

DRAFT- SUBJECT TO CHANGE

Changes to Sheepshead Management Due to Shifting Trends in the Fisheries

October 10, 2025

ISSUE

Characterize trends in sheepshead biological data and the commercial and recreational fisheries to determine if proactive changes to current sheepshead management measures are needed.

ORIGINATION

North Carolina Marine Fisheries Commission (NCMFC)

BACKGROUND

Life History

Sheepshead are a relatively large, long-lived member of the porgy family that ranges from Nova Scotia, Canada to Florida and the Gulf of Mexico south to the Atlantic coast of Brazil. They are generally found year-round in coastal waters ranging from inshore brackish waters to offshore rocky bottoms (Hildebrand and Cable 1938; Sedberry and van Dolah 1984). Juveniles are associated with shallow vegetated habitat as well as hard structures that offer protection (Parsons and Peters 1987; Froeschke et al. 2020; Johnson 2024). As sheepshead grow larger, they move to typical adult habitat including oyster reefs, rocks, pilings, jetties, piers, and wrecks (Johnson 1978; Ogburn 1984; Schwartz 1990). While sheepshead exhibit strong site fidelity and tend to stay in the same areas throughout much of the year, they migrate seasonally to spawn (Wiggers 2010; Lohman et al. 2023). Migration patterns based on mark-recapture studies have not documented large scale, north-south movements, but instead towards inlets during the fall and winter when adult sheepshead migrate to ocean waters to spawn (Jennings 1985; Wiggers 2010; Lohman et al. 2023). Spawning occurs during the late winter and spring on the Atlantic coast and in the Gulf of Mexico (Jennings 1985; Render and Wilson 1992; McDonough et al. 2011; Heil 2017; Buckel and Morley 2023; Johnson 2024), though the highest proportion of spawning capable individuals are present off the Carolinas in April–May (McDonough et al. 2011; Buckel and Morley 2023; Johnson 2024).

Sheepshead grow quickly up to age 6, after which their growth slows approaching an asymptotic length around 19.6 inches (Beckman et al. 1991; Dutka-Gianelli & Murie 2001; McDonough et al. 2011; NCDMF 2025). Fifty percent of sheepshead are mature at 10-inches FL (ages 1 and 2) with all fish mature by 15.7 inches (ages 3 to 5; McDonough et al. 2011). In North Carolina, sheepshead commonly reach a length of 20 to 25 inches FL, with a maximum reported length of 30 inches FL (NCDMF 2023), and weight ranging from 5 to 15 pounds. The maximum reported age in North Carolina is 34 years (NCDMF 2025); only Virginia has reported a higher maximum age of 35 (Liao et al. 2009; Ballenger 2011), with states to the south having maximum ages ranging from 15 to 26 years (Beckman et al. 1991; Dutka-Gianelli & Murie 2001; McDonough et al. 2011; Winner et al. 2017).

The maximum age of sheepshead, which is much older than most of the other species managed by the Division, and high site fidelity of adults to a structured habitats within a given area make sheepshead particularly vulnerable to fishing pressure. Increases in fishing pressure could lead to localized depletion of larger, older fish, resulting in the truncation of the population size and

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age structure (Anderson et al. 2008), which has implications for reproduction and population abundance (Cooper et al. 2013; Barnett et al. 2017). This is key to understanding the need to implement additional management measures for the harvest of sheepshead in North Carolina.

Management History

Sheepshead was previously managed in the South Atlantic Fishery Management Council (SAFMC) Snapper Grouper Fishery Management Plan (FMP). The plan restricted recreational anglers to an aggregate 20 fish bag limit, no commercial trip limit, and no size limit for either sector. In state waters, North Carolina deferred management to the Council regulations. In April 2012, sheepshead was removed from the SAFMC snapper grouper management complex through the Comprehensive Annual Catch Limit Amendment (Amendment 25; SAFMC 2011). The Council chose to remove sheepshead from the management complex as at least 95% of landings were in state waters. This action removed sheepshead from the North Carolina FMP for Interjurisdictional Fisheries, which adopts FMPs, consistent with N.C. law, approved by the Atlantic States Marine Fisheries Commission or federal Councils by reference. As a result, the North Carolina Division of Marine Fisheries (NCDMF) Director no longer had proclamation authority for sheepshead management (via 15A NCAC 03M .0512). In November 2012, the NCMFC requested a rule be developed for management of sheepshead based on concern over increasing landings and the exploitation of juveniles, due to the lack of a size limit. The NCMFC adopted the rule in November 2013 delegating authority to the NCDMF Director to implement management measures via proclamation authority, to implement size, bag, and trip limits, as well as season and gear restrictions (15A NCAC 03M .0521; NCDMF 2013); the rule became effective April 1, 2014. Following approval of the rule, the NCDMF received public input at the NCMFC advisory committee meetings and began developing potential management measures for sheepshead. Effective June 1, 2015 (Proclamation [FF-28-2015](#)), the NCDMF Director implemented a 10-inch fork length (FL) minimum size limit for both sectors, a recreational bag limit of 10 fish/person/day, and gear specific commercial trip limits (none for pound nets, 10 fish/person/day or trip, if more restrictive, for gigs/spears, and 300 pounds for all other gears). These measures were put into place to allow more fish to spawn before harvest and put daily harvest constraints on some fisheries. There currently is no state or federal FMP for sheepshead. Rule 15A NCAC 03M .0521 continues to delegate authority for the NCDMF Director to use proclamation authority to adjust management of sheepshead based on variable conditions considered under 15A NCAC 03H .0103, without further input from the NCMFC.

In May 2023, a commissioner at the NCMFC business meeting requested more information on sheepshead recreational bag limits citing concerns that the current limit is too high; this had been heard at the for-hire port meetings earlier that year. The same commissioner continued to request information on sheepshead in both the February and May 2024 NCMFC business meetings, expanding on the initial request. Division staff gave a [presentation](#) on sheepshead during the annual FMP updates review at the NCMFC August 2024 business meeting. Following this update, the NCMFC requested the Division investigate trends in the sheepshead commercial and recreational fisheries to determine if proactive management changes are needed. Internal discussions by Division staff determined a look at data trends for effort and landings shifts, and to evaluate sizes and ages of sheepshead, was needed. This information was [presented](#) to the NCMFC at their August 2025 business meeting. After this comprehensive review of the data the Division recognizes the need to take proactive steps to cap harvest on sheepshead.

Stock Status

The US Atlantic stock of sheepshead is considered a single unit stock genetically (Seyoum et al. 2017), though analyses of growth patterns, tagging, and fisheries independent data provide evidence of stock structure within the US Atlantic population (Adams et al. 2018; Teeears et al. 2023). There is no accepted stock assessment for sheepshead in North Carolina, therefore a benchmark assessment would be needed to determine stock status.

Since 2013, as recommended by the NCMFC Regional Standing (Northern and Southern) and Finfish advisory committees and due to concerns raised by staff, sheepshead has been one of the target species for NCDMF sampling programs. The NCDMF collects data from recreational, commercial, and independent sampling efforts to estimate trends in abundance of sheepshead as well as length, age structure, maturity, and other biological information. This information is used each year, during the annual species updates in August, to monitor stock conditions and identify any concerning data trends.

Fisheries-Independent Relative Abundance Indices

The Division uses fishery-independent surveys to provide two types of data, catch data for relative abundance and biological data for the age and size structure of the stock. Data from the estuarine trawl survey (P120) were used to examine juvenile relative abundance and data from the independent gill net survey (P915; NCDMF 2025) were used to examine subadult and adult relative abundance in Pamlico Sound. Data for the juvenile index were available for 2004 through 2024 (June and July), and data for the adult index were available for 2001 through 2024 (May through November). Specific stations to monitor juvenile spotted seatrout are also used to monitor juvenile sheepshead abundance, as both species utilize similar habitats as juveniles. The adult index is calculated using data from the east side of Pamlico Sound where sheepshead are most abundant.

Juvenile abundance was variable across years without any consistent increasing or decreasing trends (Figure 1). There were peaks in 2008 and 2015 suggesting relatively higher recruitment in those years compared to other years. The relative abundance index in 2024 was higher than the previous three years and above the time-series average. Sheepshead captured in this survey average 1.5 inches FL.

Subadult and adult abundance has shown an increasing trend across years (Figure 2). During the first eight years of the time-series (2001–2008), the relative abundance sheepshead was low. However, since 2008 abundance has an increasing trend with 2024 representing the highest relative abundance in the time series. Sheepshead between 7 inches and 22 inches FL were collected, with lengths less than 16 inches being the most common (Figure 3). A large proportion of sheepshead caught in the survey are not fully mature.

Evidence of size truncation (or lack of fish 16 inches or greater) can be seen in 2007 through 2013 compared to prior years (Figure 3). Starting in 2014, these larger fish began to re-appear in the survey and have been consistently present though the proportions have been variable. The expansion in lengths, coupled with the increasing trend in subadult and adult abundance is a positive sign for the stock; however, there is concern a large portion of the sheepshead encountered in the independent gill net survey are potentially immature and subadult fish.

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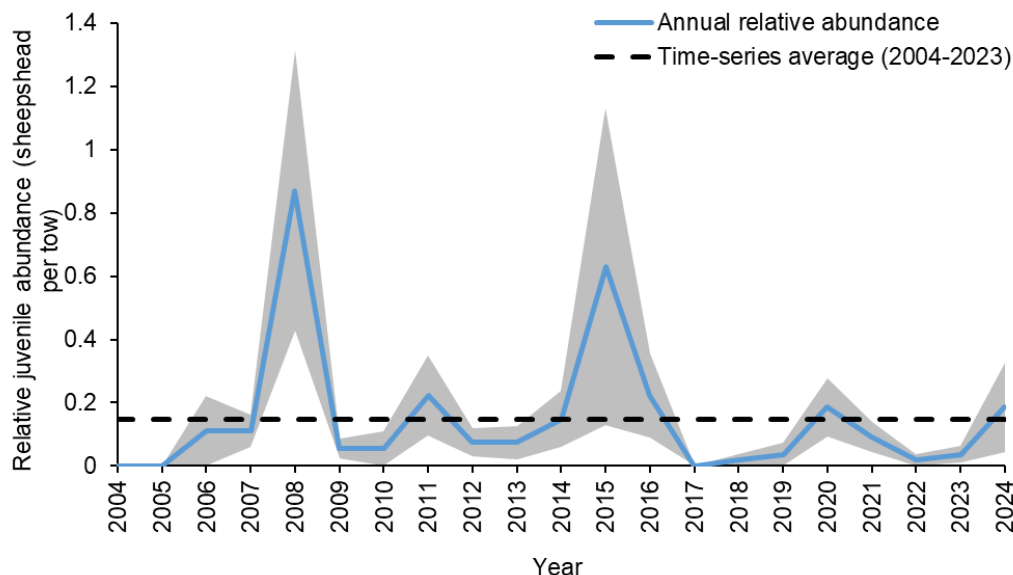


Figure 1. Annual index of relative abundance of juvenile sheephead in the NCDMF Estuarine Trawl Survey (P120), 2004–2024 (number of annual tows = 54). Shaded area represents $\pm$ one standard error.

