Barred Sand Bass Data Report

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Metadata

Two main sources of fishery data were available for the barred sand bass fishery: catch-per-unit-effort (CPUE) information from the commercial passenger fishing vessel (CPFV) fleet, and size composition data from that is collected as part of the Recreational Fisheries Information Network (RecFIN).

Beginning in 1935, CPFV operators were required to keep daily catch logs and submit them monthly to the Department. These data have been collected continuously, except for during World War II (1941 to 1946) when most CPFVs were not fishing (Hill and Schneider 1999). Logbook data have always included the date fishing occurred, port code, boat name, Department fishing block, angler effort and the number of fish kept by species, and after 1994 included discarded fish, bait type and sea surface temperature. However, barred sand bass were initially recorded within the broader "rock bass" category (which also included kelp bass and spotted sand bass) and were not consistently reported by species until 1975.

In addition, CRFS also collects size (length and weight) information on kept fish. Numbers of discards are also recorded for all modes and discard lengths are obtained opportunistically on CPFVs. Estimates from CRFS and MRFSS are not directly comparable due to differences in methodology, so only CRFS estimates are presented in this report. CRFS data on catch estimates and mortality are available electronically to the public within 40 days of collection on the updated RecFIN website (https://www.recfin.org).

Table 1: Table 1. Summary of metadata

Name	Barred Sand Bass Recreational Data Object
Common Name	Barred Sand Bass
Species	NA
Region	Southern California
Last Historical Year	2018
Last TAC	NA
Units	mt
Last TAE	1

Number of areas 2

Biology

The biology of barred sand bass is well-studied, and peer reviewed studies are available to inform mortality, growth, and maturity. The Enhanced Status Report (CDFW 2019) summarizes the best available information for each of the biological parameters used in management.

Figure 1. Density plots of biological parameters

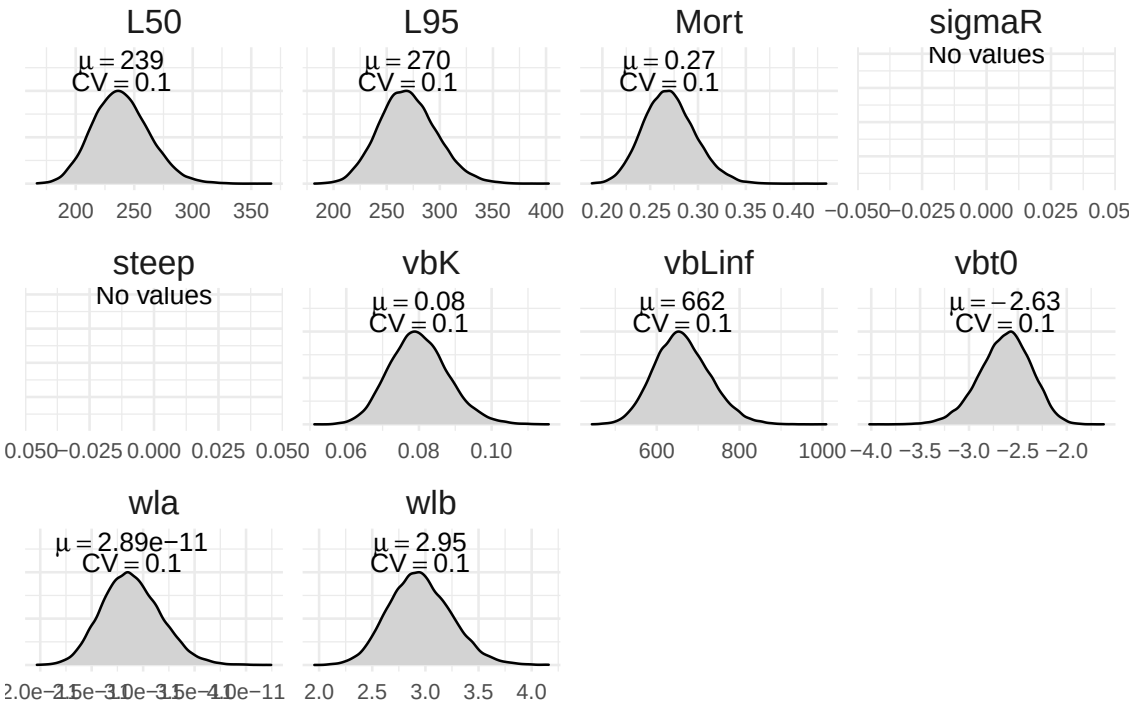
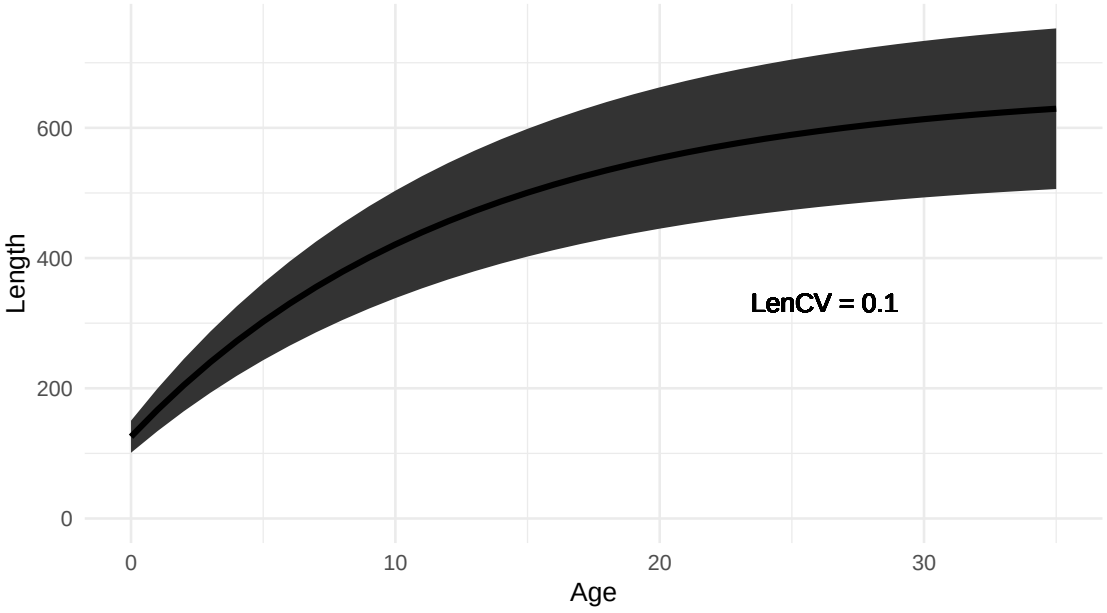


