

2002 Angler Creel Survey & Brook Trout Fishing Report



Great Smoky Mountains National Park

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Part I – Annual Ranger Creel Surveys

Qualitative angler use data has been collected by NPS law enforcement rangers and GRSM volunteers since 1986. Interviewers collect the following information from each angler - residence (city, state), hours fished, species, number of fish released, number and size of fish harvested, and if the angler prefers to harvest fish or fish catch-and-release (new for 2001). Data is analyzed by fisheries personnel and compared to historical information so that angler trends can be established throughout the Park and changes in catch statistics can be related to population changes determined by biological monitoring throughout the Park.

Rangers and Park VIP angler interviews increased nearly 800% in 2002, from 110 interviews in 2001 to 983 interviews in 2002 (Figure 1). One Park VIP (Reggie Smith) accounted for 70% (680 interviews) of the total interviews (Table 1). Little River (125) and Oconaluftee (79) district rangers recorded the most interviews in their respective districts in 2002.

Anglers who reside <50 miles from the GRSM Park boundary are considered local anglers; all others are considered non-local anglers. Of the 983 anglers interviewed in 2002, 365 (37%) were locals and 618 (618%) were non-locals (Table 1). In any given district, the proportion of local and non-local anglers varies given the locality and accessibility (Table 1). The high proportion of non-local anglers in the Little River District (67%) is probably attributed to the vast tourist industry in the Gatlinburg and Pigeon Forge area. The Lake District lacks a similar tourist influx and therefore is dominated by local anglers.

Anglers fished an average of 2.2 hours per trip during 2002 (Figure 2). Angler trip lengths from 1986 through 2002 ranged from 2.2 to 3.1 hours per trip with the highest angling effort between March and June.

Anglers interviewed caught 1,821 fish in 2002, but only harvested 200 (11%) of those fish caught. Local anglers caught an average of 1.3 trout/hour (combined brown and rainbow), while non-locals caught an average of 0.5 trout/hr (Table 1). Harvest rates ranged from <0.1 to 0.6 fish/hr throughout GRSM, but generally were rather low for both local (0.2 fish/hr) and non-local anglers (<0.1 fish/hr) (Figure 3). One reason for the low

harvest rates is that many non-local anglers are here on vacation and do not have the resources available to clean, store, and cook fish while here visiting. Another possible reason for declining harvest rates is that many anglers who come to the Smokies simply want an opportunity to fish for wild trout in their natural setting irregardless of harvest.

An additional question added to the creel survey sheet in 2001 asked anglers if they preferred to fish catch-and-release in Park waters. Between 76 and 78% of the anglers who fished GRSM streams in 2002 fished catch-and-release (range 50-100% by district) (Figure 4). These trends are similar to those found nationally where angler attitudes have changed dramatically from a society focused on harvest and sport in 1980 to one focused upon relaxation and being with family and friends in 1999 (Figure 5). Given the trends seen in GRSM and nationally, it is not surprising that angler catch and harvest rates in GRSM have declined 64% and 87% respectively from 1986 to 2002 (Figure 3).

Mean total lengths of brown trout harvested during 2002 ranged from 178-244mm (7-9.6 inches) while mean total lengths of rainbow trout ranged from 198-243mm (7.8-9.5 inches) (Table 1). The largest fish of each species was a 432mm (17-inch) brown trout in Little River and a 457mm (18-inch) rainbow trout caught in Abrams Creek.

Part II– Brook Trout Fishing Study

Beginning July 2002, brook trout fishing was opened in eight streams on an experimental basis for the first time since 1976. The three-year project is designed to determine what impacts, if any, legal angling has on wild brook trout populations in GRSM. For each of the eight streams opened to fishing, there is a paired stream in the same watershed that will remain closed to fishing as a control. During the course of the study, populations will be sampled annually to collect biological data from each population. In addition, creel surveys will be conducted annually by law enforcement rangers, fisheries staff, and Park VIP's in order to get angler use, catch/harvest, and sociological data on each stream. At the end of the three-year experimental period, the biological, sociological, and other non-target data will be evaluated and a

recommendation made to Park management staff regarding the future of brook trout fishing in the Park.

Given that most brook trout study streams were surveyed prior to the July 2002 opening of brook trout fishing, comparison of pre- and post-treatment (fishing) data is premature. Therefore, the only data presented in this report will be the returns from the 2002 brook trout fishing surveys.