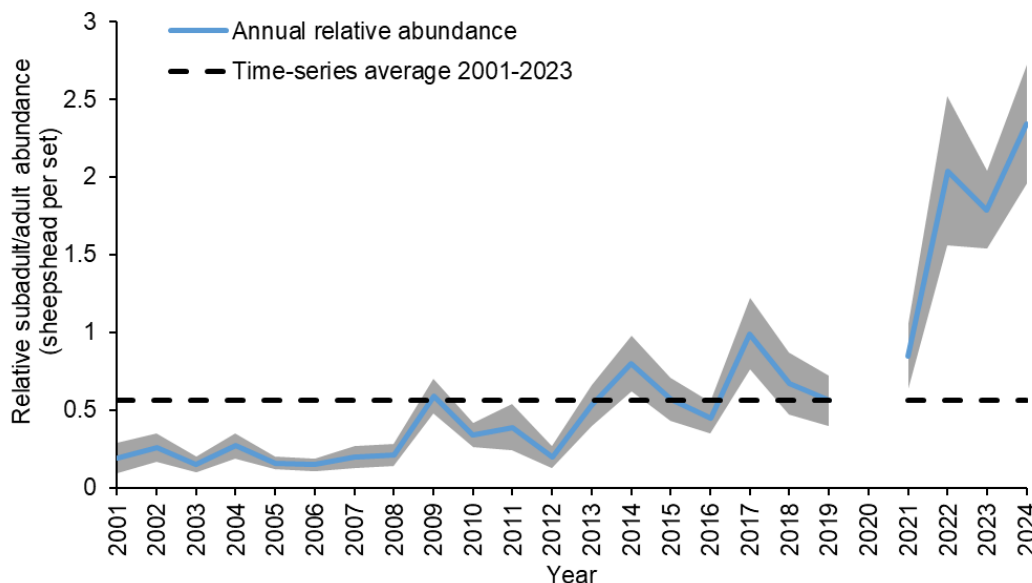


Figure 2. Annual index of relative abundance of subadult and adult sheephead in the NCDMF Independent Gill Net Survey (P915), 2001–2024 (number of annual sets = 100). Survey sampling did not occur in 2020 and the first half of 2021. Shaded area represents $\pm$ one standard error.

The independent gill net survey uses nets of differing mesh sizes capable of catching sheephead across a wide range of lengths and ages, but not across the entire size range due to gear selectivity. Additionally, sampling locations may affect the number and size range of sheephead caught as sets do not always occur on or adjacent to structure, which is the preferred habitat for the larger, older, and mature fish. The number of potentially immature, and smaller fish, may be

eclipsing any increase in larger, mature fish encountered by the survey, however similar patterns are seen in the length frequencies from the recreational and commercial fisheries (see North Carolina Fisheries section). This is key to understanding the need to implement additional management measures for the harvest of sheepshead in North Carolina.

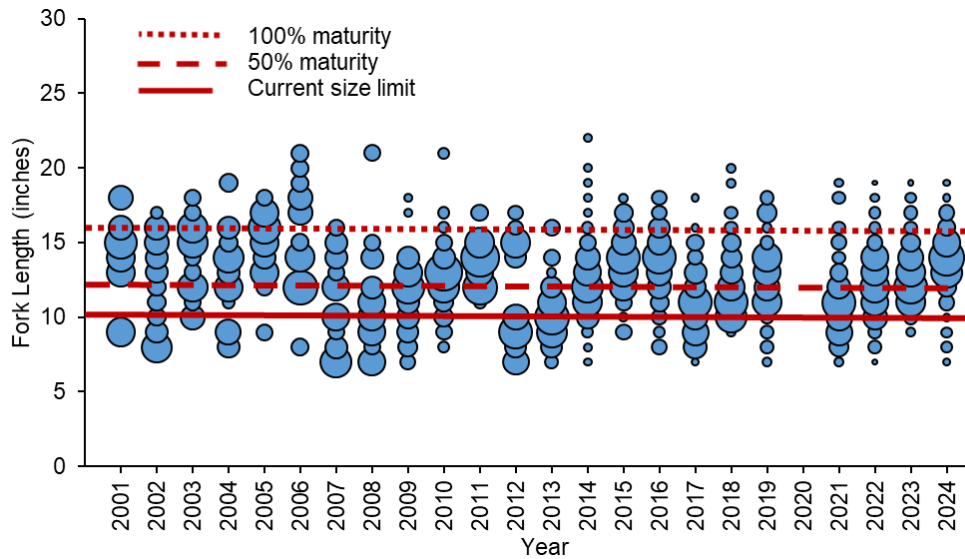


Figure 3. Length frequency (fork length, inches) of sheepshead from the NCDMF Independent Gill Net Survey (P915) for the east side of Pamlico Sound, 2001–2024. Bubbles represent fish at length and the bubble size is proportional to the number of fish at that length.

Age Composition of Sheepshead

Before 2013, sheepshead was not a priority species for age structure collection. While there is age data available prior to this period, due to the limited nature of the collections it is not included in this paper. There were initial expansions in age composition, which is expected when sample collection first begins. However, age data suggest a possible truncation in age structure where fewer older fish are being encountered (Figure 4). It is important to note that length is not a good indicator of age given the wide range of sizes at age (Figure 5; Beckman et al. 1991; Dutka-Gianelli & Murie 2001; McDonough et al. 2011).

The majority of sheepshead sampled by the NCDMF are age-5 or younger (Figure 4), regardless of if ageing structures were collected from Division surveys or the fishing sectors. While annual sampling numbers for age collections have remained similar (NCDMF 2025), the number of sheepshead older than age-10 declined after 2019 and with relatively few fish over age-20 observed. This is key to understanding the need to implement additional management measures for the harvest of sheepshead in North Carolina.

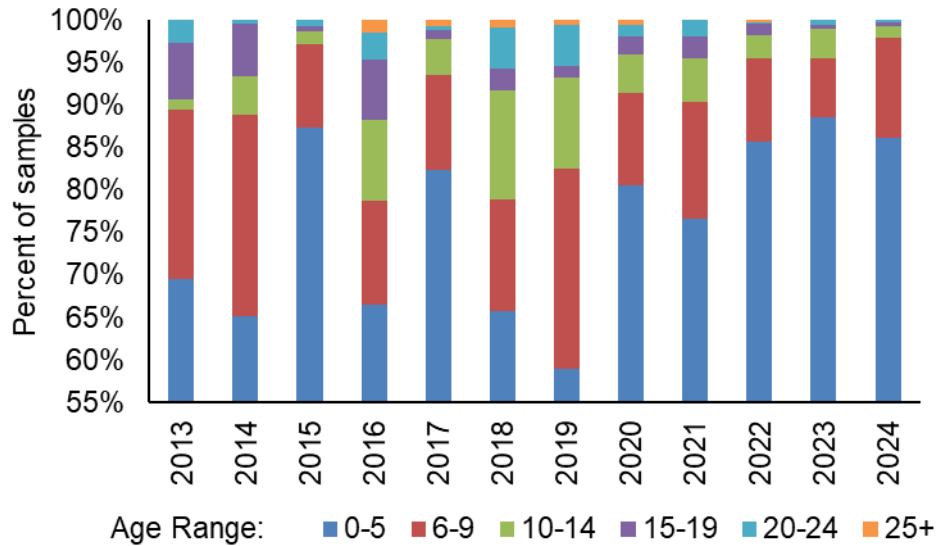


Figure 4. Percent at age of sheephead samples collected from fishery-independent (NCDMF Program 915, etc.) and fishery-dependent (recreational and commercial) sampling from 2013 to 2024. (Note scale starts at 55% for clarity of data).

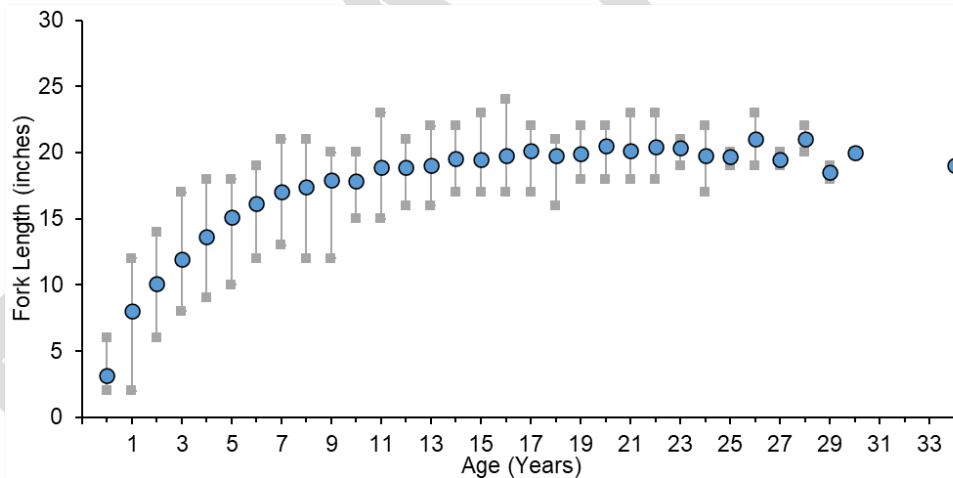


Figure 5. Sheephead length at age based on all age samples, 2013 – 2024. Blue circles represent the mean size at a given age while the grey squares represent the minimum and maximum observed size for each age.