Figure 2. Distribution of length−at−age

Mean length−at−age (solid line) and 2 standard deviations (shaded region)



Selectivity

Selectivity was estimated by fitting a logistic model to CRFS data on both retained and discarded fish collected between 2004-2012 (prior to a change in the legal size limit). Retention was calculated similarly except the model was fit to retained fish only including data collected up to the present.

Figure 3. Density plots of selectivity parameters

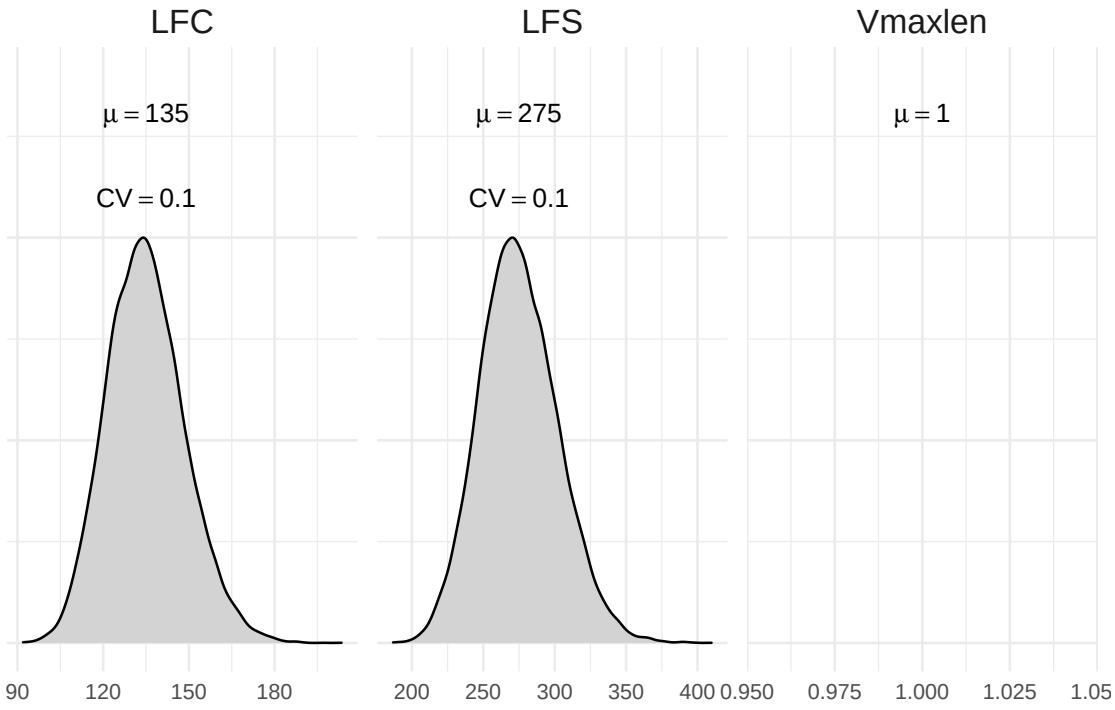
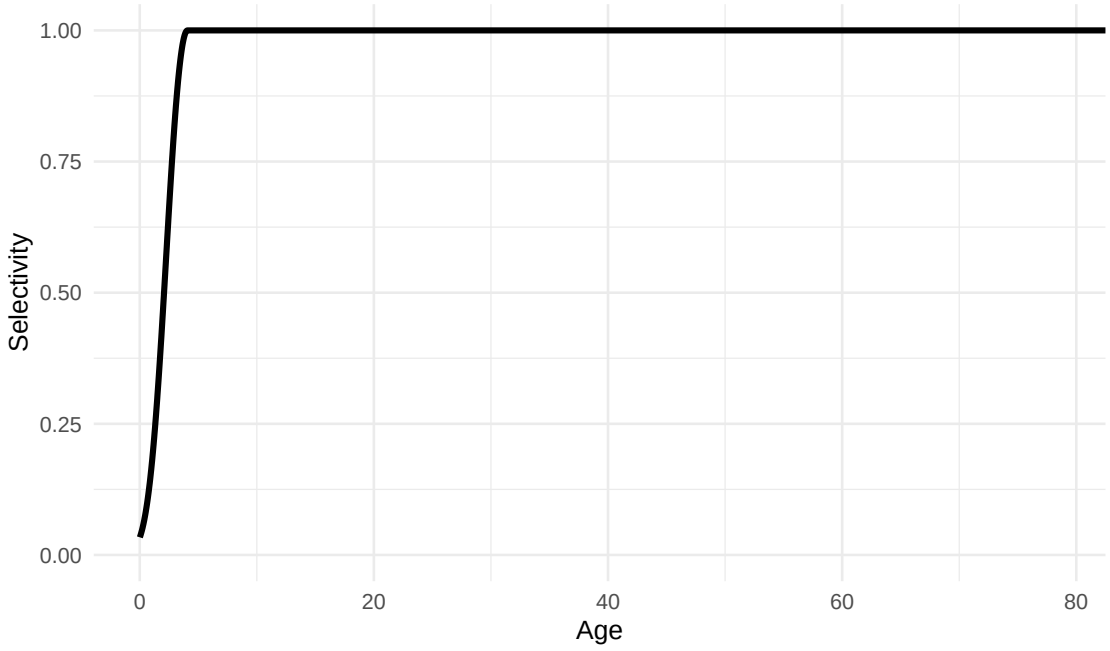
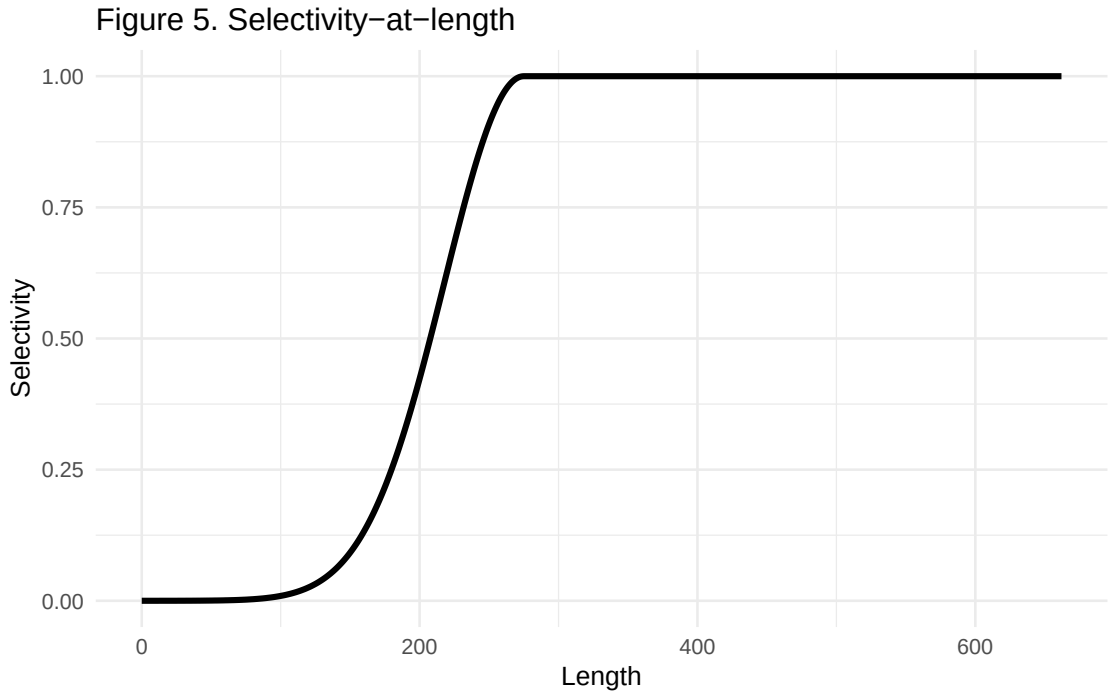


