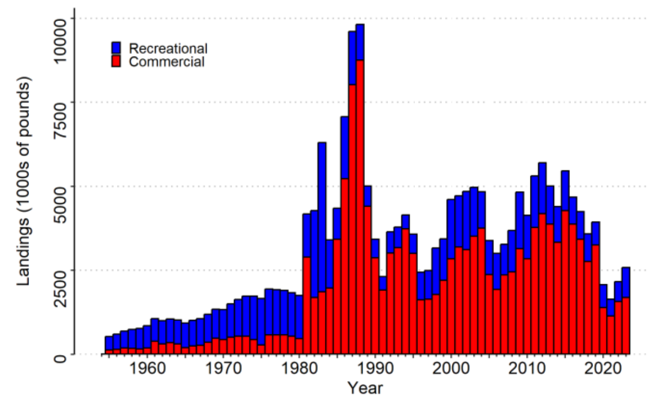
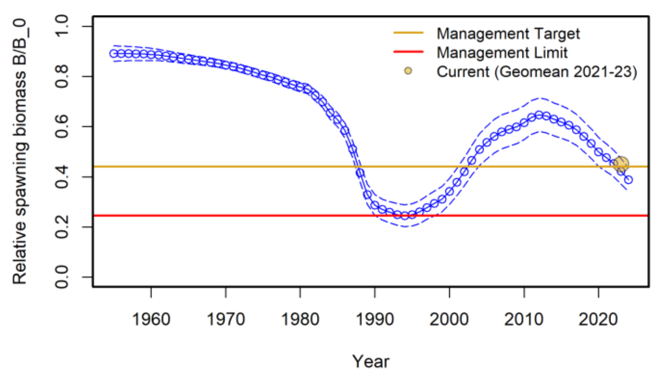
Assessment of Black Drum *Pogonias cromis* in Louisiana Waters
2025 Report

Executive Summary

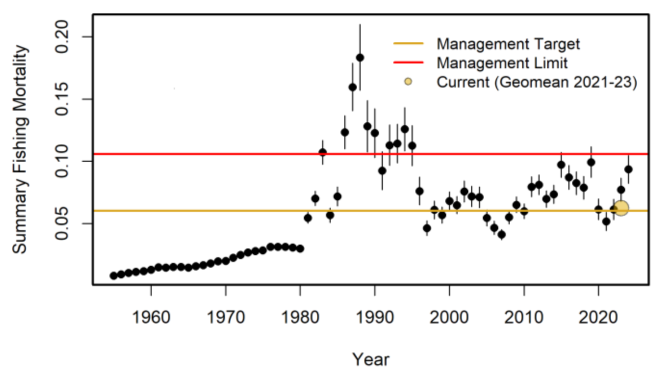
Precautionary limits to fishing are proposed in this stock assessment by requiring spawning biomass not fall below the lowest level observed from 1982-2013. This is equivalent to maintaining the stock above a limit spawning potential ratio. The spawning potential ratio that corresponds with the minimum spawning biomass observation is 25%. Based on results of this assessment, the Louisiana Black Drum stock is currently neither overfished or experiencing overfishing. The current spawning potential ratio estimate is 45%.



Landings of Black Drum in Louisiana have declined in the most recent decade from over 4 million pounds landed per year prior to 2018 to lows near 2 million pounds per year. The recent low landings observed are primarily due to reductions in fishery effort caused by the lingering impacts of the COVID-19 pandemic combined with major hurricanes in 2020 and 2021. The highest harvests on record (over 8 million pounds) occurred during the late 1980's. After fishery regulations were enacted in 1990, Black Drum landings substantially declined. Recreational landings comprised twenty percent of the total Black Drum harvest in the most recent decade.



An integrated statistical catch-at-length and -age model is used in this stock assessment to describe the dynamics of the Louisiana Black Drum stock from 1955-2023. The assessment model projects forward from initial condition estimates using age and length structured population dynamic calculations. The primary model inputs are time-series' of recreational and commercial landings, indices of relative abundance developed from LDWF fishery-independent surveys, length compositions of fishery and survey catches, and age-at-length compositions (age-length-keys) of the fishery and survey catches.



Summary of Changes from 2020 Assessment

The previous LDWF stock assessment of Black Drum (West et al. 2020) utilized the Age Structured Assessment Program (ASAP) stock assessment model to estimate current and historical stock abundance and the rate of fishery removals. In the current assessment, Stock Synthesis 3 (SS3) is used as the primary assessment model with the ASAP assessment model presented as a continuity case.

Stock Synthesis 3 is an integrated fish population analysis model that combines all available data sources, with minimal preprocessing, into a single analysis through joint likelihood functions. The SS3 model is extremely flexible and can be configured from low to high complexity depending on data availability and life history of the stock. The SS3 population dynamics model can be parametrized using an age and/or length-based structure. A variety of fisheries and survey data can be used to configure SS3 allowing multiple fleets, surveys, sexes, areas, and stocks to be modeled simultaneously. The SS3 analysis also allows missing data to be included in the modeled time-series precluding the use of pooled data sets in years without observations that were necessary when developing ASAP model inputs. Another advantage of the integrated SS3 model is the ability to input data in the rawest form possible, eliminating the need to preprocess model inputs such as externally converting catch-at-length data into catch-at-age with age-length-keys, thus allowing more appropriate estimates of uncertainty around the estimated stock status metrics by carrying variances of the observations though the model fitting process into the parameter estimates and the calculated management metrics.

In this assessment, the SS3 base model is configured as a combined sex model with both age and length structuring where fishery and survey catch-at-age are estimated within SS3 from age-length-keys (ALKs) calculated from the species growth curve in concert with the available fleet- and survey-specific empirical ALKs, and the estimated fishery and survey catch-at-length. Model inputs for the SS3 base model are summarized below. Model inputs for the ASAP continuity run have been updated through 2023 with no changes made to the configuration of the ASAP model itself.

Life History:

- Growth was modeled with a single von Bertalanffy growth equation to represent both sexes with parameters estimated within the SS3 model.
- A combined sex weight-length relationship was fixed in SS3 with parameters estimated outside of the SS3 model.
- A combined sex natural mortality (M) point estimate (0.123 yr^{-1}) was used to scale declining M-at-age (Lorenzen 1996) outside of the SS3 model.
- Sex ratio was fixed at 1:1 at birth within the SS3 model.
- A length-based logistic maturity ogive was fixed in SS3 with parameters estimated outside of the SS3 model.
- Fecundity was assumed to be directly proportional to mature female body weight in the SS3 model.

Landings and Discards:

- Commercial landings (1955-2023).
- Recreational landings (1955-2023).
- Recreational discards (1982-2023) with 5% release mortality.

Indices of Abundance:

- LDWF trammel net survey index of relative abundance (1985-2023).
- LDWF 16-foot inshore otter trawl survey index of age-0 relative abundance (1981-2023).

Length Composition:

- Commercial length composition (1984-2023).
- Recreational length composition (1982-2023).
- Trammel net survey length composition (1985-2023).

Age-at-length Composition (ALKs):

- Commercial landings ALKs (2002-2023).
- Recreational landings ALKs (2002-2023).
- Trammel net survey ALKs (2019-2023).

Assessment of Black Drum *Pogonias cromis* in Louisiana Waters
2025 Report

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Table of Contents

1. Introduction

A statistical catch-at-length and -age model is used in this assessment to describe the dynamics of Black Drum *Pogonias cromis* occurring in Louisiana (LA) waters from 1955-2023. The assessment model projects forward from estimates of initial conditions using length and age structured population dynamic calculations. The primary model inputs are the removals from the commercial and recreational fisheries, indices of abundance developed from the LDWF marine trammel net and 16-foot otter trawl surveys, and the corresponding length and age-at-length compositions of the fisheries and surveys.

1.1 Fishery Status

A comprehensive history of the Black Drum (BD) resource and associated fishery within LA is described in Adriance et al. (2019) and for the Gulf of Mexico (GOM) in GSMFC (1993). A current summary of the Louisiana BD fishery is presented below.

Commercial

The commercial BD fishery operates primarily within state waters from the coastline inland to the saltwater/freshwater line and outside territorial waters from the coastline seaward to 3 miles, with little harvest taken from federal waters of the Exclusive Economic Zone (EEZ).

Prior to the 1980s, the Black Drum fishery in LA was underutilized with practically no regulations associated with the fishery. From 1961 to 1980, the annual LA commercial BD harvest averaged under a half of a million pounds. The growth of the LA commercial BD fishery that began in the early 1980s was tied to the expansion of the commercial red drum fishery. In the late 1970s and early 1980s, the demand for red drum increased dramatically leading to a rapid increase in commercial landings. Increased concern of overfishing in the 1980s led to enactment of regulations restricting the use of purse seines to the menhaden-type fisheries and banning the use of spotter planes in the commercial haul seine fishery. The increased demand and markets for Red Drum in the 1980s also led to the increase in Black Drum landings as they were harvested in the same gear and sold in the same markets. After enactment of the commercial red drum fishing moratorium, BD became a suitable market substitute and remains so to the present.

Recreational

The recreational BD fishery operates primarily within state waters from the coastline inland to the saltwater line and from the coastline seaward in state territorial waters to 3 miles offshore, with little harvest taken from federal waters of the EEZ.

Recreationally harvested BD are typically a secondary target of LA inshore marine sportfish anglers with less than 1% of LA anglers having reported BD as their primary target in 2023 (LA Creel unpublished data). When BD are targeted or kept, anglers usually prefer smaller sized fish under 5 pounds. A variety of tackle are utilized to catch BD and anglers typically fish inshore or very near the coast.

1.2 Fishery Regulations

The LA BD fishery is governed by the Louisiana State Legislature, the Wildlife and Fisheries Commission, and the LDWF. Commercial and recreational BD regulations in LA are summarized below.

Commercial

The BD fishery in LA was virtually unregulated until the late 1980s. In 1990, commercial regulations were established (LAC 76:331) that set a harvest slot consisting of a minimum size limit of 16-inches total length (TL) and a maximum size limit of 27-inches TL, with some commercial BD harvest allowed over 27-inches TL. The 1990 regulations also established annual commercial harvest quotas of 3.25 million pounds of 16 to 27-inch TL BD and 300,000 head (*i.e.*, individual fish) of BD ≥27-inches TL. A commercial bull drum permit was required for commercial harvest of BD ≥27-inches TL until late 2000. This permit requirement was removed when the LDWF Trip Ticket Program made it possible to monitor the harvest of both quotas without requiring individual harvest reports.

Authority for regulating fishery gear lies with the Louisiana State Legislature. Act 1316 of the 1995 Regular Legislative Session (the Marine Resources Conservation Act of 1995) outlawed the use of "set" gill nets or trammel nets in saltwater areas of Louisiana, and restricted Black Drum harvest by the use of "strike" nets to the period between the third Monday in October and March 1 of the following year. A "Restricted Species Permit" was also required in order to harvest Black Drum, and several criteria were established to qualify for that permit. After March 1, 1997, all harvest by gill or trammel nets was banned, and legal commercial gear to harvest Black Drum became limited to trawl, set lines and hook and line.

Currently the primary commercial fishing gears include baited trotlines, otter trawls, and skimmer nets. The fishing year for commercial BD harvest is September 1 through August 31 of the following year. The fishery remains an open access fishery.

Recreational

The LA recreational Black Drum fishery was unregulated until the late 1980s. In 1990, recreational BD harvest regulations were implemented that established a harvest slot consisting of a minimum size limit of 16-inches TL and a maximum size limit of 27-inches TL (with one fish allowed over the maximum size), and a five-fish per angler creel and possession limit. These regulations remain the current recreational fishing limits.

1.3 Trends in Harvest

Time series of LA commercial (1950-2023) and recreational (1982-2023) BD landings are presented in (Figure 1) along with recreational fishing effort (angler trips; 1982-2023) and commercial fishing effort (trips landings BD; 2005-2023).

Commercial

Beginning in 1981, the LA commercial BD fishery experienced dramatic growth with landings reaching close to 3 million pounds in that year. Commercial harvest peaked in 1988 at 8.8 million pounds prior to the implementation of regulations in 1989. From 1981 through 1989 commercial BD landings averaged over 4 million pounds per year, a ten-fold increase from the average commercial landings of the previous 20 years. With the establishment of state quotas and harvest permits in 1989 coupled with market fluctuations, commercial BD landings dropped to an average of 3.0 million pounds from 1990 through 1995. Factors influencing harvest after 1989 were less fishing in the EEZ due to the red drum harvest moratorium, redirection of fishing effort to other species such as sheepshead and mullet, and decreasing demand for adult or “bull” BD coinciding with the red drum moratorium. After enactment of entanglement gear regulations in 1995, BD landings averaged 2.9 million pounds per year through 2023. In the most recent years, the LA commercial BD fishery has landed less than 2.0 million pounds per year which corresponds with the reduction in fishery effort observed from 2020-2023.

Currently both adult (“bull”) and juvenile (“puppy”) drum are harvested, often with similar gears. The market for adult drum has historically been more limited than the market for the juveniles due to the preference for the flavor and texture of the flesh of younger fish.

Recreational

Recreational landing estimates of BD in LA have varied considerably over the available time-series from a peak of 669 thousand fish harvested in 1983 to a low of 92 thousand fish harvested in 1991. After 1991, recreational BD landings generally increased to another peak of 408 thousand fish harvested in 2000. Landings began to decrease after 2000 to a low of 76 thousand fish harvested in 2021 which corresponds to the observed reduction in fishing effort in recent years. In 2023, 89 thousand BD were recreationally harvested in LA.

2. Life History Information

2.1 Unit Stock Definition

Black Drum occur in estuaries and nearshore habitat along the Atlantic and Gulf Coasts from Nova Scotia southward through the GOM and Caribbean Sea to Argentina (GSMFC 1993). Most of the harvest is taken in the GOM with the largest commercial GOM harvest occurring in LA waters (Figure 2).

Studies using mitochondrial DNA markers (Gold and Richardson 1998) have confirmed spatial homogeneity in Black Drum haplotype frequencies across the GOM, implying that BD may be considered one stock in the GOM. More recent work using nuclear satellite markers in the U.S. Atlantic and GOM (Leidig et al. 2015) also suggests that BD may be considered a single genetic stock in the GOM. Osburn and Matlock (1984) reported that few tagged fish were recaptured outside of the bay in which they were tagged, and many of those recaptures occurred in adjacent bays. Anderson et al. (2021) noted regional genomic heterogeneity across three coastal regions of Texas. Thus, migration of juvenile fish beyond state borders is likely minimal. Since juvenile fish are the primary target of the fishery, it is unlikely that migration would influence the size of the available stock in Louisiana waters. Thus, for purposes of this assessment, the unit stock is defined as those BD occurring in LA waters.

2.2 Morphometrics

Fish with only fork length (FL) measurements available were converted to total length (TL) from a linear regression of length data available from LDWF records (n=567; Table 1).

A combined sex length-weight regression was fit with a power function using BD length-at-weight data available from LDWF records (n=13,788; Table 2 and Figure 3).

2.3 Growth

Only minor differences have been found between male and female BD growth rates (Beckman et al. 1988; West et al. 2020). For purposes of this assessment, a combined sex von Bertalanffy growth model is fit to LDWF FI BD length-at-age data (n=1,991; Table 1 and Figure 4) to calculate expected length-at-age for computation of an age-specific natural mortality rate (see section *2.5 Natural Mortality*). Fishery dependent data were excluded from the modeled dataset due to length limits of the fisheries. In the SS3 base model, a combined sex von Bertalanffy growth function was estimated using all length-at-age data available from the fisheries and surveys included in the assessment model (see sections *3.0 Data Sources* and *4.0 Assessment Model*).

2.4 Reproduction

Black Drum are asynchronous batch spawners. To realistically estimate annual fecundity, the number of eggs spawned per batch and the number of batches spawned per season must be known. Furthermore, batch fecundity and spawning frequency likely vary as a function of fish weight/size/age (Beckman et al. 1990). Estimates of batch fecundity are available as a function of fish body weight (Fitzhugh and Beckman 1987), but spawning frequency estimates are not (see section *7.0 Research and Data needs*). Thus, for purposes of this assessment, mature female biomass is used as a proxy of total egg production.

A length-based logistic function is fit to female BD maturity data collected from the LDWF FI marine trammel net survey (n=342; Table 2 and Figure 5). Maturity is determined through macroscopic staging from samples collected during the species' spawning season (February-March).

Fitzhugh and Beckman (1987) and Beckman et al. (1988) found only minor differences between male and female BD sex ratios outside of the spawning season. Sex ratios observed in LDWF fishery-independent and fishery-dependent samples are also very close to 1:1. For purposes of this assessment, the sex ratio at birth is assumed to be 1:1.

2.5 Natural Mortality

Black Drum can live to at least 44 years (Figure 4). For purposes of this assessment, a point estimate of natural mortality (M) was calculated (0.123; Table 1) based on the observed longevity of the species (Hamel and Cope 2022). The M point estimate was used to scale estimates of M-at-age (Table 3 and Figure 6). Following SEDAR 12 (SEDAR 2006), the point estimate of M is rescaled where the average mortality rate over ages is equivalent to the constant rate over ages. The allometric exponent estimated for natural ecosystems (-0.288; Lorenzen 1996) is used to calculate the Lorenzen curve as a function of age.

2.6 Discard Mortality

Little information exists on BD discard mortality rates. Black Drum are typical caught in shallow estuarine waters and are not subject to the levels of barotrauma associated with fish species caught in deeper depths. Black Drum are thought to be similar to red drum in terms of resilience of the fish to handling and release from fishery interactions. Reported short-term discard mortality estimates of red drum vary with fish size, bait/hook type, season, and anatomical hooking location (LDWF unpublished data, Vecchio and Wenner 2007). Discard mortality estimates from these studies range from 1% up to 10%. For purposes of this assessment, a constant rate of discard mortality across time and fish size/age is assumed (5%).

3. Data Sources

3.1 Fishery Dependent

Landings and Discards

Commercial

Commercial Black Drum landings (Figure 7) are taken from the LDWF Trip Ticket Program (1999-2023) and NMFS commercial statistical records (1955-1998; NMFS 2023). A time series of commercial live release estimates is currently not available. A recent bycatch study of the commercial baited trotline fishery (Midway et al. 2022), the primary gear of the commercial BD fishery accounting for over 70% of the recent total commercial BD landings, found that BD releases make up approximately 30% of the total

BD catch from this gear, with 99.8% of the released BD observed as surviving. Considering this gear uses circle hooks in shallow estuarine waters, the low level of observed release mortality is not surprising. For purposes of this assessment, dead commercial releases of BD taken from commercial trotline gear are considered negligible and not considered further. However, discard estimates from BD caught in commercial otter trawls, which is the secondary gear of the commercial BD fishery, have not yet been documented (see section *7.0 Research and Data Needs*).

Recreational

Time series of recreational landings and live discards as used in this assessment are presented (Figures 8 and 9). Recreational BD landings and live release estimates are taken from the LDWF recreational creel survey (LA Creel; 2014-2023) and estimates hindcast to the historic MRIP time-series (1982-2013; details in *Appendix 1*). Consequently, the pre-2014 recreational estimates used in this assessment differ from the LA estimates currently published by MRIP (https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/queries/index).

Historical recreational landings (1955-1981) are estimated following the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation Survey (FHWAR) method (Brennan and Fitzpatrick 2012) outlined in the SEDAR 31 Data Workshop. The FHWAR survey has been conducted every five years since 1955. The FHWAR method uses estimates of U.S. saltwater anglers and the number of U.S saltwater days from the FHWAR survey as the main components. The ratio of U.S. saltwater anglers to total U.S. anglers was used to estimate the number of saltwater anglers in the West South Central (WSC) geographic region (LA, TX, AR, and OK) from the total number of WSC region anglers reported in each FHWAR survey. The ratio of WSC region saltwater anglers to U.S saltwater anglers was then used to calculate the WSC region saltwater days from estimates of the total U.S saltwater days reported in each FHWAR survey. Recreational effort from Texas was removed from the WSC region using the proportion of LA saltwater anglers reported in the WSC region in the 1991 FHWAR survey, which was the first year state-specific effort was reported in FHWAR surveys. To account for levels of bias associated with the 12-month recall period used in the 1955-1985 FHWAR surveys, a bias adjustment factor was calculated to adjust the pre-1991 FHWAR effort estimates using the ratio of the 1985 estimate of saltwater days in the WSC region and the sum of the mean LA Creel and TX saltwater effort from 1984-1986. The historic LA BD recreational landings estimates (1955-1981) were then computed from the mean hindcast LA Creel landings per unit of effort estimates from 1984-1986 and the adjusted saltwater days for LA estimated from the 1955-1985 FHWAR surveys. Linear interpolation was used to estimate landings between each 5 year survey period.

<u>*Length Composition*</u>

Commercial

Annual length compositions of commercial harvest (Figure 10) are available from four eras of data collection. The earliest (pre-1994) are derived from a historical database collected by LSU researchers (Russell et al. 1986, Russell et al. 1987, unpublished LSU data); the Trip Interview Program (TIPS) provides pre-2002 information; data from the Fishery Information Network (FIN) is used for 2002-2013, and information from the LDWF Biological Sampling Program is used to develop length compositions beginning in 2014. Annual sample size of the commercial BD length measurements are summarized (Table 4).

Commercial length compositions are weighted by the corresponding landings at the finest scale possible to correct for unrepresentative sampling. The pre-2002 commercial length compositions are unweighted. The 2002-2013 commercial length compositions are weighted by statewide landings of ‘puppy’ (<27 inches TL) and ‘head’ drum (>=27 inches TL) due to the stratified sampling procedures that were in place, where separate sample size targets were established for fish below and above 27 inches TL. The 2014-2023 commercial length compositions were weighted by the landings of the major gear-types (hooks, trawls, and other) in each LA drainage basin.

Recreational

Annual length compositions of BD harvest estimates are available from the LDWF Biological Sampling Program (2014-2023) and MRIP (1982-2013; Figure 10). Annual sample size of the recreational BD length measurements are summarized (Table 4).

Recreational length compositions are weighted by the corresponding landings at the finest scale possible to correct for unrepresentative sampling. Length compositions from the LDWF Biological Sampling Program are weighted by landings estimates from each mode of fishing (Private and Charter) in each LA drainage basin. The MRIP length compositions are derived using the SAS template program available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads that estimates length frequencies for custom domains from the public-use MRIP datasets.

<u>*Age-at-length Composition*</u>

Age Assignments

Black Drum exhibit a protracted spawning season, with spawning primarily occurring across a four-month window from February through May (Beckman et al. 1988). The midpoint of this season (April 1^{st}) is typically assumed as a biological birthday. However, in the SS3 assessment model, fish become age-1 the first January after birth. Thus, BD ages are assigned based on a January 1st birthday in this assessment, where BD spawned the previous year become age-1 on January 1st and remain age-1 until the beginning of the following year.

Commercial

Age-at-length data used to develop annual age-length-keys (ALKs) of commercial Black Drum landings (Figure 11) have been collected from LDWF sampling effort since 2002. Annual sample size of the commercial BD length-at-age measurements are summarized (Table 5).

Commercial age-at-length compositions are weighted by the corresponding landings at the finest scale possible to correct for any unrepresentative sampling. The 2002-2013 commercial age-at-size compositions are weighted by statewide landings of ‘puppy’ (<27 inches TL) and ‘head’ drum (>=27 inches TL) due to the stratified sampling procedures that were in place, where separate sample size targets were established for fish below and above 27 inches TL. The 2014-2023 commercial age-at-length compositions were weighted by the landings of the major gear-types (hooks, trawls, other) in each LA drainage basin.

Recreational

Age-at-length data used to develop annual age-length-keys (ALKs) of recreational Black Drum landings (Figure 12) have been collected from LDWF sampling effort since 2002. Annual sample size of the recreational BD length-at-age measurements are summarized (Table 5).

Recreational age-at-length compositions are weighted by the corresponding landings at the finest scale possible to correct for any unrepresentative sampling. Recreational age-at-length compositions from 2014-2023 are weighted by landings estimates from each mode of fishing (Private and Charter) in each LA drainage basin. The pre-2014 age-at-length compositions are weighted by statewide landings of each mode of fishing.

<u>*3.2 Fishery Independent*</u>

<u>*Survey Descriptions*</u>

The LDWF fishery-independent (FI) marine trammel net and 16-foot inshore otter trawl surveys are used to develop indices of abundance as inputs of the assessment model. Below are brief descriptions of each survey’s methodology. Complete details can be found in LDWF (2018).

For sampling purposes, coastal Louisiana is currently divided into five LDWF coastal study areas (CSAs). Current CSA definitions are as follows: CSA 1 – Mississippi State line to South Pass of the Mississippi River (Pontchartrain Basin); CSA 3 – South Pass of the Mississippi River to Bayou Lafourche

(Barataria Basin); CSA 5 – Bayou Lafourche to eastern shore of Atchafalaya Bay (Terrebonne Basin); CSA 6 – Eastern shore of Atchafalaya Bay to western shore of Freshwater Bayou Canal (Vermillion/Teche/Atchafalaya Basins); CSA 7 – western shore of Freshwater Bayou Canal to Texas State line (Mermentau/Calcasieu/Sabine Basins).

The LDWF Marine Fisheries Section conducts routine standardized sampling within each CSA as part of a long-term comprehensive monitoring program to collect life-history information and measure relative abundance/size distributions of recreationally and commercially important species.

Trammel Net Survey

This survey is conducted with standardized design from October-March. Survey gear is a 750-foot long and 6-foot depth net, consisting of 3 walls constructed of nylon. The inner wall has 1 5/8-inch bar mesh wall, and the two outer walls have 6-inch bar mesh wall.

This survey was conducted from January 1986 to October 2013 at fixed sampling stations within each CSA. In October 2010, additional fixed stations were added to allowing more spatial coverage within each CSA (Figure 13). Beginning in 2013, the survey design was modified where sampling locations are now selected randomly from the established stations within each CSA.

Samples are taken by 'striking' the net. All BD catches are enumerated and a maximum of 50 randomly selected BD are collected for length measurements, gender determination, and maturity information.

Indices are developed separately for each time period of consistent sampling methodology (1986-2012 and 2013-2023). For index development, samples collected during the months of January, February, and March are grouped with the previous year's October, November, and December samples (e.g., 1986 January-March samples become the 1985 values). Catch per unit effort (CPUE) is defined as the number of BD caught per trammel net sample.

16-foot Otter Trawl Survey

This survey is conducted with standardized design in each month of the year. Survey gear is a 16-foot flat otter trawl with a body and cod-end consisting of ¾ inch bar mesh and ¼ inch bar meshes, respectively.

The survey has been conducted from 1967 to present at fixed sampling locations. In October of 2010, additional fixed sampling locations were added to this survey allowing more spatial coverage within each CSA (Figure 14).

Samples are 10 minute tows. All BD catches are enumerated and a maximum of 50 randomly selected BD per sample are measured (in 5mm TL bins).

An index is developed from this survey to represent relative abundance of age-0 BD from 1981-2023. Samples from the earlier years of this survey, which had limited coverage across the coast, are excluded. Since catches are not directly aged from this survey, catches less than 12 inches TL are used as a proxy of age-0 catches. Catch per unit effort is defined as the number of age-0 Black Drum caught per ten minute trawl tow.

IOA Development

To reduce unexplained variability in catch rates unrelated to changes in abundance, each IOA was standardized using methods described below.

A delta lognormal approach (Lo *et al.* 1992; Ingram *et al.* 2010) is used to standardize Black Drum catch-rates in each year as $I_y = c_y p_y$, where c_y are estimated annual mean CPUEs of non-zero Black Drum catches assumed as lognormal distributions and p_y are estimated annual mean probabilities of Black Drum capture assumed as binomial distributions. The lognormal and binomial means and their standard errors are estimated with generalized linear models as least squares means and back transformed. The lognormal model considers only samples in which Black Drum are captured; the binomial model considers all samples.

Because of the designed nature of the LDWF marine trammel net survey, model development was rather straightforward. Variables considered in model inclusion were year, CSA, and sampling location. To determine the most appropriate models, we began the model selection process with a fully-reduced model that included only year as a fixed effect. More complex models were then developed including interactions and random effects and compared using AIC and log-likelihood values. All sub-models were estimated with the SAS generalized linear mixed modeling procedure (PROC GLIMMIX; SAS 2008). In the final sub-models, year was considered a fixed effect, CSA was considered a random block effect, and sampling locations within CSAs were considered random subsampling block effects.

Relative abundance indices and 95% confidence intervals of each survey are presented (Figures 15 and 16).

Length Composition

Annual length compositions of BD catches from the LDWF trammel net survey are presented (Figure 10) along with the corresponding annual sample size of the length measurements (Table 4).

Age-at-length Composition

Age-at-length data used to develop annual age-length-keys (ALKs) of Black Drum catches of the LDWF trammel net survey (Figure 17) have been collected since 2019. Annual sample size of the trammel net BD length-at-age measurements are summarized (Table 5).

4. Assessment Model

Stock Synthesis 3 (SS Version 3.30.20; Methot and Wetzel 2013) is used in this assessment to describe the dynamics of BD occurring in LA waters. Stock Synthesis 3 is an integrated fish population analysis model that combines available data sources, with minimal preprocessing, into a single analysis though joint likelihood functions. The SS3 model is extremely flexible and can be configured from low to high complexity depending on data availability and life history of the stock. The SS3 population dynamics model can be parametrized using an age and/or size-based structure. A variety of fisheries and survey data can be used to configure SS3 allowing multiple fleets, surveys, sexes, areas, and stocks to be modeled simultaneously. An overview of the model configuration, as applied in this assessment, is provided below. Specific details and full capabilities of SS3 can be found in the technical documentation (Methot et al. 2020).

4.1 Model Configuration

The base model was configured with annual time-steps from 1955-2023 with a simple one year forecast using the estimated fishing mortality rate from the terminal year of the assessment. Fish were modeled from age-0 through an age-20 plus group. Two fishing fleets (recreational and commercial) and two relative abundance indices developed from LDWF FI surveys (trammel net and inshore 16-foot otter trawl) were modeled. Fish spawn at the start of each annual time step and the age-0 fish recruit to the population at the time of settlement on April 1st. Lognormal error structure is assumed for fishery catches and abundance indices. A Dirichlet-multinomial error structure is assumed for length and age-at-length composition data. Coefficients of variation of data sources with lognormal structure are converted to standard errors in natural log space using the $\sqrt{(log_e(1+(CV)^2))}$ approximation (Methot et al. 2020). Length units are inches total length and biomass units are pounds. Inputs of the SS3 base model are summarized in Figure 18. The SS3 base model files (starter, forecast, data, and control files) are provided in *Appendix 2*.

Life History

Parameters for a power weight-length function and a logistic length-based maturity function (Table 2) are estimated outside of SS3 and fixed within the base model. In the SS3 base model, maturity of fish less than age-4 was set to zero, with the maturity of fish age-4 and greater determined from the length-based function.

The point estimate of M based on the observed longevity of the species (Table 1) is assumed to decline as a function of age and is estimated outside of SS3 and fixed within the base model (Table 3).

Growth and variability in length-at-age are estimated within the SS3 base model using the von Bertalanffy growth function with an assumed normal error structure and variability modeled as a function of age. The SS3 formulation of the von Bertalanffy growth function requires 5 parameters: 3 parameters to describe mean length-at-age (lengths at minimum and maximum reference age, and the functions slope) and 2 parameters to describe variability in length-at-age (coefficients of variation at the minimum and maximum reference age). The minimum and maximum reference ages for the length-at-age parameters were specified as 0.5 years and the age at the maximum theoretical length (Linf). Fish less than the first reference age grow linearly from the settlement time of the age-0 recruits.

Stock-Recruitment

The Beverton-Holt stock recruitment function was used to describe the relationship between spawning biomass and age-0 recruitment. Three parameters are required for this function: the unfished recruitment level (R_0), the standard deviation of natural log recruitment (σ_R), and steepness (h; the proportion of R_0 produced by 20% of unfished spawning biomass). In the base model, steepness was fixed at 0.99 and the R_0 and σ_R parameters were estimated (see section *4.3 Model Diagnostics*).

Annual lognormal recruitment deviations in the SS3 base model are estimated for the period considered data-rich (1982-2021), when size and age composition data were available to inform the model on the year to year recruitment levels, as a deviation vector with an explicit sum-to-zero constraint. Age-0 recruitment for the period prior to 1982, when no size or age composition data were available, are estimated directly from the stock recruitment relationship using the annual spawning output estimates. Likewise, recruitment is estimated directly from the stock recruitment relationship for the last two years of the time series due to limited information about young fish in the size and age composition data.

Initial Conditions

The modeled time series in this assessment begins in 1955. The recreational and commercial fleets operated in LA prior to this time. In the SS3 base model, initial commercial landings are specified as the geometric mean of LA landings from 1950-1954 available from NOAA Fisheries commercial statistical records (123 thousand pounds). Initial recreational landings are specified as the geometric mean of the 1955-1957 historical recreational landings estimates (88 thousand fish). Initial apical fishing mortality parameters were estimated from the initial fleet-specific landings. Uncertainty around the initial landings were specified with a relatively small CV of 0.1 for the commercial fleet and a slightly larger CV of 0.15 for the recreational fleet. Larger uncertainty around the initial recreational landings was tested in the SS3 base model (CV=0.35), which led to model stability issues and unrealistic estimates of the initial recreational apical fishing mortality rate, and was ultimately not used.

Landings

Landings are assumed to have a lognormal error structure in the SS3 base model and are calculated from each fleet's annual apical fishing mortalities and selectivity-at-age derived from the length-based selectivity estimates and the species growth curve. Apical F's are calculated in the SS3 base model using the hybrid approach, where fractional annual harvest rates are first calculated using Pope's method before these values are converted into approximate apical F's and tuned over multiple iterations to achieve a better fit to each fleet's landings. Uncertainty around commercial landings were specified with CV's of 0.05 for all years of the modeled time series. Coefficients of variation of the recreational landings were specified as the relative standard error of the annual landings estimates themselves (1982-2023, range 0.06 to 0.37) and 0.1 for the years prior to 1982. Larger uncertainty around the pre-1982 recreational landings time series was tested in the SS3 base model (CV=0.3), which led to model stability issues, and was ultimately not used.

Discards

Recreational discards are estimated in the SS3 base model from the selectivity and retention functions. Discard estimates are not available for the commercial fleet. The discard mortality rate used to calculate the number of dead recreational discards was assumed time invariant and fixed at 5% in the SS3 base model. Coefficients of variation of the input recreational discards were specified as the relative standard error of the annual discard estimates themselves (1982-2023, range 0.06 to 0.55)

Abundance indices

Abundance indices are assumed proportional to stock abundance and to have a lognormal error structure in the SS3 base model. Relative abundance time series are modeled for the LDWF trammel net (1985-2023) and 16-foot inshore otter trawl surveys (1981-2023). Catchability of the trammel net survey was estimated in two time blocks that correspond to periods of consistent sampling methodology: fixed station sampling (1985-2012) and random station selection (2013-2023). Catchability of the 16-foot otter trawl survey was modeled as time invariant. Index uncertainty was specified with CV's estimated from the index standardization procedure.

Length and Age-at-length Compositions

Length and age-at-length composition data were modeled for both fleets and the trammel net survey.

Length compositions were available from 1982-2023 for the recreational fleet, from 1984-2023 for the commercial fleet, and from 1985-2023 for the trammel net survey. The annual number of length observations (Table 4) from each fleet and survey are used as the input sample sizes. Observations with less than 10 length measurements were excluded from model fitting.

Age-at-length composition data were available from 2002-2023 for the recreational and commercial fleets, and from 2019-2023 for the trammel net survey. In the SS3 base model, age data was considered conditional on the length information. This configuration avoids double use of both length and age composition information by making the age data conditional on the length information while also providing better information to estimate growth parameters and the variability in size-at-age (Methot et al. 2020). The annual number of age observations in each length bin from each fleet and survey are used as the input sample sizes.

Length and conditional age-at-length composition data were assumed to have a Dirichlet-multinomial error structure. The Dirichlet-multinomial (DM) differs from the standard multinomial by estimation of a self-weighting parameter that directly scales the input sample sizes (Tables 4 and 5). Three DM parameters were estimated in the SS3 base model that were shared for the length and conditional age-at-length compositions from each fleet and survey.

Selectivity and Retention

Length-based selectivity functions were used for both fleets and the trammel net survey. Selectivity represents the proportion of the stock vulnerable to capture. Selectivity of the fisheries and survey were assumed to be dome-shaped and were estimated in SS3 using six parameter double normal selectivity functions (pattern 24). All selectivity parameters were estimated with symmetric beta priors (SE=0.05) to improve estimability. Selectivity was not estimated for the 16-foot otter trawl survey index which is used as a recruitment index in this assessment and solely represents age-0 relative abundance. Selectivity of the recreational fleet and trammel net survey were modeled as time invariant. Selectivity of the commercial fleet was estimated in three time blocks that correspond with periods of consistent regulation: no regulations (pre-1990), size limits implemented and purse-seines banned (1990-1996), and entanglement nets banned (1997-2023).

Length-based retention functions were used for the recreational fleet only in this assessment. Discard estimates are not available for the commercial fleet precluding the use of retention functions. Retention functions account for fish discarded due to varying length regulations over the modeled time series where fish above and below established length limits are caught but discarded along with legal sized fish that are caught but discarded. Two time blocks of recreational retention functions are modeled that correspond with periods of consistent regulation: no size regulations (pre-1990) and a 16-27 inch TL harvest slot limit (1990-2023). Retention functions were specified as dome-shaped due to the established harvest slot regulation of the recreational fishery. Five parameters are required for dome-shaped retention functions: the ascending and descending inflection points and slopes, and a parameter controlling the height of the function's asymptote (maximum retention). Size composition information of the recreational discard estimates is currently unavailable (see section *7.0 Research and Data Needs*) requiring most retention function parameters to be fixed in this assessment. For the 1990-2023 time block, inflection points were fixed at the minimum and maximum size of the harvest slot (16 and 27 inches TL) with slopes fixed at values allowing near knife-edged retention at the minimum length limit and a more gradual descending limb slope to approximate for fish harvested above the slot maximum size where one fish is currently allowed per angler per day. For the earlier time block where size limits were not established, the ascending inflection point and slope are fixed allowing near knife-edged retention at 5 inches TL with the descending inflection point fixed at the maximum length bin modeled to create a flat-topped function. Parameters controlling the height of each function's asymptote were estimated in the SS3 base model.

Estimated Parameters

In the SS3 base model, 105 total parameters were used with 87 estimated parameters. Estimated parameters were:

- Growth and variability in length-at-age (5)
- Unfished recruitment and recruitment variability (2)
- Annual recruitment deviations from 1982-2021 (40)
- Initial apical fishing mortality rates (2)
- Survey catchability coefficients (3)
- Commercial selectivity (18)
- Recreational selectivity (6)
- Recreational retention (2)
- Survey selectivity (6)
- Dirichlet-multinomial weighting factors (3)

Asymptotic standard error estimates derived from the inversion of the Hessian matrix are used to describe the uncertainty of the estimated parameters and calculated stock metrics.

Phases of estimation were specified in the SS3 base model as follows: initial fishing mortalities and the unfished recruitment parameters were estimated in the first phase, catchability coefficients in the second phase, selectivity/retention/ DM weighting parameters in the third phase, life history parameters in the fourth phase, recruitment deviations in the fifth phase, and recruitment variability in the last phase of estimation.

4.2 Model Results

Objective function components and log-likelihood values of the SS3 base model are summarized (Table 6). All components of the objective function were equally weighted (lambdas=1).

Parameter estimates and fixed parameter values of the base model are presented (Table 7) along with the asymptotic SEs and CVs (SE/estimate) of the estimates. Most parameters were reasonably estimated with CVs <1. Parameters with CVs>1 were: annual recruitment deviations (1985-87, 1990, 1994, 2007, and 2010), ascending slopes of recreational and trammel net survey selectivity, the top logit parameters of the trammel net survey and 1990-1996 time block of commercial selectivity, and the retention function asymptote in the most recent recreational time block.

Model Fit

Landings and Discards

Model fits to the commercial and recreational landings match the observations very well (Table 8 and Figures 19 and 20) where the estimated landings virtually overlay the observations. Each time series used relatively low SEs to control model fits with the exception of the recreational landings in the 1980's and early 1990's. Model estimated landings in units of numbers of fish and in units of biomass are also presented (Figure 21).

Model estimated discards provide reasonable fits to the data (Table 9 and Figure 22) given the large SEs of the observations prior to 2014. Most estimates lay within the 95% confidence intervals of model inputs.

Abundance Indices

Model estimated catch rates of the trammel net and 16-foot otter trawl survey (Table 10-11 and Figures 23-24) provide reasonable fits to the observations given the relatively large SEs of the indices. Estimated catch rates of each survey lay within the 95% confidence intervals of the observations with only a few exceptions and track each surveys trend across the time series.

Length Compositions

Model fits to the fishery and survey length composition data are presented in Figures 25-28. Length composition fits were controlled by the annual input sample sizes and the estimated DM parameters. The input and DM adjusted effective sample sizes are presented in each panel of the fleet and survey length composition fits. The estimated DM multipliers used to adjust the input sample sizes were: 0.678 for the recreational fleet, 0.234 for the commercial fleet, and 0.252 for the trammel net survey.

The model provided adequate fits to the length composition data. Lack of fit in the earlier noisier years of the recreational fleet was primarily due to relativity low input sample sizes. Pearson residuals of the length composition fits show some patterning but only few instances with large residuals. Most of the larger residuals occur in the smaller size bins (<16 inches TL) in the recreational time series after the recreational harvest slot was implemented in 1990, indicating a possible retention block misspecification where fish less than the minimum size limit were harvested for a series of years following enactment of the regulation.

Conditional Age-at-length Compositions

Model fits to the fishery and survey conditional age-at-length compositions are presented in Figures 29-31. Fits were controlled by the annual input sample sizes in each TL inch bin and the estimated DM parameters. The estimated DM multipliers used to adjust the input sample sizes were shared by the length and age-at-length composition data for each fleet and survey (0.678 for the recreational fleet, 0.234 for the commercial fleet, and 0.252 for the trammel net survey).

The model provided reasonable fits to the age-at-length composition data. Pearson residuals of the age-at-length composition fits are generally non-patterned and small in magnitude.

<u>Growth</u>

Model estimated mean length-at-age and variability in length-at-age are presented (Figure 32) along with the externally estimated mean length-at-age. Parameters of the von Bertalanffy growth function estimated in the SS3 base model are also presented (Table 7). The SS3 model estimated growth pattern is generally consistent with the external estimate. The SS3 estimated von Bertalanffy growth rate and maximum theoretical length (L_{inf}) were slightly larger than the externally estimated parameters (Table 1) which were derived by fitting to FI data only without an aggregated age group.

<u>Selectivity and Retention</u>

Fishery and survey length-based selectivity estimates are presented in Figures 33-35 along with the corresponding age-based selectivities derived from the length-based functions and the species growth curve. Length-based retention estimates of the recreational fleet are also presented.

Recreational

The dome-shaped recreational length-based selectivity curve (Figure 33) indicates full vulnerability to the fishery between 7 and 17 inches TL which corresponds with peak age-based vulnerability around age-1 and age-2. Ascending limbs of the length and age-based recreational selectivity curves are much steeper than the descending limbs. The age-based selectivity curve declines fairly rapidly from the peak to approximately 15% at the age-20 plus group.

Recreational retention functions for each time block of consistent regulation are presented in Figure 33. Each function reflects the size regulation in each modeled time block: no size regulations (pre-1990) and a 16-27 inch TL harvest slot with 1 fish allowed per angler per day greater than 27 inch TL (1990-present). The asymptote of each retention function, which is used to match the level of observed discards, were the only parameters estimated.

Commercial

Dome-shaped commercial length-based selectivity curves (Figure 34) were estimated for each period of consistent regulation: no regulations (pre-1990), size limits implemented and purse-seines banned (1990-1996), and entanglement nets banned (1997-2023). The selectivity curve for the pre-1990 time block indicates full vulnerability to the fishery between 17 and 30 inches TL which corresponds with peak age-based vulnerability around ages 3-6. Selectivity for the 1990-1996 time block indicates full vulnerability to the fishery between 17 and 18 inches TL which corresponds with peak age-based vulnerability around age-2 and age-3. Selectivity for the post-1996 time block indicates full vulnerability to the fishery between 18 and 21 inches TL which corresponds with peak age-based vulnerability around age-3 and age-4. Ascending limbs of the length and age-based selectivity curves for all commercial time blocks are steeper than the descending limbs. Selectivity of older fully-mature fish was reduced noticeably after commercial regulations were enacted in 1990. The age-based selectivity curve for the no regulation time block declines gradually from the peak to approximately 30% at the age-20 plus group, whereas the age-based selectivity curves for the two most recent time blocks decline rapidly from the peaks to approximately 10% at the age-20 plus group.

Trammel net

The dome-shaped trammel net survey length-based selectivity curve (Figure 35) indicates full vulnerability between 9 and 10 inches TL which corresponds with peak age-based vulnerability at age-1. The ascending limb of the length and age-based selectivity curves are much steeper than the descending limbs. The age-based selectivity curve declines gradually after the age-1 peak to approximately 25% at the age-20 plus group.

Fishing Mortality

Estimated annual fishing mortality rates (fleet-specific apical and total exploitation) are presented in Table 12 and Figure 36. Exploitation rates are calculated as the total number of fishery removals >age-0 / total stock size > age-0 (as numbers of fish).

Annual apical F rates of the recreational fleet have varied but remained relatively low (<0.25) through time with the exception of a peak (>0.35) estimated in the early 80s that corresponds with the high landings observed. An increasing trend has become apparent in the recreational apical F estimates in the most recent decade. The recreational apical F estimate in the terminal year of the assessment was 0.24. Annual apical F rates of the commercial fleet have varied over the time series from estimates close to zero in the early years of the time series to peaks greater than 0.4 estimated in 1988, 1990, and 1992-1994. After the mid-90's, commercial apical F rates decreased considerably. An increasing trend has also become apparent in the commercial apical F estimates in the most recent decade. The commercial apical F estimate in the terminal year of the assessment was 0.30.

Exploitation rates climbed gradually from less than 1% estimated in 1955 to around 3% in 1980. After 1980, exploitation rates climbed rapidly as the commercial fishery expanded to a peak of 18% in 1988. After commercial regulations were enacted in 1990, exploitation rates began to decrease. After the entanglement net ban was enacted in 1996, exploitation rates decreased further and have remained relatively stable varying between 4 to 10% annually. The exploitation rate estimate in the terminal year of the assessment was 8%.

Recruitment

In the SS3 base model, the steepness parameter of the Beverton-Holt stock recruitment function was fixed at 0.99 (see section *4.3 Model Diagnostics*) with the other two parameters (unfished recruitment and sigmaR) estimated. Unfished recruitment in log space was estimated as 7.93 which corresponds to 2.77 million age-0 recruits. The sigmaR parameter was estimated as 0.443. The resulting stock recruitment function and the relationship between SSB and age-0 recruits are presented in Figure 37.

Age-0 recruitment estimates are presented (Table 13 and Figure 38) along with the annual recruitment deviations estimated in log space (Figure 38). Age-0 recruitment has varied considerably over the modeled time series. Recruitment estimates during the data rich period (1982-2021) averaged 3.20 million age-0 fish with peaks greater than 7 million fish estimated in 1996 and 2006. Recruitment generally increased from less than one million recruits estimated in 1982 to the first peak of 7.95 million age-0 fish estimated in 1996. After 1996, recruitment generally declined to a low of 1.94 million fish in 2001 before increasing to the second peak of 8.57 million fish estimated in 2006. Following 2006, recruitment began another general decline. Recruitment estimates in the most recent decade averaged just under 2 million age-0 fish with 2.06 million age-0 fish estimated in 2021.

It should be noted that large fish kills were observed along the LA coast during the winters of 1983 and 1984. Since stock losses due to episodic mortality events were not included in the assessment, the low recruitment estimates from 1982 and 1983 may partly be an artifact of these events, where SS3 interprets the lower landings following these events strictly as reductions in earlier recruitment rather than an increase in the total mortality rate when these events occurred.

Stock Abundance and Biomass

Time series of exploitable biomass and abundance (>age-0), SSB, and relative SSB (SSB/SSB_0) estimates are presented in Table 13. Exploitable biomass, SSB, and relative SSB are also presented graphically (Figure 39). Time series of stock abundance-at-length and -age are also presented (Figures 40 and 41) along with the annual mean length and age of the stock.

Exploitable biomass estimates averaged 96.0 million pounds from 1955-2023 and ranged from a peak of 132 million pounds estimated in 1955 to a low of 42.6 million pounds in 1991. The 2023 estimate of exploitable biomass was 59.3 million pounds. Estimates of exploitable abundance averaged 10.2 million fish from 1955-2023 and ranged from 14.8 million fish estimated in 2007 to a low 5.13 million fish in 1989. The 2023 estimate of exploitable abundance was 5.97 million fish.

Estimates of SSB averaged 38.8 million pounds from 1955-2023 and ranged from a low of 15.3 million pounds estimated in 1994 to a peak of 55.6 million pounds estimated in 1955. The 2023 estimate of SSB was 26.3 million pounds. Unfished SSB was estimated as 62.3 million pounds. Relative SSB estimates ranged from 89% estimated in 1955 to a low of 24.5% in 1994. The 2023 estimate of relative SSB was 42.2%.

<u>*4.3 Model Diagnostics*</u>

Correlation Analysis

A correlation analysis was conducted on the SS3 base model to identify parameter pairs with correlations greater than 0.8. (Table 14). High correlations were identified between the ascending slope and peak parameters of the double normal selectivity functions of the recreational and commercial fleets as well as the top logit and peak selectivity parameters and top logit and ascending slope parameters of the recreational fleet.

Jitter Analysis

A jitter analysis was conducted on the SS3 base model to evaluate model stability and determine if a global solution was found. Initial parameter values of the base model were jittered using a value of 0.1 for 100 model runs. Log likelihood values of each model run are presented (Table 15). The lowest log likelihood, which was the log likelihood of the base model solution, was achieved in 90% of the jitter runs suggesting a stable global solution of the base model was found.

Sensitivity Analysis

A series of sensitivity runs were conducted to explore uncertainty in the configuration of the base model. Sensitivity runs include: increasing (and decreasing) the FHWAR historical recreational landings time series (1955-1981) by 25%, up-weighting relative abundance indices (lambdas *5), increasing the discard mortality rate from 5 to 8%, estimating annual recruitment deviations through the terminal year of the assessment, starting the model in 1982 rather than 1955, estimating age-based selectivity for each fleet and survey rather than length-based selectivity, time-varying the selectivity estimates of the trammel net survey to match the time-varying catchability time blocks, and exclusion of the conditional age-at-length compositions of the trammel net survey. Time series of relative SSB, age-0 recruitment, and exploitation rates for the base and sensitivity model runs are presented in Figure 42. Results of each run are similar to the base model with the exception of the model run where recruitment deviations were estimated though the terminal year. In that model run, estimates of age-0 recruitment were noticeably lower than the base run in the most recent years of the assessment while the exploitation rate estimates were noticeably higher. These results are not surprising given the observed reduction in fishery effort in recent years, where the model interprets the recent low landings strictly as reductions in age-0 recruitment, rather than reductions in fishery effort, leading to an unrealistic estimate of sigmaR (>0.8) along with a under fit of the age-0 recruitment index in the most recent years of the time series.

Likelihood Profiles

Likelihood profiles were conducted on each of the stock-recruitment parameters of the base model to determine the stability of the parameter estimates and the optimal value of fixed parameters. Profiles of R0, sigmaR, and steepness are presented (Figure 43). The R0 profile shows a likelihood trough around the base model log-space estimate of 7.93 with optimal values from each data source (length data, age data, etc.) near the base model estimate indicating the parameter was well estimated. The sigmaR profile shows a well-defined total likelihood trough around the base model estimate of 0.443 indicating a stable parameter estimate. However, optimal values from each the individual likelihood components, with the exception of the age data, differed from the total base model estimate. The steepness likelihood profile shows a steep decline towards 1 across likelihood components with the exception of the discard data component that suggests a lower steepness value. In the SS3 base model, the steepness parameter was fixed at 0.99.

Retrospective Analysis

A retrospective analysis was conducted by sequentially truncating the base model by a year (terminal years 2018-2023). Retrospective estimates of relative SSB, age-0 recruits, and exploitation rates are presented (Figure 44). Retrospective estimates of relative SSB show the largest pattern where terminal year estimates tend to decrease with each peel while estimates prior to 2000 tend to increase. Retrospective estimates of age-0 recruits show bias in both directions in the terminal years with estimated recruitment deviations although differences are minimal. However, a pattern is apparent in the initial age-0 recruitment estimates where estimates of unfished recruitment increase with each model peel. Terminal year retrospective estimates of the exploitation rate show minimal bias in both directions. A pattern is evident in earlier years of the time series, where exploitation rate estimates prior to 2000 tend to decrease with each model peel. Some of the retrospective pattern can be explained by the addition of the trammel net survey conditional age-at-length data to the model that became available in 2019. When the trammel net age-at-length data is excluded from model fitting, the retrospective pattern in estimates prior to 2000 as well as the estimates of unfished conditions decreases considerably (although the retrospective pattern in terminal year relative SSB estimates persists). Retrospective patterns can be quantified through Mohns's ρ metric (Mohn 1999). Using the recommendations from Hurtado-Ferro et al. (2015), Mohns's ρ for long-lived species should fall between -0.15 and 0.20. Mohns's ρ metric for relative SSB and exploitation rates fall within this range (-0.14 and -0.09 respectively), but falls outside of this range for age-0 recruits (1.8).

Continuity Model

The ASAP assessment model (ASAP3 Version 3.0.17; NOAA Fisheries Toolbox) used in the previous LDWF BD stock assessment (West et al. 2020) was updated with data through 2023 with no changes made to the configuration of the ASAP model itself. Time series of recruitment, relative SSB, and fleet-specific apical fishing mortalities estimates from ASAP are presented (Figure 45) along with the corresponding estimates from the SS3 base model. Trends of the ASAP estimated time series generally match the trends of the SS3 estimates.

The SS3 estimated age-0 recruitment time series tracks the age-1 ASAP recruitment estimates well with a one year lag. Trends in relative SSB estimates from each model are similar. However, the ASAP model estimates a more depleted stock level in the initial year of the ASAP time series when compared to the corresponding SS3 estimate. In the more recent years, estimates of relative SSB from the ASAP model are relatively flat with only a slight downturn while the SS3 estimates continue a downward trajectory. Recreational apical F estimates from the ASAP model track the SS3 estimates well in the earlier years of the time series. After 1990, the ASAP recreational apical F estimates became noticeably lower than the corresponding SS3 estimates. Trends in the commercial apical F estimates are similar between models with noticeably higher SS3 estimates during the early to mid-1990's and to a lesser extent in the most recent decade of the time series.

5. Management Benchmarks

Overfishing and overfished limits should be defined for exploitable stocks. The implication is that when biomass falls below a specified limit, there is an unacceptable risk that recruitment will be reduced to undesirable levels. Management actions are needed to avoid approaching this limit and to recover the stock if biomass falls below the limit.

Precautionary limits to fishing are proposed in this stock assessment to ensure sustainability of the stock by requiring spawning biomass not fall below the lowest level observed from 1982-2013 (SSB_{limit}) where the stock demonstrated sustainability (i.e., no observed declines in recruitment over a wide-range of spawning biomass). This is equivalent to maintaining the stock above a limit spawning potential ratio (SPR_{limit}; Goodyear 1993) and brings the proposed fishing limits into the same framework as the management targets established by LAC 76: VII.385. For purposes of this assessment, SPR is calculated as the relative depletion of the stock (SSB/SSB0). As reference points to guide management, the spawning potential ratio and equilibrium exploitation rate that lead to the SSB_{limit} (SPR_{limit}, F_{limit}) were estimated in the SS3 base model.

Management targets for Black Drum were established by LAC 76: VII.385. The spawning stock biomass target (SSB_{target}) is calculated as the average SSB (geometric mean) from 1982 (the beginning of the data rich period of the assessment) through 2013. The total exploitation rate target (F_{target}) and SPR target (SPR_{target}), that correspond to the SSB_{target} when the stock is in equilibrium, were estimated in the SS3 base model.

The proposed limits and established targets of fishing relative to each respective time-series are presented in Figure 46. Current estimates are taken as the geometric mean of the 2021-2023 estimates. Limit and target reference points are also presented in Table 17.

6. Stock Status

The history of the LA Black Drum stock relative to F/F_{limit} and SSB/SSB_{limit} is presented in Table 18 and Figure 47. Fishing mortality rates exceeding F_{limit} ($F/F_{limit} > 1.0$) are defined as overfishing; spawning stock sizes below SSB_{limit} ($SSB/SSB_{limit} < 1.0$) are defined as the overfished condition.

Overfishing Status

The current estimate of F/F_{limit} is <1.0 (0.59), indicating the stock is currently not undergoing overfishing. The current assessment model does indicate that overfishing occurred in earlier years of the time-series.

Overfished Status

The current estimate of SSB/SSB_{limit} is >1.0 (1.8), indicating the stock is currently not overfished. The current assessment model indicates the stock has not been overfished. The current SPR estimate is 45%.

Management Target Status

Management targets for Black Drum established by LAC 76: VII.385 indicate the stock is currently just above its biomass target and the fishery is currently operating at its fishing mortality rate target (Figure 46). Given the current stock trajectory and the below average recruitment estimated in most of the most recent decade (Figure 38), future levels of spawning biomass and fishing mortality past the established management targets should be expected. The stock should continue to be monitored to ensure management limits are not approached.

7. Research and Data Needs

As with any analysis, the accuracy of this assessment is dependent on the precision and accuracy of the information of which it is based. Below we list additional recommendations to improve future LA stock assessments of Black Drum.

Commercial discard estimates are currently not available. If significant numbers of undersized commercially landed Black Drum are discarded, total fishery removals would be underestimated and fishing mortality rate estimates would be biased low. Recent research has characterized the bycatch and discards from the commercial trotline fishery in LA. Research is still needed to characterize the bycatch and discards from the commercial fish trawl fishery.

Length compositions of recreational discard estimates are currently not available. Most retention function parameters in the SS3 base model were required to be fixed due to this data gap. Length measurements of recreational live releases are needed.

Estimates of Black Drum batch fecundity and spawning frequency as a function of age/size are needed.

A new FI survey that is more efficient capturing juvenile Black Drum that provides better precision in relative abundance estimates would allow better representation of juvenile abundance in future stock assessments.

The standard von Bertalanffy growth curve, which uses a single growth coefficient (K) to govern the rate of change in mean length at age, was used in the SS3 base model of this assessment to model mean length at age. Growth models that allow estimation of age-specific growth coefficients may provide better fits to the age at length composition data of the oldest fish. However, these options are currently beta features of the SS3 model. Attempts were made to use these features in the SS3 base model, but were ultimately abandoned due to unrealistic patterns of estimated mean length at age. Future versions of SS3, where these features are non-beta, will allow further exploration.

This assessment includes historic recreational harvest estimates (1955-1981) that are estimated using the most currently accepted method. If the historic estimates are not appropriately scaled to current harvest, it could influence estimates of unfished stock conditions. Continued examination of methods to improve such information could be useful for a number of stock assessments.

Factors that influence year-class strength of Black Drum are poorly understood. Investigation of these factors, including inter-annual variation in seasonal factors (winter temperatures, seasonal salinities, food availability etc.) and the influence of environmental perturbations such as the Deepwater Horizon oil spill, could elucidate causes of inter-annual variation in abundance, as well as the species stock-recruitment relationship.

With the recent trend toward ecosystem-based assessment models (Mace 2000; NMFS 2001), more data is needed linking Black Drum population dynamics to environmental conditions. The addition of meteorological and physical oceanographic data coupled with food web data may lead to a better understanding of the Black Drum stock and its habitat.

Fishery-dependent data alone is not a reliable source of information to assess status of a fish stock. Consistent fishery-dependent and fishery-independent data sources, in a comprehensive monitoring plan, are essential to understanding the status of fishery. Present monitoring programs should be assessed for adequacy with respect to their ability to evaluate stock status, and modified if deemed necessary.

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9. Tables

Table 1: Life history parameters used to develop SS3 model inputs. Units are inches total length.

Type	Function	Equation	Parameters
FL to TL	Linear	$TL = m \times FL + b$	m=1.016, b=0.1339
M point estimate	Hamel and Cope	$M = 5.40/\, Age_{max}$	Age_{max}=44 yrs, M=0.123
Growth	Von Bertalanffy	$TL = L_{\infty}(1 - e^{-K(t-t_0)})$	L_{∞}=33.9, K=0.179, t_0=-0.833

Table 2: Life history parameters used as fixed SS3 model inputs. Units are inches total length and pounds whole weight.

Type	Function	Equation	Parameters
Length-weight	Power	$W = aTL^b$	a=5.90E-04, b=2.983
Maturity	Logistic	$Mat = 1/(1 + e^{\alpha(TL - TL_{50\%})})$	α=-1.434, $TL_{50\%}$=26.04

Table 3: Natural mortality-at-age used as a fixed SS3 model input. The 20-plus value is the mean M-at-age for ages ≥20 weighted by expected survivorship.

Age	M
0	0.5347
1	0.2924
2	0.2161
3	0.1787
4	0.1566
5	0.1422
6	0.1321
7	0.1248
8	0.1194
9	0.1152
10	0.1120
11	0.1094
12	0.1073
13	0.1057
14	0.1043
15	0.1032
16	0.1023
17	0.1016
18	0.1010
19	0.1005
20+	0.0989

Table 4: Annual sample size of length measurements from the fishery fleets and the LDWF trammel net survey.

	Length Samples		
Year	Commercial	Recreational	Trammel net
1982	--	101	--
1983	--	90	--
1984	10	80	--
1985	5221	92	65
1986	3450	287	72
1987	1225	100	296
1988	2465	161	109
1989	3372	77	70
1990	2795	77	225
1991	1386	69	526
1992	48	185	363
1993	1	120	217
1994	327	121	316
1995	1258	105	434
1996	352	174	562
1997	352	195	506
1998	125	257	656
1999	67	332	697
2000	295	396	841
2001	451	290	557
2002	181	396	456
2003	332	293	446
2004	266	305	387
2005	672	246	506
2006	464	223	412
2007	1262	268	250
2008	1039	326	574
2009	1216	350	488
2010	460	274	821
2011	1176	329	789
2012	943	343	825
2013	464	260	435
2014	930	569	438
2015	1143	536	342
2016	1093	386	253
2017	1056	302	517
2018	1275	434	251
2019	1357	396	309
2020	923	259	275
2021	1171	314	156
2022	828	351	277
2023	1310	548	203

Table 5: Annual sample size of length-at-age measurements from the fishery fleets and the LDWF trammel net survey.

	Length-at-age Samples		
Year	Commercial	Recreational	Trammel net
2002	178	96	--
2003	328	140	--
2004	264	152	--
2005	563	145	--
2006	461	113	--
2007	748	314	--
2008	747	456	--
2009	629	536	--
2010	271	358	--
2011	849	395	--
2012	699	372	--
2013	390	286	--
2014	930	430	--
2015	1137	422	--
2016	1088	352	--
2017	1021	296	--
2018	1238	407	
2019	1298	385	299
2020	887	249	271
2021	1060	302	141
2022	719	330	141
2023	1042	517	188

Table 6: Summary of objective function components and likelihood values of the SS3 base model.

LogL Componenet	logL*Lambda
TOTAL_LogL	22220.3
Catch	8.91677E-10
Equil_catch	0.00618668
Survey	-20.5164
Discard	21.343
Length_comp	11241
Age_comp	10948.3
Recruitment	29.9521
InitEQ_regime	2.22665E-30
Sum_recdevs	2.13718E-15
Forecast_Recruitment	0
Parm_priors	0.222959
Parm_softbounds	0.0079432
Parm_devs	0
F_Ballpark	0
Crash_Pen	0

Table 7: Parameter estimates and fixed parameter values of the SS3 base model along with the asymptotic standard errors and coefficients of variation of the estimated parameters.

