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The Economic Impact of Mountain Trout Fishing in North Carolina

LICENSE FEES AND EXCISE TAXES are not the only ways that sportsmen make a financial mark. Hunters and anglers also have an impact by influencing local, regional, and national economies through the goods and services they purchase while participating in outdoor activities. These effects travel far, all the way to manufacturers of sporting equipment and to other businesses where the economic role of sportsmen is not so obvious.

Responsive Management and Southwick Associates recently teamed up to help the North Carolina Wildlife Resources Commission (NCWRC) determine the economic impact of mountain trout fishing on North Carolina's economy. The study entailed a major scientific telephone survey of North Carolina licensed anglers and an economic analysis of their spending on mountain trout fishing equipment and activities. The results of the study will make it possible for the NCWRC to develop a comprehensive trout management plan; draw attention to the positive economic effects that mountain trout fishing has in western North Carolina, especially in rural areas; and effectively market public fishing opportunities to both North Carolina and out-of-state residents.

The survey was conducted in March and April 2009. Findings are reported at a 95% confidence interval. For the entire sample of mountain trout anglers, the sampling error is at most plus or minus 2.77 percentage points.

The survey was limited to anglers who were at least 18 years old; who had a valid 2008 North Carolina fishing license that included privileges for fishing in public mountain trout waters; who had fished for brook trout, brown trout, or rainbow trout (collectively known as mountain trout) in North Carolina in 2008; and who had fished for mountain trout in hatchery-supported, delayed harvest, or wild trout waters (wild trout waters include wild trout, wild trout with natural bait, catch-and-release artificial lures only, and catch-and-release artificial flies only waters).

Data collection was especially challenging for this project, because a sample of North Carolina mountain trout anglers does not exist. These individuals had to be identified by contacting a random sample of

all licensed North Carolina anglers and asking each respondent if he or she had fished for mountain trout in 2008.

The number of mountain trout anglers was determined by multiplying the proportions of the sample that fished for mountain trout (determined separately for resident and nonresident license holders) by the total number of resident and nonresident license holders: 16.2% of residents and 60.5% of nonresidents fished for mountain trout in 2008. For the economic results shown, 1,232 interviews of license holders who fished for mountain trout were completed.

The survey asked anglers to report their 2008 residency status, the county in which they fished for mountain trout most often in 2008, and the types of mountain trout waters in which they had fished (hatchery-supported, delayed harvest, and/or wild trout waters). Anglers who reported having fished in multiple types of waters were randomly assigned questions about only one type of mountain trout waters, including questions about their most recent trip to that type of water.

The number of mountain trout angler-days fished statewide by residents and nonresidents was estimated based on the average days of mountain trout fishing reported in the survey multiplied by the total number of resident and nonresident anglers. The statewide angler-days were then allocated to types of waters based on questions about total days fished and the types of waters in which the fishing occurred.

Estimation of the economic contributions of mountain trout anglers to the North Carolina economy consisted of (1) calculating expenditures by residency, region, and trout fishery management regime (i.e., hatchery-supported, delayed harvest, or wild trout water); and (2) estimating the multiplier effects that result from that spending.

Calculating Expenditures

The expenditures portion of the survey was divided into two sections: trip expenditures associated with the angler's most recent trip, and equipment expenditures during 2008 for items used for mountain trout fishing. Trip expenditures include goods and services that are consumed almost entirely during the fishing trip (travel costs, food, lodging, bait, guide services, etc.), and these are allocated to the county where the fishing took place.

Equipment expenditures include durable goods used over the course of multiple trips (rods, reels, lures, boats, trailers, coolers, clothing, and other items). Equipment purchases are typically made in the same region where anglers reside; these purchases are therefore allocated to the region where anglers live, and out-of-state purchases made by nonresidents are not counted, because they do not affect North Carolina's economy.

The survey results were coupled with counts of licensed anglers and estimates of fishing activity (angler-days) to estimate the total amount of fishing-related spending by anglers, the specific goods and services purchased, and the regional locations of the spending.

