

N.C. Division of Marine Fisheries Multi Species Tagging Program

N.C. Marine Fisheries Commission

May 22, 2015



Why Conduct a Tagging Program?

- Fulfills high priority research needs for red drum, southern flounder, spotted seatrout and striped bass.
- New design improves on prior work to address tag-return model assumptions and estimate population rates from tag-return data.



Why Conduct a Tagging Program?

Tagging addresses issues specific to red drum, spotted seatrout, southern flounder and striped bass.

- Stock delineation and migration patterns
- Direct estimates of fishing mortality
- Estimates of natural mortality
- Information on capture ability and size of harvested and released fish



Historical and Current Species

Red Drum

Southern Flounder

Atlantic Sturgeon

White Perch

Dolphin

Snapper

Striped Bass

Spotted Seatrout

Shortnose Sturgeon

Yellow Perch

Mackerel

Grouper



Striped Bass

- Dr. Hassler began tagging on the Roanoke River in 1956.
- N.C. Division of Marine Fisheries began tagging in 1973 and improved methodology in 1990.



Striped Bass

- Data used in various ways.
 - Since 1995 provide an estimate of total mortality in the Albemarle/Roanoke stock.
 - Providing probability at age of Albemarle/Roanoke stock leaving Albemarle Sound Management Area
 - Providing mortality estimates at age for fish that left the Albemarle Sound Management Area
- Estimates were uncertain as tag return rates, tag retention, and tag mortality were unknown.



Striped Bass

Additional data needs identified through Amendment 1 to the N.C. North Carolina Estuarine Striped Bass Fishery Management Plan

- Research need for the Albemarle/Roanoke stock since 2000, as tagging data are necessary to separate natural mortality from fishing mortality.



Southern Flounder

Previous N.C. Division of Marine Fisheries tagging studies were from 1980-1982 and from 1988-1995.



Southern Flounder

N.C. State University and the University of North Carolina at Wilmington projects in New and Neuse rivers from 2005-2007.

- Included auxiliary studies to address model assumptions (reporting rates, retention rates, and mortality).
- Limited in area and seasonal coverage.



Southern Flounder

Additional data needs identified through Amendment 1 to the N.C. Southern Flounder Fishery Management Plan and the 2009 N.C. Division of Marine Fisheries Southern Flounder Stock Assessment

- Tagging of southern flounder to gain a better understanding of the unit stock and migration patterns.



Red Drum

Tagging began in 1983.



Red Drum

- Bacheler estimated age specific F and selectivity patterns for harvested and released red drum.
- Tagging results were incorporated in stock assessment.
 - Input of age-specific F estimates from tagging into traditional statistical catch-at-age model greatly improved precision.
 - Provided information on size of caught and released fish.
 - Tagging provided direct estimates of selectivity at age.



Red Drum

Additional data needs

- Bacher Research - Auxiliary studies to address tag reporting rate and tag retention.
- Southeast Data Assessment and Review – need for a better statistical design.
- Atlantic States Marine Fisheries Commission – (1) continue to determine stock identity, inshore/offshore migration patterns, abundance, and mortality (2) explore use of direct estimates of fishing mortality from tagging data.



Spotted Seatrout

Two prior studies both completed by Tim Ellis at N.C. State University, 2008-2014.



Spotted Seatrout

Data use

- Ellis data provided fishing and natural mortality rates for each year of the study.
- Data were incorporated into a new stock assessment.



Spotted Seatrout

Additional data needs.

- 2009 N.C. Division of Marine Fisheries stock assessment identified (1) the need for a tagging program to determine if North Carolina and Virginia were one unit stock (2) to quantify migration between northern and southern N.C. populations (3) to verify indirect, catch-at-age estimates of F and M.
- Estimates are valid only for year of studies.



Where does our tagging program stand today?

- Needs identified through the southern flounder, striped bass, red drum, and spotted seatrout fishery management plans for tagging program to estimate migration and mortality rates.
- Summer 2013 staff developed a Coastal Recreational Fishing License proposal for a multi species tagging program to address tagging needs.



Where does our tagging program stand today?

