

# **The Rainbow Trout Fishery in the Bull Shoals-Norfork Tailwaters, Arkansas, 1971-81**

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*Abstract:* The catchable rainbow trout (*Salmo gairdneri*) fishery in the tailwaters of Bull Shoals and Norfork Dams, begun in 1948, has apparently reached equilibrium with respect to angler use and harvest. Angler days during 2 creel studies (1971-1973 and 1980-81) ranged from 139,000 (1973) to 272,000 (1981). Anglers harvested 46.1% to 98.4% of the 800,000 to 880,000 rainbow trout stocked annually. Stocking schedules were tailored to well-established patterns of spatial and seasonal angler use. The number of fish caught per hour decreased from 1971-73 to 1980-81, but the weight of fish caught per hour remained unchanged. The use of guides increased substantially from 1971-73 to 1980-81. The effects on fisherman harvest were substantially different during years of very high and very low water in the tailwaters. A discrete creel census of the Norfork tailwater was conducted during 1980-81 and results were compared to the fishery during that period in the Bull Shoals tailwater.

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This paper compares intensive creel studies conducted on the Bull Shoals tailwater during 1971-73 (Aggus et al. 1977, Morais and Jenkins 1974) and 1980-81. The objective of the comparison was to define and evaluate trends in the tailwater's catchable rainbow trout (*Salmo gairdneri*) fishery. The first discrete census of the Norfork tailwater was conducted during 1980-81 for comparison with the Bull Shoals study.

The impoundment of the North Fork River in 1944 by Norfork Dam and the White River in 1952 by Bull Shoals Dam by the U.S. Army Corps of Engineers for flood control and hydropower generation and the subsequent discharge of hypolimnial water created a habitat unsuitable for warm-water fishes but suitable for trout. The success of experimental stockings of rainbow trout in 1948 led to the construction of Norfork National Fish Hatchery to mitigate lost warm-water fisheries (Baker 1959).

The Bull shoals tailwater supports trout for approximately 164 km below

Bull Shoals Dam to Lock and Dam No. 3. The Norfolk tailwater supports trout from Norfolk Dam to its confluence with the White River, a distance of approximately 7 km. The approximate surface areas of the Bull Shoals and Norfolk tailwaters are 2,535 and 46 ha, respectively.

An extensive stocking program is required to sustain the trout fishery because angling pressure is intense and highly variable daily releases through the dams result in such extreme fluctuations in water levels and temperatures that trout reproduction is severely limited (Baker 1959). Instantaneous discharge rates vary from 1.4 to 640 cm (Bull Shoals Dam) and from 1.4 to 170 cm (Norfolk Dam). The flows from Bull Shoals Dam generally dominate the tailwaters below the confluence. The historic mean daily discharge rate from Bull Shoals Dam is 144 cm (Jones and Aggus 1983). Mean daily discharge rates were 122, 95, and 286 cm, respectively, in 1971, 1972, and 1973 (Aggus et al. 1977); and 88 and 58 cm, respectively, in 1980 and 1981 (Monthly Reservoir Reports, Little Rock District, Corps of Engineers).

Rainbow trout averaging 23 cm and 7.7 fish/kg are obtained from the Norfolk Hatchery and distributed year round. Larger trout, averaging 2.6 fish/kg, are purchased from private producers or grown with monies from sales of state trout permits and are stocked from April through September to increase creel weights during the peak fishing season. Trout that avoid harvest for extended periods of time grow to respectable sizes in both tailwaters. Rainbow trout weighing >2.25 kg and brown trout (*S. trutta*) weighing >4.5 kg are not uncommon. The current Arkansas records for rainbow and brown trout, 8.65 kg and 15.2 kg, respectively, were both caught in the Bull Shoals tailwater.