Figure 4. Selectivity−at−age





Time-Series

RecFIN data come from two different surveys. All modes of recreational fishing (private rental, CPFV, beach and bank, and manmade structures) were surveyed by Marine Recreational Fisheries Statistics Survey (MRFSS) for size samples and estimates of catch and effort between 1979 and 2003. The Pacific States Marine Fisheries Commission ran these surveys with both federal and state funding. A combination of dockside surveys, CPFV sampling and phone interviews were used to generate the estimates. In January 2004, the Department implemented its own sampling survey, CRFS, to replace the MRFSS surveys using similar but different methods. Because of the difference between these methods, catch and effort estimates before and after 2004 are not considered a continuous, comparable time series. More information on each time series is provided below.

Catch

While recreational catch estimates for barred sand bass were produced as part of the MRFSS sampling program it is not used, and so the catch time series begins in 2005. Estimates are in metric tons, and include retained fish caught using all fishing modes from all water areas except Mexico.

Effort

The CRFS program develops effort estimates for each of the four fishing modes sampled, but due to the multi-species nature of recreational fishing in California, it is not possible to use this information estimate the fishing effort targeting barred sand bass specifically. Instead, we used CPFV logbook data to determine the number of trips that encountered a barred sand bass, and from that created a relative index of historical fishing effort (more fully described in the OM report). However, because yearly measures of effort are not

routinely produced in this fishery effort was not considered one of the types of data available for management, and was not included in the data object.

Abundance

CPFV logbook data were used to develop a standardized index of abundance for the barred sand bass stock since 1980. The dataset was filtered to include only trips that encountered at least one barred sand bass which were used to determine the amount of fishing effort in southern California waters (with catch in Mexico or north of Point Conception excluded). Catch was calculated as the sum of the number kept, number released and number lost to sea lions on each trip. Effort was calculated as the number of fishers for each trip.

Some estimates of catch per trip appear unrealistically high, and may be the result of error in data entry or recording. The dataset was filtered by removing all records with reported catches greater than the 99th percentile of recorded catch. The effort data was filtered in a similar way. Records which reported zero fishers were removed from the data set.

A generalized linear model (GLM) was fit to the CPUE data. Region was used as a covariate, in addition to year and month. Each trip was assigned to either the San Diego, Los Angeles, or Santa Barbara region based on reported CDFW block number.

Recruitment

A time series of larval abundance for three species of southern California basses combined is available from California Cooperative Fisheries Investigations (CalCOFI) oceanographic cruises. We used this to generate a recruitment index for 1980-2015.