Parameter	Value	StdDev	Active/Fixed	CV
L_at_Amin_Fem_GP_1	7.65293	0.0729025	Act	0.010
L_at_Amax_Fem_GP_1	35.3898	0.149667	Act	0.004
VonBert_K_Fem_GP_1	0.204974	0.0024164	Act	0.012
CV_young_Fem_GP_1	0.19441	0.0027518	Act	0.014
CV_old_Fem_GP_1	0.0901183	0.0023548	Act	0.026
Wtlen_1_Fem_GP_1	0.00059	0	Fix	
Wtlen_2_Fem_GP_1	2.9826	0	Fix	
Mat50%_Fem_GP_1	26.0393	0	Fix	
Mat_slope_Fem_GP_1	-1.4336	0	Fix	
FracFemale_GP_1	0.5	0	Fix	
SR_LN(R0)	7.93	0.0336835	Act	0.004
SR_BH_steep	0.99	0	Fix	
SR_sigmaR	0.443	0.0225018	Act	0.051
Main_RecrDev_1982	-2.34376	0.253059	Act	0.108
Main_RecrDev_1983	-1.49762	0.168718	Act	0.113
Main_RecrDev_1984	-1.06374	0.141822	Act	0.133
Main_RecrDev_1985	0.0185893	0.0877124	Act	4.718
Main_RecrDev_1986	0.0640588	0.0993518	Act	1.551
Main_RecrDev_1987	-0.0578667	0.105924	Act	1.830
Main_RecrDev_1988	-0.525062	0.153096	Act	0.292
Main_RecrDev_1989	0.279267	0.101867	Act	0.365
Main_RecrDev_1990	0.0097696	0.140567	Act	14.388
Main_RecrDev_1991	0.763771	0.101576	Act	0.133
Main_RecrDev_1992	0.61143	0.115675	Act	0.189
Main_RecrDev_1993	0.297381	0.121886	Act	0.410
Main_RecrDev_1994	0.096387	0.121399	Act	1.259
Main_RecrDev_1995	0.222801	0.105603	Act	0.474
Main_RecrDev_1996	1.15617	0.0674843	Act	0.058
Main_RecrDev_1997	0.659052	0.0891244	Act	0.135
Main_RecrDev_1998	0.846967	0.0712481	Act	0.084
Main_RecrDev_1999	0.954896	0.0591979	Act	0.062
Main_RecrDev_2000	0.877626	0.054225	Act	0.062
Main_RecrDev_2001	-0.25845	0.0811422	Act	0.314
Main_RecrDev_2002	0.487272	0.0565342	Act	0.116
Main_RecrDev_2003	0.259809	0.0592224	Act	0.228
Main_RecrDev_2004	0.0749236	0.0618928	Act	0.826
Main_RecrDev_2005	0.525233	0.0489139	Act	0.093
Main_RecrDev_2006	1.22562	0.0369179	Act	0.030
Main_RecrDev_2007	0.0340515	0.0624257	Act	1.833
Main_RecrDev_2008	0.760918	0.0441756	Act	0.058
Main_RecrDev_2009	0.0816188	0.0543709	Act	0.666
Main_RecrDev_2010	-0.0466259	0.0555448	Act	1.191
Main_RecrDev_2011	0.526683	0.04236	Act	0.080
Main_RecrDev_2012	0.733826	0.0362714	Act	0.049
Main_RecrDev_2013	-0.311881	0.0536857	Act	0.172
Main_RecrDev_2014	-0.480189	0.0547844	Act	0.114
Main_RecrDev_2015	-0.355374	0.0497006	Act	0.140
Main_RecrDev_2016	-0.0943184	0.0431346	Act	0.457
Main_RecrDev_2017	-0.340409	0.0481665	Act	0.141
Main_RecrDev_2018	-1.08672	0.0667872	Act	0.061
Main_RecrDev_2019	-1.42779	0.0766475	Act	0.054
Main_RecrDev_2020	-1.46251	0.0810338	Act	0.055
Main_RecrDev_2021	-0.215808	0.0611853	Act	0.284

Table 7 (continued):

Parameter	Value	StdDev	Active/Fixed	CV
Late_RecrDev_2022	0	0	Fix	
Late_RecrDev_2023	0	0	Fix	
ForeRecr_2024	0	0	Fix	
InitF_seas_1_flt_1FISHERY1	0.026799	0.004804	Act	0.179
InitF_seas_1_flt_2FISHERY2	0.002218	0.000262	Act	0.118
LnQ_base_SURVEY2(4)	-7.99039	0.099085	Act	0.012
LnQ_base_SURVEY1(3)_BLK1repl_1985	-8.74622	0.08965	Act	0.010
LnQ_base_SURVEY1(3)_BLK1repl_2013	-8.17341	0.11863	Act	0.015
Size_DblN_peak_FISHERY1(1)	7.1676	0.923797	Act	0.129
Size_DblN_top_logit_FISHERY1(1)	-1.43039	0.096273	Act	0.067
Size_DblN_ascend_se_FISHERY1(1)	0.205718	1.20914	Act	5.878
Size_DblN_descend_se_FISHERY1(1)	2.85381	0.098315	Act	0.034
Size_DblN_start_logit_FISHERY1(1)	-4.84013	0.783764	Act	0.162
Size_DblN_end_logit_FISHERY1(1)	-1.71806	0.069664	Act	0.041
DiscMort_L_level_old_FISHERY1(1)	0.05	0	Fix	
Size_DblN_peak_SURVEY1(3)	8.50405	0.007588	Act	0.001
Size_DblN_top_logit_SURVEY1(3)	-11.4447	16.3401	Act	1.428
Size_DblN_ascend_se_SURVEY1(3)	-13.1696	13.7346	Act	1.043
Size_DblN_descend_se_SURVEY1(3)	5.64528	0.100432	Act	0.018
Size_DblN_start_logit_SURVEY1(3)	-3.70564	0.222895	Act	0.060
Size_DblN_end_logit_SURVEY1(3)	-2.26421	0.287968	Act	0.127
ln(DM_theta)_Len_P1	0.74305	0.055718	Act	0.075
ln(DM_theta)_Len_P2	-1.18487	0.029637	Act	0.025
ln(DM_theta)_Len_P3	-1.09022	0.043378	Act	0.040
Retain_L_infl_FISHERY1(1)_BLK2repl_1955	5	0	Fix	
Retain_L_infl_FISHERY1(1)_BLK2repl_1990	16	0	Fix	
Retain_L_width_FISHERY1(1)_BLK2repl_1955	1	0	Fix	
Retain_L_width_FISHERY1(1)_BLK2repl_1990	1	0	Fix	
Retain_L_asymptote_logit_FISHERY1(1)_BLK2repl_1955	0.510324	0.127229	Act	0.249
Retain_L_asymptote_logit_FISHERY1(1)_BLK2repl_1990	12.9128	39.0575	Act	3.025
Retain_L_dome_infl_FISHERY1(1)_BLK2repl_1955	70	0	Fix	
Retain_L_dome_infl_FISHERY1(1)_BLK2repl_1990	27	0	Fix	
Retain_L_dome_width_FISHERY1(1)_BLK2repl_1955	2	0	Fix	
Retain_L_dome_width_FISHERY1(1)_BLK2repl_1990	5	0	Fix	
Size_DblN_peak_FISHERY2(2)_BLK3repl_1955	17.7916	0.174879	Act	0.010
Size_DblN_peak_FISHERY2(2)_BLK3repl_1990	17.5909	0.138201	Act	0.008
Size_DblN_peak_FISHERY2(2)_BLK3repl_1997	18.7777	0.197136	Act	0.010
Size_DblN_top_logit_FISHERY2(2)_BLK3repl_1955	-1.08803	0.031912	Act	0.029
Size_DblN_top_logit_FISHERY2(2)_BLK3repl_1990	-12.3456	16.3582	Act	1.325
Size_DblN_top_logit_FISHERY2(2)_BLK3repl_1997	-3.79129	0.488266	Act	0.129
Size_DblN_ascend_se_FISHERY2(2)_BLK3repl_1955	1.60417	0.143626	Act	0.090
Size_DblN_ascend_se_FISHERY2(2)_BLK3repl_1990	1.88833	0.119885	Act	0.063
Size_DblN_ascend_se_FISHERY2(2)_BLK3repl_1997	1.63362	0.123388	Act	0.076
Size_DblN_descend_se_FISHERY2(2)_BLK3repl_1955	2.3958	0.125039	Act	0.052
Size_DblN_descend_se_FISHERY2(2)_BLK3repl_1990	1.83466	0.208846	Act	0.114
Size_DblN_descend_se_FISHERY2(2)_BLK3repl_1997	3.58113	0.075328	Act	0.021
Size_DblN_start_logit_FISHERY2(2)_BLK3repl_1955	-5.24813	0.211235	Act	0.040
Size_DblN_start_logit_FISHERY2(2)_BLK3repl_1990	-5.89149	0.313769	Act	0.053
Size_DblN_start_logit_FISHERY2(2)_BLK3repl_1997	-7.60158	0.666135	Act	0.088
Size_DblN_end_logit_FISHERY2(2)_BLK3repl_1955	-2.99479	0.16268	Act	0.054
Size_DblN_end_logit_FISHERY2(2)_BLK3repl_1990	-2.99963	0.125496	Act	0.042
Size_DblN_end_logit_FISHERY2(2)_BLK3repl_1997	-4.85374	0.214021	Act	0.044

Table 8: Observed and estimated commercial and recreational landings along with corresponding lognormal standard errors.

	Commercial (1000s of lbs)			Recreational (1000s of fish)		
Year	Observed	Predicted	StdErr	Observed	Predicted	StdErr
1955	128.300	128.300	0.050	78.418	78.418	0.100
1956	147.700	147.700	0.050	88.434	88.434	0.100
1957	183.700	183.700	0.050	98.451	98.451	0.100
1958	179.700	179.700	0.050	108.467	108.467	0.100
1959	160.700	160.700	0.050	118.483	118.483	0.100
1960	190.200	190.200	0.050	128.499	128.499	0.100
1961	387.600	387.600	0.050	131.359	131.359	0.100
1962	308.900	308.900	0.050	134.219	134.219	0.100
1963	343.600	343.600	0.050	137.080	137.080	0.100
1964	306.500	306.500	0.050	139.940	139.940	0.100
1965	194.700	194.700	0.050	142.800	142.800	0.100
1966	247.300	247.300	0.050	149.640	149.640	0.100
1967	264.400	264.400	0.050	156.479	156.479	0.100
1968	359.900	359.900	0.050	163.319	163.319	0.100
1969	478.300	478.300	0.050	170.158	170.158	0.100
1970	434.200	434.200	0.050	176.998	176.998	0.100
1971	505.800	505.800	0.050	196.651	196.651	0.100
1972	540.200	540.200	0.050	216.303	216.303	0.100
1973	541.500	541.500	0.050	235.956	235.956	0.100
1974	440.200	440.200	0.050	255.608	255.608	0.100
1975	275.500	275.500	0.050	275.261	275.261	0.100
1976	579.000	579.000	0.050	272.062	272.062	0.100
1977	582.900	582.900	0.050	268.864	268.864	0.100
1978	580.207	580.207	0.050	265.665	265.665	0.100
1979	535.993	535.993	0.050	262.467	262.467	0.100
1980	471.656	471.656	0.050	259.268	259.268	0.100
1981	2888.990	2888.990	0.050	262.867	262.867	0.100
1982	1690.710	1690.710	0.050	527.305	527.305	0.272
1983	1858.880	1858.880	0.050	669.301	669.304	0.347
1984	1975.630	1975.630	0.050	187.029	187.029	0.265
1985	3421.320	3421.320	0.050	128.606	128.606	0.286
1986	5225.660	5225.660	0.050	347.528	347.528	0.252
1987	8020.900	8020.900	0.050	273.319	273.319	0.266
1988	8756.910	8756.910	0.050	164.633	164.633	0.195
1989	4405.880	4405.880	0.050	121.324	121.324	0.281
1990	2875.630	2875.630	0.050	108.938	108.938	0.222
1991	1914.090	1914.090	0.050	91.659	91.659	0.189
1992	3014.140	3014.130	0.050	146.448	146.448	0.226
1993	3178.200	3178.190	0.050	148.579	148.579	0.179
1994	3738.820	3738.820	0.050	96.628	96.628	0.200
1995	2999.440	2999.440	0.050	134.099	134.099	0.191
1996	1619.150	1619.150	0.050	183.842	183.842	0.181
1997	1643.430	1643.430	0.050	195.885	195.885	0.168
1998	1782.120	1782.120	0.050	337.557	337.557	0.184
1999	2199.520	2199.520	0.050	289.287	289.287	0.151
2000	2842.800	2842.800	0.050	407.609	407.609	0.155
2001	3197.870	3197.870	0.050	348.118	348.118	0.158

Table 8 (continued):

	Commercial (1000s of lbs)			Recreational (1000s of fish)		
Year	Observed	Predicted	StdErr	Observed	Predicted	StdErr
2002	3114.510	3114.510	0.050	378.430	378.430	0.157
2003	3511.680	3511.680	0.050	290.595	290.595	0.160
2004	3758.570	3758.560	0.050	214.599	214.599	0.151
2005	2375.710	2375.710	0.050	196.713	196.713	0.155
2006	1932.810	1932.810	0.050	207.019	207.019	0.221
2007	2364.410	2364.410	0.050	191.748	191.748	0.158
2008	2456.880	2456.880	0.050	272.912	272.912	0.163
2009	3148.720	3148.710	0.050	346.451	346.451	0.165
2010	2844.440	2844.440	0.050	262.774	262.774	0.164
2011	3771.240	3771.240	0.050	294.068	294.068	0.160
2012	4189.230	4189.230	0.050	281.229	281.229	0.165
2013	3876.780	3876.780	0.050	225.839	225.839	0.158
2014	3332.460	3332.460	0.050	217.662	217.662	0.085
2015	4278.500	4278.500	0.050	219.739	219.739	0.072
2016	3876.420	3876.420	0.050	138.153	138.153	0.085
2017	3420.830	3420.830	0.050	142.565	142.565	0.076
2018	2762.760	2762.750	0.050	147.459	147.459	0.085
2019	3251.110	3251.110	0.050	120.664	120.664	0.066
2020	1389.930	1389.930	0.050	110.358	110.358	0.074
2021	1135.270	1135.270	0.050	75.775	75.775	0.093
2022	1575.280	1575.280	0.050	89.309	89.309	0.104
2023	1690.810	1690.810	0.050	166.388	166.388	0.091

Table 9: Observed and estimated recreational discards along with corresponding lognormal standard errors.

	Recreational (1000s of fish)		
Year	Observed	Predicted	StdErr
1982	361.49	319.53	0.547
1983	227.09	404.17	0.463
1984	115.44	113.67	0.525
1985	107.63	79.93	0.363
1986	155.16	215.81	0.243
1987	104.46	168.71	0.404
1988	135.95	100.91	0.245
1989	78.92	75.38	0.351
1990	241.68	337.40	0.305
1991	157.76	232.23	0.250
1992	258.81	507.89	0.272
1993	343.40	400.73	0.209
1994	235.46	198.13	0.236
1995	334.99	247.78	0.200
1996	234.05	382.81	0.206
1997	466.43	678.45	0.209
1998	578.62	732.49	0.236
1999	325.97	598.94	0.162
2000	704.85	875.66	0.182
2001	787.26	692.55	0.195
2002	597.91	487.72	0.206
2003	527.96	493.32	0.180
2004	435.06	378.36	0.202
2005	407.23	332.09	0.232
2006	346.99	452.75	0.174
2007	343.19	594.81	0.169
2008	549.92	442.83	0.171
2009	699.94	670.85	0.181
2010	723.08	413.56	0.180
2011	624.56	446.05	0.154
2012	513.96	624.19	0.153
2013	848.29	572.05	0.130
2014	424.97	340.03	0.199
2015	387.14	309.20	0.169
2016	228.81	237.00	0.157
2017	272.55	312.45	0.076
2018	355.96	300.14	0.082
2019	325.52	192.12	0.102
2020	174.35	166.49	0.074
2021	100.88	129.62	0.073
2022	222.60	300.90	0.072
2023	418.36	571.22	0.059

Table 10: Observed and estimated index of relative abundance of the LDWF FI trammel net survey along with corresponding lognormal standard errors and catchability coefficient estimates for each time block.

	Trammel net Survey			
Year	Observed	Predicted	StdErr	Q
1985	0.449	0.435	0.589	1.59E-04
1986	0.354	0.509	0.540	1.59E-04
1987	0.521	0.526	0.497	1.59E-04
1988	0.147	0.467	0.570	1.59E-04
1989	0.286	0.505	0.501	1.59E-04
1990	0.511	0.557	0.490	1.59E-04
1991	0.676	0.713	0.474	1.59E-04
1992	0.681	0.872	0.467	1.59E-04
1993	0.437	0.878	0.491	1.59E-04
1994	0.556	0.794	0.484	1.59E-04
1995	0.940	0.747	0.444	1.59E-04
1996	1.377	0.995	0.423	1.59E-04
1997	0.986	1.230	0.444	1.59E-04
1998	1.649	1.298	0.401	1.59E-04
1999	1.371	1.417	0.427	1.59E-04
2000	1.967	1.490	0.405	1.59E-04
2001	1.287	1.323	0.394	1.59E-04
2002	1.127	1.144	0.430	1.59E-04
2003	0.918	1.079	0.437	1.59E-04
2004	1.065	0.983	0.403	1.59E-04
2005	1.377	0.985	0.379	1.59E-04
2006	1.468	1.267	0.370	1.59E-04
2007	0.916	1.349	0.411	1.59E-04
2008	1.588	1.279	0.380	1.59E-04
2009	1.560	1.200	0.389	1.59E-04
2010	1.150	1.035	0.370	1.59E-04
2011	1.203	0.986	0.374	1.59E-04
2012	1.432	1.076	0.347	1.59E-04
2013	1.403	1.806	0.346	2.82E-04
2014	1.457	1.461	0.375	2.82E-04
2015	1.076	1.202	0.363	2.82E-04
2016	0.799	1.111	0.381	2.82E-04
2017	1.651	1.054	0.322	2.82E-04
2018	0.912	0.900	0.363	2.82E-04
2019	0.864	0.693	0.372	2.82E-04
2020	0.827	0.565	0.383	2.82E-04
2021	0.513	0.617	0.401	2.82E-04
2022	0.803	0.814	0.385	2.82E-04
2023	0.694	0.974	0.398	2.82E-04

Table 11: Observed and estimated index of age-0 relative abundance of the LDWF FI 16-foot otter trawl survey along with corresponding lognormal standard errors and the estimated catchability coefficient.

	16-foot Otter Trawl Survey			
Year	Observed	Predicted	StdErr	Q
1981	0.540	0.939	0.695	3.39E-04
1982	0.670	0.083	0.632	3.39E-04
1983	0.822	0.193	0.629	3.39E-04
1984	0.419	0.295	0.680	3.39E-04
1985	0.721	0.868	0.630	3.39E-04
1986	0.588	0.909	0.643	3.39E-04
1987	0.491	0.804	0.646	3.39E-04
1988	0.442	0.503	0.649	3.39E-04
1989	0.626	1.123	0.638	3.39E-04
1990	0.298	0.857	0.656	3.39E-04
1991	0.947	1.820	0.606	3.39E-04
1992	1.094	1.562	0.605	3.39E-04
1993	1.687	1.141	0.591	3.39E-04
1994	1.004	0.933	0.605	3.39E-04
1995	1.056	1.059	0.601	3.39E-04
1996	1.867	2.693	0.586	3.39E-04
1997	1.572	1.639	0.592	3.39E-04
1998	2.029	1.979	0.585	3.39E-04
1999	0.996	2.206	0.600	3.39E-04
2000	1.172	2.043	0.596	3.39E-04
2001	1.381	0.657	0.594	3.39E-04
2002	0.654	1.385	0.623	3.39E-04
2003	0.646	1.104	0.612	3.39E-04
2004	0.401	0.918	0.638	3.39E-04
2005	0.690	1.440	0.617	3.39E-04
2006	1.442	2.902	0.590	3.39E-04
2007	1.886	0.882	0.590	3.39E-04
2008	2.495	1.824	0.577	3.39E-04
2009	2.342	0.925	0.582	3.39E-04
2010	1.309	0.813	0.602	3.39E-04
2011	0.617	1.443	0.592	3.39E-04
2012	1.264	1.776	0.579	3.39E-04
2013	2.013	0.624	0.576	3.39E-04
2014	0.965	0.527	0.600	3.39E-04
2015	0.490	0.597	0.615	3.39E-04
2016	0.640	0.776	0.606	3.39E-04
2017	0.646	0.606	0.603	3.39E-04
2018	0.397	0.287	0.632	3.39E-04
2019	0.312	0.204	0.643	3.39E-04
2020	0.239	0.198	0.648	3.39E-04
2021	0.956	0.699	0.601	3.39E-04
2022	1.313	0.937	0.594	3.39E-04
2023	0.864	0.936	0.597	3.39E-04

Table 12: Annual fleet-specific apical fishing mortality and total exploitation rate estimates from the SS3 base model.

	Apical F		Exploitation rate (numbers
Year	Commercial	Recreational	killed/stock size>age-0)
1955	0.0023	0.0241	0.79%
1956	0.0027	0.0272	0.89%
1957	0.0033	0.0303	1.01%
1958	0.0032	0.0335	1.10%
1959	0.0029	0.0367	1.17%
1960	0.0035	0.0399	1.29%
1961	0.0071	0.0410	1.49%
1962	0.0057	0.0420	1.45%
1963	0.0063	0.0430	1.51%
1964	0.0057	0.0440	1.51%
1965	0.0036	0.0449	1.44%
1966	0.0046	0.0472	1.55%
1967	0.0050	0.0494	1.63%
1968	0.0068	0.0517	1.79%
1969	0.0091	0.0541	1.96%
1970	0.0083	0.0565	1.99%
1971	0.0097	0.0631	2.25%
1972	0.0105	0.0698	2.47%
1973	0.0106	0.0767	2.68%
1974	0.0087	0.0837	2.79%
1975	0.0055	0.0907	2.84%
1976	0.0118	0.0902	3.12%
1977	0.0120	0.0896	3.12%
1978	0.0121	0.0888	3.11%
1979	0.0113	0.0880	3.06%
1980	0.0100	0.0870	2.99%
1981	0.0625	0.0894	5.45%
1982	0.0381	0.1860	7.01%
1983	0.0448	0.3673	10.70%
1984	0.0533	0.1441	5.66%
1985	0.1057	0.1115	7.16%
1986	0.1941	0.2165	12.33%
1987	0.3654	0.1449	15.95%
1988	0.4812	0.0873	18.34%
1989	0.2681	0.0750	12.79%
1990	0.6313	0.1347	12.26%
1991	0.3691	0.0933	9.24%
1992	0.5383	0.1302	11.29%
1993	0.4462	0.0984	11.41%
1994	0.4734	0.0574	12.57%
1995	0.3995	0.0849	11.25%
1996	0.2298	0.1256	7.60%
1997	0.1239	0.1189	4.62%
1998	0.1063	0.1395	6.08%
1999	0.1065	0.1081	5.66%
2000	0.1239	0.1446	6.79%
2001	0.1287	0.1158	6.46%

Table 12 (continued):

Year	Apical F		Exploitation rate (numbers killed/stock size>age-0)
	Commercial	Recreational	
2002	0.1181	0.1278	7.57%
2003	0.1419	0.1230	7.16%
2004	0.1706	0.1016	7.10%
2005	0.1163	0.0998	5.43%
2006	0.1008	0.1117	4.66%
2007	0.1248	0.0901	4.10%
2008	0.1106	0.0968	5.51%
2009	0.1321	0.1336	6.50%
2010	0.1210	0.1059	5.97%
2011	0.1706	0.1385	7.94%
2012	0.2196	0.1591	8.10%
2013	0.2228	0.1214	6.96%
2014	0.1843	0.1055	7.33%
2015	0.2473	0.1302	9.70%
2016	0.2682	0.1093	8.70%
2017	0.2866	0.1328	8.24%
2018	0.2604	0.1404	7.87%
2019	0.3363	0.1276	9.93%
2020	0.1647	0.1491	6.13%
2021	0.1585	0.1322	5.16%
2022	0.2674	0.1769	6.13%
2023	0.2992	0.2438	7.70%
2024			9.34%

Table 13: Annual biomass and abundance of fish greater than age-0, SSB, age-0 recruits, and relative SSB estimates from the SS3 base model.

Year	Biomass>age-0 1000s of lbs	SSB 1000s of lbs	Abundance>age-0 1000s of fish	Age-0 Recruits 1000s of fish	Depletion SSB/SSB0
Virgin	146,706	62,317	12,724	2,773	1.000
Initial	132,045	55,563	11,891	2,773	0.892
1955	132,045	55,563	11,891	2,773	0.892
1956	132,097	55,579	11,899	2,773	0.892
1957	132,064	55,567	11,894	2,773	0.892
1958	131,916	55,515	11,877	2,773	0.891
1959	131,696	55,439	11,854	2,773	0.890
1960	131,419	55,340	11,826	2,773	0.888
1961	131,028	55,194	11,790	2,773	0.886
1962	130,371	54,934	11,737	2,772	0.882
1963	129,784	54,687	11,696	2,772	0.878
1964	129,145	54,409	11,654	2,772	0.873
1965	128,546	54,139	11,617	2,772	0.869
1966	128,084	53,920	11,593	2,772	0.865
1967	127,540	53,671	11,559	2,772	0.861
1968	126,952	53,408	11,522	2,772	0.857
1969	126,226	53,091	11,473	2,772	0.852
1970	125,335	52,706	11,413	2,772	0.846
1971	124,474	52,327	11,357	2,772	0.840
1972	123,425	51,875	11,283	2,772	0.832
1973	122,228	51,366	11,197	2,772	0.824
1974	120,922	50,811	11,102	2,772	0.815
1975	119,632	50,259	11,011	2,772	0.807
1976	118,438	49,741	10,929	2,772	0.798
1977	116,938	49,090	10,830	2,772	0.788
1978	115,502	48,444	10,746	2,771	0.777
1979	114,156	47,818	10,673	2,771	0.767
1980	112,961	47,243	10,616	2,771	0.758
1981	111,950	46,738	10,573	2,771	0.750
1982	108,122	45,139	10,294	246	0.724
1983	103,284	43,534	8,232	570	0.699
1984	94,529	40,884	6,712	872	0.656
1985	88,319	39,163	6,093	2,564	0.628
1986	80,980	36,420	6,620	2,682	0.584
1987	71,136	31,803	6,665	2,373	0.510
1988	59,682	25,935	6,203	1,486	0.416
1989	48,849	20,548	5,128	3,315	0.330
1990	44,432	17,915	5,919	2,529	0.287
1991	42,593	16,797	5,888	5,373	0.270
1992	43,495	16,151	7,948	4,612	0.259
1993	44,445	15,553	8,683	3,368	0.250
1994	46,197	15,283	8,386	2,754	0.245
1995	47,327	15,496	7,751	3,126	0.249
1996	48,512	16,200	7,695	7,952	0.260
1997	52,337	17,304	11,138	4,840	0.278
1998	57,882	18,331	11,708	5,844	0.294
1999	64,353	19,365	12,801	6,513	0.311

Table 13 (continued):

Year	Biomass>age-0 1000s of lbs	SSB 1000s of lbs	Abundance>age-0 1000s of fish	Age-0 Recruits 1000s of fish	Depletion SSB/SSB0
2000	71,696	21,280	14,143	6,033	0.341
2001	78,355	23,594	14,706	1,938	0.379
2002	83,954	26,182	12,484	4,089	0.420
2003	87,946	28,997	12,343	3,259	0.465
2004	89,983	31,692	11,679	2,710	0.509
2005	90,608	33,461	10,843	4,252	0.537
2006	92,302	34,985	11,438	8,568	0.561
2007	95,638	36,128	14,798	2,603	0.580
2008	99,240	36,742	13,267	5,385	0.590
2009	102,956	37,324	14,028	2,730	0.599
2010	104,405	38,398	12,647	2,402	0.616
2011	105,325	39,701	11,557	4,262	0.637
2012	103,671	40,357	11,802	5,243	0.648
2013	101,141	40,038	12,525	1,843	0.642
2014	99,125	39,224	10,832	1,557	0.629
2015	97,058	38,568	9,470	1,764	0.619
2016	92,250	37,762	8,416	2,290	0.606
2017	87,139	36,659	8,047	1,790	0.588
2018	81,942	34,994	7,417	849	0.562
2019	77,124	33,195	6,336	603	0.533
2020	71,148	31,128	5,273	583	0.500
2021	66,778	29,677	4,663	2,063	0.476
2022	63,031	28,251	5,214	2,765	0.453
2023	59,299	26,313	5,973	2,764	0.422
2024	56,317	24,168	6,401	2,762	0.388

Table 14: Correlated parameters of the SS3 base model with correlation coefficients greater than 0.8.

Parameter1	Parmeter2	Correlation
Size_DblN_ascend_se_FISHERY1(1)	Size_DblN_peak_FISHERY1(1)	0.967
Size_DblN_top_logit_FISHERY1(1)	Size_DblN_peak_FISHERY1(1)	-0.965
Size_DblN_ascend_se_FISHERY2(2)_BLK3repl_1997	Size_DblN_peak_FISHERY2(2)_BLK3repl_1997	0.955
Size_DblN_ascend_se_FISHERY1(1)	Size_DblN_top_logit_FISHERY1(1)	-0.931
Size_DblN_ascend_se_FISHERY2(2)_BLK3repl_1955	Size_DblN_peak_FISHERY2(2)_BLK3repl_1955	0.876

Table 16: Jitter analysis log likelihood distribution of the 100 model runs with parameter starting values jittered by 0.1.

Likelihood	Frequency
22220.3	90
22220.4	10

Table 17: Limit and target reference points for the Louisiana Black Drum stock. Spawning stock biomass units are thousands of pounds. Fishing mortality rate units are per year.

Management Benchmarks		
Parameter	Definition	Value
SSB_{limit}	Proposed SSB Limit (Minimum SSB 1982-2013)	15,283
SPR_{limit}	SPR that corresponds with SSB_{limit}	24.5%
F_{limit}	Equilibrium F that corresponds with SPR_{limit}	10.6%
SSB_{target}	LAC 76: VII.385 (Geometric mean SSB 1982-2013)	26,946
SPR_{target}	SPR that corresponds with SSB_{target}	43.2%
F_{target}	Equilibrium F that corresponds with SPR_{target}	6.16%

Table 18: Stock status summary: annual SSB and exploitation rate (F) estimates, ratios of SSB and F to SSB_{limit} and F_{limit}, and spawning potential ratio (SSB/SSB_0) estimates. Current estimates are the geometric mean of the 2021-2023 estimates.

Year	SSB	SSB/SSB_{limit}	F	F/F_{limit}	SPR
1955	55,563	3.635	0.79%	0.075	89.2%
1956	55,579	3.637	0.89%	0.085	89.2%
1957	55,567	3.636	1.01%	0.096	89.2%
1958	55,515	3.632	1.10%	0.104	89.1%
1959	55,439	3.627	1.17%	0.111	89.0%
1960	55,340	3.621	1.29%	0.122	88.8%
1961	55,194	3.611	1.49%	0.141	88.6%
1962	54,934	3.594	1.45%	0.137	88.2%
1963	54,687	3.578	1.51%	0.143	87.8%
1964	54,409	3.560	1.51%	0.143	87.3%
1965	54,139	3.542	1.44%	0.136	86.9%
1966	53,920	3.528	1.55%	0.147	86.5%
1967	53,671	3.512	1.63%	0.154	86.1%
1968	53,408	3.494	1.79%	0.169	85.7%
1969	53,091	3.474	1.96%	0.185	85.2%
1970	52,706	3.449	1.99%	0.189	84.6%
1971	52,327	3.424	2.25%	0.213	84.0%
1972	51,875	3.394	2.47%	0.234	83.2%
1973	51,366	3.361	2.68%	0.253	82.4%
1974	50,811	3.325	2.79%	0.263	81.5%
1975	50,259	3.288	2.84%	0.268	80.7%
1976	49,741	3.255	3.12%	0.295	79.8%
1977	49,090	3.212	3.12%	0.295	78.8%
1978	48,444	3.170	3.11%	0.294	77.7%
1979	47,818	3.129	3.06%	0.290	76.7%
1980	47,243	3.091	2.99%	0.282	75.8%
1981	46,738	3.058	5.45%	0.515	75.0%
1982	45,139	2.953	7.01%	0.663	72.4%
1983	43,534	2.848	10.70%	1.012	69.9%
1984	40,884	2.675	5.66%	0.535	65.6%
1985	39,163	2.562	7.16%	0.677	62.8%
1986	36,420	2.383	12.33%	1.166	58.4%
1987	31,803	2.081	15.95%	1.508	51.0%
1988	25,935	1.697	18.34%	1.734	41.6%
1989	20,548	1.344	12.79%	1.210	33.0%
1990	17,915	1.172	12.26%	1.159	28.7%
1991	16,797	1.099	9.24%	0.874	27.0%
1992	16,151	1.057	11.29%	1.067	25.9%
1993	15,553	1.018	11.41%	1.078	25.0%
1994	15,283	1.000	12.57%	1.188	24.5%
1995	15,496	1.014	11.25%	1.064	24.9%
1996	16,200	1.060	7.60%	0.719	26.0%
1997	17,304	1.132	4.62%	0.437	27.8%
1998	18,331	1.199	6.08%	0.575	29.4%
1999	19,365	1.267	5.66%	0.535	31.1%
2000	21,280	1.392	6.79%	0.642	34.1%
2001	23,594	1.544	6.46%	0.611	37.9%

Table 18 (continued):

Year	SSB	SSB/SSB_{limit}	F	F/F_{limit}	SPR
2002	26,182	1.713	7.57%	0.715	42.0%
2003	28,997	1.897	7.16%	0.677	46.5%
2004	31,692	2.074	7.10%	0.671	50.9%
2005	33,461	2.189	5.43%	0.514	53.7%
2006	34,985	2.289	4.66%	0.440	56.1%
2007	36,128	2.364	4.10%	0.387	58.0%
2008	36,742	2.404	5.51%	0.521	59.0%
2009	37,324	2.442	6.50%	0.614	59.9%
2010	38,398	2.512	5.97%	0.564	61.6%
2011	39,701	2.598	7.94%	0.751	63.7%
2012	40,357	2.641	8.10%	0.766	64.8%
2013	40,038	2.620	6.96%	0.659	64.2%
2014	39,224	2.566	7.33%	0.693	62.9%
2015	38,568	2.523	9.70%	0.918	61.9%
2016	37,762	2.471	8.70%	0.822	60.6%
2017	36,659	2.399	8.24%	0.779	58.8%
2018	34,994	2.290	7.87%	0.744	56.2%
2019	33,195	2.172	9.93%	0.939	53.3%
2020	31,128	2.037	6.13%	0.579	50.0%
2021	29,677	1.942	5.16%	0.488	47.6%
2022	28,251	1.849	6.13%	0.579	45.3%
2023	26,313	1.722	7.70%	0.728	42.2%
2024	24,168	1.581	9.34%	0.883	38.8%
Current	28,046	1.835	6.24%	0.590	45.0%

10. Figures

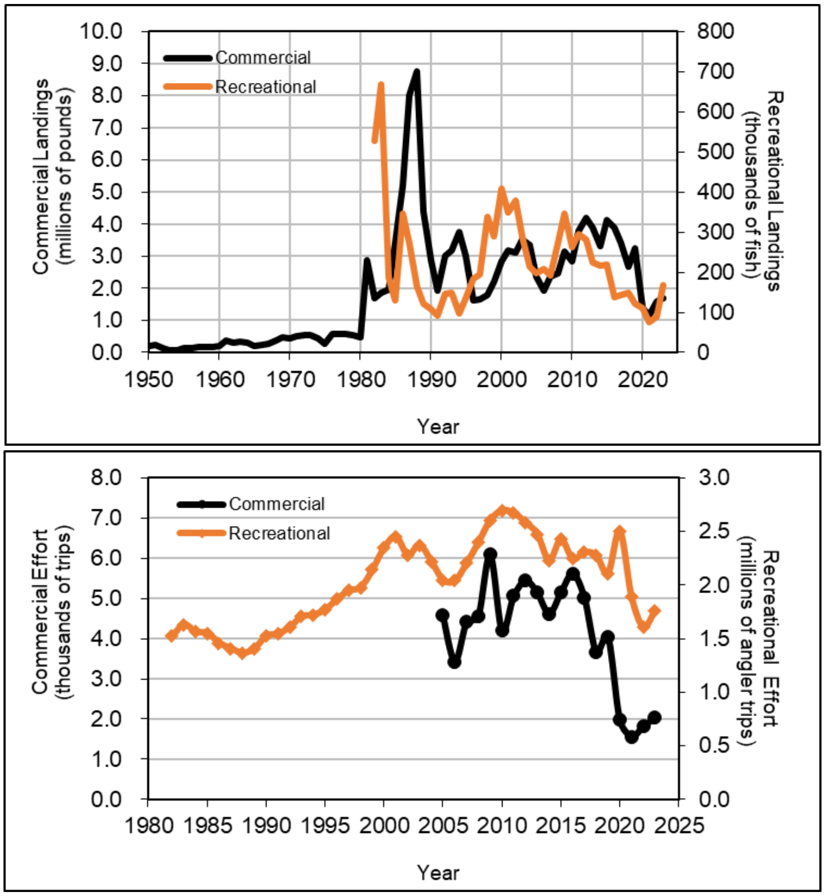


Figure 1: Reported Louisiana commercial and estimated recreational Black Drum landings derived from NMFS statistical records, the LDWF Trip Ticket Program, and the LDWF LA Creel Survey along with the number of commercial fishing trips with Black Drum landings and the estimated Louisiana recreational fishing effort (angler trips).

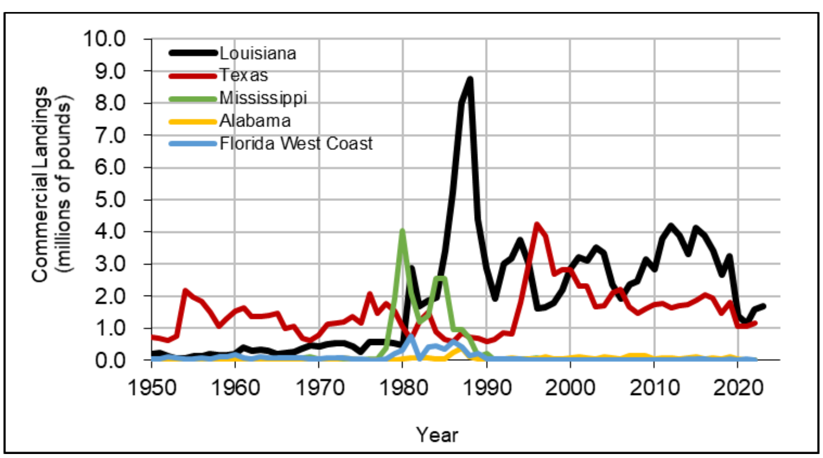


Figure 2: Reported commercial Black Drum landings of the Gulf of Mexico derived from NMFS statistical records and the LDWF Trip Ticket Program.

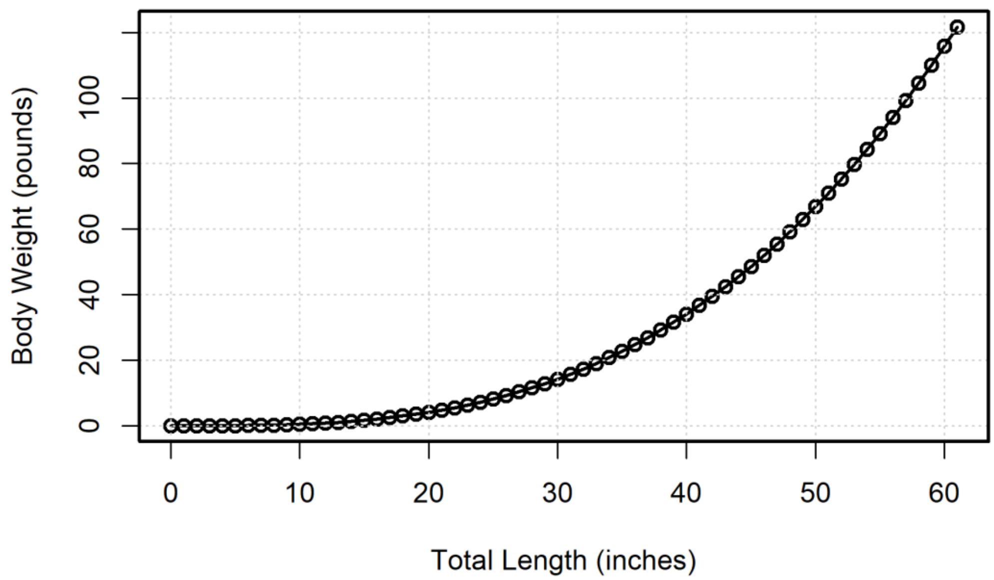


Figure 3: Mean weight at length relationship used as a fixed input of the SS3 base model.

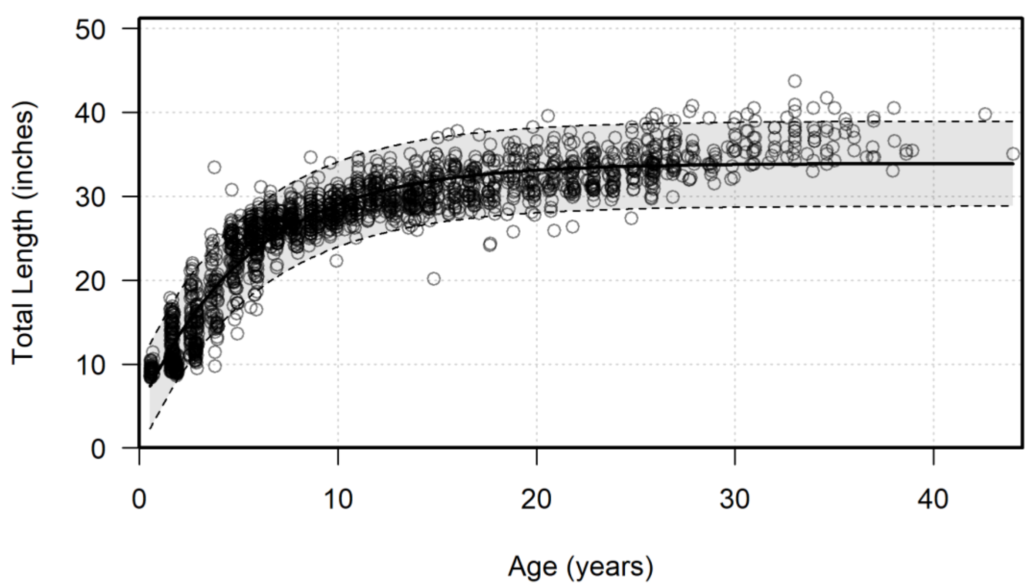


Figure 4: Fishery-independent length-at-age observations and estimated von Bertalanffy growth curve with 95% confidence intervals.

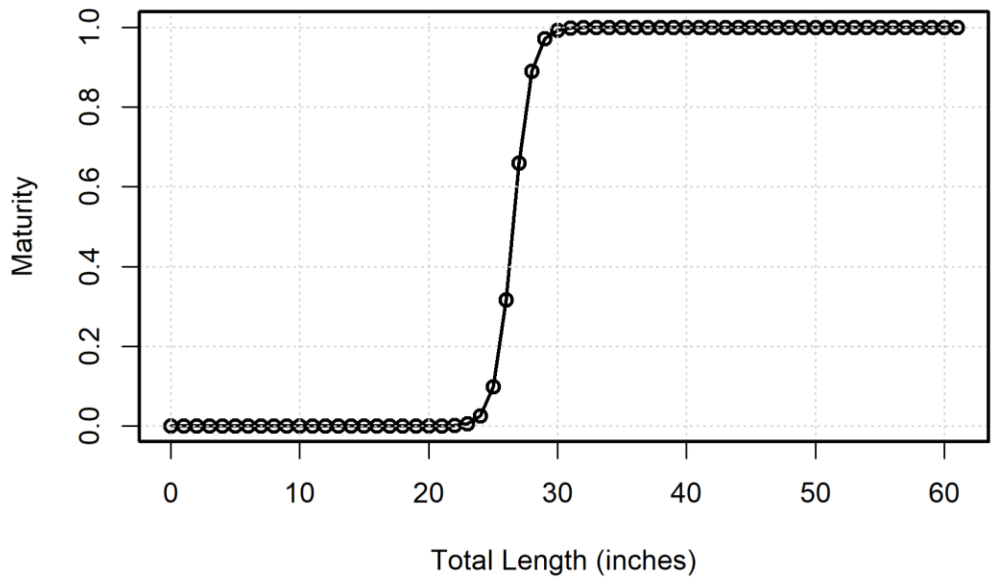


Figure 5: Mean maturity at length relationship used as a fixed input of the SS3 base model.

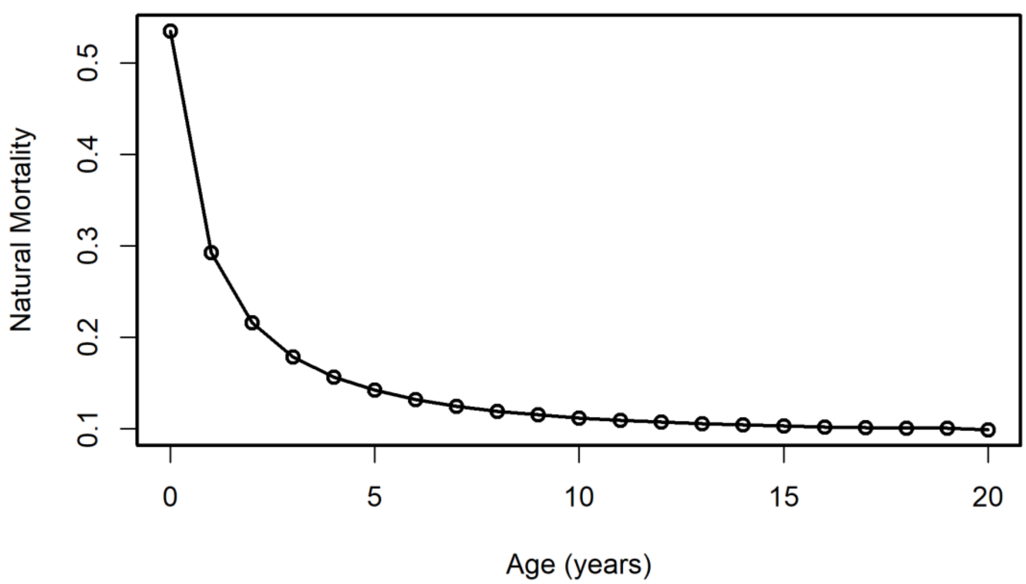


Figure 6: Age-specific natural mortality rate at age calculated from the Lorenzen curve and the M point estimate of 0.123. The 20-plus value is the mean M-at-age for ages ≥20 weighted by expected survivorship.

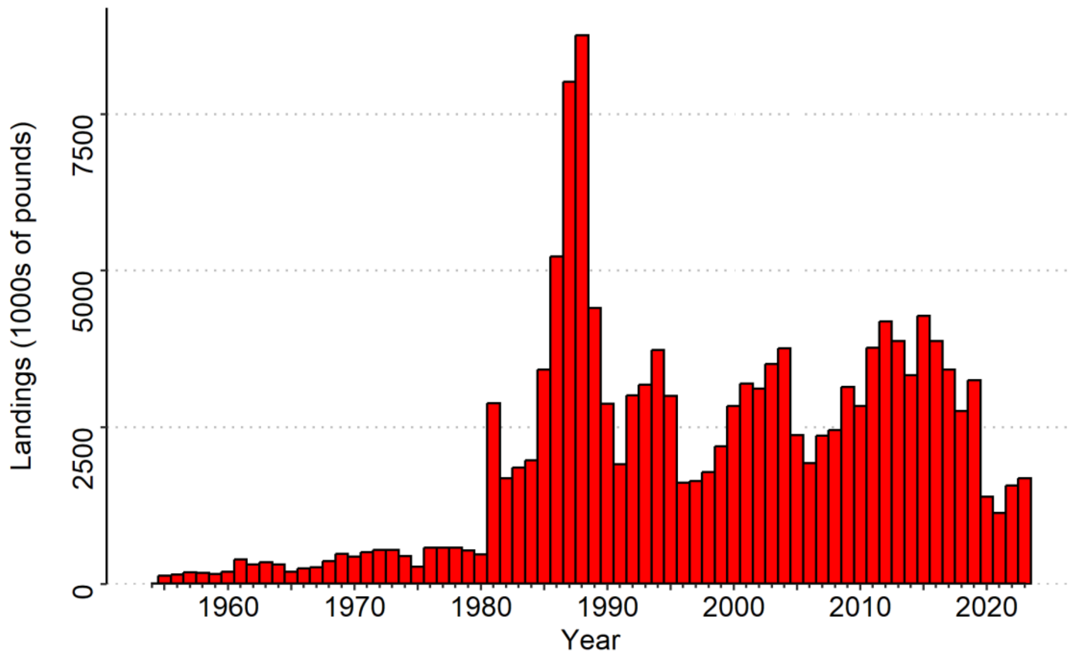


Figure 7: Observed commercial landings in pounds.

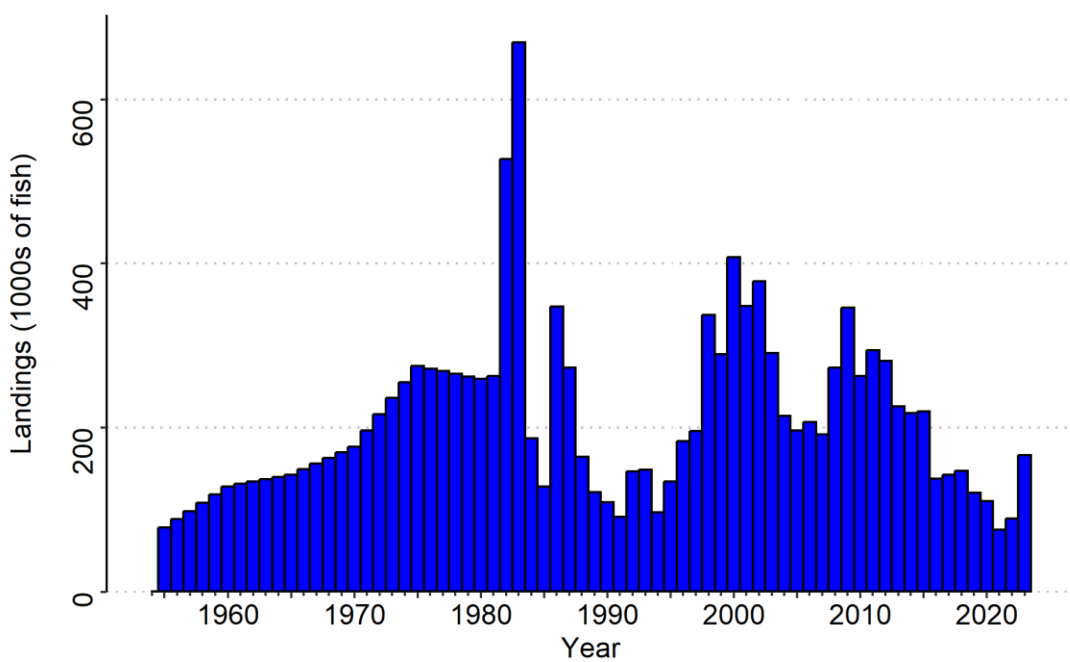


Figure 8: Observed recreational landings as numbers of fish.

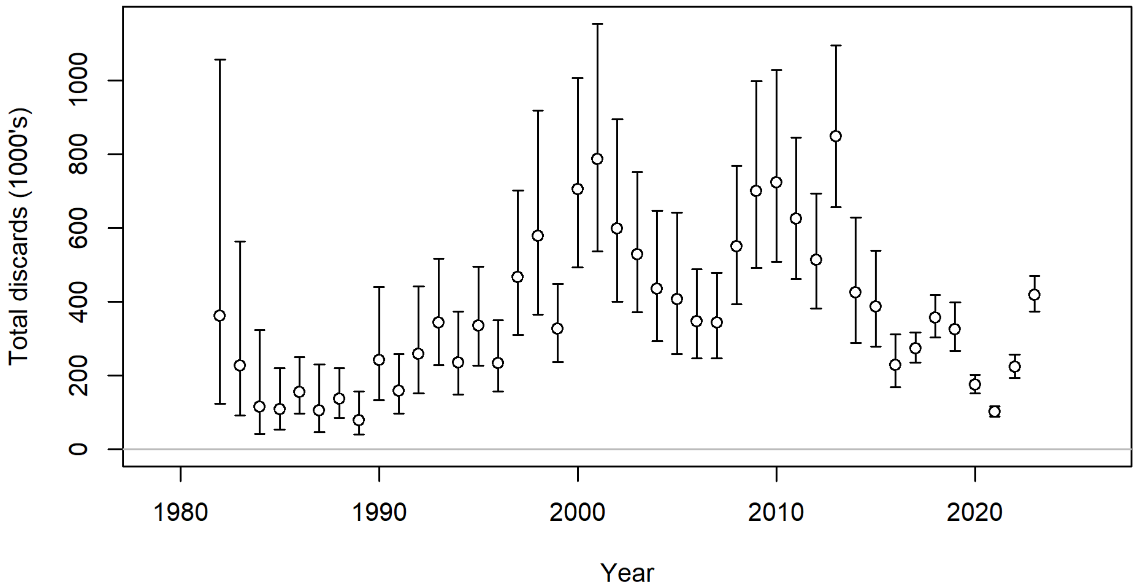


Figure 9: Observed recreational discards as numbers of fish and corresponding lognormal 95% confidence intervals.

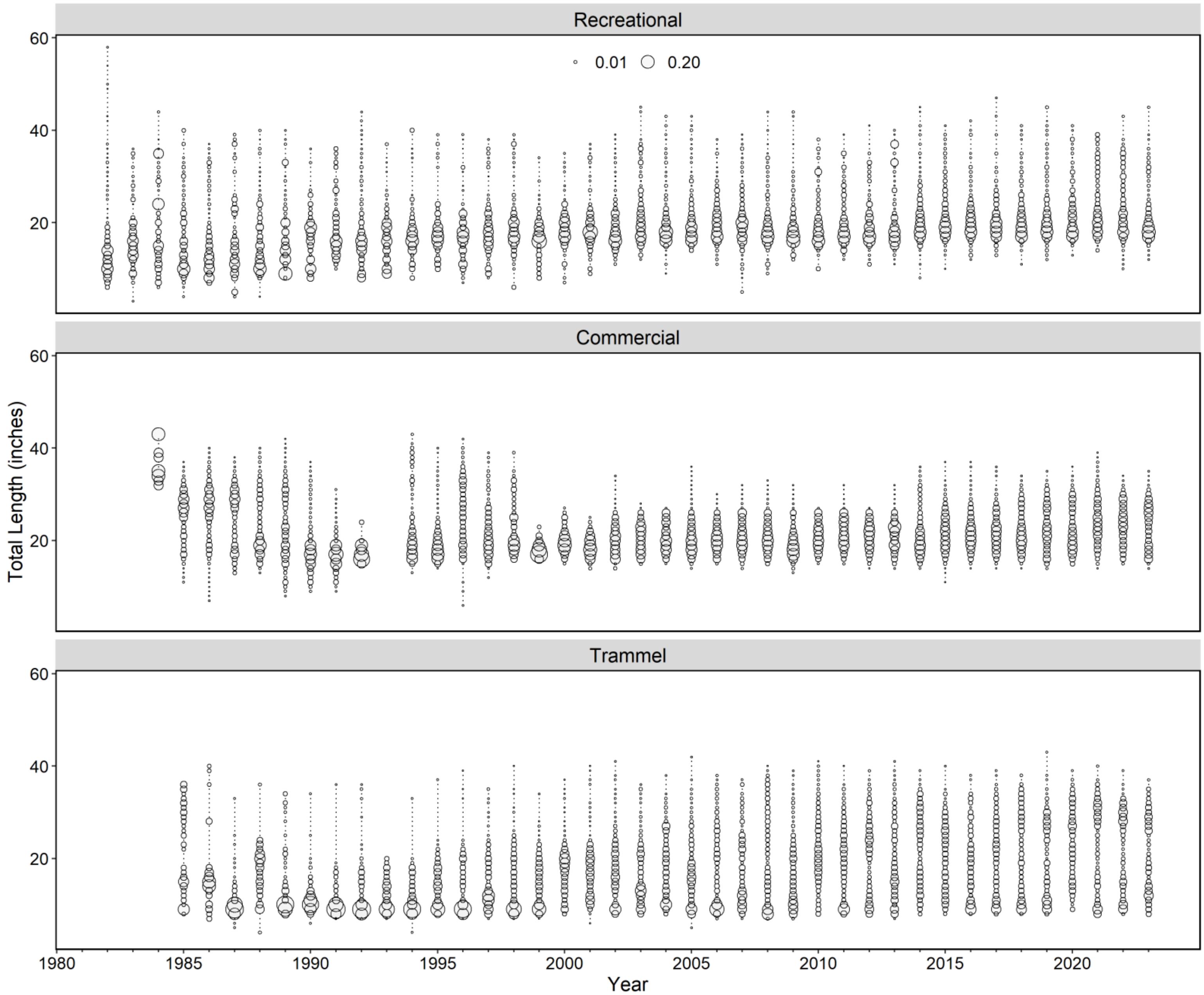


Figure 10: Observed size compositions of the fisheries and the LDWF trammel net survey.

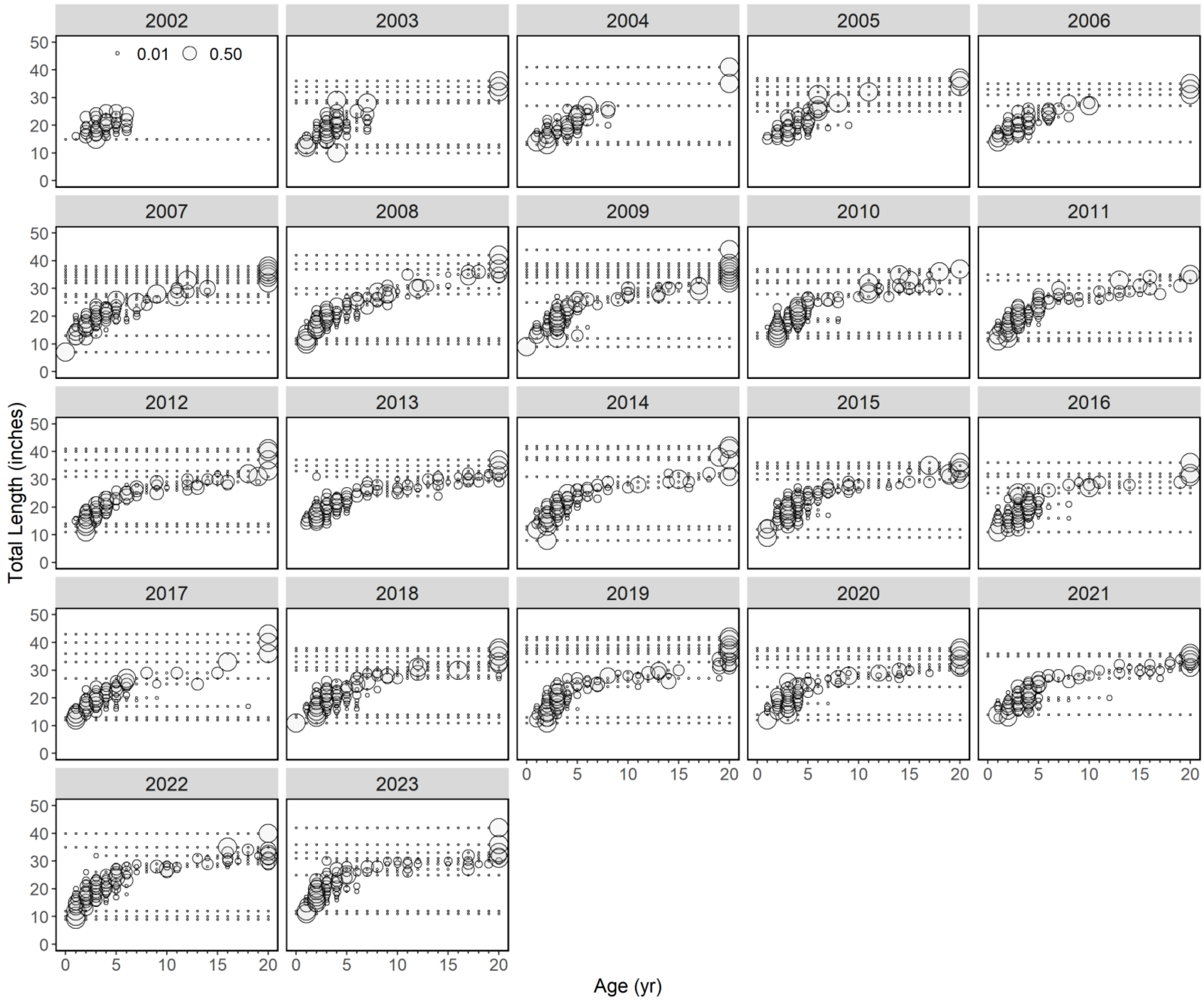


Figure 11: Observed age-at-length compositions of the recreational fishery.

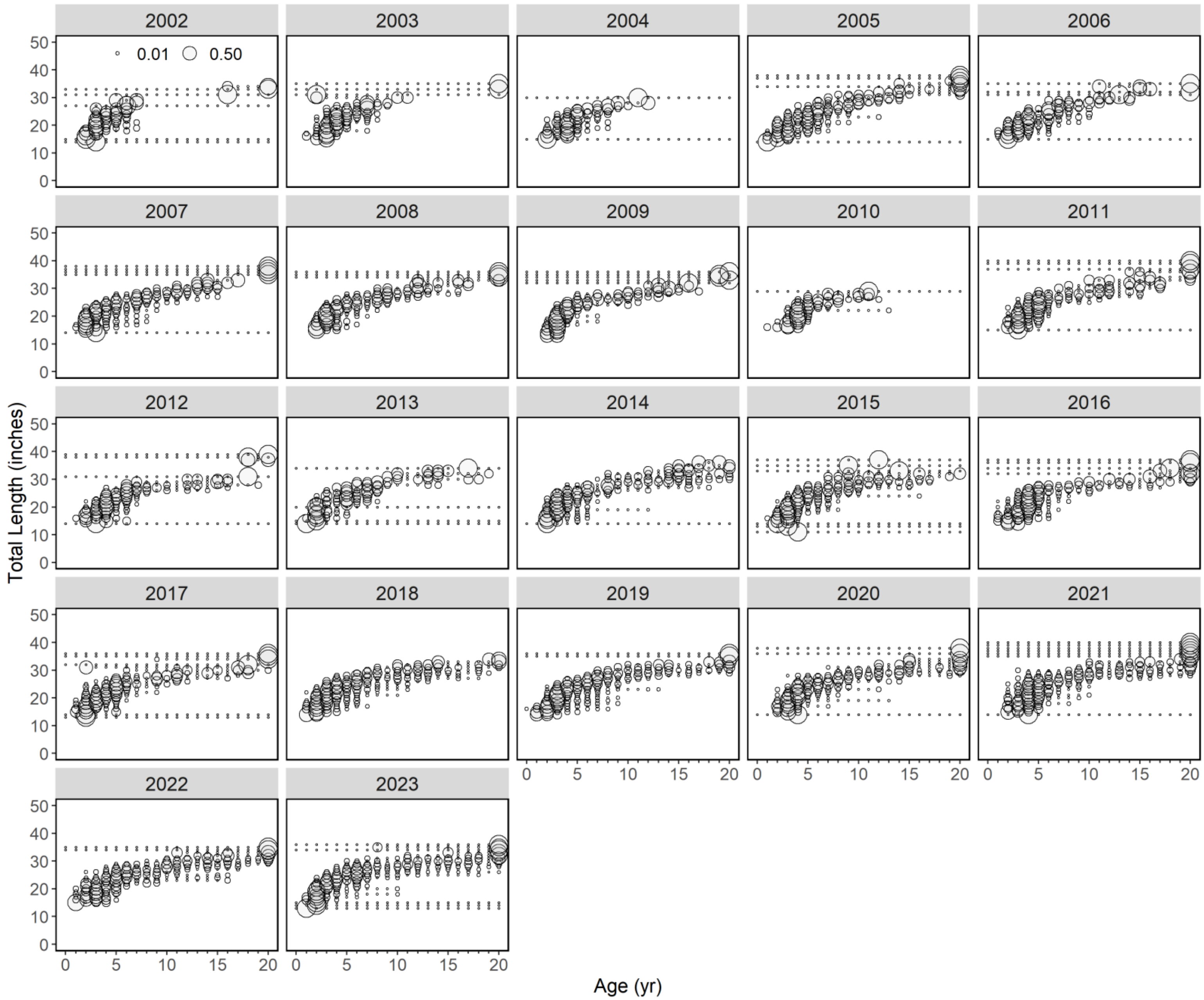


Figure 12: Observed age-at-length compositions of the commercial fishery.