An extensive tourist industry has developed on the tailwaters, particularly on the upper third of the White River, and the trout fishery has become an important part of the local and state economy. Numerous fishing services, resorts, and public access areas provide a variety of recreational attractions. The most popular is float-fishing with guides. Tourist surveys estimated \$42 million was spent on fishing trips to the White and North Fork rivers in fiscal year 1982 (pers. commun., Charles McClemore, director of research, Ark. Dep. Parks and Tourism, Little Rock).

Water temperature is the most critical environmental influence on the tailwater fishery (Baker 1959). During extended periods of low rainfall in the region, such as occurred in 1972, 1980, and especially 1981, penstock releases from the dams were frequently minimal (1.4 cm). During these low flows in summer, water temperatures in the White River climbed and were progressively higher downstream. In July 1981, temperatures in excess of 27° C killed 8,000 to 10,000 trout near Sylamore, 120 km below Bull Shoals Dam.

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## Methods

The 1980–81 creel study was identical to the 1971–73 census, except that the Norfolk tailwater was included. The creel census was designed in collaboration with Don W. Hayne, North Carolina State University, as described in Aggus et al. 1977.

Data on angler use and success obtained from fishermen interviews and angling pressure from aerial counts was transmitted to the National Reservoir Research Program. They designed the sampling schedule, computerized the data, and provided monthly summaries and final data tabulations.

Five sites on the White River and 2 on the North Fork River were selected for interviewing anglers returning to high-use landings and docks. Sites were visited at random from 1100 to 1900 hours on a predetermined schedule that was stratified by season and zone of tailwater. The White River was divided into 3 zones: 1) upper, Bull Shoals Dam to Buffalo City (53 km); 2) middle, Buffalo City to Calico Rock (46 km); and 3) lower, Calico Rock to Lock and Dam No. 3 (61 km). The North Fork River was considered a single zone.

Aerial counts of anglers were conducted on a random schedule that was stratified by time of day, season, and zone. Flights were made at either 1000, 1200, 1400, or 1600 hours, and each flight of approximately 2 hours spanned both rivers.

## Results and Discussion

The 1971–73 creel census results were obtained from Aggus et al. (1977) and Morais and Jenkins (1974). Data was collected from 6,407 angler interviews in 1971–73 and 8,272 angler interviews in 1980–81. Every year of the creel studies was complete except 1980, which was begun in March.

During the 1971–73 study period, coefficients of variation of the angler use and harvest estimates ranged from 5.2% to 22.5% of the monthly estimates (Aggus et al. 1977). In 1980–81, approximate SE's computed from mean square successive differences ranged from 4.4% to 24.0% of monthly estimates. The sample design yielded use and harvest estimates with confidence limits of  $\pm 10\%$ .

### Angler Effort

Annual angler effort on the Bull Shoals tailwater (Table 1) ranged from an estimated 783,600 angler hours (139,000 angler days) in 1973 to 1,306,050 angler hours (271,717 angler days) in 1981. Angler use of the White River

**Table 1.** Comparison of results and estimates of 5 creel census years (1971–1973 and 1980–1981) on Bull Shoals tailwater. Harvest and stocking data are for rainbow trout. The 1971–1973 creel census data were obtained from Aggus et al. (1977).

	Creel census years				
	1971	1972	1973	1980	1981
Total angler-hours	1,052,700	1,104,100	783,600	1,177,050	1,306,053
Total angler-days	250,200	227,500	139,000	226,386	271,717
Total guided angler-days	76,600	77,180	56,160	79,901	107,623
Total <i>N</i> stocked	859,800	814,200	884,400	738,089	800,384
Total <i>N</i> harvested	846,100	782,900	408,000	633,835	720,560
Total kg stocked	121,218	110,685	122,400	122,353	133,766
Total kg harvested	136,382	120,265	86,078	153,031	149,176
Harvest rates (fish/hour)	0.80	0.71	0.52	0.54	0.55
Harvest rates (kg/hour)	0.12	0.10	0.10	0.13	0.11
Equivalent harvest (% <i>N</i> ) <sup>a</sup>	98.4	96.2	46.1	85.9	90.0
Equivalent harvest (% kg) <sup>b</sup>	112.5	108.7	70.2	125.0	111.5

<sup>a</sup> Compares number of trout harvested to number stocked (number of trout harvested/number of trout stocked).  
<sup>b</sup> Compares kilograms of trout harvested to kilograms stocked (kilograms trout harvested/kilograms trout stocked).

