Virginia Game Fish Tagging Program

Introduction and Overview

The Virginia Game Fish Tagging Program (VGFTP), in its eighth year during 2002, systematically trains and assists anglers in tagging a limited number of species important to Virginia’s marine recreational fishery and maintains the resulting tagging database. A cooperative project of the Virginia Marine Resources Commission (Virginia Saltwater Fishing Tournament) and Virginia Institute of Marine Science (VIMS), the program is primarily funded with revenues from Virginia’s saltwater recreational fishing license funds (Recreational Fishing Development Fund). Additional support for the program is provided by the Virginia Sea Grant Marine Advisory Program at VIMS.

The program’s overall goal is to develop and maintain a manageable group of trained and experienced angler taggers whose fishing frequency, fish handling expertise, and fishery conservation-management interests produce a useful tag-recapture database. Tagging effort is focused on key species typically not already tagged on a regular basis by research programs in Chesapeake Bay and nearshore Virginia waters and the database shared with fishery researchers, managers, and angling interests. Aimed at improving understanding of the dynamics of fish populations supporting Virginia’s marine recreational fisheries, data from the program have been used by VIMS, the Virginia Marine Resources Commission, the Atlantic States Marine Fisheries Commission, and the National Marine Fisheries Service.

Overall Benefits

There are a variety of benefits derived from the program.

(1) Documentation of local and regional patterns of fish movement and migration, i.e., contributing both new and updated information on seasonal movement patterns of fish.

(2) Collecting data which indicate consistent seasonal or even year-round use of certain areas and habitats by species over multi-year periods (possible over-wintering phenomena in the Bay, annual returns of fish to the same specific areas or bottom features, etc.).

(3) Providing tangible evidence to anglers of direct benefits resulting from releasing fish, i.e., recapture reports support both short-and long-term survival of released fish. Tag-recapture data show that released fish can be caught again on the same site over periods of days/weeks/months. Releasing undersized and spawning-size fish can result in the same fish returning to the area annually. A portion of deep hooked fish survive when released carefully, especially if leaders are cut and hooks not pulled out. Fish brought to the surface with distended swim bladders can survive when released properly (depends upon species and catch-release scenario).

(4) Alerting anglers, fishery researchers, and managers to angling situations possibly resulting in poor survival rates of fish required to be released by fishery regulations. Required by fishery managers to rebuild and stabilize fish stocks, minimum size and slot limits, plus bag limits, result in a high number (and wide size range) of fish released by marine anglers. For example, during 2002 approximately 65% of flounder caught in the Atlantic coast recreational fishery were released, and the release rate for the recreational striped bass fishery is generally 90-95% of fish brought to the boat (National Marine Fisheries Service MRFSS data). Particularly low tag
return rates from fish could indicate problems with survival rates of released fish. Release survival rates are species specific and impacted by a number of variables, including type of terminal tackle (hook style, bait versus lure fishing, single versus treble hooks, etc.). In addition, water temperature, fish capture depth (swim bladder problems), fish size, and fighting time-fish handling have highly variable impacts on released fish survival rates (Catch and Release in Marine Recreational Fisheries, American Fisheries Society Symposium No. 30, J. Lucy and A. Studholme, eds., 2002).

(5) Documenting the size distribution of fish typically released in marine recreational fisheries during defined timeframes and under changing fishing regulations. This information is required by fishery management plans and important to evaluating effectiveness of fishery management regulations. Recapture rates and length data on tagged-released fish from the VGFTP have been used by the Virginia Marine Resources Commission, Atlantic States Marine Fisheries Commission, the Mid-Atlantic Fishery Management Council, and the National Marine Fisheries Service (NMFS), often to enhance limited data for the Virginia area collected by NMFS MRFSS surveys.

Benefits from 2002 Data

During 2002, recapture data was particularly noteworthy for red drum, summer flounder, tautog, and cobia in terms of better defining how the species utilize Virginia waters.

- **Red Drum** - The staggered and often rapid movement of juvenile red drum from specific inlets and lower Bay areas during late August through September has been demonstrated by recaptures during various years. However, focusing tagging effort on the abundant numbers of fish available during 2002 provided more precise information about the species’ late summer-fall movement patterns. Lynnhaven Inlet produced especially useful data due to good numbers of fish being tagged there during discrete timeframes from late August to mid-September. Some fish moved rapidly to Carolina beaches, i.e., Corolla to Oregon Inlet or inside the sounds within 3-9 days. Some were recaptured even further south, i.e., Avon to Ocracoke within 5-19 days. A fish was also recaptured at Emerald Isle (near Morehead City) only 11 days after being tagged in Lynnhaven. Other drum tagged during the same period remained inside the inlet, some being recaptured after only 1-9 days and others over longer periods of 21-55 days (up to late October).

- **Summer Flounder** - After moving inshore to Bay and ocean inlet waters in spring, juvenile flounder in 2002 again demonstrated a high degree of site fidelity to a number of specific areas, especially in the lower Bay. Around structure sites like bridge-tunnel complexes, fishing piers, and rock jetties, recaptures of flounder tagged at such sites primarily occurred again at the sites during subsequent weeks and months. Combined with 2000-2001 data, 2002 results strongly support the pattern. Similarly, 2002 data provided good documentation that when moving offshore in fall to early winter, Virginia flounder disperse over a wide latitudinal area. Subsequent winter-spring recaptures occurred from New York to North Carolina (one recapture occurred at Myrtle Beach, SC). A number of flounder tagged in the Bay during 2001 were recaptured again in Virginia waters by anglers during 2002. These findings support and expand upon results of tagging research projects conducted by Dr. Jack Musick and his graduate students at VIMS during the late 1980’s to mid 1990’s.

- **Tautog** – The species demonstrates little seasonal inshore-offshore movement in Virginia, unlike the pattern in more northern waters (New York to Rhode Island). However, a few tagged individuals have been shown to move from lower Chesapeake Bay to offshore sites as well as in the reverse direction.
During 2002, a few recaptures illustrated both situations and some movement within the Bay as well as between sites offshore. However, the majority of 2002 returns showed no net movement of tautog. For example, of 28 recaptures of fish tagged from 1999-2001 on the Cape Henry Wreck (at the Bay mouth), 25 were caught again on the wreck (or very close by). Times at large ranged from about 4 months to 2.9 years with half being 7-12 months. Three fish showed movement, two being caught offshore and one in the Bay. A similar pattern of site fidelity was demonstrated at the Chesapeake Bay Bridge Tunnel (23 recaptures with only two showing movement) and offshore at the Chesapeake Light Tower Reef (22 recaptures all of which were fish tagged at the site 0.5-3.8 years earlier).

All 2002 recaptures occurred in Virginia waters, the pattern since the program began in 1995. To date there have only been two exceptions to this case. Two fish tagged in 1999 inside the lower Bay were recaptured at jetties during 2000, one at Oregon Inlet, NC and one at Ocean City Inlet, MD. In 2002 VGFTP’s eight years of data on tautog recapture rates and recapture locations helped support the VMRC and VIMS position accepted by ASMFC (Tautog Technical Committee) that Virginia’s tautog catch (almost totally a recreational fishery) did not warrant a proposed 29% reduction. This reduction was applied to more northern states where fishing mortality rates are traditionally higher.

- **Cobia** – Large fish, in Virginia waters during summer, migrate over colder months as far south as Florida. Two recaptures occurred in Florida during March-April 2002 of fish tagged in the lower Bay during summer 2000 and 2001. Cobia also continue showing strong evidence of returning to the Bay over periods of one to four years after release. Recaptures in 2002 occurred in the lower Bay for cobia tagged in the area during 1998, 1999, 2000, and 2001. The lower Bay is a documented spawning and nursery area for the species.

**Program Objectives**

The VGFTP strives to accomplish four specific objectives:

1. Develop a quality-oriented tagging program utilizing trained recreational anglers to enhance data collection aimed at meeting identified information needs on specific species of fish;

2. Maintain the tagging database such that the program is responsive to fishery management needs and capable of redirecting effort to take advantage of tagging opportunities provided when unanticipated large year classes of key species become available to the recreational fishery;

3. Educate anglers about the need, benefits, limitations, and operation of tagging programs and other information gathering efforts directed toward saltwater finfish, including the proper methods for reporting the recapture of tagged fish and how such information can be used by researchers and fishery managers;

4. Reinforce efforts to educate anglers about the benefits and proper techniques for catching, handling, releasing, and tagging fish to enhance further development of a strong fishing conservation ethic in the marine angling community.
**Program Operations**

The VGFTP currently limits participation to less than 200 anglers and requires attendance at a minimum of one tagging training session before a participant receives tags and tagging equipment. This provides the program directors an opportunity to interact with all program participants to help assure the quality of their tagging efforts. As in recent years, approximately 150 anglers were enrolled in the program during 2002.

Registration is on an annual basis, beginning in December. Anglers in the program are requested to renew their registration each year to continue receiving tags. During February-March 2002, training workshops for new taggers were held in Virginia Beach, Newport News, Wachapreague (VIMS Eastern Shore Lab), and Gloucester Point (VIMS main campus). Instruction and discussion of proper fish handling techniques, tagging techniques, procedures for the accurate and efficient reporting of tag events, and the goals and philosophy of the VGFTP were featured at these sessions. Many experienced anglers, while not required to repeat the workshops, also attended the training sessions, contributing valuable suggestions on problems new taggers may encounter under various fishing conditions and while measuring and tagging certain species. Such discussions are also valuable to the program coordinators, resulting in year-to-year improvements in training information and data reporting procedures.

Receiving tagging equipment and going through tagging instruction handouts, anglers also practiced inserting tags in freshly killed and iced fish. The practice element of the training program clarifies questions about proper tagging technique, reinforces proper fish handling, and allows anglers the chance to develop a feel for the tagging process while under supervision. Mistakes in tag placement and improper anchoring of tags, common occurrences during practice tagging, provide an excellent learning situation through which anglers immediately benefit from their mistakes and gain confidence in their skills.

After hand’s-on training, taggers are provided T-Bar anchor tags (Hallprint® Pty. Ltd., South Australia) and a tagging gun featuring a removable stainless steel tagging needle (Dennison Mark III Swiftdacker Pistol Grip Tool®). For large specimens of cobia, red drum, and black drum, rather than the T-bar tag, the program is now using a Hallprint stainless steel dart tag (sheath approximately 5.5 inches long; color-orange). The dart head is attached to the tag sheath with stainless wire. Much more visible on larger fish than the slender T-bar tag, the steel dart tag has demonstrated a high retention rate in large red drum in North Carolina. The two tags and their associated tagging applicators are shown in Figure 1.

![Figure 1. Tagging gun and T-Bar tags and stainless steel dart tag and applicator](Note: coin for scale - 0.75 inches diameter).
Tag Retention Documentation

It is important to check tag retention rates in targeted species since significant tag losses negatively impact recapture rates. Also, depending upon the tag and the species, tagging fish, especially small individuals, may result in a significant level of post-tagging release mortality. Compared to immediately releasing a hooked fish, the tagging procedure naturally results in slightly longer fish handling time and added stress from inserting the tag into the fish’s musculature. Both issues should be evaluated whenever possible by holding samples of tagged fish for observation.

Tag retention trials have been carried out on most program species. Species yet to be tested are spadefish, black sea bass, gray triggerfish, and sheepshead, however multiple (double) recaptures of each species over periods of weeks to months indicate that T-bar tags work well in the fish. Most often tagging trials involve holding fish in the field for 3-7 day observation periods using net pens or submerged cages. On occasion, we have had the opportunity to hold tagged fish in large, flow-through tank systems for periods of a week to several months.

