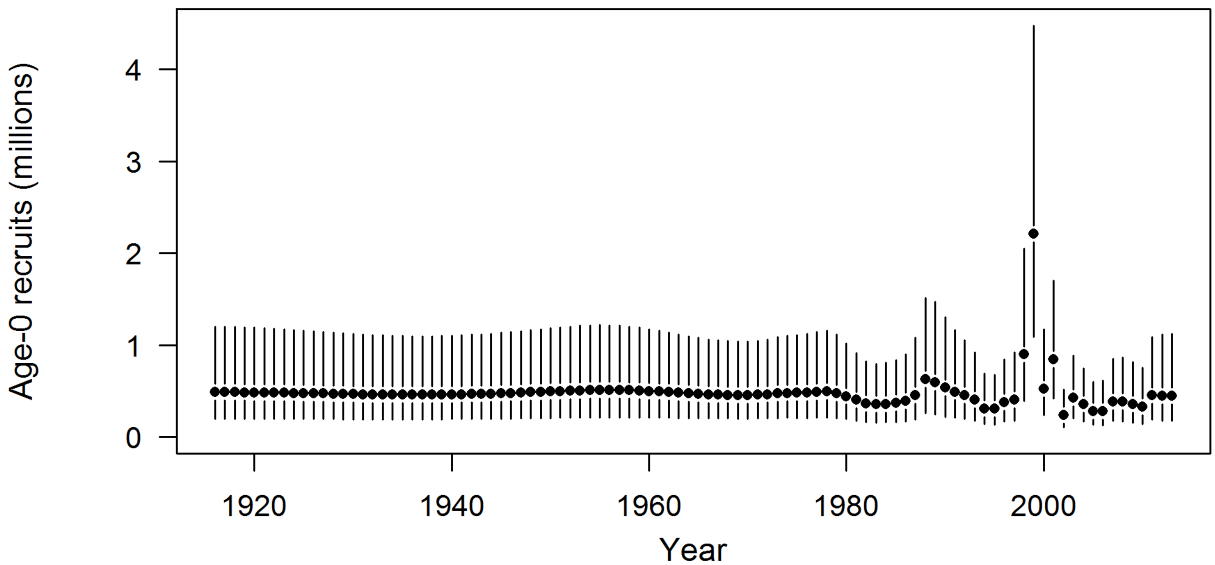

Figure c: Time-series of estimated recruitments for the base case model (round points) with approximate asymptotic 95% confidence interval (vertical bars).

Table c: Recent estimated trend in rougheye rockfish recruitment with approximate 95% confidence intervals determined from the base model.

Year	Estimated recruitment (1,000's)	~95% confidence interval
2004	355.1	168–751
2005	282.4	132–605
2006	282.4	129–619
2007	385.2	174–855
2008	385.0	171–868
2009	357.8	157–816
2010	328.2	142–757
2011	452.3	188–1,090
2012	448.9	180–1,121
2013	449.9	180–1,123

Exploitation status

The spawning biomass of rougheye rockfish reached a low in the late 1990's before stabilizing in the early 2000's and then slightly increasing during the last decade. The estimated depletion has remained above the 40% of unfished spawning biomass target and there is a small probability that the stock has fallen below this threshold in the last decade. Throughout the 1980's and 1990's the exploitation rate and (1-*SPR*) were mostly above target levels. Recent exploitation rates on rougheye rockfish were predicted to be near target levels.

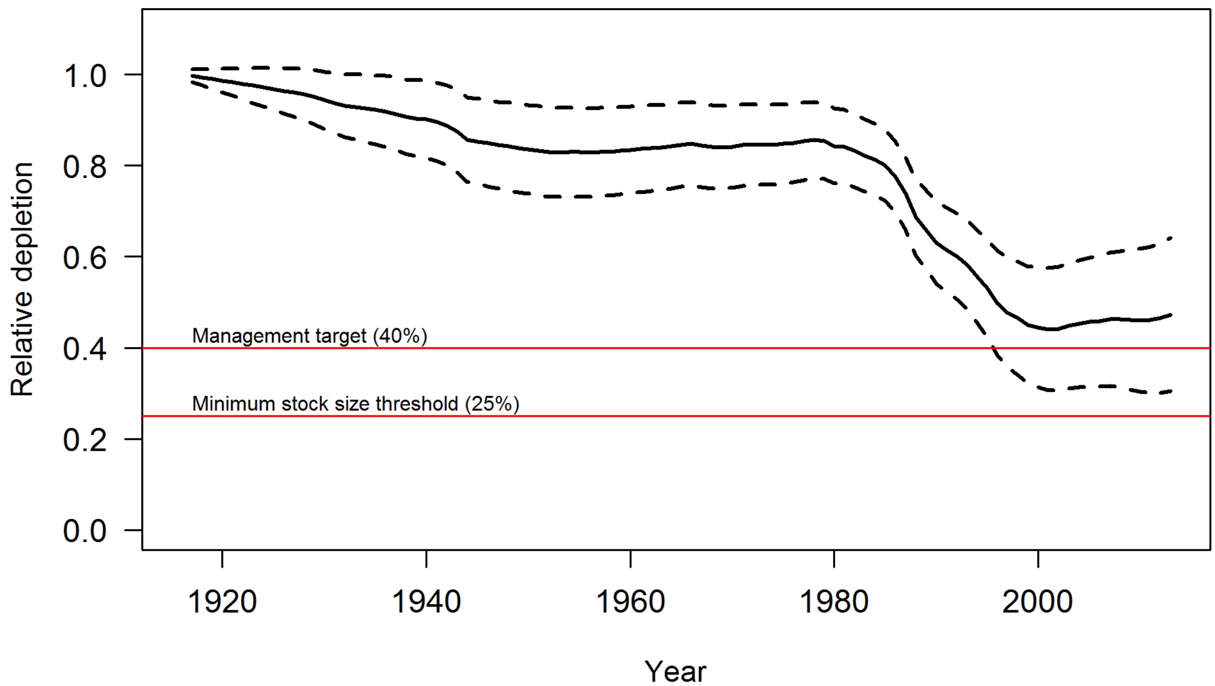

Figure d. Estimated relative depletion with approximate 95% asymptotic confidence intervals (dashed lines) for the base case assessment model.

Table d. Recent trend in spawning potential ratio (entered as 1-SPR) and summary exploitation rate.

Year	Estimated 1-SPR (%)	~95% confidence interval	Harvest rate (proportion)	~95% confidence interval
2003	32.13	17.1–47.2	0.01261	0.006–0.019
2004	37.54	21.3–53.8	0.01612	0.008–0.025
2005	42.03	25.1–58.9	0.01977	0.009–0.030
2006	38.65	22.0–55.3	0.01702	0.008–0.026
2007	49.29	31.4–67.2	0.02618	0.012–0.040
2008	53.10	35.3–70.9	0.03049	0.014–0.047
2009	55.00	36.7–73.3	0.02923	0.013–0.045
2010	55.12	36.4–73.8	0.02904	0.013–0.045
2011	51.00	32.5–69.5	0.02506	0.011–0.039
2012	48.99	30.2–67.8	0.02291	0.010–0.036

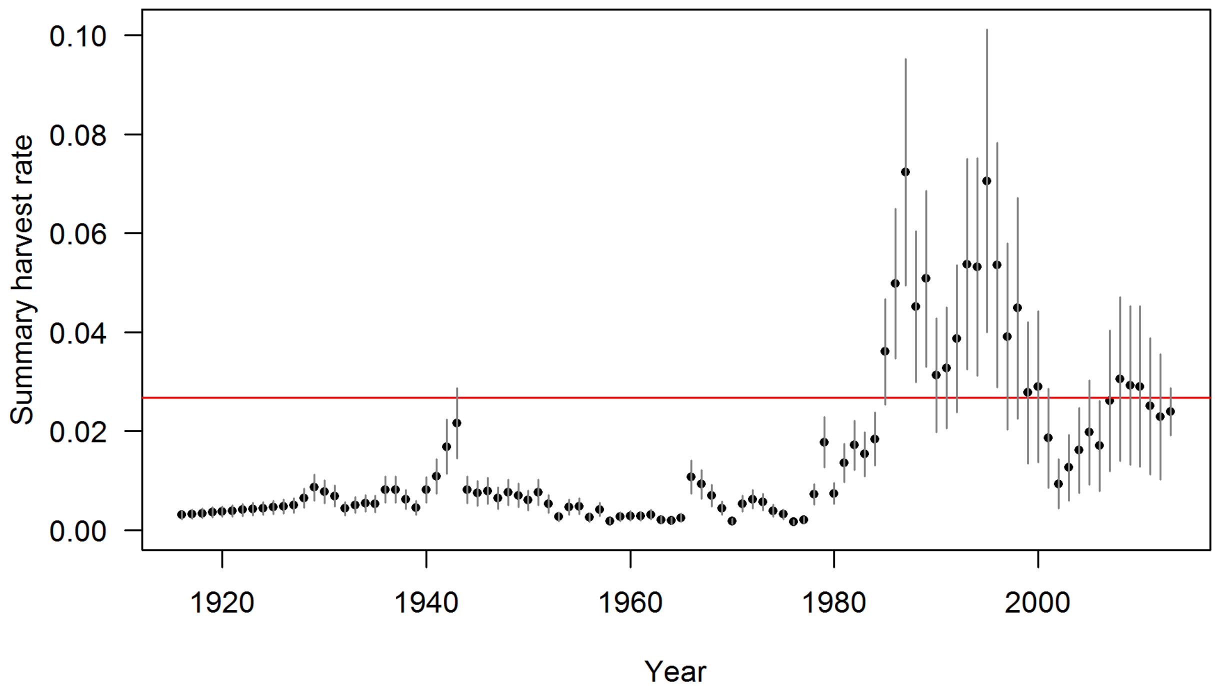

Figure e. Time-series of estimated summary harvest rate for the base case model (round points) with approximate 95% asymptotic confidence intervals (grey lines). The red line is the harvest rate at the overfishing proxy using $SPR_{50\%}$.

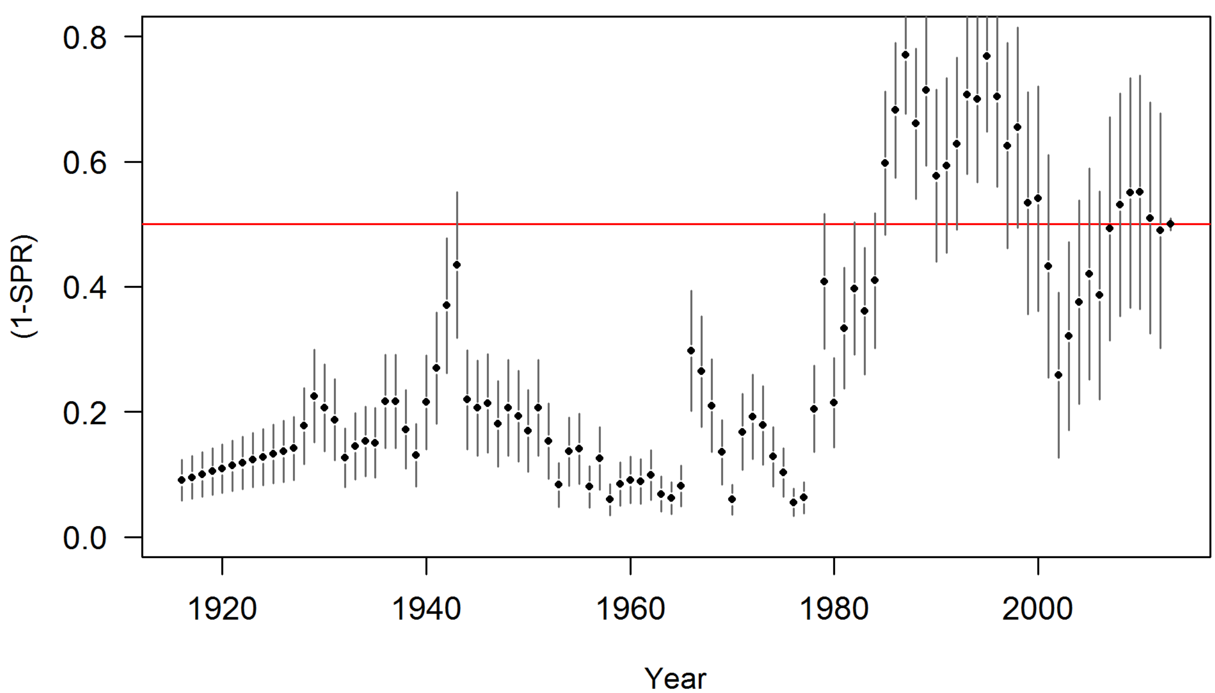

Figure f. One minus the estimated spawning potential ratio (SPR) for the base case model with approximate 95% asymptotic confidence intervals. One minus SPR is used so that higher exploitation rates occur on the upper portion of the y-axis. The relative management target is plotted as a red horizontal line and values above this reflect harvests in excess of the overfishing proxy based on the $SPR_{50\%}$.

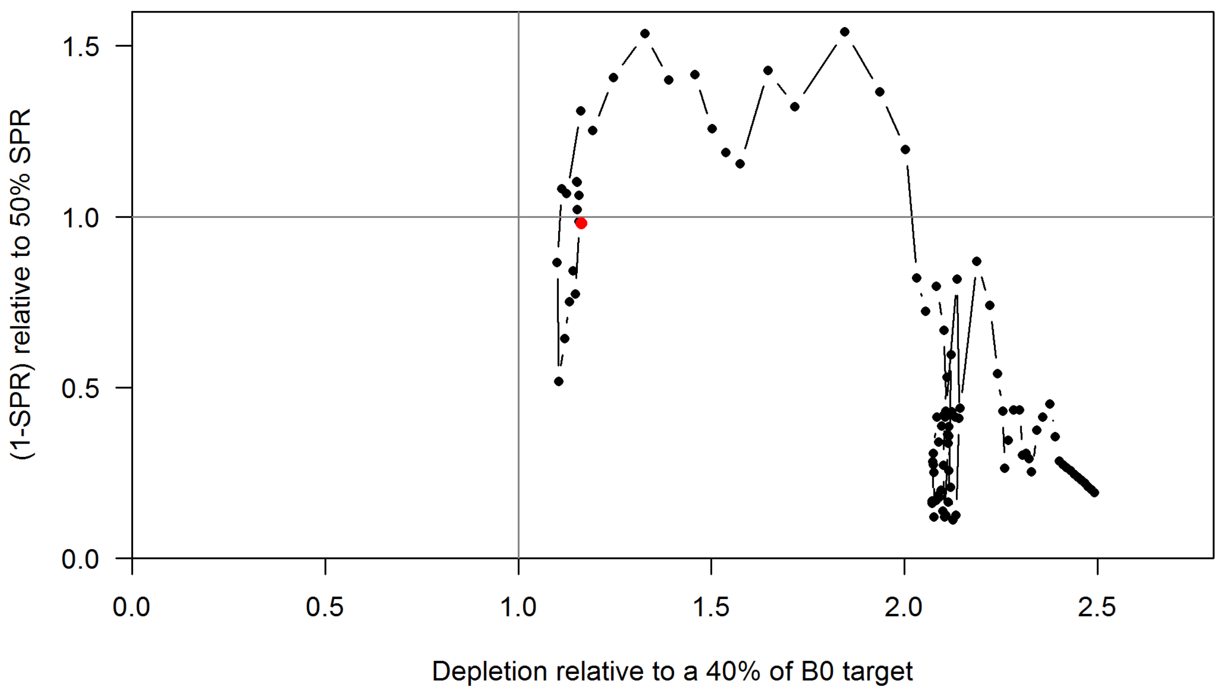

Figure g. Phase plot of estimated relative (1-SPR) vs. relative spawning biomass for the base case model. The relative (1-SPR) is (1-SPR) divided by 0.5 (one minus the SPR target). Relative depletion is the annual spawning biomass divided by the spawning biomass corresponding to 40% of the unfished spawning biomass. The red point indicates the year 2012.

Ecosystem considerations

Rockfish are an important component of the California Current ecosystem along the U.S. West Coast, with its many dozens of species filling various niches in both soft and hard bottom habitats from the nearshore to the continental slope. Rougheye rockfish are one of the larger species of rockfishes and occupy shelf areas when they are young and move into deeper slope waters with age. As they age, they tend to become more solitary, but may form aggregations during the spawning season. Due to a paucity of life-history data for rougheye rockfish, most ecosystem considerations are implied from the understanding of rockfishes in general.

Recruitment is one mechanism by which the ecosystem may directly impact the population dynamics of rougheye rockfish. The 1999 cohort for many species of rockfish was larger – sometimes significantly so – from these species' long-term averages suggesting that environmental conditions may influence the spawning success and survival of larvae and juvenile rockfish, including rougheye rockfish. The specific pathways through which environmental conditions exert influence on rougheye rockfish dynamics are unclear, however, changes in water temperature and currents, distribution of prey and predators, and the amount and timing of upwelling are all possible linkages. Changes in the environment may also result in changes in age-at-maturity, fecundity, growth, and survival which can affect how the status of the stock and its susceptibility to fishing are determined. Unfortunately, there are no data for rougheye rockfish that provide insights into these effects.

Fishing has effects on both the age structure of a population as well as the habitat with which the target species is associated. Fishing often targets larger, older fish, and years of fishing mortality results in a truncated age-structure when compared to unfished conditions. Rockfish are often associated with habitats containing living structure such as sponges and corals, and fishing may alter that habitat to a less desirable state. This assessment provides a look at the effects of fishing on age structure, and recent studies on essential fish habitat are beginning to characterize important locations for rockfish throughout their life history, however there is little current information available to evaluate the specific effects of fishing on the population and ecosystem issues specific to rougheye rockfish.

Reference points

Reference points were calculated using the estimated selectivities and catch distribution among fleets averaged across the last five years of the model (2008–2012). Sustainable total yields (landings plus discards) were 194 mt when using an $SPR_{50\%}$ reference harvest rate and ranged from 120 to 269 mt based on estimates of uncertainty. The spawning biomass equivalent to 40% of the unfished spawning output ($SB_{40\%}$) was 2,158 metric tons. The recent catches (landings plus discards) have been slightly greater than the point estimate of potential long-term yields calculated using an $SPR_{50\%}$ reference point. However, due to high predicted recruitment in 1999, the spawning biomass of the stock has been stable and slightly increasing over the last decade.

Table e. Summary of reference points and management quantities for the base case model.

Quantity	Estimate	~95% Confidence Interval
Unfished Spawning biomass (mt)	5,394	3,976–6,812
Unfished age 10+ biomass (mt)	13,756	9,883–17,629
Unfished recruitment (R0, thousands)	485	291–810
Spawning biomass (2013)	2,552	1,024 – 4,081
SD of log Spawning Biomass (2013)	0.30	–
Depletion (2013)	47.32	30.5–64.2
Reference points based on $SB_{40\%}$		
Proxy spawning biomass ($SB_{40\%}$)	2,158	1,590–2,725
SPR resulting in $SB_{40\%}$	44.3%	–
Exploitation rate resulting in $SB_{40\%}$	3.2%	2.9–3.6%
Yield with *SPR* based on $SB_{40\%}$ (mt)	210	129–290
Reference points based on SPR proxy for MSY		
Spawning biomass	2,491	1,836–3,146
SPR_{proxy}	50%	
Exploitation rate corresponding to SPR_{proxy}	2.7%	2.4–3.0%
Yield with SPR_{proxy} at SB_{SPR} (mt)	194	120–269
Reference points based on estimated MSY values		
Spawning biomass at *MSY* (SB_{MSY})	1,305	965–1,644
SPR_{MSY}	29.6%	29.2–30.0%
Exploitation rate corresponding to SPR_{MSY}	5.3%	4.7–5.8%
MSY (mt)	230	142–319

Management performance

Exploitation rates on rougheye rockfish have exceeded *MSY* proxy target harvest rates during the 1980's and 1990's, and only slightly in the mid-2000's. Spawning biomass is predicted to have never fallen below the proxy management target of 40%. Exploitation rates decreased in the late 1990's due to management restrictions, and have increased in recent years. Rougheye rockfish are managed as part of the minor slope rockfish complex, and there were species specific contributions to the OFL catch levels set for the complex in 2011 and 2012. However, catch is measured on the complex as a whole and rougheye landings exceeded the rougheye contributions to the ABC's for the complex in 2011 and 2012. In retrospect, recent landings are predicted to have been only slightly above proxy harvest target levels.

Table f. Recent trend in total catch and commercial landings (mt) relative to the management guidelines, given for minor slope rockfish and rougheye, north of 40° 10′ (N) and south of 40° 10′ (S). Estimated total catch reflects the commercial landings plus the model estimated discarded biomass.

	Minor Slope Rockfish Complex			Rougheye Rockfish Contribution			
Year	OFL (mt) N, S	ABC (mt) N, S	ACL (mt) N, S	OFL (mt) N, S	ABC (mt) N, S	Commercial Landings (mt)	Estimated Total Catch (mt)
2003						79.95	88.70
2004			1160, 639			104.21	114.12
2005			1160, 639			130.59	140.19
2006			1160, 639			110.46	120.89
2007			1160, 626			145.85	186.79
2008			1160, 626			184.88	221.61
2009			1160, 626			179.90	228.72
2010			1160, 626			173.90	229.39
2011	1462, 907	1324, 836	1160, 626	78.3, 0.5	65.3, 0.4	197.83	202.42
2012	1507, 903	1367, 832	1160, 626	78.3, 0.5	65.3, 0.4	181.78	185.51

Unresolved problems and major uncertainties

This is the first full stock assessment for rougheye rockfish on the U.S. West Coast and although scientifically credible advice is provided by synthesizing many sources of data, there are still some data and structural assumptions that contribute to uncertainty in the estimates. Major sources of uncertainty include fishing mortality, natural mortality, and growth and are discussed below.

There is little information to accurately determine the catch history for rougheye rockfish. Historically, there are few observations to determine species compositions of landings and often little information to even determine if landings came from trawl or hook & line fisheries. It is uncertain if the landings used in the assessment are likely biased high or low. Recent landings are better determined than historical landings, but there still is uncertainty in the values used in this assessment. The landings of rougheye are not determined exactly, but are predicted by applying an estimated species composition to the landed catch. Furthermore, rougheye rockfish are often difficult to distinguish from blackspotted rockfish and sometimes shortraker rockfish (*S. borealis*). We combined blackspotted and rougheye rockfish catches, but did not make any assumptions about which fish labeled as rougheye may be shortraker and vice versa.

Discards of rougheye rockfish are even more uncertain than landings, but because rougheye rockfish is a marketable species commonly above average size, discard rates are likely lower than less desirable or smaller species. This assessment assumed that discarding was nearly negligible before management restrictions began in 2000. The few observations of rougheye in discarding studies corroborates that discarding was rare before 2000. For the years 2002–2010, the West Coast Groundfish Observer Program (WCGOP) has provided data on discards from vessels that were randomly selected for observer coverage, thus some uncertainty is present in the total amount discarded. The implementation of trawl rationalization in 2011 resulted in almost 100% observer coverage for the trawl fleet and very little incentive to discard rougheye rockfish. However, the fixed-gear fleet is not encompassed by the full observer coverage required under trawl rationalization and data show that discarding of rougheye rockfish occurred on fixed gear vessels in recent years. Uncertainty in recent discards is greatly reduced because of observer coverage, but it is unknown what historical discarding may have been.

Rougheye rockfish are one of the longest lived species of rockfish on the West Coast and therefore natural mortality is likely to be lower than for other rockfish species. With length and age data available only for years after 1994, there are few observations available to monitor the long-term changes of aging cohorts. Therefore, estimates of natural mortality are uncertain. This assessment attempts to capture that uncertainty by estimating natural mortality and integrating that uncertainty into the derived biomass estimates.

Model sensitivities and profiles over *M* showed that current stock status was highly sensitive to the assumption about natural mortality. The estimates of *M* varied depending on the weight given to age and length data, or removing recent years of data. Profiles over natural mortality provide support for values from 0.037-0.047. The resulting current depletion ranges from 37–58%, depending upon the assumed natural mortality value.

Decision table

Model uncertainty has been described by the estimated uncertainty within the base model and by the sensitivities to different model structure. The parameter that resulted in the most variability of predicted status and yield advice was natural mortality (*M*), which was also estimated with much more certainty than the prior distribution implied. In fact, the 95% confidence interval for *M* was entirely greater than and did not include the point estimate from McDermott (1994), which was used in the assessment of rougheye and blackspotted rockfishes in the Gulf of Alaska assessment (Shotwell et al. 2011), and was greater than and did not include the value assumed in the analysis by Dick and MacCall (2010). There is the possibility that the base model and the approximate uncertainty intervals based on maximum likelihood theory may not entirely convey the actual uncertainty of this assessment. Preliminary (and non-converged) MCMC tests suggest that the uncertainty is greater than depicted by these results.

Therefore, to characterize uncertainty in the assessments, we used low and high values of natural mortality (0.037 and 0.047). These values closely corresponded to the 95% confidence interval from the likelihood profile, the 95% confidence interval of *M* estimated from the asymptotic variance estimate (0.035–0.049), and the *M* values of 0.037 and 0.047 respectively resulted in 2013 spawning biomass estimates that were near the 12.5% and 87.5% quantiles of spawning biomass from the base model when assuming a lognormal distribution. The 12.5% and 87.5% quantiles were chosen based on the groundfish terms of reference to give the base model a probability that is twice as likely as each alternative state of nature (12.5% and 87.5 are the central quantiles in the tails containing 25% probability).

Due to the unknown differences in life-history between rougheye rockfish and blackspotted rockfish, the Scientific and Statistical Committee (SSC) of the Pacific Fishery Management Council (PFMC) deemed this a Category 2 stock assessment. Therefore, the sigma for P* to determine the catch reduction to account for scientific uncertainty is 0.72.

Table g. Projection of potential OFL, landings, and catch, summary biomass (age-10 and older), spawning biomass, and depletion for the base case model projected with total catch equal to the recent 5-year average in 2013 and 2014, and equal to the predicted ABC (adjusted by the 40:10 control rule and 0.9135 to reflect the P* buffer) afterwards. The predicted OFL is the calculated total catch determined by $F_{SPR=50\%}$.

Year	Predicted OFL (mt)	ABC Catch (mt)	Landings (mt)	Age 10+ biomass (mt)	Spawning Biomass (mt)	Depletion (%)
2013			184	8,176	2,552	47.3%
2014			184	8,220	2,600	48.2%
2015	206	188	183	8,227	2,653	49.2%
2016	210	192	187	8,219	2,706	50.2%
2017	215	197	191	8,225	2,755	51.1%
2018	219	201	195	8,217	2,797	51.8%
2019	222	204	198	8,188	2,829	52.4%
2020	224	206	201	8,136	2,851	52.9%
2021	226	208	202	8,113	2,864	53.1%
2022	227	209	203	8,084	2,868	53.2%
2023	226	209	203	8,052	2,865	53.1%
2024	226	208	203	8,019	2,856	53.0%

Table h. Summary table of 12-year projections beginning in 2015 for alternate states of nature based on the axis of uncertainty. Columns range over low, mid, and high state of nature, and rows range over different assumptions of total catch levels (discards + retained). Catches in 2013 and 2014 are determined from 5 year averages of the landings for each fleet (trawl, hook & line, and at-sea), and are also used as status quo catches.

			State of nature					
			Low *M* = 0.037		Base case *M* estimated at 0.042		High *M* = 0.047	
Relative probability of ln(SB_2013)			0.25		0.5		0.25	
Management decision	Year	Catch (mt)	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion
ABC assuming σ = 0.72	2015	188	1,855	39%	2,653	49%	3,779	60%
	2016	192	1,888	39%	2,706	50%	3,859	61%
	2017	197	1,918	40%	2,755	51%	3,932	62%
	2018	201	1,942	40%	2,797	52%	3,993	63%
	2019	204	1,959	41%	2,829	52%	4,042	64%
	2020	206	1,969	41%	2,851	53%	4,077	64%
	2021	208	1,972	41%	2,864	53%	4,100	65%
	2022	209	1,968	41%	2,868	53%	4,111	65%
	2023	209	1,958	41%	2,865	53%	4,112	65%
	2024	208	1,945	41%	2,856	53%	4,106	65%
Recent 5-year average of catches	2015	189	1,855	39%	2,653	49%	3,779	60%
	2016	189	1,888	39%	2,706	50%	3,859	61%
	2017	189	1,919	40%	2,756	51%	3,933	62%
	2018	189	1,946	41%	2,801	52%	3,997	63%
	2019	189	1,968	41%	2,837	53%	4,051	64%
	2020	189	1,983	41%	2,865	53%	4,091	65%
	2021	189	1,992	42%	2,884	53%	4,120	65%
	2022	189	1,995	42%	2,895	54%	4,138	65%
	2023	189	1,993	42%	2,900	54%	4,147	65%
	2024	189	1,987	41%	2,899	54%	4,148	65%
Catch that stabilizes equilibrium depletion at 40% in the base model	2015	258	1,855	39%	2,653	49%	3,779	60%
	2016	261	1,862	39%	2,680	50%	3,833	61%
	2017	265	1,867	39%	2,704	50%	3,880	61%
	2018	267	1,866	39%	2,720	50%	3,917	62%
	2019	269	1,859	39%	2,728	51%	3,942	62%
	2020	270	1,844	38%	2,726	51%	3,954	62%
	2021	270	1,823	38%	2,715	50%	3,953	62%
	2022	269	1,796	37%	2,697	50%	3,942	62%
	2023	267	1,764	37%	2,673	50%	3,923	62%
	2024	264	1,730	36%	2,644	49%	3,897	62%

Research and data needs

There are many areas of research that could be improved to benefit the understanding and assessment of rougheye and blackspotted rockfishes. Below, we specifically identify five topics that we believe are most important.

- **Historical landings and discards:** The historical landings and discards are uncertain for rougheye rockfish and improvements would increase the certainty that fishing removals are applied appropriately. Because landings are assumed to be known exactly in the assessment model, uncertainty in the predictions does not include uncertainty in the landings. A thorough look at historical landings, species compositions, and discarding practices would reduce the potential uncertainty that is not entirely accounted for.

- **Natural mortality:** Uncertainty in natural mortality translates into uncertain estimates of status and sustainable fishing levels for rougheye rockfish. The collection of additional age data and improved understanding of the life-history of rougheye rockfish may reduce that uncertainty.

- **Maturity and fecundity:** There are few studies on the maturity of rougheye rockfish and only one has reported the results of a histological analysis. Further research on the maturity and fecundity of rougheye rockfish, the potential differences between areas, the possibility of changes over time, and differences between rougheye rockfish and blackspotted rockfish would greatly improve the assessment of these species.

- **Age data and error:** There is a considerable amount of error in the age data and the ageing of rougheye rockfish has not been validated. Investigating the ageing error and bias would help to understand the influences that the age data have on this assessment.

- **Understanding the stock structure and biology of rougheye and blackspotted rockfishes:** This assessment reports the status of rougheye and blackspotted rockfish as a pooled complex because it is extremely difficult to separate the catches of each species even in recent data, and attempting to do so would greatly increase the uncertainty in the predictions. Because little is known about the respective biology and catch histories of the two species, it is unclear whether managing them as a complex may place one species at disproportionate risk of overfishing relative to the other. We recommend additional research that will provide insight into the distribution, life history, biological characteristics, and catch and discard profiles of the two species. Such an endeavor would like require the efforts of at sea observers in all fleets, biologists aboard fishery-independent surveys, and port samplers along the entire West Coast requiring broad, inter-agency collaboration.

- **Basin-wide understanding of stock structure, connectivity, and distribution:** This is a stock assessment for rougheye rockfish off of the west coast of the U.S. and does not consider data from British Columbia or Alaska. Further investigating and comparing the data and predictions from British Columbia and Alaska to determine if there are similarities with the U.S. West Coast observations would help to define the connectivity between rougheye rockfish north of the U.S.-Canada border.

Table i. Summary table of results for the assessment of rougheye rockfish. OFL values are for rougheye specifically, which are managed within the minor slope rockfish complex.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Commercial landings (mt)	79.95	104.21	130.59	110.46	145.85	184.88	179.90	173.90	197.83	181.78	NA
Estimated Total catch (mt)	88.70	114.12	140.19	120.89	186.79	221.61	228.72	229.39	202.42	185.51	NA
OFL (mt)	—	—	—	—	—	—	—	—	78.8	78.8	71.5
ACL (mt)	—	—	—	—	—	—	—	—	—	—	—
1-SPR	0.32	0.38	0.42	0.39	0.49	0.53	0.55	0.55	0.51	0.49	—
Exploitation rate	1.3%	1.6%	2.0%	1.7%	2.6%	3.0%	2.9%	2.9%	2.5%	2.3%	—
Age 10+ biomass (mt)	7,036	7,079	7,093	7,102	7,134	7,268	7,825	7,899	8,077	8,097	8,176
Spawning Biomass	2,417	2,444	2,464	2,477	2,499	2,498	2,489	2,483	2,487	2,511	2,552
~95% Confidence Interval	1,098–3,736	1,108–3,780	1,111–3,818	1,106–3,847	1,110–3,887	1,092–3,904	1,064–3,913	1,038–3,929	1,017–3,956	1,014–4,008	1,024–4,081
Recruitment	426	355	282	282	385	385	358	328	452	449	450
~95% Confidence Interval	205–889	168–751	132–605	129–619	174–855	171–868	157–816	142–757	188–1090	180–1121	180–1123
Depletion (%)	44.8%	45.3%	45.7%	45.9%	46.3%	46.3%	46.1%	46.0%	46.1%	46.6%	47.3%
~95% Confidence Interval	31–59%	31–59%	32–60%	32–60%	32–61%	31–61%	31–61%	30–62%	30–62%	30–63%	31–64%

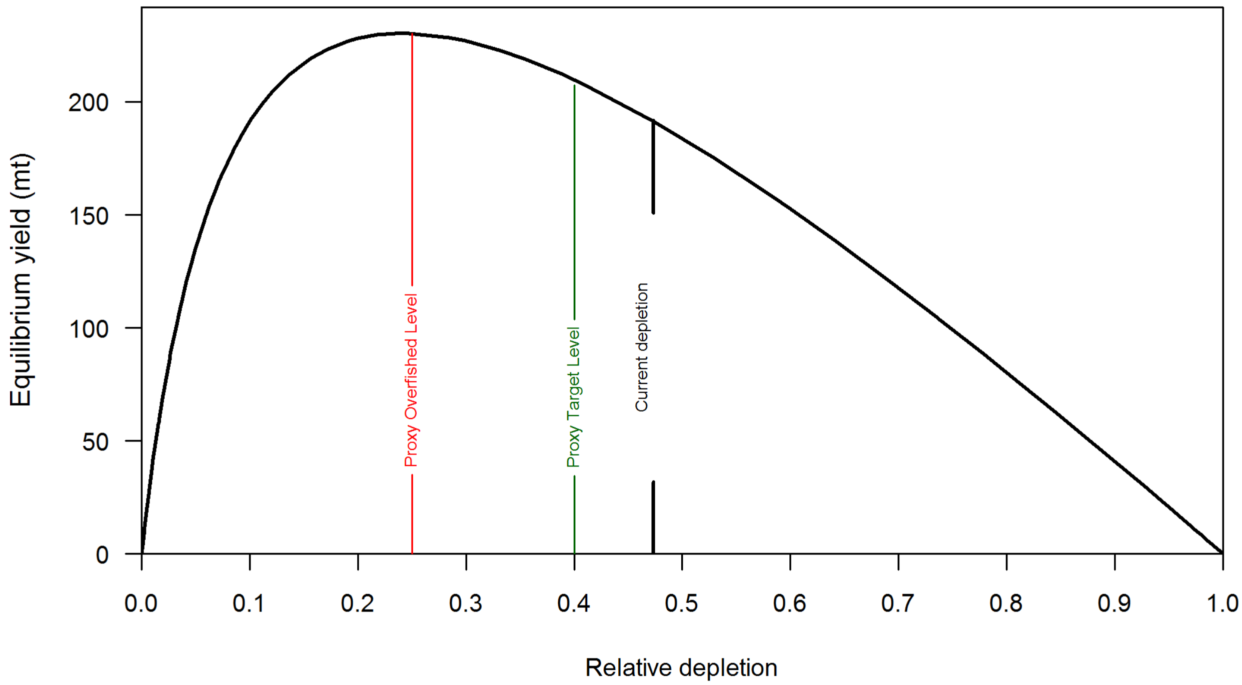

Figure h. Equilibrium yield curve (derived from reference point values reported in Table i) for the base case model. Values are based on 2012 fishery selectivity and distribution with steepness fixed at 0.779. The depletion is relative to unfished spawning biomass.

1 Introduction

Rougheye rockfish (*Sebastes aleutianus*) are a long-lived rockfish named after a series of 2–10 spines along the lower rim of their eyes. They have also been called blackthroat or blacktip rockfish (Love et al. 2002, Love 2011). Recently, Gharrett et al. (2005) and Hawkins et al. (2005) described two sympatric species with similar characteristics, rougheye rockfish and blackspotted rockfish (*S. melanostictus*), although *S. melanostictus* was first described in the 1930's (Orr and Hawkins 2008). These two species may hybridize on occasion (Love 2011). These species are closely related to shortraker rockfish (*S. borealis*) and are sometimes difficult to distinguish from shortraker rockfish without looking at the gill rakers.

Blackspotted rockfish are distributed in similar locations as rougheye rockfish and it is very difficult to visually distinguish the two species. It has only been from recent genetic studies that these two separate species have been identified (Gharrett et al. 2005, Hawkins et al. 2005) and have had phenotypic characteristics useful for identifying the species in the field identified (Gharrett et al. 2005, Orr and Hawkins 2008). Before then, data are available for one species called rougheye rockfish which included rougheye rockfish and blackspotted rockfish. Due to the difficulty in distinguishing these two species and the lack of historical separation of the species in all of the data, this assessment combines any data for blackspotted rockfish with rougheye rockfish and provides management advice for the two species combined. In this assessment, the term "rougheye rockfish" refers to rougheye/blackspotted rockfish unless specified.

Therefore, this assessment is focused on the population of rougheye and blackspotted rockfishes on the outer West Coast of the United States. This includes waters off of California, Oregon, and Washington, but does not include Puget Sound or Canadian waters (Figure 1).

1.1 Distribution and stock structure

The earliest description of what would come to be known as rougheye rockfish date to 1811 with the identification of *Perca variabilis* by German zoologist Peter Simon Pallas (Jordan and Evermann 1898). It has subsequently been described and assigned to various taxa at least 15 times (Love et al. 2002). Some descriptions noted both light and dark color morphs, which, along with possible confusion with several morphologically similar co-occurring species (e.g., *S. borealis* and *S. melanostomus*) have contributed to the persistent ambiguity in formal descriptions of rougheye rockfish (Orr and Hawkins 2008). The first genetic studies conducted in the late 1960s and early 1970s (e.g., Tsuyuki et al. 1968, Tsuyuki and Westrheim 1970) observed diversity suggestive of two genetic types within specimens identified as rougheye rockfish. Allozyme studies conducted over the next two decades (e.g., Seeb 1986, Hawkins et al. 1997, Hawkins et al. 2005) provided additional evidence suggesting two separate genetic types within field-identified rougheye rockfish. Genetic variation between the two types, as manifested by divergence within both nuclear and mitochondrial DNA, was determined to be sufficiently conclusive of two separate species by Gharrett et al. (2005) which proposed a delineation of "Type I" and "Type II" rougheye rockfish. Meristic and morphometric comparisons of the two species suggested certain characters such as gill raker counts and length, snout length, anal base length, and pectoral fin base were significantly different, and in combination could reliably, though not definitively, distinguish between the species (Gharrett et al. 2006). The two separate species were formally re-described by Orr and Hawkins (2008) with the Type II group retaining the rougheye rockfish common name and *S. aleutianus* taxon. Blackspotted rockfish was proposed as the common name for the Type I group along with the scientific name of *S. melanostictus*, re-establishing nomenclature from one of the species complex's earlier descriptions (cf. Matsubara 1934).

Rougheye and blackspotted rockfish share broad overlap in their depth and geographic distributions from the Eastern Aleutian Islands along the North American continental margin to southern Oregon, with blackspotted rockfish's range extending east beyond the Aleutian chain to the Pacific Coast of Japan (Gharrett et al. 2005, Hawkins et al. 2005, Orr and Hawkins 2008). Both species are encountered at depths shallower than 100 m to at least 439 m, however, blackspotted rockfish tend to be more prevalent in deeper waters (Hawkins et al. 2005, Orr and Hawkins 2008). Genetic information is not available to provide positive species identification in historical survey and landings information, but these data indicate that density of the nominal rougheye rockfish complex decreases sharply south of the Oregon-California border (42° N). Studies suggest that rougheye rockfish account for a greater proportion of the species complex along the coast of Washington and Oregon than in Alaskan waters (Gharrett et al. 2005, Hawkins et al. 2005, Orr and Hawkins 2008). Recent discussions with port samplers in southern Oregon suggest that both rougheye and blackspotted rockfish are encountered with some regularity in the commercial trawl and fixed-gear landings in Charleston, Port Orford, and Brookings, with blackspotted rockfish composing approximately one third to one half of identified specimens (C. Good and N. Wilsman, ODFW, pers. comm.).

The west coast of the U.S. is the southern portion of the range of rougheye rockfish, and it is likely that the population north of the U.S.-Canada border is not a separate stock. The connectivity of rougheye populations throughout its range is unknown.

1.2 Life History and Ecosystem Interactions

Compared with other rockfish species on the west coast of the U.S., rougheye rockfish life-history is poorly described and the recent resurrection of two species (rougheye and blackspotted rockfishes) has further complicated the understanding of life-history characteristics. Rougheye rockfish are often associated with boulders and steep habitats, and are typically found alone or in small aggregations (Love et al. 2002). Younger fish may school and are often found in shallower waters on the shelf, and larger fish may form larger aggregations in the Pacific Northwest during the autumn and winter.

Rougheye rockfish give birth to live young with larvae released between February and June and at lengths between 4.5-5.3 mm (Love et al. 2002). There are no studies on the fecundity of rougheye rockfish on the west coast of the U.S.

A wide range of prey items make up the diet of rougheye rockfish. Crangid and pandalid shrimps make up the majority of their diets, and larger individuals, greater than 30 cm, feeding upon other fishes (Love 2011). They are also known to feed upon gammarid amphipods; mysids, crabs, polychaetes, and octopuses (Love et al. 2002, Love 2011).

1.3 Historical and Current Fishery

Rougheye rockfish are not often targeted by a specific fishery, but are desirable and marketable, thus are typically retained when captured. They are often captured in bottom trawl, mid-water trawl, and longline fisheries. Small numbers have been observed in pot, shrimp, and recreational fisheries.

After many attempts to start trawl fisheries off the west coast of the United States in the late 1800's, the availability of the otter trawl and the diesel engine in the mid-1920's helped the trawl fisheries expand (Douglas 1998). The trawl fisheries really became established during World War II when demand increased for shark livers and bottomfish. A mink food fishery also developed during World War II (Jones and Harry 1960). Foreign fleets began fishing for rockfish in the mid 1960's until the EEZ was implemented in 1977 (Rogers 2003). Since 1977, landings of rockfish were high until management restrictions were implemented in 2000. Longline catches of rougheye rockfish are present from the turn of the century and continue in recent years, targeting sablefish and halibut. The catches by state for the trawl and hook & line fleets as well as for the Pacific whiting at-sea fleet are shown in Table 1.

A long-term directed fishery has not occurred for rougheye rockfish and historical discarding practices are not well known. Rougheye rockfish inhabit deeper water as adults, which were fished less often historically. More detailed information of the fisheries by state is given in Section 2.2.1 where the reconstructed landings are discussed.

1.4 Management History and Performance

Rougheye rockfish has been a small component of groundfish fisheries and has not had the species specific attention other rockfishes have been given over the last 30 years. The catches of rougheye rockfish have been governed by restrictions on assemblages of species, of which rougheye was a member. However, the distribution of fishing effort in areas where rougheye might often be caught has also been affected by catch restrictions on co-occurring, rebuilding species, as well as associated area closures instituted to promote rebuilding.

Limits on select rockfishes, which include co-occurring species, were established in 1982. The first imposed landings limits on a coastwide *Sebastes* complex (rougheye rockfish being one of the 50 rockfishes in the complex) were instituted in 1983. This complex was divided in to two management areas north and south of 43º 00' N (separating the Eureka and Columbia INPFC areas) in 1994. Ongoing concern that shelf and slope rockfishes may be undergoing overfishing led the attempt by Rogers et al. (1996) to describe the status of most rockfishes contained in the Sebastes complex. Rougheye rockfish information content was low, and using the Triennial survey to calculate an average biomass and assuming that fishing mortality equals natural mortality provided estimates of exploitation rates that indicated the stock was undergoing very high exploitation rates in both management areas.

The dividing line between the northern and southern management areas was shifted to 40º 10' N latitude in 1999 and the *Sebastes* complex was subsequently divided into nearshore, shelf, and slope complexes in 2000. Rougheye rockfish has since been managed under trip limits for minor slope rockfish complex in both north and south management areas. Table 2 summarizes management guidelines since 1999. Some important events are the gear restrictions implemented in 2000, implementation of Rockfish Conservation Areas (RCA's) in 2002, seasonal changes to the RCA's in 2007, and the beginning of trawl rationalization in 2011.

While stock-specific OFLs/ABCs were not historically set for rougheye rockfish specifically, the reauthorized Magnuson-Stevens Act of 2006 required OFLs for all species in a management plan. The first of the OFL contributions were calculated using DB-SRA in 2010 for the 2011-2012 management cycle. Figure 2 compares the 2011–2012 OFL contribution for each management area to historical total removals of rougheye rockfish for those areas. Most years in the northern management areas and several years in the southern area indicate that removals were higher than the estimated OFL contributions. The observation that recent catches had frequently exceeded the OFL contribution estimated using data-poor, catch-only methods provided a strong indication that a more thorough evaluation of rougheye stock status and sustainable harvest levels be undertaken, using all available data.

1.5 Fisheries and assessments in Canada and Alaska

Rougheye rockfish are distributed throughout Canada and Alaska and are commonly caught in trawl and hook & line fisheries. Alaska conducts assessments biennially for the rougheye/blackspotted complex, but Canada has not completed a formal assessment of this species. The fisheries and assessments for each country are described below.

Rougheye rockfish have been managed as a bycatch only species in Alaska since 1991 with catches ranging between 130 and 2,418 mt (Shotwell et al. 2011). In 2011, 65% of the catch was from bottom trawls, 29% from longline fisheries, and the remaining 6% from pelagic trawls. The rougheye/blackspotted complex in Alaska had total allowable catch (TAC) levels established in 2005, which have generally been between 30% and 40% of the potential quota.

The last full assessment for rougheye rockfish in Alaska was done in 2011 (Shotwell et al. 2011), although was updated in 2012 with recent catch information. The assessment used catches, fishery age and size compositions, trawl and longline survey biomass estimates, trawl survey age compositions, and longline survey size compositions. Natural mortality was estimated using a prior with a mean of 0.03 (from McDermott (1994)) and an arbitrary small coefficient of variation of 10%. The estimated natural mortality was 0.034. Female spawning biomass was well above the target of $B_{40\%}$ and the allowable biological catch (ABC) for 2012 was 1,223 mt. The stock is not estimated to be overfished and it is not likely that overfishing is occurring.

Canada identified two species of rougheye rockfish (Type I and Type II) in 2007 and designated both species of special concern, which means that they may become threatened or endangered because of a combination of biological characteristics and identified threats (COSEWIC 2007). This designation was given because biomass estimates are uncertain and no strong trends are observed, there is evidence of truncation of the age distribution and overall mortality has doubled, it is a long-lived, low-fecundity *Sebastes* species, which is susceptible to population collapse and slow recovery, and because the difficulty in separating the two species may result in potential impacts on one of the species going unnoticed. Subsequently, the species were identified as rougheye rockfish and blackspotted rockfish and a management plan was created in 2012 with a goal of sustaining the populations of rougheye and blackspotted rockfishes (Fisheries and Oceans Canada 2012). Five high priority and seven low priority actions have been identified to address the threats to the populations and support the management goal.

The species pair is targeted in some areas of British Columbia waters and occurs frequently in the bottom trawl and hook & line fisheries. Recent catches have fluctuated around 1,000 mt and the coastwide Total Allowable Catch (TAC) for 2012 was 1,140 mt.

2 Data

2.1 Fishery-independent data

Data from four surveys were used in this assessment: 1) the AFSC/NWFSC triennial Pacific Coast Bottom Trawl Survey (hereafter, “triennial survey”; 2) the AFSC Pacific Coast Upper Continental Slope Trawl Survey (hereafter, “AFSC slope survey”); 3) the NWFSC Pacific Coast Upper Continental Slope Trawl Survey (hereafter, “NWFSC slope survey”), and 4) the NWFSC Pacific Coast Groundfish Bottom Trawl Survey (hereafter, “NWFSC shelf/slope survey”). These surveys employed different designs and sampling methodologies, were conducted during different years and time periods within years, and included coverage over different areas of the coast. In some instances, the survey frequency, depths, and geographic areas covered were not internally consistent within surveys. A brief description of each survey is provided below.

Strata were defined by latitude and depth to analyze the catch-rates, length compositions, and age compositions using stratified random sampling theory. The latitude and depth breaks were chosen based on the design of the survey as well as by looking at biological patterns with latitude and depth.

Indices of abundance for all of the surveys were derived using a delta-generalized linear mixed model (GLMM) following the methods of Thorson and Ward (2013). The surveys were stratified by latitude and depth, and vessel-specific differences in catchability (via inclusion of random effects for the NWFSC surveys and fixed effects for the AFSC and Triennial survey) were estimated for each survey time series. The Delta-GLMM approach explicitly models both the zero and non-zero catches and allows for skewness in the distribution of catch rates. Lognormal and gamma errors structures were considered for the positive tows, including the option to model extreme catch events (ECEs), defined as hauls with extraordinarily large catches, as a mixture distribution (Thorson et al. 2011). There were therefore four total positive tow error structures considered: gamma or lognormal with or without ECEs mixture distributions. Model convergence was evaluated using the effective sample size of all estimated parameters (typically >500 of more than 1000 kept samples would indicate convergence), while model goodness-of-fit was evaluated using Bayesian Q-Q plots and deviance. The resultant coefficient of variations (CVs) of each model were also considered when determining viable indices (i.e., CVs consistently >2 in each year were deemed uninformative and not used).

2.1.1 AFSC/NWFSC Triennial Bottom Trawl Survey

The triennial survey was first conducted by the AFSC in 1977 and spanned the timeframe from 1977–2004. The survey's design and sampling methods are most recently described in Weinberg et al. (2002). Its basic design was a series of equally-spaced transects from which searches for tows in a specific depth range were initiated (Figure 5). The survey design has changed slightly over the period of time (Table 4, Figure 3). In general, all of the surveys were conducted in the mid-summer through early fall: the 1977 survey was conducted from early July through late September; the surveys from 1980 through 1989 ran from mid-July to late September; the 1992 survey spanned from mid-July through early October; the 1995 survey was conducted from early June to late August; the 1998 survey ran from early June through early August; and the 2001 and 2004 surveys were conducted in May-July (Figure 4).

Haul depths ranged from 91–457 m during the 1977 survey with no hauls shallower than 91 m. The surveys in 1980, 1983, and 1986 covered the West Coast south to 36.8°N latitude and a depth range of 55–366 meters. The surveys in 1989 and 1992 covered the same depth range but extended the southern range to 34.5°N (near Point Conception). From 1995 through 2004, the surveys covered the depth range 55–500 meters and surveyed south to 34.5°N. In the final year of the triennial series (2004), the NWFSC's Fishery Resource and Monitoring division (FRAM) conducted the survey and followed very similar protocols as the AFSC.

Given the different depths surveyed during 1977, the data from that year were not included in this assessment. Water hauls (Zimmermann et al. 2003) and tows located in Canadian waters were also excluded from the analysis of this survey. The survey was analyzed as an early series (1980–1992) and a late series (1995–2004), as has been done in other West Coast rockfish assessments.

The indices for the early and late series of this survey were estimated separately using a GLMM with the stratifications shown in Table 5. Boxplots of the deviance for the late and early triennial survey series are shown in Figure 5 and show that the lognormal distribution had the lowest median deviance for both series. Random or fixed strata-year effects produced similar deviance, and the random strata-year effects were chosen as the final models. Selection of using the extreme catch event mixture distribution (ECE) was done by investigating the Q-Q plots in Figure 6. The Q-Q plot for no ECE does not show any departures from the assumed distribution, and the ECE Q-Q plot did not show improvement. Therefore, the lognormal distribution without the ECE mixture distribution and random effects on the year-strata interaction were used to estimate the indices shown in Figure 7and Table 6. The early series suggests a possible slightly increasing trend in biomass from 1983–1992, while the late series showed no discernible trend and alternated between high and low estimates from 1995–2004. The design-based estimates (average density expanded to the stratum area then summed over strata) are compared to the model-based estimates in Figure 8. Similar trends are seen for both sets of estimates, but the design-based estimates are consistently greater than the model-based estimates by more than a factor of 2. This suggests that the scale of the model-based estimates may be low, which may be caused by incorrect expansion to the proper area. This is not an issue with the assessment because a catchability coefficient relating the survey biomass to the assessment model biomass is estimated without any prior assumption on what value that catchability coefficient should be. Therefore, caution is advised if attempting to interpret the value of that estimated catchability coefficient.

Length frequencies for each year were expanded using the same stratification as the GLMM, except that no observations were available for 1983 (Figure 9). Because sex ratios showed no discernible trend across years and surveys, and rougheye rockfish show no tendency toward sexual dimorphism (see sections below), we pooled male, female, and unsexed length data in this analysis. There was considerable variability in length frequencies in the triennial survey data. Mean length in the triennial survey declined during the period 1986–1992 from 31.0 cm to 21.9 cm, and there was no clear trend in mean length from 1995–2004. Mean length in the late period (1995–2004) was larger than mean length in the early period (1980–1992), except in 2004. This further supports the split into early and late periods.

2.1.2 AFSC slope survey

The AFSC slope survey operated during autumn (October-November) aboard the R/V *Miller Freeman*. Partial survey coverage of the U.S. west coast occurred during 1988–96 and complete coverage (north of 34° 30' S) during 1997, 1999, 2000, and 2001. Only the four years of consistent and complete surveys plus 1996, which surveyed north of 43° N latitude to the U.S.-Canada border, were used in this assessment. The number of tows ranged from 8 in 2001 to 26 in 1996 (Table 7). The numbers of tows with length data for rougheye rockfish are also shown in Table 7. Because a large number of positive tows occurred in 1996, we decided to include that year, which surveyed from 43° N latitude to the U.S.-Canada border. Therefore, only tows from 43° N latitude to the U.S.-Canada border were used.

The indices for this survey were developed using a GLMM with the stratification shown in Table 5. Boxplots of the deviance for this survey (Figure 5) show that the lognormal distribution had a lower median deviance than the gamma distribution. Random or no strata-year effects produced similar deviance, and the no strata-year effects were chosen as the final model. Selection of using the extreme catch event mixture distribution (ECE) was done by investigating the Q-Q plots in Figure 6. The Q-Q plot for no ECE does not show any departures from the assumed distribution, and the ECE Q-Q plot did not show improvement. Therefore, the lognormal distribution without the ECE mixture distribution and no effects on the year-strata interaction were used to estimate the indices shown in Figure 7and Table 6.

The final two years of the series (2000–2001) are much higher than the first three. The design-based indices (Figure 8) were similar in trend to the model-based indices, but were typically more than 2 times greater indicating that the scale may not be correct. This is not an issue with the assessment because a catchability coefficient relating the survey biomass to the assessment model biomass is estimated without any prior assumption on what value that catchability coefficient should be. Therefore, caution is advised if attempting to interpret the value of that estimated catchability coefficient.

Length frequencies for each year were expanded using the same stratification as the GLMM (Table 5) and are shown in Figure 10. No age data were available for the AFSC slope survey.

2.1.3 NWFSC Slope Survey

The NWFSC slope survey covered waters throughout the summer from 183 m to 1280 m north of 34° 30' S, which is near Point Conception. The survey strata used to expand the biomass data for this assessment are shown in Table 5. There were no length data from this survey for rougheye rockfish.

Boxplots of the deviance for this survey (Figure 5) show that the gamma and lognormal distributions had similar deviance. Random or no strata-year effects produced similar deviance, and the no strata-year effects were chosen as the final model. Selection of using the extreme catch event mixture distribution (ECE) was not possible for this survey due to errors in the algorithm when assuming an ECE mixture distribution. The Q-Q plot for the non ECE model is shown in Figure 6 and does not display any alarming inconsistencies. Therefore, the lognormal distribution without the ECE mixture distribution and no effects on the year-strata interaction were used to estimate the indices shown in Figure 7and Table 6.

The index for this short series is quite variable and shows no consistent trend (Figure 7).

2.1.4 NWFSC Shelf/Slope Survey

The NWFSC shelf/slope 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 chartered industry vessels in most years, assigned to a roughly equal number of randomly selected grid cells. The survey, which has been conducted from late-May to early-October each year, is divided into two 2-vessel passes of the coast, which are executed from north to south. This design therefore incorporates both vessel-to-vessel differences in catchability as well as variance associated with selecting a relatively small number (~700) of cells from a very large population of possible cells (greater than 11,000) distributed 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.

Rougheye rockfish are not commonly caught in the shelf/slope survey. Higher catch rates occur north of 42° N latitude and catches are rare south of 40° 10′ N latitude (Figure 11 & Figure 12). Very few large fish are found on the shelf and few small fish are found in the deeper water of the slope (Figure 13). There is no clear trend in length with latitude, but there appears to be two areas of more frequent catches: near 45° N latitude and near 48° N latitude. Larger fish are caught in these two areas. Age shows a similar pattern with depth and latitude (Figure 14). The oldest fish observed on the shelf (depth less than 183 m) was 13 years.

The indices for this survey were developed using a GLMM with the stratification shown in Table 5. Boxplots of the deviance for this survey (Figure 5) show that the lognormal distribution with random strata-year effects had the lowest median deviance and was chosen as the final model. Selection of using the extreme catch event mixture distribution (ECE) was done by investigating the Q-Q plots in Figure 6. The Q-Q plot for no ECE does not show any departures from the assumed distribution, and the ECE Q-Q plot showed only a very slight improvement. Therefore, the lognormal distribution without the ECE mixture distribution and random effects on the year-strata interaction were used to estimate the indices shown in Figure 7and Table 6.

The indices for the NWFSC shelf/slope survey are quite variable and show no consistent trend (Figure 7). The design-based estimates are similar to the model-based estimates (Figure 8) except that the model-based estimates show dampened fluctuations, which are likely a result of assuming a lognormal distribution.

Expanded length frequencies from this survey show years with high proportions of small fish and years with high proportions of large fish (Figure 15). It appears that length frequencies may be affected by process error and dependent on whether or not they encounter fish in certain areas within a year. From 2003 to 2009, few fish were seen in the 30–40 cm range. Age compositions (Figure 16) show a high proportion of the 1999 year class from 2003 to 2010. In 2012, there was a high proportion of very young fish. Conditional age-at-length proportions (Figure 17) show that at young ages and small lengths the data are mostly consistent, but at larger lengths and older ages, the variability increases.

2.1.5 Fishery-Independent Surveys not used in this Analysis

The International Pacific Halibut Commission (IPHC) has conducted an annual longline survey for Pacific halibut off the coast of Oregon and Washington (IPHC area "2A") since 1999 with a fixed station design. Approximately 1,800 hooks are deployed at 84 locations each year (Figure 18). Rockfish bycatch is routinely recorded during this survey, and originally estimates of rockfish bycatch in area 2A were based on subsampling the first 20 hooks of each 100-hook skate. Recently, though, all rockfish are tagged and recorded for later sampling by WDFW and ODFW biologists (see http://www.iphc.int/publications/rara/2012/rara2012503_ssa_survey.pdf). Some variability in exact sampling location is practically unavoidable, and leeway is given in the IPHC methods to center the set on the target coordinates but to allow wind and currents to dictate the actual direction in which the gear is deployed. This can result in different habitats accessed at each fixed location among years.

The IPHC longline survey fishes in suitable habitat for rougheye rockfish, but the majority of the rockfish catch is yelloweye rockfish (*S. ruberrimus*). In 2012, 169 rockfish were observed in area 2A, and consisted of eleven different species. Of those 169 rockfish, 115 were yelloweye, and 13 were rougheye. Based on the low numbers of rougheye rockfish, the data were not used in this assessment.

2.2 Fishery-dependent data

Rougheye rockfish have been caught in trawl and hook & line fisheries since the early part of the 20th century. Rougheye rockfish are a large and desirable rockfish, and are not likely to be discarded for market reasons. However, smaller rougheye are found at shallower depths and discarding practices in the early 1900's are uncertain. Few rougheye have been observed in recreational, commercial pot, and commercial shrimp fisheries, thus only trawl and hook & line landings were used in this assessment.

Since 2000, rougheye rockfish have been landed as part of the minor slope rockfish species complex, and previously, they were commonly landed as part of the 'Other *Sebastes*' complex. Therefore, the results of species-composition sampling are relied upon to determine the landed catch of rougheye. The uncertainty in species composition is greater in past years, with less systematic and extensive sampling occurring prior to 1980. Consequently, the precision with which landings of rougheye rockfish can be estimated likely decreases for earlier years. A description of the methods used to determine the historical and current landings is provided below.

2.2.1 Commercial catch reconstruction

PacFIN serves as a clearinghouse for commercial landings data since the early 1980's, and before that, landings for each state were reconstructed using the assumptions described below. The at-sea trawl fleet calculates catches are calculated from observer data stored in the NORPAC database, maintained by the AFSC.

2.2.1.1 Washington

Historical commercial landings of two gear types, trawl and longline, were reconstructed for rougheye rockfish landed in Washington. It was assumed that landings from other gears constitute a negligible amount of the total mortality.

Washington's trawl fishery

Washington's coastal trawl fishery began in the early 1930's off of Cape Flattery and landings increased substantially by the 1940's (Tagart and Kimura 1982). In 1946, rockfish landings experienced a sharp decline, presumably in response to weakened market demand following World War II. After a period of steady landings of around 5,000 metric tons (mt) annually, landings rapidly increased in the 1960's, followed by a decline in the mid-1970's and a further increase in the late 1970's. Before the mid-1970's, most of the rockfish and POP catch came from Canadian waters. The implementation of the EEZ brought higher landings in Washington from U.S. waters and U.S. landings rose to over 10,000 mt up until 1983. After that time, rockfish landings declined to around 500 mt in the late 1990's.

Most of the rockfish landed in the Washington trawl fishery were historically categorized into two market categories: "Pacific Ocean Perch" (POP) or "other rockfish" (URCK). Additional market categories were added in the mid-1980's, but only POP and URCK were used to determine the landings of rougheye rockfish prior to the 1980's. Figure 19 shows the amount landed in each category before proportioning out the species.

Theresa Tsou (pers comm., WDFW) provided species composition data from landings for 1967–2009. From these data, the years 1968–1994 were used to calculate average proportions of rougheye rockfish in the UPOP and URCK market categories. These proportions were then applied to historical landings of each category to determine historical rougheye rockfish landings. These years were chosen because landings in these two market categories were consistently sampled for species compositions. The average proportion of rougheye rockfish in UPOP landings from 1968–1994 was 0.00661 and the average proportion of rougheye rockfish in URCK landings from 1968–1994 was 0.00160. The average proportion of rougheye rockfish in the sum of UPOP and URCK landings between 1968 and 1994 was 0.00236.

A database of historical Washington landings (Greg Lippert, WDFW, pers comm.) contained landings from Puget Sound and was used to calculate a proportion of the U.S. and Canadian rockfish landings (without POP) that were not from Puget Sound. POP was excluded because it was assumed all POP were caught outside of Puget Sound. From 1949 to 1969, the proportion of landings outside of Puget Sound were greater than 0.95. These estimates agreed closely with estimates calculated using data from research reports on the Washington trawl fishery (Holmberg et al. 1962, Holmberg et al. 1967). Prior to 1949, when POP and rockfish landings were not separated, it was assumed that 99% of the landings came from outside of Puget Sound.

Catches from U.S. waters were derived from Forrester (1967) and Tagart and Kimura (1982). Forrester (1967) reports the separate U.S. vessel and Canadian vessel catches of POP and rockfish for PSMFC areas near British Columbia in the years 1954–1965. Catches south of PSMFC area 3B were not reported, but it is likely that a large proportion of the catch south of 3B came from Oregon vessels. The proportion of Washington landings caught in US waters was calculated as the ratio between the US vessel catch in area 3B and the total catch by US vessels. It is unclear if area 3C as used by Forrester (1967) includes a portion of U.S. waters. Tagart and Kimura (1982) report catches by PSMFC area for the years 1966–1979 and there was little catch in the areas south of 3B.

Historical landings from trawl fisheries of rougheye rockfish were determined as follows for the periods shown.

< 1930: Assumed no catch of rougheye rockfish.

1930–1934: The Pacific Fisherman Yearbook rockfish landings were used and it was assumed that all landings were caught in U.S. waters. It was assumed that 1% of the total catch was from Puget Sound, thus was removed (1% was used because POP could have been aggregated with rockfish). The proportion of rougheye rockfish used was 0.00236.

1935–1941: Dept. of Fisheries WA reported landings (1955 Commercial Fishing Statistics, WA Dept Fisheries) were used instead of the Pacific Fisherman Yearbook. The sources are quite different, and the Pacific Fisherman Yearbook states it is reporting foodfish only (there was a substantial mink food fishery). We used 0.00236 as the proportion of rougheye rockfish in the landings since POP landings were not separated. For U.S. catches, we assumed a linear decrease from 100% of the catches in U.S. waters in 1934 to 17.65% catches from U.S. waters in 1946 (calculated from the average percentage of catch of rockfish+POP in U.S. waters between 1954-1974, see Forrester (1967) and Tagart and Kimura (1982). However, it is likely that fishing vessels stayed closer to home during the war years. Puget Sound catches were assumed to comprise 1% of the total landings and were removed.

1942–1948: Fish & Wildlife Service reports (Pacific Coast Fisheries) were used to determine rockfish landings instead of the Pacific Fisherman Yearbook or Dept of Fisheries WA reported landings (1955 Commercial Fishing Statistics, WA Dept Fisheries). The Pacific Fisherman Yearbook was typically less than the other two sources, which were not much different. The value 0.00236 was used as the proportion of rougheye rockfish in the landings. For U.S. catches, the linear decrease to 17.65%, as above, was used and it was furthermore assumed that 17.65% of the catch came from U.S. waters from 1946–1948. It was also assumed that 1% of the total catch came from Puget Sound.

1949–1951: A database of Washington landings provided by Greg Lippert (pers comm., WDFW) was used to determine landings of combined rockfish and POP for these years. The value 0.00236 was used as the proportion of rougheye rockfish in the landings. For U.S. catches, it was furthermore assumed that 17.65% of the catch came from U.S. waters from 1946–1948. The proportion of landings that occurred outside of Puget Sound were determined from the database and ranged between 99.2% and 99.7% for these years.

1952–1965: The database of Washington landings was used for separated rockfish and POP landings. Values of 0.00160 and 0.00661 were used as the proportion of rougheye rockfish in the other rockfish and POP categories, respectively. The proportion of landings from U.S. waters were determined for the years 1954–1965 using data reported by Forrester (1967) and ranged from 3.1–40.2% for rockfish landings and 9.9–46.4% for POP landings. The proportions of rockfish and POP landings from US waters for the years 1952–1953 were 0.215 and 0.143, respectively, which were the averages of the proportions from U.S. waters in the years 1954–1974 (before the proportion of landings caught in U.S. waters began steadily increasing). Tagart and Kimura (1982) report that prior to 1968, POP landings were invariably 100% Pacific Ocean perch and species composition does not need to be applied. However, after discussions with Fish & Wildlife Biologists and noticing that rougheye rockfish have been landed with POP catches after 1968, it was considered unreasonable given the large catch of POP prior to 1968 that no rougheye rockfish would have been caught or landed in this category.

1966–1968 Tagart and Kimura (1982) report area specific landings, thus catches of rougheye rockfish from U.S. waters were determined directly. The estimated landings of rougheye rockfish increase rapidly near the end of this series, which is due to the domestic fleet taking more catch from U.S. waters.

1969–1980: The estimate of rougheye rockfish landings for this set of years was obtained from a spreadsheet supplied to me by Vlada Gertsvena (pers comm., NWFSC, NOAA) which was supplied to her by Jack Tagart. This spreadsheet is called ROCKFI~2.xls and has the catch of rougheye rockfish listed. Therefore, no proportions needed to be applied.

1981–2012: The rougheye rockfish landings were obtained from PacFIN (Pacific Fisheries Information Network (PacFIN) retrieval dated May 30, 2013, Pacific States Marine Fisheries Commission, Portland, Oregon; www.psmfc.org). Puget Sound catches were removed and only non-shrimp trawl gear was used.

The landings of rougheye rockfish in the Washington trawl fishery were low until the late 1970's when the EEZ was implemented and US vessels fished more often in US waters (Figure 20).

Washington's longline fishery

The longline fishery contributes a major portion of annual rougheye rockfish landings. Total rockfish landings for longline gear were available from the Washington landings database for the years from 1949 to 1969, and from the Washington fish ticket data between 1970 and 1980 (pers comm., Theresa Tsou, WDFW). Jack Tagart provided Vlada Gertsvena (NWFSC, NOAA Fisheries) with a spreadsheet containing species-composition data for longline gear (called LLSPP~2.xls). Using these data from the period 1994–1998, the proportion of rougheye rockfish observed in longline landings was 0.5042.

Historical longline catches were determined as follows for the periods shown.

1897–1926: Assumed a linear increase in catch of rougheye rockfish from zero to the value in 1927, following the Oregon catch reconstruction of longline catch.

1927–1948: Assumed that Washington longline catches of rougheye rockfish followed the same pattern as Oregon longline catches of rougheye rockfish. Without any other data, we simply added the average difference between Washington and Oregon longline catches of rougheye rockfish between 1949 and 1958 (36.9677 mt) to the Oregon longline landings of rougheye rockfish for each year.

1949–1969: Longline landings of all rockfish were obtained from a Washington landings database supplied by Theresa Tsou and Greg Lippert (pers. comm, WDFW, 2009) and a proportion of 0.5042 was applied to estimate rougheye landings.

1970–1980: A database of Washington fish tickets supplied by Theresa Tsou and Greg Lippert (pers. comm, WDFW, 2009) was used to determine all rockfish landed. A proportion of 0.5042 was applied to estimate rougheye landings.

1981–1999: Total hook and line landings for rockfish in Washington were taken from the Fisheries Statistics website (http://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/index). A proportion of 0.5042 was used to estimate the rougheye landings.

2000–2012: The estimated landings of rougheye rockfish from hook and line gear were obtained from PacFIN (Pacific Fisheries Information Network (PacFIN) retrieval dated May 30, 2013, Pacific States Marine Fisheries Commission, Portland, Oregon; www.psmfc.org).

Hook & line fisheries in Washington are predicted to have caught a considerable amount of rougheye prior to 1960. Catches were low in the 1970's but increased quickly in the 1980's and 1990's. Catches are similar to historical levels in the 2000's (Figure 20).

2.2.1.2 Oregon

Historical reconstructed trawl and hook & line landings of rougheye rockfish from Oregon for the years 1927–1986 were obtained from Vladlena Gertseva (NWFSC, NOAA). A description of the methods can be found in Karnowski et al. (2012). Recent landings for these two gear types were obtained from PacFIN (Pacific Fisheries Information Network (PacFIN) retrieval dated May 30, 2013, Pacific States Marine Fisheries Commission, Portland, Oregon; www.psmfc.org).

2.2.1.3 California

Historical commercial fishery landings of rougheye rockfish were obtained from the California Cooperative Groundfish Survey, also known as CALCOM (pers. comm, Don Pearson) for the years 1916–1968. However, the catches were classified as "other" gear, and because they were small compared to Oregon and Washington landings (a total of 3.73 mt over 53 years) we decided to exclude them from the total catch history. Recent landings by trawl and hook & line gear types were obtained from PacFIN (Pacific Fisheries Information Network (PacFIN) retrieval dated May 30, 2013, Pacific States Marine Fisheries Commission, Portland, Oregon; www.psmfc.org) and are a small proportion of the total landings (Figure 20).

2.2.1.4 At-sea

Catches of rougheye rockfish are determined aboard the vessel by observers in the At-Sea hake Observer program (ASHOP). Observers use a spatial sample design, based on weight, to randomly choose a portion of the haul to sample for species composition. For the last decade, this is typically 30-50% of the total weight. The total weight of the sample is determined by all catch passing over a flow scale. All species other than hake are removed and weighed, by species, on a motion compensated flatbed scale. Observers record the weights of all non-hake species. Non-hake species total weights are expanded (in the database) by using the proportion of the haul sampled to the total weight of the haul. The catches of non-hake species in unsampled hauls is determined using bycatch rates determined from sampled hauls. Table 8 provides a summary of the total number of hauls, the total number of unsampled hauls, the total sampled weight of all of the hauls, and the median tow expansion factor used to expand from the sample to the haul. Since 2001, more than 97% of the hauls have been observed and sampled.

The at-sea fleet consists of catcher-processor vessels (CP) and mother-ship vessels (MS). The CP fleet typically catches more rougheye rockfish than the MS fleet (Table 9) and catches have fluctuated to reach high amounts since 2000 for the CP fleet (Figure 21). From 2009 to 2012, the MS fleet has shown an increase in rougheye rockfish catches while the CP fleet has shown high catches within the range of recent fluctuations.

2.2.2 Fishery-Catch-Per-Unit-Effort

Fishery catch-per-unit-effort (CPUE) was not used in this assessment because management restrictions have likely resulted in changes in catch-rates that are not reflective of rougheye rockfish abundance and difficulty with species identification may result in erroneous information. Additionally, trawl logbook data, which are available since the 1980s, do not identify retained amounts of rougheye. However, raw catch-per-tow was calculated for the at-sea fleet and plotted in Figure 22 to determine if there are any significant trends in catch-rates. Overall, trends in catch-per-tow for the at-sea fleet has been mostly stable, although from 1990 to 2000 there appears to be a general increase in catch-rate, which drops in 2002 and again increases slightly to 2012. Somewhat lower rates in the 2000s may reflect efforts by the at-sea fleet to reduce their bycatch of rebuilding species, such as widow and darkblotched rockfishes, and rockfish excluders began being used by some vessels in 2009.

2.2.3 Fishery Biological Data

Biological data from commercial fisheries that caught rougheye rockfish were extracted from PacFIN (PSMFC) on June 7, 2013 and from the NORPAC database on June 10, 2013. Lengths taken during port sampling in California, Oregon, and Washington were used to calculate length compositions, and ages were determined from rougheye rockfish sampled from Oregon landings in 2008 and 2011. The data were classified as groundfish trawl (TWL), shrimp trawl (TWS), hook and line (HKL), or net (NET). There were no hauls outside of US waters in this extraction.

Table 10 shows the number of landings sampled as well as the number of lengths taken for each year since 1995 for trawl and non-trawl gear from the three states, and the number of tows from the at-sea fleet. California has few sampled landings during this time period because landings of rougheye rockfish are small in that state. The numbers of lengths sampled by gear are shown in Table 11.

Length frequencies for trawl and hook & line gears were estimated using these data (Figure 23). Samples were expanded up to the total landing then combined into state specific length frequencies. Washington did not have the total weight of the landing recorded, therefore they were expanded to the total landing weight by a factor of 5.18, which is the median expansion for the Oregon landings. Expansion factors were calculated in a way such that large expansions would not occur and based on ideas first presented by Owen Hamel (pers. comm., NWFSC). First the expansion factor (E_k) was the total catch weight (W_k) divided by the sample weight (w_k), and raised to 0.9 to account for non-homogeneity within a trip. Then, expansion factors greater than 30 were assigned a value of 30 to reduce the influence of small samples (i.e., a few fish representing a large catch). The predicted total numbers at length weighted by landings for each state were added to create a coast-wide length frequency. The effective sample size of the state combined length frequencies were determined by weighting the sample sizes within each state relative to the proportion of the total landings that were sampled.

Expanded at-sea length compositions are shown in Figure 24. Observed lengths were expanded to the tow from At-Sea Hake Observer Program samples. Tows are typically well sampled, thus expansion factors were not modified from what was calculated. Lengths from the at-sea fleet were most often greater than 40 cm.

Conditional age-at-length show a large amount of variability mostly because larger fish were observed (Figure 25 and Figure 26).

2.2.4 Discards

The West Coast Groundfish Observer Program (WCGOP) has been collecting on-vessel data since 2002 to mainly record discard information. Their data are current through 2011 and are summarized here. A proportion of the fleet for various gear types has been observed in each year and the data collected are used to estimate the total mortality to various species. In 2011, under trawl rationalization, 100% observer coverage is required for some sectors, which resulted in a large increase in data and ability to determine discard behavior. However, given the change in management, it is likely that there has been a change in discarding behavior.

Table 13 shows discard totals in metric tons for each year since the WCGOP has been collecting data. Figure 27 shows the discard totals by year for the trawl and fixed gear fisheries. Discard totals ranged from around 1 to 20 metric tons between 2002 and 2006 for the trawl fleet, and increased to around 30–60 mt from 2007 to 2010. In the first year of trawl rationalization (2011), the discard total was the lowest observed value of 0.04 mt. Prior to the implementation of catch shares, two main reasons for discarding practices were trip limits and area closures. Discard totals for the fixed gear fishery varied between 1 and 21 mt per year between 2002 and 2011.

Table 14 and Figure 28 show the observed mean body weights of discarded rougheye rockfish for the trawl and fixed gear fisheries. The mean body weight of discarded rougheye rockfish ranged between 0.53-1.84 kg between 2002 and 2010 for the trawl fishery. In 2011, under catch shares, the mean body weight of discarded fish was 0.53kg. The mean body weight of discarded rougheye rockfish ranged between 1.38-2.7 kg between 2002 and 2011 for the fixed gear fishery. On average, the fixed gear fleet appeared to discard larger rougheye rockfish relative to the trawl fleet during the comparable years of 2002-2010.

Length compositions of the discards for the trawl and hook & line fleets were quite different from each other (Figure 29). The hook & line fleet did not observe the small fish that were observed in the trawl fleet. The trawl fleet observed small fish from 2004 to 2006 in high proportion, which then was reduced from 2007 to 2010, but strong again in 2011. The hook & line fleet rarely observed fish less than 40 cm.

These discards were estimated in the model and estimated total catches, as opposed to landings, are reported where necessary.

2.3 Biological data

2.3.1 Weight-Length Relationship

Weight-at-length data collected by the NWFSC shelf/slope trawl survey was used to estimate a weight-length relationship for rougheye rockfish. Weight-at-length was very similar between females and males (Figure 30). The following relationships between weight and length for females, males, and all sexes were estimated:

Females	$\text{weight} = 8.384\text{E-}6 \cdot \text{Length}^{3.161}$
Males	$\text{weight} = 1.005\text{E-}5 \cdot \text{Length}^{3.110}$
Combined	$\text{weight} = 9.595\text{E-}5 \cdot \text{Length}^{3.123}$

where weight is measured in grams and length in cm.

2.3.2 Maturity schedule

McDermott (1994) estimated the probability that rougheye were mature at different lengths using histological techniques. Samples were collected along the coast from Oregon to the Gulf of Alaska and the small number of samples from Oregon, Washington, and British Columbia showed a slightly smaller length at 50% mature (42.88 cm) than the samples from Alaska (44.87 cm). Figure 31 shows the maturity-at-length.

2.3.3 Fecundity

Fecundity in rockfish is often not a linear function of weight, but increases faster at larger weights (Dick 2009). Therefore, this relationship is often accounted for in assessments of rockfish and spawning output is used to determine current status. We were unable to find published studies of the fecundity of rougheye rockfish that were useful for this assessment. However, it has been noted that rougheye rockfish do not experience senescence (de Bruin et al. 2004).

2.3.4 Natural Mortality

Natural mortality (*M*) is a parameter that is often highly uncertain in fish stocks. There are few published estimates of natural mortality for rougheye rockfish. Malecha et al. (2007) used samples from Alaska to calculate estimates of *M* that ranged from 0.013 to 0.063 using methods developed by Alverson and Carney (1975) and Hoenig (1983). McDermott (1994) analyzed samples collected from Alaska to Oregon and used the method developed by Gunderson and Dygert (1988) that relates the gonad somatic index (GSI) to natural mortality rate. Natural mortality rates of 0.0304 and 0.039 were reported with a high amount of uncertainty. The Gulf of Alaska assessment of rougheye rockfish (Shotwell et al. 2011) used 0.03 as the mean of a prior distribution for *M*.

In this assessment, natural mortality was estimated. A lognormal prior distribution based upon a maximum age of 130 years (as seen in the survey data) was developed and had a median of 0.03365 and a coefficient of variation (CV) of 0.58 (pers comm, Owen Hamel, NWFSC, NOAA). Two other prior distributions were developed. One assumed a maximum age of 205 (Munk 2001) resulting in a median of 0.02134 and a CV of 0.60. The other assumed a maximum age of 130 and an asymptotic weight-at-age of 3.92 kg, resulting in a median *M* of 0.0605 and a CV of 0.44. Figure 32 shows that these prior distributions are wide and not highly informative.

2.3.5 Length-at-age

In 2013, the Cooperative Ageing Project (CAP) in Newport, Oregon aged 962 rougheye rockfish otoliths collected from the NWFSC shelf/slope survey, 722 rougheye rockfish otoliths collected from Oregon port samples in 2008 and 2011, and 1065 rougheye rockfish otoliths collected by observers from the Pacific hake at-sea fleet in 2008 and 2011. All but 9 of these otoliths had a sex assigned to them. Figure 33 shows the lengths and ages for all years of the NWFSC shelf/slope survey as well as predicted von Bertalanffy fits to the data. Females and males grow at similar rates with sex specific growth parameters estimated at the following values:

Females	$L_\infty = 58.3,\ k = 0.071,\ t_0 = -1.69$
Males	$L_\infty = 57.7,\ k = 0.068,\ t_0 = -2.26$
Combined	$L_\infty = 57.9,\ k = 0.069,\ t_0 = -2.00$

Figure 34 shows the observations of length at age as well as predicted von Bertalanffy curves for each year of the data collected from the NWFSC shelf/slope survey. Large differences are apparent between years, which are likely due to smaller sizes within each year.

The length-at-age data collected from the Oregon commercial samples are shown in Figure 35 with the year-specific data shown in Figure 36. The estimates of the von Bertalanffy parameters using both years of data are:

Females	$L_\infty = 61.2,\ k = 0.032,\ t_0 = -25.98$
Males	$L_\infty = 60.5,\ k = 0.032,\ t_0 = -25.16$
Combined	$L_\infty = 60.7,\ k = 0.032,\ t_0 = -25.40$

The length-at-age data collected from the Pacific hake at-sea commercial samples are shown in Figure 37with the year-specific data shown in Figure 38. The estimates of the von Bertalanffy parameters using both years of data are:

Females	$L_\infty = 60.1,\ k = 0.038,\ t_0 = -24.21$
Males	$L_\infty = 57.6,\ k = 0.046,\ t_0 = -19.04$
Combined	$L_\infty = 58.7,\ k = 0.042,\ t_0 = -21.14$

Fewer smaller/younger fish were present in the commercial data, and estimates of k and t_0 are likely uncertain for those fleets. L_∞ was larger for the females when using data from the commercial fleets, and the Oregon samples showed a larger L_∞ for males. Even with samples sizes greater than 150, the sex-specific parameters were variable across years (e.g., see males in the Oregon samples in Figure 36).

Compared to the estimated growth curve using combined sex data from the NWFSC shelf/slope survey, the estimated growth curve from McDermott (1994) predicted smaller fish at ages less than 10, similar sized fish from about ages 10–30, and smaller fish at older ages. McDermott (1994) used data from Oregon, Washington, British Columbia, and Alaska collected in the early 1990's, while the NWFSC survey data is collected from California, Oregon, and Washington and collected in the 2000's.

2.3.6 Sex ratios

Males and females grow to similar lengths and it is expected that the proportion of females across all lengths or ages would be 50% unless mortality differs by sex. Figure 40 shows that the proportion of females at length or age from survey data is near 50% but typically slightly less than 50%. A trend would suggest differential mortality rates by sex, but instead the proportion of females appears to be consistently less than 50%. This may be a result of differential selectivity by sex and males are more vulnerable than females across all lengths or ages, or a bias in sex determination. Conversely, Figure 40 also shows the proportion of females for data from the trawl fleet and data from the at-sea fleet. There are a larger number of length observations and the proportions are much closer to 0.5 across all lengths and ages.

2.3.7 Ageing Bias and Imprecision

Uncertainty surrounding the ageing-error process for rougheye rockfish was incorporated by estimating ageing error by age. All age-composition data used in the model were from break-and-burn reads and were aged by the Cooperative Ageing Project (CAP) in Newport, Oregon.

Age validation has not been done for rougheye rockfish otoliths and there is likely a considerable amount of error in age determination, especially with very old fish. For example, the CAP lab initially aged an otolith at 210 years, but upon further investigation it was revised to be 153 (pers. comm., Patrick McDonald, NWFSC). Also, Munk (2001) reported a rougheye rockfish that was aged at 205 years, which has been referenced many times since. However, it was noted that there were ambiguous regions of the otolith and that the age of the fish could be younger than 205, but was at least 170 years.

Break-and-burn double reads of 604 otoliths were performed by CAP (unpublished data). An ageing error estimate was made based on these double reads using a computational tool specifically developed for estimating ageing error (Punt et al. 2008), which produces a standard deviation in estimated age as a function of true age. A non-linear standard error was estimated by age where there is more variability in the estimated age of older fish (Table 17, Figure 41). Bias was not estimated because there were no validated ages to provide a benchmark.

2.4 History of Modeling Approaches Used for this Stock

A previous data-limited, category-three, evaluation was conducted for the U.S. Pacific Coast stock of rougheye rockfish in 2010 by Dick and MacCall (2010) using depletion-based stock reduction analysis (DB-SRA). They estimated that the population had greater than a 50% probability of exceeding the estimated proxy overfishing level in 2010 if the harvest remained at the observed levels. DB-SRA estimated a proxy OFL for rougheye rockfish of 78.7 mt with a 95% confidence interval between 4.7-587 metric tons.

The results from DB-SRA and from this assessment vary for multiple reasons. First, they have different overall modeling structures. DB-SRA is a delay-difference modeling approach using only catch data and terminal-depletion assumptions, whereas this assessment applied an age-structured analysis which integrated catch, index, and compositional data. Secondly, the catch history has been substantially updated for rougheye, although it is still highly uncertain (Figure 42). The last main reason, and perhaps the most critical, is the assumption about natural mortality. DB-SRA assumed a distribution about a low value of *M* relative to the value that was estimated with the base model of this assessment. Model sensitivity analyses were conducted for the base model in which *M* was fixed at a low value similar to the median applied in DB-SRA. The mean long-term yield at $SPR_{50\%}$ was estimated to be 79 mt, a similar result to that resulting from the Dick and MacCall (2010) analysis.

2.4.1 Pre-assessment webinar

A pre-assessment webinar was held on May 28, 2013 to present preliminary analyses of data and potential modeling methods. Participants included representatives from federal and state agencies, as well as representatives from trawl and at-sea industries. The webinar was extremely useful to help understand the fishery and management concerns, to learn more about the fishery, and to meet people interested in this assessment for further consultation. We greatly appreciate the time that everyone took to attend the webinar and provide comments, advice, and insight used in this assessment.

After a short presentation on the data and methods used to assess rougheye rockfish, a discussion took place where many things were learned. Below are some of the more important concepts.

- This is the southern range of the stock.
- Rougheye rockfish are a desirable species and discards likely occur at the end of the trip limit period.
- Discard rates should have been low when slope rockfish limits were not constraining.
- The Pacific whiting shoreside trawl fishery interaction with rougheye rockfish (included with the trawl fleet here) is likely similar to the Pacific whiting mothership at-sea fleet.
- In 2009, excluders started being used in the at-sea fleet, and in 2013 many vessels were using excluder devices.

3 Assessment

An age-structured stock assessment model was used to predict the biomass trajectory of rougheye rockfish with an approach of balancing parsimony with complexity. This allowed for the determination of general trends in the biomass over time without introducing extraneous data partitions that explain little additional variation.

Despite the recent formal recognition of two separate species (Orr and Hawkins 2008), we modeled and assessed rougheye and blackspotted rockfish as a pooled complex in this analysis. The primary reason for this is the lack of information specific to the two species. As a result of over two centuries of taxonomic ambiguity, the information that is available for rougheye and blackspotted rockfish including depth and geographic distribution, abundance, age and growth, reproductive characteristics, and landings history reflect contributions from both species. A pooled approach was also taken by the AFSC in its most recent assessment of rougheye and blackspotted rockfish in the Gulf of Alaska (Shotwell et al. 2011). The authors cited the difficulty in correctly distinguishing between the two species during at-sea research and the high likelihood that most historical data include a combination of both species as rationale for their approach.

3.1 General Model Specifications and Assumptions

Stock Synthesis v3.24O was used to estimate the parameters in the model. R4SS, revision 1.20, along with R version 2.15.3 were used to investigate and plot model fits. A summary of the data sources used in the model (details discussed above) is shown in Figure 43.

Stock Synthesis has many options when setting up a model and the assessment model for rougheye rockfish was set up in the following manner.

3.1.1 Summary of Fleets and Areas

Rougheye rockfish are most frequently observed in Oregon and Washington waters, however, they are observed along the entire U.S. West Coast in survey and fishery observations. Multiple fisheries encounter rougheye rockfish. Trawl, fixed gear (mainly longline), and the at-sea (mid-water) hake fisheries account for the majority of the rougheye rockfish landings both historically and currently.

The trawl fishery was combined into a coast-wide fleet. For the period from 1916 to 2000, prior to the introduction of trip limits for rockfish, little to no discarding of rougheye rockfish was assumed based upon the Enhanced Data Collection Program (EDCP) (Methot et al. 2000). There were limited observations of rougheye rockfish in the Pikitch et al. (1988) data (1986-1987) which prevented a formal analysis of discard rates from this data set. Foreign trawl catches (1966-1976) were added to the main trawl fleet. The fixed gear fishery is primarily a hook and line fishery and was modeled as a coast-wide fleet. The at-sea fishery operates as a mid-water fishery targeting Pacific whiting but encounters rougheye rockfish as a bycatch species. This fleet was also modeled as a single fleet.

3.1.2 Other specifications

The specifications of the assessment are listed in Table 15. The model is a single-sex, age-structured model starting in 1916 with an accumulated age group at 140 years. Growth and natural mortality were estimated. The lengths in the population were tracked by 2 cm intervals and the length data were binned into 2cm intervals. A curvilinear ageing imprecision relationship was estimated and used to model ageing error. Fecundity was assumed to be proportional to body weight, thus spawning biomass was used as the measure of spawning output.

The Triennial survey was split into an early and a late series, based mostly on the shift to deeper depths and the timing of the survey (see section 2.1.1), by estimating different catchability parameters and selectivity parameters for each period. Only years in which the AFSC slope survey covered the entire coast north of 43° N latitude were used (1996, 1997, 1999–2001). The NWFSC survey was split at 2003 with 1998–2002 representing just the slope area and 2003–2010 representing the shelf and slope areas. Age data were not available for the Triennial, AFSC slope, or the NWFSC slope surveys, but were available for the NWFSC shelf/slope survey and entered into the model as age-at-length. Length-frequencies were calculated for the Triennial, AKFSC slope, and the NWFSC shelf/slope surveys. There were no length frequencies available for the NWFSC slope survey, and selectivity was assumed to equal the estimated selectivity of the AFSC slope survey.

The specification of when to estimate recruitment deviations is an assumption that likely affects model uncertainty. It was decided to estimate recruitment deviations from 1900–2012 to appropriately quantify uncertainty. The earliest length-composition data occur in 1980, however the earliest age data were much later (2003-2012). The most informed years for estimating recruitment deviations were from about 1980 to the mid-2000's. Therefore, the period from 1900-1979 was fit using an early series with no bias adjustment, the main period of recruitment deviates occurred from 1980–2011 with an upward and downward ramping of bias adjustment, and 2012 onward was fit using forecast recruitment deviates with no bias adjustment. Methot and Taylor (2011) summarize the reasoning behind varying levels of bias adjustment based on the information available to estimate the deviates. Recruitment deviation was assumed to be 0.40, based on iteratively tuning to a value slightly less than the observed variability of recruitment deviations in the period 1980–2011.

The recommended selectivity type in Stock Synthesis is the double normal and was used in this assessment for the fleets and surveys. The model was allowed to estimate a shift in selectivity for the Triennial survey between the early and the late period of the time series. Shifts in selectivity and retention curves were estimated for the trawl and fixed gear fisheries.

Time blocks for the trawl fishery selectivity were set from 1916–2001, 2002–2012, based on the implementation of the RCAs. The time block on the retention curves for the trawl fishery were set from 1916–1999, 2000–2006, 2007–2010, 2011–2012, based on changes in trip limits and area closures that likely resulted in changes to discarding patterns for rougheye rockfish. The early period (1916-1999) of the model and the final two years (2011-2012) were mirrored and assumed to have little discards from the trawl fishery. There were insufficient observations of rougheye rockfish in the Pikitch data (1986-1987) to estimate a discard ratio, the EDCP data set estimated little to no discard of large rockfish (Methot et al. 2000), and the WCGOP data from 2011, under catch shares management, indicated very little discarding of rougheye rockfish (0.7%). Time blocks for the hook & line selectivity were set from 1916–2002 and 2003–2012, based on the implementation of RCAs for fixed-gear. Retention for the fixed gear fleet was blocked into two periods 1916-1999 and 2000-2012 where the recent period was based upon trip limits and estimated using data collected by the WCGOP, and the early period assuming no discards.

