

APPENDIX 3: SUPPLEMENTAL MANAGEMENT OPTIONS IN THE NORTH CAROLINA SPOTTED SEATROUT FISHERY

ISSUE

The results of qualitative management measures on the North Carolina Spotted Seatrout stock cannot be quantified but implementing these management measures may serve to reduce dead discards, reduce harvest by an unknown amount, and improve the overall Spotted Seatrout stock.

ORIGINATION

The North Carolina Division of Marine Fisheries (DMF).

BACKGROUND

As outlined in Appendix 2, total Spotted Seatrout harvest increased sharply in 2019 and has remained high in the ensuing years through 2022. Most harvest occurs October – December each year. The recreational fishery includes a robust catch and release segment. Since 2012 the recreational sector has accounted for, on average, approximately 85% of spotted seatrout harvest (Appendix 2) and the number of recreational trips targeting Spotted Seatrout increased in recent years with biological years 2019 through 2022 representing the four highest numbers of trips since 2012 (Figure 3.1). The proportion of trips that are successful (i.e., anglers are targeting Spotted Seatrout and catch Spotted Seatrout) has remained relatively steady since 2012. The high number of trips targeting Spotted Seatrout has led to not only increased harvest, but also increased dead discards – or fish that are released alive but ultimately die because of the fishing interaction – though on an individual basis discard mortality depends on a variety of factors and is likely low (Gearhart 2002; James et al. 2007; NCDMF 2022). Though the commercial fishery has only accounted for about 15% of total harvest since 2022, commercial landings have also increased in recent years. While commercial dead discards are likely minimal, changes to commercial management (e.g., decreasing trip limits) could cause an unintended increase in dead discards.

