



California Department of Fish and Wildlife Regulation Petition Evaluation 20-30 Inch Striped Bass Slot Limit



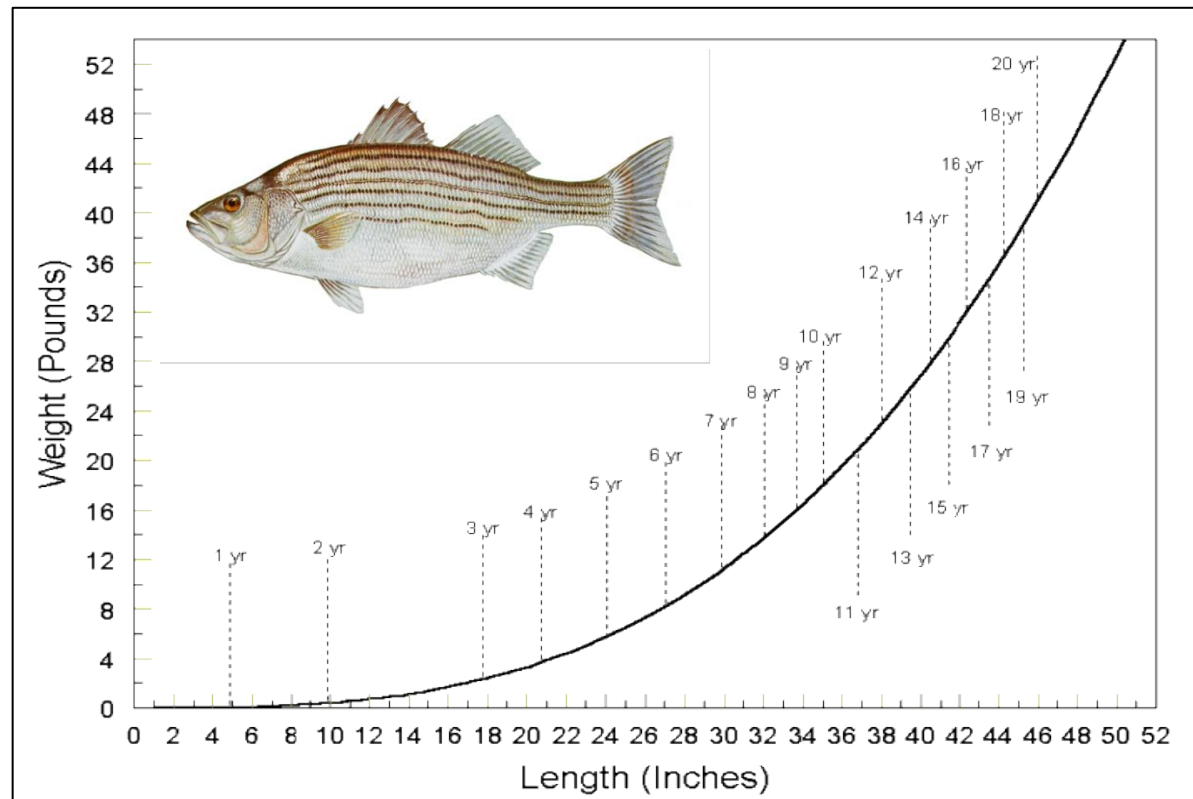
Erin Ferguson
Senior Environmental Scientist
CDFW Fisheries Branch

Wildlife Resources Committee Meeting
September 12, 2024



Striped Bass (*Morone saxatilis*)

- Native to East Coast
- Long-lived
 - Up to 30 years
- Anadromous
 - Highly migratory
- Maturation
 - Females: age 4-5 (22-24 inches)
- Broadcast spawners
- Opportunistic predators
 - insects, fishes, and crustaceans
 - cannibalistic



Wildlife.ca.gov – Striped Bass Fishing Map



Petition Background

- **Who** - Petitioner is the Nor-Cal Guides and Sportsmen's Association (NCGASA)
- **What** - Restrict the harvest of Striped Bass (SB) to a harvest slot limit (HSL) of 20-30 inches for inland anadromous and marine waters
- **Why** - NCGASA stated goal:
 - To protect the species by increasing the minimum length to allow more fish to mature and successfully spawn prior to harvest and
 - To protect the larger fish that tend to be the most prolific spawners and are becoming increasingly rare in the fishery
- **Current regulations**- 18-inch minimum length limit, 2 fish daily bag limit



FGC Striped Bass Policy

The Department of Fish and Wildlife shall...

