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

N.C. Marine Fisheries Commission

Feb 19, 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 Pan

- 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

- Bacheler 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.

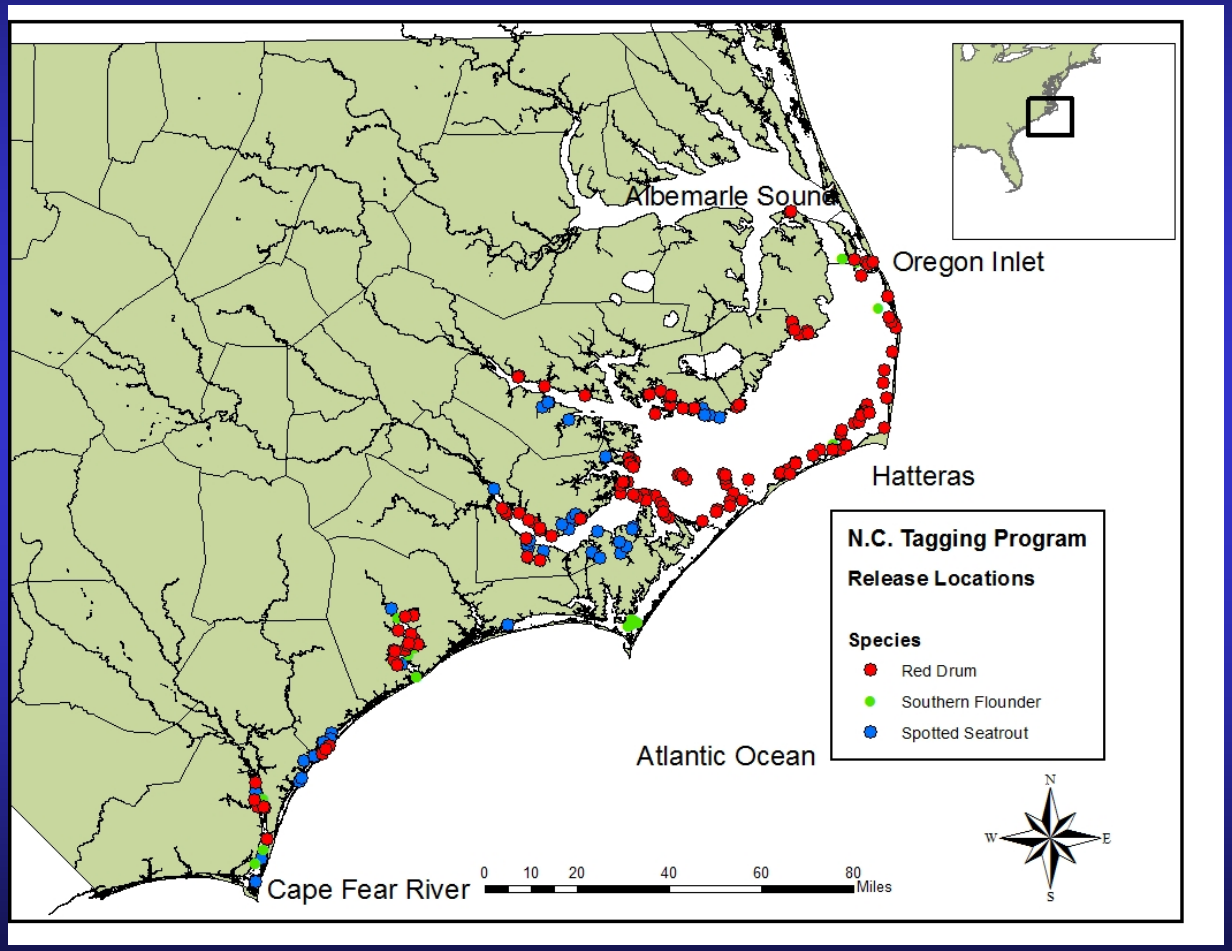
Current Return Rate

- 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.