The following distributions were assumed for data fitting. Survey indices were lognormal, total discards were lognormal, and mean weight-at-age followed a t-distribution with 30 degrees of freedom. The variability around length at age was also lognormal.

3.1.3 Priors

Prior distributions were developed for the natural mortality parameter from an analysis of maximum age and W_∞. The analysis was performed by Owen Hamel (pers comm, NWFSC, NOAA) and used a combination of methods to provide a lognormal distribution for natural mortality. The medians of the lognormal priors were 0.021, 0.034 and 0.065 when assuming maximum age is 130, maximum age is 205, or maximum age is 130 and W_∞ is 3.92 kg, respectively. The distributions are shown in Figure 32.

The prior for steepness (*h*) assumes a beta distribution with parameters based on an update of the Dorn rockfish prior (commonly used in past West Coast rockfish assessments) conducted by J. Thorson (pers. Comm, NWFSC, NOAA)) which was reviewed and accepted by the SSC in March 2013 (a beta distribution with μ=0.779 and σ=0.152).

3.1.4 Sample weights

Initially, the base case assessment model was iteratively reweighted such that the various data sources were mostly consistent with each other in terms of the relationship between input and effective sample sizes. Age-at-length compositions were fit along with length compositions for the fishery fleets and the NWFSC shelf/slope survey. Length data started with a sample size of the number of port samples for the trawl and fixed gear fleets, the number of tows for the at-sea fleet, and the number of tows for survey samples (Table 10). Age-at-length data assumed that each age was a random sample within the length bin and started with a sample size equal to the number of fish in that length bin . One extra variability parameter that was added to the input variance was estimated for each survey index series. Vessels present in the WCGOP data were bootstrapped to provide uncertainty of the total discards (Table 13) and a small amount was added to the standard deviation to make the confidence intervals of the data consistent with the predictions. The variability for the mean weight of the discards (Table 14) was determined from the sample variation and not tuned since the estimated variability was already quite large.

During the STAR panel, an alternative method was proposed to determine weights for the different data sources, which was based on equation TA1.8 in Francis (2011). This formulation looks at the mean length or age and the variance of the mean to determine if across years, the variability is explained by the model. If the variability around the mean does not encompass the model predictions, then that data source should be down-weighted. This method does account for correlation in the data (i.e., the multinomial distribution) as opposed to the McAllister and Ianelli (1997) method of looking at the difference between individual observations and predictions. Code written in R by Chris Francis (pers. comm.) was provided and ultimately used to determine the weighting of the fleet specific length and age data sets. The length data were given less weight than the method of comparing effective and input sample sizes.

3.1.5 Estimated and Fixed Parameters

There were 173 estimated parameters in the base case model. These included one parameter for R_0, 5 parameters for growth, a single natural mortality parameter, 4 parameters for extra variability on the survey indices, two parameters for the catchability of the two series of the Triennial survey (the catchability for other surveys was calculated analytically), 24 parameters for selectivity, retention, and time blocking of the fleets, 11 parameters for survey selectivity, 113 recruitment deviations, and 12 forecast recruitment deviations.

Fixed parameters in the model were as follows. Steepness was fixed at 0.779, which is the mean of the current rockfish prior. A sensitivity analysis and a likelihood profile were done for steepness. The standard deviation of recruitment deviates was fixed at 0.40. Maturity at length was fixed with a length at 50% mature at 43.87 cm (Figure 31) based upon McDermott (1994). Length-weight parameters were fixed at estimates from the NWFSC shelf/slope survey data (Figure 30 and Table 16). There were no length data associated with NWFSC slope survey, so the selectivity was mirrored to match the selectivity of the AFSC slope survey.

Dome-shaped selectivity was explored for both the fishery and the surveys. Older rougheye rockfish are often found in deeper waters and may move into areas that limit their availability to fishing gear, especially trawl gear. Little evidence was found for domed shape selectivity, except for the Triennial survey, which was mostly a shelf survey. The final base model assumed asymptotic selectivity for each fishery and for all surveys expect the Triennial survey.

3.2 Model selection and evaluation

The base case assessment model for rougheye rockfish was developed to balance parsimony and realism, and the goal was to estimate a biomass trajectory for the population of rougheye rockfish on the west coast of the United States. The model contains many assumptions to achieve parsimony and uses many different sources of data to estimate reality. A series of investigative model runs were done to achieve the final base case model.

3.2.1 Key assumptions and structural choices

The key assumptions in the model were that the assessed population is a single stock, maturity at length has remained constant over the period modeled, weight-at-length has remained constant over the period modeled, the standard deviation in recruitment deviation is 0.40, and steepness is 0.779. These are simplifying assumptions that unfortunately cannot be verified or disproven. Sensitivity analyses were conducted for most of these assumptions to determine their effect on the results.

Structurally, the model assumed that the catches from each fleet were representative of the coast-wide population, instead of specific areas, and fishing mortality prior to 1916 was negligible. It was also assumed that discards were low prior to 2000.

3.2.2 Alternate models explored

The exploration of models began by fixing *M* at the median of the prior distribution to understand the general behavior of the model. After initial investigations allowed us to better understand the model and fits to the data, *M* was estimated to determine a base model by further exploring selectivity types and blocking of time periods. Ultimately, decisions regarding specific blocks for selectivity and retention were made, primarily, through consideration of changes in management and relating those changes to patterns seen in the data. In the spirit of parsimony, we used as few blocks as possible, and added new blocks when we felt they were justified by changes in management and they improved the fit to the data.

A simple production type model was fit to the data during the initial explorations where recruitment, growth, and natural mortality were fixed and only length data were used. This simple model was not chosen as a base model because there is some indication of recruitment strengths in the length and age data, and uncertainty is very small given so many fixed parameters. We felt that these assumptions could be relaxed with a more complicated model, and poor residual patterns were explained much better with this slightly more complicated model.

3.2.3 Convergence status

Proper convergence was determined by starting the minimization process from dispersed values of the maximum likelihood estimates to determine if the model found a better minimum. This was repeated 100 times and a better minimum was not found. The model did experience some convergence issues, but through the jittering done as explained above and likelihood profiles, we are confident that the base case as presented represents the best fit to the data given the assumptions made. There were no difficulties in inverting the Hessian to obtain estimates of variability, although much of the early model investigation was done without attempting to estimate a Hessian.

3.3 Response to STAR panel review and recommendations

The stock assessment review (STAR) panel for this assessment was held at the NWFSC in Seattle from July 8–12, 2013. David Sampson chaired the review, Yan Jiao, Chris Francis, and John Field were reviewers, Colby Brady was the GMT representative, Gerry Richter was the GAP representative, and John Devore was Council staff. Other stakeholder representatives as well as scientists participated in the review and were very helpful with insights into various issues.

A number of requests were made by the reviewers during the review. The requests mainly addressed understanding the model-based GLMM estimates of survey indices, determining if the paucity of rougheye observations in the surveys between 250–300 m was due to poor gear performance, and determining appropriate weighting between data sets. No serious issues were identified with the data or the assessment, other than an alternative method was used to determine the weighting of the data sets (see Section 3.1.4 above). Specific outcomes to all of the requests are given in the STAR panel report for this assessment.

A list of recommendations for future consideration came out of the review and specific responses to those recommendations are given here.

<u>General recommendations</u>

1. *A workshop should be held to evaluate methods (a) for the iterative reweighting of composition data (e.g., current approach based on SS3 calculation of effective N versus the Francis approach) and (b) for developing initial weightings (the initial input N values).*

   Response: We were initially concerned with the differences in relative weightings that the two methods resulted in, but feel that the Francis method was less arbitrary and produced reasonable results. However, we support the further investigation of both of the methods to determine the pros and cons of each.

2. *A workshop should be held to evaluate methods for constructing survey GLMM estimates. Topics that should be explored include: (a) the effect of treating vessels as random when in fact the vessels hardly vary from one year to the next; (b) possible aliasing of the index values with the Vessel x Year interactions; and (c) the using information from the GLMM for combining length composition data collected by different vessels. One goal for the workshop should be to provide adequate documentation of the GLMM methods that will be used to produce survey biomass indices for future assessments and guidelines on how the analyses, including diagnostics, should be presented in stock assessment reports.*

   Response: A considerable amount of work was done to improve these methods in the last year, and significant gains have been made. This is an ongoing project and future improvements are planned. We are grateful to the STAR panel for providing guidance of what should be the focus of this work.

3. *Port sampling programs should continue their routine collection of otoliths of slope rockfish species. A catalog of historical collections that have not been aged should be developed.*

   Response: We agree that one of the most important data sources for this assessment is the age data, and it is crucial to continue the collection of otoliths, even if they are not aged immediately. It would also be useful to age any otoliths from the past to provide a better picture of historical stock composition.

4. *The series of historical catches of individual rockfish species, which are important sources of uncertainty in stock assessments of rockfish, should be explored in more detail. The STAR Panel agrees with the statement in the draft assessment document that "A thorough look at historical landings, species compositions, and discarding practices would reduce the potential uncertainty that is not entirely accounted for".*

   Furthermore, catch reconstructions should not just develop best estimates of rockfish catch by species, but should also characterize the uncertainty of historical catch estimates by identifying periods of greater and lesser uncertainty. For example, rockfish species compositions taken during early years when there limited slope fisheries should be very different from species compositions taken during later years when fisheries on the slope were more prevalent.

   Response: This is a key issue for many assessments of West Coast groundfish species. Identifying uncertainty in historical estimates of catch would provide the ability for assessors to develop appropriate sensitivities to alternative historical catch levels.

5. *Investigate better fishery-independent data collection methods for slope rockfish and other species living in untrawlable habitats (e.g., surveys using submersibles or remotely operated vehicles).*

   Response: Surveys in areas that are not accessible by the trawl survey would greatly improve the ability to detect changes in the population biomass of many West Coast groundfish species. Currently, AUV research is ongoing, and a hook & line survey is being performed annually in the Southern California Bight. It may be worthwhile to investigate the opportunities for expansion of the hook & line survey into areas off of Central and Northern California, as well as Oregon and Washington to increase the number of species for which that survey could provide indices of abundance.

<u>Specific to rougheye rockfish</u>

1. *The STAR Panel agrees with the STAT regarding the importance of collecting additional age data and other information that will improve our understanding of the life-history characteristics of rougheye and blackspotted rockfish, with the aim of reducing the uncertainty regarding natural mortality.*

   Response: We agree, as noted in the list of recommendations provided in this document.

2. *The survey and port sampling efforts should collect genetic material in association with otolith sampling to provide a clear basis for distinguishing between rougheye and blackspotted rockfish. Also, researchers in the PFMC arena should collaborate with ongoing AFSC and DFO genetic studies of rougheye and blackspotted rockfish.*

   Response: We agree that groundtruthing species identification as well as collecting additional information for the two species would be beneficial.

3. *The STAR Panel agrees with the STAT regarding the importance of "understanding the stock structure of rougheye and blackspotted rockfishes".*

   Response: NA

4. *Prior to the next assessment of either rougheye or blackspotted rockfish (or their complex), there should be targeted studies or analyses to investigate what caused the lack 30-44 cm fish caught in the 250-300 m depth zone by the NWFSC shelf/slope survey.*

   Response: This is one of the unresolved issues of this assessment and further investigation would be useful. Collecting detailed information from the commercial fisheries or from alternative surveys may help to understand this observation.

5. *The STAR Panel agrees with the STAT regarding the importance of additional studies of the maturity and fecundity of rougheye and blackspotted rockfish. Further, any fish used for maturity and fecundity studies should be subjected to genetic analysis to definitively identify what species it is.*

   Response: We were unable to find any specific information on fecundity, and the maturity curve included data from Canada and Alaska. More specific studies of maturity and fecundity of each species off of the West Coast would provide insight into area differences as well as differences between species. Additionally, the collection of data from various years could provide insight into temporal changes in maturity. All of this information is necessary for an accurate assessment of each species.

6. *The STAR Panel agrees with the STAT regarding the importance of validating the ageing method for rougheye and blackspotted rockfish. Further, any fish used for age-validation studies should be subjected to genetic analysis to definitively identify what species it is.*

   Response: For long-lived species, it is very important to validate the ageing methods. The ageing error determined in this assessment was large for older ages, and the age of one fish was initially determined to be over 200 years, but was subsequently determined to be 153 years old. Munk (2001) reported a rougheye rockfish of 205 years old, but admitted that it was at least 170 years old. Based on the methods of Hoenig (1983), a fish that lives to 200 should have a natural mortality value slightly greater than 0.02, but the estimated natural mortality in this assessment was more than double that. It would be useful to verify that rougheye and blackspotted rockfishes actually do live to 200 years.

7. *The STAR Panel agrees with the STAT regarding the importance of "understanding the stock structure and biology of rougheye and blackspotted rockfishes" and their recommendation for "… additional research that will provide insight into the distribution, life history, biological characteristics, and catch and discard profiles of the two species".*

   Response: As above.

8. *The STAR Panel agrees with the STAT regarding the importance of "basin-wide understanding of stock structure, connectivity, and distribution" for rougheye and blackspotted rockfish, with the aim of defining "the connectivity between rougheye [and blackspotted] rockfish north of the U.S.-Canada border".*

   Response: Rougheye rockfish is distributed mainly in the northern area of the West Coast of the U.S., with higher densities observed near the U.S./Canada border. Very little is known about the connectivity between rougheye in the U.S. and Canada, and understanding this connectivity may help to explain some of the unusual observations as well as provide a more complete assessment.

3.4 Base-model results

The base model parameter estimates along with approximate asymptotic standard errors are shown in Table 18 and the likelihood components are shown in Table 19. Estimates of key derived parameters and approximate 95% asymptotic confidence intervals are shown in Table 20.

3.4.1 Parameter estimates

The estimates of natural mortality were higher than has typically been assumed in the past, and were also higher than suggested by the median of the prior distribution (0.00365) that was used. McDermott (1994) estimated M at either 0.030 or 0.039 using two different methods, but both produced a large amount of uncertainty (the upper 95% confidence interval was greater than 0.2). The assessment of rougheye and blackspotted rockfishes in the Gulf of Alaska assumed that M was 0.03 with a tight prior that had very little probability above 0.04. (Dick and MacCall 2010) assumed that M was 0.024 based on a maximum age of 170. All of these previous assumptions are less than the 95% estimated confidence interval of M from this assessment (0.0353–0.0487).

Estimating *M* is difficult in stock assessments, and the parameters may represent model misspecification instead of the actual life-history trait. However, when investigating models leading up to the base case model, the estimates of M were rarely less than 0.04. The uncertainty in the estimated *M* was also much less than the range of the prior (Figure 44).

Selectivity curves were estimated for commercial and survey fleets. The estimated selectivity, retention, and keep (the product of selectivity and retention) curves for the trawl and hook & line fleets are shown in Figure 45. The selectivity curves showed a shift to larger fish in 2002 and 2003 for the trawl and hook & line fleets, respectively. The trawl shift is consistent with the introduction of the RCA and gear restrictions (shoreward of the RCA) that virtually eliminated fishing in rocky shelf habitats where smaller rougheye would more likely be encountered. Around this same time, the fixed-gear RCA specifications began preventing fishing between 30 and 100 fm. The retention curves showed a shift to retaining a lower percentage of fish in recent years (since 2000), except that the trawl fisheries retain nearly all fish in 2011 and on. This is likely the result of very restrictive trip limits for the minor shelf rockfish complex, which were used to reduce mortality on darkblotched rockfish (which has been under rebuilding during most of the 2000s). Estimated selectivity for the at-sea fleet was similar to the selectivity of the fixed gear fleet, where mostly fish larger than 40% were selected (Figure 46). The estimated selectivity for the Triennial survey was dome-shaped (Figure 47), which is expected given that the survey mainly covers the shelf area. Estimated selectivity of larger fish is higher in the late triennial survey, which coincides with a move to include deeper water (Table 4). The slope surveys showed a selectivity curve shifted to the right of the NWFSC shelf/slope survey (Figure 47), which is also expected since the shelf/slope survey likely encounters more smaller fish on the shelf than the slope-only surveys.

Additional survey variability (process error added directly to each year's input variability) was estimated in the model and resulted in a modest addition to the Triennial survey (0.104), small additions to the AFSC slope and NWFSC slope surveys (0.051 and 0.054, respectively), and effectively no addition to the NWFSC shelf/slope survey. It is not surprising that the slope and Triennial surveys require extra variability since they do not survey the entire stock. The NWFSC shelf/slope survey covers much more range of the stock and the GLMM is used to obtain reasonable estimates of variance.

The estimates of maximum size for both females and males were slightly less than anticipated when looking at the survey data alone. This is not uncommon, especially when using a lognormal distribution for length-at-age, which is skewed and able to explain larger fish. The estimates of the maximum size were slightly larger than the estimate used in the assessment of rougheye and blackspotted rockfishes in the Gulf of Alaska.

3.4.2 Fits to the data

There are four types of data for which the fits are discussed: survey abundance indices, discard data (biomass and average weight estimates), length composition data, and conditional age-at-length observations.

The fits to the five survey series are shown in Figure 48. Extra standard error was estimated for all of the series (Table 18), but was zero for the NWFSC shelf/slope survey. None of the series showed consistent trends, and with the large amount of error, none of the series showed serious lack of fit.

Fitting the total observed discard amounts required the time blocks used in the base case model (Figure 49). Fits to the trawl discards from 2002–2006 were low in 3 of the 5 years, but it was not possible to fit the discards without making additional assumptions that did not have much reasoning. The fits to the trawl discards from 2007–2010 and in 2011 were quite good and followed the trend observed from 2008–2010. There were no strong *a priori* reasons for additional blocks on retention for the hook & line fleet after 2000, thus it was difficult to fit all of the observations, especially in later years when an increase seemed to occur, and the estimated discards were less than the observed discards. Fits to the mean weight of the discards were reasonable only because they did not show any serious departures from the observations and the variability around them (Figure 50).

Fits to the length-composition data are displayed in two different ways: the Pearson residuals-at-length are shown for each year for all types of length compositions, and the fits to aggregates of all years are also shown. More detailed plots of fitted lines drawn over the plotted proportions at length are shown in Appendix A. Pearson residuals for the fisheries (Figure 51) show a consistent pattern of underfitting lengths between 40 and 50 cm for both the trawl and hook & line fisheries. The length compositions from the at-sea fleet did not show a consistent pattern, but some years had poor fits. The fit to the length frequency combined for all years (Figure 52) for the at-sea fleet was very good indicating that the lack of fit in individual years may be due to process error and the model is fitting the general pattern of length observations very well. The combined fit to the hook & line fishery was good, but there was a slight underfitting of lengths around 45–50 cm and overfitting of lengths between 50 and 60 cm. The trawl fit showed a similar pattern except that there was slight overfitting at smaller and larger fish than 50 cm.

The discard length frequencies for the trawl and hook & line fleets were highly variable and showed some large residuals in some years (Figure 53). The fits to hook & line discard length frequencies were worse in recent years. When combining all years of discard length frequencies by fishery, the variability was still evident, but the model fit the distribution reasonably well given small sample sizes (Figure 54). The predicted trawl discard length frequency did not fully captured the peak for smaller fish, and the hook & line fleet predicted a steep increase on frequency starting at 40 cm, but under-predicted discarding of older fish.

The residuals for the fits to the survey length frequencies were smaller than the residuals for the fishery length data (Figure 55). The triennial and NWFSC shelf/slope surveys length frequencies were often bimodal with a valley around 40 cm, and the model showed an indication of a bimodal distribution but was unable to adequately capture both peaks (Figure 56). Therefore, a pattern in the residuals was apparent across some years for these two surveys (Figure 55). The fits to the length frequencies for the AFSC survey showed an opposite pattern where there was a single peak around 30–40 cm and the model underfit that peak. Therefore, the residuals showed filled circles (underfitting) in the middle of the length range.

Age data were entered as conditional age-at-length, which was simply the raw proportion of ages in each length bin. This assumes that within each length bin, the observed ages were a random sample of fish. The observed and expected age-at-length are shown in Figure 57 for the two years of the trawl fishery observations. The fits generally match the observations. The at-sea fleet showed similar results, except that slightly older ages were predicted in both 2008 and 2011 between lengths 40 and 50 cm (Figure 58). The survey data observed smaller fish than the fisheries (Figure 59). Expected ages-at-length were very good for the survey data, except that there were a few length bins that showed potential outliers. The standard deviation of age-at-length was variable and often the expectation was much higher than the observations at larger lengths.

Plots with the residuals for individual observations showed how variable the data were. Residuals for the trawl fishery were often larger than 2 and indicated that there were potentially some outliers at the smaller lengths (Figure 60). However, where the bulk of the data were (40–60 cm) the residuals were mostly smaller than 2 and did not show any significant pattern. The residuals from fits to the age-at-length data for the at-sea fleet were similar, except that no small fish were observed and the very large residuals seen in the trawl data (potential outliers) were not seen. Some years of the NWFSC shelf/slope survey age-at-length data were very consistent between expectations and observations, while others showed some lack of fit to the smaller and younger fish. Residuals were occasionally large and it appears that there may be outliers present. The years 2004, 2005, and 2009 had very good fits, while 2008 and 2010 data did not.

3.4.3 Population trajectory

The predicted spawning biomass (in metric tons) is given in Table 21 and plotted in Figure 63. The trajectory shows a slight initial decline followed by a flat trend from 1940 to around 1980. A steeper decline occurred in the 1980's and early 1990's before stabilizing at the start of the 21st century and then slightly increasing. The trajectory of the age 10+ biomass shows a very similar pattern, except with more increase recently (Figure 64), due to the predicted size of the 1999 year class. Estimated depletion never dips below the management target of 40% of unfished biomass and has recently stabilized near 47% of unfished equilibrium spawning biomass (Figure 65).

Recruitment deviations were estimated for the entire time series that was modeled (Figure 66). There is little information regarding recruitment prior to 1980, and the uncertainty in these estimates is expressed in the model. Estimates of recruitment appear to oscillate between periods of low recruitment and periods of high recruitment. The four largest recruitments (in descending order) were predicted in the years 1999, 1998, 2001, and 1988. The four smallest recruitments (in ascending order) were estimated to have occurred in 2002, 2006, 2005, and 1995. Recruitment predictions from 2002 to 2010 were all below average. Many other stock assessments of rockfish along the west coast of the U.S. have estimated a large recruitment event in 1999 (e.g., greenstriped rockfish (Hicks et al. 2009), chilipepper rockfish (Field 2007), darkblotched rockfish (Gertseva and Thorson 2013)). It may be worthwhile to investigate the periods of strong and weak year classes further to see if it is an artifact of the data, a consistent autocorrelation, or a result of the environment.

The stock-recruit curve resulting from a fixed value of steepness is shown in Figure 67 with estimated recruitments also shown. The stock is predicted to have never fallen to low levels. Consequently, there is little contrast in spawning biomass, and little expectation that reasonable estimates of steepness could be obtained.

The population numbers-at-age for each year are shown in Appendix B.

3.5 Uncertainty and sensitivity analyses

Three types of uncertainty are presented for the assessment of rougheye rockfish. First, uncertainty in the parameter estimates was determined using approximate asymptotic estimates of the standard error. These estimates were based on the maximum likelihood theory that the inverse of the Hessian matrix (the second derivative of the log-likelihood function with respect to the parameter vector) approaches the true uncertainty of the parameter estimates as the sample size approaches infinity. This approach takes into account the uncertainty in the data and supplies correlation estimates between parameters, but does not capture possible skewness in the error distribution of the parameters and may not accurately estimate the standard error in some cases (see Stewart et al. 2013).

The second type of uncertainty that is presented is related to modeling and structural error. This uncertainty cannot be captured in the base model as it is related to errors in the assumptions used in specifying the base model. Therefore, sensitivity analyses were conducted where assumptions were modified to reveal the effect they have on the model results.

Lastly, a major axis of uncertainty was determined from a parameter or structural assumption that results in the greatest change in stock status and advice, and projections were made for different states of nature based upon that parameter or structural assumption.

3.5.1 Parameter uncertainty

Parameter estimates are shown in Table 18 along with approximate asymptotic standard errors. Some selectivity parameters showed large uncertainty, indicating that they were poorly estimated. Most correlations between parameters were below an absolute value of 0.95, except for two selectivity parameters for the AFSC slope survey. Estimates of key derived parameters are given in Table 20 along with approximate 95% asymptotic confidence intervals. There is a considerable amount of uncertainty in the estimates of biomass and the coefficient of variation (CV) of the spawning biomass in 2013 and 2014 is 0.30, slightly below the default value (0.36) used to calculate P* for a Category 1 stock (Ralston et al. 2011). The CV of the 2013 estimate of depletion is 18.2% and 80% of the approximate normal distribution describing uncertainty around depletion is above the management target of 40% of the unfished spawning biomass.

3.5.2 Sensitivity analysis

Sensitivity analysis was performed to determine the model behavior under different assumptions than those of the base case model. Eight sensitivity analyses were conducted to explore the potential differences in model structure and assumptions, including

1. Downweighted age data by a factor of 0.50.
2. Downweighted age data by a factor of 0.25.
3. Allowed the model to estimate domed selectivity for fishery and surveys.
4. Specified a lognormal prior for natural mortality with a median of 0.021.
5. Specified a lognormal prior for natural mortality with a median of 0.061.
6. Fixed natural mortality at 0.021.
7. Fixed natural mortality at 0.034
8. Fixed natural mortality at 0.061.

Likelihood values and estimates of key parameters are shown in Table 22. Predicted depletion trajectories and target yield comparisons are shown in in Figure 68 and Figure 69.

The current stock status ranged from 13.7-91.1% across the sensitivity runs, with the fixed *M* sensitivities resulting in the extreme values. Downweighting the age data by a factor of 0.50 did not result in estimates that differed from the base model. This is due to the data-weighting structure in the base model which downweights the length data significantly compared to the age data. Downweighting the age data by a factor of 0.25 resulted in a depletion value of 57.5% with *M* estimated at 0.0448. This sensitivity was done to provide a comparison between the new base model with a weighting structure that resembled the initial base model prior to the updating of the sampling weights to the new preferred Francis (2011) method. The ability to estimate domed selectivity did not greatly improve the fits to the data. Allowing *M* to be estimated, but with alternative priors resulted in estimates that were similar to the base model. The results were the most sensitive to fixing natural mortality at the medians of the low and high prior distributions.

3.5.3 Retrospective analysis

A 5-year retrospective analysis was conducted by running the model using data only through 2008, 2009, 2010, 2011, and 2012, progressively (Table 23 and Figure 70). The scale of spawning population size was generally reduced as sequential years of data were removed until the 5th year of data were removed, at which point the biomass increased to a very large value. This was related to changing estimates of *M* and growth as well as the considerable reduction of biological and index data in the base model. As commonly observed in other first time assessments, the bulk of the composition data (especially age data) occurs in the final years of the model. The estimates of depletion follow the same general trajectory as the base model but in the 2009-2012 retrospective runs, the estimates suggest a more depleted stock as data are removed from the model. The 2008 retrospective resulted in the highest estimates of natural mortality and maximum sizes, which resulted in population estimates of a much larger and less depleted stock than in other runs.

3.5.4 Likelihood profiles over key parameters

Likelihood profiles were conducted for steepness (even though it was not estimated in the base case) and over a range of natural mortality values. These likelihood profiles were conducted by fixing the parameter at specific values and removing the prior on the parameter being profiled. Without the original prior distribution the MLE estimates from the base case will likely be different than the MLE in the likelihood profile. For steepness, the negative log-likelihood was minimized near 1, but the 95% confidence interval extends down to near 0.45 (Table 24 and Figure 71). Likelihood components by data source for various values of steepness show that all but the fishery and triennial length compositions support a high steepness (Figure 72). Age data were the most influential on the estimate of steepness.

For natural mortality, the likelihood profile showed that values between 0.037 and 0.049 were within the 95% confidence interval (Table 25 and Figure 73). The change of stock status and potential yield from the upper and lower bounds of the interval covers the possibility of 37.2% depletion and yield of 153 mt to 63.0% depletion and a yield of 299 mt annually. Overall, age composition data favored natural mortality values between 0.040-0.050, except for age data from the NWFSC shelf/slope survey which favored lower values (Figure 74).

3.5.5 Overall assessment uncertainty

Model uncertainty has been described by the estimated uncertainty within the base model and by the sensitivities to different model structure. The parameter that resulted in the most variability of predicted status and yield advice was natural mortality (M), which was also estimated with much more certainty than the prior distribution implied. In fact, the 95% confidence interval for M was greater than and did not include the point estimate from McDermott (1994), which was used in the assessment of rougheye and blackspotted rockfishes in the Gulf of Alaska assessment (Shotwell et al. 2011), and greater than and did not include the value assumed in the analysis by Dick and MacCall (2010). There is the possibility that the base model and its approximate uncertainty intervals based on maximum likelihood theory may not entirely convey the actual uncertainty of this assessment. Preliminary (and non-converged) MCMC tests suggest that the uncertainty is greater than depicted by these results.

Therefore, to characterize uncertainty in the assessments, we used the 12.5% and 87.5% quantiles of natural mortality using a lognormal distribution with the uncertainty of the prior distribution for M and the base model estimated value as the median to bracket the uncertainty in the assessment (M= 0.0245 and 0.0853). The uncertainty from the prior distribution was chosen to ensure that it encompassed previously assumed values, and the estimate from the base model was used as the median value of the distribution so that the base model was central in the probability of these states-of-nature. The 12.5% and 87.5% quantiles were chosen based on the groundfish terms of reference to give the base model a probability that is twice as likely as the alternative states of nature (12.5% and 87.5 are the central quantiles in the tails containing 25% probability).

Due to the unknown differences in life-history between rougheye rockfish and blackspotted rockfish, the Scientific and Statistical Committee (SSC) of the Pacific Fishery Management Council (PFMC) deemed this a Category 2 stock assessment. Therefore, the sigma for P* to determine the catch reduction to account for scientific uncertainty is 0.72.

4 Reference points

Reference points were calculated using the estimates of selectivity and a fleet distribution based on the last year with catch observations (2012) and are show in Table 20. Sustainable total yields (landings plus discards) were 194 mt when using an $SPR_{50\%}$ reference harvest rate with a 95% confidence interval from 120 to 269 mt. The value for 40% of the unfished spawning biomass (analogous to $B_{40\%}$) was 2,158 metric tons. The recent catches (landings plus discards) have been below or near the estimated long-term yield calculated using an $SPR_{50\%}$ reference point. As a result, the spawning biomass of the stock has been slightly increasing over the last decade.

The predicted spawning biomass from the base model generally showed a slight decline over the entire time series with a period of steeper decline during the 1980's and 1990's (Figure 63). Since 2000, the spawning biomass has stabilized and possibly increased because of reduced catches and above average recruitment in 1999. The 2013 spawning biomass relative to unfished equilibrium spawning biomass is above the target of 40% of unfished spawning biomass (Figure 64). However, in the 1980's the exploitation rate and *SPR* exceeded the current estimates of the harvest rate limit ($SPR_{50\%}$), as seen in Figure 75. Recent exploitation rates on rougheye rockfish were predicted to be near target levels. In recent years, the stock has experienced exploitation rates that have been higher and lower than the target while the biomass level has remained above the target level (Figure 76).

The equilibrium yield plot is shown in Figure 77, based on a steepness value fixed at 0.779. The predicted maximum sustainable yield under the assumptions of this assessment occurs near 25% of equilibrium unfished spawning biomass.

5 Harvest projections and decision tables

A twelve year projection of the base model with catches in 2013 and 2014 determined from a recent 5-year average and catches from 2015–2024 based on the predicted allowable biological catch (ABC) suggests that the spawning biomass will increase over the projection period as the large estimated 1999 year class enters the fishery in higher proportions with ABCs over 200 mt by 2024. A decision table expands upon this by showing projections from 2015–2024 under ABC catches for three states of nature (defined on *M* as described in Section 3.5.5) and with status quo catches (recent 5-year average) for three states of nature. The low state of nature begins with a depletion level below the target at 39%, while the high state of nature is near 60% of unfished biomass in 2015. The biomass in both states of nature increases over the projection period due to the estimated large 1999 year class.

6 Regional management considerations

Currently, rougheye rockfish are managed as part of the minor slope rockfish complex, which has separate limits north and south of 40° 10′ N latitude. Rougheye rockfish are rare south of 40° 10′ N, but occasionally catches occur in this area. Therefore, species specific catch limits greater than zero should be determined for south of 40° 10′ N, and currently the OFL for rougheye rockfish is 0.5 mt, or less than 1% of the total 78.8 mt OFL.

In only four of the 10 years of data from the NWFSC shelf/slope survey were rougheye rockfish observed south of 40° 10′ N. In these years (2004, 2006, 2009, and 2011), the proportion of biomass estimated south of 40° 10′ N was 0.764%, 0.029%, 2.35%, and 0.022%, respectively.

Landings from the trawl and hook & line commercial fleets are broken down by state in Table 1. Since 1985, an average of 1.03 % of the landings of rougheye rockfish occurred in California with a maximum of 5.97% in 1994. For the hook & line fleet, since 1985, the average percentage of landings of rougheye rockfish in California is 2.11% with a maximum of 15.17% in 2001. This type of analysis may be misleading for a number of reasons. First, the California–Oregon border is at 42° N and a majority of the landings in California occurs north of 40° 10′ N. Second, the proportion of the biomass in California may not be represented by the proportion of the coastwide landings since many other factors determine how much catch is taken. Nevertheless, these averages are an indication that at most and likely less, the proportion of biomass south of 40° 10′ N latitude is 2%. It may be worthwhile to do a more detailed analysis using the limited entry trawl fleet with 100% observer coverage, although this information is still subject to differential fishing effort by area.

The effect of the management line at 40° 10′ N latitude for rougheye rockfish is that catches south of 40° 10′ N may be seriously limited due to the small perceived rougheye rockfish biomass south of that line. Conversely, setting catch levels high enough to not be limiting south of 40° 10′ N may result in limiting catches north of 40° 10′ N. An adaptive approach of assessing the efficacy of the north and south management targets over time by monitoring survey biomass, length, and age data, while also paying attention to catch levels in each area may assist in eventually determining the proper allocation of the OFL to each area.

7 Research and data needs

There are many areas of research that could be improved to benefit the understanding and assessment of rougheye and blackspotted rockfishes. Below, we specifically identify five topics that we believe are most important.

- **Historical landings and discards:** The historical landings and discards are uncertain for rougheye rockfish and improvements would increase the certainty that fishing removals are applied appropriately. Because landings are assumed to be known exactly in the assessment model, uncertainty in the predictions does not include uncertainty in the landings. A thorough look at historical landings, species compositions, and discarding practices would reduce the potential uncertainty that is not entirely accounted for.

- **Natural mortality:** Uncertainty in natural mortality translates into uncertain estimates of status and sustainable fishing levels for rougheye rockfish. The collection of additional age data and improved understanding of the life-history of rougheye rockfish may reduce that uncertainty.

- **Maturity and fecundity:** There are few studies on the maturity of rougheye rockfish and only one has reported the results of a histological analysis. Further research on the maturity and fecundity of rougheye rockfish, the potential differences between areas, the possibility of changes over time, and differences between rougheye rockfish and blackspotted rockfish would greatly improve the assessment of these species.

- **Age data and error:** There is a considerable amount of error in the age data and the ageing of rougheye rockfish has not been validated. Investigating the ageing error and bias would help to understand the influences that the age data have on this assessment.

- **Understanding the stock structure and biology of rougheye and blackspotted rockfishes:** This assessment reports the status of rougheye and blackspotted rockfish as a pooled complex because it is extremely difficult to separate the catches of each species even in recent data, and attempting to do so would greatly increase the uncertainty in the predictions. Because little is known about the respective biology and catch histories of the two species, it is unclear whether managing them as a complex may place one species at disproportionate risk of overfishing relative to the other. We recommend additional research that will provide insight into the distribution, life history, biological characteristics, and catch and discard profiles of the two species. Such an endeavor would like require the efforts of at sea observers in all fleets, biologists aboard fishery-independent surveys, and port samplers along the entire West Coast requiring broad, inter-agency collaboration.

- **Basin-wide understanding of stock structure, connectivity, and distribution:** This is a stock assessment for rougheye rockfish off of the west coast of the U.S. and does not consider data from British Columbia or Alaska. Further investigating and comparing the data and predictions from British Columbia and Alaska to determine if there are similarities with the U.S. West Coast observations would help to define the connectivity between rougheye rockfish north of the U.S.-Canada border.

8 Acknowledgments

Many people were instrumental in the successful completion of this assessment and their contribution is greatly appreciated. Ian Taylor contributed greatly with discussions about data, modeling, and SS, as well as updating the R4SS code when needed. Jon Short quickly loaded ages into the NORPAC database when we needed them. Theresa Tsou and Greg Lippert (WDFW) put in countless hours of effort compiling data and references from Washington fisheries. Don Pearson (NOAA) provided advice on data from California and Bob Leos (CDFW) provide additional insights into the landings. Ian Stewart and Claude Dykstra (IPHC) were very gracious in their advice and summary of the IPHC longline survey. Nick Wilsman (ODFW) provided insight in the port sampling in Oregon.

We are very grateful to Patrick McDonald and the team of agers at CAP for their hard work reading numerous otoliths and availability to answer questions when needed. Beth Horness was always eager to help, quick to supply survey extractions, and answered numerous questions we had. Jason Jannot assisted with data from the WCGOP and entertained our many questions. Vanessa Tuttle was especially patient and accommodating with our last minute requests. We would like to acknowledge our survey team and their dedication to improving the assessments we do. The assessment was greatly improved through the many discussions within the Population Ecology team in the FRAM division at the NWFSC. And, Jim Hastie supplied advice on the assessment and greatly improved an early draft.

Many industry representatives, including Brad Pettinger, Gerry Richter, Pete Leipzig, and Dan Waldeck were a great help in understanding the rougheye rockfish fisheries.

The reviewers of the STAR panel (Yan Jiao, Chris Francis, and John Field), the STAR panel chair (David Sampson), the GMT representative (Colby Brady), and the GAP representative (Gerry Richter) are greatly appreciated for their patience, advice, focus, understanding, and comments before, during, and after the STAR panel meeting. John Devore was an indispensable resource of past, current, and future management as well as a great organizer and representative of the Pacific Fishery Management Council. And, finally, none of this would have happened without the editing, organizational and coordinating skills of Stacey Miller.

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10 Tables

Table 1: Landings for trawl and hook & line (mt) from Washington, Oregon, and California. Catches (mt) from the Pacific whiting at-sea fishery as determined by onboard observers are also shown.

	TWL			HKL			At-sea	Total
Year	WA	OR	CA	WA	OR	CA		
1916	0.00	0.00	0.00	32.61	9.25	0.00	0.00	41.85
1917	0.00	0.00	0.00	34.32	9.72	0.00	0.00	44.04
1918	0.00	0.00	0.00	36.04	10.20	0.00	0.00	46.24
1919	0.00	0.00	0.00	37.76	10.67	0.00	0.00	48.43
1920	0.00	0.00	0.00	39.47	11.15	0.00	0.00	50.62
1921	0.00	0.00	0.00	41.19	11.62	0.00	0.00	52.81
1922	0.00	0.00	0.00	42.90	12.10	0.00	0.00	55.00
1923	0.00	0.00	0.00	44.62	12.57	0.00	0.00	57.19
1924	0.00	0.00	0.00	46.34	13.05	0.00	0.00	59.39
1925	0.00	0.00	0.00	48.05	13.52	0.00	0.00	61.58
1926	0.00	0.00	0.00	49.77	14.00	0.00	0.00	63.77
1927	0.00	0.00	0.00	51.48	14.52	0.00	0.00	66.00
1928	0.00	0.00	0.00	61.19	24.23	0.00	0.00	85.42
1929	0.00	0.00	0.00	75.30	38.33	0.00	0.00	113.63
1930	0.00	0.00	0.00	69.12	32.15	0.00	0.00	101.26
1931	0.00	0.00	0.00	63.21	26.24	0.00	0.00	89.44
1932	0.00	0.00	0.00	46.63	9.66	0.00	0.00	56.30
1933	0.00	0.00	0.00	51.30	14.33	0.00	0.00	65.63
1934	0.01	0.00	0.00	53.30	16.34	0.00	0.00	69.65
1935	0.29	0.00	0.00	52.38	15.42	0.00	0.00	68.09
1936	0.48	0.01	0.00	70.63	33.66	0.00	0.00	104.77
1937	0.40	0.02	0.00	70.33	33.36	0.00	0.00	104.11
1938	0.46	0.00	0.00	57.38	20.41	0.00	0.00	78.25
1939	0.43	0.02	0.00	46.73	9.76	0.00	0.00	56.95
1940	0.42	0.50	0.00	68.98	32.02	0.00	0.00	101.92
1941	0.62	0.77	0.00	85.38	48.41	0.00	0.00	135.18
1942	0.86	1.44	0.00	121.47	84.50	0.00	0.00	208.27
1943	2.37	5.02	0.00	146.25	109.28	0.00	0.00	262.91
1944	3.35	8.80	0.00	61.20	24.23	0.00	0.00	97.58
1945	6.62	13.67	0.00	52.67	15.70	0.00	0.00	88.65
1946	2.40	8.43	0.00	59.95	22.99	0.00	0.00	93.77
1947	1.25	5.23	0.00	53.54	16.57	0.00	0.00	76.60
1948	2.04	3.47	0.00	60.69	23.72	0.00	0.00	89.92
1949	2.38	3.24	0.00	69.02	7.93	0.00	0.00	82.57
1950	2.28	3.80	0.00	45.31	18.99	0.00	0.00	70.38
1951	1.87	3.53	0.00	69.66	13.72	0.00	0.00	88.78
1952	2.24	4.66	0.00	48.64	6.44	0.00	0.00	61.98

Table 2: continued

	TWL			HKL			At-sea	Total
Year	WA	OR	CA	WA	OR	CA		
1953	1.94	3.40	0.00	20.25	5.68	0.00	0.00	31.28
1954	3.97	4.47	0.00	36.71	8.83	0.00	0.00	53.98
1955	3.43	4.18	0.00	42.17	6.30	0.00	0.00	56.08
1956	3.29	5.93	0.00	15.06	5.22	0.00	0.00	29.50
1957	4.46	7.16	0.00	25.58	11.45	0.00	0.00	48.65
1958	5.02	5.57	0.00	7.45	3.15	0.00	0.00	21.20
1959	2.74	5.37	0.00	18.05	5.52	0.00	0.00	31.68
1960	4.85	6.96	0.00	20.14	2.05	0.00	0.00	34.00
1961	6.14	7.06	0.00	11.05	8.73	0.00	0.00	32.99
1962	5.81	8.42	0.00	12.71	10.30	0.00	0.00	37.24
1963	4.74	5.79	0.00	8.23	6.23	0.00	0.00	25.00
1964	5.93	5.39	0.00	10.73	0.55	0.00	0.00	22.60
1965	2.18	16.60	0.00	8.10	3.01	0.00	0.00	29.89
1966	15.38	7.19	0.00	4.89	2.92	0.00	0.00	30.37
1967	7.02	6.37	0.00	4.18	7.93	0.00	0.00	25.50
1968	23.72	4.16	0.00	2.12	5.91	0.00	0.00	35.91
1969	1.10	8.35	0.00	6.75	21.22	0.00	0.00	37.41
1970	0.10	0.12	0.00	0.27	3.54	0.00	0.00	4.02
1971	3.20	10.55	0.00	0.00	0.85	0.00	0.00	14.60
1972	0.00	5.03	0.00	0.01	1.43	0.00	0.00	6.47
1973	2.80	2.02	0.00	0.08	0.16	0.00	0.00	5.06
1974	0.00	1.31	0.00	0.60	0.00	0.00	0.00	1.91
1975	2.00	3.11	0.00	2.01	0.55	0.00	3.24	10.91
1976	6.60	0.00	0.00	0.00	0.00	0.00	0.71	7.31
1977	0.30	0.00	0.00	22.98	0.00	0.00	1.22	24.50
1978	5.70	26.25	0.00	38.70	16.17	0.00	0.38	87.20
1979	96.60	14.13	0.00	41.25	60.26	0.00	0.78	213.03
1980	28.30	28.14	0.00	15.15	15.91	0.00	0.19	87.69
1981	15.87	43.68	0.00	49.00	47.47	2.09	2.13	160.25
1982	42.49	50.84	0.00	59.49	48.12	0.00	0.00	200.94
1983	10.27	44.27	0.00	72.09	49.45	0.00	1.23	177.31
1984	28.49	44.67	0.00	97.10	37.66	0.00	2.28	210.20
1985	40.93	95.48	0.05	200.35	69.32	0.00	0.91	407.05
1986	16.32	136.13	0.11	217.29	174.93	0.10	1.21	546.10
1987	64.92	130.22	1.00	337.64	222.12	0.00	4.23	760.11
1988	24.87	126.14	0.00	180.89	96.85	0.00	15.85	444.60
1989	44.20	238.23	0.49	160.12	40.02	0.14	0.27	483.48
1990	10.17	153.75	2.41	118.48	0.00	0.38	0.73	285.92
1991	18.67	169.39	1.27	97.61	2.10	0.00	3.99	293.03
1992	26.80	125.14	1.74	165.97	8.10	1.07	9.12	337.94

Table 2: continued

	TWL			HKL			At-sea	Total
Year	WA	OR	CA	WA	OR	CA		
1993	2.46	140.28	0.00	279.91	31.24	0.00	1.50	455.39
1994	5.32	97.92	6.55	290.40	18.84	6.91	5.01	430.95
1995	42.85	97.68	4.98	277.19	122.56	0.70	2.65	548.62
1996	24.80	81.46	1.89	207.16	70.47	0.76	6.71	393.25
1997	33.54	64.24	0.21	156.04	12.69	0.36	9.73	276.82
1998	17.29	41.78	1.80	159.67	75.73	0.83	17.21	314.30
1999	18.69	40.78	0.99	117.77	4.23	0.00	8.96	191.42
2000	23.46	56.16	2.36	25.58	2.22	1.00	71.37	182.16
2001	11.53	63.68	0.37	13.00	0.81	2.47	20.69	112.56
2002	8.57	21.93	0.40	23.18	3.26	0.55	0.73	58.63
2003	9.96	45.25	0.69	18.33	2.32	1.25	2.16	79.95
2004	8.60	50.40	0.08	31.44	0.00	0.00	13.69	104.21
2005	7.15	38.43	0.05	40.59	5.31	3.12	35.95	130.59
2006	12.72	34.92	0.07	51.85	2.40	1.85	6.64	110.46
2007	12.42	49.35	0.56	48.55	2.79	3.11	29.08	145.85
2008	9.37	45.22	0.39	43.59	9.68	1.06	75.58	184.88
2009	17.16	51.45	0.30	76.87	19.60	5.23	9.30	179.90
2010	18.35	65.24	0.17	44.89	21.88	1.79	21.57	173.90
2011	10.32	46.79	0.19	39.67	17.95	1.95	80.95	197.83
2012	15.66	64.15	0.00	30.27	17.71	0.00	54.00	181.78

Table 2: A subset of management actions of importance to the fisheries that caught rougheye rockfish.

Year	Management action
1982	Per-trip limits for bocaccio, chilipepper, splitnose, and yellowtail rockfishes
1983	Per-trip and per-week limits implemented for *Sebastes* complex coastwide (north and south of 40° N)
1997	Per-trip limits changed to monthly or bi-monthly cumulative vessel limits
1999	Dividing line between north and south management areas moved to 40° 10’ N
2000	Minor slope rockfish complex formed north and south of 40° 10’ N and is subject to bi-monthly vessel limits. New limited entry trawl gear restrictions implemented for large footrope trawl gear, small footrope trawl gear, and midwater trawl gear.
2002	Rockfish Conservation Areas (RCA) established. Large footrope gear prohibited inside 275 m. Open access trip limits revised for the minor slope rockfish complex.
2005	Selective flatfish trawl required shoreward of the RCA north of 40° 10’ N
2006	Ammendment 19 established essential fish habitat (EFH) boundaries and conservation areas.
2007	Seasonal changes of trawl RCA boundaries and periodic closures within certain latitude boundaries (e.g., north of Cape Alava at 48°10’ N. latitude to the U.S.- Canada border) started in 2007.
2011	Trawl rationalization began, establishing the IFQ fishery.

Table 3: Management guidelines for minor slope rockfish and rougheye rockfish north of 40° 10′ (N) and south of 40° 10′ (S). Commercial landings not including discards (mt) for rougheye rockfish are also shown.

	Minor Slope Rockfish Complex			Rougheye Rockfish		
Year	OFL (mt) N, S	ABC (mt) N, S	ACL (mt) N, S	OFL (mt) N, S	ABC (mt) N, S	Commercial Landings (mt)
2000						182.16
2001						112.56
2002						58.63
2003						79.95
2004			1160, 639			104.21
2005			1160, 639			130.59
2006			1160, 639			110.46
2007			1160, 626			145.85
2008			1160, 626			184.88
2009			1160, 626			179.90
2010			1160, 626			173.90
2011	1462, 907	1324, 836	1160, 626	78.3, 0.5	65.3, 0.4	197.83
2012	1507, 903	1367, 832	1160, 626	78.3, 0.5	65.3, 0.4	181.78

Table 4: Depth ranges and limits of the southern latitude in the Triennial survey for the different years.

Years	Depth range (m)	Southern latitude
1977	91–457	34.05
1980–1986	55–366	36.8
1989–1992	55–366	34.5
1995–2004	55–500	34.5

Table 5. Stratifications used for the various surveys.

Triennial

Strata	Area (km2)	Depth1	Depth2	Latitude1	Latitude2
A	20,817	55	183	42	49
B	10,687	183	549	42	49

AFSC slope

Strata	Area (km2)	Depth1	Depth2	Latitude1	Latitude2
A	6,885	183	549	43	46
B	2,776	183	549	46	49

NWFSC slope

Strata	Area (km2)	Depth1	Depth2	Latitude1	Latitude2
A	7,911	183	549	42	46
B	2,776	183	549	46	49

NWFSC shelf/slope

Strata	Area (km2)	Depth1	Depth2	Latitude1	Latitude2
A	20,817	55	183	42	49
B	10,687	183	549	42	49

Table 6: Survey indices of abundance used in the base case model. The NWFSC consists of the NWFSC slope from 1999–2002 and the NWFSC shelf/slope from 2003–2012.

	Triennial		AFSC		NWFSC	
Year	Estimate (B)	SE(logB)	Estimate (B)	SE(logB)	Estimate (B)	SE(logB)
1980	325.77	0.459				
1981						
1982						
1983	125.38	0.308				
1984						
1985						
1986	423.90	0.320				
1987						
1988						
1989	326.62	0.301				
1990						
1991						
1992	429.25	0.360				
1993						
1994						
1995	1078.99	0.289				
1996			427.78	0.302		
1997			406.20	0.528		
1998	579.97	0.326				
1999			258.75	0.426	496.27	0.490
2000			1036.92	0.413	536.45	0.553
2001	999.44	0.322	584.98	0.551	1113.27	0.476
2002					228.42	0.550
2003					512.50	0.359
2004	761.36	0.325			1130.91	0.395
2005					1366.46	0.392
2006					727.52	0.360
2007					780.51	0.335
2008					1063.01	0.334
2009					1181.97	0.374
2010					1008.90	0.366
2011					1136.46	0.350
2012					681.45	0.410

Table 7: Number of positive tows in each year for each survey. The NWFSC survey consists of the slope survey (1998–2002) and the shelf/slope survey (2003–2010).

	Number of tows with rougheye			Number of tows with lengths			Number of tows with ages		
Year	AFSC slope	Triennial	NWFSC	AFSC slope	Triennial	NWFSC	AFSC slope	Triennial	NWFSC
1980		18			2				
1981									
1982									
1983		36							
1984									
1985									
1986		54			10				
1987									
1988									
1989		48			24				
1990									
1991									
1992		46			17				
1993									
1994									
1995		61			59				
1996	26								
1997	10			10					
1998		50			50				
1999	11		15	11					
2000	12		13	12					
2001	8	53	20	8	53				
2002			13						
2003			33			33			17
2004		49	26		48	25			25
2005			27			27			27
2006			36			34			34
2007			36			36			36
2008			37			36			36
2009			28			26			26
2010			30			29			29
2011			33			29			29
2012			24			22			21

Table 8: Summary of the data from the at-sea hake observer program used to determine the catches of rougheye.

Year	Total Hauls	Unsampled	% Unsampled	Total Sampled Wt	Median within tow expansion factor
1991	5167	2713	52.51%	2.6185	1.00
1992	3568	1407	39.43%	6.5402	1.00
1993	1802	796	44.17%	1.0397	2.62
1994	3743	1919	51.27%	3.3123	2.57
1995	2229	1046	46.93%	1.8056	1.73
1996	2617	1077	41.15%	4.7535	2.39
1997	2861	835	29.19%	7.5304	2.53
1998	2969	573	19.3%	14.4241	5.33
1999	3012	736	24.44%	7.1991	2.31
2000	2431	250	10.28%	64.7230	2.48
2001	2212	56	2.53%	20.1781	2.71
2002	1764	10	0.57%	0.7248	2.90
2003	1843	18	0.98%	2.1349	2.64
2004	2699	6	0.22%	13.6631	2.77
2005	3006	4	0.13%	35.8976	2.03
2006	2933	48	1.64%	6.5345	1.97
2007	2872	15	0.52%	28.9273	1.93
2008	3613	23	0.64%	75.1063	2.02
2009	1908	4	0.21%	9.2771	2.03
2010	2493	1	0.04%	21.5634	1.98
2011	3010	6	0.2%	80.7842	2.01
2012	2055	21	1.02%	53.4815	1.99

Table 9: Mothership (MS) and catcher-processor (CP) catches (mt) of rougheye rockfish from the at-sea fleet.

Year	MS	CP
1991	0.13	3.86
1992	3.07	6.05
1993	0.00	1.50
1994	0.42	4.59
1995	0.59	2.06
1996	0.43	6.28
1997	6.63	3.10
1998	1.60	15.61
1999	3.97	4.98
2000	0.87	70.49
2001	0.35	20.34
2002	0.39	0.34
2003	0.16	2.00
2004	0.02	13.67
2005	5.70	30.24
2006	0.58	6.06
2007	1.78	27.30
2008	5.93	69.65
2009	1.01	8.28
2010	4.61	16.95
2011	6.45	74.49
2012	11.58	42.42

Table 10: Number of landings sampled for length data by gear and state. Number of tows are shown for the at-sea fleet .

	Trawl			Hook & Line			At-sea
Year	**CA**	**OR**	**WA**	**CA**	**OR**	**WA**	
1995	4	1	0	1	1	0	
1996	6	2	21	3	5	0	
1997	1	1	36	1	0	5	
1998	1	0	29	1	2	11	
1999	2	1	19	0	3	18	
2000	4	2	28	1	1	42	
2001	2	5	20	1	1	29	
2002	5	1	26	3	0	22	
2003	4	8	36	3	1	52	66
2004	1	20	14	0	0	37	425
2005	1	20	9	13	5	42	461
2006	5	29	9	9	10	49	305
2007	13	53	21	4	4	26	572
2008	15	42	14	8	7	33	893
2009	11	64	14	11	14	27	284
2010	8	59	8	14	38	21	380
2011	9	41	16	12	42	34	1091
2012	16	65	18	2	34	26	591

Table 11: Number of lengths used to calculate length compositions for each fleet and state.

	Trawl			Hook & Line			At-sea
Year	**CA**	**OR**	**WA**	**CA**	**OR**	**WA**	
1995	5	22	0	2	21	0	
1996	15	44	163	7	123	0	
1997	1	24	591	2	0	237	
1998	3	0	591	8	44	678	
1999	3	33	419	0	69	692	
2000	11	40	575	9	23	803	
2001	2	111	386	5	24	474	
2002	5	5	388	15	0	413	
2003	6	46	885	9	2	967	300
2004	1	318	315	0	0	798	1735
2005	1	258	186	57	22	1171	2485
2006	5	254	297	113	177	1338	941
2007	17	815	718	9	58	690	4084
2008	32	660	673	47	121	971	6022
2009	16	888	458	92	177	1123	919
2010	12	725	354	109	521	743	2253
2011	13	394	268	51	494	1111	6961
2012	24	869	614	11	319	847	4284

Table 12: Number of landings sampled for ages from the Oregon trawl fleet, the number of tows sampled from the at-sea fleet, and the number of ages by fleet used to calculate age-at-length proportions.

	Number of samples		Number of ages	
Year	**Trawl**	**At-sea**	**Trawl**	**At-sea**
2008	11	170	330	555
2011	40	305	392	509

Table 13: Discard totals (mt) for the trawl and fixed gear fishery from 2002 to 2011. The standard error (SE) is given in log space.

Year	Fleet	Value	SE log
2002	Trawl	14.462	0.3815
2003	Trawl	19.8433	0.2937
2004	Trawl	1.6134	0.6049
2005	Trawl	0.9774	0.4243
2006	Trawl	14.7902	0.4337
2007	Trawl	30.252	0.3714
2008	Trawl	31.6008	0.3128
2009	Trawl	51.7018	0.2774
2010	Trawl	60.2267	0.4091
2011	Trawl	0.0383	0.0300
2002	Fixed	0.7106	0.4634
2003	Fixed	2.0126	0.5212
2004	Fixed	4.1077	0.7641
2005	Fixed	6.0832	0.3532
2006	Fixed	1.2622	0.4824
2007	Fixed	8.6847	0.5849
2008	Fixed	16.8214	0.5212
2009	Fixed	1.8543	0.4514
2010	Fixed	21.3752	0.8215
2011	Fixed	7.2975	0.6950

Table 14: Discard mean weight (kg) for the trawl and fixed gear fishery from 2002 to 2011. The coefficient of variation (CV) was determined from the samples.

Year	Fleet	Value	CV
2002	Trawl	1.84	1.16
2003	Trawl	1.80	0.65
2004	Trawl	1.51	0.9
2005	Trawl	0.53	0.71
2006	Trawl	1.34	0.84
2007	Trawl	1.40	0.59
2008	Trawl	1.60	0.74
2009	Trawl	1.58	0.53
2010	Trawl	1.57	0.49
2011	Trawl	0.55	0.86
2002	Fixed	1.99	0.31
2003	Fixed	2.31	0.45
2004	Fixed	1.43	0.33
2005	Fixed	2.15	0.28
2006	Fixed	1.77	0.8
2007	Fixed	1.79	0.25
2008	Fixed	2.16	0.56
2009	Fixed	2.33	0.59
2010	Fixed	1.38	0.33
2011	Fixed	2.70	0.29

Table 15: Specifications of the base assessment model for rougheye rockfish.

Starting year	1916
Population characteristics	
Maximum age	140
Genders	1
Population lengths	10-80 cm by 2 cm bins
Summary biomass (mt)	Age 10+
Data characteristics	
Data lengths	10-80 cm by 2 cm bins
Data ages	1-100
Minimum age for growth calcs	2
Maximum age for growth calcs	80
First mature age	5
Starting year of estimated recruitment	1900
Fishery characteristics	
Fishery timing	0.5
Triennial survey timing	0.55
AFSC slope survey timing	0.825
NWFSC slope survey timing	0.65
NWFSC combo survey timing	0.65
Fishing mortality method	Discrete
Maximum F	0.9
Catchability	Analytical estimate
Fishery Selectivity	Asymptotic Double Normal
Triennial Survey Selectivity	Double Normal
AFSC Survey Selectivity	Asymptotic Double Normal
NWFSC Slope Survey Selectivity	Asymptotic Double Normal
NWFSC Combo Survey Selectivity	Asymptotic Double Normal

Table 16: Description of biological parameters in the base case assessment model. The lognormal (LN) prior distribution is specified with the median of the parameter and the standard deviation of the log of the parameter.

Parameter	Initial value	Number estimated	Bounds (low, high)	Prior distribution
Biological				
Females:				
Natural mortality (*M*)	0.03365	1	(0.001-0.20)	LN(0.034, 054)
Length at age 2	11	1	(1-25)	
Length at age 80	57	1	(40-90)	
von Bertalanffy K	0.069	1	(0.01-0.15)	
ln(SD) of length at age 2	0.09	1	(0.03-0.20)	
ln(SD) of length at age 80	0.09	1	(0.03-0.20)	
Maturity inflection	43.87	0	—	
Maturity slope	-0.3	0	—	
Fecundity intercept	1	0	—	
Fecundity slope	0	0	—	
Length-weight intercept	3.123	0	—	
Length-weight slope	9.60E-06	0	—	

Table 17: Ageing error used in the base case model

True Age	Standard Deviation	True Age	Standard Deviation	True Age	Standard Deviation	True Age	Standard Deviation
1	0.0873	**41**	5.9126	**81**	10.3128	**121**	13.6366
2	0.2537	**42**	6.0383	**82**	10.4078	**122**	13.7083
3	0.4190	**43**	6.1631	**83**	10.5020	**123**	13.7796
4	0.5831	**44**	6.2871	**84**	10.5957	**124**	13.8503
5	0.7461	**45**	6.4102	**85**	10.6887	**125**	13.9205
6	0.9079	**46**	6.5324	**86**	10.7810	**126**	13.9903
7	1.0686	**47**	6.6538	**87**	10.8727	**127**	14.0595
8	1.2282	**48**	6.7743	**88**	10.9637	**128**	14.1283
9	1.3866	**49**	6.8940	**89**	11.0542	**129**	14.1966
10	1.5440	**50**	7.0129	**90**	11.1439	**130**	14.2644
11	1.7002	**51**	7.1309	**91**	11.2331	**131**	14.3318
12	1.8554	**52**	7.2481	**92**	11.3216	**132**	14.3986
13	2.0094	**53**	7.3645	**93**	11.4095	**133**	14.4650
14	2.1624	**54**	7.4801	**94**	11.4968	**134**	14.5310
15	2.3144	**55**	7.5948	**95**	11.5835	**135**	14.5965
16	2.4652	**56**	7.7088	**96**	11.6696	**136**	14.6615
17	2.6150	**57**	7.8219	**97**	11.7551	**137**	14.7261
18	2.7638	**58**	7.9343	**98**	11.8400	**138**	14.7902
19	2.9115	**59**	8.0459	**99**	11.9242	**139**	14.8538
20	3.0582	**60**	8.1567	**100**	12.0079	**140**	14.9171
21	3.2039	**61**	8.2667	**101**	12.0911		
22	3.3485	**62**	8.3760	**102**	12.1736		
23	3.4922	**63**	8.4845	**103**	12.2555		
24	3.6348	**64**	8.5922	**104**	12.3369		
25	3.7764	**65**	8.6992	**105**	12.4177		
26	3.9171	**66**	8.8055	**106**	12.4980		
27	4.0567	**67**	8.9110	**107**	12.5777		
28	4.1954	**68**	9.0157	**108**	12.6568		
29	4.3331	**69**	9.1197	**109**	12.7354		
30	4.4699	**70**	9.2230	**110**	12.8134		
31	4.6057	**71**	9.3256	**111**	12.8909		
32	4.7405	**72**	9.4275	**112**	12.9679		
33	4.8745	**73**	9.5286	**113**	13.0443		
34	5.0074	**74**	9.6291	**114**	13.1201		
35	5.1395	**75**	9.7288	**115**	13.1955		
36	5.2706	**76**	9.8279	**116**	13.2703		
37	5.4008	**77**	9.9262	**117**	13.3446		
38	5.5301	**78**	10.0239	**118**	13.4184		
39	5.6585	**79**	10.1209	**119**	13.4916		
40	5.7860	**80**	10.2172	**120**	13.5644		

Table 18: Parameter estimates and approximate asymptotic standard deviations for the base case model (from the final year for the commercial selectivity).

Parameter	**Estimate**	**SD**				
Stock and recruitment						
Ln(R0)	6.19	0.266				
Surveys	*Catchability ln(q)*		Extra SE			
Early triennial	0.374		0.104			
Late triennial						
AFSC	0.068		0.051			
NWFSC Slope	0.076		0.054			
NWFSC Combo	0.113		0.000			
Fisheries	**Trawl**		**Fixed Gear**		**At Sea**	
	Est	**SD**	**Est**	**SD**	**Est**	**SD**
Length at peak selectivity	51.01	1.778	48.39	1.139	56.03	2.359
Ascending width	4.06	0.397	3.20	0.362	4.20	0.351
Initial Selectivity	-3.30	0.300	-5.79	0.879	NA	
Surveys	**Triennial**		**Slope**		**NWFSC Combo**	
	Est	**SD**	**Est**	**SD**	**Est**	**SD**
Length at peak selectivity	19.51	2.411	21.63	16.052	18.24	4.054
Width of top	-3.26	2.817				
Ascending width	2.54	1.184	-1.70	51.206	2.70	1.641
Descending width	3.99	1.069				
Initial selectivity	-3.01	1.186				
Final selectivity	-3.32	1.1724				
Biological	**Est**	**SD**				
Natural mortality (M)	0.0420	0.0034				
Length at age 2	11.1963	0.3346				
Length at age 80	55.1636	0.4979				
Von Bertalanffy K	0.0812	0.0026				
SD (log) at age 2	0.0691	0.0045				
SD (log) at age 80	0.1094	0.0080				

Table 19: Likelihood components and other quantities related to the minimization of the base case model.

Description	Values
Nparameters	173
Negative log-likelihoods	
Total	2299.59
Indices	-11.65
Length-frequency data	220.68
Age-frequency data	2076.94
Discard biomass	14.00
Discard mean weight	0.78
Recruitment	-1.28
Priors	0.08
Parameter Softbound	0.02

Table 20: Estimates of key derived parameters and reference points with approximate 95% asymptotic confidence intervals.

Quantity	Estimate	~95% Confidence Interval
Unfished Spawning biomass (mt)	5,394	3,976–6,812
Unfished age 10+ biomass (mt)	13,756	9,883–17,629
Unfished recruitment (R0, thousands)	485	291–810
Depletion (2013)	47.32	30.5–64.2
Reference points based on $SB_{40\%}$		
Proxy spawning biomass ($SB_{40\%}$)	2,158	1,590–2,725
SPR resulting in $SB_{40\%}$	44.3%	–
Exploitation rate resulting in $SB_{40\%}$	3.2%	2.9–3.6%
Yield with *SPR* based on $SB_{40\%}$ (mt)	210	129–290
Reference points based on SPR proxy for MSY		
Spawning biomass	2,491	1,836–3,146
SPR_{proxy}	50%	
Exploitation rate corresponding to SPR_{proxy}	2.7%	2.4–3.0%
Yield with SPR_{proxy} at SB_{SPR} (mt)	194	120–269
Reference points based on estimated MSY values		
Spawning biomass at *MSY* (SB_{MSY})	1,305	965–1,644
SPR_{MSY}	29.6%	29.2–30.0%
Exploitation rate corresponding to SPR_{MSY}	5.3%	4.7–5.8%
MSY (mt)	230	142–319

Table 21: Time-series of population estimates from the base case model.

Year	Total biomass (mt)	Spawning Biomass	Total Biomass 10+ (mt)	Depletion	Age-0 recruits	Total catch (mt)	1-SPR	Relative exploitation rate
1916	14,306	5,395	13,763	100.0%	489	41.87	0.091	0.0030
1917	14,267	5,377	13,724	99.7%	488	44.06	0.095	0.0032
1918	14,227	5,360	13,684	99.4%	488	46.26	0.100	0.0034
1919	14,186	5,341	13,643	99.0%	487	48.45	0.105	0.0036
1920	14,145	5,322	13,601	98.7%	486	50.64	0.109	0.0037
1921	14,102	5,303	13,559	98.3%	484	52.83	0.114	0.0039
1922	14,058	5,283	13,515	98.0%	483	55.02	0.119	0.0041
1923	14,014	5,263	13,471	97.6%	481	57.21	0.123	0.0042
1924	13,968	5,243	13,427	97.2%	479	59.41	0.128	0.0044
1925	13,922	5,222	13,381	96.8%	477	61.60	0.132	0.0046
1926	13,875	5,201	13,335	96.4%	475	63.79	0.137	0.0048
1927	13,826	5,179	13,288	96.0%	473	66.02	0.142	0.0050
1928	13,777	5,158	13,240	95.6%	471	85.44	0.178	0.0065
1929	13,710	5,128	13,174	95.1%	469	113.65	0.225	0.0086
1930	13,617	5,088	13,083	94.3%	466	101.28	0.207	0.0077
1931	13,537	5,054	13,006	93.7%	465	89.46	0.188	0.0069
1932	13,471	5,026	12,941	93.2%	463	56.31	0.126	0.0044
1933	13,438	5,012	12,910	92.9%	462	65.65	0.145	0.0051
1934	13,396	4,994	12,870	92.6%	461	69.66	0.153	0.0054
1935	13,350	4,976	12,827	92.3%	460	68.10	0.151	0.0053
1936	13,306	4,959	12,786	91.9%	460	104.79	0.217	0.0082
1937	13,228	4,926	12,709	91.3%	460	104.12	0.217	0.0082
1938	13,150	4,895	12,634	90.8%	461	78.26	0.172	0.0062
1939	13,099	4,875	12,585	90.4%	462	56.95	0.131	0.0045
1940	13,069	4,864	12,556	90.2%	464	101.93	0.215	0.0081
1941	12,996	4,834	12,484	89.6%	465	135.19	0.270	0.0108
1942	12,892	4,791	12,380	88.8%	468	208.29	0.370	0.0168
1943	12,719	4,719	12,207	87.5%	470	262.94	0.434	0.0215
1944	12,497	4,625	11,985	85.7%	473	97.60	0.219	0.0081
1945	12,440	4,600	11,927	85.3%	476	88.69	0.206	0.0074
1946	12,393	4,580	11,879	84.9%	480	93.79	0.214	0.0079
1947	12,342	4,558	11,827	84.5%	483	76.61	0.181	0.0065
1948	12,311	4,543	11,793	84.2%	488	89.93	0.207	0.0076
1949	12,268	4,523	11,747	83.8%	492	82.59	0.193	0.0070
1950	12,234	4,506	11,711	83.5%	496	70.40	0.170	0.0060
1951	12,214	4,495	11,688	83.3%	500	88.80	0.206	0.0076
1952	12,179	4,477	11,649	83.0%	503	62.00	0.154	0.0053
1953	12,172	4,470	11,638	82.9%	506	31.30	0.084	0.0027

Year	Total biomass (mt)	Spawning Biomass	Total Biomass 10+ (mt)	Depletion	Age-0 recruits	Total catch (mt)	1-SPR	Relative exploitation rate
1954	12,197	4,476	11,659	83.0%	509	53.99	0.137	0.0046
1955	12,202	4,474	11,659	82.9%	511	56.11	0.141	0.0048
1956	12,206	4,471	11,660	82.9%	511	29.52	0.080	0.0025
1957	12,239	4,479	11,688	83.0%	510	48.66	0.126	0.0042
1958	12,254	4,480	11,700	83.1%	508	21.22	0.060	0.0018
1959	12,298	4,494	11,740	83.3%	505	31.70	0.085	0.0027
1960	12,333	4,503	11,773	83.5%	500	34.01	0.091	0.0029
1961	12,368	4,512	11,805	83.6%	494	33.01	0.089	0.0028
1962	12,404	4,522	11,840	83.8%	488	37.27	0.099	0.0031
1963	12,437	4,530	11,872	84.0%	482	25.01	0.068	0.0021
1964	12,482	4,545	11,918	84.3%	476	22.62	0.062	0.0019
1965	12,529	4,561	11,968	84.6%	470	29.92	0.082	0.0025
1966	12,568	4,575	12,011	84.8%	465	128.51	0.298	0.0107
1967	12,509	4,552	11,956	84.4%	461	110.62	0.265	0.0093
1968	12,466	4,537	11,920	84.1%	459	83.00	0.210	0.0070
1969	12,451	4,532	11,910	84.0%	457	52.45	0.136	0.0044
1970	12,464	4,539	11,930	84.1%	458	21.06	0.060	0.0018
1971	12,507	4,559	11,978	84.5%	460	63.68	0.168	0.0053
1972	12,504	4,562	11,982	84.6%	466	74.56	0.192	0.0062
1973	12,489	4,562	11,971	84.6%	474	68.14	0.178	0.0057
1974	12,479	4,564	11,964	84.6%	479	46.97	0.128	0.0039
1975	12,487	4,573	11,975	84.8%	481	37.94	0.103	0.0032
1976	12,503	4,585	11,991	85.0%	483	19.34	0.056	0.0016
1977	12,536	4,604	12,023	85.4%	491	24.50	0.063	0.0020
1978	12,562	4,619	12,047	85.6%	495	87.23	0.205	0.0072
1979	12,526	4,609	12,008	85.4%	476	213.14	0.408	0.0178
1980	12,367	4,547	11,844	84.3%	445	87.75	0.215	0.0074
1981	12,332	4,535	11,805	84.1%	404	160.30	0.334	0.0136
1982	12,227	4,493	11,697	83.3%	367	201.05	0.397	0.0172
1983	12,082	4,434	11,553	82.2%	355	177.37	0.361	0.0154
1984	11,964	4,384	11,438	81.3%	359	210.27	0.410	0.0184
1985	11,812	4,321	11,294	80.1%	371	407.20	0.598	0.0361
1986	11,469	4,179	10,962	77.5%	393	546.27	0.682	0.0498
1987	10,995	3,982	10,506	73.8%	456	760.34	0.771	0.0724
1988	10,322	3,702	9,855	68.6%	628	444.77	0.661	0.0451
1989	9,964	3,554	9,519	65.9%	598	483.81	0.714	0.0508
1990	9,568	3,397	9,139	63.0%	536	286.11	0.577	0.0313
1991	9,374	3,319	8,945	61.5%	494	293.26	0.594	0.0328
1992	9,179	3,240	8,733	60.1%	454	338.12	0.629	0.0387

Year	Total biomass (mt)	Spawning Biomass	Total Biomass 10+ (mt)	Depletion	Age-0 recruits	Total catch (mt)	1-SPR	Relative exploitation rate
1993	8,950	3,144	8,476	58.3%	406	455.56	0.707	0.0537
1994	8,616	3,000	8,109	55.6%	312	431.08	0.699	0.0532
1995	8,318	2,867	7,775	53.1%	307	548.79	0.768	0.0706
1996	7,916	2,689	7,339	49.8%	381	393.39	0.704	0.0536
1997	7,674	2,574	7,083	47.7%	404	276.95	0.626	0.0391
1998	7,558	2,507	7,004	46.5%	898	314.40	0.654	0.0449
1999	7,432	2,428	6,895	45.0%	2209	191.51	0.534	0.0278
2000	7,398	2,400	6,898	44.5%	526	200.01	0.541	0.0290
2001	7,377	2,376	6,889	44.1%	846	128.25	0.433	0.0186
2002	7,450	2,384	6,938	44.2%	239	64.58	0.259	0.0093
2003	7,610	2,417	7,036	44.8%	426	88.70	0.321	0.0126
2004	7,771	2,444	7,079	45.3%	355	114.12	0.375	0.0161
2005	7,919	2,464	7,093	45.7%	282	140.19	0.420	0.0198
2006	8,054	2,477	7,102	45.9%	282	120.89	0.387	0.0170
2007	8,212	2,499	7,134	46.3%	385	186.79	0.493	0.0262
2008	8,306	2,498	7,268	46.3%	385	221.61	0.531	0.0305
2009	8,365	2,489	7,825	46.1%	358	228.72	0.550	0.0292
2010	8,406	2,483	7,899	46.0%	328	229.39	0.551	0.0290
2011	8,441	2,487	8,077	46.1%	452	202.42	0.510	0.0251
2012	8,494	2,511	8,097	46.6%	449	185.51	0.490	0.0229
2013	8,550	2,552	8,176	47.3%	450	NA	NA	NA

Table 22: Quantities of interest from the sensitivity analyses.

	Base	Age (0.50)	Age (0.25)	Domed Selectivity	Low Prior *M*	High Prior *M*	*M*=0.021	*M*=0.034	*M*=0.061
Steepness (*h*)	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779
Natural Mortality (*M*)	0.0420	0.0415	0.0448	0.0419	0.0414	0.0432	0.0213	0.0337	0.0605
lnR0	6.19	6.19	6.52	6.18	6.15	6.10	4.80	5.61	8.76
SB0	5,394	5,379	6,384	5,412	5,321	4,869	4,165	4,542	33,412
SB2013	2,552	2,545	3,711	2,566	2,478	2,429	571	1,417	30,431
Depl2013	47.3%	47.3%	57.5%	47.4%	46.6%	49.9%	13.7%	31.2%	91.1%
Yield_SPR	194	198	260	194	190	174	80	133	1715
SPR2012	0.510	0.519	0.708	0.510	0.500	0.500	0.102	0.312	0.949
Q Triennial Early	0.374	0.387	0.279	0.337	0.320	0.321	1.136	0.613	0.028
Q Triennial Late	0.383	0.433	0.390	0.355	0.337	0.426	1.516	0.678	0.028
Q AKFSC Slope	0.068	0.066	0.045	0.105	0.069	0.067	0.180	0.108	0.006
Q NWFSC Slope	0.076	0.075	0.051	0.116	0.078	0.075	0.220	0.125	0.007
Q NWFSC Slope/Shelf	0.113	0.114	0.081	0.113	0.117	0.121	0.389	0.192	0.010
Likelihood	2,300	1,256	725	2,299	2,303	2,354	2,338	2,304	2,321
Triennial	-3.11	-3.24	-3.54	-3.12	-3.13	-3.28	-2.39	-2.82	-3.73
AKSC Slope	-1.15	-1.16	-1.19	-1.22	-1.15	-1.14	-0.74	-1.03	-1.29
NWFSC Slope	-0.27	-0.27	-2.77	-0.26	-0.26	-0.28	-0.27	-0.26	-0.28
NWFSC Shelf/Slope	-7.12	-7.07	-6.98	-7.12	-7.11	-6.98	-6.50	-7.05	-7.12
Length TRAWL	115.36	111.12	107.57	115.55	115.37	119.88	114.73	114.44	129.12
Length FIXED	45.27	40.05	36.13	45.60	44.92	87.43	47.01	45.31	45.56
Length ASF	8.19	7.63	7.43	8.15	8.19	8.46	8.42	8.22	8.25
Length Triennial	15.27	14.65	14.76	15.83	17.49	16.01	14.87	15.13	16.05
Length AKFSC Slope	4.46	4.25	4.19	3.67	4.66	4.79	4.53	4.46	4.60
Length NWFSC Shelf/Slope	32.13	31.06	32.21	31.90	32.21	30.09	33.16	32.47	31.71
Age TRAWL	330.63	333.51	334.32	330.65	330.81	329.49	340.77	332.74	329.87
Age ASF	356.15	364.18	371.28	356.10	356.26	355.56	368.47	357.73	358.20
Age NWFSC Shelf/Slope	1390.16	1405.26	1430.06	1389.85	1390.59	1389.99	1392.05	1389.56	1393.95
Discards	14.01	14.07	14.30	14.01	14.01	20.80	14.43	14.06	13.75
Discard weights	0.78	0.86	1.19	0.79	0.78	4.03	1.12	0.84	0.72

Table 23: Results from retrospective runs, sequentially removing data over the last five years using the base case assumptions.

Year Assessed	Last year of data	Unfished Spawning Biomass	2008 Spawning Biomass	2008 Depletion	2013 Depletion	Yield $SPR_{50\%}$	*M*
2013	2012	10,788	4,996	46.32%	47.32%	194	0.0420
2012	2011	10,427	4,642	44.73%	45.66%	189	0.0417
2011	2010	9,647	3,941	40.85%	41.28%	179	0.0413
2010	2009	9,893	4,293	43.40%	44.06%	192	0.0430
2009	2008	9,102	3,486	38.30%	38.90%	175	0.0420
2008	2007	18,160	13,286	73.16%	75.72%	462	0.0490

Table 24: Quantities of interest when profiling over steepness values

h	0.25	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.99
M	0.0461	0.0451	0.0438	0.0431	0.0426	0.0422	0.0420	0.0418	0.0416
lnR0	6.44	6.38	6.30	6.25	6.22	6.20	6.18	6.17	6.16
SB0	5,876	5,751	5,596	5,508	5,452	5,415	5,389	5,370	5,356
SB2013	2,062	2,179	2,320	2,409	2,472	2,521	2,560	2,591	2,615
Depl2013	35.1%	37.9%	41.5%	43.7%	45.3%	46.6%	47.5%	48.3%	48.8%
Yield_SPR	0	0	90	146	172	187	196	203	207
SPR2012	0.483	0.491	0.498	0.503	0.506	0.508	0.510	0.512	0.513
Q Triennial Early	0.375	0.374	0.374	0.374	0.374	0.374	0.374	0.374	0.373
Q Triennial Late	0.487	0.460	0.429	0.410	0.398	0.388	0.381	0.376	0.372
Q AKFSC Slope	0.073	0.071	0.070	0.069	0.068	0.068	0.068	0.067	0.067
Q NWFSC Slope	0.083	0.081	0.079	0.078	0.077	0.077	0.076	0.076	0.075
Q NWFSC Slope/Shelf	0.137	0.131	0.124	0.119	0.117	0.115	0.113	0.112	0.111
Likelihood	2,304	2,303	2,301	2,301	2,300	2,300	2,300	2,299	2,299
Triennial	-2.91	-2.97	-3.03	-3.06	-3.08	-3.10	-3.11	-3.12	-3.12
AKSC Slope	-1.06	-1.09	-1.11	-1.13	-1.14	-1.15	-1.16	-1.16	-1.16
NWFSC Slope	-0.28	-0.28	-0.27	-0.27	-0.27	-0.27	-0.27	-0.26	-0.26
NWFSC Shelf/Slope	-6.91	-6.97	-7.04	-7.07	-7.10	-7.11	-7.12	-7.13	-7.14
Length TRAWL	115.21	115.26	115.32	115.35	115.36	115.36	115.36	115.36	115.36
Length FIXED	45.92	45.77	45.57	45.44	45.36	45.30	45.26	45.23	45.21
Length ASF	8.15	8.15	8.17	8.18	8.18	8.19	8.19	8.20	8.20
Length Triennial	15.33	15.32	15.30	15.29	15.28	15.27	15.27	15.26	15.26
Length AKFSC Slope	4.51	4.50	4.48	4.47	4.46	4.46	4.46	4.46	4.45
Length NWFSC Shelf/Slope	31.56	31.59	31.72	31.85	31.97	32.06	32.14	32.21	32.26
Age TRAWL	330.29	330.35	330.45	330.52	330.57	330.61	330.64	330.66	330.68
Age ASF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Age NWFSC Shelf/Slope	357.43	357.16	356.78	356.54	356.36	356.23	356.14	356.06	356.00
Discards	1,390.21	1,390.18	1,390.16	1,390.15	1,390.15	1,390.15	1,390.16	1,390.16	1,390.16
Discard weights	13.96	13.97	13.99	13.99	14.00	14.00	14.01	14.01	14.01

Table 25: Quantities of interest when profiling over natural mortality values.

M	0.036	0.038	0.040	0.042	0.044	0.046	0.048	0.05
lnR0	5.77	5.90	6.04	6.18	6.34	6.50	6.67	6.87
SB0	4,709	4,888	5,112	5,391	5,743	6,195	6,788	7,589
SB2013	1,668	1,916	2,206	2,549	2,962	3,470	4,114	4,961
Depl2013	35.4%	39.2%	43.2%	47.3%	51.6%	56.0%	60.6%	65.4%
Yield_SPR	147	160	176	194	216	243.614	278	324
SPR2012	0.365	0.412	0.460	0.510	0.560	0.610	0.660	0.710
Q Triennial Early	0.539	0.481	0.426	0.374	0.326	0.280	0.237	0.197
Q Triennial Late	0.581	0.508	0.442	0.383	0.330	0.281	0.236	0.195
Q AKFSC Slope	0.096	0.086	0.077	0.068	0.059	0.051	0.044	0.037
Q NWFSC Slope	0.110	0.098	0.087	0.076	0.067	0.057	0.049	0.041
Q NWFSC Slope/Shelf	0.167	0.147	0.130	0.113	0.099	0.085	0.072	0.056
Likelihood	2,301.46	2,300.35	2,299.72	2,299.50	2,299.63	2300.04	2300.70	2301.57
Triennial	-2.90	-2.97	-3.04	-3.11	-3.17	-3.24	-3.31	-3.38
AKSC Slope	-1.07	-1.10	-1.13	-1.15	-1.18	-1.19	-1.21	-1.22
NWFSC Slope	-0.26	-0.26	-0.26	-0.27	-0.27	-0.27	-0.27	-0.27
NWFSC Shelf/Slope	-7.08	-7.10	-7.11	-7.12	-7.13	-7.13	-7.13	-7.13
Length TRAWL	114.69	114.91	115.14	115.36	115.58	115.79	116.01	116.21
Length FIXED	45.24	45.22	45.23	45.27	45.32	45.39	45.48	45.58
Length ASF	8.21	8.20	8.20	8.19	8.19	8.19	8.19	8.19
Length Triennial	15.17	15.20	15.24	15.27	15.30	15.32	15.35	15.37
Length AKFSC Slope	4.45	4.45	4.46	4.46	4.46	4.47	4.47	4.48
Length NWFSC Shelf/Slope	32.38	32.30	32.21	32.13	32.04	31.96	31.87	31.79
Age TRAWL	32.38	32.30	32.21	32.13	32.04	31.96	31.87	31.79
Age ASF	331.97	331.44	330.99	330.64	330.35	330.12	329.94	329.81
Age NWFSC Shelf/Slope	357.02	356.60	356.32	356.16	356.10	356.13	356.23	356.40
Discards	1389.61	1389.73	1389.92	1390.15	1390.43	1390.75	1391.10	1391.48
Discard weights	14.04	14.02	14.01	14.01	14.00	14.00	14.00	14.00

Table 26: Projection of potential OFL, landings, and catch, summary biomass (age-10 and older), spawning biomass, and depletion for the base case model projected with total catch equal to the recent 5-year average in 2013 and 2014, and equal to the predicted ABC (adjusted by the 40:10 control rule and 0.9135 to reflect the P* buffer) afterwards. The predicted OFL is the calculated total catch determined by $F_{SPR=50\%}$.

Year	Predicted OFL (mt)	ABC Catch (mt)	Landings (mt)	Age 10+ biomass (mt)	Spawning Biomass (mt)	Depletion (%)
2013			184	8,176	2,552	47.3%
2014			184	8,220	2,600	48.2%
2015	206	188	183	8,227	2,653	49.2%
2016	210	192	187	8,219	2,706	50.2%
2017	215	197	191	8,225	2,755	51.1%
2018	219	201	195	8,217	2,797	51.8%
2019	222	204	198	8,188	2,829	52.4%
2020	224	206	201	8,136	2,851	52.9%
2021	226	208	202	8,113	2,864	53.1%
2022	227	209	203	8,084	2,868	53.2%
2023	226	209	203	8,052	2,865	53.1%
2024	226	208	203	8,019	2,856	53.0%

Table 27: Summary table of 12-year projections beginning in 2015 for alternate states of nature based on an axis of uncertainty. Columns range over low, mid, and high state of nature, and rows range over different assumptions of total catch levels (discards + retained). Catches in 2013 and 2014 are determined from 5 year averages of the landings for each fleet (trawl, hook & line, and at-sea), and are also used as status quo catches.

			State of nature					
			Low *M* = 0.037		Base case *M* estimated at 0.042		High *M* = 0.047	
Relative probability of ln(SB_2013)			0.25		0.5		0.25	
Management decision	Year	Catch (mt)	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion
ABC assuming σ = 0.72	2015	188	1,855	39%	2,653	49%	3,779	60%
	2016	192	1,888	39%	2,706	50%	3,859	61%
	2017	197	1,918	40%	2,755	51%	3,932	62%
	2018	201	1,942	40%	2,797	52%	3,993	63%
	2019	204	1,959	41%	2,829	52%	4,042	64%
	2020	206	1,969	41%	2,851	53%	4,077	64%
	2021	208	1,972	41%	2,864	53%	4,100	65%
	2022	209	1,968	41%	2,868	53%	4,111	65%
	2023	209	1,958	41%	2,865	53%	4,112	65%
	2024	208	1,945	41%	2,856	53%	4,106	65%
Recent 5-year average of catches	2015	189	1,855	39%	2,653	49%	3,779	60%
	2016	189	1,888	39%	2,706	50%	3,859	61%
	2017	189	1,919	40%	2,756	51%	3,933	62%
	2018	189	1,946	41%	2,801	52%	3,997	63%
	2019	189	1,968	41%	2,837	53%	4,051	64%
	2020	189	1,983	41%	2,865	53%	4,091	65%
	2021	189	1,992	42%	2,884	53%	4,120	65%
	2022	189	1,995	42%	2,895	54%	4,138	65%
	2023	189	1,993	42%	2,900	54%	4,147	65%
	2024	189	1,987	41%	2,899	54%	4,148	65%
Catch that stabilizes equilibrium depletion at 40% in the base model	2015	258	1,855	39%	2,653	49%	3,779	60%
	2016	261	1,862	39%	2,680	50%	3,833	61%
	2017	265	1,867	39%	2,704	50%	3,880	61%
	2018	267	1,866	39%	2,720	50%	3,917	62%
	2019	269	1,859	39%	2,728	51%	3,942	62%
	2020	270	1,844	38%	2,726	51%	3,954	62%
	2021	270	1,823	38%	2,715	50%	3,953	62%
	2022	269	1,796	37%	2,697	50%	3,942	62%
	2023	267	1,764	37%	2,673	50%	3,923	62%
	2024	264	1,730	36%	2,644	49%	3,897	62%

11 Figures

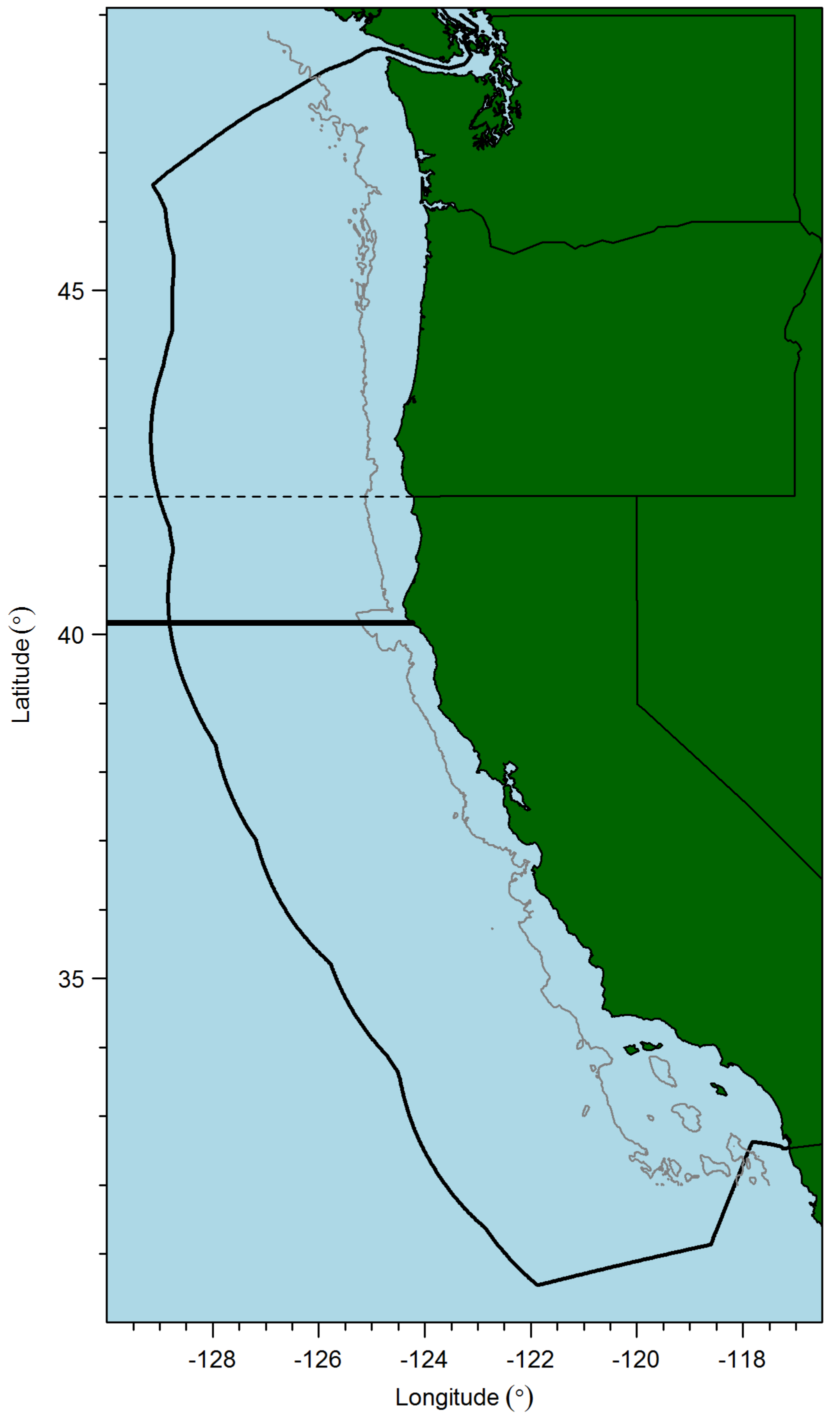


Figure 1: A map of the west coast of the U.S. with the EEZ and the 40° 10' line that divides rougheye management into northern and southern regions. Survey data north of the dashed line at 42° were used to create an index of abundance for rougheye rockfish.