Brook trout fishing survey returns were extremely poor for 2002. Although there were over 40 days of survey effort expended between July and October 2002, only 11 interviews were recorded (Table 2). *Due to the low number of angler interviews in 2002 (n=11), there is not enough data to draw any inferences on the entire project.*

The majority of the survey results came from WP Little Pigeon River (5), followed by Cosby Creek (3) and Beech Flats Prong (2). All anglers surveyed were male (100%) and 73% of the respondents were local anglers. The majority of anglers interviewed have fished in GRSM for more than 10 years (mean 19.9 years) and 55% of the anglers fish >20 days a year in GRSM (Table 2). All the anglers used fly rods and flies for lures. None of the anglers belonged to a fishing club.

Most anglers (64%) cited '*the opportunity catch a brook trout*' as the number one reason for fishing these streams, followed by '*easy access/close to the road*' (27%) and '*to get away from the road*' (18%). The anglers cited '*poaching and over harvest*' (45%) as the greatest future threat to wild trout populations in GRSM, followed by '*acid rain*' (18%) and '*the Government*' (18%). On a scale of 1 to 5 (1=poor and 5=excellent), 36% of anglers considered their experience excellent with 81% considering the experience average to excellent (3 to 5).

Angler catch varied considerably among local and non-local anglers. Non-local anglers caught 0 or 1 fish, whereas 63% (5 of 8) local anglers caught >15 fish per trip. Angler catch and harvest rates varied greatly among local (4.83 fish/hr) and non-local (0.25 fish/hr) anglers. Although harvest rates differed among local (0.63 fish/hr) and non-local (0.00 fish/hr) anglers, both groups of anglers (local-63%, non-locals-66%) indicated they would harvest legal trout if they caught them. There were 17 trout harvested by five local anglers, however only six of these fish were brook trout (35%).

The average length of brook trout (8.2 inches) and rainbow trout (8.0 inches) harvested closely resembles mean total lengths for legal trout (8.0 inches) in most high elevation (>3,000 feet) streams in GRSM (Table2).

Angler expenditures varied considerably depending if they were local or non-local anglers. Local anglers spent between \$0 and \$347 per trip (mean \$55.63), whereas non-local anglers spent between \$14.50 and \$1,030 per trip (mean \$374.83). Angler expenditures were greatest for equipment (\$678.00) and lodging (\$317.00), although gasoline expenditures were incurred by most anglers (Table 2).

Given the low number of angler returns for 2002, attaining brook trout angler surveys will be a high priority for 2003, especially in those streams not represented in the 2002 data (Bunches Creek, Fish Camp Prong, Hazel Creek, Lost Bottom). In addition, because of the variety of results in ranger creel surveys data among ranger districts, it will be extremely important to obtain data from all eight brook trout fishing streams in 2003. Given the remote nature of these streams, and the difficulty of contacting anglers when patrolling all the streams, if anglers are observed in brook trout fishing streams in 2003, it will be imperative to try and interview anglers when observed. In addition, in order to better quantify angler use, we will try to track effort by recording the number of days expended on angler interviews. By tracking effort, we will be able to better understand angler use or the lack thereof.

Brook Trout Fishing Survey Goal for 2003:

- 1) Through law enforcement rangers, fisheries staff, and Park VIP's we will contact and survey *at least 80 anglers* (i.e. ~10 anglers per brook trout fishing stream) to gather angler use, catch/harvest, and sociological data *on all eight streams during 2003* (Beech Flats Prong, Bunches Creek, Cosby Creek, Fish Camp Prong, Hazel Creek, Indian Camp Creek, Lost Bottoms Creek, WP Little Pigeon River).