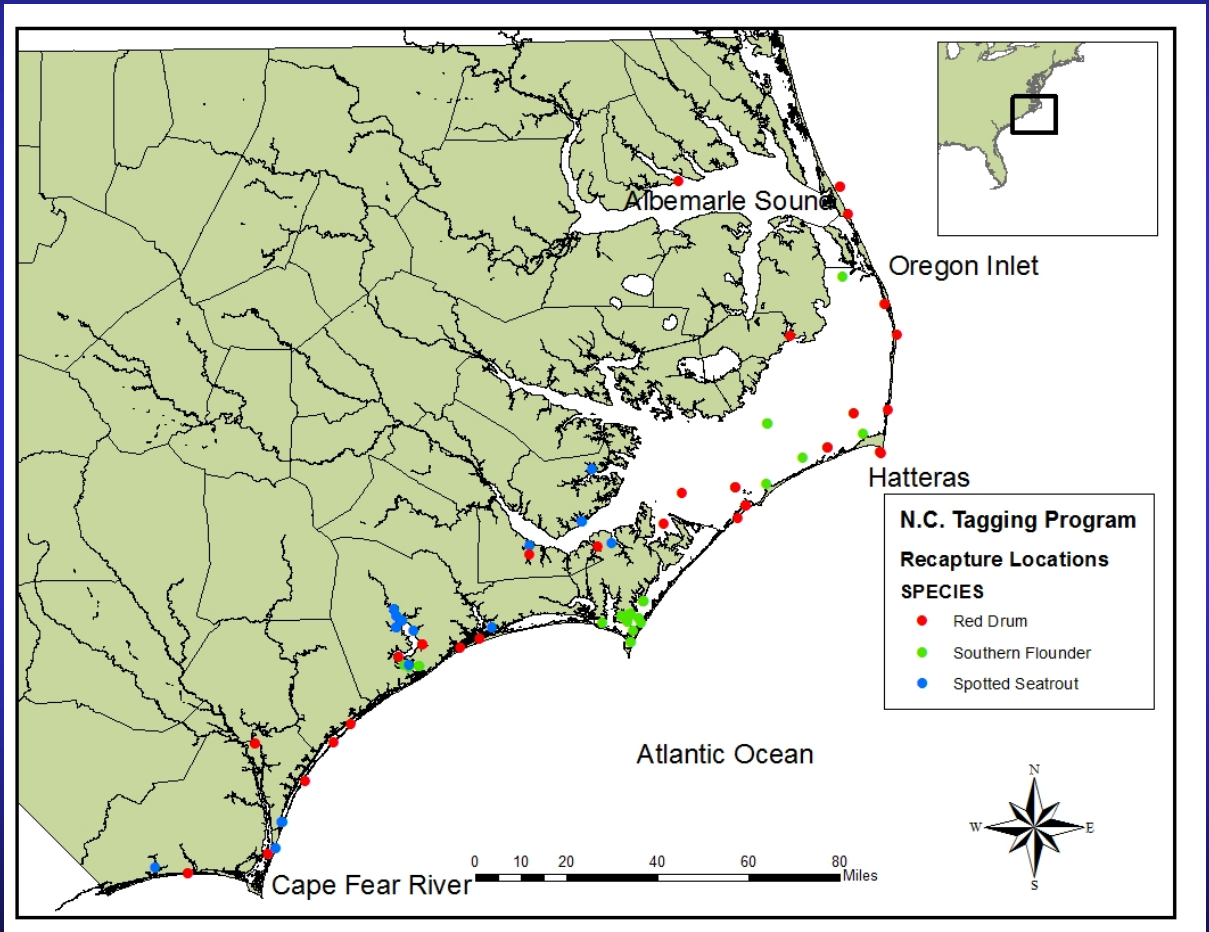
Who will be tagging fish

- 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