- Ensure, enhance, & prevent loss of sport fishing opportunities
- Aim to maintain a self-sustaining Striped Bass population in support of a robust recreational fishery *while adhering to the Department's long-term mission related to threatened, endangered species, and other species of greatest conservation need*
- Work with relevant stakeholders, organizations, and the public to develop appropriate objectives to achieve these broad aims



CDFW Evaluation Contents

- Population and Fishery Trends:
 - Existing fisheries monitoring data
 - Marine and Inland Creel survey data
 - Public Input*
 - Population and fishery impacts of regulatory changes*
-
- Atlantic States SB regulations
 - Predation impacts*

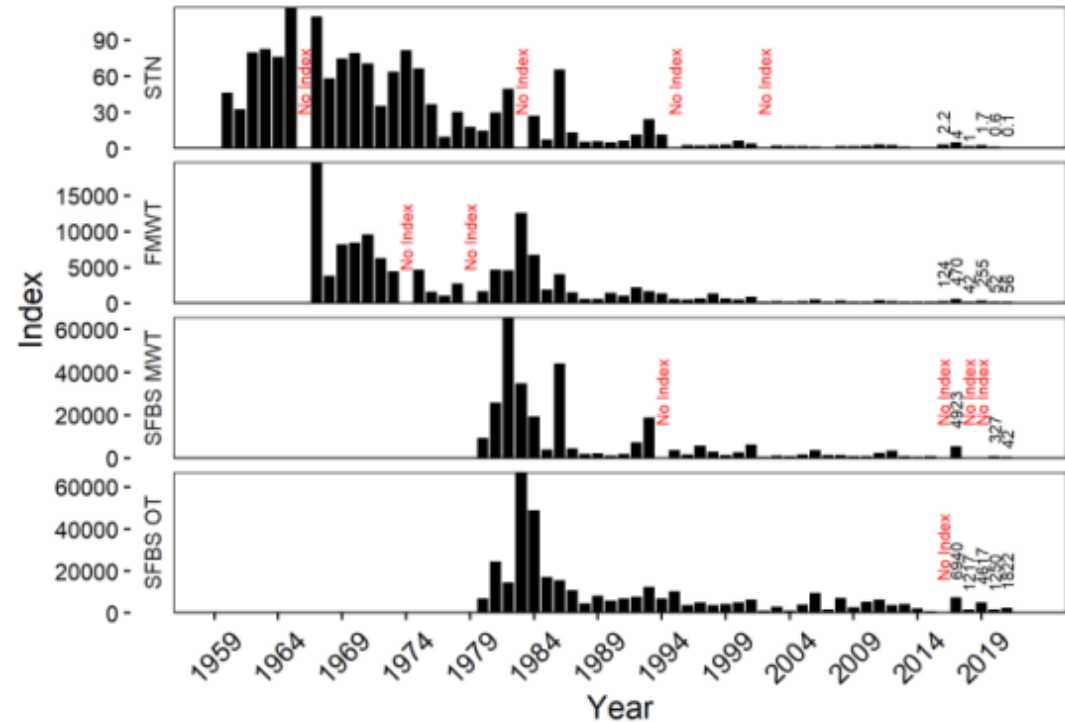
**Additional information included in Appendices*



Population Trends

Juvenile abundance surveys (fishery independent surveys)

- Indicate some level of decline in catch of age-0 or young SB
 - Potential lateral shift in habitat usage by SB not well captured by survey methods