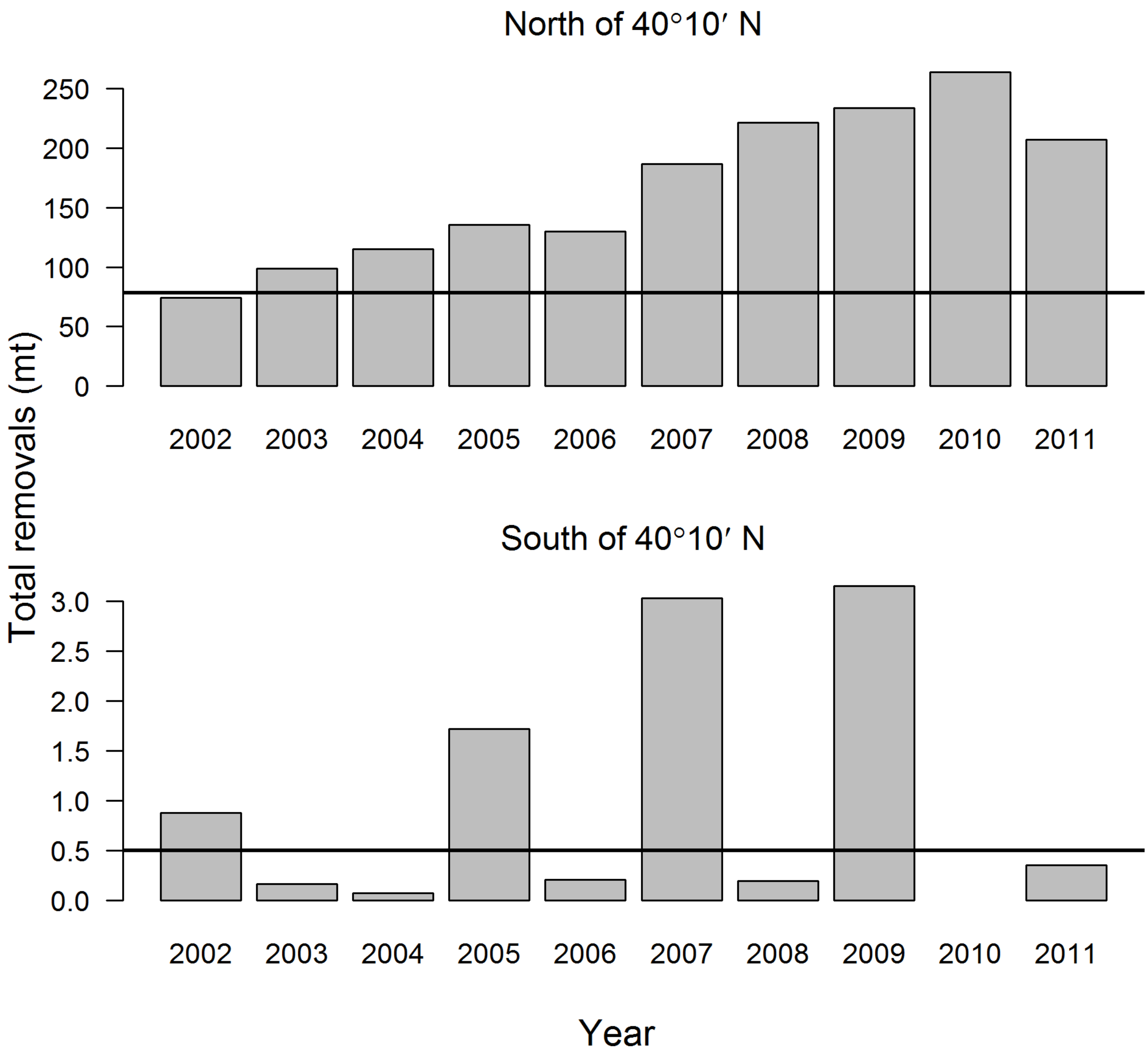


Figure 2: Total removals north of 40° 10' N (top) and south of 40° 10' N (bottom) as estimated in the groundfish mortality report (pers. comm., Marlene Bellman, NWFSC) for 2002 to 2011. The horizontal line represents the rougheye specific OFL for 2011 and 2012.

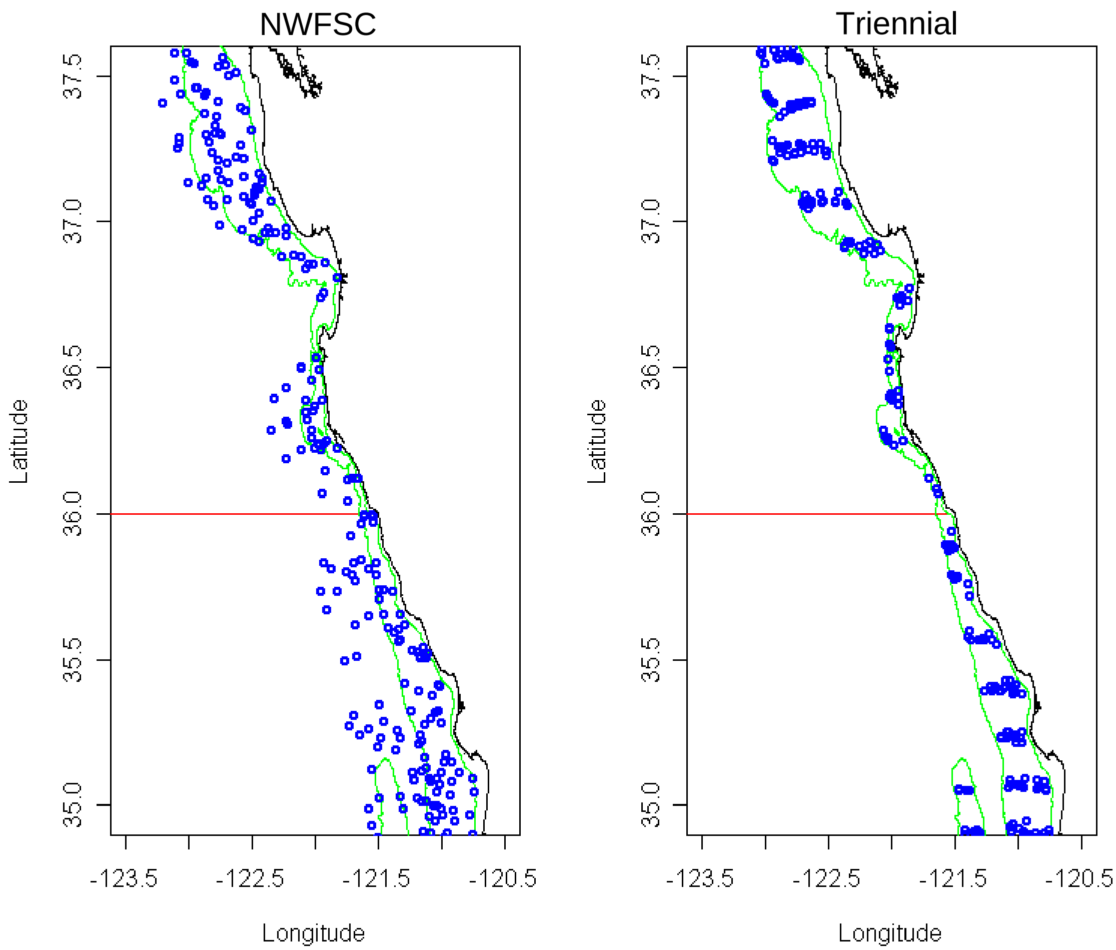


Figure 3: Survey tow locations in 2004, showing the difference in station design for the NWFSC survey relative to the Triennial trawl survey (Figure from Stewart (2007)).

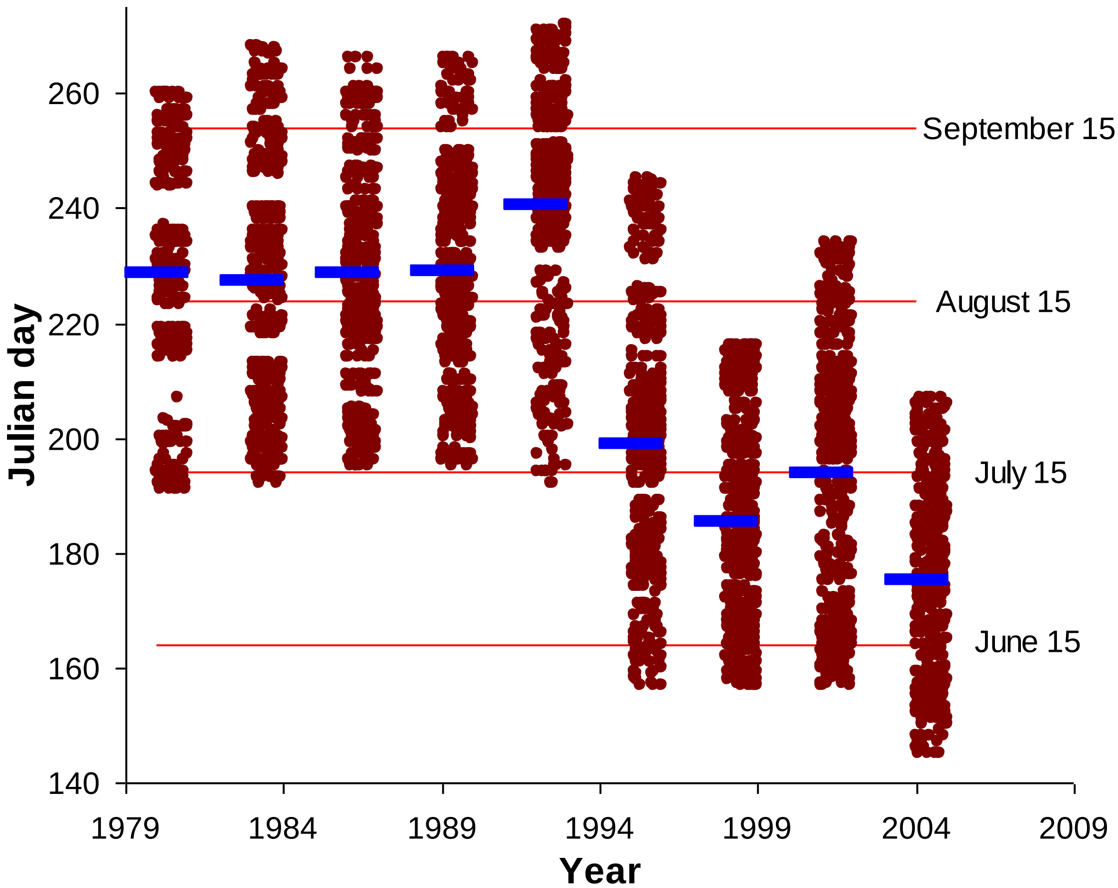


Figure 4: Distribution of dates of operation for the triennial survey (1980-2004). Solid bars show the mean date for each survey year, points represent individual hauls dates, but are jittered to allow better delineation of the distribution of individual points (Figure from (Stewart 2007)).

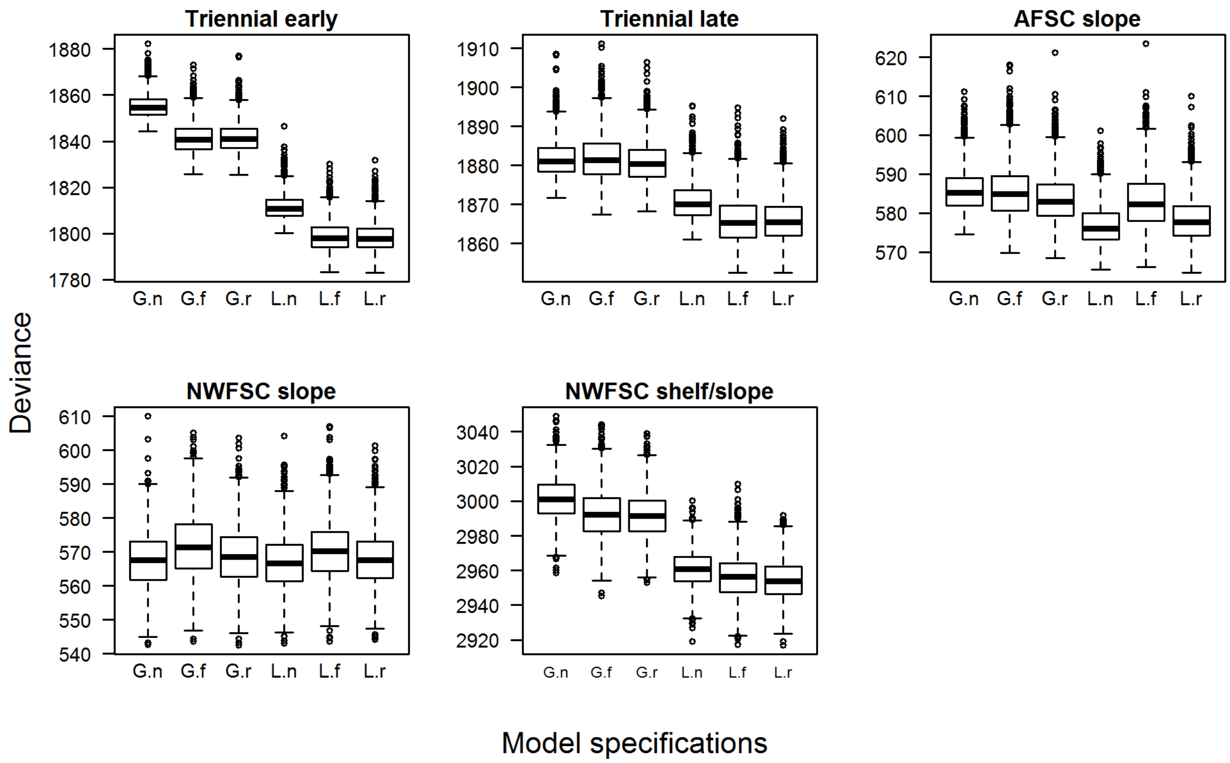


Figure 5: Deviance from six assumptions in the GLMM model for the five surveys. "G" refers to the gamma distribution and "L" refers to the lognormal distribution. No stratum effects, fixed stratum effects, and random stratum effects are notated with "n", "f", "r", respectively.

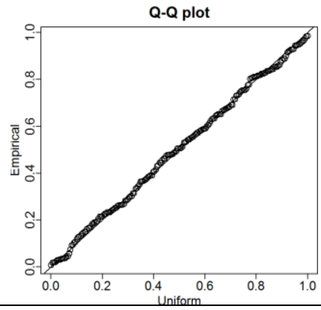
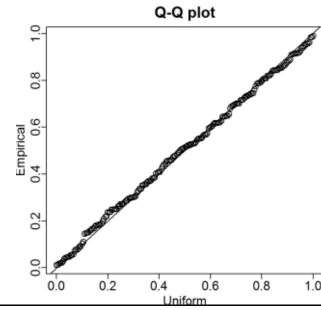
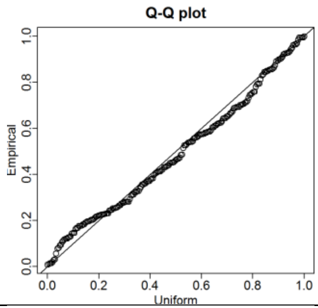
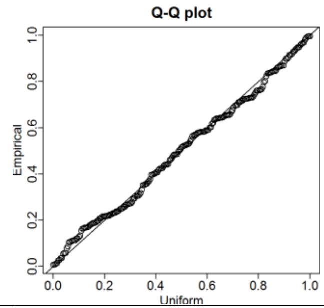
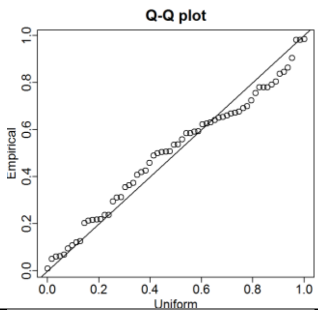
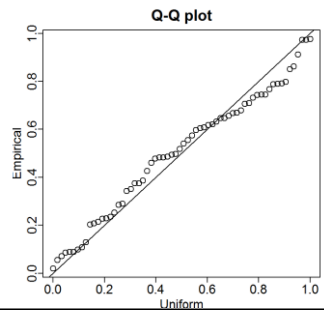
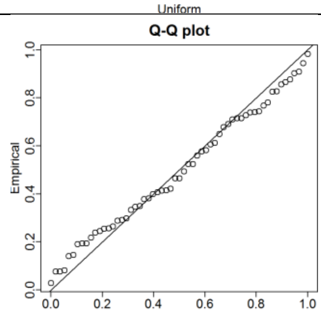
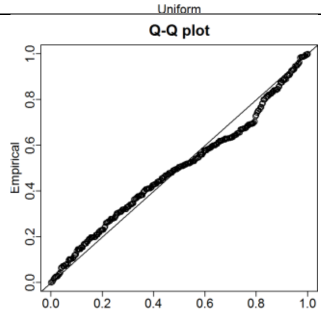
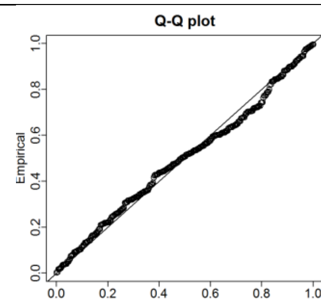
	No ECE mixture distribution	ECE mixture distribution
Triennial Early		
Triennial Late		
AFSC Slope		
NWFSC Slope		Not available
NWFSC shelf/slope		

Figure 6: Q-Q plots for models without an extreme catch event (ECE) mixture distribution (left column) and with an ECE mixture distribution (right column) for the five survey series.

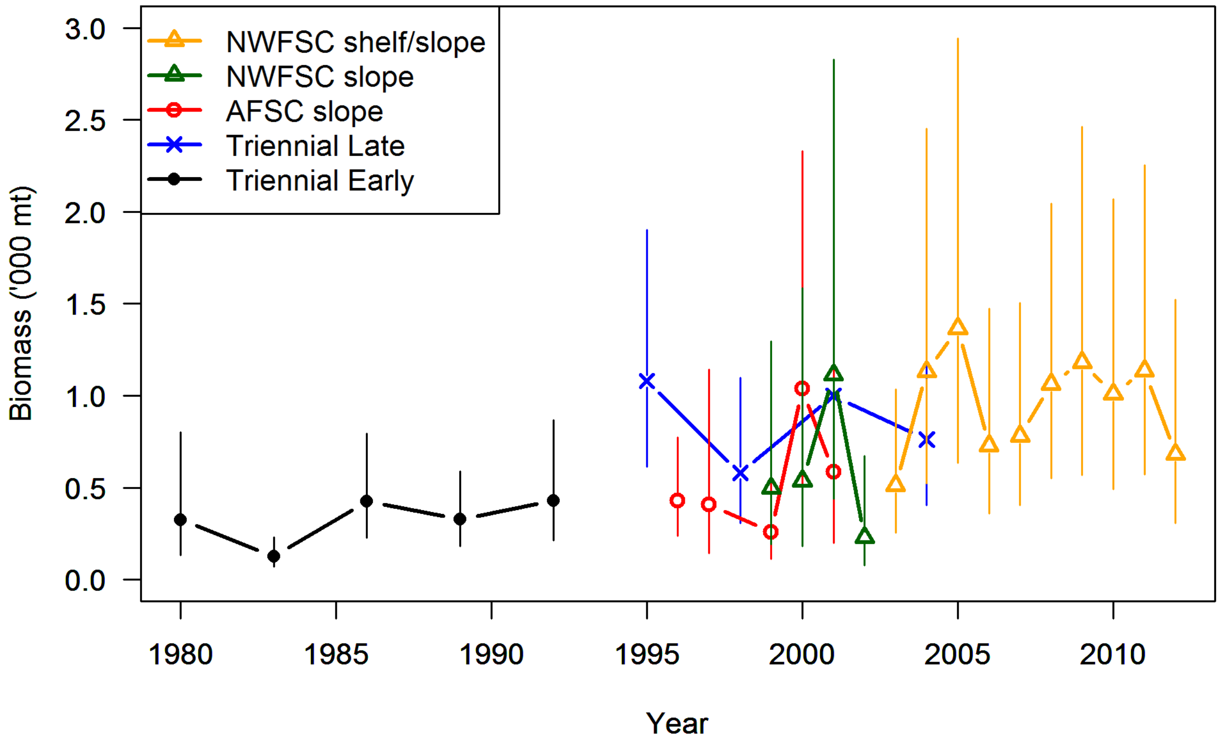


Figure 7: Model-based survey estimates for the four surveys with estimated 95% confidence intervals.

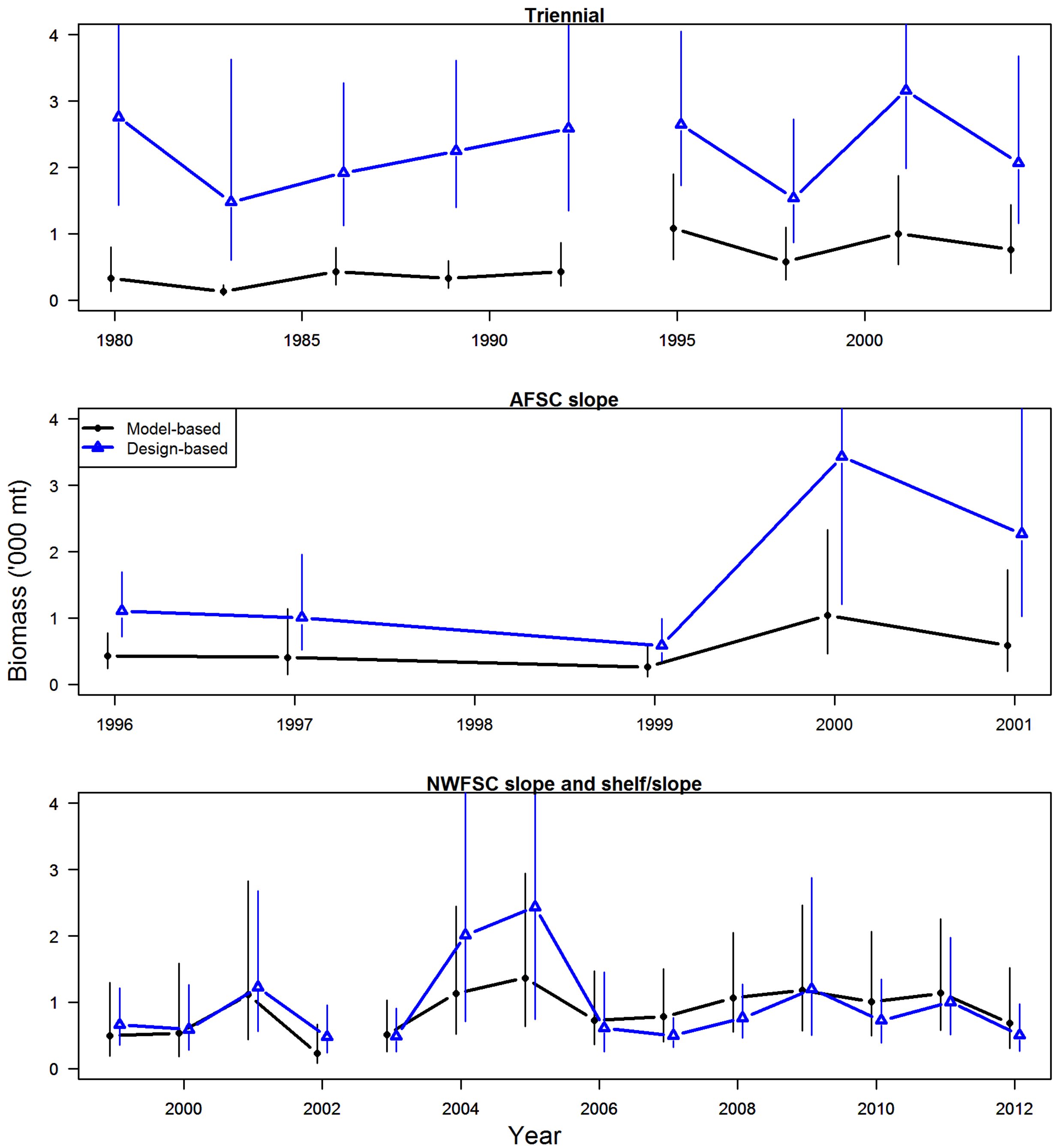


Figure 8: A comparison of the design-based estimates and the model-based estimates for each survey.

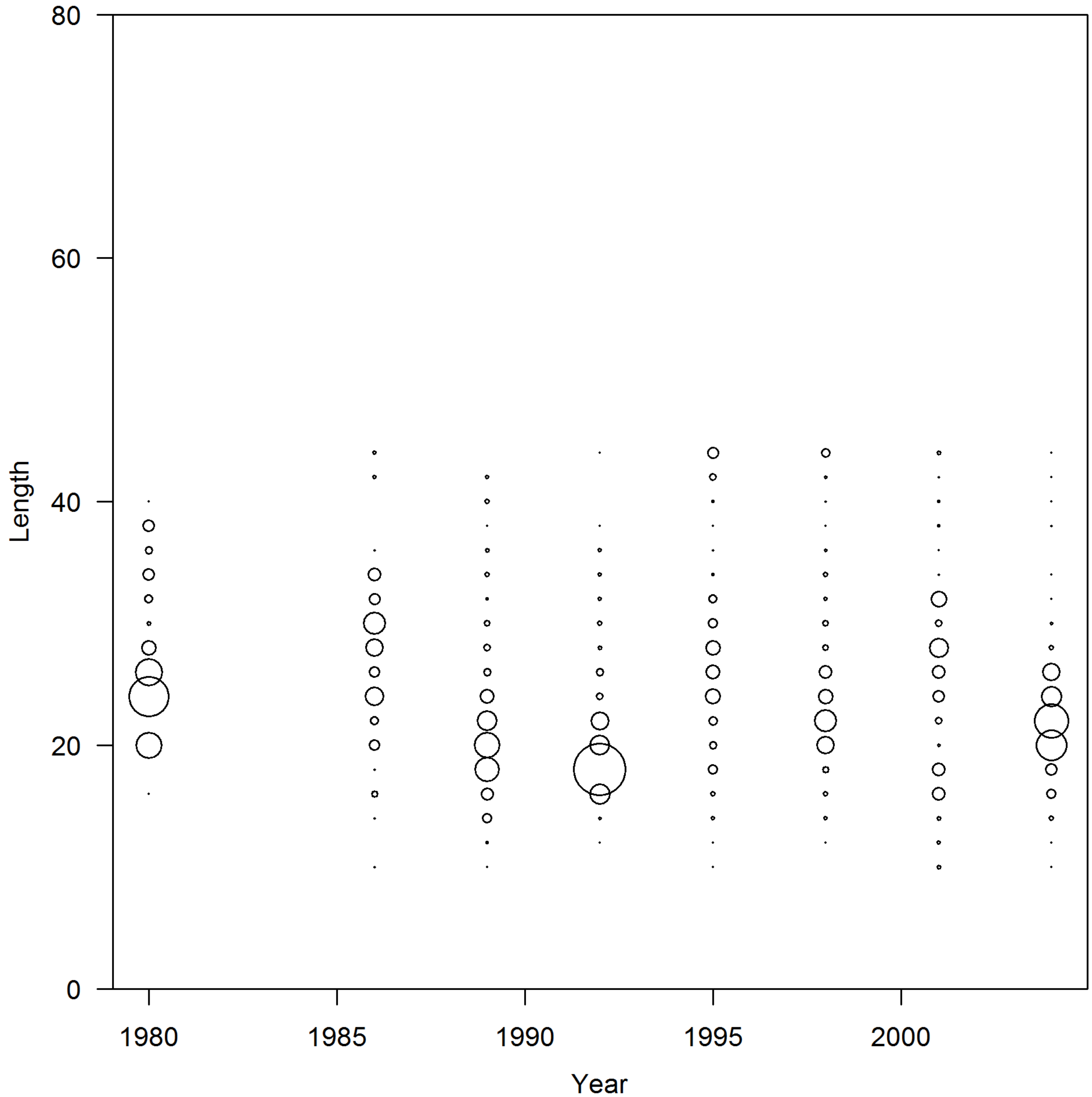


Figure 9: Expanded length compositions for the Triennial survey.

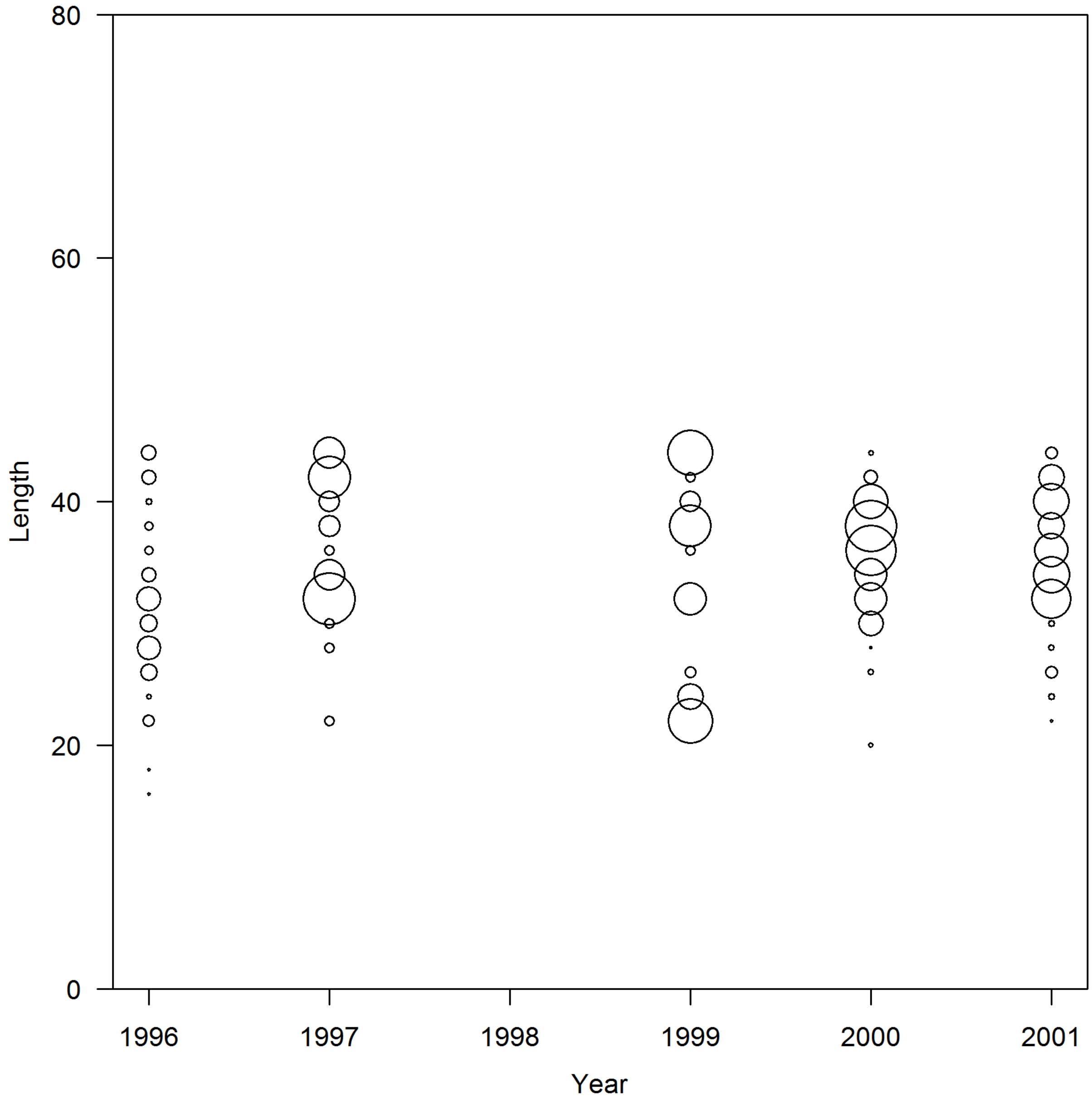


Figure 10: Expanded length compositions for the AFSC slope survey.

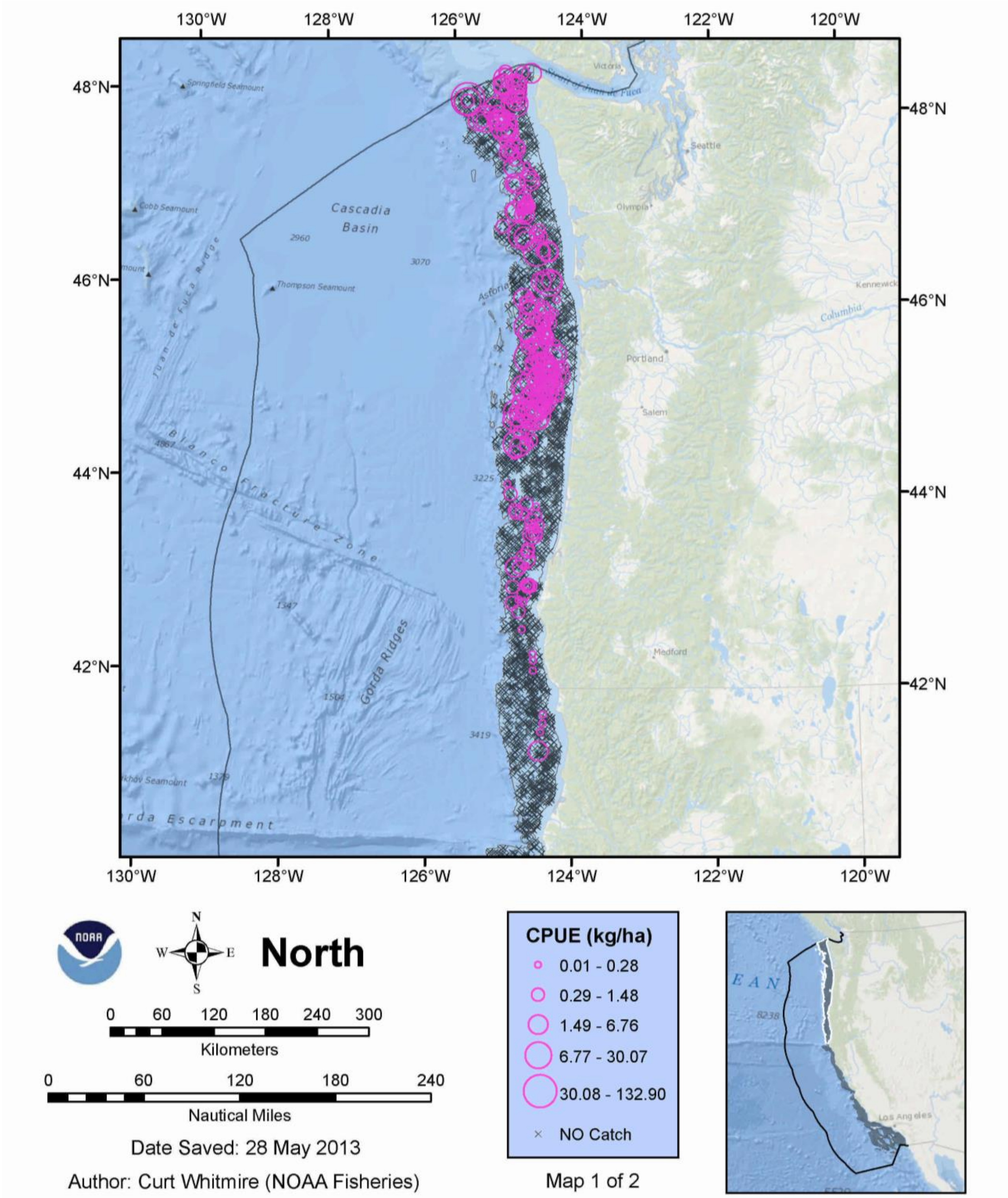


Figure 11: Catch-rates (pink circles) of rougheye rockfish north of 40° 10' N for all years of the NWFSC shelf/slope survey.

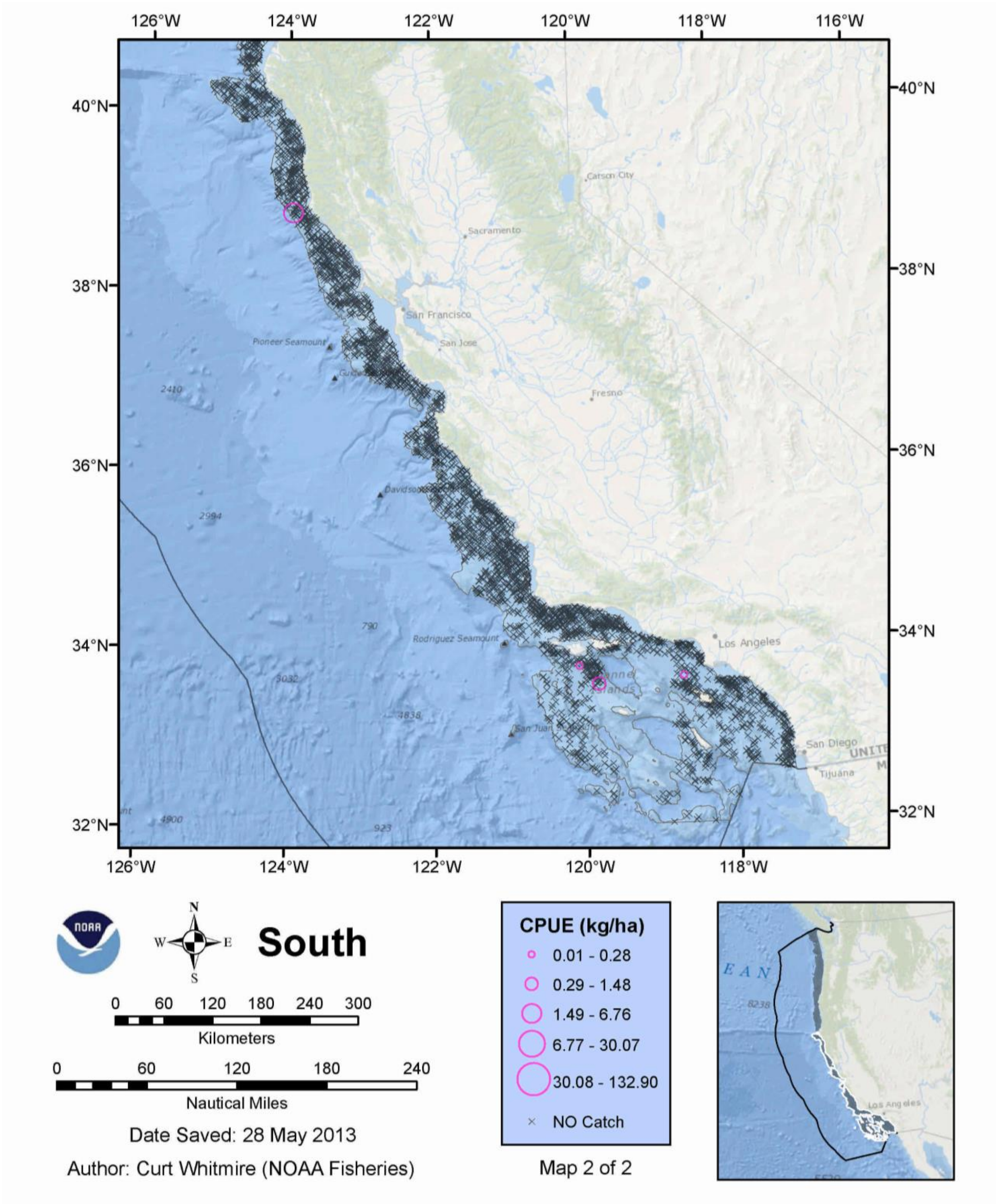
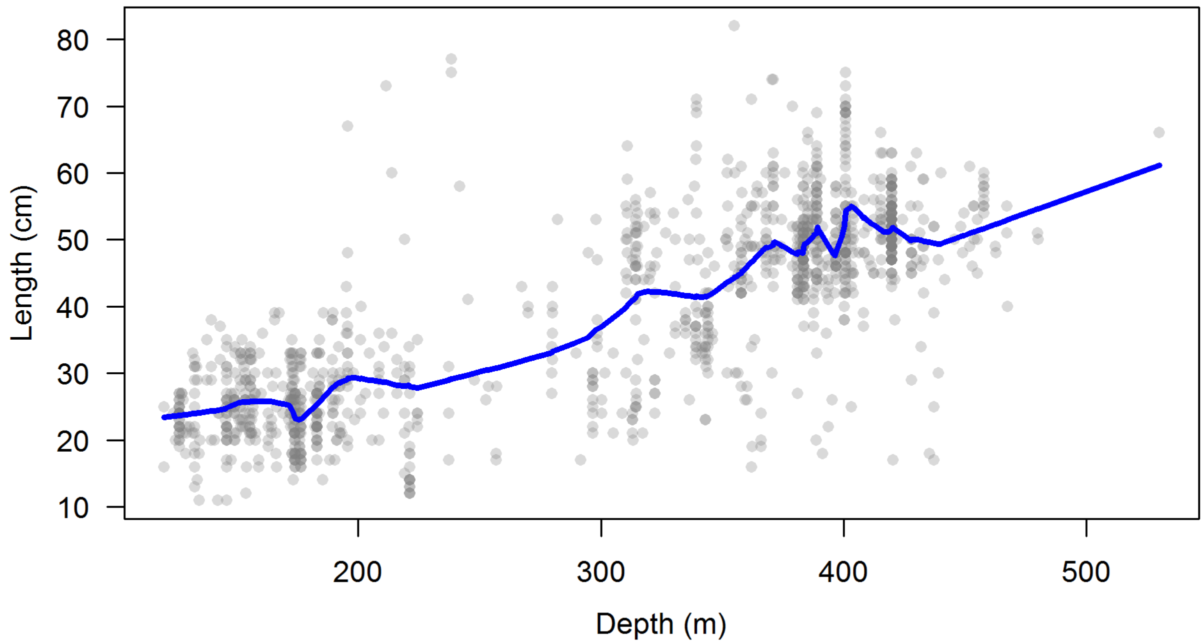


Figure 12: Catch-rates (pink circles) of rougheye rockfish south of 40° 10' N for all years of the NWFSC shelf/slope survey.



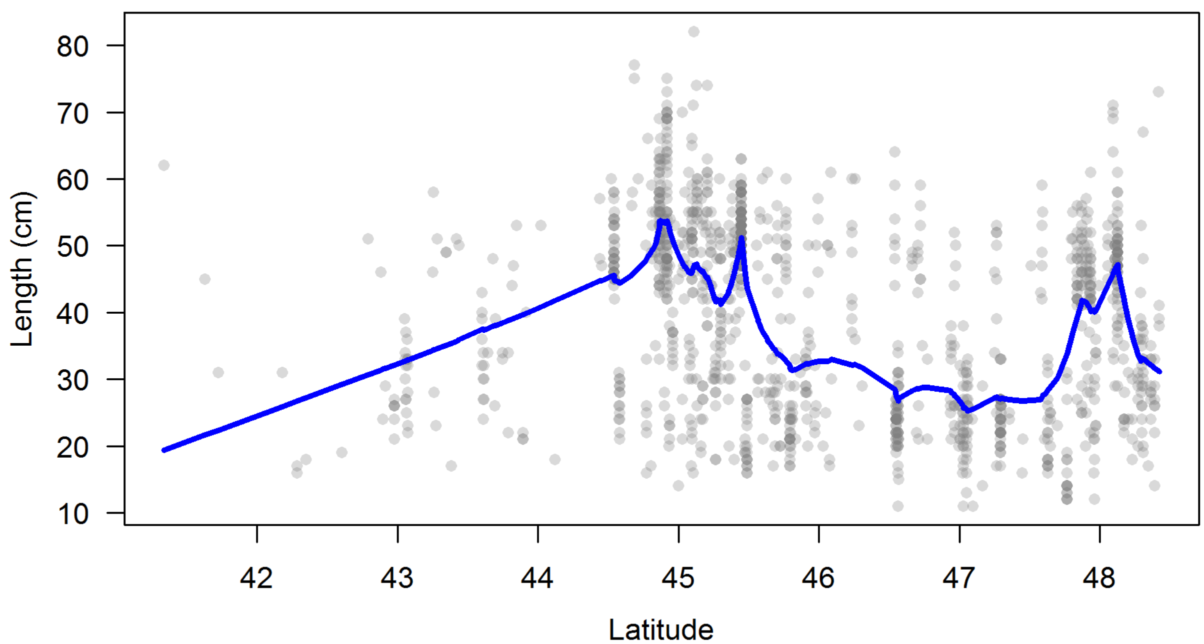


Figure 13: Observed rougheye rockfish lengths (cm) plotted against depth (top) and latitude (bottom). The blue line is a smoothed line through the observations.

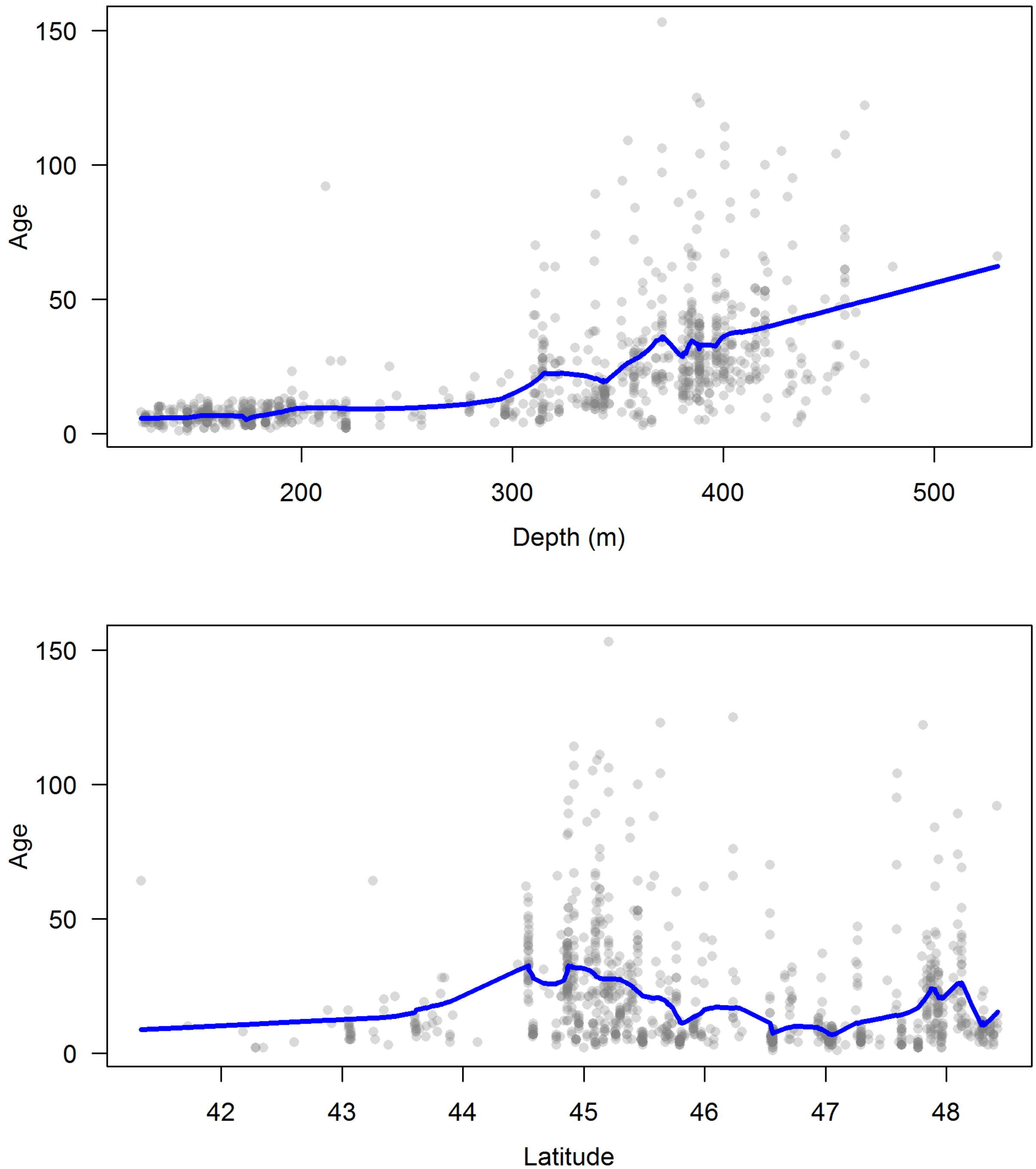


Figure 14: Observed rougheye rockfish ages plotted against depth (top) and latitude (bottom). The blue line is a smoothed line through the observations.

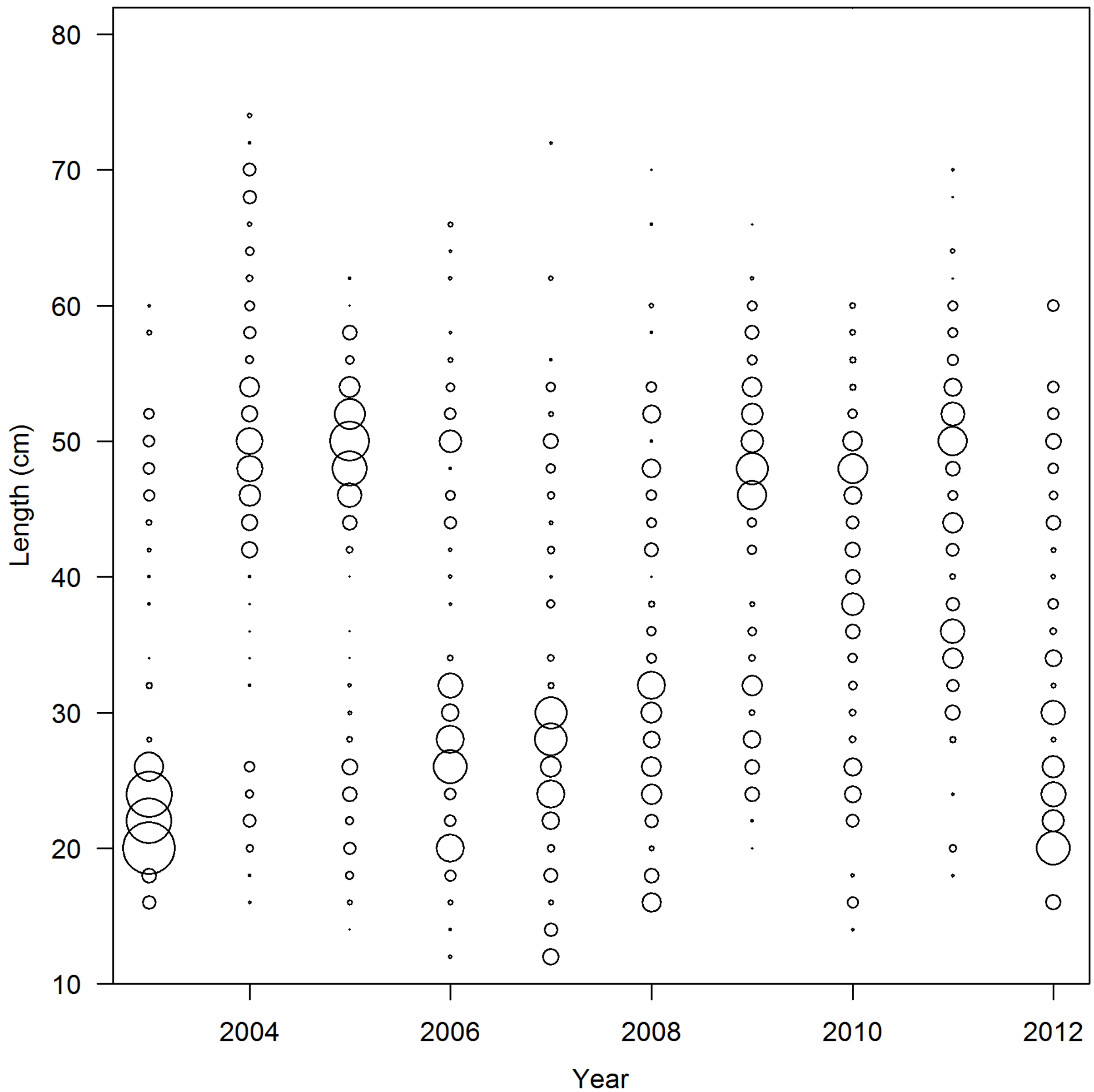


Figure 15: Expanded length compositions for the NWFSC shelf/slope survey.

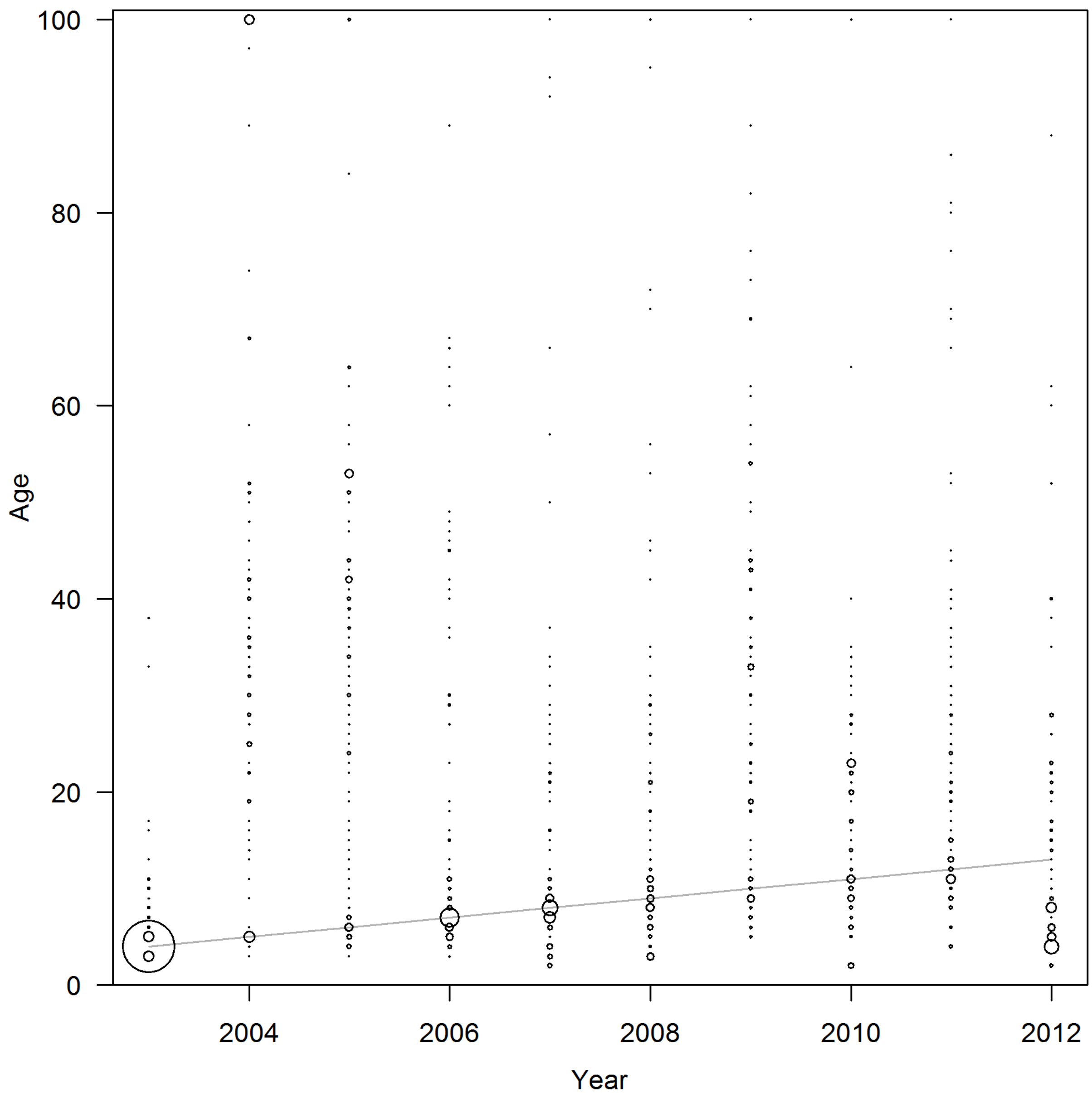


Figure 16: Expanded age compositions from the NWFSC shelf/slope survey. The grey line follows the 1999 cohort, which was estimated to be a strong cohort for many different species of rockfish.

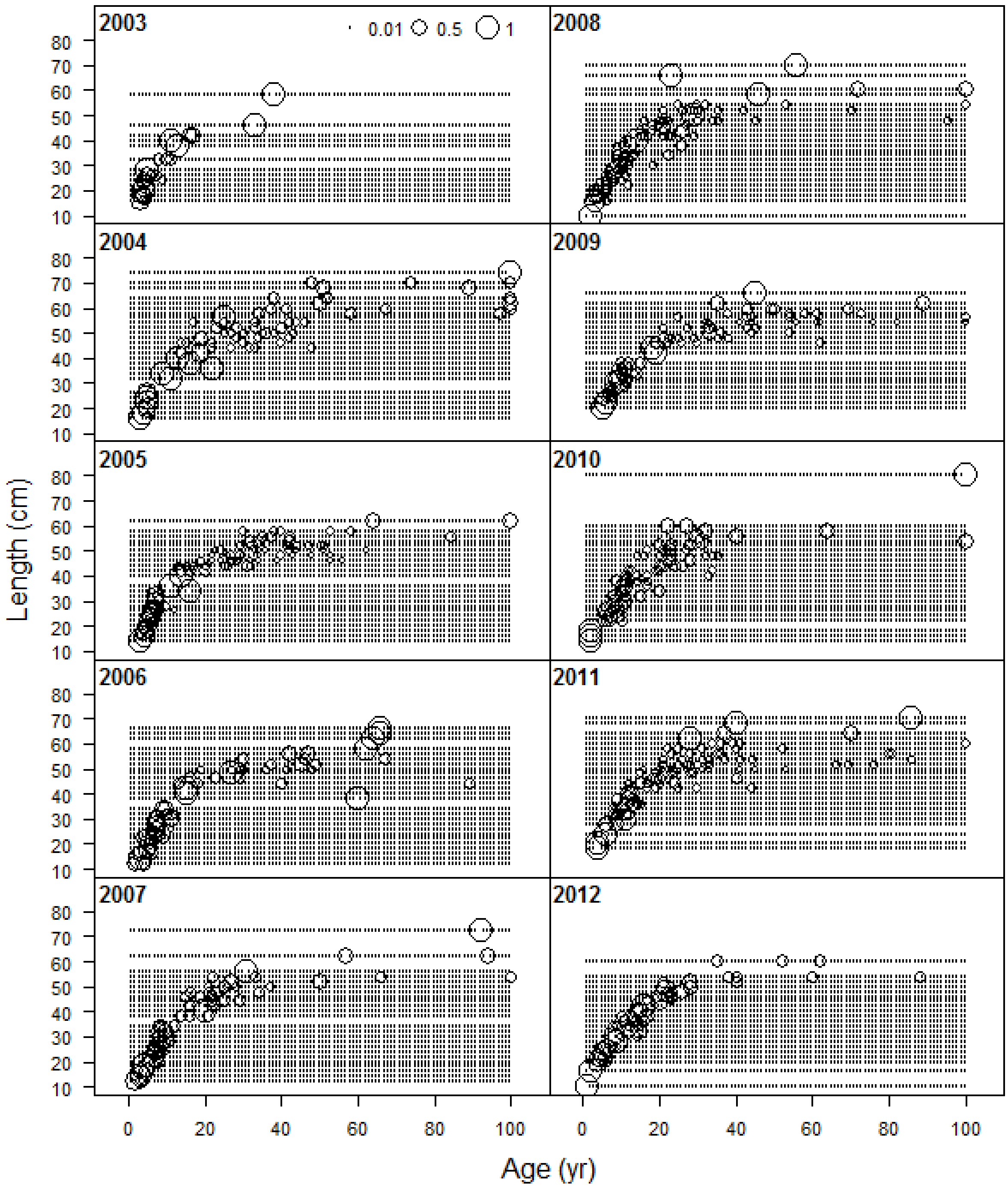


Figure 17: Conditional age-at-length from NWFSC shelf/slope observations.

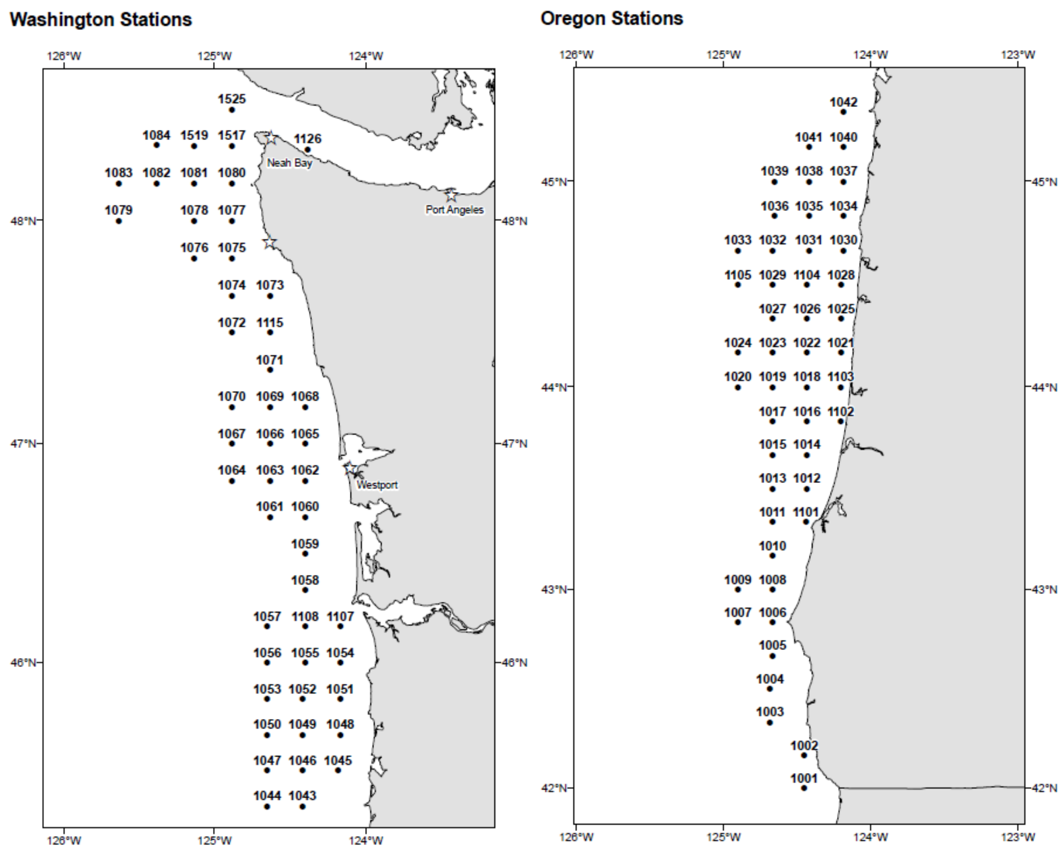


Figure 18: Station locations for the International Pacific Halibut Commission longline survey in Washington (left) and Oregon (right).

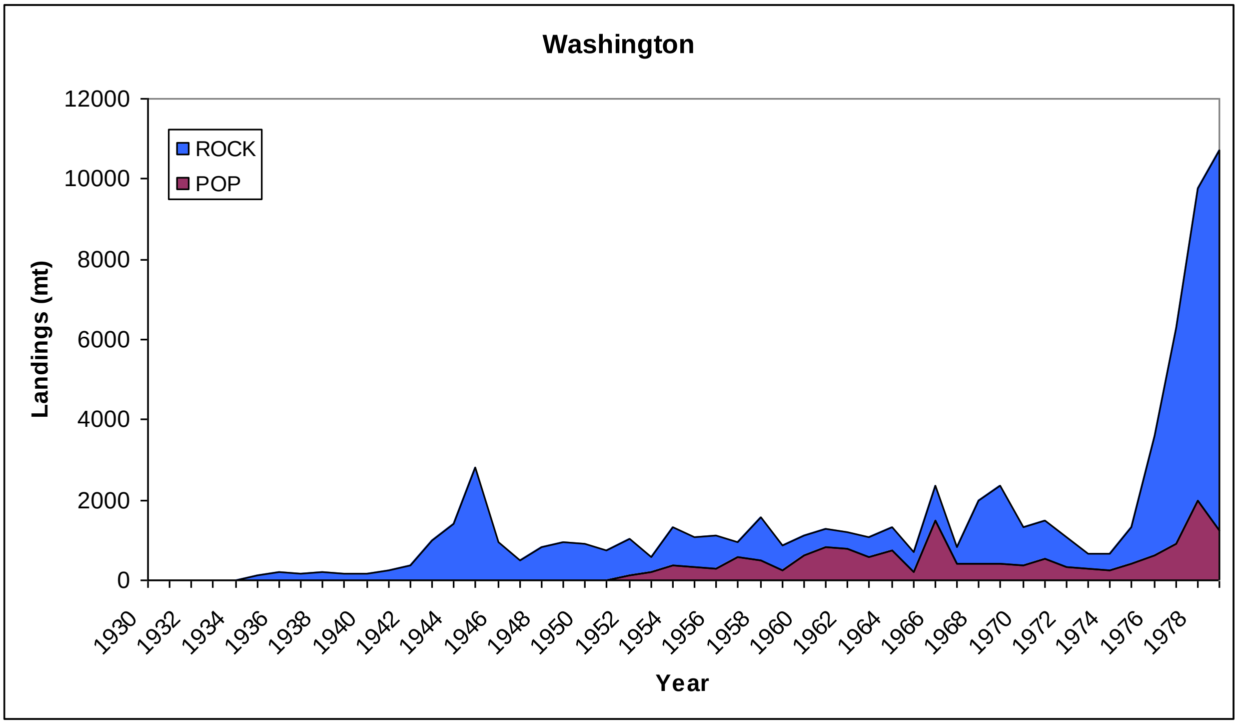


Figure 19: Trawl landings in Washington of each market category used in the historical catch reconstruction. Different proportions were applied to each market category to estimate the landings of rougheye rockfish.

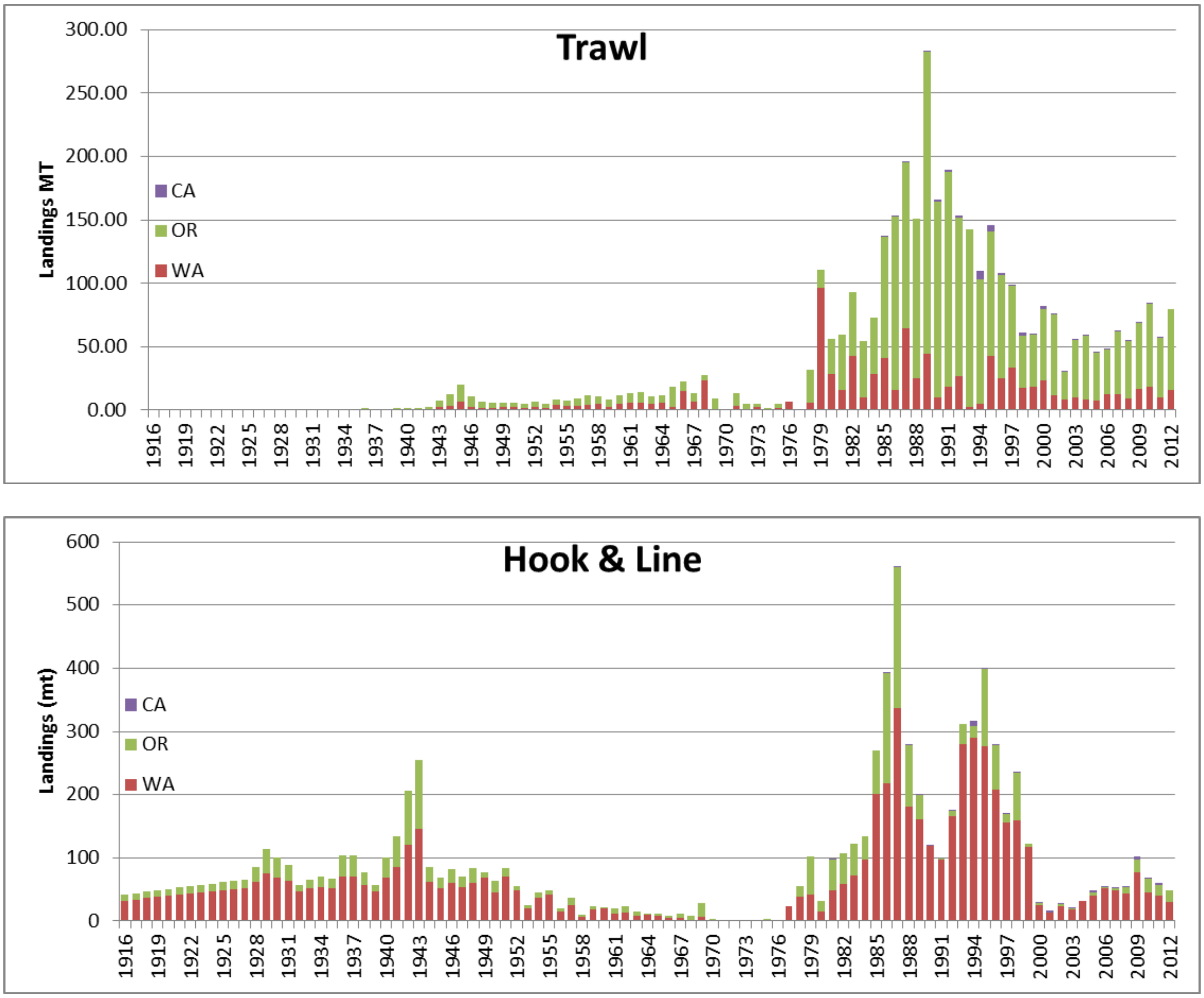


Figure 20: Trawl landings (top) and hook & line landings (bottom) by state of rougheye rockfish.

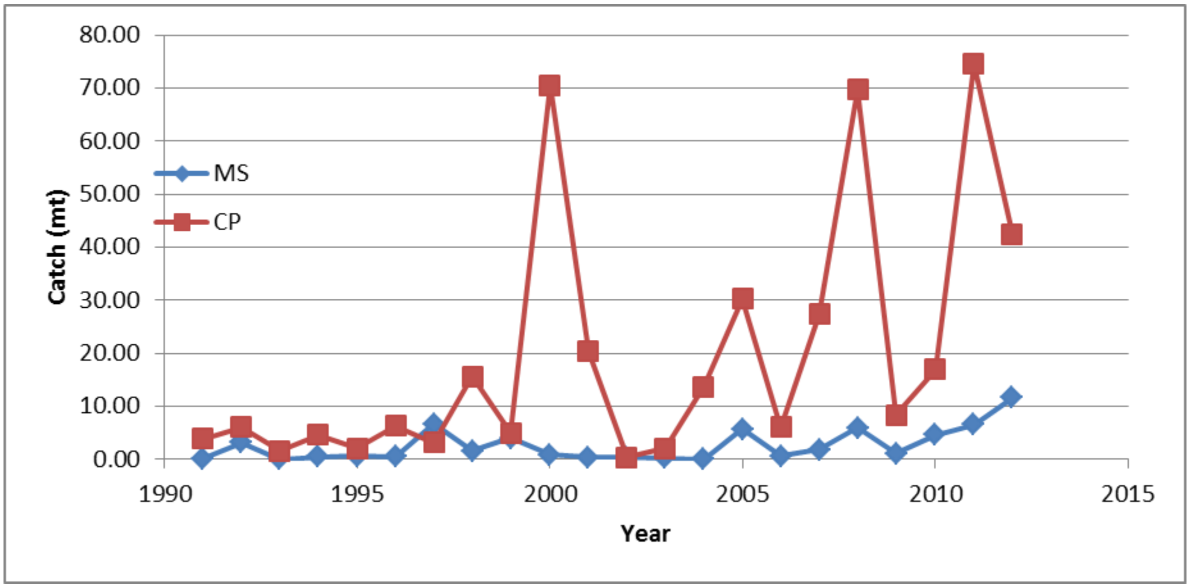


Figure 21: Catches of rougheye rockfish for the mothership (MS) and catcher-processor (CP) fleets.

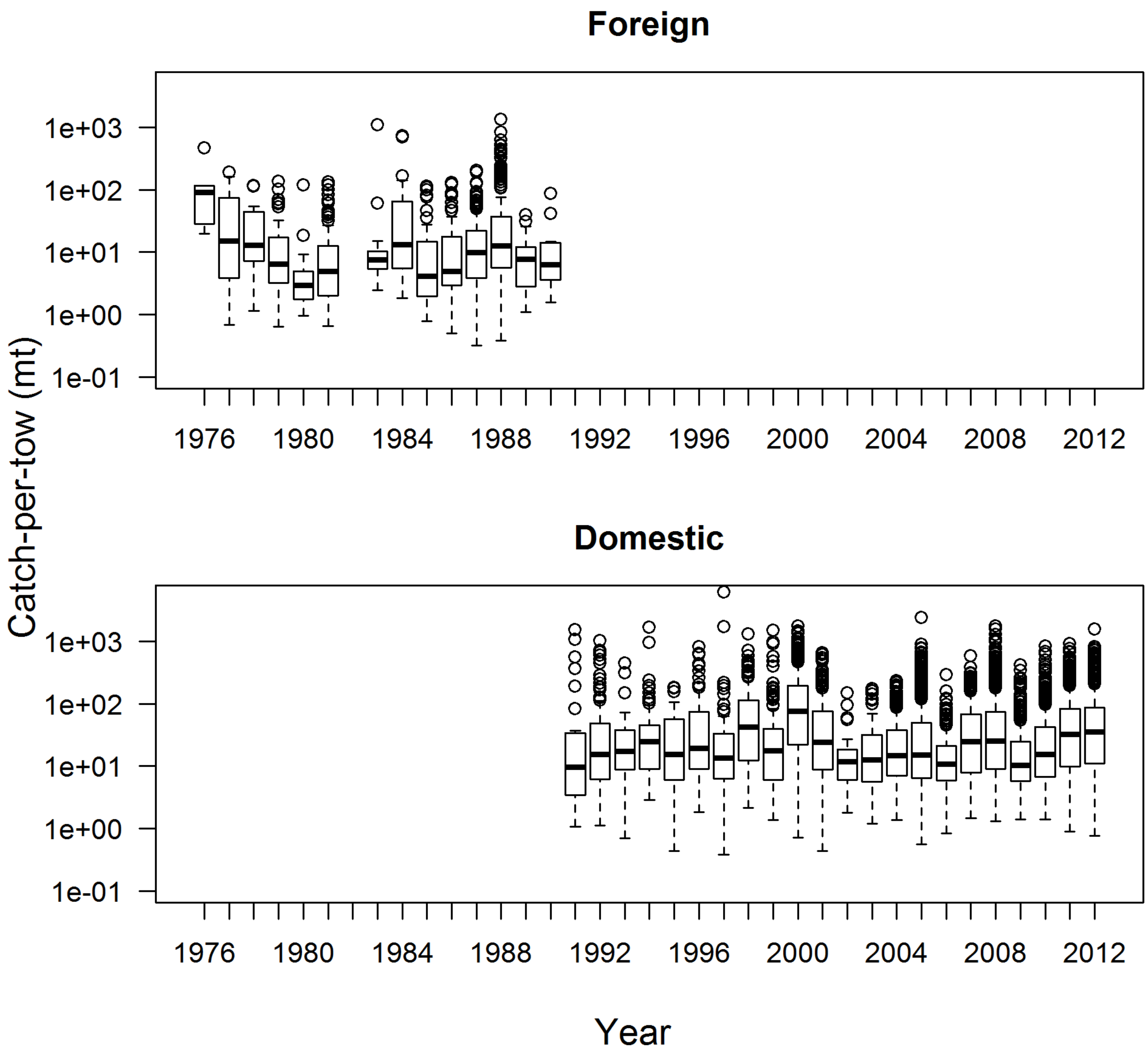


Figure 22: Catch-per-tow in metric tons for the at-sea foreign fleet (top) and at-sea domestic fleet (bottom).

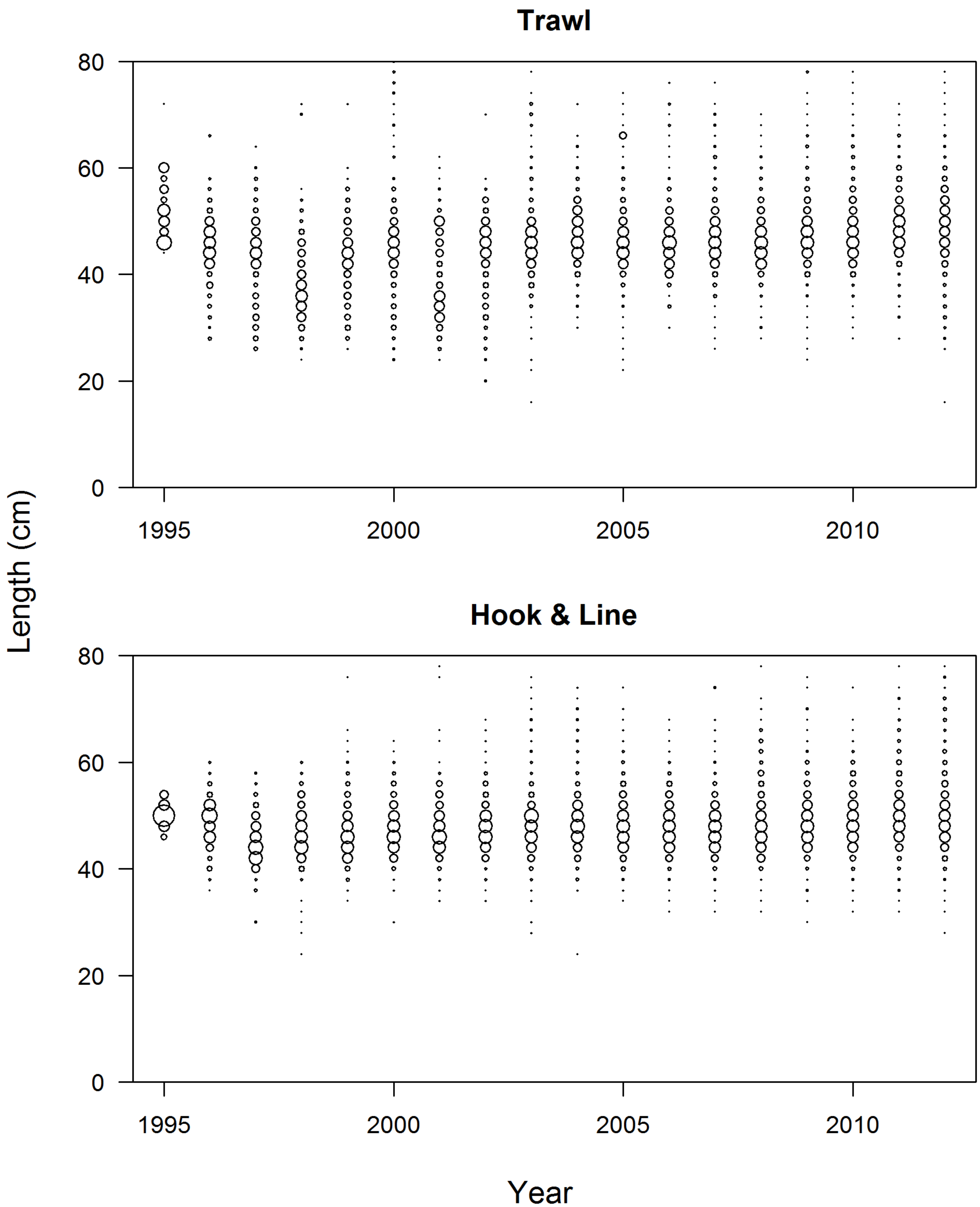


Figure 23: Expanded length compositions for trawl and hook & line fisheries. The area of the circles are proportional to the proportion-at-length, and are consistent for the two fleets.

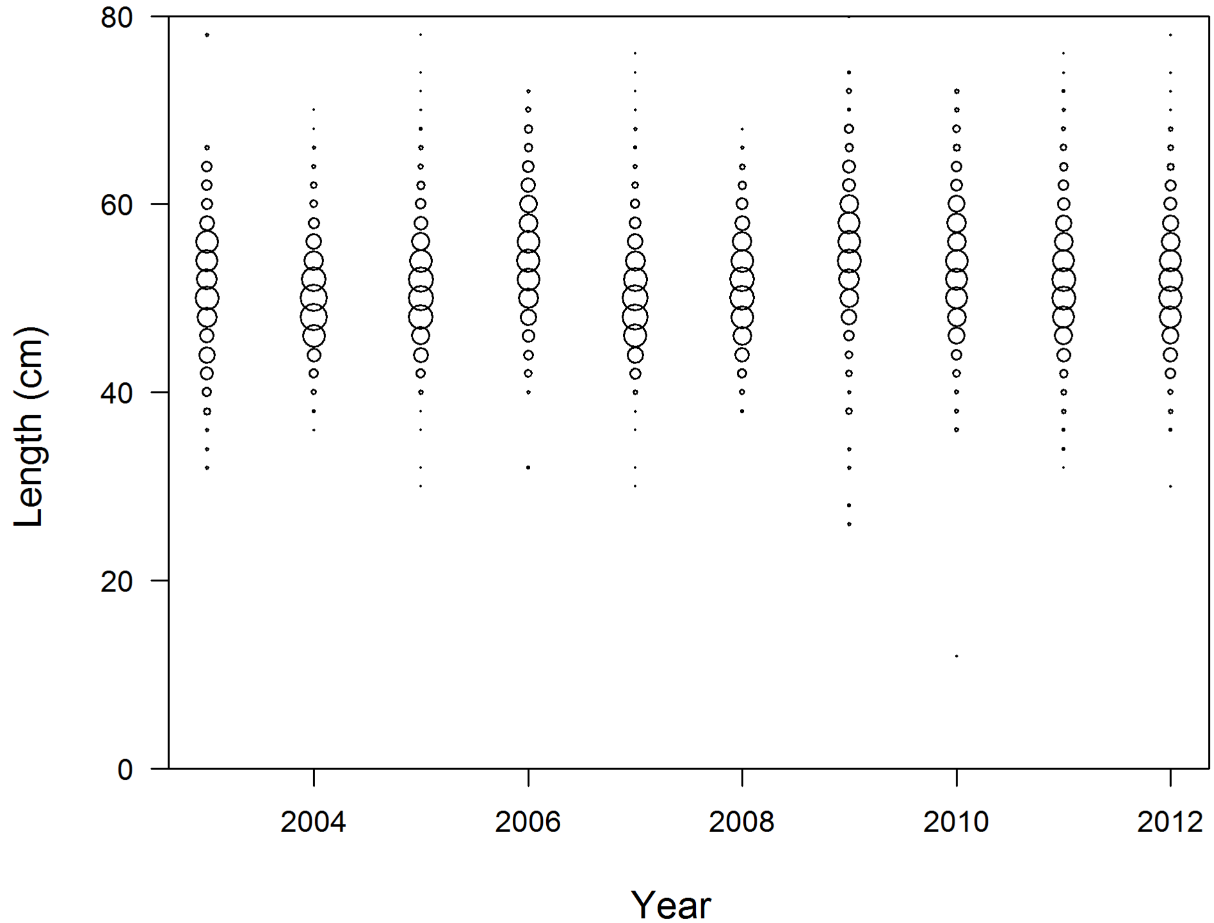


Figure 24: Expanded length compositions for Pacific whiting at-sea fishery. The area of the circles is proportional to the proportion-at-length.

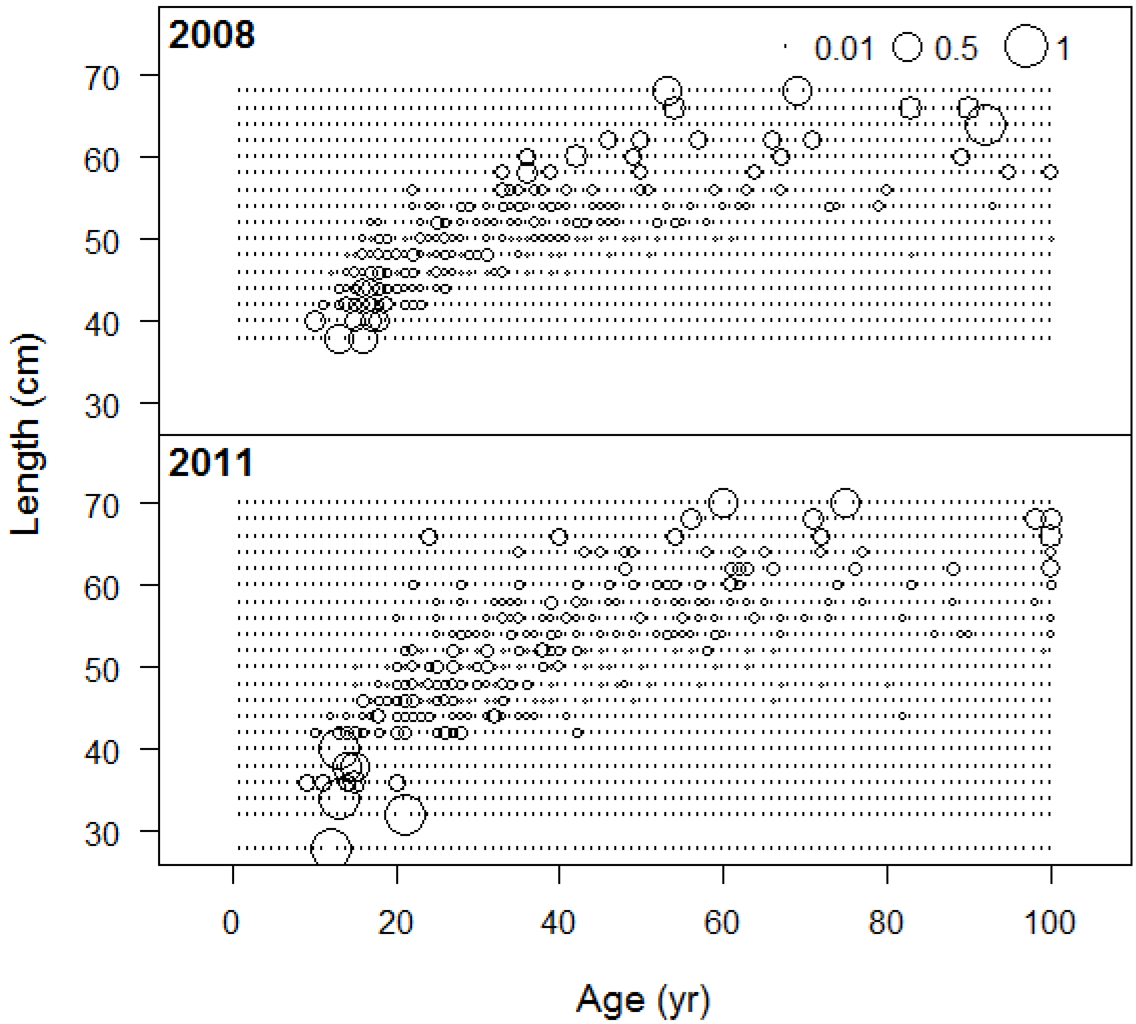


Figure 25: Conditional age-at-length from Oregon trawl fishery observations.

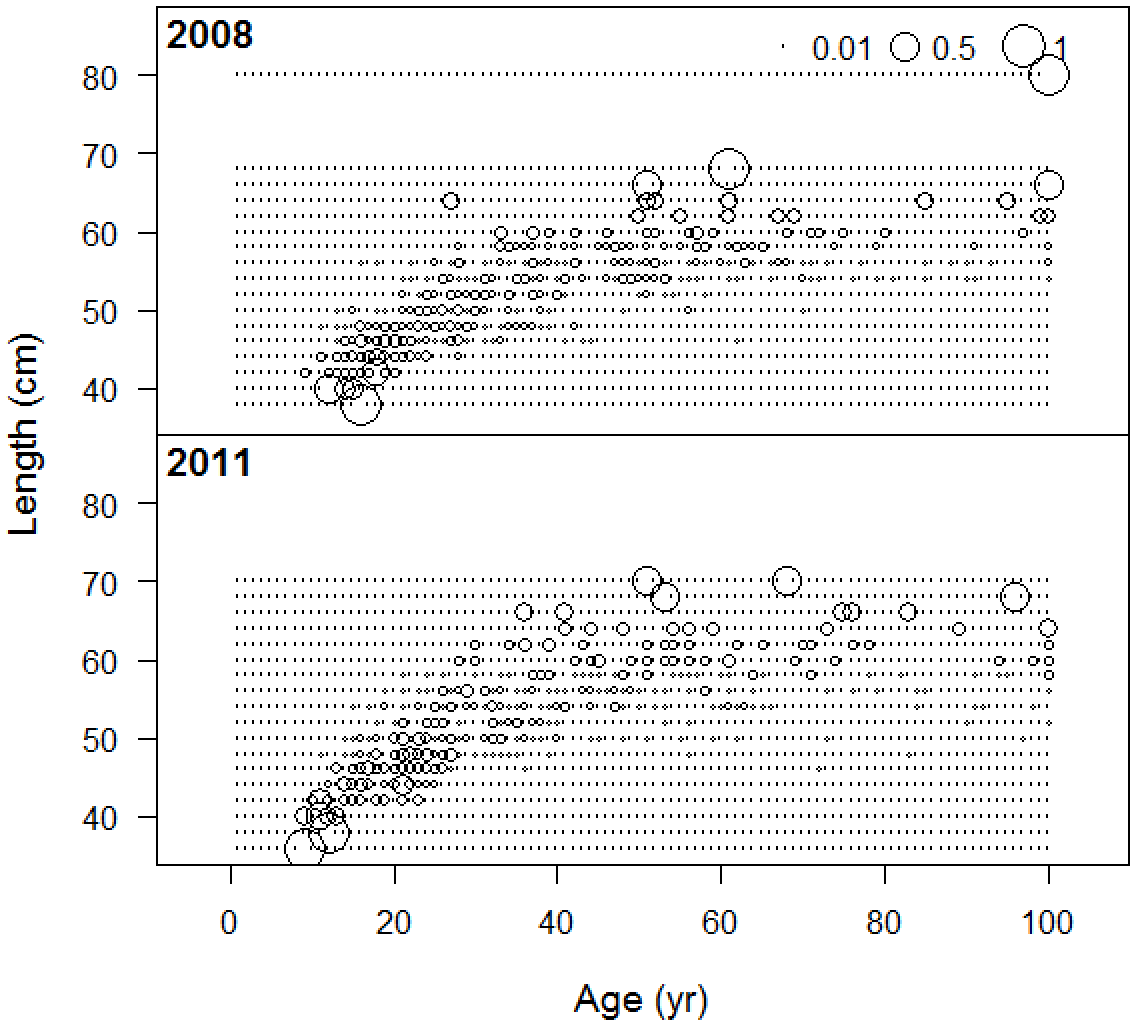


Figure 26: Conditional age-at-length from Pacific whiting at-sea fishery observations.

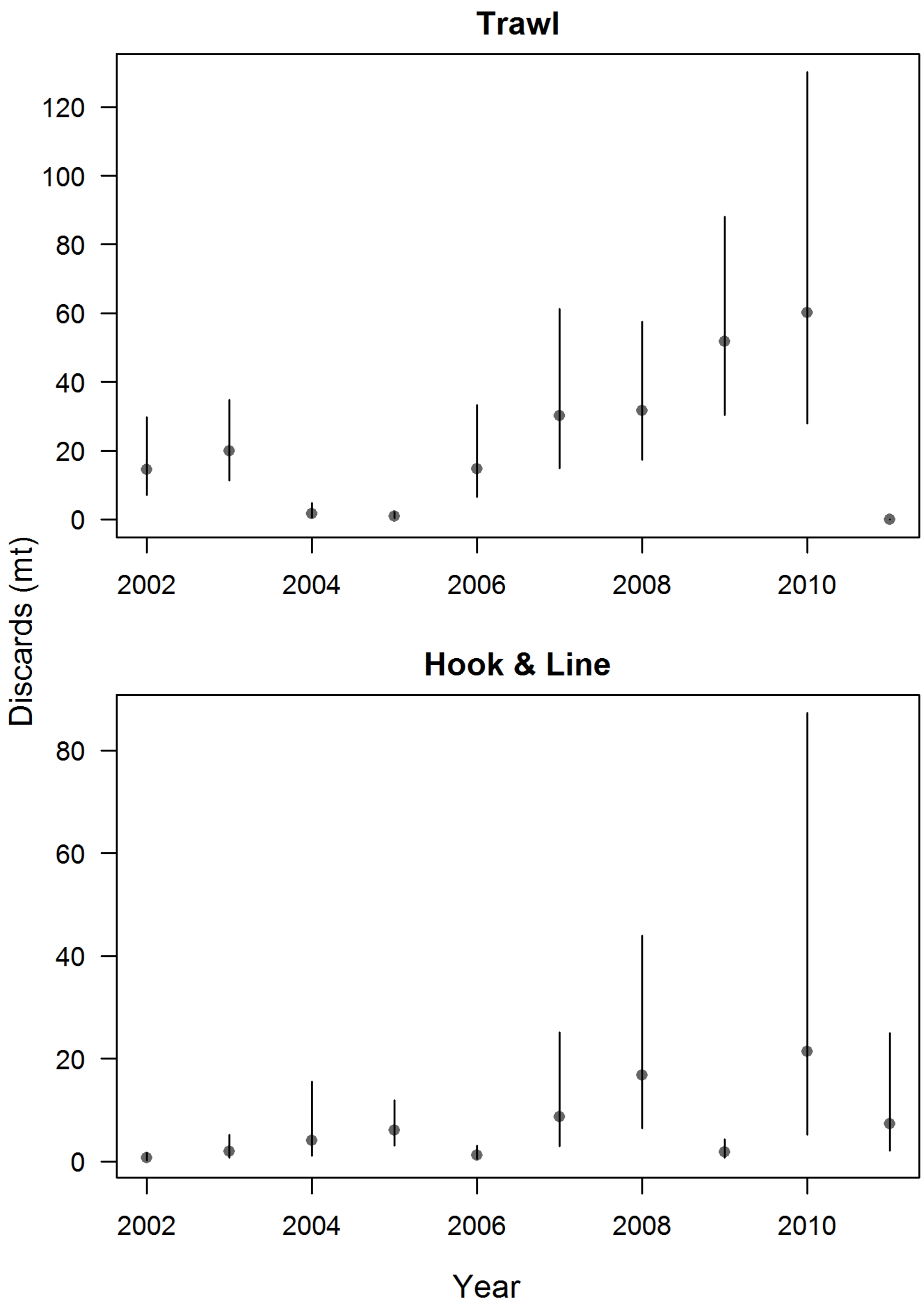


Figure 27: Total discards (mt) from 2002 to 2011 for the trawl and hook & line fleets. Vertical lines show 95% confidence intervals determined by bootstrapping vessels in each year and fleet.