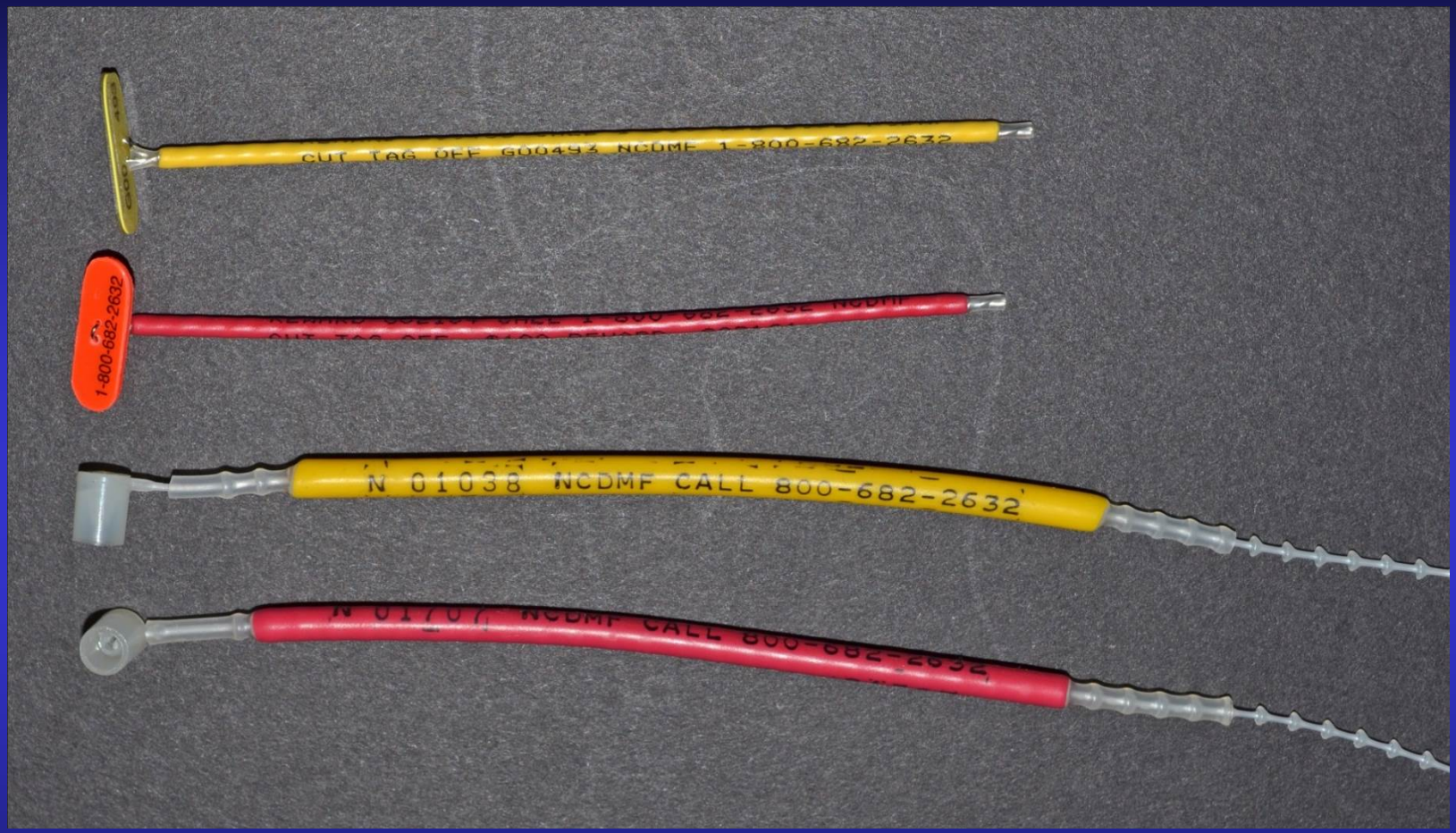
Standardized tag colors for all species

- 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.”