North Carolina Fisheries

Below are the characterizations of the North Carolina recreational and commercial fisheries for sheephead. Recreational fishery data were obtained from the [Marine Recreational Information Program](#) (MRIP). Commercial fishery effort and landings data were obtained from [NCDMF's Trip Ticket Program](#) while biological data such as lengths and ages were collected as part of NCDMF's fish house sampling programs, the carcass collection and citation programs, and standard aging procedures for otoliths. Data from 2015 are not included due to the timing of management implementation part way through the year (June 1, 2015). This allows for a clearer distinction

between data trends pre- and post-regulation changes. The 2015 data can be found in the annual FMP update for sheepshead (NCDMF 2025).

RECREATIONAL FISHERY

Sheepshead are targeted recreationally using hook and line, as well as spears and gigs. The spear and gig fishery mainly operates from Morehead City and south, with very limited data on catch and effort. Most trips intercepted by MRIP sampling were identified as hook and line; trips identified as spear or gig accounted for less than 3% of intercepted trips on average (B. Johnson, NCDMF, personal communication). Due to the limited data on spears and gigs, the gears were combined as a single category.

Sheepshead are landed year-round with most catches in the late spring (May) and summer (June–August; Figure 6). This pattern is apparent pre- and post-regulation change, though there is an overall shift in landings to the fall and winter months since 2016. The majority of sheepshead caught recreationally were from state waters (Internal Coastal Fishing Waters and Atlantic Ocean 0 to 3 miles), with most of the catch occurring in Internal Coastal Fishing Waters (Figure 6).

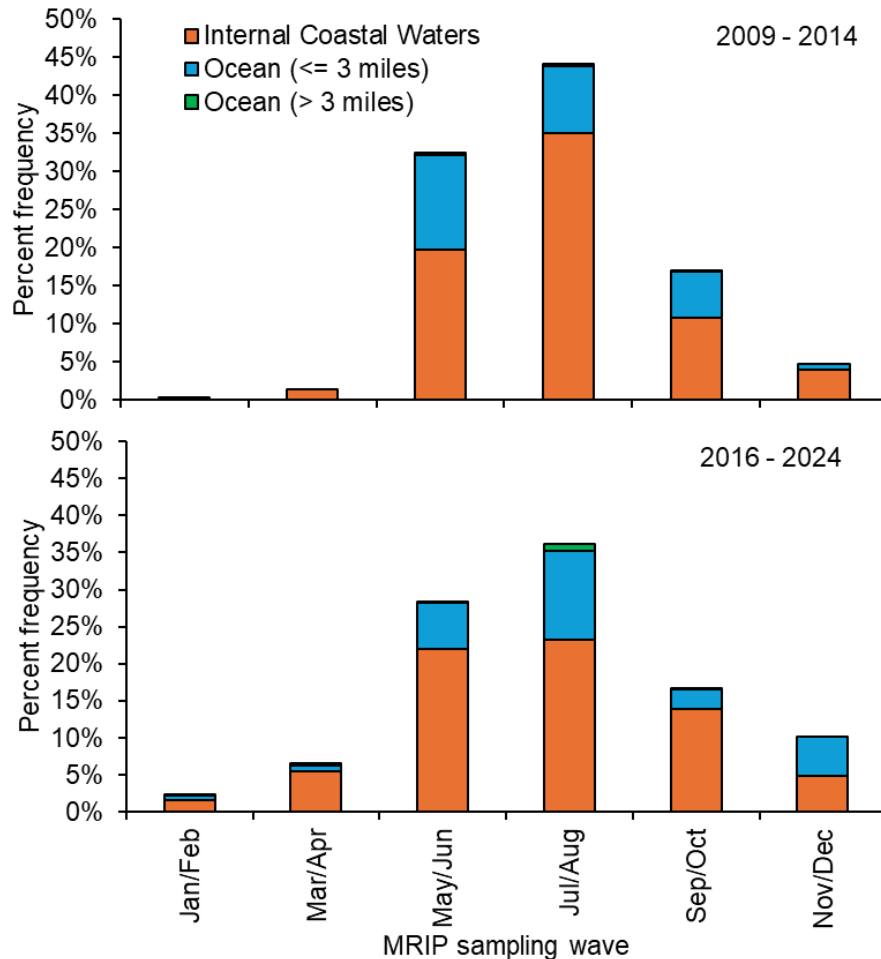


Figure 6. Percent of sheepshead recreational landings by MRIP sampling wave (two months) for Internal Coastal Fishing and ocean waters from 2009–2024. Data from 2015 were excluded due to timing of management implementation. (Source: National Marine Fisheries Service Marine Recreational Information Program).

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However, there has been a marked increase in the percent of landings from ocean waters post-regulation change in the November/December MRIP wave. The increase in landings during these months, especially if effort occurs on the nearshore reefs, is concerning. While there are resident populations of sheephead on these structures all year (NCDMF, unpublished data), large aggregations are seen in specific locations as sheephead move out into the ocean to spawn.

Recreational landings, in pounds, accounted for 69% to 94% of North Carolina's total sheephead landings from 2009 to 2024 (Figure 7). After implementation of management recreational landings initially decreased but have since increased and are similar in magnitude to pre-regulation years (Figure 8). This is not unexpected as minimum size limit implementation decreases the number of younger and smaller fish immediately available for harvest, which in turn decreases landings; fast-growing species, like sheephead, will grow into the new size limit in a short period of time negating initial landings decreases. Notably, landings from 2021, 2022, and 2024 were well above the post-regulation average of 789,981 pounds (2016– 2024) and represent some of the higher values in the time series. The recreational landings in 2024 represent the highest landings in the time series (Figure 8); they are the second highest recreational landings value since data has been recorded (1981; NCDMF 2023).

With the introduction of a minimum size limit, the proportion of the recreational catch (landings and releases) has shifted from majority landings to majority releases (numbers of fish; Figure 9). Since 2016, discards have accounted for 66% of the recreational catch, ranging from 59% to 76%. Releases in 2017, 2021, 2023, and 2024 accounted for more than 70% of the catch for those years. The high releases in 2017 and 2021 are most likely due to strong year classes (Figure 3; 40% of fish seen in the independent gill net survey are 10-inches FL or less). The reason for high discards in 2023 and 2024 (an all-time high) is less clear, possibly resulting from increased effort or selective harvest of keeper fish (Figure 8, Figure 10). Prior to the implementation of management, releases averaged 25% of the recreational catch (1981 through 2014) though releases increased closer to 40% of the catch starting in 2005 (NCDMF 2023, 2025). There is not currently an estimate of post-release mortality for sheephead, though sheephead are generally considered "tough" (Wenner and Archambault 2006). Post-release mortality rates have varied but most stock assessments assume a 1% mortality rate (West et al. 2015, 2020, 2025; Munyandorero et al. 2017; Tears 2023).

Directed trips, where sheephead was the primary and/or secondary target species identified by recreational anglers, increased 119% between 2020 and 2021 and have remained at that level since (Figure 8). Prior to 2021, directed trips for sheephead averaged approximately 218,000 trips per year. From 2021–2024 directed sheephead trips averaged 452,171 each year. Directed trips in 2024 reflect a shift in effort to September and October relative to other years, most likely due to the closure of the inshore flounder; this shift was also seen in 2019 for the same reason.

Technology has changed how recreational fishermen approach a fishery, whether it be in advancements in finding and catching fish or shared fishing techniques, locations, or experiences (Cook et al. 2021; Henry et al. 2025). The recreational sheephead fishery is not immune to the shifting use of technology. In recent years, video streams and podcasts have brought attention to the fishery leading to increased interest in participation (NCDMF, personal communication). Additionally, technological advancements that allow anglers to lock into specific locations and the use of forward-facing sonar have improved catch success for sheephead when the fish feed or spawn off the same structures year after year; this can lead to localized age truncation if the larger mature fish are kept.

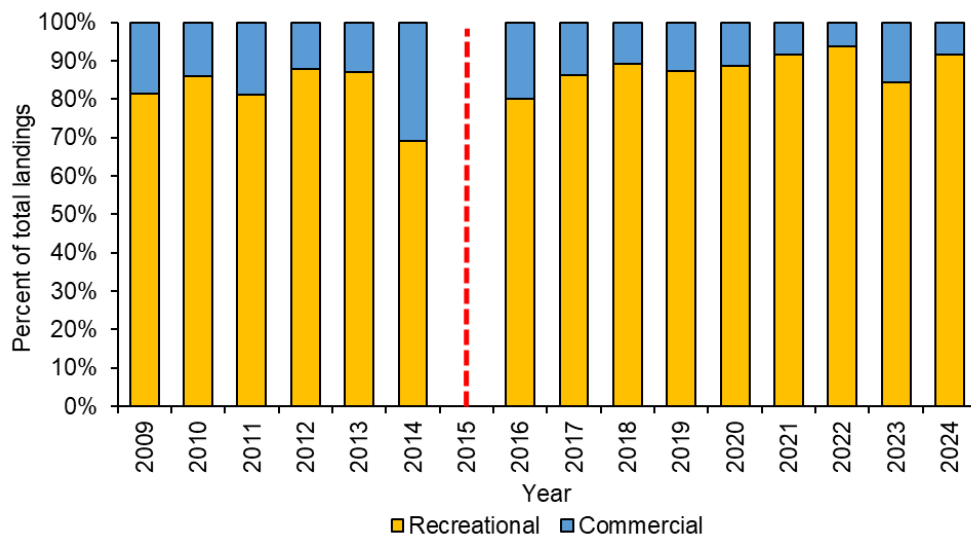


Figure 7. Percent of sheephead recreational and commercial landings to total annual landings, 2009–2024. Data from 2015 were excluded due to timing of management implementation part way through the year. (Source: National Marine Fisheries Service Marine Recreational Information Program and North Carolina Trip Ticket Program).