**Table 2.** Estimated angler use (angler-hours), estimated number of rainbow trout harvested, and number of rainbow trout stocked in Bull Shoals tailwater from 1971 to 1973 (Morais and Jenkins 1974) and 1980 and 1981. Percentage of annual total shown in parenthesis.

	Angler hours				
	1971	1972	1973	1980	1981
Jan-Feb	15,300 (1.4)	27,900 (2.5)	25,740 (3.3)		60,030 (4.6)
Mar	34,800 (3.3)	65,000 (5.9)	33,100 (4.2)	42,430 (3.6)	61,780 (4.7)
Apr	123,400 (11.7)	110,300 (10.0)	32,500 (4.1)	108,290 (9.2)	141,250 (10.8)
May	124,200 (11.7)	149,000 (13.5)	53,600 (6.8)	182,880 (15.5)	208,120 (15.9)
Jun	158,200 (15.0)	216,000 (19.6)	146,400 (18.7)	186,830 (15.9)	184,440 (14.1)
Jul	204,600 (19.4)	190,300 (17.2)	152,000 (19.5)	210,110 (17.8)	162,760 (12.5)
Aug	182,200 (17.2)	178,800 (16.2)	132,500 (16.9)	186,860 (15.9)	212,960 (16.3)
Sep	101,700 (9.6)	95,800 (8.7)	92,900 (11.8)	116,610 (9.9)	143,070 (11.0)
Oct	89,100 (8.4)	41,900 (3.8)	81,000 (10.4)	91,370 (7.8)	87,080 (6.7)
Nov-Dec	23,800 (2.3)	29,200 (2.6)	33,800 (4.3)	51,970 (4.4)	44,570 (3.4)

	N of rainbow trout harvested				
	1971	1972	1973	1980	1981
Jan-Feb	18,500 (2.2)	33,300 (4.2)	12,300 (3.0)		45,650 (6.3)
Mar	23,800 (2.8)	45,400 (5.8)	19,200 (4.7)	19,440 (3.1)	45,640 (6.3)
Apr	76,600 (9.1)	73,800 (9.4)	12,700 (3.1)	62,860 (9.9)	87,910 (12.2)
May	82,800 (9.8)	113,000 (14.4)	24,100 (5.9)	72,230 (11.4)	89,290 (12.4)
Jun	120,600 (14.2)	152,800 (19.5)	83,100 (20.4)	90,720 (14.3)	90,730 (12.6)
Jul	153,100 (18.1)	135,600 (17.4)	64,600 (15.9)	115,150 (18.2)	73,800 (10.3)
Aug	149,500 (17.7)	115,900 (14.8)	74,000 (18.1)	114,040 (18.0)	94,070 (13.1)
Sep	78,200 (9.2)	71,900 (9.2)	55,300 (13.6)	69,370 (10.9)	98,200 (13.6)
Oct	115,100 (13.6)	21,600 (2.8)	42,200 (10.3)	58,980 (9.3)	45,260 (6.3)
Nov-Dec	27,900 (3.3)	19,600 (2.5)	20,600 (5.0)	31,030 (4.9)	50,020 (6.9)

