AgeStructure

B. Kesner

Methodology

An age structure analysis was developed based on PIT scanning for zones within a reach that had at least 200 unique fish contacted. A map of color coded zones and locations can be found here: Location Mapping App

The age structure was developed for each fiscal year (FY; October through September) from 2015 to 2024. Age was based on years at large (YAL; the number of years post-stocking), because actual age for many fish in hatcheries is unknown due to mixing of year classes.

The YAL for a given fish was calculated from the number of years between release FY and scan year FY. The calculated YAL for each fish was the whole number of years a fish was at large just prior to the start of each scanning FY. A fish released in FY 2020 (October 1, 2019 to September 30, 2020) and scanned in FY 2021 (October 1, 2020 to September 30, 2021) could have been at large for 0 days prior to the start of FY 2021 (released September 30, 2020, the last day of FY 2020) or at large for one day less than a year (released October 1, 2019) and would have a calculated YAL age of zero. A fish released in FY 2019 (October 1, 2018 to September 30, 2019) and scanned in FY 2023 (October 1, 2022 to September 30, 2023) will have a YAL of 3 and would have been at large for 3 to 4 years at the beginning of FY 2023.

Fish included in the analysis for each scan FY must have been at large for more than one year; calculated YAL equal to or greater than one. YAL was calculated for all fish repatriated to MSCP Reach 3 with a TL measurement (in millimeters). Age structure was examined using stacked bar charts produced separately by zone and scan FY, each stack color coded by zone of release. To maintain a consistent x-axis range between figures, all fish 25 YAL and older were given the age of 25 YAL (max age was 25 YAL).

TL at release is known to significantly impact post-release survival (Marsh et al. 2005). To illustrate the impact of release size distribution on age structure, release cohorts for each zone and FY were summarized in bar charts with release numbers divided between two size classes: shorter than 400 mm TL, and equal to or longer than 400 mm TL. This size class cutoff was smaller than the TL generally considered as a safe target size for release; 500 mm TL (Wisenall et al. 2015). However, a longer size cutoff resulted in many years with no fish released in the

larger size class. The size cutoff was reduced to increase the number of sample cohorts available for analysis.

Results

The age structure for zone 3.1 is shown in Figure 1 and Figure 2.

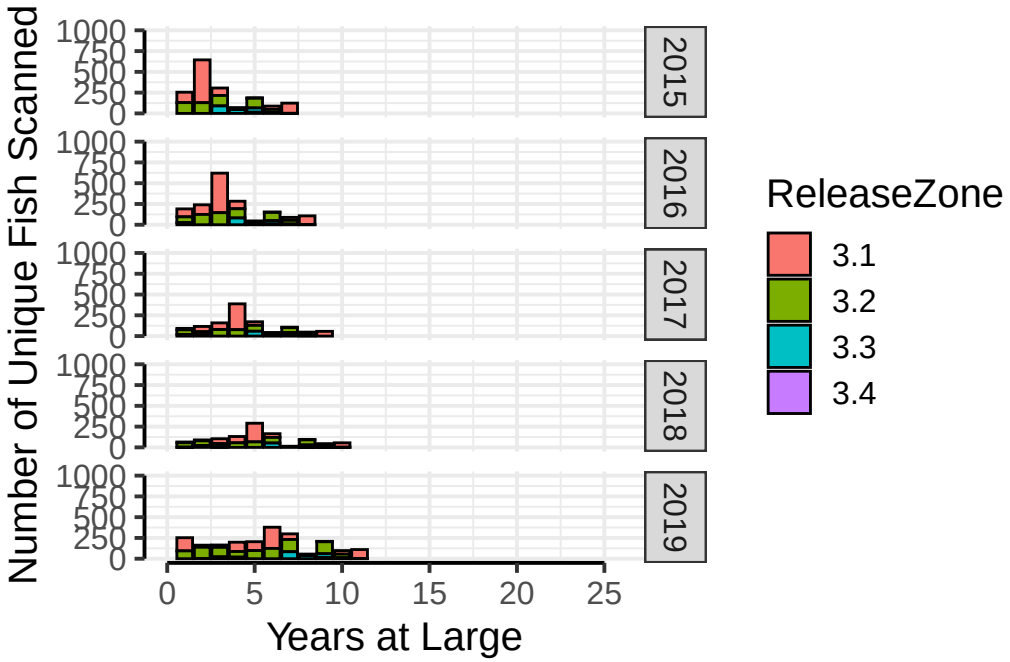

Figure 1: Age structure based on years-at-large, part 1.

The age structure for zone 3.2 is shown in Figure 3 and Figure 4.