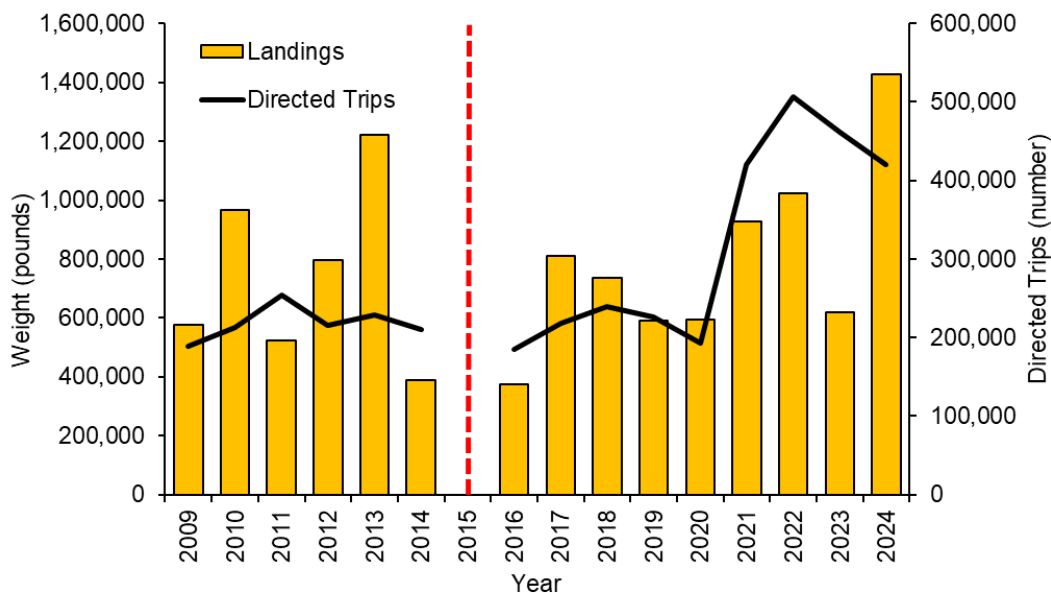


Figure 8. Sheephead recreational landings (pounds) and directed trips (number), 2009–2024. Data from 2015 were excluded due to timing of management implementation part way through the year. (Source: National Marine Fisheries Service Marine Recreational Information Program).

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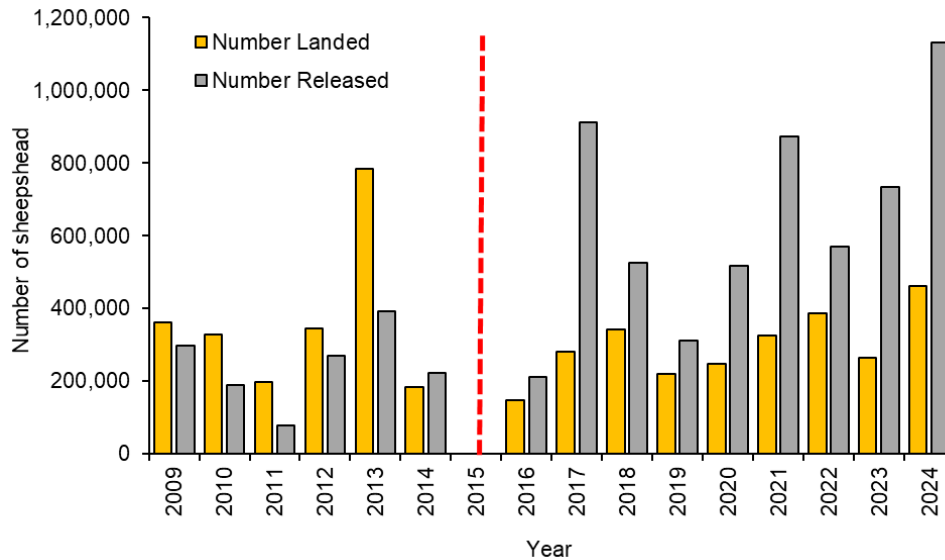


Figure 9. Recreational harvest and releases (number of fish) of sheephead, 2009–2024. Data from 2015 were excluded due to timing of management implementation part way through the year. (Source: National Marine Fisheries Service Marine Recreational Information Program).

The proportion of recreational anglers harvesting four or more sheephead has slowly increased (Figure 11). While the bag limit for sheephead is 10 fish, approximately 60% of anglers landed only one fish across the time series. Approximately 80% of anglers landed either one or two fish, and 95% landed four fish or less. Only 0.2% of anglers landed the maximum allowed bag limit of 10 sheephead. From 2019–2024, there has been an increase in the percent of anglers landing two or three sheephead with percentages more similar to those seen prior to implementation of the bag limit than from 2015–2018. Additionally, the percentage of anglers landing four fish increased starting in 2021, and those anglers that land six or more fish has doubled since 2019 compared to 2015–2018.

The number of sheephead landed per recreational trip (one or more anglers) was variable, with most of the intercepted trips landing either one or two fish (Figure 12). On average, from 2009–2024 80% of recreational trips landed five fish or less, and 90% of trips landed seven fish or less. The number of fish landed per trip can be indicative of party size (number of anglers) and fishing mode (trip type). For fishing mode, approximately 73% of recreational sheephead harvest was from anglers on private boats, followed by anglers fishing from shore (25%) and on charter boats (2%).

Prior to 2018, anglers on charter boats consistently harvested approximately 0.5% of annual landings; since 2018 the percentage has increased to 3%. The most common party size by fishing mode has remained consistent at two anglers for private boat, one angler for shore-based fishing, and four anglers for charter boats (Figure 13). It should be noted, since 2016 the percentage of trips taken with five or more anglers on private boats has increased and can account for up to 10% of intercepted trips. Additionally, MRIP defaults to a party size of one for shore-based fishing modes.

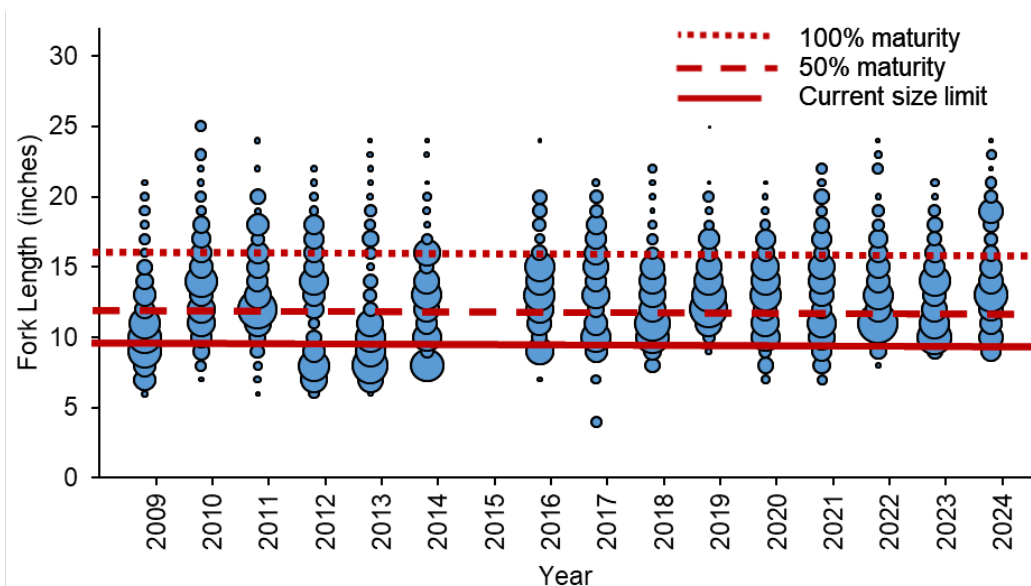


Figure 10. Recreational length frequency (fork length, inches) of sheephead sampled from landings, 2009 – 2024. Bubbles represent fish at length and the bubble size is proportional to the number of fish at that length. (Source: National Marine Fisheries Service Marine Recreational Information Program).

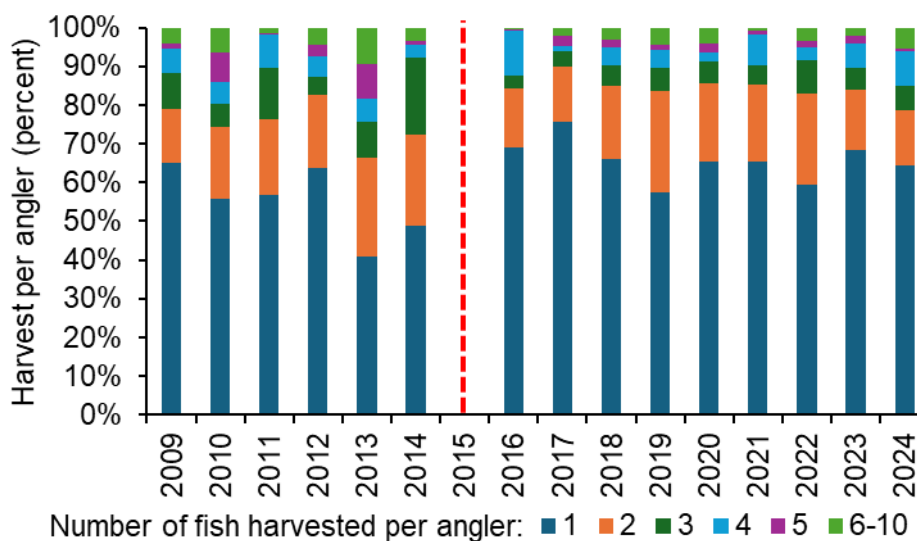


Figure 11. Percent of recreational sheephead harvested per angler, 2009–2024. Data from 2015 were excluded due to timing of management implementation part way through the year. (Source: National Marine Fisheries Service Marine Recreational Information Program)