In the latter case, double-tagging trials demonstrated the T-Bar anchor tag had the higher retention rate compared to single barb plastic-tipped dart tags in juvenile tautog and weakfish (gray trout). Recaptures of double tagged tautog in the field also showed a higher retention rate for T-bar tags. With spotted seatrout, however, a tank trial resulted in no loss of either tag type over a 7-10 day period. But as the case with tautog and gray trout, single barb dart tags would often remain more loosely anchored in fish compared to the T-bar tags, i.e., fish tissue had not healed firmly around the dart tag anchor barb.

Work at VIMS involving the capture and spawning of adult cobia in large re-circulating tanks provided opportunities to test retention of T-bar tags both in large fish and juvenile fish. Fish sizes and holding times in VIMS aquaculture facilities were: 125 juvenile fish (17-20 inches TL, held 30 days; 1 tag lost), 10 smaller juveniles (tagged at 12 inches TL, held 2 years; no tags lost); and 10 large adults (tagged at 40-50 lbs., held 7-8 months; no tags lost) (M. Oesterling, VIMS, personal communication).

Submerged cage studies for periods of 3-7 days with tautog, summer flounder, spotted seatrout, and juvenile red drum have also shown the T-bar tag to be retained in all fish. No tagging mortality has been observed in any species. These results, plus the very small tag entry wound resulting from using the tagging gun, convinced program coordinators to use the T-bar tag as the principal tag for smaller size fish (approximately 10-25 inches TL).

Targeted Species

Species must meet certain broad criteria to be included in the program. First, they contribute significantly to Virginia’s recreational fisheries. Second, gaps exist in the scientific data available on the species regarding how “Virginia’s” populations of these species interact with, and impact upon, the overall populations of which they are a component. Third, selected species are not included in other major tagging efforts in this region. Fourth, tagging studies can provide insight into aspects of the species’ life history. Examples of such life history parameters include local and regional movement patterns of young as well as sexually mature fish, documentation of species’ utilization of specific types of habitat to include substrate and water areas, limited growth data, and insight into survival rates of released fish.
In 2002 no changes occurred in species targeted by the program.

**Target Species-2002**

- Black Drum (*Pogonias cromis*)
- Black Sea Bass (*Centropristis striata*)
- Cobia (*Rachycentron canadum*)
- Flounder (fluke) (*Paralichthys dentatus*)
- Gray Triggerfish (*Balistes capriscus*)
- Red Drum (*Sciaenops ocellatus*)
- Sheepshead (*Archosargus probatocephalus*)
- Spadefish (*Chaetodipterus faber*)
- Speckled Trout (*Cynoscion nebulosus*)
- Tautog (*Tautoga onitis*)

**Angler Tagging & Fish Recapture Achievements**

Volunteers participating in the VGFTP who tag significant numbers of fish receive special recognition. Participants tagging a minimum of 25 fish are awarded Conservation Certificates (Table 1). For the year 2002, 69 taggers received certificates. Comparable to 2001 (70 taggers), approximately half of the program’s participants again tagged at a level warranting this special recognition. During 2000 conservation certificates were awarded 55 participants.

**Top Tagger for 2002 — Rob Holtz**

Tagging 952 fish during the year, Mr. Holtz’s impressive effort, while spread across the majority of the program’s targeted species (Table 1), focused particularly on juvenile red drum (puppy drum) and speckled trout. He was the top tagger for both species, tagging 646 and 247 fish, respectively (Table 2).

His efforts on puppy drum in Lynnhaven provided some of the program’s best information to date on the episodic movement of these fish out of the Bay. A number of Holtz’s Lynnhaven drum were recaptured along the beaches from Corolla to Oregon Inlet, NC only 3-9 days after being tagged. Others were recaptured further south (Avon to Ocracoke) after only 5-19 days, including one recaptured at Emerald Isle (near Morehead City) 11 days after being tagged in Lynnhaven. The short recapture times show how quickly the fish can cover the distances involved. More importantly, the short recapture times helped define distinctive timeframes in which portions of Lynnhaven’s puppy drum migrated south. The periodic departure of such fish occurred while other drum, tagged in the area at similar times, remained inside the inlet well into September and October (for periods of 20-50 days after tagging).

Mr. Holtz also tagged significant numbers of speckled trout in Lynnhaven and Rudee. In spite of the species’ continued low recapture reporting rate (3%), several fish were reported from North Carolina waters. Two of Mr. Holtz’s Lynnhaven specks (tagged October 27) were recaptured along Hatteras Island beaches in November only 13 and 28 days after being tagged. And a trout tagged (J. Lucy) inside Rudee (10/19/02) was recaptured at the Nags Head Fishing Pier only 9 days later. Mr. Holtz also had four recaptures of speckled trout tagged at the Elizabeth River Hot Ditch, all taken again in the Ditch after periods of 16-91 days at large (DAL) (see Speckled Trout in the “Recaptures by Species” section and the Appendix).
Outstanding tagging efforts were also made by a number of other program members. Congratulations go to each of the Top Taggers by Species (Table 2), all of whom worked especially hard to tag significant numbers of fish.

Flounder-Special Tagging Effort

Flounder topped all tagging effort in 2002, as in 2000-2001, providing particularly useful data. Top flounder tagger, Gil Rigo wisely utilized the opportunity provided by fishing with a close community of regulars on the Buckroe Fishing Pier. Important as his tagging high numbers of fish (438 flounder), he instilled in the pier anglers the importance of recording/reporting tag numbers on recaptured flounder and releasing the fish again with their tags in place. This produced valuable multiple recapture data for a number of fish, most showing strong site fidelity for the pier during summer, i.e., being recaptured 2-3 times at the pier over periods of 30-105 DAL. The program owes a special “Thank You!” to the Buckroe Pier operators and anglers for their tag-recapture work. Mr. Rigo also received the 2002 award for Most Recaptures (Table 2).

Coming close to matching Mr. Rigo’s flounder tagging accomplishments (Table 1) were Scott Vinson (380 flounder, primarily at the Kiptopeke State Park Pier and Willoughby Spit Jetty) and Mike Handforth (376 flounder, primarily tagged around Chincoteague). Special effort was also made by anglers tagging 100-200 flounder, i.e., Rick Guyot, Dorothy Elliott, W. T. Nottingham, Mike Perron, Chad Stoker, and Horace Mauney. Anglers tagging 50-99 flounder during the year included David Agee, P. Archer, Dave Barbee, Greg Edinger, Gerald Head, Tom Heinz, C. Hester, and Sonny Spiers (Table 1).

A special thanks goes to these individuals, as well to all anglers tagging flounder. The effort produced one of the best annual tag-recapture data sets to date. Equally important, program coordinators and its taggers wish to thank the hundreds of anglers who reported recaptured flounder, as well as other species. The program can only produce useful information with taggers and the angling community working together as a team.

Valuable of Multiple Recaptures

The VGFTP is especially grateful to those taggers, and many other anglers, who made special efforts to carefully record tag numbers and release their flounder again with the tag still in the fish. Their diligence made it possible to acquire multiple recapture times and locations for significant numbers of fish. Multiple recapture data uniquely do the following: (1) Provide the best hard evidence in conventional tagging programs for pinning down patterns of site fidelity to structure sites or other areas when combined with a strong set of single recapture records; (2) Increase understanding of the resiliency of species to catch and release practices, the tagging process, and multiple captures of typically undersized fish (especially known to occur with structure-oriented fish but for which little data exist on marine species).

Red Drum Tagging

In addition to Rob Holtz, top tagger for red drum during the year, other taggers made major contributions on this species. In particular, Dennis Cline tagged a good number of larger fish (> 30 inches TL) along the Eastern Shore barrier island beaches, plus numbers of puppy drum (233 red drum total). Dr. Jim Wright also tagged 245 puppy drum. Other anglers also greatly assisted the VGFTP in taking advantage of the strong run of puppy drum to accomplish significant tagging. Anglers tagging 100-200 drum included Scott Vinson, Rick Guyot, Al Bunnell, Ron Hughes, Bill Perron, and Gil Rigo (see Table 1 for individual totals).
As in the case of flounder, special thanks goes to these individuals, as well to all anglers tagging red drum. The effort produced one of the best tag-recapture data sets to date for the species.

**Outstanding Overall Tagging Effort**

Several anglers tagged over 600-700 individual fish. Rick Guyot tagged 711 fish, tagging every species targeted by the program (Table 1). In addition to high numbers of red drum and flounder, he focused special effort on black sea bass, tautog, spadefish, and black drum, being the year’s top tagger for black drum (Table 2). Gil Rigo tagged 621 fish total, his efforts on red drum and flounder accounting for over 560 fish. He tagged all targeted species except sheepshead. Scott Vinson tagged 595 fish, followed by Mike Perron (523), Robert Collins (422), and Dr. Jim Wright (406).

Mike Perron was top tagger for black sea bass (223) and tautog (77). Robert Collins led the year for spadefish (85) and gray triggerfish (24). Dave Barbee tagged the most cobia (14), and Ken Neill, III took the top tagging award for sheephead (5). Special congratulations go out to all the top taggers (Table 2) for their work during the year!

Over 300 fish were tagged by Chad Stoker and Mike Handforth, and over 200 fish by Dennis Cline, W.T. Nottingham, Bill Perron, and Tim Capoldo. Tagging nearly 100 or more fish were David Agee, P. Archer, Dave Barbee (also top cobia tagger), Al Bunnell, C. T. Cowling, Greg Edinger, Dorothy Elliott, Gerald Head, Ron Hughes, Horace Mauney, Al Paschall, Wayne Seymour, Barclay Shepard, and Sonny Spiers (Table 1).

The program wants to especially thank the referenced anglers for their extraordinary tagging efforts. Many anglers also tagged 25-99 fish overall during 2002 (Table 1). Their cumulative efforts were also very important to the program and are much appreciated.

**Outstanding Recapture Results**

As indicated, the program strives to recognize anglers producing significant numbers of recaptured fish. The focus is to recognize quality tagging since proper, consistent tagging effort is critical to producing good numbers of recaptured fish. As previously mentioned, Gil Rigo had the most tagged fish recaptured during the year (Table 2). In addition, anglers having 7 or more tagged fish recaptured during the year are listed in Table 3.

Anglers reporting the capture of tagged fish are equally as important to the tagging program as those tagging fish, since without such reporting the program would have little data. As a token of appreciation to fishermen returning information on recaptures of tagged fish these special individuals are presented with a program cap, or a fish pin (specific to the species reported).

**Tag and Recapture Data - 2002 Overview**

The program’s volunteers tagged and released just over 10,600 fish during 2002, down slightly from the previous year’s effort (about 11,450 fish). Since its start in 1995, the program has been responsible for a total of over 56,700 fish tagged and released by trained Virginia anglers.
Tagging Effort Summary

Flounder, accounting for one third of the year’s tagged fish, continued to lead the overall tagging effort in 2002 (Figure 2). However, while still the species leader for the second consecutive year, absolute numbers of tagged flounder (3,509) declined to almost half the number tagged in 2001. On the other hand, the unusual abundance of puppy drum (fish 11-17 inches TL) occurring in local waters during 2002 provided the opportunity for program anglers to tag 2,727 drum, nearly ten times the number tagged the previous year and better than twice the effort recorded in either 1999 or 2000.

Similarly, a strong class of one-year old speckled trout resulted in over 1,200 being tagged and released during the year, better than twice the effort of any previous year. Anglers assisting VIMS release mortality trials on trout in Rudee Inlet during October- November 2002 also enhanced the number of tagged trout released. With hook-release mortality rates of lure-caught fish being low (averaging 3.5%; N= 282 fish), the majority of fish caught, tagged, and held in submerged cages for 3-4 days (short-term mortality assessments) were released in good condition. As was the case with similar trials in Rudee the previous year, no losses of T-bar tags were observed among the fish during the nine mortality trials. Finally, gray triggerfish and sheepshead also experienced slight tagging increases in 2002.