CUT TAG OFF
1-800-682-2632
N 01038 NCDMF CALL 800-682-2632

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

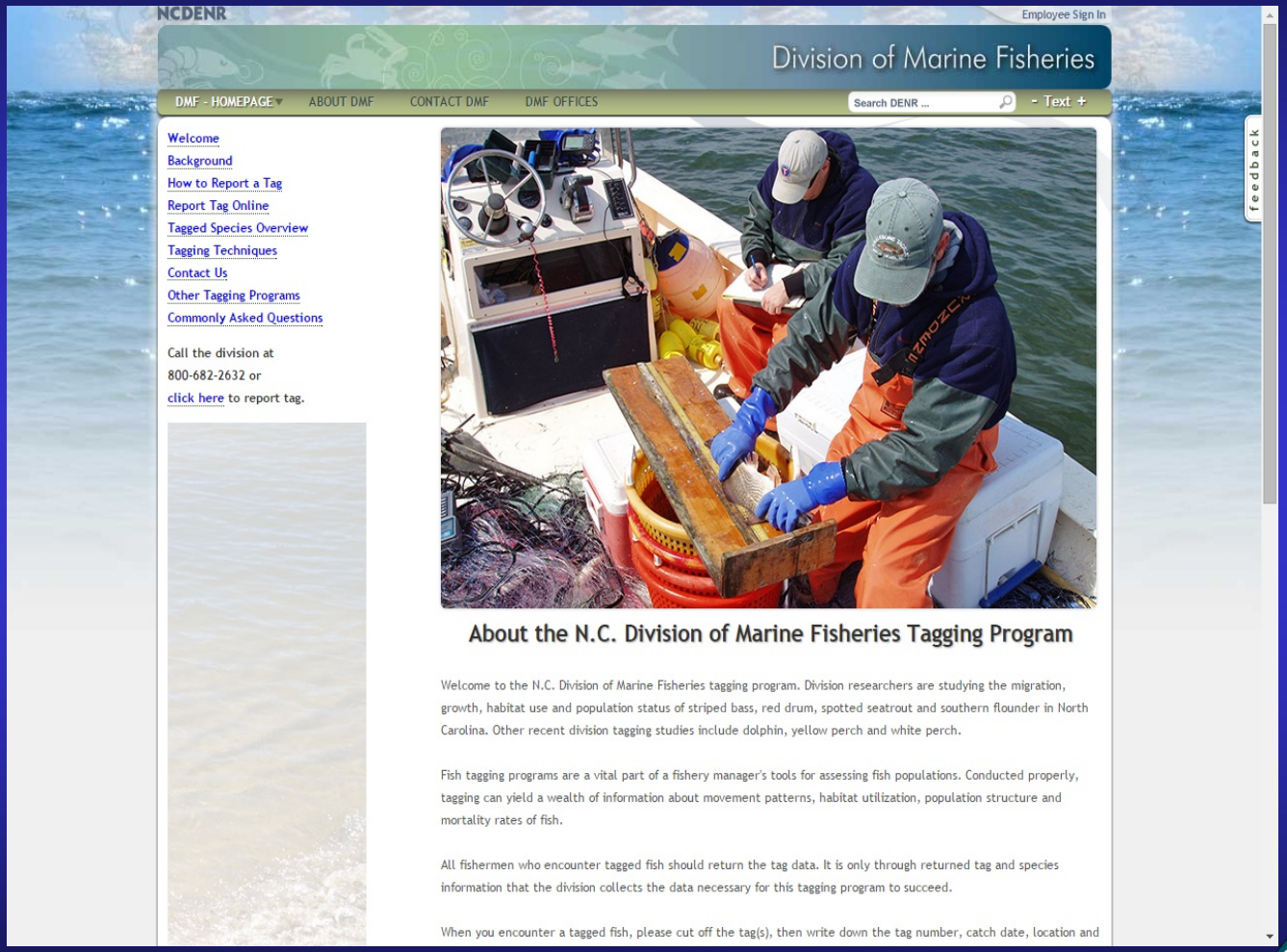
Information we wish to receive from a tag return

