



**Fisheries Bulletin  
of the Kentucky  
Department of  
Fish and Wildlife  
Resources**

**Evaluation of Rainbow and Brown Trout Stockings  
In the Lake Cumberland Tailwater**

by  
**Jarrad Kosa**

**Bulletin No. 102**

**September 1999**

Evaluation of Rainbow Trout and Brown Trout Stockings  
In the Lake Cumberland Tailwater

Jarrad T. Kosa  
Kentucky Department of Fish and Wildlife Resources  
1 Game Farm Road  
Frankfort, KY 40601 USA

Partially funded by the Sport Fish Restoration Act  
Statewide Fisheries Investigation Grant F-40

**Abstract.** --We evaluated the movement and exploitation of stocked brown trout *Salmo trutta* and rainbow trout *Oncorhynchus mykiss* and the attitudes of anglers in a 38 mi section of the Lake Cumberland tailwater. Trout were batch-marked according to stocking location and time using multiple body locations of tags, tag types, and tag combinations. Tag returns in a creel survey were used to assess dispersal and harvest patterns. Dispersal was similar for brown and rainbow trout. The longitudinal distribution of brown and rainbow trout catches were segregated based on stocking locations and this pattern was similar for brown and rainbow trout. In few cases did brown trout and rainbow trout move beyond the boundaries of their upper and lower stocking sites. Harvest was greatest among trout stocked in upstream locations. Exploitation rates were greatest for rainbow trout stocked in August and September. From March-November 1995, anglers fished an estimated 269,123 h and angler effort peaked in July. The average trip length was 5.1 h and the estimated number of trips was 52,431. Approximately 82% of the anglers interviewed were KY residents and 21% were residents of counties proximal to the river. Angling practices (release and harvest) differed dramatically between two strata within the study section. We recommend increasing the number of sites stocked and shifting stocking densities in consideration of spatial patterns of angler exploitation.

The management of trout in tailwaters receives great emphasis in the Southeastern USA due to habitat issues associated with reservoir construction (Axon 1974). Nearly half of the annual cultured trout production in Kentucky is allocated to 14 reservoir tailwaters. Despite the importance of tailwater trout fisheries in this region, little information exists regarding the post-stocking movements of hatchery trout in these unique environments. Recent improvements in fish tagging technology allow biologists to easily identify numerous cohorts of fish stocked at different locations and times. Knowledge of trout movement and harvest patterns is necessary for biologists of the Kentucky Department of Fish and Wildlife Resources (KDFWR) to design stocking strategies that meet their management goals. The purposes of this effort are: (1) to characterize patterns of movement from stocking sites for brown trout *Salmo trutta* and rainbow trout *Oncorhynchus mykiss*, (2) to evaluate spatial and temporal patterns of exploitation for both species, (3) to determine angler use patterns and their attitudes regarding management strategies, and (4) to relate the implications for managers using similar stocking programs in large tailwaters.

### Study Area

This study was conducted on a 38.3 mi long section of the Cumberland River below the Wolf Creek Dam located along the southern border of Kentucky. Lake Cumberland was created in 1950 by the U. S. Army Corps of Engineers with the construction of Wolf Creek dam for hydropower and flood control. Brown trout have been stocked in the tailwater since 1982 and rainbow trout since 1952. Within the study area, there is an eight trout daily limit and only three may be brown trout. The tailwater extends 75.2 mi from Lake Cumberland to the Tennessee state line and is Kentucky's largest trout fishery. Discharge in the tailwater is regulated by releases through penstocks at 103 ft below normal power pool. The average daily discharge is 10,000 ft<sup>3</sup>/s. Radical fluctuations in flow occur daily with releases typically increasing from 20 to 15,000 cfs within 3 h. Daily water level fluctuations range from as much as 20 ft in the upper reaches to 6 ft in Burkesville 34 mi downstream. Water temperatures in the study area range from 8 to 14 °C and releases from the dam influence water temperatures throughout the Kentucky portion of the river. River width varies from 200 to 400 ft. The river is characterized by long (0.5-4.0 mi) pools interspersed with riffles (0.1-1.0 mi). Available structure primarily consists of shoals associated with islands and small streams. Stumps and large woody debris occur along the banks (Coopwood et al. 1987).

### Methods

All trout stocked in the tailwater during 1995 were tagged to indicate stocking location (brown trout) or stocking location and stocking time (rainbow trout). Brown trout were tagged using blank coded wire tags from Northwest Marine Technology (NMT). Rainbow trout were tagged with combinations of wire tags and elastomer tags to identify stocking

month (Apr-Nov) and stocking location (up to four per month). In brown trout, wire tags were placed in various body locations to identify stocking location. We stocked 26 groups of rainbow trout and six groups of brown trout. Fish were anesthetized with MS-222 prior to tagging and were held in hatchery raceways for a minimum of 21 days to detoxify the anesthetic and assess tag retention. Details of the tagging methodology, retention, and detection are described in Hale and Gray (1998). Brown trout were stocked at 6 locations within the study section on March 20 and 21, 1995 (Table 1). Rainbow trout were stocked monthly between April and November at four locations within the study section (Table 1).