Length

Mean length, modal length, and the mean length above modal length were calculated using RecFIN data for all fish sampled from the CPFV and private boat modes from 1980 to 2018 (there was no sampling in 1990-1992). We did not include Mexican waters. We combined data from sampling programs implementing different methods before and after 2005.

Figure 6. Time−Series Data

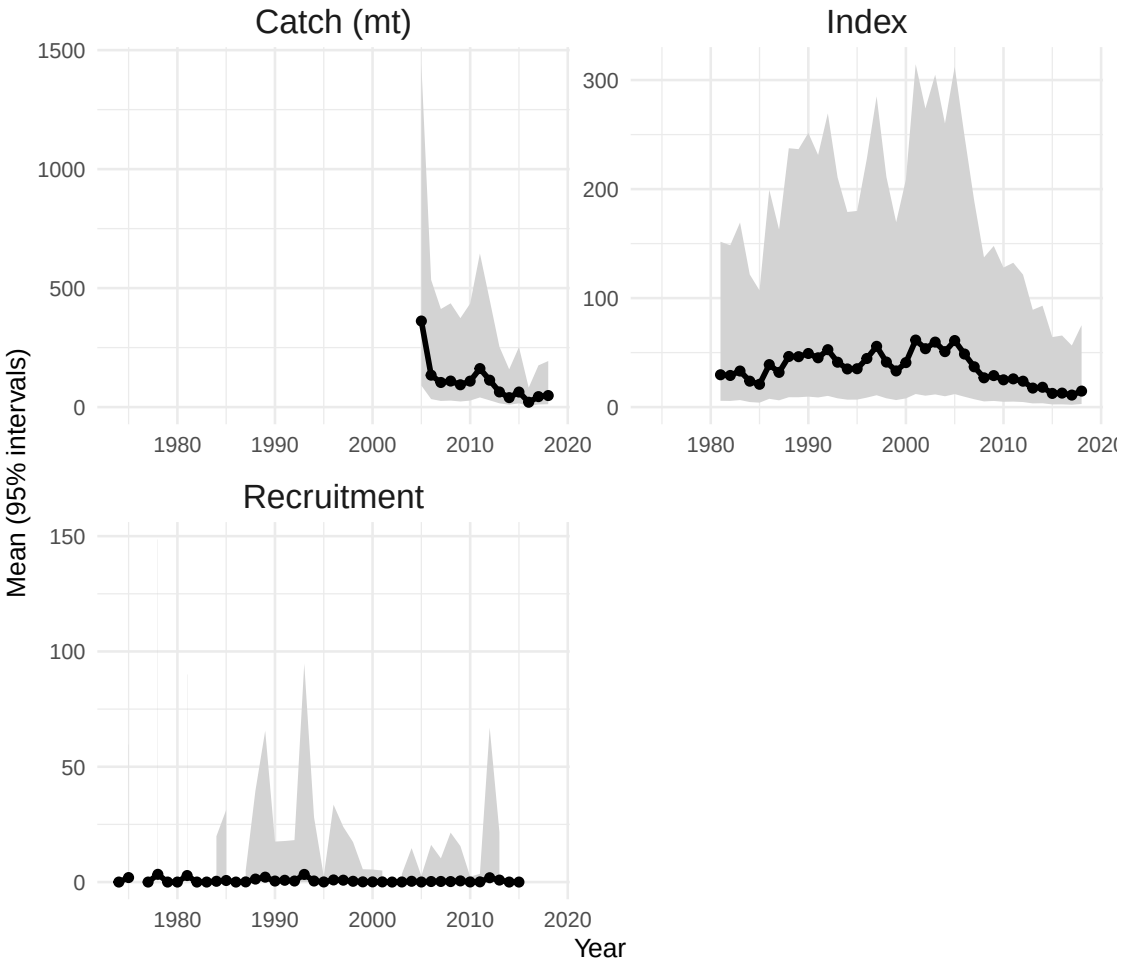
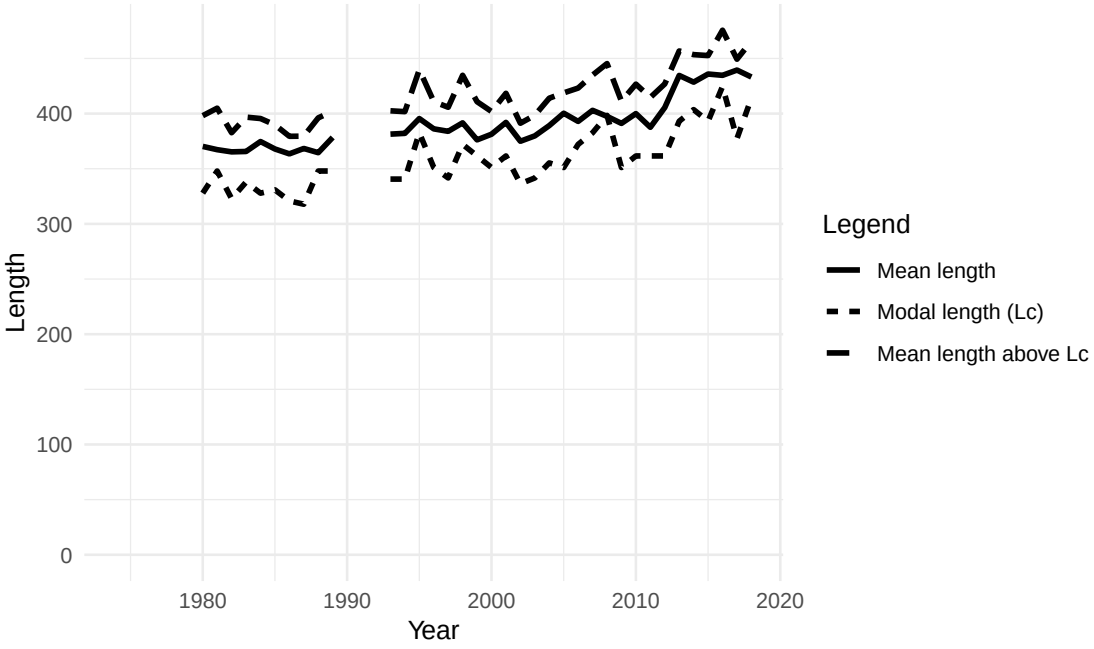