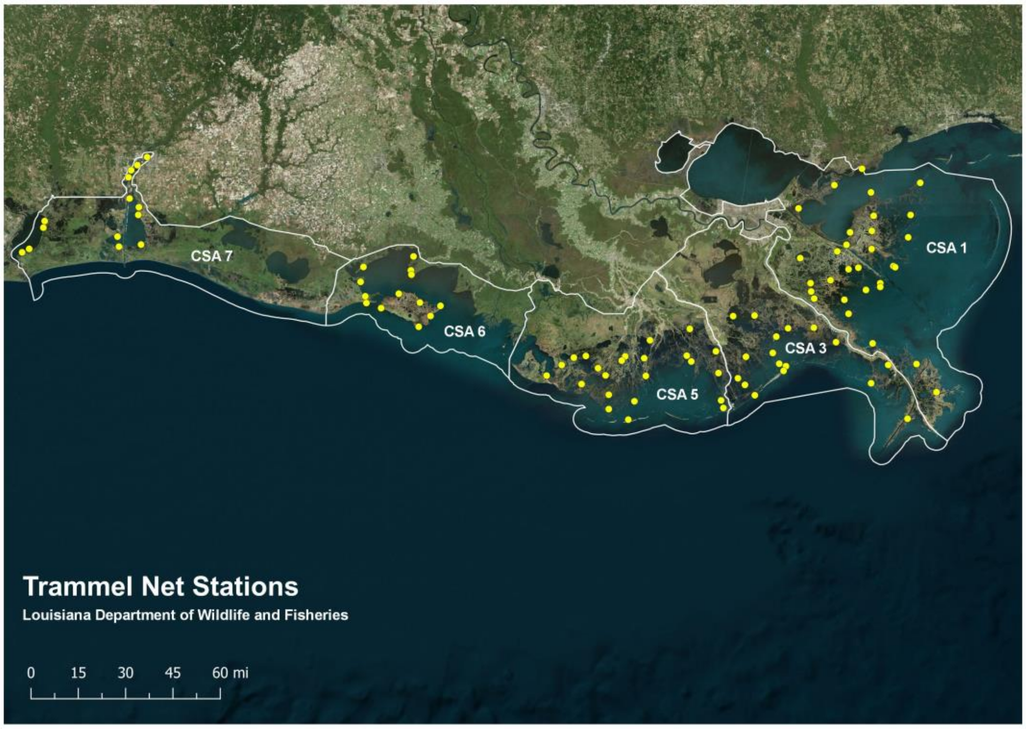


Figure 13: Station locations of the LDWF trammel net survey. Lines delineate LDWF Coastal Study Areas and state/federal waters.

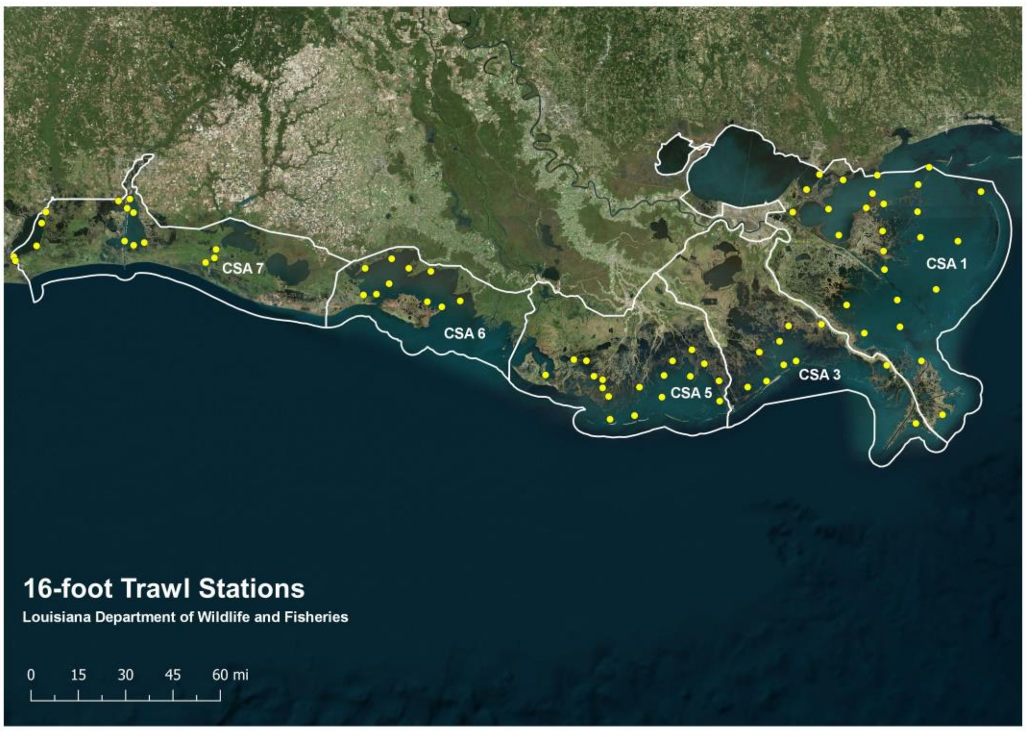


Figure 14: Station locations of the LDWF 16-foot inshore trawl survey. Lines delineate LDWF Coastal Study Areas and state/federal waters.

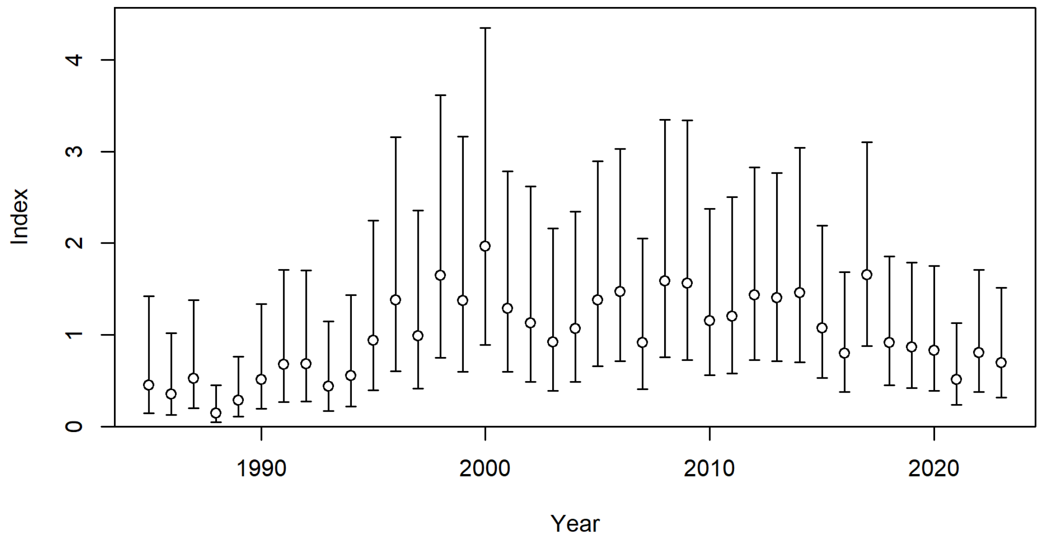


Figure 15: Observed index of relative abundance of the LDWF trammel net survey and corresponding lognormal 95% confidence intervals.

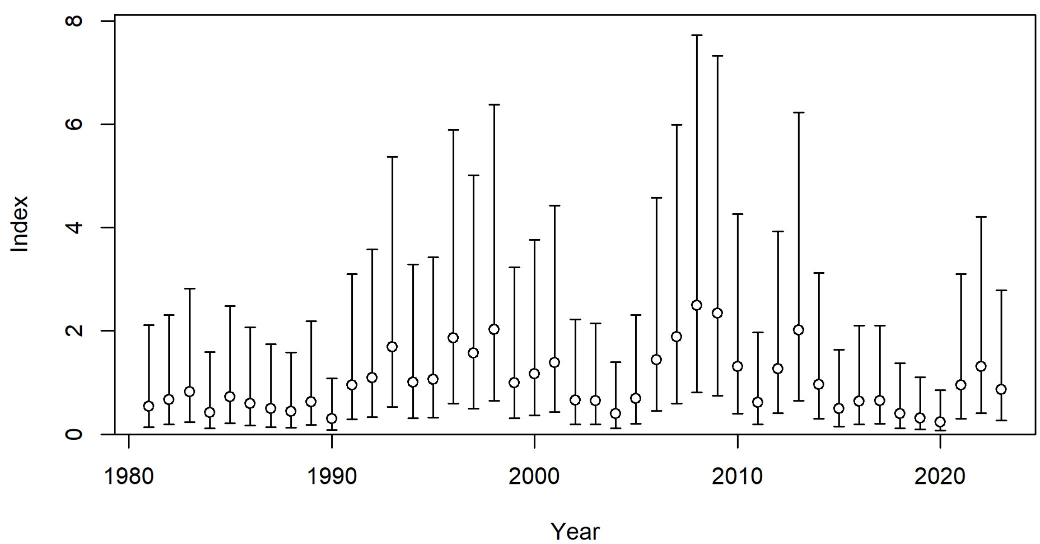


Figure 16: Observed index of age-0 relative abundance of the LDWF 16-foot inshore trawl survey and corresponding lognormal 95% confidence intervals.

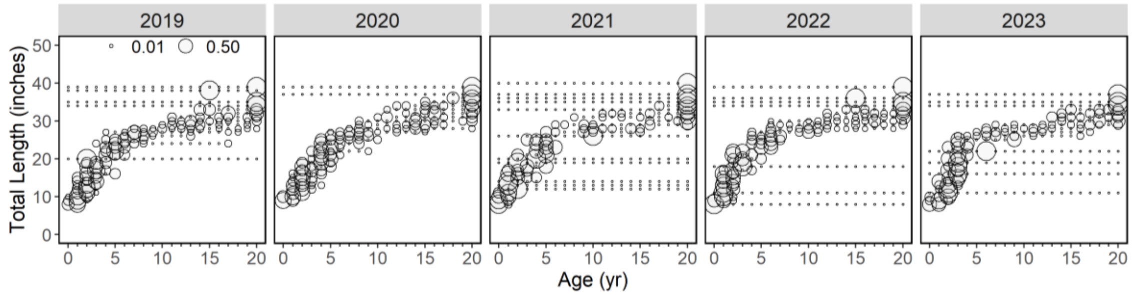


Figure 17: Observed age-at-length compositions of the LDWF trammel net survey.

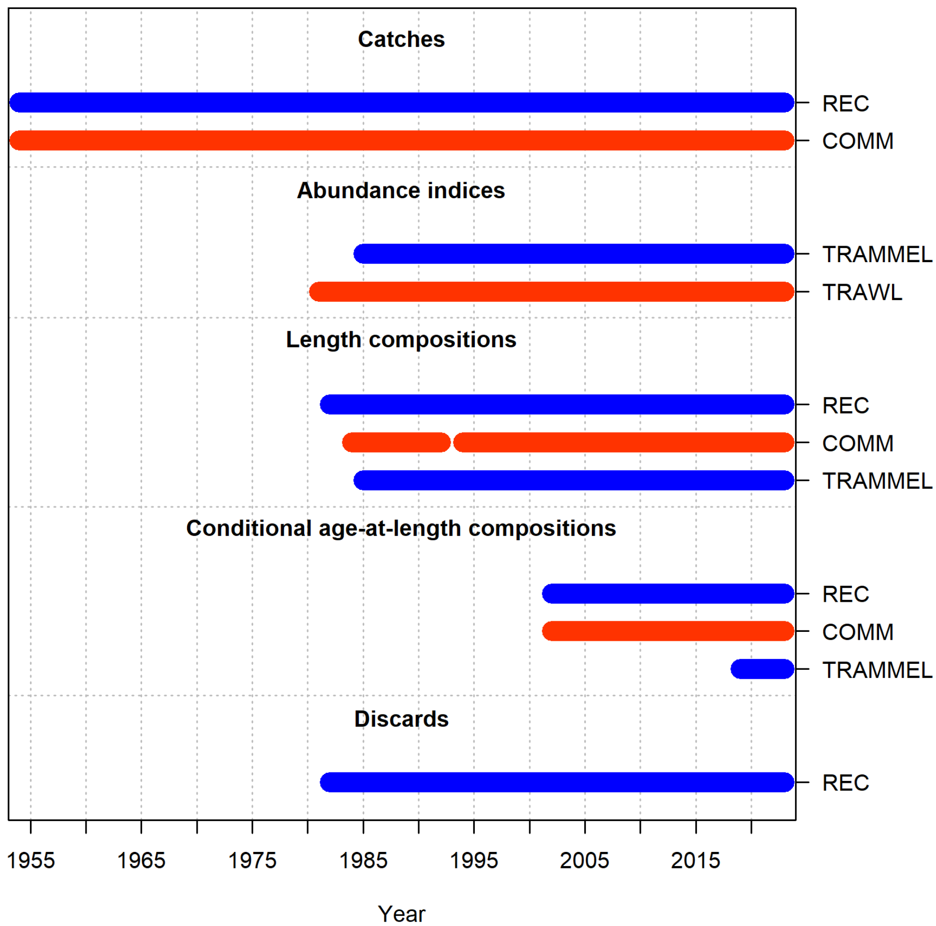


Figure 18: Data inputs of the SS3 base model.

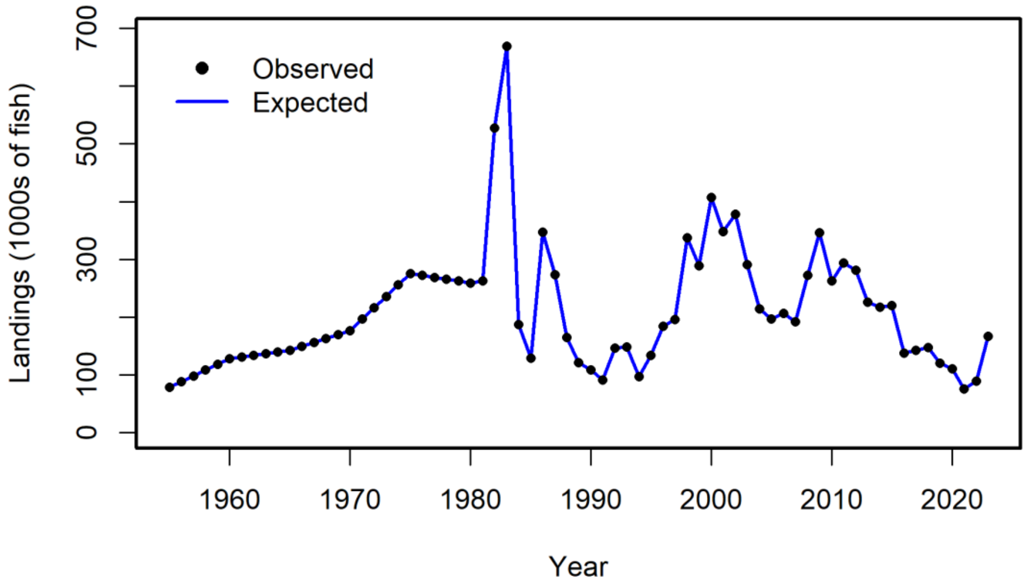


Figure 19: Observed and SS3 base model estimated recreational landings as numbers of fish.

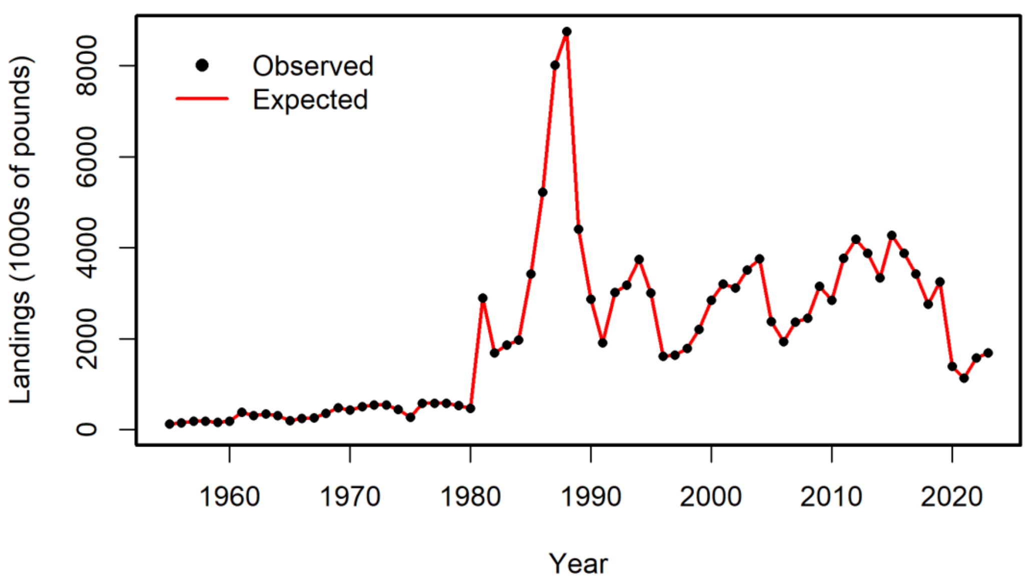


Figure 20: Observed and SS3 base model estimated commercial landings in pounds.

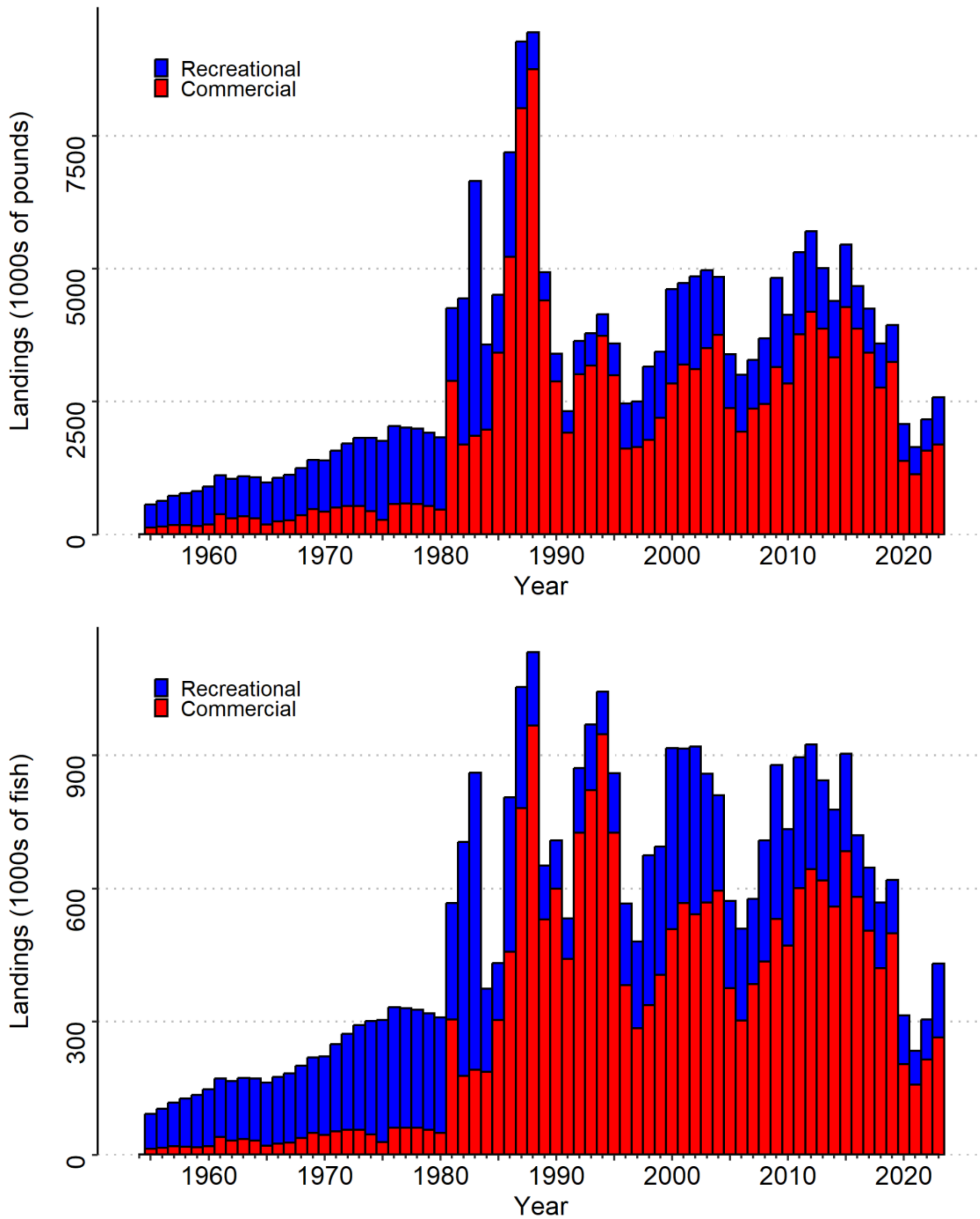


Figure 21: SS3 base model estimated landings in pounds (top) and as numbers of fish (bottom).

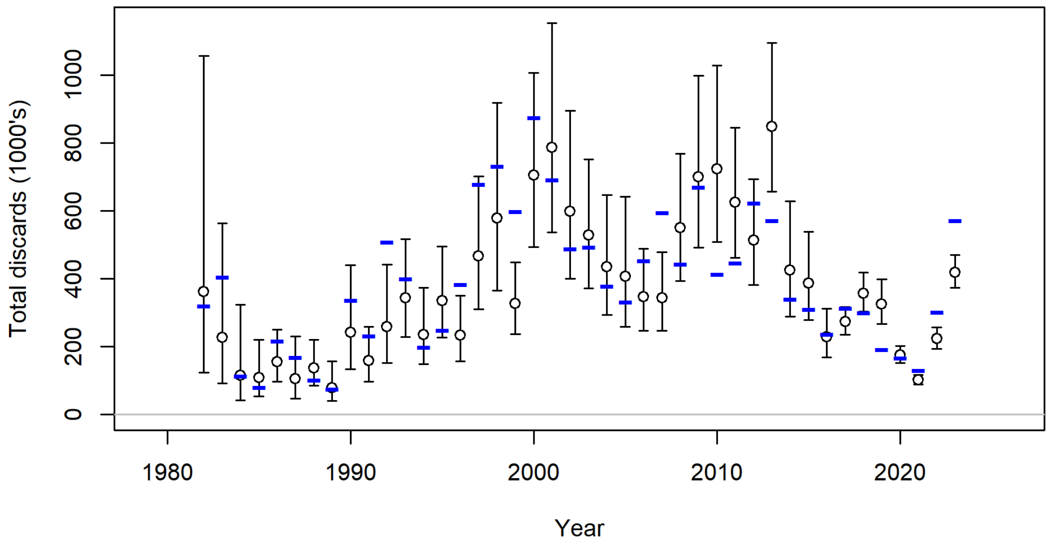


Figure 22: Observed and SS3 base model estimated discards of the recreational fishery with corresponding lognormal 95% confidence intervals.

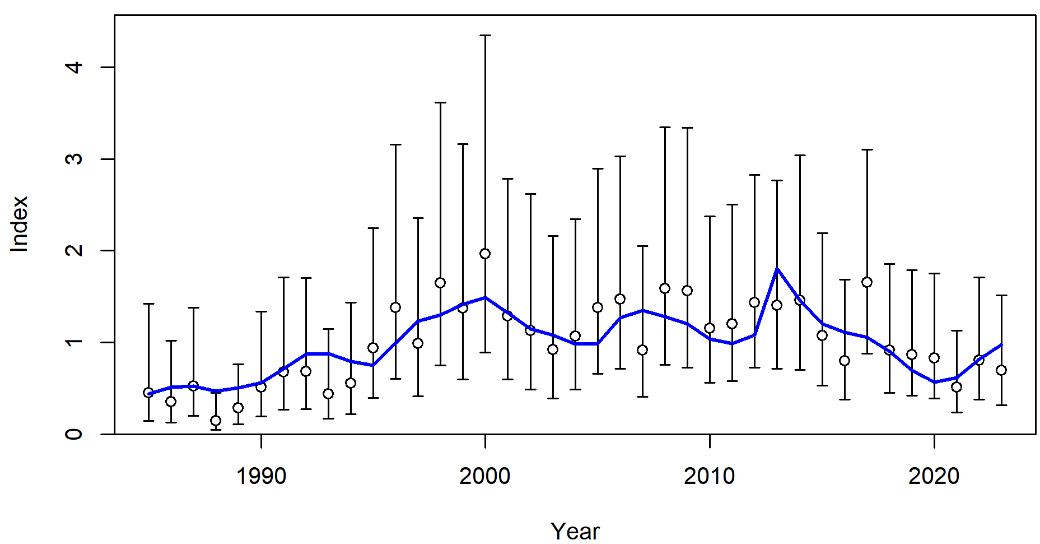


Figure 23: Observed and SS3 base model estimated index of relative abundance of the LDWF trammel net survey with corresponding lognormal 95% confidence intervals.

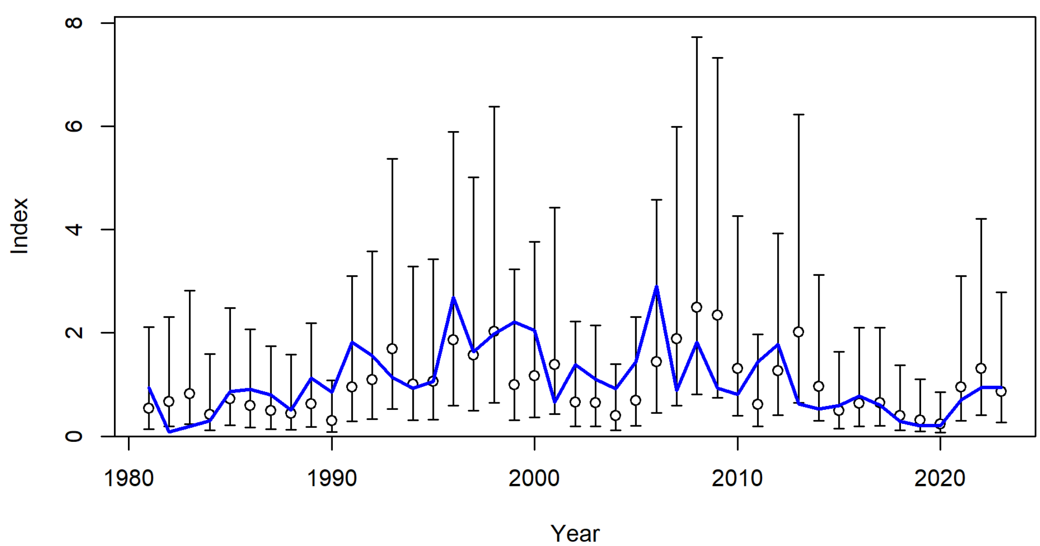


Figure 24: Observed and SS3 base model estimated index of age-0 relative abundance of the LDWF 16-foot inshore otter trawl survey with corresponding lognormal 95% confidence intervals.

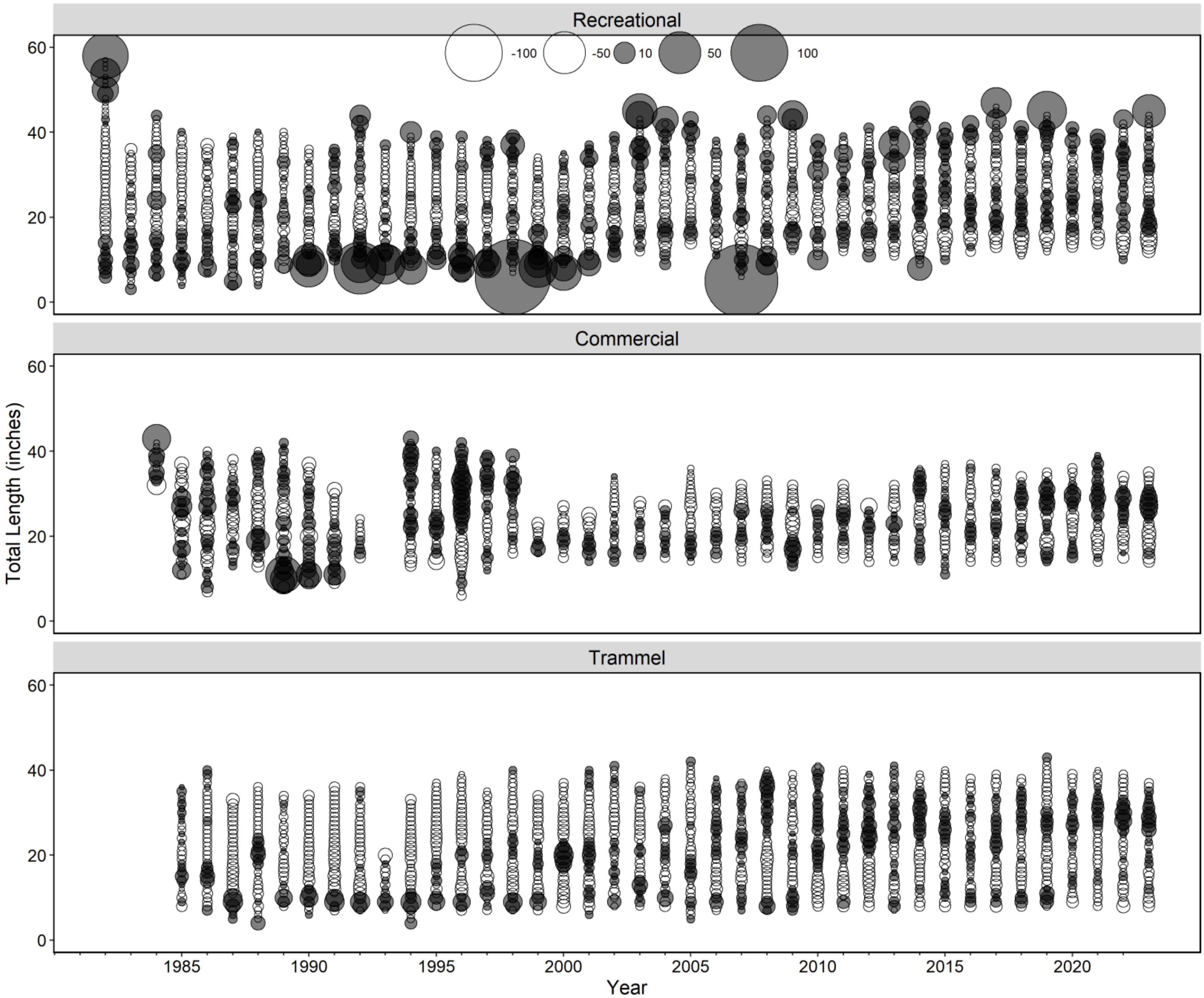


Figure 25: Pearson residuals of length composition fits of the fisheries and the LDWF trammel net survey. Dark bubbles represent instances where observed values are greater than the predicted values and clear bubbles represent instances where observed values are less than the predicted values.

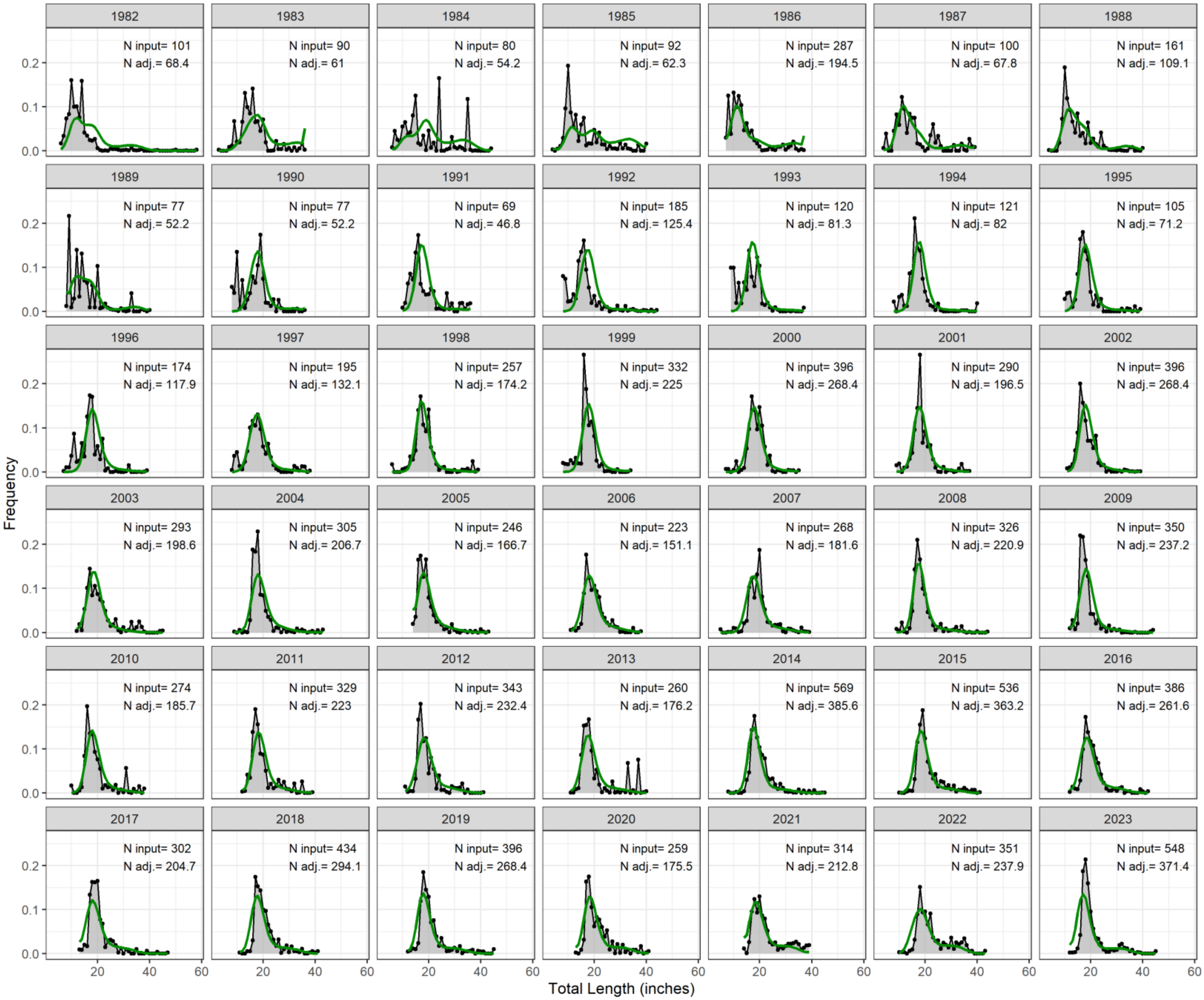


Figure 26: Observed and SS3 base model estimated size compositions of the recreational fishery. Input samples sizes (N input) and effective sample sizes adjusted by the estimated Dirichlet-multinomial multiplier (N adj.) are reported in each figure.

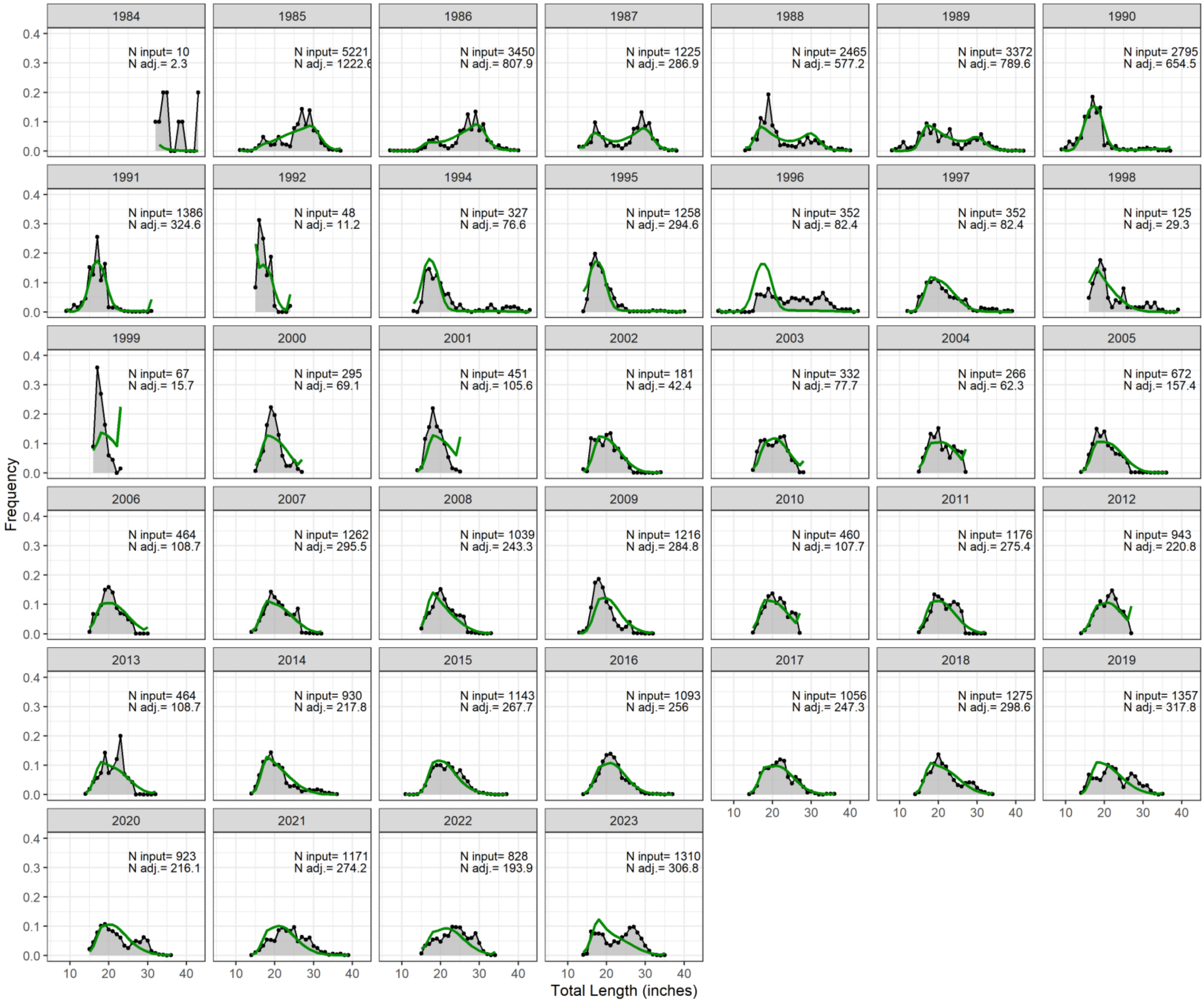


Figure 27: Observed and SS3 base model estimated size compositions of the commercial fishery. Input samples sizes (N input) and effective sample sizes adjusted by the estimated Dirichlet-multinomial multiplier (N adj.) are reported in each figure.

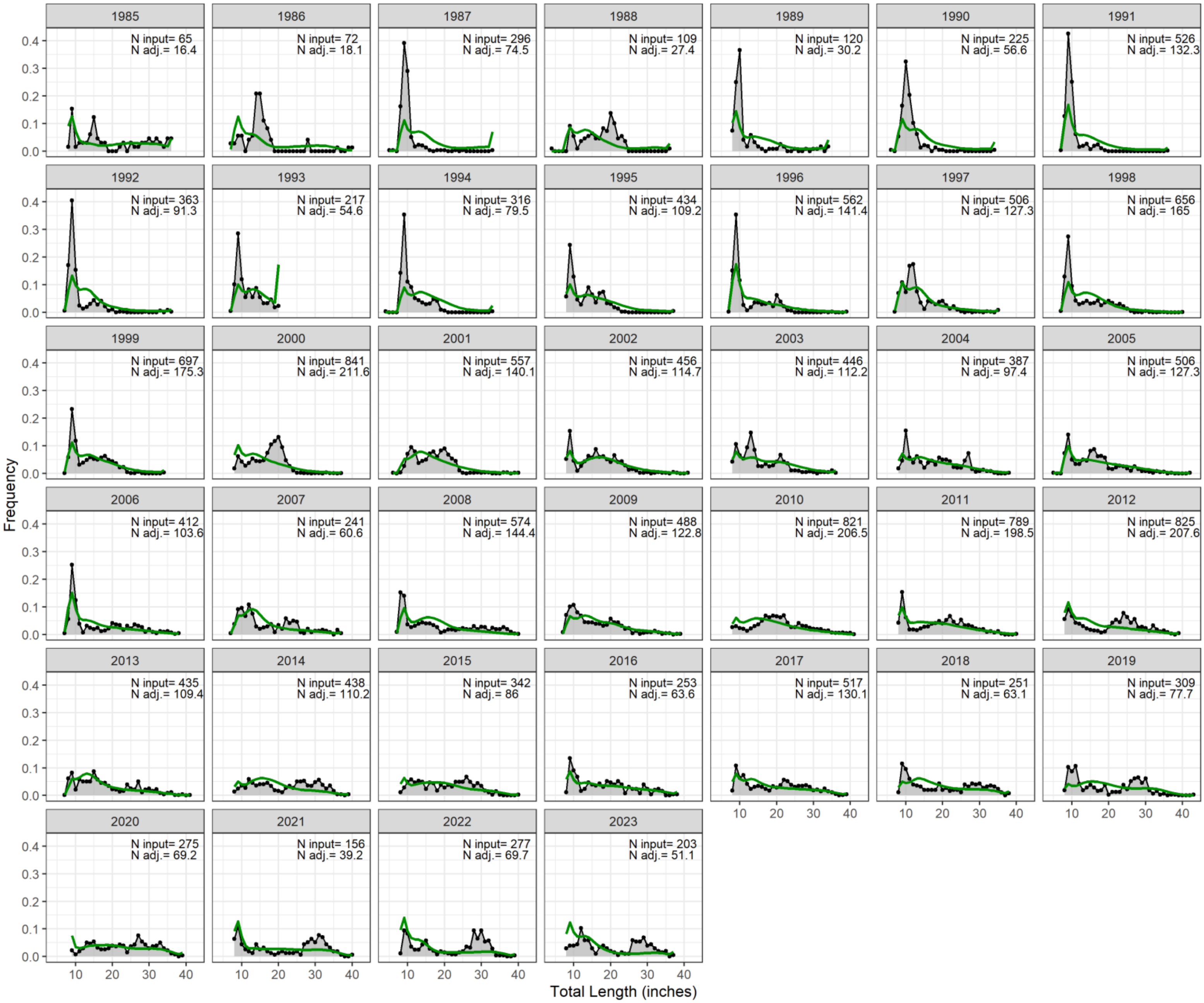


Figure 28: Observed and SS3 base model estimated size compositions of the LDWF trammel net survey. Input samples sizes (N input) and effective sample sizes adjusted by the estimated Dirichlet-multinomial multiplier (N adj.) are reported in each figure.

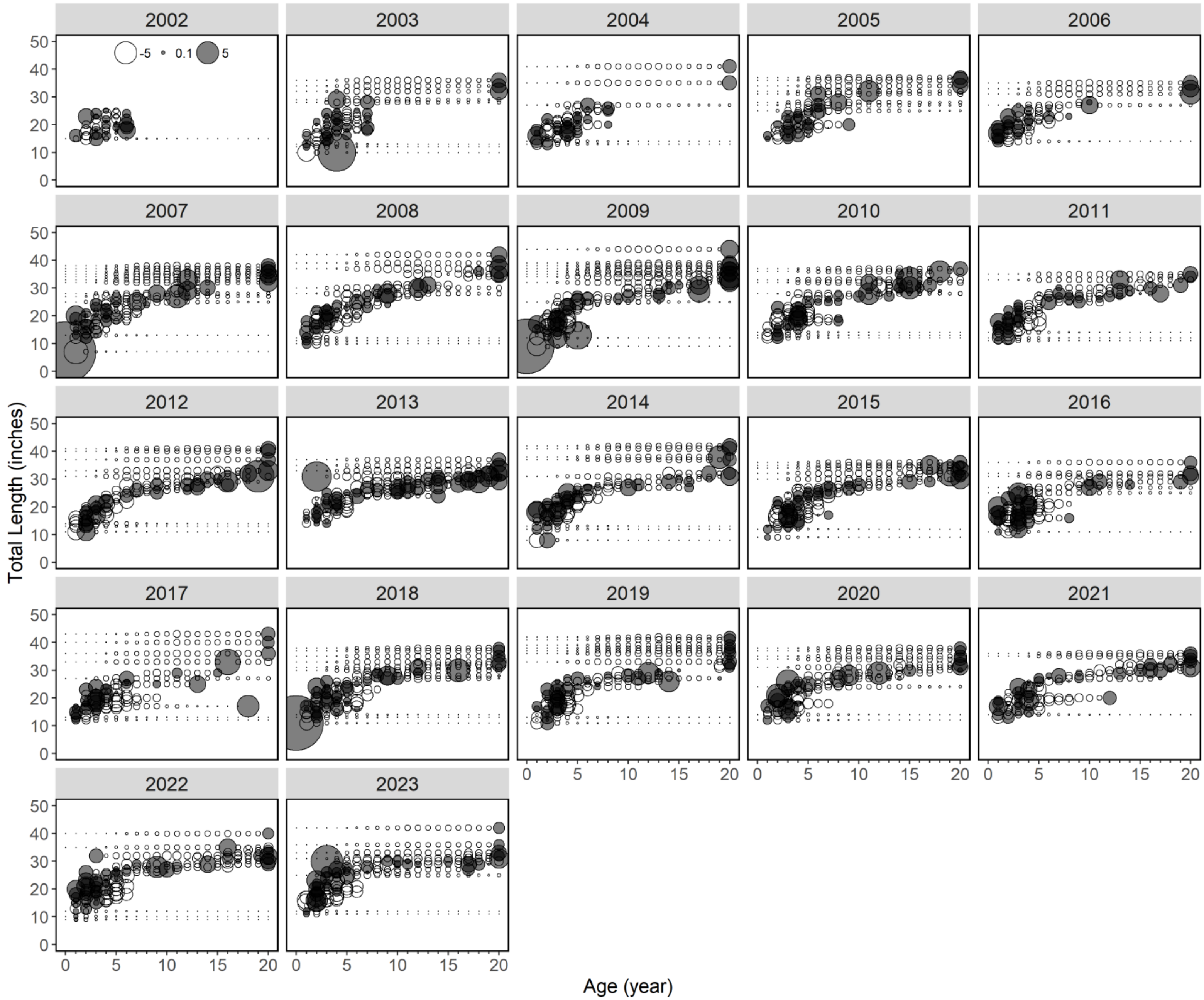


Figure 29: Pearson residuals of the conditional age-at-length composition fits of the recreational fishery. Dark bubbles represent instances where observed values are greater than the predicted values and clear bubbles represent instances where observed values are less than the predicted values.

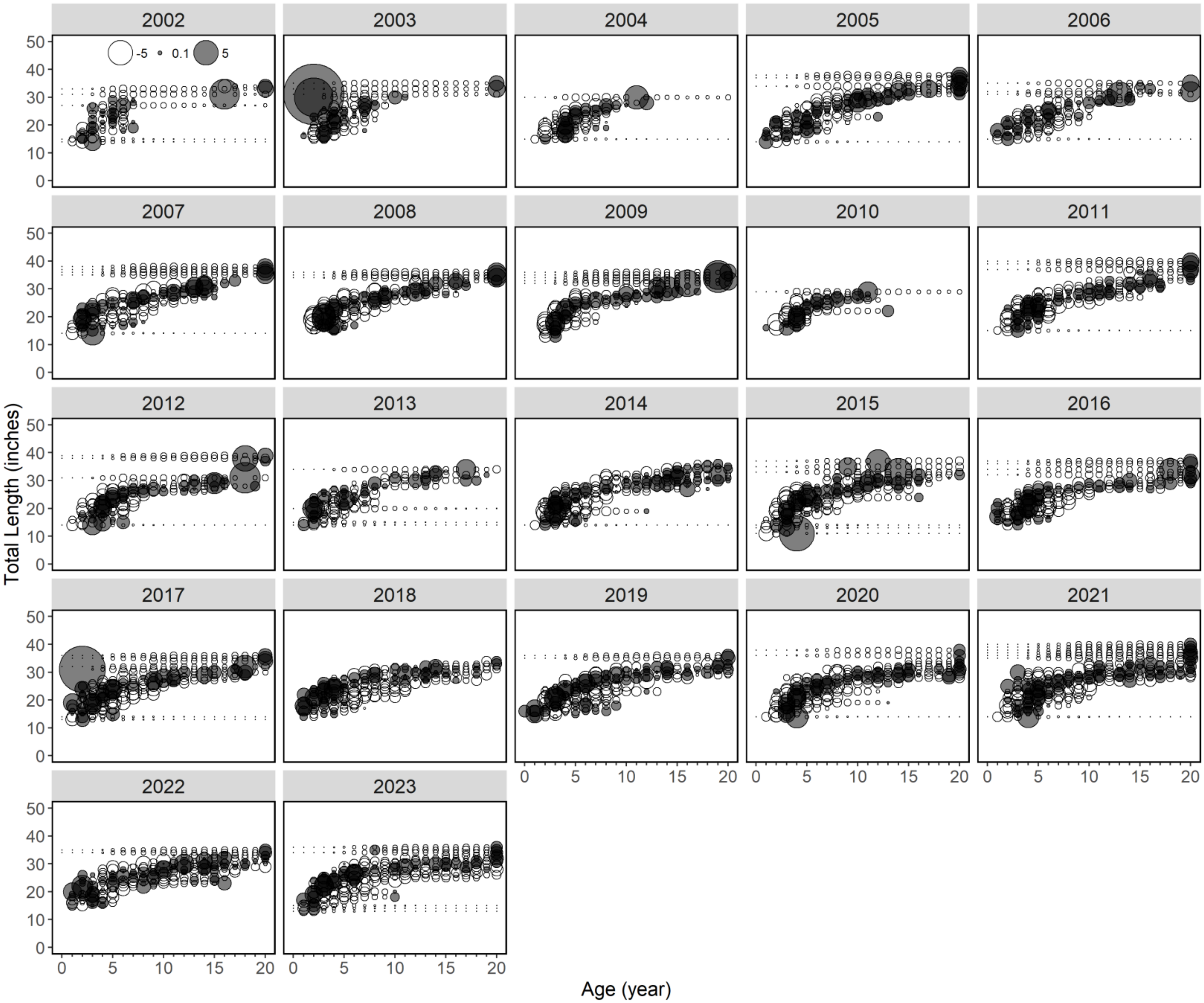


Figure 30: Pearson residuals of the conditional age-at-length composition fits of the commercial fishery. Dark bubbles represent instances where observed values are greater than the predicted values and clear bubbles represent instances where observed values are less than the predicted values.

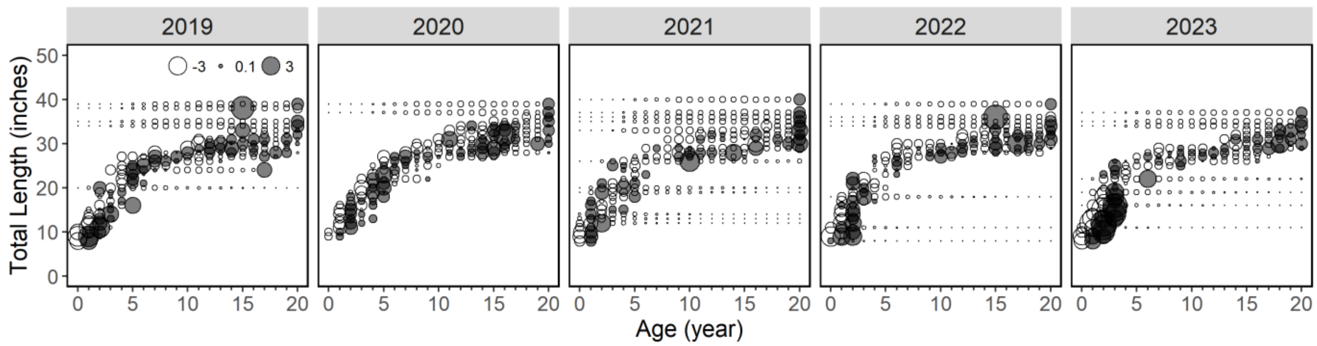


Figure 31: Pearson residuals of the conditional age-at-length composition fits of the LDWF trammel net survey. Dark bubbles represent instances where observed values are greater than the predicted values and clear bubbles represent instances where observed values are less than the predicted values.

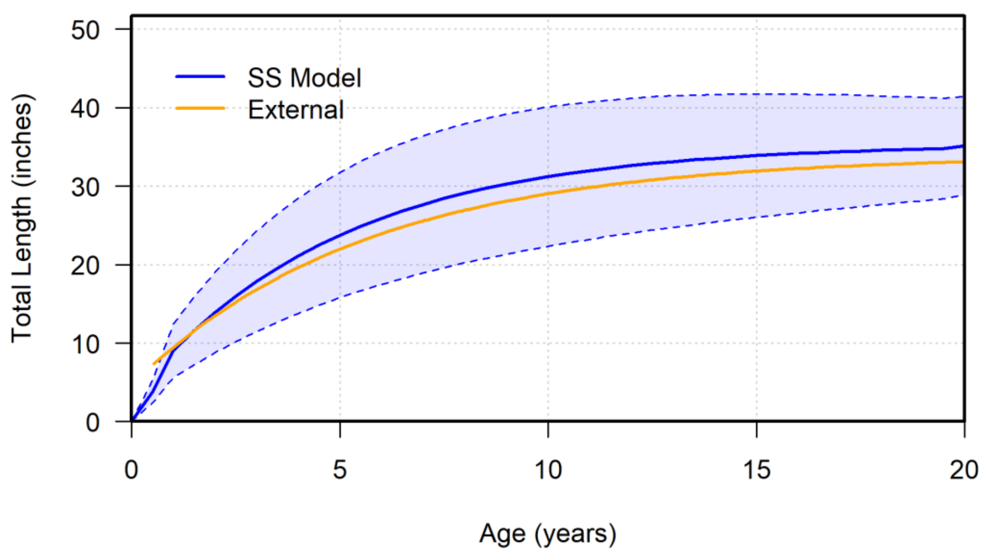


Figure 32: SS3 base model estimated mean length-at-age and 95% confidence distribution (shaded area) along with the external estimates of mean length-at-age. Parameter estimates of the SS3 base model estimated growth function are presented in Table 7.

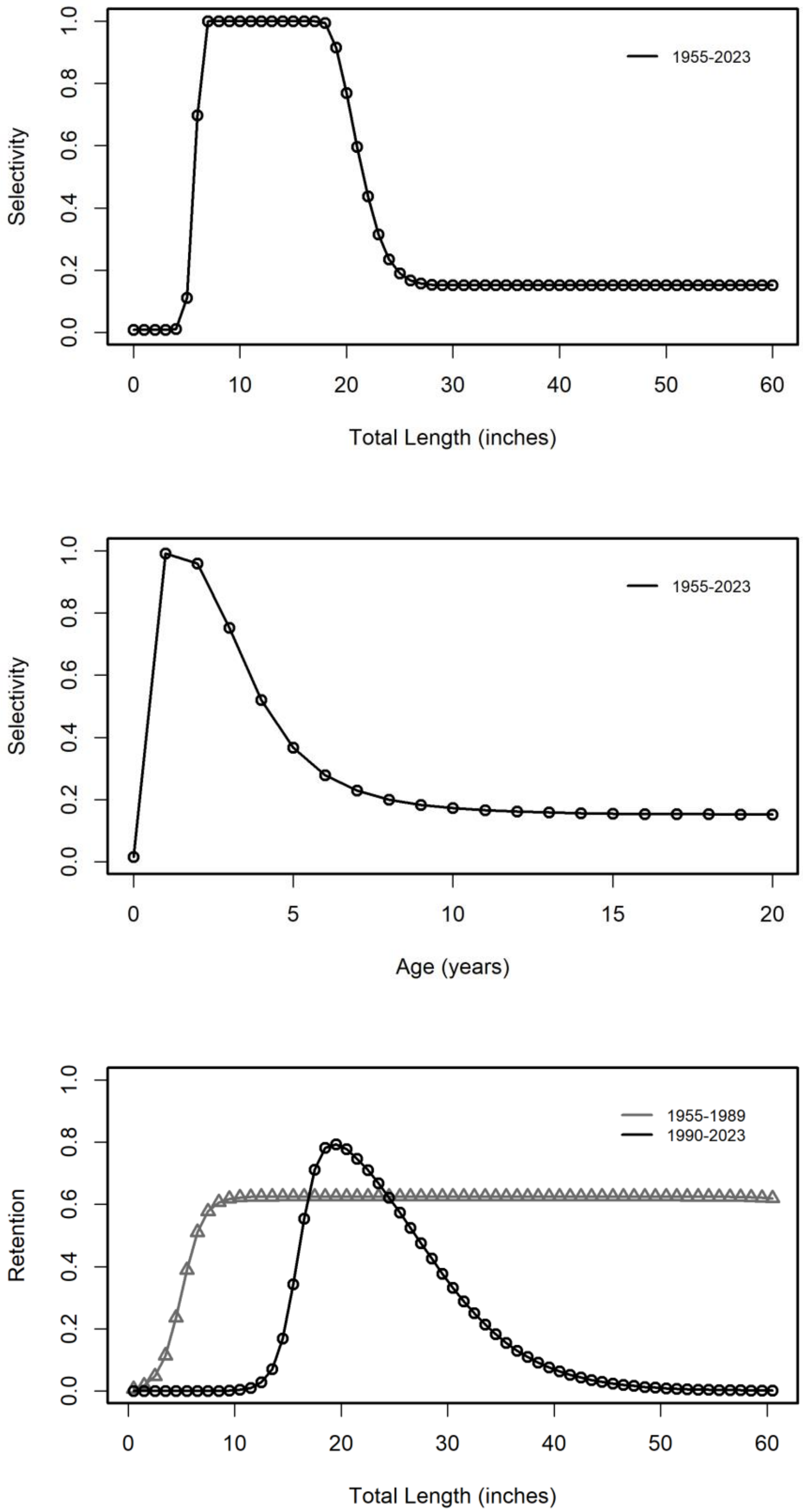


Figure 33: Estimated selectivity at size (top), selectivity at age (middle), and retention at size (bottom) functions of the recreational fishery. Retention functions represent each time block of consistent regulation.

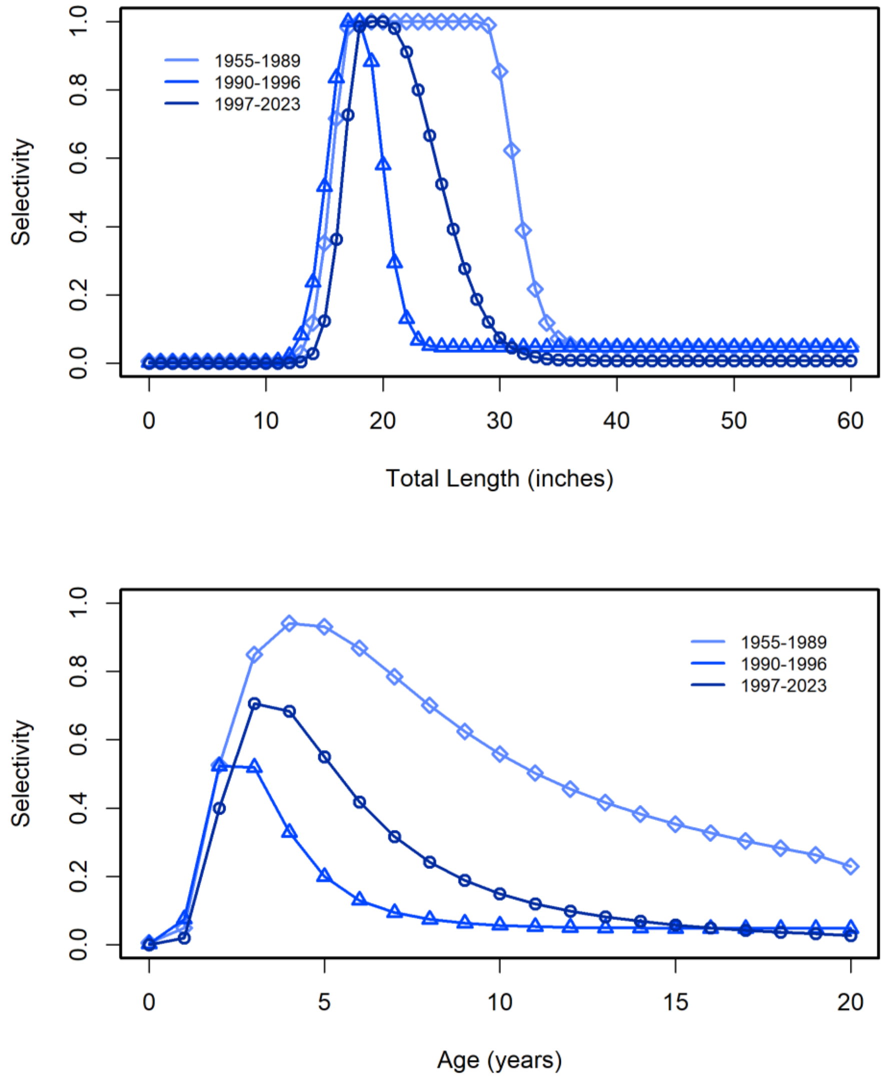


Figure 34: Estimated selectivity at size (top) and selectivity at age (bottom) functions of the commercial fishery for each time block of consistent regulation.

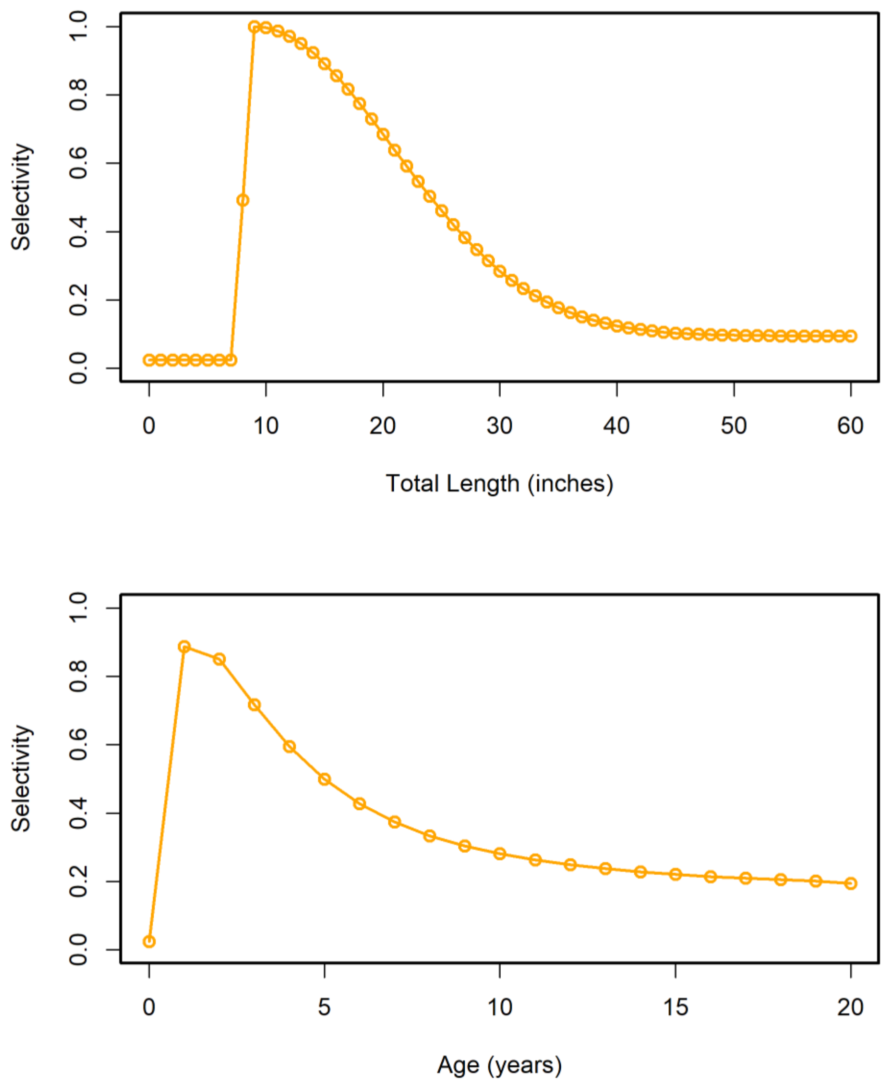
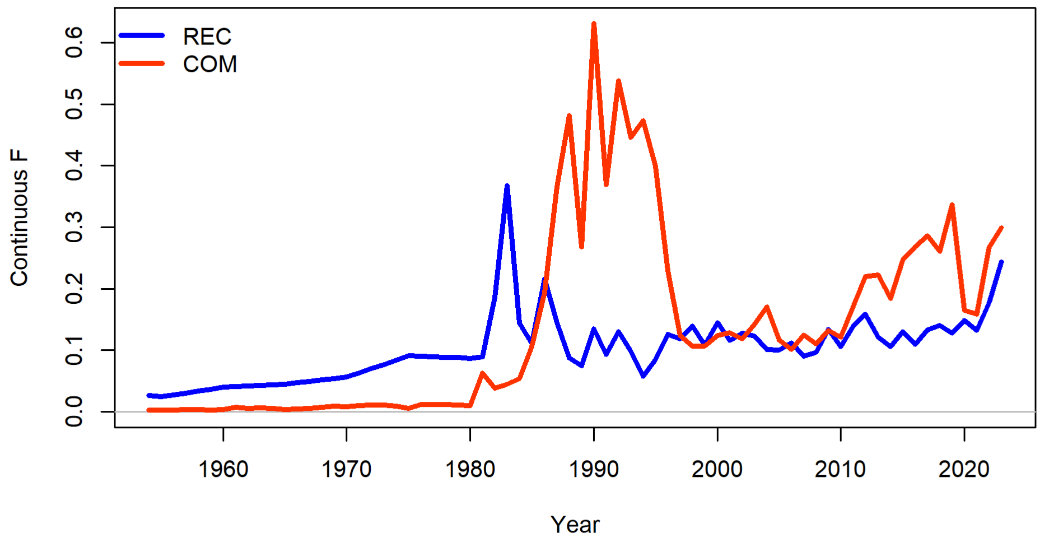


Figure 35: Estimated selectivity at size (top) and selectivity at age (bottom) functions of the LDWF trammel net survey.