July 1, 2014 N.C. Division of Marine Fisheries received three years of Coastal Recreational Fishing License funds for a multi species tagging program.



Where does our tagging program stand today?

- Multi-species study will maximize tagging opportunities and minimize cost.
- Follow consistent, valid study protocol.
- Assure all elements are included for each species where tagging methods are employed.



Where does our tagging program stand today?

Four main components for each species

- Tag a minimum 1,000 – 1,500 individuals per year with standard reward tags (low reward).
- Double tag a calculated percentage to assess tag loss.
- Conduct high reward (\$100) tagging to assess reporting rates.
- Conduct field experiments to estimate mortality related to tagging and capture.



Current Return Rate

- 215,000 striped bass tagged
 - 11,500 tag returns for a tag return rate of 5 percent.
- 62,000 red drum tagged
 - 7,200 tag returns for a tag return rate of 12 percent.

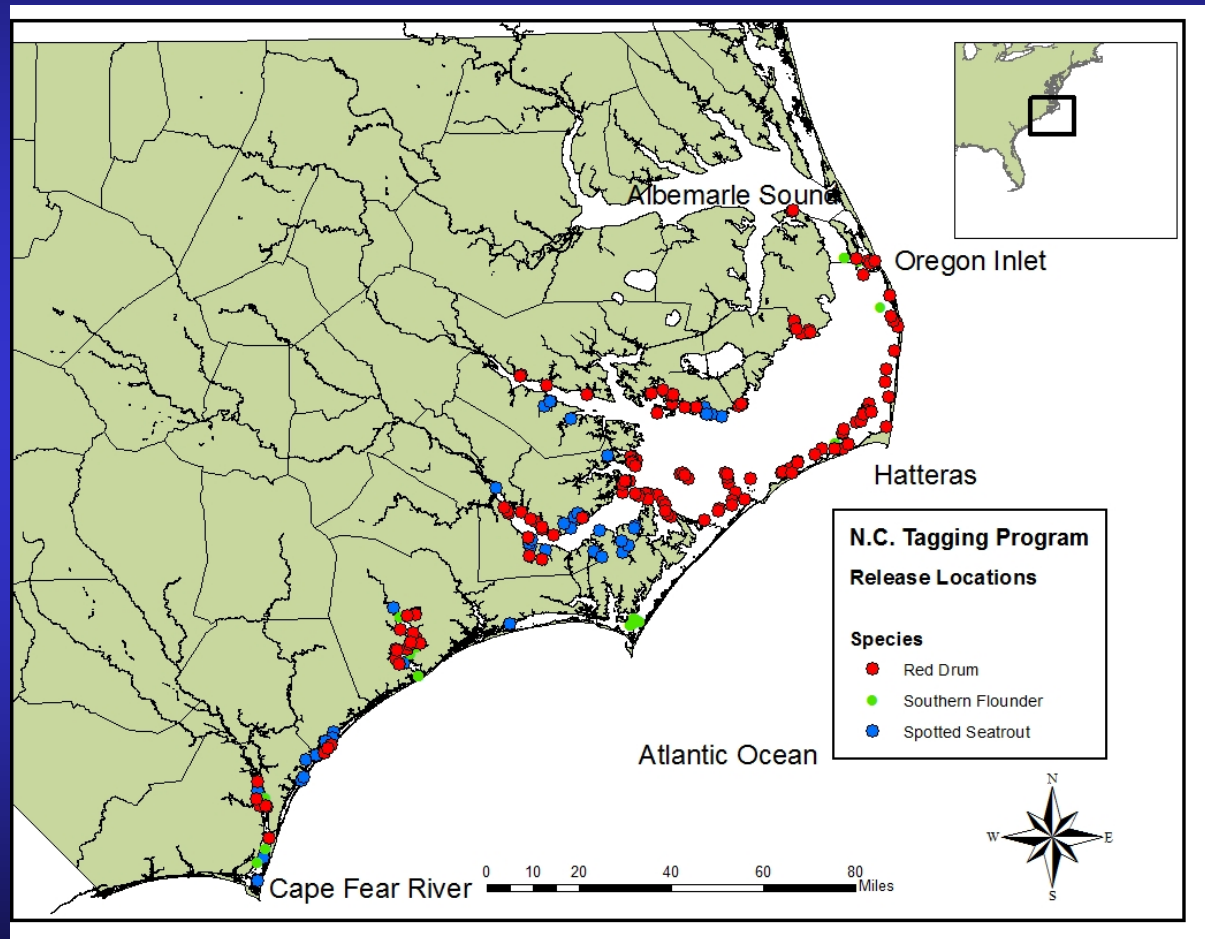


Who will be tagging fish

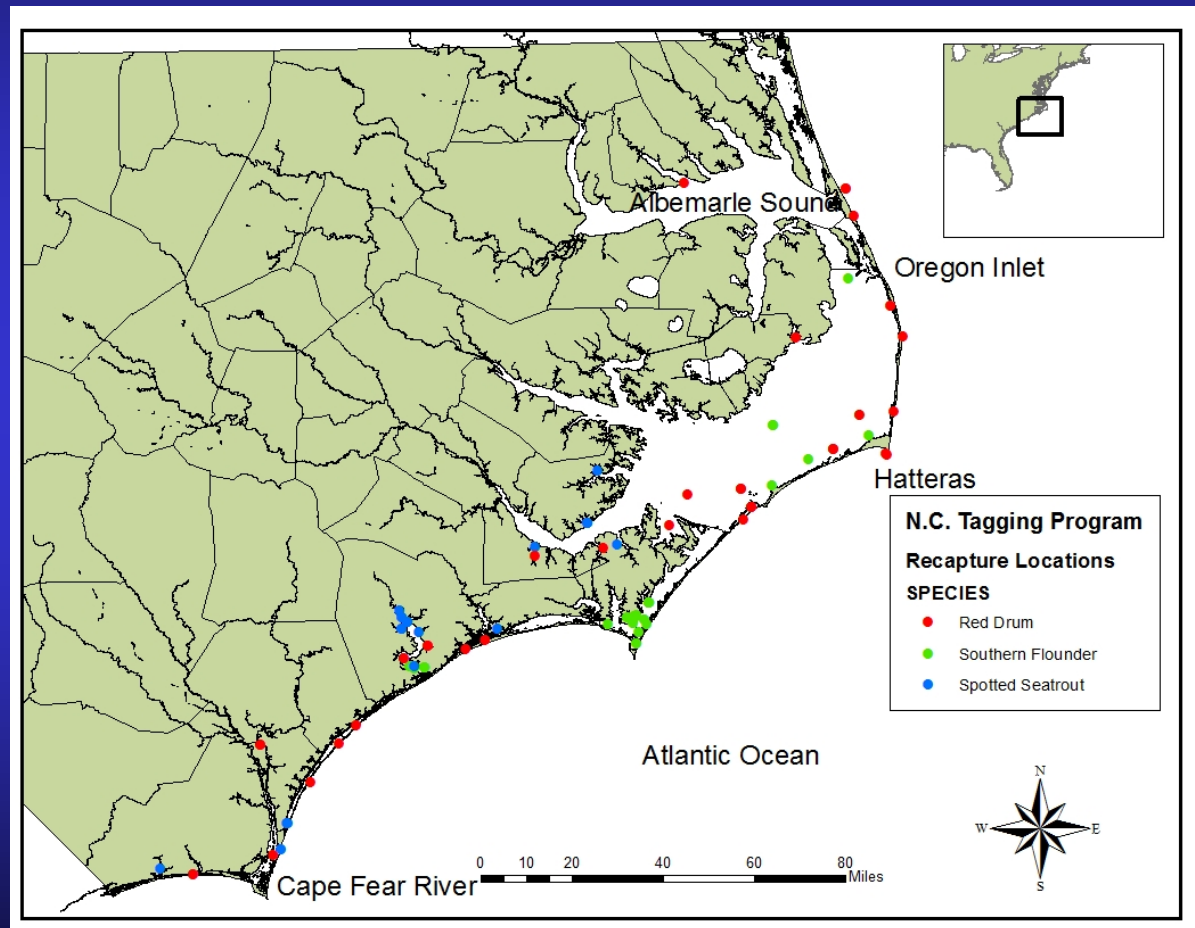
- Red Drum – Division employees
- Striped Bass – State employees
- Southern Flounder – Division employees with the aid of commercial pound net fishermen
- Spotted Seatrout – Division employees and recreational fishing guides