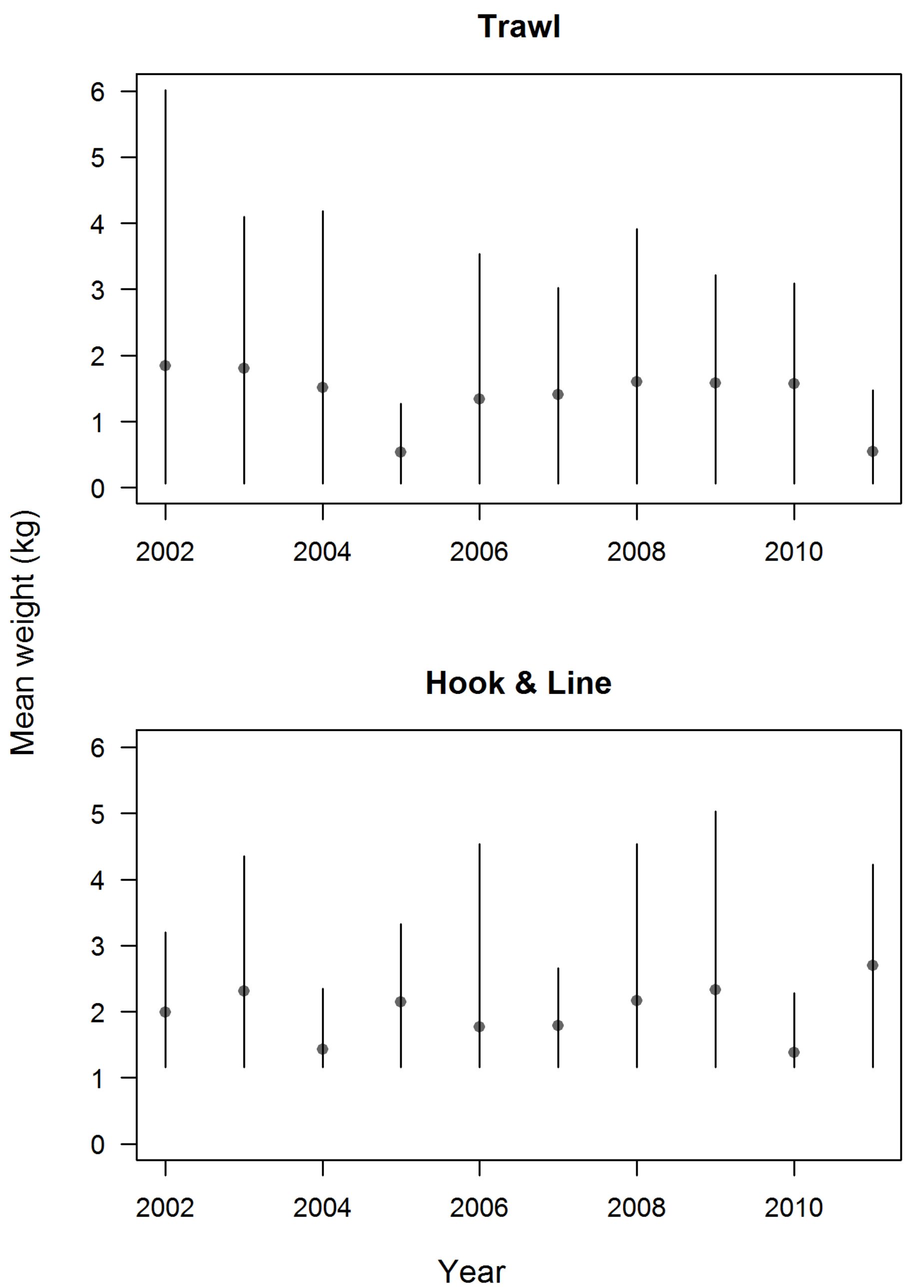


Figure 28: Mean weights of discards for 2002–2011 as determined by the WCGOP. 95% confidence intervals are determined from variability between observations.

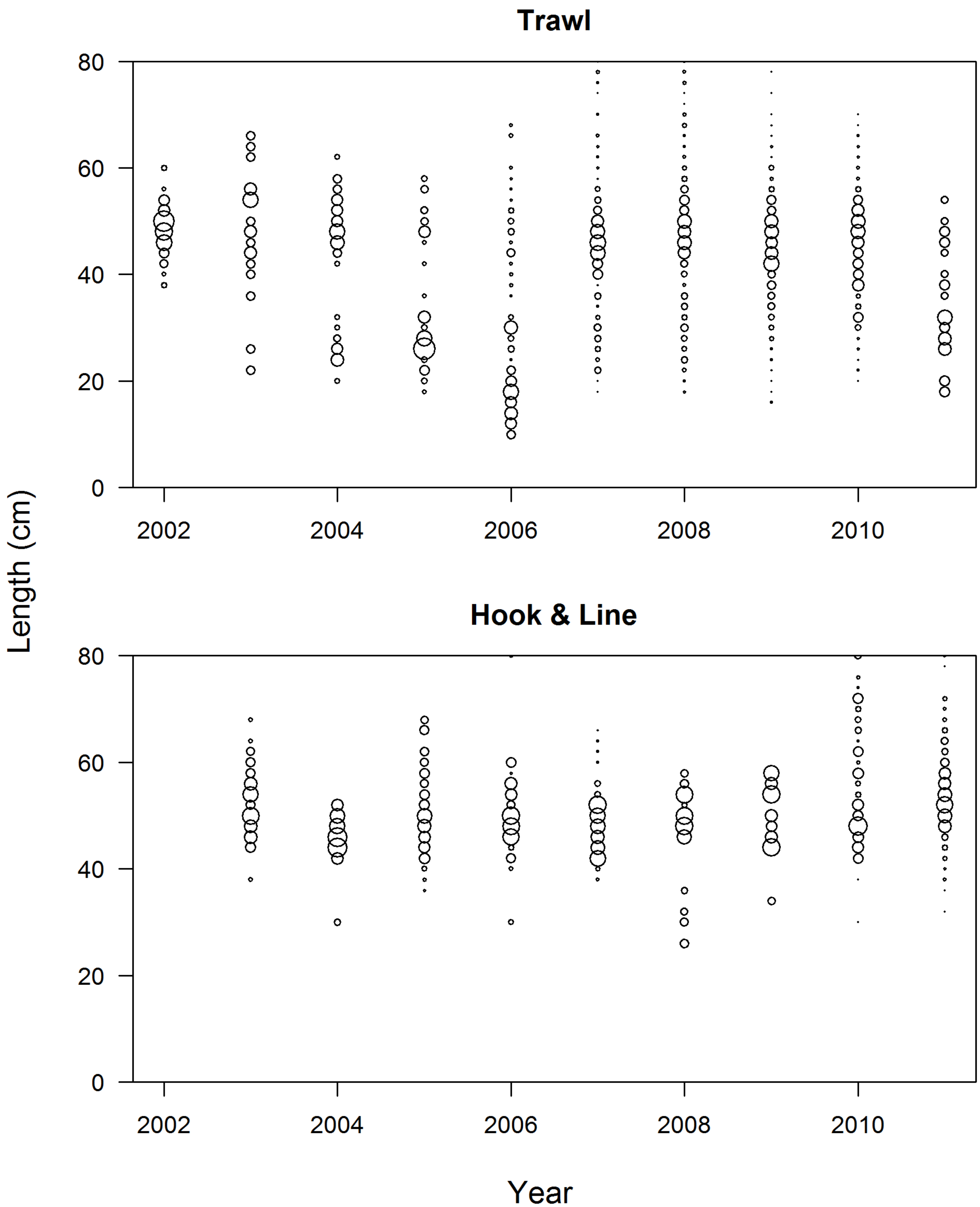


Figure 29: Length compositions of the discards for the trawl and hook & line fleets.

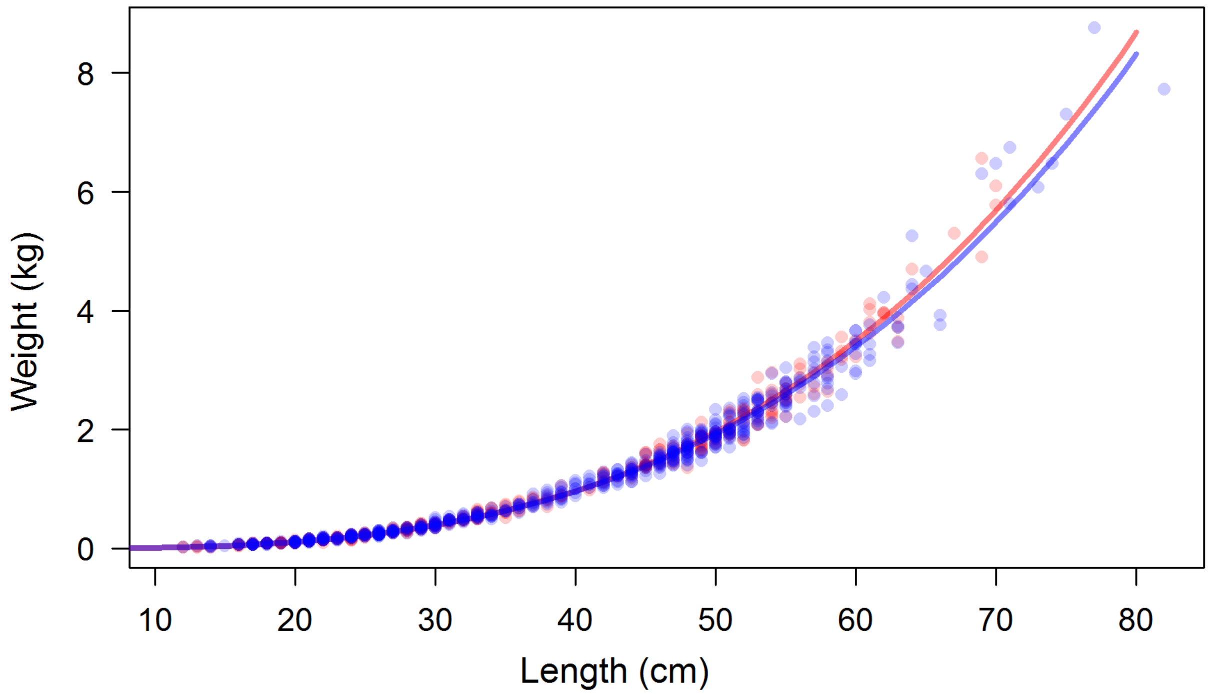


Figure 30: Weight-at-length observations for females (red dots) and males (blue dots). Fitted lines to the sex specific observations from regression analysis are shown in red (females) and blue (males).

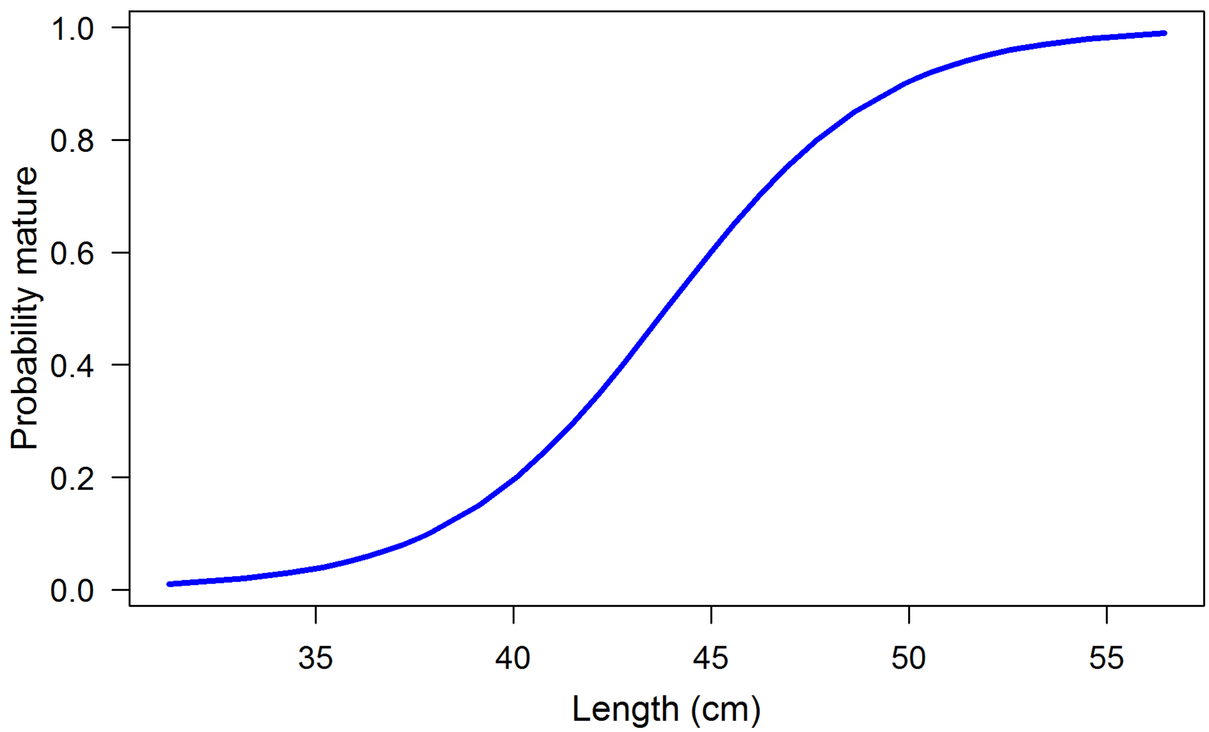


Figure 31: Maturity at length estimated from (McDermott 1994) using all samples from Oregon to Alaska.

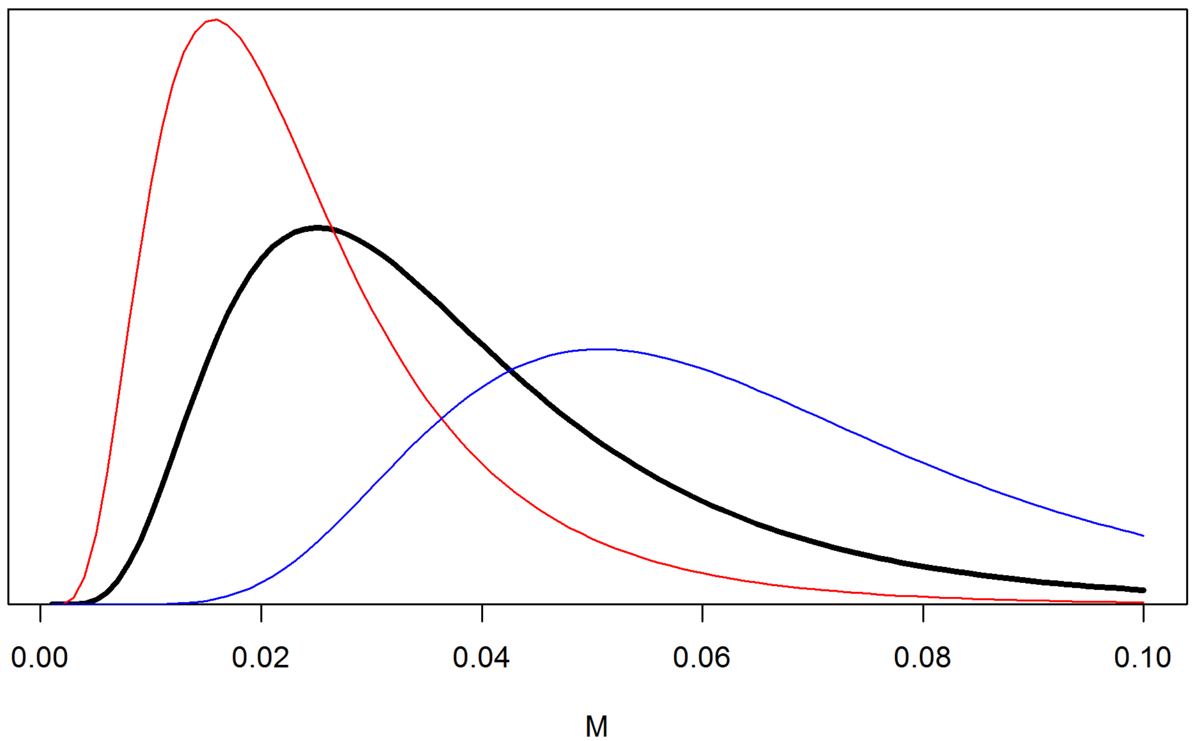


Figure 32: Prior distributions for natural mortality (*M*). The prior used in the base model is shown by the thick black line.

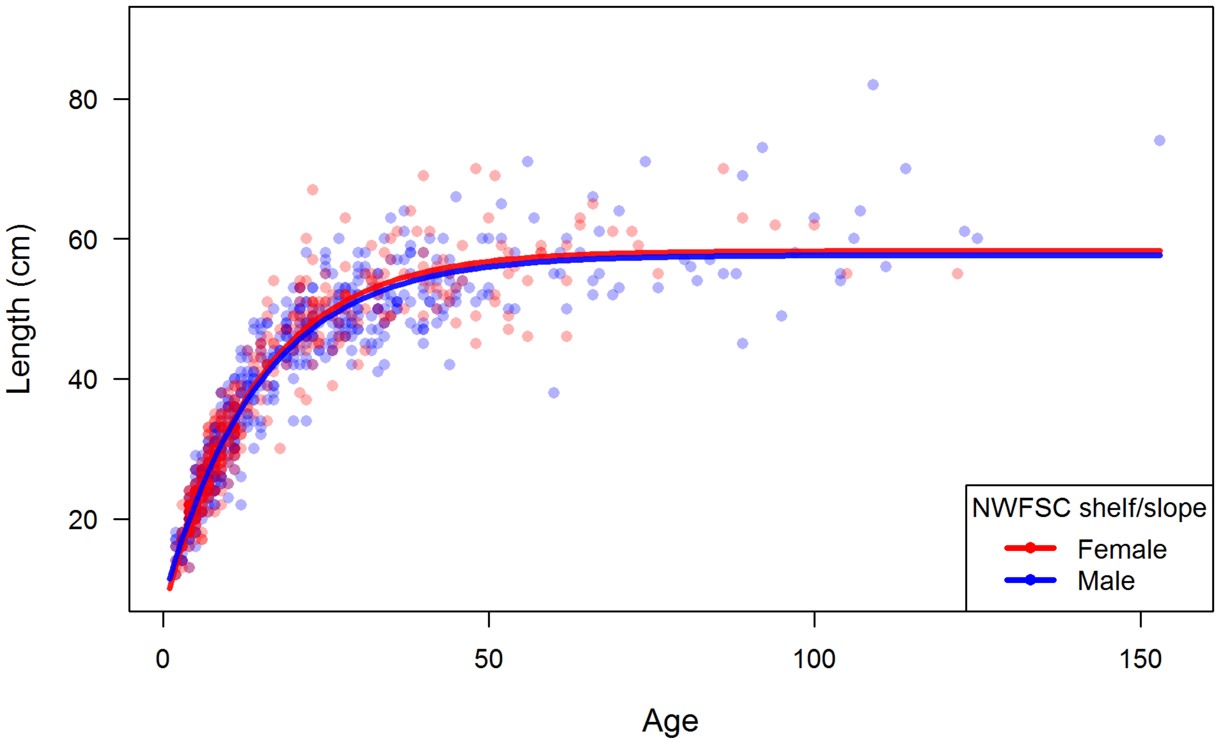


Figure 33: Length-at-age observations (points) and predicted length-at-age von Betalanffy curves for female (red) and male (blue) rougheye rockfish collected from the NWFSC shelf/slope survey.

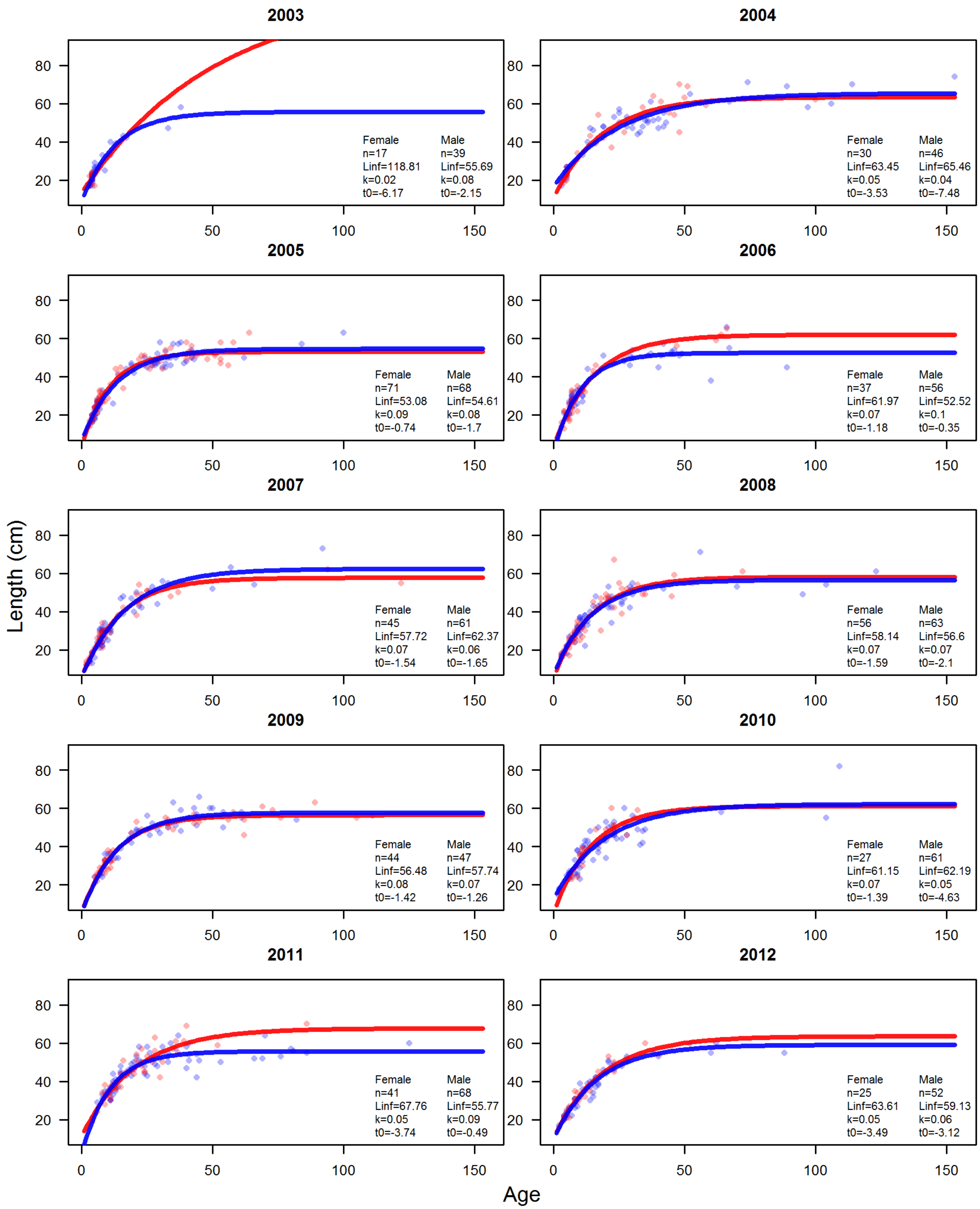


Figure 34: Length-at-age observations (points) and predicted length-at-age von Betalanffy curves for female (red) and male (blue) rougheye rockfish by each year collected from the NWFSC shelf/slope survey.

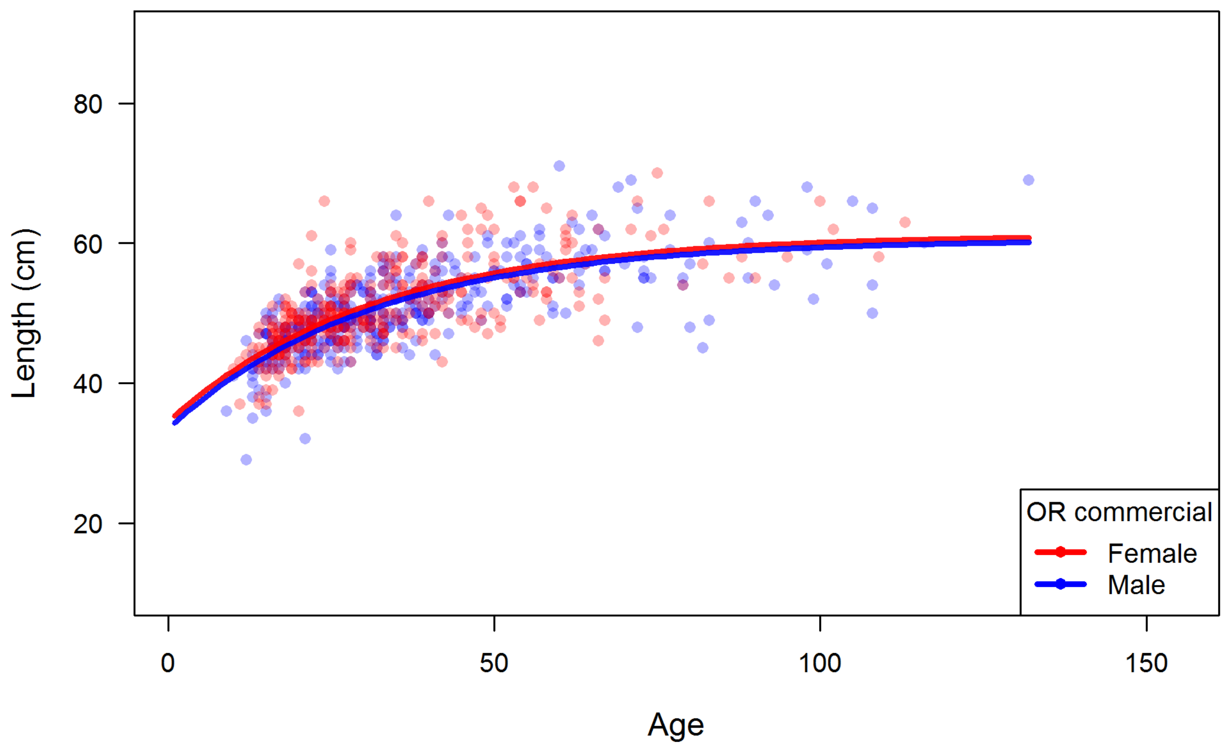


Figure 35: Length-at-age observations (points) and predicted length-at-age von Betalanffy curves for female (red) and male (blue) rougheye rockfish collected from Oregon port samples in 2008 and 2011.

Figure 36: Length-at-age observations (points) and predicted length-at-age von Betalanffy curves for female (red) and male (blue) rougheye rockfish by each year collected from Oregon port samples in 2008 and 2011.

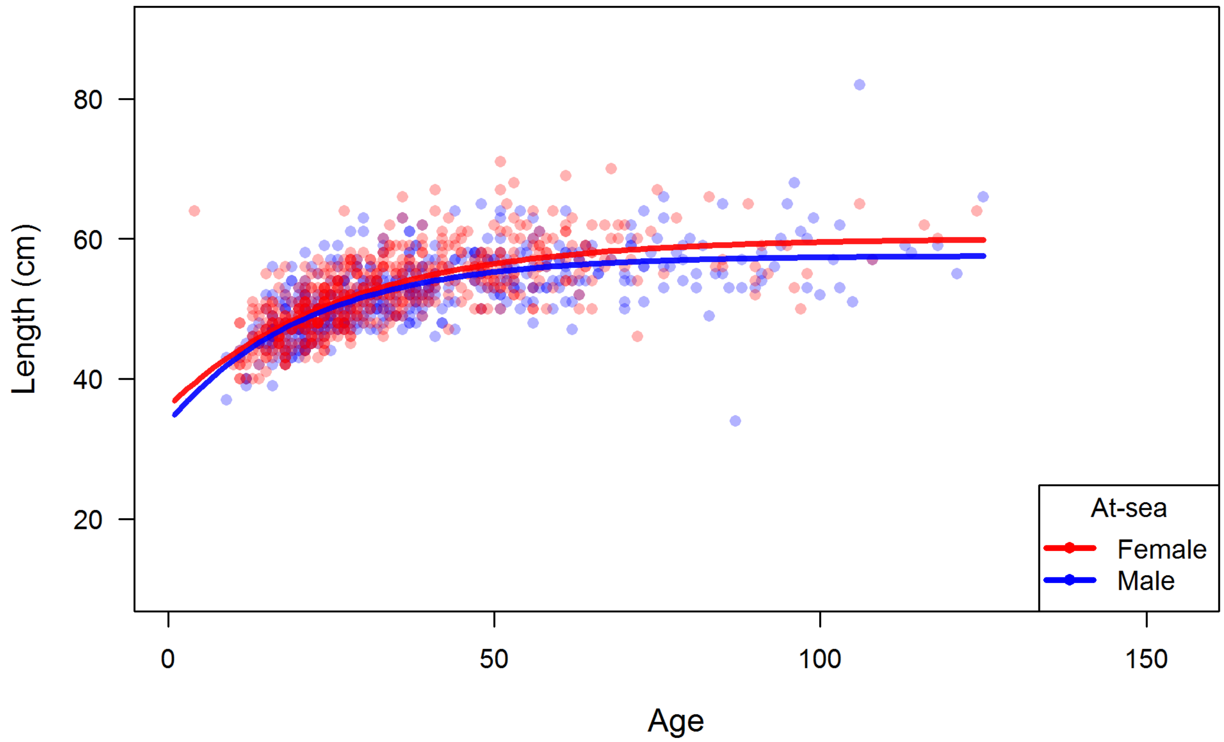


Figure 37: Length-at-age observations (points) and predicted length-at-age von Betalanffy curves for female (red) and male (blue) rougheye rockfish collected from Pacific hake at-sea samples in 2008 and 2011.

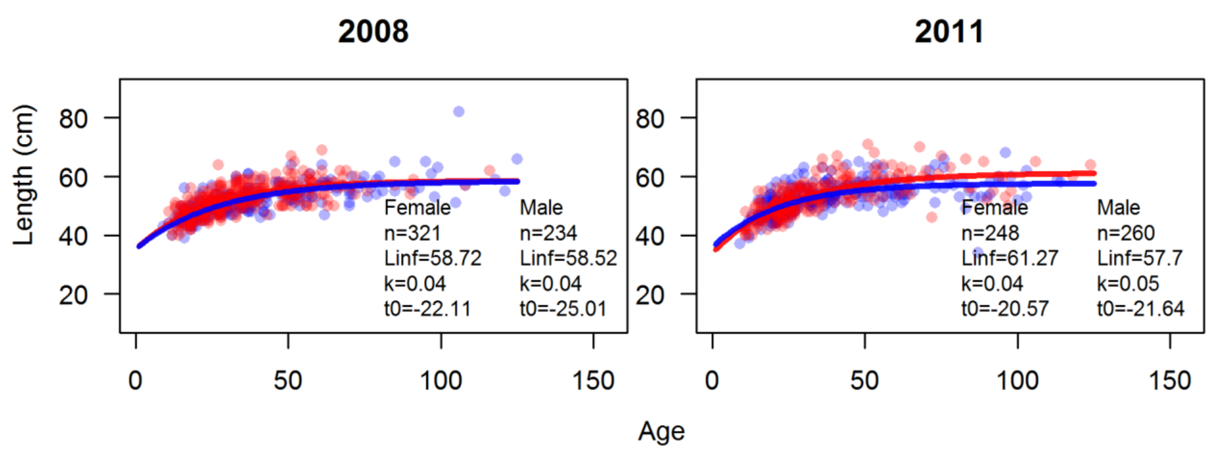


Figure 38: Length-at-age observations (points) and predicted length-at-age von Betalanffy curves for female (red) and male (blue) rougheye rockfish by each year collected from Pacific hake at-sea port samples in 2008 and 2011.

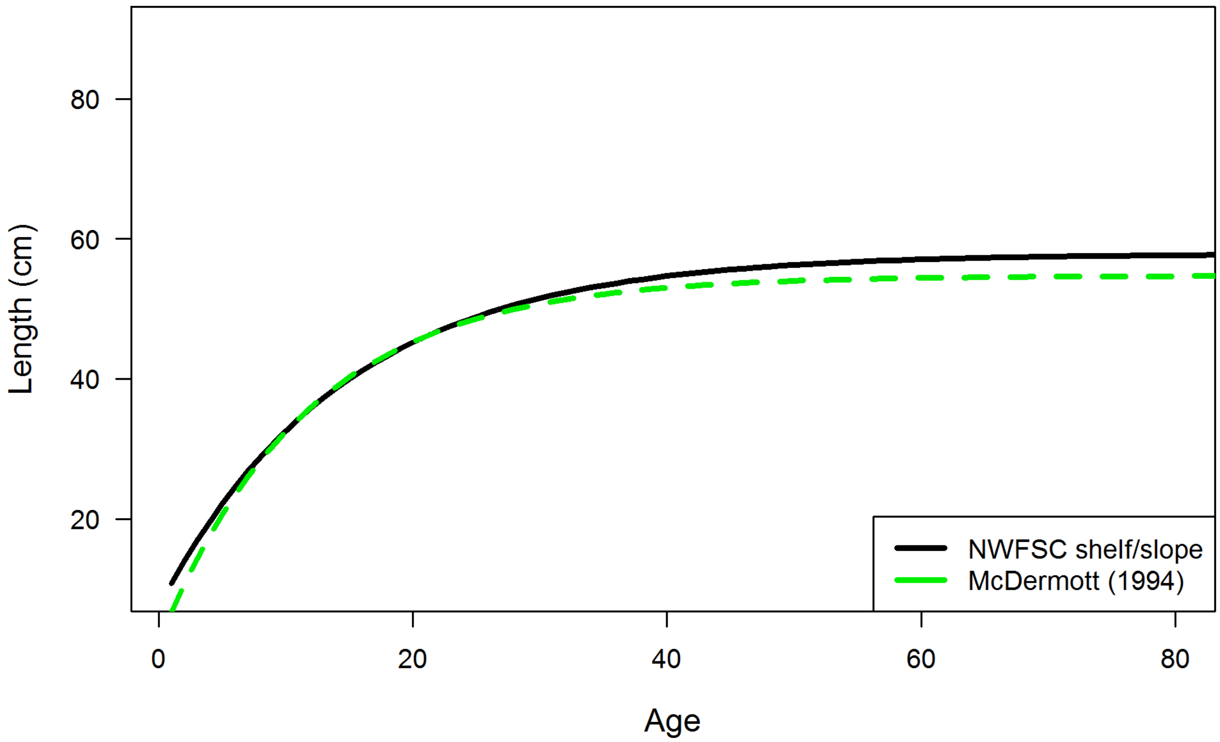


Figure 39: Predicted growth curves for combined sexes using NWFSC survey data compared to predicted growth curves from (McDermott 1994).

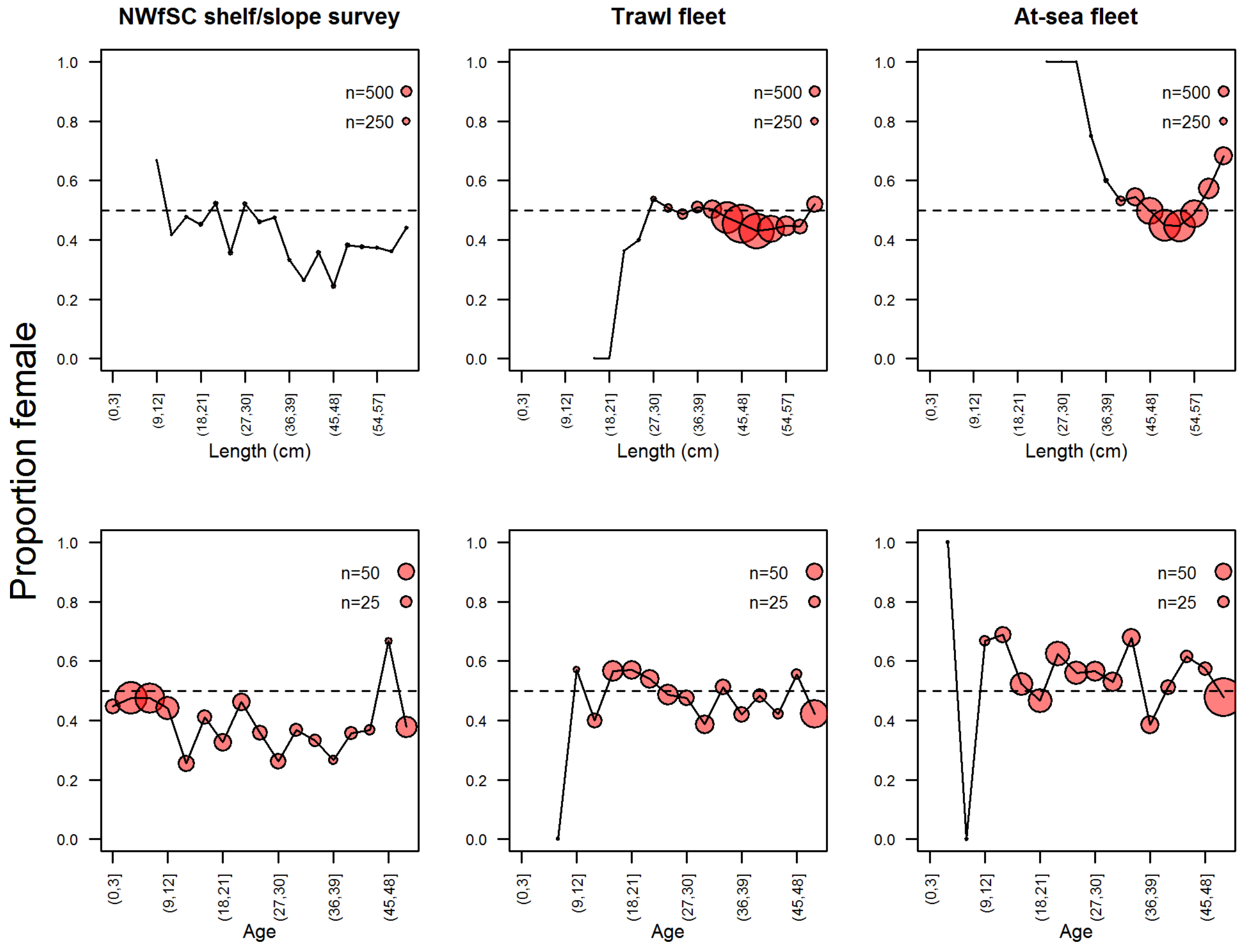


Figure 40: Proportion of females plotted against fish length (top) and fish age (bottom). The area of the circle corresponds to the number of observations in that bin.

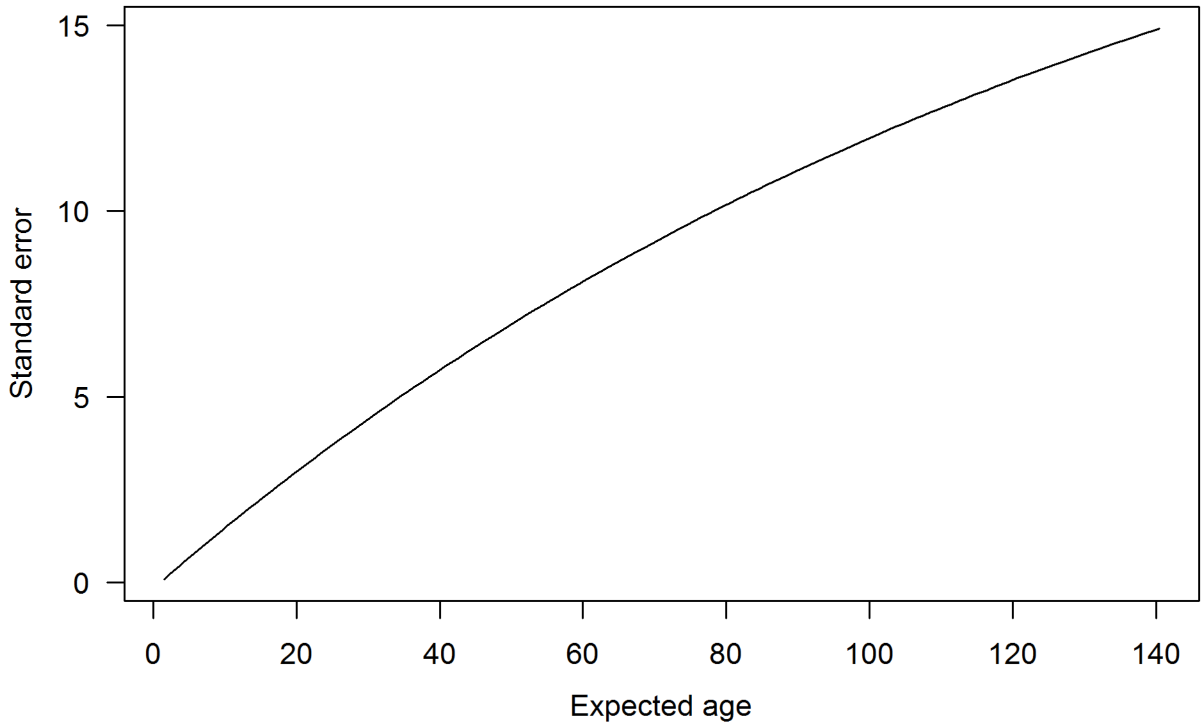


Figure 41: Estimated ageing error used in the model.

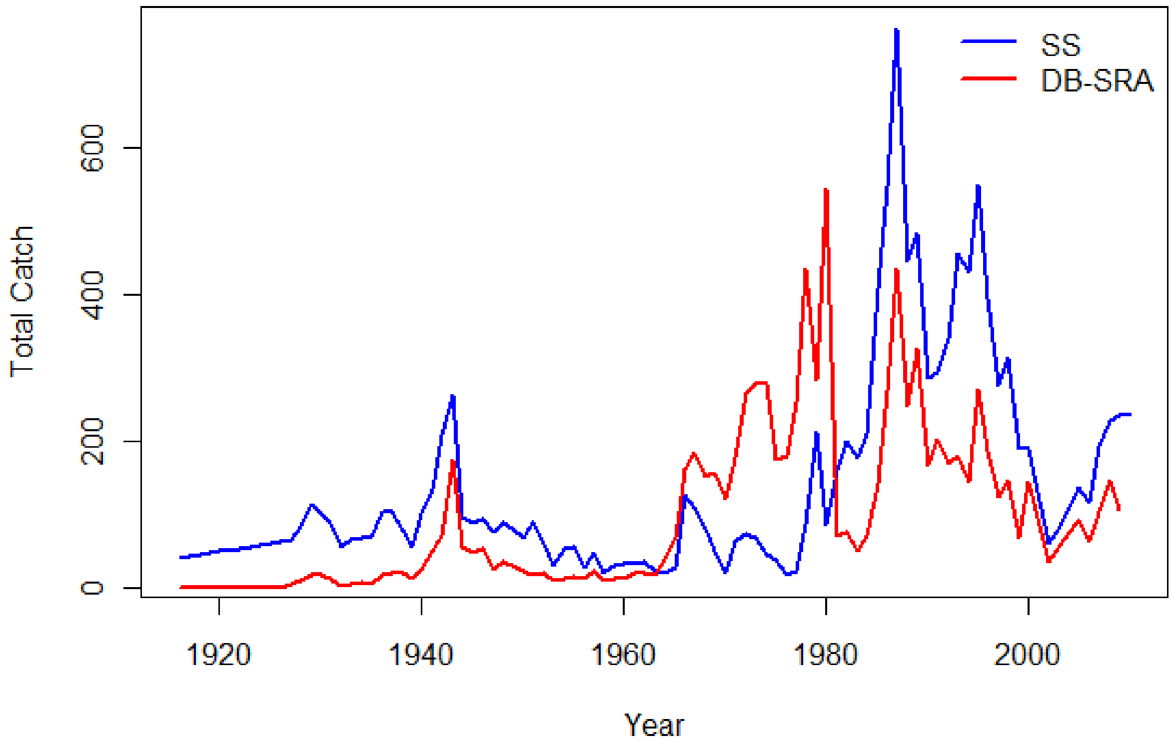


Figure 42: Comparison of catches applied by (Dick and MacCall 2010) in 2010 to those used by the base model in this assessment for 1916-2010.

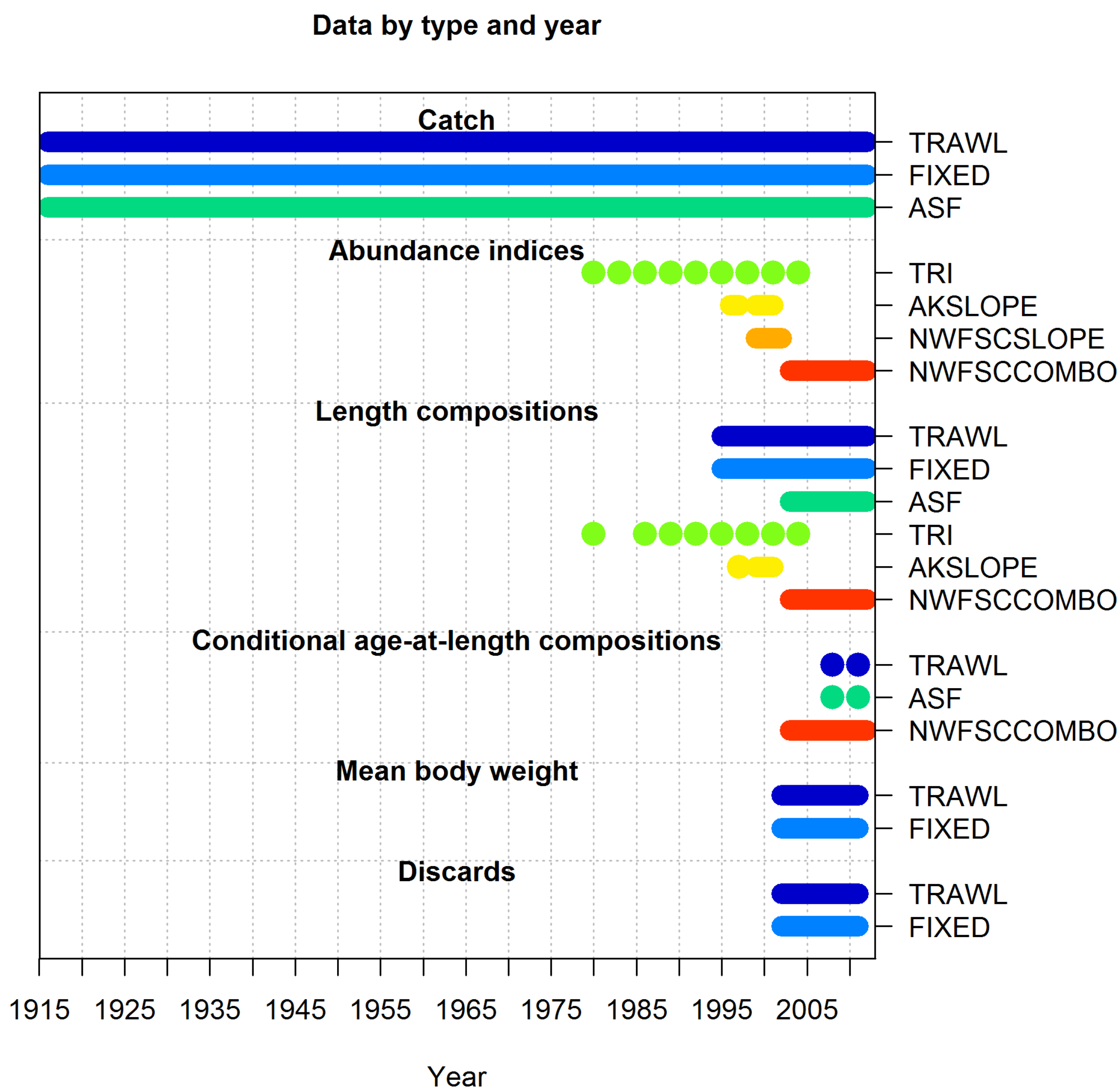


Figure 43: Data sources by type and year that were used in the base model.

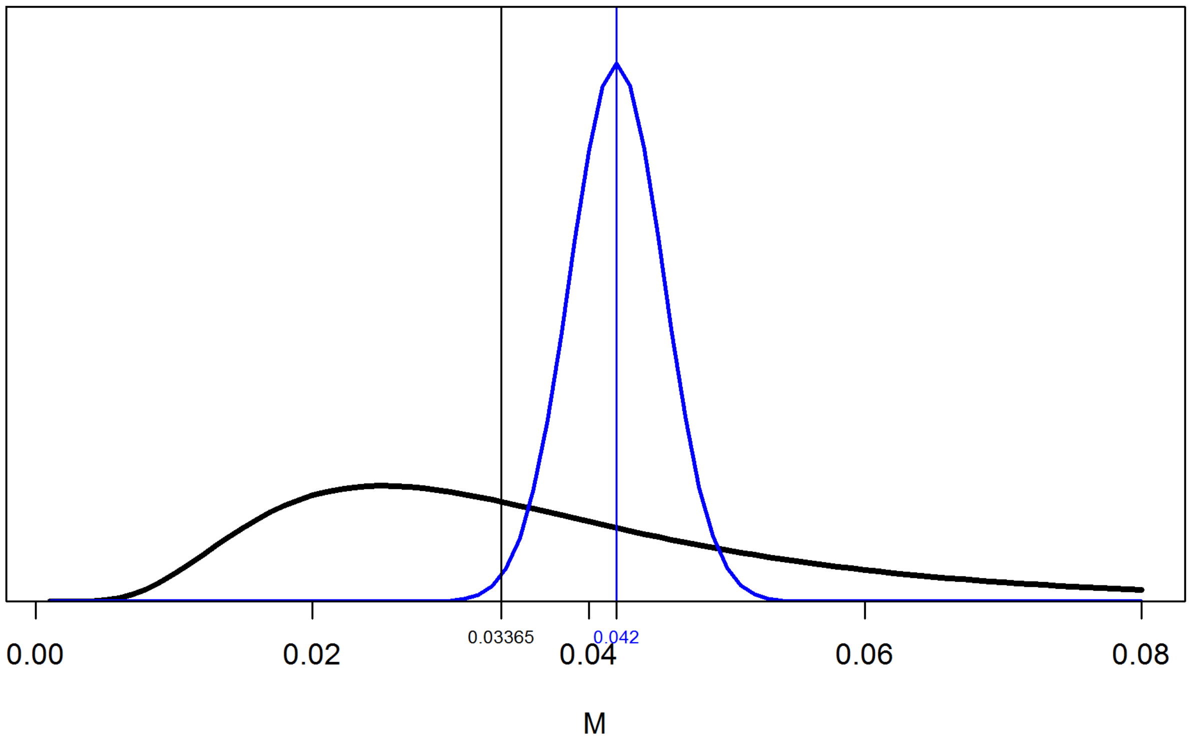


Figure 44: The prior for natural mortality (*M*) and the estimated *M* with asymptotic uncertainty based on maximum likelihood theory. The median of the prior is shown by the vertical black line and the maximum likelihood estimate is shown by the vertical blue line.

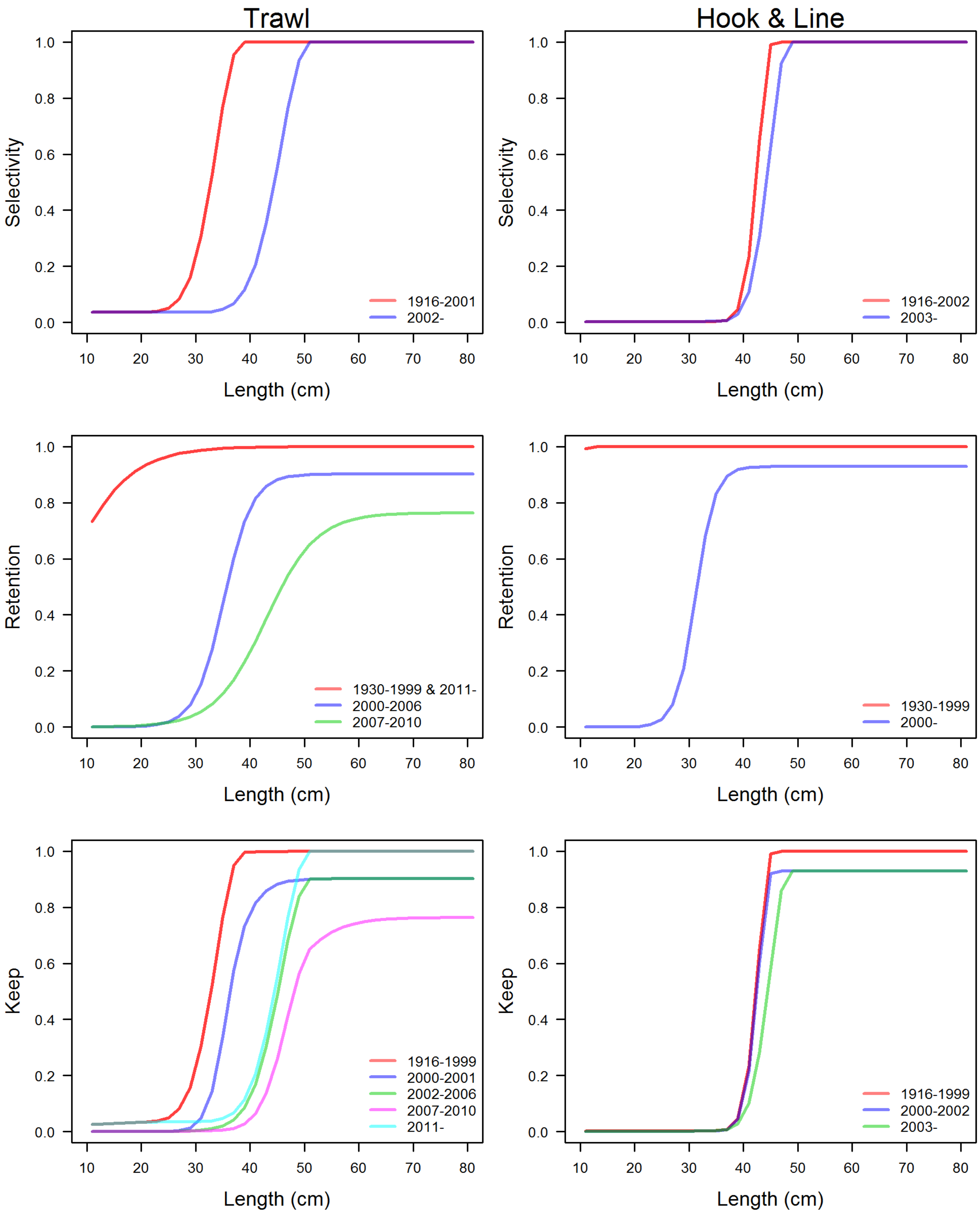


Figure 45: Estimated selectivity (top), retention (middle), and keep (bottom) curves for different blocks and the trawl (left) and hook & line (right) fleets.

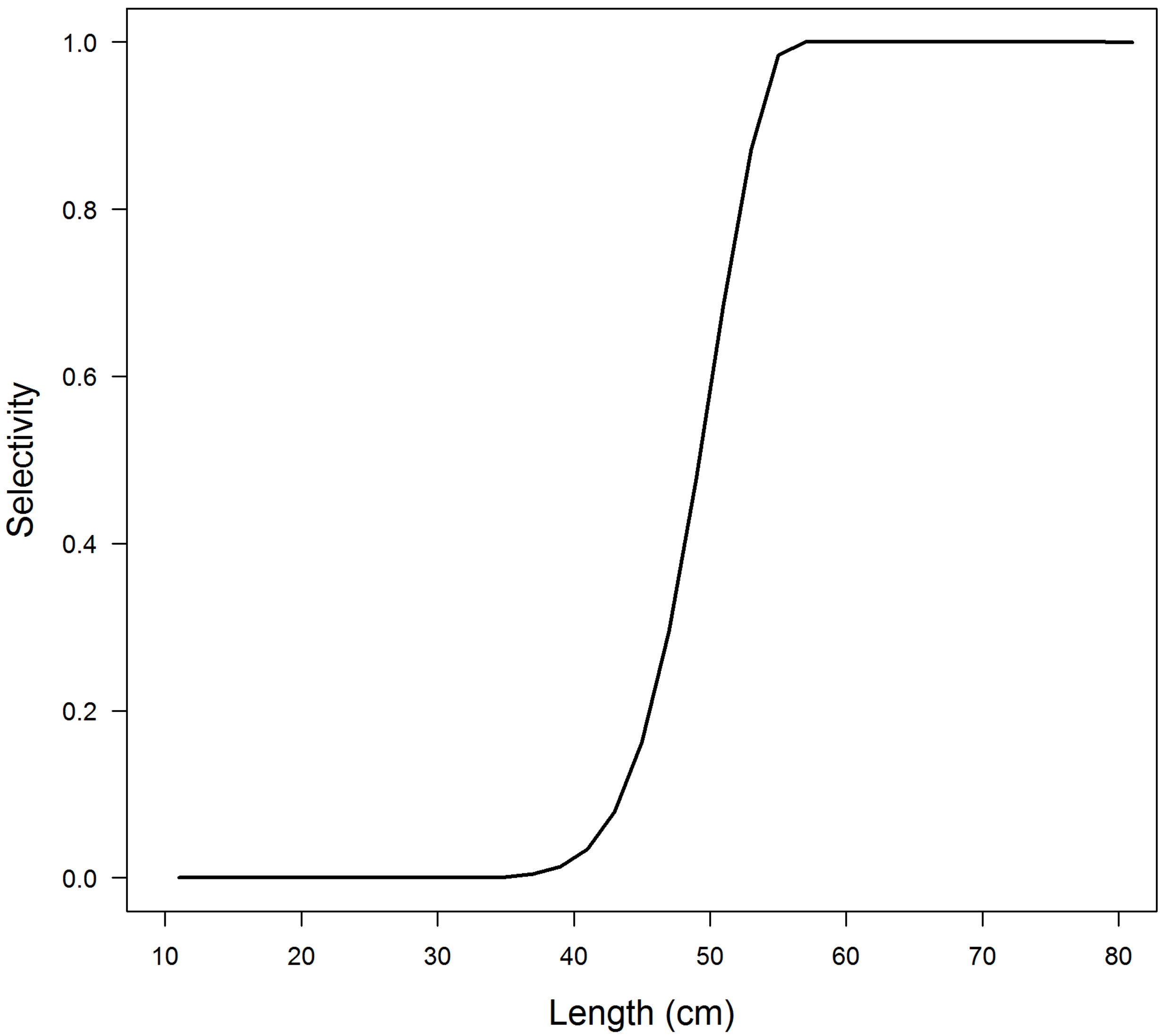


Figure 46: Estimated length-based selectivity for the at-sea fleet.

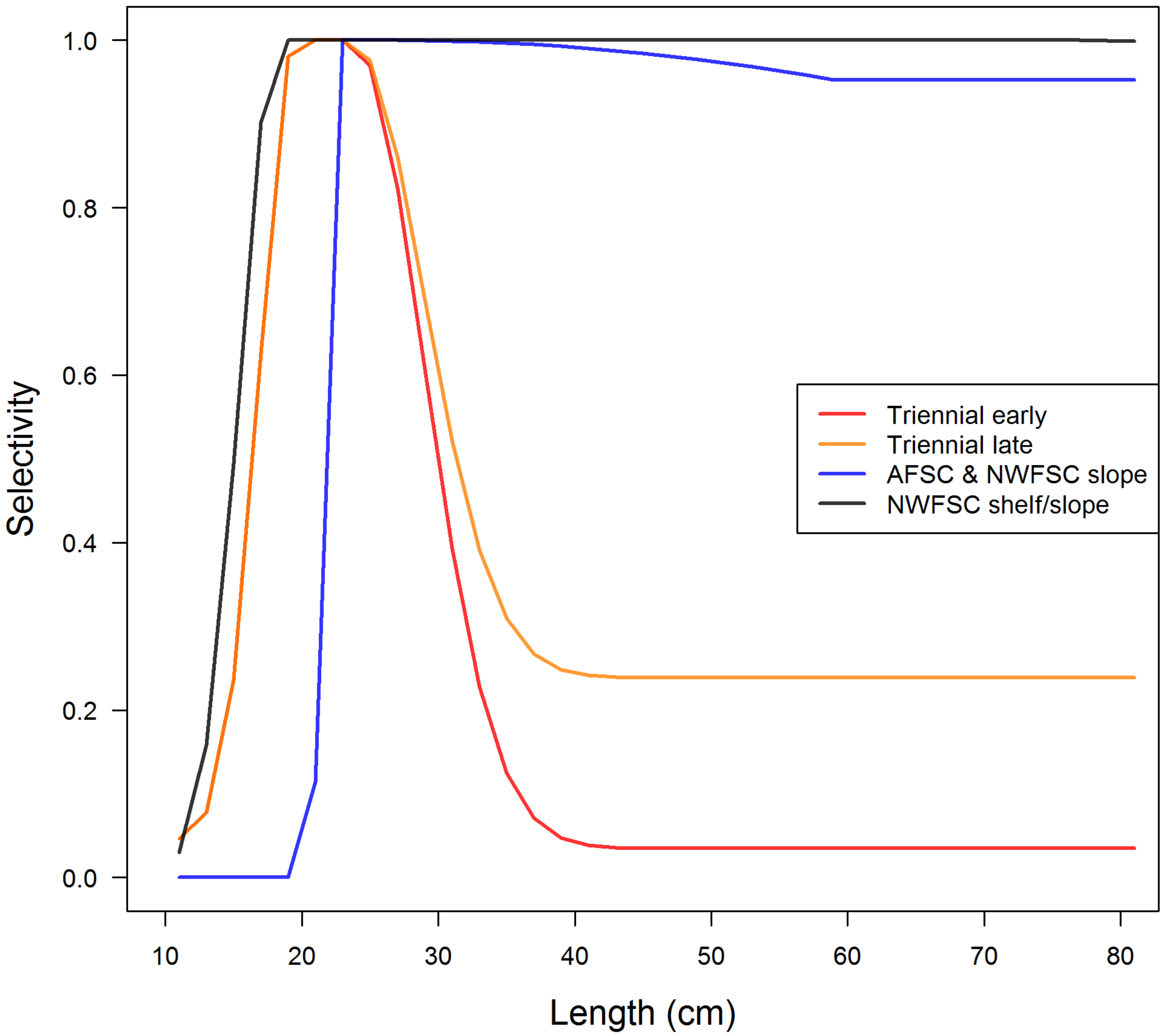


Figure 47: Estimated selectivity curves for the surveys.

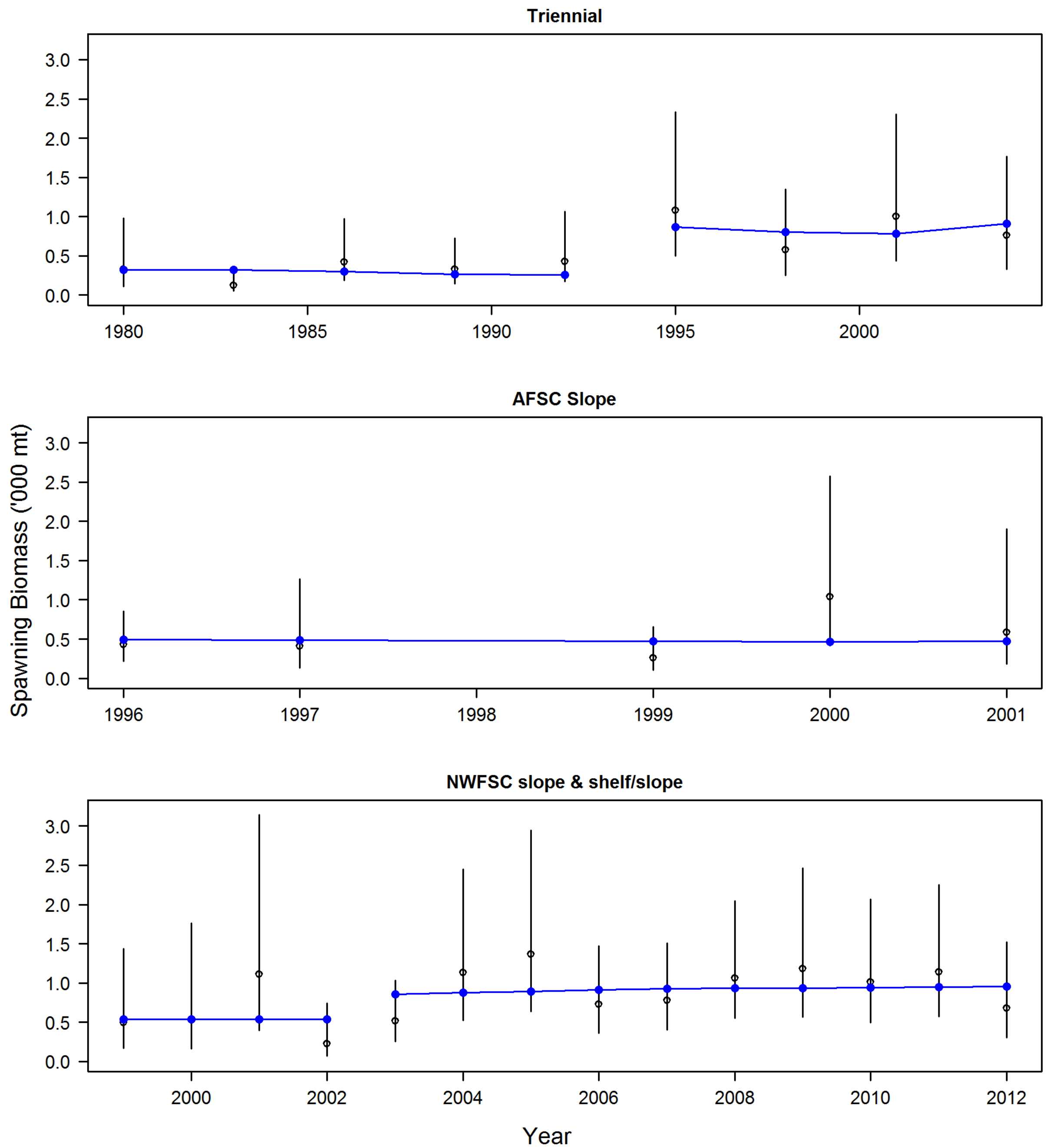


Figure 48: Fits to the survey abundance estimates for the base model.

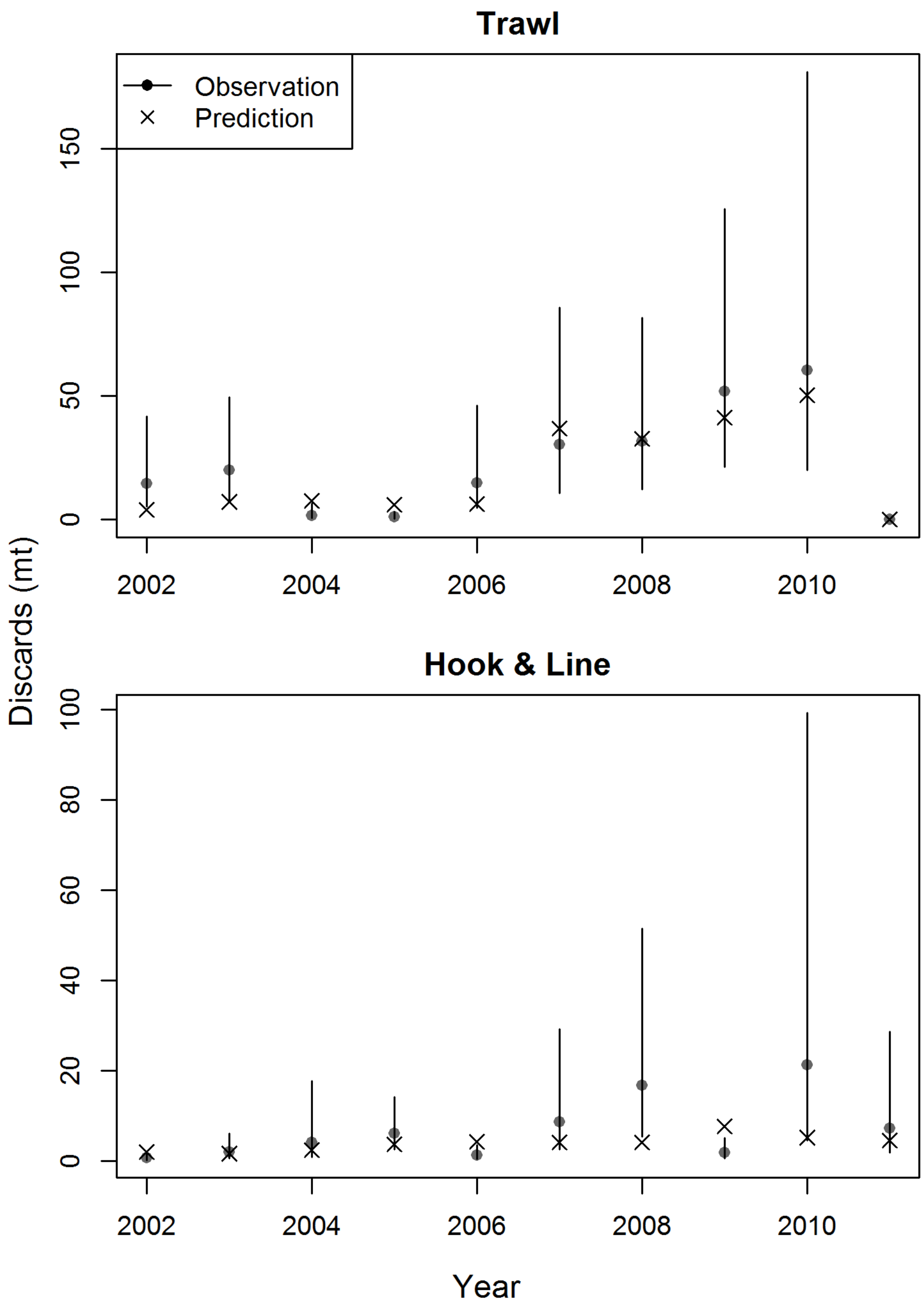


Figure 49: Predicted and observed discards for the trawl and hook & line fleets from the base model.

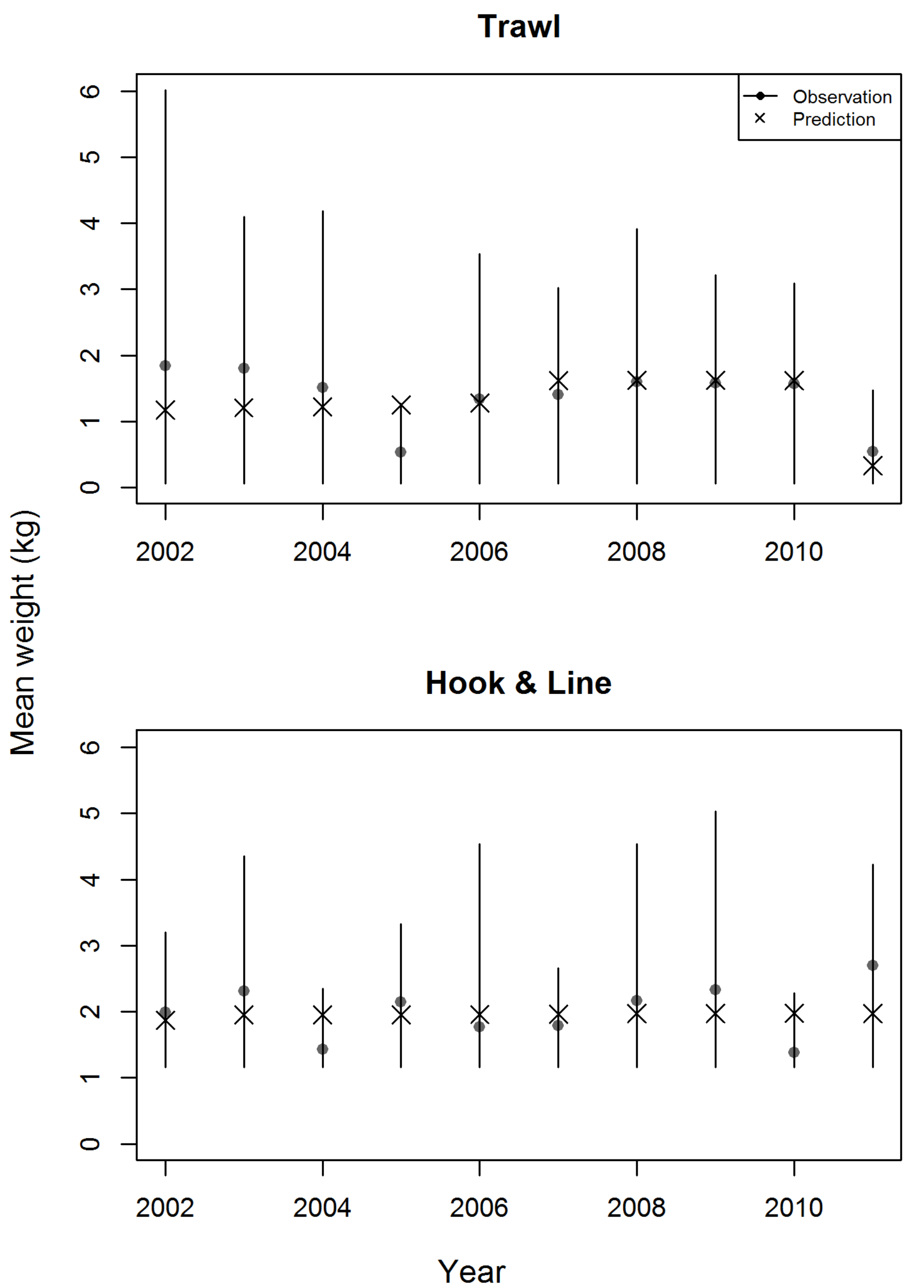


Figure 50: Fits to the mean weight of the discards for each fleet from the base model.

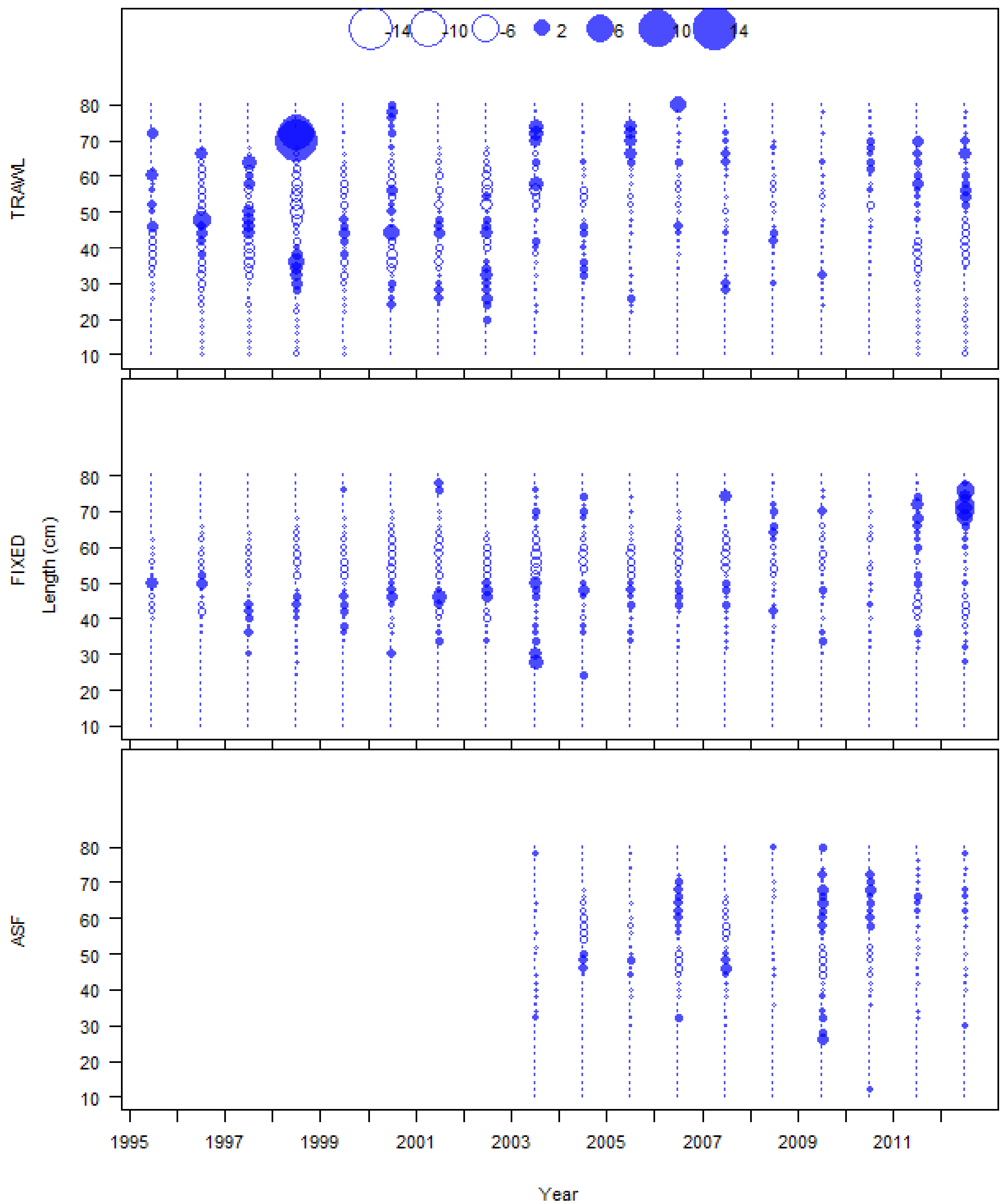


Figure 51: Pearson residuals for fits to length frequency data from the commercial fleets. Filled circles indicate that the fitted proportion was less than the observed proportion.

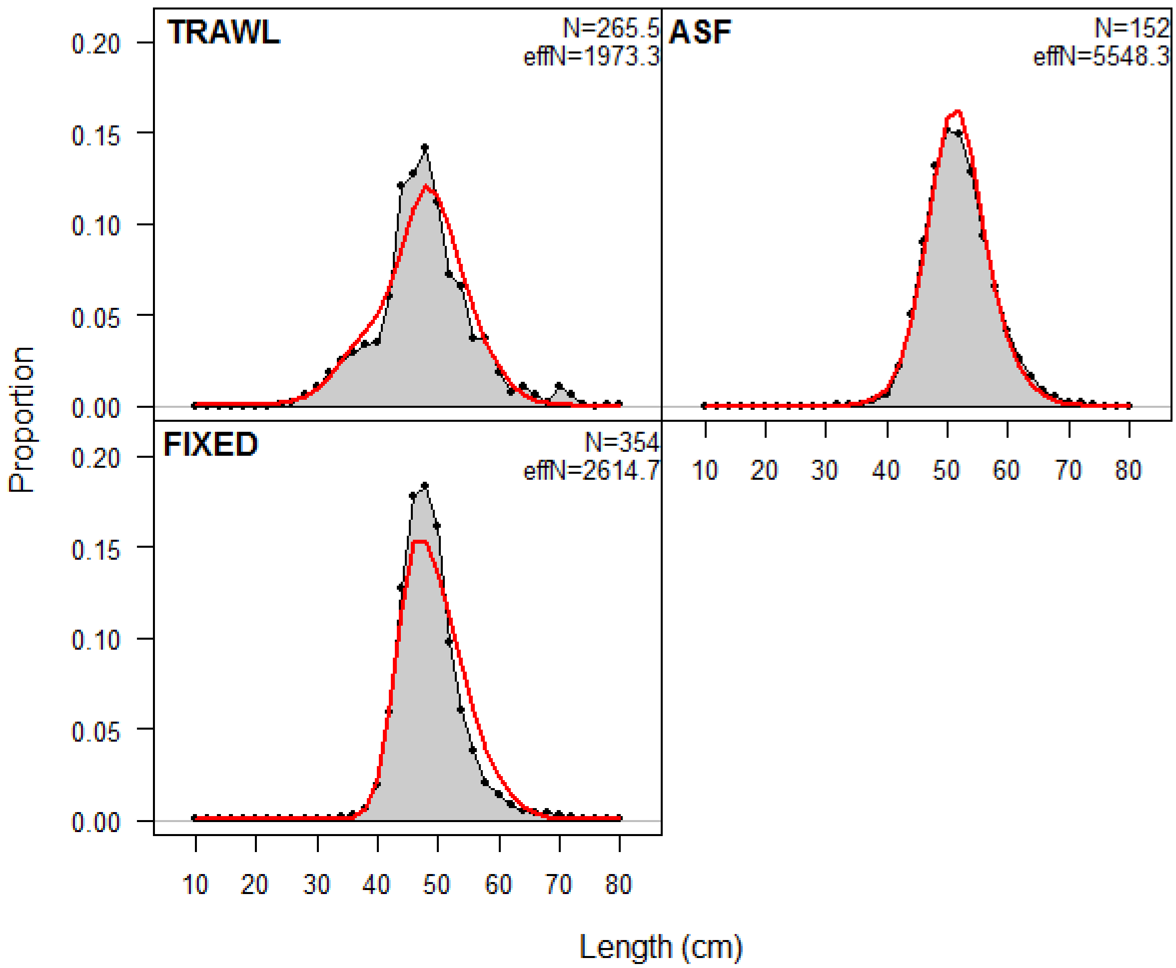


Figure 52: Combined length frequencies for all years (points) with the overall fit (red) for each commercial fleet.

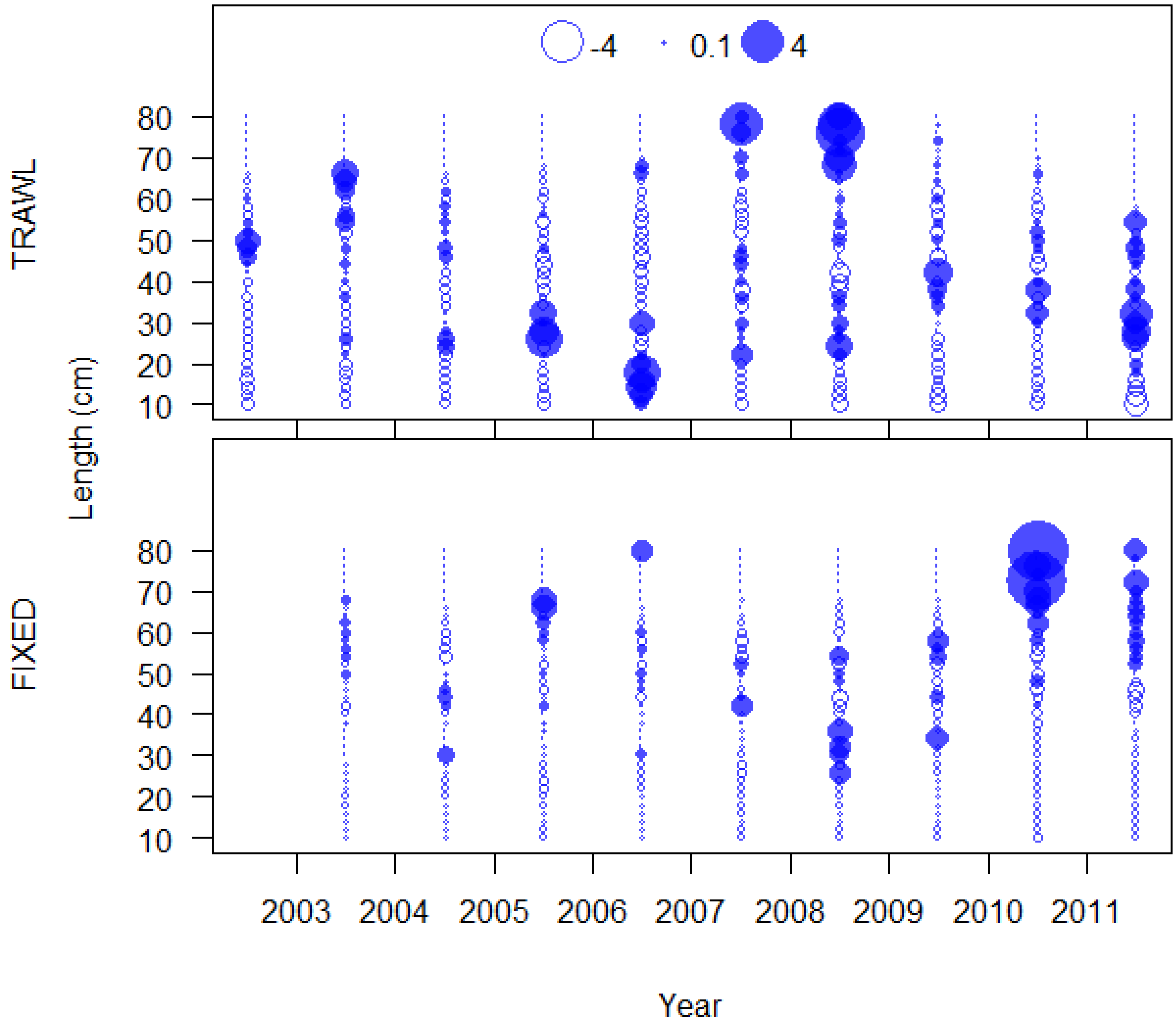


Figure 53: Pearson residuals for fits to the discard length frequencies from the trawl and hook & line fleets. Filled circles indicate that the fitted proportion was less than the observed proportion.

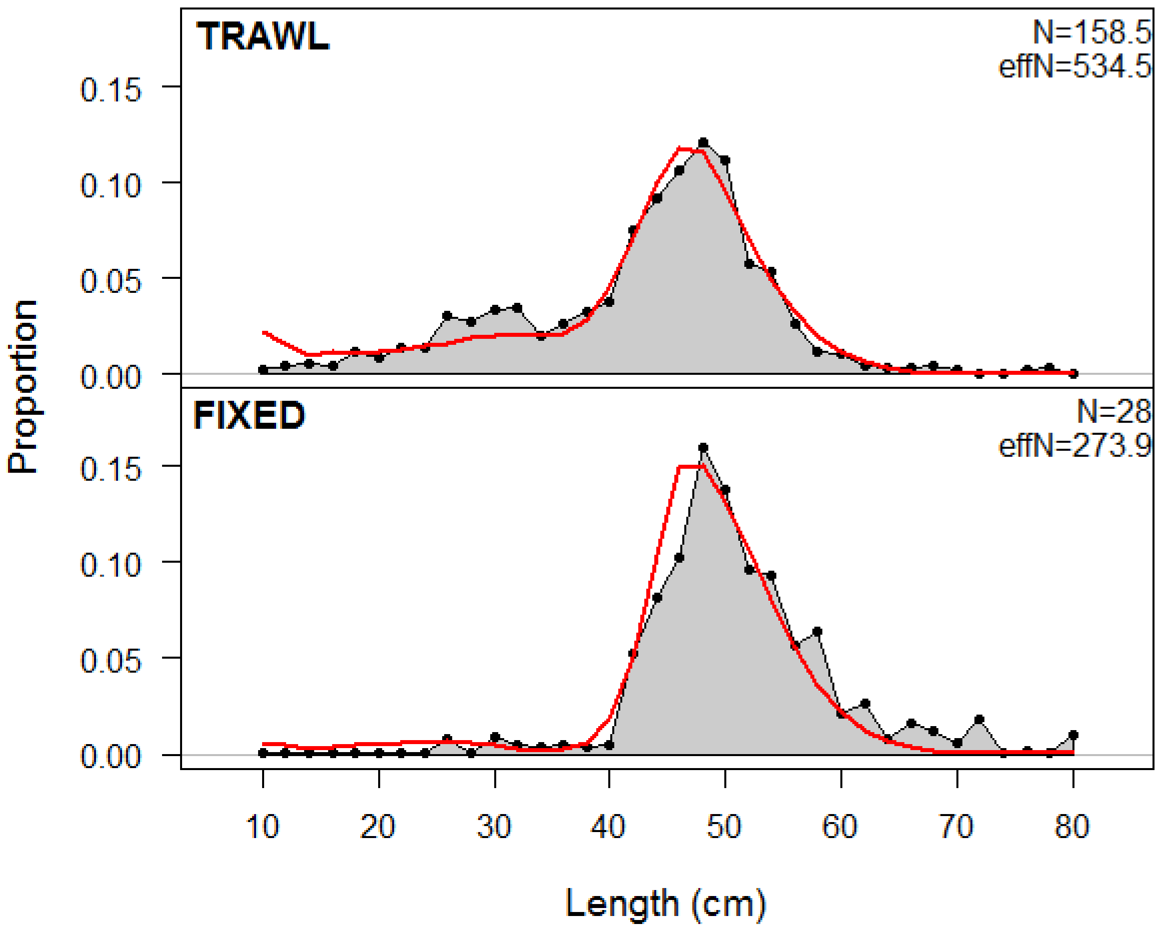


Figure 54: Combined length frequencies for all years from trawl and hook & line discard data (points) with fits shown by the red line.

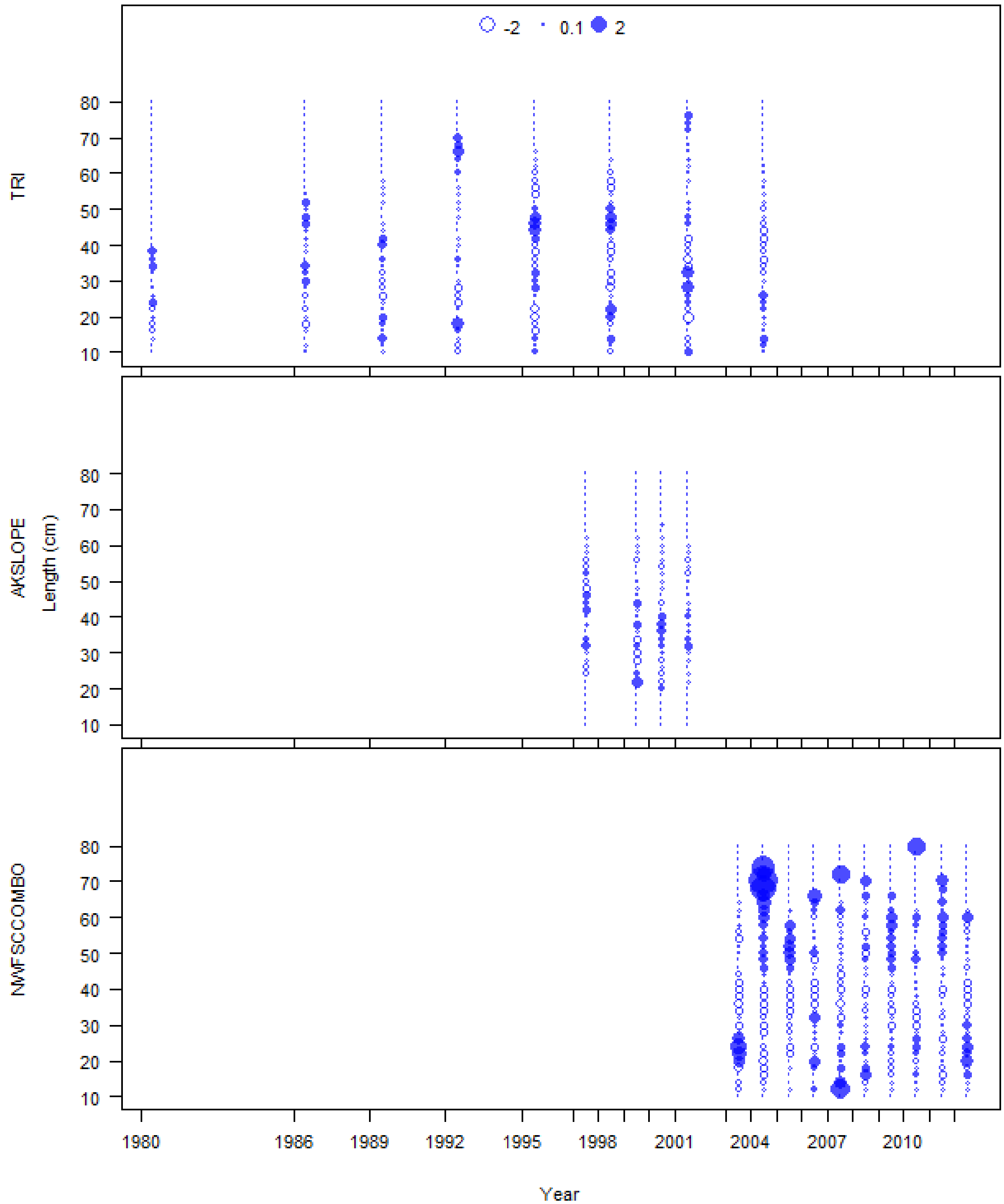


Figure 55: Pearson residuals for fits to the survey length frequency data. Filled circles indicate that the fitted proportion was less than the observed proportion.