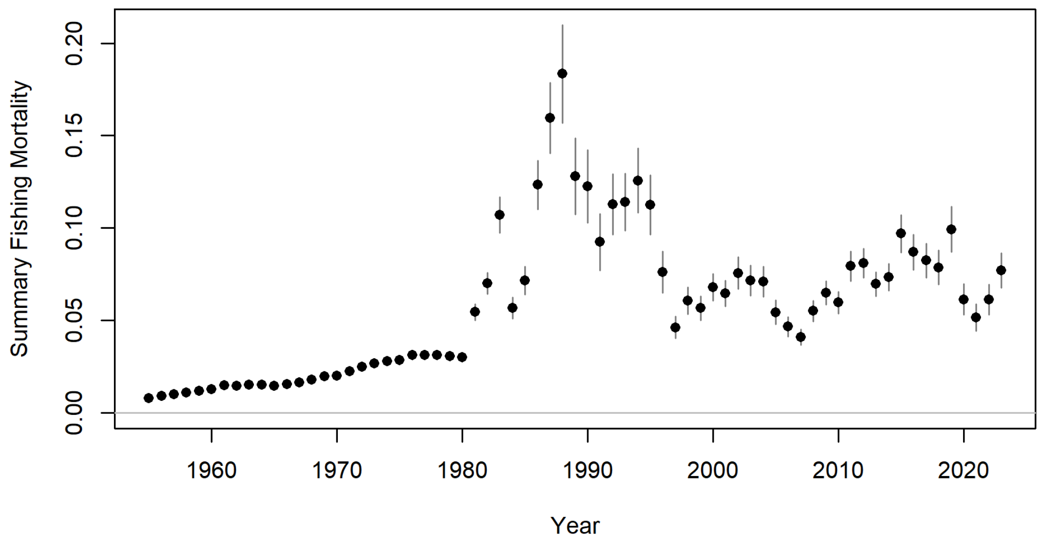


Figure 36: Fleet-specific apical fishing mortalities (top) and exploitation rate (summary F; bottom) estimates of the SS3 base model.

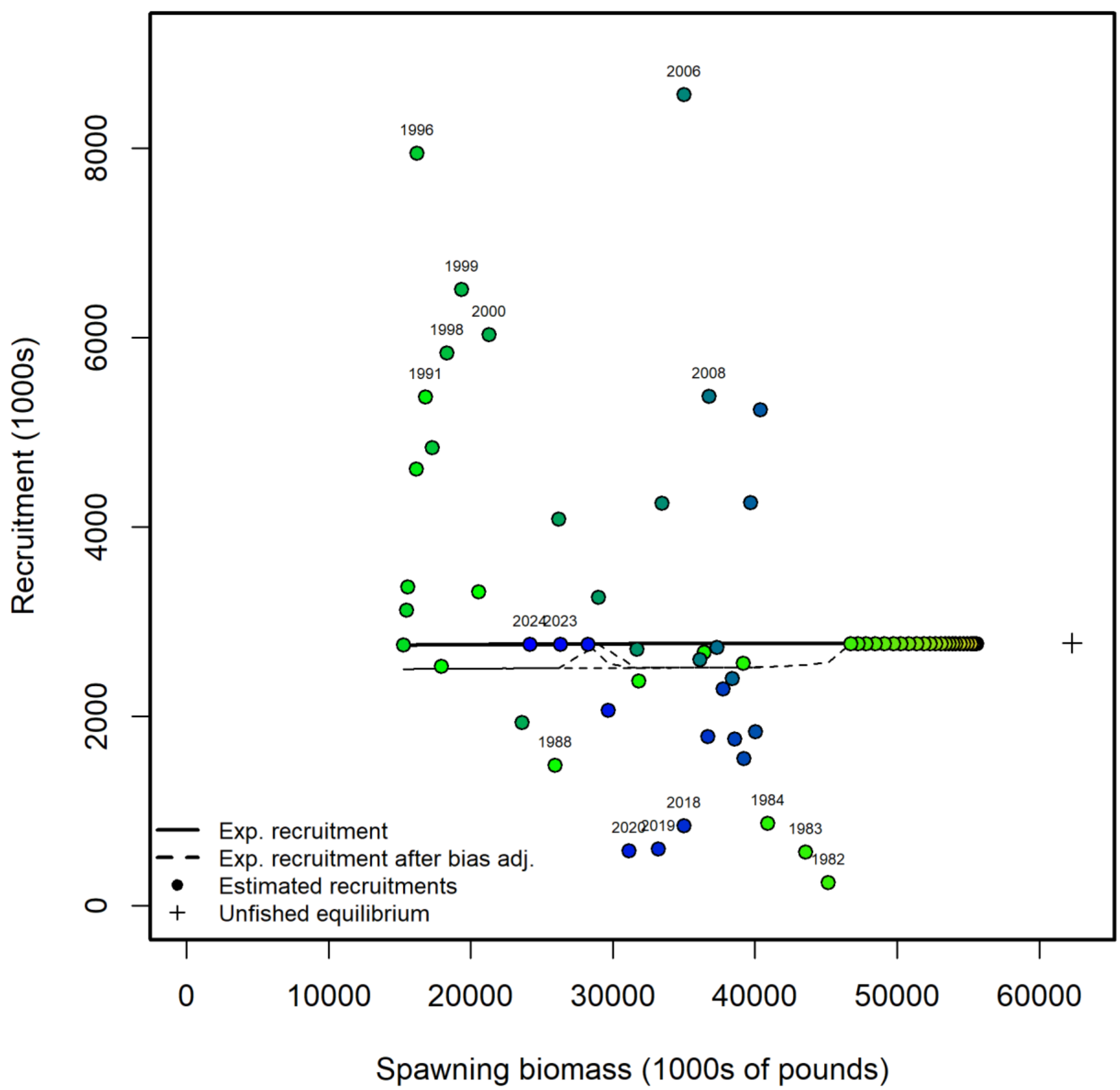
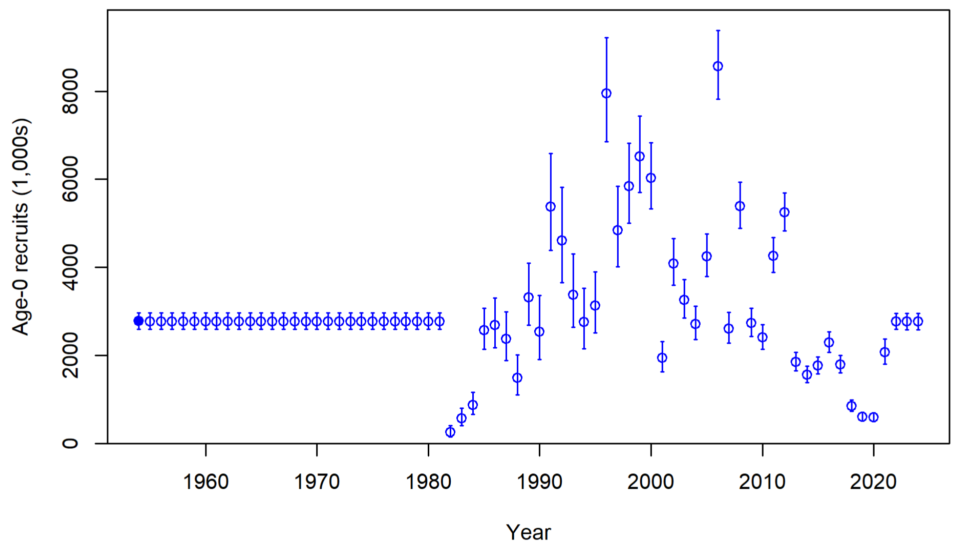


Figure 37: Estimated Beverton-Holt stock-recruitment relationship of the SS3 base model with steepness fixed at 0.99. Estimated age-0 recruitment/SSB pairs are plotted along with the expected Beverton-Holt recruitment (solid line) and the expected recruitment after lognormal bias adjustment (dashed line).



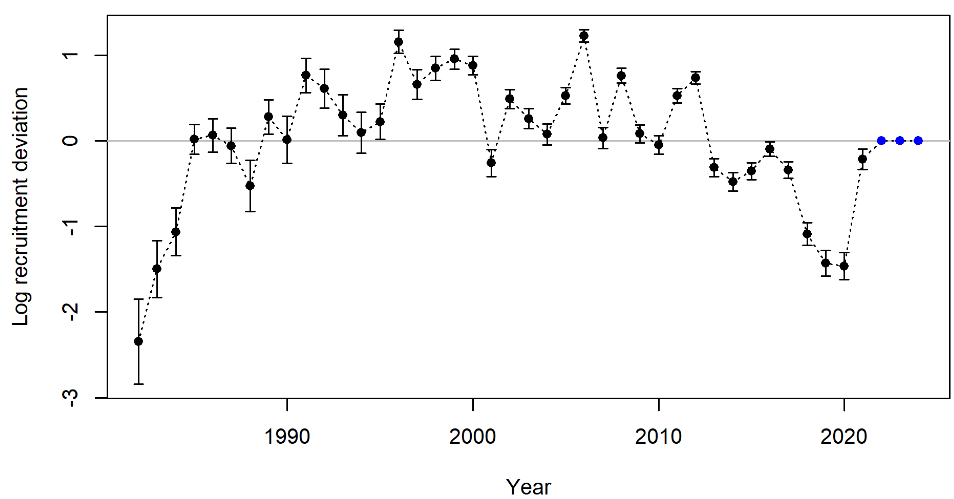


Figure 38: Annual age-0 recruitment (top) and lognormal recruitment deviations (bottom) estimates of the SS3 base model along with the 95% asymptotic confidence intervals of the estimates.

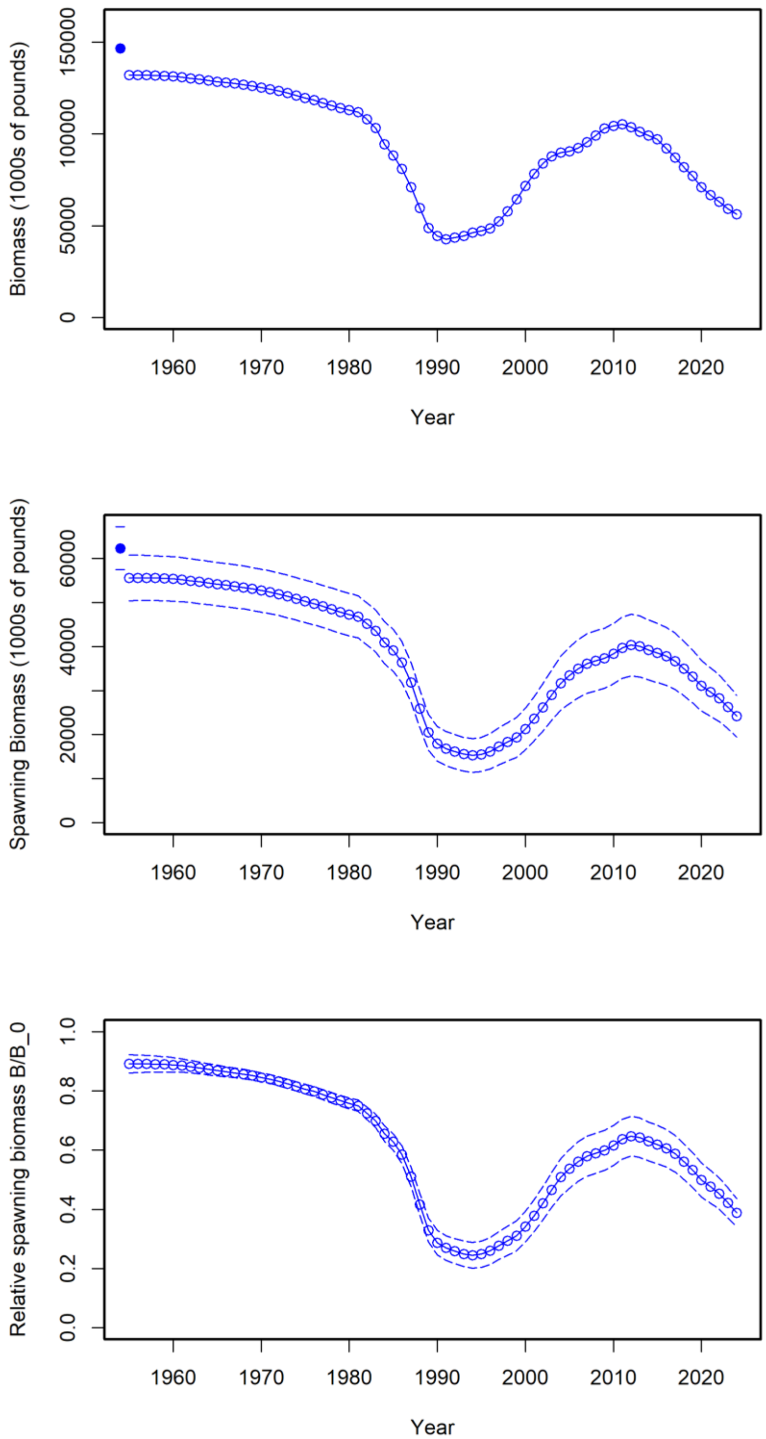


Figure 39: Annual biomass > age-0 (top), spawning biomass (middle), and relative spawning biomass (bottom) estimates of the SS3 base model along with the 95% asymptotic confidence intervals of spawning and relative spawning biomass time series.

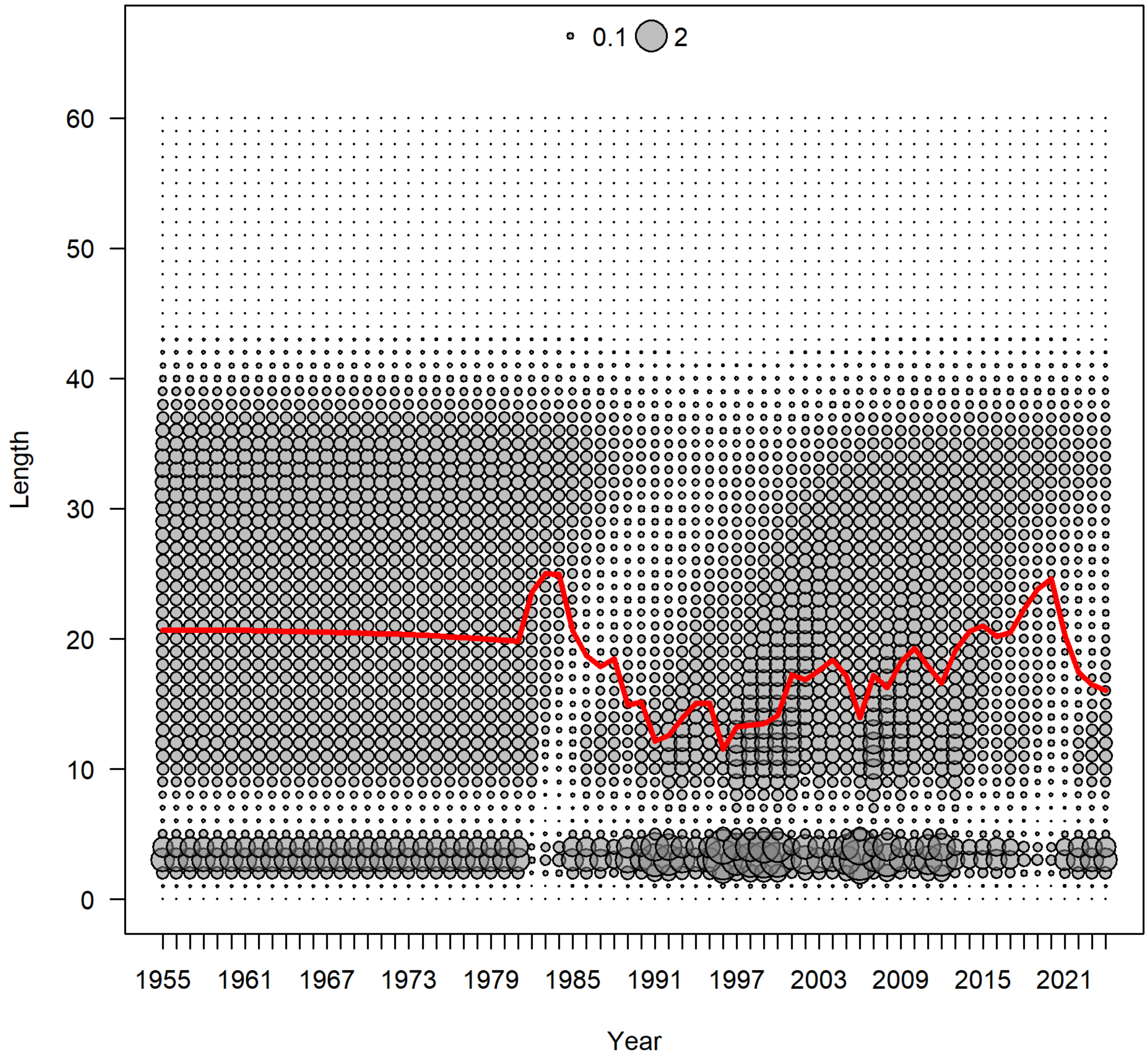


Figure 40: Annual beginning of the year abundance at length (inches total length) estimates (bubbles) from the SS3 base model along with the annual mean length of the stock (red line).

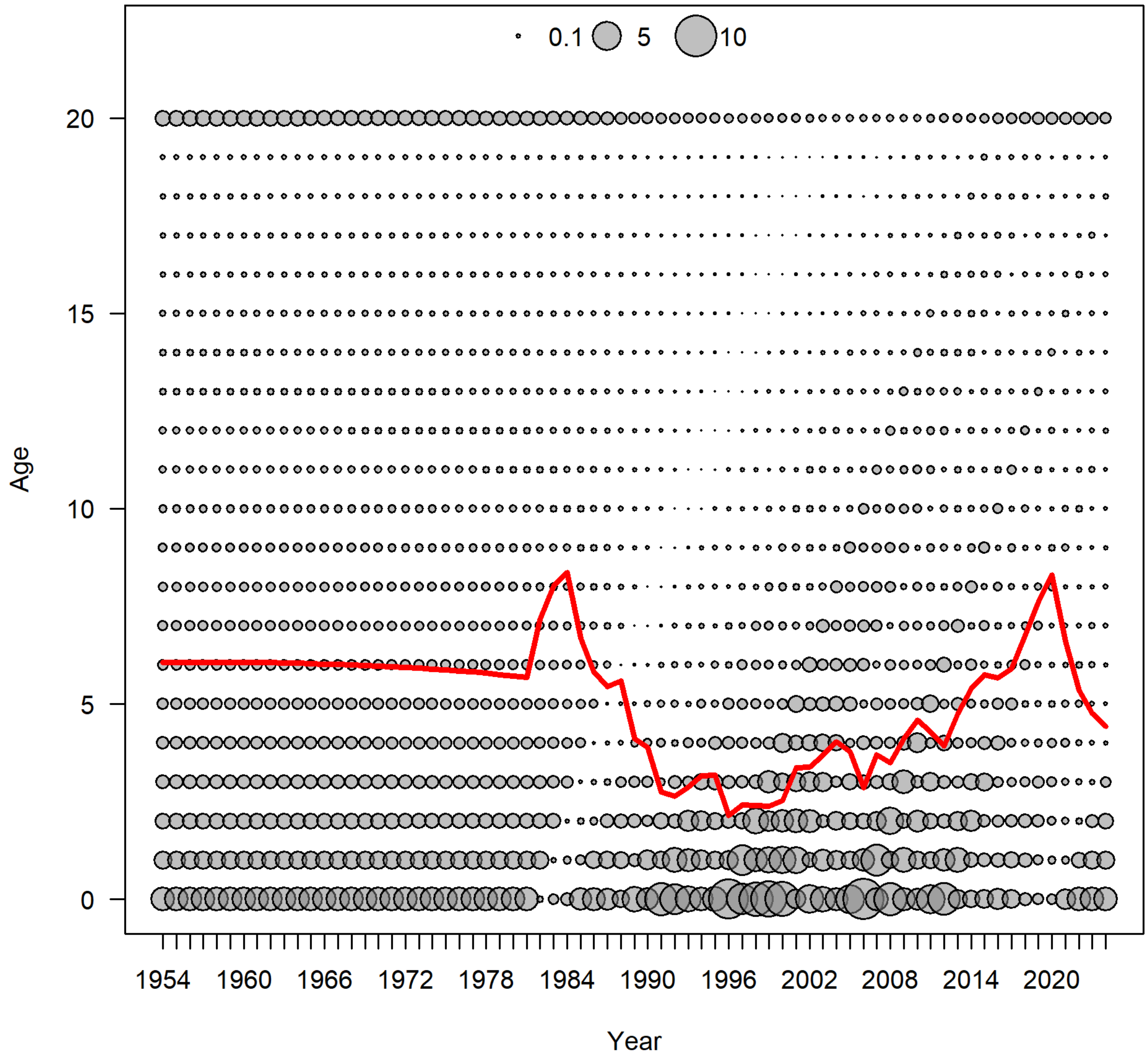


Figure 41: Annual beginning of the year abundance at age estimates (bubbles) from the SS3 base model along with the annual mean age of the stock age (red line).

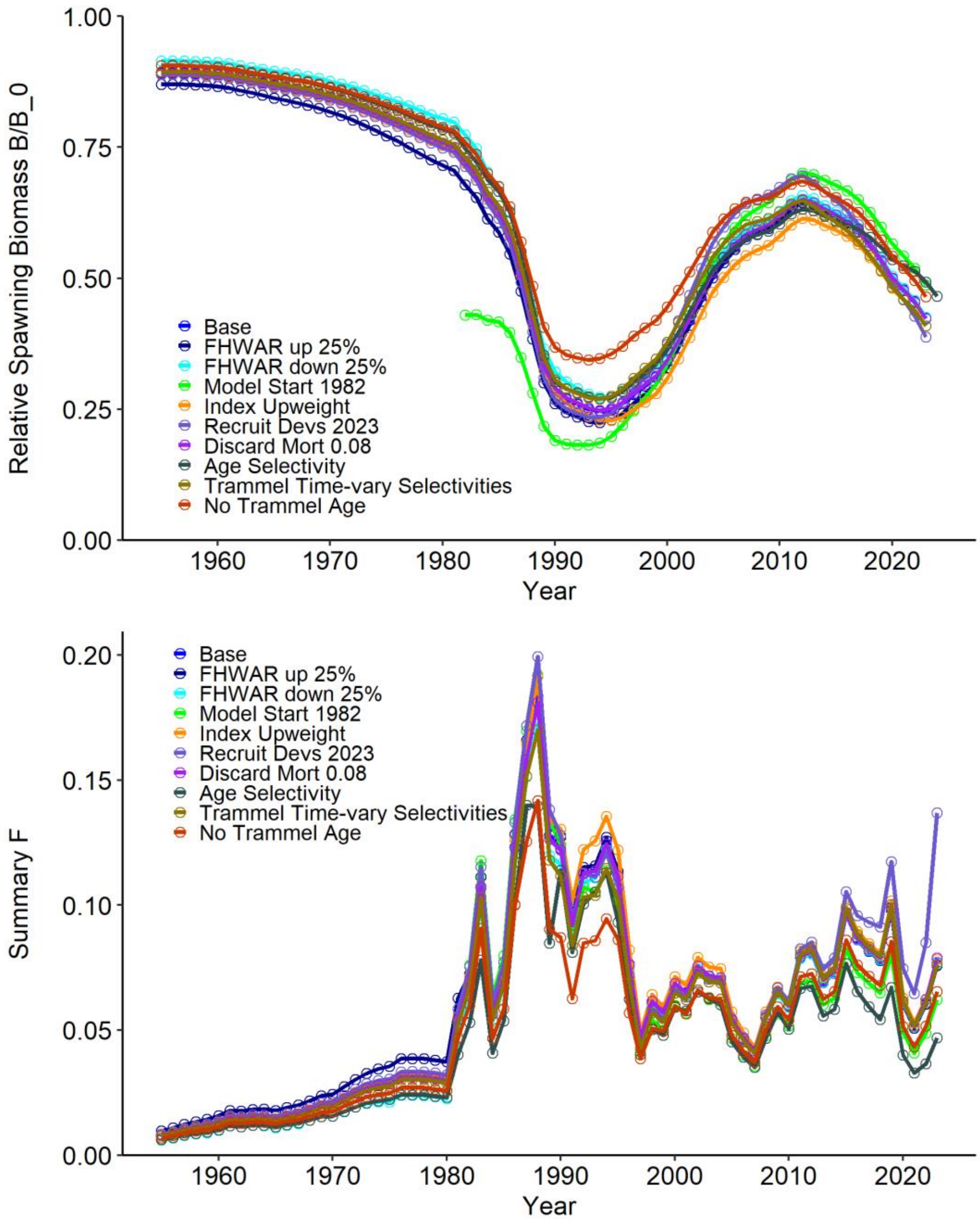


Figure 42: Model runs comparing time series of relative spawning stock biomass, exploitation rates (summary F), and age-0 recruitment estimates of the SS3 base model and the sensitivity models (FHWAR estimates plus/minus 25%, model start year of 1982, relative abundance indices upweighted, recruitment deviations estimated though the terminal year, discard morality rate increased from 5 to 8%, age selectivity estimated for each fleet/survey, time-vary trammel net survey selectivity, and exclusion of the trammel net survey age-at-length compositions).

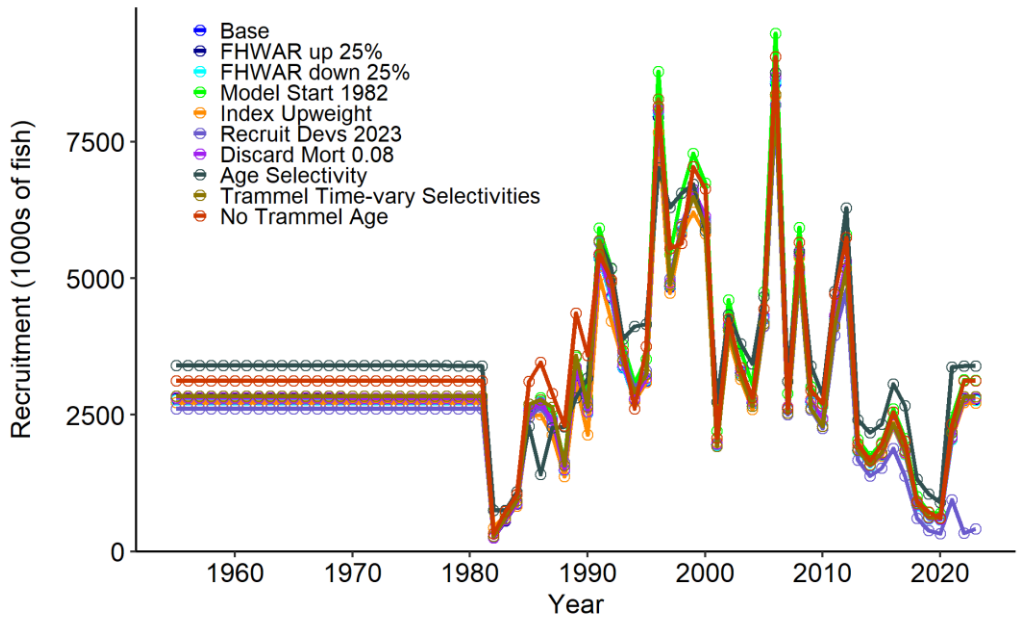


Figure 42 (continued):

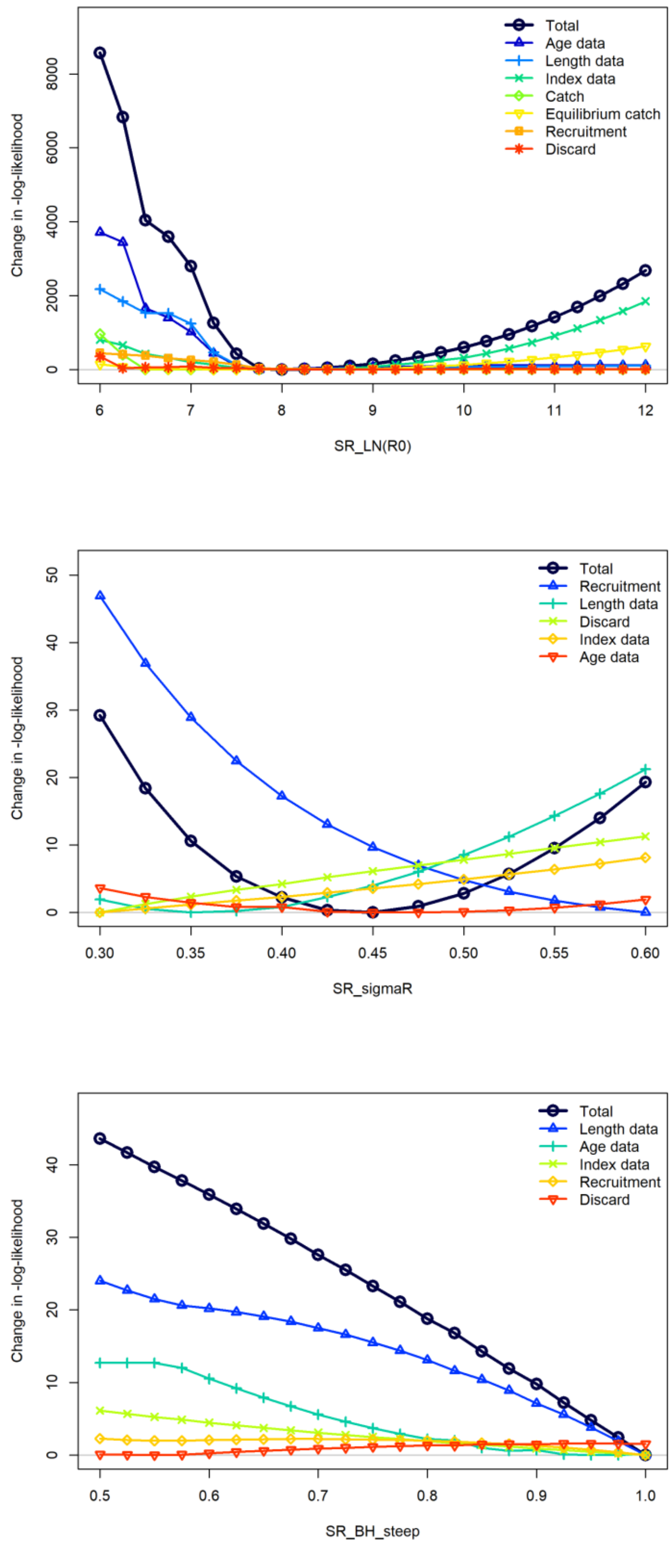


Figure 43: Likelihood profile plots of log-space unfished recruitment (LN_R0), recruitment variance (sigma R), and steepness parameters of the Beverton-Holt stock recruitment function.

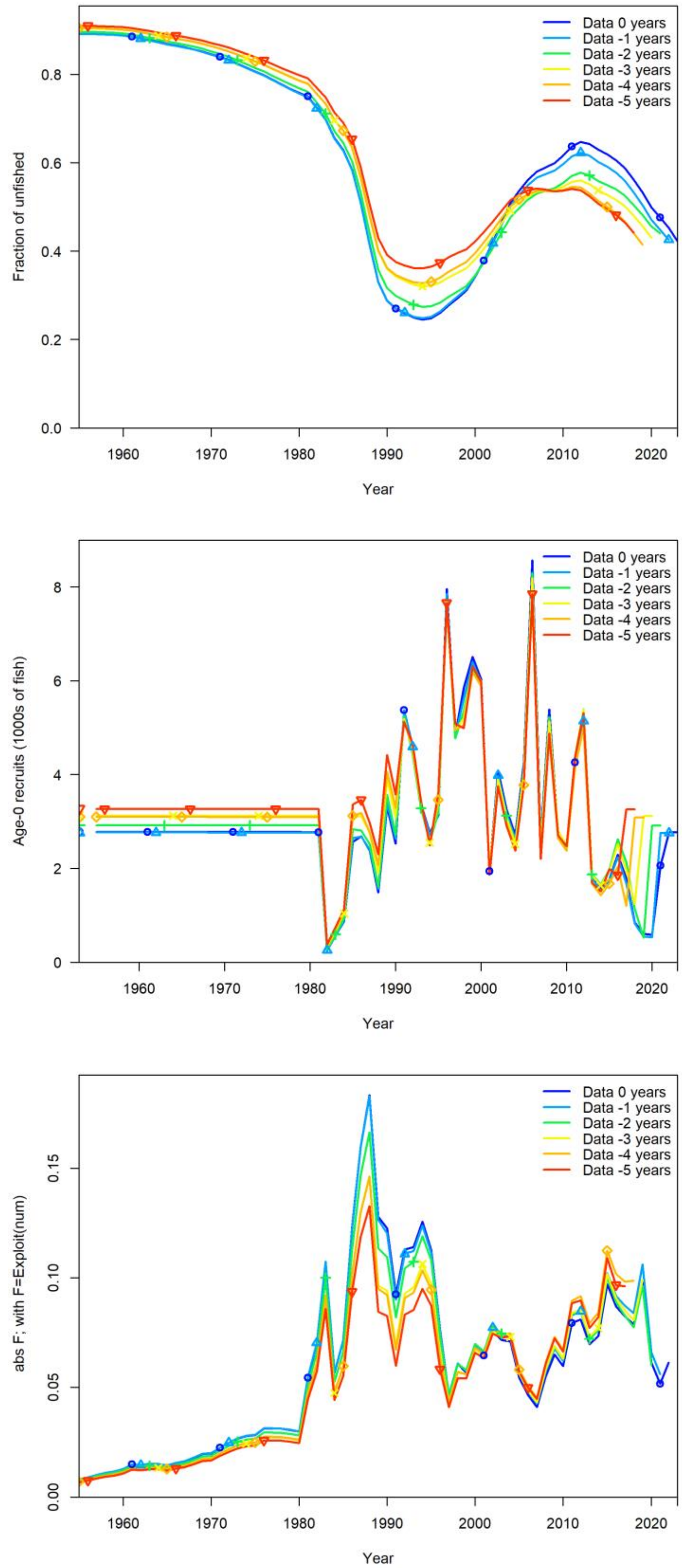


Figure 44: Retrospective analysis of relative spawning stock biomass, age-0 recruitment, and exploitation rate estimates of the SS3 base model.

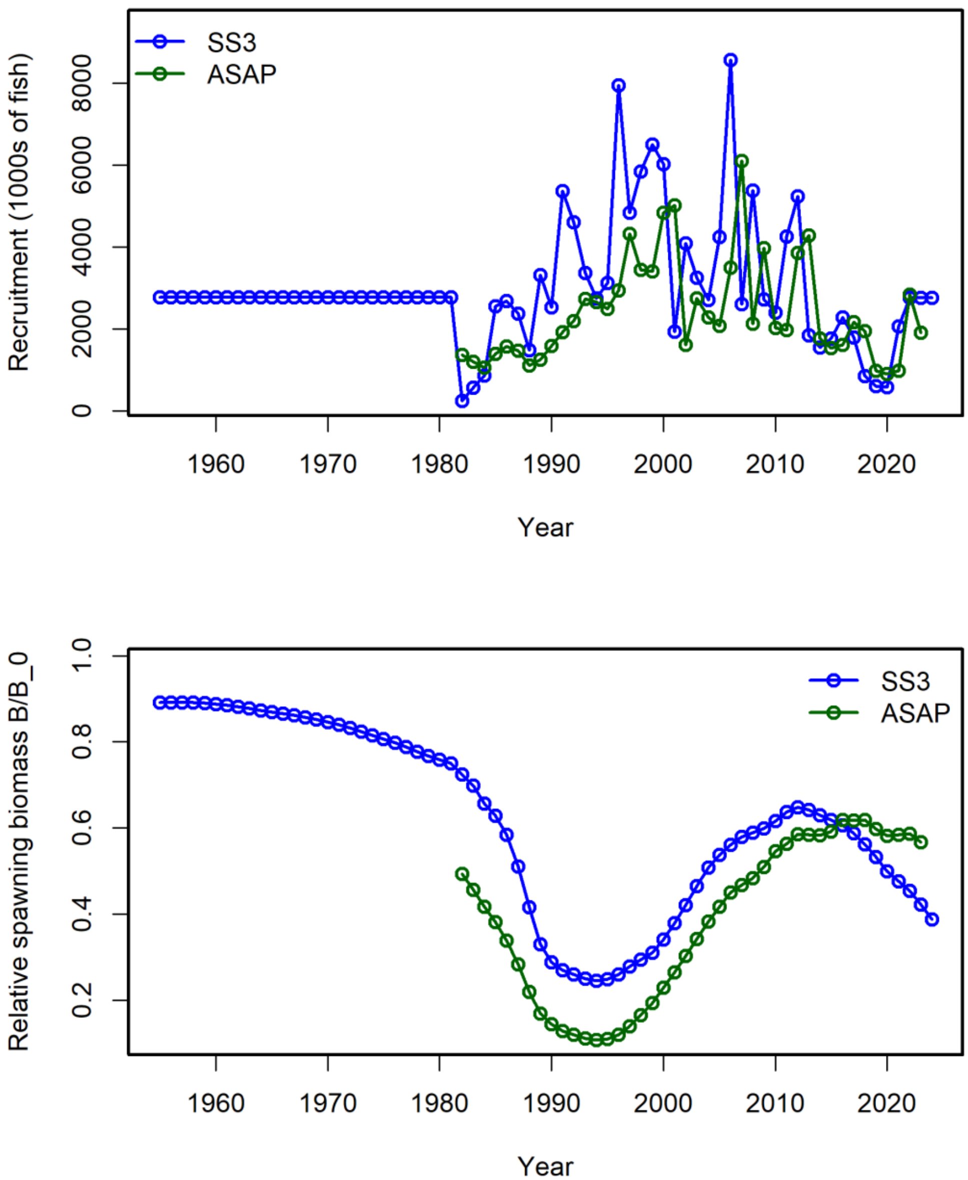
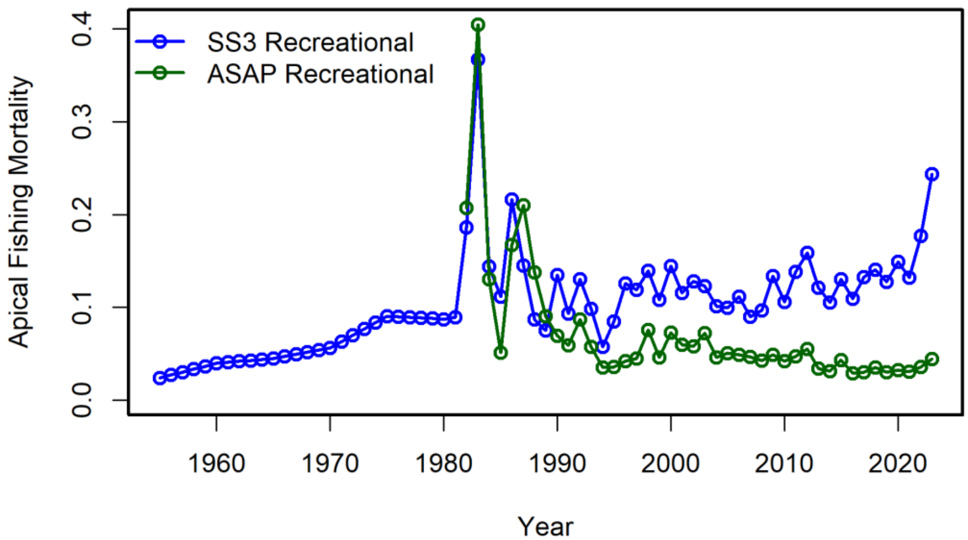


Figure 45: Comparison of the SS3 base model and the ASAP continuity model estimates of recruitment (age-0 in SS3 and age-1 in ASAP), relative spawning stock biomass, and fleet-specific apical fishing mortality rates.



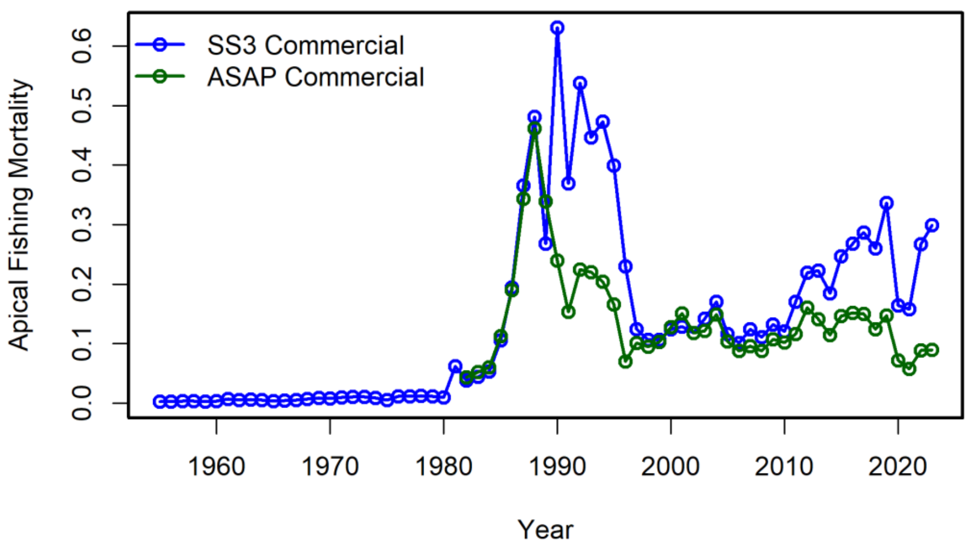


Figure 45 (continued):

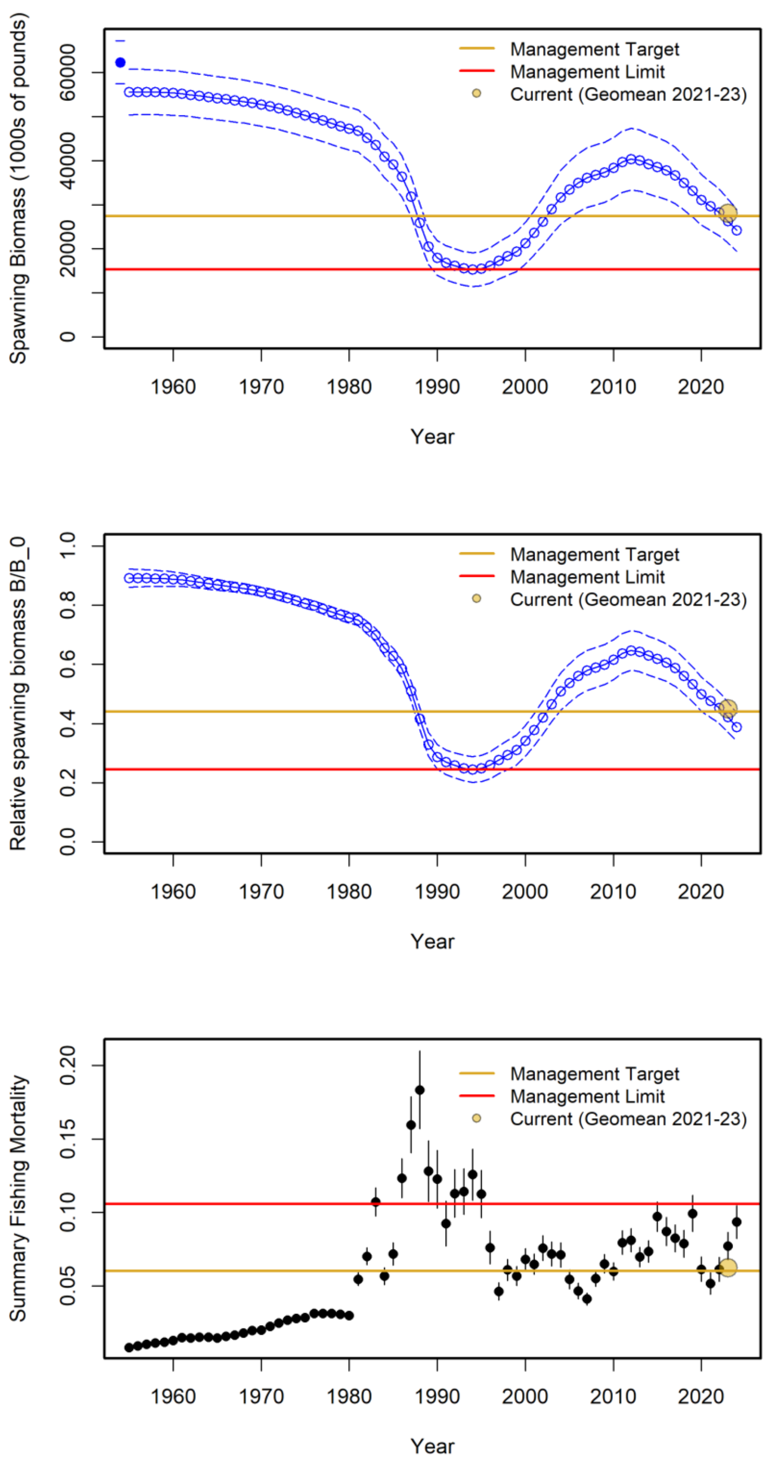


Figure 46: Time series of SS3 base model estimated spawning biomass, spawning potential ratio (relative SSB), and exploitation rates (summary F) relative to proposed limit and established target reference points. Current estimates represent the geometric mean of the 2021-2023 estimates.

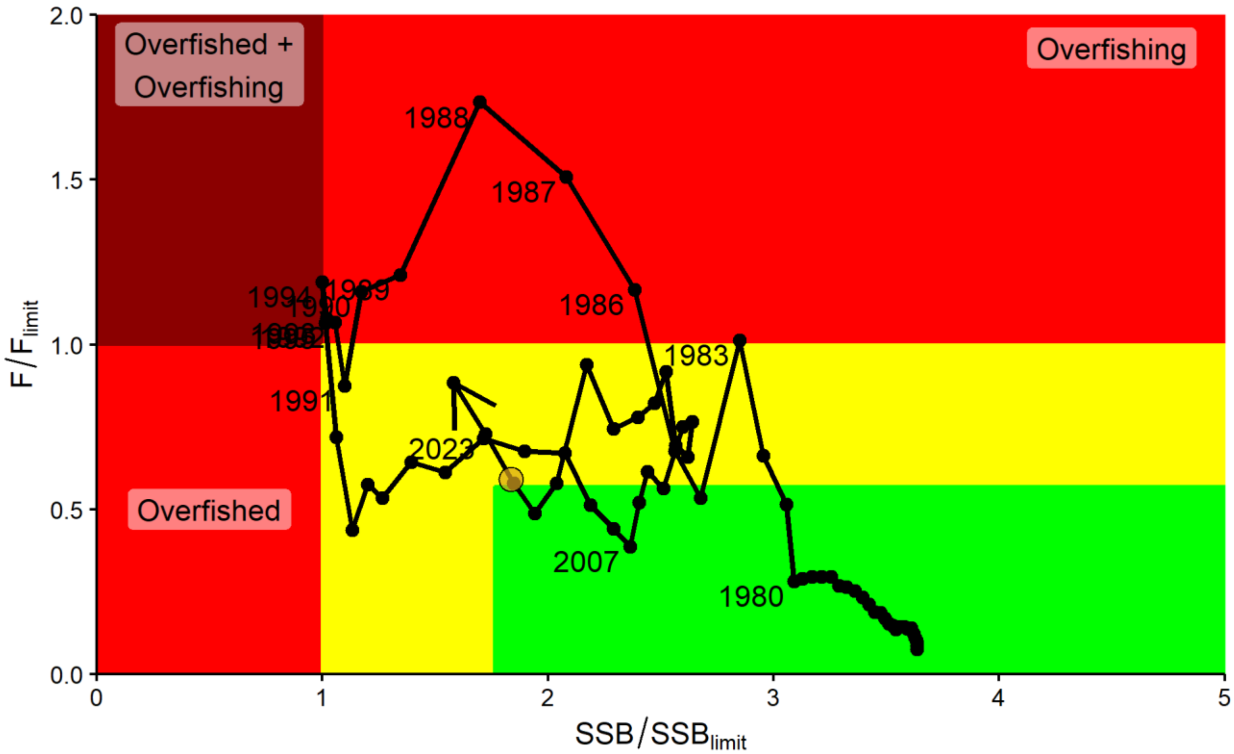


Figure 47: Kobe plot illustrating the trajectory of the stock relative to limit and target reference points. The yellow circle represents current status (geometric mean 2021-2023).

Appendix 1:

LA Creel/MRIP Calibration Procedure

Joe West and Xinan Zhang
Office of Fisheries
Louisiana Department of Wildlife and Fisheries
Updated 10/29/2020

Overview

The Louisiana Department of Wildlife and Fisheries (LDWF) conducts stock assessments on important recreationally and commercially landed species. Time-series of fishery removals are critical components of these stock assessments as they provide the level of depletion of the resource through time. Beginning in 2014, LDWF started its own creel survey (LA Creel) to provide recreational landings estimates for Louisiana-specific fishery management and stock assessment purposes. Prior to 2014 recreational landings estimates were taken from the National Marine Fisheries Service's Marine Recreational Intercept Program and the earlier Marine Recreational Fisheries Statistical Survey (MRIP/MRFSS). The MRIP and LA Creel surveys were conducted simultaneously in 2015 for benchmarking purposes. Methods are now needed to calibrate MRIP landings estimates to LA Creel landings estimates for species with upcoming LDWF stock assessments.

Abbreviations used in this document:

E - Fishing effort
FM - Fishing mode
- C - charter
- CI - charter inshore
- CO - charter offshore
- P - private
- PI - private inshore (LA Creel)
- PO - private offshore
- PR - private boat (MRIP)
- SH - shore (MRIP)

H - Harvest
HR - Harvest rate
D - Discards
DR – Discard rate
PSE - Percent standard error
R - Ratio
V - Variance
y – Year
w – Bimonthly period
wk – Week of year

Calibration Methodology

A ratio estimator approach is described below allowing hind-casting of LA Creel recreational harvest estimates to 1982. The calibration procedure to hind-cast LA Creel discard estimates is presented in the Appendix of this document. Concurrent harvest rate estimates of LA Creel and MRIP are only available for the single year (2015) both surveys were conducted simultaneously. Effort estimates, however, are available from both surveys for multiple years (2015-2017). The reliability of this calibration procedure could be greatly improved with more comparison years of the surveys.

Note: MRIP private fishing effort is distributed across the various fishing modes (shore, inshore, and offshore) by applying the observed distribution of those modes from the dockside survey. In 2016 and 2017, the MRIP effort estimation process required additional estimations, as the dockside portion of that survey was not conducted in Louisiana. NOAA Fisheries applied the proportions of trips by fishing mode observed in 2015 to the effort data collected in 2016 and 2017 to obtain estimates of angler trips by fishing mode. While this method is clearly not optimal, it does allow comparison of effort over additional years.

The LA Creel survey provides estimates for four fishing modes (FM): private inshore (PI), private offshore (PO), charter inshore (CI), and charter offshore (CO). The MRIP survey provides estimates for five fishing modes: private boat (PR), shore (SH), PO, CI, and CO. For calibration purposes, LA Creel estimates are transformed into a fifth fishing mode equivalent to the MRIP surveys SH mode by separating the PI mode into PR and SH modes. Additionally, the inshore/offshore fishing modes of each survey are collapsed into overall private (P) and charter (C) fishing modes for the species included in this report that support predominantly inshore fisheries.

Fishing effort (E) estimates of the two surveys are calibrated separately by collapsed fishing mode (P and SH only) and bimonthly period (w). Because the charter fishing effort frame used by the LA Creel and MRIP surveys are functionally equivalent, charter fishing effort and corresponding variance estimates of the two surveys are assumed equivalent and not adjusted. Harvest rates and corresponding variance estimates of the MRIP and LA Creel surveys for the species included in this report are also assumed equivalent and not adjusted. Calibrated effort estimates of the shore and private fishing modes are then combined with unadjusted MRIP harvest rate estimates to provide time-series of recreational harvest estimates for species with upcoming LDWF stock assessments as described below.

Fishing Effort

To allow hind-casting of LA Creel effort estimates to the historic MRIP effort time-series, fishing effort calibration factors are calculated as the ratio of mean fishing effort (2015-2017) from each survey by fishing mode (P and SH only) and bimonthly period as:

$$\hat{R}_{E,FM,w} = \frac{\bar{E}_{LAcreel,FM,w}}{\bar{E}_{MRIP,FM,w}} \qquad [1]$$

Note: MRIP effort estimates in Equation [1] are based on the FES and APAIS methodologies.

Survey-specific mean fishing effort (angler trips) and calibration factors for the P and SH fishing modes by bimonthly period are presented below.

FM	w	$\bar{E}_{LAcreel}$	$\bar{E}_{MRIP}$	$\hat{R}_E$
P	1	141,988	760,757	0.187
P	2	229,436	608,036	0.377
P	3	425,433	908,285	0.468
P	4	349,345	1,075,253	0.325
P	5	284,077	935,917	0.304
P	6	277,228	806,998	0.344
SH	1	50,377	753,943	0.067
SH	2	80,580	642,766	0.125
SH	3	151,142	897,938	0.168
SH	4	73,203	1,095,251	0.067
SH	5	105,286	1,228,032	0.086
SH	6	64,342	950,532	0.068

The hind-cast LA Creel fishing effort estimates (1982-2013) are then calculated by fishing mode and bimonthly period as:

$$\hat{E}_{y,w,FM,\hat{R}} = \hat{R}_{E,FM,w}\hat{E}_{y,w,FM,MRIP} \quad [2]$$

Note: MRIP effort estimates in Equation [2] have been calibrated to the FES and APAIS design changes (FCAL).

Variances of the hind-cast LA Creel fishing effort estimates from Equation [2] are approximated by fishing mode and bimonthly period as:

$$\hat{V}\left(\hat{E}_{y,w,FM,\hat{R}}\right) = \hat{E}^2_{y,w,FM,MRIP}\hat{V}\left(\hat{R}_{E,FM,w}\right) + \hat{R}^2_{E,FM,w}\hat{V}\left(\hat{E}_{y,w,FM,MRIP}\right) - \hat{V}\left(\hat{R}_{E,FM,w}\right)\hat{V}\left(\hat{E}_{y,w,FM,MRIP}\right) \quad [3]$$

where

$$\hat{V}\left(\hat{R}_{E,FM,w}\right) = \hat{R}_{E,FM,w}{}^2\left[\frac{\hat{V}(\bar{E}_{LAcreel,FM,w})}{\bar{E}_{LAcreel,FM,w}{}^2} + \frac{\hat{V}(\bar{E}_{MRIP,FM,w})}{\bar{E}_{MRIP,FM,w}{}^2}\right]$$

Harvest

The hind-cast LA Creel harvest estimates (1982-2013) by fishing mode (P and SH only) for the species included in this report are then calculated as:

$$\hat{H}_{y,FM,\hat{R}} = \sum_w \hat{E}_{y,w,FM,\hat{R}}\,\widehat{HR}_{y,w,FM,MRIP} \quad [4]$$

Note: MRIP harvest rate estimates in Equation [4] are FCAL estimates and represent A+ B1 landings only.