Where will fish be tagged



Recapture Locations



When will fish be tagged

- Red Drum – throughout the fishing year
- Striped Bass – April through May
- Flounder – March through December
- Spotted Seatrout – January through May and October through December



Tag Information

Standardized tag colors for all species

- **Yellow** = Standard Reward (\$5, hat or towel)
- **Red** = High Reward (\$100)
 - To receive a high reward payment the tag must be cut off and mailed or delivered to the N. C. Division of Marine Fisheries for confirmation of tag and tag number.



Tag Information

Tag labels

- All printed with “REWARD,” “NCDMF,” “CUT OFF TAG,” phone number (1-800-682-2632) and unique tag number that has alpha and numeric characters.
- **Red** high rewards tags will also be printed with “\$100 reward.”





Tag Protocol

- Each year, approximately 8,600 fish will be tagged (1,500-2,600 depending on species).
- High reward tags will be placed in 4 to 25 percent of fish.
- Double tags will be placed in 10 to 25 percent of fish with one tag on each side of the fish.



Information

Information we wish to receive from a tag return

- Date of capture
- Location of capture
- Gear used for capture
- Length of fish
- Tag number
- Fate of fish (released or harvested)

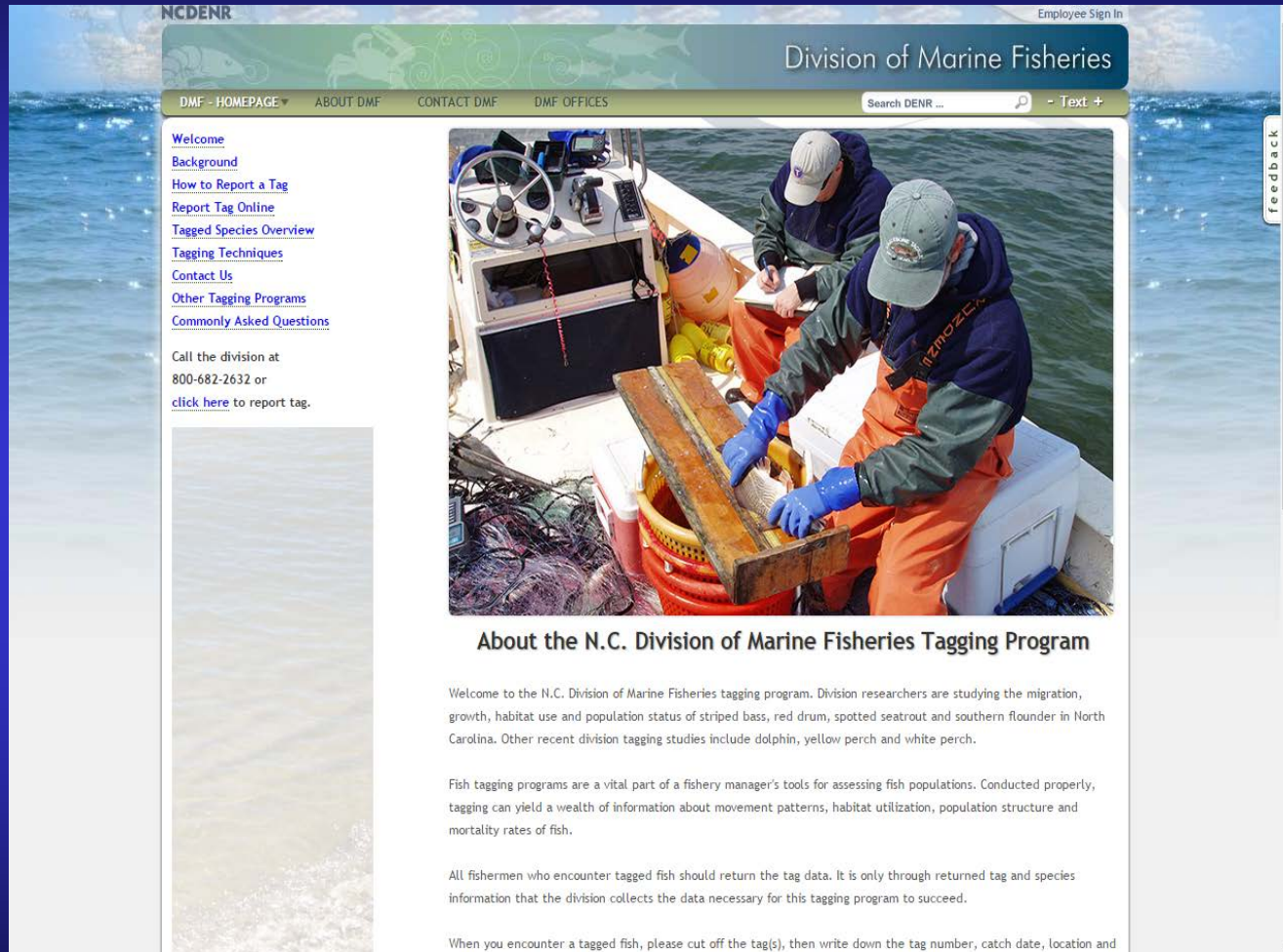


How to report a tag

- Tag returns can be called into the divisions 1-800-682-2632 number or any division office number.
- Tag returns can be brought into any division office.
- Tag returns can now be reported online at the enhanced division tagging pages through the new reporting tool.
 - <http://portal.ncdenr.org/web/mf/report-tag-online>



Online Reporting Tool



The screenshot shows the website for the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Marine Fisheries. The page features a navigation menu with links for 'DMF - HOMEPAGE', 'ABOUT DMF', 'CONTACT DMF', and 'DMF OFFICES'. A search bar is located in the top right corner. The main content area is titled 'About the N.C. Division of Marine Fisheries Tagging Program' and includes a large photograph of two researchers on a boat handling a fish. The text below the photo provides information about the tagging program, including the species studied, the purpose of the program, and instructions for reporting tagged fish.