Table 2. Continued

	N of rainbow trout stocked				
	1971	1972	1973	1980	1981
Jan-Feb	73,789 (8.6)	82,469 (10.1)	72,208 (8.6)	40,092 (4.9)	68,786 (8.6)
Mar	38,900 (4.5)	38,900 (4.8)	62,500 (7.4)	76,200 (9.3)	44,873 (5.6)
Apr	59,300 (6.9)	86,900 (10.7)	50,600 (6.0)	61,960 (7.6)	71,051 (8.9)
May	79,200 (9.2)	80,900 (9.9)	67,300 (8.0)	88,060 (10.7)	75,407 (9.4)
Jun	118,600 (13.7)	100,011 (12.3)	96,700 (11.5)	96,070 (11.7)	92,260 (11.5)
Jul	110,300 (12.7)	88,900 (10.9)	105,000 (12.4)	116,990 (14.3)	101,235 (12.7)
Aug	99,300 (11.5)	110,300 (13.5)	108,800 (12.9)	113,890 (13.9)	110,388 (13.8)
Sep	122,400 (14.2)	93,800 (11.5)	77,000 (9.1)	82,370 (10.0)	90,514 (11.3)
Oct	83,400 (9.7)	66,000 (8.1)	62,600 (7.4)	70,180 (8.6)	67,322 (8.4)
Nov-Dec	77,400 (9.0)	67,000 (8.2)	141,800 (16.7)	74,060 (9.0)	78,548 (9.8)

**Table 3.** Annual estimates of angler use and harvest obtained in the 1980 and 1981 creel census of the Bull Shoals-Norfolk tailwaters. The estimates are reported by zone: Up = upper, Mid = middle, Lo = lower, and NFR = North Fork River, and both tailwaters combined (TWS). Harvest estimates and stocking data are for rainbow trout.

	1980					1981				
	Up	Mid	Lo	NFR	TWS	Up	Mid	Lo	NFR	TWS
Total angler-hours	691,010	296,520	189,520	78,850	1,256,200	816,732	302,943	186,378	129,549	1,435,603
% total angler-hours	55	24	15	6	100	57	21	13	9	100
Angler-hours/km	13,010	6,349	2,948	10,951	7,329	15,381	6,487	2,894	17,993	8,376
Angler-hours/ha	832	406	195	1,691	488	984	415	191	2,786	558
Total angler-days	134,200	55,820	36,376	15,810	242,206	169,846	63,008	38,865	28,485	300,206
Angler-days/km	2,527	1,195	565	2,196	1,413	3,196	1,349	605	3,956	1,751
Angler-days/ha	162	76	37	340	94	205	86	40	616	117
N stocked	370,456	219,388	148,245	42,214	780,303	412,014	241,056	147,314	46,064	846,448
N/km stocked	6,977	4,698	2,302	5,863	4,552	7,759	5,162	2,295	6,398	4,938
N harvested	362,482	149,681	121,662	40,082	673,910	452,040	165,248	103,272	75,363	795,525
N/km harvested	6,826	3,205	1,895	5,567	3,932	8,513	3,538	1,609	10,467	4,644
Kg stocked	63,202	35,354	23,797	8,329	130,682	70,102	41,026	2,638	8,596	142,362
Kg/km stocked	1,190	757	370	1,157	762	1,320	878	351	1,194	831
Kg harvested	91,682	35,175	26,174	13,100	166,131	96,568	33,263	19,345	21,756	170,932
Kg/km harvested	1,727	753	406	1,819	969	1,819	712	306	3,022	997
Harvest rate (fish/hour)	0.52	0.50	0.64	0.51	0.54	0.55	0.54	0.58	0.58	0.55
Harvest rate (kg/hour)	0.13	0.12	0.14	0.17	0.13	0.12	0.11	0.10	0.17	0.12

was greatly reduced in 1973 due to extremely high flows during much of the year. These high flows made boating hazardous and often suspended bank-and-wade fishing. Excluding the atypical high water year of 1973, annual angler effort averaged 1,160,000 angler hours (244,025 angler days). Angler use increased by approximately 9% from 1971 to 1981. Monthly angling effort (Table 2) varied from 15,300 angler hours (4,500 angler days) in January–February 1971, to 216,000 angler hours (41,600 angler days) in June 1972. It averaged 34,700 angler hours in the winter months (January–February, November–December) and 126,840 angler hours during spring, summer, and fall (March–October). Angling pressure during the 4 peak months of the fishing season (May–August) was 64% of the total for 1971–73 (Morais and Jenkins 1974) and 56% of the total in 1980–81, which may indicate a trend toward more even temporal distribution of angler effort.