Fishing pressure, catch, harvest, and dispersal of trout were estimated using a non-uniform probability creel survey (Table 2). Surveys of boat and bank anglers were conducted on a 38.3 mi section beginning at Wolf Creek Dam from March through November 1995. Five surveys were done per week with no more than one survey done per day. The tailwater was stratified into an upper (0-4.5 mi) and lower strata (4.6-38.3 mi). The lower stratum was further divided into three subsections so angling pressure counts and angler interviews could be done within a 6-hour period. All surveys were done during daylight hours and the start time of each survey was randomized such that the earliest possible survey would begin at sunrise and the latest possible survey would end at sunset. Pressure counts were taken during the first half-hour and last half-hour of each survey period. Creel agents noted whether anglers fished from a boat or the bank. Creel clerks collected harvest information and identified tags in harvested fish during angler interviews. Length and numbers of trout released by anglers could not be validated.

The mean distances between stocking location and harvest location were calculated for both species (Table 3). Numbers of tagged rainbow trout harvested at Wolf Creek dam and Helm's Landing were summed by month to evaluate the differences in catch rates through time. When calculating the mean distances both species moved upstream and downstream, we eliminated the bias associated with immediate harvest by not considering trout harvested within 0.5 mi of each stocking area. Data for Crocus Creek and Burkesville stocking sites were not used due to extremely low return rates (Table 2). The number of days between stocking and harvest was summarized for each species by stocking site (Table 4) and days at large (Table 5). To evaluate dispersal of brown trout, the number of days between stocking and harvest was regressed on distance between stocking location and capture location. Analyses were considered significant at  $P \leq 0.10$  because of the importance of pattern detection (Scheiner 1993). Harvest statistics were determined using version 2.1 of the Kentucky Fisheries Analysis System (Tables 6-12).

The angler telephone survey instrument was designed in collaboration with KDFWR district managers to insure that questions were based on current management practices and in consideration of potential changes (Hale et al. 1992). Two questions were added to the survey regarding participation in small stream trout fisheries. Structure of the instrument and form of the questions were refined by Fishery

Information Management Systems. Anglers interviewed during creel surveys were asked for their address and telephone number. This information was used to assemble a sample of trout anglers for the telephone survey. One hundred and five usable interviews were conducted via telephone from May 1, 1997 to August 1, 1997.

## Results and Discussion

### *Trout movement*

Creel survey agents examined 163 (0.5%) of the 30,160 brown trout stocked in 1995. Returns of brown trout were greatest among those fish stocked in the upper three stocking locations. The return rate of tagged brown trout stocked at the three stocking sites within 4.5 miles of the dam ranged from 0.8 to 1.2% and made up 88.4% of all tagged browns observed in the creel survey. Less than 0.1% of trout stocked at the lower three stocking sites were examined in the creel survey (Table 1). The majority (69%) of all marked brown trout observed in the creel was harvested within 3 miles of their stocking location (Table 3). Approximately 45% of the brown trout were caught within 0.5 mi up- or downstream of the stocking sites and 90% within 5 mi of the stocking sites (Table 3; Figure 1). A positive linear relationship was observed between distance moved and time at large however the strength of the relationship was weak ( $P = 0.07$ ,  $r^2 = 0.02$ ) due to high variability in the observations (Figure 2). The mean overall distance between stocking site and location of harvest was similar for trout captured  $\leq 90$  days after stocking (1.8 mi) and  $> 90$  days after stocking (2.3 mi; Table 4; Figure 2). The mean distance that all brown trout moved from stocking location to capture location, including fish that did not move, was 2.0 mi. Similar numbers of brown trout moved upstream and downstream regardless of time at large (Figure 3). The mean distances of brown trout captured upstream and downstream of the stocking sites were 3.9 and 2.0 mi, respectively (Figure 2 and 4).