NC DENR Employee Sign In

Division of Marine Fisheries

DMF - HOMEPAGE ABOUT DMF CONTACT DMF DMF OFFICES Search DENR ... - Text +

[Welcome](#)
[Background](#)
[How to Report a Tag](#)
[Report Tag Online](#)
[Tagged Species Overview](#)
[Tagging Techniques](#)
[Contact Us](#)
[Other Tagging Programs](#)
[Commonly Asked Questions](#)

Call the division at
800-682-2632 or
[click here](#) to report tag.

About the N.C. Division of Marine Fisheries Tagging Program

Welcome to the N.C. Division of Marine Fisheries tagging program. Division researchers are studying the migration, growth, habitat use and population status of striped bass, red drum, spotted seatrout and southern flounder in North Carolina. Other recent division tagging studies include dolphin, yellow perch and white perch.

Fish tagging programs are a vital part of a fishery manager's tools for assessing fish populations. Conducted properly, tagging can yield a wealth of information about movement patterns, habitat utilization, population structure and mortality rates of fish.

All fishermen who encounter tagged fish should return the tag data. It is only through returned tag and species information that the division collects the data necessary for this tagging program to succeed.

When you encounter a tagged fish, please cut off the tag(s), then write down the tag number, catch date, location and



Online Reporting Tool

Division of Marine Fisheries

DMF - HOME PAGE | ABOUT DMF | CONTACT DMF | DMF OFFICES

Search DENR ... - Text +

[Welcome](#)
[Background](#)
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[Commonly Asked Questions](#)

Call the division at 800-682-2632 or [click here](#) to report tag.

Report a Tag Online

Report a tagged fish, apply for reward

Thank you for responding to our tagged fish questionnaire. If you have a red tag, please call 800-682-2632 to report your recapture and discuss your \$100 reward. For online reporting, a representative of the Division of Marine Fisheries may contact you for additional information or to discuss your reward options.