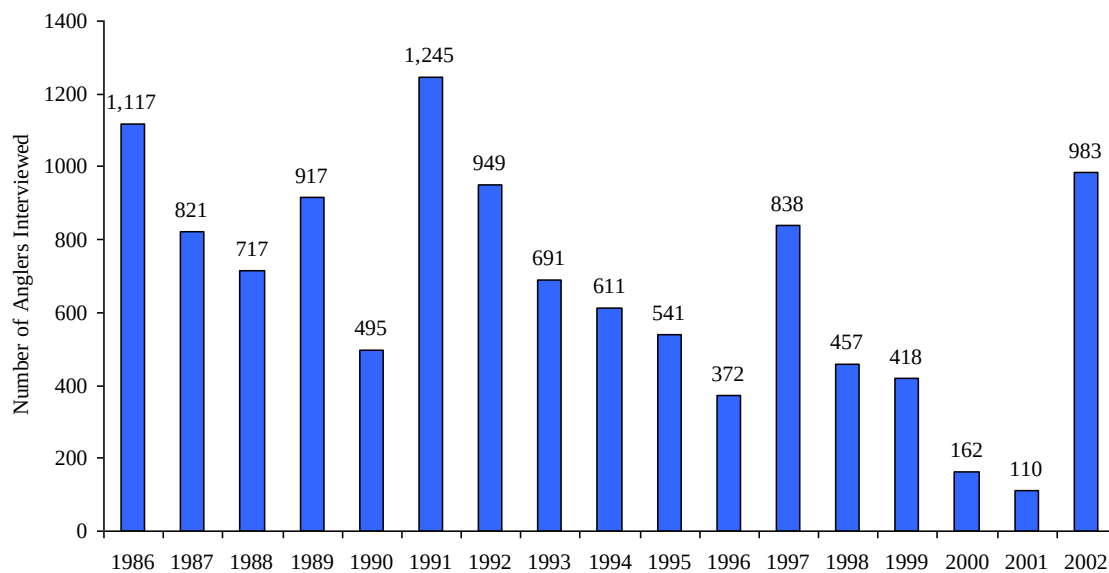


Figure 1.—Count of total angler surveys collected annually from 1986 to 2002. *Note: Park VIP Reggie Smith accounted for 768 (78%) of the total creel surveys in 2002.*

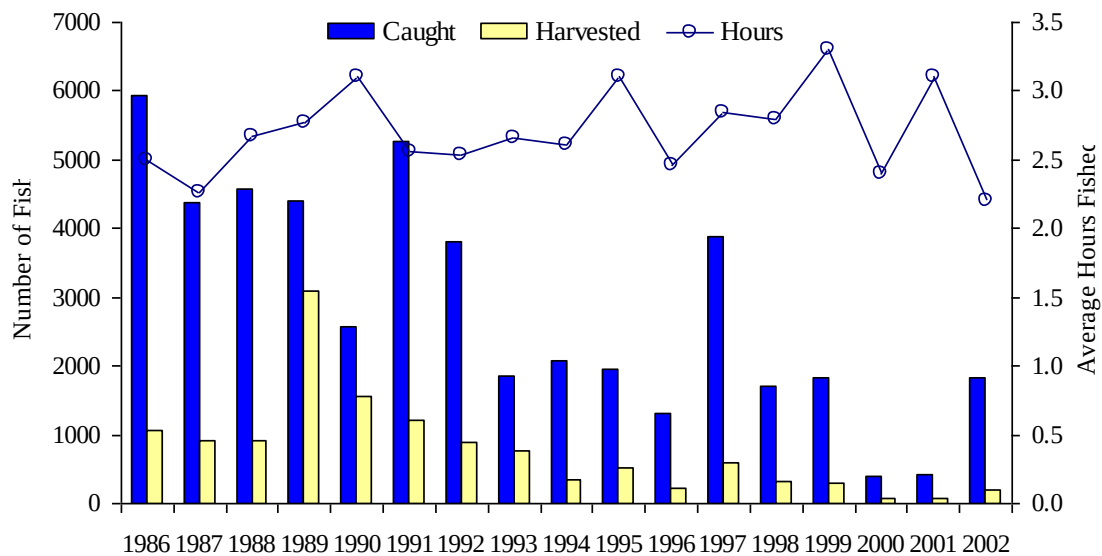


Figure 2. — Total numbers of trout caught and harvested in GRSM streams and the average number of hours fished per angler during 2002. Data collected during annual angler surveys from 1986 to 2002.