The upper, middle, and lower White River sustained 59%, 28%, and 13% of the total estimated fishing pressure during 1971–73 (Aggus et al. 1977) and 61%, 24%, and 15%, respectively, of the estimated fishing pressure during 1980–81 (Table 3). Fishing pressure (both in percentage of total effort and estimated number of angler hr and days) increased in the upper and lower white River zones and decreased in the middle zone from 1971–73 to 1980–81.

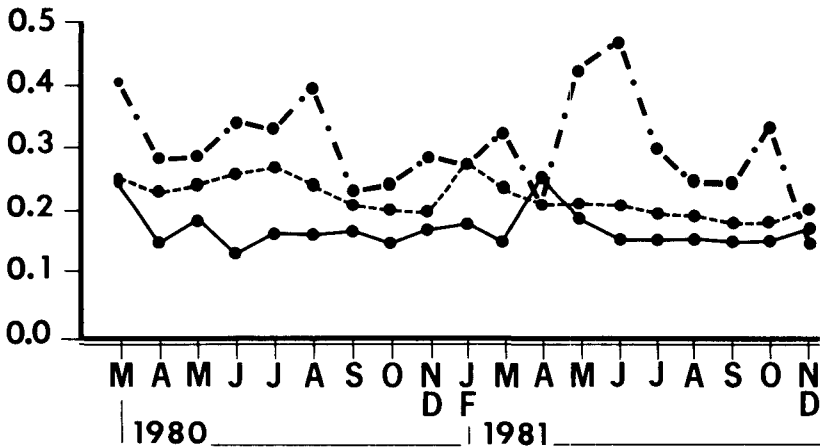
Angler use per hectare on the upper White River zone averaged approximately 770 hours (157 days) in 1971–72, 546 hours (94 days) in 1973 (Aggus et al. 1977), and 980 hours in 1980–81 (Table 3). Use decreased in near geometric sequence downriver by zone. Angler hours per hectare in the middle zone averaged 430 in 1971–72, 290 in 1973, and 410 in 1981. Use per hectare in the lower White River averaged approximately 130 hours in 1971–72, 120 hours in 1973, and 193 hours in 1980–81. The zonal distribution of angler effort is well established and unlikely to change appreciably.

#### Stocking and Angler Harvest

The number of trout stocked annually (Table 1) in the tailwaters ranged from 800,400 in 1981 to 884,400 in 1973, and averaged 845,630. The estimated number of trout harvested annually from the White River ranged from 408,000 (46.1% of the number stocked) in 1973 to 846,100 (98.4% of the number stocked) in 1971. The average estimated number harvested during the 5 years of the census was 784,200. Excluding 1973, when harvests were substantially lower because of reduced pressure, the percentage of harvested-to-stocked trout was higher in the 1971–72 census period (97.3%) than in the second (88.0%) in the Bull Shoals tailwater. When the estimated number harvested from the Norfork tailwater during 1980–81 was included in total harvest, the harvest rate became 90.2% of the number stocked. Mortality of trout from other causes besides harvest was not investigated.

The estimated number of trout harvested frequently exceeded the number stocked in the upper zone throughout the 5 census years. Early tagging





**Figure 1.** Comparison of the monthly mean weight (kg/fish) of rainbow trout harvested in the White River (dashed line) and North Fork River (dashed line with dots) with the mean weight of fish stocked (solid line), 1980–1981. Rainbow trout were raised in Pot Shoals net pens and stocked in March 1980 and April 1981.

studies demonstrated a tendency for trout to migrate upstream in White River (Baker 1959). The upper zone probably recruited trout from the middle zone, where stocking consistently exceeded harvest.