Please complete all required items indicated with *

Color of tag *
 red
 yellow
 blue

Tag number (ex: D12345) : *

Was there a second tag? *
 yes
 no

If so, tag number

Species: *
 dolphin
 red drum
 southern flounder
 spotted seatrout
 striped bass
 yellow perch
 white perch

Date caught (Month/Day/Year): *

Feedback



Website and Contact Information

- <http://portal.ncdenr.org/web/mf/tagged-fish>
- tagrecap@ncdenr.gov



Reward

- After a return is processed each tag reporter will receive a letter, certificate and reward.
 - Date of tagging
 - Location of tagging and recapture
 - Length of fish at tagging
 - Days at large
 - Growth of fish since tagging
 - Distance from tagging to recapture site

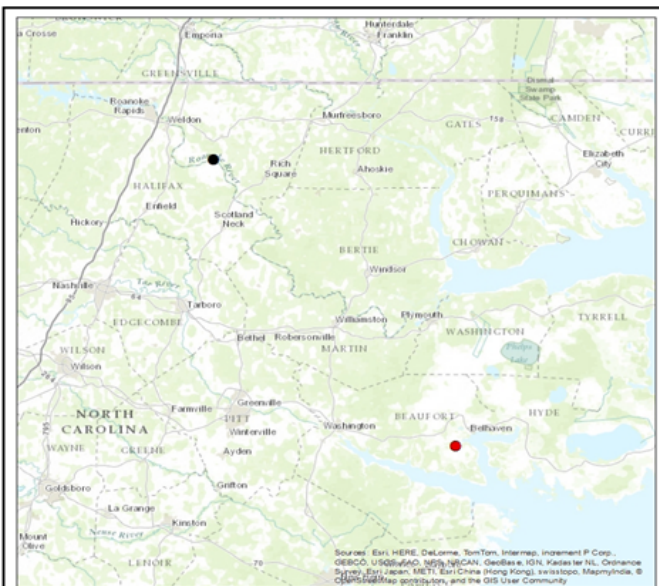


Certificate of Recognition and Appreciation

Awarded to
JOHN Q. PUBLIC



For your assistance in recapturing and reporting data
 in the Striped Bass Tagging Program.



- Tag and Release Location
- Recapture Location



0 10 20
 Miles

0 15 30
 Kilometers

	Tagged	Recaptured
Date:	5/12/2014	12/14/2014
Location:	Hwy 258 Bridge, Roanoke Rapids Dam	Pungo Creek at the Route 264 Bridge
Length:	19.5 inches	22.3 inches
Distance:	Approximately 115 miles	
Days at Large:	216 days	



Updates

- Division staff have developed a new program documentation to expedite data entry and subsequent returns.
- Goal of tagging data entry of 10 business days.
- Goal of recapture processing of 10 business days.





\$100 REWARD



Striped Bass



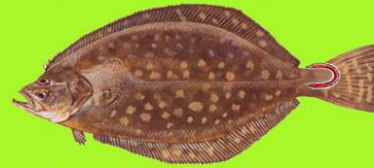
Spotted Seatrout



Red Drum



Southern Flounder



ANGLERS, LOOK FOR TAGS IN YOUR CATCH!

The N.C. Division of Marine Fisheries will give rewards for tag and recapture information.

CHECK BOTH SIDES OF THE FISH!

Some fish may have more than one unique tag. To receive a reward you must report the tag number (or numbers), the fish species, length, date and location of catch.

Mail Cut Tags to:

Division of Marine Fisheries
P.O. Box 769
Morehead City, N.C. 28557

REWARDS FOR REPORTING TAGS

Red tag: \$100 Reward - Tag must be cut and returned to the Division of Marine Fisheries.

Yellow tag: hat, \$5 or other reward, and one entry into the Division of Marine Fisheries end-of-year drawing.

