

## **Dan Wilson, VA DWR Fishery Biologist**

### **Striper Fishery Research and Trends at SML**

**3/4/22**

Dan Wilson, the Virginia DWR Fishery Biologist at SML for 20+ years, explained to SMSC members that striper fishery management at SML can be viewed as a complex, multi-variable equation, or like a puzzle with many different pieces that all must fit together. For examples, some of the factors that DWR analyzes include: fish natural mortality; fish mortality due to anglers; the influence of competing fish species; the size and quality of the forage base; the growth rate of stripers; variations in the striper stocking survival from year to year; changes in lake water chemical composition (dissolved oxygen, PH, clarity), and so on.

DWR uses input from anglers to balance different potential goals and achieve an outcome, which the public desires. SMSC has been an important voice in the past and continues in that tradition today by helping Dan and other DWR professionals understand which goals to prioritize in managing the striper fishery at SML. For example, SML anglers have indicated a clear preference for the opportunity to land bigger, trophy sized fish at SML (35"+), versus catching more but smaller fish (20"-30").

Striper fishery management is driven by data and scientific methods, but it is not 100% predictable. It begins with stocking, which typically runs about 350,000 fingerlings per year, based on average for last 20 years. These are supplied by VA DWRs hatchery. About 17 fingerlings per acre of lake surface are stocked at SML. This is well above the average fish/acre striper stocking done in most other US lakes, per data from American Fishery Society, of which Dan is a member. Most stocking has been done by hatchery truck on land, but deep water stocking done by boat in past 5 years also has been promising. Over half of the stocking is done by truck, due to logistics of boat stocking. 2021 stocking was just under 300K in total.

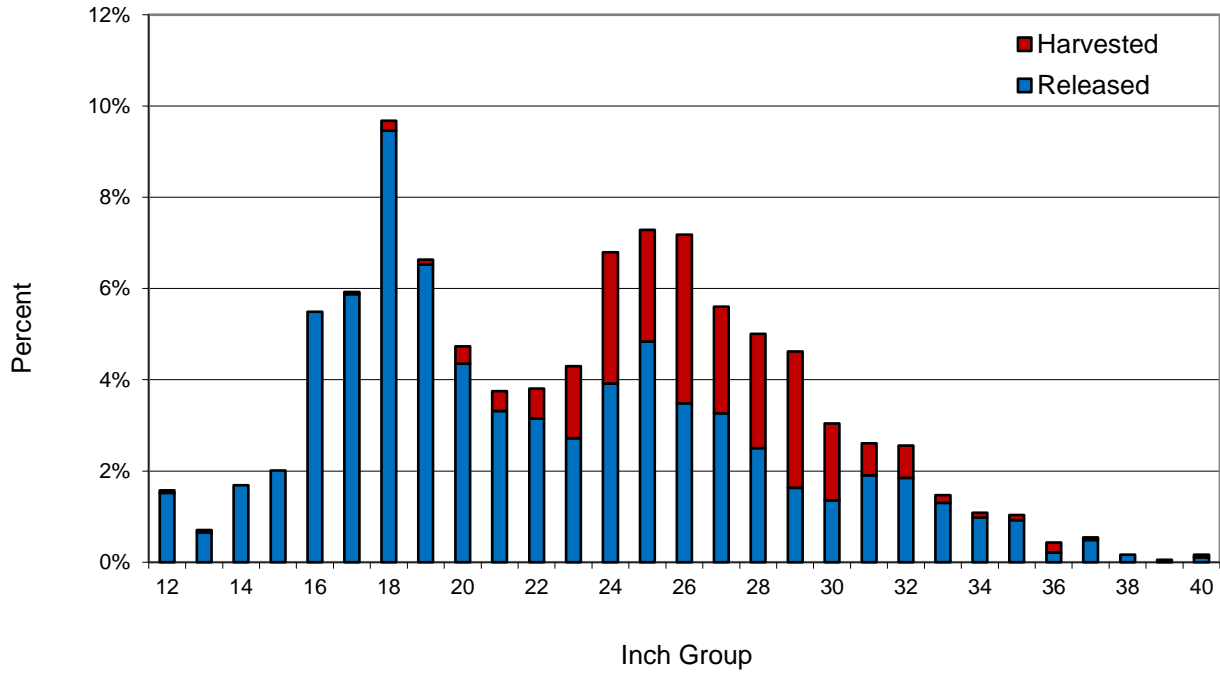
DWR performs gill net sampling at SML 3x per year to determine stocking success and how well fish are growing the first 3 years. These fish are targeted by using nets with a specific mesh size that matches smaller fish. This allows the larger stripers to avoid being caught in the nets. DWR gill netting data for SML shows stripers here average 17" length at 1.5 years old and about 21" at 2.5 years, although there is always some variation from year to year.

