

## Appendix C



# Angling for Answers

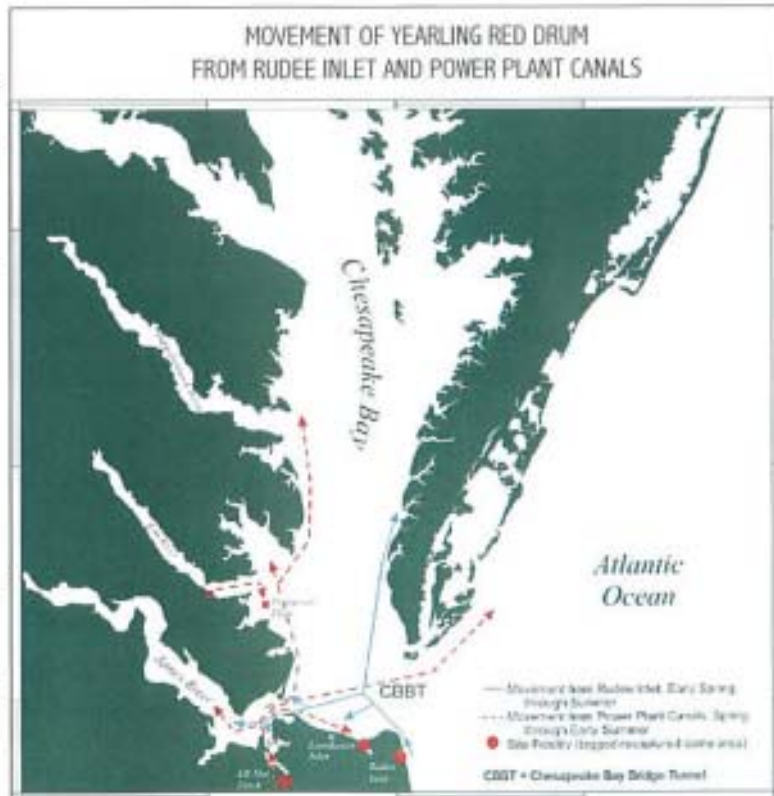
By Jon Jucy

### ADULT RED DRUM:

Adult drum (41-48 inches) in Virginia, some carrying 1 to 2-year-old tags, have yet to be recaptured outside of state waters. Tagging large numbers of adult reds (45-55 inches) since 1986, North Carolina has received only 7 reports of recaptures in Virginia (inside the bay and along barrier island beaches). Dynamics of adult drum movements between the two states remain unclear.

### YEARLING RED DRUM:

Beginning in late summer, up to 20% or more of yearling drum migrate out of the bay to winter in North Carolina waters. Some 14- to 18-inch drum also remain in the bay, over-wintering around power plants. At certain plants from December to March, most appear to move back into lower bay areas during spring and summer months (dotted red arrows). Small drum also can congregate at Rudee Inlet during spring. During March-May 1999, tagging showed that drum remained inside of the inlet up to 6-7 weeks, while others moved out to lower bay fishing grounds (solid blue arrows).



A trained corps of 150-200 anglers is doing big things for Virginia. They are part of a decade-long effort, collecting data on ten marine species that are major contributors to Virginia's billion-dollar-a-year recreational fishing industry. Under the auspices of the Virginia Game Fish Tagging Program, between 8,000 and 12,000 fish are tagged by trained anglers each year. To date, their contributions have resulted in close to 80,000 tagged fish which have generated complete tag-recapture records on nearly 8,000 individuals (about a 10% recapture rate).

The Tagging Program is a cooperative effort of the Virginia Institute of Marine Science (VIMS) Sea Grant Marine Advisory Program and the Virginia Saltwater Fishing Tournament (directed by Claude Bain, III, of the Virginia Marine Resources Commission, VMRC). Primary funding comes from license fees paid by saltwater recreational anglers, and is administered by the VMRC.

Target species are carefully selected by program coordinators, taking into account both developing and expanding fisheries. Species selected must be important and provide useful data to coastal anglers. Tagging should have the potential to produce useful management data for the fish, and those selected must not be regularly targeted for tagging by scientific programs. Since 2000, the program has focused on black sea bass, black and red drum, cobia, flounder, gray triggerfish, sheepshead, spadefish, speckled trout, and tautog.

"Using saltwater fishing license funds for the tagging program is a positive thing for anglers. The tagging program provides the angling community a way to express its conservation ethic. Not only are anglers investing their license money in the future of their own fishery, they are building a working relationship with fishery managers," said Richard Welton, who recently directed the Coastal

Conservation Association of Virginia. Welton added, "Anglers remain apprehensive about the accuracy of scientifically collected data on saltwater recreational fisheries. By anglers tagging fish and reporting recaptures, there is a built-in angler confidence factor in the results."

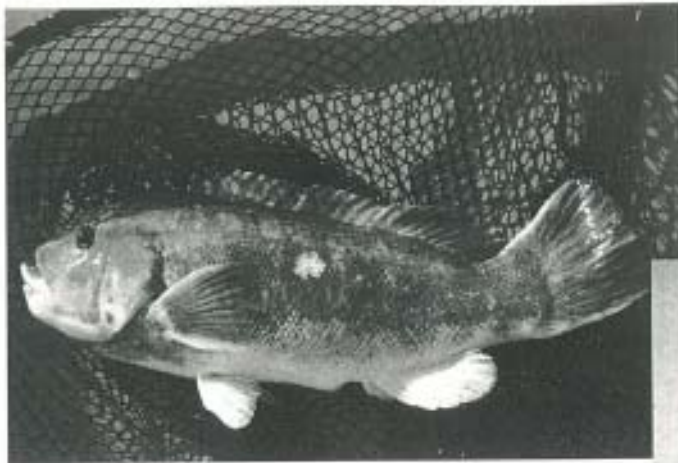
#### **Mechanics**

Tags are anchored in the shoulder muscle of the fish, near the base of the dorsal fin. To be effective, tagging programs must regularly evaluate tag retention issues. Some tag loss always occurs: tags work out of the fish's muscle over time, rub off against a structure, or may be "bitten off" by other fish.