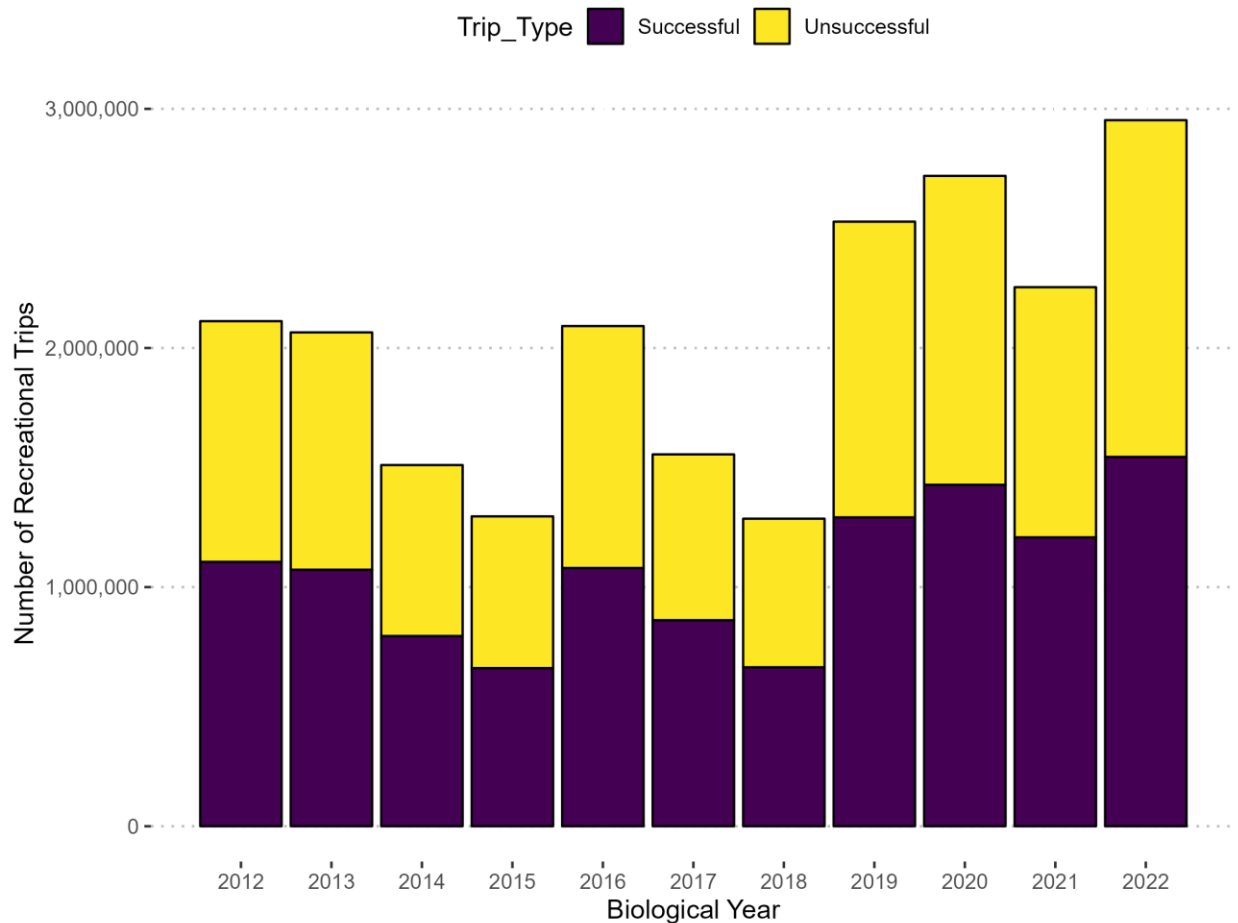


Figure 3.1. Annual MRIP trips where Spotted Seatrout were reported as the primary or secondary target by Biological Year (March–February). Bars are total annual trips with “successful” trips (i.e., a Spotted Seatrout was either harvested or released on the trip) as the purple portion and “unsuccessful” trips (i.e., no Spotted Seatrout were caught) as the yellow portion of the total.

As a result of the popularity of Spotted Seatrout as a targeted species; Marine Fisheries Commission (MFC) commissioners, MFC Advisory Committee members, and the public have mentioned a wide variety of potential recreational and commercial management strategies that could benefit the Spotted Seatrout stock but the scope of which are not immediately quantifiable. The increase in recreational trips targeting Spotted Seatrout and increased total Spotted Seatrout harvest in recent years combined with the presence of a dedicated catch and release segment of the recreational fishery suggest that even management measures lacking immediately quantifiable benefits are worth exploring. Additionally, there are management measures that could provide supplementary benefits when paired with sustainable harvest measures discussed in Appendix 2. For example, gear requirements designed to reduce recreational discard mortality would not provide a quantifiable benefit to the Spotted Seatrout stock, but when paired with a seasonal fishery closure could help prevent an increase in dead discards during the closed season. Discussion will focus on measures specific to the

spotted seatrout recreational fishery, those more broadly affecting multiple recreational fisheries, and measures specific to the commercial fishery not discussed in Appendix 1.

AUTHORITY

G.S. 113-134 RULES

G.S. 113-182 REGULATION OF FISHING AND FISHERIES

G.S. 113-182.1 FISHERY MANAGEMENT PLANS

G.S. 113-221.1. PROCLAMATIONS; EMERGENCY REVIEW

G.S. 143B-289.52 MARINE FISHERIES COMMISSION-POWERS AND DUTIES

15A NCAC 03H .0103 PROCLAMATIONS, GENERAL

15A NCAC 03M .0512 COMPLIANCE WITH FISHERY MANAGEMENT PLANS

15A NCAC 03M .0522 SPOTTED SEATROUT

DISCUSSION

Carry Forward Items from Original FMP

The prohibition on commercial harvest and sale of Spotted Seatrout taken in joint waters on weekends as outlined in the original Spotted Seatrout Fishery Management Plan will carry forward into Amendment 1 to the Spotted Seatrout Fishery Management Plan.

Spotted Seatrout Specific Recreational Management

Vessel limits

Limiting the harvest of fish through a vessel limit less than the sum of individual bag limits when multiple anglers are on a vessel is a common practice in many state and federal fisheries. Spotted seatrout recreational harvest is limited to four fish per person per day. When multiple anglers are fishing from the same vessel, the anglers may keep the individual bag limit for each angler on board. For example, eight anglers fishing from one boat could harvest eight times the individual bag limit or 32 Spotted Seatrout. Similarly, charter captains and any crew are allowed to harvest their own recreational limit of Spotted Seatrout while running charter trips. The prevalence of multiple anglers on private or for-hire boats harvesting multiple individual limits is unknown but implementing a boat limit and/or eliminating the charter captain and crew allowance should aid in meeting sustainability goals.