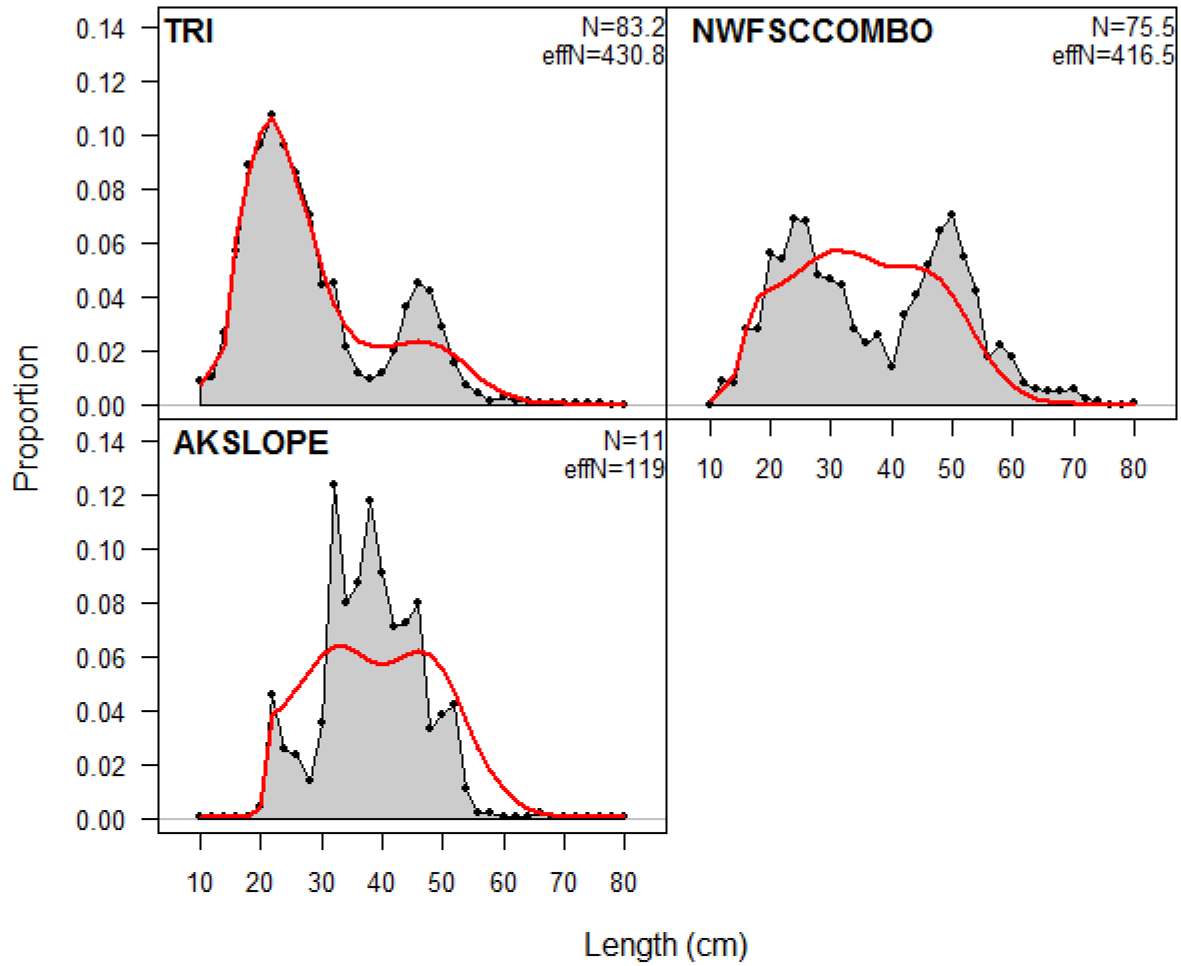


Figure 56: Combined length frequencies for all years from survey length frequency data (points) with fits shown by the red line.

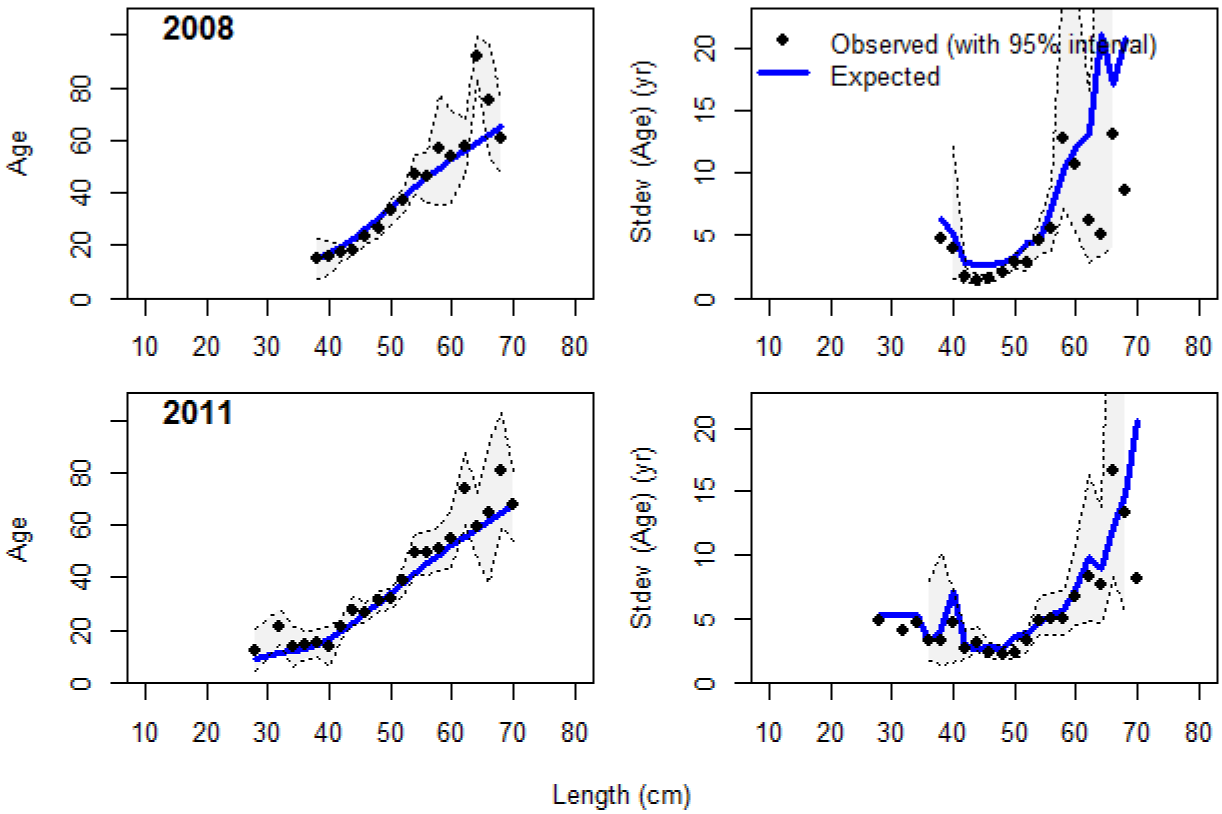


Figure 57: Observed and expected age-at-length with 95% confidence intervals (left) and observed and expected standard deviation of age-at-length with 95% confidence intervals (right) for the trawl fishery.

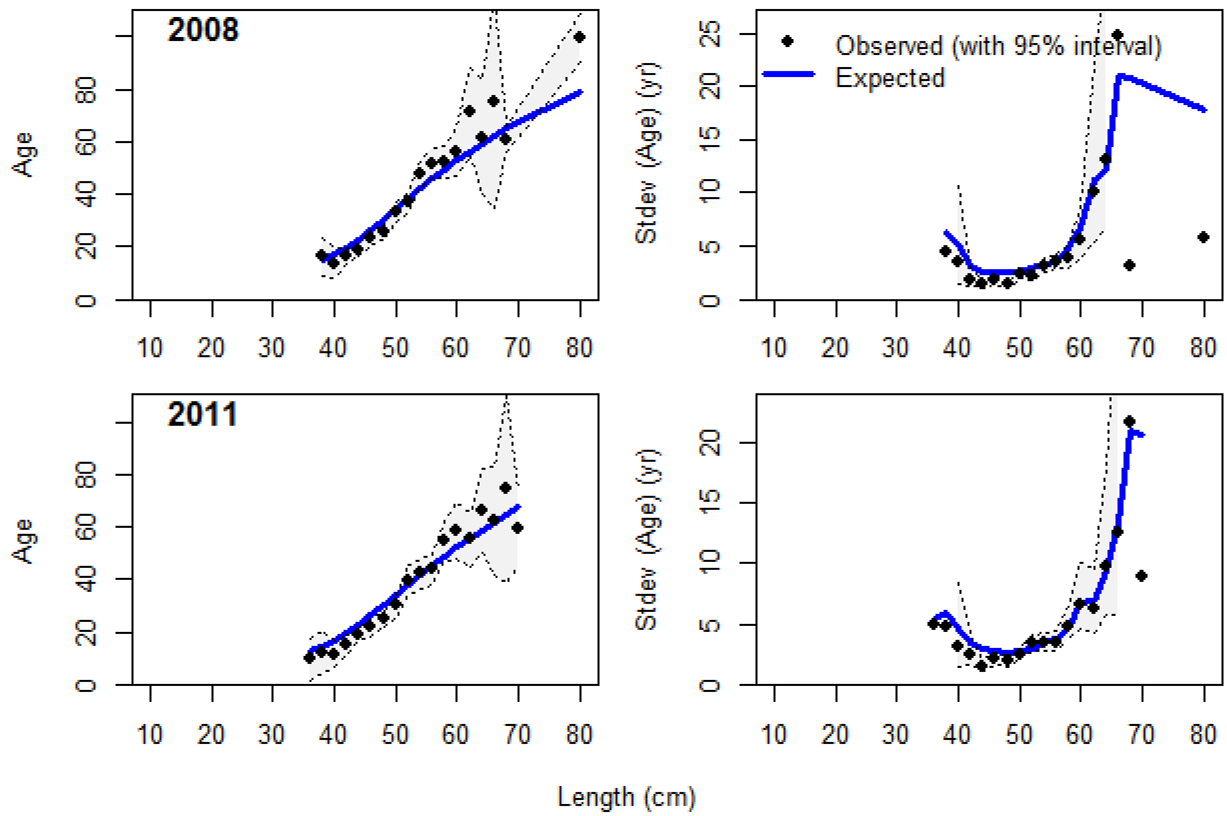


Figure 58: Observed and expected age-at-length with 95% confidence intervals (left) and observed and expected standard deviation of age-at-length with 95% confidence intervals (right) for the at-sea fleet.

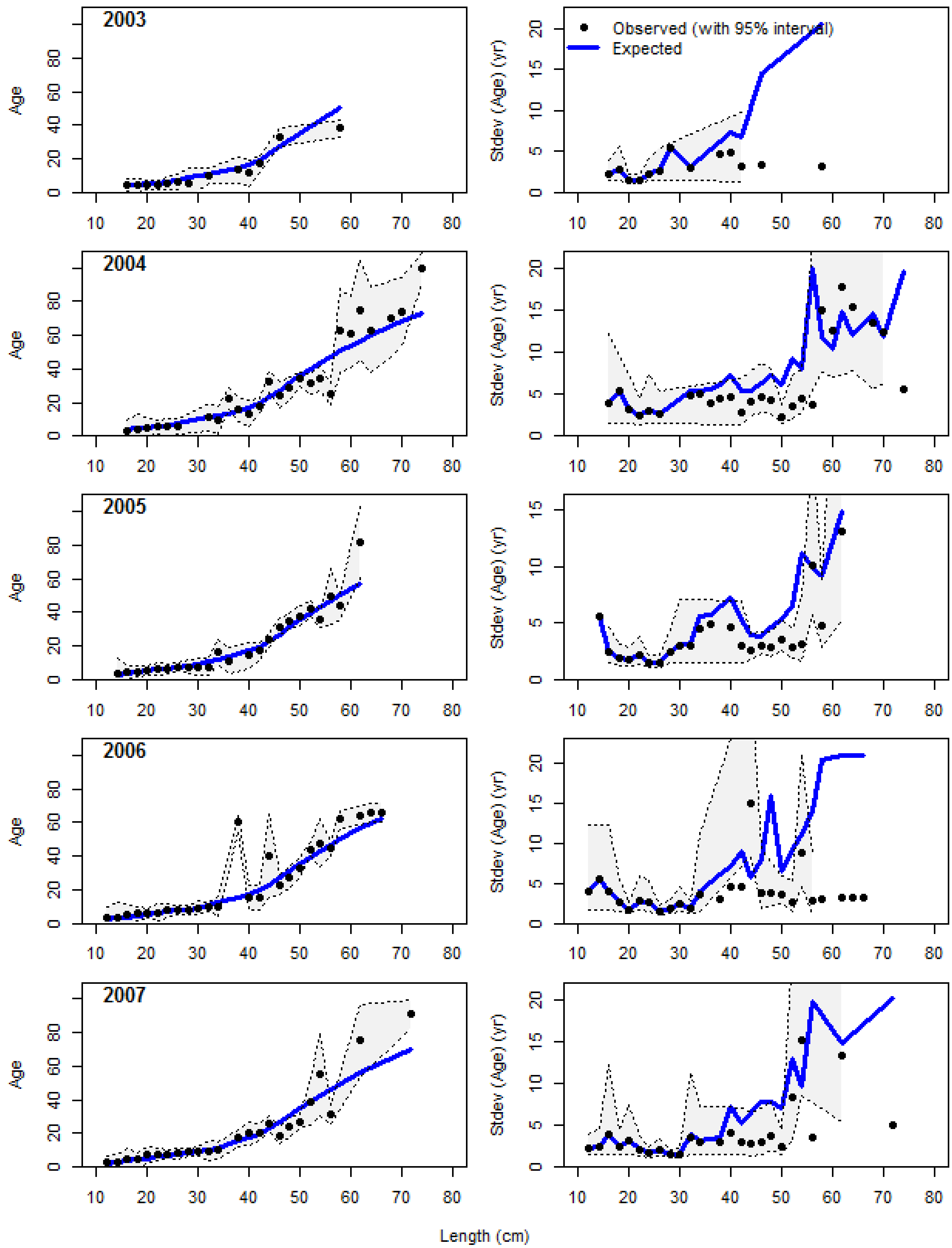


Figure 59: Observed and expected age-at-length with 95% confidence intervals (left) and observed and expected standard deviation of age-at-length with 95% confidence intervals (right) for the NWFSC shelf/slope survey data.

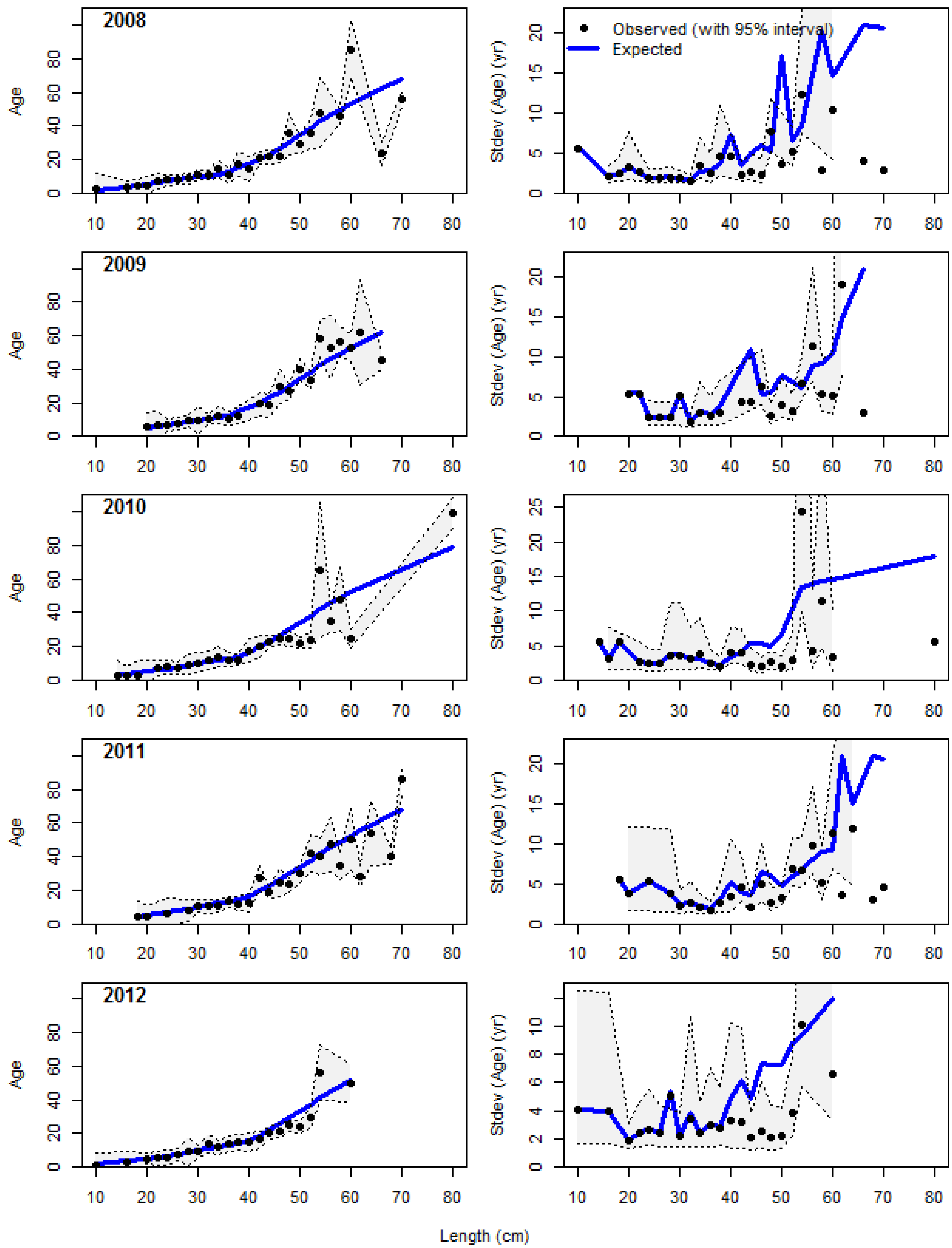


Figure 59 (cont.): Observed and expected age-at-length with 95% confidence intervals (left) and observed and expected standard deviation of age-at-length with 95% confidence intervals (right) for the NWFSC shelf/slope survey.

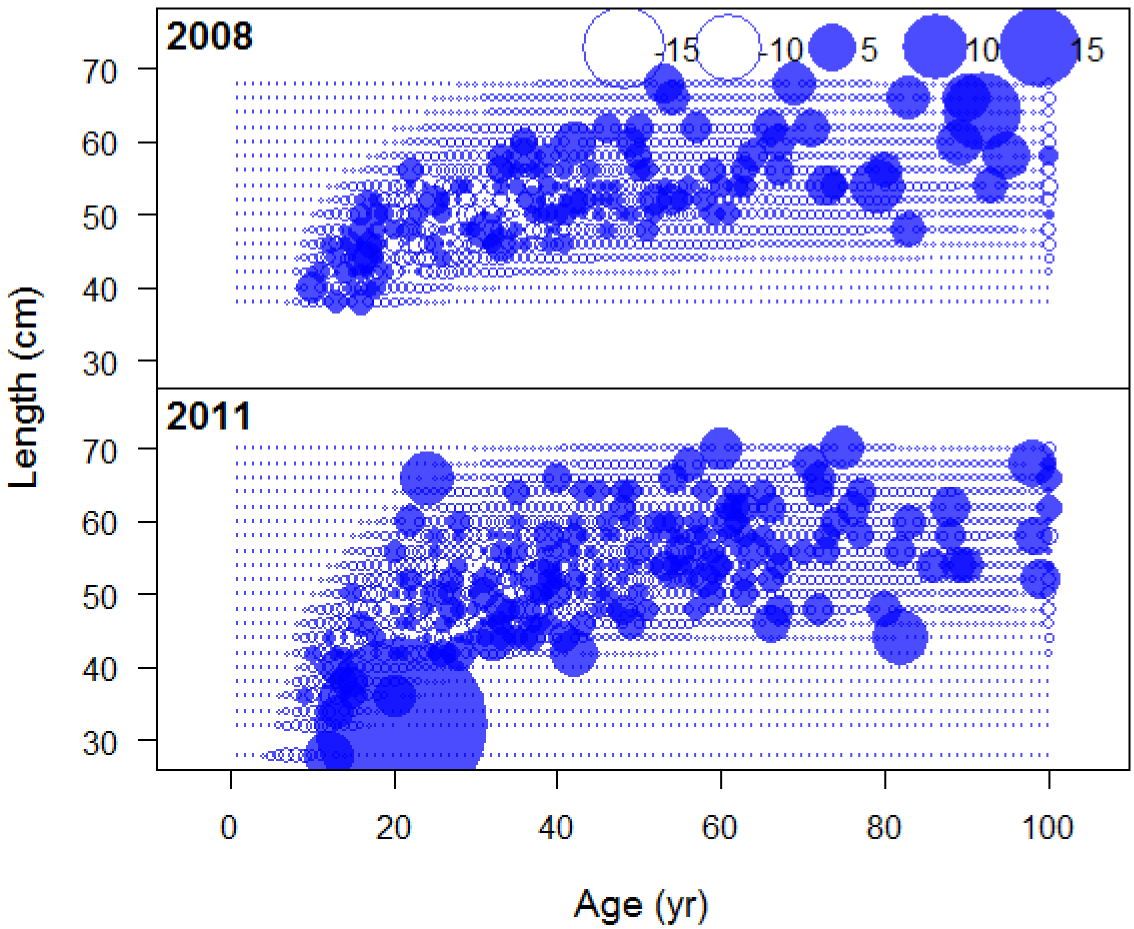


Figure 60: Pearson residuals for fits to age-at-length data for the trawl fleet. Filled circles indicate that the fitted proportion was less than the observed proportion.

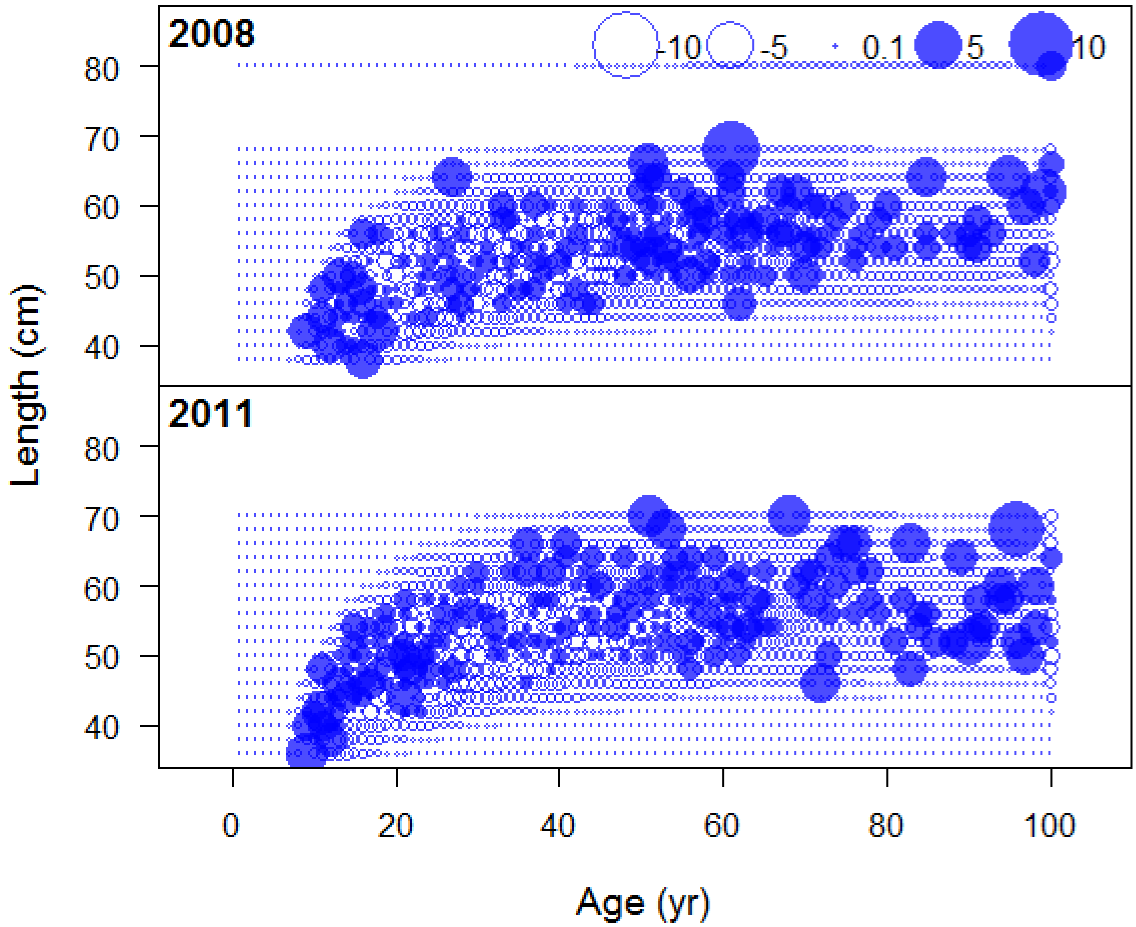


Figure 61: Pearson residuals for fits to age-at-length data for the at-sea fleet. Filled circles indicate that the fitted proportion was less than the observed proportion.

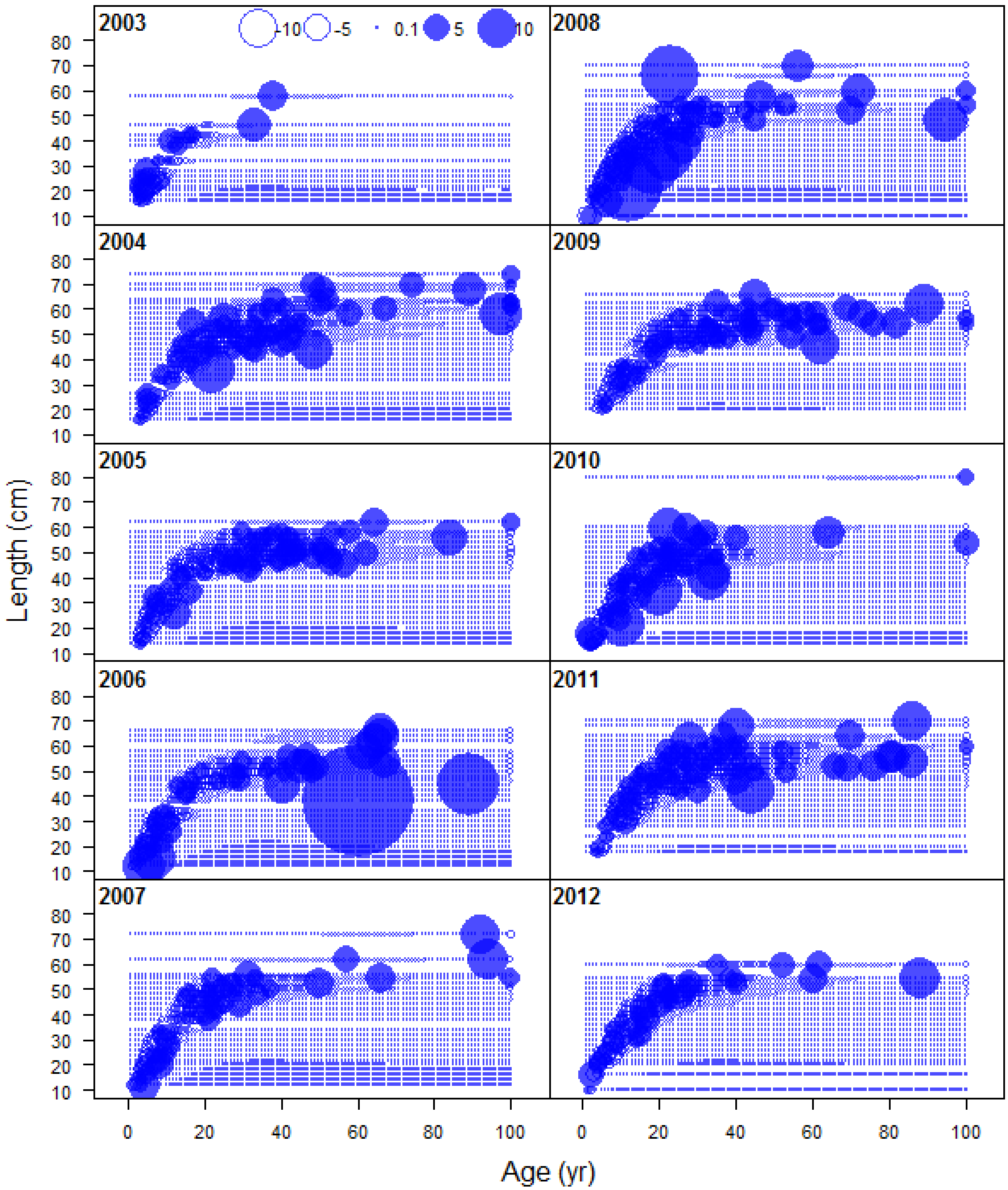


Figure 62: Pearson residuals for fits to age-at-length data for the NWFSC shelf/slope survey. Filled circles indicate that the fitted proportion was less than the observed proportion.

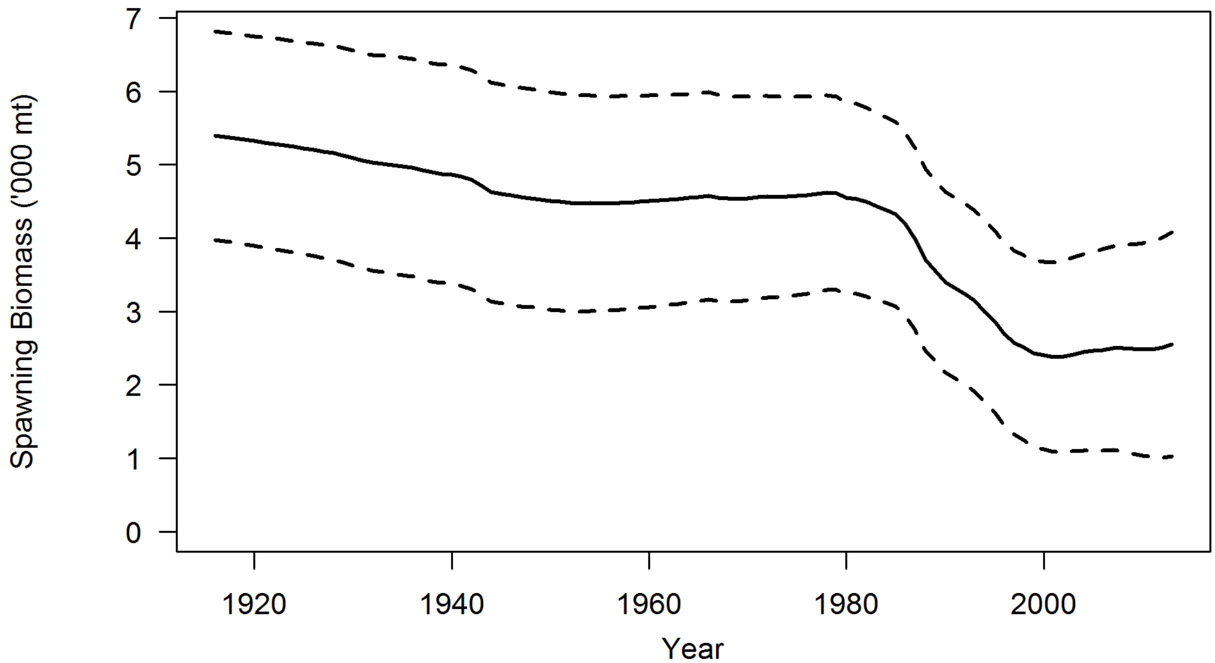


Figure 63: Predicted spawning biomass (mt) for rougheye rockfish using the base assessment. The solid line is the MLE estimate and the dashed lines are the approximate asymptotic 95% confidence intervals.

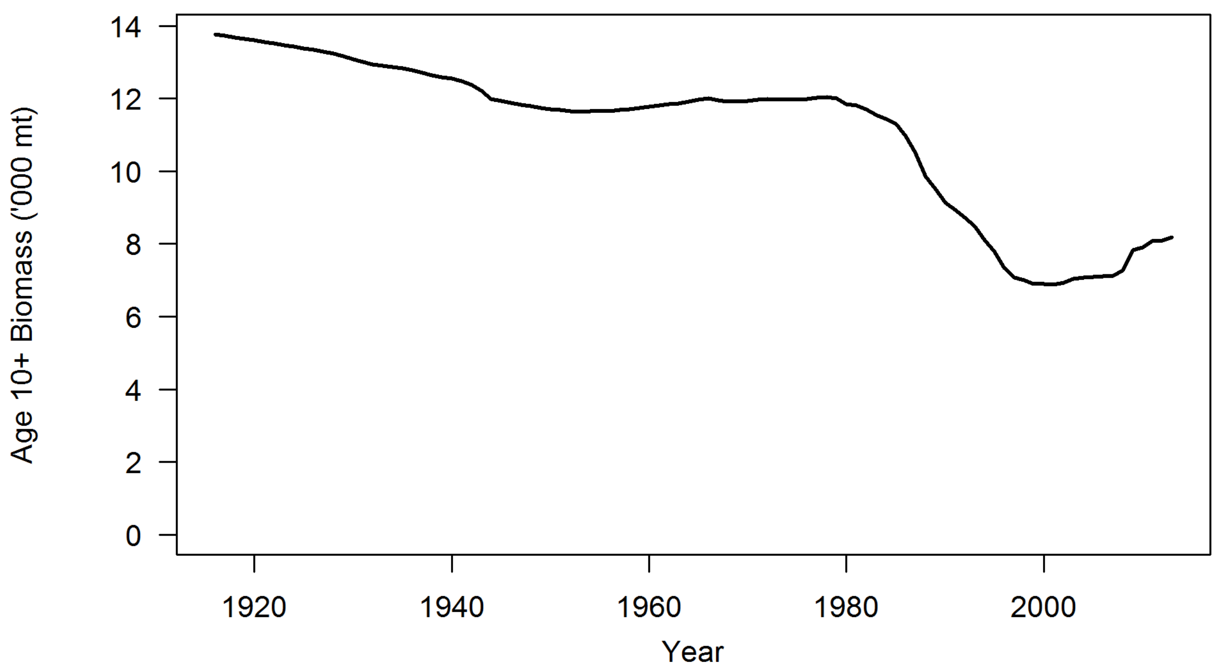


Figure 64: Predicted summary biomass (age 10+) from the base model.

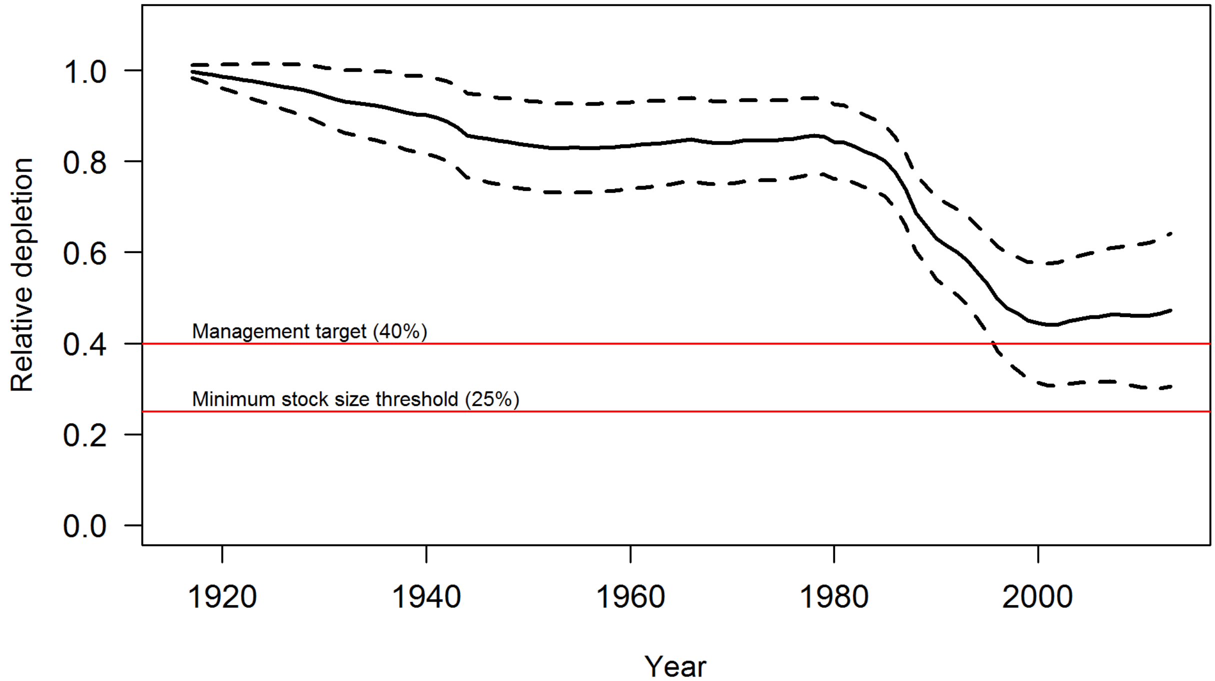


Figure 65: Predicted depletion relative to unfished biomass from the rougheye rockfish base case assessment. The solid line is the MLE estimate and the dashed lines are the approximate asymptotic 95% confidence intervals. The red lines show the management target of 40% of unfished biomass and the minimum stock size threshold of 25% of unfished biomass.

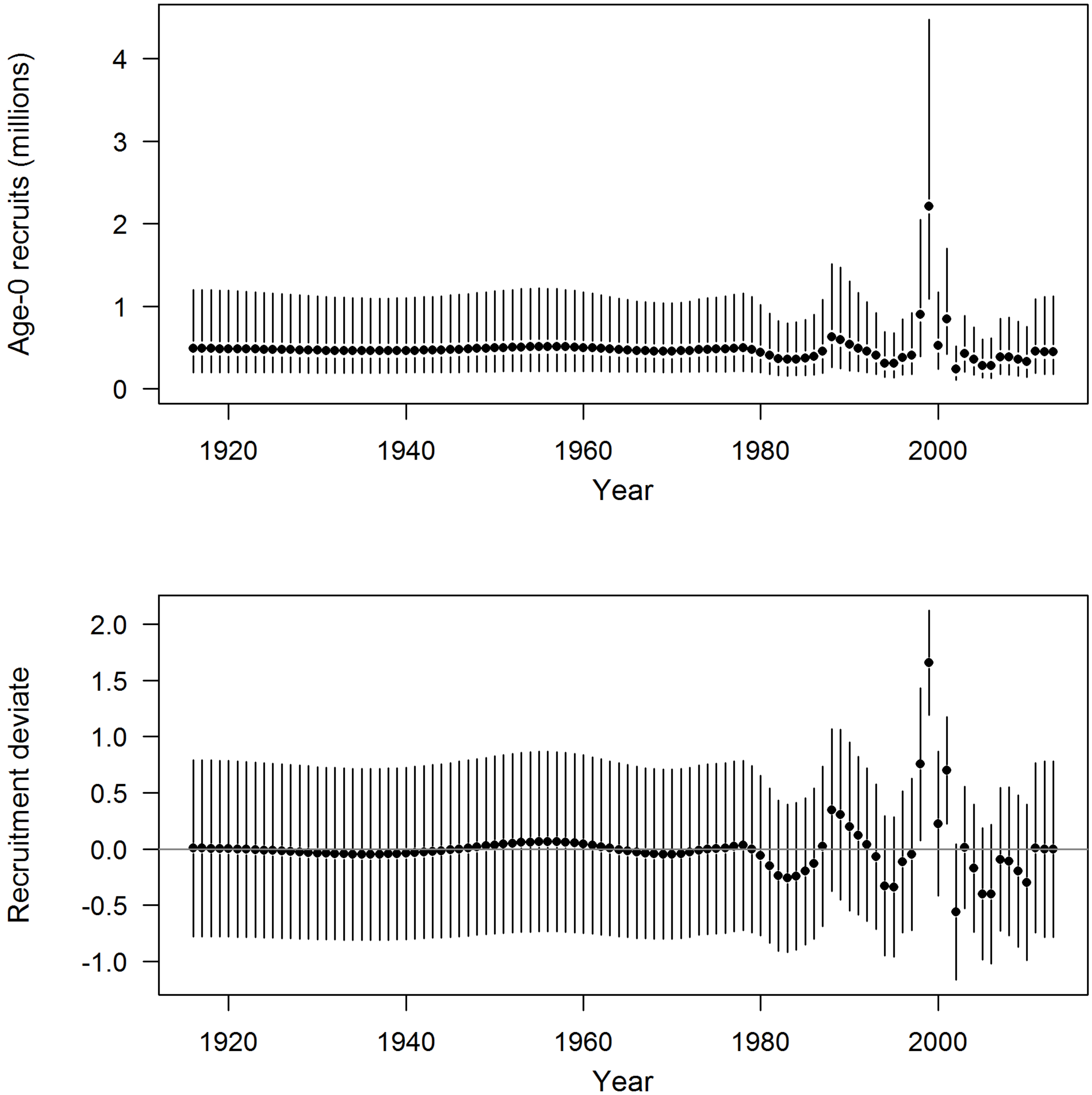


Figure 66: Estimates of recruitment (upper) and recruitment deviates (lower) with approximate asymptotic 95% confidence intervals (vertical lines) from the MLE estimates.

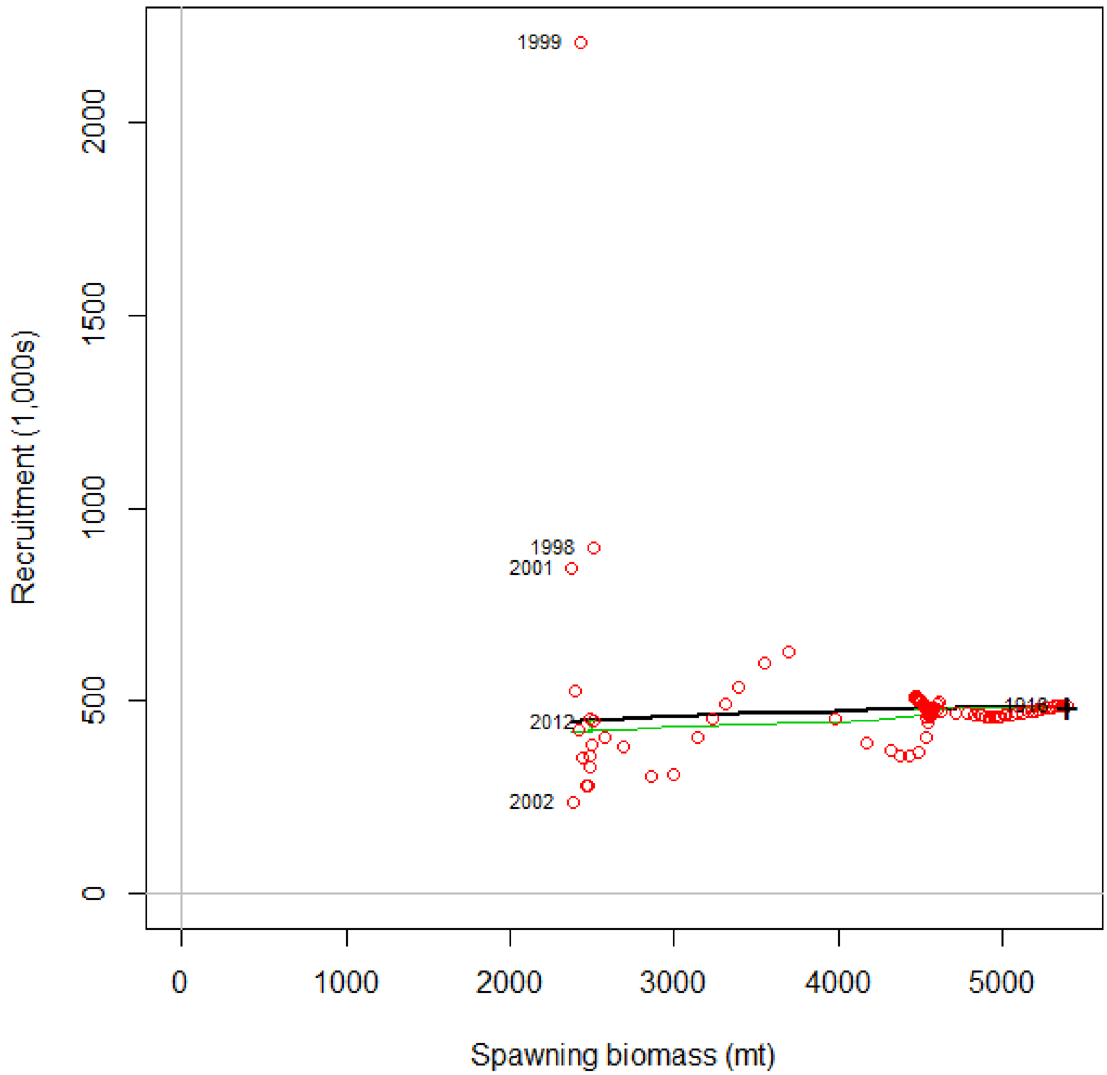


Figure 67: Estimated recruitment (red circles) and the assumed stock-recruit relationship (black line). The green line shows the effect of the bias correction for the lognormal distribution.

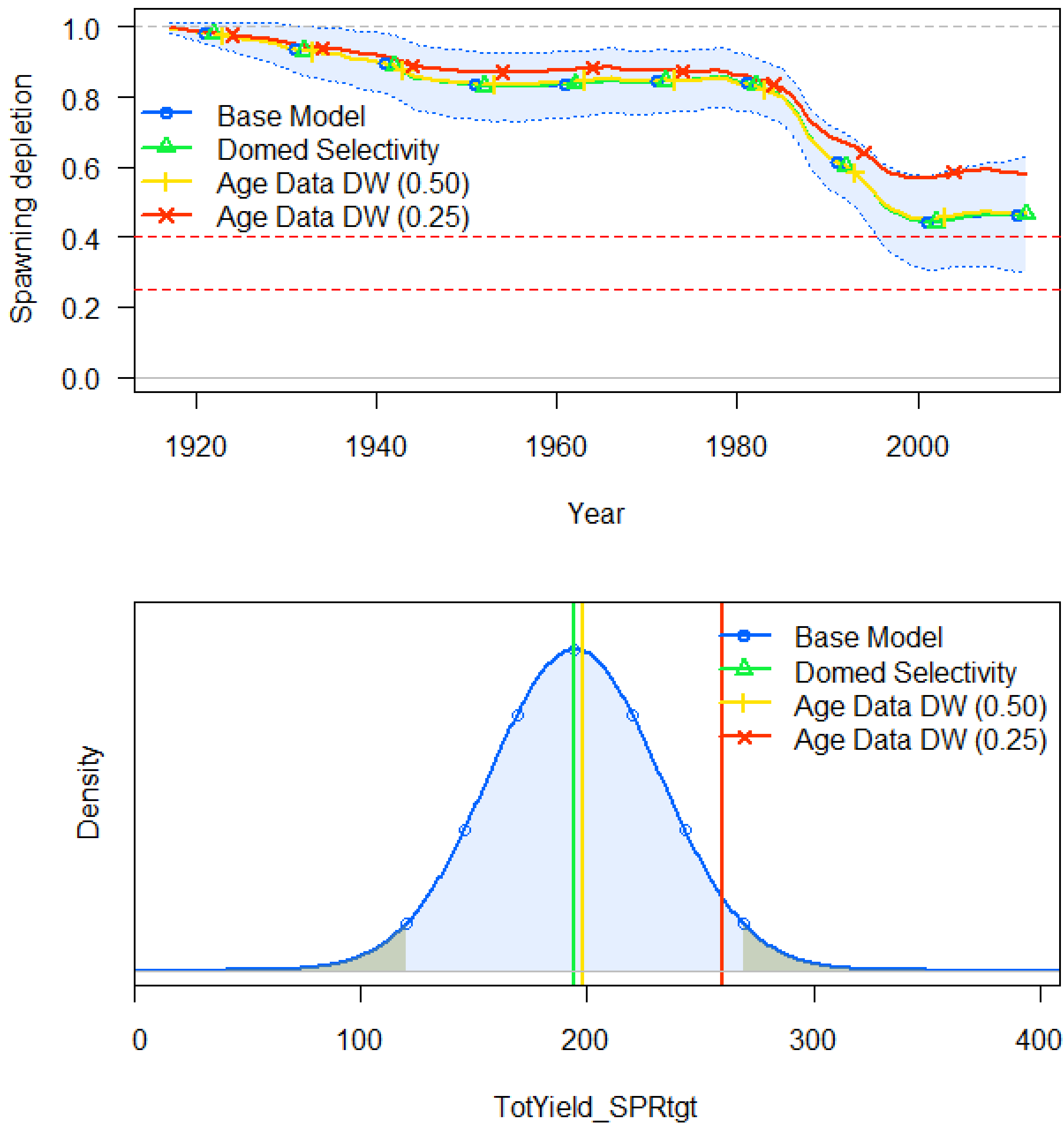


Figure 68: Depletion and target yield estimates for the base model and sensitivities to dome-shaped selectivity and reducing the weight on age data sources in the likelihood.

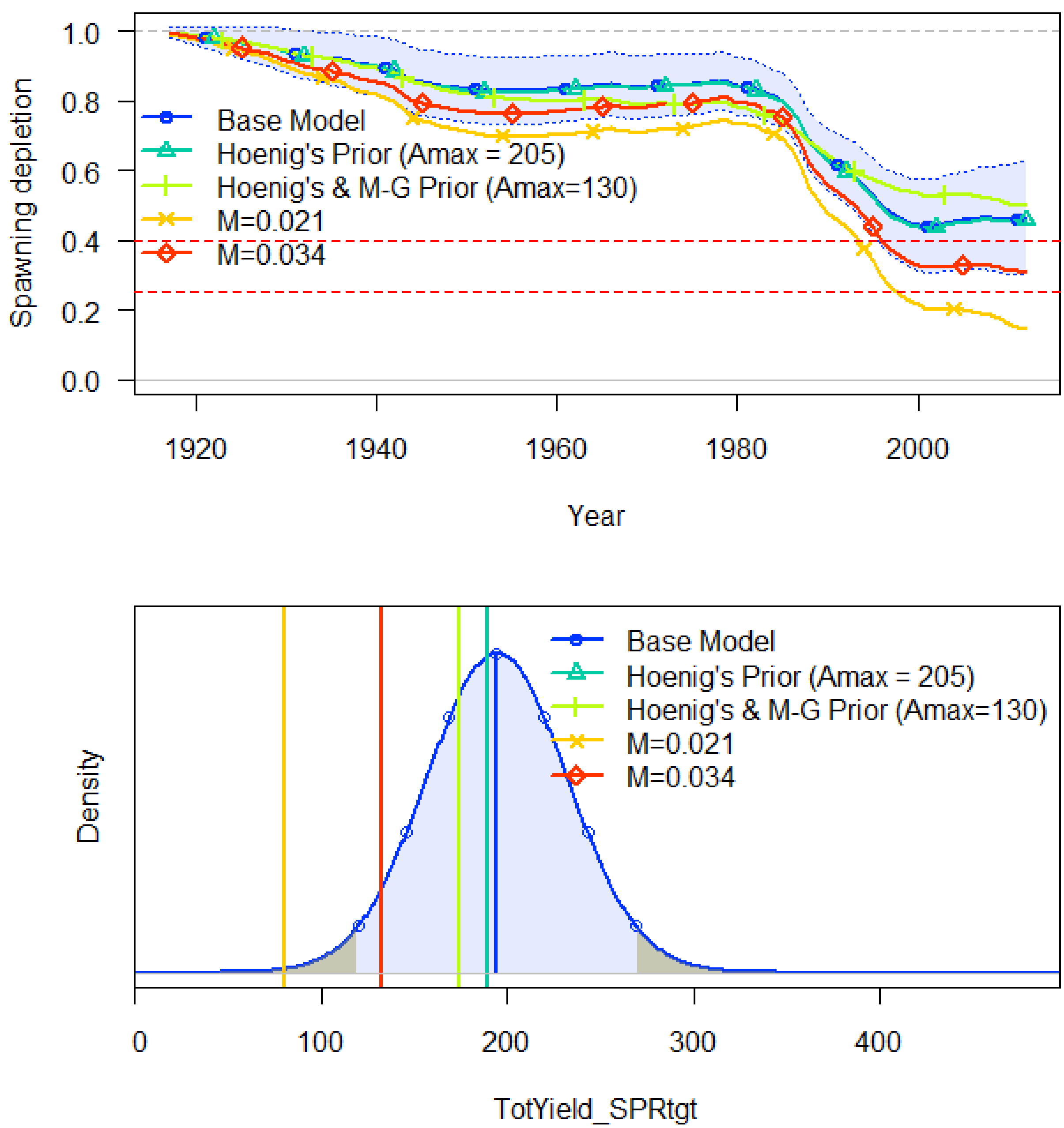


Figure 69: Depletion and target yield estimates for the base model and sensitivities to changing the prior for *M* or fixing *M* at various values. The target yield for the high fixed *M* case is not shown because it is 11,678 mt and is beyond the scale of the x-axis.

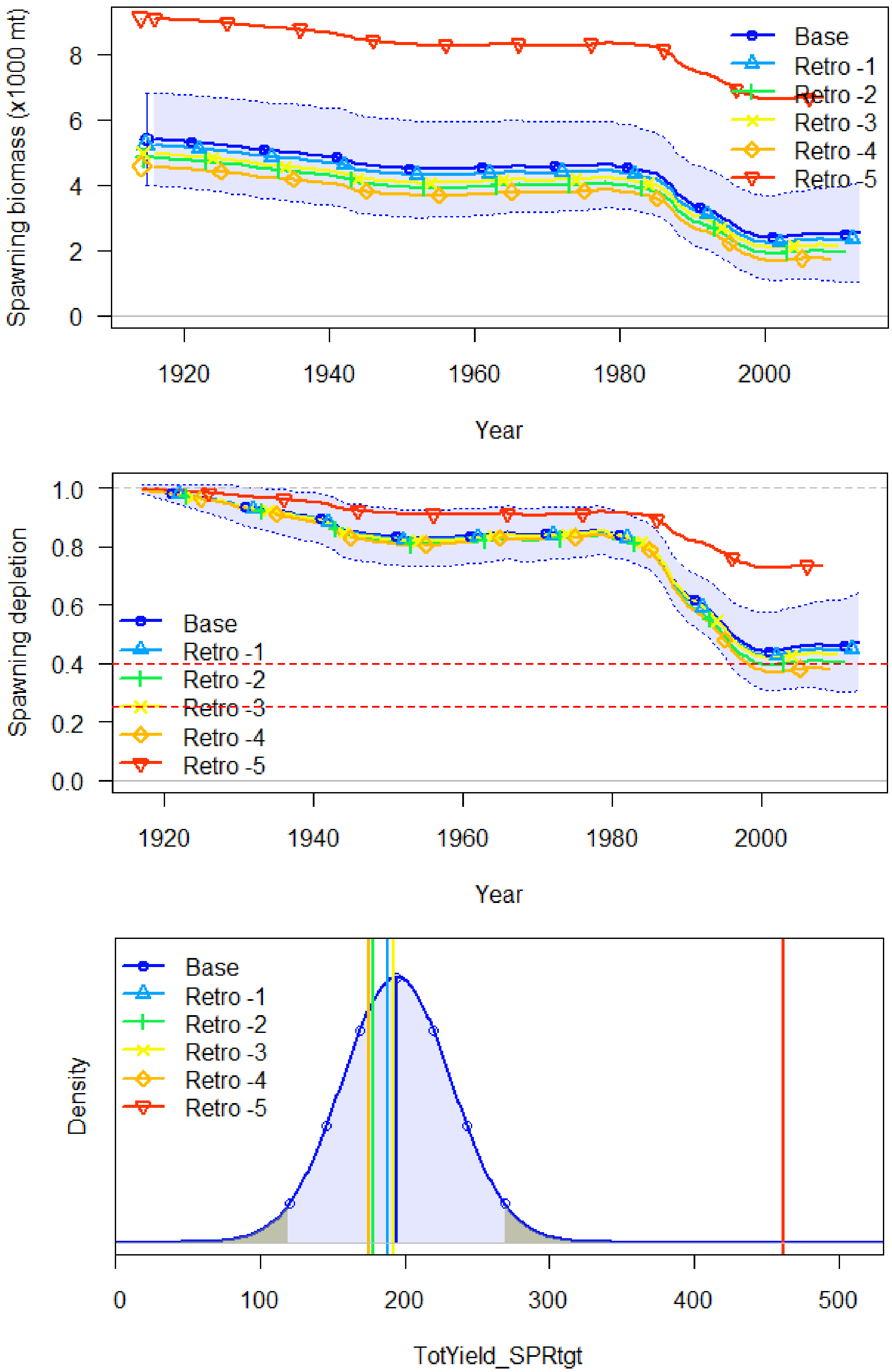


Figure 70: Five-year retrospective estimates of spawning biomass (top left), depletion (top right), (1-SPR)/(1-SPRtarget) (bottom left), and target yield (bottom left). Uncertainty is shown for the base model only.

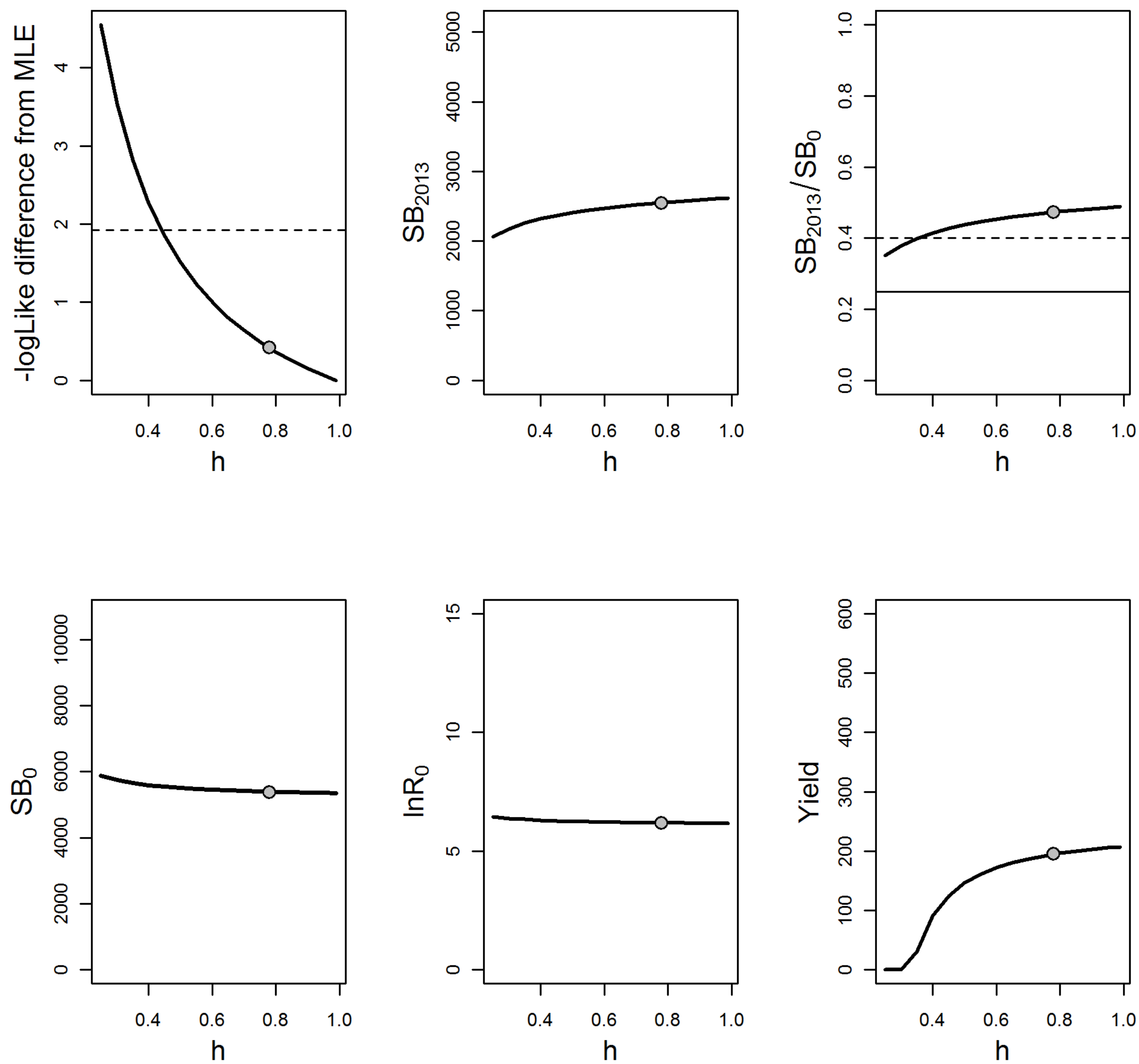


Figure 71: Likelihood profiles and changes in estimates of key parameters when profile over steepness (*h*).

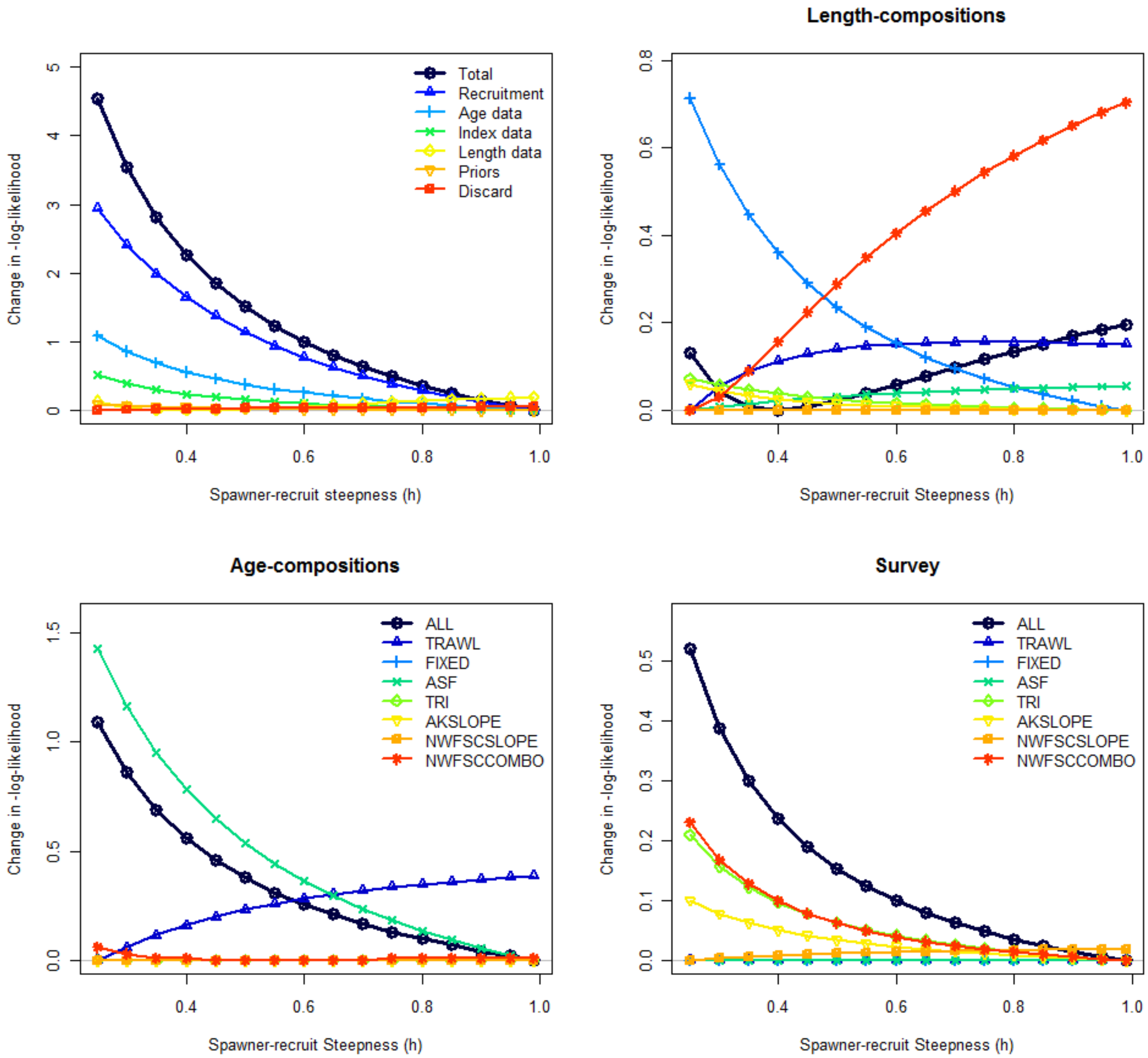


Figure 72: Likelihood components in the likelihood profile for steepness (*h*).

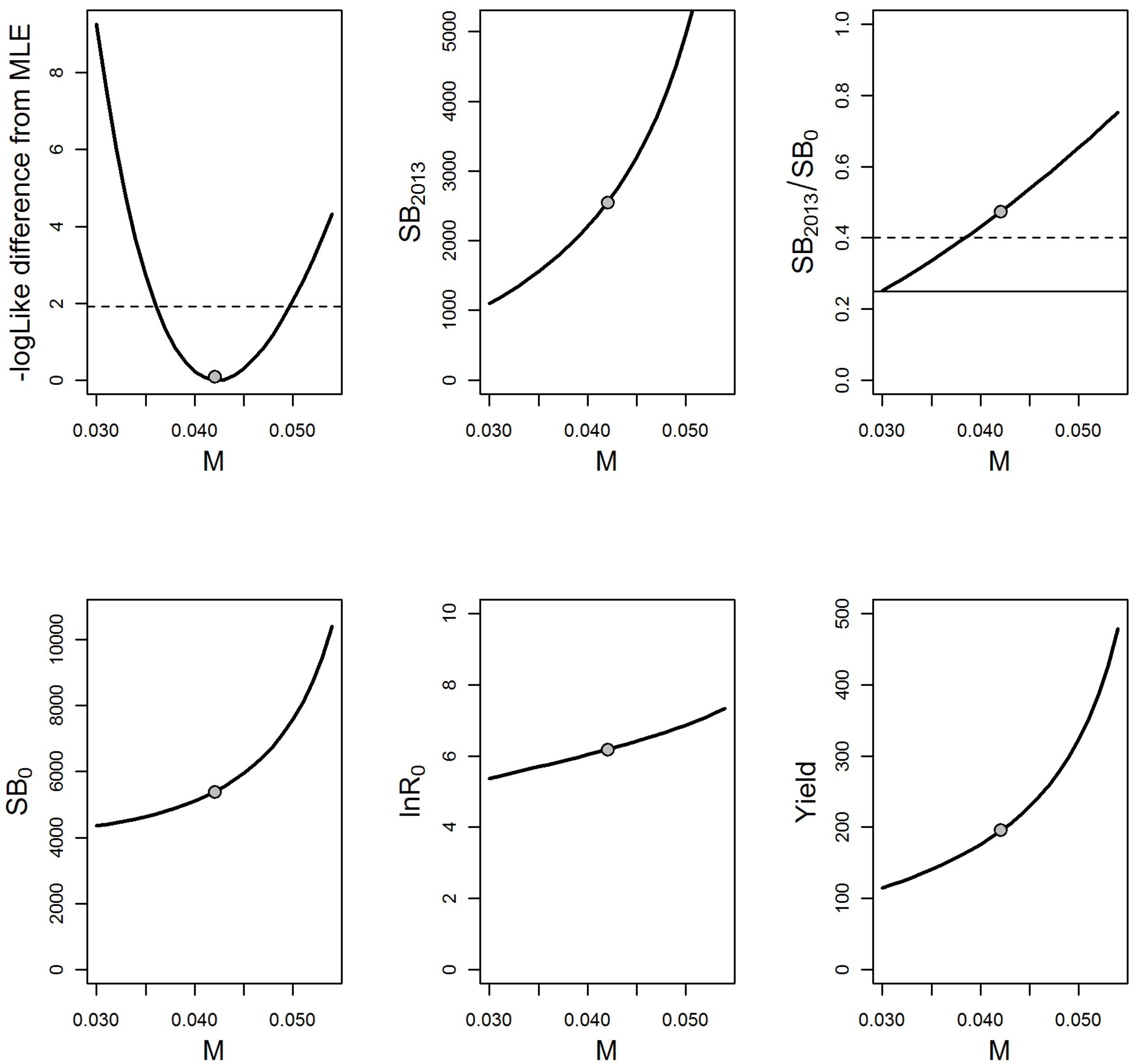


Figure 73: Likelihood profiles and changes in estimates of key parameters when profile over natural mortality (M).

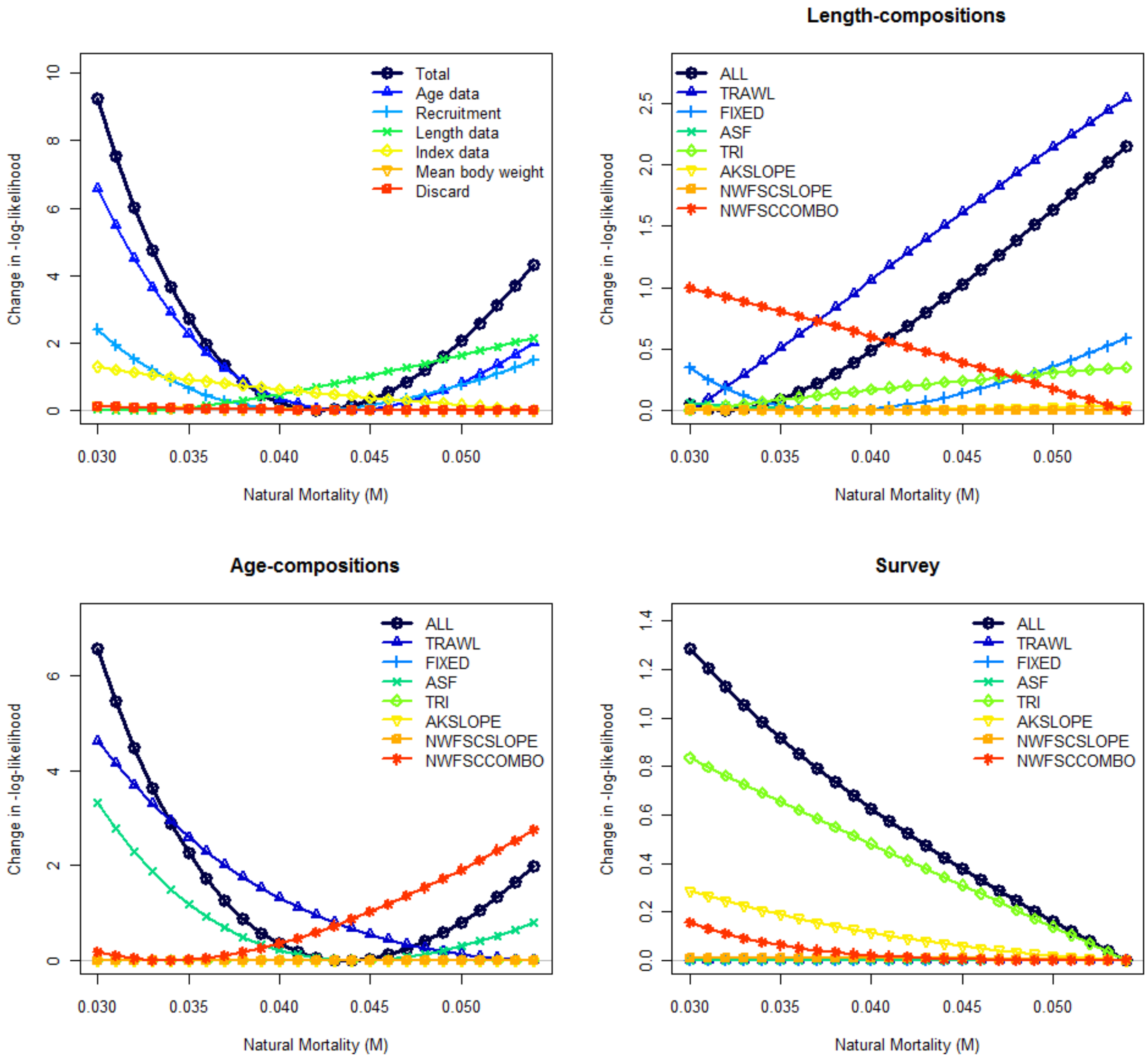


Figure 74: Likelihood components in the likelihood profile for natural mortality (*M*).

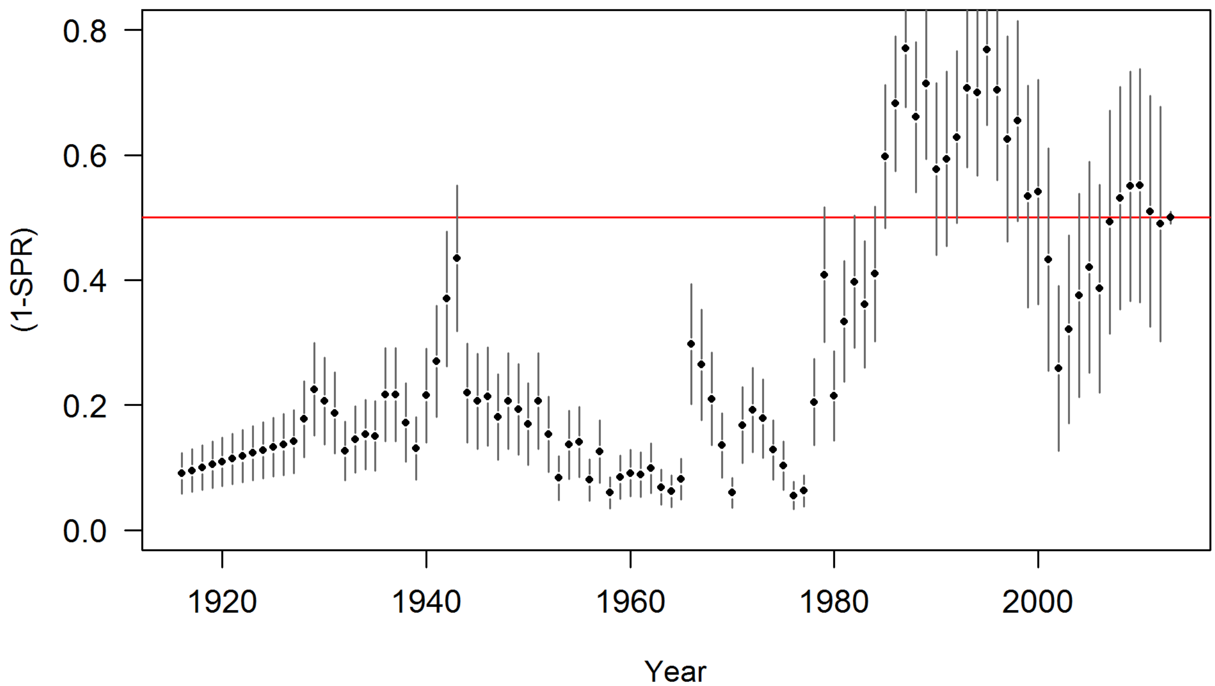


Figure 75: Plot of the predicted (1-SPR) for each year of the model with 95% confidence intervals.

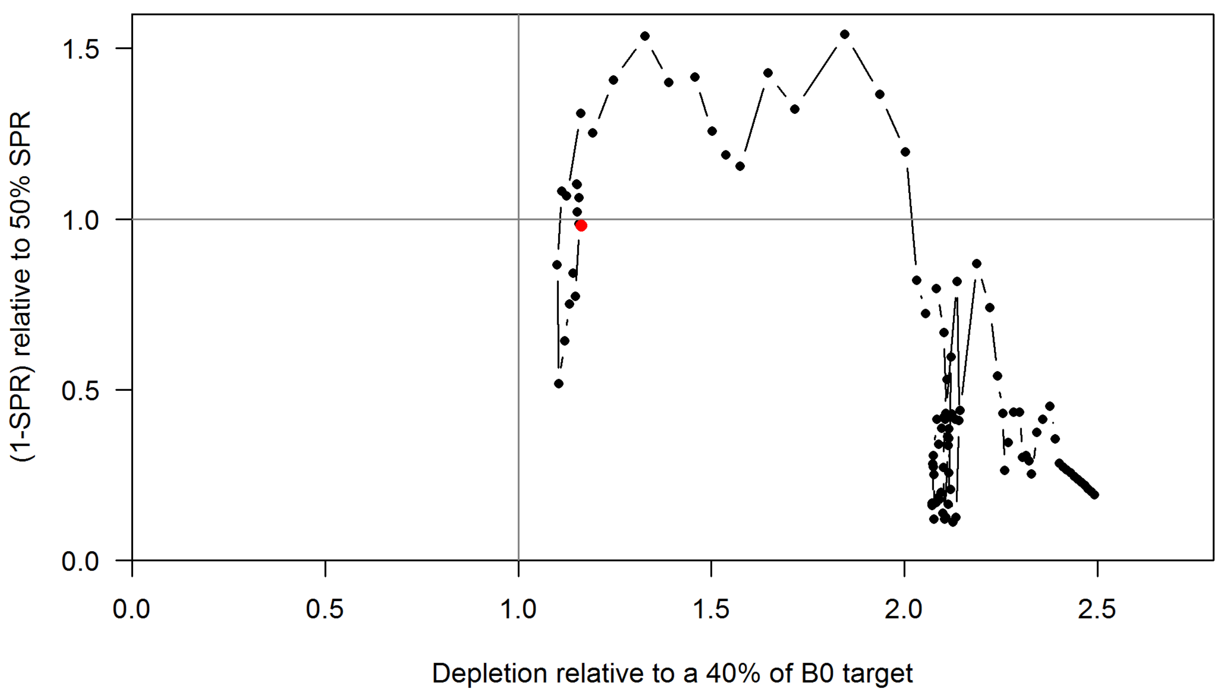


Figure 76: Phase plot of relative (1-SPR) (y-axis) and depletion (x-axis) for rougheye rockfish. The red point represent the year 2012.

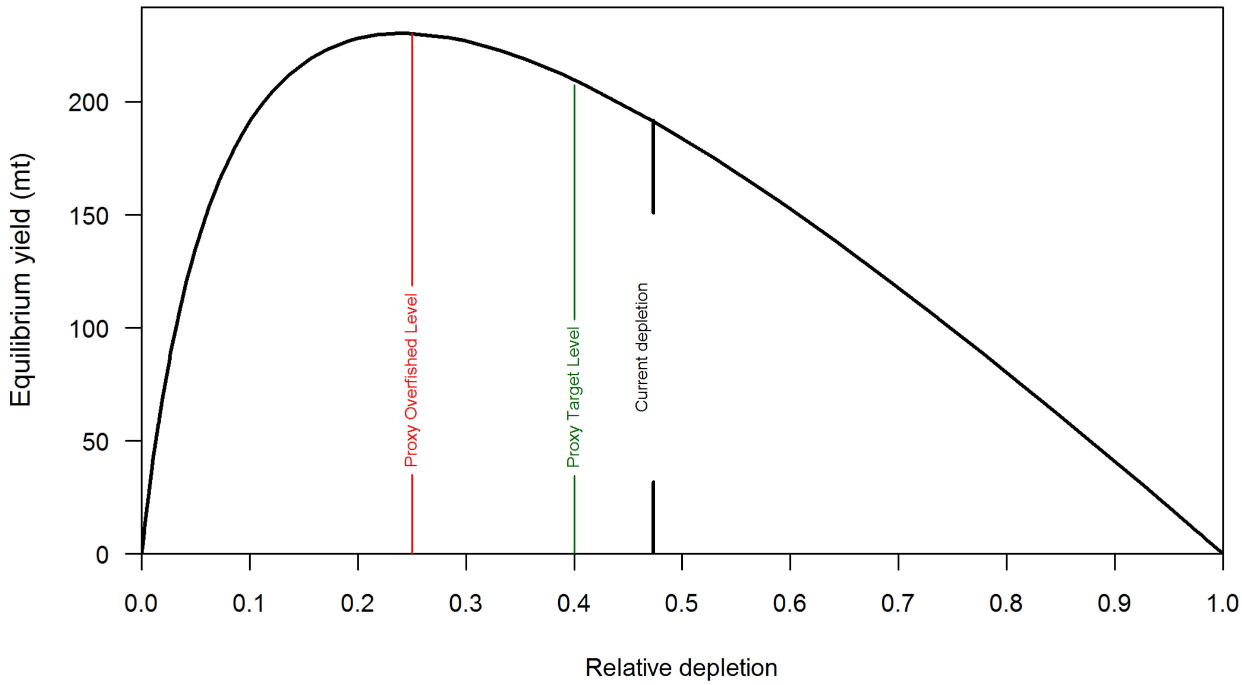


Figure 77: Equilibrium yield curve plotted against depletion for rougheye rockfish with proxy target levels shown in red and green, and the 2013 estimated depletion shown in black.

Appendix A. Year-specific fits to the length compositions

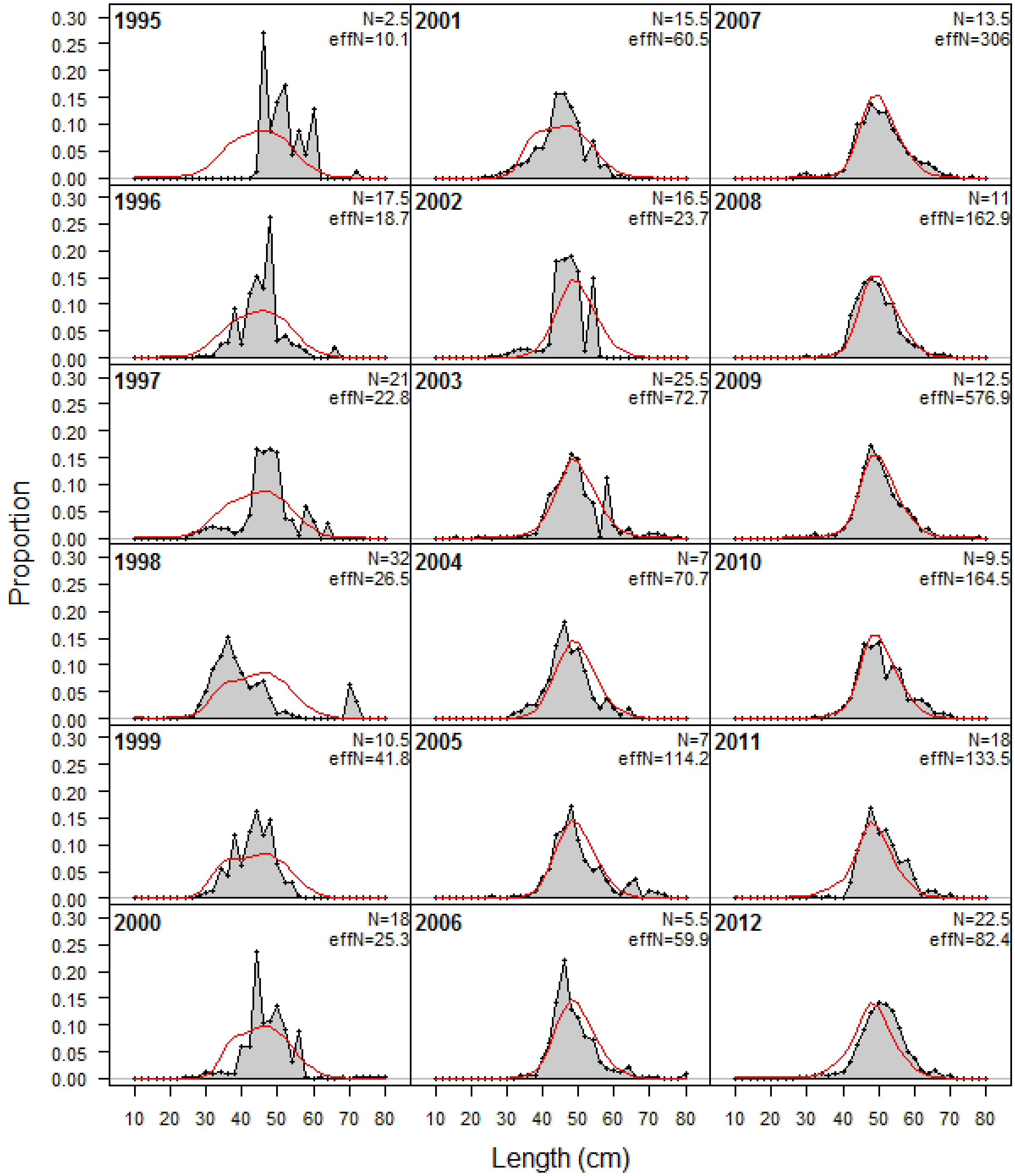


Figure A1: Fits to the retained length compositions for the trawl fleet.

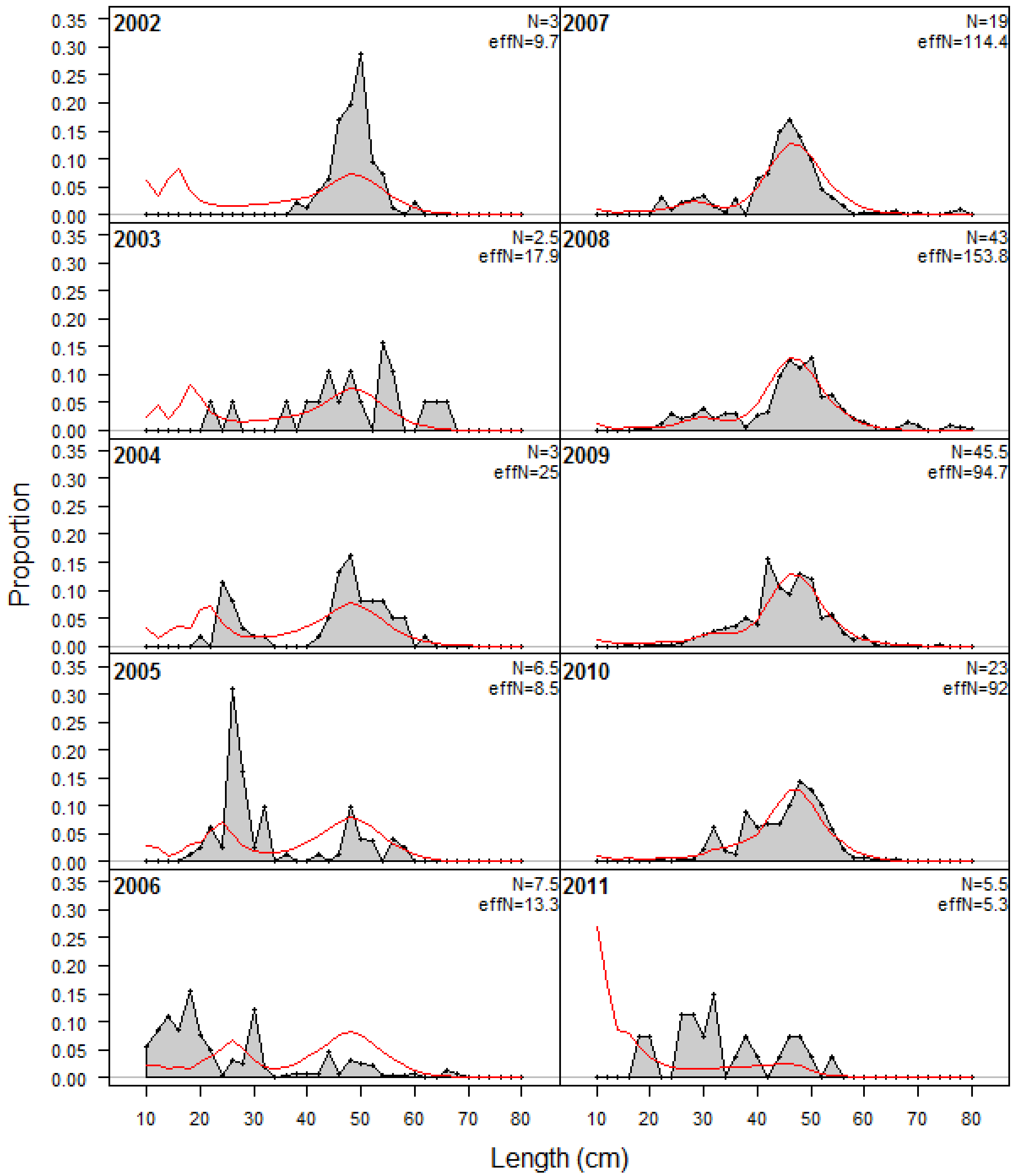


Figure A2: Fits to the discarded length compositions for the trawl fleet.

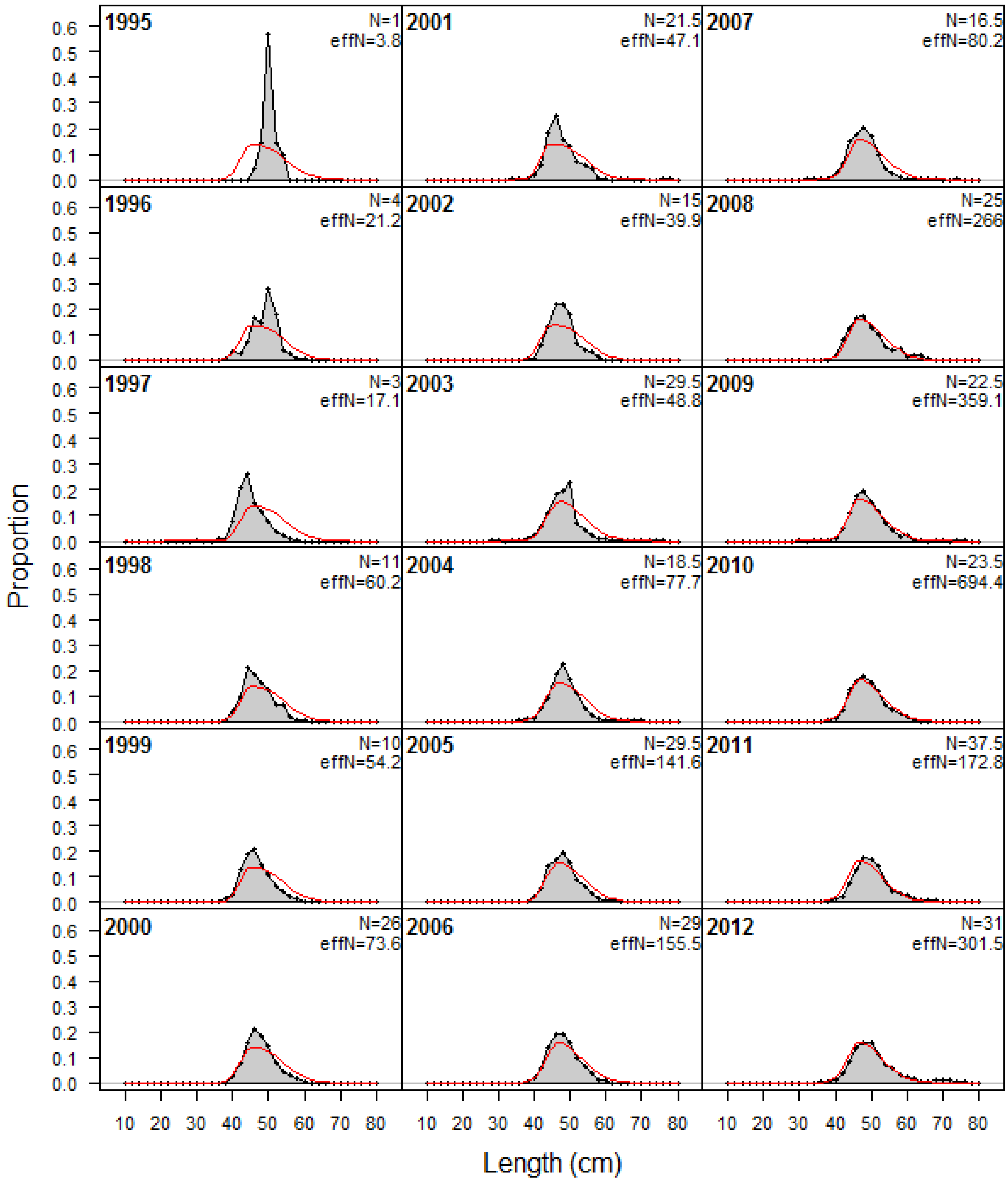


Figure A3: Fits to the retained length compositions for the hook & line fleet.