Each year, except 1973, more weight was harvested from the White River than was stocked (Table 1). The total weight of trout harvested exceeded the total weight stocked by an estimated 24,720 kg in 1971–72, and by an estimated 46,080 kg in 1980–81. While only 46% of the number of trout stocked in 1973 was harvested, approximately 70% of the weight stocked was harvested. More kilograms of trout were harvested in 1980 (10 months) than in 1981 as a result of anglers catching trout stocked but unharvested in 1979, a high water year, or earlier.

As angling pressure accumulated during each year, the average size of trout harvested from White River either stabilized or approached the average size of stocked trout. Larger trout were caught in winter months when angling pressure declined. This relationship was true in 1971–72 (Aggus et al. 1977) and was observed in 1980–81 (Fig. 1). Peaks in the size of stocked trout in March 1980 and April 1981 resulted from the supplemental stocking of trout averaging 0.45 kg/fish from the state-operated net pen facility on Bull Shoals Reservoir.

Catch rates (Table 1) ranged from 0.52 fish/hr (1973) to 0.8 fish/hr (1971), and from 0.11 kg/hr (1972–73, 1981) to 0.13 kg/hr (1971, 1980). Angler success declined from 0.75 fish/hr in 1971–72 to 0.55 fish/hr in 1980–81, but was consistent in kg/hr. Catch rates (fish/hr) were highest in the lower

zone (0.67–1.33) and lowest in the upper zone (0.41–0.72) during 1971–73 and 1980. Reduced flows in the Bull Shoals-Norfolk tailwaters during 1981 had severe impacts on the lower zone. In July, harvest declined to less than 0.2 fish/hr. Trout, stressed by warm-water temperatures, provided poor fishing, and boat traffic was often restricted to easily accessible areas that were probably overfished.

Guide use on the White River (Table 4) was extensive and steadily increased from approximately 31% of all estimated angler effort in 1971 to nearly 40% in 1981. The estimated number of guided angler days ranged from 56,160 in 1973 to 107,620 in 1981. The greatest increase in guide use occurred in the upper zone, which sustained approximately 73% of all guided effort during 1971–73 and 82% during 1980–81. Guide expertise increased the angling efficiency of average and inexperienced fishermen and attracted approximately 42,000 to 72,000 individuals to the tailwaters annually.

The socioeconomic importance of the trout fishery was demonstrated by the 1-way distances anglers were willing to travel to reach the tailwaters (Table 5). Anglers from most states and several foreign countries were interviewed. During the 1971–73 period, approximately 60% travelled >321 km. During 1980–81, approximately 40% (including Norfolk tailwater anglers) travelled >321 km. The decline in the numbers of anglers travelling greater distances in 1980–81 probably reflected the general economic conditions (i.e., high unemployment, rising gasoline prices, etc.) of the times. Additional distance categories in the 1980–81 interviews showed that 18% (97,600 anglers) travelled >644 km.

#### North Fork River

During 1980–81, anglers spent an estimated 208,400 angler hours (44,300 angler days) on the North Fork River. This amounted to 8% of the total fishing effort occurring in the tailwaters (Table 3). Monthly angling effort ranged from 6,712 angler hours (1,269 angler days) in October 1981, to

**Table 4.** Estimated guide use on the Bull Shoals tailwater during 1971–73 (Aggus et al. 1977) and 1980–81.

	Guided angler effort				
	1971	1972	1973	1980	1981
Total guided angler-hours	367,360	602,000	370,660	581,960	724,100
% total angler-hours	30.6	33.9	40.4	35.3	39.6
Guided angler-days <sup>a</sup>	76,600	77,180	56,160	79,900	107,620
Guide-days <sup>b</sup>	24,750	27,580	14,300	26,630	35,870
Mean trip length (hours)	6.0	7.8	6.6	7.3	6.7

<sup>a</sup> Includes guides.

<sup>b</sup> Based on 2 fishermen per guide (the observed average).

**Table 5.** One-way distances (km) travelled by anglers to reach Bull Shoals-Norfork tailwaters during 1971-73 (Aggus et al. 1977) and 1980-81.