Of the 81,364 rainbow trout stocked, 0.9% ( $N = 769$ ) of the rainbow trout were inspected during the creel survey. Similar to brown trout, return rates were greatest for fish stocked at sites within 5 miles of the dam (range: 0.1 to 1.5%) while the return rates for rainbow trout stocked at the 25.7 and 33.5 mile stocking sites were  $\leq 0.3\%$  (Table 1). Approximately 29% of the marked rainbow trout were caught within 0.5 mi up- or downstream of the stocking sites (Table 3; Figure 1). The majority (72%) of all marked rainbow trout observed in the creel was harvested within 3 miles of the stocking site (Table 3; Figures 4-6). A significant positive linear relationship was observed between distance moved and time at large ( $P = 0.0001$ ,  $r^2 = 0.12$ ) however, as was noted for brown trout, the strength of the relationship was weak. The mean distance moved from stocking site to location of harvest was less for rainbow trout captured  $\leq 90$  days after stocking (2.0 mi) than those caught  $> 90$  days after stocking (5.2 mi; Table 4; Figure 5). The mean distance that all rainbow trout moved from stocking location to capture location, including fish that did not move, was 2.4 mi (Table 4; Figures 6 and 7). The mean downstream movement distance (3.4 mi)

and upstream distance (3.1 mi) were similar (Figure 5). Unlike brown trout, greater numbers of rainbow trout were caught at or downstream of the stocking site, particularly within 90 days of stocking (Figure 8). Of those trout that remained in the river >90 days after stocking, rainbow trout tended to move considerably farther away from stocking areas than brown trout (Figure 5).

Marked brown trout and rainbow trout were rarely harvested beyond the boundaries of the next upstream or downstream stocking site. For both species, the majority tagged trout returns occurred within 3 miles of the site at which they were originally stocked. The percentage of fishing pressure that occurs at areas where fish are stocked is unknown, however it is likely to be significant due to limited bank and wade fishing access. The number of stocking areas should be increased to facilitate dispersal and, therefore short-term survival, if put-grow-take management strategies are to be employed.

In considering the relative magnitude of dispersal, it must be taken into account that brown trout were stocked once in March (Figure 4) while rainbow trout were stocked monthly (Figures 6 and 7). Rainbow trout and brown trout exhibited differences in dispersal following stocking. Brown trout were generally harvested within two miles of their stocking location regardless of time at large. The distance moved for rainbow trout, however, was related to time at large which can easily be seen by comparing the capture locations of each cohort (Figures 6 and 7).

#### *Angler activity and harvest*

Anglers made 52,431 fishing trips averaging 5.1 hours for a total estimated angling effort of 269,123 h within the study section (Table 6) and considerable variability occurred between the two strata (Tables 7 and 8). Approximately 91% of the angling effort were targeted at trout. Anglers caught an estimated 79,326 trout and harvested 61,052 (77%). The harvest of brown trout (95%) and rainbow trout (89%) was dominated by fish stocked during 1995. The estimated harvest of trout represented 56% of the total number of catchable rainbow trout and 39% of the total number of catchable brown trout stocked in 1995. The return rate of brown trout was greatest (13.5-21.5% of tag returns) between April and August (Table 2; Figure 9). Conversely, the return rate of rainbow trout was greatest during the months of September and October (respectively, 41.7 and 22.9%; Table 2). Brown trout were less susceptible to immediate harvest than rainbow trout (Table 5). This suggests that in areas where harvest tends to be more important to the angler (e.g. the upper strata), the stocking emphasis should be on easily catchable rainbow trout.

Boat and bank anglers accounted for a near-equal number of trips and man-hours (Table 9). Bank anglers (67%) were more prevalent in the upper strata while boat anglers (59%) were more common in the lower strata. Total fish caught, fish harvested, and catch rate were similar for boat and bank anglers. The number of fishing trips to the upper strata accounted for 44% of all trips to the study section (Tables 7 and 8). Monthly catch rates varied seasonally and were

often dissimilar among boat and bank anglers (Tables 10-12). Fishing pressure was highest during June and July, however catch rates remained nearly constant (Table 10; Figure 9).

The angling population was dominated by males (82%) and residents (81%; Table 6). Approximately 82% of the anglers interviewed were KY residents and 21% of anglers were residents of counties proximal to the river. Still fishing was the most prevalent method (72%) for fishing in the tailwater while 20% used cast-and-retrieve methods, 7% fly-fished and 1% trolled.

The harvest and fishing pressure patterns between the upper and lower strata varied considerably (Tables 7 and 8). Anglers who preferred to harvest trout were more common in the upper strata while anglers who were preferred to catch and release trout were more common in the lower strata. For example, trout harvest was much greater in the upper strata (6,642 trout/mi) than the lower strata (922 trout/mi). Similarly, release rates in the lower strata for brown trout (63%) and rainbow trout (34%) were higher than the upper strata (38% and 14% respectively). Angling pressure in the upper strata (24,322 h/mi) was considerably greater than the lower strata (4,724 h/mi). More angler effort was targeted at trout in the lower section (95%) than the upper strata (85%). The length frequency of angler caught trout was similar between the two strata (Tables 13 and 14). Trout caught by anglers within the study section (Table 15) were similar in length frequency to trout sampled during annual electrofishing surveys (Tables 16 and 17). Trout angling success varied seasonally (Table 18) and by strata (Table 19-20). Bank anglers were more successful in the upper strata (0.49 fish/h) than the lower strata (0.31 fish/h). However, the catch rate for boat anglers in the upper strata (0.41 fish/h) was similar to those in the lower strata (0.39 fish/h). Brown trout were caught in greater proportion in the lower strata (33%) than in the upper strata (22%). Still fishing was less common in lower strata (52%) than in the upper strata (79%).