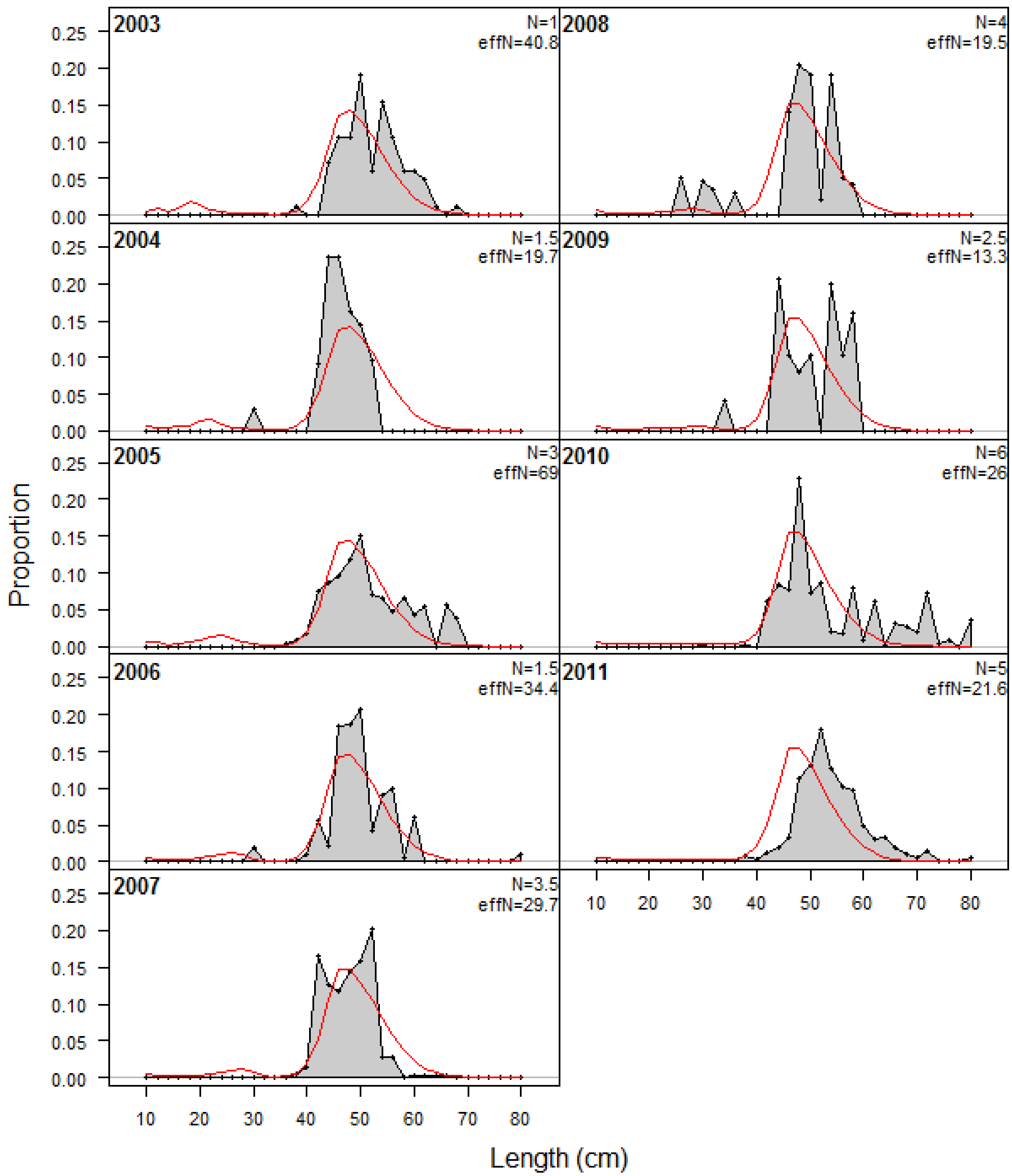


Figure A4: Fits to the discarded length compositions for the hook & line fleet.

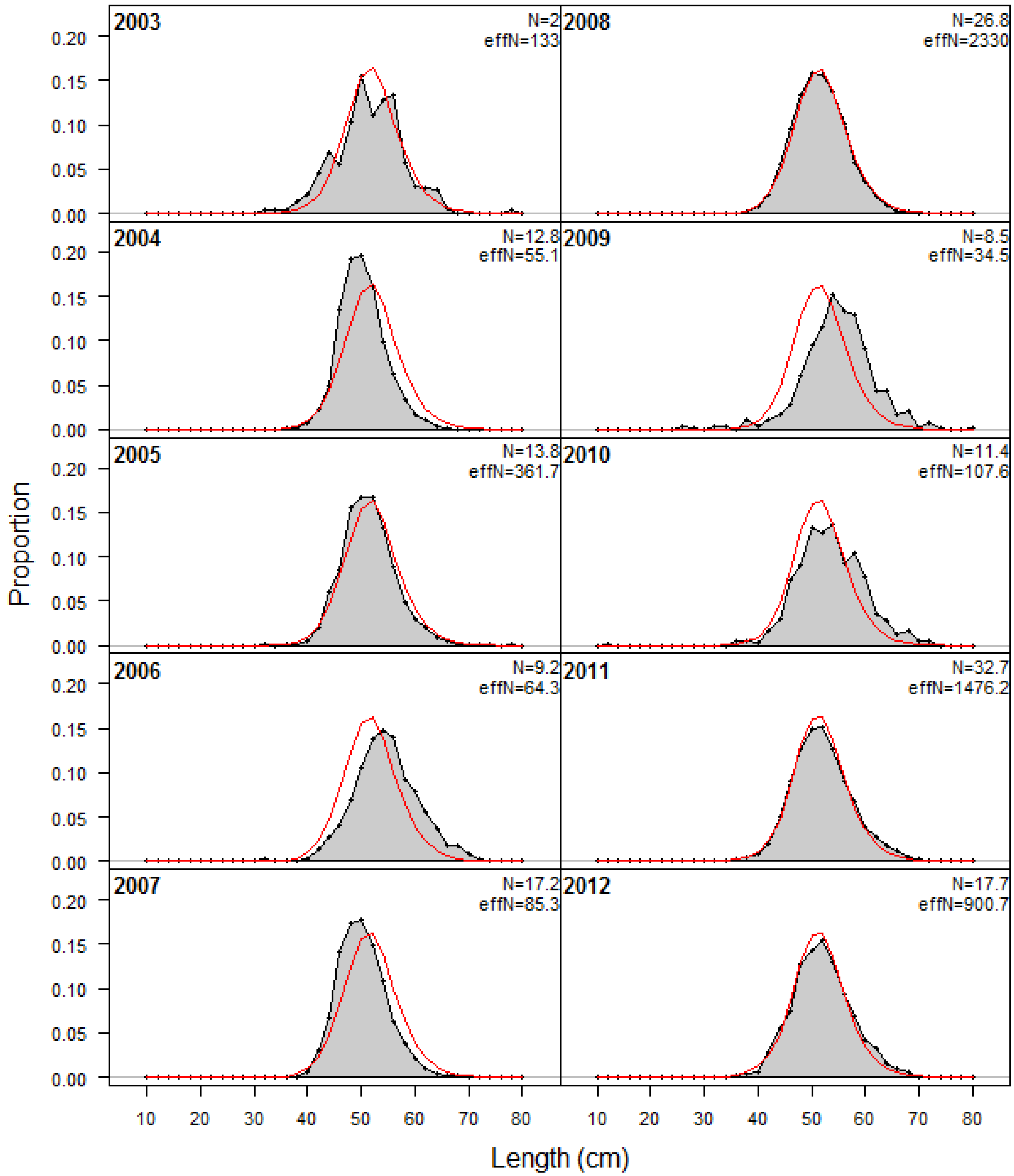


Figure A5: Fits to the length compositions for the at-sea fleet.

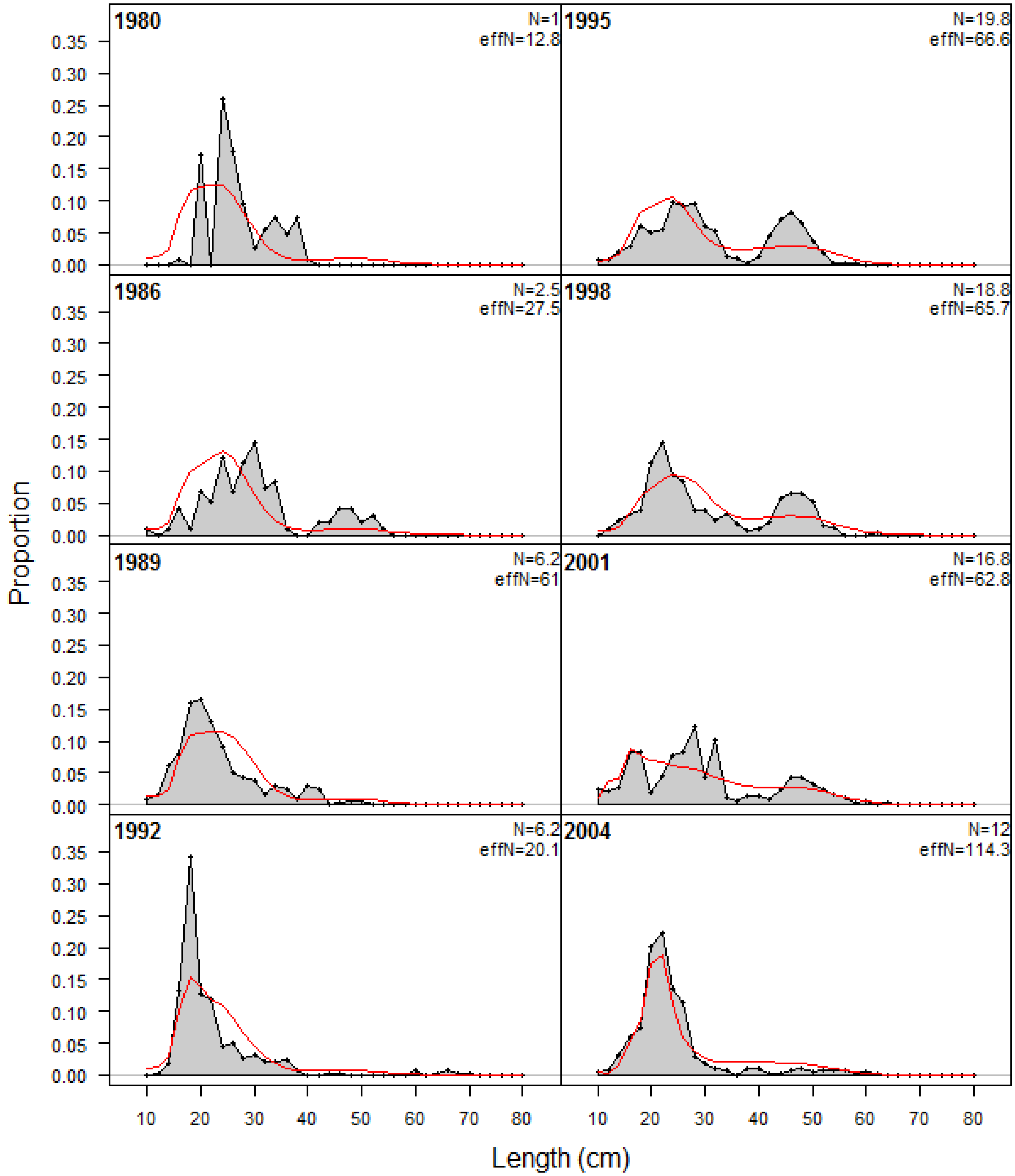


Figure A6: Fits to the length compositions for the triennial survey.

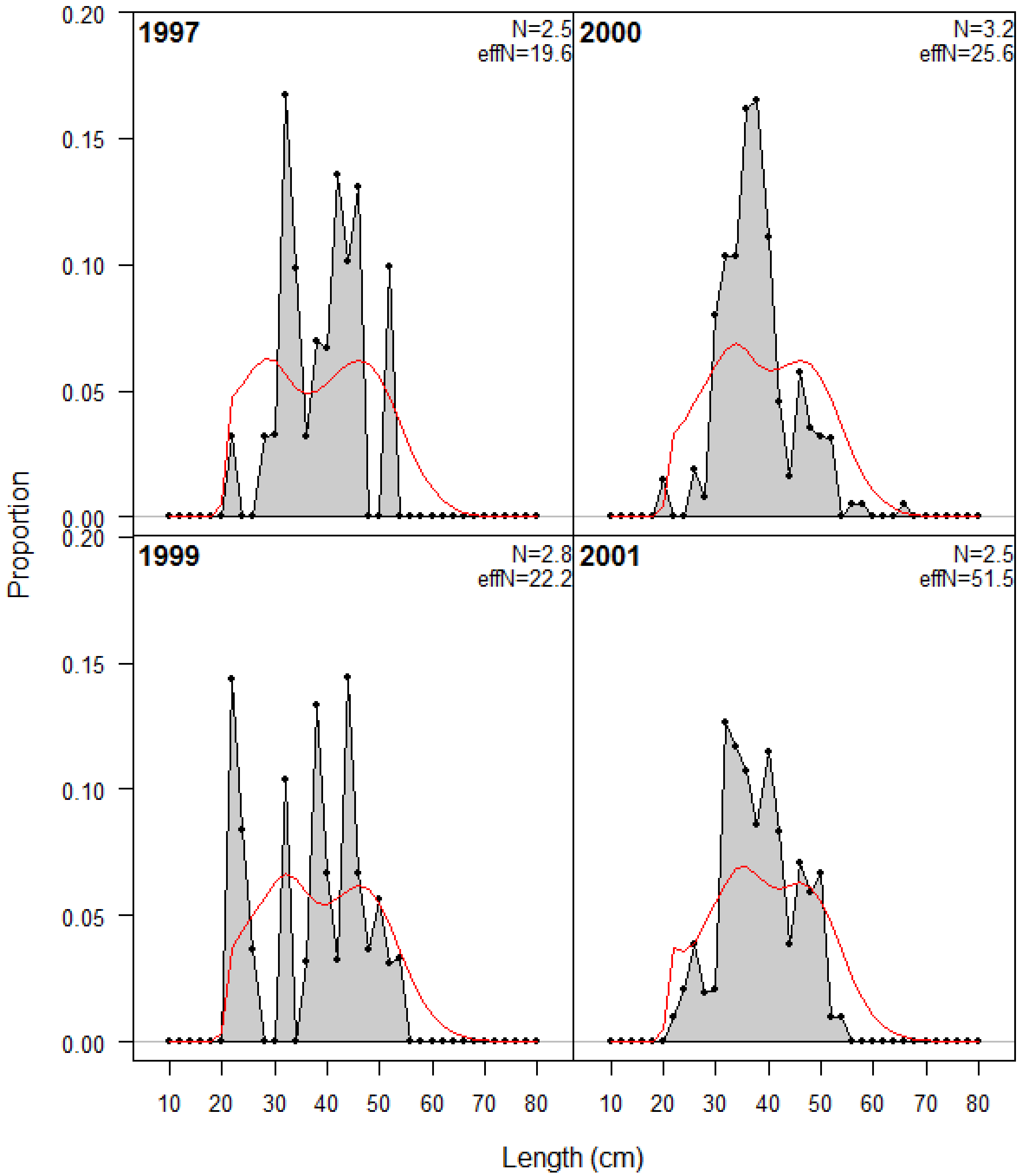


Figure A7: Fits to the length compositions for the AFSC slope survey.

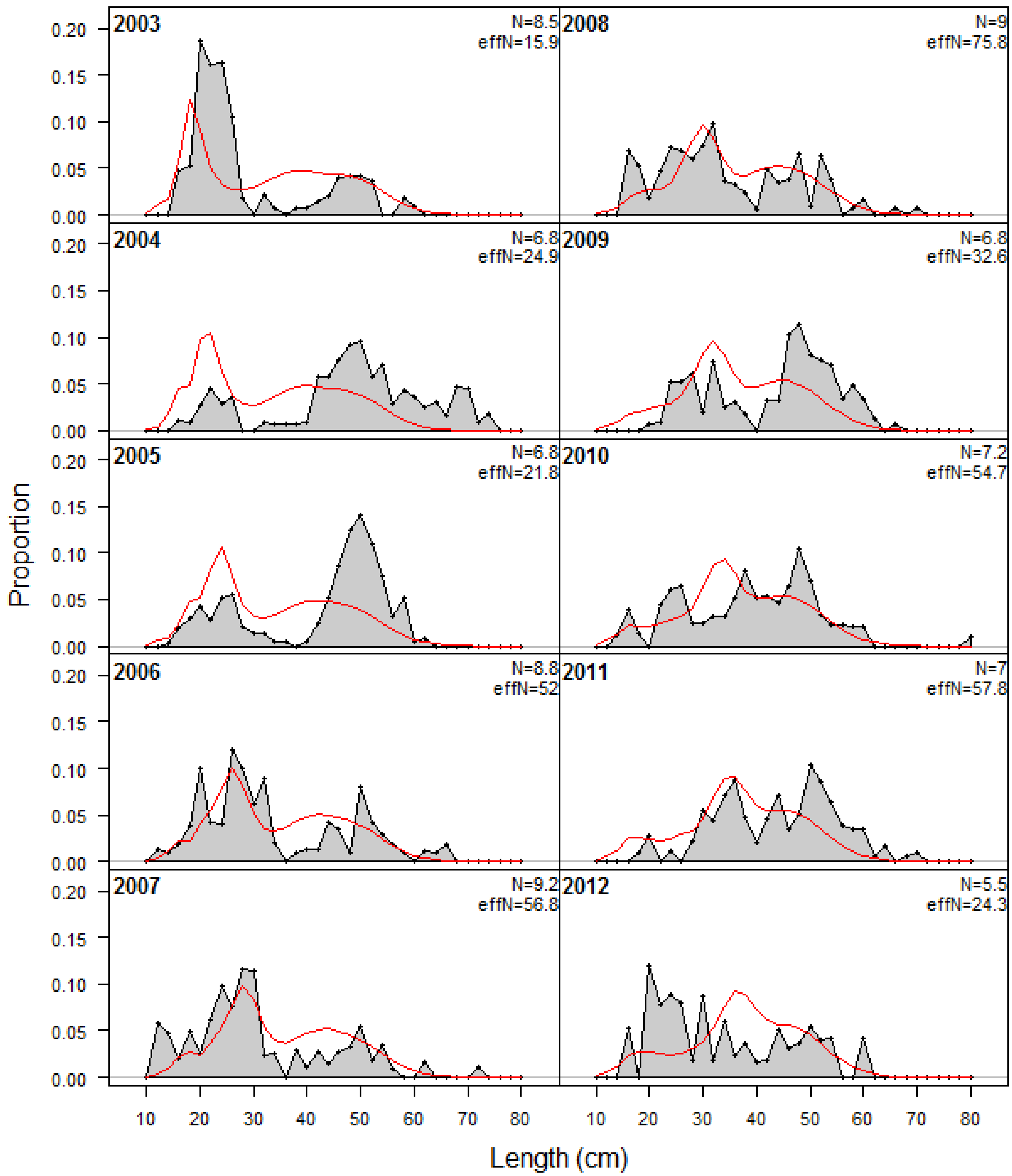


Figure A8: Fits to the length compositions for the NWFSC shelf/slope survey.

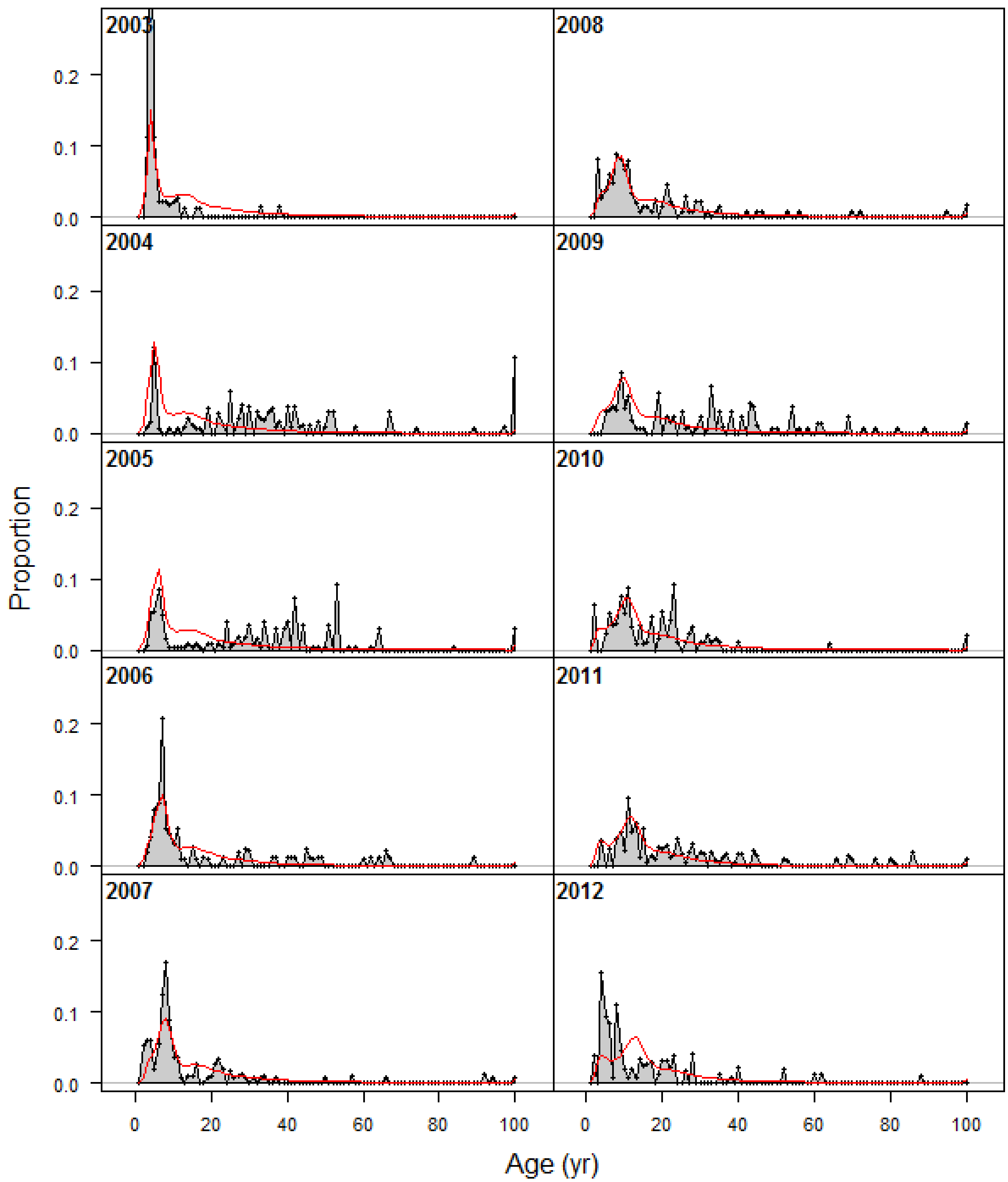


Figure A8: Implied fits to the age compositions for the NWFSC shelf/slope survey.

Appendix B. Predicted numbers-at-age

Year	0	1	2	3	4	5	6	7	8	9	10
1916	488.90	469.03	449.87	431.40	413.62	396.52	380.09	364.31	349.17	334.65	320.73
1917	488.38	468.78	449.73	431.35	413.64	396.59	380.20	364.44	349.32	334.80	320.87
1918	487.71	468.29	449.49	431.22	413.60	396.62	380.27	364.55	349.44	334.94	321.02
1919	486.84	467.64	449.01	430.99	413.47	396.57	380.29	364.62	349.55	335.06	321.15
1920	485.75	466.80	448.40	430.53	413.25	396.45	380.25	364.64	349.61	335.16	321.27
1921	484.46	465.76	447.59	429.94	412.81	396.24	380.13	364.60	349.63	335.22	321.36
1922	482.98	464.53	446.59	429.17	412.24	395.82	379.93	364.48	349.59	335.24	321.42
1923	481.32	463.11	445.41	428.20	411.50	395.27	379.53	364.29	349.48	335.20	321.44
1924	479.48	461.52	444.05	427.07	410.58	394.56	379.00	363.90	349.29	335.10	321.40
1925	477.48	459.75	442.52	425.77	409.49	393.68	378.32	363.40	348.92	334.91	321.30
1926	475.36	457.83	440.82	424.30	408.24	392.64	377.47	362.75	348.44	334.56	321.13
1927	473.15	455.80	438.98	422.68	406.84	391.44	376.47	361.93	347.82	334.10	320.79
1928	470.86	453.68	437.04	420.91	405.28	390.09	375.32	360.98	347.03	333.50	320.35
1929	468.59	451.48	435.00	419.05	403.58	388.59	374.03	359.87	346.11	332.75	319.77
1930	466.43	449.31	432.89	417.09	401.79	386.96	372.59	358.63	345.05	331.86	319.04
1931	464.53	447.23	430.81	415.07	399.91	385.25	371.03	357.25	343.86	330.85	318.20
1932	462.94	445.41	428.82	413.07	397.98	383.45	369.39	355.76	342.54	329.70	317.22
1933	461.71	443.89	427.08	411.17	396.07	381.59	367.66	354.18	341.11	328.44	316.13
1934	460.79	442.72	425.62	409.50	394.24	379.76	365.89	352.53	339.60	327.07	314.92
1935	460.21	441.82	424.49	408.09	392.64	378.01	364.13	350.82	338.02	325.62	313.60
1936	460.05	441.28	423.64	407.02	391.29	376.48	362.45	349.14	336.38	324.10	312.21
1937	460.20	441.12	423.11	406.19	390.26	375.18	360.97	347.53	334.76	322.53	310.75
1938	460.80	441.27	422.95	405.68	389.47	374.19	359.73	346.11	333.22	320.97	309.24
1939	461.92	441.84	423.10	405.54	388.98	373.43	358.78	344.92	331.86	319.50	307.75
1940	463.55	442.92	423.65	405.68	388.85	372.97	358.06	344.01	330.72	318.20	306.34
1941	465.47	444.48	424.68	406.21	388.98	372.83	357.61	343.31	329.84	317.10	305.09
1942	467.70	446.32	426.17	407.19	389.48	372.96	357.48	342.88	329.17	316.25	304.03
1943	470.06	448.45	427.93	408.61	390.41	373.43	357.59	342.74	328.75	315.60	303.20
1944	472.58	450.72	429.96	410.28	391.76	374.31	358.02	342.83	328.59	315.15	302.52
1945	475.95	453.13	432.15	412.24	393.37	375.61	358.88	343.26	328.68	315.00	302.06
1946	479.62	456.36	434.45	414.33	395.25	377.15	360.12	344.07	329.07	315.03	301.83
1947	483.49	459.89	437.56	416.55	397.26	378.96	361.61	345.28	329.87	315.46	301.96
1948	487.57	463.60	440.94	419.54	399.39	380.90	363.35	346.71	331.04	316.25	302.41
1949	491.67	467.51	444.50	422.78	402.26	382.94	365.21	348.38	332.42	317.38	303.18
1950	495.76	471.44	448.25	426.19	405.37	385.69	367.17	350.16	334.02	318.70	304.26
1951	499.73	475.36	452.02	429.79	408.64	388.67	369.80	352.04	335.73	320.23	305.52
1952	503.31	479.17	455.78	433.40	412.09	391.81	372.66	354.57	337.53	321.87	306.99
1953	506.48	482.60	459.44	437.01	415.55	395.12	375.67	357.31	339.95	323.59	308.55
1954	509.06	485.64	462.73	440.52	419.02	398.45	378.85	360.20	342.59	325.93	310.22
1955	510.62	488.11	465.64	443.67	422.38	401.76	382.03	363.24	345.35	328.44	312.43
1956	511.04	489.61	468.01	446.46	425.40	404.98	385.21	366.29	348.26	331.08	314.84
1957	510.29	490.01	469.44	448.74	428.07	407.88	388.30	369.34	351.19	333.87	317.36
1958	508.09	489.29	469.82	450.10	430.25	410.44	391.07	372.30	354.10	336.66	320.01
1959	504.66	487.18	469.14	450.48	431.57	412.53	393.53	374.96	356.94	339.46	322.70
1960	499.98	483.89	467.12	449.82	431.93	413.80	395.54	377.32	359.50	342.20	325.41
1961	494.38	479.41	463.96	447.88	431.30	414.13	396.75	379.24	361.75	344.63	327.99
1962	488.20	474.04	459.66	444.85	429.43	413.53	397.07	380.40	363.59	346.78	330.31
1963	481.80	468.11	454.51	440.73	426.52	411.74	396.49	380.71	364.69	348.54	332.36
1964	475.64	461.98	448.83	435.79	422.58	408.96	394.78	380.15	365.00	349.62	334.08
1965	470.02	456.06	442.95	430.35	417.84	405.17	392.11	378.52	364.47	349.91	335.11
1966	465.24	450.68	437.27	424.70	412.61	400.62	388.47	375.94	362.88	349.35	335.31

Year	0	1	2	3	4	5	6	7	8	9	10
1967	461.26	446.10	431.98	419.13	407.08	395.49	383.98	372.27	360.07	347.18	333.72
1968	458.57	442.28	427.62	414.08	401.76	390.21	379.09	368.01	356.63	344.64	331.87
1969	457.30	439.70	423.98	409.93	396.95	385.14	374.06	363.36	352.62	341.48	329.67
1970	457.55	438.48	421.58	406.50	393.03	380.59	369.26	358.62	348.32	337.95	327.18
1971	459.95	438.72	420.41	404.21	389.75	376.83	364.91	354.03	343.81	333.89	323.87
1972	465.58	441.02	420.59	403.04	387.50	373.65	361.25	349.78	339.27	329.28	319.52
1973	474.45	446.42	422.78	403.20	386.37	371.47	358.18	346.27	335.16	324.88	315.01
1974	479.38	454.93	427.97	405.30	386.53	370.39	356.11	343.33	331.81	320.98	310.85
1975	480.85	459.65	436.15	410.30	388.57	370.57	355.10	341.38	329.06	317.89	307.32
1976	483.47	461.06	440.69	418.16	393.38	372.54	355.28	340.43	327.23	315.34	304.50
1977	490.96	463.57	442.07	422.54	400.93	377.17	357.19	340.63	326.37	313.66	302.19
1978	495.05	470.76	444.49	423.87	405.15	384.43	361.65	342.49	326.61	312.94	300.75
1979	475.99	474.68	451.34	426.16	406.39	388.43	368.57	346.71	328.30	312.99	299.75
1980	444.65	456.40	454.98	432.61	408.47	389.52	372.30	353.20	332.09	314.15	299.06
1981	403.71	426.36	437.55	436.18	414.73	391.59	373.42	356.88	338.49	318.09	300.68
1982	366.88	387.10	408.73	419.45	418.15	397.58	375.39	357.94	341.99	324.19	304.42
1983	355.37	351.78	371.05	391.78	402.06	400.81	381.09	359.77	342.90	327.34	309.91
1984	358.99	340.75	337.24	355.71	375.58	385.44	384.23	365.30	344.77	328.44	313.30
1985	370.97	344.22	326.64	323.27	340.98	360.03	369.47	368.27	350.00	330.11	314.15
1986	392.91	355.70	329.88	313.04	309.81	326.78	345.02	353.99	352.61	334.69	315.06
1987	456.17	376.74	340.85	316.11	299.97	296.88	313.12	330.51	338.86	337.04	319.19
1988	627.55	437.39	360.93	326.54	302.84	287.37	284.39	299.85	316.20	323.53	320.83
1989	597.76	601.73	419.12	345.85	312.90	290.19	275.35	272.42	287.00	302.14	308.40
1990	536.15	573.16	576.31	401.42	331.24	299.68	277.90	263.55	260.33	273.38	286.45
1991	493.51	514.08	549.19	552.20	384.63	317.38	287.12	266.17	252.18	248.62	260.33
1992	453.62	473.20	492.54	526.17	529.06	368.50	304.05	274.96	254.61	240.68	236.48
1993	406.48	434.95	453.41	471.94	504.17	506.93	353.06	291.22	263.11	243.18	229.23
1994	311.68	389.76	416.75	434.43	452.18	483.06	485.67	338.16	278.68	251.33	231.66
1995	306.68	298.85	373.49	399.35	416.30	433.30	462.87	465.26	323.72	266.39	239.73
1996	380.60	294.06	286.31	357.81	382.59	398.82	415.08	443.26	445.11	309.08	253.59
1997	404.22	364.94	281.77	274.34	342.86	366.60	382.13	397.61	424.27	425.38	294.68
1998	898.04	387.58	349.72	270.02	262.90	328.56	351.29	366.08	380.64	405.56	405.73
1999	2209.43	861.09	371.47	335.19	258.80	251.97	314.89	336.62	350.64	364.24	387.55
2000	526.41	2118.51	825.34	356.05	321.27	248.05	241.50	301.76	322.44	335.55	348.07
2001	846.20	504.75	2030.27	790.97	341.22	307.89	237.71	231.37	288.88	308.21	320.02
2002	239.26	811.38	483.74	1945.80	758.05	327.02	295.06	227.75	221.53	276.21	294.08
2003	426.36	229.42	777.79	463.72	1865.23	726.67	313.48	282.84	218.32	212.36	264.76
2004	355.09	408.82	219.87	745.44	444.43	1787.66	696.45	300.44	271.08	209.24	203.52
2005	282.43	340.48	391.81	210.72	714.42	425.94	1713.27	667.46	287.94	259.80	200.52
2006	282.40	270.81	326.34	375.54	201.97	684.76	408.25	1642.13	639.75	275.98	249.00
2007	385.24	270.78	259.56	312.78	359.94	193.59	656.31	391.29	1573.92	613.17	264.51
2008	385.01	369.39	259.46	248.70	299.70	344.88	185.49	628.86	374.92	1508.06	587.48
2009	357.84	369.16	353.97	248.62	238.32	287.19	330.48	177.74	602.60	359.26	1444.99
2010	328.25	343.12	353.68	339.13	238.20	228.32	275.15	316.63	170.29	577.32	344.17
2011	452.29	314.74	328.68	338.80	324.86	228.18	218.72	263.57	303.30	163.12	552.98
2012	448.88	433.68	301.66	315.02	324.72	311.36	218.69	209.63	252.61	290.69	156.33
2013	449.90	430.41	415.59	289.08	301.88	311.18	298.37	209.57	200.89	242.08	278.56

Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1916	307.39	294.60	282.35	270.62	259.39	248.62	237.63	227.85	218.47	209.49
1917	307.52	294.72	282.43	270.63	259.30	248.44	238.03	227.42	217.98	208.95
1918	307.66	294.85	282.54	270.70	259.30	248.35	237.84	227.78	217.54	208.45
1919	307.80	294.98	282.67	270.80	259.36	248.33	237.73	227.56	217.86	208.00
1920	307.93	295.12	282.79	270.91	259.44	248.37	237.69	227.43	217.62	208.27
1921	308.04	295.24	282.91	271.03	259.54	248.43	237.71	227.38	217.47	208.02
1922	308.13	295.34	283.03	271.14	259.64	248.51	237.75	227.37	217.39	207.85
1923	308.19	295.43	283.13	271.24	259.74	248.59	237.80	227.38	217.35	207.73
1924	308.20	295.48	283.20	271.33	259.83	248.67	237.86	227.41	217.34	207.67
1925	308.17	295.50	283.25	271.40	259.90	248.74	237.91	227.43	217.33	207.62
1926	308.07	295.46	283.26	271.44	259.95	248.79	237.95	227.46	217.33	207.58
1927	307.90	295.37	283.23	271.44	259.98	248.83	237.98	227.47	217.32	207.55
1928	307.58	295.20	283.13	271.40	259.98	248.84	237.99	227.47	217.30	207.51
1929	307.15	294.88	282.96	271.26	259.85	248.70	237.83	227.27	217.06	207.23
1930	306.59	294.46	282.61	271.02	259.58	248.38	237.43	226.80	216.52	206.63
1931	305.90	293.93	282.22	270.72	259.40	248.20	237.23	226.55	216.21	206.26
1932	305.09	293.27	281.73	270.37	259.17	248.10	237.17	226.48	216.11	206.11
1933	304.16	292.51	281.14	269.99	258.99	248.11	237.38	226.78	216.45	206.46
1934	303.11	291.62	280.39	269.40	258.57	247.87	237.29	226.88	216.62	206.66
1935	301.95	290.61	279.53	268.67	257.99	247.44	237.03	226.75	216.66	206.76
1936	300.69	289.49	278.56	267.85	257.29	246.89	236.63	226.51	216.56	206.82
1937	299.34	288.26	277.44	266.82	256.33	245.97	235.75	225.71	215.86	206.21
1938	297.94	286.97	276.26	265.74	255.34	245.04	234.87	224.88	215.10	205.55
1939	296.50	285.64	275.06	264.68	254.44	244.28	234.23	224.32	214.62	205.17
1940	295.08	284.27	273.81	263.58	253.52	243.56	233.69	223.94	214.36	205.01
1941	293.71	282.87	272.43	262.26	252.25	242.36	232.58	222.92	213.42	204.13
1942	292.49	281.54	271.05	260.84	250.81	240.90	231.11	221.47	212.01	202.77
1943	291.45	280.33	269.66	259.30	249.09	238.99	229.01	219.22	209.67	200.40
1944	290.58	279.22	268.34	257.74	247.28	236.88	226.61	216.54	206.78	197.38
1945	289.89	278.38	267.40	256.83	246.48	236.25	226.09	216.08	206.31	196.87
1946	289.35	277.59	266.46	255.81	245.53	235.45	225.49	215.63	205.94	196.52
1947	289.25	277.22	265.86	255.06	244.67	234.61	224.76	215.05	205.48	196.12
1948	289.43	277.21	265.60	254.60	244.10	233.97	224.17	214.58	205.17	195.93
1949	289.88	277.39	265.59	254.33	243.61	233.33	223.43	213.86	204.55	195.45
1950	290.61	277.82	265.77	254.34	243.38	232.92	222.89	213.24	203.95	194.95
1951	291.65	278.52	266.19	254.54	243.44	232.78	222.60	212.86	203.51	194.55
1952	292.86	279.51	266.85	254.89	243.55	232.71	222.30	212.37	202.91	193.87
1953	294.26	280.67	267.81	255.58	244.00	232.99	222.47	212.38	202.79	193.66
1954	295.78	282.04	268.98	256.61	244.82	233.66	223.05	212.91	203.21	193.98
1955	297.33	283.44	270.21	257.61	245.65	234.25	223.44	213.18	203.40	194.06
1956	299.45	284.94	271.56	258.80	246.62	235.03	223.99	213.54	203.63	194.22
1957	301.75	286.96	273.01	260.14	247.86	236.13	224.99	214.36	204.32	194.81
1958	304.13	289.11	274.87	261.43	249.01	237.16	225.83	215.08	204.85	195.19
1959	306.69	291.42	276.99	263.31	250.40	238.48	227.09	216.21	205.90	196.09
1960	309.30	293.91	279.24	265.35	252.19	239.76	228.27	217.31	206.86	196.95
1961	311.84	296.34	281.55	267.44	254.08	241.41	229.44	218.40	207.86	197.83
1962	314.30	298.76	283.86	269.63	256.06	243.20	231.02	219.52	208.91	198.80
1963	316.50	301.09	286.15	271.81	258.12	245.05	232.69	220.97	209.92	199.74
1964	318.52	303.28	288.47	274.11	260.33	247.17	234.62	222.74	211.49	200.89
1965	320.16	305.20	290.55	276.33	262.53	249.30	236.66	224.61	213.22	202.43
1966	321.04	306.64	292.25	278.16	264.50	251.25	238.55	226.43	214.88	203.96
1967	319.72	305.61	291.54	277.62	264.10	251.05	238.42	226.34	214.81	203.84
1968	318.52	304.75	291.00	277.40	264.03	251.09	238.62	226.57	215.06	204.09
1969	317.10	304.03	290.66	277.40	264.34	251.53	239.17	227.26	215.77	204.78
1970	315.74	303.59	290.98	278.10	265.31	252.73	240.40	228.51	217.07	206.04
1971	313.46	302.44	290.74	278.63	266.26	254.00	241.94	230.13	218.73	207.78

Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1972	309.64	299.44	288.72	277.44	265.82	253.98	242.27	230.75	219.48	208.61
1973	305.33	295.60	285.65	275.29	264.46	253.34	242.04	230.86	219.88	209.14
1974	301.10	291.58	282.09	272.47	262.52	252.16	241.54	230.75	220.09	209.63
1975	297.41	287.91	278.67	269.53	260.28	250.75	240.84	230.69	220.39	210.21
1976	294.24	284.63	275.44	266.54	257.75	248.89	239.76	230.27	220.55	210.69
1977	291.72	281.82	272.56	263.73	255.19	246.77	238.28	229.53	220.44	211.14
1978	289.74	279.70	270.18	261.27	252.75	244.51	236.38	228.18	219.76	211.02
1979	287.94	277.27	267.53	258.29	249.62	241.32	233.29	225.39	217.46	209.34
1980	285.93	274.22	263.68	254.08	244.98	236.43	228.27	220.42	212.73	205.08
1981	285.99	273.22	261.85	251.64	242.36	233.57	225.33	217.47	209.92	202.55
1982	287.48	273.19	260.74	249.65	239.65	230.52	221.88	213.81	206.14	198.82
1983	290.58	274.03	260.06	247.90	237.03	227.21	218.25	209.81	201.95	194.54
1984	296.36	277.62	261.56	247.95	236.03	225.34	215.67	206.87	198.62	190.99
1985	299.32	282.79	264.60	248.95	235.63	223.92	213.40	203.91	195.31	187.31
1986	299.15	284.38	268.05	250.13	234.60	221.26	209.52	199.01	189.62	181.20
1987	299.69	283.78	268.95	252.57	234.61	218.90	205.35	193.48	182.98	173.72
1988	302.78	283.20	267.02	251.70	234.77	216.38	200.25	186.43	174.49	164.12
1989	304.95	286.96	267.62	251.49	236.14	219.31	201.24	185.48	172.06	160.56
1990	290.78	286.04	267.96	248.91	233.03	218.00	201.75	184.54	169.63	157.01
1991	271.86	275.10	269.88	252.21	233.74	218.34	203.82	188.26	171.92	157.82
1992	246.66	256.66	258.93	253.37	236.25	218.50	203.70	189.83	175.08	159.69
1993	224.50	233.43	242.18	243.61	237.65	220.87	203.61	189.26	175.92	161.91
1994	217.69	212.51	220.20	227.52	227.75	220.96	204.19	187.25	173.25	160.43
1995	220.40	206.55	201.00	207.45	213.28	212.26	204.70	188.12	171.66	158.19
1996	227.40	208.29	194.36	188.14	192.88	196.78	194.29	185.97	169.78	154.10
1997	241.11	215.58	196.82	182.93	176.19	179.60	182.16	178.86	170.38	154.93
1998	280.36	228.80	204.04	185.75	172.06	165.10	167.66	169.44	165.85	157.58
1999	387.07	266.96	217.34	193.19	175.11	161.37	154.02	155.62	156.57	152.69
2000	369.75	368.66	253.81	206.21	182.84	165.26	151.86	144.55	145.70	146.31
2001	331.11	350.88	349.14	239.97	194.68	172.37	155.57	142.74	135.68	136.57
2002	304.62	314.49	332.68	330.61	227.01	184.02	162.81	146.84	134.66	127.92
2003	281.88	291.94	301.29	318.53	316.28	216.94	175.65	155.23	139.86	128.13
2004	253.72	270.06	279.59	288.36	304.59	302.09	206.94	167.32	147.66	132.87
2005	195.02	243.07	258.61	267.53	275.63	290.73	287.88	196.86	158.89	139.99
2006	192.17	186.85	232.78	247.46	255.69	263.01	276.90	273.62	186.72	150.40
2007	238.62	184.12	178.95	222.75	236.52	244.01	250.54	263.26	259.65	176.86
2008	253.39	228.51	176.20	171.04	212.55	225.20	231.73	237.28	248.64	244.57
2009	562.83	242.67	218.69	168.42	163.20	202.34	213.78	219.32	223.87	233.86
2010	1384.05	538.86	232.13	208.87	160.50	155.07	191.60	201.70	206.17	209.72
2011	329.59	1324.81	515.32	221.65	199.01	152.49	146.85	180.81	189.68	193.24
2012	529.91	315.75	1268.41	492.87	211.66	189.64	144.94	139.19	170.88	178.74
2013	149.79	507.55	302.24	1212.86	470.55	201.67	180.25	137.41	131.60	161.14

Year	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1916	200.87	192.60	184.67	177.08	169.79	162.80	156.10	149.68	143.52	137.62
1917	200.31	192.03	184.11	176.52	169.24	162.27	155.58	149.18	143.04	137.15
1918	199.77	191.47	183.54	175.94	168.68	161.71	155.05	148.65	142.53	136.66
1919	199.26	190.93	182.97	175.37	168.10	161.14	154.49	148.11	142.00	136.15
1920	198.80	190.41	182.41	174.79	167.52	160.56	153.91	147.55	141.46	135.62
1921	199.02	189.93	181.89	174.23	166.94	159.98	153.33	146.97	140.89	135.07
1922	198.75	190.12	181.40	173.70	166.37	159.39	152.74	146.39	140.31	134.51
1923	198.55	189.83	181.55	173.20	165.83	158.82	152.15	145.80	139.73	133.93
1924	198.42	189.60	181.23	173.31	165.32	158.27	151.58	145.21	139.14	133.34
1925	198.32	189.44	180.99	172.98	165.39	157.76	151.02	144.63	138.55	132.75
1926	198.24	189.31	180.80	172.71	165.04	157.79	150.50	144.07	137.97	132.16
1927	198.18	189.20	180.64	172.49	164.76	157.43	150.51	143.55	137.41	131.58
1928	198.11	189.11	180.51	172.31	164.52	157.13	150.13	143.52	136.88	131.02
1929	197.80	188.77	180.14	171.92	164.08	156.64	149.59	142.92	136.62	130.29
1930	197.14	188.07	179.42	171.17	163.32	155.86	148.78	142.07	135.72	129.73
1931	196.72	187.61	178.92	170.65	162.77	155.29	148.17	141.43	135.04	129.01
1932	196.53	187.37	178.64	170.33	162.42	154.91	147.77	140.99	134.57	128.49
1933	196.85	187.65	178.87	170.51	162.56	155.00	147.82	141.00	134.53	128.40
1934	197.04	187.81	179.00	170.59	162.60	155.01	147.79	140.94	134.43	128.26
1935	197.18	187.94	179.10	170.66	162.63	154.99	147.74	140.86	134.32	128.12
1936	197.29	188.09	179.24	170.78	162.71	155.04	147.75	140.83	134.26	128.03
1937	196.82	187.67	178.85	170.39	162.31	154.62	147.32	140.38	133.80	127.55
1938	196.24	187.22	178.45	170.02	161.95	154.25	146.92	139.97	133.37	127.11
1939	195.97	187.04	178.39	170.00	161.94	154.24	146.89	139.91	133.28	126.99
1940	195.91	187.08	178.52	170.24	162.21	154.52	147.15	140.14	133.47	127.14
1941	195.11	186.37	177.90	169.72	161.81	154.17	146.83	139.83	133.15	126.81
1942	193.79	185.11	176.73	168.65	160.85	153.33	146.06	139.10	132.45	126.12
1943	191.43	182.78	174.46	166.48	158.80	151.41	144.30	137.43	130.87	124.60
1944	188.35	179.70	171.42	163.51	155.95	148.70	141.74	135.05	128.61	122.44
1945	187.82	179.16	170.88	162.97	155.42	148.22	141.31	134.68	128.32	122.20
1946	187.46	178.78	170.49	162.58	155.03	147.84	140.97	134.40	128.09	122.04
1947	187.06	178.35	170.05	162.13	154.58	147.38	140.53	133.99	127.74	121.74
1948	186.92	178.22	169.89	161.94	154.38	147.17	140.31	133.78	127.55	121.59
1949	186.54	177.90	169.56	161.59	154.01	146.80	139.93	133.40	127.19	121.26
1950	186.19	177.64	169.35	161.39	153.78	146.55	139.67	133.13	126.91	120.99
1951	185.89	177.48	169.29	161.36	153.75	146.49	139.59	133.03	126.80	120.87
1952	185.24	176.91	168.85	161.03	153.46	146.20	139.29	132.71	126.47	120.54
1953	184.97	176.69	168.71	161.00	153.52	146.30	139.37	132.77	126.50	120.55
1954	185.23	176.89	168.95	161.32	153.94	146.78	139.87	133.24	126.93	120.93
1955	185.20	176.80	168.81	161.21	153.91	146.86	140.02	133.43	127.10	121.08
1956	185.24	176.74	168.69	161.05	153.79	146.81	140.08	133.55	127.25	121.22
1957	185.78	177.17	169.03	161.32	154.01	147.06	140.39	133.94	127.70	121.68
1958	186.06	177.40	169.16	161.37	154.00	147.01	140.37	134.00	127.84	121.88
1959	186.83	178.08	169.79	161.89	154.43	147.38	140.69	134.33	128.23	122.35
1960	187.54	178.67	170.29	162.34	154.79	147.65	140.90	134.50	128.42	122.59
1961	188.33	179.31	170.81	162.79	155.19	147.96	141.13	134.68	128.56	122.75
1962	189.18	180.08	171.44	163.31	155.63	148.36	141.45	134.92	128.75	122.90
1963	190.05	180.83	172.11	163.85	156.07	148.73	141.78	135.17	128.93	123.03
1964	191.13	181.85	173.02	164.67	156.76	149.31	142.29	135.63	129.31	123.34
1965	192.27	182.92	174.03	165.57	157.58	150.01	142.88	136.15	129.79	123.74
1966	193.63	183.90	174.95	166.44	158.35	150.70	143.46	136.64	130.21	124.12
1967	193.47	183.66	174.43	165.93	157.86	150.18	142.93	136.06	129.59	123.49
1968	193.64	183.78	174.46	165.68	157.61	149.94	142.64	135.75	129.23	123.08
1969	194.33	184.37	174.98	166.10	157.74	150.05	142.75	135.80	129.24	123.03
1970	195.52	185.51	175.99	167.01	158.53	150.54	143.20	136.23	129.60	123.34
1971	197.22	187.15	177.56	168.45	159.85	151.73	144.09	137.06	130.38	124.04

Year	21	22	23	24	25	26	27	28	29	30
1972	198.16	188.09	178.48	169.34	160.65	152.45	144.71	137.42	130.71	124.35
1973	198.78	188.81	179.22	170.06	161.35	153.07	145.26	137.88	130.93	124.55
1974	199.38	189.50	180.01	170.86	162.13	153.82	145.93	138.48	131.44	124.82
1975	200.21	190.42	180.99	171.92	163.18	154.84	146.91	139.37	132.26	125.54
1976	200.95	191.38	182.02	173.00	164.32	155.97	148.00	140.42	133.21	126.40
1977	201.70	192.37	183.21	174.25	165.61	157.31	149.31	141.68	134.42	127.52
1978	202.08	193.02	184.08	175.30	166.72	158.45	150.50	142.84	135.54	128.59
1979	200.94	192.38	183.72	175.18	166.81	158.63	150.75	143.18	135.89	128.94
1980	197.29	189.29	181.15	172.95	164.88	156.97	149.26	141.83	134.70	127.84
1981	195.22	187.78	180.14	172.38	164.57	156.88	149.35	142.01	134.94	128.15
1982	191.72	184.69	177.59	170.31	162.95	155.53	148.25	141.12	134.17	127.48
1983	187.50	180.70	174.01	167.26	160.37	153.41	146.41	139.54	132.83	126.28
1984	183.83	177.07	170.57	164.20	157.79	151.26	144.67	138.06	131.57	125.23
1985	179.94	173.08	166.62	160.44	154.40	148.34	142.18	135.97	129.74	123.63
1986	173.45	166.39	159.87	153.78	147.99	142.35	136.72	131.01	125.26	119.50
1987	165.53	158.11	151.43	145.31	139.65	134.30	129.12	123.96	118.74	113.51
1988	155.13	147.33	140.37	134.18	128.58	123.44	118.61	113.96	109.36	104.72
1989	150.65	142.14	134.80	128.29	122.53	117.34	112.59	108.14	103.87	99.65
1990	146.27	137.07	129.20	122.43	116.45	111.18	106.44	102.11	98.05	94.17
1991	145.92	135.83	127.21	119.85	113.54	107.96	103.05	98.64	94.62	90.86
1992	146.46	135.33	125.89	117.85	111.00	105.13	99.95	95.39	91.30	87.56
1993	147.43	135.03	124.64	115.86	108.40	102.05	96.61	91.83	87.62	83.85
1994	147.21	133.74	122.28	112.72	104.68	97.87	92.08	87.14	82.80	78.99
1995	146.02	133.66	121.20	110.66	101.90	94.55	88.34	83.08	78.60	74.66
1996	141.40	130.09	118.78	107.51	98.02	90.17	83.60	78.06	73.38	69.40
1997	140.17	128.31	117.83	107.43	97.13	88.49	81.35	75.39	70.37	66.13
1998	143.00	129.17	118.09	108.34	98.71	89.20	81.22	74.64	69.16	64.54
1999	144.64	130.95	118.07	107.79	98.78	89.92	81.20	73.90	67.89	62.87
2000	142.46	134.78	121.90	109.83	100.21	91.79	83.53	75.41	68.62	63.02
2001	136.95	133.18	125.86	113.71	102.35	93.30	85.40	77.66	70.06	63.71
2002	128.70	129.00	125.40	118.46	106.99	96.28	87.74	80.29	73.00	65.84
2003	121.62	122.28	122.50	119.02	112.40	101.49	91.30	83.19	76.11	69.19
2004	121.58	115.29	115.80	115.92	112.56	106.24	95.88	86.22	78.54	71.84
2005	125.78	114.94	108.86	109.23	109.25	106.00	99.98	90.19	81.06	73.81
2006	132.26	118.62	108.24	102.37	102.60	102.52	99.38	93.66	84.44	75.85
2007	142.23	124.89	111.88	101.97	96.36	96.51	96.37	93.37	87.96	79.27
2008	166.19	133.35	116.87	104.51	95.12	89.77	89.81	89.60	86.75	81.67
2009	229.36	155.43	124.41	108.79	97.10	88.22	83.14	83.07	82.78	80.07
2010	218.40	213.61	144.41	115.36	100.71	89.76	81.46	76.69	76.57	76.25
2011	195.96	203.52	198.58	133.97	106.83	93.13	82.90	75.15	70.69	70.52
2012	181.59	183.69	190.32	185.31	124.79	99.35	86.48	76.88	69.62	65.42
2013	168.14	170.43	172.04	177.94	172.98	116.32	92.49	80.43	71.44	64.64

Year	31	32	33	34	35	36	37	38	39	40
1916	131.95	126.52	121.32	116.33	111.54	106.95	102.55	98.33	94.28	90.40
1917	131.50	126.09	120.90	115.93	111.15	106.58	102.19	97.99	93.96	90.09
1918	131.03	125.64	120.46	115.51	110.75	106.19	101.82	97.63	93.61	89.76
1919	130.54	125.16	120.01	115.07	110.33	105.79	101.43	97.26	93.26	89.42
1920	130.03	124.67	119.53	114.61	109.89	105.36	101.03	96.87	92.88	89.06
1921	129.49	124.15	119.04	114.13	109.43	104.92	100.60	96.46	92.49	88.68
1922	128.95	123.62	118.52	113.63	108.95	104.46	100.16	96.03	92.08	88.29
1923	128.38	123.07	117.99	113.12	108.46	103.98	99.70	95.59	91.66	87.88
1924	127.80	122.51	117.44	112.59	107.94	103.49	99.22	95.14	91.22	87.46
1925	127.22	121.93	116.88	112.05	107.42	102.98	98.73	94.66	90.76	87.02
1926	126.63	121.35	116.31	111.49	106.87	102.46	98.23	94.17	90.29	86.57
1927	126.04	120.76	115.73	110.92	106.32	101.92	97.71	93.67	89.81	86.10
1928	125.46	120.18	115.14	110.34	105.75	101.37	97.17	93.15	89.31	85.62
1929	124.71	119.42	114.39	109.60	105.02	100.66	96.48	92.49	88.66	85.00
1930	123.72	118.42	113.39	108.61	104.06	99.71	95.57	91.60	87.81	84.18
1931	123.31	117.59	112.55	107.77	103.22	98.89	94.77	90.82	87.06	83.45
1932	122.74	117.32	111.87	107.07	102.52	98.20	94.08	90.15	86.40	82.82
1933	122.59	117.11	111.93	106.74	102.16	97.82	93.69	89.76	86.01	82.43
1934	122.41	116.87	111.64	106.71	101.75	97.39	93.25	89.31	85.57	81.99
1935	122.23	116.65	111.37	106.39	101.68	96.96	92.80	88.86	85.11	81.54
1936	122.11	116.50	111.18	106.15	101.40	96.91	92.41	88.44	84.68	81.11
1937	121.62	116.00	110.66	105.61	100.83	96.31	92.05	87.78	84.01	80.44
1938	121.17	115.54	110.19	105.12	100.32	95.78	91.49	87.44	83.38	79.80
1939	121.03	115.37	110.00	104.91	100.09	95.51	91.19	87.10	83.25	79.38
1940	121.14	115.45	110.05	104.93	100.08	95.47	91.11	86.98	83.09	79.41
1941	120.80	115.09	109.68	104.55	99.69	95.07	90.69	86.55	82.63	78.93
1942	120.11	114.41	109.00	103.87	99.01	94.40	90.03	85.89	81.96	78.25
1943	118.63	112.97	107.60	102.51	97.69	93.12	88.78	84.67	80.77	77.08
1944	116.57	110.98	105.68	100.65	95.89	91.37	87.09	83.03	79.19	75.54
1945	116.34	110.75	105.44	100.40	95.62	91.10	86.81	82.74	78.89	75.23
1946	116.21	110.63	105.32	100.27	95.47	90.93	86.62	82.54	78.68	75.01
1947	115.98	110.44	105.14	100.09	95.28	90.73	86.41	82.32	78.44	74.77
1948	115.88	110.40	105.12	100.07	95.26	90.69	86.36	82.24	78.35	74.66
1949	115.59	110.15	104.94	99.92	95.12	90.55	86.21	82.08	78.17	74.47
1950	115.35	109.95	104.78	99.82	95.04	90.48	86.13	82.00	78.07	74.36
1951	115.23	109.85	104.71	99.78	95.06	90.51	86.16	82.02	78.08	74.35
1952	114.90	109.54	104.43	99.54	94.85	90.36	86.04	81.90	77.96	74.22
1953	114.89	109.51	104.40	99.53	94.87	90.40	86.12	82.00	78.06	74.30
1954	115.24	109.83	104.69	99.80	95.14	90.69	86.42	82.33	78.38	74.62
1955	115.36	109.93	104.77	99.86	95.20	90.75	86.50	82.43	78.52	74.77
1956	115.47	110.01	104.83	99.91	95.23	90.78	86.54	82.49	78.61	74.88
1957	115.91	110.41	105.19	100.24	95.53	91.06	86.80	82.75	78.87	75.16
1958	116.13	110.62	105.37	100.39	95.67	91.17	86.90	82.84	78.97	75.28
1959	116.64	111.14	105.86	100.84	96.07	91.55	87.25	83.16	79.28	75.58
1960	116.96	111.51	106.25	101.20	96.40	91.84	87.52	83.41	79.50	75.79
1961	117.17	111.79	106.58	101.55	96.73	92.14	87.78	83.65	79.72	75.99
1962	117.34	112.01	106.87	101.88	97.07	92.46	88.08	83.91	79.96	76.21
1963	117.44	112.13	107.03	102.11	97.35	92.76	88.35	84.16	80.18	76.41
1964	117.70	112.35	107.27	102.39	97.69	93.13	88.73	84.52	80.51	76.71
1965	118.02	112.62	107.50	102.64	97.98	93.47	89.11	84.91	80.88	77.04
1966	118.33	112.87	107.70	102.81	98.16	93.69	89.39	85.22	81.20	77.34
1967	117.72	112.23	107.04	102.15	97.50	93.09	88.86	84.78	80.82	77.01
1968	117.29	111.80	106.59	101.67	97.01	92.60	88.41	84.40	80.52	76.76
1969	117.18	111.66	106.44	101.48	96.79	92.36	88.16	84.17	80.35	76.66
1970	117.40	111.82	106.56	101.57	96.83	92.36	88.13	84.13	80.32	76.67
1971	118.05	112.37	107.02	101.98	97.21	92.68	88.40	84.35	80.52	76.88

Year	31	32	33	34	35	36	37	38	39	40
1972	118.30	112.58	107.16	102.07	97.26	92.71	88.39	84.30	80.45	76.79
1973	118.48	112.71	107.27	102.11	97.25	92.67	88.34	84.22	80.33	76.65
1974	118.74	112.95	107.46	102.26	97.34	92.71	88.35	84.22	80.29	76.58
1975	119.21	113.40	107.87	102.63	97.67	92.97	88.55	84.38	80.43	76.68
1976	119.98	113.94	108.38	103.10	98.08	93.34	88.85	84.62	80.64	76.87
1977	121.01	114.86	109.07	103.75	98.69	93.89	89.35	85.05	81.01	77.19
1978	121.99	115.76	109.87	104.34	99.25	94.41	89.82	85.47	81.36	77.49
1979	122.33	116.05	110.12	104.52	99.25	94.41	89.81	85.44	81.31	77.39
1980	121.29	115.07	109.15	103.58	98.31	93.35	88.80	84.47	80.36	76.47
1981	121.62	115.39	109.47	103.84	98.54	93.52	88.81	84.47	80.36	76.44
1982	121.07	114.89	109.01	103.41	98.09	93.08	88.34	83.89	79.79	75.90
1983	119.98	113.93	108.12	102.58	97.31	92.31	87.59	83.13	78.94	75.08
1984	119.05	113.10	107.40	101.92	96.69	91.72	87.01	82.56	78.35	74.40
1985	117.66	111.85	106.26	100.90	95.75	90.84	86.17	81.73	77.55	73.61
1986	113.86	108.36	103.00	97.84	92.91	88.16	83.63	79.33	75.25	71.40
1987	108.27	103.15	98.15	93.29	88.61	84.14	79.83	75.73	71.83	68.13
1988	100.07	95.43	90.90	86.48	82.19	78.07	74.11	70.32	66.70	63.27
1989	95.40	91.15	86.92	82.78	78.75	74.83	71.07	67.47	64.01	60.72
1990	90.33	86.47	82.62	78.77	75.02	71.37	67.81	64.40	61.14	58.00
1991	87.25	83.69	80.11	76.54	72.98	69.50	66.11	62.82	59.66	56.64
1992	84.08	80.73	77.44	74.12	70.81	67.52	64.29	61.16	58.11	55.19
1993	80.41	77.20	74.12	71.09	68.04	65.00	61.97	59.01	56.13	53.33
1994	75.57	72.46	69.56	66.78	64.04	61.29	58.55	55.82	53.15	50.56
1995	71.21	68.11	65.30	62.68	60.17	57.70	55.22	52.74	50.28	47.88
1996	65.90	62.84	60.10	57.61	55.29	53.07	50.89	48.70	46.51	44.34
1997	62.52	59.36	56.60	54.12	51.87	49.78	47.78	45.81	43.84	41.87
1998	60.64	57.32	54.42	51.88	49.60	47.54	45.62	43.78	41.98	40.17
1999	58.66	55.10	52.08	49.43	47.11	45.04	43.17	41.42	39.75	38.11
2000	58.36	54.44	51.13	48.32	45.86	43.71	41.79	40.04	38.42	36.87
2001	58.48	54.13	50.47	47.39	44.77	42.48	40.48	38.69	37.07	35.56
2002	59.87	54.95	50.85	47.41	44.51	42.05	39.89	38.01	36.33	34.80
2003	62.40	56.73	52.06	48.18	44.92	42.17	39.83	37.79	36.00	34.41
2004	65.29	58.87	53.51	49.11	45.44	42.36	39.76	37.56	35.63	33.94
2005	67.49	61.32	55.28	50.24	46.09	42.64	39.75	37.31	35.24	33.42
2006	69.03	63.10	57.31	51.65	46.92	43.04	39.81	37.10	34.82	32.88
2007	71.19	64.77	59.19	53.75	48.43	44.00	40.35	37.32	34.78	32.64
2008	73.56	66.03	60.05	54.86	49.80	44.86	40.75	37.36	34.55	32.19
2009	75.31	67.78	60.80	55.27	50.46	45.79	41.23	37.44	34.32	31.73
2010	73.71	69.30	62.35	55.91	50.81	46.38	42.07	37.88	34.39	31.52
2011	70.18	67.81	63.73	57.31	51.37	46.67	42.59	38.63	34.78	31.56
2012	65.21	64.85	62.62	58.81	52.86	47.37	43.02	39.24	35.58	32.02
2013	60.70	60.47	60.10	58.00	54.46	48.93	43.83	39.80	36.30	32.91

Year	41	42	43	44	45	46	47	48	49	50
1916	86.68	83.12	79.70	76.42	73.27	70.26	67.37	64.59	61.94	59.39
1917	86.38	82.83	79.42	76.15	73.02	70.01	67.13	64.37	61.72	59.18
1918	86.07	82.53	79.13	75.87	72.75	69.76	66.89	64.14	61.50	58.97
1919	85.74	82.21	78.83	75.58	72.47	69.49	66.63	63.89	61.26	58.74
1920	85.39	81.88	78.51	75.28	72.18	69.21	66.36	63.63	61.01	58.50
1921	85.03	81.53	78.17	74.96	71.87	68.92	66.08	63.36	60.75	58.25
1922	84.65	81.17	77.83	74.63	71.55	68.61	65.79	63.08	60.48	57.99
1923	84.26	80.79	77.47	74.28	71.22	68.29	65.48	62.79	60.20	57.72
1924	83.86	80.40	77.09	73.92	70.88	67.96	65.16	62.48	59.91	57.44
1925	83.44	80.00	76.71	73.55	70.52	67.62	64.84	62.17	59.61	57.15
1926	83.00	79.58	76.31	73.16	70.15	67.26	64.50	61.84	59.30	56.85
1927	82.55	79.15	75.89	72.77	69.77	66.90	64.14	61.50	58.97	56.54
1928	82.09	78.71	75.47	72.36	69.38	66.52	63.78	61.15	58.64	56.22
1929	81.49	78.13	74.91	71.83	68.87	66.03	63.31	60.70	58.21	55.81
1930	80.70	77.37	74.18	71.12	68.19	65.38	62.69	60.11	57.63	55.26
1931	80.00	76.70	73.53	70.50	67.59	64.81	62.14	59.58	57.12	54.77
1932	79.39	76.10	72.96	69.95	67.06	64.30	61.65	59.11	56.67	54.34
1933	79.01	75.74	72.61	69.61	66.74	63.98	61.35	58.82	56.39	54.07
1934	78.58	75.32	72.20	69.22	66.36	63.62	60.99	58.48	56.07	53.76
1935	78.13	74.88	71.77	68.80	65.96	63.23	60.62	58.12	55.72	53.43
1936	77.71	74.46	71.36	68.40	65.57	62.86	60.26	57.77	55.39	53.11
1937	77.04	73.81	70.73	67.79	64.97	62.28	59.70	57.24	54.88	52.61
1938	76.40	73.18	70.11	67.18	64.39	61.71	59.16	56.71	54.37	52.12
1939	75.97	72.74	69.67	66.75	63.96	61.30	58.75	56.32	53.99	51.76
1940	75.72	72.47	69.39	66.46	63.67	61.01	58.47	56.04	53.72	51.50
1941	75.43	71.93	68.84	65.91	63.13	60.48	57.96	55.54	53.24	51.03
1942	74.74	71.43	68.11	65.19	62.42	59.78	57.27	54.88	52.60	50.41
1943	73.58	70.29	67.17	64.05	61.30	58.69	56.22	53.86	51.61	49.46
1944	72.08	68.82	65.73	62.82	59.90	57.33	54.89	52.57	50.37	48.26
1945	71.76	68.48	65.38	62.45	59.68	56.91	54.46	52.15	49.95	47.85
1946	71.53	68.24	65.12	62.17	59.38	56.75	54.11	51.79	49.58	47.49
1947	71.28	67.98	64.85	61.88	59.07	56.43	53.93	51.42	49.21	47.12
1948	71.16	67.84	64.70	61.72	58.89	56.23	53.70	51.33	48.94	46.84
1949	70.96	67.64	64.49	61.50	58.66	55.98	53.44	51.05	48.79	46.52
1950	70.83	67.50	64.33	61.34	58.49	55.80	53.24	50.83	48.55	46.40
1951	70.81	67.45	64.28	61.26	58.41	55.70	53.13	50.70	48.41	46.24
1952	70.67	67.31	64.12	61.10	58.23	55.52	52.95	50.51	48.19	46.01
1953	70.74	67.35	64.15	61.11	58.23	55.50	52.91	50.46	48.13	45.93
1954	71.03	67.62	64.39	61.32	58.41	55.66	53.05	50.58	48.24	46.01
1955	71.17	67.75	64.50	61.41	58.49	55.72	53.09	50.60	48.25	46.01
1956	71.30	67.87	64.61	61.51	58.56	55.77	53.13	50.63	48.26	46.01
1957	71.60	68.17	64.90	61.78	58.81	56.00	53.33	50.80	48.41	46.14
1958	71.73	68.33	65.06	61.94	58.96	56.13	53.44	50.90	48.49	46.20
1959	72.04	68.65	65.39	62.26	59.27	56.42	53.71	51.14	48.71	46.40
1960	72.25	68.86	65.62	62.51	59.52	56.66	53.94	51.35	48.89	46.56
1961	72.44	69.05	65.82	62.72	59.75	56.89	54.16	51.55	49.08	46.73
1962	72.64	69.24	66.01	62.92	59.95	57.11	54.38	51.77	49.28	46.91
1963	72.82	69.41	66.16	63.07	60.12	57.29	54.57	51.96	49.46	47.09
1964	73.09	69.66	66.40	63.29	60.34	57.51	54.80	52.21	49.71	47.32
1965	73.40	69.94	66.66	63.53	60.56	57.74	55.03	52.44	49.96	47.56
1966	73.67	70.19	66.88	63.74	60.76	57.92	55.21	52.63	50.15	47.77
1967	73.35	69.87	66.57	63.43	60.45	57.62	54.93	52.36	49.91	47.56
1968	73.14	69.67	66.36	63.22	60.25	57.42	54.73	52.17	49.73	47.40
1969	73.08	69.63	66.32	63.18	60.19	57.35	54.66	52.10	49.67	47.35
1970	73.15	69.74	66.44	63.29	60.29	57.44	54.73	52.16	49.72	47.39
1971	73.38	70.01	66.74	63.59	60.57	57.70	54.97	52.38	49.92	47.58

Year	41	42	43	44	45	46	47	48	49	50
1972	73.32	69.98	66.77	63.65	60.65	57.77	55.03	52.43	49.96	47.61
1973	73.17	69.86	66.68	63.62	60.65	57.79	55.04	52.43	49.95	47.60
1974	73.08	69.75	66.60	63.57	60.65	57.82	55.09	52.48	49.99	47.62
1975	73.14	69.79	66.62	63.60	60.71	57.92	55.22	52.61	50.12	47.74
1976	73.28	69.90	66.70	63.66	60.78	58.02	55.36	52.77	50.28	47.90
1977	73.58	70.15	66.91	63.85	60.94	58.19	55.54	52.99	50.52	48.13
1978	73.84	70.39	67.10	64.00	61.08	58.30	55.66	53.13	50.69	48.32
1979	73.71	70.24	66.95	63.83	60.88	58.10	55.45	52.95	50.54	48.22
1980	72.79	69.33	66.06	62.97	60.03	57.26	54.64	52.16	49.80	47.53
1981	72.75	69.25	65.95	62.85	59.91	57.11	54.47	51.98	49.62	47.37
1982	72.21	68.71	65.41	62.29	59.36	56.58	53.94	51.45	49.10	46.86
1983	71.42	67.94	64.66	61.55	58.62	55.86	53.24	50.76	48.41	46.20
1984	70.77	67.32	64.04	60.94	58.01	55.25	52.65	50.18	47.84	45.63
1985	69.89	66.48	63.24	60.16	57.25	54.49	51.90	49.45	47.14	44.94
1986	67.76	64.34	61.20	58.21	55.38	52.70	50.16	47.78	45.53	43.39
1987	64.65	61.35	58.26	55.41	52.71	50.14	47.71	45.42	43.26	41.22
1988	60.01	56.93	54.03	51.30	48.80	46.41	44.15	42.02	39.99	38.09
1989	57.59	54.62	51.82	49.18	46.69	44.41	42.24	40.18	38.24	36.40
1990	55.02	52.18	49.49	46.96	44.56	42.31	40.24	38.28	36.41	34.65
1991	53.73	50.96	48.34	45.84	43.49	41.28	39.19	37.28	35.46	33.73
1992	52.39	49.71	47.15	44.72	42.41	40.23	38.18	36.25	34.48	32.80
1993	50.65	48.08	45.61	43.26	41.03	38.92	36.92	35.04	33.27	31.64
1994	48.04	45.62	43.30	41.08	38.96	36.96	35.05	33.25	31.56	29.96
1995	45.54	43.27	41.09	39.00	37.00	35.09	33.28	31.57	29.95	28.42
1996	42.22	40.15	38.15	36.23	34.39	32.62	30.94	29.35	27.83	26.40
1997	39.91	38.00	36.14	34.34	32.61	30.95	29.36	27.85	26.41	25.05
1998	38.36	36.57	34.81	33.11	31.46	29.87	28.36	26.90	25.51	24.20
1999	36.46	34.82	33.19	31.60	30.05	28.55	27.11	25.73	24.41	23.15
2000	35.35	33.82	32.30	30.78	29.31	27.87	26.48	25.14	23.87	22.64
2001	34.12	32.70	31.29	29.87	28.47	27.10	25.77	24.48	23.25	22.07
2002	33.38	32.03	30.70	29.37	28.04	26.73	25.44	24.19	22.98	21.82
2003	32.96	31.62	30.34	29.08	27.82	26.56	25.31	24.10	22.92	21.77
2004	32.44	31.08	29.81	28.60	27.41	26.22	25.04	23.86	22.71	21.60
2005	31.84	30.43	29.15	27.96	26.82	25.71	24.59	23.48	22.37	21.30
2006	31.19	29.71	28.39	27.19	26.08	25.01	23.97	22.93	21.89	20.86
2007	30.82	29.23	27.84	26.60	25.48	24.44	23.44	22.46	21.49	20.52
2008	30.20	28.52	27.04	25.76	24.61	23.57	22.60	21.68	20.78	19.87
2009	29.56	27.72	26.17	24.82	23.63	22.58	21.62	20.73	19.89	19.06
2010	29.14	27.14	25.46	24.03	22.78	21.69	20.72	19.85	19.03	18.25
2011	28.93	26.74	24.90	23.35	22.04	20.90	19.90	19.01	18.20	17.45
2012	29.06	26.63	24.61	22.91	21.49	20.28	19.22	18.30	17.48	16.74
2013	29.61	26.86	24.61	22.74	21.17	19.85	18.74	17.76	16.91	16.15

Year	51	52	53	54	55	56	57	58	59	60
1916	56.94	54.60	52.35	50.20	48.13	46.15	44.25	42.43	40.69	39.01
1917	56.75	54.41	52.17	50.03	47.97	45.99	44.10	42.29	40.55	38.88
1918	56.54	54.21	51.98	49.84	47.79	45.83	43.94	42.13	40.40	38.74
1919	56.32	54.00	51.78	49.65	47.61	45.65	43.77	41.97	40.24	38.59
1920	56.09	53.79	51.57	49.45	47.42	45.46	43.59	41.80	40.08	38.43
1921	55.86	53.56	51.35	49.24	47.21	45.27	43.41	41.62	39.91	38.27
1922	55.61	53.32	51.13	49.02	47.00	45.07	43.22	41.44	39.73	38.10
1923	55.35	53.07	50.89	48.79	46.79	44.86	43.01	41.24	39.55	37.92
1924	55.08	52.81	50.64	48.56	46.56	44.64	42.81	41.05	39.36	37.74
1925	54.80	52.55	50.39	48.31	46.32	44.42	42.59	40.84	39.16	37.55
1926	54.51	52.27	50.12	48.06	46.08	44.18	42.37	40.62	38.95	37.35
1927	54.22	51.99	49.85	47.80	45.83	43.94	42.13	40.40	38.74	37.14
1928	53.91	51.69	49.56	47.52	45.57	43.69	41.90	40.17	38.52	36.93
1929	53.51	51.31	49.20	47.17	45.23	43.37	41.59	39.87	38.23	36.66
1930	52.98	50.80	48.71	46.71	44.79	42.94	41.18	39.48	37.86	36.30
1931	52.52	50.35	48.28	46.29	44.39	42.56	40.81	39.13	37.52	35.98
1932	52.10	49.96	47.90	45.93	44.04	42.23	40.49	38.82	37.23	35.69
1933	51.84	49.71	47.66	45.70	43.82	42.02	40.29	38.63	37.04	35.52
1934	51.54	49.42	47.39	45.44	43.57	41.77	40.05	38.40	36.82	35.31
1935	51.23	49.12	47.09	45.15	43.30	41.51	39.81	38.17	36.60	35.09
1936	50.92	48.82	46.81	44.88	43.03	41.26	39.56	37.93	36.37	34.88
1937	50.44	48.36	46.37	44.46	42.63	40.88	39.19	37.58	36.03	34.55
1938	49.97	47.91	45.94	44.05	42.23	40.49	38.83	37.23	35.69	34.23
1939	49.62	47.58	45.62	43.74	41.93	40.21	38.55	36.96	35.44	33.98
1940	49.37	47.33	45.38	43.51	41.72	40.00	38.35	36.77	35.26	33.81
1941	48.92	46.90	44.96	43.11	41.33	39.63	38.00	36.43	34.93	33.49
1942	48.33	46.33	44.41	42.58	40.82	39.14	37.53	35.98	34.50	33.08
1943	47.41	45.44	43.56	41.76	40.04	38.39	36.81	35.29	33.84	32.44
1944	46.26	44.34	42.50	40.74	39.06	37.45	35.90	34.42	33.00	31.64
1945	45.85	43.94	42.12	40.37	38.70	37.11	35.57	34.11	32.70	31.35
1946	45.50	43.60	41.78	40.05	38.39	36.80	35.28	33.83	32.43	31.09
1947	45.13	43.24	41.43	39.71	38.06	36.48	34.97	33.53	32.14	30.82
1948	44.85	42.95	41.15	39.43	37.79	36.22	34.72	33.29	31.91	30.59
1949	44.52	42.63	40.83	39.11	37.48	35.92	34.43	33.00	31.64	30.33
1950	44.25	42.35	40.54	38.83	37.20	35.65	34.17	32.75	31.39	30.09
1951	44.19	42.13	40.32	38.61	36.98	35.43	33.95	32.53	31.18	29.89
1952	43.95	42.00	40.05	38.33	36.70	35.15	33.67	32.27	30.93	29.64
1953	43.85	41.88	40.03	38.17	36.53	34.98	33.50	32.09	30.75	29.47
1954	43.91	41.92	40.04	38.27	36.49	34.92	33.43	32.02	30.68	29.40
1955	43.89	41.88	39.98	38.19	36.50	34.80	33.31	31.89	30.54	29.26
1956	43.87	41.85	39.94	38.13	36.42	34.81	33.19	31.76	30.41	29.13
1957	43.99	41.95	40.02	38.19	36.46	34.82	33.28	31.73	30.37	29.08
1958	44.04	41.98	40.04	38.19	36.44	34.79	33.23	31.76	30.28	28.98
1959	44.21	42.14	40.18	38.31	36.55	34.88	33.30	31.80	30.39	28.98
1960	44.36	42.27	40.28	38.41	36.63	34.94	33.34	31.83	30.40	29.06
1961	44.50	42.39	40.40	38.50	36.71	35.01	33.39	31.87	30.42	29.06
1962	44.67	42.54	40.52	38.62	36.81	35.09	33.46	31.92	30.46	29.08
1963	44.83	42.68	40.65	38.72	36.90	35.17	33.53	31.97	30.50	29.11
1964	45.04	42.88	40.83	38.89	37.04	35.30	33.64	32.08	30.59	29.18
1965	45.28	43.10	41.03	39.07	37.21	35.45	33.78	32.19	30.69	29.27
1966	45.49	43.30	41.22	39.24	37.36	35.58	33.90	32.30	30.79	29.35
1967	45.31	43.14	41.07	39.09	37.21	35.43	33.75	32.15	30.63	29.20
1968	45.17	43.03	40.97	39.00	37.13	35.34	33.65	32.05	30.53	29.09
1969	45.13	43.00	40.97	39.01	37.13	35.35	33.65	32.04	30.51	29.07
1970	45.18	43.06	41.04	39.09	37.22	35.43	33.73	32.11	30.57	29.12
1971	45.36	43.24	41.22	39.28	37.42	35.62	33.91	32.28	30.73	29.26

Year	51	52	53	54	55	56	57	58	59	60
1972	45.38	43.26	41.24	39.31	37.46	35.68	33.97	32.34	30.79	29.31
1973	45.36	43.24	41.22	39.29	37.45	35.69	34.00	32.37	30.82	29.33
1974	45.38	43.25	41.22	39.30	37.46	35.71	34.02	32.41	30.86	29.38
1975	45.48	43.34	41.30	39.37	37.53	35.78	34.10	32.50	30.96	29.47
1976	45.62	43.47	41.42	39.47	37.62	35.87	34.19	32.59	31.05	29.58
1977	45.85	43.67	41.61	39.65	37.79	36.02	34.33	32.73	31.20	29.73
1978	46.04	43.86	41.78	39.80	37.93	36.15	34.45	32.84	31.31	29.84
1979	45.97	43.80	41.72	39.74	37.86	36.08	34.38	32.77	31.24	29.78
1980	45.35	43.23	41.19	39.24	37.37	35.61	33.93	32.34	30.82	29.38
1981	45.22	43.14	41.13	39.19	37.33	35.55	33.87	32.28	30.76	29.32
1982	44.74	42.71	40.75	38.85	37.01	35.26	33.58	31.99	30.49	29.06
1983	44.10	42.10	40.19	38.34	36.55	34.83	33.17	31.60	30.11	28.69
1984	43.54	41.56	39.68	37.88	36.14	34.45	32.83	31.27	29.78	28.38
1985	42.86	40.90	39.04	37.28	35.58	33.95	32.36	30.84	29.37	27.98
1986	41.37	39.46	37.65	35.94	34.31	32.75	31.25	29.79	28.39	27.04
1987	39.29	37.46	35.72	34.09	32.54	31.07	29.66	28.29	26.97	25.70
1988	36.30	34.60	32.98	31.46	30.02	28.65	27.36	26.11	24.92	23.75
1989	34.66	33.03	31.49	30.02	28.63	27.32	26.08	24.90	23.77	22.67
1990	32.98	31.41	29.93	28.53	27.20	25.94	24.75	23.63	22.56	21.54
1991	32.09	30.55	29.09	27.72	26.43	25.19	24.03	22.93	21.89	20.90
1992	31.20	29.69	28.26	26.91	25.65	24.45	23.30	22.23	21.21	20.25
1993	30.09	28.63	27.24	25.93	24.70	23.53	22.43	21.38	20.40	19.46
1994	28.50	27.10	25.78	24.53	23.35	22.24	21.19	20.20	19.26	18.37
1995	26.98	25.66	24.41	23.22	22.10	21.03	20.03	19.09	18.19	17.35
1996	25.06	23.79	22.63	21.52	20.47	19.48	18.54	17.66	16.83	16.04
1997	23.76	22.55	21.41	20.36	19.37	18.42	17.53	16.69	15.89	15.15
1998	22.95	21.77	20.66	19.61	18.65	17.74	16.88	16.06	15.29	14.56
1999	21.96	20.82	19.75	18.75	17.80	16.93	16.10	15.32	14.58	13.87
2000	21.47	20.36	19.31	18.32	17.39	16.51	15.70	14.93	14.21	13.52
2001	20.93	19.85	18.82	17.85	16.94	16.07	15.26	14.51	13.80	13.13
2002	20.71	19.65	18.63	17.67	16.76	15.90	15.08	14.32	13.62	12.96
2003	20.67	19.62	18.61	17.65	16.74	15.87	15.06	14.29	13.56	12.90
2004	20.52	19.48	18.49	17.54	16.63	15.77	14.96	14.19	13.47	12.78
2005	20.25	19.24	18.27	17.34	16.44	15.60	14.79	14.03	13.31	12.63
2006	19.86	18.88	17.94	17.03	16.16	15.33	14.54	13.79	13.08	12.41
2007	19.55	18.61	17.70	16.81	15.96	15.15	14.37	13.62	12.92	12.25
2008	18.97	18.08	17.21	16.36	15.54	14.76	14.01	13.29	12.60	11.95
2009	18.23	17.40	16.58	15.78	15.00	14.25	13.53	12.84	12.18	11.55
2010	17.49	16.73	15.97	15.22	14.48	13.77	13.08	12.42	11.79	11.18
2011	16.74	16.04	15.34	14.65	13.95	13.28	12.63	12.00	11.39	10.81
2012	16.05	15.39	14.75	14.10	13.46	12.83	12.21	11.61	11.03	10.47
2013	15.46	14.82	14.22	13.62	13.03	12.44	11.85	11.28	10.72	10.18

Year	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**
1916	37.41	35.87	34.39	32.98	31.62	30.32	29.07	27.88	26.73	25.63
1917	37.28	35.74	34.27	32.86	31.51	30.21	28.97	27.78	26.64	25.54
1918	37.14	35.61	34.15	32.74	31.40	30.10	28.87	27.68	26.54	25.45
1919	37.00	35.48	34.02	32.62	31.28	29.99	28.75	27.57	26.44	25.35
1920	36.85	35.33	33.88	32.49	31.15	29.87	28.64	27.46	26.33	25.25
1921	36.69	35.18	33.74	32.35	31.02	29.74	28.52	27.34	26.22	25.14
1922	36.53	35.03	33.59	32.20	30.88	29.61	28.39	27.22	26.10	25.03
1923	36.36	34.86	33.43	32.05	30.74	29.47	28.26	27.10	25.98	24.91
1924	36.18	34.70	33.27	31.90	30.59	29.33	28.12	26.96	25.86	24.79
1925	36.00	34.52	33.10	31.74	30.43	29.18	27.98	26.83	25.72	24.67
1926	35.81	34.34	32.93	31.57	30.27	29.03	27.83	26.69	25.59	24.54
1927	35.62	34.15	32.75	31.40	30.11	28.87	27.68	26.54	25.45	24.40
1928	35.41	33.96	32.56	31.22	29.94	28.70	27.52	26.39	25.31	24.26
1929	35.15	33.71	32.32	30.99	29.71	28.49	27.32	26.20	25.12	24.09
1930	34.81	33.37	32.00	30.68	29.42	28.21	27.05	25.94	24.87	23.85
1931	34.50	33.08	31.72	30.41	29.16	27.96	26.81	25.71	24.65	23.64
1932	34.23	32.82	31.47	30.17	28.93	27.74	26.60	25.51	24.46	23.45
1933	34.05	32.65	31.31	30.02	28.79	27.60	26.47	25.38	24.33	23.33
1934	33.86	32.46	31.13	29.85	28.62	27.44	26.31	25.23	24.19	23.20
1935	33.65	32.26	30.93	29.66	28.44	27.27	26.15	25.07	24.04	23.05
1936	33.44	32.07	30.75	29.48	28.27	27.11	25.99	24.92	23.90	22.91
1937	33.13	31.76	30.46	29.20	28.00	26.85	25.75	24.69	23.67	22.70
1938	32.82	31.47	30.17	28.93	27.74	26.60	25.50	24.46	23.45	22.48
1939	32.58	31.24	29.96	28.72	27.54	26.41	25.32	24.28	23.28	22.33
1940	32.42	31.08	29.80	28.58	27.40	26.27	25.19	24.16	23.16	22.21
1941	32.11	30.79	29.53	28.31	27.15	26.03	24.96	23.93	22.95	22.00
1942	31.72	30.41	29.16	27.96	26.81	25.71	24.65	23.63	22.66	21.73
1943	31.11	29.83	28.60	27.42	26.29	25.21	24.17	23.18	22.23	21.31
1944	30.34	29.09	27.89	26.75	25.65	24.59	23.58	22.61	21.68	20.79
1945	30.06	28.82	27.64	26.50	25.41	24.36	23.36	22.40	21.48	20.60
1946	29.81	28.59	27.41	26.28	25.20	24.16	23.17	22.21	21.30	20.42
1947	29.55	28.33	27.16	26.04	24.97	23.94	22.96	22.01	21.11	20.24
1948	29.33	28.12	26.96	25.85	24.79	23.77	22.79	21.85	20.95	20.09
1949	29.08	27.88	26.73	25.63	24.57	23.56	22.59	21.66	20.77	19.92
1950	28.85	27.66	26.52	25.43	24.38	23.37	22.41	21.49	20.60	19.76
1951	28.66	27.47	26.34	25.25	24.21	23.21	22.26	21.34	20.46	19.62
1952	28.41	27.24	26.11	25.04	24.00	23.01	22.07	21.16	20.29	19.45
1953	28.25	27.08	25.96	24.89	23.86	22.88	21.93	21.03	20.16	19.33
1954	28.17	27.01	25.89	24.82	23.79	22.81	21.87	20.97	20.10	19.28
1955	28.04	26.87	25.76	24.69	23.67	22.69	21.76	20.86	20.00	19.18
1956	27.91	26.74	25.63	24.56	23.55	22.57	21.64	20.75	19.89	19.07
1957	27.85	26.68	25.57	24.50	23.49	22.51	21.58	20.69	19.84	19.02
1958	27.75	26.58	25.46	24.40	23.39	22.42	21.49	20.60	19.75	18.93
1959	27.74	26.56	25.44	24.37	23.35	22.38	21.45	20.56	19.71	18.90
1960	27.71	26.52	25.39	24.32	23.30	22.32	21.39	20.51	19.66	18.84
1961	27.77	26.48	25.34	24.26	23.24	22.27	21.34	20.45	19.60	18.79
1962	27.78	26.55	25.31	24.23	23.20	22.22	21.28	20.39	19.55	18.74
1963	27.79	26.54	25.37	24.19	23.15	22.16	21.23	20.34	19.49	18.68
1964	27.84	26.58	25.39	24.27	23.14	22.14	21.20	20.31	19.46	18.64
1965	27.92	26.64	25.44	24.30	23.22	22.14	21.19	20.29	19.43	18.62
1966	27.99	26.70	25.48	24.32	23.23	22.20	21.17	20.26	19.40	18.58
1967	27.84	26.55	25.32	24.16	23.07	22.03	21.06	20.08	19.22	18.40
1968	27.73	26.44	25.21	24.05	22.95	21.91	20.93	20.00	19.07	18.25
1969	27.70	26.40	25.17	24.00	22.90	21.85	20.86	19.92	19.04	18.16
1970	27.74	26.43	25.19	24.02	22.90	21.85	20.85	19.90	19.01	18.17
1971	27.87	26.55	25.30	24.11	22.99	21.92	20.91	19.95	19.05	18.20

Year	61	62	63	64	65	66	67	68	69	70
1972	27.91	26.58	25.32	24.13	22.99	21.92	20.91	19.94	19.03	18.17
1973	27.93	26.59	25.32	24.12	22.99	21.91	20.89	19.92	19.00	18.13
1974	27.97	26.62	25.35	24.14	23.00	21.91	20.89	19.91	18.99	18.12
1975	28.06	26.71	25.43	24.21	23.06	21.96	20.93	19.95	19.02	18.14
1976	28.17	26.81	25.52	24.30	23.14	22.03	20.99	20.00	19.06	18.18
1977	28.32	26.96	25.67	24.43	23.26	22.15	21.09	20.09	19.15	18.25
1978	28.44	27.09	25.79	24.55	23.37	22.25	21.19	20.18	19.22	18.32
1979	28.39	27.05	25.77	24.53	23.36	22.23	21.17	20.15	19.19	18.28
1980	28.01	26.70	25.44	24.24	23.07	21.97	20.91	19.91	18.95	18.05
1981	27.95	26.65	25.40	24.20	23.06	21.95	20.90	19.89	18.94	18.03
1982	27.69	26.40	25.17	23.99	22.86	21.78	20.73	19.74	18.79	17.89
1983	27.34	26.06	24.84	23.68	22.57	21.51	20.49	19.51	18.57	17.68
1984	27.04	25.77	24.56	23.41	22.32	21.28	20.27	19.31	18.39	17.51
1985	26.65	25.40	24.21	23.07	21.99	20.97	19.99	19.05	18.14	17.27
1986	25.76	24.54	23.38	22.28	21.24	20.25	19.30	18.40	17.53	16.70
1987	24.48	23.32	22.22	21.17	20.18	19.23	18.33	17.48	16.66	15.88
1988	22.63	21.56	20.54	19.57	18.64	17.77	16.94	16.15	15.39	14.67
1989	21.62	20.60	19.62	18.69	17.81	16.97	16.17	15.41	14.70	14.01
1990	20.55	19.59	18.66	17.78	16.94	16.14	15.38	14.65	13.97	13.32
1991	19.95	19.03	18.14	17.29	16.47	15.69	14.95	14.24	13.57	12.94
1992	19.33	18.45	17.61	16.78	15.99	15.23	14.51	13.83	13.18	12.56
1993	18.58	17.74	16.93	16.15	15.40	14.67	13.98	13.32	12.69	12.09
1994	17.53	16.73	15.98	15.25	14.55	13.87	13.22	12.59	11.99	11.43
1995	16.54	15.79	15.07	14.39	13.73	13.10	12.49	11.90	11.34	10.80
1996	15.29	14.59	13.92	13.29	12.69	12.11	11.55	11.02	10.50	10.00
1997	14.44	13.76	13.13	12.53	11.96	11.42	10.90	10.40	9.92	9.45
1998	13.88	13.23	12.61	12.03	11.48	10.96	10.46	9.99	9.53	9.08
1999	13.21	12.59	12.00	11.44	10.91	10.42	9.94	9.49	9.06	8.65
2000	12.87	12.25	11.68	11.13	10.61	10.12	9.66	9.22	8.80	8.41
2001	12.49	11.89	11.33	10.79	10.29	9.81	9.36	8.93	8.52	8.14
2002	12.32	11.73	11.16	10.63	10.13	9.66	9.21	8.78	8.38	8.00
2003	12.27	11.67	11.11	10.57	10.07	9.60	9.15	8.72	8.32	7.94
2004	12.16	11.57	11.00	10.47	9.96	9.49	9.04	8.62	8.22	7.84
2005	11.99	11.40	10.84	10.32	9.82	9.34	8.90	8.48	8.08	7.71
2006	11.77	11.18	10.63	10.11	9.62	9.15	8.71	8.30	7.91	7.54
2007	11.62	11.03	10.47	9.96	9.47	9.01	8.58	8.16	7.78	7.41
2008	11.33	10.75	10.20	9.68	9.21	8.76	8.33	7.93	7.55	7.19
2009	10.95	10.39	9.86	9.35	8.88	8.45	8.03	7.64	7.27	6.92
2010	10.60	10.05	9.53	9.05	8.58	8.15	7.75	7.37	7.01	6.68
2011	10.25	9.72	9.22	8.74	8.30	7.87	7.47	7.11	6.76	6.43
2012	9.94	9.42	8.94	8.48	8.04	7.63	7.24	6.87	6.54	6.22
2013	9.67	9.18	8.70	8.26	7.83	7.42	7.04	6.68	6.35	6.04