Malinich et al. 2022

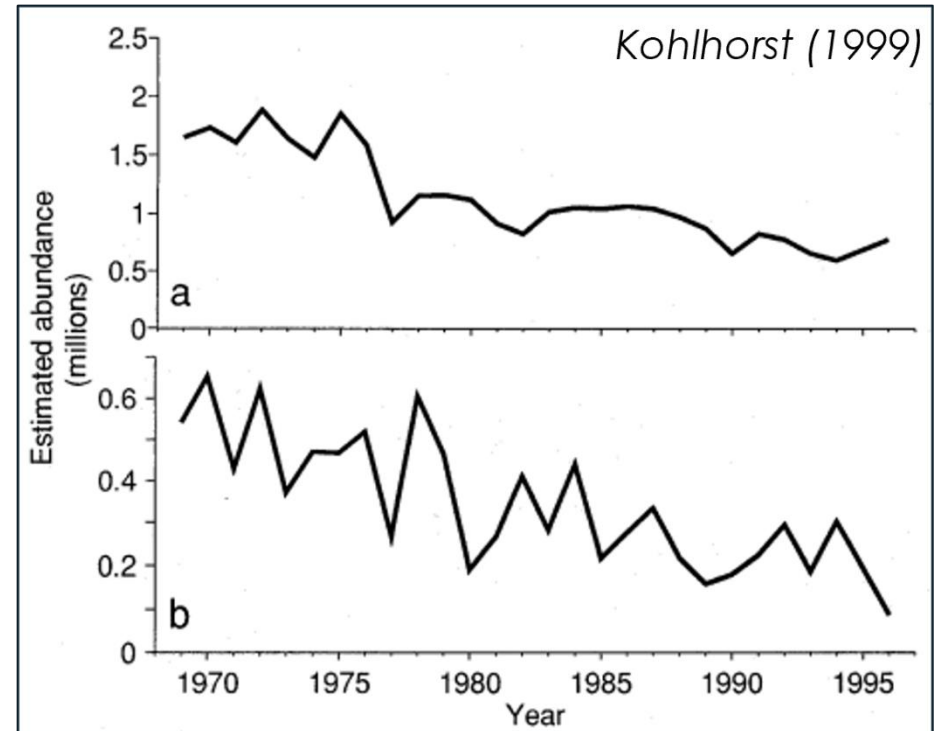


Population Trends Cont.

Adult population monitoring

(fishery dependent data)

- Mark-recapture (Lincoln-Petersen Estimator):
 - Adult population numbers (**a**) and age-3 abundance (**b**) have declined from historical levels, but overall appear stable (**a**)
- Harvest and harvest rate (Lincoln-Harvest estimator):
 - ~1,157,275 > 18 inches TL (average, 2011-2016)

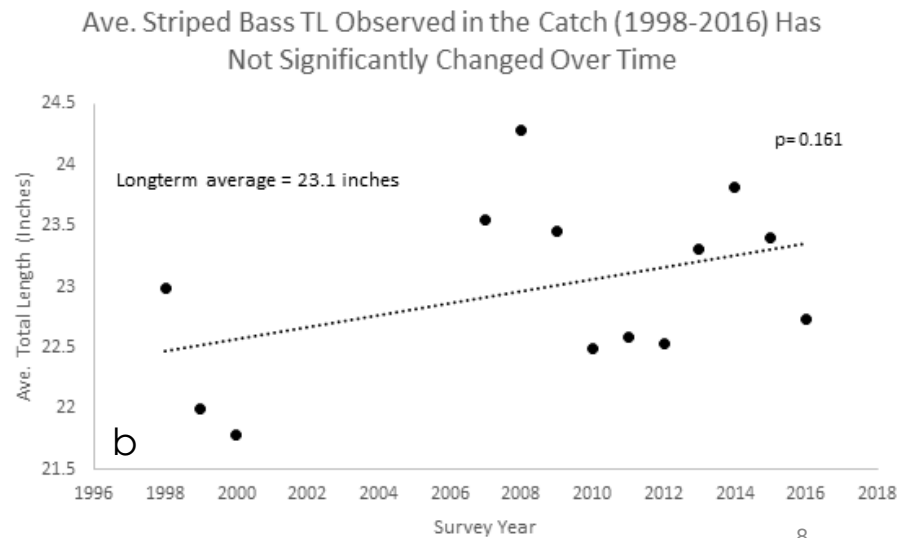
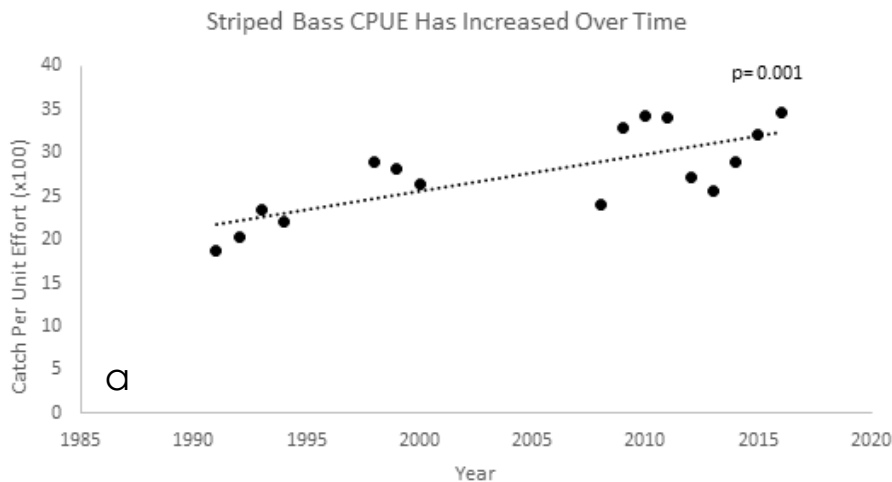