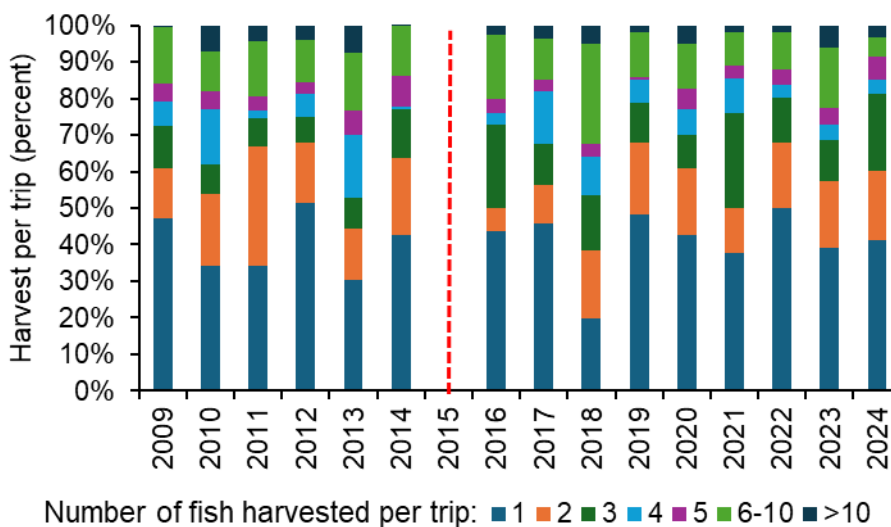


Figure 12. Percent of recreational sheephead harvested per trip (one or more anglers), 2009–2024. Data from 2015 were excluded due to timing of management implementation part way through the year. (Source: National Marine Fisheries Service Marine Recreational Information Program)

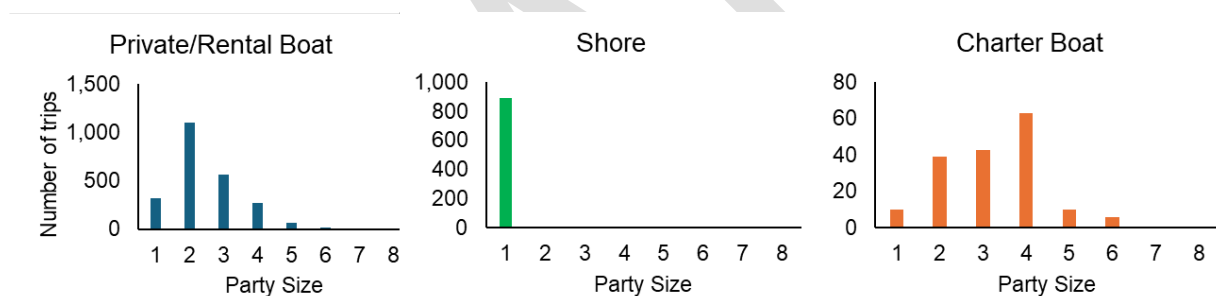


Figure 13. Recreational party size (number of anglers) per trip by fishing mode, 2009–2024. Note the scales for the number of trips are different among modes. (Source: National Marine Fisheries Service Marine Recreational Information Program)

The 2015 implementation of the 10-inch minimum size limit was intended to decrease the proportion of immature fish harvested. Prior to 2015 the majority of sheephead landed recreationally ranged from six to 14 inches FL (Figures 10, 14). Since implementation of management measures in 2015, approximately 80% of the fish landed were 10-16 inches FL (Figures 10, 14). Both prior to and after regulations were implemented, based on current maturation data, approximately 17% of fish landed would have been considered fully mature. Therefore, harvest not only historically but also currently continues to occur on potentially immature fish. Undersize (< 10 inches FL) sheephead made up about 8% of the catch from 2016 to 2024. Approximately 3% of landings from 2009–2024 were 20-inches FL or greater.

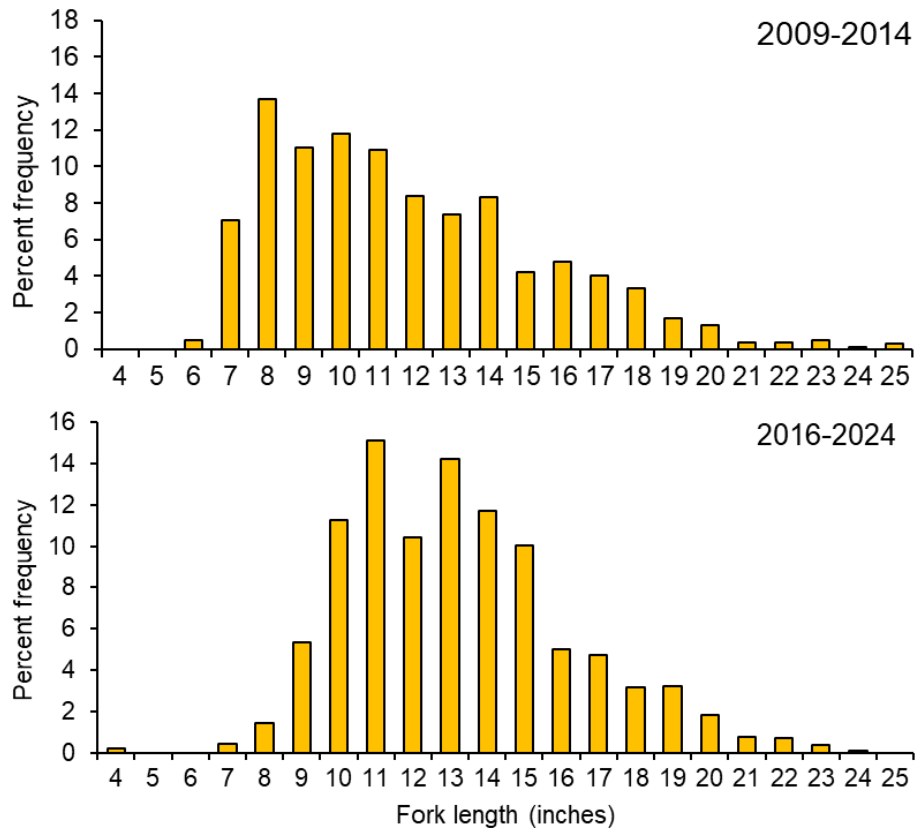


Figure 14. Length frequency (fork length, inches) of sheephead sampled from recreational landings, 2009–2024 ($n = 1,244$, 2009–2014; $n = 2,002$, 2016–2024). A 10-inch fork length minimum size limit was implemented in June 2015; data from 2015 were excluded due to timing of management implementation part way through the year. (Source: National Marine Fisheries Service Marine Recreational Information Program).

The need to implement additional management measures for recreational harvest of sheephead in North Carolina is based on key changes in the effort and landings in recent years. Directed recreational trips have doubled since 2020, after remaining steady for the time series. Additionally, while most anglers harvest one fish, the proportion of recreational anglers harvesting four or more sheephead is starting to increase, albeit slowly. Recreational landings from 2021, 2022, and 2024 were well above the post-regulation average and represent some of the higher values in the time series presented; 2024 landings were the highest since implementation of management, and some of the highest landings historically. The majority of sheephead harvested recreationally from 2016-2024 are potentially immature fish with fewer, larger and older fish showing up in samples.

COMMERCIAL FISHERY

Sheepshead are primarily caught incidentally in several of North Carolina's commercial fisheries including estuarine gill nets, pound nets, long haul seine, ocean gill nets, and trawls (Figure 15; NCDMF 2025). However, sheepshead have become a more desirable catch and more targeted fishing practices are starting to occur than have been seen historically (i.e., setting of pound nets classified as other finfish in the late fall). Commercial trip limits are 10 fish per person per day or trip for gigs and spears, and 300 pounds per trip for all other gears, except pound nets. Pound

nets do not have a trip limit for sheepshead. Sheepshead are landed year-round by the commercial fishery, with the highest proportion of landings occurring in October and November (2009–2024; Figure 16). The exception to this is the spear and gig fishery, where landings peak in July and August.

Annual average commercial landings from 2009–2014 were 145,766 pounds compared to 99,975 pounds for 2016–2024. Historically (1994-2009), sheepshead landings were relatively low (70,146 pounds on average; NCDMF 2023). While the post-regulation landings are less than those prior to management implementation, they are still higher than the historical time period. Landings ranged from a high of 180,343 pounds in 2013 to a low of 69,381 pounds in 2022 (Figure 15). In 2023, 114,751 pounds of sheepshead were landed by the commercial fishery representing a 65% increase from 2022. Landings in 2024 increased to 129,702 pounds and represent the highest value since implementation of management in 2015. Fishing effort over the years may be influenced by dockside value, which increased over the last 15 years (Figure 17).

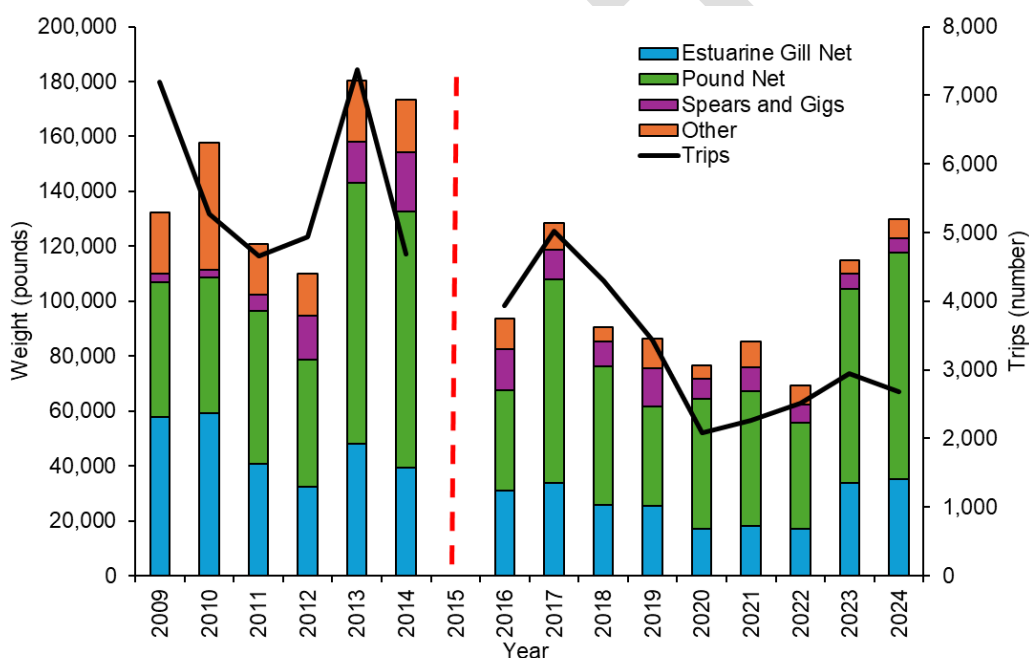


Figure 15. Annual sheepshead commercial landings (pounds, left axis) by gear type and trips (number, right axis), 2009–2024. Data from 2015 were excluded due to timing of management implementation part way through the year. (Source: North Carolina Trip Ticket Program).