Variances of the calibrated harvest estimates are then calculated as:

$$\hat{V}\left(\hat{H}_{y,FM,\hat{R}}\right) = \sum_w \left[\hat{E}_{y,FM,w,\hat{R}}{}^2\hat{V}(\widehat{HR}_{y,FM,w,MRIP}) + \widehat{HR}_{y,FM,w,MRIP}{}^2\hat{V}\left(\hat{E}_{y,FM,w,\hat{R}}\right) - \hat{V}\left(\hat{E}_{y,FM,w,\hat{R}}\right)\hat{V}(\widehat{HR}_{y,FM,w,MRIP})\right] \quad [5]$$

Percent standard errors of the calibrated harvest estimates are then calculated as:

$$PSE\left(\hat{H}_{y,FM,\hat{R}}\right) = 100 \times \frac{\sqrt{\hat{V}\left(\hat{H}_{y,FM,\hat{R}}\right)}}{\hat{H}_{y,FM,\hat{R}}} \quad [6]$$

The MRIP (FCAL) and hind-cast LA Creel harvest estimate time-series and corresponding PSEs by fishing mode for species with upcoming LDWF stock assessments are presented belo

FM = Private

	Black Drum				**Red Drum**				**Sheepshead**				**Southern Flounder**				**Spotted Seatrout**			
	MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel	
Year	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE
1982	1,106,821	27.1	426,166	31.2	3,046,664	12.0	925,323	21.4	511,387	34.3	184,011	40.4	497,263	19.5	190,801	23.4	9,160,786	16.2	3,111,188	23.8
1983	1,659,509	34.3	595,673	38.8	4,758,470	32.7	1,542,955	41.7	1,064,824	38.1	334,974	43.8	1,929,817	51.4	610,002	58.6	7,402,179	20.0	2,660,990	25.0
1984	362,104	26.0	138,699	29.8	2,976,458	38.9	960,611	40.8	548,364	47.5	176,510	39.5	213,064	23.0	73,394	28.5	2,503,426	29.8	790,913	33.0
1985	356,406	30.0	115,179	34.5	2,563,074	14.5	865,588	21.9	340,142	32.1	114,127	35.8	431,284	24.5	150,115	27.3	5,947,072	15.2	2,109,649	22.2
1986	918,541	24.1	317,533	28.9	2,635,843	10.0	843,830	21.1	252,644	15.5	84,282	23.6	1,464,132	48.5	483,555	47.8	14,077,720	7.8	4,947,892	16.4
1987	683,049	25.6	237,415	30.7	2,602,974	23.0	876,900	30.6	270,702	33.7	87,926	33.0	147,601	25.2	52,016	27.6	11,023,715	10.1	4,035,139	15.6
1988	344,681	15.4	115,234	22.3	1,160,955	20.2	349,965	26.3	277,793	21.3	90,608	28.5	358,099	13.2	123,628	18.1	6,890,452	14.3	2,511,864	21.3
1989	227,336	20.4	76,002	25.3	2,015,801	12.6	676,453	24.5	789,892	49.3	254,087	50.2	341,489	25.9	111,900	29.0	8,082,318	11.9	2,753,203	18.0
1990	231,168	22.9	79,940	26.9	1,469,547	16.8	481,003	25.0	270,726	27.1	104,809	31.1	805,964	23.6	264,106	26.8	4,881,711	13.7	1,640,863	21.0
1991	183,005	19.4	62,265	26.3	1,824,768	20.0	582,125	33.1	402,935	32.6	138,862	35.4	694,466	16.1	248,442	20.6	13,468,560	9.9	4,744,596	18.2
1992	333,217	23.9	119,606	28.4	2,807,145	8.7	936,586	15.5	563,816	25.3	182,360	27.9	615,928	14.6	217,218	17.6	10,680,755	9.3	3,584,240	20.0
1993	246,588	17.6	88,970	24.2	2,581,130	9.9	880,530	16.3	885,380	26.7	320,661	35.5	500,023	14.8	175,907	18.0	7,757,436	12.1	2,655,102	18.2
1994	234,272	16.9	79,717	24.5	2,311,786	9.5	778,462	16.4	508,883	17.8	170,439	24.2	578,264	21.0	216,551	26.3	10,418,883	10.5	3,481,640	17.6
1995	335,507	18.4	109,385	22.1	3,842,177	8.7	1,269,660	19.6	920,809	20.4	274,232	26.3	398,528	14.0	146,807	19.4	12,135,672	13.2	3,937,329	27.0
1996	414,798	12.9	137,386	20.9	3,197,497	9.0	1,120,688	16.0	760,607	21.7	243,914	29.8	416,737	11.4	148,322	15.5	10,306,475	11.3	3,488,899	20.1
1997	477,705	16.1	161,196	20.3	2,861,918	9.6	987,223	16.3	1,005,406	18.2	318,972	22.9	445,579	11.7	155,574	18.2	10,415,118	11.9	3,599,696	17.9
1998	920,933	14.6	311,906	20.5	2,762,600	8.0	955,164	15.1	1,138,280	15.6	358,340	25.5	393,018	13.8	148,318	18.2	10,005,379	8.7	3,578,852	18.8
1999	681,905	11.9	236,111	18.6	3,459,681	6.9	1,208,361	14.4	793,093	16.2	246,697	26.4	758,946	10.4	272,110	16.0	14,037,235	8.5	4,731,081	18.3
2000	1,017,717	12.8	352,152	18.8	4,249,272	6.9	1,474,223	16.0	769,653	28.0	246,219	34.0	670,295	13.3	246,882	18.4	15,977,551	7.7	5,264,946	19.6
2001	765,815	13.7	259,288	20.5	4,322,843	7.7	1,456,752	14.4	567,945	15.8	193,751	22.4	427,914	12.2	155,260	16.0	12,618,114	8.0	4,269,752	15.9
2002	908,616	12.6	315,701	19.5	3,445,574	8.2	1,168,322	15.9	1,249,437	18.7	408,449	30.9	443,758	18.8	173,052	23.0	9,816,916	10.3	3,441,381	16.8
2003	659,209	14.7	229,521	22.3	2,977,090	7.4	1,014,320	17.2	1,257,175	23.2	396,409	28.7	647,034	15.7	250,097	18.7	10,528,223	9.6	3,662,095	20.0
2004	546,776	12.0	183,643	18.3	2,605,118	8.1	898,352	15.2	1,722,589	24.9	586,483	33.7	408,006	12.6	148,846	17.3	9,728,915	10.5	3,334,545	18.8
2005	461,775	13.0	156,509	21.3	2,236,920	9.4	772,472	15.8	962,130	23.6	302,340	30.7	286,521	12.9	108,654	15.8	10,699,116	8.5	3,616,229	17.8
2006	354,910	14.3	117,386	19.2	2,385,907	10.7	812,152	16.3	430,504	25.3	125,365	32.5	285,429	11.9	98,401	15.3	13,779,620	8.7	5,016,008	16.0
2007	415,104	15.7	142,698	18.7	3,049,990	8.3	1,045,909	15.6	320,952	21.9	95,855	25.9	355,606	19.0	123,052	23.8	11,790,003	8.3	3,967,935	18.2
2008	668,820	12.8	224,335	20.6	3,336,041	7.9	1,155,421	14.9	623,988	17.6	205,809	26.8	239,893	10.9	88,186	16.8	15,551,638	9.5	5,347,885	19.1
2009	908,297	13.6	308,638	19.6	3,414,547	8.2	1,187,696	16.4	1,055,358	22.6	315,386	32.0	398,573	14.6	140,011	19.7	15,667,348	8.8	5,452,613	16.8
2010	697,188	14.5	231,949	19.1	5,128,842	8.0	1,797,454	14.5	753,414	22.4	261,214	29.3	571,870	14.4	214,026	18.3	14,465,717	10.7	4,974,270	23.5
2011	679,614	15.1	232,721	20.6	4,548,266	8.3	1,584,573	14.9	1,425,042	35.5	525,042	44.9	544,173	14.7	198,755	17.6	17,697,003	9.6	5,977,076	18.1
2012	694,257	12.8	241,481	18.1	3,458,029	8.8	1,210,182	15.5	577,843	16.7	175,722	24.4	524,259	14.8	184,915	17.5	17,938,248	8.9	6,201,433	19.0
2013	528,084	14.3	172,534	20.4	4,523,043	8.7	1,512,033	15.4	311,155	16.9	95,381	24.0	930,394	13.1	317,618	25.0	12,928,606	9.4	4,374,563	17.4

FM = Shore																				
	Black Drum				**Red Drum**				**Sheepshead**				**Southern Flounder**				**Spotted Seatrout**			
	MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel	
Year	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE
1982	880,444	22.8	113,540	38.2	2,388,907	23.1	293,698	36.1	676,628	29.0	66,012	30.5	834,940	21.4	103,180	36.3	2,787,818	23.5	296,866	35.0
1983	500,922	29.9	62,566	38.0	1,351,640	25.0	123,385	34.4	2,326,172	25.9	276,981	40.7	327,205	34.7	31,100	37.4	2,927,094	47.2	258,452	45.3
1984	536,866	34.1	51,163	46.2	660,866	35.0	57,459	34.8	987,229	41.9	85,083	40.5	112,657	45.9	9,755	45.9	331,308	40.5	32,117	42.3
1985	181,986	27.0	16,397	32.7	618,693	30.8	46,417	33.4	656,976	30.2	51,856	35.9	284,046	29.1	23,081	33.1	500,629	27.9	43,400	33.5
1986	469,638	52.0	39,289	48.9	243,647	45.9	18,934	47.8	782,112	81.2	57,566	79.5	189,325	42.5	18,019	48.7	1,815,727	55.4	142,905	52.4
1987	260,971	52.0	26,358	51.9	665,407	54.3	49,467	55.0	65,880	46.2	4,878	52.4	185,090	37.3	14,954	38.7	965,130	44.3	112,992	58.7
1988	429,974	36.6	48,607	46.1	237,418	45.6	18,170	48.4	662,260	57.5	57,664	53.5	90,283	40.5	8,305	40.6	398,803	39.6	41,221	48.1
1989	484,955	58.2	47,183	67.1	472,062	35.4	45,444	43.7	179,471	40.2	16,156	43.5	127,388	33.6	12,077	38.8	402,794	68.4	30,056	67.0
1990	122,352	47.4	15,821	63.4	627,617	29.6	54,607	36.3	80,673	46.7	7,631	52.3	238,834	24.9	22,144	31.2	1,178,966	28.6	120,340	42.6
1991	80,287	38.8	7,830	45.0	497,827	35.7	39,572	39.7	109,726	43.1	8,166	45.0	617,776	26.6	69,562	37.3	1,611,329	29.8	190,451	48.5
1992	266,722	39.0	24,559	43.7	535,731	21.7	57,486	31.8	1,470,811	61.9	111,109	64.6	197,948	31.2	17,703	32.4	1,622,752	18.8	160,534	25.9
1993	332,409	38.4	32,083	46.0	1,058,829	26.2	102,231	30.1	438,233	37.3	34,539	38.3	152,286	34.8	14,994	35.2	1,262,891	19.3	139,848	32.3
1994	111,090	26.4	12,000	35.3	973,065	30.5	86,198	33.8	339,821	55.8	27,751	51.7	245,182	26.2	26,246	30.4	2,585,733	32.7	225,016	34.0
1995	122,762	40.4	10,791	37.0	747,219	23.9	61,587	28.3	338,135	43.2	33,177	41.4	56,558	30.7	5,970	40.2	1,432,447	21.4	141,769	30.2
1996	529,054	58.3	42,278	55.7	864,227	22.6	85,059	27.2	682,583	41.1	54,497	42.0	134,402	31.1	14,417	42.1	2,327,551	27.4	272,968	42.0
1997	123,564	39.8	14,500	55.8	347,632	21.5	33,897	27.2	283,171	25.4	28,012	31.1	307,330	23.1	31,614	33.0	1,905,584	21.5	196,046	32.0
1998	86,575	34.3	11,850	53.2	397,083	31.2	39,546	33.4	450,254	36.2	34,658	37.6	128,645	26.4	15,533	39.9	2,415,887	30.1	316,704	52.1
1999	385,329	39.6	34,484	42.0	492,350	25.7	58,215	38.6	202,445	35.8	17,647	34.4	641,276	32.9	57,671	36.5	3,530,688	27.9	302,816	33.9
2000	625,217	26.3	55,444	30.4	822,698	21.3	74,515	25.1	202,744	52.7	18,710	49.9	136,953	43.0	13,647	44.9	2,697,901	36.0	235,416	36.6
2001	675,474	30.1	74,021	37.8	621,324	23.2	56,647	29.7	399,908	49.4	46,027	53.6	305,296	67.4	40,328	72.5	2,657,545	28.5	284,780	35.3
2002	399,178	23.6	39,488	28.7	945,520	31.8	86,759	37.0	872,663	35.4	77,666	40.1	323,826	31.2	35,596	40.3	923,988	31.5	104,622	40.0
2003	288,546	23.4	29,030	28.5	280,366	33.2	26,439	34.2	983,844	36.8	108,655	37.5	199,400	38.3	17,629	37.0	945,730	42.3	70,559	43.3
2004	137,240	36.0	13,664	36.9	559,991	19.0	53,877	26.8	603,693	36.9	49,237	39.0	395,552	36.1	39,848	47.2	1,303,971	45.1	186,126	62.8
2005	138,758	28.0	13,443	36.2	704,981	30.9	57,698	36.6	563,322	29.6	52,206	36.7	450,207	38.7	35,117	45.5	632,798	30.7	54,561	34.2
2006	261,544	30.8	25,308	39.5	389,280	25.4	35,566	35.1	593,305	31.2	44,987	35.3	335,766	29.1	34,011	31.9	788,193	22.7	75,533	29.7
2007	286,213	35.5	28,210	37.6	187,726	25.1	17,832	35.4	257,091	36.2	27,901	42.7	348,752	28.0	38,995	36.9	771,812	27.5	84,196	35.4
2008	247,234	25.5	22,539	32.8	374,463	27.9	30,507	30.4	1,396,084	30.3	113,710	33.3	260,865	36.4	23,363	33.9	1,140,758	33.3	131,023	47.6
2009	100,842	26.9	10,221	33.5	123,122	28.0	12,120	33.8	523,105	46.9	62,220	56.4	470,681	44.6	39,588	45.3	611,298	25.2	62,519	33.2
2010	184,668	41.2	16,865	42.9	531,708	32.4	50,704	34.5	561,648	40.1	46,001	39.1	94,348	29.4	8,854	31.9	584,064	43.3	45,383	43.2
2011	380,669	21.7	36,537	27.0	983,461	22.1	96,717	27.3	1,318,064	44.8	124,632	55.1	430,717	40.0	39,973	40.9	651,281	27.8	67,792	37.1
2012	283,508	22.6	26,638	30.9	279,299	36.1	23,109	38.3	695,553	42.6	54,144	43.8	155,170	30.6	15,176	33.3	727,577	29.5	80,824	39.4
2013	471,823	13.0	36,871	21.6	849,762	9.3	80,731	27.2	659,450	12.4	48,095	25.1	573,922	18.3	51,029	30.3	2,682,372	11.4	241,359	21.8

Appendix (Discard Hindcast):

A ratio estimator approach is described below allowing hind-casting of LA Creel recreational discard estimates to 1982. Concurrent discard estimates of the LA Creel and MRIP surveys are not available.

Analogous to the procedure to hind-cast LA Creel harvest estimates, the hind-cast LA Creel effort estimates of the shore and private fishing modes are combined with unadjusted MRIP discard rate estimates to provide time-series of recreational discard estimates for species with upcoming LDWF stock assessments as described below. Discard estimates of the charter fishing mode for the LA Creel and MRIP surveys are assumed equivalent and not adjusted.

Discards (1982-2013)

The hind-cast LA Creel discard estimates (1982-2013) are calculated by collapsed fishing mode (P and SH only) and bimonthly period as:

$$\hat{D}_{y,FM,\hat{R}} = \sum_{w} \hat{E}_{y,w,FM,\hat{R}} \, \widehat{DR}_{y,w,FM,MRIP} \quad [1a]$$

Note: MRIP discard rate estimates in Equation [1a] are FCAL estimates and represent B2 landings only. The calibrated effort estimates are taken from Equation [2].

Variances of the calibrated discard estimates from Equation [1a] are then calculated as:

$$\hat{V}\left(\hat{D}_{y,FM,\hat{R}}\right) = \sum_{w} \left[\hat{E}_{y,FM,w,\hat{R}}^{\;2} \hat{V}(\widehat{DR}_{y,FM,w,MRIP}) + \widehat{DR}_{y,FM,w,MRIP}^{\;2} \hat{V}\left(\hat{E}_{y,FM,w,\hat{R}}\right) - \hat{V}\left(\hat{E}_{y,FM,w,\hat{R}}\right) \hat{V}(\widehat{DR}_{y,FM,w,MRIP}) \right] \quad [2a]$$

Percent standard errors of the calibrated discard estimates are then calculated as:

$$PSE\left(\hat{D}_{y,FM,\hat{R}}\right) = 100 \times \frac{\sqrt{\hat{V}\left(\hat{D}_{y,FM,\hat{R}}\right)}}{\hat{D}_{y,FM,\hat{R}}} \quad [3a]$$

Discards (2014-2016)

Discard estimates of the LA Creel survey are only available from week 19 of 2016 to present. Discard estimates prior to week 19 of 2016 are imputed by fishing mode (P, SH, and C) and week of year (wk) by calculating discard to harvest ratios from the LA Creel estimates from week 19 of 2016 to week 18 of 2017 as:

$$\hat{R}_{D/H,FM,wk} = \frac{\hat{D}_{LAcreel,FM,wk}}{\hat{H}_{LAcreel,FM,wk}} \quad [4a]$$

The imputed LA Creel discard estimates are then calculated by fishing mode from week 1 of 2014 to week 18 of 2016 as:

$$\hat{D}_{y,wk,FM,\hat{R}_{D/H}} = \hat{R}_{D/H,FM,wk} \hat{H}_{y,wk,FM,LAcreel} \quad [5a]$$

Variances of the imputed LA Creel discard estimates from Equation [5a] are approximated by fishing mode and week of year as:

$$\hat{V}\left(\hat{D}_{y,wk,FM,\hat{R}_{D/H}}\right) = \hat{H}^2_{y,wk,FM,LAcreel}\hat{V}\left(\hat{R}_{D/H,FM,wk}\right) + \hat{R}^2_{D/H,FM,wk}\hat{V}\left(\hat{H}_{y,wk,FM,LAcreel}\right) - \hat{V}\left(\hat{R}_{D/H,FM,wk}\right)\hat{V}\left(\hat{H}_{y,wk,FM,LAcreel}\right) \qquad [6a]$$

where

$$\hat{V}\left(\hat{R}_{D/H,FM,wk}\right) = \hat{R}_{D/H,FM,wk}{}^2\left[\frac{\hat{V}(\hat{D}_{LAcreel,FM,wk})}{\hat{D}_{LAcreel,FM,wk}{}^2} + \frac{\hat{V}(\hat{H}_{LAcreel,FM,wk})}{\hat{H}_{LAcreel,FM,wk}{}^2}\right]$$

The MRIP (FCAL) and hind-cast/imputed LA Creel discard estimate annual time-series and corresponding PSEs by fishing mode for species with upcoming LDWF stock assessments are presented below.

FM = Private

	Black Drum				Red Drum				Sheepshead				Southern Flounder				Spotted Seatrout			
	MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel	
Year	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE
1982	818,734	54.5	345,860	60.5	274,870	40.0	94,664	41.5	515,459	44.8	200,681	47.1	1,083,668	45.5	415,439	50.2	1,654,868	35.7	609,681	39.2
1983	671,251	47.1	224,549	50.1	793,805	34.3	265,412	40.0	833,079	71.7	268,324	76.4	145,644	54.4	50,553	55.2	2,092,864	42.4	754,795	47.4
1984	284,254	68.2	93,240	65.6	346,317	56.3	111,489	56.2	309,986	35.6	93,467	45.2	65,411	64.9	21,520	65.9	197,040	21.8	64,439	30.9
1985	291,106	38.5	95,314	41.4	243,413	40.1	91,863	46.5	317,951	28.8	109,302	37.0	61,785	68.0	19,987	66.6	1,709,137	23.1	579,765	29.5
1986	448,236	20.4	152,135	27.7	451,777	15.3	162,385	19.5	393,569	19.8	127,427	29.5	367,830	40.1	162,331	43.1	4,745,760	10.2	1,630,190	19.8
1987	300,153	41.9	93,694	44.6	2,360,122	24.5	759,753	32.9	210,127	21.2	74,868	25.8	10,809	42.4	4,341	46.5	6,980,249	12.7	2,367,280	21.1
1988	350,541	21.1	118,251	29.1	3,062,822	16.2	1,010,542	22.4	398,058	25.6	135,054	32.6	375,399	58.9	119,109	60.9	5,610,284	10.4	2,077,053	16.1
1989	228,012	35.0	75,276	40.5	2,998,273	20.9	986,135	30.8	483,464	37.6	174,497	44.9	260,401	93.8	84,574	91.5	5,656,036	14.2	1,879,166	20.3
1990	653,511	28.7	214,860	36.2	1,880,922	19.7	575,989	24.4	408,363	25.1	146,133	30.3	334,821	40.3	107,726	42.4	4,750,794	18.0	1,566,570	24.0
1991	389,398	26.0	130,884	32.2	7,412,013	11.2	2,413,187	27.7	272,267	26.1	100,654	28.7	114,636	37.5	35,343	33.6	12,341,402	9.3	4,316,171	17.6
1992	559,417	33.2	179,758	38.0	5,753,237	9.1	1,845,345	17.5	440,289	16.8	142,247	23.5	42,988	21.4	14,876	24.2	8,795,484	8.4	2,994,762	16.4
1993	710,873	18.2	235,327	23.6	4,143,002	11.2	1,394,760	19.0	758,778	20.8	261,093	28.4	45,686	33.2	16,234	35.7	6,905,906	11.3	2,294,599	17.5
1994	440,825	29.8	144,491	33.2	4,086,816	12.5	1,292,596	19.6	608,190	19.3	200,928	25.0	34,050	29.6	11,832	31.0	7,780,829	9.7	2,545,253	17.4
1995	816,070	17.5	288,067	20.8	4,248,542	15.4	1,356,682	22.3	558,424	25.6	180,589	31.0	59,357	34.4	21,731	33.3	7,603,172	11.0	2,469,940	22.8
1996	525,560	20.4	180,919	27.4	3,312,106	11.9	1,066,067	18.3	878,282	23.1	280,982	30.9	80,897	23.0	28,339	27.1	8,055,743	10.2	2,790,011	17.6
1997	1,057,203	18.5	357,381	27.0	5,150,476	11.3	1,623,792	20.9	1,138,193	23.4	388,364	33.4	98,494	29.1	33,249	32.9	10,917,063	19.7	3,714,497	25.0
1998	1,439,547	24.7	488,061	28.2	5,753,271	10.8	1,852,465	18.5	1,056,926	17.9	341,063	28.4	99,007	29.1	32,096	32.3	9,977,400	9.3	3,525,435	17.2
1999	820,371	13.6	272,222	19.4	5,477,613	9.4	1,855,481	17.3	699,825	18.9	218,048	29.4	84,447	20.8	29,392	26.0	11,688,515	8.8	3,900,534	18.2
2000	1,833,450	16.2	636,903	21.0	6,018,948	8.2	2,015,680	18.4	586,993	21.9	204,594	28.9	121,790	28.3	37,513	29.7	11,091,619	7.9	3,696,143	17.1
2001	1,781,293	17.4	641,432	22.0	6,184,966	9.5	1,893,106	18.7	816,650	16.4	289,672	22.4	88,936	21.8	33,827	26.2	7,365,829	11.2	2,385,033	19.6
2002	1,670,431	17.1	549,754	23.8	6,266,166	10.8	2,051,328	21.1	854,311	17.0	278,770	22.5	90,982	26.1	32,596	28.9	6,778,238	11.5	2,325,982	18.2
2003	1,172,837	17.8	408,312	22.5	5,286,909	10.2	1,707,282	22.5	930,576	20.8	286,148	31.2	172,327	23.4	67,664	27.1	10,682,302	9.5	3,656,768	20.8
2004	1,155,649	17.0	384,622	24.5	3,841,642	10.1	1,251,295	17.5	701,938	19.9	253,961	27.9	149,844	27.6	53,175	29.8	9,847,326	11.5	3,329,014	17.7
2005	954,552	24.2	324,774	29.3	3,505,968	11.8	1,125,035	19.3	770,173	15.0	252,100	25.9	87,557	25.3	31,613	26.7	10,903,988	9.7	3,699,324	17.6
2006	699,933	16.3	227,542	20.8	4,124,647	11.7	1,352,670	19.7	616,668	30.1	179,470	34.3	41,784	27.7	14,147	30.4	11,930,250	9.1	4,253,200	16.1
2007	818,643	15.4	279,976	19.3	4,630,404	11.5	1,534,744	20.7	308,039	21.2	101,638	25.6	78,231	25.8	28,165	30.1	9,924,934	8.4	3,345,776	18.0
2008	1,320,182	14.8	447,658	22.4	5,074,358	8.1	1,704,655	15.5	609,401	23.6	193,005	30.6	50,063	26.0	17,325	28.4	13,158,192	9.4	4,628,268	17.0
2009	1,788,575	14.5	598,396	22.8	6,242,208	9.6	2,046,201	20.1	744,464	19.5	224,182	27.5	89,961	28.4	32,910	34.0	13,919,234	10.0	4,655,798	17.8
2010	1,813,254	14.9	636,963	18.6	7,335,948	10.2	2,585,291	15.8	711,836	21.9	248,894	26.2	111,912	23.5	40,129	23.3	9,190,616	12.6	3,180,901	22.2
2011	1,390,360	14.9	475,469	19.2	4,744,947	9.7	1,532,673	16.4	259,735	17.7	86,064	22.2	85,027	24.1	31,745	26.9	10,091,732	9.5	3,443,856	16.2
2012	1,136,427	13.3	373,501	18.6	5,374,152	8.9	1,776,461	17.9	422,968	13.4	136,234	19.8	152,363	24.3	53,417	25.2	13,175,745	8.7	4,524,702	18.2
2013	1,709,164	12.2	586,398	18.1	6,088,863	9.9	2,013,792	17.0	398,767	14.8	130,785	21.7	197,844	21.3	72,578	23.8	13,404,945	10.3	4,608,071	16.5
2014			330,955	24.0			1,609,006	11.8			148,454	38.3			44,345	56.6			2,316,191	11.3
2015			295,893	21.4			1,486,227	10.3			98,800	30.3			30,296	41.4			3,440,509	12.3
2016			161,733	21.0			1,096,370	6.4			47,135	25.6			29,612	24.3			3,643,636	8.6

FM = Shore

	Black Drum				**Red Drum**				**Sheepshead**				**Southern Flounder**				**Spotted Seatrout**			
	MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel	
Year	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE
1982	149,995	64.4	19,897	80.7	364,343	26.2	52,316	41.6	89,674	57.7	11,246	70.6	128,975	30.5	15,915	45.2	386,524	48.1	49,802	62.2
1983	69,276	40.0	6,493	59.5	15,283	79.9	1,470	73.4	25,959	61.6	2,914	58.8					7,794	83.8	1,361	89.1
1984	285,887	32.0	20,494	39.5	83,103	84.6	5,758	89.8	12,248	103.2	2,139	105.1	3,384	99.3	319	100.5	59,529	52.1	4,864	50.1
1985	138,851	42.9	12,304	55.2	32,336	53.0	2,919	51.6	155,985	38.0	11,628	41.9	12,292	79.8	881	80.3	603,943	44.5	47,922	44.9
1986	107,212	49.6	7,822	51.3	19,379	65.3	1,723	60.3	473,615	72.5	34,777	72.6	11,853	75.8	1,010	78.1	267,044	41.3	22,713	38.7
1987	102,949	71.9	8,596	74.4	352,180	47.9	26,897	48.2	36,133	89.7	3,410	94.8	13,517	87.5	1,198	89.8	642,898	37.9	64,120	42.0
1988	185,774	51.5	16,072	60.9	329,574	30.8	28,447	35.6	116,937	36.7	10,973	40.9	7,726	52.0	616	56.8	205,385	41.4	24,387	50.9
1989	61,484	38.9	5,723	46.1	1,080,247	72.5	128,194	83.5	115,300	39.3	11,720	45.4	49,549	66.9	3,586	66.6	311,869	36.9	27,571	40.1
1990	96,587	44.0	13,477	59.9	327,612	37.7	28,235	45.2	18,485	89.3	1,318	92.6	783,955	82.6	72,564	86.6	736,838	34.5	65,803	38.9
1991	237,878	30.6	24,906	36.8	1,544,560	43.0	124,239	43.5	207,958	30.7	14,829	39.1	91,471	44.6	10,241	47.2	1,902,261	22.7	219,559	37.7
1992	860,902	31.0	76,139	32.3	1,833,394	25.8	167,249	28.7	514,453	32.0	41,930	37.4	49,674	57.6	4,587	56.0	1,468,815	20.7	142,809	28.3
1993	1,345,395	39.9	110,604	41.5	1,630,396	23.1	171,511	31.8	1,109,224	51.0	86,564	51.4	51,220	62.5	3,860	64.5	2,544,151	26.7	323,743	45.9
1994	947,564	31.5	99,539	33.8	2,220,435	25.8	190,194	29.9	690,548	35.8	54,745	36.3	27,765	64.3	2,143	65.9	2,280,973	19.3	214,069	27.3
1995	602,888	40.5	48,383	40.0	942,643	25.9	86,408	28.5	72,571	30.1	8,839	38.7	18,216	63.3	1,309	62.8	1,617,673	19.6	162,345	29.9
1996	493,436	28.1	52,883	32.7	1,516,179	39.1	120,897	39.3	295,818	49.5	24,464	47.5	123,621	57.8	16,558	74.1	2,271,614	31.3	308,086	52.8
1997	1,032,761	51.8	90,230	49.3	1,179,933	27.3	100,418	31.4	199,864	33.2	17,257	35.4	71,388	41.3	8,442	48.4	2,076,029	22.6	207,557	32.1
1998	1,033,214	43.8	84,752	44.3	2,262,074	26.0	204,593	31.1	207,500	34.3	20,284	40.9	39,280	40.3	3,276	42.0	1,721,873	25.1	220,941	47.8
1999	532,125	37.2	45,165	42.1	1,281,413	23.5	130,179	31.6	51,091	32.2	4,474	39.5	68,459	49.6	7,292	57.3	4,103,241	23.1	371,893	29.8
2000	955,854	28.8	73,538	36.4	1,948,980	22.8	182,824	29.6	265,642	61.1	21,463	56.0	24,518	50.4	2,069	53.3	2,552,559	34.6	207,540	35.3
2001	1,404,055	37.8	143,215	44.1	1,702,671	23.4	159,705	28.0	627,865	66.9	49,516	64.4	267,359	75.6	37,792	76.1	2,252,160	31.5	187,174	32.3
2002	559,039	30.6	45,914	33.0	1,187,635	24.6	99,572	27.3	192,094	28.9	16,154	33.4	132,712	47.7	11,419	48.6	1,035,758	30.9	94,081	34.7
2003	1,024,308	33.3	104,601	38.7	744,196	31.1	73,392	36.7	114,932	46.8	11,660	47.4	299,436	63.4	31,155	65.2	1,546,106	34.1	119,188	35.8
2004	477,328	44.0	37,608	44.0	944,587	31.1	83,721	31.6	83,683	37.1	9,645	45.2	24,033	55.8	1,683	59.3	1,547,223	44.2	179,206	58.2
2005	793,236	24.4	78,009	30.6	1,986,884	22.7	197,746	37.7	322,768	29.1	27,129	33.4	127,575	57.7	10,772	59.1	895,780	34.2	88,581	36.9
2006	1,085,517	44.4	94,206	40.6	2,355,407	21.3	246,212	35.5	670,528	47.6	51,507	48.7	109,904	38.3	14,722	53.3	1,144,271	28.0	114,481	33.4
2007	464,018	30.3	53,814	41.9	1,109,367	20.9	108,758	29.6	256,654	49.1	23,186	43.8	96,680	53.7	16,221	68.5	929,550	25.0	101,536	36.6
2008	901,587	24.4	79,859	28.4	1,912,635	19.8	158,866	23.6	248,799	29.8	18,285	34.4	12,748	60.9	1,302	65.4	1,377,270	27.7	120,320	31.0
2009	417,567	31.0	39,805	30.9	1,414,008	28.6	126,475	32.2	384,706	30.4	37,443	32.7	87,082	93.5	6,332	93.7	927,737	30.0	109,736	43.9
2010	572,004	29.7	56,545	30.2	1,506,818	23.6	154,439	35.8	583,189	30.2	46,495	32.6	74,678	40.5	7,726	48.6	828,375	54.9	63,464	53.8
2011	1,434,105	21.3	134,468	28.0	1,860,121	22.2	162,394	25.3	249,435	48.1	22,119	43.9	103,717	65.2	7,384	66.2	719,286	25.7	64,218	31.8
2012	1,263,476	24.4	132,282	31.2	977,186	35.2	90,057	34.4	175,964	43.2	13,443	45.1	52,159	45.4	6,074	56.4	674,174	31.1	75,140	37.8
2013	2,271,755	9.7	195,413	19.6	3,675,890	9.3	327,093	18.3	939,354	18.9	77,379	32.1	41,427	37.2	3,162	40.7	5,525,367	8.1	504,444	24.1
2014			79,920	38.8			375,249	12.4			51,901	55.7			9,346	53.3			594,294	15.1
2015			76,780	21.4			378,245	11.5			23,835	34.1			9,300	45.9			727,719	12.3
2016			50,106	21.9			275,986	8.7			24,951	66.9			9,495	37.5			892,875	11.4

FM = Charter

	Black Drum				Red Drum				Sheepshead				Southern Flounder				Spotted Seatrout			
	MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel		MRIP		LA Creel	
Year	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE	Discards	PSE
1982																	7,252	32.4		
1983													352	57.8			121,816	54.1		
1984	182	112.8							1,166	78.8							116	101.5		
1985									587	107.7							42,739	26.9		
1986					25	55.4			266	97.1							16,514	42.5		
1987	2,752	45.9			2,597	42.5			2,484	64.6							64,522	30.1		
1988	5	106.1			1,561	59.4											59,254	37.7		
1989	298	63.1			26,854	45.6			1,199	62.5			1,401	106.9			190,285	38.2		
1990	6,449	56.2			30,305	40.5			16,177	94.7			445	57.1			39,578	32.1		
1991	3,258	52.2			46,366	44.7			1,641	52.5			280	82.8			144,689	30.9		
1992	7,421	46.7			63,966	35.7			3,664	55.2			225	61.5			91,373	31.5		
1993	410	71.7			58,230	19.2											155,919	30.0		
1994	329	100.1			70,705	32.6			1,123	61.4							243,186	36.3		
1995	2,606	72.8			198,687	34.0			1,654	110.7							300,673	31.6		
1996	4,776	74.9			113,101	28.6			406	56.1			843	103.1			223,999	36.0		
1997	20,581	37.1			157,816	23.0			19,422	46.2			490	68.4			260,983	23.5		
1998	18,161	43.4			138,650	25.5			8,030	44.8			647	48.0			199,955	31.8		
1999	12,980	33.2			105,462	22.3			5,944	40.9			520	57.8			277,771	21.3		
2000	10,335	28.4			108,340	13.2			1,739	48.3			259	59.4			175,694	15.8		
2001	13,566	28.8			203,577	19.3			12,615	31.6			1,224	72.4			211,516	15.0		
2002	9,657	30.9			138,601	17.2			4,954	29.6			1,248	50.0			104,977	25.3		
2003	25,831	34.0			129,125	18.5			16,306	53.2			982	53.9			170,658	26.6		
2004	13,050	32.7			105,936	14.2			10,370	38.8			503	55.6			221,275	16.5		
2005	5,692	45.0			53,333	25.0			3,190	61.4							263,044	26.2		
2006	30,916	38.8			144,300	48.0			10,206	71.3							464,015	26.8		
2007	13,350	37.3			178,892	21.5			23,101	34.4			486	60.6			238,335	19.0		
2008	31,830	33.1			198,411	16.5			30,031	55.1			1,197	59.3			323,315	17.3		
2009	62,094	27.2			332,961	19.7			16,588	52.9			98	71.3			356,216	17.4		
2010	38,261	33.5			151,250	23.0			10,938	36.4			69	107.9			167,473	21.6		
2011	29,517	38.0			203,917	17.0			5,021	34.4			640	62.2			149,933	27.4		
2012	21,344	30.0			153,584	17.6			5,844	46.6			2,353	48.7			205,441	22.7		
2013	83,501	7.5			281,131	7.2			48,342	11.3			12,017	15.1			222,879	7.6		
2014			14,093	31.5			353,243	19.2			2,706	40.6			442	53.7			316,892	29.4
2015			14,464	32.7			403,525	14.1			16,575	50.0			553	46.7			413,119	18.4
2016			16,975	33.3			338,910	7.4			10,778	23.1			497	31.4			439,247	9.6

Appendix 2:

Starter File:

```
#V3.30.20;_Stock_Synthesis_by_Richard_Methot_(NOAA)
#_File written by GUI version 3.30.20.0
#Stock Synthesis (SS) is a work of the U.S. Government and is not subject to copyright protection in the United States.
#Foreign copyrights may apply. See copyright.txt for more information.
#_user_support_available_at:NMFS.Stock.Synthesis@noaa.gov
#_user_info_available_at:https://vlab.noaa.gov/group/stock-synthesis
#C starter comment here
BlackDrum_dat.ss        # data file name
BlackDrum_ctl.ss        # control file name
0 # 0=use init values in control file; 1=use ss.par
0 # run display detail (0,1,2)
1 # detailed output (0=minimal for data-limited, 1=high (w/ wtatage.ss_new), 2=brief, 3=custom)
# custom report options: -100 to start with minimal; -101 to start with all; -number to remove, +number to add, -999 to end
0 # write 1st iteration details to echoinput.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)
0 # Include prior_like for non-estimated parameters (0,1)
1 # Use Soft Boundaries to aid convergence (0,1) (recommended)
#
2 # Number of datafiles to produce: 1st is input, 2nd is estimates, 3rd and higher are bootstrap
10 # Turn off estimation for parameters entering after this phase
#
0 # MCeval burn interval
1 # MCeval thin interval
0 # jitter initial parm value by this fraction
-1 # min yr for sdreport outputs (-1 for styr)
-1 # max yr for sdreport outputs (-1 for endyr+1; -2 for endyr+Nforecastyrs)
0 # N individual STD years
#vector of year values

0.0001 # final convergence criteria (e.g. 1.0e-04)
0 # retrospective year relative to end year (e.g. -4)
1 # min age for calc of summary biomass
1 # Depletion basis:  denom is: 0=skip; 1=rel X*SPB0; 2=rel SPBmsy; 3=rel X*SPB_styr; 4=rel X*SPB_endyr; values; >=11 invoke N multiyr (up to 9!) with 10's
digit; >100 invokes log(ratio)
1 # Fraction (X) for Depletion denominator (e.g. 0.4)
4 # SPR_report_basis:  0=skip; 1=(1-SPR)/(1-SPR_tgt); 2=(1-SPR)/(1-SPR_MSY); 3=(1-SPR)/(1-SPR_Btarget); 4=rawSPR
2 # Annual_F_units: 0=skip; 1=exploitation(Bio); 2=exploitation(Num); 3=sum(Apical_F's); 4=true F for range of ages; 5=unweighted avg. F for range of ages
#COND 13 17 #_min and max age over which average F will be calculated with F_reporting=4 or 5 with F_reporting>3
0 # F_std_basis: 0=raw_annual_F; 1=F/Fspr; 2=F/Fmsy; 3=F/Fbtgt; where F means annual_F; values >=11 invoke N multiyr (up to 9!) with 10's digit; >100
invokes log(ratio)
1 # MCMC output detail: integer part (0=default; 1=adds obj func components); and decimal part (added to SR_LN(R0) on first call to mcmc)
0 # ALK tolerance (example 0.0001)
3.30 # check value for end of file and for version control
```

Forecast File:

```
#V3.30.20;_Stock_Synthesis_by_Richard_Methot_(NOAA)
#_File written by GUI version 3.30.20.0
#Stock Synthesis (SS) is a work of the U.S. Government and is not subject to copyright protection in the United States.
#Foreign copyrights may apply. See copyright.txt for more information.
#_user_support_available_at:NMFS.Stock.Synthesis@noaa.gov
#_user_info_available_at:https://vlab.noaa.gov/group/stock-synthesis
#C generic forecast file
# for all year entries except rebuilder; enter either: actual year, -999 for styr, 0 for endyr, neg number for rel. endyr
1 # Benchmarks: 0=skip; 1=calc F_spr,F_btgt,F_msy; 2=calc F_spr,F_0.1,F_msy; 3=add F_BLimit
3 # Do_MSY: 1=set to F(SPR); 2=calc F(MSY); 3=set to F(Btgt) or F0.1; 4=set to F(endyr); 5=calc F(MEY)
0.2 # SPR target (e.g. 0.40)
0.2 # Biomass target (e.g. 0.40)
#_Bmark_years: beg_bio, end_bio, beg_selex, end_selex, beg_relF, end_relF, beg_recr_dist, end_recr_dist, beg_SRparm, end_SRparm (enter actual year, or
values of 0 or -integer to be rel. endyr)
 2002 2023 2002 2023 2002 2023 1982 2023 1955 2023
# value <0 convert to endyr-value; except -999 converts to start_yr; must be >=start_yr and <=endyr
1 # Bmark_relF_Basis: 1 = use year range; 2 = set relF same as forecast below
#
0 # Forecast: -1=none; 0=simple_1yr; 1=F(SPR); 2=F(MSY) 3=F(Btgt) or F0.1; 4=Ave F (uses first-last relF yrs); 5=input annual F scalar
# where none and simple require no input after this line; simple sets forecast F same as end year F
1 # N forecast years
1 # Fmult (only used for Do_Forecast==5) such that apical_F(f)=Fmult*relF(f)
#_Fcast_years:  beg_selex, end_selex, beg_relF, end_relF, beg_mean recruits, end_recruits  (enter actual year, or values of 0 or -integer to be rel. endyr)
 2023 2023 2023 2023 1982 2023
0 # Forecast selectivity (0=fcast selex is mean from year range; 1=fcast selectivity from annual time-vary parms)
1 # Control rule method (0: none; 1: ramp does catch=f(SSB), buffer on F; 2: ramp does F=f(SSB), buffer on F; 3: ramp does catch=f(SSB), buffer on catch;
4: ramp does F=f(SSB), buffer on catch)
# values for top, bottom and buffer exist, but not used when Policy=0
0.4 # Control rule Biomass level for constant F (as frac of Bzero, e.g. 0.40); (Must be > the no F level below)
0.1 # Control rule Biomass level for no F (as frac of Bzero, e.g. 0.10)
0.75 # Buffer:  enter Control rule target as fraction of Flimit (e.g. 0.75), negative value invokes list of [year, scalar] with filling from year to YrMax
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 recruitment: 0=spawn_recr; 1=value*spawn_recr; 2=value*VirginRecr; 3=recent mean from yr range above (need to set phase to -1 in control to
get constant recruitment in MCMC)
0 # value is multiplier of SRR
0 # Forecast loop control #5 (reserved for future bells&whistles)
2015 # FirstYear for caps and allocations (should be after years with fixed inputs)
0 # stddev of log(realized catch/target catch) in forecast (set value>0.0 to cause active impl_error)
0 # Do West Coast gfish rebuilder output (0/1)
2004 # Rebuilder: first year catch could have been set to zero (Ydecl)(-1 to set to 1999)
-1 # Rebuilder: year for current age structure (Yinit) (-1 to set to endyear+1)
1 # fleet relative F: 1=use first-last alloc year; 2=read seas, fleet, alloc list below
# Note that fleet allocation is used directly as average F if Do_Forecast=4
2 # basis for fcast catch tuning and for fcast catch caps and allocation  (2=deadbio; 3=retainbio; 5=deadnum; 6=retainnum)
# Conditional input if relative F choice = 2
# enter list of:  season,  fleet, relF; if used, terminate with season=-9999
#  -9999 1 0.0
# enter list of: fleet number, max annual catch for fleets with a max; terminate with fleet=-9999
-9999 -1
# enter list of area ID and max annual catch; terminate with area=-9999
-9999 -1
# enter list of fleet number and allocation group assignment, if any; terminate with fleet=-9999
-9999 -1
```

```
#_if N allocation groups >0, list year, allocation fraction for each group
# list sequentially because read values fill to end of N forecast
# terminate with -9999 in year field
# no allocation groups
2 # basis for input Fcast catch: -1=read basis with each obs; 2=dead catch; 3=retained catch; 99=input apical_F; NOTE: bio vs num based on fleet's
catchunits
#enter list of Fcast catches or Fa; terminate with line having year=-9999
#_Yr Seas Fleet Catch(or_F)
-9999 1   1   0
#
999   # verify end of input
```

Data File:

```
#V3.30.20;_Stock_Synthesis_by_Richard_Methot_(NOAA)
#_File written by GUI version 3.30.20.0
#Stock Synthesis (SS) is a work of the U.S. Government and is not subject to copyright protection in the United States.
#Foreign copyrights may apply. See copyright.txt for more information.
#_user_support_available_at:NMFS.Stock.Synthesis@noaa.gov
#_user_info_available_at:https://vlab.noaa.gov/group/stock-synthesis
#C data file for simple example
#_observed data:
#
1955 # StartYr
2023 # EndYr
1 # Nseas
12 #_months/season
12 # Nsubseasons (even number, minimum is 2)
1 # spawn_month
-1 # Ngenders: 1, 2, -1  (use -1 for 1 sex setup with SSB multiplied by female_frac parameter)
20 # Nages=accumulator age, first age is always age 0
1 # Nareas
4 # Nfleets (including surveys)
#_fleet_type: 1=catch fleet; 2=bycatch only fleet; 3=survey; 4=ignore
#_sample_timing: -1 for fishing fleet to use season-long catch-at-age for observations, or 1 to use observation month;  (always 1 for surveys)
#_fleet_area:  area the fleet/survey operates in
#_units of catch:  1=bio; 2=num (ignored for surveys; their units read later)
#_catch_mult: 0=no; 1=yes
#_rows are fleets
#_fleet_type fishery_timing area catch_units need_catch_mult fleetname
 1 -1  1  2  0 FISHERY1 # 1
 1 -1  1  1  0 FISHERY2 # 2
 3  1  1  2  0 SURVEY1 # 3
 3  1  1  2  0 SURVEY2 # 4
#Bycatch_fleet_input_goes_next
#a:  fleet index
#b:  1=include dead bycatch in total dead catch for F0.1 and MSY optimizations and forecast ABC; 2=omit from total catch for these purposes (but still
include the mortality)
#c:  1=Fmult scales with other fleets; 2=bycatch F constant at input value; 3=bycatch F from range of years
#d:  F or first year of range
#e:  last year of range
#f:  not used
# a   b   c   d   e   f
#_Catch data: yr, seas, fleet, catch, catch_se
#_catch_se:  standard error of log(catch)
#_NOTE:  catch data is ignored for survey fleets
-999        1           1           88.055      0.149
1955        1           1           78.418      0.1
1956        1           1           88.434      0.1
1957        1           1           98.451      0.1
1958        1           1           108.467     0.1
1959        1           1           118.483     0.1
1960        1           1           128.499     0.1
1961        1           1           131.359     0.1
1962        1           1           134.219     0.1
1963        1           1           137.080     0.1
1964        1           1           139.940     0.1
1965        1           1           142.800     0.1
1966        1           1           149.640     0.1
1967        1           1           156.479     0.1
1968        1           1           163.319     0.1
1969        1           1           170.158     0.1
1970        1           1           176.998     0.1
1971        1           1           196.651     0.1
1972        1           1           216.303     0.1
1973        1           1           235.956     0.1
1974        1           1           255.608     0.1
1975        1           1           275.261     0.1
1976        1           1           272.062     0.1
1977        1           1           268.864     0.1
1978        1           1           265.665     0.1
1979        1           1           262.467     0.1
1980        1           1           259.268     0.1
1981        1           1           262.867     0.1
1982        1           1           527.305     0.272
1983        1           1           669.301     0.347
1984        1           1           187.029     0.265
1985        1           1           128.606     0.286
1986        1           1           347.528     0.252
1987        1           1           273.319     0.266
1988        1           1           164.633     0.195
1989        1           1           121.324     0.281
1990        1           1           108.938     0.222
1991        1           1           91.659      0.189
1992        1           1           146.448     0.226
1993        1           1           148.579     0.179
1994        1           1           96.628      0.200
1995        1           1           134.099     0.191
1996        1           1           183.842     0.181
1997        1           1           195.885     0.168
1998        1           1           337.557     0.184
1999        1           1           289.287     0.151
2000        1           1           407.609     0.155
2001        1           1           348.118     0.158
2002        1           1           378.430     0.157
2003        1           1           290.595     0.160
2004        1           1           214.599     0.151
2005        1           1           196.713     0.155
2006        1           1           207.019     0.221
```

```
2007	1	1	191.748	0.158
2008	1	1	272.912	0.163
2009	1	1	346.451	0.165
2010	1	1	262.774	0.164
2011	1	1	294.068	0.160
2012	1	1	281.229	0.165
2013	1	1	225.839	0.158
2014	1	1	217.662	0.085
2015	1	1	219.739	0.072
2016	1	1	138.153	0.085
2017	1	1	142.565	0.076
2018	1	1	147.459	0.085
2019	1	1	120.664	0.066
2020	1	1	110.358	0.074
2021	1	1	75.775	0.093
2022	1	1	89.309	0.104
2023	1	1	166.388	0.091

-999	1	2	123.150	0.100
1955	1	2	128.300	0.050
1956	1	2	147.700	0.050
1957	1	2	183.700	0.050
1958	1	2	179.700	0.050
1959	1	2	160.700	0.050
1960	1	2	190.200	0.050
1961	1	2	387.600	0.050
1962	1	2	308.900	0.050
1963	1	2	343.600	0.050
1964	1	2	306.500	0.050
1965	1	2	194.700	0.050
1966	1	2	247.300	0.050
1967	1	2	264.400	0.050
1968	1	2	359.900	0.050
1969	1	2	478.300	0.050
1970	1	2	434.200	0.050
1971	1	2	505.800	0.050
1972	1	2	540.200	0.050
1973	1	2	541.500	0.050
1974	1	2	440.200	0.050
1975	1	2	275.500	0.050
1976	1	2	579.000	0.050
1977	1	2	582.900	0.050
1978	1	2	580.207	0.050
1979	1	2	535.993	0.050
1980	1	2	471.656	0.050
1981	1	2	2888.988	0.050
1982	1	2	1690.712	0.050
1983	1	2	1858.879	0.050
1984	1	2	1975.626	0.050
1985	1	2	3421.325	0.050
1986	1	2	5225.656	0.050
1987	1	2	8020.901	0.050
1988	1	2	8756.913	0.050
1989	1	2	4405.882	0.050
1990	1	2	2875.627	0.050
1991	1	2	1914.090	0.050
1992	1	2	3014.135	0.050
1993	1	2	3178.195	0.050
1994	1	2	3738.821	0.050
1995	1	2	2999.438	0.050
1996	1	2	1619.152	0.050
1997	1	2	1643.434	0.050
1998	1	2	1782.122	0.050
1999	1	2	2199.519	0.050
2000	1	2	2842.798	0.050
2001	1	2	3197.869	0.050
2002	1	2	3114.508	0.050
2003	1	2	3511.682	0.050
2004	1	2	3758.565	0.050
2005	1	2	2375.706	0.050
2006	1	2	1932.808	0.050
2007	1	2	2364.413	0.050
2008	1	2	2456.880	0.050
2009	1	2	3148.715	0.050
2010	1	2	2844.436	0.050
2011	1	2	3771.243	0.050
2012	1	2	4189.226	0.050
2013	1	2	3876.785	0.050
2014	1	2	3332.461	0.050
2015	1	2	4278.500	0.050
2016	1	2	3876.423	0.050
2017	1	2	3420.826	0.050
2018	1	2	2762.755	0.050
2019	1	2	3251.113	0.050
2020	1	2	1389.933	0.050
2021	1	2	1135.270	0.050
2022	1	2	1575.277	0.050
2023	1	2	1690.808	0.050

-9999 0 0 0 0
#
 #_CPUE_and_surveyabundance_observations
#_Units:  0=numbers; 1=biomass; 2=F; 30=spawnbio; 31=recdev; 32=spawnbio*recdev; 33=recruitment; 34=depletion(&see Qsetup); 35=parm_dev(&see Qsetup)
#_Errtype:  -1=normal; 0=lognormal; >0=T
#_SD_Report: 0=no sdreport; 1=enable sdreport
#_Fleet Units Errtype SD_Report
1 0 -1 0 # FISHERY1
2 1 -1 0 # FISHERY2
3 0 0 0 # SURVEY1
4 33 0 0 # SURVEY2
#_yr month fleet obs stderr
1985	11	3	0.449	0.589
1986	11	3	0.354	0.540
1987	11	3	0.521	0.497
1988	11	3	0.147	0.570
1989	11	3	0.286	0.501
1990	11	3	0.511	0.490
1991	11	3	0.676	0.474
1992	11	3	0.681	0.467
1993	11	3	0.437	0.491
1994	11	3	0.556	0.484
1995	11	3	0.940	0.444
1996	11	3	1.377	0.423
1997	11	3	0.986	0.444
```

```
1998	11	3	1.649	0.401
1999	11	3	1.371	0.427
2000	11	3	1.967	0.405
2001	11	3	1.287	0.394
2002	11	3	1.127	0.430
2003	11	3	0.918	0.437
2004	11	3	1.065	0.403
2005	11	3	1.377	0.379
2006	11	3	1.468	0.370
2007	11	3	0.916	0.411
2008	11	3	1.588	0.380
2009	11	3	1.560	0.389
2010	11	3	1.150	0.370
2011	11	3	1.203	0.374
2012	11	3	1.432	0.347
2013	11	3	1.403	0.346
2014	11	3	1.457	0.375
2015	11	3	1.076	0.363
2016	11	3	0.799	0.381
2017	11	3	1.651	0.322
2018	11	3	0.912	0.363
2019	11	3	0.864	0.372
2020	11	3	0.827	0.383
2021	11	3	0.513	0.401
2022	11	3	0.803	0.385
2023	11	3	0.694	0.398

1981	7	4	0.540	0.695
1982	7	4	0.670	0.632
1983	7	4	0.822	0.629
1984	7	4	0.419	0.680
1985	7	4	0.721	0.630
1986	7	4	0.588	0.643
1987	7	4	0.491	0.646
1988	7	4	0.442	0.649
1989	7	4	0.626	0.638
1990	7	4	0.298	0.656
1991	7	4	0.947	0.606
1992	7	4	1.094	0.605
1993	7	4	1.687	0.591
1994	7	4	1.004	0.605
1995	7	4	1.056	0.601
1996	7	4	1.867	0.586
1997	7	4	1.572	0.592
1998	7	4	2.029	0.585
1999	7	4	0.996	0.600
2000	7	4	1.172	0.596
2001	7	4	1.381	0.594
2002	7	4	0.654	0.623
2003	7	4	0.646	0.612
2004	7	4	0.401	0.638
2005	7	4	0.690	0.617
2006	7	4	1.442	0.590
2007	7	4	1.886	0.590
2008	7	4	2.495	0.577
2009	7	4	2.342	0.582
2010	7	4	1.309	0.602
2011	7	4	0.617	0.592
2012	7	4	1.264	0.579
2013	7	4	2.013	0.576
2014	7	4	0.965	0.600
2015	7	4	0.490	0.615
2016	7	4	0.640	0.606
2017	7	4	0.646	0.603
2018	7	4	0.397	0.632
2019	7	4	0.312	0.643
2020	7	4	0.239	0.648
2021	7	4	0.956	0.601
2022	7	4	1.313	0.594
2023	7	4	0.864	0.597

-9999 1 1 1 1 # terminator for survey observations
#
1 #_N_fleets_with_discard
#_discard_units (1=same_as_catchunits(bio/num); 2=fraction; 3=numbers)
#_discard_errtype:  >0 for DF of T-dist(read CV below); 0 for normal with CV; -1 for normal with se; -2 for lognormal; -3 for trunc normal with CV
# note: only enter units and errtype for fleets with discard
# note: discard data is the total for an entire season, so input of month here must be to a month in that season
#_Fleet units errtype
1 1 -2 # FISHERY1
#_yr month fleet obs stderr
1982	7	1	361.49	0.547
1983	7	1	227.09	0.463
1984	7	1	115.44	0.525
1985	7	1	107.63	0.363
1986	7	1	155.16	0.243
1987	7	1	104.46	0.404
1988	7	1	135.95	0.245
1989	7	1	78.92	0.351
1990	7	1	241.68	0.305
1991	7	1	157.76	0.250
1992	7	1	258.81	0.272
1993	7	1	343.40	0.209
1994	7	1	235.46	0.236
1995	7	1	334.99	0.200
1996	7	1	234.05	0.206
1997	7	1	466.43	0.209
1998	7	1	578.62	0.236
1999	7	1	325.97	0.162
2000	7	1	704.85	0.182
2001	7	1	787.26	0.195
2002	7	1	597.91	0.206
2003	7	1	527.96	0.180
2004	7	1	435.06	0.202
2005	7	1	407.23	0.232
2006	7	1	346.99	0.174
2007	7	1	343.19	0.169
2008	7	1	549.92	0.171
2009	7	1	699.94	0.181
2010	7	1	723.08	0.180
2011	7	1	624.56	0.154
2012	7	1	513.96	0.153
2013	7	1	848.29	0.130
2014	7	1	424.97	0.199
```

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2015        7           1           387.14      0.169
2016        7           1           228.81      0.157
2017        7           1           272.55      0.076
2018        7           1           355.96      0.082
2019        7           1           325.52      0.102
2020        7           1           174.35      0.074
2021        7           1           100.88      0.073
2022        7           1           222.60      0.072
2023        7           1           418.36      0.059