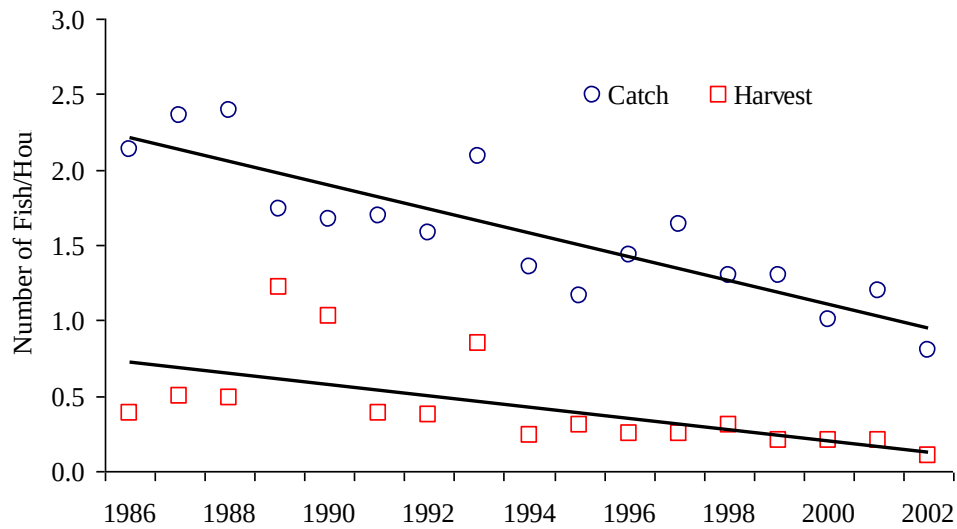


Figure 3. — Angler catch and harvest rates collected annually during GRSM angler surveys from 1986 to 2002.

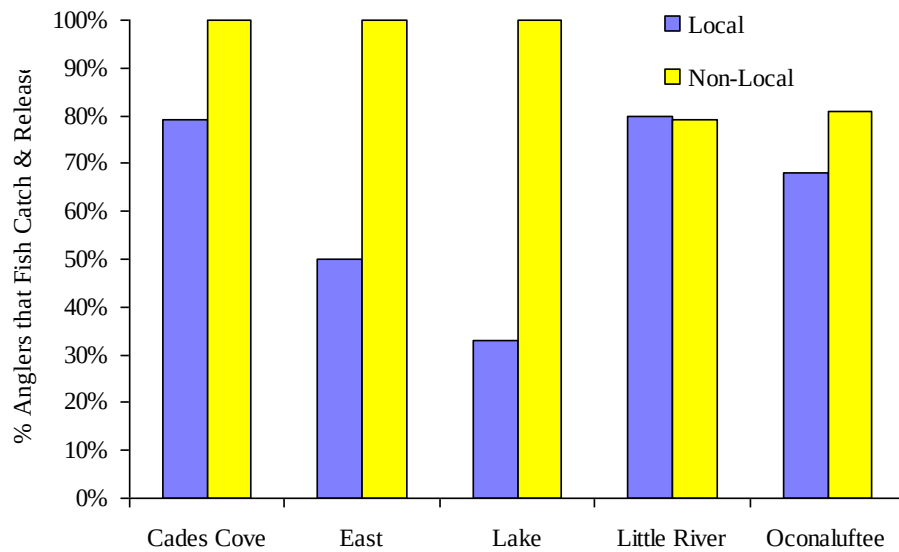


Figure 4. — Percent of anglers who prefer to fish using the “catch-and-release” philosophy of fishing in GRSM streams. Data collected during annual angler surveys from 1986 to 2002.