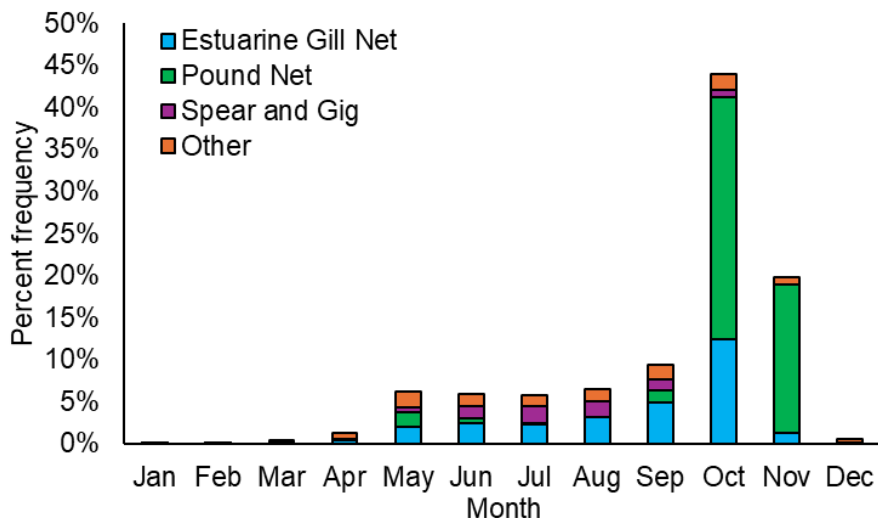


Figure 16. Percent of sheepshead commercial landings by gear and month, 2009–2024. (Source: North Carolina Trip Ticket Program)

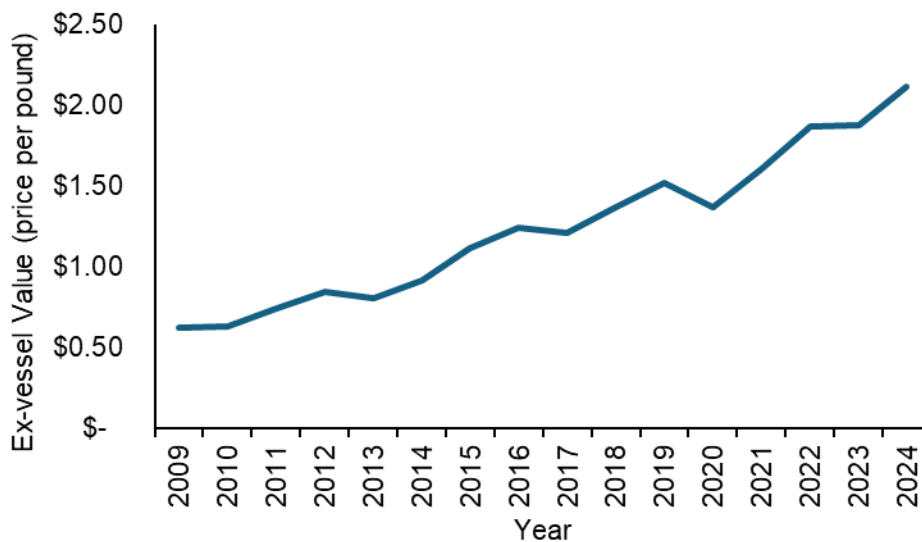


Figure 17. Ex-vessel price (\$) per pound (normalized to current dollar value) of sheepshead from 2009–2024. (Source: North Carolina Trip Ticket Program)

On average, 80% of total sheepshead landings are from pound nets and estuarine gill nets (including anchored, runaround, and drift nets). Pound nets accounted for 31% to 64% of the commercial landings from 2009–2024. Estuarine gill nets accounted for 21% to 44% of the commercial landings during the same time period. In 2023, pound net and estuarine gill net landings doubled compared to the previous five years (2018–2022). In 2024, landings from estuarine gill nets remained stable compared to 2023 while pound net landings increased by 17%. This increase in pound net landings was the result of several days of high-volume catches during

the month of October. Behavior has shifted in the pound net fishery the last several years due to significant harvest restrictions in the southern flounder commercial fishery. Many pound netters who traditionally set flounder pound nets are now setting other pound net types to take advantage of different fisheries (NCDMF, personal communication). Additionally, there has been a shift in the estuarine gillnet fishery from anchored gill nets (especially large mesh) to runaround nets in the last few years (NCDMF, unpublished data). As with pound nets, changes in regulations, in particular for southern flounder, have changed traditional fishing practices. A targeted sheepshead spear fishery developed in the last 15 years, and the gig fishery has become more popular; these landings combined have accounted for approximately 10% of the commercial harvest. Landings from spears and gigs in 2023 were 5% of the commercial harvest, the lowest proportion since 2011. Sheepshead landed in “other” gears, which include ocean gill nets, long haul seine, trawls, and crab pots, have accounted for 4% to 29% of the annual landings. Prior to 2015, long haul seines were the major contributor to the “other” gear landings. Historically (pre-2009), trawls were also a major contributor to the “other” gear landings.

Similar to landings, effort, as measured by number of trips landing sheepshead, has exhibited a decreasing trend since 2013. Effort started to trend up in 2020 but has remained lower than pre-2019 effort (Figure 15). It should be noted that effort in 2020 was a historic low, and while the number of trips increased after that year, the number of trips has been well below historic values (back to 1994; NCDMF 2023). Commercial sheepshead landings ranged from less than one pound to greater than 7,000 pounds per trip, with the highest landings from pound nets. Approximately, 95% of all commercial trips landed 100 pounds or less of sheepshead per trip from 2009 to 2024 (Figure 18). While there have been occasional trips that have landed above the trip limits (10 per person per day or trip for gig and spear, 300 pounds per trip for all other gears except pound nets), these accounted for less than 0.05% of trips annually. For those gears held to the 300-pound trip limit, 98% of trips land 100 pounds or less, though since 2019 there has been a slight but consistent increase in trips landing 101-200 and 201-300 pounds (Figure 18). In 2024, the number of trips landing over 100 pounds increased to 6%. This increase was driven mostly by estuarine and ocean gill net landings; the number of trips by these gears landing greater than 100 pounds increased by 89% between 2023 and 2024.

Gig and spear trips have rarely landed more than 200 pounds per trip since 2015, though trips landing up to 200 pounds can account for up to 25% of trips (Figure 18). In some cases, this pattern is due to trips either occurring over multiple days or more than one person is fishing; though most trips over 100 pounds were identified on trip tickets as single day, single crew trips.

Until 2021, pound net landings per trip remained stable with most trips landing 200 pounds or less (Figure 18). There was also a small contingent of pound netters landing over 500 pounds, accounting on average for 3% of all pound net trips. Between 2021–2024, there has been a marked increase in pound net trips landing 201-300 and 301-400 pounds. In 2024, the number of pound net trips landing over 500 pounds was the highest of the time series.

The overall length frequency trend in North Carolina’s commercial sheepshead fisheries was similar prior to and after the implementation of the size limit in 2015 (Figure 19). The majority of sheepshead landed in the commercial fishery were less than 17 inches FL, with a peak at 12 inches FL (Figure 20). Post-2015 there is an increase in the number of 11- and 13-inch fish landed compared to the previous period (Figure 20), though this is somewhat expected given the size limit change. While undersized sheepshead continue to be harvested, only about 4% of the sheepshead landed commercially were under 10 inches FL from 2016 to 2024. Like the recreational fishery, commercial harvest tends to target potentially immature and subadult fish, though approximately 20% of commercial landings from 2016–2024, have been larger, mature