Compared to 2001, however, tagging for other major species was down (Figure 2). Tagged fish numbers declined particularly for black drum (188, less than half of 2001’s effort). Numbers of tagged fish in 2002 also declined for tautog (653 versus 920), spadefish (470 versus 565), and cobia (63 versus 88).

Examining the pattern of cumulative tagging effort for 1995-2002 (Figure 3), flounder ranks as the top species even though only included in the program since 2000. This is in large part due to good year classes of sub-legal flounder being allowed to recruit to the fishery under tightening management efforts. Black sea bass, gray trout (ceased tagging in 1999), tautog, and red drum, in that order, make up the other tagged fish leaders for the program. It must be remembered that relative abundance of a given species, changes in legal size limits, and changes in anglers’ interests and opportunities to fish over the course of the program all interact to influence the broader tagging pattern.

Recapture Data Overview

For all targeted species just under 1,040 recaptures were reported during 2002, down slightly from nearly 1,160 reported the previous year. As with the pattern for numbers of fish tagged, flounder (331 recaptures) led all species in 2002 (Figure 4; Table 4). Following flounder, good numbers of recaptures also occurred for black sea bass (237), red drum (191), tautog (139), and spadefish (64), with other species accounting for fewer reports.

With flounder having been tagged since 2000, it now accounts for over 1,100 recaptures (Table 4). Therefore in recaptures it now ranks third behind black sea bass (1,728 recaptures) and tautog (1,244 recaptures). The three species’ totals include multiple recaptures. For example, in 2002 black sea bass accounted for 15 double recaptures and 3 triple recaptures and tautog had 4 double recaptures. Flounder multiple recaptures were even higher, i.e., 21 double, 5 triple and 2 quadruple recaptures.

As previously referenced with regards to flounder, the special effort by some anglers and taggers to write down tag numbers and re-release fish with their tags in place is providing the program with particularly useful information on species’ temporal use of wrecks, artificial reefs, bridge-tunnel complexes, fishing piers, and other
sites. This practice continues to be encouraged. Multiple recaptures of individual fish best define site fidelity patterns which may exist for a given species. They also provide insight into the hardiness of a species under catch and release situations, a regulated component of nearly every key coastal and offshore recreational fishery.

For the program overall, the cumulative recapture reporting rate for the eight-year span of the program (1995-2002) was 9.7% (Table 4). Across species (Figure 5), speckled trout continued to experience the lowest recapture rate (3%) with tautog (17%), black sea bass (16%), and cobia (16%) continuing to rank at the top. Flounder, red drum, sheepshead, and spadefish continued to experience recapture rates of 9-11%. Red drum dropped from a 13% recapture rate the previous year to 11% in 2002. Gray triggerfish were not included in Figure 5. Its recapture rate during the year was unusual, being over twice that of either tautog, black sea bass, or cobia.

An increased tagging effort during 2002 on gray triggerfish, a species typically associated with spadefish around structure, contributed to a very high number of recaptures of the fish. From 56 fish tagged during the year, 23 recaptures occurred (41% recapture rate); however, included in the total were four fish with double recaptures. Excluding the double recaptures, there were still 19 of 56 tagged fish recaptured during the year (34% recapture rate). The cumulative recapture rate for the two years during which the species has been tagged was 36% (Table 4).

2002 Recapture Results by Species: Overview and Examples

Notes:

Fish Lengths: All fish lengths indicated are for total length (TL) in inches (taggers are instructed to always measure total length (or estimate it in the case of large, hard-to-handle fish, i.e., cobia). Lengths of recaptured fish are also total lengths, and may be measured or sometimes estimated.

DAL = Days fish at large from date of tagging to date of recapture; if DAL is 0, fish recaptured same day as first tagged.

Referring to examples described in species’ sections, and recapture records in the Appendix, if a fish was captured more than once, DAL data indicated for the second recapture, etc. represent “total days since the fish was first tagged.”

Also in the tag-recapture examples included in the species’ sections credit is given to the tagger. In examples where the fish was released again with its tag, effort was made to credit the angler (s) making this extra effort. By doing so, they provided the opportunity for obtaining additional multiple recapture data on a given fish.

In the Appendix multiple recapture records occur together (2 records, 3 records, etc.) and are printed in **bold-italics**. However, note that sorting the records for printing in the appendix sometimes does not result in the recapture records always being listed in ascending order by recapture dates.

Occasionally for some tag-recapture events listed as noteworthy examples in a species section (primarily for Red Drum), estimated minimum “straight-line distances” between the tagging and recapture sites in question are provided. This is only an approximation of the absolute minimum distance the fish would have had to cover, not how far it actually might have moved during the time interval between being tagged and recaptured. The
distances (statute miles) were estimated using Chartview© software (Nautical Software, Inc, Oregon). The authors thought such estimates would be of interest when documented movement occurred over significant distances during short time periods. The first example is in the “Movement” section under Black Drum, i.e., (est. distance 142 mi.).

**Black Drum**

Recaptures of drum increased somewhat compared to previous years. Most recaptures were juvenile fish (10-18 inches TL) tagged in 2002, with relatively short times at large. However, two recaptures occurred in North Carolina waters from fish tagged in 2001 at the Cape Henry Wreck and the Virginia Beach surf.

**Multiple Recapture-Hot Ditch**

-Four recaptures of fish tagged 1/11/02 (R. Holtz) in the Elizabeth River Hot Ditch; recaptured again the same day, then on 1/25, 1/27, and 2/8 (0, 14, 16, and 28 DAL).

**Movement**

**Rapid movement to North Carolina**

-Fish tagged 10/26/02 (G. Rigo) at the Buckroe Pier was recaptured 10/31 at Cape Point, NC (only 5 DAL) (est. distance 142 miles).

**Long-term Movement to North Carolina 2001–2002**

Two longer-term recaptures of small drum occurred in North Carolina waters.

-Fish tagged 10/31/01 (G. Edinger) at the Cape Henry Wreck was recaptured in Croatan Sound 3/13/02 (133 DAL).

-Fish tagged 9/21/01 in the Virginia Beach surf (R. Holtz) was recaptured almost a year later in Albemarle Sound (8/31/02; 344 DAL).

**Short-term Virginia Recaptures**

Other drum tagged during 2002 were recaptured over periods of 10-50 DAL, largely in the same areas they were tagged.

-Fish tagged 9/13/02 in Rudee Inlet (R. Collins) was recaptured again inside the inlet on 11/2 (50 DAL).

-Two fish tagged 9/7/02 on the Occohannock Artificial Reef (G. Reiger) were recaptured again at the site on 9/18 and 9/22 (11 and 15 DAL).

-Fish tagged 9/23/02 (M. Bull) in Metompkin Inlet was recaptured again in the inlet on 10/3 (10 DAL).

-Fish (23 inches TL) tagged 5/27/02 (R. Guyot) at the Hampton Roads Bridge Tunnel was captured again at the Tunnel complex 6/23 (27 DAL).
Black Sea Bass

Compared to 2001, the number of black sea bass tagged during the year declined significantly (down over 1,100 fish), and recaptures also continued their downward trend. However, cumulative recapture rates continued to hold steady at 16 %, the case for the past four years (see Figures 2, 4 and 5). Releases were generally undersized fish (8-11 inches TL).

Once small sea bass are tagged on a structure site, fishing pressure results in a good chance that the fish may be recaptured again before the year ends. Given that sea bass swim bladders typically expand when fish are brought to the boat in offshore waters, anglers might assume that a good portion of small fish do not survive being released. However, research in South Carolina (Mark Collins and other researchers, 1999, SC Dept. of Natural Resources, Charleston; reference: North American Journal of Fisheries Management 19:828-832, 1999) showed that survival rates were 85-88 % for released sea bass caught on hook and line from depths of 66-115 feet. The resiliency of released sea bass to angling stress is also indicated by the tagging program’s record of multiple recaptures of a portion of tagged fish, i.e., 28 events in 2000, 29 in 2001, and 18 in 2002.

Recaptures indicate that many smaller fish return to the same sites occupied during prior years. Offshore, especially during years with mild winters, some sea bass could over winter on certain wrecks. Some of the more interesting sea bass recaptures for 2002 follow, largely documenting the strong pattern of site fidelity to key structure sites in local waters. However, some instances of significant movement were also documented, i.e., north-south movement between offshore sites, from the Bay to offshore areas, and from offshore sites into the lower Bay.

Significant Latitudinal Movement

-Fish (10 inches TL) tagged 11/4/00 (D. Barbee) in the lower Bay at the 38 A Buoy (Cherrystone Reef area) recaptured 10/24/02 (719 DAL) off the mouth of Delaware Bay (near DE Light Ship, about 20 miles offshore).

4A Buoy Dry Dock Wreck (52 recaptures, including 4 multiple events)

Within Season Site Fidelity-Multiple Recaptures

-Fish tagged 6/1/02 (M. Perron) recaptured twice again at the site, on 7/20 (49 DAL) and 8/3/02 (63 DAL); released again with its tag (R. Cameron).

-Fish tagged 8/16/02 (E. Diggs) recaptured twice again at the site, on 9/2 (17 DAL) and 10/5 (50 DAL); released again with its tag (E. Hellmann).

-Triple recapture of fish tagged 7/28/02 (R. Collins); recaptured on 8/3, 8/11, and 8/18 (6, 14, and 21 DAL).

Year to Year Site Fidelity

Multiple recaptures

-Fish tagged 5/28/01 (M Kucharzczk) recaptured again at the site 6/23/02 and 6/30/02 (391 and 398 DAL); released again with its tag (M. Perron).
-Fish tagged 10/23/01 (W. Beard) was recaptured at the site on 7/20/02 and 8/3/02 (270 and 284 DAL).

**Single recaptures**

- Four fish tagged 10/23/01 (W. Beard) were recaptured again at the site, one each on 5/24 (213 DAL), 5/31 (220 DAL), 7/20 (270 DAL), and 8/3 (284 DAL).

- Eight fish tagged 5/6/02 (A. Paschall) were recaptured again at the site on 5/27/02 (3 fish-21 DAL), 5/31 (1 fish-25 DAL), 6/23 (1 fish-48 DAL), 6/30 (2 fish after 55 DAL), and on 9/21 (1 fish-138 DAL).

- Seven fish tagged 6/30/02 (M. Perron) were recaptured 7/6 (1 fish-6 DAL), 7/20 (1 fish-20 DAL, and 8/1-3 (5 fish: 32-34 DAL).

**Movement from 4A Buoy Dry Dock Wreck**

- Fish tagged 9/2/00 (T. Capoldo) recaptured further offshore on 10/4/02 at the Chenango Wreck (on the Cigar about 50 miles off Virginia Beach) (762 DAL).

- Fish tagged 9/21/01 (M. Perron) recaptured inside the lower Bay at the Kiptopeke State Park Pier (260 DAL).

- Fish tagged 6/30/02 (M. Perron) moved south about 20 miles, recaptured at the R”6” Buoy off Duck, NC (32 DAL).

**Chesapeake Light Tower Reef** (82 recaptures, including 5 multiple recaptures)

**Year to Year Site Fidelity**

**Multiple recaptures**

- Fish tagged 9/8/01 (M. Perron); recaptured again at the site in 2002 on 7/17 and 7/18 (312 and 313 DAL).

- Fish tagged 10/20/01 (T. Capoldo); recaptured at the site in 2002 on 8/2 and 8/8 (286 and 292 DAL); released again with its tag (R. Metcalf, C. Spinks).