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

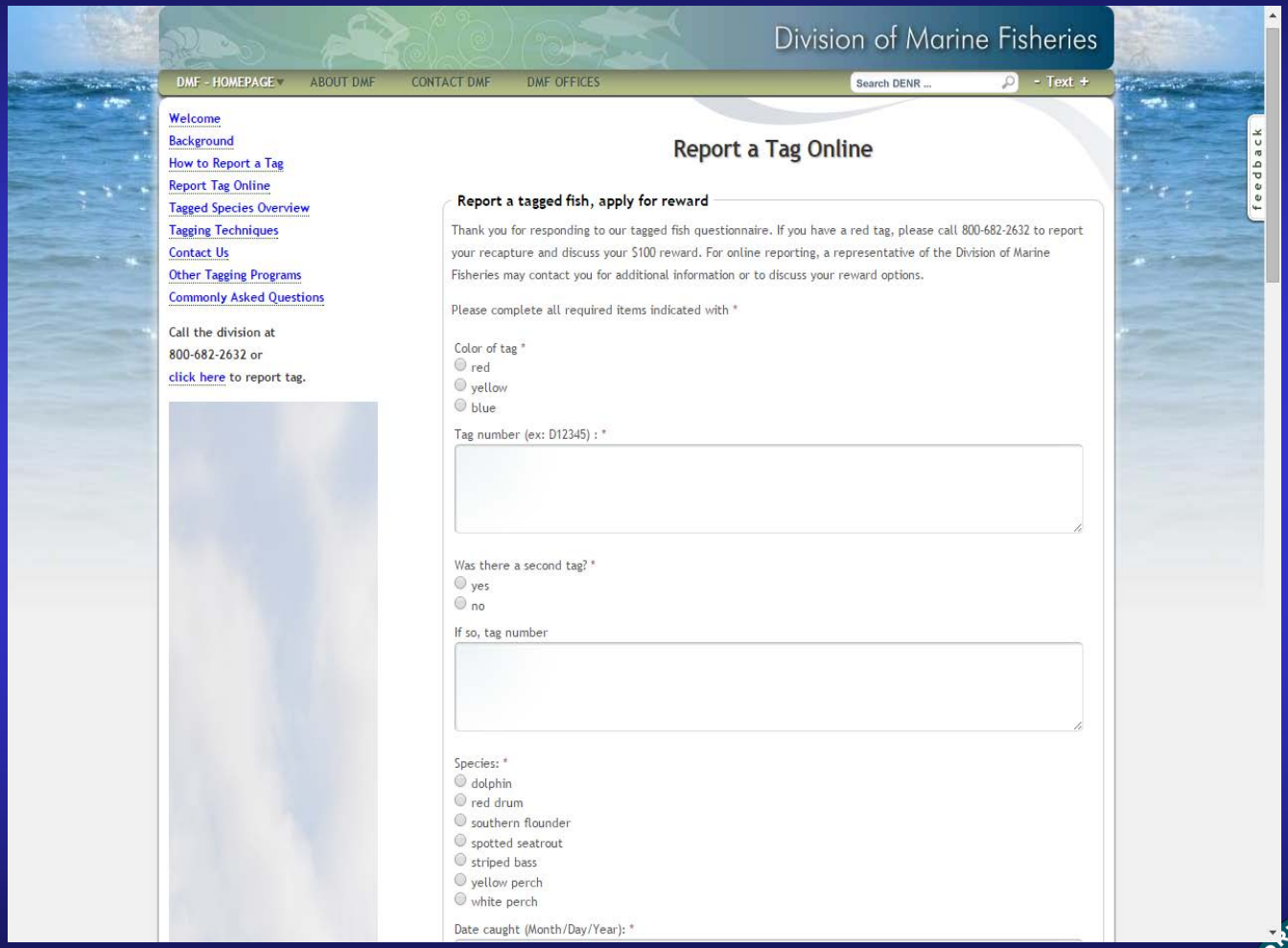
How to report a tag

- 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



Online Reporting Tool



Website and Contact Information

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

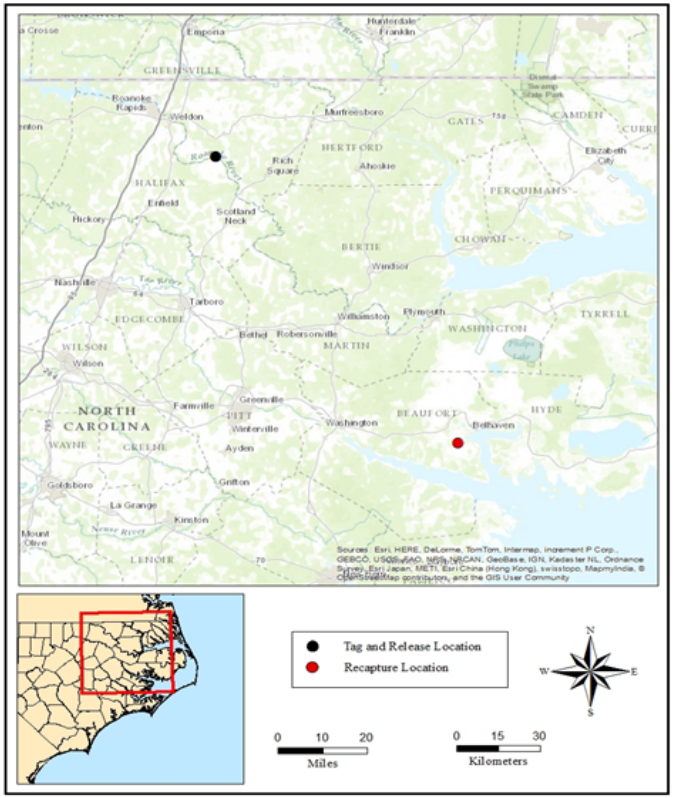
- tagrecap@ncdenr.gov

Reward

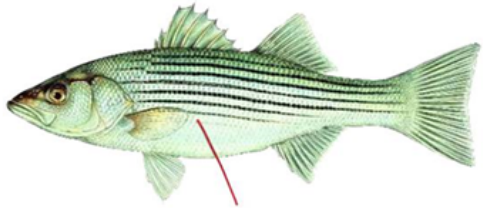
- After a return is processed each tag reporter will receive a letter, certificate and reward.
  - Date of tagging
  - Location of tagging and recapture
  - Length of fish at tagging
  - Days at large
  - Growth of fish since tagging
  - Distance from tagging to recapture site

State of North Carolina
Department of Environment and Natural Resources
Division of Marine Fisheries

Certificate of Recognition and Appreciation



Awarded to
JOHN Q. PUBLIC



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

	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

CUT OFF TAG $100 REWARD

Striped Bass

Spotted Seatrout

Red Drum

Southern Flounder

DO NOT CALL NCDMF CALL 800-682-2632

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