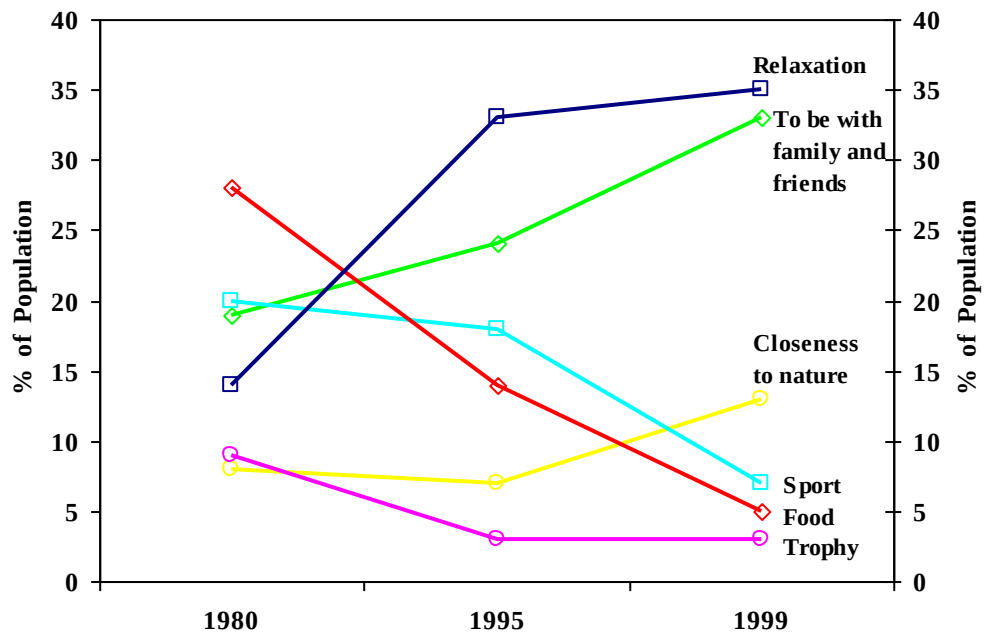


Figure 5. — Sociological review of the responses of people asked the question of ‘Why they fish?’ and their responses from 1980, 1995, and 2000 questionnaires. *Data provided by Duda et al., Responsive Management 2001.*

Table 2.—Summary of results of brook trout fishing surveys conducted between July 1 and December 31, 2002 on eight streams opened to brook trout fishing in Great Smoky Mountains National Park. (N=11)

Summary of Survey Results

(Note: (x or y%) equals (count or percent of total))

<i>Total Surveys:</i>	11
<i>Survey Origin:</i>	WP Little Pigeon (5), Cosby Creek (3), Beech Flats Prong (2), Indian Camp Creek (1)
<i>Male or Female:</i>	100% Male
<i>Time of Day:</i>	Morning (18%) Afternoon (82%)
<i>Weekend or Weekday:</i>	Weekday (91%) Weekend (9%)
<i>Local (within 50 miles):</i>	Local (73%) Non-local (27%)
<i>Years Fished in GRSM:</i>	Mean (19.9) Range (1.5–70)
<i>Days/Yr Fish in GRSM:</i>	1-5 days (2 or 18%) 6-10 (3 or 27%) >20 (6 or 55%)
<i>Hours Fished Today:</i>	Mean (3.2) Range (2.0-6.0)
<i>Rank Angling Experience:</i> (1=poor to 5=Excellent)	1 (0 or 0%), 2 (2 or 18%), 3 (4 or 36%), 4 (1 or 9%), 5 (4 or 36%)
<i>Why did they fish here?:</i>	To catch a brook trout (7 or 64%) Easy access/close to home (3 or 27%) Get away from road (2, 18%) Favorite stream, New brook trout program on internet, Camping nearby (1 each)
<i>Belong to a fishing club?:</i>	No (11 or 100%)
<i>Would you release or harvest fish if caught?:</i>	Total: Harvest (7 or 64%) Release (4 or 36%) Local Harvest (5 or 63%) Non-Local Harvest (2 or 66%)
<i>Perception of greatest future threat to wild trout in GRSM?:</i>	Poaching/Overharvest (5 or 45%), Acid Rain (2 or 18%), The Govt. (2 or 18%), Over-regulation (1 or 9%), Whatever is depleting high elevation stocks (1 or 9%), Nothing (1 or 9%)
<i>Gear Type:</i>	Flyrod (100%)
<i>Lure Type:</i>	Fly (100%)
<i>Number of Fish Caught:</i> (all species)	0 (3 or 27%), 1 (3 or 27%), 15-25 (3 or 27%), >30 (2 or 18%)
<i>Number of Fish Kept:</i> (all species)	0 (6 or 55%), 1 (1 or 9%), 2 (1 or 9%), 4 (1 or 9%), 5 (2 or 18%)
<i>Angler Catch Rate:</i>	Local (4.83 fish/hr) Non-Local (0.25 fish/hr)
<i>Angler Harvest Rate:</i>	Local (0.63 fish/hr) Non-Local (0.00 fish/hr)
<i>Mean Total Length of brook trout kept:</i>	208mm (8.2 inches) Range (7.5-9.0 inches)
<i>Mean Total Length of rainbow trout kept:</i>	205mm (8.0 inches) Range (7.0-12.0 inches)

Total Dollars Spent On:

	Gas	Food	Lodging	Equipment	License	Misc.	Total
Mean	\$17.44	\$52.50	\$300.00	\$96.50	\$30.00	\$100.00	\$142.68
Range	\$0-\$100	\$0-\$100	\$0-\$300	\$0-\$400	\$0-\$30	\$0-\$100	\$0-\$1,030
Total	\$139.50	\$105.00	\$317.00	\$678.00	\$90.00	\$100.00	\$1,569.50

Average Expenditures per trip:

Total	\$142.68 per trip
Local	\$ 55.63 per trip
Non-local	\$374.83 per trip