- Four recaptures of same fish tagged 10/20/01 (T. Capoldo); recaptured at the site in 2002 on 3/23 (154 DAL), 5/27 (219 DAL), 6/16 (239 DAL), and 7/20 (273 DAL); released again with its tag (J. Kinlow, T. Capoldo, D. Lightfoot, J Bausone).

- Fish tagged 3/1/02 (M. Perron) and recaptured at the site on 6/24 (115 DAL) and 7/18 (139 DAL).

- Fish tagged 4/6/02 (R. Burnley) and recaptured at the site on 5/10 (34 DAL) and 7/18 (103 DAL).

**Single recaptures-Site Fidelity and Movement**

- Fish tagged 10/14/00 (T. Capoldo) was recaptured again on the site 10/2/02 (718 DAL).
Sixteen fish tagged 10/20/01 (T. Capoldo); all but three fish were recaptured again on the site in 2002 (1/27-10/5/02) after periods of 99-357 DAL; two fish moved inshore to the Cape Henry Wreck (each recaptured 6/25/02 after 248 DAL); one moved only slightly inshore to the Santore Wreck (6/16/02-239 DAL).

Fifteen fish tagged 11/23-11/28/01 (T. Capoldo, B. Petrauskas, B. Perron, R. Burnley); all but 3 fish were recaptured again on the site in 2002 from 1/29-11/24 (66-365 DAL); Movement from the site: (1) fish tagged 11/23/01 recaptured further offshore at the Fingers on 4/16/02 (144 DAL); (2) fish tagged 11/28/01 recaptured further offshore on the Morgan Wreck (Triangle Wrecks Reef) on 1/12/02 (45 DAL); (3) fish tagged 11/28/01 moved offshore and northward, recaptured off Chincoteague (30-50 fathoms) 9/18/02 (294 DAL).

Additional Movement from Light Tower Reef

Fish tagged 5/15/01 (R. Phipps) moved offshore, recaptured at The Fingers on 5/10/02 (360 DAL).

Fish tagged 3/8/02 (R. Guyot) recaptured further offshore on the Triangle Wrecks Reef 9/19/02 (195 DAL).

Back River Artificial Reef

Within season site fidelity patterns were also observed during 2002 for the Back River Artificial Reef (of 16 fish tagged 8/7-10/2/02, 15 were recaptured again on the site 9/2-10/23/02; 7-50 DAL).

Multiple recapture

Fish tagged 8/16/02 (E. Diggs) recaptured on the site 9/2 (17 DAL) and 10/5 (50 DAL); released with its tag (E. Diggs, E. Hellmann).

Movement out of Chesapeake Bay

Fish tagged 10/2/02 (E. Diggs) was recaptured offshore at the Triangle Wrecks Reef area (30 miles off the mouth of the Bay) on 11/19/02 (48 DAL).

Hampton Roads Bridge Tunnel (HRBT)

Recaptures of flounder tagged at the HRBT during 2002 all occurred at the site again within 0-43 days. There were four double recaptures and one triple recapture of fish tagged August-September 2002. A fish tagged at the site in 2001 was recaptured offshore in 2002.

Movement out of Chesapeake Bay

Fish tagged 8/31/01 (C. Stoker) was recaptured offshore at the Chesapeake Light Tower Reef 6/29/02 (280 DAL).

Multiple Recaptures-Site Fidelity 2002

Two fish tagged 8/31/02 (R. Guyot) were both recaptured multiple times; fish (8 inches TL) was caught 9/15 (15 DAL) and again at the site 9/29 (29 DAL); fish (7 inches TL) was recaptured at the site 9/29 (29 DAL), and twice on 10/13 (43 DAL); both fish were released again with their tags (C. Stoker).
-Fish tagged 9/14/02 (R. Guyot) recaptured at the site 9/15 (1 DAL) and again 9/29 (15 DAL); released with its tag (R. Guyot).

-Fish tagged 9/21/02 (C. Stoker) recaptured at the site 9/29 (8 DAL) and again 10/5 (14 DAL); released with its tag (R. Guyot).

-Fish tagged 9/29/02 (C. Stoker) recaptured at the site 10/13 (14 DAL) and again 10/20 (21 DAL); released with its tag (R. Guyot).

Other Tagging Sites-Black Sea Bass Movement

-Fish tagged 10/25/01 (R. Giannini) at the Concrete Ships (just off Kiptotpeake State Park) recaptured offshore at the Fingers (4/16/02-173 DAL).

-Fish tagged 3/25/00 (J. Dail) at the Cuyahoga Wreck (Triangle Artificial Reef) was recaptured to the south off the False Cape-Corolla-Duck, NC area (4/1/02-737 DAL).

Cobia

During 2002, 14 cobia were recaptured (35-47 inches TL when tagged). Three had been tagged in 1998-99, two in 2000, and four in 2001. As in past years, recaptures largely documented the periodic return of sexually mature cobia to the Bay (Figure 6).

However, two fish tagged at Latimer Shoal in the lower Bay, one during 2000 (at 34 inch TL) and one in 2001 (at 45 inches TL), were recaptured during March-April 2002 along Florida’s east coast (St. Augustine and Melbourne, FL). The VGFTP now has three cobia recapture records from Florida, the first report being a recapture off Jacksonville, FL Blackmar’s Reef) in late April 1999 (316 DAL). This fish was 40 inches TL when tagged during June 1998 (C. Brown) in lower Chesapeake Bay (Inner Middle Ground Shoal).

Fish tagged 1998-99

-Two fish (41 and 26 inches TL), tagged 6/20/98 and 6/27/98 (J. Santti and B. Noel, respectively), at inner Middle Ground Shoal and the Chesapeake Bay Bridge Tunnel (12 Mile Post) were recaptured back in the Bay; one was caught at the Cabbage Patch (7/18/02-1,489 days/4.1 years at large) and released again (est. at 50 inches TL) with a new tag (F. Brady); the other was caught at the Inner Middle Ground Shoal (6/27/02-1,461 days/4.0 years at large).

-Fish (est. 35 inches TL) tagged 7/19/99 (R. Holtz) at Latimer Shoal recaptured again at Latimer Shoal 6/24/02 (1,071 days/2.9 years at large); estimated at 44 inches TL, it was released without its tag and reported (R. Dockiewicz)

Fish Tagged 2000

One fish documented fidelity to lower Chesapeake Bay over multiple years while the other again demonstrated cobia from Virginia waters move as far south as Florida during winter-spring months.
-Fish (34 inches TL) tagged at Latimer Shoal 7/18/00 (B. Crutzinger) was recaptured off Melbourne, FL on 3/25/02 (615 DAL).

-Fish (est. 42 inches TL) tagged at the Cabbage Patch 8/3/00 (J. Jenrette) was recaptured again at the same area on 6/21/02 (687 DAL).

_Fish Tagged 2001_

Tagged June 2001 at Latimer Shoal, the Cabbage Patch, and Back River Artificial Reef, the fish again provided valuable insight into the annual return of fish to the Bay as well as the extent of movement south and also offshore.

**Movement: 2001-2002**

-Two fish tagged at Latimer Shoal moved significant distances. A fish (estimated 45 inches TL) tagged 6/27/01 (M. Firestone) was recaptured 4/27/02 off St. Augustine, FL (304 DAL) and the fish killed (measured 44 inches TL). Released at almost the same time (6/24/01) (A. Bunnell), the second fish (estimated 47 inches TL) was recaptured at the “Parking Lot” area off Chincoteague 7/30/02 (401 DAL). This fish was also killed (measured 50 inches TL).

**Bay Fidelity: 2001-2002**

Two fish, tagged at the Back River Artificial Reef 6/13/01 (M. Hammond) and 6/30/01 (J. Jenrette) at the Cabbage Patch, were recaptured respectively at the Hump (8/10/02-423 DAL) and the Chesapeake Bay Bridge Tunnel (9/13/02-440 DAL).

_Fish Tagged 2002_

**Movement Within the Bay**

Recaptures occurred of six fish tagged in the lower Bay during June 2002. Five of the fish were recaptured during June-August 2002 while still in the Bay. Of these, three fish demonstrated significant movement in the Bay.

-Fish (36 inches TL) tagged at Hungar’s Creek 6/22/02 (R. Savage) was recaptured just north of the Rappahannock River off Fleet’s Bay 8/24 (63 DAL).

-Fish (38 inches TL) tagged 6/19/02 (A. Bunnell) at Inner Middle Ground Shoal recaptured at York Spit 7/2 (13 DAL) and released with its tag (D. Cross).

-Fish (46 inches TL) tagged 6/23/02 at Latimer Shoal (RN 16 Buoy) recaptured at the Chesapeake Bay Bridge Tunnel (4th Island) on 6/30 (7 DAL)
Movement from the Bay

-Fish (39 inches TL) tagged 6/29/02 (R. Savage) at the Concrete Ships off Kiptopeke State Park recaptured south of Oregon Inlet on Wimble Shoals 11/12/02 (136 DAL).

Flounder

As in 2001, 2002’s flounder tagging effort was primarily on undersized fish (11-16 inches TL). The greatest numbers of tagged fish again occurred at fishing piers, bridge-tunnel complexes, and Eastern Shore inlets. The top-ranked locations for tagged flounder releases (with rounded off numbers of fish in parentheses) were: Chesapeake Bay Bridge Tunnel (CBBT) (570), Buckroe Fishing Pier (395), Chincoteague Bay/Inlet area (390), Hampton Roads Bridge Tunnel (340), Hampton Bar (175), Kiptopeke State Park Pier (160), Willoughby Spit Jetty (140), and Ship Shoal Inlet (120). Other locations accounting for significant releases were: Concrete Ships off Kiptopeke State Park Pier (80) and Back River Artificial Reef (80).

Recapture patterns were generally consistent with those for 2001. The site fidelity pattern for structure sites in the lower bay was again strongly supported by 2002 recaptures of fish tagged both in 2001 and 2002 (Figure 7). Fish tagged during 2001 and recaptured in 2002 also demonstrated fish moving from Chesapeake Bay to continental shelf waters off Virginia/North Carolina. These movements were coupled with a distinctive pattern of tagged fish moving north to waters off beaches, inlets, and sounds of New Jersey and New York (Figure 8). Likewise to the south, there were several flounder recaptures along the Carolina beaches and inside the sounds. There was one recapture from a fishing pier in Myrtle Beach, SC. Of five recaptures from flounder tagged during 2000 (four tagged in the Bay and one in Rudee Inlet), two fish were caught in New Jersey waters, two back inside the Bay, and one on a nearshore wreck off Virginia Beach.

Virginia Waters: Site Fidelity 2001 to 2002

Recaptures during 2002 of flounder tagged in 2001 provided some indication of the value of catch and release to Virginia’s recreational flounder fishery. From 57 recaptures of fish tagged one year ago, 42 (74%) were caught again in Virginia waters during 2002 (three were from Virginia offshore waters, i.e., offshore Chincoteague and Virginia Beach). Most were caught once again in the Bay, along ocean beaches, or inside ocean inlets.

Of course, one cannot automatically assume that this return rate is representative of all undersized flounder released in Virginia waters. For example, our 2002 recapture data only represents about 9% of flounder tagged, and reporting rates of recaptures from out of state could well be lower than for tagged flounder caught in state waters where the program is better known (and the telephone call to report catches less expensive). However, it does suggest that some significant proportion of released flounder not only have the opportunity to contribute to spawning activity offshore during winter, but they also make it back to Virginia waters to contribute to the state’s recreational fishery a second year, and possibly additional years.