The release size plot for all zones within the reach is shown in Figure 5.

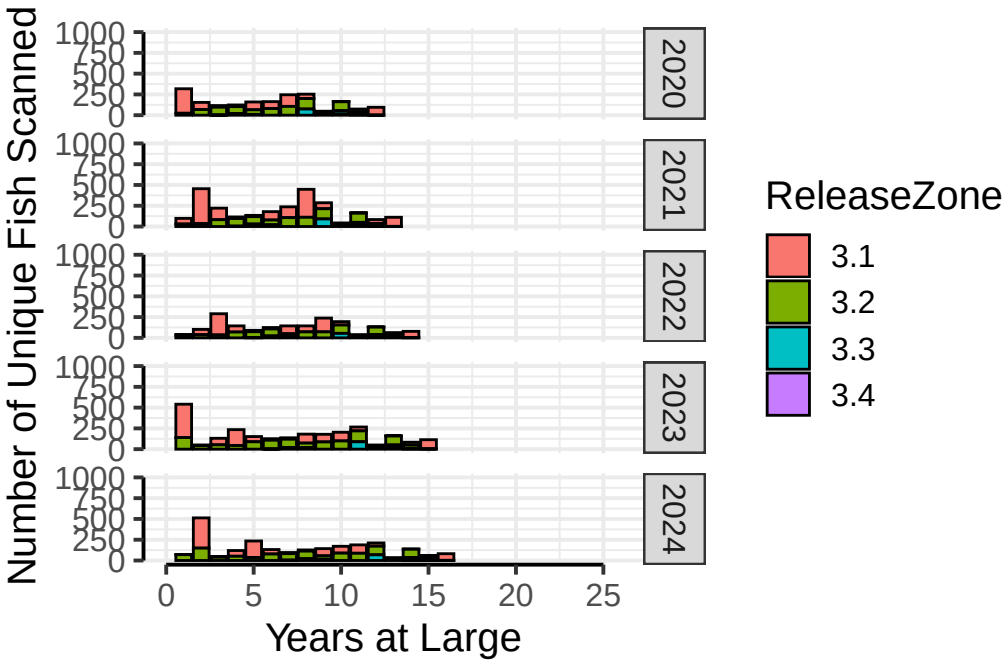

Figure 2: Age structure based on years-at-large, part 2.

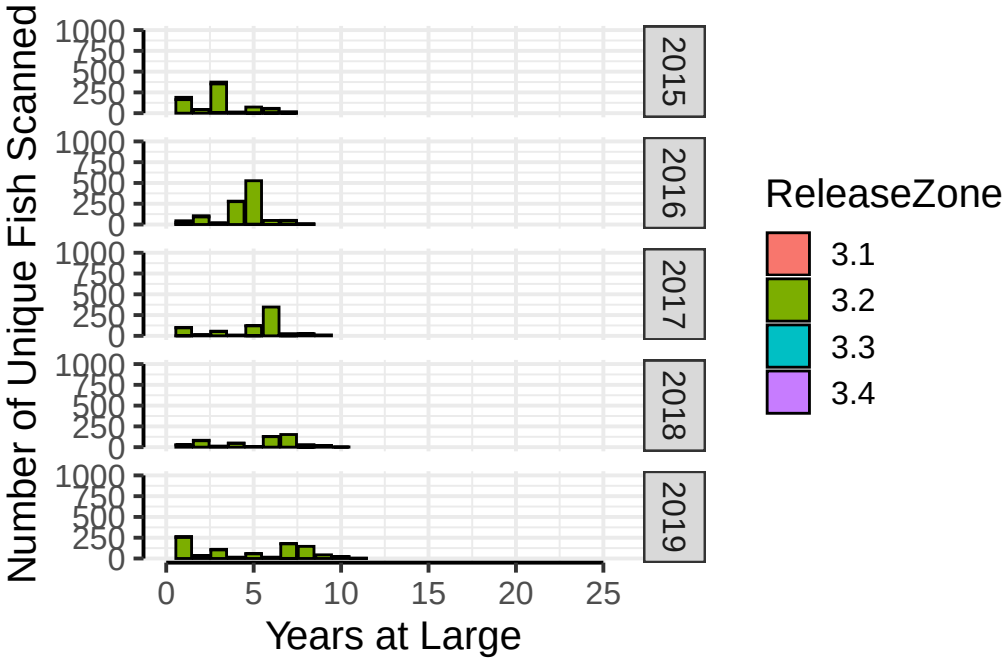

Figure 3: Age structure based on years-at-large, part 2.