-9999 0 0 0.0 0.0 # terminator for discard data
#
0 # use meanbodysize_data (0/1)
#_COND_0 #_DF_for_meanbodysize_T-distribution_like
# note:  type=1 for mean length; type=2 for mean body weight
#_yr month fleet part type obs stderr
# -9999 0 0 0 0 0 0 # terminator for mean body size data
#
# set up population length bin structure (note - irrelevant if not using size data and using empirical wtatage
2 # length bin method: 1=use databins; 2=generate from binwidth,min,max below; 3=read vector
1 # binwidth for population size comp
0 # minimum size in the population (lower edge of first bin and size at age 0.00)
60 # maximum size in the population (lower edge of last bin)
1 # use length composition data (0/1)
#_mintailcomp: upper and lower distribution for females and males separately are accumulated until exceeding this level.
#_addtocomp:  after accumulation of tails; this value added to all bins
#_combM+F: males and females treated as combined gender below this bin number
#_compressbins: accumulate upper tail by this number of bins; acts simultaneous with mintailcomp; set=0 for no forced accumulation
#_Comp_Error:  0=multinomial, 1=dirichlet
#_ParmSelect:  parm number for dirichlet
#_minsamplesize: minimum sample size; set to 1 to match 3.24, minimum value is 0.001
#
#_mintailcomp addtocomp combM+F CompressBins CompError ParmSelect minsamplesize
  0.001     1e-07       0           0                       1           1                       1 #_fleet:1_FISHERY1
  0.001     1e-07       0           0                       1           2                       1 #_fleet:2_FISHERY2
  0.001     1e-07       0           0                       1           3                       1 #_fleet:3_SURVEY1
  0.001     1e-07       0           0                       0           0                       1 #_fleet:4_SURVEY2
# sex codes:  0=combined; 1=use female only; 2=use male only; 3=use both as joint sexxlength distribution
# partition codes:  (0=combined; 1=discard; 2=retained
61 # N_LengthBins; then enter lower edge of each length bin
 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51
52 53 54 55 56 57 58 59 60
#_yr month fleet sex part Nsamp datavector(female-male)
1982        7           1           0           2           101         0           0           0           0           0           0           0.0169
            0.0337      0.0732      0.0830      0.1598      0.0996      0.1006      0.0751      0.1584      0.0412      0.0344      0.0242      0.0227
            0.0270      0.0059      0.0014      0           0.0008      0           0.0044      0.0035      0.0038      0.0023      0.0006      0.0013
            0.0022      0.0008      0.0066      0.0013      0.0009      0.0014      0.0040      0           0           0           0           0.0009
            0.0013      0           0           0           0           0           0.0009      0.0023      0           0           0           0.0009
            0           0           0           0.0023      0           0
1983        7           1           0           2           90          0           0           0           0.0019      0           0           0
            0.0087      0.0117      0.0673      0.0205      0.0188      0.0659      0.1312      0.0990      0.0846      0.1408      0.0647      0.0669
            0.0447      0.0708      0.0188      0           0           0.0007      0.0219      0.0038      0.0038      0.0151      0.0019      0.0057
            0           0.0076      0           0.0056      0.0158      0.0010      0           0.0009      0           0           0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1984        7           1           0           2           80          0           0           0           0           0           0           0.0076
            0.0449      0.0250      0.0207      0.0550      0.0648      0.0367      0.0421      0.0798      0.1249      0.0177      0.0140      0.0345
            0.0014      0.0458      0.0068      0.0185      0           0.1649      0           0           0.0027      0.0055      0.0309      0.0087
            0.0052      0.0094      0.0063      0.0011      0.1172      0.0019      0           0.0009      0           0           0           0
            0           0.0053      0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1985        7           1           0           2           92          0           0           0           0           0.0032      0           0.0045
            0.0107      0.0293      0.0962      0.1928      0.0869      0.0551      0.0818      0.0218      0.0594      0.0747      0.0121      0.0164
            0.0163      0.0475      0.0190      0.0414      0.0143      0.0135      0.0034      0.0105      0.0053      0.0053      0.0039      0.0172
            0.0053      0.0135      0.0053      0.0034      0           0           0.0135      0           0           0.0160      0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1986        7           1           0           2           287         0           0           0           0           0           0           0
            0.0296      0.1252      0.0382      0.1321      0.0991      0.1246      0.1037      0.0464      0.0625      0.0399      0.0456      0.0237
            0.0171      0.0097      0.0005      0.0015      0.0024      0.0088      0.0032      0.0018      0.0092      0.0092      0.0134      0.0019
            0.0074      0.0116      0.0202      0.0048      0.0010      0.0040      0.0015      0           0.0003      0           0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1987        7           1           0           2           100         0           0           0           0           0.0063      0.0390      0
            0           0.0450      0.0822      0.0586      0.1222      0.0956      0.0407      0.0841      0.0748      0.0748      0.0168      0.0145
            0.0085      0           0.0046      0.0348      0.0605      0.0184      0.0333      0.0103      0           0           0           0
            0.0132      0           0           0.0156      0.0019      0           0.0263      0.0098      0.0083      0           0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1988        7           1           0           2           161         0           0           0           0           0.0016      0           0
            0           0.0180      0.0723      0.1894      0.1189      0.0930      0.0665      0.0409      0.0848      0.0338      0.0405      0.0168
            0.0639      0.0177      0.0276      0.0152      0.0092      0.0412      0.0116      0.0061      0.0021      0.0015      0.0014      0.0009
            0.0025      0.0008      0           0           0.0073      0.0080      0           0.0008      0           0.0059      0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1989        7           1           0           2           77          0           0           0           0           0           0           0
            0           0.0119      0.2162      0.0091      0.0291      0.1397      0.0336      0.1314      0.0699      0.0643      0.0092      0.0596
            0.0092      0.1026      0.0067      0.0092      0.0175      0.0080      0.0050      0.0034      0.0030      0.0003      0.0066      0.0010
            0           0.0010      0.0410      0           0           0           0.0054      0.0030      0           0.0030      0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1990        7           1           0           2           77          0           0           0           0           0           0           0
            0           0.0558      0.0415      0.1346      0.0049      0.0711      0.0078      0.0266      0.0413      0.0793      0.0644      0.1044
            0.1736      0.0741      0.0199      0.0188      0.0122      0.0271      0           0.0260      0.0074      0.0002      0           0
            0           0.0000      0.0062      0           0           0.0027      0           0           0.0000      0           0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1991        7           1           0           2           69          0           0           0           0           0           0           0
            0           0           0           0.0079      0.0191      0.0631      0.0854      0.0725      0.1334      0.1733      0.0627      0.0458
            0.0377      0.0384      0.0517      0.0455      0.0058      0.0069      0.0058      0.0037      0.0413      0.0050      0.0181      0
            0           0.0181      0.0188      0.0058      0.0161      0.0181      0           0           0           0           0           0
            0           0           0           0           0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1992        7           1           0           2           185         0           0           0           0           0           0           0
            0           0.0802      0.0735      0.0222      0.0238      0.0385      0.0291      0.1142      0.1349      0.1606      0.0945      0.0541
            0.0188      0.0351      0.0131      0.0206      0.0049      0.0115      0.0100      0.0002      0.0028      0.0038      0.0128      0.0031
            0.0012      0.0117      0.0012      0.0036      0.0049      0.0025      0.0008      0.0004      0.0028      0.0020      0.0001      0.0036
            0           0.0030      0           0.0000      0           0           0           0           0           0           0           0
            0           0           0           0           0           0
1993        7           1           0           2           120         0           0           0           0           0           0           0
            0           0           0.0991      0.0988      0.0193      0.0645      0.0184      0.0658      0.0485      0.1378      0.0783      0.0569
            0.1227      0.1039      0.0175      0.0142      0.0200      0.0087      0.0012      0.0091      0.0035      0           0           0
            0.0017      0.0001      0.0014      0.0001      0           0           0.0085      0           0.0001      0           0           0
```

	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1994	7	1	0	2	121	0	0	0	0	0	0	0
	0	0.0218	0	0.0324	0.0373	0.0131	0.0123	0.0860	0.0898	0.2109	0.1442	0.1379
	0.0739	0.0446	0.0245	0.0138	0.0105	0.0031	0.0175	0.0018	0	0	0	0.0003
	0	0	0.0003	0.0021	0.0018	0.0018	0	0	0	0.0184	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1995	7	1	0	2	105	0	0	0	0	0	0	0
	0	0	0	0.0281	0.0413	0.0425	0.0096	0.0266	0.0848	0.1642	0.1800	0.1361
	0.1174	0.0444	0.0152	0.0362	0.0112	0.0284	0	0	0	0	0	0
	0	0.0058	0	0.0065	0.0053	0	0.0113	0	0.0050	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1996	7	1	0	2	174	0	0	0	0	0	0	0
	0.0024	0.0102	0.0103	0.0362	0.0865	0.0227	0.0258	0.0656	0.0352	0.1253	0.1734	0.1707
	0.0395	0.0586	0.0290	0.0750	0.0026	0.0078	0	0	0.0022	0.0005	0	0
	0.0011	0.0149	0	0	0	0.0002	0	0.0004	0.0038	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1997	7	1	0	2	195	0	0	0	0	0	0	0
	0	0.0045	0.0365	0.0450	0.0134	0.0058	0.0232	0.0473	0.1002	0.1158	0.1052	0.1302
	0.0975	0.0577	0.0407	0.0638	0.0333	0.0161	0.0070	0.0038	0	0	0	0.0007
	0	0.0134	0.0088	0.0027	0.0130	0.0119	0	0.0026	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1998	7	1	0	2	257	0	0	0	0	0	0	0.0174
	0	0	0	0.0062	0.0078	0.0102	0.0349	0.0279	0.0486	0.1399	0.1714	0.1074
	0.0920	0.1414	0.0564	0.0416	0.0180	0.0045	0.0096	0.0110	0	0.0001	0	0.0041
	0	0.0011	0.0054	0.0042	0.0075	0.0018	0.0240	0.0008	0.0045	0	0.0003	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1999	7	1	0	2	332	0	0	0	0	0	0	0
	0	0.0207	0.0183	0.0171	0.0266	0.0197	0.0319	0.0195	0.0192	0.2658	0.1884	0.1058
	0.1138	0.0810	0.0258	0.0124	0.0184	0.0014	0.0023	0.0022	0	0	0.0060	0
	0	0	0.0002	0.0033	0.0002	0.0001	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2000	7	1	0	2	396	0	0	0	0	0	0	0
	0.0068	0.0068	0	0.0045	0.0240	0	0.0047	0.0086	0.0530	0.0972	0.1716	0.1412
	0.0970	0.1471	0.1050	0.0569	0.0154	0.0368	0.0020	0	0.0045	0.0026	0	0
	0.0046	0.0033	0.0035	0	0.0032	0.0001	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2001	7	1	0	2	290	0	0	0	0	0	0	0
	0	0	0.0150	0.0186	0	0.0099	0.0123	0.0296	0.0432	0.0958	0.1447	0.2659
	0.0659	0.0922	0.0574	0.0604	0.0285	0.0094	0.0002	0.0001	0.0112	0	0.0034	0.0033
	0	0.0013	0.0075	0.0179	0.0017	0.0022	0.0015	0	0	0.0008	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2002	7	1	0	2	396	0	0	0	0	0	0	0
	0	0	0	0	0.0081	0.0108	0.0170	0.0489	0.0888	0.2003	0.1565	0.1164
	0.0709	0.0708	0.0537	0.0821	0.0206	0.0151	0.0160	0.0005	0.0051	0.0006	0.0005	0.0006
	0.0029	0.0002	0.0051	0.0033	0.0011	0.0010	0.0003	0.0013	0.0006	0.0006	0.0001	0
	0	0	0	0.0002	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2003	7	1	0	2	293	0	0	0	0	0	0	0
	0	0	0	0	0	0.0032	0.0186	0.0053	0.0527	0.1009	0.1448	0.0844
	0.1060	0.0870	0.0741	0.0693	0.0489	0.0276	0.0149	0.0179	0.0303	0.0053	0.0007	0.0117
	0.0034	0.0056	0.0239	0.0049	0.0115	0.0247	0.0125	0.0020	0	0	0	0
	0	0.0034	0.0045	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2004	7	1	0	2	305	0	0	0	0	0	0	0
	0	0	0.0017	0	0.0061	0	0.0017	0.0007	0.0277	0.1877	0.1836	0.2289
	0.0860	0.0842	0.0490	0.0354	0.0284	0.0031	0.0110	0.0106	0.0005	0.0091	0.0009	0.0038
	0.0023	0.0002	0.0086	0.0033	0.0068	0.0034	0	0.0008	0.0033	0	0.0048	0
	0.0055	0.0008	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2005	7	1	0	2	246	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0193	0.0357	0.1653	0.1745	0.1259
	0.1661	0.0793	0.0585	0.0393	0.0239	0.0248	0.0181	0.0074	0.0096	0.0007	0.0187	0.0058
	0.0012	0	0.0033	0.0034	0.0005	0.0033	0.0005	0.0033	0	0.0072	0.0023	0
	0.0020	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2006	7	1	0	2	223	0	0	0	0	0	0	0
	0	0	0	0	0.0054	0.0077	0.0043	0.0101	0.0194	0.0891	0.1765	0.1243
	0.0964	0.1062	0.0938	0.0808	0.0434	0.0333	0.0225	0.0161	0.0278	0.0131	0.0117	0.0012
	0.0023	0.0004	0.0003	0.0003	0.0101	0.0007	0.0003	0.0024	0.0001	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2007	7	1	0	2	268	0	0	0	0	0	0.0076	0
	0	0.0012	0.0012	0.0105	0.0087	0.0015	0.0030	0.0207	0.0267	0.1026	0.1228	0.0792
	0.1315	0.1876	0.0815	0.0526	0.0243	0.0224	0.0160	0.0174	0.0169	0.0184	0.0029	0.0007
	0.0085	0.0082	0.0053	0.0028	0.0005	0.0114	0.0024	0.0018	0.0011	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2008	7	1	0	2	326	0	0	0	0	0	0	0
	0	0	0.0084	0.0042	0.0222	0.0020	0	0.0097	0.0487	0.1431	0.2103	0.1660
	0.0997	0.0866	0.0465	0.0349	0.0161	0.0059	0.0121	0.0198	0.0024	0.0086	0.0035	0.0049
	0.0064	0.0129	0.0036	0.0142	0.0018	0	0.0008	0	0	0.0028	0	0
	0	0.0019	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2009	7	1	0	2	350	0	0	0	0	0	0	0
	0	0	0	0	0	0.0094	0.0275	0.0071	0.0205	0.2198	0.2170	0.1641
	0.1275	0.0426	0.0417	0.0205	0.0284	0.0087	0.0131	0.0021	0.0159	0.0040	0.0083	0.0052
	0.0066	0	0.0003	0.0001	0	0	0.0008	0	0	0	0	0
	0.0030	0.0059	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2010	7	1	0	2	274	0	0	0	0	0	0	0
	0	0	0	0.0169	0	0	0.0056	0.0133	0.0841	0.1973	0.1352	0.1341
	0.0935	0.0767	0.0556	0.0100	0.0176	0.0131	0.0151	0.0069	0.0186	0.0004	0.0077	0.0020
	0.0569	0.0022	0	0.0094	0.0024	0.0155	0	0.0099	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2011	7	1	0	2	329	0	0	0	0	0	0	0
	0	0	0	0	0	0.0034	0.0050	0.0416	0.0349	0.1383	0.1901	0.1561
	0.0896	0.0874	0.0505	0.0120	0.0206	0.0113	0.0152	0.0297	0.0157	0.0256	0.0097	0.0086
	0.0038	0.0219	0.0001	0.0010	0.0262	0	0	0	0.0016	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2012	7	1	0	2	343	0	0	0	0	0	0	0
	0	0	0	0	0.0145	0.0029	0.0050	0.0041	0.0324	0.1665	0.2023	0.1176
	0.1249	0.0444	0.0805	0.0550	0.0106	0.0397	0.0071	0.0068	0.0028	0.0003	0.0157	0.0119
	0.0111	0.0123	0.0218	0	0.0080	0	0.0003	0	0	0	0.0015	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2013	7	1	0	2	260	0	0	0	0	0	0	0
	0	0	0	0	0.0013	0.0011	0.0085	0.0107	0.0862	0.1527	0.1547	0.1677
	0.0962	0.0332	0.0532	0.0193	0.0019	0.0112	0.0054	0.0008	0.0265	0.0011	0.0025	0.0013
	0.0066	0.0019	0.0680	0	0.0066	0	0.0760	0	0.0016	0.0038	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2014	7	1	0	2	569	0	0	0	0	0	0	0
	0	0.0037	0	0	0.0027	0	0.0004	0.0041	0.0298	0.0472	0.1427	0.1748
	0.1260	0.1042	0.0867	0.0791	0.0345	0.0306	0.0334	0.0194	0.0097	0.0208	0.0117	0.0035
	0.0024	0.0030	0.0013	0.0012	0.0081	0	0.0054	0	0.0048	0.0004	0.0064	0
	0	0.0012	0.0012	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2015	7	1	0	2	536	0	0	0	0	0	0	0
	0	0	0	0.0013	0	0	0.0034	0.0060	0.0051	0.0317	0.1154	0.1553
	0.1879	0.1236	0.0714	0.0461	0.0331	0.0428	0.0148	0.0269	0.0245	0.0114	0.0179	0.0088
	0.0174	0.0035	0.0070	0.0070	0.0115	0.0070	0.0032	0.0070	0.0070	0	0.0021	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2016	7	1	0	2	386	0	0	0	0	0	0	0
	0	0	0	0	0	0.0028	0.0140	0.0105	0.0088	0.0285	0.0996	0.1726
	0.1381	0.1170	0.1079	0.0790	0.0679	0.0425	0.0234	0.0102	0.0057	0.0056	0.0094	0.0052
	0.0108	0.0136	0	0.0045	0.0045	0	0	0	0.0090	0.0045	0	0.0045
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2017	7	1	0	2	302	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0096	0.0087	0.0197	0.0169	0.1338	0.1629
	0.1618	0.1647	0.0770	0.0681	0.0148	0.0302	0.0312	0.0281	0.0191	0.0026	0.0125	0
	0.0104	0.0052	0	0	0.0101	0	0	0	0.0060	0	0	0
	0.0044	0	0	0	0.0022	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2018	7	1	0	2	434	0	0	0	0	0	0	0
	0	0	0	0	0.0026	0	0	0.0052	0.0052	0.0297	0.1743	0.1529
	0.1433	0.1001	0.0971	0.0657	0.0502	0.0318	0.0181	0.0324	0.0019	0.0104	0.0187	0.0032
	0.0166	0.0055	0.0052	0.0032	0.0109	0	0	0.0026	0.0052	0.0028	0.0052	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2019	7	1	0	2	396	0	0	0	0	0	0	0
	0	0	0	0	0	0.0050	0.0069	0.0120	0.0100	0.0236	0.1188	0.1845
	0.1448	0.1291	0.0711	0.0754	0.0392	0.0175	0.0352	0.0164	0.0056	0.0061	0.0088	0.0135
	0.0055	0.0168	0.0011	0.0056	0.0056	0.0061	0.0089	0	0.0061	0.0050	0.0050	0.0004
	0	0	0.0101	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2020	7	1	0	2	259	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0024	0	0.0085	0.0314	0.1636	0.1752
	0.1058	0.0617	0.0835	0.0773	0.0605	0.0385	0.0527	0.0097	0.0276	0.0009	0.0213	0.0019
	0.0200	0.0033	0.0094	0.0001	0.0085	0.0085	0.0035	0.0169	0	0.0022	0.0054	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2021	7	1	0	2	314	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0114	0.0006	0.0265	0.0959	0.1237
	0.0933	0.1299	0.0863	0.0795	0.0518	0.0265	0.0211	0.0257	0.0087	0.0148	0.0114	0.0170
	0.0223	0.0225	0.0235	0.0267	0.0215	0.0092	0.0131	0.0183	0.0189	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2022	7	1	0	2	351	0	0	0	0	0	0	0
	0	0	0	0.0032	0.0029	0.0029	0.0005	0.0061	0.0093	0.0313	0.0892	0.1514
	0.0940	0.0953	0.0668	0.0909	0.0368	0.0290	0.0298	0.0111	0.0249	0.0197	0.0139	0.0364
	0.0106	0.0255	0.0212	0.0255	0.0343	0.0190	0.0059	0.0063	0	0	0	0
	0.0063	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2023	7	1	0	2	548	0	0	0	0	0	0	0
	0	0	0	0	0	0.0024	0.0024	0.0030	0.0114	0.0420	0.1868	0.2139
	0.1598	0.0956	0.0568	0.0354	0.0338	0.0231	0.0091	0.0040	0.0038	0.0090	0.0074	0.0089
	0.0195	0.0227	0.0131	0.0115	0.0053	0.0083	0	0.0030	0.0022	0	0	0
	0	0	0.0059	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1984	7	2	0	0	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	0.1000	0.1000	0.2000	0.2000	0	0	0.1000	0.1000	0	0	0
	0.2000	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1985	7	2	0	0	5221	0	0	0	0	0	0	0
	0	0	0	0	0.0035	0.0035	0.0010	0.0010	0.0090	0.0190	0.0486	0.0301
	0.0200	0.0225	0.0476	0.0240	0.0220	0.0155	0.0781	0.0917	0.1428	0.0857	0.1383	0.0696
	0.0651	0.0270	0.0190	0.0062	0.0045	0.0030	0.0010	0.0005	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1986	7	2	0	0	3450	0	0	0	0	0	0	0
	0.0018	0.0012	0.0006	0.0005	0.0013	0.0010	0.0005	0.0006	0.0074	0.0123	0.0358	0.0006
	0.0455	0.0205	0.0168	0.0094	0.0176	0.0269	0.0683	0.0727	0.1255	0.0737	0.1346	0.0383
	0.0917	0.0368	0.0302	0.0132	0.0198	0.0083	0.0090	0.0029	0.0030	0.0020	0	0.0695
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1987	7	2	0	0	1225	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0149	0.0146	0.0236	0.0301	0.0971	0.0600
	0.0472	0.0179	0.0295	0.0176	0.0181	0.0090	0.0221	0.0291	0.0753	0.0788	0.1313	0.0851
	0.0949	0.0420	0.0352	0.0110	0.0078	0.0027	0.0036	0.0014	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1988	7	2	0	0	2465	0	0	0	0	0	0	0
	0	0	0	0	0	0.0005	0.0018	0.0064	0.0412	0.0384	0.1123	0.0965
	0.1930	0.0870	0.0650	0.0191	0.0224	0.0185	0.0173	0.0134	0.0307	0.0222	0.0465	0.0286
	0.0369	0.0263	0.0293	0.0118	0.0109	0.0017	0.0085	0.0085	0.0033	0.0016	0.0004	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1989	7	2	0	0	3372	0	0	0	0	0	0	0
	0	0.0023	0.0070	0.0132	0.0304	0.0092	0.0121	0.0148	0.0624	0.0546	0.0938	0.0605
	0.0888	0.0334	0.0535	0.0511	0.0740	0.0237	0.0230	0.0085	0.0226	0.0284	0.0433	0.0374
	0.0575	0.0259	0.0275	0.0146	0.0121	0.0044	0.0037	0.0016	0.0012	0.0019	0.0006	0.0012
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1990	7	2	0	0	2795	0	0	0	0	0	0	0
	0	0.0004	0.0057	0.0117	0.0323	0.0214	0.0428	0.0443	0.1166	0.1167	0.1846	0.1310
	0.1483	0.0191	0.0269	0.0098	0.0166	0.0041	0.0067	0.0035	0.0052	0.0020	0.0076	0.0075
	0.0109	0.0063	0.0090	0.0019	0.0039	0.0018	0.0008	0.0007	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1991	7	2	0	0	1386	0	0	0	0	0	0	0
	0	0	0.0029	0.0039	0.0236	0.0164	0.0323	0.0458	0.1520	0.1267	0.2555	0.1078
	0.1641	0.0154	0.0152	0.0152	0.0092	0.0029	0.0024	0.0014	0.0010	0.0010	0.0019	0

	0.0034	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1992	7	2	0	0	48	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0833	0.3125	0.2500	0.1250
	0.1875	0.0208	0	0	0	0.0208	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
-1993	7	2	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1.0000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1994	7	2	0	0	327	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0031	0	0.0336	0.1407	0.1468	0.1131
	0.1254	0.0979	0.0581	0.0612	0.0306	0.0122	0.0245	0.0061	0.0031	0	0.0031	0.0061
	0.0031	0.0122	0.0245	0.0092	0	0.0122	0.0183	0.0153	0.0183	0.0122	0.0031	0
	0.0061	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1995	7	2	0	0	1258	0	0	0	0	0	0	0
	0	0	0	0.0008	0	0	0	0.0008	0.0429	0.1622	0.1987	0.1590
	0.1359	0.0930	0.0763	0.0469	0.0207	0.0223	0.0103	0.0008	0.0024	0.0016	0.0016	0.0016
	0.0016	0.0056	0.0032	0.0040	0.0032	0.0008	0.0008	0	0.0008	0.0016	0	0
	0.0008	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1996	7	2	0	0	352	0	0	0	0	0	0	0.0028
	0	0	0.0028	0	0.0028	0	0	0	0.0028	0.0597	0.0597	0.0540
	0.0795	0.0511	0.0455	0.0455	0.0284	0.0341	0.0483	0.0455	0.0398	0.0483	0.0398	0.0284
	0.0455	0.0483	0.0653	0.0426	0.0284	0.0170	0.0057	0.0085	0.0085	0.0085	0	0.0028
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1997	7	2	0	0	352	0	0	0	0	0	0	0
	0	0	0	0	0	0.0028	0	0.0028	0.0511	0.0597	0.0994	0.1023
	0.1136	0.1051	0.0795	0.0710	0.0511	0.0483	0.0455	0.0369	0.0426	0.0142	0.0057	0.0028
	0.0142	0.0114	0.0085	0.0114	0.0085	0	0.0028	0.0057	0.0028	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1998	7	2	0	0	125	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.0480	0.0960	0.1360
	0.1760	0.1440	0.0480	0.0160	0.0400	0.0320	0.0800	0.0160	0.0160	0.0160	0.0160	0.0160
	0.0320	0.0160	0.0320	0.0080	0.0080	0	0	0	0.0080	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1999	7	2	0	0	67	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.0896	0.3582	0.2687
	0.1642	0.0597	0.0448	0	0.0149	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2000	7	2	0	0	295	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0068	0.0441	0.0746	0.1627
	0.2237	0.1966	0.1288	0.0576	0.0237	0.0237	0.0407	0.0136	0.0034	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2001	7	2	0	0	451	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0089	0.0177	0.1153	0.1552	0.2195
	0.1574	0.1419	0.0998	0.0532	0.0155	0.0111	0.0044	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2002	7	2	0	0	181	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0118	0.0059	0.1176	0.1117	0.1117
	0.0941	0.1294	0.1353	0.0765	0.0823	0.0529	0.0470	0.0176	0.0010	0.0010	0.0010	0
	0.0005	0	0.0005	0.0020	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2003	7	2	0	0	332	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0099	0.0724	0.1086	0.1118
	0.0954	0.0921	0.1053	0.1217	0.1250	0.0757	0.0428	0.0362	0.0015	0.0011	0	0.0003
	0.0001	0	0.0001	0	0.0001	0	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	7	2	0	0	266	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0039	0.0508	0.0821	0.1330
	0.1212	0.1525	0.0782	0.0899	0.0508	0.0899	0.0743	0.0704	0.0020	0.0005	0	0.0003
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2005	7	2	0	0	672	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0034	0.0136	0.0613	0.0987	0.1498
	0.1242	0.1412	0.0936	0.0817	0.0647	0.0630	0.0562	0.0357	0.0021	0.0024	0.0020	0.0011
	0.0014	0.0011	0.0007	0.0004	0.0006	0.0007	0.0001	0.0003	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2006	7	2	0	0	464	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0069	0.0667	0.0667	0.0967
	0.1496	0.1588	0.1404	0.0875	0.0690	0.0667	0.0483	0.0391	0.0004	0.0010	0.0009	0.0003
	0.0001	0.0001	0.0002	0.0002	0.0001	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2007	7	2	0	0	1262	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0010	0.0048	0.0143	0.0448	0.0668	0.1011
	0.1431	0.1249	0.1078	0.0963	0.0677	0.0649	0.0649	0.0858	0.0035	0.0034	0.0018	0.0015
	0.0008	0.0004	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2008	7	2	0	0	1039	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0181	0.0542	0.0701	0.0915
	0.1345	0.1526	0.1175	0.0848	0.0802	0.0622	0.0622	0.0576	0.0049	0.0035	0.0029	0.0012
	0.0004	0.0005	0.0004	0.0002	0.0004	0.0003	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2009	7	2	0	0	1216	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0037	0.0092	0.0194	0.0895	0.1743	0.1863
	0.1577	0.1088	0.0876	0.0489	0.0267	0.0157	0.0240	0.0397	0.0028	0.0022	0.0012	0.0007
	0.0004	0.0006	0.0001	0.0002	0.0001	0.0001	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2010	7	2	0	0	460	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0046	0.0343	0.0709	0.0915
	0.1281	0.1373	0.1052	0.1213	0.1052	0.0572	0.0732	0.0686	0.0015	0.0007	0.0002	0

	0	0	0	0	0	0	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	7	2	0	0	1176	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0009	0.0047	0.0245	0.0480	0.0753
	0.1337	0.1271	0.1149	0.0838	0.0970	0.1083	0.1008	0.0763	0.0019	0.0008	0.0004	0.0003
	0.0003	0.0002	0.0002	0.0001	0.0000	0.0002	0.0001	0	0.0001	0.0001	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2012	7	2	0	0	943	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0012	0.0116	0.0289	0.0625	0.0880
	0.1112	0.0949	0.1274	0.1470	0.1193	0.0787	0.0753	0.0521	0.0009	0.0005	0.0002	0.0002
	0.0000	0	0	0	0	0	0.0000	0.0000	0.0000	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2013	7	2	0	0	464	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0024	0.0190	0.0428	0.0571	0.0737
	0.1427	0.0737	0.0927	0.1213	0.1997	0.0689	0.0571	0.0428	0.0008	0.0017	0.0007	0.0007
	0.0005	0.0008	0.0008	0.0001	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2014	7	2	0	0	930	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0042	0.0267	0.0660	0.1123	0.1231
	0.1438	0.1028	0.1013	0.0915	0.0395	0.0281	0.0306	0.0233	0.0104	0.0152	0.0165	0.0147
	0.0180	0.0138	0.0064	0.0064	0.0032	0.0021	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2015	7	2	0	0	1143	0	0	0	0	0	0	0
	0	0	0	0	0.0012	0	0.0008	0.0016	0.0114	0.0315	0.0621	0.0927
	0.0999	0.1005	0.0870	0.1059	0.0920	0.0702	0.0833	0.0592	0.0457	0.0217	0.0147	0.0068
	0.0059	0.0026	0.0017	0	0.0001	0	0.0012	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2016	7	2	0	0	1093	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0013	0.0068	0.0300	0.0470	0.0714
	0.1130	0.1343	0.1395	0.1264	0.1004	0.0572	0.0503	0.0408	0.0347	0.0225	0.0090	0.0038
	0.0022	0.0025	0.0022	0.0011	0	0.0022	0.0011	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2017	7	2	0	0	1056	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0007	0.0007	0.0079	0.0308	0.0732	0.0897
	0.0898	0.0977	0.1094	0.1200	0.1151	0.0607	0.0388	0.0603	0.0485	0.0274	0.0072	0.0109
	0.0045	0.0002	0	0.0022	0.0022	0.0022	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2018	7	2	0	0	1275	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0015	0.0082	0.0468	0.0710	0.0763
	0.1059	0.1375	0.1062	0.0957	0.0711	0.0499	0.0324	0.0278	0.0395	0.0418	0.0403	0.0234
	0.0115	0.0082	0.0029	0.0020	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2019	7	2	0	0	1357	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0059	0.0242	0.0678	0.0552	0.0557
	0.0498	0.0737	0.1013	0.0935	0.0878	0.0542	0.0255	0.0537	0.0712	0.0623	0.0384	0.0288
	0.0315	0.0129	0.0036	0	0.0024	0.0005	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2020	7	2	0	0	923	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0.0010	0.0216	0.0445	0.0788	0.1016
	0.1067	0.0887	0.0830	0.0729	0.0610	0.0333	0.0250	0.0442	0.0492	0.0451	0.0623	0.0503
	0.0155	0.0083	0.0035	0.0021	0	0.0007	0	0.0007	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2021	7	2	0	0	1171	0	0	0	0	0	0	0
	0	0	0	0	0	0.0006	0	0.0005	0.0105	0.0188	0.0334	0.0540
	0.0534	0.0502	0.0866	0.0956	0.0845	0.0845	0.0969	0.0480	0.0634	0.0544	0.0609	0.0330
	0.0254	0.0122	0.0114	0.0027	0.0064	0.0034	0.0055	0.0018	0.0009	0.0009	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2022	7	2	0	0	828	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0.0072	0.0336	0.0393	0.0544
	0.0573	0.0468	0.0688	0.0673	0.0980	0.0969	0.0950	0.0752	0.0575	0.0601	0.0766	0.0425
	0.0152	0.0053	0.0019	0.0007	0.0004	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2023	7	2	0	0	1310	0	0	0	0	0	0	0
	0	0	0	0	0	0	0.0006	0.0022	0.0065	0.0814	0.0749	0.0754
	0.0712	0.0414	0.0346	0.0483	0.0435	0.0620	0.0715	0.0948	0.0974	0.0788	0.0581	0.0334
	0.0160	0.0041	0.0017	0.0004	0.0015	0.0004	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1985	11	3	0	0	65	0	0	0	0	0	0	0
	0	0.0154	0.1538	0.0154	0.0308	0.0308	0.0308	0.0615	0.1231	0.0462	0.0308	0.0308
	0	0	0	0.0154	0.0308	0	0.0308	0.0154	0.0154	0.0308	0.0308	0.0462
	0.0308	0.0462	0.0308	0.0154	0.0462	0.0462	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1986	11	3	0	0	72	0	0	0	0	0	0	0
	0.0278	0.0278	0.0556	0.0556	0	0.0417	0.0556	0.2083	0.2083	0.1111	0.0833	0.0417
	0	0	0	0	0	0	0	0	0	0.0417	0	0
	0	0	0	0	0	0.0139	0	0	0.0139	0.0139	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1987	11	3	0	0	296	0	0	0	0	0	0.0034	0.0034
	0	0.1622	0.3919	0.2905	0.0507	0.0169	0.0236	0.0203	0.0135	0.0034	0	0.0034
	0.0034	0.0034	0	0	0.0034	0	0.0034	0	0	0	0	0
	0	0	0.0034	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1988	11	3	0	0	109	0	0	0	0	0.0092	0	0
	0	0	0.0917	0.0550	0.0092	0.0367	0.0459	0.0550	0.0642	0.0459	0.0459	0.0826
	0.0734	0.1376	0.1009	0.0459	0.0550	0.0367	0	0	0	0	0	0
	0	0	0	0	0	0.0092	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1989	11	3	0	0	120	0	0	0	0	0	0	0
	0	0.0750	0.2500	0.3667	0.0417	0.0167	0.0583	0.0333	0.0167	0.0083	0	0.0083
	0.0083	0.0083	0.0250	0.0167	0	0	0.0083	0	0	0.0083	0	0.0083
	0.0083	0.0167	0	0.0167	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1990	11	3	0	0	225	0	0	0	0	0	0	0.0044
	0	0.0533	0.1644	0.3244	0.2044	0.1022	0.0622	0.0133	0.0222	0.0178	0	0.0133

	0.0044	0.0044	0	0	0	0	0.0044	0	0	0	0	0
	0	0	0	0.0044	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1991	11	3	0	0	526	0	0	0	0	0	0	0
	0.0038	0.1274	0.4259	0.2510	0.0627	0.0152	0.0190	0.0266	0.0076	0.0190	0.0247	0.0114
	0.0038	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0.0019	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1992	11	3	0	0	363	0	0	0	0	0	0	0
	0.0055	0.1708	0.4050	0.1543	0.0248	0.0138	0.0193	0.0303	0.0441	0.0275	0.0413	0.0220
	0.0055	0.0110	0	0.0028	0.0028	0	0	0	0	0	0.0028	0
	0	0	0.0055	0	0.0083	0.0028	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1993	11	3	0	0	217	0	0	0	0	0	0	0
	0.0046	0.1014	0.2857	0.1198	0.0553	0.0829	0.0553	0.0876	0.0553	0.0323	0.0323	0.0461
	0.0184	0.0230	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1994	11	3	0	0	316	0	0	0	0	0.0032	0	0
	0	0.1424	0.3544	0.1108	0.0918	0.0506	0.0443	0.0348	0.0285	0.0316	0.0475	0.0411
	0.0095	0.0063	0	0	0	0	0	0	0	0	0	0
	0	0	0.0032	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1995	11	3	0	0	434	0	0	0	0	0	0	0
	0	0.0576	0.2442	0.1290	0.0461	0.0276	0.0599	0.0899	0.0645	0.0346	0.0691	0.0737
	0.0323	0.0300	0.0184	0.0138	0.0023	0.0023	0	0	0	0	0	0
	0	0	0	0	0	0	0.0046	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1996	11	3	0	0	562	0	0	0	0	0	0	0
	0.0018	0.1512	0.3541	0.1157	0.0267	0.0071	0.0178	0.0356	0.0356	0.0285	0.0302	0.0338
	0.0214	0.0623	0.0391	0.0214	0.0071	0.0053	0	0	0	0	0	0
	0	0	0.0018	0	0.0018	0	0	0	0.0018	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1997	11	3	0	0	506	0	0	0	0	0	0	0
	0.0020	0.0692	0.1087	0.0731	0.1680	0.1739	0.0751	0.0356	0.0119	0.0395	0.0375	0.0296
	0.0375	0.0415	0.0257	0.0138	0.0217	0.0099	0.0040	0	0.0040	0	0.0020	0.0020
	0	0.0040	0.0020	0	0.0079	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1998	11	3	0	0	656	0	0	0	0	0	0	0
	0.0046	0.1296	0.2744	0.0945	0.0427	0.0290	0.0335	0.0412	0.0320	0.0335	0.0427	0.0259
	0.0351	0.0412	0.0335	0.0244	0.0305	0.0213	0.0137	0.0046	0	0.0015	0	0.0046
	0.0015	0	0	0.0015	0.0015	0	0	0	0	0.0015	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
1999	11	3	0	0	697	0	0	0	0	0	0	0
	0.0014	0.0588	0.2324	0.1176	0.0316	0.0387	0.0488	0.0588	0.0516	0.0502	0.0574	0.0631
	0.0488	0.0430	0.0359	0.0215	0.0230	0.0043	0.0014	0.0014	0.0057	0.0014	0	0
	0	0	0	0.0029	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2000	11	3	0	0	841	0	0	0	0	0	0	0
	0	0.0178	0.0618	0.0428	0.0273	0.0369	0.0535	0.0452	0.0440	0.0476	0.0737	0.1046
	0.1165	0.1320	0.0951	0.0476	0.0262	0.0107	0.0024	0.0024	0.0012	0.0012	0	0.0012
	0.0012	0	0.0036	0.0012	0.0012	0	0.0012	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2001	11	3	0	0	557	0	0	0	0	0	0	0.0018
	0	0.0036	0.0269	0.0700	0.0952	0.0790	0.0377	0.0449	0.0503	0.0718	0.0790	0.0610
	0.0826	0.0898	0.0682	0.0539	0.0449	0.0108	0.0018	0	0.0018	0.0018	0.0036	0.0018
	0.0036	0.0036	0	0	0	0.0036	0.0036	0	0.0018	0.0018	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2002	11	3	0	0	456	0	0	0	0	0	0	0
	0	0.0526	0.1535	0.0461	0.0088	0.0263	0.0439	0.0636	0.0570	0.0877	0.0592	0.0614
	0.0504	0.0417	0.0658	0.0417	0.0439	0.0285	0.0132	0.0154	0.0110	0.0022	0.0022	0.0044
	0	0.0022	0.0044	0.0022	0.0022	0	0.0044	0.0022	0	0	0.0022	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2003	11	3	0	0	446	0	0	0	0	0	0	0
	0	0.0426	0.1054	0.0650	0.0538	0.0942	0.1480	0.0852	0.0269	0.0247	0.0336	0.0247
	0.0291	0.0426	0.0673	0.0426	0.0359	0.0112	0.0112	0.0090	0.0045	0.0045	0.0067	0.0045
	0	0.0045	0.0045	0.0045	0.0112	0.0022	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	11	3	0	0	387	0	0	0	0	0	0	0
	0	0.0181	0.0465	0.1550	0.0568	0.0388	0.0620	0.0413	0.0207	0.0388	0.0465	0.0310
	0.0568	0.0491	0.0491	0.0439	0.0233	0.0207	0.0207	0.0465	0.0724	0.0155	0.0052	0.0078
	0.0129	0.0078	0.0078	0.0026	0	0	0	0.0026	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2005	11	3	0	0	506	0	0	0	0	0	0.0020	0
	0	0.0731	0.1403	0.0494	0.0336	0.0336	0.0494	0.0455	0.0810	0.0870	0.0613	0.0632
	0.0573	0.0178	0.0158	0.0217	0.0277	0.0257	0.0178	0.0099	0.0257	0.0158	0.0079	0.0079
	0.0059	0.0020	0.0079	0.0040	0.0059	0	0.0020	0	0	0	0	0.0020
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2006	11	3	0	0	412	0	0	0	0	0	0	0
	0.0049	0.0558	0.2524	0.1238	0.0388	0.0073	0.0316	0.0243	0.0194	0.0243	0.0121	0.0146
	0.0218	0.0413	0.0364	0.0340	0.0170	0.0316	0.0218	0.0364	0.0316	0.0267	0.0097	0.0194
	0.0097	0.0049	0.0121	0.0097	0.0121	0.0073	0.0024	0.0049	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2007	11	3	0	0	241	0	0	0	0	0	0	0
	0.0041	0.0373	0.0913	0.0954	0.0664	0.1079	0.0747	0.0290	0.0207	0.0249	0.0290	0.0373
	0.0083	0.0332	0.0207	0.0581	0.0415	0.0498	0.0456	0.0083	0.0041	0.0207	0.0083	0.0124
	0.0124	0.0166	0.0124	0.0083	0	0.0166	0.0041	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2008	11	3	0	0	574	0	0	0	0	0	0	0
	0.0087	0.1516	0.1394	0.0366	0.0261	0.0314	0.0383	0.0436	0.0401	0.0401	0.0331	0.0261
	0.0070	0.0122	0.0174	0.0174	0.0157	0.0192	0.0226	0.0192	0.0174	0.0296	0.0192	0.0279
	0.0261	0.0122	0.0244	0.0192	0.0192	0.0261	0.0192	0.0087	0.0035	0.0017	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0						
2009	11	3	0	0	488	0	0	0	0	0	0	0
	0.0082	0.0697	0.1004	0.1066	0.0799	0.0676	0.0451	0.0430	0.0430	0.0389	0.0389	0.0307

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        0.0348  0.0574  0.0430  0.0430  0.0307  0.0205  0.0225  0.0041  0.0123  0.0020  0.0061  0.0082
        0.0082  0.0123  0.0082  0.0020  0.0041  0.0041  0       0.0020  0.0020  0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2010    11      3       0       0       821     0       0       0       0       0       0       0
        0       0.0268  0.0305  0.0231  0.0207  0.0134  0.0219  0.0305  0.0365  0.0499  0.0682  0.0621
        0.0682  0.0658  0.0621  0.0694  0.0426  0.0268  0.0268  0.0414  0.0317  0.0305  0.0244  0.0207
        0.0195  0.0195  0.0134  0.0146  0.0073  0.0061  0.0061  0.0073  0.0049  0.0061  0.0012  0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2011    11      3       0       0       789     0       0       0       0       0       0       0
        0       0.0418  0.1534  0.0621  0.0177  0.0177  0.0152  0.0215  0.0279  0.0292  0.0380  0.0406
        0.0482  0.0393  0.0520  0.0672  0.0456  0.0330  0.0532  0.0330  0.0342  0.0292  0.0215  0.0177
        0.0190  0.0089  0.0114  0.0063  0.0114  0.0025  0       0       0       0.0013  0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2012    11      3       0       0       825     0       0       0       0       0       0       0
        0       0.0558  0.0909  0.0667  0.0424  0.0388  0.0303  0.0218  0.0170  0.0145  0.0133  0.0073
        0.0109  0.0279  0.0424  0.0533  0.0448  0.0776  0.0630  0.0424  0.0558  0.0255  0.0279  0.0230
        0.0133  0.0327  0.0182  0.0109  0.0145  0.0085  0.0036  0       0.0048  0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2013    11      3       0       0       435     0       0       0       0       0       0       0
        0.0023  0.0621  0.0828  0.0207  0.0575  0.0506  0.0506  0.0506  0.0874  0.0575  0.0460  0.0460
        0.0345  0.0230  0.0207  0.0138  0.0161  0.0391  0.0253  0.0207  0.0506  0.0115  0.0207  0.0253
        0.0161  0.0230  0.0092  0.0046  0.0092  0.0115  0.0023  0.0023  0.0046  0       0.0023  0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2014    11      3       0       0       438     0       0       0       0       0       0       0
        0       0.0137  0.0251  0.0365  0.0274  0.0594  0.0457  0.0365  0.0411  0.0411  0.0457  0.0342
        0.0183  0.0160  0.0114  0.0274  0.0342  0.0274  0.0502  0.0502  0.0525  0.0365  0.0342  0.0479
        0.0571  0.0388  0.0251  0.0365  0.0160  0.0046  0.0046  0       0.0046  0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2015    11      3       0       0       342     0       0       0       0       0       0       0
        0       0.0117  0.0292  0.0497  0.0585  0.0468  0.0526  0.0497  0.0234  0.0468  0.0439  0.0175
        0.0380  0.0292  0.0380  0.0322  0.0497  0.0497  0.0497  0.0673  0.0497  0.0351  0.0439  0.0351
        0.0175  0.0117  0.0029  0.0146  0.0029  0       0       0       0       0.0029  0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2016    11      3       0       0       253     0       0       0       0       0       0       0
        0       0.0119  0.1344  0.0909  0.0672  0.0158  0.0237  0.0474  0.0395  0.0356  0.0435  0.0316
        0.0514  0.0474  0.0395  0.0514  0.0395  0.0079  0.0316  0.0237  0.0237  0.0079  0.0395  0.0237
        0.0040  0.0198  0.0237  0.0158  0       0       0.0040  0.0040  0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2017    11      3       0       0       517     0       0       0       0       0       0       0
        0       0.0174  0.1083  0.0638  0.0735  0.0426  0.0232  0.0309  0.0348  0.0309  0.0232  0.0174
        0.0329  0.0290  0.0368  0.0561  0.0522  0.0387  0.0309  0.0348  0.0348  0.0368  0.0309  0.0193
        0.0213  0.0155  0.0251  0.0155  0.0116  0.0058  0       0.0019  0.0039  0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2018    11      3       0       0       251     0       0       0       0       0       0       0
        0       0.0120  0.1155  0.0956  0.0598  0.0398  0.0359  0.0319  0.0199  0.0199  0.0199  0.0199
        0.0438  0.0199  0.0279  0.0159  0.0199  0.0199  0.0120  0.0398  0.0319  0.0438  0.0398  0.0438
        0.0279  0.0319  0.0359  0.0319  0.0239  0.0120  0       0.0080  0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2019    11      3       0       0       309     0       0       0       0       0       0       0
        0       0.0194  0.1036  0.0874  0.1068  0.0421  0.0194  0.0291  0.0388  0.0291  0.0162  0.0194
        0.0388  0.0032  0.0129  0.0129  0.0129  0.0388  0.0227  0.0518  0.0615  0.0647  0.0453  0.0615
        0.0194  0.0065  0.0162  0.0032  0.0065  0       0.0032  0.0032  0       0       0       0
        0.0032  0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2020    11      3       0       0       275     0       0       0       0       0       0       0
        0       0       0.0218  0.0073  0.0182  0.0291  0.0509  0.0473  0.0545  0.0327  0.0255  0.0255
        0.0291  0.0400  0.0364  0.0436  0.0400  0.0145  0.0364  0.0436  0.0764  0.0545  0.0436  0.0291
        0.0364  0.0400  0.0509  0.0291  0.0218  0.0109  0.0073  0       0.0036  0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2021    11      3       0       0       156     0       0       0       0       0       0       0
        0       0.0641  0.1090  0.0449  0.0256  0.0192  0.0128  0.0449  0.0256  0.0321  0.0192  0.0128
        0.0064  0.0128  0.0192  0.0128  0.0128  0.0128  0.0192  0.0064  0.0449  0.0513  0.0641  0.0513
        0.0769  0.0705  0.0449  0.0321  0.0192  0.0192  0.0064  0       0       0.0064  0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2022    11      3       0       0       277     0       0       0       0       0       0       0
        0       0.0108  0.0939  0.0830  0.0361  0.0253  0.0253  0.0433  0.0578  0.0289  0.0217  0.0072
        0.0181  0.0144  0.0108  0.0072  0.0072  0.0144  0.0181  0.0361  0.0325  0.0939  0.0650  0.0939
        0.0542  0.0578  0.0289  0.0036  0.0036  0.0036  0       0       0.0036  0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
2023    11      3       0       0       203     0       0       0       0       0       0       0
        0       0.0296  0.0394  0.0394  0.0443  0.1034  0.0591  0.0591  0.0296  0.0099  0.0345  0.0394
        0.0296  0.0197  0.0148  0.0049  0.0148  0.0099  0.0099  0.0591  0.0542  0.0542  0.0690  0.0394
        0.0443  0.0296  0.0197  0.0148  0.0197  0       0.0049  0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0


-9999   0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0
#
21 # N_age_bins
 0  1  2  3  4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
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
 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001
#_mintailcomp: upper and lower distribution for females and males separately are accumulated until exceeding this level.
#_addtocomp:  after accumulation of tails; this value added to all bins
#_combM+F: males and females treated as combined gender below this bin number
#_compressbins: accumulate upper tail by this number of bins; acts simultaneous with mintailcomp; set=0 for no forced accumulation
#_Comp_Error:  0=multinomial, 1=dirichlet
#_ParmSelect:  parm number for dirichlet
#_minsamplesize: minimum sample size; set to 1 to match 3.24, minimum value is 0.001
#
#_mintailcomp addtocomp combM+F CompressBins CompError ParmSelect minsamplesize
0.001 1e-03 0 0 1 1 1 #_fleet:1_FISHERY1
0.001 1e-03 0 0 1 2 1 #_fleet:2_FISHERY2
0.001 1e-03 0 0 1 3 1 #_fleet:3_SURVEY1
```

```
0.001 1e-03 0 0 0 0 1 #_fleet:4_SURVEY2
3 # Lbin_method_for_Age_Data: 1=poplenbins; 2=datalenbins; 3=lengths
# sex codes:  0=combined; 1=use female only; 2=use male only; 3=use both as joint sexxlength distribution
# partition codes:  (0=combined; 1=discard; 2=retained
#_yr month fleet sex part ageerr Lbin_lo Lbin_hi Nsamp datavector(female-male)
2002    7       1       0       2       1       15      15      1       0       0       0       1.0000
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       16      16      19      0       0.1106  0.4976  0.2260
        0.1659  0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       17      17      18      0       0       0.2778  0.5556
        0.1111  0.0556  0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       18      18      22      0       0       0.2887  0.3794
        0.0948  0.0474  0.1897  0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       19      19      10      0       0       0.3000  0.3000
        0.1000  0.1000  0.2000  0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       20      20      9       0       0       0.1111  0.1111
        0.3333  0.1111  0.3333  0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       21      21      4       0       0       0       0
        0.7500  0.2500  0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       22      22      5       0       0       0       0.2000
        0.4000  0       0.4000  0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       23      23      3       0       0       0.3333  0.3333
        0       0.3333  0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       24      24      3       0       0       0       0.4789
        0       0       0.5211  0       0       0       0       0       0       0       0
        0       0       0       0       0
2002    7       1       0       2       1       25      25      2       0       0       0       0
        0.5000  0.5000  0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       10      10      1       0       0       0       0
        1.0000  0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       12      12      1       0       1.0000  0       0
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       13      13      1       0       1.0000  0       0
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       14      14      2       0       0.5000  0       0.5000
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       15      15      6       0       0       0.1667  0.8333
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       16      16      20      0       0.1649  0.1566  0.5219
        0.0522  0.1044  0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       17      17      20      0       0.0084  0.1566  0.6263
        0.2088  0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       18      18      12      0       0       0       0.5000
        0.3333  0.0833  0       0.0833  0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       19      19      28      0       0       0.0714  0.5000
        0.1786  0.1429  0       0.1071  0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       20      20      15      0       0       0.0706  0.3531
        0.4943  0.0819  0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       21      21      14      0       0       0.0714  0.4286
        0.3571  0.0714  0       0.0714  0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       22      22      5       0       0       0       0.2000
        0.6000  0       0       0.2000  0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       23      23      4       0       0       0       0.3164
        0.6329  0       0       0.0507  0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       24      24      3       0       0       0       0.4629
        0.0742  0       0       0.4629  0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       25      25      2       0       0       0       0
        0.5000  0       0.5000  0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       28      28      1       0       0       0       0
        0       0       0       1.0000  0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       29      29      1       0       0       0       0
        1.0000  0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2003    7       1       0       2       1       32      32      1       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       1.0000
2003    7       1       0       2       1       34      34      1       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       1.0000
2003    7       1       0       2       1       36      36      2       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       1.0000
2004    7       1       0       2       1       13      13      1       0       0       1.0000  0
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2004    7       1       0       2       1       14      14      2       0       1.0000  0       0
        0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2004    7       1       0       2       1       15      15      6       0       0       0.8333  0
        0.1667  0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2004    7       1       0       2       1       16      16      26      0       0.3077  0.6154  0.0385
        0.0385  0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0
2004    7       1       0       2       1       17      17      25      0       0.0400  0.2400  0.1600
        0.4000  0.1600  0       0       0       0       0       0       0       0       0
        0       0       0       0       0
```

2004	7	1	0	2	1	18	18	25	0	0.0415	0.1659	0.2489
	0.4608	0.0830	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	19	19	21	0	0	0.2602	0.1041
	0.4740	0.1618	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	20	20	17	0	0	0.0588	0.2353
	0.4118	0.2353	0	0	0.0588	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	21	21	8	0	0	0.1250	0
	0.5000	0.3750	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	22	22	5	0	0	0.2000	0
	0	0.4000	0.4000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	23	23	2	0	0	0	0.0979
	0	0.9021	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	24	24	3	0	0	0	0
	0	0.6667	0.3333	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	25	25	3	0	0	0	0
	0	0.4743	0.0514	0	0.4743	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	26	26	5	0	0	0	0
	0.2000	0	0.2000	0	0.6000	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	27	27	1	0	0	0	0
	0	0	1.0000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2004	7	1	0	2	1	41	41	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2005	7	1	0	2	1	15	15	7	0	0.2216	0.2973	0.4811
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	16	16	21	0	0.1187	0.3965	0.2967
	0.1187	0.0695	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	17	17	24	0	0	0.2948	0.6587
	0	0.0465	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	18	18	20	0	0	0.3651	0.4784
	0.0522	0.1043	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	19	19	23	0	0	0.0870	0.6087
	0.0435	0.2174	0	0.0435	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	20	20	15	0	0	0.2398	0.2670
	0.0936	0.3197	0	0	0	0.0799	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	21	21	11	0	0	0	0.0983
	0.4101	0.4916	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	22	22	2	0	0	0	0.5000
	0	0.5000	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	23	23	4	0	0	0	0.6308
	0.3154	0.0538	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	24	24	4	0	0	0	0
	0.4271	0.4271	0.1457	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	25	25	2	0	0	0	0
	0	0	1.0000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	26	26	4	0	0	0	0
	0	0.2257	0.7743	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	27	27	1	0	0	0	0
	0	0	1.0000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	28	28	1	0	0	0	0
	0	0	0	0	1.0000	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	31	31	1	0	0	0	0
	0	0	1.0000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	32	32	1	0	0	0	0
	0	0	0	0	0	0	0	1.0000	0	0	0	0
	0	0	0	0	0							
2005	7	1	0	2	1	34	34	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2005	7	1	0	2	1	36	36	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2005	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2006	7	1	0	2	1	14	14	2	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	15	15	3	0	0.6667	0.3333	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	16	16	12	0	0.3333	0.2500	0.3333
	0.0833	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	17	17	12	0	0.3333	0.2500	0.4167
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	18	18	16	0	0.0625	0.2500	0.5625
	0.1250	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	19	19	12	0	0.0452	0.4548	0.0910
	0.4090	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	20	20	11	0	0	0.2858	0.5236
	0.1905	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2006	7	1	0	2	1	21	21	20	0	0	0.2106	0.3159
	0.3682	0.0527	0.0527	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	22	22	6	0	0	0	0.3333
	0.5000	0	0.1667	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	23	23	5	0	0	0.2000	0
	0.2000	0	0.4000	0	0.2000	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	24	24	2	0	0	0	0
	0.5000	0	0.5000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	25	25	3	0	0	0	0.4006
	0	0	0.5994	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	26	26	3	0	0	0	0
	0.3333	0	0.3333	0.3333	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	27	27	1	0	0	0	0
	0	0	0	0	0	0	1.0000	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	28	28	2	0	0	0	0
	0	0	0	0	0.6683	0	0.3317	0	0	0	0	0
	0	0	0	0	0							
2006	7	1	0	2	1	31	31	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2006	7	1	0	2	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2006	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	1	0	2	1	7	7	2	1.0000	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	12	12	2	0	0.5000	0.5000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	13	13	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	14	14	3	0	0.6667	0	0.3333
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	15	15	11	0	0.4301	0.5538	0
	0.0161	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	16	16	63	0	0.1200	0.7601	0.1200
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	17	17	43	0	0	0.7301	0.2699
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	18	18	52	0	0.0225	0.4972	0.2063
	0.2029	0.0485	0.0225	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	19	19	39	0	0.0274	0.1728	0.3882
	0.2195	0.1646	0.0274	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	20	20	25	0	0.0429	0.2639	0.3069
	0.2575	0.0429	0	0.0858	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	21	21	22	0	0	0.2231	0.2312
	0.3763	0.1156	0	0.0538	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	22	22	13	0	0	0	0.2788
	0.4558	0.1770	0	0.0885	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	23	23	8	0	0	0	0.3750
	0.3750	0.2500	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	24	24	6	0	0	0	0.3768
	0.0435	0.2899	0	0	0.2899	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	25	25	3	0	0	0	0
	0	0	0	1.0000	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	26	26	3	0	0	0	0
	0	0.7693	0	0	0.1154	0.1154	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	27	27	3	0	0	0	0
	0	0	0	0	0	0	0	1.0000	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	28	28	1	0	0	0	0
	0	0	0	0	0	1.0000	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	29	29	3	0	0	0	0
	0	0	0	0	0	0	0	0.4651	0.4651	0	0.0698	0
	0	0	0	0	0							
2007	7	1	0	2	1	30	30	3	0	0	0	0
	0	0	0	0	0	0	0	0.3333	0	0	0.6667	0
	0	0	0	0	0							
2007	7	1	0	2	1	32	32	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	1	0	2	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	1.0000	0	0	0
	0	0	0	0	0							
2007	7	1	0	2	1	34	34	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	1	0	2	1	35	35	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	1	0	2	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	1	0	2	1	38	38	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							

2008	7	1	0	2	1	10	10	2	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	11	11	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	12	12	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	14	14	3	0	0.6667	0.3333	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	15	15	20	0	0	0.9000	0.1000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	16	16	104	0	0.0106	0.8690	0.1097
	0.0106	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	17	17	76	0	0	0.7758	0.2087
	0.0155	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	18	18	64	0	0.0168	0.4590	0.4403
	0.0671	0.0168	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	19	19	55	0	0	0.4118	0.4451
	0.1006	0.0201	0.0224	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	20	20	36	0	0	0.2768	0.4833
	0.1200	0.0600	0.0600	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	21	21	22	0	0	0.0634	0.6521
	0.2276	0	0.0569	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	22	22	15	0	0	0.2268	0.4535
	0.1599	0.1512	0.0087	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	23	23	4	0	0	0	0.4484
	0	0.1033	0	0.4484	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	24	24	5	0	0	0	0
	0.6000	0.2000	0	0	0	0.2000	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	25	25	5	0	0	0	0
	0	0.2000	0.6000	0	0.2000	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	26	26	2	0	0	0	0
	0	0	0.5000	0	0.5000	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	27	27	8	0	0	0	0
	0	0.0215	0.1871	0.1871	0.1871	0.3741	0	0.0215	0.0215	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	28	28	3	0	0	0	0
	0	0	0	0	0	1.0000	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	29	29	6	0	0	0	0
	0	0	0	0	0.7820	0.1955	0.0225	0	0	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	30	30	2	0	0	0	0
	0	0	0	0	0	0	0	0	1.0000	0	0	0
	0	0	0	0	0							
2008	7	1	0	2	1	31	31	5	0	0	0	0
	0	0	0	0	0	0.3096	0	0	0.3452	0.3096	0	0.0357
	0	0	0	0	0							
2008	7	1	0	2	1	34	34	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0.6790	0	0	0.3210							
2008	7	1	0	2	1	35	35	5	0	0	0	0
	0	0	0	0	0	0	0	0.3096	0	0	0	0.0357
	0	0	0	0	0.6548							
2008	7	1	0	2	1	36	36	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0.5000	0.5000	0	0							
2008	7	1	0	2	1	37	37	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2008	7	1	0	2	1	39	39	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2008	7	1	0	2	1	42	42	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	9	9	1	1.0000	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	12	12	1	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	13	13	3	0	0.6667	0	0
	0	0.3333	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	14	14	2	0	0.5000	0	0.5000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	15	15	17	0	0.1864	0.4409	0.3727
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	16	16	95	0	0.1227	0.1839	0.6811
	0	0	0.0123	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	17	17	87	0	0.1116	0.1995	0.6750
	0.0140	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	18	18	94	0	0	0.0784	0.8419
	0.0797	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	19	19	65	0	0	0.1126	0.8321
	0.0554	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	20	20	49	0	0	0.0512	0.7903
	0.1586	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	21	21	36	0	0	0.0337	0.5892
	0.3771	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2009	7	1	0	2	1	22	22	15	0	0	0	0.4960
	0.3413	0.1627	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	23	23	14	0	0	0	0.1771
	0.6372	0.1858	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	24	24	16	0	0	0	0.3198
	0.4636	0.0101	0	0.2065	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	25	25	1	0	0	0	0
	0	1.0000	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	26	26	4	0	0	0	0
	0	0.0446	0.4554	0	0	0.5000	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	27	27	5	0	0	0	0.0307
	0	0.3129	0	0	0	0.0307	0.3129	0	0	0.3129	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	28	28	2	0	0	0	0
	0	0	0	0	0	0	0.5000	0	0	0.5000	0	0
	0	0	0	0	0							
2009	7	1	0	2	1	29	29	2	0	0	0	0
	0	0	0	0	0	0	0.0892	0	0	0	0	0
	0	0.9108	0	0	0							
2009	7	1	0	2	1	30	30	5	0	0	0	0
	0	0	0	0	0	0	0.4786	0	0	0.0427	0.4786	0
	0	0	0	0	0							
2009	7	1	0	2	1	31	31	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.0757	0.0757	0.0757
	0	0.7728	0	0	0							
2009	7	1	0	2	1	32	32	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	33	33	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0.0467	0	0	0.9533							
2009	7	1	0	2	1	34	34	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	36	36	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	38	38	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	39	39	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	1	0	2	1	44	44	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2010	7	1	0	2	1	12	12	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	13	13	2	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	14	14	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	15	15	23	0	0	0.8580	0.0947
	0.0473	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	16	16	56	0	0.0206	0.6843	0.1494
	0.1456	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	17	17	51	0	0	0.4786	0.2711
	0.2503	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	18	18	57	0	0	0.2531	0.1776
	0.5304	0.0195	0	0	0.0195	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	19	19	50	0	0	0.1754	0.2276
	0.5724	0	0	0	0.0246	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	20	20	31	0	0	0.0710	0.1086
	0.7849	0.0355	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	21	21	22	0	0	0.0613	0.1156
	0.7653	0.0578	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	22	22	16	0	0	0	0.0759
	0.8437	0.0805	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	23	23	9	0	0	0.1404	0
	0.8596	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	24	24	3	0	0	0	0
	0.6667	0.3333	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	25	25	8	0	0	0	0
	0.0087	0.4249	0.1416	0.1416	0.2832	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	26	26	2	0	0	0	0
	0	0.5000	0	0.5000	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	27	27	4	0	0	0	0
	0	0.2500	0	0	0.2500	0	0.2500	0	0	0.2500	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	28	28	2	0	0	0	0
	0	0	0	0	0	0	0	1.0000	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	29	29	4	0	0	0	0
	0	0	0	0	0	0	0	0.8451	0.0516	0	0	0.0516
	0	0	0.0516	0	0							
2010	7	1	0	2	1	30	30	6	0	0	0	0
	0	0	0	0	0	0	0	0	0.2097	0	0.1976	0.3952
	0.1976	0	0	0	0							

2010	7	1	0	2	1	31	31	3	0	0	0	0
	0	0	0	0	0	0	0	0	0.0297	0	0.4852	0
	0	0.4852	0	0	0							
2010	7	1	0	2	1	32	32	1	0	0	0	0
	0	0	0	0	0	0	0	1.0000	0	0	0	0
	0	0	0	0	0							
2010	7	1	0	2	1	33	33	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1.0000
	0	0	0	0	0							
2010	7	1	0	2	1	35	35	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.9424	0
	0	0.0576	0	0	0							
2010	7	1	0	2	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1.0000	0	0							
2010	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2011	7	1	0	2	1	11	11	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	12	12	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	13	13	6	0	0.8333	0.1667	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	14	14	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	15	15	13	0	0.3077	0.6154	0.0769
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	16	16	67	0	0.1064	0.4850	0.4086
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	17	17	76	0	0.0306	0.4930	0.4441
	0.0171	0.0153	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	18	18	75	0	0.0344	0.3595	0.5717
	0.0344	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	19	19	45	0	0	0.3136	0.5417
	0.0965	0.0482	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	20	20	21	0	0	0.1718	0.7070
	0.1211	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	21	21	22	0	0	0	0.5229
	0.1551	0.3220	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	22	22	18	0	0	0.0788	0.4212
	0.0879	0.4121	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	23	23	5	0	0	0	0.4861
	0.0279	0.4861	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	24	24	4	0	0	0	0.3579
	0	0.6421	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	25	25	10	0	0	0	0
	0	0.3274	0.4645	0.0178	0.0178	0.1548	0	0.0178	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	26	26	6	0	0	0	0
	0	0.3910	0.1955	0.0224	0.1955	0	0	0.1955	0	0	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	27	27	7	0	0	0	0
	0	0.2857	0	0.1429	0.1429	0.1429	0	0	0.1429	0.1429	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	28	28	4	0	0	0	0
	0	0.3210	0	0.3210	0	0	0	0	0	0	0	0.0369
	0	0.3210	0	0	0							
2011	7	1	0	2	1	29	29	4	0	0	0	0
	0	0	0	0	0	0	0	0.3210	0	0.3579	0.3210	0
	0	0	0	0	0							
2011	7	1	0	2	1	30	30	2	0	0	0	0
	0	0	0	0.5000	0	0	0	0	0	0	0	0
	0.5000	0	0	0	0							
2011	7	1	0	2	1	31	31	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.5271
	0	0	0	0.4729	0							
2011	7	1	0	2	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	1.0000	0	0
	0	0	0	0	0							
2011	7	1	0	2	1	34	34	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0.5000	0	0	0	0.5000							
2011	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2012	7	1	0	2	1	11	11	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	13	13	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	14	14	4	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	15	15	17	0	0.1167	0.6426	0.2407
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	16	16	58	0	0.0258	0.6551	0.3191
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	17	17	63	0	0	0.3894	0.5038
	0.1068	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	18	18	70	0	0	0.4491	0.2787
	0.2722	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	19	19	39	0	0	0.3053	0.3799
	0.3148	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2012	7	1	0	2	1	20	20	20	0	0	0.0695	0.4261
	0.4349	0.0695	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	21	21	23	0	0	0	0.6449
	0.3551	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	22	22	21	0	0	0	0.2268
	0.6204	0.0787	0.0740	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	23	23	9	0	0	0	0
	0.6193	0.3807	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	24	24	7	0	0	0	0
	0.2074	0	0.5975	0.1951	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	25	25	3	0	0	0	0
	0	0	0.5154	0	0	0.4846	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	26	26	6	0	0	0	0
	0	0.1975	0.1975	0.4075	0	0	0	0	0.1975	0	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	27	27	5	0	0	0	0
	0	0	0	0.4855	0	0.0290	0.0290	0	0	0.4566	0	0
	0	0	0	0	0							
2012	7	1	0	2	1	28	28	6	0	0	0	0
	0	0	0.0154	0.0154	0	0.2423	0	0	0.2423	0.2423	0	0
	0.2423	0	0	0	0							
2012	7	1	0	2	1	29	29	5	0	0	0	0
	0	0	0	0	0	0.4566	0	0	0	0	0.0290	0
	0.4855	0	0	0.0290	0							
2012	7	1	0	2	1	30	30	4	0	0	0	0
	0	0	0	0	0	0	0	0	0.3264	0	0.3264	0.3471
	0	0	0	0	0							
2012	7	1	0	2	1	31	31	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1.0000	0							
2012	7	1	0	2	1	32	32	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.0596
	0	0	0.9404	0	0							
2012	7	1	0	2	1	33	33	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2012	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2012	7	1	0	2	1	40	40	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2012	7	1	0	2	1	41	41	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2013	7	1	0	2	1	14	14	6	0	0.3333	0.5000	0.1667
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	15	15	8	0	0.2500	0.6250	0.1250
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	16	16	37	0	0.1621	0.7193	0.1186
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	17	17	35	0	0.0372	0.6988	0.1524
	0.1115	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	18	18	30	0	0.0049	0.6668	0.1740
	0.1045	0.0498	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	19	19	31	0	0	0.4575	0.2550
	0.2470	0.0405	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	20	20	17	0	0	0.2388	0.4553
	0.2313	0.0746	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	21	21	19	0	0	0.1696	0.3560
	0.3049	0.1696	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	22	22	13	0	0	0.0117	0.1294
	0.5884	0.2705	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	23	23	7	0	0	0.0293	0.3236
	0.3236	0.3236	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	24	24	8	0	0	0	0
	0.1250	0.2500	0.3750	0.1250	0	0	0	0	0	0	0.1250	0
	0	0	0	0	0							
2013	7	1	0	2	1	25	25	8	0	0	0	0.1613
	0	0.3226	0.1774	0.0160	0	0	0.3226	0	0	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	26	26	12	0	0	0	0
	0	0	0	0.3860	0.2454	0	0.1756	0.1756	0.0174	0	0	0
	0	0	0	0	0							
2013	7	1	0	2	1	27	27	12	0	0	0	0
	0	0	0.1191	0.5000	0.0118	0	0.2382	0	0.1191	0	0.0118	0
	0	0	0	0	0							
2013	7	1	0	2	1	28	28	10	0	0	0	0
	0	0	0	0	0.2877	0	0	0.2740	0	0.0136	0.2740	0
	0.1370	0.0136	0	0	0							
2013	7	1	0	2	1	29	29	7	0	0	0	0
	0	0	0	0.2327	0	0	0	0.0231	0	0	0	0.0231
	0	0.2558	0.2327	0	0.2327							
2013	7	1	0	2	1	30	30	5	0	0	0	0
	0	0	0	0	0	0	0.0311	0	0	0.3126	0.3126	0
	0	0.3126	0	0	0.0311							
2013	7	1	0	2	1	31	31	9	0	0	0.1111	0
	0	0	0	0	0	0	0	0	0	0	0.2222	0
	0.1111	0.1111	0.1111	0.2222	0.1111							
2013	7	1	0	2	1	32	32	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0.3333	0	0.1667	0.5000							
2013	7	1	0	2	1	33	33	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2013	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							

2013	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2014	7	1	0	2	1	8	8	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	12	12	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	13	13	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	14	14	5	0	0.2247	0.7753	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	15	15	28	0	0.0723	0.6258	0.3019
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	16	16	71	0	0.0205	0.8339	0.1247
	0.0208	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	17	17	79	0	0	0.7422	0.2392
	0.0187	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	18	18	60	0	0.0496	0.3189	0.6064
	0.0252	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	19	19	43	0	0.0244	0.1473	0.6482
	0.1795	0.0006	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	20	20	27	0	0	0.3898	0.5137
	0.0289	0.0676	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	21	21	26	0	0	0.2889	0.4016
	0.2562	0.0533	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	22	22	19	0	0	0	0.6298
	0.3658	0.0044	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	23	23	15	0	0	0	0.1492
	0.4582	0.2365	0.0468	0.1093	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	24	24	12	0	0	0	0.2495
	0.2257	0.2992	0.2257	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	25	25	9	0	0	0	0
	0.8759	0.1149	0.0092	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	26	26	10	0	0	0	0
	0	0.4403	0.3899	0	0.1698	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	27	27	7	0	0	0	0
	0	0.1229	0.2867	0.1336	0.0471	0	0.2867	0	0	0	0	0
	0.1229	0	0	0	0							
2014	7	1	0	2	1	28	28	3	0	0	0	0
	0	0	0	0.3333	0	0	0	0.6667	0	0	0	0
	0	0	0	0	0							
2014	7	1	0	2	1	29	29	3	0	0	0	0
	0	0	0	0	0.3333	0	0	0	0	0	0.3333	0
	0.3333	0	0	0	0							
2014	7	1	0	2	1	30	30	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.9640
	0	0	0.0360	0	0							
2014	7	1	0	2	1	31	31	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2014	7	1	0	2	1	32	32	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.1765	0
	0	0	0.4117	0	0.4117							
2014	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2014	7	1	0	2	1	38	38	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1.0000	0							
2014	7	1	0	2	1	41	41	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2014	7	1	0	2	1	42	42	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2015	7	1	0	2	1	9	9	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	12	12	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	13	13	2	0	0.5000	0	0.5000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	14	14	4	0	0	0.5000	0.2500
	0.2500	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	15	15	18	0	0	0.1693	0.5857
	0.2450	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	16	16	69	0	0	0.1807	0.7209
	0.0883	0.0096	0	0.0005	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	17	17	80	0	0	0.1191	0.7617
	0.0754	0.0093	0.0093	0.0251	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	18	18	72	0	0	0.1087	0.6305
	0.2259	0.0349	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	19	19	43	0	0	0.1067	0.6939
	0.1778	0.0206	0.0010	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	20	20	29	0	0	0.0045	0.7089
	0.1890	0.0975	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	21	21	13	0	0	0.1128	0.4149
	0.4623	0	0.0101	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2015	7	1	0	2	1	22	22	17	0	0	0.0805	0.3425
	0.4362	0.0525	0.0883	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	23	23	9	0	0	0	0
	0.5257	0.4743	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	24	24	13	0	0	0	0.1633
	0.4348	0.1937	0.1791	0.0292	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	25	25	13	0	0	0	0.1621
	0.0703	0.2200	0.1922	0.1777	0	0.1777	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	26	26	12	0	0	0	0
	0.0398	0.1591	0.1931	0.5284	0.0398	0	0.0398	0	0	0	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	27	27	4	0	0	0	0
	0.1217	0	0	0.3118	0	0.5238	0	0	0	0.0427	0	0
	0	0	0	0	0							
2015	7	1	0	2	1	28	28	6	0	0	0	0
	0	0	0	0.2831	0	0.3062	0.2831	0	0	0.0231	0.1045	0
	0	0	0	0	0							
2015	7	1	0	2	1	29	29	3	0	0	0	0
	0	0	0	0	0	0.3333	0	0	0	0	0	0.3333
	0	0.3333	0	0	0							
2015	7	1	0	2	1	30	30	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2015	7	1	0	2	1	31	31	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.6667	0.3333							
2015	7	1	0	2	1	32	32	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1.0000	0							
2015	7	1	0	2	1	33	33	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.0322
	0	0	0	0	0.9678							
2015	7	1	0	2	1	34	34	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2015	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1.0000	0	0	0							
2015	7	1	0	2	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2016	7	1	0	2	1	11	11	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	12	12	4	0	0	0.5240	0.4760
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	13	13	4	0	0.5943	0.4057	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	14	14	5	0	0	0.2387	0.5225
	0.2387	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	15	15	19	0	0.2933	0.2686	0.4348
	0.0034	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	16	16	59	0	0.1895	0.2864	0.3878
	0.1215	0	0	0	0.0148	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	17	17	64	0	0.1270	0.2229	0.3556
	0.2803	0.0137	0.0005	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	18	18	47	0	0.0378	0.0633	0.4194
	0.3850	0.0945	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	19	19	46	0	0.0015	0.1289	0.3936
	0.3618	0.1143	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	20	20	35	0	0.0313	0.0470	0.1609
	0.6893	0.0482	0.0227	0.0007	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	21	21	31	0	0	0	0.1740
	0.6844	0.0893	0	0	0.0523	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	22	22	15	0	0	0	0.1138
	0.6775	0.2087	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	23	23	7	0	0	0.1324	0.2138
	0.3482	0.3055	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	24	24	2	0	0	0	0.7972
	0.2028	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	25	25	1	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	26	26	2	0	0	0	0
	0.5000	0	0.5000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	27	27	1	0	0	0	0
	0	0	0	0	0	0	1.0000	0	0	0	0	0
	0	0	0	0	0							
2016	7	1	0	2	1	28	28	3	0	0	0	0
	0	0	0	0	0.3333	0	0.3333	0	0	0	0.3333	0
	0	0	0	0	0							
2016	7	1	0	2	1	29	29	3	0	0	0	0
	0	0	0	0	0	0.1597	0	0.4201	0	0	0	0
	0	0	0	0.4201	0							
2016	7	1	0	2	1	31	31	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2016	7	1	0	2	1	32	32	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2016	7	1	0	2	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2017	7	1	0	2	1	12	12	2	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2017	7	1	0	2	1	13	13	2	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	14	14	4	0	0.7785	0.2215	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	15	15	10	0	0.5672	0.1150	0.3178
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	16	16	53	0	0.1548	0.6645	0.1190
	0.0281	0.0336	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	17	17	54	0	0.0493	0.5910	0.2966
	0.0123	0.0261	0	0	0	0	0	0	0	0	0	0
	0	0	0.0247	0	0							
2017	7	1	0	2	1	18	18	46	0	0	0.4553	0.4952
	0.0405	0.0089	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	19	19	37	0	0	0.3954	0.5526
	0.0431	0.0054	0	0.0034	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	20	20	28	0	0	0.1868	0.5490
	0.0838	0.1670	0.0067	0	0	0.0067	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	21	21	14	0	0	0.0105	0.4515
	0.4512	0.0223	0.0645	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	22	22	7	0	0	0	0
	0.4027	0.5973	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	23	23	12	0	0	0.1097	0.1309
	0.3273	0.4321	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	24	24	9	0	0	0	0.3580
	0.1959	0.2728	0.1733	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	25	25	4	0	0	0	0
	0	0.1473	0.3527	0	0	0.1473	0	0	0	0.3527	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	26	26	5	0	0	0	0
	0	0.3395	0.6605	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	27	27	1	0	0	0	0
	0	0	1.0000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2017	7	1	0	2	1	29	29	3	0	0	0	0
	0	0	0	0	0.3333	0	0	0.3333	0	0	0	0.3333
	0	0	0	0	0							
2017	7	1	0	2	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1.0000	0	0	0	0							
2017	7	1	0	2	1	36	36	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2017	7	1	0	2	1	40	40	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2017	7	1	0	2	1	43	43	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2018	7	1	0	2	1	11	11	1	1.0000	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	13	13	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	14	14	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	15	15	19	0	0.0201	0.8092	0.1410
	0.0296	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	16	16	96	0	0.0915	0.6165	0.1628
	0.0966	0.0052	0.0275	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	17	17	73	0	0.0653	0.6828	0.2254
	0.0179	0	0.0086	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	18	18	69	0	0.0057	0.3780	0.4481
	0.1138	0.0466	0.0078	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	19	19	37	0	0	0.2616	0.4850
	0.1632	0.0777	0.0125	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	20	20	32	0	0	0.3766	0.2083
	0.2332	0.1819	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	21	21	20	0	0	0.1093	0.3788
	0.2635	0.0875	0.1468	0.0141	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	22	22	12	0	0	0.1880	0.4543
	0.3577	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	23	23	8	0	0	0.0080	0.2919
	0.1997	0.4087	0.0134	0	0.0784	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	24	24	9	0	0	0.1615	0.1644
	0	0.3370	0.3370	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	25	25	3	0	0	0	0
	0.2629	0	0.7371	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	26	26	3	0	0	0	0.2471
	0	0	0	0.7529	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	27	27	5	0	0	0	0
	0	0	0.4163	0	0	0.2797	0.2797	0	0	0	0	0
	0	0	0	0	0.0243							
2018	7	1	0	2	1	28	28	4	0	0	0	0
	0	0	0.1061	0	0.2929	0.5530	0	0	0	0	0	0
	0	0	0	0	0.0480							
2018	7	1	0	2	1	29	29	4	0	0	0	0
	0	0	0	0.1949	0.1949	0	0	0	0.6102	0	0	0
	0	0	0	0	0							