There are anecdotal reports of charter captains and crew harvesting multiple bag limits when running more than one trip in a day (DMF Staff, personal communication) though it is not clear how prevalent this behavior is nor is it possible to assess the impact such behavior has on managed fish stocks. Harvesting multiple charter captain/crew allowances in a day is not legal and leads to unreported harvest of managed fish species. However, enforcement to ensure a single charter captain/crew allowance is difficult as it would require proof that a captain or crew harvested their personal bag limit on a trip previously taken that same day. During the Spotted Seatrout Public Scoping period there was support voiced for eliminating the captain/crew allowance for Spotted Seatrout, but Spotted Seatrout are not the only species in North Carolina where a

charter captain/crew allowance is permitted. Changes to the captain/crew allowance in the Spotted Seatrout fishery could lead to confusion about when a captain/crew allowance is permitted, but there is a precedent for eliminating the captain/crew allowance for a single species in other states. The Louisiana Department of Wildlife and Fisheries included a ban on charter captains/crew harvesting Spotted Seatrout while on a for-hire trip in their November 2023 regulation changes. In its most recent Spotted Seatrout regulation changes, Florida Fish and Wildlife implemented similar regulations prohibiting captain/crew harvest while engaged in a for-hire trip. Since addressing the charter captain/crew allowance for multiple species is outside the scope of this amendment, management options here will deal specifically with the Spotted Seatrout fishery. DMF staff should explore the greater question of a multi-species look at the charter captain/crew allowance in a separate, standalone issue paper.

Option 1: Vessel Limit Options with associated positives (+) and negatives (-)

- a) *Status Quo – Manage fishery without changes to vessel limit or charter captain/crew allowance*
 - + No confusion between individual bag limits and vessel limit
 - + No confusion between species of when a captain/crew allowance is prohibited
 - Does not reduce harvest and allows for continuation of harvest above individual bag limit in some situations

- b) *Implement vessel limit and eliminate captain/crew allowance for charter trips*
 - + Would decrease Spotted Seatrout harvest by undetermined amount
 - May cause confusion between individual bag limit and vessel limit
 - Could increase discards
 - Creates inconsistent captain/crew allowance based on species

- c) *Implement <specific vessel limit based on conversation with AC> with no change to captain/crew allowance for charter trips*
 - + Would decrease Spotted Seatrout harvest by undetermined amount
 - + Maintains consistency of captain/crew allowance based on species
 - Reduction will be smaller
 - Could increase discards
 - May cause confusion between individual bag limit and vessel limit

- d) *Eliminate captain/crew allowance for charter trips with no vessel limit*
 - + Would decrease Spotted Seatrout harvest by undetermined amount
 - + No potential for bag limit vs vessel limit confusion
 - + Any increase in discards would likely be minimal
 - Reduction will likely be very minimal
 - Creates inconsistent captain/crew allowance based on species

Effort Controls

One way to reduce harvest in a fishery is to limit those able to participate in the fishery. There are a multitude of ways to limit entry to a fishery and measures to limit

recreational participation in the Spotted Seatrout fishery would reduce harvest pressure and would probably reduce fishing effort. G.S. 113-182.1(g) gives authority to the MFC to limit entry into a fishery, however; the authority granted by this statute is limited only to cases where “the Commission determines that sustainable harvest cannot otherwise be achieved.” Participation in the fishery increased markedly in biological year 2019 and has remained high since, but Spotted Seatrout life history allows this species to readily recover from period of high mortality (e.g., cold stuns). Appendix 2 presents multiple options with an at least 50% chance of ending overfishing within two years timeframe of plan implementation (G.S. 113-182 .1). The combination of current stock status, species life history, and other available options expected to end overfishing make the Spotted Seatrout fishery unlikely to meet the level required for the MFC to limit entry to the fishery.