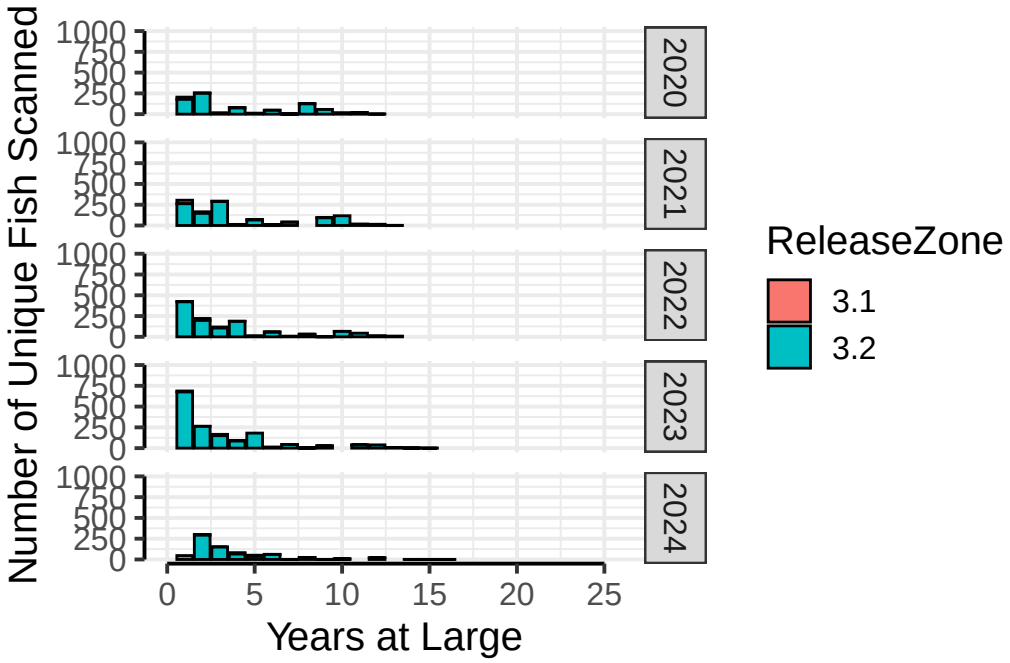

Figure 4: Age structure based on years-at-large, part 2.

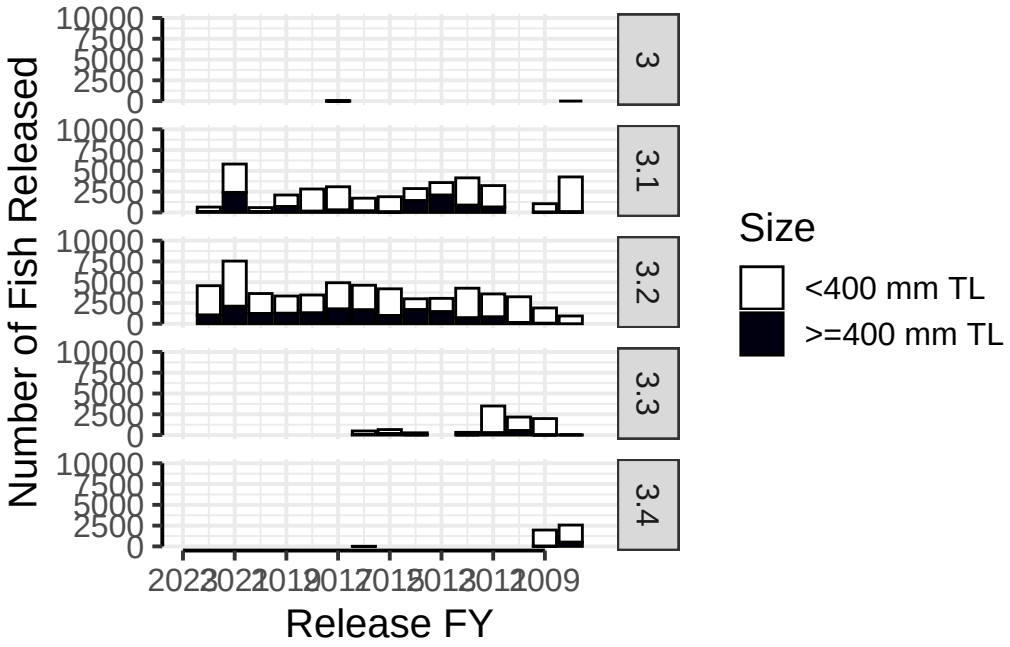

Figure 5: FY Release cohorts and their release size class (shorter than 400 mm TL or 400 mm TL and longer).