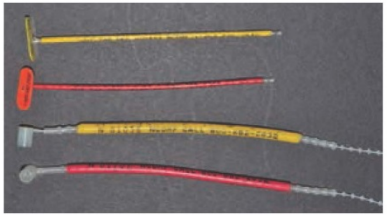
N.C. Division of Marine Fisheries Tagging Program

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.

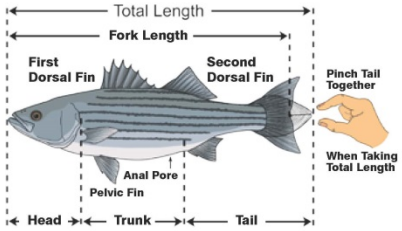


Anchor tags (top) and cinch-up tags (bottom) used in the study

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

NORTH CAROLINA MARINE FISHERIES

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:

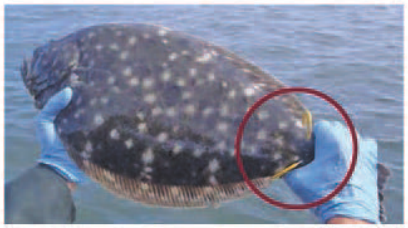
- Cut the tag off; don't pull it out. If releasing the fish, cut the tag as close to the body of the fish as possible.
- Record the tag information (just in case you misplace the tag before reporting).
- If the tag has algae growth, do not scrape the algae off. Let the tag soak in soapy warm water until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

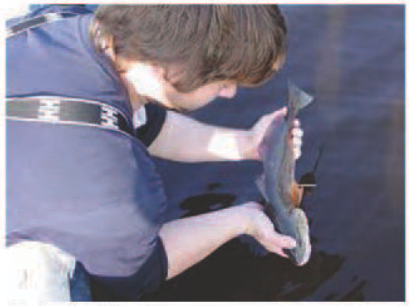
Be alert! Tags are designed to be as unobtrusive as possible, so they don't change the fish's behavior. That means that you might not see one if you're not looking.

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

NORTH CAROLINA MARINE FISHERIES

Public Outreach

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