Angler diaries (fishing journals) are very important as a data source for DWR to analyze fish population structure year by year. They complement the data collected with gill netting. Dan notes that no angler diaries are collected from Leesville Lake, making gill netting the only source of data there. The SMSC work to provide angler diaries and collect fish heads in freezers means DWR needs to collect less data by gill nets, thus killing fewer stripers with gill nets at SML due to the diary data and fish head collections. This is a key role for SMSC members to participate in the diary program either with the printed or new online formats.

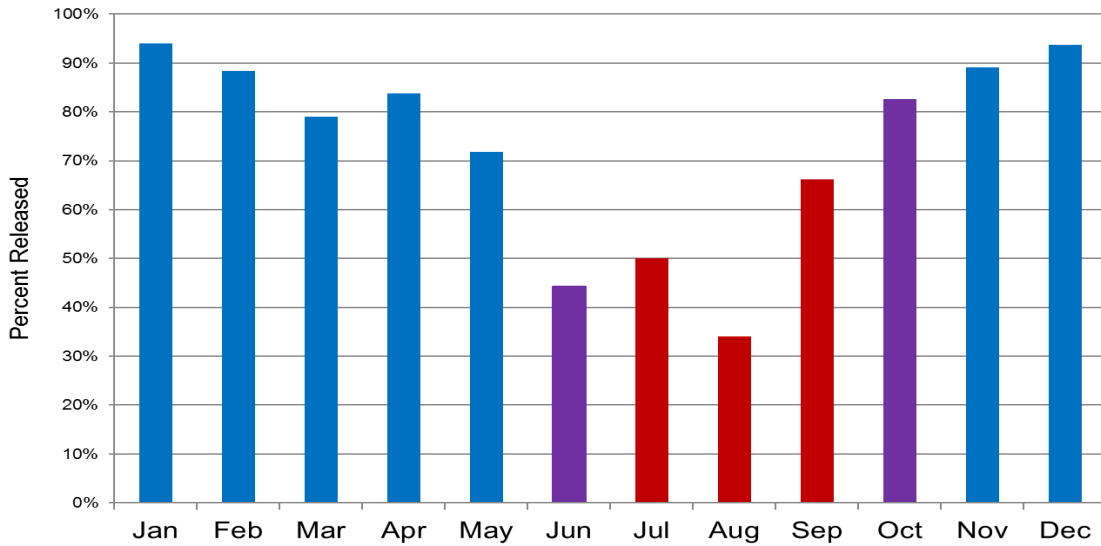
Angler diaries are unique to SML, but being introduced elsewhere, such as in Arkansas, to provide a more detailed understanding of the striper fishery. Fishing diary data and striped bass heads collected from anglers from 2009-2015 revealed that stripers were not growing past a certain size, despite living longer. There were too many fish in the lake, resulting in many stunted fish. DWR then changed the slot limit, to encourage harvesting of stunted fish and release of larger fish during cold-water months. The change was successful - more larger fish now exist in the SML fishery.

Most recent data from 2021 show growth rates have slowed again. Angler diaries also provide DWR data on what percentage of each size fish are released: for fish < 20", it is virtually 100%; for fish 24"-32" the

release rate is around 50%; fish 33"-40" are released more often than they are kept and harvested (many due to 30"-40" slot limit in cold water months).