Offshore Movement 2001 to 2002

A good number of flounder, primarily tagged during summer-fall 2001, were recaptured during winter-spring months of 2002 on the continental shelf (Figure 8). Details follow for recaptures occurring on the Virginia/North Carolina shelf, and in a few cases along the beaches or inside the Carolina sounds:
Four fish tagged April-September 2001 (R. Brown, A. Phipps, H. Mauney, S. Spiers) in the lower Bay (Cape Henry Wreck, CBBT, and Concrete Ships off Kiptopeke) were recaptured off North Carolina’s Outer Banks (mid-shore waters) during the trawl fishery in January-February 2002 (108, 146, 195, and 293 DAL).

Fish tagged 8/26/01 (R. Holtz) at the Kiptopeke State Park Pier recaptured in Pamlico Sound (off Hatteras Village) on 7/28/02 (336 DAL).

Two fish tagged during July 2001 (D. Elliott, J. Jenrette) at the CBBT and Coral Lump (off Town of Cape Charles) were recaptured during March-April 2002 offshore Virginia Beach (231 and 257 DAL).

Myrtle Beach, SC provided an unusual recapture, i.e., tagged 9/2/01 (R. Guyot) at the Hampton Roads Bridge Tunnel, the flounder was recaptured at a Myrtle Beach fishing pier (est. 355 mi. south of Cape Henry) on 2/21/02 (172 DAL);

Offshore Movement Within 2002

An offshore movement pattern similar to that observed between 2001-2002 occurred for fish tagged and recaptured within 2002.

-Fish tagged at the Hampton Roads Bridge Tunnel (HRBT) 9/15/02 (R. Guyot) was recaptured 11/15/02 (61 DAL) on the shelf off North Carolina’s Outer Banks.

-Fish tagged 5/25/02 (R. Harris) at the Back River Artificial Reef was recaptured on the shelf off Chincoteague (30-50 fathoms depth) on 11/18/02 (177 DAL).

Movement to New Jersey-New York Waters 2000-2002

Nine Virginia-tagged flounder were recaptured along the beaches and bays/inlets of the New Jersey-New York shoreline from January-August 2002. Details follow:

Fish Tagged in 2000

-Fish tagged 11/30/00 (G. Edinger) at the Baltimore Channel Buoy Line was recaptured at Manasquan, NJ 6/16/02 (580 DAL); another fish tagged 9/15/00 (J. Jenrette) off Cape Charles (Texaco Wreck) was recaptured on New Jersey’s Garden State Reef (off Long Beach Isle) after 674 DAL.

Fish Tagged in 2001

-Two fish, tagged 6/29/01 (G. Edinger) and 7/4/01 (A. Paschall), at the CBBT recaptured in Raritan Bay, NJ (7/20/02; 386 DAL) and off Belmar, NJ (4/29/02; 299DAL).

-Fish tagged 7/13/01 (T. Healy) at Plantation Light recaptured in Long Island Sound (NY side) on 7/4/02 (356 DAL).
- Fish tagged 7/20/01 (H. Mauney) at the HRBT recaptured exactly one year later (7/20/02-365 DAL) in Raritan Bay, NJ; NOTE: this was one of two Virginia tagged flounder recaptured the same day in Raritan Bay (see G. Edinger fish tagged CBBT 6/29/01, recaptured in Raritan Bay).

- Fish tagged 10/10/01 (C. Stoker) at the HRBT recaptured at Jones Beach, NY on 8/17/02 (311 DAL).

- Fish tagged 10/19/01 (C. Johnson) at the CBBT recaptured in Barnegat Bay, NJ on 6/30/02 (254 DAL).

Ocean Inlet Tagging - MD and NY Recaptures

- Fish tagged 5/26/01 (T. Heinz) in Metompkin Bay (north of Wachapreague Inlet) recaptured in Long Island Sound (CT side) on 5/19/02 (358 DAL).

- Two fish tagged in June-July 2001 (M. Handforth) inside Chincoteague Inlet waters, i.e., in Assateague Channel and Chincoteague Bay, were recaptured at the Ocean City, MD Inlet (8/18/02; 416 DAL) and in waters off Ocean City (11/8/02; 548 DAL).

2002 Recaptures: Longest Periods at Large

Four flounder recaptures occurred for fish tagged during June-November 2000 (580-810 DAL/1.6-2.2 years); two, tagged in June and August 2000, were recaptured in September 2002 relatively close to their tagging sites, i.e., Rudee Inlet and Buoy 36A (off the Town of Cape Charles); the other two were tagged inside the Bay during September and November 2000 and recaptured in New Jersey waters (580 and 674 DAL and previously described under “Movement to New Jersey-New York Waters 2000-2002, Fish Tagged in 2000”).

- Fish tagged 6/25/00 (S. Spiers) off the Town of Cape Charles (Buoy 36A) recaptured at the “Cut Channel” off the mouth of Rappahannock River/Windmill Point on 9/22/02 (762 DAL/2.1 years).

- Fish tagged 6/25/00 (M. Kucharczk) in Rudee Inlet recaptured on the Turn of the Century Wreck (also called the Winthrop Tug) about 4 mi. off Virginia Beach on 9/13/02 (810 DAL/2.2 years).

Site Fidelity Patterns at Fishing Piers and Other Structure Sites

In contrast to instances where a few flounder tagged at the Chesapeake Bay Bridge Tunnel and Hampton Roads Bridge Tunnel showed significant movement offshore (typically between one year and the next), most recaptures during 2002 at fishing piers, the bridge tunnel complexes, and other structure sites consisted of fish tagged during the year with little within-year movement observed. Fishing piers in particular continued to show a distinctive pattern of holding undersized flounder for significant periods from spring through late summer/early fall months (Figure 7).

Buckroe Fishing Pier (Hampton)

Second only to the Chesapeake Bay Bridge Tunnel in numbers of flounder tagged during 2002 (395 versus 569 fish), the Buckroe Pier provided the best opportunity to further document the pattern observed in 2000-2001 whereby fish tagged in May-June appeared to remain in the vicinity of piers over long periods.
Many pier anglers are regulars, often fishing several times or more each week at their favorite location. As a result such regulars make significant contributions to pier recaptures. One such person at the Buckroe Pier is Ms. Edith Spiro, responsible for 14 tagged flounder recaptures in 2002.

**Year to Year Site Fidelity 2001 to 2002**

There was one instance of inter-year site fidelity observed, i.e., fish (13 inches) tagged at the pier 7/4/01 (G. Rigo) was recaptured again at the pier on 6/26/02 after 357 DAL; measuring 15 inches, it was released again with its tag (C. Shuler).

**Within Year Recaptures-Limited Movement in 2002**

There were nearly 50 single recaptures of flounder at the pier during 2002 representing fish tagged (G. Rigo) there earlier in the year. However, two fish showed short distance movement.

-Fish tagged at the pier 5/27/02 recaptured on Hampton Bar 6/30 (34 DAL).

**Double recapture fish:** Tagged 6/9/02, the fish (17 inches TL) was recaptured again that day at the pier and released with its tag; recaptured a second time in the lower York River on 10/24/02 (137 DAL).

The majority of the other single recaptures occurred again at the pier within 1-40 days (up to 5.7 weeks post tagging), however some also continued for periods beyond 120 days (>17 weeks), or until mid-October (Figure 9). Stronger evidence for flounder site fidelity at the pier over significant periods was provided by multiple recaptures. As shown in Figure 10, tagged fish were recaptured twice at the pier over minimum periods of 30 and 36 days total. However, seven fish tagged at the pier were recaptured 2-3 times at the site over periods of 51-105 days.

**Grandview Fishing Pier (Hampton): 2001 to 2002 Site Fidelity**

There were only 15 flounder tagged in 2002 at the Grandview Pier. Three fish tagged at the site in May and August 2001 (G. Rigo and R. Meister) were recaptured again at the pier during May, August, and September 2002 (358-463 DAL). Like the Buckroe Pier less than two miles south along the same stretch of shoreline, the Grandview Pier once again provided hard evidence that some released flounder return to the same structure sites from one year to the next.

-Fish tagged 7/4 and 7/28/02 (G. Rigo) recaptured at the pier on 8/10 (37 DAL) and 9/5 (39 DAL); both fish were released again with their tags (M. Deinhart and J. Brown).

**Chesapeake Bay Bridge Tunnel (CBBT) Area**

Accounting for the highest number of tagged flounder in 2002, the CBBT area produced 26 recaptures. Unlike 2001, there were no multiple recaptures from the site. In comparison to flounder attracted to fishing piers such as Buckroe Pier, flounder around the CBBT are spread over a much larger area, thereby contributing to fewer recaptures compared to the pier site.
**Movement Offshore 2000 to 2001 (NC to NJ)**

However, as mentioned previously when describing long-distance movements of tagged flounder from the Bay, CBBT tagged fish accounted for significant movement of fish.

- Three fish tagged during April, July, and September 2001 (A. Phipps, M. Mauney, and C. Johnson) at the bridge-tunnel were recaptured in the trawl fishery during January-March 2002 off North Carolina (121, 195, and 293 DAL).

Fish tagged 7/22/01 (D. Elliott) was recaptured offshore of Virginia Beach on 3/10/02 (231 DAL).

- Three flounder, tagged in June, July, and October 2001 (G. Edinger, A. Paschall, and C. Johnson), were recaptured in April, June, and July 2002 in New Jersey waters 254-386 DAL).

**Movement Within the Bay**

- Fish 5/17/02 (H. Mauney) recaptured at Hampton Bar (near the Hampton Roads Bridge Tunnel) on 6/29 (43 DAL).

**Year to Year Site Fidelity 2001 to 2002**

- Fish tagged 5/12/01 (B. Petrauskas) at the CBBT recaptured again at the site 4/29/02 (352 DAL).

- Fish tagged 4/30/01 (G. Edinger) recaptured at the bridge tunnel once again on 8/31/02 488 DAL).

**Within-year Site Fidelity 2002**

- Four fish tagged April-late June 2002 (G. Edinger, H. Mauney, and T. Brown) at the bridge tunnel were recaptured again in the tunnel area during June-July (14, 51, 56, and 65 DAL).

- Six fish tagged July 18-21, 2002 (M. Perron and R. Hughes) at the CBBT Yancey Wreck were recaptured again at the First Island-Yancey Wreck area from July 26-September 28 (5, 8, 12, 14, 35, and 72 DAL).

**Hampton Roads Bridge Tunnel Area**

**Long Distance Movement**

Like the CBBT area, flounder tagged at the Hampton Roads Bridge Tunnel (HRBT) during 2001 exhibited movement out of the Bay between 2001-2002, as well as fall movement offshore within 2002.

- Three fish tagged during July-October 2001 were recaptured, two in New Jersey-New York waters (July-August 2002; 311 and 365 DAL), and one at a fishing pier at Myrtle Beach, SC (2/21/02-172 DAL).

- Fish tagged 9/15/02 (R. Guyot) at the HBBT also moved onto the North Carolina shelf, being recaptured 11/15/02 (61 DAL).
Year to Year Site Fidelity 2001 to 2002

In contrast to offshore recaptures of HRBT tagged fish, six fish tagged (R. Guyot and C Stoker) at the site from August-early November 2001 were recaptured again during 2002 in the general site area (5-HBBT; 1-”off Willoughby Spit”). These recaptures occurred from May-September (241-374 DAL). Four of these recaptures were made by the same taggers initially releasing the fish. Another fish tagged in the same period at the site also returned in 2002 to the lower Bay, being recaptured at Lynnhaven Inlet 7/12/02 (292 DAL).

Short Distance Movement in 2002

Flounder tagged May-September at the HRBT exhibited a few instances of movement to nearby sites.

Of 14 fish tagged 5/2-5/26/02 (Guyot, C Stoker, L. Fischbeck), 9 were recaptured again around the bridge tunnel from 5/19-10/20 (8-154 DAL); two fish were involved in multiple recapture events.