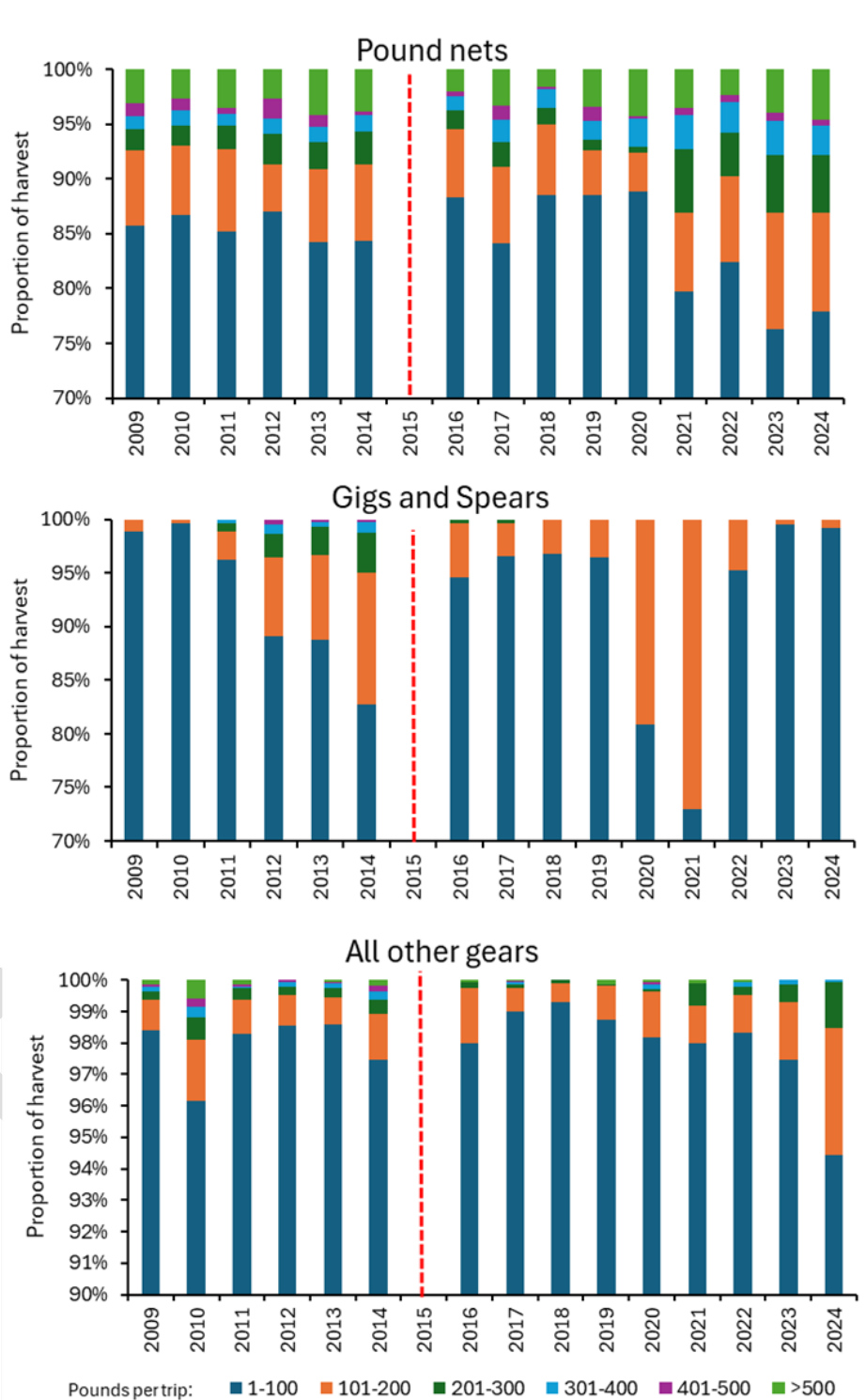


Figure 18. The proportion of commercial sheephead harvest where bar color refers to the range of pounds (e.g., 0-100 lb) harvested per trip, 2009–2024. Data from 2015 were excluded due to timing of management implementation. The dashed red line indicates when size, bag, and trip limits were implemented through Proclamation FF-28-2015. (Source: North Carolina Trip Ticket Program)

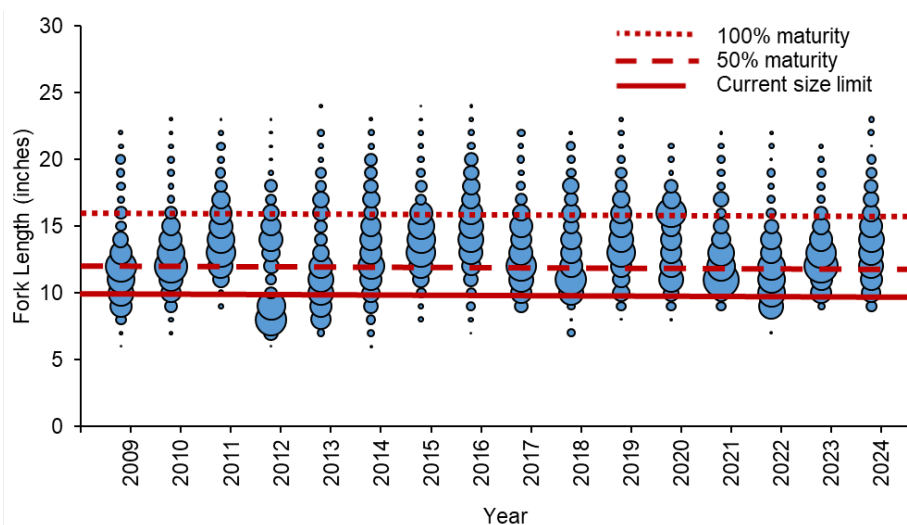


Figure 19. Commercial length frequency (fork length, inches) of sheephead sampled from landings, 2009 – 2024. Bubbles represent fish at length and the bubble size is proportional to the number of fish at that length. (Source: National Marine Fisheries Service Marine Recreational Information Program).

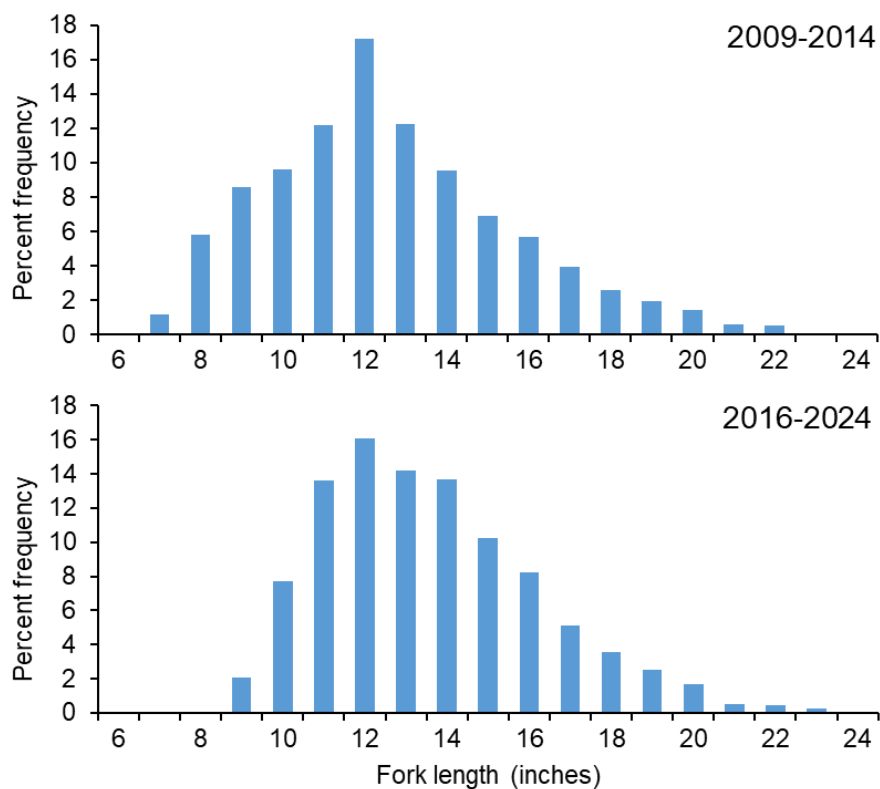


Figure 20. Length frequency (fork length, inches) of sheephead sampled from commercial landings, 2009–2024 ($n = 8,129$, 2009–2014; $n = 4,644$, 2016–2024). A 10-inch fork length minimum size limit was implemented in June 2015; data from 2015 were excluded due to timing of management implementation. (Source: North Carolina Trip Ticket Program and fish house sampling program data)

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fish (greater than 15.7 inches). Sheepshead that are 20 inches FL or greater made up approximately 2% of the landings.

The need to implement additional management measures for commercial harvest of sheepshead in North Carolina is based on changes in the effort and landings in recent years. While commercial effort, the number of commercial trips landing sheepshead, is well below historic values it started to increase beginning in 2020. Commercial landings have been consistently below 100,000 pounds post-regulation changes, though they did increase in 2023 and 2024 to values more similar to the 2009 – 2014 time period. More importantly the average pounds per trip is increasing, especially in the pound net fishery. The majority of sheepshead harvested commercially from 2016-2024 are potentially immature fish with fewer, larger and older fish showing up in samples.

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RULES
REGULATION OF FISHING AND FISHERIES
PROCLAMATIONS; EMERGENCY REVIEW
MARINE FISHERIES COMMISSION – POWERS AND DUTIES
PROCLAMATIONS, GENERAL
SHEEPSHEAD

DISCUSSION

The increasing trends in landings along with increasing effort are concerning indicators the fisheries are expanding, which could negatively impact the sheepshead stock in North Carolina. Landings in 2024 were the highest for both sectors since implementation of management in 2015, and some of the highest landings historically. The majority of sheepshead harvested from 2016-2024 are immature and subadult fish with fewer, larger, older, and fully mature fish. These trends provide justification to pursue proactive management to prevent harm to the stock. The level of fishing mortality and status of the stock cannot be determined until a stock assessment is complete. However, changes to the minimum size limit, recreational bag limit, or commercial trip limit as well implementation of slot and vessel limits could be used to slow harvest and further growth in the fisheries to limit exploitation of juvenile sheepshead; all are discussed below as potential options. Due to the concerning stock indicators and fisheries trends, status quo is not an option, and the Division will be implementing changes to sheepshead management.

Size Limit Changes

Managing fisheries using size to constrain harvest is common practice, but there is often a trade-off between conservation and fishery objectives (Gwinn et al. 2015; Ayllon et al. 2018, 2019).

Total length is the most common measure for fish when size limits are applied as a management tool. For states with size limits for sheepshead, North Carolina is one of only two states where the minimum size is fork length (Table 1). When management measures were implemented in 2015, fork length was standard for the minimum size of sheepshead, but South Carolina and Florida have since changed to total length. It would be beneficial for the sheepshead size limit to be changed to total length to be consistent with most other states and align with the measurement for most species, in particular for black drum. If no additional changes were made to the minimum size limit, the 10-inch FL would simply switch to the equivalent 11-inch TL.

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Table 1. State regulations for sheepshead on the Atlantic Coast, July 2025.

State	Recreational			Commercial	
	Size limit (inch)	Bag limit (number)	Additional regulations	Size limit (inch)	Trip Limit (lb)
ME to DE	None	None		None	None
MD	12 inches TL	4/person/day		None	None
VA	None	4/person/day		None	500 lb
NC	10 inches FL	10/person/day		10 inches FL	300 lb, except for pound nets (none) and spear/ gigs (10 fish)
SC	14 inches TL	10/person/day; Vessel limit of 30/boat/day		14 inches TL	10/person/day; Vessel limit of 30/boat/day
GA	10 inches FL	15/person/day		10 inches FL	15/person/day
FL	12 inches TL	8/person/day; Vessel limit of 50/trip in Mar and Apr	Harvest prohibited using multiple hooks in conjunction with live or dead natural bait	12 inches TL	Directed trip: none Bycatch allowance: 50 lb for shrimp trawls

Often, minimum size limits are used as a management tool but can negatively impact a stock by truncating the age and size structure if effort is high (Moreau and Matthais 2018). Implementation of minimum size limits diminishes the pool of younger and smaller fish immediately available for harvest, which in turn decreases landings. The number of released fish increases as minimum size limits are raised, and often fish, especially fast-growing species, grow into the new size limit negating any initial conservation benefit.