Figure 8. Mean Length Time−Series



Catch-at-Age

Catch-at-age is not consistently sampled, however, a dedicated study was conducted by CDFW staff between 2015 and 2018 to sample age, weight, length, and maturity. The purpose of this study was to update the estimates of biological parameters, and a paper describing these results is forthcoming. Because this data is not assumed to be routinely available for management it was not included in the data object.

Catch-at-Length

Catch-at-length data was available from RecFIN data for all fish sampled from the CPFV and private boat modes from 1980 to 2018 (there was no sampling in 1990-1992). We did not include Mexican waters. We combined data from sampling programs implementing different methods before and after 2005.

Figure 9. Catch−at−Length (Years 1980 − 1998)

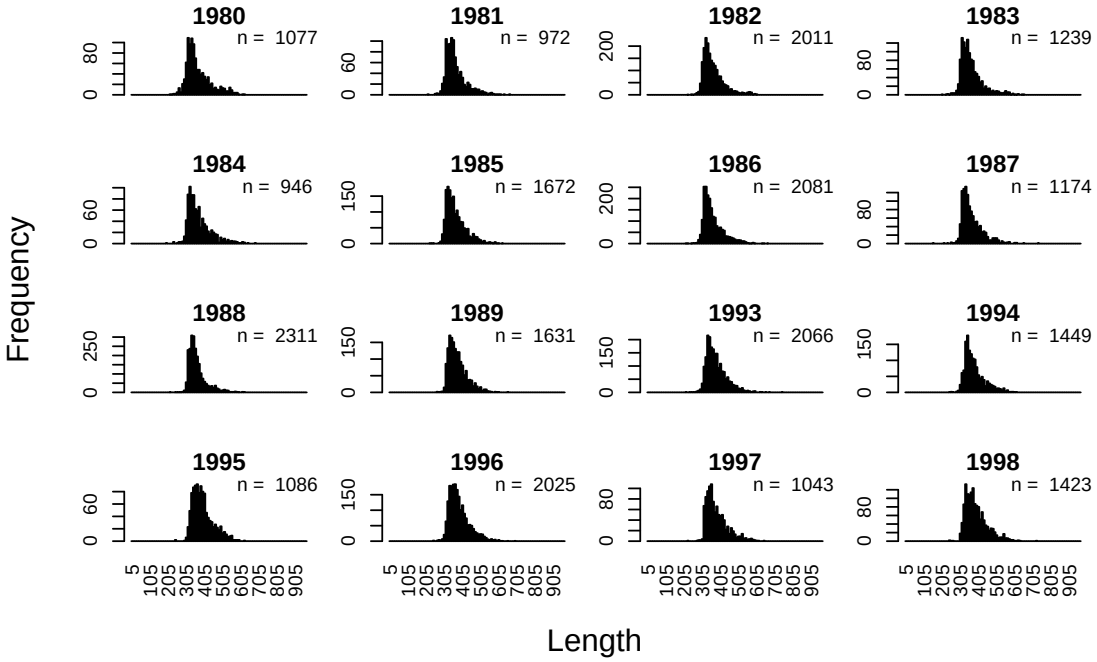


Figure 10. Catch−at−Length (Years 1999 − 2015)

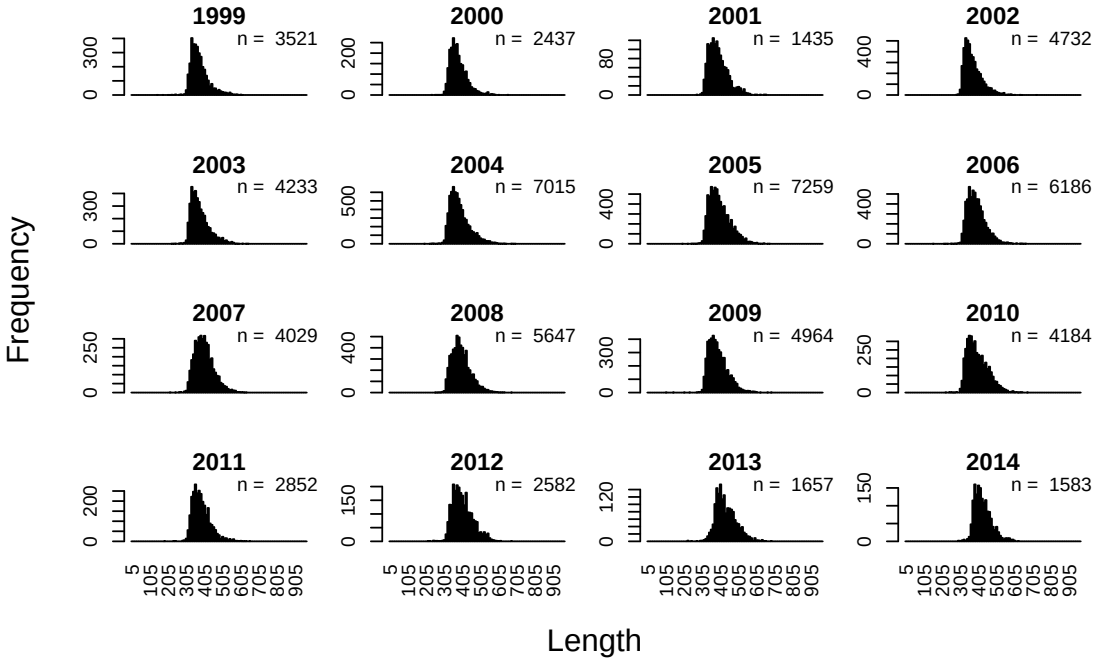
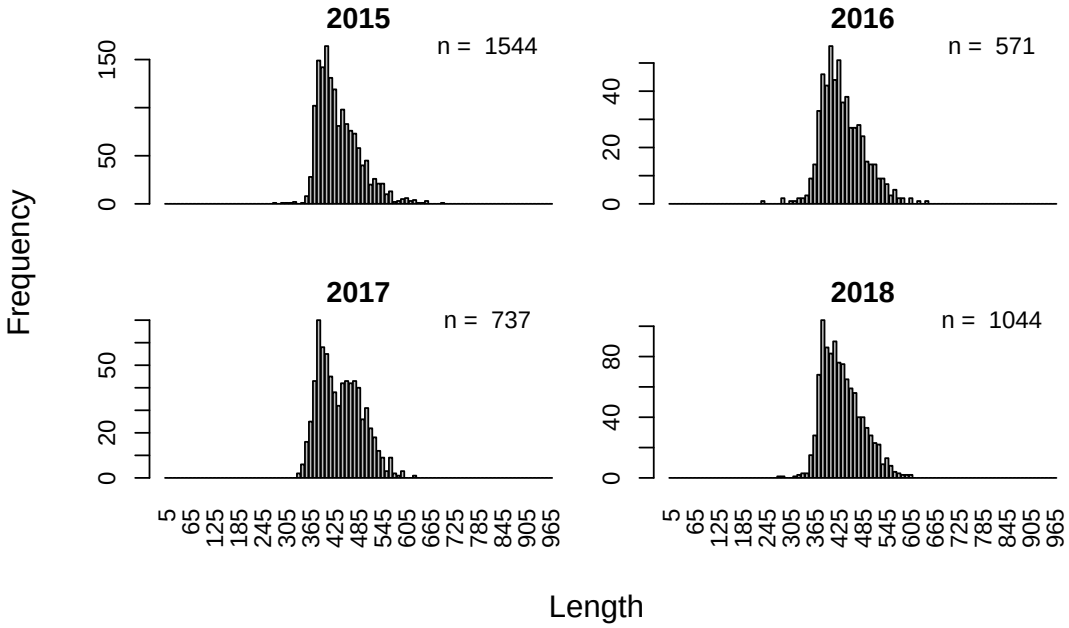