Year	71	72	73	74	75	76	77	78	79	80
1916	24.57	23.56	22.59	21.66	20.77	19.92	19.10	18.31	17.56	16.84
1917	24.49	23.48	22.52	21.59	20.70	19.85	19.03	18.25	17.50	16.78
1918	24.40	23.40	22.43	21.51	20.63	19.78	18.96	18.18	17.43	16.72
1919	24.31	23.31	22.35	21.43	20.55	19.70	18.89	18.11	17.37	16.65
1920	24.21	23.21	22.26	21.34	20.46	19.62	18.81	18.04	17.30	16.59
1921	24.11	23.11	22.16	21.25	20.38	19.54	18.73	17.96	17.22	16.52
1922	24.00	23.01	22.06	21.16	20.29	19.45	18.65	17.88	17.15	16.44
1923	23.89	22.90	21.96	21.06	20.19	19.36	18.56	17.80	17.07	16.37
1924	23.77	22.79	21.86	20.96	20.09	19.27	18.47	17.71	16.99	16.29
1925	23.65	22.68	21.75	20.85	19.99	19.17	18.38	17.63	16.90	16.21
1926	23.53	22.56	21.63	20.74	19.89	19.07	18.29	17.53	16.81	16.12
1927	23.40	22.44	21.51	20.63	19.78	18.97	18.19	17.44	16.72	16.03
1928	23.27	22.31	21.39	20.51	19.67	18.86	18.08	17.34	16.63	15.94
1929	23.09	22.14	21.23	20.36	19.52	18.72	17.95	17.21	16.50	15.82
1930	22.87	21.93	21.02	20.16	19.33	18.53	17.77	17.04	16.34	15.67
1931	22.66	21.73	20.84	19.98	19.16	18.37	17.62	16.89	16.20	15.53
1932	22.49	21.56	20.67	19.82	19.01	18.23	17.48	16.76	16.07	15.41
1933	22.37	21.45	20.57	19.72	18.91	18.14	17.39	16.67	15.99	15.33
1934	22.24	21.33	20.45	19.61	18.80	18.03	17.29	16.58	15.90	15.24
1935	22.11	21.20	20.32	19.49	18.69	17.92	17.18	16.47	15.80	15.15
1936	21.97	21.07	20.20	19.37	18.57	17.81	17.08	16.37	15.70	15.06
1937	21.76	20.87	20.01	19.19	18.40	17.64	16.92	16.22	15.55	14.91
1938	21.56	20.67	19.82	19.01	18.23	17.48	16.76	16.07	15.41	14.77
1939	21.41	20.53	19.68	18.87	18.10	17.35	16.64	15.95	15.30	14.67
1940	21.30	20.42	19.58	18.77	18.00	17.26	16.55	15.87	15.22	14.59
1941	21.10	20.23	19.40	18.60	17.84	17.10	16.40	15.72	15.08	14.46
1942	20.84	19.98	19.16	18.37	17.61	16.89	16.20	15.53	14.89	14.28
1943	20.44	19.59	18.79	18.02	17.28	16.56	15.88	15.23	14.60	14.00
1944	19.93	19.11	18.33	17.57	16.85	16.16	15.49	14.86	14.25	13.66
1945	19.75	18.94	18.16	17.41	16.69	16.01	15.35	14.72	14.11	13.53
1946	19.58	18.78	18.01	17.27	16.56	15.87	15.22	14.60	14.00	13.42
1947	19.41	18.61	17.84	17.11	16.41	15.73	15.09	14.47	13.87	13.30
1948	19.26	18.47	17.71	16.98	16.29	15.62	14.97	14.36	13.77	13.20
1949	19.10	18.31	17.56	16.84	16.14	15.48	14.84	14.23	13.65	13.09
1950	18.94	18.16	17.42	16.70	16.01	15.36	14.72	14.12	13.54	12.98
1951	18.81	18.04	17.30	16.59	15.90	15.25	14.62	14.02	13.45	12.89
1952	18.65	17.88	17.15	16.44	15.77	15.12	14.50	13.90	13.33	12.78
1953	18.54	17.78	17.04	16.34	15.67	15.03	14.41	13.82	13.25	12.70
1954	18.48	17.72	16.99	16.29	15.62	14.98	14.36	13.77	13.21	12.66
1955	18.39	17.63	16.90	16.21	15.54	14.90	14.29	13.70	13.14	12.60
1956	18.29	17.53	16.81	16.12	15.46	14.82	14.21	13.63	13.07	12.53
1957	18.24	17.48	16.76	16.07	15.41	14.78	14.17	13.59	13.03	12.49
1958	18.15	17.40	16.69	16.00	15.34	14.71	14.10	13.52	12.97	12.43
1959	18.12	17.37	16.66	15.97	15.31	14.68	14.08	13.50	12.94	12.41
1960	18.07	17.32	16.61	15.92	15.27	14.64	14.03	13.46	12.90	12.37
1961	18.01	17.27	16.55	15.87	15.22	14.59	13.99	13.41	12.86	12.33
1962	17.96	17.22	16.51	15.82	15.17	14.55	13.95	13.37	12.82	12.30
1963	17.90	17.16	16.45	15.77	15.12	14.50	13.90	13.33	12.78	12.25
1964	17.87	17.13	16.42	15.74	15.09	14.47	13.87	13.30	12.75	12.22
1965	17.84	17.10	16.39	15.71	15.06	14.44	13.84	13.27	12.72	12.20
1966	17.80	17.06	16.35	15.67	15.02	14.40	13.81	13.24	12.69	12.17
1967	17.62	16.88	16.18	15.51	14.86	14.25	13.66	13.09	12.55	12.04
1968	17.48	16.74	16.04	15.37	14.73	14.12	13.53	12.97	12.44	11.92
1969	17.38	16.64	15.94	15.27	14.63	14.02	13.44	12.88	12.35	11.84
1970	17.33	16.58	15.88	15.21	14.57	13.96	13.38	12.82	12.29	11.78
1971	17.39	16.58	15.87	15.20	14.55	13.94	13.36	12.81	12.27	11.77

Year	71	72	73	74	75	76	77	78	79	80
1972	17.35	16.59	15.81	15.14	14.49	13.88	13.30	12.74	12.21	11.71
1973	17.31	16.54	15.80	15.07	14.42	13.81	13.23	12.67	12.14	11.64
1974	17.29	16.50	15.76	15.07	14.37	13.75	13.16	12.61	12.08	11.57
1975	17.30	16.51	15.76	15.05	14.39	13.72	13.13	12.57	12.04	11.54
1976	17.33	16.53	15.78	15.06	14.39	13.75	13.11	12.55	12.01	11.51
1977	17.40	16.59	15.83	15.10	14.42	13.77	13.16	12.55	12.01	11.50
1978	17.46	16.64	15.87	15.14	14.45	13.79	13.17	12.59	12.01	11.49
1979	17.42	16.61	15.83	15.10	14.40	13.74	13.12	12.53	11.98	11.42
1980	17.20	16.39	15.62	14.89	14.20	13.55	12.93	12.34	11.79	11.27
1981	17.17	16.36	15.59	14.86	14.17	13.51	12.89	12.30	11.74	11.21
1982	17.03	16.22	15.45	14.72	14.03	13.38	12.76	12.17	11.62	11.09
1983	16.83	16.03	15.26	14.54	13.86	13.21	12.59	12.01	11.45	10.93
1984	16.66	15.86	15.11	14.39	13.71	13.06	12.45	11.87	11.32	10.80
1985	16.45	15.65	14.90	14.19	13.51	12.87	12.27	11.69	11.15	10.63
1986	15.90	15.14	14.41	13.72	13.06	12.44	11.85	11.29	10.77	10.26
1987	15.12	14.40	13.71	13.05	12.42	11.83	11.27	10.73	10.23	9.75
1988	13.98	13.32	12.68	12.07	11.49	10.94	10.42	9.92	9.45	9.01
1989	13.35	12.73	12.12	11.54	10.99	10.46	9.96	9.48	9.03	8.61
1990	12.70	12.10	11.53	10.99	10.46	9.96	9.48	9.03	8.59	8.19
1991	12.34	11.76	11.21	10.68	10.18	9.69	9.23	8.78	8.36	7.96
1992	11.97	11.41	10.88	10.37	9.88	9.41	8.96	8.53	8.12	7.73
1993	11.52	10.98	10.47	9.98	9.52	9.07	8.64	8.23	7.83	7.46
1994	10.89	10.38	9.89	9.43	8.99	8.57	8.17	7.78	7.41	7.05
1995	10.29	9.81	9.35	8.91	8.50	8.10	7.72	7.36	7.01	6.68
1996	9.53	9.08	8.65	8.24	7.86	7.49	7.14	6.81	6.49	6.18
1997	9.00	8.57	8.17	7.79	7.42	7.07	6.74	6.43	6.13	5.84
1998	8.66	8.25	7.86	7.48	7.13	6.80	6.48	6.18	5.89	5.62
1999	8.24	7.86	7.48	7.13	6.79	6.47	6.17	5.88	5.61	5.35
2000	8.02	7.65	7.29	6.94	6.61	6.30	6.00	5.72	5.46	5.20
2001	7.77	7.41	7.07	6.74	6.42	6.11	5.82	5.55	5.29	5.04
2002	7.64	7.29	6.96	6.63	6.32	6.02	5.74	5.47	5.21	4.97
2003	7.58	7.24	6.91	6.59	6.28	5.99	5.70	5.43	5.18	4.93
2004	7.48	7.14	6.82	6.51	6.21	5.92	5.64	5.38	5.12	4.88
2005	7.35	7.02	6.70	6.40	6.11	5.83	5.55	5.29	5.04	4.80
2006	7.19	6.86	6.54	6.25	5.96	5.69	5.43	5.18	4.94	4.70
2007	7.06	6.73	6.42	6.13	5.85	5.59	5.34	5.09	4.85	4.63
2008	6.85	6.53	6.23	5.94	5.67	5.41	5.17	4.93	4.71	4.49
2009	6.59	6.28	5.99	5.71	5.45	5.20	4.96	4.74	4.53	4.32
2010	6.35	6.05	5.77	5.50	5.24	5.00	4.77	4.56	4.35	4.16
2011	6.12	5.83	5.55	5.29	5.04	4.81	4.59	4.38	4.18	3.99
2012	5.91	5.63	5.36	5.10	4.86	4.64	4.42	4.22	4.03	3.84
2013	5.74	5.46	5.20	4.95	4.72	4.49	4.28	4.09	3.90	3.72

Year	81	82	83	84	85	86	87	88	89	90
1916	16.14	15.48	14.84	14.23	13.65	13.08	12.55	12.03	11.53	11.06
1917	16.09	15.43	14.79	14.18	13.60	13.04	12.50	11.99	11.49	11.02
1918	16.03	15.37	14.74	14.13	13.55	12.99	12.46	11.94	11.45	10.98
1919	15.97	15.31	14.68	14.08	13.50	12.94	12.41	11.90	11.41	10.94
1920	15.90	15.25	14.62	14.02	13.44	12.89	12.36	11.85	11.36	10.90
1921	15.84	15.18	14.56	13.96	13.39	12.84	12.31	11.80	11.32	10.85
1922	15.77	15.12	14.50	13.90	13.33	12.78	12.25	11.75	11.27	10.80
1923	15.69	15.05	14.43	13.83	13.27	12.72	12.20	11.69	11.21	10.75
1924	15.62	14.97	14.36	13.77	13.20	12.66	12.14	11.64	11.16	10.70
1925	15.54	14.90	14.29	13.70	13.13	12.59	12.08	11.58	11.10	10.65
1926	15.46	14.82	14.21	13.63	13.07	12.53	12.01	11.52	11.04	10.59
1927	15.37	14.74	14.13	13.55	12.99	12.46	11.95	11.46	10.98	10.53
1928	15.29	14.66	14.05	13.48	12.92	12.39	11.88	11.39	10.92	10.47
1929	15.17	14.55	13.95	13.38	12.83	12.30	11.79	11.31	10.84	10.40
1930	15.02	14.41	13.81	13.25	12.70	12.18	11.68	11.20	10.74	10.29
1931	14.89	14.28	13.69	13.13	12.59	12.07	11.57	11.10	10.64	10.20
1932	14.77	14.17	13.58	13.02	12.49	11.98	11.48	11.01	10.56	10.12
1933	14.70	14.10	13.52	12.96	12.43	11.92	11.43	10.96	10.50	10.07
1934	14.61	14.01	13.44	12.88	12.35	11.85	11.36	10.89	10.44	10.01
1935	14.52	13.93	13.35	12.80	12.28	11.77	11.29	10.82	10.38	9.95
1936	14.44	13.84	13.27	12.73	12.20	11.70	11.22	10.76	10.32	9.89
1937	14.30	13.71	13.15	12.61	12.09	11.59	11.12	10.66	10.22	9.80
1938	14.17	13.58	13.03	12.49	11.98	11.48	11.01	10.56	10.12	9.71
1939	14.07	13.49	12.93	12.40	11.89	11.40	10.93	10.48	10.05	9.64
1940	13.99	13.42	12.87	12.34	11.83	11.34	10.88	10.43	10.00	9.59
1941	13.86	13.29	12.75	12.22	11.72	11.24	10.78	10.33	9.91	9.50
1942	13.69	13.13	12.59	12.07	11.57	11.10	10.64	10.20	9.78	9.38
1943	13.43	12.88	12.35	11.84	11.35	10.89	10.44	10.01	9.60	9.20
1944	13.10	12.56	12.04	11.55	11.07	10.62	10.18	9.76	9.36	8.98
1945	12.98	12.44	11.93	11.44	10.97	10.52	10.09	9.67	9.27	8.89
1946	12.87	12.34	11.83	11.35	10.88	10.43	10.00	9.59	9.20	8.82
1947	12.75	12.23	11.73	11.24	10.78	10.34	9.91	9.51	9.12	8.74
1948	12.66	12.14	11.64	11.16	10.70	10.26	9.84	9.44	9.05	8.68
1949	12.55	12.03	11.54	11.06	10.61	10.17	9.76	9.35	8.97	8.60
1950	12.45	11.94	11.45	10.98	10.52	10.09	9.68	9.28	8.90	8.53
1951	12.36	11.85	11.37	10.90	10.45	10.02	9.61	9.22	8.84	8.47
1952	12.26	11.75	11.27	10.81	10.36	9.94	9.53	9.14	8.76	8.40
1953	12.18	11.68	11.20	10.74	10.30	9.87	9.47	9.08	8.71	8.35
1954	12.14	11.64	11.17	10.71	10.27	9.84	9.44	9.05	8.68	8.32
1955	12.08	11.58	11.11	10.65	10.21	9.79	9.39	9.00	8.63	8.28
1956	12.01	11.52	11.05	10.59	10.16	9.74	9.34	8.95	8.59	8.23
1957	11.98	11.49	11.01	10.56	10.13	9.71	9.31	8.93	8.56	8.21
1958	11.92	11.43	10.96	10.51	10.08	9.67	9.27	8.89	8.52	8.17
1959	11.90	11.41	10.94	10.49	10.06	9.65	9.25	8.87	8.50	8.16
1960	11.86	11.38	10.91	10.46	10.03	9.62	9.22	8.84	8.48	8.13
1961	11.83	11.34	10.87	10.43	10.00	9.59	9.19	8.81	8.45	8.10
1962	11.79	11.30	10.84	10.39	9.97	9.56	9.16	8.79	8.43	8.08
1963	11.75	11.27	10.80	10.36	9.93	9.52	9.13	8.76	8.40	8.05
1964	11.72	11.24	10.78	10.33	9.91	9.50	9.11	8.74	8.38	8.03
1965	11.70	11.22	10.75	10.31	9.89	9.48	9.09	8.72	8.36	8.02
1966	11.67	11.19	10.73	10.28	9.86	9.46	9.07	8.69	8.34	7.99
1967	11.54	11.06	10.61	10.17	9.75	9.35	8.97	8.60	8.25	7.91
1968	11.43	10.96	10.51	10.08	9.66	9.26	8.88	8.52	8.17	7.83
1969	11.35	10.88	10.43	10.00	9.59	9.20	8.82	8.46	8.11	7.78
1970	11.30	10.83	10.39	9.96	9.55	9.15	8.78	8.42	8.07	7.74
1971	11.28	10.81	10.37	9.94	9.53	9.14	8.76	8.40	8.05	7.72

Year	81	82	83	84	85	86	87	88	89	90
1972	11.22	10.76	10.31	9.89	9.48	9.09	8.71	8.36	8.01	7.68
1973	11.15	10.69	10.25	9.83	9.42	9.03	8.66	8.30	7.96	7.63
1974	11.09	10.63	10.19	9.77	9.37	8.98	8.61	8.26	7.92	7.59
1975	11.05	10.59	10.15	9.73	9.33	8.95	8.58	8.22	7.88	7.56
1976	11.02	10.56	10.12	9.70	9.30	8.92	8.55	8.20	7.86	7.54
1977	11.02	10.55	10.11	9.69	9.29	8.91	8.54	8.18	7.85	7.52
1978	11.00	10.54	10.10	9.67	9.27	8.89	8.52	8.17	7.83	7.51
1979	10.93	10.47	10.02	9.60	9.20	8.82	8.45	8.10	7.77	7.45
1980	10.74	10.28	9.84	9.43	9.03	8.66	8.29	7.95	7.62	7.31
1981	10.72	10.22	9.78	9.36	8.97	8.59	8.23	7.89	7.56	7.25
1982	10.59	10.12	9.65	9.24	8.85	8.47	8.12	7.78	7.45	7.14
1983	10.43	9.97	9.53	9.08	8.69	8.32	7.97	7.64	7.32	7.01
1984	10.30	9.84	9.39	8.98	8.56	8.19	7.85	7.51	7.20	6.90
1985	10.14	9.68	9.24	8.83	8.43	8.04	7.70	7.37	7.06	6.76
1986	9.79	9.34	8.91	8.51	8.13	7.77	7.40	7.09	6.79	6.50
1987	9.30	8.86	8.46	8.07	7.70	7.36	7.03	6.71	6.42	6.14
1988	8.59	8.19	7.81	7.45	7.11	6.79	6.48	6.19	5.91	5.65
1989	8.20	7.82	7.45	7.11	6.78	6.47	6.18	5.90	5.64	5.38
1990	7.80	7.43	7.08	6.75	6.44	6.14	5.86	5.60	5.35	5.11
1991	7.58	7.22	6.88	6.56	6.26	5.97	5.69	5.43	5.19	4.95
1992	7.37	7.02	6.68	6.37	6.07	5.79	5.52	5.27	5.02	4.80
1993	7.10	6.76	6.44	6.13	5.84	5.57	5.31	5.07	4.83	4.61
1994	6.72	6.39	6.09	5.80	5.52	5.26	5.02	4.78	4.56	4.35
1995	6.36	6.05	5.76	5.48	5.22	4.98	4.74	4.52	4.31	4.11
1996	5.89	5.60	5.34	5.08	4.84	4.61	4.39	4.18	3.99	3.80
1997	5.57	5.30	5.05	4.80	4.57	4.35	4.15	3.95	3.77	3.59
1998	5.35	5.10	4.86	4.62	4.40	4.19	3.99	3.80	3.62	3.45
1999	5.10	4.86	4.63	4.41	4.20	3.99	3.80	3.62	3.45	3.29
2000	4.96	4.73	4.51	4.29	4.09	3.89	3.70	3.53	3.36	3.20
2001	4.81	4.58	4.37	4.17	3.97	3.78	3.60	3.42	3.26	3.10
2002	4.73	4.51	4.30	4.10	3.91	3.72	3.55	3.38	3.21	3.06
2003	4.70	4.48	4.28	4.08	3.89	3.70	3.53	3.36	3.20	3.04
2004	4.65	4.43	4.23	4.03	3.84	3.66	3.49	3.33	3.17	3.02
2005	4.58	4.36	4.16	3.96	3.78	3.60	3.44	3.27	3.12	2.97
2006	4.48	4.27	4.07	3.88	3.70	3.52	3.36	3.20	3.05	2.91
2007	4.41	4.20	4.00	3.81	3.63	3.46	3.30	3.15	3.00	2.86
2008	4.28	4.08	3.88	3.70	3.53	3.36	3.20	3.06	2.91	2.78
2009	4.12	3.92	3.74	3.56	3.39	3.23	3.08	2.94	2.80	2.67
2010	3.97	3.78	3.60	3.43	3.27	3.12	2.97	2.83	2.70	2.57
2011	3.81	3.64	3.47	3.31	3.15	3.00	2.86	2.72	2.60	2.48
2012	3.67	3.51	3.34	3.19	3.04	2.90	2.76	2.63	2.51	2.39
2013	3.55	3.39	3.24	3.09	2.95	2.81	2.68	2.55	2.43	2.31

Year	91	92	93	94	95	96	97	98	99	100
1916	10.60	10.17	9.75	9.35	8.96	8.60	8.24	7.90	7.58	7.27
1917	10.57	10.13	9.72	9.32	8.93	8.57	8.21	7.88	7.55	7.24
1918	10.53	10.10	9.68	9.28	8.90	8.53	8.18	7.85	7.52	7.21
1919	10.49	10.06	9.64	9.25	8.87	8.50	8.15	7.82	7.49	7.19
1920	10.45	10.02	9.61	9.21	8.83	8.47	8.12	7.79	7.46	7.16
1921	10.40	9.97	9.56	9.17	8.79	8.43	8.08	7.75	7.43	7.13
1922	10.36	9.93	9.52	9.13	8.75	8.39	8.05	7.72	7.40	7.10
1923	10.31	9.88	9.48	9.09	8.71	8.36	8.01	7.68	7.37	7.06
1924	10.26	9.84	9.43	9.04	8.67	8.32	7.97	7.65	7.33	7.03
1925	10.21	9.79	9.39	9.00	8.63	8.27	7.93	7.61	7.29	6.99
1926	10.15	9.74	9.34	8.95	8.58	8.23	7.89	7.57	7.26	6.96
1927	10.10	9.68	9.29	8.90	8.54	8.19	7.85	7.53	7.22	6.92
1928	10.04	9.63	9.23	8.85	8.49	8.14	7.80	7.48	7.18	6.88
1929	9.97	9.56	9.16	8.79	8.43	8.08	7.75	7.43	7.12	6.83
1930	9.87	9.46	9.07	8.70	8.34	8.00	7.67	7.36	7.05	6.76
1931	9.78	9.38	8.99	8.62	8.27	7.93	7.60	7.29	6.99	6.70
1932	9.71	9.31	8.92	8.56	8.20	7.87	7.54	7.23	6.94	6.65
1933	9.66	9.26	8.88	8.51	8.16	7.83	7.51	7.20	6.90	6.62
1934	9.60	9.21	8.83	8.46	8.12	7.78	7.46	7.16	6.86	6.58
1935	9.54	9.15	8.77	8.41	8.07	7.73	7.42	7.11	6.82	6.54
1936	9.48	9.09	8.72	8.36	8.02	7.69	7.37	7.07	6.78	6.50
1937	9.40	9.01	8.64	8.28	7.94	7.62	7.30	7.00	6.71	6.44
1938	9.31	8.93	8.56	8.21	7.87	7.54	7.23	6.94	6.65	6.38
1939	9.24	8.86	8.50	8.15	7.81	7.49	7.18	6.89	6.60	6.33
1940	9.19	8.82	8.45	8.11	7.77	7.45	7.15	6.85	6.57	6.30
1941	9.11	8.73	8.38	8.03	7.70	7.38	7.08	6.79	6.51	6.24
1942	9.00	8.63	8.27	7.93	7.61	7.29	6.99	6.70	6.43	6.16
1943	8.82	8.46	8.11	7.78	7.46	7.15	6.86	6.58	6.31	6.05
1944	8.61	8.25	7.91	7.59	7.28	6.98	6.69	6.41	6.15	5.90
1945	8.53	8.18	7.84	7.52	7.21	6.91	6.63	6.36	6.09	5.84
1946	8.46	8.11	7.78	7.46	7.15	6.85	6.57	6.30	6.04	5.79
1947	8.38	8.04	7.71	7.39	7.08	6.79	6.51	6.25	5.99	5.74
1948	8.32	7.98	7.65	7.33	7.03	6.74	6.47	6.20	5.95	5.70
1949	8.25	7.91	7.58	7.27	6.97	6.68	6.41	6.15	5.89	5.65
1950	8.18	7.84	7.52	7.21	6.92	6.63	6.36	6.10	5.85	5.61
1951	8.12	7.79	7.47	7.16	6.87	6.59	6.31	6.06	5.81	5.57
1952	8.05	7.72	7.41	7.10	6.81	6.53	6.26	6.00	5.76	5.52
1953	8.01	7.68	7.36	7.06	6.77	6.49	6.22	5.97	5.72	5.49
1954	7.98	7.65	7.34	7.04	6.75	6.47	6.20	5.95	5.70	5.47
1955	7.94	7.61	7.30	7.00	6.71	6.44	6.17	5.92	5.67	5.44
1956	7.90	7.57	7.26	6.96	6.67	6.40	6.14	5.88	5.64	5.41
1957	7.87	7.55	7.24	6.94	6.66	6.38	6.12	5.87	5.63	5.40
1958	7.84	7.51	7.20	6.91	6.62	6.35	6.09	5.84	5.60	5.37
1959	7.82	7.50	7.19	6.89	6.61	6.34	6.08	5.83	5.59	5.36
1960	7.80	7.48	7.17	6.87	6.59	6.32	6.06	5.81	5.57	5.34
1961	7.77	7.45	7.15	6.85	6.57	6.30	6.04	5.79	5.55	5.33
1962	7.75	7.43	7.12	6.83	6.55	6.28	6.02	5.77	5.54	5.31
1963	7.72	7.40	7.10	6.81	6.53	6.26	6.00	5.75	5.52	5.29
1964	7.70	7.39	7.08	6.79	6.51	6.24	5.99	5.74	5.50	5.28
1965	7.69	7.37	7.07	6.78	6.50	6.23	5.97	5.73	5.49	5.27
1966	7.66	7.35	7.05	6.76	6.48	6.21	5.96	5.71	5.48	5.25
1967	7.58	7.27	6.97	6.68	6.41	6.15	5.89	5.65	5.42	5.20
1968	7.51	7.20	6.90	6.62	6.35	6.09	5.84	5.60	5.37	5.15
1969	7.46	7.15	6.85	6.57	6.30	6.04	5.80	5.56	5.33	5.11
1970	7.42	7.11	6.82	6.54	6.27	6.01	5.77	5.53	5.30	5.08
1971	7.41	7.10	6.81	6.53	6.26	6.00	5.76	5.52	5.29	5.08

Year	91	92	93	94	95	96	97	98	99	100
1972	7.37	7.06	6.77	6.49	6.23	5.97	5.73	5.49	5.26	5.05
1973	7.32	7.02	6.73	6.45	6.19	5.93	5.69	5.46	5.23	5.02
1974	7.28	6.98	6.69	6.42	6.15	5.90	5.66	5.42	5.20	4.99
1975	7.25	6.95	6.66	6.39	6.13	5.88	5.63	5.40	5.18	4.97
1976	7.22	6.93	6.64	6.37	6.11	5.86	5.61	5.38	5.16	4.95
1977	7.21	6.92	6.63	6.36	6.10	5.85	5.61	5.37	5.15	4.94
1978	7.20	6.90	6.62	6.34	6.08	5.83	5.59	5.36	5.14	4.93
1979	7.14	6.85	6.56	6.29	6.03	5.79	5.55	5.32	5.10	4.89
1980	7.00	6.72	6.44	6.17	5.92	5.68	5.44	5.22	5.00	4.80
1981	6.95	6.66	6.39	6.13	5.87	5.63	5.40	5.18	4.96	4.76
1982	6.85	6.57	6.29	6.03	5.79	5.55	5.32	5.10	4.89	4.69
1983	6.72	6.44	6.18	5.92	5.68	5.44	5.22	5.01	4.80	4.60
1984	6.61	6.34	6.07	5.82	5.58	5.35	5.13	4.92	4.72	4.52
1985	6.48	6.21	5.95	5.71	5.47	5.24	5.03	4.82	4.62	4.43
1986	6.23	5.97	5.72	5.48	5.25	5.04	4.83	4.63	4.44	4.26
1987	5.89	5.64	5.40	5.18	4.96	4.76	4.56	4.37	4.19	4.02
1988	5.41	5.18	4.97	4.76	4.56	4.37	4.19	4.02	3.85	3.69
1989	5.15	4.93	4.72	4.52	4.33	4.15	3.98	3.81	3.66	3.51
1990	4.87	4.66	4.46	4.28	4.10	3.93	3.76	3.61	3.46	3.31
1991	4.73	4.51	4.32	4.14	3.96	3.80	3.64	3.49	3.34	3.20
1992	4.58	4.38	4.18	4.00	3.83	3.66	3.51	3.36	3.22	3.09
1993	4.40	4.20	4.02	3.83	3.67	3.51	3.36	3.22	3.09	2.96
1994	4.15	3.97	3.79	3.62	3.45	3.30	3.16	3.03	2.90	2.78
1995	3.92	3.74	3.57	3.41	3.26	3.11	2.98	2.85	2.73	2.61
1996	3.62	3.46	3.30	3.15	3.01	2.88	2.74	2.62	2.51	2.41
1997	3.42	3.26	3.11	2.97	2.84	2.71	2.59	2.47	2.36	2.26
1998	3.29	3.14	2.99	2.85	2.72	2.60	2.48	2.37	2.26	2.16
1999	3.13	2.98	2.85	2.71	2.59	2.47	2.36	2.25	2.15	2.05
2000	3.05	2.90	2.77	2.64	2.52	2.40	2.29	2.19	2.09	2.00
2001	2.96	2.82	2.68	2.56	2.44	2.33	2.22	2.12	2.02	1.93
2002	2.91	2.78	2.64	2.52	2.40	2.29	2.18	2.08	1.99	1.90
2003	2.90	2.76	2.63	2.50	2.39	2.28	2.17	2.07	1.97	1.88
2004	2.87	2.73	2.60	2.48	2.36	2.25	2.14	2.04	1.95	1.86
2005	2.83	2.69	2.56	2.44	2.32	2.21	2.11	2.01	1.92	1.83
2006	2.77	2.64	2.51	2.39	2.28	2.17	2.06	1.97	1.88	1.79
2007	2.73	2.60	2.47	2.35	2.24	2.13	2.03	1.94	1.84	1.76
2008	2.65	2.52	2.40	2.29	2.18	2.07	1.97	1.88	1.79	1.71
2009	2.55	2.43	2.31	2.20	2.10	2.00	1.90	1.81	1.72	1.64
2010	2.45	2.34	2.23	2.12	2.02	1.92	1.83	1.74	1.66	1.58
2011	2.36	2.25	2.14	2.04	1.95	1.85	1.77	1.68	1.60	1.52
2012	2.28	2.17	2.07	1.97	1.88	1.79	1.71	1.62	1.55	1.47
2013	2.21	2.10	2.00	1.91	1.82	1.74	1.65	1.58	1.50	1.43

Year	101	102	103	104	105	106	107	108	109	110
1916	6.97	6.68	6.41	6.14	5.89	5.65	5.41	5.19	4.98	4.77
1917	6.94	6.66	6.38	6.12	5.87	5.63	5.40	5.17	4.96	4.76
1918	6.92	6.63	6.36	6.10	5.85	5.61	5.38	5.15	4.94	4.74
1919	6.89	6.61	6.34	6.07	5.82	5.58	5.36	5.13	4.92	4.72
1920	6.86	6.58	6.31	6.05	5.80	5.56	5.33	5.11	4.90	4.70
1921	6.83	6.55	6.28	6.02	5.78	5.54	5.31	5.09	4.88	4.68
1922	6.80	6.52	6.26	6.00	5.75	5.51	5.29	5.07	4.86	4.66
1923	6.77	6.49	6.23	5.97	5.72	5.49	5.26	5.05	4.84	4.64
1924	6.74	6.46	6.20	5.94	5.70	5.46	5.24	5.02	4.82	4.62
1925	6.71	6.43	6.17	5.91	5.67	5.44	5.21	5.00	4.79	4.59
1926	6.67	6.40	6.13	5.88	5.64	5.41	5.18	4.97	4.77	4.57
1927	6.63	6.36	6.10	5.85	5.61	5.38	5.16	4.94	4.74	4.55
1928	6.60	6.33	6.07	5.82	5.58	5.35	5.13	4.92	4.71	4.52
1929	6.55	6.28	6.02	5.77	5.54	5.31	5.09	4.88	4.68	4.49
1930	6.48	6.22	5.96	5.72	5.48	5.26	5.04	4.83	4.63	4.44
1931	6.43	6.16	5.91	5.67	5.43	5.21	4.99	4.79	4.59	4.40
1932	6.38	6.11	5.86	5.62	5.39	5.17	4.96	4.75	4.56	4.37
1933	6.34	6.08	5.83	5.59	5.36	5.14	4.93	4.73	4.53	4.35
1934	6.31	6.05	5.80	5.56	5.33	5.11	4.90	4.70	4.51	4.32
1935	6.27	6.01	5.76	5.53	5.30	5.08	4.87	4.67	4.48	4.29
1936	6.23	5.97	5.73	5.49	5.27	5.05	4.84	4.64	4.45	4.27
1937	6.17	5.92	5.68	5.44	5.22	5.00	4.80	4.60	4.41	4.23
1938	6.12	5.86	5.62	5.39	5.17	4.96	4.75	4.56	4.37	4.19
1939	6.07	5.82	5.58	5.35	5.13	4.92	4.72	4.52	4.34	4.16
1940	6.04	5.79	5.55	5.33	5.11	4.90	4.69	4.50	4.32	4.14
1941	5.98	5.74	5.50	5.28	5.06	4.85	4.65	4.46	4.28	4.10
1942	5.91	5.67	5.43	5.21	5.00	4.79	4.59	4.40	4.22	4.05
1943	5.80	5.56	5.33	5.11	4.90	4.70	4.51	4.32	4.14	3.97
1944	5.65	5.42	5.20	4.98	4.78	4.58	4.39	4.21	4.04	3.87
1945	5.60	5.37	5.15	4.94	4.74	4.54	4.35	4.18	4.00	3.84
1946	5.56	5.33	5.11	4.90	4.70	4.50	4.32	4.14	3.97	3.81
1947	5.51	5.28	5.06	4.85	4.65	4.46	4.28	4.10	3.93	3.77
1948	5.47	5.24	5.03	4.82	4.62	4.43	4.25	4.07	3.91	3.75
1949	5.42	5.20	4.98	4.78	4.58	4.39	4.21	4.04	3.87	3.71
1950	5.38	5.15	4.94	4.74	4.54	4.36	4.18	4.01	3.84	3.68
1951	5.34	5.12	4.91	4.71	4.51	4.33	4.15	3.98	3.81	3.66
1952	5.29	5.07	4.87	4.67	4.47	4.29	4.11	3.94	3.78	3.63
1953	5.26	5.04	4.84	4.64	4.45	4.26	4.09	3.92	3.76	3.60
1954	5.24	5.03	4.82	4.62	4.43	4.25	4.08	3.91	3.75	3.59
1955	5.22	5.00	4.80	4.60	4.41	4.23	4.05	3.89	3.73	3.57
1956	5.19	4.97	4.77	4.57	4.39	4.21	4.03	3.87	3.71	3.55
1957	5.17	4.96	4.76	4.56	4.37	4.19	4.02	3.86	3.70	3.54
1958	5.15	4.94	4.73	4.54	4.35	4.17	4.00	3.84	3.68	3.53
1959	5.14	4.93	4.72	4.53	4.34	4.17	3.99	3.83	3.67	3.52
1960	5.12	4.91	4.71	4.52	4.33	4.15	3.98	3.82	3.66	3.51
1961	5.11	4.90	4.70	4.50	4.32	4.14	3.97	3.81	3.65	3.50
1962	5.09	4.88	4.68	4.49	4.30	4.13	3.96	3.79	3.64	3.49
1963	5.07	4.86	4.66	4.47	4.29	4.11	3.94	3.78	3.63	3.48
1964	5.06	4.85	4.65	4.46	4.28	4.10	3.93	3.77	3.62	3.47
1965	5.05	4.84	4.64	4.45	4.27	4.09	3.93	3.76	3.61	3.46
1966	5.04	4.83	4.63	4.44	4.26	4.08	3.92	3.75	3.60	3.45
1967	4.98	4.78	4.58	4.39	4.21	4.04	3.87	3.71	3.56	3.41
1968	4.93	4.73	4.54	4.35	4.17	4.00	3.84	3.68	3.53	3.38
1969	4.90	4.70	4.50	4.32	4.14	3.97	3.81	3.65	3.50	3.36
1970	4.88	4.68	4.48	4.30	4.12	3.95	3.79	3.63	3.48	3.34
1971	4.87	4.67	4.47	4.29	4.11	3.95	3.78	3.63	3.48	3.34

Year	101	102	103	104	105	106	107	108	109	110
1972	4.84	4.64	4.45	4.27	4.09	3.92	3.76	3.61	3.46	3.32
1973	4.81	4.61	4.42	4.24	4.07	3.90	3.74	3.59	3.44	3.30
1974	4.78	4.59	4.40	4.22	4.04	3.88	3.72	3.56	3.42	3.28
1975	4.76	4.57	4.38	4.20	4.03	3.86	3.70	3.55	3.40	3.26
1976	4.75	4.55	4.36	4.18	4.01	3.85	3.69	3.54	3.39	3.25
1977	4.74	4.54	4.36	4.18	4.01	3.84	3.68	3.53	3.39	3.25
1978	4.73	4.53	4.35	4.17	4.00	3.83	3.67	3.52	3.38	3.24
1979	4.69	4.50	4.31	4.13	3.96	3.80	3.65	3.50	3.35	3.21
1980	4.60	4.41	4.23	4.06	3.89	3.73	3.58	3.43	3.29	3.15
1981	4.56	4.38	4.20	4.02	3.86	3.70	3.55	3.40	3.26	3.13
1982	4.50	4.31	4.13	3.96	3.80	3.64	3.49	3.35	3.21	3.08
1983	4.41	4.23	4.06	3.89	3.73	3.58	3.43	3.29	3.15	3.02
1984	4.34	4.16	3.99	3.82	3.67	3.52	3.37	3.23	3.10	2.97
1985	4.25	4.07	3.91	3.75	3.59	3.44	3.30	3.17	3.04	2.91
1986	4.08	3.91	3.75	3.60	3.45	3.31	3.17	3.04	2.92	2.80
1987	3.85	3.69	3.54	3.40	3.26	3.12	2.99	2.87	2.75	2.64
1988	3.54	3.39	3.25	3.12	2.99	2.87	2.75	2.64	2.53	2.43
1989	3.36	3.22	3.09	2.96	2.84	2.72	2.61	2.50	2.40	2.30
1990	3.18	3.05	2.92	2.80	2.68	2.57	2.47	2.37	2.27	2.18
1991	3.07	2.94	2.82	2.71	2.59	2.49	2.38	2.29	2.19	2.10
1992	2.96	2.84	2.72	2.61	2.50	2.40	2.30	2.21	2.12	2.03
1993	2.84	2.72	2.61	2.50	2.40	2.30	2.20	2.11	2.02	1.94
1994	2.67	2.55	2.45	2.35	2.25	2.16	2.07	1.98	1.90	1.82
1995	2.51	2.40	2.30	2.21	2.11	2.03	1.94	1.86	1.79	1.71
1996	2.31	2.21	2.12	2.03	1.95	1.87	1.79	1.71	1.64	1.58
1997	2.17	2.08	1.99	1.91	1.83	1.75	1.68	1.61	1.54	1.48
1998	2.07	1.98	1.90	1.82	1.75	1.67	1.60	1.54	1.47	1.41
1999	1.96	1.88	1.80	1.73	1.65	1.59	1.52	1.46	1.40	1.34
2000	1.90	1.82	1.74	1.67	1.60	1.53	1.47	1.41	1.35	1.29
2001	1.85	1.76	1.68	1.61	1.54	1.48	1.42	1.36	1.30	1.25
2002	1.81	1.73	1.65	1.58	1.51	1.45	1.39	1.33	1.28	1.22
2003	1.80	1.72	1.64	1.56	1.50	1.43	1.37	1.32	1.26	1.21
2004	1.77	1.69	1.62	1.55	1.47	1.41	1.35	1.29	1.24	1.19
2005	1.74	1.66	1.59	1.52	1.45	1.38	1.32	1.27	1.21	1.16
2006	1.71	1.63	1.55	1.48	1.42	1.35	1.29	1.23	1.18	1.13
2007	1.68	1.60	1.52	1.45	1.39	1.33	1.27	1.21	1.16	1.11
2008	1.63	1.55	1.48	1.41	1.35	1.28	1.23	1.17	1.12	1.07
2009	1.56	1.49	1.42	1.36	1.29	1.23	1.18	1.13	1.08	1.03
2010	1.51	1.44	1.37	1.31	1.24	1.19	1.13	1.08	1.03	0.99
2011	1.45	1.38	1.32	1.26	1.20	1.14	1.09	1.04	0.99	0.95
2012	1.40	1.33	1.27	1.21	1.15	1.10	1.05	1.00	0.96	0.91
2013	1.36	1.29	1.23	1.17	1.12	1.07	1.02	0.97	0.93	0.88

Year	111	112	113	114	115	116	117	118	119	120
1916	4.58	4.39	4.21	4.03	3.87	3.71	3.56	3.41	3.27	3.14
1917	4.56	4.37	4.19	4.02	3.86	3.70	3.54	3.40	3.26	3.12
1918	4.54	4.36	4.18	4.01	3.84	3.68	3.53	3.39	3.25	3.11
1919	4.53	4.34	4.16	3.99	3.83	3.67	3.52	3.37	3.23	3.10
1920	4.51	4.32	4.15	3.97	3.81	3.65	3.50	3.36	3.22	3.09
1921	4.49	4.30	4.13	3.96	3.79	3.64	3.49	3.35	3.21	3.08
1922	4.47	4.29	4.11	3.94	3.78	3.62	3.47	3.33	3.19	3.06
1923	4.45	4.27	4.09	3.92	3.76	3.61	3.46	3.32	3.18	3.05
1924	4.43	4.25	4.07	3.90	3.74	3.59	3.44	3.30	3.16	3.03
1925	4.41	4.22	4.05	3.88	3.72	3.57	3.42	3.28	3.15	3.02
1926	4.38	4.20	4.03	3.86	3.70	3.55	3.41	3.27	3.13	3.00
1927	4.36	4.18	4.01	3.84	3.68	3.53	3.39	3.25	3.11	2.99
1928	4.33	4.16	3.98	3.82	3.66	3.51	3.37	3.23	3.10	2.97
1929	4.30	4.12	3.96	3.79	3.64	3.49	3.34	3.21	3.07	2.95
1930	4.26	4.08	3.92	3.75	3.60	3.45	3.31	3.17	3.04	2.92
1931	4.22	4.05	3.88	3.72	3.57	3.42	3.28	3.15	3.02	2.89
1932	4.19	4.02	3.85	3.69	3.54	3.40	3.26	3.12	2.99	2.87
1933	4.17	4.00	3.83	3.67	3.52	3.38	3.24	3.11	2.98	2.86
1934	4.14	3.97	3.81	3.65	3.50	3.36	3.22	3.09	2.96	2.84
1935	4.12	3.95	3.79	3.63	3.48	3.34	3.20	3.07	2.94	2.82
1936	4.09	3.92	3.76	3.61	3.46	3.32	3.18	3.05	2.92	2.80
1937	4.05	3.89	3.73	3.57	3.43	3.29	3.15	3.02	2.90	2.78
1938	4.02	3.85	3.69	3.54	3.40	3.26	3.12	2.99	2.87	2.75
1939	3.99	3.82	3.67	3.52	3.37	3.23	3.10	2.97	2.85	2.73
1940	3.97	3.80	3.65	3.50	3.35	3.22	3.08	2.96	2.84	2.72
1941	3.93	3.77	3.61	3.47	3.32	3.19	3.06	2.93	2.81	2.69
1942	3.88	3.72	3.57	3.42	3.28	3.15	3.02	2.89	2.77	2.66
1943	3.81	3.65	3.50	3.36	3.22	3.09	2.96	2.84	2.72	2.61
1944	3.71	3.56	3.42	3.27	3.14	3.01	2.89	2.77	2.65	2.54
1945	3.68	3.53	3.38	3.24	3.11	2.98	2.86	2.74	2.63	2.52
1946	3.65	3.50	3.36	3.22	3.09	2.96	2.84	2.72	2.61	2.50
1947	3.62	3.47	3.33	3.19	3.06	2.93	2.81	2.70	2.58	2.48
1948	3.59	3.44	3.30	3.17	3.04	2.91	2.79	2.68	2.57	2.46
1949	3.56	3.41	3.27	3.14	3.01	2.89	2.77	2.65	2.54	2.44
1950	3.53	3.39	3.25	3.11	2.98	2.86	2.74	2.63	2.52	2.42
1951	3.51	3.36	3.22	3.09	2.96	2.84	2.73	2.61	2.51	2.40
1952	3.48	3.33	3.20	3.07	2.94	2.82	2.70	2.59	2.48	2.38
1953	3.46	3.31	3.18	3.05	2.92	2.80	2.69	2.58	2.47	2.37
1954	3.45	3.30	3.17	3.04	2.91	2.79	2.68	2.57	2.46	2.36
1955	3.43	3.29	3.15	3.02	2.90	2.78	2.66	2.55	2.45	2.35
1956	3.41	3.27	3.13	3.00	2.88	2.76	2.65	2.54	2.44	2.34
1957	3.40	3.26	3.13	3.00	2.87	2.76	2.64	2.53	2.43	2.33
1958	3.38	3.24	3.11	2.98	2.86	2.74	2.63	2.52	2.42	2.32
1959	3.38	3.24	3.10	2.98	2.85	2.74	2.62	2.52	2.41	2.31
1960	3.37	3.23	3.10	2.97	2.85	2.73	2.62	2.51	2.41	2.31
1961	3.36	3.22	3.09	2.96	2.84	2.72	2.61	2.50	2.40	2.30
1962	3.35	3.21	3.08	2.95	2.83	2.71	2.60	2.49	2.39	2.29
1963	3.33	3.20	3.06	2.94	2.82	2.70	2.59	2.48	2.38	2.28
1964	3.33	3.19	3.06	2.93	2.81	2.70	2.58	2.48	2.38	2.28
1965	3.32	3.18	3.05	2.93	2.81	2.69	2.58	2.47	2.37	2.27
1966	3.31	3.17	3.04	2.92	2.80	2.68	2.57	2.47	2.37	2.27
1967	3.27	3.14	3.01	2.89	2.77	2.65	2.54	2.44	2.34	2.24
1968	3.24	3.11	2.98	2.86	2.74	2.63	2.52	2.42	2.32	2.22
1969	3.22	3.09	2.96	2.84	2.72	2.61	2.50	2.40	2.30	2.21
1970	3.20	3.07	2.95	2.82	2.71	2.60	2.49	2.39	2.29	2.20
1971	3.20	3.07	2.94	2.82	2.70	2.59	2.49	2.38	2.29	2.19

Year	111	112	113	114	115	116	117	118	119	120
1972	3.18	3.05	2.92	2.80	2.69	2.58	2.47	2.37	2.27	2.18
1973	3.16	3.03	2.91	2.79	2.67	2.56	2.46	2.36	2.26	2.17
1974	3.14	3.01	2.89	2.77	2.66	2.55	2.44	2.34	2.25	2.15
1975	3.13	3.00	2.88	2.76	2.65	2.54	2.43	2.33	2.24	2.14
1976	3.12	2.99	2.87	2.75	2.64	2.53	2.42	2.33	2.23	2.14
1977	3.11	2.99	2.86	2.75	2.63	2.52	2.42	2.32	2.23	2.13
1978	3.11	2.98	2.86	2.74	2.63	2.52	2.41	2.32	2.22	2.13
1979	3.08	2.96	2.83	2.72	2.61	2.50	2.40	2.30	2.20	2.11
1980	3.02	2.90	2.78	2.67	2.56	2.45	2.35	2.25	2.16	2.07
1981	3.00	2.88	2.76	2.64	2.54	2.43	2.33	2.24	2.14	2.06
1982	2.95	2.83	2.72	2.60	2.50	2.39	2.30	2.20	2.11	2.02
1983	2.90	2.78	2.67	2.56	2.45	2.35	2.25	2.16	2.07	1.99
1984	2.85	2.73	2.62	2.51	2.41	2.31	2.22	2.12	2.04	1.95
1985	2.79	2.68	2.57	2.46	2.36	2.26	2.17	2.08	2.00	1.91
1986	2.68	2.57	2.46	2.36	2.27	2.17	2.08	2.00	1.92	1.84
1987	2.53	2.43	2.33	2.23	2.14	2.05	1.97	1.89	1.81	1.74
1988	2.33	2.23	2.14	2.05	1.97	1.89	1.81	1.73	1.66	1.59
1989	2.21	2.12	2.03	1.95	1.87	1.79	1.72	1.65	1.58	1.51
1990	2.09	2.00	1.92	1.84	1.76	1.69	1.62	1.56	1.49	1.43
1991	2.02	1.93	1.85	1.78	1.70	1.63	1.57	1.50	1.44	1.38
1992	1.94	1.86	1.79	1.71	1.64	1.58	1.51	1.45	1.39	1.33
1993	1.86	1.78	1.71	1.64	1.57	1.51	1.45	1.39	1.33	1.28
1994	1.75	1.68	1.61	1.54	1.48	1.42	1.36	1.30	1.25	1.20
1995	1.64	1.57	1.51	1.45	1.39	1.33	1.28	1.22	1.17	1.13
1996	1.51	1.45	1.39	1.33	1.28	1.22	1.17	1.13	1.08	1.04
1997	1.42	1.36	1.30	1.25	1.20	1.15	1.10	1.06	1.01	0.97
1998	1.36	1.30	1.25	1.19	1.15	1.10	1.05	1.01	0.97	0.93
1999	1.28	1.23	1.18	1.13	1.08	1.04	1.00	0.96	0.92	0.88
2000	1.24	1.19	1.14	1.09	1.05	1.01	0.96	0.92	0.89	0.85
2001	1.20	1.15	1.10	1.05	1.01	0.97	0.93	0.89	0.85	0.82
2002	1.17	1.12	1.08	1.03	0.99	0.95	0.91	0.87	0.84	0.80
2003	1.16	1.11	1.06	1.02	0.98	0.94	0.90	0.86	0.83	0.79
2004	1.14	1.09	1.05	1.00	0.96	0.92	0.88	0.85	0.81	0.78
2005	1.11	1.07	1.02	0.98	0.94	0.90	0.86	0.83	0.79	0.76
2006	1.08	1.04	1.00	0.95	0.92	0.88	0.84	0.81	0.77	0.74
2007	1.06	1.02	0.97	0.93	0.89	0.86	0.82	0.79	0.76	0.72
2008	1.02	0.98	0.94	0.90	0.86	0.83	0.79	0.76	0.73	0.70
2009	0.98	0.94	0.90	0.86	0.83	0.79	0.76	0.73	0.70	0.67
2010	0.94	0.90	0.86	0.83	0.79	0.76	0.73	0.70	0.67	0.64
2011	0.91	0.86	0.83	0.79	0.76	0.73	0.70	0.67	0.64	0.61
2012	0.87	0.83	0.79	0.76	0.73	0.70	0.67	0.64	0.61	0.59
2013	0.84	0.80	0.77	0.73	0.70	0.67	0.64	0.62	0.59	0.57

Year	121	122	123	124	125	126	127	128	129	130
1916	3.01	2.88	2.76	2.65	2.54	2.44	2.34	2.24	2.15	2.06
1917	3.00	2.87	2.75	2.64	2.53	2.43	2.33	2.23	2.14	2.05
1918	2.99	2.86	2.74	2.63	2.52	2.42	2.32	2.22	2.13	2.05
1919	2.97	2.85	2.73	2.62	2.51	2.41	2.31	2.22	2.12	2.04
1920	2.96	2.84	2.72	2.61	2.50	2.40	2.30	2.21	2.12	2.03
1921	2.95	2.83	2.71	2.60	2.49	2.39	2.29	2.20	2.11	2.02
1922	2.94	2.82	2.70	2.59	2.48	2.38	2.28	2.19	2.10	2.01
1923	2.92	2.80	2.69	2.58	2.47	2.37	2.27	2.18	2.09	2.00
1924	2.91	2.79	2.67	2.56	2.46	2.36	2.26	2.17	2.08	1.99
1925	2.89	2.77	2.66	2.55	2.45	2.35	2.25	2.16	2.07	1.98
1926	2.88	2.76	2.65	2.54	2.43	2.33	2.24	2.15	2.06	1.97
1927	2.86	2.75	2.63	2.52	2.42	2.32	2.23	2.13	2.05	1.96
1928	2.85	2.73	2.62	2.51	2.41	2.31	2.21	2.12	2.03	1.95
1929	2.83	2.71	2.60	2.49	2.39	2.29	2.20	2.11	2.02	1.94
1930	2.80	2.68	2.57	2.47	2.37	2.27	2.17	2.09	2.00	1.92
1931	2.77	2.66	2.55	2.44	2.34	2.25	2.16	2.07	1.98	1.90
1932	2.75	2.64	2.53	2.43	2.33	2.23	2.14	2.05	1.97	1.89
1933	2.74	2.63	2.52	2.41	2.31	2.22	2.13	2.04	1.96	1.88
1934	2.72	2.61	2.50	2.40	2.30	2.21	2.12	2.03	1.95	1.86
1935	2.71	2.59	2.49	2.38	2.29	2.19	2.10	2.02	1.93	1.85
1936	2.69	2.58	2.47	2.37	2.27	2.18	2.09	2.00	1.92	1.84
1937	2.66	2.55	2.45	2.35	2.25	2.16	2.07	1.98	1.90	1.82
1938	2.64	2.53	2.43	2.33	2.23	2.14	2.05	1.97	1.89	1.81
1939	2.62	2.51	2.41	2.31	2.21	2.12	2.04	1.95	1.87	1.80
1940	2.61	2.50	2.40	2.30	2.20	2.11	2.03	1.94	1.86	1.79
1941	2.58	2.48	2.37	2.28	2.18	2.09	2.01	1.92	1.85	1.77
1942	2.55	2.45	2.35	2.25	2.16	2.07	1.98	1.90	1.82	1.75
1943	2.50	2.40	2.30	2.21	2.11	2.03	1.94	1.86	1.79	1.71
1944	2.44	2.34	2.24	2.15	2.06	1.98	1.90	1.82	1.74	1.67
1945	2.42	2.32	2.22	2.13	2.04	1.96	1.88	1.80	1.73	1.66
1946	2.40	2.30	2.20	2.11	2.03	1.94	1.86	1.79	1.71	1.64
1947	2.38	2.28	2.18	2.09	2.01	1.93	1.85	1.77	1.70	1.63
1948	2.36	2.26	2.17	2.08	1.99	1.91	1.83	1.76	1.69	1.62
1949	2.34	2.24	2.15	2.06	1.98	1.90	1.82	1.74	1.67	1.60
1950	2.32	2.22	2.13	2.04	1.96	1.88	1.80	1.73	1.66	1.59
1951	2.30	2.21	2.12	2.03	1.95	1.87	1.79	1.72	1.65	1.58
1952	2.28	2.19	2.10	2.01	1.93	1.85	1.77	1.70	1.63	1.56
1953	2.27	2.18	2.09	2.00	1.92	1.84	1.76	1.69	1.62	1.56
1954	2.26	2.17	2.08	2.00	1.91	1.83	1.76	1.69	1.62	1.55
1955	2.25	2.16	2.07	1.98	1.90	1.82	1.75	1.68	1.61	1.54
1956	2.24	2.15	2.06	1.97	1.89	1.81	1.74	1.67	1.60	1.53
1957	2.23	2.14	2.05	1.97	1.89	1.81	1.74	1.66	1.60	1.53
1958	2.22	2.13	2.04	1.96	1.88	1.80	1.73	1.66	1.59	1.52
1959	2.22	2.13	2.04	1.96	1.88	1.80	1.72	1.65	1.58	1.52
1960	2.21	2.12	2.03	1.95	1.87	1.79	1.72	1.65	1.58	1.52
1961	2.20	2.11	2.03	1.94	1.86	1.79	1.71	1.64	1.58	1.51
1962	2.20	2.11	2.02	1.94	1.86	1.78	1.71	1.64	1.57	1.51
1963	2.19	2.10	2.01	1.93	1.85	1.78	1.70	1.63	1.56	1.50
1964	2.19	2.10	2.01	1.93	1.85	1.77	1.70	1.63	1.56	1.50
1965	2.18	2.09	2.00	1.92	1.84	1.77	1.69	1.62	1.56	1.49
1966	2.17	2.09	2.00	1.92	1.84	1.76	1.69	1.62	1.55	1.49
1967	2.15	2.06	1.98	1.90	1.82	1.74	1.67	1.60	1.54	1.47
1968	2.13	2.04	1.96	1.88	1.80	1.73	1.66	1.59	1.52	1.46
1969	2.12	2.03	1.94	1.86	1.79	1.71	1.64	1.58	1.51	1.45
1970	2.11	2.02	1.94	1.86	1.78	1.71	1.64	1.57	1.50	1.44
1971	2.10	2.01	1.93	1.85	1.78	1.70	1.63	1.57	1.50	1.44

Year	121	122	123	124	125	126	127	128	129	130
1972	2.09	2.00	1.92	1.84	1.77	1.69	1.62	1.56	1.49	1.43
1973	2.08	1.99	1.91	1.83	1.76	1.68	1.61	1.55	1.48	1.42
1974	2.06	1.98	1.90	1.82	1.75	1.67	1.60	1.54	1.48	1.41
1975	2.06	1.97	1.89	1.81	1.74	1.67	1.60	1.53	1.47	1.41
1976	2.05	1.97	1.88	1.81	1.73	1.66	1.59	1.53	1.46	1.40
1977	2.05	1.96	1.88	1.80	1.73	1.66	1.59	1.53	1.46	1.40
1978	2.04	1.96	1.88	1.80	1.73	1.65	1.59	1.52	1.46	1.40
1979	2.03	1.94	1.86	1.79	1.71	1.64	1.57	1.51	1.45	1.39
1980	1.99	1.90	1.83	1.75	1.68	1.61	1.54	1.48	1.42	1.36
1981	1.97	1.89	1.81	1.74	1.67	1.60	1.53	1.47	1.41	1.35
1982	1.94	1.86	1.79	1.71	1.64	1.57	1.51	1.45	1.39	1.33
1983	1.91	1.83	1.75	1.68	1.61	1.54	1.48	1.42	1.36	1.31
1984	1.87	1.80	1.72	1.65	1.58	1.52	1.46	1.40	1.34	1.28
1985	1.83	1.76	1.69	1.62	1.55	1.49	1.43	1.37	1.31	1.26
1986	1.76	1.69	1.62	1.55	1.49	1.43	1.37	1.31	1.26	1.21
1987	1.66	1.60	1.53	1.47	1.41	1.35	1.29	1.24	1.19	1.14
1988	1.53	1.47	1.41	1.35	1.29	1.24	1.19	1.14	1.09	1.05
1989	1.45	1.39	1.33	1.28	1.23	1.18	1.13	1.08	1.04	0.99
1990	1.37	1.31	1.26	1.21	1.16	1.11	1.07	1.02	0.98	0.94
1991	1.32	1.27	1.22	1.17	1.12	1.07	1.03	0.99	0.95	0.91
1992	1.28	1.23	1.17	1.13	1.08	1.04	0.99	0.95	0.91	0.88
1993	1.22	1.17	1.12	1.08	1.03	0.99	0.95	0.91	0.87	0.84
1994	1.15	1.10	1.06	1.01	0.97	0.93	0.89	0.86	0.82	0.79
1995	1.08	1.03	0.99	0.95	0.91	0.87	0.84	0.80	0.77	0.74
1996	0.99	0.95	0.91	0.88	0.84	0.80	0.77	0.74	0.71	0.68
1997	0.93	0.89	0.86	0.82	0.79	0.76	0.72	0.69	0.67	0.64
1998	0.89	0.85	0.82	0.78	0.75	0.72	0.69	0.66	0.64	0.61
1999	0.84	0.81	0.77	0.74	0.71	0.68	0.66	0.63	0.60	0.58
2000	0.82	0.78	0.75	0.72	0.69	0.66	0.63	0.61	0.58	0.56
2001	0.79	0.75	0.72	0.69	0.66	0.64	0.61	0.59	0.56	0.54
2002	0.77	0.74	0.71	0.68	0.65	0.62	0.60	0.57	0.55	0.53
2003	0.76	0.73	0.70	0.67	0.64	0.62	0.59	0.57	0.54	0.52
2004	0.75	0.72	0.69	0.66	0.63	0.61	0.58	0.56	0.53	0.51
2005	0.73	0.70	0.67	0.64	0.62	0.59	0.57	0.54	0.52	0.50
2006	0.71	0.68	0.65	0.63	0.60	0.58	0.55	0.53	0.51	0.49
2007	0.69	0.67	0.64	0.61	0.59	0.56	0.54	0.52	0.50	0.48
2008	0.67	0.64	0.62	0.59	0.57	0.54	0.52	0.50	0.48	0.46
2009	0.64	0.61	0.59	0.56	0.54	0.52	0.50	0.48	0.46	0.44
2010	0.61	0.59	0.56	0.54	0.52	0.50	0.48	0.46	0.44	0.42
2011	0.59	0.56	0.54	0.52	0.50	0.48	0.46	0.44	0.42	0.40
2012	0.56	0.54	0.52	0.50	0.48	0.46	0.44	0.42	0.40	0.39
2013	0.54	0.52	0.50	0.48	0.46	0.44	0.42	0.40	0.39	0.37

Year	131	132	133	134	135	136	137	138	139	140
1916	1.97	1.89	1.82	1.74	1.67	1.60	1.53	1.47	1.41	32.88
1917	1.97	1.89	1.81	1.74	1.66	1.60	1.53	1.47	1.41	32.77
1918	1.96	1.88	1.80	1.73	1.66	1.59	1.52	1.46	1.40	32.65
1919	1.95	1.87	1.80	1.72	1.65	1.58	1.52	1.46	1.40	32.53
1920	1.95	1.87	1.79	1.72	1.64	1.58	1.51	1.45	1.39	32.39
1921	1.94	1.86	1.78	1.71	1.64	1.57	1.51	1.44	1.38	32.26
1922	1.93	1.85	1.77	1.70	1.63	1.56	1.50	1.44	1.38	32.11
1923	1.92	1.84	1.77	1.69	1.62	1.56	1.49	1.43	1.37	31.97
1924	1.91	1.83	1.76	1.68	1.62	1.55	1.48	1.42	1.37	31.81
1925	1.90	1.82	1.75	1.68	1.61	1.54	1.48	1.42	1.36	31.65
1926	1.89	1.81	1.74	1.67	1.60	1.53	1.47	1.41	1.35	31.49
1927	1.88	1.80	1.73	1.66	1.59	1.52	1.46	1.40	1.34	31.31
1928	1.87	1.79	1.72	1.65	1.58	1.52	1.45	1.39	1.34	31.14
1929	1.86	1.78	1.71	1.64	1.57	1.50	1.44	1.38	1.33	30.91
1930	1.84	1.76	1.69	1.62	1.55	1.49	1.43	1.37	1.31	30.61
1931	1.82	1.75	1.68	1.61	1.54	1.48	1.42	1.36	1.30	30.33
1932	1.81	1.73	1.66	1.59	1.53	1.47	1.40	1.35	1.29	30.10
1933	1.80	1.72	1.65	1.59	1.52	1.46	1.40	1.34	1.29	29.95
1934	1.79	1.71	1.64	1.58	1.51	1.45	1.39	1.33	1.28	29.77
1935	1.78	1.70	1.63	1.57	1.50	1.44	1.38	1.32	1.27	29.59
1936	1.77	1.69	1.62	1.56	1.49	1.43	1.37	1.32	1.26	29.41
1937	1.75	1.68	1.61	1.54	1.48	1.42	1.36	1.30	1.25	29.14
1938	1.73	1.66	1.59	1.53	1.47	1.41	1.35	1.29	1.24	28.86
1939	1.72	1.65	1.58	1.52	1.45	1.40	1.34	1.28	1.23	28.66
1940	1.71	1.64	1.57	1.51	1.45	1.39	1.33	1.28	1.22	28.51
1941	1.70	1.63	1.56	1.50	1.43	1.38	1.32	1.26	1.21	28.25
1942	1.68	1.61	1.54	1.48	1.42	1.36	1.30	1.25	1.20	27.90
1943	1.64	1.58	1.51	1.45	1.39	1.33	1.28	1.22	1.17	27.36
1944	1.60	1.54	1.47	1.41	1.36	1.30	1.25	1.19	1.15	26.69
1945	1.59	1.52	1.46	1.40	1.34	1.29	1.23	1.18	1.13	26.45
1946	1.58	1.51	1.45	1.39	1.33	1.28	1.22	1.17	1.13	26.23
1947	1.56	1.50	1.44	1.38	1.32	1.27	1.21	1.16	1.12	25.99
1948	1.55	1.49	1.42	1.37	1.31	1.26	1.20	1.15	1.11	25.80
1949	1.54	1.47	1.41	1.35	1.30	1.25	1.19	1.14	1.10	25.58
1950	1.52	1.46	1.40	1.34	1.29	1.24	1.18	1.14	1.09	25.37
1951	1.51	1.45	1.39	1.33	1.28	1.23	1.18	1.13	1.08	25.20
1952	1.50	1.44	1.38	1.32	1.27	1.22	1.17	1.12	1.07	24.98
1953	1.49	1.43	1.37	1.31	1.26	1.21	1.16	1.11	1.07	24.83
1954	1.49	1.43	1.37	1.31	1.26	1.21	1.16	1.11	1.06	24.76
1955	1.48	1.42	1.36	1.30	1.25	1.20	1.15	1.10	1.06	24.63
1956	1.47	1.41	1.35	1.30	1.24	1.19	1.14	1.10	1.05	24.49
1957	1.47	1.41	1.35	1.29	1.24	1.19	1.14	1.09	1.05	24.42
1958	1.46	1.40	1.34	1.29	1.23	1.18	1.13	1.09	1.04	24.31
1959	1.46	1.40	1.34	1.28	1.23	1.18	1.13	1.09	1.04	24.26
1960	1.45	1.39	1.34	1.28	1.23	1.18	1.13	1.08	1.04	24.19
1961	1.45	1.39	1.33	1.28	1.22	1.17	1.13	1.08	1.03	24.11
1962	1.44	1.38	1.33	1.27	1.22	1.17	1.12	1.08	1.03	24.04
1963	1.44	1.38	1.32	1.27	1.22	1.17	1.12	1.07	1.03	23.95
1964	1.44	1.38	1.32	1.27	1.21	1.16	1.12	1.07	1.03	23.90
1965	1.43	1.37	1.32	1.26	1.21	1.16	1.11	1.07	1.02	23.85
1966	1.43	1.37	1.31	1.26	1.21	1.16	1.11	1.06	1.02	23.79
1967	1.41	1.35	1.30	1.25	1.19	1.15	1.10	1.05	1.01	23.53
1968	1.40	1.34	1.29	1.23	1.18	1.13	1.09	1.04	1.00	23.30
1969	1.39	1.33	1.28	1.23	1.17	1.13	1.08	1.04	0.99	23.14
1970	1.38	1.33	1.27	1.22	1.17	1.12	1.07	1.03	0.99	23.03
1971	1.38	1.32	1.27	1.22	1.17	1.12	1.07	1.03	0.99	22.99

Year	131	132	133	134	135	136	137	138	139	140
1972	1.37	1.32	1.26	1.21	1.16	1.11	1.07	1.02	0.98	22.86
1973	1.36	1.31	1.25	1.20	1.15	1.11	1.06	1.02	0.97	22.72
1974	1.36	1.30	1.25	1.20	1.15	1.10	1.05	1.01	0.97	22.59
1975	1.35	1.30	1.24	1.19	1.14	1.10	1.05	1.01	0.97	22.50
1976	1.35	1.29	1.24	1.19	1.14	1.09	1.05	1.00	0.96	22.42
1977	1.34	1.29	1.24	1.19	1.14	1.09	1.04	1.00	0.96	22.39
1978	1.34	1.29	1.23	1.18	1.13	1.09	1.04	1.00	0.96	22.33
1979	1.33	1.28	1.22	1.17	1.12	1.08	1.03	0.99	0.95	22.16
1980	1.31	1.25	1.20	1.15	1.10	1.06	1.01	0.97	0.93	21.73
1981	1.30	1.24	1.19	1.14	1.09	1.05	1.01	0.97	0.93	21.56
1982	1.28	1.22	1.17	1.12	1.08	1.03	0.99	0.95	0.91	21.24
1983	1.25	1.20	1.15	1.10	1.06	1.01	0.97	0.93	0.89	20.85
1984	1.23	1.18	1.13	1.08	1.04	1.00	0.96	0.92	0.88	20.49
1985	1.21	1.16	1.11	1.06	1.02	0.98	0.94	0.90	0.86	20.08
1986	1.16	1.11	1.06	1.02	0.98	0.94	0.90	0.86	0.83	19.28
1987	1.09	1.05	1.01	0.96	0.92	0.89	0.85	0.81	0.78	18.21
1988	1.00	0.96	0.92	0.89	0.85	0.81	0.78	0.75	0.72	16.73
1989	0.95	0.91	0.88	0.84	0.81	0.77	0.74	0.71	0.68	15.88
1990	0.90	0.86	0.83	0.79	0.76	0.73	0.70	0.67	0.64	15.00
1991	0.87	0.83	0.80	0.77	0.74	0.71	0.68	0.65	0.62	14.50
1992	0.84	0.81	0.77	0.74	0.71	0.68	0.65	0.63	0.60	13.99
1993	0.80	0.77	0.74	0.71	0.68	0.65	0.62	0.60	0.57	13.39
1994	0.75	0.72	0.69	0.67	0.64	0.61	0.59	0.56	0.54	12.57
1995	0.71	0.68	0.65	0.63	0.60	0.57	0.55	0.53	0.51	11.81
1996	0.65	0.63	0.60	0.58	0.55	0.53	0.51	0.49	0.47	10.87
1997	0.61	0.59	0.56	0.54	0.52	0.50	0.48	0.46	0.44	10.20
1998	0.59	0.56	0.54	0.52	0.49	0.47	0.45	0.44	0.42	9.75
1999	0.55	0.53	0.51	0.49	0.47	0.45	0.43	0.41	0.40	9.23
2000	0.54	0.51	0.49	0.47	0.45	0.43	0.42	0.40	0.38	8.92
2001	0.52	0.50	0.47	0.46	0.44	0.42	0.40	0.38	0.37	8.60
2002	0.51	0.48	0.46	0.45	0.43	0.41	0.39	0.38	0.36	8.42
2003	0.50	0.48	0.46	0.44	0.42	0.40	0.39	0.37	0.36	8.32
2004	0.49	0.47	0.45	0.43	0.42	0.40	0.38	0.37	0.35	8.18
2005	0.48	0.46	0.44	0.42	0.41	0.39	0.37	0.36	0.34	8.00
2006	0.47	0.45	0.43	0.41	0.39	0.38	0.36	0.35	0.33	7.78
2007	0.46	0.44	0.42	0.40	0.39	0.37	0.35	0.34	0.33	7.60
2008	0.44	0.42	0.40	0.39	0.37	0.36	0.34	0.33	0.31	7.33
2009	0.42	0.40	0.39	0.37	0.36	0.34	0.33	0.31	0.30	7.01
2010	0.40	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.29	6.72
2011	0.39	0.37	0.35	0.34	0.33	0.31	0.30	0.29	0.28	6.43
2012	0.37	0.35	0.34	0.33	0.31	0.30	0.29	0.28	0.26	6.16
2013	0.36	0.34	0.33	0.31	0.30	0.29	0.28	0.27	0.25	5.94

SS data file

```
#C 2013 Rougheye assessment (Hicks, Wetzel, Harms)
############################################
#           Rougheye Rockfish 2013         #
#  Allan Hicks, Chantel Wetzel, John Harms #
############################################
###     Global model specifications      ###
1916   # Start year
2012   # End year
1      # Number of seasons/year
12     # Number of months/season
1      # Spawning occurs at beginning of season
3      # Number of fishing fleets
4      # Number of surveys
1      # Number of areas
TRAWL%FIXED%ASF%TRI%AKSLOPE%NWFSCSLOPE%NWFSCCOMBO
0.5   0.5   0.5 0.55 0.825   0.65        0.65 # fleet timing_in_season
1 1 1 1 1 1 1 # Area of each fleet
1 1 1  # Units for catch by fishing fleet: 1=Biomass(mt),2=Numbers(1000s)
0.01 0.01 0.01  # SE of log(catch) by fleet for equilibrium and continuous options
1      # Number of genders
140    # Number of ages in population dynamics
### Catch section ###
0 0 0  # Initial equilibrium catch (landings + discard) by fishing fleet
97  # Number of lines of catch
# Catch Year Season
#Trawl Fixed  AS     Year   Season
0.01   41.85  0.01   1916   1
0.01   44.04  0.01   1917   1
0.01   46.24  0.01   1918   1
0.01   48.43  0.01   1919   1
0.01   50.62  0.01   1920   1
0.01   52.81  0.01   1921   1
0.01   55.00  0.01   1922   1
0.01   57.19  0.01   1923   1
0.01   59.39  0.01   1924   1
0.01   61.58  0.01   1925   1
0.01   63.77  0.01   1926   1
0.01   66.00  0.01   1927   1
0.01   85.42  0.01   1928   1
0.01   113.63 0.01   1929   1
0.01   101.26 0.01   1930   1
0.01   89.44  0.01   1931   1
0.01   56.29  0.01   1932   1
0.01   65.63  0.01   1933   1
```

0.01	69.64	0.01	1934	1
0.29	67.80	0.01	1935	1
0.49	104.29	0.01	1936	1
0.41	103.70	0.01	1937	1
0.46	77.79	0.01	1938	1
0.45	56.49	0.01	1939	1
0.92	101.00	0.01	1940	1
1.39	133.79	0.01	1941	1
2.31	205.97	0.01	1942	1
7.39	255.53	0.01	1943	1
12.16	85.42	0.01	1944	1
20.29	68.37	0.01	1945	1
10.83	82.94	0.01	1946	1
6.48	70.11	0.01	1947	1
5.50	84.41	0.01	1948	1
5.62	76.95	0.01	1949	1
6.08	64.30	0.01	1950	1
5.40	83.38	0.01	1951	1
6.90	55.08	0.01	1952	1
5.35	25.93	0.01	1953	1
8.44	45.53	0.01	1954	1
7.62	48.47	0.01	1955	1
9.22	20.28	0.01	1956	1
11.62	37.02	0.01	1957	1
10.60	10.60	0.01	1958	1
8.11	23.57	0.01	1959	1
11.81	22.18	0.01	1960	1
13.20	19.79	0.01	1961	1
14.23	23.01	0.01	1962	1
10.53	14.46	0.01	1963	1
11.32	11.28	0.01	1964	1
18.78	11.11	0.01	1965	1
120.56	7.81	0.01	1966	1
98.39	12.11	0.01	1967	1
74.88	8.03	0.01	1968	1
24.45	27.96	0.01	1969	1
17.22	3.81	0.01	1970	1
62.75	0.85	0.01	1971	1
73.03	1.44	0.01	1972	1
67.82	0.24	0.01	1973	1
46.31	0.60	0.01	1974	1
32.11	2.56	3.24	1975	1
18.60	0.01	0.71	1976	1
0.30	22.98	1.22	1977	1
31.95	54.87	0.38	1978	1

```
110.73 101.51 0.78   1979   1
56.44  31.06  0.19   1980   1
59.55  98.56  2.13   1981   1
93.33  107.61 0.01   1982   1
54.53  121.55 1.23   1983   1
73.15  134.76 2.28   1984   1
136.46 269.68 0.91   1985   1
152.56 392.33 1.21   1986   1
196.14 559.75 4.23   1987   1
151.01 277.74 15.85  1988   1
282.93 200.28 0.27   1989   1
166.33 118.85 0.73   1990   1
189.34 99.70  3.99   1991   1
153.68 175.14 9.12   1992   1
142.74 311.15 1.50   1993   1
109.79 316.15 5.01   1994   1
145.52 400.44 2.65   1995   1
108.15 278.39 6.71   1996   1
98.00  169.09 9.73   1997   1
60.87  236.23 17.21  1998   1
60.46  122.00 8.96   1999   1
81.98  28.81  71.37  2000   1
75.59  16.28  20.69  2001   1
30.90  26.99  0.73   2002   1
55.89  21.90  2.16   2003   1
59.07  31.44  13.69  2004   1
45.63  49.02  35.95  2005   1
47.72  56.10  6.64   2006   1
62.33  54.44  29.08  2007   1
54.98  54.32  75.58  2008   1
68.90  101.70 9.30   2009   1
83.76  68.56  21.57  2010   1
57.30  59.58  80.95  2011   1
79.81  47.98  54.00  2012   1

28 # Number of index observations
# Units: 0=numbers,1=biomass,2=F; Errortype: -1=normal,0=lognormal,>0=T
# Fleet Units Errortype
1      1      0 #TRAWL
2      1      0 #FIXED
3      1      0 #AT SEA/FOREIGN FLEET
4      1      0 #TRIENNIAL
5      1      0 #AKFSC SLOPE
6      1      0 #NWFSC SLOPE
7      1      0 #NWFSC COMBO
```

```
#year seas   index  obs       se(log)
1980  1      4      325.769   0.4594
1983  1      4      125.377   0.3077
1986  1      4      423.897   0.3195
1989  1      4      326.618   0.3014
1992  1      4      429.246   0.3598
1995  1      4      1078.993  0.2889
1998  1      4      579.967   0.3260
2001  1      4      999.435   0.3218
2004  1      4      761.362   0.3250
1996  1      5      427.783   0.3017
1997  1      5      406.204   0.5276
1999  1      5      258.749   0.4256
2000  1      5      1036.921  0.4133
2001  1      5      584.978   0.5512
1999  1      6      496.269   0.4896
2000  1      6      536.454   0.5527
2001  1      6      1113.272  0.4757
2002  1      6      228.419   0.5498
2003  1      7      512.498   0.3587
2004  1      7      1130.905  0.3947
2005  1      7      1366.460  0.3916
2006  1      7      727.516   0.3601
2007  1      7      780.511   0.3351
2008  1      7      1063.013  0.3342
2009  1      7      1181.969  0.3743
2010  1      7      1008.902  0.3664
2011  1      7      1136.463  0.3496
2012  1      7      681.453   0.4099

2 #_N_fleets_with_discard
#Fleet       Units  Error
1       1       -2
2       1       -2
20 #_N_discard_obs
#Lognormal discards values are median
#Year  Season Fleet  Discard             SElog(bootstrapped)
2002    1       1       14.4620     0.3815  #TRAWL
2003    1       1       19.8433     0.2937
2004    1       1       1.6134      0.6049
2005    1       1       0.9774      0.4243
2006    1       1       14.7902     0.4337
2007    1       1       30.2520     0.3714
2008    1       1       31.6008     0.3128
2009    1       1       51.7018     0.2774
```

```
2010    1       1       60.2267     0.4091
2011    1       1       0.0383      0.030
2002    1       2       0.7106      0.4634  #FIXED
2003    1       2       2.0126      0.5212
2004    1       2       4.1077      0.7641
2005    1       2       6.0832      0.3532
2006    1       2       1.2622      0.4824
2007    1       2       8.6847      0.5849
2008    1       2       16.8214     0.5212
2009    1       2       1.8543      0.4514
2010    1       2       21.3752     0.8215
2011    1       2       7.2975      0.6950

20 #_N_meanbodywt_obs
30 #_DF_meanwt
#Year   Season  Fleet   Part    Value          CV
2002    1       1       1       1.837824573   1.16 #TRAWL
2003    1       1       1       1.803001641   0.65
2004    1       1       1       1.514902413   0.9
2005    1       1       1       0.530873839   0.71
2006    1       1       1       1.33703054    0.84
2007    1       1       1       1.402125321   0.59
2008    1       1       1       1.59780249    0.74
2009    1       1       1       1.579676541   0.53
2010    1       1       1       1.574469455   0.49
2011    1       1       1       0.548034363   0.86
2002    1       2       1       1.993521585   0.31 #FIXED
2003    1       2       1       2.311551264   0.45
2004    1       2       1       1.428361987   0.33
2005    1       2       1       2.147353366   0.28
2006    1       2       1       1.768075717   0.8
2007    1       2       1       1.785023915   0.25
2008    1       2       1       2.164774098   0.56
2009    1       2       1       2.332403249   0.59
2010    1       2       1       1.384264872   0.33
2011    1       2       1       2.695545068   0.29

## Population size structure
1 # length bin method: 1=use databins; 2=generate from binwidth,min,max below; 3=read vector
# binwidth for population size comp
# minimum size in the population (lower edge of first bin and size at age 0.00)
# maximum size in the population (lower edge of last bin)
-1 #_comp_tail_compression
0.0001 #_add_to_comp
0 #_combine males into females at or below this bin number
```

```
36 #_N_LengthBins
10      12      14      16      18      20      22      24      26      28      30      32      34      36      38      40      42      44
        46      48      50      52      54      56      58      60      62      64      66      68      70      72      74      76      78
        80
87 #_N_Length_obs
#year   season fleet  gender partition    nSamps F10    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    F64
        F66    F68    F70    F72    F74    F76    F78    F80    F82    F84    F86    F88    F90    F92    M10    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    M64    M66    M68    M70    M72    M74    M76    M78    M80    M82
        M84    M86    M88    M90    M92
#COMMERCIAL DISCARDED LENGTHS
#TRAWL
2002    1       1       0       1       8       0.000000        0.000000        0.000000        0.000000        0.000000
        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000
        0.000000        0.022510        0.011255        0.042841        0.065069        0.171364        0.198594        0.288996
        0.093358        0.074427        0.011255        0.000000        0.020331        0.000000        0.000000        0.000000
        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000
2003    1       1       0       1       6       0.000000        0.000000        0.000000        0.000000        0.000000
        0.000000        0.052632        0.000000        0.052632        0.000000        0.000000        0.000000        0.000000
        0.052632        0.000000        0.052632        0.052632        0.105263        0.052632        0.105263        0.052632
        0.000000        0.157895        0.105263        0.000000        0.000000        0.052632        0.052632        0.052632
        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000
2004    1       1       0       1       8       0.000000        0.000000        0.000000        0.000000        0.000000
        0.016413        0.000000        0.114894        0.082067        0.032827        0.016413        0.016413        0.000000
        0.000000        0.000000        0.000000        0.016413        0.049184        0.130920        0.163747        0.082067
        0.081902        0.082067        0.049184        0.049075        0.000000        0.016413        0.000000        0.000000
        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000
2005    1       1       0       1       16      0.000000        0.000000        0.000000        0.000000        0.012356
        0.024711        0.061778        0.024711        0.311835        0.161281        0.024711        0.099503        0.000000
        0.012356        0.000000        0.000000        0.012356        0.000000        0.012356        0.096866        0.041703
        0.037067        0.000000        0.041703        0.024711        0.000000        0.000000        0.000000        0.000000
        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000
2006    1       1       0       1       19      0.053946        0.086313        0.109689        0.084515        0.154644
        0.076123        0.050349        0.002997        0.030569        0.024575        0.120479        0.017982        0.000000
        0.002997        0.007792        0.007792        0.005994        0.044756        0.005994        0.029772        0.024575
        0.021979        0.004597        0.002997        0.004597        0.005994        0.000000        0.000000        0.011988
        0.005994        0.000000        0.000000        0.000000        0.000000        0.000000        0.000000
2007    1       1       0       1       48      0.000000        0.000000        0.000000        0.000000        0.000389
        0.000389        0.030341        0.010229        0.022995        0.028630        0.033910        0.015288        0.002530
        0.028633        0.001557        0.063750        0.073239        0.150222        0.171460        0.138708        0.097832
        0.045573        0.030904        0.016939        0.001401        0.004541        0.003366        0.003710        0.006552
        0.000000        0.003081        0.000000        0.000389        0.002335        0.009936        0.001168
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2008   1     1      0      1        108    0.000000      0.000000      0.000000      0.000000      0.003605
       0.002804     0.012623     0.031222     0.019407     0.026946     0.040056     0.021999     0.028513
       0.029024     0.006961     0.026861     0.034324     0.097626     0.127055     0.111695     0.128475
       0.059933     0.064511     0.037437     0.019607     0.015426     0.006087     0.002243     0.002981
       0.013914     0.007698     0.000841     0.001001     0.009701     0.006657     0.002764
2009   1     1      0      1        114    0.000000      0.000000      0.000000      0.002542      0.000148
       0.000709     0.001212     0.002808     0.003551     0.013829     0.018805     0.025143     0.033009
       0.035951     0.050524     0.038379     0.155207     0.106205     0.093045     0.130506     0.119292
       0.051758     0.057348     0.022784     0.009568     0.017592     0.001271     0.004588     0.001803
       0.001596     0.000148     0.000000     0.000532     0.000000     0.000148     0.000000
2010   1     1      0      1        57     0.000000      0.000000      0.000000      0.000000      0.000000
       0.000373     0.002631     0.001738     0.005029     0.004423     0.023730     0.061049     0.020022
       0.013751     0.090228     0.061500     0.068987     0.066857     0.100297     0.142683     0.128581
       0.101849     0.058286     0.021950     0.006825     0.005812     0.004241     0.004583     0.003527
       0.000396     0.000652     0.000000     0.000000     0.000000     0.000000     0.000000
2011   1     1      0      1        14     0.000000      0.000000      0.000000      0.000000      0.074074
       0.074074     0.000000     0.000000     0.111111     0.111111     0.074074     0.148148     0.000000
       0.037037     0.074074     0.037037     0.000000     0.037037     0.074074     0.074074     0.037037
       0.000000     0.037037     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
#FIXED
2003   1     2      0      1        2      0.000000      0.000000      0.000000      0.000000      0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
       0.000000     0.011905     0.000000     0.000000     0.071429     0.107143     0.107143     0.190476
       0.059524     0.154762     0.107143     0.059524     0.059524     0.047619     0.011905     0.000000
       0.011905     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2004   1     2      0      1        4      0.000000      0.000000      0.000000      0.000000      0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.028991     0.000000     0.000000
       0.000000     0.000000     0.000000     0.091799     0.236714     0.236714     0.164264     0.144916
       0.096603     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2005   1     2      0      1        7      0.000000      0.000000      0.000000      0.000000      0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
       0.003844     0.007963     0.018305     0.075127     0.086914     0.095830     0.118539     0.152008
       0.070549     0.066974     0.046947     0.066783     0.043566     0.053218     0.000000     0.056059
       0.037372     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2006   1     2      0      1        4      0.000000      0.000000      0.000000      0.000000      0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.018907     0.000000     0.000000
       0.000000     0.000000     0.010805     0.056721     0.020922     0.186045     0.187900     0.208733
       0.042568     0.090215     0.100928     0.005041     0.061762     0.000000     0.000000     0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.009454
2007   1     2      0      1        9      0.000000      0.000000      0.000000      0.000000      0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
       0.000000     0.005464     0.013466     0.166565     0.126070     0.117753     0.145584     0.158466
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     0.201744     0.027419     0.027006     0.000000     0.003144     0.002439     0.002927     0.001952
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2008    1      2       0       1          10      0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000000     0.051134     0.000000     0.045496     0.034089     0.000000
     0.030680     0.000000     0.000000     0.000000     0.000000     0.139767     0.204537     0.190901
     0.020454     0.190901     0.051134     0.040907     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2009    1      2       0       1          6       0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.040000
     0.000000     0.000000     0.000000     0.000000     0.208000     0.104000     0.080000     0.104000
     0.000000     0.200000     0.104000     0.160000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2010    1      2       0       1          15      0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000698     0.000000     0.000000
     0.000000     0.000441     0.000000     0.061824     0.083140     0.076478     0.228619     0.073474
     0.086705     0.020232     0.018468     0.078535     0.008306     0.062057     0.002368     0.031942
     0.025736     0.019616     0.073763     0.002676     0.009168     0.000000     0.035753
2011    1      2       0       1          13      0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000729     0.000000
     0.000729     0.007068     0.003862     0.013262     0.020185     0.032062     0.114695     0.131041
     0.179584     0.126860     0.102235     0.097214     0.049478     0.030532     0.033580     0.019687
     0.009983     0.005538     0.014463     0.000000     0.000000     0.000729     0.006485
#RETAINED COMMERCIAL LENGTHS
#TRAWL
1995    1      1       0       2          5       0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000700     0.136291     0.045197     0.068605
     0.090176     0.022489     0.045230     0.022708     0.067905     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000700     0.000000     0.000000     0.000000     0.000000
1996    1      1       0       2          35      0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000000     0.000000     0.006848     0.002323     0.006848     0.010216
     0.010547     0.027899     0.016029     0.062995     0.092684     0.082911     0.085602     0.050217
     0.019093     0.012479     0.005598     0.004365     0.000000     0.000000     0.000000     0.003348
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
1997    1      1       0       2          42      0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000000     0.009369     0.015614     0.024983     0.027325     0.024202
     0.023421     0.010149     0.021079     0.056211     0.082292     0.074136     0.048350     0.038981
     0.014872     0.010188     0.007026     0.007042     0.003161     0.000000     0.001600     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
1998    1      1       0       2          64      0.000000      0.000000      0.000000      0.000000      0.000000
     0.000000     0.000000     0.000842     0.002525     0.013467     0.027775     0.050500     0.064809
     0.083326     0.063125     0.046292     0.031984     0.035350     0.038717     0.020200     0.005050
     0.007575     0.003367     0.000842     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.002556     0.001699     0.000000     0.000000     0.000000     0.000000
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1999   1      1      0      2          21      0.000000      0.000000      0.000000      0.000000      0.000000
      0.000000      0.000000      0.000000      0.001152      0.009215      0.018431      0.023039      0.025231
      0.033937      0.030280      0.033316      0.068915      0.083290      0.060841      0.036539      0.032143
      0.017799      0.013202      0.009215      0.001152      0.001152      0.000000      0.000000      0.000000
      0.000000      0.000000      0.001152      0.000000      0.000000      0.000000      0.000000
2000   1      1      0      2          36      0.000000      0.000000      0.000000      0.000000      0.000000
      0.000000      0.000000      0.003089      0.002317      0.006177      0.017760      0.016216      0.016988
      0.009376      0.015443      0.027262      0.053196      0.079740      0.077997      0.062581      0.035289
      0.027447      0.012976      0.010774      0.002426      0.000000      0.003964      0.001044      0.000772
      0.002391      0.000772      0.001648      0.002317      0.003861      0.003861      0.002317
2001   1      1      0      2          31      0.000000      0.000000      0.000000      0.000000      0.000000
      0.000000      0.000000      0.001034      0.008275      0.017583      0.025858      0.055853      0.067231
      0.071676      0.026183      0.019028      0.019952      0.034335      0.035362      0.037661      0.062211
      0.009166      0.004131      0.002622      0.000657      0.001081      0.000102      0.000000      0.000000
      0.000000      0.000000      0.000000      0.000000      0.000000      0.000000      0.000000
2002   1      1      0      2          33      0.000000      0.000000      0.000000      0.000000      0.000000
      0.002213      0.000000      0.002213      0.006640      0.006640      0.008853      0.021026      0.024346
      0.023239      0.019919      0.020277      0.039092      0.072935      0.079575      0.079503      0.043056
      0.021026      0.022410      0.004427      0.001503      0.000000      0.000000      0.000000      0.000000
      0.000000      0.001107      0.000000      0.000000      0.000000      0.000000      0.000000
2003   1      1      0      2          51      0.000000      0.000000      0.000000      0.000479      0.000000
      0.000000      0.000957      0.001436      0.000000      0.001436      0.000479      0.000957      0.005742
      0.010049      0.019620      0.026061      0.053797      0.084905      0.092802      0.088214      0.044801
      0.016977      0.011445      0.004785      0.008171      0.002853      0.004646      0.001952      0.000479
      0.003492      0.006328      0.006328      0.000332      0.000000      0.000479      0.000000
2004   1      1      0      2          14      0.000000      0.000000      0.000000      0.000000      0.000000
      0.000000      0.000000      0.000000      0.000000      0.000000      0.001587      0.001587      0.003175
      0.004762      0.004762      0.019048      0.033333      0.088889      0.095238      0.069841      0.069841
      0.050794      0.030159      0.007937      0.007937      0.003175      0.001587      0.003175      0.001587
      0.000000      0.000000      0.001587      0.000000      0.000000      0.000000      0.000000
2005   1      1      0      2          14      0.000000      0.000000      0.000000      0.000000      0.000000
      0.000000      0.000069      0.000067      0.000270      0.000110      0.000043      0.000218      0.002406
      0.004728      0.009642      0.024219      0.055662      0.096377      0.090841      0.073851      0.040550
      0.028595      0.016532      0.006536      0.008397      0.003018      0.000422      0.001448      0.033775
      0.000067      0.000854      0.000650      0.000650      0.000000      0.000000      0.000000
2006   1      1      0      2          11      0.000000      0.000000      0.000000      0.000000      0.000000
      0.000000      0.000000      0.000000      0.000000      0.000000      0.001566      0.000000      0.007828
      0.000161      0.010960      0.042622      0.060387      0.076595      0.119629      0.068484      0.041888
      0.036155      0.011350      0.010124      0.002036      0.000397      0.000359      0.000637      0.000053
      0.003430      0.000104      0.003386      0.000000      0.001566      0.000000      0.000283
2007   1      1      0      2          27      0.000000      0.000000      0.000000      0.000000      0.000000
      0.000000      0.000000      0.000000      0.000004      0.000182      0.000248      0.000093      0.000012
      0.006855      0.009639      0.021290      0.050901      0.087754      0.090722      0.083363      0.060252
      0.038805      0.014961      0.009398      0.003953      0.004657      0.007495      0.002566      0.001696
      0.002360      0.002686      0.000091      0.000000      0.000016      0.000000      0.000000
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2008   1    1    0    2    22   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000022   0.002790   0.001254   0.001364
       0.004236   0.009329   0.025125   0.074262   0.089501   0.099117   0.075700   0.042358
       0.032252   0.021809   0.006671   0.004990   0.003993   0.002295   0.000878   0.000732
       0.000978   0.000345   0.000000   0.000000   0.000000   0.000000   0.000000
2009   1    1    0    2    25   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000085   0.000057   0.000057   0.000103   0.000964   0.000232
       0.002811   0.002907   0.020520   0.034828   0.068618   0.097506   0.095910   0.066671
       0.032228   0.027949   0.016214   0.008274   0.006525   0.001859   0.005335   0.003507
       0.001606   0.000087   0.000252   0.000699   0.000000   0.004197   0.000000
2010   1    1    0    2    19   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000029   0.000029   0.001219   0.000205
       0.004246   0.004733   0.018383   0.039727   0.070786   0.097143   0.074866   0.061854
       0.034451   0.032171   0.024961   0.007488   0.009039   0.007106   0.005186   0.002098
       0.001891   0.001900   0.000285   0.000093   0.000029   0.000083   0.000000
2011   1    1    0    2    36   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.001278   0.000000   0.002167   0.001278
       0.004046   0.003836   0.002556   0.018547   0.054758   0.082986   0.075019   0.086824
       0.058932   0.038345   0.022076   0.018770   0.015290   0.002223   0.003226   0.005791
       0.000163   0.001112   0.000778   0.000000   0.000000   0.000000   0.000000
2012   1    1    0    2    45   0.000000   0.000000   0.000000   0.000514   0.000000
       0.000000   0.000000   0.000000   0.001541   0.003109   0.004110   0.007212   0.007835
       0.005285   0.006351   0.012496   0.025912   0.047622   0.064180   0.065462   0.072452
       0.058151   0.045660   0.029545   0.015769   0.013671   0.004272   0.002568   0.004218
       0.000377   0.001237   0.000281   0.000030   0.000022   0.000121   0.000000
#FIXED
1995   1    2    0    2    2    0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000000   0.023675   0.072441   0.285512
       0.071024   0.047349   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
1996   1    2    0    2    8    0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000641   0.004029   0.016117   0.012088   0.036904   0.084615   0.072527   0.141665
       0.088644   0.020787   0.013924   0.004029   0.004029   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
1997   1    2    0    2    6    0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000000   0.002105   0.000000   0.000000
       0.006315   0.004210   0.039992   0.106396   0.130500   0.075774   0.058935   0.039992
       0.018944   0.010524   0.004210   0.002105   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
1998   1    2    0    2    22   0.000000   0.000000   0.000000   0.000000   0.000000
       0.000000   0.000000   0.000218   0.000000   0.000874   0.000218   0.000437   0.000498
       0.000000   0.003489   0.021089   0.051341   0.105790   0.093673   0.077994   0.062505
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     0.031674     0.032635     0.009280     0.003643     0.004640     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
1999   1      2      0      2       20     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000697
     0.001851     0.007672     0.015100     0.063336     0.095258     0.105986     0.075704     0.054354
     0.030988     0.022728     0.012537     0.008199     0.002454     0.001042     0.000697     0.000697
     0.000000     0.000000     0.000000     0.000000     0.000697     0.000000     0.000000
2000   1      2      0      2       52     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.001106     0.000000     0.000000
     0.001106     0.001106     0.011614     0.041236     0.079346     0.105722     0.093287     0.072828
     0.039229     0.023769     0.016664     0.008287     0.003595     0.000553     0.000553     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2001   1      2      0      2       43     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.001274
     0.001685     0.003369     0.010155     0.030323     0.091137     0.124534     0.078086     0.065868
     0.034123     0.029939     0.021926     0.003369     0.000842     0.000000     0.000842     0.000842
     0.000000     0.000000     0.000000     0.000000     0.000842     0.000842     0.000000
2002   1      2      0      2       30     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.001182
     0.000858     0.004082     0.004729     0.030523     0.067394     0.109550     0.110184     0.089225
     0.032782     0.020649     0.015285     0.008277     0.001182     0.001182     0.001182     0.001182
     0.000549     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2003   1      2      0      2       59     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.001776     0.001776     0.000000     0.001298
     0.001731     0.004760     0.011252     0.029861     0.055756     0.090991     0.096869     0.114237
     0.035415     0.020521     0.012118     0.004760     0.004760     0.002597     0.001298     0.003029
     0.002164     0.001731     0.000433     0.000433     0.000433     0.000000     0.000000
2004   1      2      0      2       37     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000629     0.000000     0.000000     0.000000     0.000000     0.000000
     0.001887     0.005660     0.005660     0.026415     0.045283     0.091824     0.114465     0.084277
     0.055975     0.027673     0.013836     0.005660     0.003774     0.003774     0.002516     0.003774
     0.002516     0.002516     0.000629     0.001258     0.000000     0.000000     0.000000
2005   1      2      0      2       59     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000708
     0.001769     0.003184     0.012382     0.027884     0.070092     0.084983     0.099023     0.079690
     0.044296     0.032992     0.019167     0.007363     0.006397     0.004811     0.001921     0.001026
     0.000930     0.001026     0.000000     0.000354     0.000000     0.000000     0.000000
2006   1      2      0      2       58     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000275     0.000345
     0.000345     0.002418     0.008245     0.030081     0.068258     0.096389     0.095571     0.079126
     0.049513     0.033727     0.020428     0.007464     0.004728     0.001063     0.000952     0.000725
     0.000345     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2007   1      2      0      2       33     0.000000     0.000000     0.000000     0.000000     0.000000
     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000646     0.000646
     0.001292     0.003231     0.010985     0.031199     0.076749     0.090177     0.103494     0.086810
```