*Percent of striped bass caught and recorded in angler diaries for each inch group.*

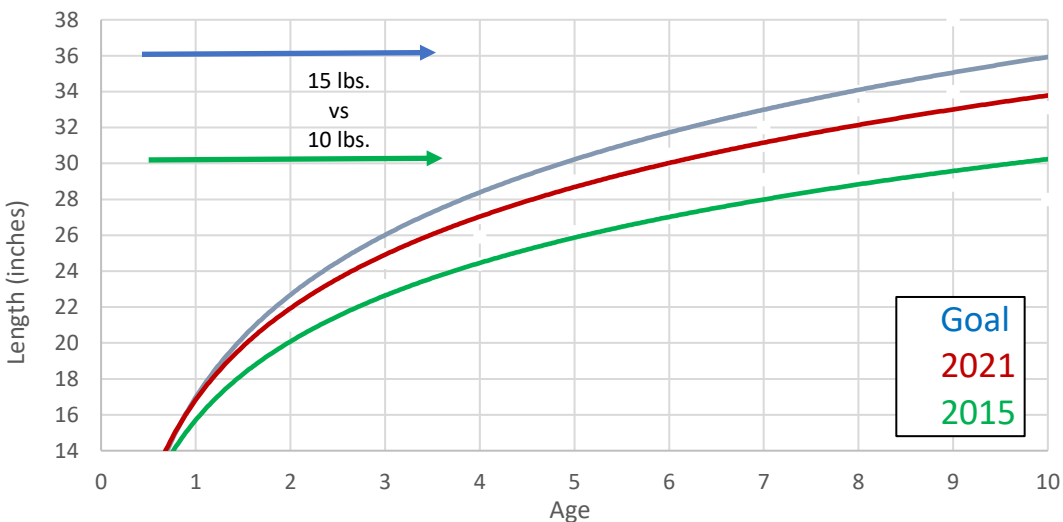


*Percent of striped bass released in angler diaries at SML in 2020.*

Key takeaways for SMSC members and SML anglers to help improve the striper fishery, per VA DWR:

- In warm water months of June/July/August/September, catch your striper daily limit (2 fish), then SWITCH to another fish species, or just QUIT for the day. Kindly do NOT keep fishing and release stripers over daily limit, because many will die.
- Smaller stripers (less than 22") tend to survive better than larger ones when being caught and released in warm water months.
- For all stripers, the higher the water temperature, the higher the mortality for released fish. The longer the fish is out of the water (handling, pics, etc), the higher the mortality.
- Smaller stripers are more easily replaced than larger fish, so when fishing for dinner, harvesting smaller fish is more sustainable than fewer larger fish.

The importance and positive impact of releasing stripers can be seen in the next data graph. It takes an average of 4-5 years for a striper to grow to 25+ inches. It takes 9-10 years for a striper to grow to 35+ inches.