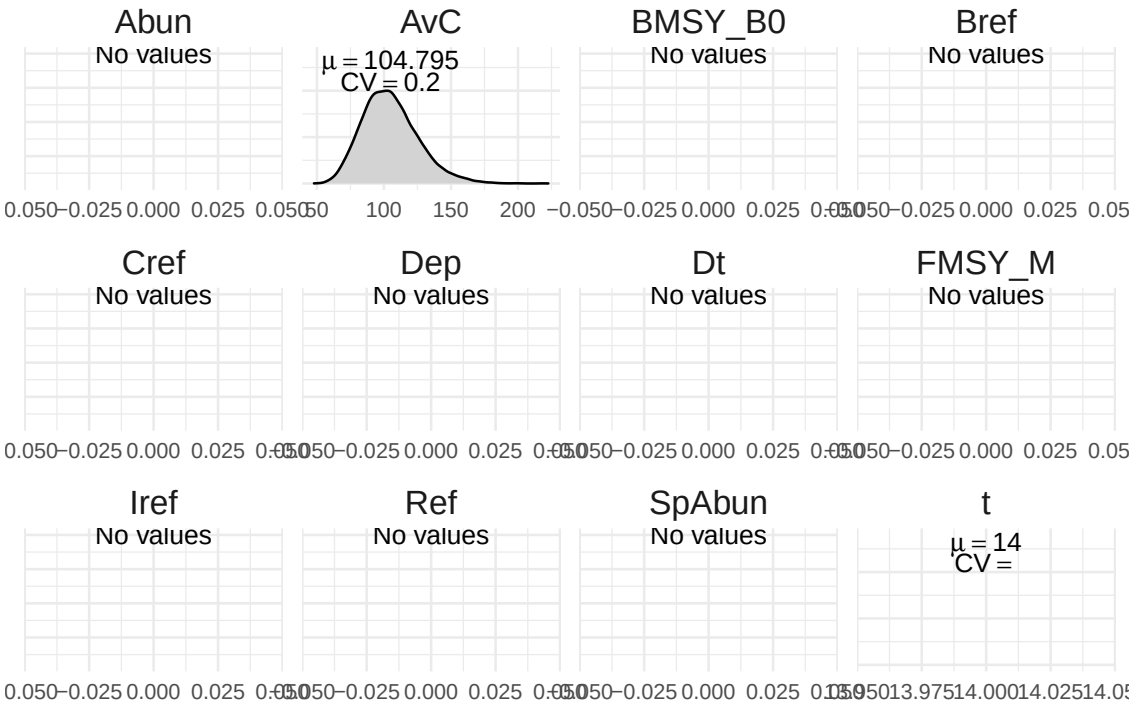
Figure 11. Catch−at−Length (Years 2015 − 2018)



Reference

No reference points have been developed for barred sand bass.

Figure 12. Density plots of Reference parameters



Reference List

California Department of Fish and Wildlife. 2019. Barred Sand Bass, Paralabrax nebulifer. Enhanced Status Report.

Hill KT, Schneider N, 1999. Historical logbook databases from California's commercial passenger fishing vessel (partyboat) fishery, 1936-1997. Scripps Institution of Oceanography, Ref. Series No. 99-19, 58 p.