Recreational management beyond Spotted Seatrout

Gear Requirements

Recreational catch and release fishing for Spotted Seatrout has increased in popularity in recent years whether from anglers switching to catch and release fishing after harvesting their limit or from dedicated catch and release anglers. Released Spotted Seatrout have far outpaced harvested fish. From 2017-2019, recreational anglers released almost six times as many fish as were harvested (Table 3.1). Delayed mortality, or discard mortality, is the measure of how many fish released alive ultimately die because of the fishing interaction and, on an individual basis, is likely low for Spotted Seatrout (Murphy et al. 1995; Gearhart 2002; James et al. 2007). Conversely, delayed mortality for throat or gut hooked fish is quite high. Delayed mortality is also dependent on factors such as salinity, dissolved oxygen levels, and length or health of fish (Gearhart 2002; James et al. 2007). Spotted Seatrout aggregations in the small creeks and bays of the upper estuary during winter months could potentially have a larger than expected impact on dead discards in the fishery as anglers are able to fish more efficiently on schools at smaller spatial scales than other times of the year, though any such effects could be mitigated by lower water temperatures and higher dissolved oxygen levels during the winter months. Even with low individual discard mortality rates, the sheer number of releases in recent years makes the cumulative number of dead discards impactful and management to reduce the delayed mortality rate worth discussing.

Table 3.1. Harvest and releases of Spotted Seatrout in numbers of fish for biological years 2017-2022.

Biological Year	Harvest	Release
2017	1,054,500	4,725,746
2018	499,560	16,426,444
2019	2,415,394	7,050,238
2020	1,605,723	5,428,133
2021	1,495,385	6,859,777
2022	1,852,135	11,468,873

Studies of gear requirements that could reduce recreational discard mortality are severely lacking outside of those studies examining the differences in discard mortality when using circle hooks or “J” hooks. There are not specific studies exploring

differences in circle and J hook mortality rates for Spotted Seatrout though hooking location and the severity of injuries related to hooking are important factors impacting delayed mortality (Murphy et al. 1995; Gearhart 2002; Stunz and McKee 2006; James et al. 2007) and generally studies show circle hooks reduce hooking injuries compared to J hooks in marine species (Skomal et al. 2002; Cooke et al. 2003; Millard et al. 2005; Vecchio and Wenner 2007). In theory, other gear requirements such as eliminating the use of treble hooks with natural baits, using barbless treble hooks or inline hooks on artificial baits, and requiring rubberized landing nets when handling fish should help reduce discard mortality as well, however; there are few studies that attempt to quantify the benefits of these measures.

Implementing gear requirements in the Spotted Seatrout fishery to reduce mortality of released fish would benefit the stock, but single species gear requirements in multi-species fisheries like the Spotted Seatrout fishery can introduce difficulties in enforcement and decrease compliance with the requirements. Enforcement is difficult because it requires proof of an angler's intent to fish for Spotted Seatrout and the enforcement difficulty provides a built-in loophole for anglers to avoid gear requirements. For example, requiring circle hooks when fishing with natural or artificial baits in the Spotted Seatrout fishery could also affect other robust recreational fisheries like Sheepshead, Red Drum, Estuarine Striped Bass, Summer Flounder, and Kingfishes regardless of whether anglers in these fisheries target Spotted Seatrout as well. If anglers follow Spotted Seatrout gear requirements when fishing for these other species, there could be decreases in recreational discard mortality across multiple fisheries. However, if anglers use these other fisheries to avoid Spotted Seatrout gear requirements, the discard mortality benefit in the Spotted Seatrout fishery would be reduced. Regardless of angler behavior, enforcement remains difficult. Implementing gear requirements such as requiring circle hooks across multiple fisheries could be a way to improve angler compliance, simplify enforcement, and gain the benefit of reduced discard mortality in these fisheries. Circle hooks could be required when fishing with any natural or artificial bait, when using natural or artificial baits in certain areas (e.g., the sounds or rivers), when using natural or artificial baits in combination with hooks of a certain size, or when using natural or artificial baits where the fishing method is similar. The latter two examples could help provide exceptions for instances where circle hooks could significantly affect angler efficiency such as when anglers are targeting Sheepshead or offshore trolling.