Fishery Trends

1991-2022 Creel Data (fishery dependent surveys)

- Angling effort targeting Striped Bass **has not** significantly changed
- Catch and Catch-per-unit-effort (CPUE, Fig. a) **have** significantly increased
- Harvest **has not** significantly changed over time
- Number of SB released over time **has** significantly increased
- Mean size of SB harvested **has not** significantly changed (~23 in; Fig. b)





Public Input

Joint Public Town Hall Meeting (August 24, 2022)

- Purpose – discuss the NCGASA regulation change petition and CDFW's evaluation plan
- Well Attended with 50 in-person and 100 virtual participants
- Majority of commenters (40/45) supported 20-30-inch HSL

Angler Preference Questionnaire (July 26, 2022 – October 31, 2022)

- Purpose – Better understand anglers' sentiments about the SB fishery
- Distributed through email and social media
- Available in 7 languages (English, Spanish, Tagalog, Traditional Chinese, Simplified Chinese, Russian, Vietnamese)
- Questionnaire vetted for bias and leading language



Questionnaire Results

26,410 Total responses

- 18,751 respondents fish for SB
- 7,659 did not fish for SB

Brief results

- 71% of Striped Bass anglers support the current minimum size limit (MSL)
- If given the option
 - 54% of respondents would not change the MSL
 - 28% would either lower or no limit at all
- Trophy fish
 - 64% of respondents were in favor of catch-and-release trophy fishery
 - 30 inches (26%), 36 inches (15%), ≥ 40 inches (21%)



Photo credit: Erin Ferguson



Predicting the Impact of Regulatory Changes

Goal: Understand potential population and fishery tradeoffs resulting from proposed regulatory changes

Approach: Developed a sex-specific, age and size-structured population model for West Coast Striped Bass following methods in Gwinn et al. (2013)



Original Article

Rethinking length-based fisheries regulations: the value of protecting old and large fish with harvest slots

Daniel C Gwinn ✉ Micheal S Allen, Fiona D Johnston, Paul Brown, Charles R Todd, Robert Arlinghaus

First published: 07 September 2013 | <https://doi.org/10.1111/faf.12053> | Citations: 134

[Read the full text >](#)

PDF TOOLS SHARE

Abstract

Managing fisheries using length-based harvest regulations is common, but such policies often create trade-offs among conservation (e.g. maintaining natural age-structure or spawning stock biomass) and fishery objectives (e.g. maximizing yield or harvest numbers). By focusing harvest on the larger (older) fish, minimum-length limits are thought to maximize biomass yield, but at the potential cost of severe age and size truncation at high fishing mortality. Harvest-slot-length limits (harvest slots) restrict harvest to intermediate lengths (ages), which may contribute to maintaining high harvest numbers and a more natural age-structure. However, an evaluation of minimum-length limits vs. harvest slots for jointly meeting fisheries and conservation objectives across a range of fish life-history strategies is currently lacking. We present a general age- and size-structured population model calibrated to several recreationally important fish



Predicting the Impact of Regulatory Changes Cont.

Approach: Evaluated how the following metrics would change in response to implementing a 20-30-inch HSL (proposed), 18-30-inch HSL (alternative), or 28-35-inch HSL (conservative) regulation:

- Stock Conservation:
 - Probability of recruitment overfishing (exploitation at a rate beyond stock replacement)
 - Proportion of fecundity contribution from older females (>10 years)
- Fishery:
 - Total catch, total harvest, and Trophy-size (> 30 inches) catch

Data: Input parameter data informed by multiple data sources, published values, and life-history theory



Model Results

Relative to the current 18-inch MLL:

- Probability of recruitment overfishing decreased under evaluated HSLs vs current 18-inch MLL
 - 20-30-inch HSL: ↓ 19%
 - 18-30-inch HSL: ↓ 14%
 - 28-35- inch HSL: ↓ 32%
- Reproductive contributions from older (thus larger) females increase under evaluated HSL vs MLL
- Increase in catch and trophy catch under evaluated HSLs
- Decrease in total harvest under evaluated
 - 20-30-inch HSL: ↓ 21%
 - 18-30-inch HSL: ↓ 8%
 - 28-35-inch HSL: ↓ 73%