	One-way distance (km)						
	<80	81-160	161-321	>321 <sup>a</sup>	322-644	645-1,287	>1,287
Present (1971-73)	21.3	3.6	15.4	59.9			
Present (1980-81)	32.8	3.6	24.3	39.3	20.1	17.7	1.5

<sup>a</sup> Last category in 1971-73 interviews.

18,612 angler hours (3,429 angler days) in June 1981. Annual angler effort per hectare on the North Fork River was twice as great as occurred in the upper White River zone in 1980 and almost 3 times as much as occurred in 1981.

Several features distinguished the North Fork River fishery from that of the White River. Although more angling pressure was exerted on the North Fork River than on the White, trout harvested from the North Fork consistently weighed more than those from the White (Fig. 1). A combination of factors probably influenced this difference. Only 1% of all guided fishing effort in the tailwaters occurred on the North Fork River and angling was less efficient. The North Fork was popular with flyfishermen who practiced catch-and-release. Approximately 24% of the North Fork River fishermen harvested no trout per trip, whereas only 13% of the White River fishermen harvested no trout per trip. The trout remained in the North Fork longer and were allowed more opportunity for growth. The estimated weight of trout harvested (Table 3) exceeded the weight stocked by 57% in 1980 and by 153% in 1981 in the North Fork River.

The North Fork River received the Norfork Hatchery outfall which added nutrients and probably stimulated macrophyte and macroinvertebrate production. Investigators (Hoffman and Kilambi 1971, Schmidt 1972, Brown et al. 1967) reported higher densities of chironomids, amphipods, isopods, oligochaetes, and other macroinvertebrates trout eat in the North Fork than in the White. Scouring of substrate and macrophytes due to turbine releases from the dam were less severe in the North Fork than the White (Jones and Aggus 1983). Water temperatures were usually within the optimum range (10°-15.5° C) for trout growth (Piper 1982) and, because of the short travel of water discharged from the dam, rarely exceeded 18° C. In contrast, during low-flow periods in summer and early fall, water temperatures in the White River frequently exceeded 21° C and trout migrated into the North Fork and were harvested.

During 1980-81, 27,170 more trout were harvested than were stocked in the North Fork River. This extra harvest occurred primarily in 1981. The North Fork probably recruited trout from the middle and lower White River zones.

## Conclusion

Data from the 5 creel census years have identified several established trends in angler use and harvest on the Bull Shoals tailwater. As expected, angler effort closely corresponded to harvest throughout every year (except during several extended periods of very low or high flows). Stocking schedules, which were adjusted after the 1971–73 census, were based on predicted angling pressure, although stocking in winter was intentionally greater than predicted demand in order to maximize in-river growth before the spring fishing season (Table 2).

The results of the 1980–81 studies showed that relatively little change had occurred in most features of the trout fishery since 1971–73. Most importantly, the use of guides increased substantially. Since guided anglers are extremely efficient, this trend is expected to greatly increase the demands on the fishery, particularly in the upper zone. The number of trout caught per hour declined in 1973 and 1980–81, but harvest in kg/hr was relatively consistent throughout the 5 years. The success rates of guided anglers may have buffered the estimated success rates of all tailwater effort. The mean length of a guided trip during the 5 years was 6.9 hours (Table 4) and the average guided party (2 anglers and a guide) harvested 12 trout (0.58 fish/hour). During 1971–73, guides commonly harvested the 6 trout of their own daily limit which increased the mean guided angler catch rate to 0.87 fish/hour. This practice was mostly abandoned by 1980 and was prohibited by law in 1983.

Only major changes in reservoir operation or trout stocking will significantly alter angler use and success in the Bull Shoals-Norfork tailwaters. The trout fishery in the tailwaters is vulnerable to adverse changes in the operative priorities or capacities of the 2 dams. Since stocking is near capacity, management emphasis has been placed on obtaining an increased, sustained minimum discharge from the dams, particularly Bull Shoals Dam, to alleviate temperature problems and to provide more wetted substrate for benthic production.

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