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      0.048371    0.021508    0.010652    0.003821    0.002348    0.000826    0.001063    0.001939
      0.001293    0.000000    0.000000    0.002950    0.000000    0.000000    0.000000
2008   1     2     0     2     50   0.000000    0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000210    0.000484
      0.000624    0.001240    0.009702    0.040261    0.063116    0.082498    0.085947    0.062799
      0.048606    0.026129    0.020588    0.022070    0.007610    0.009494    0.009867    0.005120
      0.000896    0.001770    0.000826    0.000000    0.000000    0.000141    0.000000
2009   1     2     0     2     45   0.000000    0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000436    0.000000    0.001966
      0.002120    0.001642    0.005961    0.024749    0.056112    0.088700    0.099248    0.074831
      0.057636    0.035001    0.022351    0.009698    0.011548    0.002358    0.001795    0.000132
      0.000750    0.002320    0.000000    0.000321    0.000324    0.000000    0.000000
2010   1     2     0     2     47   0.000000    0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000538    0.000658
      0.001109    0.002372    0.007049    0.024862    0.064282    0.079429    0.090291    0.077094
      0.060447    0.034135    0.024087    0.017910    0.009570    0.003479    0.001480    0.000533
      0.000453    0.000000    0.000000    0.000222    0.000000    0.000000    0.000000
2011   1     2     0     2     75   0.000000    0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000607    0.000910
      0.002711    0.002224    0.006711    0.012271    0.037318    0.066380    0.086699    0.085543
      0.070738    0.041626    0.022523    0.019404    0.015953    0.009493    0.005824    0.005190
      0.003957    0.000960    0.002196    0.000660    0.000000    0.000102    0.000000
2012   1     2     0     2     62   0.000000    0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000362    0.000000    0.000749    0.000993
      0.001724    0.002068    0.007466    0.018280    0.042035    0.069866    0.078749    0.080496
      0.057462    0.037514    0.028365    0.015743    0.014055    0.009686    0.004476    0.004332
      0.007912    0.007571    0.005113    0.001768    0.002840    0.000372    0.000000
#AT SEA
2003   1     3     0     2     66   0.000000 0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.003229    0.003229
      0.003229    0.012917    0.020452    0.045210    0.069968    0.055974    0.104413    0.155005
      0.111948    0.128095    0.134553    0.057051    0.031216    0.027987    0.026911    0.005382
      0.000000    0.000000    0.000000    0.000000    0.000000    0.003229    0.000000
2004   1     3     0     2     425      0.000000 0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
      0.000933    0.001866    0.007929    0.021766    0.049129    0.136039    0.193252    0.196673
      0.161536    0.099969    0.062189    0.033271    0.017413    0.011194    0.003420    0.002332
      0.000622    0.000466    0.000000    0.000000    0.000000    0.000000    0.000000
2005   1     3     0     2     461      0.000000 0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000126    0.000315    0.000000
      0.000189    0.000504    0.004791    0.020677    0.059699    0.085986    0.156906    0.166803
      0.166992    0.133266    0.088319    0.049864    0.028998    0.019353    0.007880    0.005421
      0.001828    0.001072    0.000315    0.000504    0.000000    0.000189    0.000000
2006   1     3     0     2     305      0.000000 0.000000    0.000000    0.000000    0.000000
      0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.001907    0.000000
```

```
        0.000000    0.000000    0.002860    0.014776    0.026692    0.040991    0.070067    0.105338
        0.138704    0.147760    0.139657    0.091992    0.078646    0.056244    0.037655    0.017636
        0.018589    0.007626    0.002860    0.000000    0.000000    0.000000    0.000000
2007    1       3       0       2           572         0.000000 0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000145    0.000145    0.000000
        0.000653    0.001089    0.005153    0.031207    0.067059    0.140939    0.174976    0.177589
        0.148777    0.109297    0.064083    0.037884    0.021192    0.010306    0.003556    0.002177
        0.002395    0.000943    0.000145    0.000145    0.000145    0.000000    0.000000
2008    1       3       0       2           893     0.000000        0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.001890    0.006931    0.020794    0.056081    0.096408    0.134216    0.159420
        0.157530    0.137366    0.102079    0.057971    0.035917    0.019534    0.009452    0.002520
        0.001260    0.000000    0.000000    0.000000    0.000000    0.000000    0.000630
2009    1       3       0       2           284     0.000000        0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.003241    0.001621    0.000000    0.003241    0.003241
        0.000000    0.011345    0.003241    0.011345    0.016207    0.029173    0.061588    0.095624
        0.116694    0.152350    0.132901    0.129660    0.090762    0.043760    0.043760    0.017828
        0.021070    0.001621    0.006483    0.001621    0.000000    0.000000    0.001621
2010    1       3       0       2           380     0.000000        0.001163    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.004651    0.004651    0.003488    0.016279    0.030233    0.074419    0.090698    0.132558
        0.126744    0.137209    0.093023    0.103488    0.077907    0.034884    0.027907    0.012791
        0.016279    0.005814    0.005814    0.000000    0.000000    0.000000    0.000000
2011    1       3       0       2           1091    0.000000        0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000504    0.001512
        0.002016    0.005040    0.009073    0.019153    0.050907    0.090222    0.127520    0.150202
        0.152722    0.127016    0.091230    0.068044    0.038306    0.027722    0.018145    0.011593
        0.003528    0.002520    0.001512    0.001008    0.000504    0.000000    0.000000
2012    1       3       0       2           591     0.000000        0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000972    0.000000    0.000000
        0.001944    0.004859    0.006803    0.028183    0.055394    0.073858    0.128280    0.142857
        0.155491    0.130224    0.093294    0.068999    0.042760    0.032070    0.014577    0.009718
        0.005831    0.000972    0.000972    0.000972    0.000000    0.000972    0.000000
#SURVEY LENGTHS
#TRIENNIAL (ENTERED 6/6 2:00
#year  season fleet  gender partition    Nsamp  U10   U12   U14   U16   U18   U20   U22   U24   U26   U28   U30
        U32   U34   U36   U38   U40   U42   U44   U46   U48   U50   U52   U54   U56   U58   U60   U62   U64
        U66   U68   U70   U72   U74   U76   U78   U80
1980    1       4       0       0           2       0.000000        0.000000    0.000000    0.679231    0.000000
        17.199796   0.000000    26.117407   17.879026   9.596842    2.716924    5.433847    7.471540
        4.754616    7.471540    0.679231    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
1986    1       4       0       0           10      1.037004        0.000000    1.005463    4.151721    1.038239
        6.823992    5.265770    12.207883   6.876941    11.305032   14.618919   7.348824    8.396104
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      1.037004     0.000000     0.000000     2.098567     2.098567     4.197134     4.197134     2.098567
      3.147851     1.049284     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
1989   1     4     0     0          25     0.779015     1.666042     6.220374     7.981918     15.919405
      16.628479    12.969342    9.067219     5.053114     4.430047     3.899767     1.654732     3.071238
      2.537502     0.946269     3.029772     2.434313     0.000000     0.342290     0.684580     0.684580
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
1992   1     4     0     0          25     0.000000     0.139574     1.718305     13.348197    34.199217
      12.880032    11.965429    4.490229     4.999233     2.532290     3.104516     2.223139     2.208953
      2.349933     0.714847     0.000000     0.000000     0.347345     0.347345     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.694690     0.000000     0.347345     0.694690
      0.347345     0.347345     0.000000     0.000000     0.000000     0.000000     0.000000
1995   1     4     0     0          79     0.883220     0.709166     2.130459     2.952595     6.014377
      4.929590     5.558169     9.779610     9.280958     9.535970     6.013618     5.272393     1.400642
      0.994242     0.336759     1.355588     4.452141     7.177413     8.104547     6.681765     3.741311
      1.948442     0.258539     0.266720     0.113285     0.054456     0.054024     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
1998   1     4     0     0          75     0.000000     0.936136     2.242415     3.227967     3.997000
      11.409846    14.601500    9.552928     8.402164     3.924467     3.903377     2.276186     3.208215
      1.716053     0.781392     0.980639     1.911150     5.752133     6.557138     6.457474     5.192346
      1.531845     1.129806     0.000000     0.000000     0.000000     0.307823     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2001   1     4     0     0          67     2.573861     2.121620     2.714956     8.232089     8.293387
      1.801042     4.461676     7.707757     8.208384     12.408517    4.437424     10.197315    1.206840
      0.545054     1.459650     1.377190     0.990465     2.485814     4.201594     4.254358     3.239166
      2.566250     1.553097     1.106740     0.277306     0.585942     0.091582     0.375176     0.092984
      0.092206     0.000000     0.113519     0.113519     0.113519     0.000000     0.000000
2004   1     4     0     0          48     0.385801     0.781178     3.201205     6.021791     7.505544
      20.175758    22.261066    13.487314    11.458220    3.019538     1.901897     0.926039     0.860373
      0.000000     1.023423     0.925499     0.184123     0.302318     0.873389     1.117653     0.496476
      0.665376     0.665288     0.794146     0.218386     0.450440     0.297761     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
#AKFSC SLOPE (ENTERED 6/6  2:00)


#year season  fleet  gender partition    Nsamp  U10   U12   U14   U16   U18   U20   U22   U24   U26   U28   U30
      U32   U34   U36   U38   U40   U42   U44   U46   U48   U50   U52   U54   U56   U58   U60   U62   U64
      U66   U68   U70   U72   U74   U76   U78   U80
1997  1      5     0     0          10    0.000000 0.000000     0.000000     0.000000     0.000000
      0.000000     3.201643     0.000000     0.000000     3.201643     3.219507     16.795836    9.895573
      3.201643     6.948846     6.688354     13.612089    10.155334    13.124894    0.000000     0.000000
      9.954640     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
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1999  1         5       0       0            11     0.000000 0.000000     0.000000     0.000000     0.000000
      0.000000     14.369710    8.405715     3.619802     0.000000     0.000000     10.408359    0.000000
      3.180497     13.347027    6.648434     3.201815     14.479210    6.666019     3.619802     5.618456
      3.115095     3.320059     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2000  1         5       0       0            13     0.000000 0.000000     0.000000     0.000000     0.000000
      1.443730     0.000000     0.000000     1.854904     0.798651     7.986508     10.382461    10.382461
      16.185168    16.591995    11.136805    4.563197     1.597302     5.760357     3.508510     3.150192
      3.130273     0.000000     0.519974     0.503578     0.000000     0.000000     0.000000     0.503935
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2001  1         5       0       0            10     0.000000 0.000000     0.000000     0.000000     0.000000
      0.000000     0.967170     2.043320     3.868678     1.934339     2.043320     12.695846    11.728676
      10.761507    8.609205     11.534117    8.305665     3.879827     7.108279     5.919308     6.679387
      0.967170     0.954188     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
#NWFSC COMBO
#year   Season  Fleet   gender  partition   nSamps  U10     U12    U14    U16    U18    U20    U22    U24    U26    U28
      U30    U32    U34    U36    U38    U40    U42    U44    U46    U48    U50    U52    U54    U56    U58    U60    U62
      U64    U66    U68    U70    U72    U74    U76    U78    U80
2003   1        7       0       0            34      0.000000      0.000000      0.000000      4.672809      5.191895
      18.651802    16.140644    16.340116    10.463924    1.906190     0.000000     2.269377     0.671420
      0.000000     0.745805     0.745805     1.378481     2.084852     3.968508     4.131994     4.114978
      3.657861     0.000000     0.000000     1.915387     0.948151     0.000000     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2004   1        7       0       0            27      0.000000      0.000000      0.000000      1.005863      0.886000
      2.639455     4.577936     2.839198     3.664543     0.000000     0.000000     0.801781     0.626453
      0.712883     0.712883     0.886000     5.725865     5.707150     7.608200     9.262889     9.556975
      5.744325     6.999527     2.936773     4.359987     3.531920     2.557448     3.110570     1.656135
      4.766705     4.565090     0.828068     1.729380     0.000000     0.000000     0.000000
2005   1        7       0       0            27      0.000000      0.000000      0.370379      1.859708      2.968929
      4.308524     2.873074     5.103006     5.521933     2.153693     1.448855     1.296066     0.470789
      0.493873     0.000000     0.408990     2.434996     5.269148     8.604730     12.390500    14.073921
      11.057375    7.463005     3.135796     5.122415     0.390098     0.780197     0.000000     0.000000
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2006   1        7       0       0            35      0.000000      1.345818      0.918467      1.879533      3.858781
      9.962854     4.200798     4.073135     12.122676    9.950237     6.214370     8.912926     2.030802
      0.000000     0.985486     1.252615     1.252615     4.313809     3.450423     0.916839     8.013724
      4.151280     3.014932     1.954693     1.037854     0.000000     1.190751     1.037854     1.956728
      0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2007   1        7       0       0            37      0.000000      5.881370      4.794095      1.947722      4.878857
      2.627157     6.155949     9.884856     7.551230     11.626345    11.436975    2.292439     2.493897
      0.000000     2.878158     1.014004     2.707591     1.527944     2.681028     3.363298     5.409660
      1.779393     3.381355     0.834333     0.000000     0.000000     1.735520     0.000000     0.000000
      0.000000     0.000000     1.116822     0.000000     0.000000     0.000000     0.000000
```

```
2008   1     7     0     0          36    0.000000     0.000000     0.000000     6.882140     5.245077
       1.896444     4.817969     7.197912     6.959181     6.003775     7.533971     9.865733     3.597507
       3.337403     2.354706     0.634925     4.989923     3.535440     3.778638     6.608149     0.852524
       6.350339     3.795906     0.000000     0.725491     1.568355     0.000000     0.000000     0.783453
       0.000000     0.685038     0.000000     0.000000     0.000000     0.000000     0.000000
2009   1     7     0     0          27    0.000000     0.000000     0.000000     0.000000     0.000000
       0.664477     0.883817     5.204417     5.275570     6.184757     2.011306     7.324009     2.490348
       3.129339     1.872921     0.000000     3.298053     3.301397     10.378044    11.383409    8.154779
       7.620614     7.030172     3.479798     4.931338     3.456965     1.280866     0.000000     0.643604
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000
2010   1     7     0     0          29    0.000000     0.000000     1.106526     3.919339     1.305678
       0.000000     4.517123     6.029688     6.422396     2.402494     2.403811     3.176223     3.257200
       5.207077     8.017749     5.264847     5.427296     4.557282     6.423713     10.489864    7.014749
       3.400557     2.259467     2.278559     2.115452     2.068709     0.000000     0.000000     0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.934203
2011   1     7     0     0          28    0.000000     0.000000     0.000000     0.000000     0.986883
       2.762479     0.000000     1.060815     0.000000     2.221782     5.442641     4.373137     7.177232
       8.725238     4.780299     2.141904     4.596764     7.199335     3.448297     5.176790     10.325074
       8.542161     6.478762     3.878172     3.462931     3.450431     0.589325     1.626817     0.000000
       0.589325     0.963407     0.000000     0.000000     0.000000     0.000000     0.000000
2012   1     7     0     0          22    0.000000     0.000000     0.000000     5.338821     0.000000
       12.076144    7.905387     8.864351     7.918872     1.762765     8.660541     1.891127     6.019039
       2.462101     3.713636     1.641401     1.891127     5.143716     3.104767     3.645528     5.545361
       4.065096     4.121255     0.000000     0.000000     4.228963     0.000000     0.000000     0.000000
       0.000000     0.000000     0.000000     0.000000     0.000000     0.000000     0.000000

100 #_N_age_bins
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    41    42    43    44    45    46    47    48    49    50    51    52
       53    54    55    56    57    58    59    60    61    62    63    64    65    66    67    68    69
       70    71    72    73    74    75    76    77    78    79    80    81    82    83    84    85    86
       87    88    89    90    91    92    93    94    95    96    97    98    99    100
1 #_N_ageerror_definitions
0.5    1.5   2.5   3.5   4.5   5.5   6.5   7.5   8.5   9.5   10.5  11.5  12.5  13.5  14.5  15.5  16.5  17.5
       18.5  19.5  20.5  21.5  22.5  23.5  24.5  25.5  26.5  27.5  28.5  29.5  30.5  31.5  32.5  33.5  34.5
       35.5  36.5  37.5  38.5  39.5  40.5  41.5  42.5  43.5  44.5  45.5  46.5  47.5  48.5  49.5  50.5  51.5
       52.5  53.5  54.5  55.5  56.5  57.5  58.5  59.5  60.5  61.5  62.5  63.5  64.5  65.5  66.5  67.5  68.5
       69.5  70.5  71.5  72.5  73.5  74.5  75.5  76.5  77.5  78.5  79.5  80.5  81.5  82.5  83.5  84.5  85.5
       86.5  87.5  88.5  89.5  90.5  91.5  92.5  93.5  94.5  95.5  96.5  97.5  98.5  99.5  100.5 101.5 102.5
       103.5 104.5 105.5 106.5 107.5 108.5 109.5 110.5 111.5 112.5 113.5 114.5 115.5 116.5 117.5 118.5 119.5
       120.5 121.5 122.5 123.5 124.5 125.5 126.5 127.5 128.5 129.5 130.5 131.5 132.5 133.5 134.5 135.5 136.5
       137.5 138.5 139.5 140.5
0.0872932    0.0872932    0.253723     0.418989     0.5831 0.746065     0.90789      1.06858      1.22816
       1.38661      1.54396      1.70021      1.85536      2.00944      2.16243      2.31436      2.46522
```

```
	2.61503	2.7638	2.91152	3.05821	3.20387	3.34852	3.49216	3.63479	3.77643
	3.91707	4.05673	4.19542	4.33314	4.46989	4.60569	4.74054	4.87445
	5.00742	5.13946	5.27058	5.40078	5.53008	5.65847	5.78596	5.91256
	6.03827	6.16311	6.28708	6.41017	6.53241	6.6538	6.77433	6.89402	7.01288
	7.13091	7.24811	7.36449	7.48006	7.59482	7.70878	7.82194	7.93431
	8.04589	8.1567	8.26673	8.37599	8.48449	8.59223	8.69922	8.80546	8.91096
	9.01571	9.11974	9.22304	9.32562	9.42748	9.52863	9.62907	9.72882
	9.82786	9.92621	10.0239	10.1209	10.2172	10.3128	10.4078	10.502	10.5957
	10.6887	10.781	10.8727	10.9637	11.0542	11.1439	11.2331	11.3216	11.4095
	11.4968	11.5835	11.6696	11.7551	11.84	11.9242	12.0079	12.0911	12.1736
	12.2555	12.3369	12.4177	12.498	12.5777	12.6568	12.7354	12.8134	12.8909
	12.9679	13.0443	13.1201	13.1955	13.2703	13.3446	13.4184	13.4916
	13.5644	13.6366	13.7083	13.7796	13.8503	13.9205	13.9903	14.0595
	14.1283	14.1966	14.2644	14.3318	14.3986	14.465	14.531	14.5965	14.6615
	14.7261	14.7902	14.8538	14.9171

310 #_N_Agecomp_obs
3 #_Lbin_method: 1=poplenbins; 2=datalenbins; 3=lengths
0 #_combine males into females at or below this bin number
#year	Season	Fleet	gender	partition	AgeErr	LbinLo	LbinHi	nSamps	U1	U2	U3	U4	U5	U6	U7	U8
	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25
	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42
	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59
	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76
	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93
	U94	U95	U96	U97	U98	U99	U100	U101	U102	U103	U104	U105	U106	U107	U108	U109	U110
	U111	U112	U113	U114	U115	U116	U117	U118	U119	U120	U121	U122	U123	U124	U125	U126	U127
	U128	U129	U130	U131	U132	U133	U134	U135	U136	U137	U138	U139	U140
#Commercial TWL AatL
2008	1	1	1	0	1	38	38	2	0	0	0	0	0	0	0	0	0
	0	0	0	50	0	0	50	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	40	40	4	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	25	0	25	25	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	42	42	20	0	0	0	0	0	0	0	0	0
	0	5	0	5	15	10	15	15	5	15	0	5	5	5	0	0	0
```

```
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  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 1  1  1  0  1  44  44  33  0  0  0  0  0  0  0  0  0
     0  0  0  6.060606061  3.03030303  6.060606061  21.21212121  21.21212121  12.12121212  6.060606061
     6.060606061  3.03030303  3.03030303  3.03030303  0  3.03030303  6.060606061  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  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 1  1  1  0  1  46  46  51  0  0  0  0  0  0  0  0  0
     0  0  1.960784314  0  3.921568627  7.843137255  3.921568627  11.76470588  9.803921569  5.882352941
     1.960784314  5.882352941  5.882352941  0  1.960784314  7.843137255  3.921568627  3.921568627  1.960784314
     1.960784314  0  1.960784314  3.921568627  7.843137255  0  0  1.960784314  0  0  1.960784314
     0  1.960784314  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  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 1  1  1  0  1  48  48  60  0  0  0  0  0  0  0  0  0
     0  0  0  0  1.666666667  1.666666667  6.666666667  3.333333333  6.666666667  5  8.333333333
     3.333333333  10  3.333333333  1.666666667  3.333333333  5  3.333333333  1.666666667  5  5
     11.66666667  0  0  0  3.333333333  1.666666667  0  0  1.666666667  1.666666667  0  0
     0  0  0  1.666666667  0  0  0  0  1.666666667  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  1.666666667  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0
2008 1  1  1  0  1  50  50  52  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  3.846153846  1.923076923  5.769230769  5.769230769  0  1.923076923
     0  7.692307692  3.846153846  3.846153846  7.692307692  3.846153846  3.846153846  0  0  3.846153846
     0  3.846153846  1.923076923  1.923076923  1.923076923  3.846153846  3.846153846  3.846153846  3.846153846
     3.846153846  1.923076923  1.923076923  0  1.923076923  0  0  1.923076923  1.923076923  0  0
     1.923076923  0  0  0  0  0  0  1.923076923  0  1.923076923  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
     1.923076923
2008 1  1  1  0  1  52  52  33  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  3.03030303  3.03030303  0  0  0  0  3.03030303
     0  12.12121212  6.060606061  0  3.03030303  0  3.03030303  3.03030303  3.03030303  0
     3.03030303  3.03030303  0  9.090909091  3.03030303  0  0  3.03030303  6.060606061  6.060606061
     0  3.03030303  3.03030303  3.03030303  0  0  0  0  6.060606061  0  6.060606061
     3.03030303  0  0  3.03030303  0  0  0  0  0  0  0  0  0  0  0
```

0 0 0 0 0 0 0 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 1 1 1 0 1 54 54 35 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 2.857142857 0 2.857142857
2.857142857 0 0 5.714285714 5.714285714 0 2.857142857 0 5.714285714 2.857142857
5.714285714 2.857142857 0 2.857142857 5.714285714 2.857142857 2.857142857 0 0 2.857142857
2.857142857 2.857142857 2.857142857 0 0 0 0 0 2.857142857 0 0 2.857142857
0 0 0 2.857142857 0 2.857142857 2.857142857 0 0 0 0 0 0 0
0 0 5.714285714 2.857142857 0 0 0 0 8.571428571 0 0 0 0 0
0 0 0 0 0 0 0 0 2.857142857 0 0 0 0 0 0 0
2008 1 1 1 0 1 56 56 15 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 6.666666667 0 0 0
0 0 0 0 0 0 0 13.33333333 6.666666667 6.666666667 0 6.666666667
6.666666667 0 0 6.666666667 0 0 6.666666667 0 0 0 0 0 6.666666667
6.666666667 0 0 0 0 0 0 0 6.666666667 0 0 0 6.666666667 0
0 0 6.666666667 0 0 0 0 0 0 0 0 0 0 0 0
6.666666667 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0
2008 1 1 1 0 1 58 58 8 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 12.5 0 0 25 0 0 12.5 0 0 0 0
0 0 0 0 0 0 12.5 0 0 0 0 0 0 0 0 0 0
0 0 0 12.5 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
12.5 0 0 0 0 12.5
2008 1 1 1 0 1 60 60 6 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 16.66666667 0 0 0 0 0
33.33333333 0 0 0 0 0 0 16.66666667 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 16.66666667 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
16.66666667 0 0 0 0 0 0 0 0 0 0 0
2008 1 1 1 0 1 62 62 5 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 20 0 0 0 20 0 0 0 0 0 0 20 0 0 0
0 0 0 0 0 20 0 0 0 0 20 0 0 0 0 0 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 1 1 1 0 1 64 64 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 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0
	0	0	0	0	0	0											
2008	1	1	1	0	1	66	66	3	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	33.33333333	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	33.33333333	0	0	0	0	0	0	33.33333333	0		
	0	0	0	0	0	0	0	0	0								
2008	1	1	1	0	1	68	68	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0											
2011	1	1	1	0	1	28	28	1	0	0	0	0	0	0	0	0	0
	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	32	32	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	34	34	1	0	0	0	0	0	0	0	0	0
	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	36	36	6	0	0	0	0	0	0	0	0	
	16.66666667	0	16.66666667	0	0	16.66666667	33.33333333	0	0	0	0	16.66666667					
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	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	1	1	1	0	1	38	38	4	0	0	0	0	0	0	0	0	0
	0	0	0	0	50	50	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	40	40	2	0	0	0	0	0	0	0	0	0
	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	42	42	20	0	0	0	0	0	0	0	0	0
	5	0	0	10	10	10	5	0	5	0	10	10	0	0	0	5	10
	5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	44	44	32	0	0	0	0	0	0	0	0	0
	0	0	3.125	0	3.125	0	3.125	3.125	12.5	0	6.25	6.25	6.25	6.25	6.25	0	0
	3.125	3.125	3.125	0	3.125	12.5	3.125	0	3.125	3.125	3.125	0	0	0	3.125	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	3.125	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0											
2011	1	1	1	0	1	46	46	40	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	10	2.5	5	5	5	10	10	2.5	2.5	5	7.5
	5	2.5	2.5	0	2.5	2.5	5	0	0	0	2.5	2.5	2.5	0	0	0	2.5
	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0	0	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	1	1	1	0	1	48	48	66	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1.515151515	0	0	3.03030303	1.515151515	6.060606061	4.545454545					
	7.575757576	1.515151515	7.575757576	4.545454545	4.545454545	9.090909091	6.060606061	0	4.545454545								
	3.03030303	1.515151515	7.575757576	4.545454545	0	6.060606061	0	0	1.515151515	0	0						
	0	0	0	1.515151515	0	1.515151515	3.03030303	0	0	1.515151515	0	0	0				
	0	0	1.515151515	0	0	0	0	0	0	0	0	0	1.515151515	0	0		
	0	0	1.515151515	0	0	0	0	0	0	0	1.515151515	0	0	0	0		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2011	1	1	1	0	1	50	50	43	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	2.325581395	0	0	0	2.325581395	4.651162791	2.325581395					

6.976744186 0 4.651162791 11.62790698 0 9.302325581 2.325581395 2.325581395 4.651162791
11.62790698 2.325581395 2.325581395 0 2.325581395 0 0 4.651162791 2.325581395 6.976744186
0 0 2.325581395 0 2.325581395 2.325581395 0 0 0 2.325581395 0 0 0
0 0 0 0 0 2.325581395 0 0 0 2.325581395 0 0 0 0 0
0 0 0 0 0 0 0 0 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 1 1 1 0 1 52 52 43 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 4.651162791 6.976744186 2.325581395
0 0 0 9.302325581 2.325581395 0 2.325581395 9.302325581 0 2.325581395 0
4.651162791 2.325581395 2.325581395 13.95348837 4.651162791 4.651162791 0 4.651162791 2.325581395
0 2.325581395 0 0 2.325581395 0 0 0 0 0 2.325581395 0 2.325581395
0 4.651162791 0 0 0 0 2.325581395 0 0 2.325581395 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 2.325581395 0
2011 1 1 1 0 1 54 54 32 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3.125 0
3.125 6.25 3.125 3.125 3.125 0 0 6.25 0 3.125 3.125 0 6.25 3.125 0 3.125 0
0 3.125 0 3.125 0 3.125 0 0 3.125 6.25 3.125 3.125 3.125 0 0 6.25 3.125
0 0 0 0 0 0 3.125 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 3.125 0 0 3.125 3.125 0 0 0 0
0 0 0 0 0 3.125
2011 1 1 1 0 1 56 56 27 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 3.703703704 0 0 0 0
3.703703704 0 0 0 0 0 3.703703704 0 7.407407407 3.703703704 7.407407407 0
0 3.703703704 3.703703704 0 7.407407407 3.703703704 0 3.703703704 0 0 0 0
0 7.407407407 0 0 0 0 7.407407407 0 3.703703704 0 3.703703704 0 0
0 0 7.407407407 0 0 3.703703704 0 0 3.703703704 0 0 3.703703704 0
0 0 0 0 0 0 0 3.703703704 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 3.703703704
2011 1 1 1 0 1 58 58 26 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3.846153846
0 0 3.846153846 0 0 0 3.846153846 3.846153846 3.846153846 3.846153846 0 0
0 11.53846154 0 0 7.692307692 3.846153846 0 0 3.846153846 3.846153846 0 0
0 0 3.846153846 0 3.846153846 3.846153846 0 3.846153846 3.846153846 0 0
3.846153846 0 3.846153846 0 3.846153846 0 0 0 0 0 0 0 3.846153846
0 0 0 3.846153846 0 0 0 0 0 0 0 0 0 0 3.846153846
0 0 0 0 0 0 0 0 0 3.846153846 0 0
2011 1 1 1 0 1 60 60 16 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 6.25 0 0 0 0
0 6.25 0 0 0 0 0 0 6.25 0 0 0 0 0 0 6.25 0
0 0 6.25 0 0 6.25 0 0 6.25 6.25 6.25 0 0 6.25 0 0 0
12.5 6.25 0 0 0 0 0 0 0 0 0 0 0 6.25 0 0 0
0 0 0 0 0 6.25 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 6.25

```
2011	1	1	1	0	1	62	62	9	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	11.11111111	0	0	0	0	0	0	0	0	0	0	0
	0	11.11111111	11.11111111	11.11111111	0	0	11.11111111	0	0	0	0	0	0
	0	0	0	11.11111111	0	0	0	0	0	0	0	0	0	0	0
	11.11111111	0	0	0	0	0	0	0	0	0	0	0	22.22222222
2011	1	1	1	0	1	64	64	11	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	9.090909091	0	0	0	0	0	0	0
	9.090909091	0	9.090909091	0	0	9.090909091	9.090909091	0	0	0	0	0	0
	0	0	9.090909091	0	0	0	9.090909091	0	0	9.090909091	0	0	0	0
	0	0	9.090909091	0	0	0	0	9.090909091	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.090909091
2011	1	1	1	0	1	66	66	6	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.66666667	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.66666667	0
	0	0	0	0	0	0	0	0	0	0	0	0	16.66666667	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.66666667	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	33.33333333
2011	1	1	1	0	1	68	68	4	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	25	0	25
2011	1	1	1	0	1	70	70	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0
#AtSeaAatL
2008	1	3	1	0	1	38	38	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	3	1	0	1	40	40	4	0	0	0	0	0	0	0	0	0
	0	0	50	0	25	25	0	0	0	0	0	0	0	0	0	0	0
```

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 1 3 1 0 1 42 42 16 0 0 0 0 0 0 0 0 6.25
0 0 6.25 6.25 6.25 6.25 6.25 6.25 43.75 6.25 6.25 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 1 3 1 0 1 44 44 36 0 0 0 0 0 0 0 0 0
0 5.555555556 0 5.555555556 5.555555556 8.333333333 5.555555556 11.11111111 16.66666667
8.333333333 5.555555556 5.555555556 8.333333333 2.777777778 8.333333333 0 0 0 2.777777778
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 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 1 3 1 0 1 46 46 54 0 0 0 0 0 0 0 0 0
0 0 0 1.851851852 5.555555556 3.703703704 11.11111111 3.703703704 5.555555556 9.259259259
9.259259259 5.555555556 5.555555556 1.851851852 3.703703704 1.851851852 1.851851852 5.555555556
7.407407407 1.851851852 0 1.851851852 1.851851852 3.703703704 0 0 0 0 0 0
0 1.851851852 0 1.851851852 1.851851852 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 1.851851852 0 0 0 0 0 0 0
0 0 0 0 0 0 0 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 1 3 1 0 1 48 48 74 0 0 0 0 0 0 0 0 0
0 1.351351351 0 1.351351351 1.351351351 0 8.108108108 4.054054054 2.702702703 5.405405405
5.405405405 4.054054054 2.702702703 6.756756757 4.054054054 5.405405405 4.054054054 8.108108108
4.054054054 5.405405405 4.054054054 1.351351351 0 1.351351351 2.702702703 4.054054054 2.702702703
4.054054054 1.351351351 1.351351351 0 0 2.702702703 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 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 1 3 1 0 1 50 50 87 0 0 0 0 0 0 0 0 0
0 0 0 2.298850575 0 3.448275862 1.149425287 1.149425287 2.298850575 2.298850575
1.149425287 3.448275862 3.448275862 4.597701149 5.747126437 3.448275862 6.896551724 2.298850575
6.896551724 2.298850575 4.597701149 3.448275862 1.149425287 1.149425287 3.448275862 2.298850575
1.149425287 1.149425287 3.448275862 2.298850575 0 1.149425287 1.149425287 1.149425287 0 0
0 1.149425287 2.298850575 1.149425287 0 1.149425287 1.149425287 0 1.149425287 0
3.448275862 0 1.149425287 0 0 1.149425287 0 1.149425287 0 1.149425287 0 0
0 0 2.298850575 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1.149425287
2008 1 3 1 0 1 52 52 80 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1.25 1.25 0 1.25 3.75 1.25 2.5 5 3.75 1.25
5 3.75 3.75 5 6.25 3.75 1.25 5 1.25 1.25 5 3.75 1.25 5 2.5 0 1.25
0 0 0 0 1.25 1.25 2.5 3.75 1.25 2.5 2.5 0 1.25 0 2.5 1.25 0
0 0 1.25 0 0 0 0 0 0 0 0 0 0 0 0 1.25 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 1.25 0 0
2008 1 3 1 0 1 54 54 67 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 1.492537313 1.492537313 0
1.492537313 0 5.970149254 2.985074627 1.492537313 1.492537313 1.492537313 4.47761194 2.985074627
0 0 4.47761194 4.47761194 1.492537313 2.985074627 0 1.492537313 4.47761194 0
2.985074627 0 0 2.985074627 1.492537313 4.47761194 4.47761194 2.985074627 2.985074627
2.985074627 4.47761194 0 1.492537313 1.492537313 1.492537313 0 0 0 1.492537313
1.492537313 0 0 0 1.492537313 0 0 0 2.985074627 1.492537313 1.492537313 0
0 0 1.492537313 0 0 1.492537313 0 1.492537313 0 0 0 1.492537313 0
0 0 0 1.492537313 1.492537313 0 0 0 0 0 0 0 0 1.492537313
2008 1 3 1 0 1 56 56 64 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 1.5625 0 1.5625 0 0 0 1.5625 0 0 3.125 0
1.5625 4.6875 0 0 1.5625 0 3.125 1.5625 0 1.5625 4.6875 1.5625 3.125 1.5625 1.5625 4.6875 0
0 0 0 3.125 3.125 3.125 1.5625 3.125 4.6875 1.5625 0 0 1.5625 3.125 1.5625 0 3.125
1.5625 0 4.6875 1.5625 0 1.5625 3.125 3.125 0 1.5625 1.5625 0 1.5625 0 0 0 1.5625
0 0 0 0 0 0 0 1.5625 0 0 1.5625 0 1.5625 0 0 1.5625 0
0 0 0 0 0 3.125
2008 1 3 1 0 1 58 58 36 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 2.777777778 0 0 0 0 8.333333333 5.555555556 2.777777778 2.777777778 2.777777778
0 2.777777778 0 2.777777778 2.777777778 0 0 2.777777778 2.777777778 5.555555556
2.777777778 2.777777778 0 2.777777778 0 2.777777778 0 2.777777778 0 5.555555556
5.555555556 0 0 2.777777778 5.555555556 2.777777778 2.777777778 5.555555556 0 0 0
0 0 0 0 0 2.777777778 0 0 0 0 2.777777778 0 0 0 0
0 0 0 0 0 0 0 2.777777778 0 0 0 0 0 0 0 0
2.777777778
2008 1 3 1 0 1 60 60 19 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 10.52631579 0 0 0 10.52631579 0 5.263157895 0
0 5.263157895 0 0 0 5.263157895 0 0 0 0 5.263157895 5.263157895 0
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0 5.263157895 0 0 0
2008 1 3 1 0 1 62 62 7 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

	0	0	0	0	0	0	14.28571429	0	0	0	0	14.28571429	0	0	0		
	0	0	14.28571429	0	0	0	0	0	14.28571429	0	14.28571429	0	0	0			
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	14.28571429	14.28571429						
2008	1	3	1	0	1	64	64	6	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16.66666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	16.66666667	16.66666667	0	0	0	0	0		
	0	0	0	16.66666667	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	16.66666667	0	0	0	0	
	0	0	0	0	0	16.66666667	0	0	0	0	0	0					
2008	1	3	1	0	1	66	66	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	50											
2008	1	3	1	0	1	68	68	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	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	3	1	0	1	80	80	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	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	100											
#2011	1	3	1	0	1	34	34	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	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0
	0	0	0	0	0	0											
2011	1	3	1	0	1	36	36	1	0	0	0	0	0	0	0	0	100
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	3	1	0	1	38	38	1	0	0	0	0	0	0	0	0	0
	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	3	1	0	1	40	40	5	0	0	0	0	0	0	0	0	20
	0	40	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	3	1	0	1	42	42	13	0	0	0	0	0	0	0	0	0
	7.692307692	30.76923077	7.692307692	0	7.692307692	7.692307692	7.692307692	0	7.692307692								
	7.692307692	0	7.692307692	0	7.692307692	0	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	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	1	3	1	0	1	44	44	28	0	0	0	0	0	0	0	0	0
	0	0	3.571428571	0	14.28571429	7.142857143	10.71428571	7.142857143	0	3.571428571							
	7.142857143	28.57142857	7.142857143	3.571428571	3.571428571	3.571428571	0	0	0	0	0						
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	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	1	3	1	0	1	46	46	45	0	0	0	0	0	0	0	0	0
	0	0	0	6.666666667	0	4.444444444	8.888888889	13.33333333	4.444444444	8.888888889							
	4.444444444	8.888888889	6.666666667	8.888888889	6.666666667	4.444444444	6.666666667	2.222222222	0								
	0	0	0	0	0	0	0	2.222222222	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	2.222222222	0	0	0	0	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	1	3	1	0	1	48	48	63	0	0	0	0	0	0	0	0	0
	0	1.587301587	0	0	1.587301587	1.587301587	3.174603175	1.587301587	7.936507937	0							
	6.349206349	9.523809524	14.28571429	7.936507937	9.523809524	3.174603175	6.349206349	9.523809524									
	1.587301587	0	1.587301587	1.587301587	1.587301587	1.587301587	1.587301587	1.587301587	0	0							
	0	1.587301587	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	1.587301587	0	0	0	0	0	0	0	0	0	0	0	0	0	

0 0 0 0 0 0 0 0 0 0 0 0 0 1.587301587 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2011 1 3 1 0 1 50 50 67 0 0 0 0 0 0 0 0 0
0 0 0 0 1.492537313 1.492537313 2.985074627 1.492537313 2.985074627 0 8.955223881
11.94029851 1.492537313 10.44776119 7.462686567 1.492537313 2.985074627 4.47761194 1.492537313
2.985074627 0 2.985074627 4.47761194 4.47761194 0 1.492537313 2.985074627 1.492537313
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2011 1 3 1 0 1 52 52 76 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1.315789474 1.315789474 0 2.631578947 0 2.631578947 5.263157895
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2011 1 3 1 0 1 54 54 60 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1.666666667 0 1.666666667 0 3.333333333 0 1.666666667 0
3.333333333 0 5 1.666666667 5 0 3.333333333 3.333333333 1.666666667 8.333333333
3.333333333 1.666666667 1.666666667 3.333333333 0 1.666666667 1.666666667 3.333333333 5 0
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2011 1 3 1 0 1 56 56 54 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 1.851851852 0 1.851851852 0 1.851851852
1.851851852 0 5.555555556 1.851851852 3.703703704 9.259259259 0 5.555555556 1.851851852
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2011 1 3 1 0 1 58 58 39 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 2.564102564 0 0 2.564102564
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5.128205128 5.128205128 5.128205128 0 0 2.564102564 2.564102564 2.564102564 2.564102564 0
2.564102564 5.128205128 0 0 5.128205128 0 0 2.564102564 2.564102564 2.564102564
2.564102564 0 0 2.564102564 2.564102564 0 0 5.128205128 2.564102564 0 0 0
0 0 5.128205128 0 0 0 0 0 0 2.564102564 0 0 0 2.564102564

	0	0	0	0	0	0	0	0	2.564102564	0	0	2.564102564	2.564102564	0			
	0	0	0	5.128205128													
2011	1	3	1	0	1	60	60	19	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	5.263157895	0	5.263157895	0	0	0	0	0	0	0	0	0	0	0		
	5.263157895	0	5.263157895	10.52631579	0	0	0	5.263157895	0	5.263157895	0						
	5.263157895	5.263157895	0	5.263157895	0	5.263157895	0	0	10.52631579	0	0	0					
	0	0	0	0	5.263157895	0	0	0	0	5.263157895	0	0	0	0	0		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.263157895	0	
	0	0	5.263157895	0	5.263157895												
2011	1	3	1	0	1	62	62	18	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	5.555555556	0	0	0	5.555555556	0	11.11111111	0	0	11.11111111				
	0	0	0	5.555555556	0	0	0	0	0	0	0	5.555555556	0	5.555555556			
	5.555555556	0	5.555555556	0	0	0	0	0	5.555555556	0	0	5.555555556	0				
	0	0	0	5.555555556	5.555555556	0	0	0	0	5.555555556	0	5.555555556	0				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	5.555555556													
2011	1	3	1	0	1	64	64	10	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0
	10	0	0	0	10	0	0	0	0	0	10	0	10	0	0	10	0
	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0
	0	0	0	0	0	20											
2011	1	3	1	0	1	66	66	5	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	20	0	0	0	0	20	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20	0
	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0											
2011	1	3	1	0	1	68	68	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	50	0	0	0	0											
2011	1	3	1	0	1	70	70	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0	0

```
      0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
      0     0     0     0     0     0
#NWFSC age-at-length
2003  1     7     1     0     1     16    16    6     0.00  0.00  66.67 16.67 16.67 0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00
2003  1     7     1     0     1     18    18    4     0.00  0.00  50.00 50.00 0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00
2003  1     7     1     0     1     20    20    13    0.00  0.00  0.00  100.00 0.00 0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00
2003  1     7     1     0     1     22    22    13    0.00  0.00  7.69  84.62 7.69  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00
2003  1     7     1     0     1     24    24    6     0.00  0.00  0.00  50.00 33.33 0.00  0.00  0.00  16.67
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00
2003  1     7     1     0     1     26    26    4     0.00  0.00  0.00  0.00  50.00 25.00 25.00 0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
      0.00  0.00  0.00  0.00  0.00  0.00
```

2003	1	7	1	0	1	28	28	1	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2003	1	7	1	0	1	32	32	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00
	33.33	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2003	1	7	1	0	1	38	38	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2003	1	7	1	0	1	40	40	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2003	1	7	1	0	1	42	42	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2003	1	7	1	0	1	46	46	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2003	1	7	1	0	1	58	58	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	16	16	2	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	18	18	1	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	20	20	3	0.00	0.00	0.00	33.33	66.67	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	22	22	5	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	24	24	3	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	26	26	4	0.00	0.00	0.00	0.00	75.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	32	32	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	34	34	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	36	36	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	38	38	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	40	40	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	42	42	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	66.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2004	1	7	1	0	1	44	44	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
	20.00	0.00	0.00	0.00	0.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	46	46	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	48	48	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	50	50	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00
	12.50	0.00	0.00	12.50	0.00	0.00	0.00	0.00	12.50	25.00	0.00	12.50	0.00	0.00	0.00	0.00	12.50
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	52	52	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
	0.00	25.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	54	54	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00
	16.67	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	56	56	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	58	58	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	33.33	0.00	0.00	0.00											
2004	1	7	1	0	1	60	60	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	25.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	25.00											
2004	1	7	1	0	1	62	62	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	50.00											
2004	1	7	1	0	1	64	64	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	33.33											
2004	1	7	1	0	1	68	68	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2004	1	7	1	0	1	70	70	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	33.33											
2004	1	7	1	0	1	74	74	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	100.00											
2005	1	7	1	0	1	14	14	1	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	16	16	5	0.00	0.00	20.00	80.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	18	18	8	0.00	0.00	0.00	62.50	37.50	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	20	20	9	0.00	0.00	0.00	44.44	33.33	22.22	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	22	22	6	0.00	0.00	0.00	0.00	50.00	33.33	16.67	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2005	1	7	1	0	1	24	24	12	0.00	0.00	0.00	0.00	33.33	58.33	8.33	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	26	26	13	0.00	0.00	0.00	0.00	0.00	46.15	23.08	15.38	7.69
	0.00	0.00	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	28	28	5	0.00	0.00	0.00	0.00	0.00	40.00	40.00	0.00	0.00
	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	30	30	3	0.00	0.00	0.00	0.00	0.00	0.00	66.67	33.33	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	32	32	3	0.00	0.00	0.00	0.00	0.00	0.00	66.67	33.33	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	34	34	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	36	36	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	40	40	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	42	42	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	33.33	0.00	33.33	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	44	44	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	11.11	0.00	11.11	0.00	11.11	0.00	0.00	11.11	0.00	0.00	0.00	0.00	11.11	11.11
	0.00	0.00	0.00	0.00	22.22	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	46	46	14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	7.14	0.00	7.14	0.00	0.00
	14.29	14.29	7.14	0.00	0.00	7.14	0.00	7.14	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	7.14	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	48	48	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	8.33
	16.67	0.00	16.67	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	8.33
	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	50	50	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.09	18.18	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	9.09	9.09	0.00	9.09	0.00	0.00	0.00	0.00	0.00	18.18	0.00
	9.09	0.00	0.00	0.00	0.00	0.00	0.00	9.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	9.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	52	52	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	12.50	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	12.50	0.00
	12.50	0.00	0.00	12.50	0.00	0.00	12.50	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	54	54	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	33.33	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	56	56	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	25.00	0.00	0.00	0.00	0.00	25.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	58	58	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	20.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2005	1	7	1	0	1	62	62	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	50.00											
2006	1	7	1	0	1	12	12	2	0.00	50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2006	1	7	1	0	1	14	14	1	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	16	16	2	0.00	0.00	50.00	0.00	0.00	50.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	18	18	4	0.00	0.00	0.00	0.00	75.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	20	20	10	0.00	0.00	0.00	10.00	50.00	30.00	10.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	22	22	4	0.00	0.00	0.00	50.00	0.00	0.00	25.00	0.00	25.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	24	24	4	0.00	0.00	0.00	0.00	0.00	25.00	50.00	25.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	26	26	12	0.00	0.00	0.00	0.00	0.00	25.00	58.33	0.00	8.33
	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	28	28	8	0.00	0.00	0.00	0.00	0.00	0.00	62.50	37.50	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	30	30	5	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00
	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	32	32	9	0.00	0.00	0.00	0.00	0.00	0.00	22.22	11.11	11.11
	22.22	22.22	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	34	34	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	38	38	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	40	40	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	42	42	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	44	44	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	46	46	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00
	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	48	48	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	50	50	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	14.29	0.00	14.29	14.29	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	14.29	0.00	0.00
	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	52	52	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	50.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2006	1	7	1	0	1	54	54	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	56	56	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00
	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	58	58	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	62	62	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	64	64	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2006	1	7	1	0	1	66	66	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	12	12	6	0.00	66.67	16.67	16.67	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	14	14	5	0.00	20.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	16	16	2	0.00	0.00	50.00	0.00	50.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	18	18	5	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	20	20	3	0.00	0.00	0.00	0.00	33.33	0.00	33.33	33.33	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	22	22	6	0.00	0.00	0.00	0.00	0.00	50.00	16.67	33.33	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	24	24	10	0.00	0.00	0.00	0.00	0.00	10.00	50.00	30.00	0.00
	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	26	26	7	0.00	0.00	0.00	0.00	0.00	14.29	28.57	28.57	28.57
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	28	28	13	0.00	0.00	0.00	0.00	0.00	0.00	15.38	30.77	38.46
	0.00	15.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	30	30	12	0.00	0.00	0.00	0.00	0.00	0.00	16.67	33.33	16.67
	16.67	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	32	32	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00
	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	34	34	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	33.33
	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	38	38	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	33.33	0.00	33.33	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2007	1	7	1	0	1	40	40	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	42	42	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	33.33	33.33	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	44	44	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	33.33	0.00
	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	46	46	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	33.33	0.00	0.00	33.33	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	48	48	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	25.00	0.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	50	50	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	33.33	16.67
	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	52	52	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	54	54	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	25.00											
2007	1	7	1	0	1	56	56	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	62	62	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2007	1	7	1	0	1	72	72	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	10	10	1	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	16	16	7	0.00	0.00	85.71	0.00	0.00	14.29	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	18	18	5	0.00	0.00	40.00	40.00	20.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	20	20	3	0.00	0.00	33.33	33.33	0.00	33.33	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	22	22	5	0.00	0.00	0.00	0.00	60.00	20.00	0.00	0.00	0.00
	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	24	24	8	0.00	0.00	0.00	0.00	0.00	25.00	37.50	25.00	0.00
	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	26	26	8	0.00	0.00	0.00	0.00	0.00	25.00	25.00	37.50	0.00
	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	28	28	7	0.00	0.00	0.00	0.00	0.00	0.00	14.29	57.14	14.29
	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2008	1	7	1	0	1	30	30	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	44.44
	22.22	0.00	11.11	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	32	32	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.27
	9.09	54.55	0.00	9.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	34	34	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
	0.00	25.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	36	36	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	75.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	38	38	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	66.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	40	40	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	42	42	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	14.29	14.29	14.29	0.00	0.00	0.00	14.29	14.29	14.29	0.00	0.00	0.00
	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	44	44	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	40.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	46	46	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	20.00	40.00	0.00	0.00	0.00	0.00	0.00
	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	48	48	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	11.11	11.11	11.11	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	11.11	0.00	0.00	0.00	11.11	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11.11	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	50	50	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	52	52	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	12.50
	0.00	12.50	12.50	12.50	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	54	54	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
	0.00	0.00	0.00	20.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	20.00											
2008	1	7	1	0	1	58	58	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	60	60	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	50.00											
2008	1	7	1	0	1	66	66	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2008	1	7	1	0	1	70	70	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	20	20	1	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	22	22	1	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2009	1	7	1	0	1	24	24	5	0.00	0.00	0.00	0.00	40.00	20.00	20.00	20.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	26	26	5	0.00	0.00	0.00	0.00	0.00	20.00	40.00	20.00	20.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	28	28	5	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00
	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	30	30	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	32	32	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
	0.00	37.50	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	34	34	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	33.33	0.00	0.00	33.33	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	36	36	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
	25.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	38	38	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	33.33	0.00	33.33	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	42	42	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	44	44	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	46	46	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	16.67	0.00	0.00	0.00	16.67
	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	48	48	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	12.50	12.50	0.00	12.50	0.00
	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	50	50	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	52	52	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00
	14.29	0.00	0.00	0.00	0.00	0.00	28.57	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29
	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	54	54	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	10.00											
2009	1	7	1	0	1	56	56	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	20.00											
2009	1	7	1	0	1	58	58	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	20.00	0.00	0.00
	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	60	60	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
	0.00	0.00	0.00	0.00	0.00	25.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2009	1	7	1	0	1	62	62	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2009	1	7	1	0	1	66	66	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	14	14	1	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	16	16	3	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	18	18	1	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	22	22	4	0.00	0.00	0.00	0.00	25.00	25.00	25.00	0.00	0.00
	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	24	24	5	0.00	0.00	0.00	0.00	20.00	0.00	40.00	0.00	40.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	26	26	5	0.00	0.00	0.00	0.00	0.00	60.00	0.00	20.00	20.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	28	28	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00
	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	30	30	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	32	32	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00
	0.00	33.33	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	34	34	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	33.33	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	36	36	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40.00	40.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	38	38	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.57
	0.00	28.57	14.29	0.00	14.29	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	40	40	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	20.00	20.00	0.00	20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	42	42	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	44	44	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	0.00	0.00	25.00	0.00	25.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	46	46	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	33.33	0.00	0.00	0.00
	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	48	48	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	11.11	0.00	11.11	0.00	0.00	0.00	11.11	0.00	0.00	33.33	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	11.11	0.00	11.11	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	50	50	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	16.67	16.67	33.33	0.00	0.00	0.00
	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2010	1	7	1	0	1	52	52	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	33.33	0.00	0.00	0.00
	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	54	54	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	50.00											
2010	1	7	1	0	1	56	56	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	58	58	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	60	60	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2010	1	7	1	0	1	80	80	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	100.00											
2011	1	7	1	0	1	18	18	1	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	20	20	2	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	24	24	1	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	28	28	2	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	30	30	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
	0.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	32	32	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00
	0.00	25.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	34	34	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	16.67
	33.33	16.67	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	36	36	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	37.50	0.00	37.50	12.50	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	38	38	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
	0.00	0.00	50.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	40	40	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	42	42	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	44	44	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	11.11	0.00	0.00	33.33	0.00	11.11	0.00	0.00	11.11	0.00	0.00	0.00	33.33	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	46	46	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2011	1	7	1	0	1	48	48	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	16.67	0.00	0.00	0.00	16.67	16.67	0.00	0.00
	0.00	16.67	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	50	50	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	8.33	8.33	8.33	8.33	8.33	0.00	0.00
	8.33	0.00	0.00	0.00	8.33	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00
	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	52	52	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	11.11	0.00
	11.11	11.11	0.00	11.11	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	54	54	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	12.50
	0.00	0.00	0.00	0.00	12.50	0.00	12.50	0.00	0.00	0.00	12.50	0.00	0.00	0.00	12.50	0.00	0.00
	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	56	56	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00
	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	16.67	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	16.67	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	58	58	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	20.00	0.00
	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	60	60	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	20.00	0.00	0.00	20.00	0.00	20.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	20.00											
2011	1	7	1	0	1	62	62	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	64	64	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	68	68	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2011	1	7	1	0	1	70	70	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	10	10	2	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	16	16	2	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	20	20	8	0.00	0.00	0.00	75.00	12.50	12.50	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	22	22	5	0.00	0.00	0.00	60.00	20.00	0.00	20.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	24	24	4	0.00	0.00	0.00	0.00	75.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	26	26	5	0.00	0.00	0.00	0.00	0.00	60.00	0.00	20.00	20.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	28	28	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	30	30	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.67	0.00
	16.67	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											

2012	1	7	1	0	1	32	32	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	50.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	34	34	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00
	0.00	0.00	20.00	0.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	36	36	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	33.33	0.00	0.00	33.33	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	38	38	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25.00	0.00	0.00	25.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	40	40	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	42	42	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	44	44	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	60.00	0.00	0.00	20.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	46	46	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	33.33	33.33	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	48	48	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	0.00	0.00	50.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	50	50	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	20.00	0.00	0.00	0.00
	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	52	52	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00
	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	54	54	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	25.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00											
2012	1	7	1	0	1	60	60	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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      0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
      0.00   0.00   0.00   0.00   0.00   0.00
#NWFSC COMBO MARGINAL AGE COMPS
2003  1      -7     0      0      1      -1     -1     1      0      0      11.43890062  56.90658599  11.42682668
      2.251210007  2.251210007  2.251210007  1.672125095  2.251210007  2.750885519  0      1.299225991  0      0
      1.271943522  1.129262015  0      0      0      0      0      0      0      0      0      0      0      0      0
      0      0      1.513190203  0      0      0      0      1.586214343  0      0      0      0      0      0      0
      0      0      0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
      0      0      0      0      0      0      0      0      0      0      0      0      0      0      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  1      -7     0      0      1      -1     -1     1      0      0      1.005857863  1.692110855  12.13009798
      0.78484816   0      0      0.626449366  0      0.801776925  0      0.885995403  2.156503453  1.256556706
      0.712879642  0.626449366  0      3.59128007   0      0      2.804985734  1.209173179  0      5.870283127  0
      2.069988107  3.987702401  0      3.865202796  0      3.01646769   2.159565943  1.981090825  3.01646769
      3.68962003   0.901307853  1.706232338  0      3.917775543  0.901307853  3.917775543  0.990205136  1.079782972
      0      1.079782972  0      1.706232338  0      0.901307853  3.01646769   3.01646769   0      0      0      0
      0      0.901307853  0      0      0      0      0      0      0      0      3.01646769   0      0      0      0
      0      0      0.626449366  0      0      0      0      0      0      0      0      0      0      0      0      0
      0      0.626449366  0      0      0      0      0      0      0      0.901307853  0      0      10.85201878
2005  1      -7     0      0      1      -1     -1     1      0      0      0.727867658  5.236061409  5.499507785
      8.614955266  4.948651248  1.640820628  0.49076592   0.370377655  0.493871378  0.45701994   0.49076592
      0.98153184   0.49076592   0.961553392  0.49076592   0      0.817253098  0.947320041  0      0.891111247
      0.354022241  4.050293932  0.424309113  0.891111247  1.774148302  0.896287011  1.816434292  3.503319217
      0.851464896  1.657693618  0.424309113  3.91800141   0.434557125  0.350968541  3.068762092  0.434557125
      3.068762092  3.937876343  0.434557125  7.41381577   0.434557125  3.559528012  0      0      0.424309113
      0.346103323  0      0.434557125  3.503319217  0      9.206286276  0      0      0.434557125  0      0.434557125
      0      0      0      0.467785529  0      3.068762092  0      0      0      0      0      0      0      0      0
      0      0      0      0      0      0      0      0      0      0      0.360698977  0      0      0      0      0
      0      0      0      0      0      0      0      0      0      0      3.068762092
2006  1      -7     0      0      1      -1     -1     1      0      0      1.930142071  4.229028512  8.002078427
      8.967352964  20.97786448  5.494806647  4.69816686   3.115469355  5.300123729  0.966359877  1.068924536  0
      2.717149462  1.025103921  0      1.358574731  0.994443058  0      0      0      1.358574731  0      0      0
      2.030943052  0      2.554619751  2.214772567  0      0      0      0      0      1.19604502   1.19604502   0
      0      1.19604502   1.19604502   1.19604502   0      0      2.39209004   1.19604502   0.994443058  1.19604502
      1.19604502   0      0      0      0      0      0      0      0      0      0      1.068924536  0      1.19604502
      0      1.190753986  0      2.192794426  1.19604502   0      0      0      0      0      0      0      0      0
      0      0      0      0      0      0      0      0      0      0      0      0      1.19604502   0      0      0
      0      0      0      0      0      0      0      0
2007  1      -7     0      0      1      -1     -1     1      0      5.244669151  5.93604921   6.12437678   2.01325456
      5.52895126   12.44931795  17.18705464  8.862588027  3.695368962  3.674327609  0.854786311  0      1.014014138
      0.940294788  2.665834961  0      0      0.798377577  1.014014138  2.672102598  3.336024438  1.841789918  0
      1.623019539  0.805391362  0.942234771  1.320083748  0.82777578   0      0.834341876  0      0.795243759
      0.866873897  0      0      0.798377577  0      0      0      0      0      0      0      0      0      0      0
      0      0.837177235  0      0      0      0      0      0      0.940294788  0      0      0      0      0      0
```

```
        0       0       0.8385203       0       0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0       1.116833232     0       0.795243759
        0       0       0       0       0       0.805391362
2008    1       -7      0       0       1       -1      -1      1       0       0       8.277836612     2.679902962     3.912805645
        6.151471936     4.956244634     9.040280054     8.20164057      6.797266603     7.889248871     3.333667421     1.968538642
        0.634926768     1.400872088     1.499286945     0.715832233     2.40917154      0       1.531407622     4.609800188     2.126364676
        1.499286945     0       0.713658654     3.006543682     0.796375435     0.830307429     2.28201713      2.116704322     0
        0.859650754     0       0.685039855     1.52971706      0       0       0       0       0       0       0.830307429     0       0
        0.746383103     0.725492587     0       0       0       0       0       0       0.685039855     0       0       0.685039855     0
        0       0       0       0       0       0       0       0       0       0       0       0       0.725492587     0       0.715832233
        0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0.725492587     0       0       0       0       1.705052486
2009    1       -7      0       0       1       -1      -1      1       0       0       0       0       3.196455507     3.371396809
        3.863239032     3.32688307      8.51930697      3.639978412     5.26357669      1.819989206     0.665630319     0.750044975
        0.624345556     0       0       2.421040007     5.664085024     0       2.284154493     1.675146572     2.421040007     0
        3.064644098     0.681890519     0.908380115     0       0.741395932     2.421040007     0       0.643604091     6.805182045
        0.67589385      3.058301466     0.908380115     0       3.064644098     0       0       2.421040007     0       4.339051696
        3.889647442     1.287208181     0       0       0       0.731017081     0.664477113     0       0       0       3.708248188     0
        0.664477113     0       0.664477113     0       0       1.328954227     1.357784369     0       0       0       0       0       0
        2.421040007     0       0       0       0.664477113     0       0       0.664477113     0       0       0       0       0
        0.643604091     0       0       0       0       0       0       0.643604091     0       0       0       0       0       0       0
        0       0       0       1.426746069
2010    1       -7      0       0       1       -1      -1      1       0       6.331574426     0       0       2.402505703     5.121022295
        3.400408839     3.842001139     7.537682653     5.295980407     8.717456639     3.360084533     0.916925346     3.525661072
        0.978646223     1.180926109     4.609315079     0       1.50664775      5.475217834     1.979347372     4.311738159     9.301253839
        1.121838657     0       1.121838657     2.252400531     3.36551597      0       1.156731526     1.121838657     2.024115581
        1.121838657     1.645231692     1.121838657     0       0       0       0       1.121838657     0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0
        0       0.958730953     0       0       0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       2.071846392
2011    1       -7      0       0       1       -1      -1      1       0       0       0       3.749430253     0       2.443471196     0
        3.829309154     4.960876107     2.304750203     9.823275553     4.838466264     6.170645114     1.201994533     5.272007476
        0.589335557     1.547120167     0.963424915     2.832957059     2.584478798     3.073508406     1.178671114     1.768006671
        3.880376772     1.836300082     0.589335557     1.91297773      3.291955859     1.010529076     1.903373969     1.768006671     0
        2.109931051     0.742385971     0.589335557     1.178671114     1.743921048     0       0.589335557     1.768006671     1.768006671
        0       0       2.191944121     1.421813952     0       0       0       0       0       0       1.03735863      0.840405309     0
        0       0       0       0       0       0       0       0       0       0       0       0.939949054     0       0       1.421813952
        1.03735863      0       0       0       0       0       0.939949054     0       0       0       0.931259937     0.589335557     0
        0       0       0       1.894684852     0       0       0       0       0       0       0       0       0       0       0       0
        0       0.939949054
2012    1       -7      0       0       1       -1      -1      1       0       3.786836431     0       15.77985419     9.46726221
        8.43019475      0.856350755     11.17568539     4.656706712     1.96803231      0.822808639     1.927644864     0.822808639
        3.291234555     2.468425916     2.718793853     2.969161789     0       1.122805216     3.034192422     3.247937844     2.218400246
        3.893965842     0       0       1.677619194     0       4.196016018     0       0       0       0       0       0       1.122805216
```

```
0	0	0.854468289	0	2.218400246	0	0	0	0	0	0	0	0	0	0
0	1.947496321	0	0	0	0	0	0	0	1.122805216	0	1.169524592	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1.03176233	0	0	0	0	0	0	0	0	0
0	0	0

0 #_N_MeanSize-at-Age_obs
0 #_N_environ_variables
0 #_N_environ_obs
0 # N sizefreq methods to read
0 # no tag data
0 # no morphcomp data

999 # End data file
```

Appendix C. SS control file

#C 2013 Rougheye assessment (Hicks, Wetzel, Harms)
#Control File
#Rougheye Rockfish 2013
#Allan Hicks, Chantel Wetzel, John Harms
#
1 #_N_Growth_Patterns
1 #_N_Morphs_Within_GrowthPattern
5 #_Nblock_Patterns
1 2 1 1 1 #_blocks_per_pattern
#begin and end years of blocks
#1930 1994 2011 2012 # Block Years for Retention
#1983 1996 1997 2001 2002 2010 # Block Years for TRAWL Retention No Limits/Sebastes trip limits/Monthly, bimonthly limits/RCA's/Rationalization
#1983 1996 1997 2002 # Block Years for FIXED Retention No Limits/Sebastes trip limits/Monthly, bimonthly limits/RCA's
#1997 2001 2002 2010 # Block Years for TRAWL Retention No Limits/Sebastes trip limits/Monthly, bimonthly limits/RCA's/Rationalization
1916 2001 # Block Years for TRAWL Selectivity before RCA's
2000 2006 2007 2010 # Block Years for TRAWL Retention Sebastes trip limits/Monthly, bimonthly limits (pre-2000 same as post-2010) (2000 was when complex came in and EDCP shows little discard from 1996-1999)
1916 2002 # Block Years for FIXED Selectivity before RCA's
1916 1999 # Block Years for FIXED Retention before Sebastes trip limits/Monthly, bimonthly limits (assume no discards)
1995 2012 # Block Pattern for Triennial Selectivity when they started going deeper

#
0.5 #_fracfemale
0 #_natM_type:_0=1Parm; 1=N_breakpoints;_2=Lorenzen;_3=agespecific;_4=agespec_withseasinterpolate
#_no additional input for selected M option; read 1P per morph
1 # GrowthModel: 1=vonBert with L1&L2; 2=Richards with L1&L2; 3=not implemented; 4=not implemented
2 #_Growth_Age_for_L1
80 #_Growth_Age_for_L2 (999 to use as Linf)
0 #_SD_add_to_LAA (set to 0.1 for SS2 V1.x compatibility)
4 #_CV_Growth_Pattern: 0 CV=f(LAA); 1 CV=F(A); 2 SD=F(LAA); 3 SD=F(A); 4 logSD=F(A)
1 #_maturity_option: 1=length logistic; 2=age logistic; 3=read age-maturity matrix by growth_pattern; 4=read age-fecundity; 5=read fec and wt from wtatage.ss
#_placeholder for empirical age-maturity by growth pattern
5 #_First_Mature_Age
1 #_fecundity option:(1)eggs=Wt*(a+b*Wt);(2)eggs=a*L^b;(3)eggs=a*Wt^b
0 #_hermaphroditism option: 0=none; 1=age-specific fxn
1 #_parameter_offset_approach (1=none, 2= M, G, CV_G as offset from female-GP1, 3=like SS2 V1.x)
2 #_env/block/dev_adjust_method (1=standard; 2=logistic transform keeps in base parm bounds; 3=standard w/ no bound check)

#_growth_parms
#_LO HI INIT PRIOR PR_TYP SD PHASE env-var use_dev dev_minyr dev_maxyr dev_stddev Block Block_Fxn
0.001 0.2 0.03365 -3.3918 3 0.5424 5 0 0 0 0 0 0 0 #NatM_p_1_Fem_GP_1

```
1 25 11 12 -1 10 2 0 0 0 0 0 0 0 #L_at_Amin_Fem_GP_1
40 90 57 58 -1 10 3 0 0 0 0 0 0 0 #L_at_Amax_Fem_GP_1
0.01 0.15 0.069 0.069 -1 0.8 2 0 0 0 0 0 0 0 #VonBert_K_Fem_GP_1
0.03 0.2 0.09 0.1 -1 0.8 3 0 0 0 0 0 0 0 #CV_young_Fem_GP_1
0.03 0.2 0.09 0.1 -1 0.8 3 0 0 0 0 0 0 0 #CV_old_Fem_GP_1
-3 3 9.60E-06 9.60E-06 -1 0.8 -3 0 0 0 0 0 0 0 #Wtlen_1_Fem
-3 4 3.123 3.123 -1 0.8 -3 0 0 0 0 0 0 0 #Wtlen_2_Fem
1 60 43.87 43.87 -1 0.8 -3 0 0 0 0 0 0 0 #Mat50%_Fem (McDermott)
-30 3 -0.30 -0.25 -1 0.8 -3 0 0 0 0 0 0 0 #Mat_slope_Fem
#Fecundity proportional to body weight
-3 3 1 1 -1 0.8 -3 0 0 0 0 0 0 0
    #Eggs/kg_inter_Fem
-3 3 0 0 -1 0.8 -3 0 0 0 0 0 0 0
    #Eggs/kg_slope_wt_Fem
#Fecundity set equal to POP values from 2011 assessment for exploration (fecundity option = 3)
#0 6 1.08643 1 -1 99 -50 0 0 0 0 0 0 0 #Bases for
fecundity option 3
#-3 3 1.44 1 -1 99 -50 0 0 0 0 0 0 0 #Exponent for
fecundity option 3
#Fecundity set equal to YEYE values from 2011 update assessment for exploration (fecundity option = 3)
#0 300000 137900 137900 -1 99 -50 0 0 0 0 0 0 0 #Bases for
fecundity option 3
#-3 390000 36500 36500 -1 99 -50 0 0 0 0 0 0 0 #Exponent for
fecundity option 3
#-3 3 7.56E-06 7.56E-06 -1 0.8 -3 0 0 0 0 0 0 0 #Wtlen_1_Mal
#-3 4 3.121 3.121 -1 0.8 -3 0 0 0 0 0 0 0 #Wtlen_2_Mal
# Unused recruitment interactions
0 2 1 1 -1 99 -50 0 0 0 0 0 0 0 #RecrDist_GP_1
0 2 1 1 -1 99 -50 0 0 0 0 0 0 0 #RecrDist_Area
0 2 1 1 -1 99 -50 0 0 0 0 0 0 0 #RecrDist_Seas
0 2 1 1 -1 99 -50 0 0 0 0 0 0 0 #CohortGrowDev
#0 0 0 0 -1 0 -4 0 0 0 0 0 0 0 #RecrDist_GP_1
#0 0 0 0 -1 0 -4 0 0 0 0 0 0 0 #RecrDist_Area_1
#0 0 0 0 -1 0 -4 0 0 0 0 0 0 0 #RecrDist_Seas_1
#0 0 0 0 -1 0 -4 0 0 0 0 0 0 0 #CohortGrowDev
#
#_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
#_Cond No MG parm trends
#
#_seasonal_effects_on_biology_parms
0 0 0 0 0 0 0 0 0 0 #_femwtlen1,femwtlen2,mat1,mat2,fec1,fec2,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
1 10 6 6 -1 10 1 #SR_R0
0.25 0.99 0.779 0.779 2 0.152 -3 #SR_steep
0 2 0.4 0.6 -1 0.8 -4 #SR_sigmaR
-5 5 0 0 -1 1 -3 #SR_envlink
-5 5 0 0 -1 1 -4 #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
1980 #first year of main recr_devs; early devs can preceed this era
2011 #last year of main recr_devs; forecast devs start in following year
3 #_recdev phase
1 #(0/1) to read 13 advanced options
  1900 #_recdev_early_start (0=none; neg value makes relative to recdev_start)
  4 #_recdev_early_phase
  0 #_forecast_recruitment phase (incl. late recr) (0 value resetsto maxphase+1)
  1 #_lambda for fore_recr_like occurring before endyr+1
  1978 #_last_early_yr_nobias_adj_in_MPD
  1986 #_first_yr_fullbias_adj_in_MPD
  2007 #_last_yr_fullbias_adj_in_MPD
  2011 #_first_recent_yr_nobias_adj_in_MPD
  0.75 #_max_bias_adj_in_MPD (-1 to override ramp and set biasadj=1.0 for all estimated \ recdevs)
  0 #_period of cycles in recruitment (N parms read below)
  -5 #min rec_dev
  5 #max rec_dev
  0 #_read_recdevs
#_end of advanced SR options

#_placeholder for full parameter lines for recruitment cycles
#read specified recr devs
#_Yr Input_value
#
#all recruitment deviations
#
#Fishing Mortality info
0.05 # F ballpark for tuning early phases
-2001 # F ballpark year (neg value to disable)
```

```
1 # F_Method:  1=Pope; 2=instan. F; 3=hybrid (hybrid is recommended)
0.9 #0.9 # max F or harvest rate, depends on F_Method
# no additional F input needed for Fmethod 1
# if Fmethod=2; read overall start F value; overall phase; N detailed inputs to read
# if Fmethod=3; read N iterations for tuning for Fmethod 3
# 4  # N iterations for tuning F in hybrid method (recommend 3 to 7)
#
#_initial_F_parms
#_LO HI INIT PRIOR PR_type SD PHASE
 0 1 0 0.01 0 99 -1 # InitF_1FISHERY1 TRAWL
 0 1 0 0.01 0 99 -1 # InitF_1FISHERY2 FIXED
 0 1 0 0.01 0 99 -1 # InitF_1FISHERY3 ATSEA/FOREIGN FLEET

#_Q_setup
# Q_type options:  <0=mirror, 0=median_float, 1=mean_float, 2=parameter, 3=parm_w_random_dev, 4=parm_w_randwalk, 5=mean_unbiased_float_assign_to_parm
#Den-dep  env-var  extra_se  Q_type
0        0       0        0 # TRAWL
0        0       0        0 # FIXED
0        0       0        0 # ATSEA/FOREIGN
0        0       1        4 # TRIENNIAL
0        0       1        0 # AKFSC SLOPE
0        0       1        0 # NWFSC SLOPE
0        0       1        0 # NWFSC COMBO
#
1 # Par setup: 0=read one parm for each fleet with random q; 1=read a parm for each year of index
#_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
#_Q_parms(if_any)
#LO HI INIT PRIOR PR_type SD PHASE

#Extra SD parameters for surveys
#Lo        Hi          Init        Prior  Prior Prior Phase
0   2   0.01    0      -1    99    2   #AFSC slope
0   2   0.01    0      -1    99    2   #Triennial
0   2   0.01    0      -1    99    2   #NWFSC_slope
0   2   0.01    0      -1    99    2   #NWFSC_combo

# Lo    Hi  Init Prior PrType PrSD Phase
# Early period
 -10        2  -2   0   -1          99          1   # Triennial (log) base parameter (1980)
 -4     4   0   0   -1    99         -50 # Triennial 1983 deviation
 -4     4   0   0   -1    99         -50 # Triennial 1986 deviation
 -4     4   0   0   -1    99         -50 # Triennial 1989 deviation
 -4     4   0   0   -1    99         -50 # Triennial 1992 deviation
# Late period
  -4          4            0             0           -1           99          1   # Triennial 1995 deviation
```

```
 -4      4       0        0     -1      99      -50 # Triennial 1998 deviation
 -4      4       0        0     -1      99      -50 # Triennial 2001 deviation
 -4      4       0        0     -1      99      -50 # Triennial 2004 deviation


#_size_selex_types
#_Pattern Discard Male Special
 24 1 0 0 # TRAWL
 24 1 0 0 # FIXED
 24 0 0 0 # ATSEA/FOREIGN
 24 0 0 0 # TRIENNIAL
 24 0 0 0 # AKFSC SLOPE
 5  0 0 5 # NWFSC SLOPE mirrors AKFSC SLOPE
# 24 0 0 0 # NWFSC SLOPE
 24 0 0 0 # NWFSC COMBO
#_age_selex_types
#_Pattern ___ Male Special
 10 0 0 0 # TRAWL
 10 0 0 0 # FIXED
 10 0 0 0 # ATSEA/FOREIGN
 10 0 0 0 # TRIENNIAL
 10 0 0 0 # AKFS SLOPE
 10 0 0 0 # NWFSC SLOPE
 10 0 0 0 # NWFSC COMBO
#
#Size Selectivity Setup
#LO    HI     INIT   PRIOR  PRtype SD   PHASE   env-var use_dev dev_minyr dev_maxyr dev_stddev Block Block_Fxn
#TRAWL
15     70     52.0   45.0  -1    0.05   1     0  0  0  0  0.5  1  2  #PEAK
-5.0   10.0   2.5    5.0   -1    0.05  -3     0  0  0  0  0.5  0  0  #TOP_WIDTH
-4.0   12.0   5.7    3.0   -1    0.05   2     0  0  0  0  0.5  1  2  #ASC_WIDTH
-2.0   10.0   9.0    10.0  -1    0.05  -4     0  0  0  0  0.5  0  0  #DESC_WIDTH
-9     10.0   -4     0.5   -1    0.05   3     0  0  0  0  0.5  0  0  #INIT
-9     9.0    8      0.5   -1    0.05  -4     0  0  0  0  0.5  0  0  #FINAL
#-999  5.0    -999   -999  -1    0.05  -3     0  0  0  0  0.5  0  0  #INIT
#-999  10.0   -999   5.0   -1    0.05  -4     0  0  0  0  0.5  0  0  #FINAL
#RETENTION TRAWL
 5     60     26     34    -1    99     1     0  0  0  0  0  2  2        #inflection
0.01   8      1.2    1.0   -1    99     1     0  0  0  0  0  2  2        #slope
0.5    1      0.99   1     -1    99     3     0  0  0  0  0  2  2  #asymptote
-10    10     0.0    0.0   -1    99    -9     0  0  0  0  0  0  0  #male offset to inflection (arithmetic)
#FIXED GEAR
15     70     48.0   45.0  -1    0.05   1     0  0  0  0  0.5  3  2  #PEAK
-5.0   10.0   2.5    5.0   -1    0.05  -3     0  0  0  0  0.5  0  0  #TOP_WIDTH
-4.0   12.0   2.8    3.0   -1    0.05   2     0  0  0  0  0.5  3  2  #ASC_WIDTH
```

```
-2.0    10.0    9.0    10.0    -1      0.05   -4       0   0   0   0   0.5   0   0  #DESC_WIDTH
-9      10.0    -4      0.5    -1      0.05    3       0   0   0   0   0.5   0   0  #INIT
-9      9.0      8      0.5   -1      0.05     -4       0   0   0   0   0.5   0   0  #FINAL
#-999    5.0    -999    -999    -1      0.05  -2       0   0   0   0   0.5   0   0  #INIT
#-999    10.0   -999     5.0    -1      0.05  -4       0   0   0   0   0.5   0   0  #FINAL
#RETENTION FIXED
 5      60      42      34    -1      99    1       0   0   0   0   0   4   2              #inflection
0.1      8      1.0     1.0   -1      99    1       0   0   0   0   0   4   2              #slope
0.5      1      0.89    1     -1      99    2       0   0   0   0   0   4   2  #asymptote
-10     10      0.0     0.0   -1      99   -9       0   0   0   0   0   0   0  #male offset to inflection (arithmetic)
#ATSEA/FOREIGN
15      70      55.0    50.0   -1      0.05   2       0   0   0   0   0.5   0   0  #PEAK
-5.0    10.0    2.0     2.5    -1      0.05   -3       0   0   0   0   0.5   0   0  #TOP_WIDTH
-4.0    12.0    4.0     4.0    -1      0.05   2       0   0   0   0   0.5   0   0  #ASC_WIDTH
-2.0    10.0    10.0    10.0   -1      0.05  -4       0   0   0   0   0.5   0   0  #DESC_WIDTH
-999.0  5.0    -999    -999    -1      0.05  -2       0   0   0   0   0.5   0   0  #INIT
-999    10.0   -999     5.0    -1      0.05  -4       0   0   0   0   0.5   0   0  #FINAL
#TRIENNIAL
13      50      18.0    25.0   -1      0.05   2       0   0   0   0   0.5   0   0  #PEAK
-5.0    10.0    0.0     5.0    -1      0.05   3       0   0   0   0   0.5   0   0  #TOP_WIDTH
-4.0    12.0    3.0     3.0    -1      0.05   2       0   0   0   0   0.5   0   0  #ASC_WIDTH
-2.0    10.0    4.0     10.0   -1      0.05   3       0   0   0   0   0.5   0   0  #DESC_WIDTH
-9      10.0    -2      0.5    -1      0.05   2       0   0   0   0   0.5   0   0  #INIT
-9      9.0      0      0.5   -1      0.05    4       0   0   0   0   0.5   5   2  #FINAL
#AKFSC SLOPE
13      50      35.0    35.0   -1      0.05   2       0   0   0   0   0.5   0   0  #PEAK
-5.0    10.0    -2.5    5.0    -1      0.05   -3       0   0   0   0   0.5   0   0  #TOP_WIDTH
-4.0    12.0    4.0     5.0    -1      0.05   2       0   0   0   0   0.5   0   0  #ASC_WIDTH
-2.0    10.0    10.0    10.0   -1      0.05  -4       0   0   0   0   0.5   0   0  #DESC_WIDTH
-999    5.0    -999    -999.0  -1      0.05  -2       0   0   0   0   0.5   0   0  #INIT
-1080   10.0   -1025    5.0    -1      0.05  -4       0   0   0   0   0.5   0   0  #FINAL
#NWFSC SLOPE
-2 60 0 0 -1 0.2 -4 0 0 0 0 0.5 0 0 #MinBin
-2 60 0 0 -1 0.2 -4 0 0 0 0 0.5 0 0 #MaxBin
#NWFSC COMBO
13      50      20.0    20.0   -1      0.05   2       0   0   0   0   0.5   0   0  #PEAK
-5.0    10.0    2.5     5.0    -1      0.05   -3       0   0   0   0   0.5   0   0  #TOP_WIDTH
-4.0    12.0    3.0     3.0    -1      0.05   2       0   0   0   0   0.5   0   0  #ASC_WIDTH
-2.0    10.0    10.0    10.0    -1      0.05  -4       0   0   0   0   0.5   0   0  #DESC_WIDTH
-999    5.0    -999    -999    -1      0.05  -2       0   0   0   0   0.5   0   0  #INIT
-999    10.0   -999    -999    -1      0.05  -4       0   0   0   0   0.5   0   0  #FINAL


1 #Custom Block Setup (0/1)
#LO     HI      INIT    PRIOR  PR_TYPE  SD    PHASE
```

```
#RETENTION TRAWL BLOCKS
15      70     48.0    45.0   -1      0.05   1  #PEAK (1930-2001)
-4.0    12.0   5.7     3.0    -1      0.05   2  #ASC_WIDTH (1930-2002)
 5      50     31      34     -1      99     1  #inflection (2000-2006)
 5      50     31      34     -1      99     1  #inflection (2007-2010)
0.01    5      2.4     1.0    -1      99     1  #slope (2000-2006)
0.01    5      2.4     1.0    -1      99     1  #slope (2007-2010)
0.5     1      0.8     1      -1      99     2  #asymptote (2000-2006)
0.5     1      0.8     1      -1      99     2  #asymptote (2007-2010)
#RETENTION HKL BLOCKS
15      70     48.0    45.0   -1      0.05   1   #PEAK  (1930-2002)
-4.0    12.0   2.8     3.0    -1      0.05   2   #ASC_WIDTH (1930-2002)
 5      60     10      34     -1      99    -2   #inflection (1930-1999)
0.1     8      0.2     1.0    -1      99    -3      #slope  (1930-1999)
0.5     1      1.0     1      -1      99    -3      #asymptote  (1930-1999)
#Selectivity Triennial
-9      9.0     5      0.5   -1      0.05    3    #FINAL

#3 #selparm_dev_PH

1 #selparm_adjust_method: 1=standard; 2=logistic trans to keep in base parm bounds

# 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
#_fleet: 1 2 3 4 5 6 7
0   0   0   0   0   0   0  #_add_to_survey_CV
0.2 0.1 0   0   0   0   0  #_add_to_discard_stddev
0   0   0   0   0   0   0  #_add_to_bodywt_CV
0.5   0.5   0.03 0.25 0.25 1   0.25  #_mult_by_lencomp_N
0.5   1   0.5   1   1   1   1  #_mult_by_agecomp_N
1   1   1   1   1   1   1  #_mult_by_size-at-age_N#
1 #_maxlambdaphase
1 #_sd_offset
#
0 # 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

0 # (0/1) read specs for more stddev reporting

999
```

Appendix D. SS starter file

#C starter comment here
REYE.dat
REYE.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 checkup.sso file (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)
0 # write to cumreport.sso (0=no,1=like&timeseries; 2=add survey fits)
1 # Include prior_like for non-estimated parameters (0,1)
1 # Use Soft Boundaries to aid convergence (0,1) (recommended)
0 # Number of bootstrap datafiles to produce
20 # Turn off estimation for parameters entering after this phase
1 # MCeval burn interval
1 # MCeval thin interval
0.01 # jitter initial parm value by this fraction
-1 # min yr for sdreport outputs (-1 for styr)
-2 # max yr for sdreport outputs (-1 for endyr; -2 for endyr+Nforecastyrs
0 # N individual STD years
#vector of year values
0.00001 # final convergence criteria (e.g. 1.0e-04)
0 # retrospective year relative to end year (e.g. -4)
10 # 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)
1 # 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)
0 # F_report_basis: 0=raw; 1=F/Fspr; 2=F/Fmsy ; 3=F/Fbtgt
999 # check value for end of file

Appendix E. SS forecast file

```
#Rougheye Rockfish 2013
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)
0.50 # SPR target (e.g. 0.40)
0.40 # 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
1 #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
0.2 # 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 0 0
1 # Control rule method (1=catch=f(SSB) west coast; 2=F=f(SSB) )
0.40 # Control rule Biomass level for constant F (as frac of Bzero, e.g. 0.40); (Must be > the no F level below)
0.10 # Control rule Biomass level for no F (as frac of Bzero, e.g. 0.10)
0.9135  # Control rule target as fraction of Flimit (e.g. 0.75) P* reduction with sigma=0.72
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)
2013  #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)
0 # 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)
2013 # Rebuilder:  year for current age structure (Yinit) (-1 to set to endyear+1)
2 # fleet relative F:  1=use first-last alloc year; 2=read seas(row) x fleet(col) below
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:  TRAWL FIXED ASF  Based on 5-year averages
0.013  0.0135  0.0135    #input the average catches for 2013-2014 and then see what F's are needed to produce those catches.
                         #Then input those F's to keep it constant.
# max totalcatch by fleet (-1 to have no max) must enter value for each fleet
 -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
# no allocation groups
0 # Number of forecast catch levels to input (else calc catch from forecast F)
3 # basis for input Fcast catch:  2=dead catch; 3=retained catch; 99=input Hrate(F) (units are from fleetunits)
6 # Number of forecast catch levels to input (else calc catch from forecast F)
3 # basis for input Fcast catch:  2=dead catch; 3=retained catch; 99=input Hrate(F) (units are from fleetunits)
# Input fixed catch values
#Year Seas Fleet Catch(or_F)
2013    1   1   69.0
2013    1   2   66.4
2013    1   3   48.3
2014    1   1   69.0
2014    1   2   66.4
2014    1   3   48.3
999 # verify end of input
```