2018	7	1	0	2	1	30	30	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1.0000	0	0	0	0							
2018	7	1	0	2	1	31	31	1	0	0	0	0
	0	0	0	0	0	0	0	0	1.0000	0	0	0
	0	0	0	0	0							
2018	7	1	0	2	1	32	32	3	0	0	0	0
	0	0	0	0	0	0	0	0	0.2470	0	0	0
	0	0	0	0	0.7530							
2018	7	1	0	2	1	33	33	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2018	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2018	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2018	7	1	0	2	1	38	38	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	1	0	2	1	11	11	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	12	12	2	0	0.5531	0.4469	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	13	13	3	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	14	14	4	0	0.2373	0.5873	0.1755
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	15	15	15	0	0	0.9103	0.0897
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	16	16	82	0	0.0573	0.5435	0.3847
	0.0084	0.0061	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	17	17	61	0	0.0346	0.3816	0.5796
	0.0041	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	18	18	56	0	0	0.2937	0.6875
	0.0188	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	19	19	44	0	0	0.2882	0.6211
	0.0906	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	20	20	25	0	0	0.1819	0.6866
	0.1315	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	21	21	22	0	0	0.2120	0.5409
	0.1616	0.0854	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	22	22	8	0	0	0	0.9488
	0.0512	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	23	23	13	0	0	0.1213	0.2865
	0.4708	0	0.1213	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	24	24	5	0	0	0	0.5385
	0	0.1780	0	0.2406	0	0	0	0.0429	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	25	25	4	0	0	0	0
	0	0.3900	0.0427	0.5673	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	26	26	5	0	0	0	0.0914
	0	0	0.1827	0.0914	0	0	0	0	0	0	0.6345	0
	0	0	0	0	0							
2019	7	1	0	2	1	27	27	5	0	0	0	0
	0.2071	0.3466	0.0499	0	0	0	0	0.3466	0	0	0	0
	0	0	0	0.0499	0							
2019	7	1	0	2	1	28	28	5	0	0	0	0
	0	0	0	0	0.6711	0	0.2553	0.0368	0	0	0.0368	0
	0	0	0	0	0							
2019	7	1	0	2	1	29	29	5	0	0	0	0
	0	0	0	0	0	0.0524	0	0	0.4786	0.4690	0	0
	0	0	0	0	0							
2019	7	1	0	2	1	30	30	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.7093	0	0.2907
	0	0	0	0	0							
2019	7	1	0	2	1	31	31	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.5000	0.5000							
2019	7	1	0	2	1	32	32	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.4506	0.5494							
2019	7	1	0	2	1	33	33	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	1	0	2	1	34	34	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.5679	0.4321							
2019	7	1	0	2	1	36	36	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	1	0	2	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	1	0	2	1	38	38	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	1	0	2	1	39	39	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	1	0	2	1	41	41	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	1	0	2	1	42	42	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2020	7	1	0	2	1	12	12	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0	14 0	14 0	1 0	0 0	0 0	0 0	1.0000 0
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0	15 0	15 0	10 0	0 0	0.0477 0	0.6152 0	0.3371 0
2020	7 0.0414 0	1 0 0	0 0 0	2 0 0	1 0 0	16 0	16 0	47 0	0 0	0.0439 0	0.1961 0	0.7187 0
2020	7 0.1309 0	1 0 0	0 0 0	2 0 0	1 0 0	17 0	17 0	43 0	0 0	0.0593 0	0.2514 0	0.5584 0
2020	7 0.2209 0	1 0 0	0 0 0	2 0.0033 0	1 0 0	18 0	18 0	34 0	0 0	0.0033 0	0.2364 0	0.5362 0
2020	7 0.2384 0	1 0 0	0 0 0	2 0 0	1 0 0	19 0	19 0	23 0	0 0	0 0	0.3938 0	0.3679 0
2020	7 0.2565 0	1 0 0	0 0 0	2 0 0	1 0 0	20 0	20 0	21 0	0 0	0 0	0.4108 0	0.3327 0
2020	7 0.1447 0	1 0 0	0 0 0	2 0 0	1 0 0	21 0	21 0	14 0	0 0	0 0	0.4857 0	0.3696 0
2020	7 0.3203 0	1 0.2266 0	0 0 0	2 0 0	1 0 0	22 0	22 0	5 0	0 0	0 0	0 0	0.4531 0
2020	7 0.2220 0	1 0 0	0 0.1945 0	2 0 0	1 0 0	23 0	23 0	6 0	0 0	0 0	0 0	0.5835 0
2020	7 1.0000 0	1 0 0	0 0 0	2 0 0	1 0 0	24 0	24 0	3 0	0 0	0 0	0 0	0 0
2020	7 0.2941 0	1 0.5883 0	0 0 0	2 0 0	1 0.0760 0	25 0	25 0	5 0	0 0	0 0	0 0	0.0416 0
2020	7 0 0	1 0.1129 0	0 0.0445 0	2 0 0	1 0.0445 0	26 0	26 0	4 0	0 0	0 0	0 0	0.7981 0
2020	7 0 0	1 0 0	0 0 0	2 0.0752 0	1 0.7128 0	27 0	27 0	6 0	0 0	0 0.0376	0 0.1744	0 0
2020	7 0 0	1 0.0477 0	0 0 0	2 0 0	1 0 0	28 0.8568	28 0	4 0	0 0.0477	0 0	0 0.0477	0 0
2020	7 0 0	1 0 0.1037	0 0 0	2 0 0	1 0.0408 0	29 0.0408	29 0	6 0	0 0.7329	0 0	0 0.0408	0 0.0408
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0.2000	30 0	30 0	5 0	0 0	0 0	0 0.6000	0 0.2000
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	31 0	31 0	2 0	0 0	0 0	0 0	0 0
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0.9928	32 0	32 0	2 0	0 0	0 0	0 0.0072	0 0
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	34 0	34 0	2 0	0 0	0 0	0 0	0 0
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	35 0	35 0	2 0	0 0	0 0	0 0	0 0
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	37 0	37 0	1 0	0 0	0 0	0 0	0 0
2020	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	38 0	38 0	2 0	0 0	0 0	0 0	0 0
2021	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0	13 0	13 0	4 0	0 0	0.1261 0	0.8739 0	0 0
2021	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0	14 0	14 0	1 0	0 0	1.0000 0	0 0	0 0
2021	7 0.2645 0	1 0 0	0 0 0	2 0 0	1 0 0	15 0	15 0	12 0	0 0	0.0001 0	0.5803 0	0.1551 0
2021	7 0.1331 0	1 0.0041 0	0 0 0	2 0 0	1 0 0	16 0	16 0	42 0	0 0	0.0649 0	0.3843 0	0.4137 0
2021	7 0.1853 0	1 0.0664 0	0 0 0	2 0 0	1 0 0	17 0	17 0	42 0	0 0	0.1173 0	0.3758 0	0.2551 0
2021	7 0.3370 0	1 0 0	0 0 0	2 0 0	1 0 0	18 0	18 0	33 0	0 0	0.0272 0	0.2578 0	0.3780 0
2021	7 0.6373 0	1 0.0410 0	0 0 0	2 0 0	1 0.0038 0	19 0	19 0	40 0	0 0	0.0087 0	0.1475 0	0.1617 0
2021	7 0.4145 0	1 0.1513 0	0 0 0	2 0 0	1 0 0	20 0	20 0	29 0	0 0.0351	0 0	0.0597 0	0.3395 0
2021	7 0.6247 0	1 0 0	0 0 0	2 0 0	1 0 0	21 0	21 0	16 0	0 0	0 0	0.0001 0	0.3753 0
2021	7 0.6531 0	1 0 0	0 0 0	2 0 0	1 0 0	22 0	22 0	18 0	0 0	0 0	0.0114 0	0.3354 0
2021	7 0.8406 0	1 0.0655 0	0 0 0	2 0 0	1 0 0	23 0	23 0	7 0	0 0	0 0	0 0	0.0939 0
2021	7 0.0480 0	1 0.4520 0	0 0 0	2 0 0	1 0 0	24 0	24 0	6 0	0 0	0 0	0 0	0.5000 0
2021	7 0.2982 0	1 0.7018 0	0 0 0	2 0 0	1 0 0	25 0	25 0	3 0	0 0	0 0	0 0	0 0
2021	7 0.1752 0	1 0.4124 0	0 0 0	2 0 0	1 0.4124 0	26 0	26 0	4 0	0 0	0 0	0 0	0 0
2021	7 0 0	1 0.5372 0.0729	0 0.1141 0	2 0 0	1 0 0	27 0.2758	27 0	4 0	0 0	0 0	0 0	0 0

2021	7	1	0	2	1	28	28	4	0	0	0	0
	0	0	0.3775	0.3775	0	0	0.2450	0	0	0	0	0
	0	0	0	0	0							
2021	7	1	0	2	1	29	29	4	0	0	0	0
	0	0	0	0	0	0.5603	0	0	0	0.2876	0	0.0760
	0.0760	0	0	0	0							
2021	7	1	0	2	1	30	30	9	0	0	0	0
	0	0	0	0	0	0	0	0.2385	0	0.0324	0	0.2709
	0.2385	0.1549	0.0324	0	0.0324							
2021	7	1	0	2	1	31	31	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.0346	0.0346
	0	0	0	0	0.9308							
2021	7	1	0	2	1	32	32	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.2500	0	0
	0.2500	0	0.2500	0	0.2500							
2021	7	1	0	2	1	33	33	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0.2043	0	0.7957							
2021	7	1	0	2	1	34	34	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.1938	0.8062							
2021	7	1	0	2	1	35	35	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	7	1	0	2	1	36	36	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2022	7	1	0	2	1	9	9	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	10	10	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	12	12	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	13	13	2	0	0.4849	0.5151	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	14	14	3	0	0.6581	0.3419	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	15	15	16	0	0.6188	0.2376	0.1261
	0.0174	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	16	16	41	0	0.2431	0.3473	0.3780
	0.0316	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	17	17	56	0	0.1378	0.5631	0.2560
	0	0.0431	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	18	18	39	0	0.0882	0.4871	0.3314
	0.0877	0	0.0056	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	19	19	30	0	0	0.3669	0.4268
	0.1990	0.0073	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	20	20	26	0	0.0353	0.0630	0.3341
	0.3844	0.1831	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	21	21	19	0	0	0.3273	0.3418
	0.2290	0.0931	0.0088	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	22	22	15	0	0	0.0960	0.3936
	0.2790	0.2313	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	23	23	16	0	0	0.1056	0.2792
	0.2044	0	0.4109	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	24	24	3	0	0	0	0.1004
	0.1096	0.7899	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	25	25	8	0	0	0	0
	0.3686	0.5059	0.1255	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	26	26	5	0	0	0.0391	0
	0	0.3079	0.3079	0.0373	0	0	0.3079	0	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	27	27	3	0	0	0	0
	0	0.3105	0	0	0	0	0.6150	0.0745	0	0	0	0
	0	0	0	0	0							
2022	7	1	0	2	1	28	28	10	0	0	0	0
	0	0.0856	0.1726	0.0209	0	0.4467	0.0806	0.1726	0	0	0	0
	0.0209	0	0	0	0							
2022	7	1	0	2	1	29	29	8	0	0	0	0
	0	0	0.0251	0.1542	0	0	0.0800	0	0	0	0.3303	0
	0.0400	0	0	0	0.3703							
2022	7	1	0	2	1	30	30	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0.2272	0.0590	0	0	0.7138							
2022	7	1	0	2	1	31	31	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.2357	0.0286	0
	0.2643	0	0	0	0.4714							
2022	7	1	0	2	1	32	32	8	0	0	0	0.0272
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.1048	0.8680							
2022	7	1	0	2	1	33	33	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0.3365	0	0	0	0.6635							
2022	7	1	0	2	1	34	34	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0.3333	0	0.6667							
2022	7	1	0	2	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1.0000	0	0	0	0							
2022	7	1	0	2	1	40	40	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2023	7	1	0	2	1	11	11	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	1	0	2	1	12	12	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2023	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0	14 0	14 0	9 0	0 0	0.5044 0	0.4956 0	0 0
2023	7 0 0	1 0 0	0 0 0	2 0 0	1 0 0	15 0	15 0	36 0	0 0	0.0394 0	0.9240 0	0.0366 0
2023	7 0.0131 0	1 0 0	0 0 0	2 0 0	1 0 0	16 0	16 0	143 0	0 0	0.0382 0	0.9243 0	0.0244 0
2023	7 0.0173 0	1 0 0	0 0 0	2 0 0	1 0 0	17 0	17 0	114 0	0 0	0.0196 0	0.9166 0	0.0465 0
2023	7 0.0404 0	1 0 0	0 0 0	2 0 0	1 0 0	18 0	18 0	67 0	0 0	0 0	0.8507 0	0.1089 0
2023	7 0.1247 0	1 0 0	0 0.0183 0	2 0 0	1 0 0	19 0	19 0	41 0	0 0	0 0	0.7079 0	0.1491 0
2023	7 0.0451 0	1 0.0657 0	0 0 0	2 0 0	1 0 0	20 0	20 0	19 0	0 0	0 0	0.7784 0	0.1108 0
2023	7 0.2606 0	1 0 0	0 0.0696 0	2 0 0	1 0 0	21 0	21 0	17 0	0 0	0 0	0.3803 0	0.2894 0
2023	7 0.3993 0	1 0 0	0 0 0	2 0 0	1 0 0	22 0	22 0	7 0	0 0	0 0	0.2775 0	0.3232 0
2023	7 0.3591 0	1 0 0	0 0 0	2 0 0	1 0 0	23 0	23 0	7 0	0 0	0 0	0.5069 0	0.1340 0
2023	7 0.2728 0	1 0.2871 0	0 0 0	2 0 0	1 0 0	24 0	24 0	3 0	0 0	0 0	0 0	0.4401 0
2023	7 0 0	1 1.0000 0	0 0 0	2 0 0	1 0 0	25 0	25 0	1 0	0 0	0 0	0 0	0 0
2023	7 0.1734 0	1 0.1725 0	0 0.1247 0	2 0.1725 0	1 0 0	26 0	26 0	7 0.2323	0 0	0 0	0 0	0.1247 0
2023	7 0.5123 0	1 0 0.3803	0 0 0	2 0 0	1 0 0	27 0	27 0	3 0.1074	0 0	0 0	0 0	0 0
2023	7 0 0	1 0.2479 0	0 0 0	2 0.4182 0	1 0.3339 0	28 0	28 0	4 0	0 0	0 0	0 0	0 0
2023	7 0 0	1 0 0.2837	0 0 0.1079	2 0 0.1453	1 0 0	29 0.0305	29 0.0780	12 0.2158	0 0.1085	0 0	0 0	0 0.0305
2023	7 0 0	1 0 0.1786	0 0 0	2 0 0	1 0 0.0749	30 0.1326	30 0.1326	9 0.1326	0 0.0375	0 0	0 0	0.1786 0.1326
2023	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	31 0	31 0	7 0	0 0	0 0	0 0	0 0
2023	7 0 0	1 0 0.3646	0 0 0	2 0 0	1 0 0.6354	32 0	32 0	3 0	0 0	0 0	0 0	0 0
2023	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	33 0	33 0	4 0	0 0	0 0	0 0	0 0
2023	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	36 0	36 0	1 0	0 0	0 0	0 0	0 0
2023	7 0 0	1 0 0	0 0 0	2 0 0	1 0 1.0000	42 0	42 0	1 0	0 0	0 0	0 0	0 0
2002	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	14 0	14 0	2 0	0 0	0 0	0 0	1.0000 0
2002	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	15 0	15 0	1 0	0 0	0 0	1.0000 0	0 0
2002	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	16 0	16 0	20 0	0 0	0 0	0.9000 0	0.1000 0
2002	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	17 0	17 0	18 0	0 0	0 0	0.5000 0	0.5000 0
2002	7 0.1053 0	2 0 0	0 0.0526 0	0 0 0	1 0 0	18 0	18 0	19 0	0 0	0 0	0.3684 0	0.4737 0
2002	7 0.1250 0	2 0.0625 0	0 0 0	0 0.0625 0	1 0 0	19 0	19 0	16 0	0 0	0 0	0.0625 0	0.6875 0
2002	7 0.1818 0	2 0.0455 0	0 0.0909 0	0 0 0	1 0 0	20 0	20 0	22 0	0 0	0 0	0 0	0.6818 0
2002	7 0.2727 0	2 0.1818 0	0 0 0	0 0.0455 0	1 0 0	21 0	21 0	22 0	0 0	0 0	0 0	0.5000 0
2002	7 0.1538 0	2 0.2308 0	0 0.0769 0	0 0 0	1 0 0	22 0	22 0	13 0	0 0	0 0	0 0	0.5385 0
2002	7 0.2857 0	2 0.2857 0	0 0.1429 0	0 0 0	1 0 0	23 0	23 0	14 0	0 0	0 0	0 0	0.2857 0
2002	7 0.3333 0	2 0.4444 0	0 0.1111 0	0 0 0	1 0 0	24 0	24 0	9 0	0 0	0 0	0 0	0.1111 0
2002	7 0.2857 0	2 0.2857 0	0 0.2857 0	0 0 0	1 0 0	25 0	25 0	7 0	0 0	0 0	0 0	0.1429 0
2002	7 0 0	2 0.3333 0	0 0.3333 0	0 0 0	1 0 0	26 0	26 0	3 0	0 0	0 0	0 0	0.3333 0
2002	7 0 0	2 0 0	0 1.0000 0	0 0 0	1 0 0	27 0	27 0	2 0	0 0	0 0	0 0	0 0
2002	7 0 0	2 0 0	0 0.5000 0	0 0.5000 0	1 0 0	28 0	28 0	2 0	0 0	0 0	0 0	0 0

2002	7	2	0	0	1	29	29	2	0	0	0	0
	0	0.5000	0	0.5000	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2002	7	2	0	0	1	31	31	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1.0000	0	0	0	0							
2002	7	2	0	0	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2002	7	2	0	0	1	34	34	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0.2500	0	0	0	0.7500							
2003	7	2	0	0	1	15	15	3	0	0	0.3333	0.6667
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	16	16	22	0	0.1364	0.0909	0.6818
	0.0909	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	17	17	32	0	0.0313	0.0625	0.8438
	0.0625	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	18	18	34	0	0	0.0588	0.6471
	0.2647	0	0	0.0294	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	19	19	29	0	0	0.0690	0.3793
	0.4483	0.1034	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	20	20	27	0	0	0.0370	0.5185
	0.3333	0.1111	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	21	21	30	0	0	0	0.2667
	0.6000	0.1000	0	0.0333	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	22	22	37	0	0	0.0270	0.1351
	0.4865	0.2432	0.0270	0.0541	0.0270	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	23	23	38	0	0	0.0263	0.0526
	0.5526	0.1842	0.1053	0.0789	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	24	24	23	0	0	0	0.0435
	0.3478	0.2609	0.1304	0.1739	0.0435	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	25	25	13	0	0	0	0.0769
	0.3846	0.3077	0.1538	0.0769	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	26	26	11	0	0	0	0.0909
	0	0.1818	0.0909	0.6364	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	27	27	13	0	0	0	0
	0.0769	0.0769	0.0769	0.5385	0.1538	0.0769	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	28	28	10	0	0	0	0
	0	0	0.1000	0.6000	0.1000	0.2000	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	30	30	3	0	0	0.3333	0
	0	0	0	0	0	0	0.3333	0.3333	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	31	31	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2003	7	2	0	0	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2003	7	2	0	0	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2004	7	2	0	0	1	15	15	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	16	16	13	0	0	0.4615	0.0769
	0.4615	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	17	17	21	0	0	0.1905	0.1429
	0.5714	0.0952	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	18	18	33	0	0	0.1515	0.2121
	0.5455	0.0606	0.0303	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	19	19	31	0	0	0.0968	0.1290
	0.5484	0.1613	0	0.0323	0.0323	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	20	20	38	0	0	0.0263	0.1053
	0.7105	0.1316	0.0263	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	21	21	20	0	0	0	0.2500
	0.5000	0.2000	0	0	0.0500	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	22	22	23	0	0	0.0435	0.0870
	0.6522	0.1304	0.0435	0.0435	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	23	23	13	0	0	0	0.0769
	0.1538	0.6923	0	0.0769	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	24	24	23	0	0	0	0.0435
	0.1304	0.4783	0.2174	0.0435	0.0870	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	25	25	19	0	0	0	0
	0.1053	0.4737	0.0526	0.2632	0.1053	0	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	26	26	18	0	0	0	0
	0	0.1667	0.3333	0.1667	0.2778	0.0556	0	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	27	27	8	0	0	0	0
	0	0	0	0.2500	0.5000	0.1250	0.1250	0	0	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	28	28	2	0	0	0	0
	0	0	0	0	0	0.5000	0	0	0.5000	0	0	0
	0	0	0	0	0							
2004	7	2	0	0	1	30	30	1	0	0	0	0
	0	0	0	0	0	0	0	1.0000	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	14	14	2	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2005	7	2	0	0	1	15	15	5	0	0.2000	0.6000	0.2000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	16	16	29	0	0.1379	0.3793	0.4483
	0.0345	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	17	17	48	0	0.0417	0.2917	0.5208
	0.0625	0.0833	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	18	18	72	0	0.0139	0.2778	0.4028
	0.0278	0.2083	0.0556	0.0139	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	19	19	56	0	0	0.2500	0.2679
	0.1964	0.2500	0.0357	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	20	20	71	0	0	0.3099	0.2676
	0.0845	0.2113	0.1127	0.0141	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	21	21	45	0	0	0.2222	0.1778
	0.0667	0.3778	0.0667	0.0444	0.0222	0.0222	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	22	22	36	0	0	0.0833	0.1389
	0.1389	0.3611	0.2778	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	23	23	31	0	0	0	0.1290
	0.2581	0.3871	0.1613	0.0323	0	0	0	0	0.0323	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	24	24	32	0	0	0	0.1250
	0.1563	0.3125	0.2813	0.0938	0	0.0313	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	25	25	26	0	0	0	0.0385
	0.0769	0.2692	0.3462	0.1538	0.0769	0.0385	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	26	26	21	0	0	0	0
	0	0.0952	0.4286	0.1905	0.1429	0.1429	0	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	27	27	14	0	0	0	0
	0.0714	0.0714	0.0714	0.0714	0.2143	0.3571	0.1429	0	0	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	28	28	15	0	0	0	0
	0	0	0.2667	0.0667	0	0.2000	0.3333	0.0667	0.0667	0	0	0
	0	0	0	0	0							
2005	7	2	0	0	1	29	29	14	0	0	0	0
	0	0	0.0714	0.0714	0	0	0.2857	0.2857	0.1429	0.0714	0.0714	0
	0	0	0	0	0							
2005	7	2	0	0	1	30	30	8	0	0	0	0
	0	0	0	0.1250	0	0.2500	0.1250	0	0.1250	0.2500	0.1250	0
	0	0	0	0	0							
2005	7	2	0	0	1	31	31	10	0	0	0	0
	0	0	0	0	0.1000	0.1000	0.2000	0.2000	0	0	0.1000	0.1000
	0	0	0	0	0.2000							
2005	7	2	0	0	1	32	32	8	0	0	0	0
	0	0	0	0	0	0	0	0	0.2500	0.1250	0.3750	0
	0	0	0	0	0.2500							
2005	7	2	0	0	1	33	33	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.2000	0.2000
	0	0.2000	0	0	0.4000							
2005	7	2	0	0	1	34	34	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2005	7	2	0	0	1	35	35	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.2500	0
	0	0	0	0	0.7500							
2005	7	2	0	0	1	36	36	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.2000	0.8000							
2005	7	2	0	0	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2005	7	2	0	0	1	38	38	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2006	7	2	0	0	1	15	15	3	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	16	16	28	0	0.0357	0.6071	0.3214
	0.0357	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	17	17	28	0	0.0714	0.4643	0.3214
	0.1071	0	0.0357	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	18	18	42	0	0.0714	0.2381	0.4524
	0.2143	0	0.0238	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	19	19	65	0	0	0.2615	0.4615
	0.2308	0.0154	0.0308	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	20	20	69	0	0	0.2319	0.2899
	0.2899	0.1159	0.0580	0.0145	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	21	21	61	0	0	0.1967	0.2787
	0.3607	0.0328	0.0984	0	0.0164	0.0164	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	22	22	38	0	0	0.0526	0.1842
	0.3421	0.0789	0.2895	0.0526	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	23	23	30	0	0	0	0.0667
	0.6333	0.0333	0.1000	0.0333	0.0333	0.0667	0.0333	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	24	24	29	0	0	0	0.0345
	0.3448	0.0690	0.3103	0.1379	0.0345	0	0.0690	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	25	25	21	0	0	0	0
	0.1429	0	0.5714	0.1905	0.0952	0	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	26	26	16	0	0	0	0
	0.1250	0.0625	0.5000	0.1250	0.0625	0.0625	0.0625	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	27	27	4	0	0	0	0
	0	0	0	0.5000	0.2500	0.2500	0	0	0	0	0	0
	0	0	0	0	0							
2006	7	2	0	0	1	28	28	9	0	0	0	0
	0	0	0	0.1111	0.2222	0.1111	0.3333	0.2222	0	0	0	0
	0	0	0	0	0							

2006	7	2	0	0	1	29	29	8	0	0	0	0
	0	0	0.1250	0.1250	0.1250	0	0.1250	0.1250	0.1250	0	0.2500	0
	0	0	0	0	0							
2006	7	2	0	0	1	30	30	3	0	0	0	0
	0	0	0	0	0	0	0	0.3333	0.3333	0	0.3333	0
	0	0	0	0	0							
2006	7	2	0	0	1	31	31	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	1.0000	0	0
	0	0	0	0	0							
2006	7	2	0	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	1.0000							
2006	7	2	0	0	1	33	33	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.5000
	0.5000	0	0	0	0							
2006	7	2	0	0	1	34	34	2	0	0	0	0
	0	0	0	0	0	0	0	0.5000	0	0	0	0.5000
	0	0	0	0	0							
2006	7	2	0	0	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	2	0	0	1	14	14	2	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	15	15	8	0	0	0.6250	0.3750
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	16	16	28	0	0.0714	0.6786	0.1429
	0.0714	0.0357	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	17	17	46	0	0.0217	0.7174	0.1304
	0.0652	0.0217	0.0217	0.0217	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	18	18	64	0	0	0.7031	0.0938
	0.0938	0.0625	0	0.0313	0.0156	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	19	19	84	0	0	0.6786	0.1786
	0.1190	0.0119	0.0119	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	20	20	69	0	0	0.4928	0.2754
	0.1594	0.0290	0	0.0290	0.0145	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	21	21	63	0	0	0.2222	0.4286
	0.2381	0.0952	0.0159	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	22	22	55	0	0	0.0727	0.4545
	0.2364	0.1273	0.0364	0.0545	0	0.0182	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	23	23	45	0	0	0.0889	0.4000
	0.1556	0.2222	0.0667	0.0667	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	24	24	45	0	0	0	0.1333
	0.3556	0.2444	0.0222	0.1778	0.0222	0.0444	0	0	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	25	25	42	0	0	0	0.0238
	0.1429	0.3810	0	0.2857	0.1190	0	0.0238	0.0238	0	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	26	26	59	0	0	0	0
	0.0508	0.2034	0.0847	0.3898	0.2034	0.0169	0.0169	0.0169	0	0.0169	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	27	27	49	0	0	0	0
	0	0.0816	0.0408	0.2449	0.3061	0.1429	0.0612	0.0408	0.0204	0	0.0204	0.0408
	0	0	0	0	0							
2007	7	2	0	0	1	28	28	41	0	0	0	0
	0	0.0244	0.0244	0.1707	0.2439	0.0976	0.1220	0.2439	0.0732	0	0	0
	0	0	0	0	0							
2007	7	2	0	0	1	29	29	20	0	0	0	0
	0	0	0	0	0.1000	0.1000	0.1500	0.3500	0.1000	0.1000	0.0500	0.0500
	0	0	0	0	0							
2007	7	2	0	0	1	30	30	12	0	0	0	0
	0	0	0	0	0	0.0833	0	0.1667	0.0833	0.2500	0.2500	0.1667
	0	0	0	0	0							
2007	7	2	0	0	1	31	31	6	0	0	0	0
	0	0	0	0	0	0	0	0.1667	0	0.3333	0.3333	0.1667
	0	0	0	0	0							
2007	7	2	0	0	1	32	32	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.3333	0.3333	0
	0.3333	0	0	0	0							
2007	7	2	0	0	1	33	33	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.5000	0
	0	0.5000	0	0	0							
2007	7	2	0	0	1	35	35	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	2	0	0	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	2	0	0	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2007	7	2	0	0	1	38	38	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2008	7	2	0	0	1	15	15	9	0	0	0.7778	0.1111
	0.1111	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	16	16	32	0	0	0.7813	0.0938
	0.0938	0.0313	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	17	17	31	0	0	0.3226	0.3871
	0.2581	0	0.0323	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	18	18	48	0	0	0.2708	0.6250
	0.0417	0.0625	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	19	19	74	0	0	0.0946	0.7973
	0.1081	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	20	20	86	0	0	0.0581	0.8256
	0.0814	0	0.0233	0.0116	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	21	21	74	0	0	0.0135	0.8243
	0.1216	0.0135	0.0270	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2008	7	2	0	0	1	22	22	51	0	0	0	0.4314
	0.4706	0.0392	0.0392	0	0.0196	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	23	23	49	0	0	0	0.2449
	0.5102	0.1837	0.0408	0.0204	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	24	24	43	0	0	0	0.0698
	0.3023	0.2093	0.2791	0.0465	0.0698	0.0233	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	25	25	50	0	0	0	0.0200
	0.0800	0.3000	0.1800	0.0600	0.2400	0.1200	0	0	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	26	26	48	0	0	0	0
	0.1250	0.1250	0.2292	0.0417	0.2708	0.1458	0.0208	0.0417	0	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	27	27	52	0	0	0	0
	0	0.0385	0.0769	0.1346	0.2692	0.2692	0.0577	0.0385	0.1154	0	0	0
	0	0	0	0	0							
2008	7	2	0	0	1	28	28	38	0	0	0	0
	0	0.0263	0.0526	0.0789	0.1316	0.2895	0.1316	0.0789	0.1053	0.0526	0	0.0263
	0.0263	0	0	0	0							
2008	7	2	0	0	1	29	29	32	0	0	0	0
	0	0	0	0	0.0938	0.1875	0.0625	0.1563	0.3750	0.0625	0	0
	0.0625	0	0	0	0							
2008	7	2	0	0	1	30	30	10	0	0	0	0
	0	0	0	0	0.1000	0.2000	0	0.1000	0.3000	0.2000	0.1000	0
	0	0	0	0	0							
2008	7	2	0	0	1	31	31	4	0	0	0	0
	0	0	0	0	0	0	0	0	0.7500	0	0	0
	0	0.2500	0	0	0							
2008	7	2	0	0	1	32	32	4	0	0	0	0
	0	0	0	0	0	0	0	0	0.2500	0	0.2500	0
	0.2500	0.2500	0	0	0							
2008	7	2	0	0	1	33	33	3	0	0	0	0
	0	0	0	0	0	0	0	0	0.3333	0	0	0
	0.3333	0	0	0	0.3333							
2008	7	2	0	0	1	34	34	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2008	7	2	0	0	1	35	35	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2008	7	2	0	0	1	36	36	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	2	0	0	1	13	13	2	0	0	0.5000	0.5000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	14	14	4	0	0	0.5000	0.5000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	15	15	7	0	0	0.2857	0.7143
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	16	16	46	0	0	0.2391	0.7609
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	17	17	96	0	0	0.1042	0.8542
	0.0313	0.0104	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	18	18	102	0	0	0.0490	0.9118
	0.0294	0	0	0.0098	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	19	19	97	0	0	0.0103	0.8144
	0.1753	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	20	20	62	0	0	0	0.6452
	0.3226	0.0161	0	0.0161	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	21	21	46	0	0	0	0.5217
	0.4783	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	22	22	30	0	0	0	0.1667
	0.7333	0.1000	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	23	23	16	0	0	0	0.0625
	0.7500	0.1250	0.0625	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	24	24	11	0	0	0	0.0909
	0.2727	0.3636	0.1818	0	0	0	0.0909	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	25	25	15	0	0	0	0
	0.2667	0.3333	0.2667	0	0	0.0667	0	0.0667	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	26	26	20	0	0	0	0
	0	0.1000	0.0500	0.4000	0.1000	0.2500	0.1000	0	0	0	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	27	27	24	0	0	0	0
	0	0.0833	0.0417	0.1250	0.0417	0.1250	0.1667	0.1250	0.0833	0.2083	0	0
	0	0	0	0	0							
2009	7	2	0	0	1	28	28	24	0	0	0	0
	0	0.0417	0	0.1667	0	0.1667	0.3333	0.1250	0.0417	0.0833	0.0417	0
	0	0	0	0	0							
2009	7	2	0	0	1	29	29	10	0	0	0	0
	0	0	0	0	0	0	0.2000	0.1000	0.1000	0.3000	0.1000	0.1000
	0	0.1000	0	0	0							
2009	7	2	0	0	1	30	30	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.2857	0.5714	0.1429
	0	0	0	0	0							
2009	7	2	0	0	1	31	31	5	0	0	0	0
	0	0	0	0	0	0	0	0	0.2000	0.6000	0	0
	0.2000	0	0	0	0							
2009	7	2	0	0	1	32	32	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1.0000	0	0	0	0							
2009	7	2	0	0	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2009	7	2	0	0	1	34	34	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1.0000	0							
2009	7	2	0	0	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1.0000	0							

2009	7 0 0	2 0 0	0 0 0	0 0 0	1 0 1.0000	36 0	36 0	1 0	0 0	0 0	0 0	0 0
2010	7 0.2727 0	2 0 0	0 0 0	0 0 0	1 0 0	16 0	16 0	11 0	0 0	0.0909 0	0.1818 0	0.4545 0
2010	7 0.2105 0	2 0 0	0 0 0	0 0 0	1 0 0	17 0	17 0	19 0	0 0	0 0	0 0	0.7895 0
2010	7 0.6786 0	2 0.0357 0	0 0 0	0 0 0	1 0 0	18 0	18 0	28 0	0 0	0 0	0.0357 0	0.2500 0
2010	7 0.7143 0	2 0.0571 0	0 0 0	0 0 0	1 0 0	19 0	19 0	35 0	0 0	0 0	0 0	0.2286 0
2010	7 0.8621 0	2 0.1034 0	0 0 0	0 0 0	1 0 0	20 0	20 0	29 0	0 0	0 0	0 0	0.0345 0
2010	7 0.8438 0	2 0.1250 0	0 0 0	0 0 0	1 0 0	21 0	21 0	32 0	0 0	0 0	0 0	0.0313 0
2010	7 0.6667 0	2 0.2000 0	0 0 0	0 0 0	1 0 0	22 0	22 0	30 0	0 0	0 0.0333	0 0	0.1000 0
2010	7 0.4667 0	2 0.3667 0	0 0.1000 0	0 0.0333 0	1 0 0	23 0	23 0	30 0	0 0	0 0	0 0	0.0333 0
2010	7 0.4615 0	2 0.3077 0	0 0.1538 0	0 0.0769 0	1 0 0	24 0	24 0	13 0	0 0	0 0	0 0	0 0
2010	7 0.0625 0	2 0.2500 0	0 0.2500 0	0 0.2500 0	1 0.1875 0	25 0	25 0	16 0	0 0	0 0	0 0	0 0
2010	7 0.0588 0	2 0.1765 0	0 0.2941 0	0 0 0	1 0.2941 0	26 0.0588	26 0.0588	17 0	0 0.0588	0 0	0 0	0 0
2010	7 0 0	2 0.1429 0	0 0 0	0 0.1429 0	1 0.2857 0	27 0	27 0.2857	7 0.1429	0 0	0 0	0 0	0 0
2010	7 0 0	2 0 0	0 0 0	0 0.3333 0	1 0 0	28 0	28 0.3333	3 0.3333	0 0	0 0	0 0	0 0
2010	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	29 0	29 0	1 1.0000	0 0	0 0	0 0	0 0
2011	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	15 0	15 0	1 0	0 0	0 0	0 0	1.0000 0
2011	7 0.1500 0	2 0 0	0 0 0	0 0 0	1 0 0	16 0	16 0	20 0	0 0	0 0	0.4500 0	0.4000 0
2011	7 0.1290 0	2 0.0645 0	0 0 0	0 0 0	1 0 0	17 0	17 0	31 0	0 0	0 0	0.0968 0	0.7097 0
2011	7 0.1053 0	2 0.1404 0	0 0 0	0 0 0	1 0 0	18 0	18 0	57 0	0 0	0 0	0.2456 0	0.5088 0
2011	7 0.1193 0	2 0.2752 0	0 0 0	0 0 0	1 0 0	19 0	19 0	109 0	0 0	0 0	0.0550 0	0.5505 0
2011	7 0.0874 0	2 0.2816 0	0 0.0097 0	0 0 0	1 0 0	20 0	20 0	103 0	0 0	0 0	0.0097 0	0.6117 0
2011	7 0.2391 0	2 0.2935 0	0 0.0109 0	0 0 0	1 0 0	21 0	21 0	92 0	0 0	0 0	0.0109 0	0.4457 0
2011	7 0.2778 0	2 0.5000 0	0 0.0370 0	0 0 0	1 0 0	22 0	22 0	54 0	0 0	0 0	0 0	0.1852 0
2011	7 0.3151 0	2 0.4932 0	0 0.0274 0	0 0 0	1 0 0	23 0	23 0	73 0	0 0	0 0	0.0274 0	0.1370 0
2011	7 0.3034 0	2 0.5730 0	0 0.0449 0	0 0.0225 0	1 0 0	24 0	24 0	89 0	0 0	0 0	0 0	0.0562 0
2011	7 0.2027 0	2 0.6351 0	0 0.0811 0	0 0.0405 0	1 0 0	25 0.0135	25 0.0135	74 0	0 0	0 0	0 0	0.0135 0
2011	7 0.1538 0	2 0.3846 0	0 0.1538 0	0 0.1346 0	1 0.0769 0	26 0.0385	26 0	52 0.0385	0 0	0 0	0 0	0.0192 0
2011	7 0.1081 0	2 0.4054 0	0 0.1081 0	0 0.1351 0	1 0.0811 0	27 0.0811	27 0	37 0.0270	0 0.0270	0 0	0 0	0 0.0270
2011	7 0 0	2 0.0714 0	0 0.1429 0	0 0 0	1 0.0714 0	28 0.2143	28 0.1429	14 0.1429	0 0.1429	0 0	0 0	0 0.0714
2011	7 0 0	2 0.1250 0	0 0 0	0 0 0	1 0.1250 0	29 0	29 0	8 0.3750	0 0.2500	0 0	0 0.1250	0 0
2011	7 0 0	2 0 0.1667	0 0 0	0 0.1667 0	1 0 0	30 0	30 0.1667	6 0.1667	0 0.1667	0 0	0 0	0 0.1667
2011	7 0 0	2 0 0.2857	0 0 0	0 0 0	1 0.1429 0	31 0	31 0	7 0	0 0.1429	0 0	0 0.1429	0 0.2857
2011	7 0 0	2 0 0.3333	0 0 0	0 0 0	1 0 0	32 0	32 0	3 0.3333	0 0	0 0	0 0.3333	0 0
2011	7 0 0.2500	2 0 0	0 0 0	0 0 0	1 0 0.2500	33 0	33 0.2500	4 0	0 0.2500	0 0	0 0	0 0
2011	7 0 0.3333	2 0 0	0 0 0	0 0 0	1 0 0.3333	34 0	34 0	3 0	0 0	0 0	0 0	0 0.3333
2011	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0.6667	36 0	36 0	6 0	0 0	0 0	0 0.1667	0 0.1667
2011	7 0 0	2 0 0	0 0 0	0 0 0	1 0 1.0000	37 0	37 0	2 0	0 0	0 0	0 0	0 0
2011	7 0 0	2 0 0	0 0 0	0 0 0	1 0 1.0000	39 0	39 0	2 0	0 0	0 0	0 0	0 0

2011	7	2	0	0	1	40	40	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2012	7	2	0	0	1	14	14	1	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	15	15	8	0	0	0.3750	0
	0.5000	0	0.1250	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	16	16	14	0	0.0714	0.4286	0.2857
	0.1429	0.0714	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	17	17	34	0	0	0.5588	0.2647
	0.1765	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	18	18	56	0	0	0.3036	0.3571
	0.2679	0.0536	0.0179	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	19	19	71	0	0	0.1268	0.3380
	0.4507	0.0282	0.0563	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	20	20	59	0	0	0.0339	0.2034
	0.6780	0.0508	0.0339	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	21	21	77	0	0	0	0.1818
	0.6364	0.0909	0.0779	0.0130	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	22	22	94	0	0	0.0106	0.1489
	0.5532	0.1383	0.1489	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	23	23	77	0	0	0	0.0260
	0.4156	0.2597	0.2727	0.0260	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	24	24	57	0	0	0	0
	0.3684	0.2632	0.3333	0.0351	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	25	25	58	0	0	0	0
	0.1897	0.2414	0.4310	0.0862	0.0517	0	0	0	0	0	0	0
	0	0	0	0	0							
2012	7	2	0	0	1	26	26	37	0	0	0	0
	0	0.0270	0.4595	0.2162	0.1351	0	0.0811	0	0.0541	0	0.0270	0
	0	0	0	0	0							
2012	7	2	0	0	1	27	27	29	0	0	0	0
	0.0345	0	0.3103	0.2069	0.1379	0.1724	0.0345	0	0.0345	0.0345	0	0
	0.0345	0	0	0	0							
2012	7	2	0	0	1	28	28	14	0	0	0	0
	0	0	0.2857	0.0714	0.0714	0	0.0714	0	0.1429	0.2143	0	0.0714
	0	0	0	0.0714	0							
2012	7	2	0	0	1	29	29	4	0	0	0	0
	0	0	0	0.2500	0	0	0	0	0	0	0	0.5000
	0.2500	0	0	0	0							
2012	7	2	0	0	1	30	30	4	0	0	0	0
	0	0	0	0	0	0	0	0	0.2500	0.2500	0	0.2500
	0.2500	0	0	0	0							
2012	7	2	0	0	1	31	31	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1.0000	0	0							
2012	7	2	0	0	1	37	37	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0.5000	0	0.5000							
2012	7	2	0	0	1	38	38	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1.0000	0	0							
2012	7	2	0	0	1	39	39	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2013	7	2	0	0	1	14	14	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	15	15	6	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	16	16	15	0	0.1333	0.7333	0.0667
	0.0667	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	17	17	16	0	0	0.8750	0.0625
	0	0.0625	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	18	18	27	0	0	0.6296	0.2963
	0.0370	0.0370	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	19	19	39	0	0	0.7436	0.2308
	0.0256	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	20	20	23	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	21	21	35	0	0	0.4571	0.1143
	0.0571	0.3143	0.0571	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	22	22	41	0	0	0.1463	0.1951
	0.0976	0.3171	0.0732	0.1463	0.0244	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	23	23	73	0	0	0.0137	0.0548
	0.0822	0.6164	0.0959	0.1370	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	24	24	27	0	0	0.0370	0.2963
	0.0370	0.2963	0.1481	0.1852	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	25	25	24	0	0	0	0.0833
	0.0833	0.3750	0.0833	0.2917	0.0833	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	26	26	17	0	0	0	0.0588
	0	0.2941	0.0588	0.3529	0.2353	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	27	27	6	0	0	0	0
	0.1667	0.3333	0	0.1667	0.3333	0	0	0	0	0	0	0
	0	0	0	0	0							
2013	7	2	0	0	1	28	28	13	0	0	0	0
	0	0	0.3077	0.3077	0.1538	0.0769	0	0	0	0.0769	0.0769	0
	0	0	0	0	0							
2013	7	2	0	0	1	29	29	5	0	0	0	0
	0	0	0.2000	0.2000	0.4000	0.2000	0	0	0	0	0	0
	0	0	0	0	0							

2013	7	2	0	0	1	30	30	5	0	0	0	0
	0	0	0	0	0	0	0.2000	0	0.2000	0.2000	0	0
	0	0.2000	0.2000	0	0							
2013	7	2	0	0	1	31	31	4	0	0	0	0
	0	0	0	0	0	0.2500	0.2500	0	0	0.2500	0.2500	0
	0	0	0	0	0							
2013	7	2	0	0	1	32	32	6	0	0	0	0
	0	0	0	0	0	0	0.3333	0	0	0.1667	0.3333	0
	0	0	0	0.1667	0							
2013	7	2	0	0	1	33	33	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.3333	0.3333	0.3333
	0	0	0	0	0							
2013	7	2	0	0	1	34	34	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1.0000	0	0	0							
2014	7	2	0	0	1	14	14	4	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	15	15	28	0	0	0.6586	0.3017
	0	0.0397	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	16	16	71	0	0	0.8134	0.1061
	0.0161	0.0483	0.0161	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	17	17	100	0	0	0.5476	0.3744
	0.0373	0.0218	0.0189	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	18	18	120	0	0	0.3022	0.6557
	0.0136	0.0199	0.0086	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	19	19	129	0	0	0.1507	0.7794
	0.0410	0.0170	0.0096	0	0	0	0	0	0.0022	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	20	20	85	0	0	0.1942	0.5752
	0.1967	0	0.0339	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	21	21	88	0	0	0.0380	0.6346
	0.2374	0.0895	0.0006	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	22	22	76	0	0	0.0348	0.5660
	0.2801	0.0762	0.0306	0.0116	0.0007	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	23	23	34	0	0	0.0538	0.3994
	0.3164	0.1593	0.0711	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	24	24	29	0	0	0	0.4284
	0.1511	0.2107	0.1983	0	0.0115	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	25	25	29	0	0	0	0.1899
	0.1611	0.3097	0.1809	0.0455	0.1129	0	0	0	0	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	26	26	28	0	0	0	0.0126
	0.1926	0.1784	0.3623	0.0053	0.1382	0.0650	0	0	0.0455	0	0	0
	0	0	0	0	0							
2014	7	2	0	0	1	27	27	15	0	0	0	0
	0.0282	0.0059	0.4641	0	0.3340	0.0059	0	0	0	0	0	0
	0.1337	0	0.0282	0	0							
2014	7	2	0	0	1	28	28	16	0	0	0	0
	0.0193	0.0193	0.1398	0	0.5226	0.0892	0	0.1398	0	0	0	0
	0.0699	0	0	0	0							
2014	7	2	0	0	1	29	29	16	0	0	0	0
	0	0	0	0	0	0.0819	0.1283	0.0642	0.1283	0.1483	0.2566	0.0642
	0.0642	0.0642	0	0	0							
2014	7	2	0	0	1	30	30	15	0	0	0	0
	0	0	0	0.0200	0.0721	0	0.0721	0	0.1442	0.0721	0.1642	0.0946
	0.0721	0.0721	0.0721	0.0721	0.0721							
2014	7	2	0	0	1	31	31	17	0	0	0	0
	0	0	0	0	0.0588	0.0588	0.0588	0.1176	0.0588	0	0.1176	0.2941
	0.0588	0	0.0588	0	0.1176							
2014	7	2	0	0	1	32	32	13	0	0	0	0
	0	0	0	0	0.0769	0	0	0	0.0769	0	0.1538	0.2308
	0.0769	0.0769	0	0.2308	0.0769							
2014	7	2	0	0	1	33	33	6	0	0	0	0
	0	0	0	0	0	0	0	0	0.1667	0	0.1667	0.3333
	0.3333	0	0	0	0							
2014	7	2	0	0	1	34	34	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.1667	0.1667
	0.1667	0.1667	0	0	0.3333							
2014	7	2	0	0	1	35	35	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.3333
	0	0	0.3333	0	0.3333							
2014	7	2	0	0	1	36	36	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0.5000	0	0.5000	0							
2015	7	2	0	0	1	11	11	1	0	0	0	0
	1.0000	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	13	13	1	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	14	14	2	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	15	15	15	0	0	0.4752	0.5203
	0.0045	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	16	16	44	0	0.0396	0.3795	0.5564
	0.0245	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	17	17	81	0	0	0.2332	0.7039
	0.0629	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	18	18	119	0	0	0.1976	0.6286
	0.1248	0.0406	0.0083	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	19	19	127	0	0	0.0451	0.7500
	0.1576	0.0082	0.0232	0.0077	0.0082	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	20	20	113	0	0	0.0097	0.7314
	0.2030	0.0235	0.0200	0.0124	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	21	21	92	0	0	0	0.4969
	0.3890	0.0100	0.0523	0.0518	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2015	7	2	0	0	1	22	22	110	0	0	0.0077	0.2228
	0.5246	0.1262	0.1041	0.0073	0.0073	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	23	23	95	0	0	0	0.0594
	0.5698	0.1857	0.1040	0.0811	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	24	24	80	0	0	0	0.0583
	0.4040	0.3268	0.1046	0.0764	0.0123	0	0	0	0	0	0	0
	0.0177	0	0	0	0							
2015	7	2	0	0	1	25	25	84	0	0	0	0.0103
	0.2362	0.3203	0.0972	0.1475	0.0782	0.0789	0.0313	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	26	26	61	0	0	0	0
	0.0956	0.1103	0.1524	0.3103	0.0820	0.2055	0.0439	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	27	27	50	0	0	0	0
	0.0272	0.1749	0.1272	0.1302	0.1487	0.1905	0.1382	0	0.0180	0	0.0272	0.0180
	0	0	0	0	0							
2015	7	2	0	0	1	28	28	24	0	0	0	0
	0	0.1046	0.0756	0.1637	0.0951	0.1549	0.1744	0.0969	0.0378	0	0	0.0969
	0	0	0	0	0							
2015	7	2	0	0	1	29	29	17	0	0	0	0
	0	0	0	0	0	0.2190	0.0560	0.2582	0.1174	0.0587	0.1147	0.0587
	0.0587	0.0587	0	0	0							
2015	7	2	0	0	1	30	30	8	0	0	0	0
	0	0	0	0.1265	0.1265	0	0.1265	0	0.2412	0.1265	0	0
	0.1265	0.1265	0	0	0							
2015	7	2	0	0	1	31	31	7	0	0	0	0
	0	0	0	0.1380	0.1448	0.1448	0	0.2828	0.1448	0	0	0
	0	0	0	0.1448	0							
2015	7	2	0	0	1	32	32	3	0	0	0	0
	0	0	0	0	0	0.3333	0	0	0	0	0	0
	0.3333	0	0	0	0.3333							
2015	7	2	0	0	1	33	33	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1.0000	0
	0	0	0	0	0							
2015	7	2	0	0	1	35	35	1	0	0	0	0
	0	0	0	0	0	1.0000	0	0	0	0	0	0
	0	0	0	0	0							
2015	7	2	0	0	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	1.0000	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	14	14	2	0	0	0.5000	0.5000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	15	15	9	0	0.1644	0.6291	0.0984
	0.1081	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	16	16	46	0	0.1123	0.3134	0.3081
	0.1570	0.0845	0.0246	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	17	17	53	0	0.1214	0.1235	0.5050
	0.2196	0	0.0305	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	18	18	83	0	0.0157	0.1181	0.4380
	0.3361	0.0827	0.0094	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	19	19	133	0	0	0.0340	0.4439
	0.4660	0.0480	0	0.0082	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	20	20	154	0	0.0084	0.0599	0.2325
	0.6517	0.0381	0.0094	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	21	21	154	0	0	0.0106	0.1190
	0.7563	0.1002	0.0139	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	22	22	137	0	0.0031	0.0179	0.1281
	0.5996	0.2183	0.0155	0.0020	0.0155	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	23	23	101	0	0	0.0112	0.1184
	0.5431	0.3157	0.0092	0.0025	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	24	24	56	0	0	0	0.0758
	0.6094	0.2859	0	0.0222	0.0068	0	0	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	25	25	46	0	0	0	0.0817
	0.4057	0.3593	0.0475	0.0504	0	0	0.0553	0	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	26	26	39	0	0	0	0.0186
	0.3525	0.2453	0.1872	0.0063	0.0613	0.0320	0.0959	0.0010	0	0	0	0
	0	0	0	0	0							
2016	7	2	0	0	1	27	27	33	0	0	0	0
	0.1012	0.3149	0.0970	0.1053	0.1896	0	0.0448	0.0730	0	0	0.0365	0
	0.0365	0.0011	0	0	0							
2016	7	2	0	0	1	28	28	20	0	0	0	0
	0	0.1129	0.1564	0.0500	0.1129	0.1129	0.0564	0.1711	0.0018	0.1129	0.0564	0
	0.0564	0	0	0	0							
2016	7	2	0	0	1	29	29	9	0	0	0	0
	0	0	0	0	0	0.1416	0.2832	0.0044	0.0044	0.1416	0	0
	0	0.1416	0.1416	0	0.1416							
2016	7	2	0	0	1	30	30	3	0	0	0	0
	0	0	0	0	0	0	0	0	0.3333	0	0.3333	0
	0	0	0	0	0.3333							
2016	7	2	0	0	1	31	31	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0.5000	0	0	0	0.5000							
2016	7	2	0	0	1	32	32	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2016	7	2	0	0	1	33	33	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0.5000	0	0	0.5000							
2016	7	2	0	0	1	34	34	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1.0000	0	0							
2016	7	2	0	0	1	36	36	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2016	7	2	0	0	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2017	7	2	0	0	1	13	13	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2017	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	14 0	14 0	1 0	0 0	0 0	1.0000 0	0 0
2017	7 0 0	2 0.1706 0	0 0 0	0 0 0	1 0 0	15 0	15 0	17 0	0 0	0.2866 0	0.5427 0	0 0
2017	7 0.0228 0	2 0.0456 0	0 0 0	0 0 0	1 0 0	16 0	16 0	38 0	0 0	0.1506 0	0.6429 0	0.1381 0
2017	7 0.0198 0	2 0.0294 0	0 0 0	0 0 0	1 0 0	17 0	17 0	71 0	0 0	0.0107 0	0.6288 0	0.3113 0
2017	7 0.0557 0	2 0.0380 0	0 0 0	0 0 0	1 0 0	18 0	18 0	106 0	0 0	0.0378 0	0.3741 0	0.4944 0
2017	7 0.1234 0	2 0.1163 0	0 0.0075 0	0 0 0	1 0 0	19 0	19 0	109 0	0 0	0.0341 0	0.1852 0	0.5335 0
2017	7 0.2954 0	2 0.1334 0	0 0 0	0 0 0	1 0 0	20 0	20 0	107 0	0 0	0 0	0.1698 0	0.4014 0
2017	7 0.2631 0	2 0.3094 0	0 0.0143 0	0 0.0061 0	1 0 0	21 0	21 0	97 0	0 0	0 0	0.1397 0	0.2674 0
2017	7 0.2990 0	2 0.3735 0	0 0.0360 0	0 0 0	1 0 0	22 0.0180	22 0	112 0	0 0	0 0	0.0656 0	0.2080 0
2017	7 0.2705 0	2 0.5032 0	0 0.0804 0	0 0.0114 0	1 0 0	23 0	23 0	117 0	0 0	0 0	0.0228 0	0.1117 0
2017	7 0.1120 0	2 0.6549 0	0 0.1450 0	0 0 0	1 0.0037 0	24 0.0112	24 0	77 0	0 0	0 0	0.0501 0	0.0231 0
2017	7 0.1622 0	2 0.5144 0	0 0.1260 0	0 0.1287 0	1 0 0	25 0	25 0.0556	44 0	0 0	0 0	0.0130 0	0 0
2017	7 0.0113 0	2 0.3300 0	0 0.2654 0	0 0.0261 0	1 0 0	26 0.2156	26 0	43 0.1074	0 0.0358	0 0	0 0	0.0084 0
2017	7 0.0142 0.0452	2 0.1704 0	0 0.0899 0	0 0.0452 0	1 0 0	27 0.3590	27 0.0482	37 0.2259	0 0.0010	0 0	0 0	0 0.0010
2017	7 0 0	2 0 0.0088	0 0.1031 0	0 0.0263 0	1 0.0837 0	28 0.1761	28 0.2511	22 0.3491	0 0	0 0.0019	0 0	0 0
2017	7 0 0	2 0 0	0 0 0.3221	0 0 0	1 0 0	29 0	29 0	4 0.3221	0 0.0337	0 0	0 0.3221	0 0
2017	7 0 0	2 0 0.2396	0 0.0623 0.2189	0 0 0	1 0 0.0623	30 0	30 0	10 0	0 0.2189	0 0	0 0	0 0.1981
2017	7 0 0	2 0 0.4751	0 0 0	0 0 0	1 0 0	31 0	31 0	3 0.0498	0 0	0 0	0.4751 0	0 0
2017	7 0 0	2 0 0	0 0 1.0000	0 0 0	1 0 0	32 0	32 0	1 0	0 0	0 0	0 0	0 0
2017	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0.9783	34 0.0217	34 0	2 0	0 0	0 0	0 0	0 0
2017	7 0 0	2 0 0	0 0 0	0 0 0	1 0 1.0000	35 0	35 0	1 0	0 0	0 0	0 0	0 0
2017	7 0 0	2 0 0	0 0 0	0 0 0	1 0 1.0000	36 0	36 0	1 0	0 0	0 0	0 0	0 0
2018	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0	14 0	14 0	3 0	0 0	0.5421 0	0.4579 0	0 0
2018	7 0.1021 0	2 0 0	0 0 0	0 0 0	1 0 0	15 0	15 0	8 0	0 0	0 0	0.6947 0	0.2032 0
2018	7 0.0663 0	2 0.0138 0	0 0 0	0 0 0	1 0 0	16 0	16 0	57 0	0 0	0.1498 0	0.5998 0	0.1704 0
2018	7 0.0367 0	2 0.0092 0	0 0.0092 0	0 0.0128 0	1 0 0	17 0	17 0	80 0	0 0	0.1070 0	0.6704 0	0.1547 0
2018	7 0.0465 0	2 0.0250 0	0 0.0417 0	0 0 0	1 0 0	18 0	18 0	92 0	0 0	0.0610 0	0.4704 0	0.3555 0
2018	7 0.1099 0	2 0.0694 0	0 0.0647 0	0 0 0	1 0 0	19 0	19 0	129 0	0 0	0.0138 0	0.3591 0	0.3831 0
2018	7 0.1711 0	2 0.0586 0	0 0.0361 0	0 0 0	1 0 0	20 0	20 0	160 0	0 0	0 0	0.3749 0	0.3593 0
2018	7 0.1966 0	2 0.0446 0	0 0.0353 0	0 0.0057 0	1 0 0	21 0	21 0.0010	122 0	0 0	0 0	0.3181 0	0.3986 0
2018	7 0.4300 0	2 0.0967 0	0 0.0769 0	0 0.0063 0	1 0.0062 0	22 0	22 0	112 0	0 0	0.0087 0	0.1044 0	0.2708 0
2018	7 0.2353 0	2 0.0986 0	0 0.1366 0	0 0.0583 0	1 0.0167 0	23 0	23 0	87 0.0118	0 0	0 0	0.0652 0	0.3775 0
2018	7 0.4405 0	2 0.1933 0	0 0.0926 0	0 0.0002 0	1 0.0236 0	24 0	24 0	67 0.0022	0 0	0 0	0.0238 0	0.2238 0
2018	7 0.2633 0	2 0.1521 0	0 0.2714 0	0 0.1039 0	1 0.0256 0	25 0	25 0	46 0.0256	0 0	0 0	0 0	0.1582 0
2018	7 0.2058 0	2 0.1544 0	0 0.3276 0	0 0.0965 0	1 0.0039 0	26 0	26 0.0585	45 0	0 0.0039	0 0.0301	0 0	0.1193 0
2018	7 0.0902 0.0225	2 0.0451 0	0 0.2343 0.0029	0 0.1943 0	1 0.0255 0	27 0.0510	27 0.1333	67 0.0676	0 0.0853	0 0.0480	0 0	0 0
2018	7 0.0401 0.0227	2 0.0886 0	0 0.2955 0	0 0.0880 0	1 0.1139 0	28 0.0401	28 0.1081	60 0.0401	0 0.0802	0 0.0802	0 0.0026	0 0
2018	7 0 0.0227	2 0 0	0 0.0824 0.0415	0 0.2072 0.0235	1 0.1942 0	29 0	29 0.0911	50 0.0408	0 0.0911	0 0.1224	0 0.0415	0 0.0415