Program coordinators researching tag retention issues hold tagged fish at VIMS or in net pens in open water. Double-tagging field trials are also conducted using high-retention, internal anchor tags (or "belly tags" as anglers often call them), to certify retention of the shoulder-anchored type. Such trials are in progress on black sea bass and speckled trout.

Angler-assisted tagging programs are instrumental in leveraging tight research budgets to acquire basic life history information required for fishery management plans. Those plans build upon information collected about local movements, seasonal migrations, water area-habitat preferences, and more. Also, researcher-angler partnerships result in more nimble responses when a recreational species experiences a sudden change—such as a jump in abundance. Typically, research institutions have little flexibility to quickly put a systematic tagging effort in place during such events.

Bain pointed out, "This is a major reason we worked to establish the tagging program. The scientific and angling communities both missed great opportunities in the past to gain new information on key Virginia fisheries such as red drum."



*Only tautog over 14 inches are keepers.*

### **Tautog management example**

Since 1995, tautog have been tagged inside the bay and on wrecks out to 30 miles offshore. Had it not been for the tagging data on tautog, Virginia's recreational fishery could have experienced serious catch limits, largely based upon data from New York to Rhode Island waters.

Dr. John Hoenig of the Fisheries Department at VIMS has a special interest in tautog tagging and works with NOAA's Marine Recreational Fisheries Statistical Survey (MRFSS) data. Since 1997-98, at the request of the Atlantic States Marine Fisheries Commission's (ASMFC) tautog technical committee, the tagging database has supplemented the MRFSS data set for the fishery's more southern region (NJ south). Paul Caruso of the Massachusetts Division of Marine Fisheries and past chair of the technical committee recently requested more data.

He explained, "The Virginia tagging data for tautog now accounts for about 50% of all release data available for the fishery's southern area, data needed to characterize size distribution and numbers of fish released alive by anglers."

Dr. Hoenig was able to use age composition data (VMRC catches sampled from anglers in Virginia ports) to produce catch curve analyses—which show changes in catch over

*Tautog provide fall to spring fishing in Virginia.*



time of tautog at different ages. His results indicated that tautog mortality rates in Virginia have been lower than in other states.

The tautog technical committee questioned why that should be the case. Committee members wanted to know if there was a biological explanation for the lower mortality in Virginia.

According to Hoenig, "The tagging data provided an explanation: Virginia tautog can experience lower mortality rates than elsewhere because they largely stay 'at home' in Virginia. Of over 1,100 tag returns of small and large tautog (tagged both inside the bay and on wrecks offshore Virginia), no recaptures have occurred in waters from New York northward."

"If Virginia's fishing mortality is lower

than the target level desired by managers, and if Virginia tautog do not move out of state to any appreciable extent, then forcing Virginia to cut back its fishing does nothing to reduce the fishing mortality in states where it is excessive," Hoenig further pointed out.

In the end, only the states of Rhode Island and Virginia were exempted from a 25% reduction in their annual recreational landings of tautog. The issue will naturally be revisited in the future. Tagging data will again play a critical role in justifying the most appropriate management strategy for Virginia's recreational fishery.

#### **Red drum data show promise**

In 2001-2002, under the ASMFC Red Drum Management Plan, the

states had to further reduce fishing mortality on young and adult fish. The objective was to move the overfished stock more rapidly toward an effective rebuilding schedule (changes to result under Amendment 2).

During 2001, in preparing for input to Amendment 2, the VMRC requested a summary of red drum movement patterns from the tagging program. "The tagging data were important, both for Virginia and for the updating of broader plans," asserted Rob O'Reilly, VMRC Deputy Chief of Fisheries. "Understanding movements of sub-adult drum and their escape rate into the fishery, where they then contribute to the spawning stock, were crucial elements to making the management plan more effective," he added.

Virginia tagging data were able to document that lower Chesapeake Bay waters support occasional strong year classes of drum. Tagged and released drum enhance Chesapeake

Bay recreational fisheries in Virginia and Maryland. More important, however, tagging data showed that thousands of sub-adult fish were released (tagged) in Virginia's fishery. Over a several year period, those released fish are expected to join the spawning stock.

While documenting relative increases in the abundance of sub-adult fish in Chesapeake Bay during 1999-2000, the tagging program also proved that Virginia fish exhibit overwintering behavior in the lower bay. Concentrations of puppy drum were tagged during January-February 2000 in areas near an Elizabeth River power plant (known by anglers as the "Hot Ditch"). From recaptures it was learned that while a sizable portion of the fish

stayed in the ditch into March, a few moved into the lower bay. Tagging of similar sized drum was accomplished again in the winter of 2002-2003 with similar results. Tagging at two power plants, the Elizabeth River location and the Yorktown plant, was enhanced through special tagging rodeos in cooperation with Dominion Resources.

The charts on page 14 show how the tagging program has made progress toward filling basic life history voids for red drum. By revealing where target fish come from and go to, tagging data contribute to better management decisions for related state fisheries. The program also provides the angling community with hard evidence that catch and release works in marine waters. It proves that released fish are hearty and survive being caught (sometimes more than once.) In many cases, those fish are caught again by other anglers in mid-Atlantic waters – keeping the circle turning,

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*Rob O'Reilly  
Deputy Chief of Fisheries, VMRC*