Slot limits, have the ability to protect juveniles and spawning adults and maintain more mature fish when compared to minimum size limit regulations (Gwinn et al. 2015; Ayllon et al. 2019). Slot limits are not appropriate for all species but should be considered if the population in question has the following characteristics (Baker et al. 1993; Brousseau and Armstrong 1987): (a) good natural reproduction, (b) slow growth, especially of young fish, (c) relatively high natural mortality of young fish, and (d) high angling effort.

Additionally, the upper limit of a slot limit should provide meaningful harvest protection for the species in question (Oliver et al. 2021). Slot limits generally result in lower harvest and more discards by weight (Wiedenmann et al. 2013). As older, larger fish become more abundant, the volume of removals due to post-release mortality and non-compliant harvest is expected to increase (Ayllon et al. 2019; Kasper et al. 2020).

MINIMUM SIZE LIMIT

Increasing the minimum size further increases the proportion of fish that can spawn prior to harvest but may not necessarily reduce overall harvest. The modal peak for sheepshead measured in both sectors fluctuates annually between 12-inch FL (or 13-inch TL) and 13-inch FL (or 14-inch TL; Figures 8, 17). On average, seventy percent of the recreational and commercial

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landings are 14 inches FL (15 inches TL) or less. The minimum size limit could be increased to 12-inches TL or 14-inches TL to mirror regulations in adjacent states (Table 1). Additionally, increasing the minimum size to 14-inches TL would match the black drum minimum size limit, which may eliminate angler confusion due to differences in regulations between the species. Increasing the minimum size limit will likely increase the number of released fish, though post-release mortality is believed to be low compared to other species (West et al. 2015, 2020, 2025; Munyandorero et al. 2017; Teears 2023). As larger fish become more available discards are expected to decrease.

MAXIMUM SIZE LIMIT (SLOT LIMIT)

Slot limits were explored as a management option by the Division when regulations were originally implemented, but this option was not recommended (NCDMF 2015). Some aspects of sheepshead life history do not make it an ideal fish for a slot limit. They are long lived, which would make them a good candidate for a slot limit, but they mature early, grow quickly prior to age-6 after which their growth slows, and their height increases as opposed to length (McDonough et al. 2011; NCDMF 2025). Any slot limit would most likely be relatively narrow if the minimum size limit is increased (i.e., not more than six inches) and likely not include fish over 20 inches due to annual maximum sizes seen in more recent years.

Should a slot limit be implemented, an allowance for a trophy fish would not be beneficial to the stock given the age and size truncation already present. By not allowing a trophy fish larger fish remain for more reproductive benefit and expansion of the age of the stock. While a trophy fish allowance gives anglers an opportunity to establish records and win awards, recreational anglers would still be eligible for a North Carolina Saltwater Fishing Tournament citation for all released sheepshead. Citations are currently awarded for sheepshead that are eight pounds or greater and/or 24-inches TL (equal to 21.6 inches FL). Aside from the life history considerations, a trophy fish allowance may be problematic due to the growing interest in the recreational gig/spear fishery. Light refraction underwater can make it difficult to accurately determine the size of a fish being targeted for harvest, especially if close to the size limit. Post-release mortality is considered 100% on these fish.

Recreational Bag and Vessel Limits

Reducing the current recreational bag limit is a simple management strategy to reduce the harvest rate. Currently, North Carolina's bag limit is similar to the other states in the South Atlantic, though higher than Virginia and Maryland (Table 1). Florida decreased their bag limit from 15 fish to 8 fish and implemented a seasonal vessel limit in 2018 due to concerns about their sheepshead stock.

The North Carolina 10-fish bag limit was initially set at the upper bound of fish harvested by recreational anglers to reduce discards, as 96% of trips harvested 10 fish or less (NCDMF 2015). Increased angler success in recent years may be due to more small-sized fish being available (less than 14 inches FL). A reduction in the current bag limit may address changes in angler behavior, technological advancements that improve catch success, and increased effort in recent years. The bag limit could be reduced to as low as between 2-4 fish and result in minimal discards as most anglers land one fish (Figure 10), though any reduction in bag limit will result in an increase in discards. Post-release mortality is assumed to be low for sheepshead, though some fish are caught in deep waters (e.g., the turning basin and port wall in Morehead City or offshore) where barotrauma may lead to higher post-release mortality.

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Adopting a four fish bag limit would mirror regulations set by Virginia and Maryland, where sheepshead life history is more similar to North Carolina than the states to the south.

While angler success varies and the extent of multiple anglers on private or for-hire boats harvesting multiple individual limits is unknown, several for-hire captains noted more trips targeting sheepshead and raised concerns with large parties wanting to “bag out” (NCDMF, personal communication). For example, a party of six could potentially land up to 60 sheepshead and charter captains and any crew are allowed to harvest their own recreational limit of sheepshead while running charter trips. Vessel limits could address these concerns when set to no more than 4-times the individual bag limit, even if more than four people were on board. The captain and crew allowance could also be eliminated to reduce harvest levels.

Commercial Trip Limit

Maximum possession limits tend to work better in the recreational fishery because catches are often less variable than commercial catches. The initial NCDMF recommendation in 2015 was a 300-pound commercial trip limit for all gears except for spear/gig (10 fish per person per day or per trip). The 300-pound trip limit was chosen because it was near the upper bound of trips landing sheepshead and would limit discards in the majority of gears. The 10-fish limit for the spear/gig fishery was a proactive cap and set to the day or trip if the trip occurs over more than one calendar day. Pound nets were exempted from trip limits because at the time, 5% of pound net trips landed over 300 pounds, with trips over 500 pounds accounting for 2.5% of trips (NCDMF 2015).

Based on recent data, and no trip limits in place, pound net landings have increased in the last several years. Behavior has likely shifted in the pound net fishery due to harvest restrictions in the southern flounder commercial fishery. Many who traditionally set flounder pound nets are now using other pound net types to take advantage of different fisheries (NCDMF, personal communication). While implementing a trip limit increases discards, pound nets are a good candidate for trip limits due to how the gear operates; sheepshead caught in pound nets can be released alive or retained for later harvest. Trip limits could be implemented to match the 300-pound trip limit for other “all other gears” (i.e., not gig/spear) or set higher to reflect the difference in sheepshead catchability in pound nets.

Of the other commercial gears, only estuarine gill nets have shown an increase in sheepshead landings. This increase in recent years may warrant lowering the trip limit for this gear. Trip limits for estuarine gillnets, along with all other gears except pound nets and gigs/spears, could be lowered to either 100 pounds or 200 pounds. Estuarine gillnets make up the majority of the “all other gear” category, and on average, 98% of estuarine gill net trips land 100 pounds or less. Most of the other gear landings have stabilized.

Summary

Landings in 2024 were the highest for the recreational and commercial sectors since implementation of management, and some of the highest landings historically. Directed recreational trips have doubled since 2020, after remaining steady for the time series. Recreational landings from 2021, 2022, and 2024 were well above the post-regulation average and represent some of the higher values in the time series presented. Additionally, most recreational anglers harvest one fish, but the proportion of recreational anglers harvesting four or more sheepshead is increasing in recent years. While commercial effort, the number of commercial trips landing sheepshead, has been increasing since 2020. Additionally, the average pounds per trip is increasing, especially in the pound net fishery. The majority of sheepshead

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harvested by both sectors are immature fish with fewer larger and older fish showing up being seen in the fishery and division sampling. The length and age data indicate the size and age truncation seen prior to regulation changes has continued. Increases in fishing pressure could lead to localized depletion of larger, older fish, which has implications for reproduction and population abundance.

While constraining harvest to devise an effective management strategy is made more difficult when the status of the stock is unknown, there is a need to implement additional, proactive management measures for sheepshead in North Carolina based on increases in effort and landings in recent years and concerning trends in the biological data. Status quo is not an option, and the NCDMF will implement additional management measures to be effective January 1, 2026. Before doing so, the NCDMF is seeking input from regulated stakeholders to help mitigate unintended consequences of new management strategies being considered to protect the resource.

MANAGEMENT OPTIONS

The NCDMF has identified the general management strategies listed below for sheepshead harvested in recreational and commercial fisheries. Examples of how these management strategies could be implemented are explored in the Discussion. Input is being sought from the public, based on their experience with the sheepshead fishery; this input will guide the Division's implementation of new management measures to slow the growth of the sheepshead fishery.

Recreational and Commercial Size Limit

- Change the measurement for the size limit from fork length to total length (TL) for consistency with other states and black drum regulations.
- Increase the minimum size limit (e.g., 12 inches TL, 14 inches TL)
- Implement a slot limit for the recreational fishery (e.g., 12–20 inches TL, 14–20 inches TL)

Recreational Bag and Vessel Limits

- Reduce recreational bag limit (e.g., 4, 6, or 8 fish/person/day)
- Implement a recreational vessel limit (e.g., 3 or 4 times the bag limit)
- Eliminate captain and crew allowance on for-hire charters

Commercial Trip Limits

- Implement pound net trip limit. This could be different from or mirror the “other” gear limit (excluding gig/spear gear) (e.g., 300 or 500 pounds)
- Reduce commercial trip limit for “other” gears (excludes gig/spear gears) to less than 300 pounds per trip (e.g., 100 or 200 pounds)

NEXT STEPS

Public input and feedback are requested to further refine the options and identify potential unintended consequences prior to implementation of management measures. A public comment period to accept comments online will occur from October 22, 2025, through November 5, 2025.

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A virtual and in-person hearing will occur as well for the public on November 4, 2025. The NCDMF intends to implement management changes for sheepshead to begin effective January 1, 2026.

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