Model Take-aways

- More favorable outcomes for nearly all management priorities (stock conservation and fishery) under evaluated HSLs compared to the currently enforced 18-inch MLL.
- Largest improvements were to the risk of recruitment overfishing [decreased] and catch of trophy-sized fish [increased]
- HSL Tradeoff: harvest numbers
- Effectiveness of HSLs can differ based on management priority:
 - Harvest: best supported by current MLL, or wide HSL
 - Population conservation: restrictive HSL to protect mature size-classes
 - Angler experience: HSLs that balance harvest and conservation



CDFW Does Not Support Increasing Lower Limit

CDFW does not support increasing the MLL from 18 inches to 20 inches

- Stock Conservation:

- Similar gains in recruitment under 20-inch vs 18-inch lower slot limit (paired with 30-inch upper limit)
- Greatest potential recruitment gains come from 30-inch harvest cap, not from shifting lower limit size

- Harvest:

- Greater loss of harvest opportunity
 - 21% decrease in harvest under an 20-30-inch HSL vs an 8% decrease in under an 18-30-inch HSL
- 18 and 19-inch Striped Bass represent ~ 20% of the harvest (creel surveys)
- Harvest loss disproportionately affects disadvantaged communities
- Increasing the lower limit will likely increase discard mortality



CDFW Does Not Support Increasing Lower Limit (cont.)

CDFW does not support increasing the MLL from 18 inches to 20 inches

- Predation considerations
 - Increased abundance of juvenile SB (which are more likely to consume smaller prey items such as salmonids at certain times of year) may increase predation on native and non-native species
- Angler Preference Questionnaire results indicate low support
 - 71% (11,981 out of 16,875) of respondents support the current minimum size retention at 18 inches
 - If given the option:
 - 54% (8,975 out of 16,621) of respondents did not support changing the minimum size limit from 18 inches
 - 28% (4,653 out of 16,621) supported lowering the minimum size or no minimum size at all



CDFW Could Support Implementing a 30-inch Upper Slot Limit

- **Benefit to anglers**
 - Create trophy fishery
 - Predicted to increase total catch
 - 18-30-inch HSL resulted in less impact to current harvest levels (8% predicted loss) compared to a 20-30-inch HSL (21% predicted loss)
- **Population benefits**
 - Decreases risk of recruitment overfishing compared to MLL
 - Predicted to increase egg contribution from older fish to total fecundity
 - Performs similarly to 20–30-inch HSL



Photo credit: Central Valley Angler Survey



Uncertainties and Additional Considerations

- It is unknown how environmental conditions (flow, temperature, water quality, etc.) constrain the Striped Bass population growth
- Implementing a slot limit will require modification to spear fishing regulations, which includes restricting as a method of take
- Discard mortality may increase as a result of a HSL regulation change
- Unknown effects of Striped Bass predation
- Lack of funding prevents current Striped Bass adult population monitoring to measure the effectiveness or impact of a regulation change





CDFW Conclusions

Petition Evaluation Biological Conclusion

- The added protection of raising the lower harvest limit to 20 inches is unlikely to provide the intended benefits of increased recruitment due to spawning of early-maturing females, as stated by petitioners.
- A 30-inch upper slot limit is more likely to provide stock conservation benefits through increased recruitment resulting from protections for older, larger spawning females.

Slot Limit Support

- While adult population and creel survey data suggest that the Striped Bass population is relatively stable in recent decades, *CDFW could support a slot limit to:*
 - 1) improve population resiliency to environmental stochasticity/perturbations
 - 2) improve the angling experience
 - Catch-and-release trophy fishery
 - Angler Preference Questionnaire showed general support for an upper limit

CDFW could support either “no change” or an 18-30-inch HSL

Questions?



Thank you!

California Department of Fish and Wildlife

StripedBass@wildlife.ca.gov

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
EVALUATION OF REGULATION CHANGE PETITION 2022–12:
PROPOSED 20–30–INCH HARVEST SLOT LIMIT FOR STRIPED
BASS (*MORONE SAXATILIS*)**

Petition submitted August 1, 2022 by Nor-Cal Guides and Sportsmen's
Association (NCGASA)

Report prepared by:

Erin Ferguson¹

Colby Hause¹

Jonathan Nelson¹

Dylan Stompe²

Ken Oda²

Lanette Richardson¹

California Department of Fish and Wildlife

¹Fisheries Branch and ²Marine Region

1010 Riverside Parkway

West Sacramento, 95605

July 26, 2024