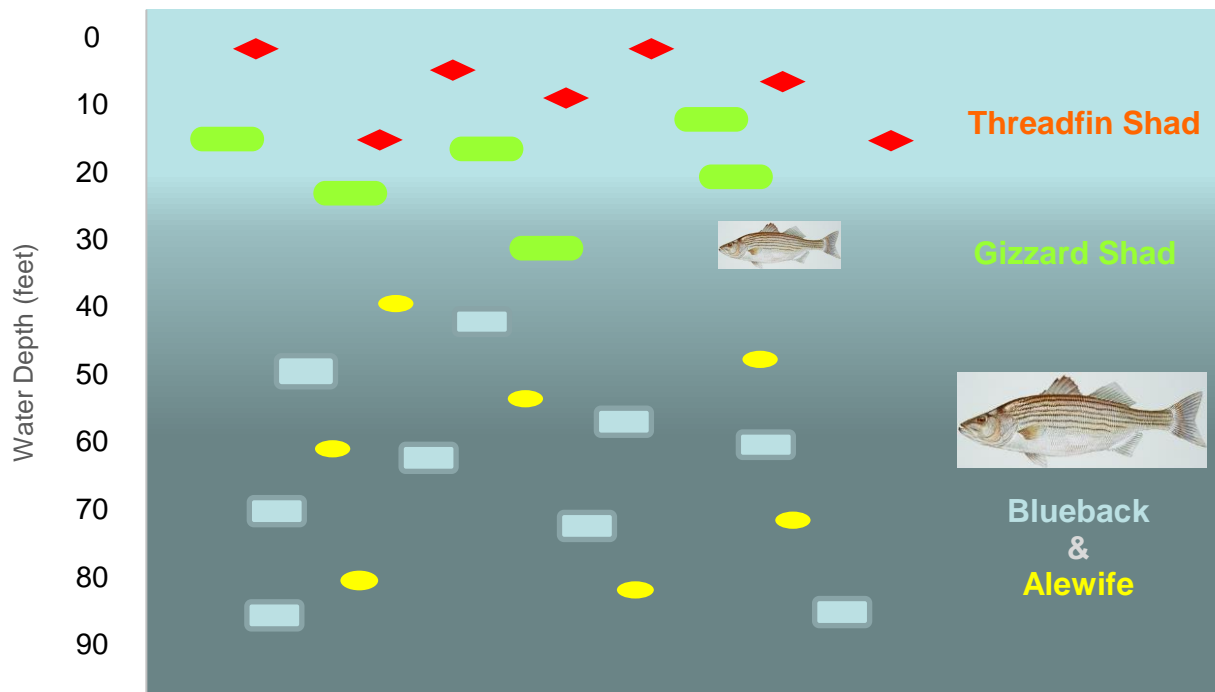


*Average growth rates of striped bass at SML in 2015 and 2021. The goal growth rates is how striped bass can grow if adequate forage is available throughout their lifetime and is based on historical data.*

#### Observations on the SML Forage Base

The 4 shad species that comprise most of the striper forage base are alewives, blueback herring, threadfin shad and gizzard shad. Alewives and bluebacks have similar characteristics but alewives are much smaller as adults, alewives are usually 4-5 inches and bluebacks 6-8 inches as adults at SML. Gizzard shad are the largest of all the species and comprise the bulk of the forage. Threadfin population has been up and down at SML, as they are subject to dying in cold winters. They prefer warm waters and inhabit primary shallow water during the summer but may go deep when the water temperatures drop to stay in warmer water. Gizzards prefer cooler water than threadfin, but still warm water over cool water. Alewives and blueback prefer cool water, thus stay deeper in summer. Stripers will stay in deeper and cooler water in summer, if there are enough alewives and bluebacks at that level. DWR is not actively gathering forage data in summer, which limits visibility to how forage base behaves year-round. The lake stratifies in the summer and produces a thermocline. Various hydrological and biological

conditions, which are different each year, dictate how much oxygen is contained in deeper water. Sometime in July, oxygen becomes depleted in the deeper water in the upper lake but remains adequate for fish in the lower lake. The transition area for adequate summer oxygen in deep water usually occurs around midlake (bridge area on the Roanoke arm). As oxygen is depleted from the upper ends of the lake; alewives, bluebacks and striped bass all move downlake to remain in cool oxygenated water. This winter, the colder water on top made baitfish and stripers stay deep, because the water was 3-5 degrees warmer deep than it was on top. Threadfin shad compete with gizzard shad and reduce gizzard shad numbers so when threadfin experience winter kills, it creates problems for stripers due to periodic reduced forage. The fishery would be more stable if only gizzard shad, alewives and bluebacks made up forage without any threadfin, but that is not expected in future. The expected stocking for the coming year in 2022 will be around 300,000, to align with current forage base.



*Example of shad distribution in the summer at SML for areas that have adequate oxygen in deep water.*

Almost 60 SMSC members attended this meeting, a strong show of support and interest in Dan's presentation. SMSC is an important part of the SML striper fishery ecosystem, with club involvement and leadership on initiatives such as gill netting, fish head freezers, fishing diaries, and sustainable practices like catch and release during cold water months and fishing for other species during hot water months. Dan acknowledged the club's continuing support and assistance with SML striper fishery management during his remarks. Thank you, Dan, from everyone at SMSC for your dedication, commitment, and excellent work to make SML's striper fishery a truly outstanding natural resource!