Report Tagged Fish To:
800-682-2632



For more information:

<http://portal.ncdenr.org/web/mf/tagged-fish>

Have Questions?

tagrecap@ncdenr.gov





A tagged spotted sea trout

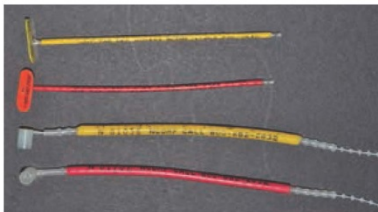
N.C. Division of Marine Fisheries Tagging Program

Division researchers are tagging more than 15,000 striped bass, red drum, southern flounder and spotted seatrout per year to improve management of these species.

Fish tagging programs are a vital part of a fishery manager's tools for assessing fish populations. Tagging programs can yield a wealth of information about fish movement patterns, habitat utilization, population structure and mortality rates.

It is only through returned tag and species information that the division collects the data necessary for this tagging program to succeed.

All fishermen who encounter tagged fish should return the tag and fish data to help improve management of these fisheries.

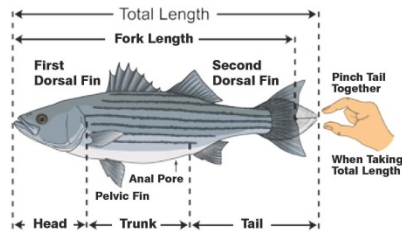


Anchor tags (top) and cinch-up tags (bottom) used in the study

How to Measure a Fish:

When you measure your fish, measure to fork length or total length.

Lay the fish down on top of a ruler or tape measure. Measure the fish even if you're planning to release it. Handle it gently, with wet hands or wet gloves, and return it to the water as quickly as possible.



Report a tagged fish:
800-682-2632

Report a tagged fish online:
<http://portal.ncdenr.org/web/mf/tagged-fish>

Have questions?
tagrecap@ncdenr.gov

To submit photos with your tagged fish, email tagrecap@ncdenr.gov (All photos submitted to the division are public record and, thus, may be disclosed to third parties without your approval.)

N.C. Division of Marine Fisheries
P.O. Box 769
Morehead City, N.C. 28557

xxxxx copies of this brochure were printed at a cost of xx each.

North Carolina Tagging Program



Report tagged fish to:
800-682-2632
You may receive a
\$100 reward



How Can You Help?

Get involved! If you catch a tagged fish, please cut off the tag and record the tag number, date, capture location, capture method, total length, and the fate (harvested or released). Then report the information to 800-682-2632.

Reward for Reporting

If a red tag is returned to the N.C. Division of Marine Fisheries with required information, individuals are eligible for a \$100 Reward. The tag must be cut and returned to receive a reward.

If a yellow tag and required information is reported, individuals can pick from a hat, \$5, or other rewards.

In addition to rewards, reported tags will be entered into the division's end-of-year cash drawing. For each reported tag, fishermen will also receive a letter and personalized certificate, stating where and when the fish was released, days at large, distance from tagging location and more.



Preparing to tag a striped bass



Tagging a red drum

Information We Need:

Required information

- Species
- Tag number
- Date
- Location captured (water body and nearest landmark or latitude/longitude)
- Length (total or fork length)
- Fate of the fish (kept, released alive, etc.)
- Gear used for capture

What You Need to Know:

- Cut the tag off; don't pull it out. If releasing the fish, cut the tag as close to the body of the fish as possible.
- Record the tag information (just in case you misplace the tag before reporting).
- If the tag has algae growth, do not scrape the algae off. Let the tag soak in soapy warm water until the algae comes off.

Red tags must be cut off and returned to the N.C. Division of Marine Fisheries, P.O. Box 769, Morehead City, N.C. 28557 to receive the \$100 reward.

Things to Remember:

Be alert! Tags are designed to be as unobtrusive as possible, so they don't change the fish's behavior. That means that you might not see one if you're not looking.

Some fish may have more than one unique tag and tag number. Please report all tag and species information to the N.C. Division of Marine Fisheries.



Double-tagged flounder ready for release

Be careful when handling fish you intend to release. Handle it as little as possible, using wet hands or wet gloves. Do not pull the tag out of the fish — cut it off as close to the body as possible. Return the fish to the water quickly. This will give the fish the greatest chance of post-release survival.



Releasing a tagged fish



Public Outreach



- Questions, comments, or suggestions for improving this tagging program