Economic Summary for All Mountain Trout Fishing in North Carolina

	Resident Anglers	Nonresident Anglers	All Anglers
Mountain Trout Anglers	76,761	16,008	92,769
Days Fished for Mountain Trout	1,274,528	147,901	1,422,428
Angler Purchases			
Licenses and Fees	$1,679,326	$432,333	$2,111,659
Trip Expenditures	$83,468,702	$23,335,331	$106,804,033
Equipment Expenditures	$36,925,432	*	$36,925,432
TOTAL	$122,073,460	$23,767,664	$145,841,124
Impacts From Trip Spending			
Total Economic Output	$118,879,235	$30,814,136	$149,693,371
Income Provided	$37,417,675	$9,837,538	$47,255,213
Jobs Supported	1,322	347	1,669
Impacts From Equipment Spending			
Total Economic Output	$24,683,912	*	$24,683,912
Income Provided	$9,080,790	*	$9,080,790
Jobs Supported	308	*	308
Impacts From All Spending			
Total Economic Output	$143,563,147	$30,814,136	$174,377,283
Income Provided	$46,498,465	$9,837,538	$56,336,003
Jobs Supported	1,630	347	1,977
Tax Revenues From All Spending			
State and Local	$11,175,095	$2,232,836	$13,407,931
Federal	$11,342,552	$2,397,591	$13,740,143

*Most equipment spending takes place where people live; nonresidents generally spend little on equipment in North Carolina.

Estimating Multiplier Effects

The expenditures made by anglers for mountain trout fishing generated additional economic benefits throughout the North Carolina economy beyond initial angler spending. These additional economic benefits were estimated with an IMPLAN input-output model that relates changes in specific industries to impacts in other industries within the statewide economy. For this study, a single statewide model was used to estimate the multiplier effects on the state economy of spending attributed to each region and trout water type. The model produced estimates of the total economic multiplier effects from spending by mountain trout anglers.

Results

Mountain trout anglers spent $146 million in North Carolina in 2008 and had a total economic output of $174 million when indirect economic effects are factored in—$72.7 million in hatchery-supported waters, $55.2 million in wild trout waters, and $46.5 million in delayed harvest waters.

The typical resident angler spends approximately $65 per day on trip expenditures when mountain trout fishing in North Carolina; nonresidents average $158 per day. Annually, the typical resident angler spends a little over $500 on mountain trout fishing equipment in North Carolina.

Other results include the following:

- In 2008, a total of 92,769 mountain trout anglers (76,761 residents and 16,008 nonresidents) fished in North Carolina.
- The typical resident angler fishes for mountain trout in North Carolina about 10 days per year, and the typical nonresident for about 5 days per year.
- A majority of resident (59%) and a large majority of nonresident (78%) anglers fished for mountain trout from 1 to 10 days in 2008 in North Carolina.
- Hatchery-supported waters are the most popular among mountain trout anglers.
- The typical mountain trout angler is approximately 50 years old (the mean ages are 51.2 years for resident anglers and 48.9 years for nonresident anglers).
- The leading counties for mountain trout fishing participation are Transylvania, Watauga, Haywood, Cherokee, Henderson, Jackson, and Ashe.

In assessing their own participation trends, resident and nonresident anglers most commonly say their participation in mountain trout fishing was about the same in 2007 and 2008 (46% among residents, and 39% among nonresidents). Otherwise, among residents, the percentage who say their participation was less in 2008 compared to 2007 (33%) exceeds the percentage who say their participation was more (21%). Nonresidents, on the other hand, more often say they fished more (36%) than less (24%) in 2008 compared to 2007.

The full report, including a more detailed explanation of the methodologies used and more breakdowns of the economic data, is available at http://www.responsivemanagement.com/download/reports/NC_Econ_Trout_Report.pdf (272KB PDF).

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PHOTOS: KEN THOMAS; NORTH CAROLINA WILDLIFE RESOURCES COMMISSION.

Responsive Management 130 Franklin Street Harrisonburg, VA 22801 Phone: 540-432-1888
Web: www.responsivemanagement.com E-mail: mark@responsivemanagement.com