Multiple Recaptures - May Tagging

-Fish (15 inches) tagged 5/19 (R. Guyot): recaptured three times around the HRBT (on 6/8, 9/2, and 10/20) after 20, 106, and 154 DAL; released each time with its tag (R. Guyot).

-Fish (13) tagged 5/11 (C. Stoker)): first recaptured again around HRBT (8/4; 85 DAL) and released again with its tag (C. Stoker); recaptured a second time less than two miles away in Willoughby Bay (8/31; 112 DAL).

Like the previous fish, a few others also moved short distances to nearby sites (likely less than 1- 2 mi. from the HRBT), e.g., to Hampton Bar (6/18; 45 DAL), Willoughby Spit Jetty (9/6; 118 DAL), and off Sewell’s Point (8/27; 95 DAL). One additional movement episode was noted: a fish tagged 5/26 at the HRBT was recaptured 7/17 (52 DAL) at the Yancey Wreck (at the First Island, Chesapeake Bay Bridge Tunnel), representing a straight-line distance of around eight miles.

Of 21 fish tagged and recaptured at the bridge tunnel from 7/6 to 9/9 (Guyot, Stoker, Fischbeck), all were caught from 8/25 to 9/29 in the same general area (14-56 DAL).

Multiple Recaptures - August Tagging

Flounder were also recaptured multiple times at the HRBT: one tagged 8/31/02 was recaptured 9/19 and 9/29 (19 and 29 DAL); one tagged 8/25/02 recaptured 9/2, 9/15, and 9/29 (8, 21, 35 DAL); one tagged 5/19/02 recaptured 6/8, 9/2, and 10/20 (20, 106, 154 DAL). Only two fish moved slightly, both being recaptured at the Willoughby Spit Jetty adjacent to the eastern end of the bridge complex (9/22-27; 35 and 54 DAL).

Results from recaptures of these two groups of flounder (12-17 inches TL), one group tagged in May, and the other at the site during mid-late summer, showed significant site fidelity for most of the fish. Movement, when occurring, was limited to distances no greater than eight miles from the complex.
Willoughby Spit Jetty

In immediate proximity to the eastern end of the Hampton Roads Bridge Tunnel, this popular shore fishing site accounted for 25 flounder recaptures during 2002. Two recaptures were of fish tagged in 2001 with the remainder tagged during 2002. Like the adjacent bridge tunnel complex, recapture patterns at the jetty largely showed strong site fidelity to the site with only occasional movement of flounder to sites in the immediate vicinity.

Year to Year Site Fidelity 2001 to 2002

Both recaptures of fish from 2001 were flounder initially tagged at the site. One accounted for a multiple recapture.

-Fish tagged 8/11/01 (S. Vinson) at the jetty was recaptured at the site again on 6/9/02 (302 DAL) by the initial tagger; released with its tag, the fish was caught at the site again on 9/6/02 (391 DAL) and released with its tag (J. Flagg).

-Fish tagged 8/19/01 (S. Vinson) at the site, and recaptured at the site again on 6/15/02 (300 DAL).

Site Fidelity Within 2002

There were 23 recaptures of flounder tagged at the jetty during 2002 of which only a few demonstrated a small degree of movement to structure in the same general area. Fish tagged from August-October at the site showing some movement to nearby sites were recaptured at the following locations: Fort Wool (mid way along the HRBT complex) on 9/9 (23 DAL), the Ocean View surf on 9/14 after 8 DAL (a multiple recapture described later), and the HRBT (two fish, recaptured 10/6 and 10/10 after 9 and 5 DAL).

Multiple Recaptures Within 2002

-Fish tagged 8/30/02 (S. Vinson) recaptured again at the site 9/8 (9 DAL) and released with its tag (H. Glass), then recaptured nearby at the Willoughby Bay Marina fishing pier 9/19 (20 DAL); it was released again with its tag (C. Rogers).

-Fish tagged 9/6 (S. Vinson) recaptured again at the site the same day tagged (0 DAL), then again in the Ocean View surf on 9/14 (8 DAL); released again with its tag (J. Yashaev).

-Fish tagged 9/20 (S. Vinson) recaptured at the site 10/13 (23 DAL) and released with its tag (S. Vinson); recaptured again 10/16 (26 DAL).

-Fish tagged 9/27 (S. Vinson) recaptured at the site on 10/4, 10/11, and 10/13 (7, 14, and 16 DAL); released again each time with its tag (S. Vinson).
Kiptopeke State Park Pier

Of 17 flounder recaptured at pier in 2002, all but two were recaptured again at the pier, including several fish tagged in 2001.

Movement 2001 to 2002

-Fish tagged 8/26/01 (R. Holtz) was recaptured in Pamlico Sound (off Hatteras Village) on 7/28/02 (336 DAL).

-Fish tagged 9/2/01 (S. Vinson) recaptured at the CBBT (High Level Bridge) on 5/31/02 (271 DAL).

Year to Year Site Fidelity 2001 to 2002

Three of the five fish tagged at the site in 2001 and recaptured during 2002 were caught again in the area of the pier. Tagged 5/11-6/3/01 (S. Vinson), they were recaptured at the pier and the adjacent Concrete Ships in May, July and early September 2002 (316, 455, and 465 DAL).

Within Year Site Fidelity 2002

All flounder tagged at the Park’s pier during May-September 2002 were recaptured again at the site during June-October 2002 (0-4 to 140 DAL). There was one multiple recapture in this group: fish tagged 5/31/02 (S. Vinson) was recaptured at the pier on 8/11 (72 DAL) and released with its tag (S. Vinson); then recaptured again at the pier on 9/22/02 (114 DAL).

Harrison’s Pier (Norfolk)

The pier experienced two recaptures in 2002 from fish tagged at the site during 2001.

Year to Year Site Fidelity 2001 to 2002

-Double recapture: fish tagged 7/14/01 (J. Zarella) was recaptured again at the pier on 4/22/02 (282 DAL) and released with its tag (B. DeGuzman, Jr.); it was recaptured a second time at the pier on 6/10/02 (331 DAL) and released again with its tag (M. Webb).

-Fish tagged 9/18/01 (J. Zarella) recaptured again at the pier on 5/26/02 (250 DAL).

Area Site Fidelity 2001 to 2002

-Fish tagged at the pier 7/14/01 (J. Zarella) was recaptured at the Buckroe Fishing Pier 7/01/02 (352 DAL) and released again with its tag (B. Averette).

Other Interesting 2002 Recaptures- Various Tagging Sites

-Two fish tagged at Fisherman’s Island Inlet/Bridge area during July-August 2002 (W.T. Nottingham); one was recaptured only 3 days later (7/15) at the Concrete Ships off Kiptopeke State Park Pier, moving more than 2 miles up the Bay. The other fish moved across the Bay, being recaptured at Buckroe Pier 10/20 after 80 DAL.
-Fish tagged 10/3/02 (M. Handforth) in Chincoteague Channel was recaptured offshore Chincoteague (30-50 fathoms depth) on 11/4 after 32 DAL.

**Gray Triggerfish**

Efforts to tag gray triggerfish began in 2001. Of 14 fish tagged that year, two were recaptured. Tagged at the Dump Site off Virginia Beach (R. Holtz) and the Cabbage Patch Artificial Reef (D. Barbee), the fish was recaptured within 8 and 35 DAL, respectively, basically not having moved any significant distance.

Compared to 2001, there were four times as many fish tagged during 2002, the fish being 11-16 inches long. Of 19 triggerfish tagged-recaptured from late May through late August 2002, there were only a few instances of slight movement of the fish from their tagging sites. Periods at large ranged from less than a week up to 62 days. With only 56 fish tagged during the year and 19 recaptured, the species had an unusually high recapture rate of 34% (based on individual fish), or 41% (counting multiple recaptures).

There were four double recaptures of tagged fish, two of which involved fish tagged 8/24/02 (M. Perron) on the Kingston Celonite Wreck (roughly half way between Rudee Inlet and the Chesapeake Light Tower Reef). After being tagged, both fish were recaptured again by M. Perron during the same day (0 DAL) and released again with their tags. They were subsequently recaptured on the wreck again on 9/13 and 9/14 after 20 and 21 DAL; one fish was killed and one released again with its tag (D. Smith).

**Other Multiple Recaptures 2002**

- Fish tagged (R. Collins) 8/4/02 at the Chesapeake Bay Bridge Tunnel (Third Island) recaptured again still at the Third Island on 8/30 (26 DAL), then a second time at the site on 10/5 (62 DAL).

- Fish tagged (T. Lowry) 9/2/02 at the Back River Artificial Reef was recaptured at the Reef 9/14 (12 DAL) and released again with its tag (C. Freeman); recaptured again at the site 10/3 (31 DAL), and released with its tag (R. Deese).

**Minor Movement 2002**

- Fish tagged 8/25/02 (R. Collins) at the Santore Wreck was reported recaptured at the Chesapeake Light Tower Reef on 9/21 (27 DAL).

- Fish tagged 8/3/02 (R. Guyot) at the Winthrop Wreck (Turn of the Century Wreck) was recaptured at the Cape Henry Wreck just to the north on 10/4 (62 DAL).

**Single Recaptures**

Four triggerfish tagged at the Anglo-American Wreck, one on May 29 (G. Rigo), and three from July 4-27 (R. Guyot and C. Stoker), were recaptured again at the wreck in June (13 DAL), July (4 DAL) and early August (after 7 and 28 DAL).

Seven tag-recapture events at the CBBT Third Island during 2002 involved fish at large for 11-36 days, the one exception being the double recapture previously described where the fish was at large for up to 62 days.
**Red Drum**

Tagging effort on red drum (primarily 12-16 inches) during 2002 (2,727 fish) totaled more than twice that in either 1999 or 2000 (1,000-1,100+ fish each year). One of the strongest year classes of puppy drum in the Chesapeake Bay in decades provided the opportunity for this effort. Top tagging locations (and numbers of fish tagged) were: Lynnhaven Inlet waters (1,014), the Elizabeth River Hot Ditch (352), Elizabeth River (227), the Eastern Shore Barrier Islands (279+ fish; including bigger fish 30-47 inches), York River Yorktown Power Plant Hot Ditch (139), the Buckroe Pier (117), Rudee Inlet waters (92), and Hampton Roads Bridge Tunnel/Willoughby Spit Jetties area (64). Many other areas accounted for tagging of 20-40 puppy drum, including: Mobjack Bay waters, Hungars Creek, off Windmill Point/Dividing Creek area, Piankatank River, Poquoson Flats, Poquoson River, Middle Ground/Inner Middle Ground Shoals, and Harrison Fishing Pier, to name some key locations.

**Lynnhaven Inlet Waters**

Because of the high number of drum tagged in Lynnhaven, the resulting recaptures provided one of the best opportunities for the tagging program to examine patterns of site fidelity and movement of the fish in a major tributary system of the lower Bay. There were 95 recaptures reported in 2002 from fish tagged in this area (Lynnhaven Inlet, Lynnhaven River, and Long Creek), of which 22 were from North Carolina waters.

The periodicity of movement is interesting.

*Fish Tagged July 23-August 19, 2002*

-Nine fish (tagged mostly by R. Holtz and A. Burnell) were recaptured still in the Lynnhaven system (0-77 DAL); five of these recaptures were of fish re-caught the same day tagged (0 DAL) to 1-7 DAL; the others were still inside the inlet from 9/8-11/1 (after 27, 41, 49, and 77 DAL) (Figure 11).

-Three fish tagged in Lynnhaven had moved out of the Bay, one being recaptured at the Virginia Beach Fishing Pier (9/2; 14 DAL) and at two at Sandbridge on 8/18 (18 DAL) and 8/26 (7 DAL); Lynnhaven Inlet around Cape Henry to Sandbridge is an estimated 19 miles.