Option 3: Gear Requirements with associated positives (+) and negatives (-)

- a) *Status Quo – Manage fishery without additional gear requirements and continue outreach and education about ethical angling*
 - + Anglers do not have to know instances when gear requirements are necessary
 - + Education could encourage some anglers to practice ethical angling
 - No additional reduction to discard mortality

- b) *Require circle hooks in the Spotted Seatrout fishery when using natural or artificial baits and continue outreach and education about ethical angling*

- + Would likely decrease discard mortality in the Spotted Seatrout fishery
- + Could have additional benefits to other fisheries
- Difficult to enforce
- May cause angler confusion about when circle hooks are needed or decreased compliance

c) *General requirement to use circle hooks when fishing with natural or artificial baits and continue outreach and education about ethical angling*

- + Would likely decrease discard mortality in the Spotted Seatrout fishery and other recreational fisheries
- + Eliminates confusion about when circle hooks are required
- + Eases burden of enforcing circle hook requirements
- +/- Requires significant outreach and education
- Potential negative impacts to other fisheries (e.g., Sheepshead). Could be mitigated by hook size requirement or only requiring for similar fisheries.
- Benefit to some fisheries (e.g., Southern Flounder) likely minimal

Spotted Seatrout Specific Commercial Management

Hook and Line Harvest

During the Spotted Seatrout Public Scoping Period recreational anglers and commercial fishers regularly expressed interest in a commercial hook and line fishery. The context of interest in a commercial hook and line fishery varied from making the trip limit the same regardless of gear to making the hook and line trip limit consistent with the broader commercial trip limit but prohibiting gill nets as a legal harvest gear to prohibiting gill nets as a legal harvest gear but keeping the hook and line trip limit consistent with the recreational bag limit and other variations on these ideas. There is precedent in other states for allowing increased harvest of Spotted Seatrout by hook and line. Some states combine their hook and line allowance with gill net prohibitions (e.g., Florida and Louisiana) while other states allow both hook and line and gill net harvest (Mississippi). Commercial harvest in other states is minimal, however, and there does not appear to be a directed Spotted Seatrout fishery outside of North Carolina.

Ultimately, the benefits or detriments resulting from changes to the hook and line trip limit would largely depend on fisher behavior and the specific implementation of such changes. A decrease to the general trip limit would increase dead discards making management less effective, but if a general trip limit decrease were paired with an exclusively hook and line fishery, the potential increase in dead discards could be greatly mitigated (see Appendix 2 for a more detailed discussion on anchored gill net and hook and line discard mortality). Raising the hook and line trip limit in the absence of other gear limitations should be considered with caution since it is unclear the effect such a change would have on current commercial fisher behavior. In theory, consistent trip limits regardless of gear could increase the number of participants in the fishery as fishers with the expertise to fish gill nets would likely continue doing so and fishers without that expertise would no longer be held to the recreational bag limit when fishing with hook and line. A hook and line trip limit consistent with other commercial gears could encourage recreational anglers to obtain a commercial license to keep the

commercial limit of Spotted Seatrout. Anecdotally, this happens in the Cobia fishery though the extent of this practice is unclear (DMF staff, personal communication). A higher hook and line commercial trip limit could also encourage for-hire captains to obtain a commercial license to allow their clients to keep a commercial limit. Both these scenarios could increase commercial harvest, though if and how much would depend on other management implemented. For example, eliminating the captain and crew allowance for Spotted Seatrout could discourage for-hire captains from obtaining a commercial license to pursue commercial limits for their clients.

MANAGEMENT OPTIONS

Table 3.2. Supplemental management options for the Spotted Seatrout fishery. Options would likely provide benefits to the stock but are not able to be quantified.

Topic	Option	Description
Boat limits and captain/crew allowance	1.a	Status quo – no boat limit, continue captain/crew allowance
	1.b	Implement vessel limits and eliminate for-hire captain/crew allowance
	1.c	Implement <specific number> vessel limit, no change captain/crew
	1.d	Eliminate captain/crew allowance, no vessel limit
Gear requirements (rec)	3.a	Status quo – no gear requirements, continue ethical angling outreach
	3.b	Require circle hooks with natural bait and inline hooks (non-treble) with artificial baits when fishing for Spotted Seatrout
	3.c	Statewide circle hook requirement when using natural baits and inline hooks (non-treble) when using artificial baits

RECOMMENDATION

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