2018	7	2	0	0	1	30	30	27	0	0	0	0
	0	0	0	0.0740	0.1252	0.0370	0.0727	0.1797	0.2194	0.1070	0.0370	0.0740
	0	0	0.0740	0	0							
2018	7	2	0	0	1	31	31	13	0	0	0	0
	0	0	0	0	0.0787	0	0.2275	0.0758	0.1573	0.0758	0.1517	0
	0.0758	0	0.0787	0	0.0787							
2018	7	2	0	0	1	32	32	9	0	0	0	0
	0	0	0	0	0	0	0.2258	0	0.1129	0.2218	0.2177	0
	0	0	0.1089	0	0.1129							
2018	7	2	0	0	1	33	33	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.4132	0
	0	0	0	0	0.5868							
2018	7	2	0	0	1	34	34	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.4044	0.5956							
2019	7	2	0	0	1	14	14	7	0	0.4418	0.3961	0.1621
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	15	15	31	0	0.4185	0.4685	0.0371
	0.0361	0.0398	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	16	16	91	0.0076	0.0903	0.6824	0.1430
	0.0381	0	0.0129	0.0129	0.0129	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	17	17	95	0	0.0784	0.5362	0.3081
	0.0421	0.0259	0	0.0093	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	18	18	96	0	0	0.4030	0.4599
	0.0343	0.0157	0.0557	0.0157	0	0.0157	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	19	19	72	0	0	0.1901	0.5686
	0.0885	0.0725	0.0578	0.0112	0.0112	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	20	20	106	0	0	0.0436	0.8201
	0.0501	0.0314	0.0314	0.0157	0	0.0078	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	21	21	131	0	0	0.0448	0.7198
	0.1781	0.0249	0.0208	0.0115	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	22	22	111	0	0	0.0365	0.5481
	0.2419	0.0748	0.0617	0.0243	0.0125	0	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	23	23	108	0	0	0.0107	0.2813
	0.3889	0.1692	0.0658	0.0437	0.0098	0.0102	0	0	0.0102	0.0102	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	24	24	65	0	0	0.0070	0.1376
	0.4311	0.1940	0.1354	0.0779	0	0.0170	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	25	25	31	0	0	0	0.1017
	0.1497	0.1755	0.2559	0.2111	0.0354	0.0707	0	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	26	26	61	0	0	0	0
	0.1956	0.1559	0.3274	0.2053	0.0877	0.0107	0.0174	0	0	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	27	27	79	0	0	0	0
	0.0268	0.0765	0.1851	0.3388	0.1919	0.0338	0.0785	0.0547	0.0140	0	0	0
	0	0	0	0	0							
2019	7	2	0	0	1	28	28	73	0	0	0	0
	0	0	0.0829	0.3325	0.1459	0.0802	0.0323	0.1483	0.0479	0.1016	0.0009	0
	0.0274	0	0	0	0							
2019	7	2	0	0	1	29	29	47	0	0	0	0
	0	0	0	0.0494	0.1855	0.1987	0.0349	0.1033	0.1151	0.0685	0.0864	0
	0.0680	0.0223	0	0	0.0680							
2019	7	2	0	0	1	30	30	34	0	0	0	0
	0	0	0	0.0971	0.1185	0	0.1157	0.1171	0.0623	0.1060	0.1248	0.0277
	0.0579	0.0277	0.0581	0.0277	0.0593							
2019	7	2	0	0	1	31	31	36	0	0	0	0
	0	0	0	0	0	0.1112	0.0305	0.0875	0.0570	0.0807	0.1656	0
	0.0265	0.0542	0	0.0835	0.3035							
2019	7	2	0	0	1	32	32	15	0	0	0	0
	0	0	0	0	0	0	0.0645	0	0.0744	0.2678	0.1934	0
	0.0645	0	0	0.1934	0.1420							
2019	7	2	0	0	1	33	33	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0.2679	0.2321	0.5000							
2019	7	2	0	0	1	35	35	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2019	7	2	0	0	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2020	7	2	0	0	1	14	14	1	0	0	0	0
	1.0000	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	15	15	22	0	0	0.1945	0.7270
	0.0786	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	16	16	44	0	0	0.2366	0.6647
	0.0986	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	17	17	70	0	0	0.3635	0.5242
	0.0995	0	0	0.0128	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	18	18	88	0	0	0.1877	0.6677
	0.1347	0.0098	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	19	19	87	0	0	0.0681	0.6928
	0.2123	0.0239	0	0.0014	0	0	0	0	0	0.0014	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	20	20	78	0	0	0	0.3975
	0.5861	0.0130	0.0017	0.0017	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	21	21	68	0	0	0.0187	0.2665
	0.6009	0.0645	0.0307	0	0.0187	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	22	22	53	0	0	0	0.1214
	0.6946	0.1064	0.0563	0.0213	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	23	23	51	0	0	0.0234	0.0421
	0.3489	0.3257	0.1510	0.0524	0.0262	0	0	0	0.0303	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	24	24	38	0	0	0	0.0497
	0.4616	0.1101	0.1956	0.0226	0.1053	0.0551	0	0	0	0	0	0
	0	0	0	0	0							

2020	7	2	0	0	1	25	25	24	0	0	0	0
	0.2426	0.1522	0.2818	0.2986	0.0248	0	0	0	0	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	26	26	44	0	0	0	0
	0.0761	0.2632	0.1487	0.1607	0.1909	0.0839	0.0038	0	0	0.0343	0.0384	0
	0	0	0	0	0							
2020	7	2	0	0	1	27	27	46	0	0	0	0
	0.0148	0.0979	0.1831	0.1314	0.3177	0.1637	0	0.0326	0.0588	0	0	0
	0	0	0	0	0							
2020	7	2	0	0	1	28	28	49	0	0	0	0.0035
	0.0411	0.0317	0.0317	0.0669	0.1480	0.1591	0.0634	0.1253	0.1417	0.0035	0.1452	0
	0	0	0	0.0355	0.0035							
2020	7	2	0	0	1	29	29	58	0	0	0	0
	0	0	0	0	0.1010	0.0517	0.1028	0.0639	0.1817	0.0608	0.2238	0.1040
	0.0261	0	0	0.0465	0.0378							
2020	7	2	0	0	1	30	30	39	0	0	0	0
	0	0	0	0	0.0066	0.0452	0.1201	0.0300	0.1537	0	0.1928	0.1028
	0.0184	0	0.0300	0	0.3004							
2020	7	2	0	0	1	31	31	11	0	0	0	0
	0	0	0	0.0119	0	0	0	0	0.1085	0	0	0.2169
	0	0	0.1085	0	0.5542							
2020	7	2	0	0	1	32	32	8	0	0	0	0
	0	0	0	0	0	0	0	0	0.1990	0	0.1990	0.1003
	0	0	0	0	0.5016							
2020	7	2	0	0	1	33	33	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.3993
	0	0	0	0	0.6007							
2020	7	2	0	0	1	34	34	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0.3333
	0	0	0	0	0.6667							
2020	7	2	0	0	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2020	7	2	0	0	1	38	38	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	7	2	0	0	1	14	14	1	0	0	0	0
	1.0000	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	15	15	10	0	0	0.5930	0.2814
	0.1256	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	16	16	17	0	0	0.1346	0.4620
	0.2303	0.1731	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	17	17	30	0	0	0.2896	0.3120
	0.3120	0.0864	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	18	18	57	0	0	0.0163	0.4762
	0.3118	0.1497	0.0327	0	0.0132	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	19	19	48	0	0	0.1141	0.2723
	0.4146	0.1990	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	20	20	43	0	0	0.1408	0.1006
	0.3950	0.3239	0.0256	0	0	0.0142	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	21	21	63	0	0	0.0196	0.0275
	0.4877	0.4066	0.0391	0	0	0	0.0196	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	22	22	80	0	0	0.0178	0.0824
	0.4044	0.3546	0.1230	0.0178	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	23	23	84	0	0	0.0080	0.0583
	0.3346	0.3694	0.1987	0.0199	0	0.0111	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	24	24	107	0	0	0	0.1178
	0.3603	0.4334	0.0344	0.0081	0	0.0441	0.0019	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	25	25	101	0	0	0.0182	0.0211
	0.3785	0.2942	0.1249	0.0893	0.0557	0.0182	0	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	26	26	68	0	0	0	0
	0.2006	0.3247	0.1664	0.2014	0.0408	0.0394	0.0266	0	0	0	0	0
	0	0	0	0	0							
2021	7	2	0	0	1	27	27	86	0	0	0	0.0302
	0.1096	0.1699	0.0874	0.1352	0.1140	0.1611	0.1011	0	0	0.0003	0.0652	0.0151
	0.0110	0	0	0	0							
2021	7	2	0	0	1	28	28	77	0	0	0	0
	0.0385	0.0158	0.1107	0.0385	0.1149	0.1829	0.1910	0.0738	0.0112	0.0830	0.0029	0.0475
	0.0128	0.0346	0	0.0128	0.0290							
2021	7	2	0	0	1	29	29	65	0	0	0	0
	0.0165	0.0165	0.0359	0.0120	0.0359	0.1732	0.1447	0.1047	0.0105	0.1411	0.0591	0.0575
	0.0696	0.0400	0.0027	0.0400	0.0400							
2021	7	2	0	0	1	30	30	42	0	0	0	0.0291
	0	0	0	0	0.0713	0.1214	0.0476	0.0582	0.0096	0.1398	0	0.0765
	0.0923	0.0339	0.0687	0	0.2516							
2021	7	2	0	0	1	31	31	28	0	0	0	0
	0	0	0	0	0	0.0397	0	0.1081	0	0.0862	0.1460	0.2043
	0	0.0504	0	0.0539	0.3113							
2021	7	2	0	0	1	32	32	16	0	0	0	0
	0	0	0	0	0	0	0.0810	0.1325	0	0.0515	0.0515	0.0810
	0	0.1101	0	0	0.4925							
2021	7	2	0	0	1	33	33	13	0	0	0	0
	0	0	0	0	0	0	0.0803	0	0	0	0.0803	0.2189
	0.2410	0	0.0803	0	0.2992							
2021	7	2	0	0	1	34	34	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0.3333	0.6667							
2021	7	2	0	0	1	35	35	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	7	2	0	0	1	36	36	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	7	2	0	0	1	37	37	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	7	2	0	0	1	38	38	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	7	2	0	0	1	39	39	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							

2021	7	2	0	0	1	40	40	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2022	7	2	0	0	1	15	15	5	0	0.7532	0	0.1234
	0.1234	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	16	16	24	0	0.0643	0.4011	0.3384
	0.1717	0.0245	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	17	17	26	0	0.0130	0.3579	0.4469
	0.1822	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	18	18	33	0	0.0464	0.4003	0.4441
	0.0659	0.0434	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	19	19	34	0	0.0139	0.1694	0.5259
	0.0990	0.1918	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	20	20	30	0	0.0437	0.1533	0.4215
	0.1726	0.2090	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	21	21	46	0	0	0.3117	0.2236
	0.2107	0.1935	0.0606	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	22	22	37	0	0	0.2671	0.2758
	0.0872	0.1065	0.0628	0.0123	0.1256	0.0628	0	0	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	23	23	57	0	0	0.0242	0.1130
	0.1575	0.4274	0.1109	0.0239	0.0477	0.0477	0	0	0	0	0	0
	0.0477	0	0	0	0							
2022	7	2	0	0	1	24	24	50	0	0	0.0130	0.0454
	0.2087	0.3298	0.2755	0.0255	0	0.0255	0	0	0	0.0255	0	0.0511
	0	0	0	0	0							
2022	7	2	0	0	1	25	25	55	0	0	0	0
	0.0951	0.2816	0.1889	0.1456	0.0884	0.1213	0.0062	0.0243	0	0	0	0.0243
	0.0243	0	0	0	0							
2022	7	2	0	0	1	26	26	50	0	0	0.0082	0.0322
	0.0436	0.2388	0.3071	0.1368	0.0725	0.0965	0	0.0643	0	0	0	0
	0	0	0	0	0							
2022	7	2	0	0	1	27	27	51	0	0	0	0
	0.0399	0.1502	0.1681	0.1187	0.1187	0.0788	0.1775	0.0394	0.0394	0	0.0593	0
	0	0.0100	0	0	0							
2022	7	2	0	0	1	28	28	64	0	0	0	0
	0.0086	0.0460	0.1596	0.0172	0.0086	0.0233	0.3299	0.1024	0.0512	0.0086	0.1170	0.0426
	0.0426	0.0426	0	0	0							
2022	7	2	0	0	1	29	29	65	0	0	0	0
	0	0.0078	0.0384	0.0593	0.0210	0.0306	0.2214	0.0922	0.1151	0.0155	0.1535	0.0461
	0.0996	0.0384	0.0306	0	0.0306							
2022	7	2	0	0	1	30	30	48	0	0	0	0
	0	0	0	0	0.0128	0	0.1135	0.1270	0.2112	0.0128	0.1104	0.0128
	0.1360	0.0255	0.0504	0.0217	0.1659							
2022	7	2	0	0	1	31	31	28	0	0	0	0
	0	0	0	0	0	0	0.0354	0.0354	0.0708	0.0248	0.2706	0.1416
	0.0708	0	0.0354	0.0354	0.2799							
2022	7	2	0	0	1	32	32	8	0	0	0	0
	0	0	0	0	0	0	0	0	0	0.1026	0.0719	0
	0.4047	0	0	0	0.4209							
2022	7	2	0	0	1	33	33	5	0	0	0	0
	0	0	0	0	0	0	0	0.2628	0	0	0	0
	0.1843	0	0	0	0.5529							
2022	7	2	0	0	1	34	34	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2022	7	2	0	0	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2023	7	2	0	0	1	13	13	1	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	14	14	2	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	15	15	6	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	16	16	68	0	0.1876	0.7853	0.0113
	0.0158	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	17	17	63	0	0.1719	0.7307	0.0848
	0.0068	0	0.0058	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	18	18	66	0	0	0.8620	0.0550
	0.0632	0	0.0071	0	0	0	0.0128	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	19	19	69	0	0	0.9064	0.0415
	0.0454	0.0067	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	20	20	49	0	0	0.6258	0.2622
	0.0511	0.0105	0.0316	0	0	0	0.0189	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	21	21	29	0	0	0.2454	0.4993
	0.1439	0	0.0953	0.0162	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	22	22	43	0	0	0.1234	0.5547
	0.1966	0.0126	0.1128	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	23	23	59	0	0	0.0168	0.3599
	0.3341	0.1247	0.1385	0.0260	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	24	24	58	0	0	0.0411	0.2006
	0.2744	0.0416	0.2939	0.1183	0	0.0151	0.0151	0	0	0	0	0
	0	0	0	0	0							
2023	7	2	0	0	1	25	25	56	0	0	0	0.1341
	0.1730	0.1780	0.3621	0.0609	0.0268	0.0155	0.0268	0	0.0155	0	0	0
	0	0	0.0073	0	0							
2023	7	2	0	0	1	26	26	101	0	0	0	0.0359
	0.0813	0.1730	0.4241	0.1578	0.0224	0.0139	0.0111	0.0378	0.0163	0.0098	0	0
	0.0055	0.0065	0	0	0.0046							
2023	7	2	0	0	1	27	27	113	0	0	0	0
	0.0660	0.1455	0.3253	0.2051	0.0469	0.0341	0.0382	0.0509	0.0295	0	0.0153	0.0168
	0	0.0132	0.0132	0	0							
2023	7	2	0	0	1	28	28	102	0	0	0	0
	0.0297	0.0447	0.1842	0.1461	0.1097	0.0316	0.1014	0.0945	0.0612	0	0.0378	0.0423
	0.0189	0.0681	0	0.0148	0.0148							

2023	7 0 0.0198	2 0.0113 0.1287	0 0.0966 0	0 0.0583 0.0057	1 0.0616 0.0619	29 0.0120	29 0.0796	77 0.2672	0 0.0781	0 0.0113	0 0.0176	0 0.0903
2023	7 0 0.0737	2 0.0369 0.0979	0 0.0214 0.0838	0 0 0	1 0.0427 0.1305	30 0	30 0	39 0.0528	0 0.1468	0 0.0369	0 0.1247	0 0.1519
2023	7 0 0	2 0 0.0648	0 0 0.1190	0 0.0391 0	1 0 0.4510	31 0	31 0.0185	25 0.1151	0 0	0 0.0675	0 0.0185	0 0.1065
2023	7 0 0	2 0 0.0717	0 0 0.0717	0 0 0	1 0 0.7848	32 0	32 0	6 0.0717	0 0	0 0	0 0	0 0
2023	7 0 0	2 0 0	0 0 0	0 0 0	1 0 0.7500	33 0	33 0	4 0	0 0	0 0	0 0	0 0.2500
2023	7 0 0	2 0 0	0 0 0	0 0 0	1 0 1.0000	34 0	34 0	1 0	0 0	0 0	0 0	0 0
2023	7 0 0	2 0 0	0 0 0	0 0 0	1 0.1932 0.8068	35 0	35 0	4 0	0 0	0 0	0 0	0 0
2023	7 0 0	2 0 0	0 0 0	0 0 0	1 0 1.0000	36 0	36 0	1 0	0 0	0 0	0 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	8 0	8 0	6 0	0.3333 0	0.6667 0	0 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	9 0	9 0	32 0	0.1875 0	0.7813 0	0.0313 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	10 0	10 0	27 0	0.0370 0	0.7037 0	0.2593 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	11 0	11 0	33 0	0 0	0.3333 0	0.6364 0	0.0303 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	12 0	12 0	12 0	0 0	0.2500 0	0.7500 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	13 0	13 0	6 0	0 0	0.1667 0	0.6667 0	0.1667 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	14 0	14 0	8 0	0 0	0.2500 0	0.1250 0	0.6250 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	15 0	15 0	11 0	0 0	0.2727 0	0.4545 0	0.2727 0
2019	11 0 0	3 0.2500 0	0 0 0	0 0 0	1 0 0	16 0	16 0	8 0	0 0	0 0	0.5000 0	0.2500 0
2019	11 0.2000 0	3 0 0	0 0 0	0 0 0	1 0 0	17 0	17 0	5 0	0 0	0 0	0 0	0.8000 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	18 0	18 0	6 0	0 0	0 0	0.5000 0	0.5000 0
2019	11 0.3333 0	3 0 0	0 0 0	0 0 0	1 0 0	19 0	19 0	12 0	0 0	0 0	0.2500 0	0.4167 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	20 0	20 0	1 0	0 0	0 0	1.0000 0	0 0
2019	11 0.5000 0	3 0.2500 0	0 0.2500 0	0 0 0	1 0 0	21 0	21 0	4 0	0 0	0 0	0 0	0 0
2019	11 0.2500 0	3 0.7500 0	0 0 0	0 0 0	1 0 0	22 0	22 0	4 0	0 0	0 0	0 0	0 0
2019	11 0.3333 0	3 0.3333 0	0 0.3333 0	0 0 0	1 0 0	23 0	23 0	3 0	0 0	0 0	0 0	0 0
2019	11 0 0	3 0.4167 0.0833	0 0.1667 0	0 0.1667 0	1 0.0833 0	24 0	24 0	12 0	0 0	0 0	0 0	0.0833 0
2019	11 0.1429 0	3 0.2857 0	0 0.4286 0	0 0 0	1 0.1429 0	25 0	25 0	7 0	0 0	0 0	0 0	0 0
2019	11 0 0	3 0 0	0 0.1250 0	0 0.4375 0	1 0.2500 0	26 0.0625	26 0	16 0	0 0	0 0.1250	0 0	0 0
2019	11 0.0526 0	3 0 0.0526	0 0.0526 0.0526	0 0.4737 0	1 0.1053 0	27 0.1579	27 0	19 0	0 0	0 0.0526	0 0	0 0
2019	11 0 0.0526	3 0 0	0 0 0.0526	0 0.1053 0.0526	1 0.1053 0.0526	28 0.0526	28 0.1579	19 0.0526	0 0.1053	0 0.1053	0 0.1053	0 0
2019	11 0 0.0769	3 0 0	0 0 0	0 0 0.0769	1 0 0	29 0	29 0.0769	13 0.1538	0 0.1538	0 0.2308	0 0.2308	0 0
2019	11 0 0.0526	3 0 0.0526	0 0 0	0 0 0.0526	1 0 0.1579	30 0	30 0	19 0.1053	0 0.1053	0 0.3158	0 0.0526	0 0.1053
2019	11 0 0.1667	3 0 0.1667	0 0 0	0 0 0.1667	1 0 0.1667	31 0	31 0	6 0.1667	0 0	0 0	0 0.1667	0 0
2019	11 0 0	3 0 0.5000	0 0 0	0 0 0	1 0 0.5000	32 0	32 0	2 0	0 0	0 0	0 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0.3333	33 0	33 0	3 0	0 0	0 0	0 0.3333	0 0.3333
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 1.0000	34 0	34 0	1 0	0 0	0 0	0 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 1.0000	35 0	35 0	2 0	0 0	0 0	0 0	0 0
2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	38 0	38 0	1 0	0 0	0 0	0 0	0 1.0000

2019	11 0 0	3 0 0	0 0 0	0 0 0	1 0 1.0000	39 0	39 0	1 0	0 0	0 0	0 0	0 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	9 0	9 0	6 0	0.6667 0	0.3333 0	0 0	0 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	10 0	10 0	3 0	0.3333 0	0.6667 0	0 0	0 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	11 0	11 0	5 0	0 0	0.4000 0	0.6000 0	0 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	12 0	12 0	8 0	0 0	0.3750 0	0.5000 0	0.1250 0
2020	11 0.0769 0	3 0 0	0 0 0	0 0 0	1 0 0	13 0	13 0	13 0	0 0	0.4615 0	0.3846 0	0.0769 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	14 0	14 0	12 0	0 0	0.1667 0	0.5833 0	0.2500 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	15 0	15 0	15 0	0 0	0.0667 0	0.6667 0	0.2667 0
2020	11 0.2222 0	3 0 0	0 0 0	0 0 0	1 0 0	16 0	16 0	9 0	0 0	0.1111 0	0.6667 0	0 0
2020	11 0.2857 0	3 0 0	0 0 0	0 0 0	1 0 0	17 0	17 0	7 0	0 0	0 0	0.2857 0	0.4286 0
2020	11 0 0	3 0.2857 0	0 0 0	0 0 0	1 0 0	18 0	18 0	7 0	0 0	0 0	0.5714 0	0.1429 0
2020	11 0.6250 0	3 0.1250 0	0 0 0	0 0 0	1 0 0	19 0	19 0	8 0	0 0	0 0	0.2500 0	0 0
2020	11 0.3636 0	3 0.5455 0	0 0 0	0 0 0	1 0 0	20 0	20 0	11 0	0 0	0 0	0 0	0.0909 0
2020	11 0.6000 0	3 0.3000 0	0 0.1000 0	0 0 0	1 0 0	21 0	21 0	10 0	0 0	0 0	0 0	0 0
2020	11 0.6154 0	3 0.0769 0	0 0 0	0 0 0	1 0 0	22 0.0769	22 0	13 0	0 0	0 0	0 0	0.2308 0
2020	11 0.3000 0	3 0.6000 0	0 0.1000 0	0 0 0	1 0 0	23 0	23 0	10 0	0 0	0 0	0 0	0 0
2020	11 0.5000 0	3 0 0	0 0.2500 0	0 0 0	1 0.2500 0	24 0	24 0	4 0	0 0	0 0	0 0	0 0
2020	11 0.3333 0	3 0.2222 0	0 0.1111 0	0 0.1111 0	1 0.1111 0	25 0	25 0.1111	9 0	0 0	0 0	0 0	0 0
2020	11 0 0	3 0.2500 0	0 0.1667 0	0 0.1667 0	1 0.1667 0	26 0.2500	26 0	12 0	0 0	0 0	0 0	0 0
2020	11 0 0	3 0.0476 0	0 0.1429 0	0 0.2381 0	1 0.1905 0	27 0.1905	27 0.0476	21 0	0 0.0952	0 0	0 0	0 0.0476
2020	11 0 0	3 0 0	0 0 0	0 0.0667 0	1 0.2000 0.0667	28 0	28 0	15 0.0667	0 0.1333	0 0.0667	0 0.2667	0 0.1333
2020	11 0 0.0833	3 0 0.0833	0 0 0	0 0 0	1 0.0833 0	29 0.0833	29 0	12 0	0 0.0833	0 0.0833	0 0.2500	0 0.2500
2020	11 0 0.1250	3 0 0	0 0 0	0 0 0.1250	1 0.1250 0.2500	30 0	30 0	8 0	0 0	0 0	0 0.3750	0 0
2020	11 0 0	3 0 0.1000	0 0 0	0 0 0	1 0 0.3000	31 0	31 0.1000	10 0.3000	0 0	0 0	0 0.2000	0 0
2020	11 0 0.4545	3 0 0	0 0 0	0 0 0	1 0 0.2727	32 0	32 0	11 0	0 0	0 0.0909	0 0	0 0.1818
2020	11 0 0.1429	3 0 0	0 0 0	0 0 0	1 0 0.5714	33 0	33 0	14 0.0714	0 0	0 0	0 0	0 0.2143
2020	11 0 0.1250	3 0 0.1250	0 0 0	0 0 0	1 0 0.3750	34 0	34 0	8 0	0 0.1250	0 0.1250	0 0	0 0.1250
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0.8000	35 0	35 0	5 0	0 0	0 0	0 0	0 0.2000
2020	11 0 0	3 0 0	0 0 0.3333	0 0 0	1 0 0.6667	36 0	36 0	3 0	0 0	0 0	0 0	0 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 1.0000	37 0	37 0	1 0	0 0	0 0	0 0	0 0
2020	11 0 0	3 0 0	0 0 0	0 0 0	1 0 1.0000	39 0	39 0	1 0	0 0	0 0	0 0	0 0
2021	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	8 0	8 0	9 0	0.8889 0	0.1111 0	0 0	0 0
2021	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	9 0	9 0	16 0	0.7500 0	0.2500 0	0 0	0 0
2021	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	10 0	10 0	7 0	0.4286 0	0.5714 0	0 0	0 0
2021	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	11 0	11 0	4 0	0.2500 0	0.7500 0	0 0	0 0
2021	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	12 0	12 0	2 0	0 0	0 0	1.0000 0	0 0
2021	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	13 0	13 0	1 0	0 0	1.0000 0	0 0	0 0
2021	11 0 0	3 0 0	0 0 0	0 0 0	1 0 0	14 0	14 0	3 0	0 0	1.0000 0	0 0	0 0

2021	11	3	0	0	1	15	15	4	0	0	0.5000	0.2500
	0.2500	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	16	16	5	0	0.6000	0.4000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	17	17	3	0	0.3333	0.3333	0.3333
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	18	18	2	0	0	0	0.5000
	0	0.5000	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	19	19	1	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	20	20	2	0	0	0	0
	1.0000	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	21	21	3	0	0	0.3333	0
	0	0.6667	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	22	22	2	0	0	0	0
	0.5000	0.5000	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	23	23	2	0	0	0	0
	0	0.5000	0.5000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	24	24	2	0	0	0	0
	0.5000	0.5000	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	25	25	3	0	0	0	0.3333
	0.3333	0.3333	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	26	26	1	0	0	0	0
	0	0	0	0	0	0	1.0000	0	0	0	0	0
	0	0	0	0	0							
2021	11	3	0	0	1	27	27	7	0	0	0	0
	0	0.2857	0.1429	0	0	0.2857	0.1429	0	0	0	0	0.1429
	0	0	0	0	0							
2021	11	3	0	0	1	28	28	8	0	0	0	0
	0	0	0	0	0	0.1250	0.2500	0.1250	0.1250	0	0.2500	0.1250
	0	0	0	0	0							
2021	11	3	0	0	1	29	29	9	0	0	0	0
	0	0	0.1111	0.1111	0	0.2222	0.1111	0	0	0	0	0
	0.2222	0	0	0	0.2222							
2021	11	3	0	0	1	30	30	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0.1429	0	0	0.1429	0.7143							
2021	11	3	0	0	1	31	31	10	0	0	0	0
	0	0	0	0	0.1000	0	0	0.1000	0	0.1000	0	0.1000
	0	0	0.1000	0	0.5000							
2021	11	3	0	0	1	32	32	10	0	0	0	0
	0	0	0	0	0	0	0	0.1000	0.1000	0.1000	0	0
	0.2000	0	0	0	0.5000							
2021	11	3	0	0	1	33	33	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	11	3	0	0	1	34	34	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0.2000	0	0	0.8000							
2021	11	3	0	0	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	11	3	0	0	1	36	36	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	11	3	0	0	1	37	37	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2021	11	3	0	0	1	40	40	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2022	11	3	0	0	1	8	8	3	1.0000	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	9	9	25	0.4000	0.5200	0.0800	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	10	10	21	0	0.9048	0.0952	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	11	11	10	0	1.0000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	12	12	7	0	0.5714	0.4286	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	13	13	7	0	0.7143	0.2857	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	14	14	12	0	0.5000	0.5000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	15	15	16	0	0.4375	0.5625	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	16	16	8	0	0.7500	0.2500	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	17	17	6	0	0.1667	0.6667	0
	0.1667	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	18	18	2	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	19	19	5	0	0	0.2000	0.8000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	20	20	4	0	0	0.2500	0.5000
	0	0.2500	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	21	21	3	0	0	0.6667	0
	0.3333	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							

2022	11	3	0	0	1	22	22	2	0	0	0.5000	0.5000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	23	23	2	0	0	0	0
	0	0.5000	0.5000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	24	24	4	0	0	0	0
	0.2500	0.2500	0.5000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	25	25	5	0	0	0	0
	0.2000	0.2000	0.4000	0.2000	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	26	26	11	0	0	0	0
	0.1818	0.0909	0.3636	0.3636	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	27	27	8	0	0	0	0
	0.1250	0	0.2500	0	0	0.1250	0.3750	0.1250	0	0	0	0
	0	0	0	0	0							
2022	11	3	0	0	1	28	28	24	0	0	0	0
	0	0	0.2083	0	0.0417	0.0833	0.1667	0.2083	0.0833	0.0417	0.0417	0.0417
	0.0417	0	0	0.0417	0							
2022	11	3	0	0	1	29	29	16	0	0	0	0
	0	0	0.0625	0.0625	0.0625	0	0.2500	0.0625	0.1250	0	0	0.1250
	0	0.0625	0.0625	0	0.1250							
2022	11	3	0	0	1	30	30	26	0	0	0	0
	0	0	0.0385	0	0	0	0.0385	0.0769	0.0769	0.0769	0.0385	0.1154
	0.0769	0.3077	0	0.0769	0.0769							
2022	11	3	0	0	1	31	31	15	0	0	0	0
	0	0	0	0	0	0	0	0	0.1333	0.0667	0	0.0667
	0.0667	0.0667	0.0667	0	0.5333							
2022	11	3	0	0	1	32	32	14	0	0	0	0
	0	0	0	0	0	0	0	0	0.1429	0	0	0
	0.1429	0.1429	0.0714	0.0714	0.4286							
2022	11	3	0	0	1	33	33	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0.1429	0.1429
	0.1429	0	0	0	0.5714							
2022	11	3	0	0	1	34	34	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2022	11	3	0	0	1	35	35	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2022	11	3	0	0	1	36	36	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1.0000
	0	0	0	0	0							
2022	11	3	0	0	1	39	39	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1.0000							
2023	11	3	0	0	1	8	8	6	0.5000	0.5000	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	9	9	7	0.1429	0.7143	0.1429	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	10	10	5	0.2000	0.2000	0.6000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	11	11	6	0	0	1.0000	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	12	12	22	0	0.0909	0.9091	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	13	13	13	0	0.1538	0.6923	0.1538
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	14	14	12	0	0.5000	0.1667	0.3333
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	15	15	6	0	0	0.3333	0.6667
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	16	16	2	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	17	17	7	0	0	0.5714	0.4286
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	18	18	7	0	0	0.1429	0.8571
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	19	19	2	0	0	0	1.0000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	20	20	4	0	0	0.5000	0.5000
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	21	21	3	0	0	0	0.6667
	0.3333	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	22	22	1	0	0	0	0
	0	0	1.0000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	23	23	3	0	0	0.3333	0.3333
	0.3333	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	24	24	2	0	0	0	0.5000
	0.5000	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	25	25	2	0	0	0	0.5000
	0	0	0	0	0	0.5000	0	0	0	0	0	0
	0	0	0	0	0							
2023	11	3	0	0	1	26	26	12	0	0	0	0.0833
	0.0833	0.0833	0.1667	0.2500	0	0.1667	0	0.0833	0	0	0	0
	0.0833	0	0	0	0							
2023	11	3	0	0	1	27	27	11	0	0	0	0
	0	0.0909	0.2727	0.1818	0.0909	0	0	0.1818	0.0909	0	0	0
	0	0.0909	0	0	0							
2023	11	3	0	0	1	28	28	11	0	0	0	0
	0	0	0.1818	0	0.0909	0.0909	0.0909	0.1818	0.1818	0.0909	0	0
	0.0909	0	0	0	0							
2023	11	3	0	0	1	29	29	12	0	0	0	0
	0	0	0	0.0833	0	0.0833	0	0	0.0833	0.0833	0	0.0833
	0.0833	0.2500	0.0833	0	0.1667							

```
2023    11      3       0       0       1       30      30      8       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0.1250  0
        0       0       0.3750  0       0.5000
2023    11      3       0       0       1       31      31      8       0       0       0       0
        0       0       0       0       0       0       0       0       0       0.2500  0.1250  0.1250
        0.1250  0       0       0.1250  0.2500
2023    11      3       0       0       1       32      32      6       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0.1667  0
        0       0.1667  0.1667  0       0.5000
2023    11      3       0       0       1       33      33      4       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0.2500
        0       0       0.2500  0.2500  0.2500
2023    11      3       0       0       1       34      34      2       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       1.0000
2023    11      3       0       0       1       35      35      3       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       1.0000
2023    11      3       0       0       1       37      37      1       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       1.0000


-9999   0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0       0       0       0
        0       0       0       0       0

#
0 # Use_MeanSize-at-Age_obs (0/1)
#
0 # N_environ_variables
# -2 in yr will subtract mean for that env_var; -1 will subtract mean and divide by stddev (e.g. Z-score)
#Yr Variable Value
#
0 # N sizefreq methods to read
#
0 # do tags (0/1)
#
0 # morphcomp data(0/1)
# Nobs, Nmorphs, mincomp
# yr, seas, type, partition, Nsamp, datavector_by_Nmorphs
#
0 # Do dataread for selectivity priors(0/1)
# Yr, Seas, Fleet,  Age/Size,  Bin,  selex_prior,  prior_sd
# feature not yet implemented
#
999

ENDDATA
```

Control File:

```
#V3.30.20.00;_safe;_compile_date:_Sep 30 2022;_Stock_Synthesis_by_Richard_Methot_(NOAA)_using_ADMB_13.0
#_Stock_Synthesis_is_a_work_of_the_U.S._Government_and_is_not_subject_to_copyright_protection_in_the_United_States.
#_Foreign_copyrights_may_apply._See_copyright.txt_for_more_information.
#_User_support_available_at:NMFS.Stock.Synthesis@noaa.gov
#_User_info_available_at:https://vlab.noaa.gov/group/stock-synthesis
#_Source_code_at:_https://github.com/nmfs-stock-synthesis/stock-synthesis

#C growth parameters are estimated
#C spawner-recruitment bias adjustment Not tuned For optimality
#_data_and_control_files: Seatrout_dat.ss // Seatrout_ctl.ss
0  # 0 means do not read wtatage.ss; 1 means read and use wtatage.ss and also read and use growth parameters
1  #_N_Growth_Patterns (Growth Patterns, Morphs, Bio Patterns, GP are terms used interchangeably in SS3)
1 #_N_platoons_Within_GrowthPattern
#_Cond 1 #_Platoon_within/between_stdev_ratio (no read if N_platoons=1)
#_Cond  1 #vector_platoon_dist_(-1_in_first_val_gives_normal_approx)
#
4 # recr_dist_method for parameters:  2=main effects for GP, Area, Settle timing; 3=each Settle entity; 4=none (only when N_GP*Nsettle*pop==1)
1 # not yet implemented; Future usage: Spawner-Recruitment: 1=global; 2=by area
1 #  number of recruitment settlement assignments
0 # unused option
#GPattern month  area  age (for each settlement assignment)
 1 4 1 0
#
#_Cond 0 # N_movement_definitions goes here if Nareas > 1
#_Cond 1.0 # first age that moves (real age at begin of season, not integer) also cond on do_migration>0
#_Cond 1 1 1 2 4 10 # example move definition for seas=1, morph=1, source=1 dest=2, age1=4, age2=10
#
3 #_Nblock_Patterns
 2 2 3 #_blocks_per_pattern
# begin and end years of blocks
 1985 2012 2013 2023
 1955 1989 1990 2023
 1955 1989 1990 1996 1997 2023
#
# controls for all timevary parameters
1 #_time-vary parm bound check (1=warn relative to base parm bounds; 3=no bound check); Also see env (3) and dev (5) options to constrain with base bounds
#
# AUTOGEN
 1 1 1 1 1 # autogen: 1st element for biology, 2nd for SR, 3rd for Q, 4th reserved, 5th for selex
# where: 0 = autogen time-varying parms of this category; 1 = read each time-varying parm line; 2 = read then autogen if parm min==-12345
#
#_Available timevary codes
#_Block types: 0: P_block=P_base*exp(TVP); 1: P_block=P_base+TVP; 2: P_block=TVP; 3: P_block=P_block(-1) + TVP
#_Block_trends: -1: trend bounded by base parm min-max and parms in transformed units (beware); -2: endtrend and infl_year direct values; -3: end and infl
as fraction of base range
#_EnvLinks:  1: P(y)=P_base*exp(TVP*env(y));  2: P(y)=P_base+TVP*env(y);  3: P(y)=f(TVP,env_Zscore) w/ logit to stay in min-max;  4: P(y)=2.0/(1.0+exp(-
TVP1*env(y) - TVP2))
#_DevLinks:  1: P(y)*=exp(dev(y)*dev_se;  2: P(y)+=dev(y)*dev_se;  3: random walk;  4: zero-reverting random walk with rho;  5: like 4 with logit transform
to stay in base min-max
#_DevLinks(more):  21-25 keep last dev for rest of years
#
#_Prior_codes:  0=none; 6=normal; 1=symmetric beta; 2=CASAL's beta; 3=lognormal; 4=lognormal with biascorr; 5=gamma
#
# setup for M, growth, wt-len, maturity, fecundity, (hermaphro), recr_distr, cohort_grow, (movement), (age error), (catch_mult), sex ratio
#_NATMORT
3 #_natM_type:_0=1Parm; 1=N_breakpoints;_2=Lorenzen;_3=agespecific;_4=agespec_withseasinterpolate;_5=BETA:_Maunder_link_to_maturity;_6=Lorenzen_range
#0 20  #Lorenzen Age Range
0.5347  0.2924  0.2161  0.1787  0.1566  0.1422  0.1321  0.1248  0.1194  0.1152  0.1120  0.1094  0.1073
        0.1057  0.1043  0.1032  0.1023  0.1016  0.1010  0.1005  0.0989
```

```
#
1 # GrowthModel: 1=vonBert with L1&L2; 2=Richards with L1&L2; 3=age_specific_K_incr; 4=age_specific_K_decr; 5=age_specific_K_each; 6=NA; 7=NA; 8=growth
cessation
0.5 #_Age(post-settlement)_for_L1;linear growth below this
999 #_Growth_Age_for_L2 (999 to use as Linf)
0.14 #_exponential decay for growth above maxage (value should approx initial Z; -999 replicates 3.24; -998 to not allow growth above maxage)*************
0  #_placeholder for future growth feature
#6 # number of K multipliers to read
# 1 2 3 4 5 6 # ages for K multiplier
#
0 #_SD_add_to_LAA (set to 0.1 for SS2 V1.x compatibility)
1 #_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=disabled; 6=read length-
maturity
4 #_First_Mature_Age
3 #_fecundity_at_length option:(1)eggs=Wt*(a+b*Wt);(2)eggs=a*L^b;(3)eggs=a*Wt^b; (4)eggs=a+b*L; (5)eggs=a+b*W
0 #_hermaphroditism option:  0=none; 1=female-to-male age-specific fxn; -1=male-to-female age-specific fxn
1 #_parameter_offset_approach for M, G, CV_G:  1- direct, no offset**; 2- male=fem_parm*exp(male_parm); 3: male=female*exp(parm) then old=young*exp(parm)
#_** in option 1, any male parameter with value = 0.0 and phase <0 is set equal to female parameter
#
#_growth_parms
#_ LO HI INIT PRIOR PR_SD PR_type PHASE env_var&link dev_link dev_minyr dev_maxyr dev_PH Block Block_Fxn
# Sex: 1  BioPattern: 1  NatMort
#0.1       2          0.1530     0          0          0          -1         0          0          0          0          0          0
           0          #          N_Mort
# Sex: 1  BioPattern: 1  Growth
5          8.2        8          8          0.05       0          4          0          0          0          0          0          0
           0          #          L_at_Amin_Fem_1
34         36         35.25      35.25      0.05       0          4          0          0          0          0          0          0
           0          #          L_at_Amax_Fem_1
0.18       0.22       0.2        0.2        0.05       0          4          0          0          0          0          0          0
           0          #          VonBert_K_Fem_1
0.17       0.2        0.185      0.185      0.05       0          4          0          0          0          0          0          0
           0          #          CV_young_Fem_1
0.07       0.1        0.085      0.085      0.05       0          4          0          0          0          0          0          0
           0          #          CV_old_Fem_1

# Sex: 1  BioPattern: 1  WtLen
 0         1          0.00059    0.00059    0.05       0          -1         0          0          0          0          0          0
           0 # Wtlen_1_Fem_GP_1
 2         4          2.9826     2.9826     0.05       0          -1         0          0          0          0          0          0
           0 # Wtlen_2_Fem_GP_1
# Sex: 1  BioPattern: 1  Maturity&Fecundity
 10        30         26.0393    26.0393    0.05       0          -1         0          0          0          0          0          0
           0 # Mat50%_Fem_GP_1
 -2        1          -1.4336    -1.4336    0.05       0          -1         0          0          0          0          0          0
           0 # Mat_slope_Fem_GP_1
 1         1          1          1          0.8        0          -1         0          0          0          0          0          0
           0 # Eggs_scalar_Fem_GP_1
 1         1          1          1          0.8        0          -1         0          0          0          0          0          0
           0 # Eggs_exp_wt_Fem_GP_1
# Sex: 2  BioPattern: 1  NatMort
#0.2       2          0          0          0          0          -1         0          0          0          0          0          0
           0          #          N_Mort
# Sex: 2  BioPattern: 1  Growth
#1         5          0          0          0          0          -4         0          0          0          0          0          0
           0          #          L_at_Amin_Fem_1
#12        50         0          0          0          0          -4         0          0          0          0          0          0
           0          #          L_at_Amax_Fem_1
#0.3       0.6        0          0          0          0          -4         0          0          0          0          0          0
           0          #          VonBert_K_Fem_1
#0.05      0.6        0          0          0          0          -4         0          0          0          0          0          0
           0          #          CV_young_Fem_1
#0.05      0.6        0          0          0          0          -4         0          0          0          0          0          0
           0          #          CV_old_Fem_1
# Sex: 2  BioPattern: 1  WtLen
#0         1          0          0          0          0          -1         0          0          0          0          0          0
           0 # Wtlen_1_Fem_GP_1
#2         4          0          0          0          0          -1         0          0          0          0          0          0
           0 # Wtlen_2_Fem_GP_1
# Hermaphroditism
#  Recruitment Distribution
#  Cohort growth dev base
0.1        10         1          1          1          0          -1         0          0          0          0          0          0
           0 # CohortGrowDev
#  Movement
#  Age Error from parameters
#  catch multiplier
#  fraction female, by GP
 0.1       1          0.5        0.5        0          0          -4         0          0          0          0          0          0
           0 # FracFemale_GP_1
#  M2 parameter for each predator fleet
#
#_no timevary MG parameters
#
#_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
#_ LO HI INIT PRIOR PR_SD PR_type PHASE
#_Cond -2 2 0 0 -1 99 -2 #_placeholder when no seasonal MG parameters
#
3 #_Spawner-Recruitment; Options: 1=NA; 2=Ricker; 3=std_B-H; 4=SCAA; 5=Hockey; 6=B-H_flattop; 7=survival_3Parm; 8=Shepherd_3Parm; 9=RickerPower_3parm
1  # 0/1 to use steepness in initial equ recruitment calculation
0  #  future feature:  0/1 to make realized sigmaR a function of SR curvature
#LO        HI         INIT        PRIOR              PR_SD                  PR_type                PHASE                  env-var    use_dev
dev_mnyr   dev_mxyr   dev_PH      Block     Blk_Fxn #  parm_name
7.5         8.5       8                     8                     0.05                   0                      1                     0
0          0          0          0          0          0 # SR_LN(R0)
0.5         1         0.99                  0.99                  0.05                   0                      -7                    0
0          0          0          0          0          0 # SR_BH_steep
0.2         0.9       0.5                   0.5                   0.05                   0                      7                     0
0          0          0          0          0          0 # SR_sigmaR
-5          5         0                     0                     0.05                   0                      -1                    0
0          0          0          0          0          0 # SR_regime
0           0         0                     0                     0                      0                      -1                    0
0          0          0          0          0          0 # SR_autocorr
#_no timevary SR parameters
1 #do_recdev:  0=none; 1=devvector (R=F(SSB)+dev); 2=deviations (R=F(SSB)+dev); 3=deviations (R=R0*dev; dev2=R-f(SSB)); 4=like 3 with sum(dev2) adding
penalty
1982 # first year of main recr_devs; early devs can preceed this era
2021 # last year of main recr_devs; forecast devs start in following year
5 #_recdev phase
```

```
1 # (0/1) to read 13 advanced options
0 #_Cond 0 #_recdev_early_start (0=none; neg value makes relative to recdev_start)
6 #_Cond -4 #_recdev_early_phase
-1 #_Cond 0 #_forecast_recruitment phase (incl. late recr) (0 value resets to maxphase+1)
1 #_Cond 1 #_lambda for Fcast_recr_like occurring before endyr+1
1972.7  #_Cond 982 #_last_yr_nobias_adj_in_MPD; begin of ramp
1984.4 #_Cond 1976 #_first_yr_fullbias_adj_in_MPD; begin of plateau
2019.9 #_Cond 2019 #_last_yr_fullbias_adj_in_MPD
2025.6 #_Cond 2022 #_First_recent_yr_nobias_adj_in_MPD (can be in forecast to shape ramp, but SS3 sets bias_adj to 0.0 for fcast yrs)
0.973 #_Cond 1 #_max_bias_adj_in_MPD (typical ~0.8; -3 sets all years to 0.0; -2 sets all non-forecast yrs w/ estimated recdevs to 1.0; -1 sets biasadj=1.0 for all yrs w/ recdevs)
0 #_Cond 0 #_period of cycles in recruitment (N parms read below)
-5 #_Cond -5 #min rec_dev
5 #_Cond 5 #max rec_dev
0 #_Cond 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
0.3 # F ballpark value in units of annual_F
-2001 # F ballpark year (neg value to disable)
4 # F_Method:  1=Pope midseason rate; 2=F as parameter; 3=F as hybrid; 4=fleet-specific parm/hybrid (#4 is superset of #2 and #3 and is recommended)
4 # max F (methods 2-4) or harvest fraction (method 1)
#Fleet      Parameter Phase
1           0.2        99
2           0.2        99
-9999       0          0
4  # N iterations for tuning in hybrid mode; recommend 3 (faster) to 5 (more precise if many fleets)
#
#_initial_F_parms; for each fleet x season that has init_catch; nest season in fleet; count = 2
#           overall     start       F           value;      overall     phase;      N           detailed    inputs      to          read
#_for unconstrained init_F, use an arbitrary initial catch and set lambda=0 for its logL
#LO         HI          INIT        PRIOR       PR_SD       PR_type     PHASE
0           0.04        0.02        0.1         0.05        0           1 # InitF_seas_1_flt_1FISHERY1
0.0015      0.003       0.002       0.1         0.05        0           1 # InitF_seas_1_flt_2FISHERY2
#
# F rates by fleet x season
# Yr:  1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
# seas:  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
# FISHERY1 9.82304e-05 3.72409e-05 7.38148e-06 2.72446e-05 7.16417e-05 7.40515e-05 7.96852e-05 0.000104733 8.3897e-05 0.000288107 0.000274882 0.000279637 0.000475506 0.000675889 0.000743153 0.000964839 0.00123204 0.00188252 0.0023705 0.00254327 0.00219753 0.00284675 0.00303124 0.0037502 0.00578817 0.00511713 0.00773471 0.00949694 0.00868472 0.0122432 0.0152069 0.0135373 0.010036 0.0160772 0.0243028 0.0288925 0.0178388 0.0297319 0.0395718 0.037092
# FISHERY2 9.55191e-05 0.000110698 5.87194e-05 4.25583e-05 5.82148e-05 5.847e-05 5.1623e-05 6.79603e-05 3.75276e-05 8.95674e-05 9.01642e-05 0.000133202 0.00015005 0.000118968 0.000170963 0.000147799 3.59702e-05 2.94626e-05 1.87282e-05 6.05319e-05 4.55848e-05 1.40925e-05 1.64449e-05 1.56414e-05 2.07295e-06 1.25118e-05 1.31774e-05 1.51364e-06 3.94684e-07 4.69933e-07 2.5259e-07 3.89049e-06 4.21031e-06 8.85591e-06 1.03866e-05 2.48013e-05 3.35468e-05 2.23036e-06 2.76545e-06 3.0888e-06
#
#_Q_setup for fleets with cpue or survey data
#_1:  fleet number
#_2:  link type: (1=simple q, 1 parm; 2=mirror simple q, 1 mirrored parm; 3=q and power, 2 parm; 4=mirror with offset, 2 parm)
#_3:  extra input for link, i.e. mirror fleet# or dev index number
#_4:  0/1 to select extra sd parameter
#_5:  0/1 for biasadj or not
#_6:  0/1 to float
#fleet      link link_info  extra_se   biasadj     float  #  fleetname
3        1         0         0         0         0  #  SURVEY1
4        1         0         0         0        0  #  SURVEY2
-9999 0 0 0 0 0
#
#_Q_parms(if_any);Qunits_are_ln(q)
#LO           HI          INIT         PRIOR         PR_SD        PR_type      PHASE    env-var    use_dev   dev_mnyr   dev_mxyr     dev_PH      Block      Blk_Fxn  #  parm_name
-20           -2          -11            0             1             0         -1          0          0          0          0          0          1          2  #  LnQ_base_SURVEY1(3)
-8.25           -7.5           -8            0             1             0         2          0          0          0          0          0          0          0  #  LnQ_base_SURVEY2(4)

# timevary Q parameters
#LO           HI          INIT         PRIOR         PR_SD        PR_type     PHASE  #  parm_name
-9                      -8.6        -9            0             1             0      2  # LnQ_base_SURVEY1(3)_BLK1repl_1986
-9                      -7.6        -8            0             1             0      2  # LnQ_base_SURVEY1(3)_BLK1repl_2013

# info on dev vectors created for Q parms are reported with other devs after tag parameter section
#
#_size_selex_patterns
#Pattern:_0;  parm=0; selex=1.0 for all sizes
#Pattern:_1;  parm=2; logistic; with 95% width specification
#Pattern:_5;  parm=2; mirror another size selex; PARMS pick the min-max bin to mirror
#Pattern:_11; parm=2; selex=1.0  for specified min-max population length bin range
#Pattern:_15; parm=0; mirror another age or length selex
#Pattern:_6;  parm=2+special; non-parm len selex
#Pattern:_43; parm=2+special+2;  like 6, with 2 additional param for scaling (average over bin range)
#Pattern:_8;  parm=8; double_logistic with smooth transitions and constant above Linf option
#Pattern:_9;  parm=6; simple 4-parm double logistic with starting length; parm 5 is first length; parm 6=1 does desc as offset
#Pattern:_21; parm=2+special; non-parm len selex, read as pairs of size, then selex
#Pattern:_22; parm=4; double_normal as in CASAL
#Pattern:_23; parm=6; double_normal where final value is directly equal to sp(6) so can be >1.0
#Pattern:_24; parm=6; double_normal with sel(minL) and sel(maxL), using joiners
#Pattern:_2;  parm=6; double_normal with sel(minL) and sel(maxL), using joiners, back compatibile version of 24 with 3.30.18 and older
#Pattern:_25; parm=3; exponential-logistic in length
#Pattern:_27; parm=special+3; cubic spline in length; parm1==1 resets knots; parm1==2 resets all
#Pattern:_42; parm=special+3+2; cubic spline; like 27, with 2 additional param for scaling (average over bin range)
#_discard_options:_0=none;_1=define_retention;_2=retention&mortality;_3=all_discarded_dead;_4=define_dome-shaped_retention
#_Pattern Discard Male Special
24          4           0           0           #           1           FISHERY1
24          0           0           0           #           2           FISHERY2
24          0           0           0           #           3           SURVEY1
0           0           0           0           #           4           SURVEY2


#
#_age_selex_patterns
#Pattern:_0; parm=0; selex=1.0 for ages 0 to maxage
#Pattern:_10; parm=0; selex=1.0 for ages 1 to maxage
#Pattern:_11; parm=2; selex=1.0  for specified min-max age
#Pattern:_12; parm=2; age logistic
#Pattern:_13; parm=8; age double logistic. Recommend using pattern 18 instead.
#Pattern:_14; parm=nages+1; age empirical
```

```
#Pattern:_15; parm=0; mirror another age or length selex
#Pattern:_16; parm=2; Coleraine - Gaussian
#Pattern:_17; parm=nages+1; empirical as random walk  N parameters to read can be overridden by setting special to non-zero
#Pattern:_41; parm=2+nages+1; // like 17, with 2 additional param for scaling (average over bin range)
#Pattern:_18; parm=8; double logistic - smooth transition
#Pattern:_19; parm=6; simple 4-parm double logistic with starting age
#Pattern:_20; parm=6; double_normal,using joiners
#Pattern:_26; parm=3; exponential-logistic in age
#Pattern:_27; parm=3+special; cubic spline in age; parm1==1 resets knots; parm1==2 resets all
#Pattern:_42; parm=2+special+3; // cubic spline; with 2 additional param for scaling (average over bin range)
#Age patterns entered with value >100 create Min_selage from first digit and pattern from remainder
#_Pattern Discard Male Special
0           0           0           0           #           1           FISHERY1
0           0           0           0           #           2           FISHERY2
0           0           0           0           #           3           SURVEY1
0           0           0           0           #           4           SURVEY2


#
#LO         HI          INIT        PRIOR       PR_SD       PR_type     PHASE    env-var    use_dev   dev_mnyr   dev_mxyr     dev_PH      Block     Blk_Fxn
#  parm_name
# 1   FISHERY1 LenSelex
6           10          8           8           0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_Base_P1_FISHERY1
-2.5        -1          -2          -2          0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_Base_P2_FISHERY1
-2          3           0           0           0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_Base_P3_FISHERY1
2.5         3.5         3           3           0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_Base_P4_FISHERY1
-6          -2          -4          -4          0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_Base_P5_FISHERY1
-2.5        -1.5        -2          -2          0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_Base_P6_FISHERY1

0           30          5           5           0           0           -1          0           0           0           0           0           2
            2           #           P1_Ascending Inflection
-5          5           1           1           0           0           -1          0           0           0           0           0           2
            2           #           P2_ascending slope
-5          15          1.95        1.95        0           0           -3          0           0           0           0           0           2
            2           #           P3_height of asymtote (value of 999 assumes retention=1)
-5          5           0           0           0           0           -1          0           0           0           0           0           2
            2           #           P4_male offset to ascending inflection
0           100         27          27          0           0           -1          0           0           0           0           0           2
            2           #           P5_descending inflection
-5          10          1           1           0           0           -1          0           0           0           0           0           2
            2           #           P6_descending slope
-5          5           0           0           0           0           -1          0           0           0           0           0           2
            2           #           P7_male offset to descending inflection
-20         20          -10         0           0           0           -1          0           0           0           0           0           0
            0           #           P1_DiscardMort_Descending Inflection
1           1           1           0           0           0           -1          0           0           0           0           0           0
            0           #           P2_descending slope
0.05        0.05        0.05        0           0           0           -1          0           0           0           0           0           0
            0           #           P3_Max Discard Mort
0           0           0           0           0           0           -1          0           0           0           0           0           0
            0           #           P4_male offset

# 2   FISHERY2 LenSelex
8           30          20          20          0.05        1           -3          0           0           0           0           0           3
            2           #           SizeSel_P1_FISHERY2
-20         20          -1          -1          0.05        1           -3          0           0           0           0           0           3
            2           #           SizeSel_P2_FISHERY2
-20         20          -1          -1          0.05        1           -3          0           0           0           0           0           3
            2           #           SizeSel_P3_FISHERY2
-20         20          -1          -1          0.05        1           -3          0           0           0           0           0           3
            2           #           SizeSel_P4_FISHERY2
-20         20          0           0           0.05        1           -3          0           0           0           0           0           3
            2           #           SizeSel_P5_FISHERY2
-20         20          0           0           0.05        1           -3          0           0           0           0           0           3
            2           #           SizeSel_P6_FISHERY2

# 3   SURVEY1(Trammel) LenSelex
8.4         8.6         8.5         8.5         0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_P1_SURVEY1
-20         5           -8          -8          0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_P2_SURVEY1
-30         10          -5          -5          0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_P3_SURVEY1
5           7           6           6           0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_P4_SURVEY1
-5          -2          -3          -3          0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_P5_SURVEY1
-4          -1          -2          -2          0.05        1           3           0           0           0           0           0           0
            0           #           SizeSel_P6_SURVEY1


#_Dirichlet parameters
#LO         HI          INIT        PRIOR       PR_SD       PR_type     PHASE env-var    use_dev   dev_mnyr   dev_mxyr     dev_PH      Block     Blk_Fxn #
parm_name
0           1.5         1           0           0           0           3           0           0                       0           0
            0           0           0           #           Fleet1_LengthComps
-5          -1          -1.15       0           0           0           3           0           0                       0           0
            0           0           0           #           Fleet2_LengthComps
-5          -0.25       -1          0           0           0           3           0           0                       0           0
            0           0           0           #           Survey1_LengthComps


# timevary selex parameters
#LO         HI          INIT        PRIOR       PR_SD       PR_type     PHASE  #  parm_name
0           30          5           5           0           0           -1          #           P1_Ascending Inflection_1955
0           30          16          16          0           0           -1          #           P1_Ascending Inflection_1990
-5          5           1           1           0           0           -1          #           P2_ascending slope_1955
-5          5           1           1           0           0           -1          #           P2_ascending slope_1990
-5          15          1.95        1.95        0           0           3           #           P3_height of asymtote (value of 999 assumes
retention=1)_1955
-5          15          1.95        1.95        0           0           3           #           P3_height of asymtote (value of 999 assumes
retention=1)_1990
-5          5           0           0           0           0           -1          #           P4_male offset to ascending inflection_1955
-5          5           0           0           0           0           -1          #           P4_male offset to ascending inflection_1990
0           100         70          70          0           0           -1          #           P5_descending inflection_1955
0           30          27          27          0           0           -1          #           P5_descending inflection_1990
-5          5           2           2           0           0           -1          #           P6_descending slope_1955
-5          10          5           5           0           0           -1          #           P6_descending slope_1990
```

```
-5	5	0	0	0	0	-1	#	P7_male offset to descending inflection_1955	45
-5	5	0	0	0	0	-1	#	P7_male offset to descending inflection_1990

17	19	18	18	0.05	1	3	#	SizeSel_P1_FISHERY2_1955
17	19	18	18	0.05	1	3	#	SizeSel_P1_FISHERY2_1988
18	20	19	19	0.05	1	3	#	SizeSel_P1_FISHERY2_1997
-1.5	1	-1.25	-1.25	0.05	1	3	#	SizeSel_P2_FISHERY2_1955	50
-20	0	-8	-8	0.05	1	3	#	SizeSel_P2_FISHERY2_1988
-6	-2	-4	-4	0.05	1	3	#	SizeSel_P2_FISHERY2_1997
0	2	1	1	0.05	1	3	#	SizeSel_P3_FISHERY2_1955
1	3	2	2	0.05	1	3	#	SizeSel_P3_FISHERY2_1988
1	3	1.75	2	0.05	1	3	#	SizeSel_P3_FISHERY2_1997	55
1	3	2	2	0.05	1	3	#	SizeSel_P4_FISHERY2_1955
0	5	4	4	0.05	1	3	#	SizeSel_P4_FISHERY2_1988
0	4	3.5	3.5	0.05	1	3	#	SizeSel_P4_FISHERY2_1997
-6	-4	-5	-5	0.05	1	3	#	SizeSel_P5_FISHERY2_1955
-8	-5	-6	-6	0.05	1	3	#	SizeSel_P5_FISHERY2_1988	60
-10	-5	-8	-8	0.05	1	3	#	SizeSel_P5_FISHERY2_1997
-4	-2	-3	-3	0.05	1	3	#	SizeSel_P6_FISHERY2_1955
-5	0	-4	-4	0.05	1	3	#	SizeSel_P6_FISHERY2_1988
-6	-4	-5	-5	0.05	1	3	#	SizeSel_P6_FISHERY2_1997	64

# info on dev vectors created for selex parms are reported with other devs after tag parameter section
#
0   #  use 2D_AR1 selectivity(0/1)
#_no 2D_AR1 selex offset used
#
# Tag loss and Tag reporting parameters go next
0  # TG_custom:  0=no read and autogen if tag data exist; 1=read
#_Cond -6 6 1 1 2 0.01 -4 0 0 0 0 0 0 0  #_placeholder if no parameters
#
# deviation vectors for timevary parameters
#  base   base first block   block  env  env   dev   dev   dev   dev   dev
#  type  index  parm trend pattern link  var  vectr link _mnyr  mxyr phase  dev_vector
#      3     1     1     1     2     0     0     0     0     0     0     0
#      3     2     3     1     2     0     0     0     0     0     0     0
#      3     3     5     1     2     0     0     0     0     0     0     0
#      5     1     7     2     2     0     0     0     0     0     0     0
#      5     2     9     2     2     0     0     0     0     0     0     0
#      5     3    11     2     2     0     0     0     0     0     0     0
#      5     4    13     2     2     0     0     0     0     0     0     0
#      5    15    15     2     2     0     0     0     0     0     0     0
#      5    16    17     2     2     0     0     0     0     0     0     0
#      5    17    19     2     2     0     0     0     0     0     0     0
#      5    18    21     2     2     0     0     0     0     0     0     0
#      5    19    23     2     2     0     0     0     0     0     0     0
#      5    20    25     2     2     0     0     0     0     0     0     0
     #
# Input variance adjustments factors:
 #_1=add_to_survey_CV
 #_2=add_to_discard_stddev
 #_3=add_to_bodywt_CV
 #_4=mult_by_lencomp_N
 #_5=mult_by_agecomp_N
 #_6=mult_by_size-at-age_N
 #_7=mult_by_generalized_sizecomp
#_Factor  Fleet  Value

 -9999   1    0  # terminator
#
2 #_maxlambdaphase
1 #_sd_offset; must be 1 if any growthCV, sigmaR, or survey extraSD is an estimated parameter
# read 0 changes 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; 17=F_ballpark; 18=initEQregime
#like_comp fleet  phase  value  sizefreq_method

-9999  1  1  1  1  #  terminator
#
# lambdas (for info only; columns are phases)
# 0 #_CPUE/survey:_1
#  0 #_CPUE/survey:_2
#  1 #_CPUE/survey:_3
#  1 #_CPUE/survey:_4
#  1 #_CPUE/survey:_5
#  1 #_discard:_1
#  0 #_discard:_2
#  0 #_discard:_3
#  0 #_discard:_4
#  0 #_discard:_5
#  1 #_lencomp:_1
#  0 #_lencomp:_2
#  1 #_lencomp:_3
#  1 #_lencomp:_4
#  1 #_lencomp:_5
#  1 #_agecomp:_1
#  0 #_agecomp:_2
#  0 #_agecomp:_3
#  0 #_agecomp:_4
#  0 #_agecomp:_5
#  0 #_init_equ_catch1
#  0 #_init_equ_catch2
#  0 #_init_equ_catch3
#  0 #_init_equ_catch4
#  0 #_init_equ_catch5
#  1 #_recruitments
#  1 #_parameter-priors
#  1 #_parameter-dev-vectors
#  1 #_crashPenLambda
#  0 # F_ballpark_lambda
0 # (0/1/2) read specs for more stddev reporting: 0 = skip, 1 = read specs for reporting stdev for selectivity, size, and numbers, 2 = add options for
M,Dyn. Bzero, SmryBio
 # 0 2 0 0 # Selectivity: (1) fleet, (2) 1=len/2=age/3=both, (3) year, (4) N selex bins
 # 0 0 # Growth: (1) growth pattern, (2) growth ages
 # 0 0 0 # Numbers-at-age: (1) area(-1 for all), (2) year, (3) N ages
 # -1 # list of bin #'s for selex std (-1 in first bin to self-generate)
 # -1 # list of ages for growth std (-1 in first bin to self-generate)
 # -1 # list of ages for NatAge std (-1 in first bin to self-generate)
999
```