*Fish Tagged August 25-31, 2002 (26 recaptures)*

Nine fish moved not only out of Lynnhaven waters, but out of the Bay, being recaptured along Sandbridge and North Carolina beaches or in the Outer Banks sounds (Figure 11).

-Recaptures occurred at: Sandbridge (9/2; 2 DAL; est. distance 19 mi.), Corolla-Duck, NC area (2 fish, 9/2 and 9/8; 3 and 8 DAL; est. distance 50-55 mi.), Kitty Hawk/Nags Head (2 fish, 9/1 and 9/5; 5 and 7 DAL; est. distance 65/75 mi.), Roanoke-Croatan-Pamlico Sounds (3 fish, 9/7-9/26 after 9, 20, and 32 DAL; est. distance 95-100 mi.), and Buxton surf (9/2; 8 DAL; est. distance 128 mi.).

-Roanoke Sound recapture (9/14; 20 DAL): a multiple recapture, i.e., this was the second recapture of the fish; it had also been recaptured by the tagger (R. Holtz) the same day it was released in Lynnhaven (8/25) and released again with its tag.
During the same period, 15 puppy drum were recaptured still inside Lynnhaven: 12 fish between 8/26 and 9/21 (0-21 DAL) and 3 fish from 10/10-19 (40, 50, and 52 DAL). Two fish tagged in the period were recaptured just outside the inlet, one at the Lynnhaven Fishing Pier (8/31; 2 DAL) and the other along First Landing State Park beach (9/2; 7 DAL).

Therefore, over half of the total recaptures of puppy drum tagged in Lynnhaven waters during the last week of August 2002 were fish which remained inside the inlet, some for periods as long as 3-4 weeks (21-52 days). During the same tagging period there also was significant movement of approximately one third of the recaptured fish out of the Bay to North Carolina waters.

**Fish Tagged September 1-October 4 (49 recaptures)**

Puppy drum tagged during this 34 day period also exhibited a pattern of site fidelity to Lynnhaven waters, but also demonstrated periodic movement of some fish to North Carolina waters (14 fish). The recaptures are separated into fish tagged in two periods, i.e., those tagged September 1-9 and those tagged September 13-October 4.

**Fish Tagged September 1-9 (19 recaptures)**

Of fish tagged during this period, 11 were re-caught still inside the inlet. Some recapture periods were typically short (0-9 DAL); however, some of the fish were also recaptured 9/24-10/27 (23, 28, 43, 44, and 55 DAL).

One multiple recapture occurred: fish tagged 9/2 (R. Holtz) was first recaptured again by the tagger on 9/30 (28 DAL); the tagger re-caught the fish a second time in Lynnhaven on 10/27 (55 DAL), releasing it again with its tag.

During this period fish also moved from Lynnhaven Inlet to North Carolina waters, some exhibiting relatively rapid movement as far south as Ocracoke Island (est. distance 156 mi.), Drum Inlet (est. distance 195 mi.), and east of Morehead City (Emerald Isle; est. distance 228 mi.) after only 10, 19, and 11 DAL, respectively (Figure 11).

- Three fish tagged 9/1-2 (2-R. Holtz; 1-S. Wray) were all recaptured on 9/6 at the following locations: Corolla-Duck area (4 DAL) (est. distance 50-55 mi.), Nags Head Pier (5 DAL) (est. distance 74 mi.), and Avon surf (5 DAL) (est. distance 121 mi.).

- Two fish tagged 9/1 (R. Holtz) and 9/9 (J. Wright) recaptured in area of Ocracoke Island on 9/11 (10 DAL) and 10/19 (40 DAL), respectively (est. distance 150-158 mi.).

- Fish tagged 9/1 (R. Holtz) recaptured at Drum Inlet (south end Portsmouth Island) 9/20 (19 DAL) (est. distance 195 mi.).

- Fish tagged 9/1 (R. Holtz) recaptured at Emerald Isle 9/12 after only 11 DAL (est. distance 228 mi.).

- Fish tagged 9/1 (R. Holtz) recaptured at Cape Hatteras Point 12/10 (100 DAL) (est. distance 130 mi.).

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Fish Tagged September 13-October 4

Puppy drum tagged in Lynnhaven in this period also showed a pattern of some fish moving to Sandbridge-Outer Banks waters. However, 25 fish were recaptured still inside the inlet after being at large over periods of only a few days up to six weeks.

Multiple recaptures document site fidelity patterns (three fish):

- Fish tagged 9/15 (R. Holtz) was recaptured still in Lynnhaven on 9/21, 10/5, and 10/27 (after 6, 20, and 42 DAL).

- Fish tagged 9/17 (J. Wright) was recaptured at the inlet bridge 9/22 (5 DAL), then again in the Lynnhaven River on 10/13 (21 DAL).

- Fish tagged 9/21 (R. Holtz) was recaptured twice by the tagger, once on 10/5 (14 DAL), then again on 10/27 (36 DAL overall), and released again with its tag.

Movement out of Inlet (seven fish):

- Three fish tagged 9/16 (R. Holtz) demonstrated the variable distances over which 12-17 inch puppy drum can move during short timeframes. One fish was re-caught at the Rudee Inlet Jetty 9/18 after only 2 DAL (est. distance 13 mi.); the other two fish were each recaptured the same day (9/29; 13 DAL), one at Sandbridge’s Little Island Fishing Pier (est. distance 19 mi.), and one at Oregon Inlet (est. distance 90 mi.).

- Fish tagged 9/14 (R. Holtz) recaptured at Outer Banks Fishing Pier (south Nags Head) 10/19 (35 DAL) (est. distance 81 mi.).

- Two fish tagged 9/19 (A. Burnell and J. Wright) were recaptured, one 10/29 at Ocracoke Inlet (40 DAL) (est. distance 158 mi.) and the other on 12/8 (80 DAL) in Pamlico Sound (northern portion).

- Fish tagged 9/26 (R. Holtz) recaptured at Corolla-Duck on 10/2 after only 6 DAL (est. distance 50-55 mi.).

Elizabeth River Hot Ditch

Several recaptures during 2002 from the Hot Ditch are of interest. Two fish tagged from 11/27 to 12/4/01 in the ditch showed that 19 inch fish can remain in the same area into February, or for up to two months.

- Multiple recapture: fish tagged 11/27/01 (R. Holtz) recaptured in the ditch again 1/26/02 (60 DAL), then re-caught a second time 2/6/02 (71 DAL), and released with its tag.

- Fish tagged 12/4/01 (R. Hughes) recaptured in the Hot Ditch 2/1/02 (59 DAL).
Fish tagged at the site during 2002 (in January and later in the year, November-December) and recaptured during the year did not show any movement from the site. Times at large were relatively short (1-23 DAL).

-Three fish tagged January 2002 (R. Holtz, R. Collins) in the ditch were recaptured after only 6-18 DAL, with two of the fish released again with their tags in place (W. Orentlicherman).

-Three fish tagged 11/23/02 were recaptured 12/20-16 (17-23 DAL); one fish was recaptured twice on the same day (12/14) by the initial tagger (R. Hughes).

-Fish tagged during December 2002 resulted in 13 recaptures during the same month (1-19 DAL).

**Elizabeth River (other areas)**

Recaptures of puppy drum tagged in the Norfolk-Portsmouth area of the Elizabeth River and the Southern Branch indicated both short and long-term site fidelity to the river. Some movement of fish also occurred into the lower Bay, as well as to North Carolina.

-Fish (17 inches) tagged 6/5/00 (S. Strong) in the Norfolk-Portsmouth river segment was recaptured still in the same general area on 4/27/02 (691 DAL).

Fish tagged from June to September 2002 showed movement of puppy drum to the lower Bay, Sandbridge and as far south as Oregon Inlet.

-For example, fish tagged during summer were recaptured at the Little Creek Jetties (10/13; 113 DAL), Willoughby Spit Jetty (7/26; 16 DAL), the Inner Middle Ground Shoal (two fish on 8/31, after 7 and 42 DAL), and in the Lynnhaven River (10/5; 20 DAL).

-Fish tagged in the same period also moved out of the Bay, i.e., recaptured at Sandbridge (10/7; 18 DAL), Nags Head Fishing Pier (10/17; 60 DAL), and Oregon Inlet (on 9/1 after only 17 Dal).

**Buckroe Fishing Pier**

A handful of recaptures from drum (12-16 inches) tagged (G. Rigo) at the Buckroe Pier from September and early October 2002 again documented movement of the juvenile fish into other lower Bay areas as well as to North Carolina waters.

-Five fish tagged 9/1-2 were recaptured as follows: Chick’s Beach surf (9/2; 1 DAL), James River (lower) (9/14; 13 DAL), Kittyhawk-Southern Shores, NC (9/5; only 4 DAL) (est. distance 76 mi.), Nags Head, NC (9/7; only 6 DAL) (est. distance 86 mi.), and Avon, NC (9/20; 18 DAL) (est. distance 123 mi.).

-Three fish tagged 9/28-10/12 were recaptured in the lower James River (1 DAL), the Elizabeth River’s Eastern Branch (10/19; 20 DAL), and in Pamlico Sound, NC (10/27 after only 15 DAL) (est. distance 106 mi.).
Other Recaptures of Interest

Movement out of the Bay (Figure 12)

-Fish tagged in Hungar’s Creek 9/17 (L. Holmes) recaptured at the Kitty Hawk, NC fishing pier 10/22 (35 DAL).

-Fish tagged at Fisherman’s Island Inlet 9/22 (M. Bull) recaptured in Pamlico Sound (off Hatteras Village) on 12/16 (85 DAL).

-Two fish, one tagged 8/10 at the Little Creek Jetties (S. Gold), and one tagged 9/8 at the Willoughby Spit Jetty (S. Vinson), were recaptured at Kitty Hawk, NC (8/17; 7DAL) (est. distance 69 mi.) and Corolla-Duck (9/12; 4 DAL) (est. distance 60-65 mi.).

-Two fish tagged off Windmill Point (mouth of Rappahannock River) on 8/17 (H. Norton) were recaptured at Sandbridge (8/29; 12 DAL) (est. distance 63 mi.) and Corolla-Duck, NC (9/3; 17 DAL) (est. distance 98-103 mi.).

-Fish tagged in Sturgeon Creek (Rappahannock River mouth near Deltaville) on 8/25 (H. Norton) was recaptured at Oregon Inlet on 9/1 (only 7 DAL) (est. distance 131 mi.).

-Two fish tagged on Poquoson Flats 7/23 (B. Shepard) recaptured at Corolla-Duck, NC (8/12; 20 DAL) and in Roanoke Sound, NC (10/8; 77 DAL).

Eastern Shore Barrier Islands

-Five larger fish (33-49 inches) tagged 5/5-9/17/02 (D. Cline) were all recaptured again largely in the same area where tagged, after 0-26 DAL; one fish tagged 5/5 was recaptured along the same beach area on 8/10 (97 DAL).

-Fish (17 inches) tagged 9/13/02 (D. Cline) was recaptured at Avon, NC on 10/17 after only 34 DAL.

York River Power Station Hot Ditch

This warm water discharge canal at the power station on the south side of the lower York River attracted and held large numbers of puppy drum during December 2002 on into late winter 2003. The initial tagging effort there in December 2002 (139 fish) (S. Vinson) laid excellent groundwork for a cooperative tagging project with Dominion Resources in March 2003.

Three recaptures occurred during December 2002 from fish tagged at the site (S. Vinson), the fish being re-caught again still inside the canal after 11-16 DAL.
Sheepshead

During 2002 only one recapture was reported for sheepshead, the same pattern for both 2000 and 2001. Recaptures in 2000 and 2001 were of fish initially tagged at Oregon Inlet and recaptured at the same location after only 6-15 DAL. However, the 2002 recapture was a fish tagged on 9/17/00 (M. Firestone) at Rudee Inlet and recaptured at Oregon Inlet, NC on 8/8/02 after 690 DAL.

Spadefish

Most tagging effort on spadefish occurred again at the Anglo-American Wreck (east of Fisherman’s Island off Cape Charles) and the Chesapeake Light Tower, however the Dump Site off Virginia Beach (drain pipes) also received some tagging effort during 2002. Most recaptures were of fish tagged May through July 2002 and occurred again at the site of tagging. However, a few recaptures were of spadefish tagged during 2001.

Double Recaptures

Three double recaptures occurred:

-Fish tagged 7/27/02 (C. Southall) on the Anglo-American Wreck recaptured two separate times at the site on 8/3 (7 DAL) and released with its tag (C. Southall, N. Lupton).

-Fish tagged 8/2 (J. Dail) on the Anglo-American Wreck recaptured the same day it was tagged (0 DAL), then again at the site 8/14 (12 DAL) and released with its tag (M. White, C. Hill).

-Fish tagged 5/28/02 at the Chesapeake Light Tower recaptured twice on 7/8 (41 DAL) and released with its tag (G. Rigo).

Fish Tagged 2001-Returned in 2002 to VA Waters

-Two fish tagged 6/18/01 (J. Jenrette; R. Phipps) on the Anglo-American Wreck were recaptured during 2002 at the Chesapeake Light Tower (5/23; 339 DAL) and on the Gulf Hustler Wreck (7/1; 378 DAL).

-Fish tagged 7/15/01 (L. Snider) at the Chesapeake Bay Bridge Tunnel was recaptured at the Chesapeake Light Tower on 5/32/02 (312 DAL).

-Fish tagged 9/22/01 (B. Noland) at the Chesapeake Light Tower was recaptured inshore at the Tiger Wreck on 5/31/02 (251 DAL).

-Two fish, one tagged 6/27/01 (R. Phipps) on the Marble Wreck, and one tagged 7/7/01 (R. Hughes) “off Virginia Beach” were recaptured at the Chesapeake Light Tower (5/17/02; 324 DAL) and the Dump Site off Virginia Beach (6/16/02; 344 DAL).
- Two fish tagged 7/22/01 (B. Noland) at the Cell were recaptured, one again at the Cell (7/8/02; 351 DAL), and the other at Chesapeake Light Tower (6/2/02; 315 DAL).

- Fish tagged 6/30/01 on a wreck east of Cape Charles (R. Collins) was recaptured at the Dump Site off Virginia Beach (6/23/02; 358 DAL).

**Site Fidelity at Offshore Sites 2002**

While recaptures at the Anglo-American Wreck of fish tagged during 2002 occurred within 1-16 days after release, times at large ranged from 9-75 days for fish tagged at the Chesapeake Light Tower. A good portion of the Light Tower recaptures indicated spadefish likely stayed around the site for periods of 3-4 weeks up to 5-6 weeks, and sometimes longer. Similarly, fish tagged at the Dump Site off Virginia Beach were recaptured at the site within 10-56 days of release with five fish at large for about 3-6 weeks.

**Movement during 2002 (generally from offshore to inshore)**

- Two fish, tagged 5/28 and 5/31 (R. Guyot) at the Chesapeake Light Tower were recaptured at the Chesapeake Bay Bridge Tunnel, one on 7/30 (60 DAL) and the other 8/11 (75 DAL).

- Fish tagged 7/4 (R. Collins) at the Dump Site off Virginia Beach recaptured at the Cape Henry Wreck on 7/27 (23 DAL).

- Fish tagged 7/7 on the Kingston Celonite Wreck was recaptured at the Virginia Beach Fishing Pier 9/17 (72 DAL).

**Speckled Trout**

Tagging effort more than doubled in 2002 compared to the previous year. This was primarily the result of the sudden appearance of a strong year class of 10-14 inch fish in the lower Bay. Most tagging occurred in September through November. The most releases occurred in Rudee Inlet waters (517 fish). Nearly half of these tagged fish were part of a VIMS hook-release mortality study whereby they were caught, tagged, held for 4 days observation (on average) in cages before being released. Only fish in fair to good condition at the end of the holding period were released, the case for most fish.

Other major tagging areas (with numbers of fish tagged) were: Elizabeth River Hot Ditch (211), Lynnhaven Inlet waters (199), Mobjack Bay (58), and Hungars Creek (48). Much smaller numbers of trout were tagged at many other locations in the Bay from the general area of Windmill Point-Little Bay (north side of mouth of Rappahannock River) south to Poquoson Flats, and along Eastern Shore bayside creeks.

Unfortunately, recapture rates continued to remain around 3%, in spite of the significant increase in tagging effort. The majority of the recaptures were from fish tagged in the Elizabeth River Hot Ditch and Rudee Inlet.

**Elizabeth River Hot Ditch**

The nine recaptures again provided evidence that trout over-winter in the area for periods ranging from 40-90 days.
Three fish tagged November 25-29, 2001, were recaptured again in the Ditch during January-February 2002 (41, 42, and 91 DAL).

Fish tagged in the Ditch, both in January 2002 and late in the year (December 2002), were recaptured again in the Ditch with periods at large ranging from a few days to a month after being released.

**Lynnhaven Inlet**

In spite of the good number of fish tagged in the August-November 2002, there were only two recaptures from this area. However, the recaptures were important because they again documented that trout largely leave Virginia in the fall for North Carolina waters. Both fish, tagged 10/27/02 (R. Holtz), were recaptured, one at Rodanthe (Hatteras Island Pier) on 11/9 (13 DAL) (est. distance 106mi.) , and one at Cape Point on 11/24 (28 DAL) (est. distance 130 mi.).

**Rudee Inlet**

Of seven recaptures from trout tagged in Rudee, six were recaptured in inlet waters within 2-38 DAL after release. One recapture of a fish tagged 10/19 (R. Holtz) showed the same movement pattern as the Lynnhaven Inlet recaptures, i.e., it was caught along the Outer Banks beaches at the Nags Head Fishing Pier on 10/28 after only 9 DAL (est. distance 61 mi.)

**Other interesting recaptures**

Two trout (20-22 inches) being tracked in Mobjack Bay waters with acoustic telemetry transmitters encased in small plastic floats tethered to the fish with 30 pound test fishing line, part of a VIMS release mortality study, were recovered by anglers.

-Fish tagged and released for tracking on 9/17/02 near the mouth of the Severn River was tracked for nearly 24 hours before it got out of the receiver’s range and was lost. Seeing the tether float moving slowing along the water’s surface where he was fishing, an angler recovered the float on the afternoon of 9/18, releasing the fish with its Game Fish Program tag in place. The fish was approximately half way up the Severn River when picked up, nearly three miles from where it was released.

-Fish released and tracked near the mouth of the North River for nearly 24 hours was also lost after its signal could no longer be detected. It was recovered three days later by an angler at his pier approximately three miles upriver (the tethered float had become hung on the angler’s pier between 4-6 PM). The fish appeared to be in good condition and was released by the angler with its Game Fish Program tag in place.

**Tautog**

Long term site fidelity patterns of fish to specific wrecks and other structure sites in Virginia waters were well documented by 2002 recaptures.
**Fish Tagged 1998**

There were three recaptures of tautog tagged during 1998. The fish were caught again on their initial tagging sites, the Mussel Beds (inside the Bay off Cape Charles) and offshore at the Chesapeake Light Tower Reef. They had been at large for 3.8 years (1,399-1,436 days).

**Fish Tagged 1999-2000**

There were also good numbers of recaptures from fish tagged during 1999 (18 fish) and 2000 (16 fish), times at large for these fish generally ranging from 800-1,100 days and 500-800 days, respectively.

**Site Fidelity: Fish Tagged 1999-2000**

Scanning the tautog table in the appendix for recapture records of fish tagged during 1998-2000 illustrates the species’ strong site fidelity pattern. In addition to those previously mentioned, several other examples were especially interesting:

- Two fish tagged 4/11/99 (R. Bartlett) on the Cape Henry Wreck were recaptured again on the wreck during late February-early March 2002 (1,051 and 1,063 DAL).

- Two fish tagged in October-November 1999 (R. Collins) at the CBBT (1st Island) were recaptured at the same area, one on 2/12/02 (858 DAL) and the other on 9/12/02 (1,041 DAL).

- Of four fish tagged during February 2000 at the Westmoreland Wreck at the Bay mouth, three were recaptured again at the site in February-March 2002 (1,104-1,113 DAL); the remaining fish was re-caught offshore at the Santore Wreck on 3/8/02 (1,105 DAL).

- Double recapture: fish tagged in April 2000 (R. Collins) at the CBBT (2nd Island) was recaptured at the same island on 4/12/02, and again the next day (722-723 DAL).

For those fish recaptured on a site different from where they were tagged, movement was minimal, and the fish were still within “Virginia” waters. Fish at large for 730 DAL (two years) or more and recaptured at their tagging site occurred both for fish tagged inside the Bay, at the Bay mouth, and offshore.

**Fish Tagged 2001**

Fish tagged in 2001 and recaptured during 2002 also demonstrated the consistent site fidelity pattern observed in previous inter-year data sets. Fish appeared to over winter on Bay sites (Back River Artificial Reef, CBBT islands, Cape Henry Wreck, etc.) Likewise, fish tagged in the spring/fall 2001 on offshore sites were consistently recaptured again at the sites in winter-spring 2002 (Birch Lake Wreck, Chesapeake Light Tower Reef, Kingston Celonite Wreck, etc.).
Movement Offshore 1999 to 2002

Movement was documented for a few 2002 recaptures:

- Fish tagged 10/30/99 (D. Barbee) at the 38A Buoy (NW of Cape Charles) was recaptured at a wreck 10 miles offshore Chincoteague on 3/29/02 (881 DAL).

- Fish tagged 1/3/00 (M. Perron) at the Cape Henry Wreck was recaptured offshore Wachapreague Inlet at the Page Wreck on 2/22/02 (781 DAL).

- Fish tagged 3/27/00 (K. Neill) at the Cape Henry Wreck was recaptured at the Chesapeake Light Tower Reef on 3/14/02 (717 DAL).

There were also instances of relatively short distance movement of fish among sites within the Bay, including: fish moving from the Cape Henry Wreck to the Chesapeake Bay bridge Tunnel (4th Island, CBBT), from the CBBT 1st Island to the Cut Channel off Deltaville, and from the New Point Comfort Rock Pile to the Cape Henry Wreck.
Appendix Tables

2002 Recapture Records for Game Fish Tagging Program Target Species

Notes:

1. Records are grouped alphabetically by species name.

2. Within each species record group, records are listed alphabetically by “Tag Location” and within each tag location in order of increasing Tag Date (TgDate). This grouping of the data quickly allows visually determining recapture locations and dates based upon where the fish was tagged. While all recaptures occurred in 2002, note that tagging dates for such fish ranged from 1998-2002.

3. Special Note: Tag numbers are listed for each record. Multiple listings of records with the same tag number indicate multiple recaptures of the same individual fish. They are visually distinct for each species, being in a bold/italics font. However, examine the sequence of such records with care. Always check the “Recap” date, since sometimes multiple capture records print out in reverse order of the date sequence preferred (earliest recapture in time listed ahead of later recaptures). We have yet to determine why this inconsistency occurs, and apologize for any confusion it may cause.

4. If a fish was captured more than once, DAL data indicated for second recapture, etc. are “total days since fish first tagged,” not, e.g., days since second recapture, third recapture, etc.