Relatively few brown trout and rainbow trout were harvested between the Helm's Landing stocking site (mile 4.5) and the lower limit of the creel survey area (mile 38.3; Figure 5). There are several potential reasons for this harvest pattern. First, trout densities were highest in the upstream area. Three of the six stocking locations for browns were in this upper area. Concentrating stocking within the first few miles will continue to prevent the lower river from reaching its full potential as a trout fishery. Second, the current stocking locations for either species concentrate trout at areas that are closely associated with boat ramps. Most stocking points were areas where boat ramps were installed. These were originally ferry crossings that were established in areas of exceptional water depth. For this reason, fish were concentrated in areas characterized by long, deep pools that precluded wading and provided limited access to bank anglers. Therefore, only boat anglers could exploit these fish. Third, poor access for bank and wade anglers in the area between Helm's Landing and Burkesville may contribute to low angler use in this area. Finally, low movement of brown trout away from stocking areas combined with low susceptibility to harvest may depress the number of brown trout returned to the creel.



## Angler Attitude Survey

An angler attitude survey of anglers contacted during the 1995 creel was conducted by telephone during the summer of 1997. Out of 297 attempted contacts, 105 usable responses (35%) were collected. The majority (72.4%) of these were non-local Kentucky residents, followed by local residents (16.2%), and out-of-state anglers (11.4%; Figure 10).

This survey indicated that in the past year the respondents fished for trout in the Cumberland River an average of 16 days; an average of just 2 days were spent angling for trout in small streams. Angling time was split 40% fishing from boats, 35% fishing from shore, and 25% wading. Nearly half (49%) of all respondents indicated that they normally used a boat when fishing the tailwater. Time spent fishing using various methods was split between casting and retrieving artificial lures (43%) and drifting live or organic bait (45%) while just 12% of the respondents time was spent fly fishing. Three access areas were identified which were heavily utilized by anglers: below the Wolf Creek Dam (62%), Helm's Landing (41%), and Rock House (46%).

Most survey respondents (81.9%) were aware of the new regulations for brown trout implemented in 1997 (20-inch size limit for brown trout and 1 fish daily limit). Most agreed with the regulation (73%) with 13% disagreement and 14% had no opinion. Overall, respondents indicated a preference for catching larger fish. The majority of anglers preferred catching an occasional trophy trout (27%;  $\geq 20$  inches) or a few large fish (45%; 15 to 18 inches), which supports the current management goal of developing the trophy aspect of the trout fishery.

The majority of respondents rated the quality of the fishery as either "good" (50%) or "excellent" (38%) as opposed to those that rated the fishery "fair" (8%), "poor" (4%), or "bad" (0%). The majority (41%) of anglers surveyed felt trout fishing in the Cumberland River has stayed the same while all other respondents were nearly equally distributed between "declined" (24%), "improved" (18%), and "did not know" (17%). Questions about perceived changes in the size structure of the trout population were less revealing with no clear majority of opinion for either question. When asked about changes in the number of trout  $>12$  inches, 23% believed that it had stayed the same, 30% believed the number decreased, 21% believed it had increased, and 27% did not know. Similarly, 36% of anglers felt that the number of smaller trout (8-12 inches) had stayed the same, 20% felt the number had decreased, and 32% felt that it had increased while 11% did not know.

The Lake Cumberland trout fishery regulations were altered based on the information collected in this study. Previously, there was an eight trout daily limit with only three brown trout allowed in the study. Below this study site (mile 38 to Tennessee line), there was a 12-20 inch protected slot limit on rainbow trout, with a four fish limit below the slot and one fish allowed above the slot. The slot limit was eliminated in 1997 and was replaced with a reduced size and

creel limit on brown trout throughout the river (one fish per day; 20-inch minimum size). The current management strategy is to develop the put-and-take component of the fishery with rainbow trout while featuring the brown trout as a trophy species. A study has been implemented to evaluate the effectiveness of this regulation and to examine the feasibility of stocking fingerling brown trout. The contribution of trout from natural reproduction is being examined as well.

#### Recommendations

Brown trout that are stocked as part of a put-grow-and-take management scheme should not be stocked in areas of high harvest. Brown trout should be stocked away from areas that are accessed by stocking trucks (e.g. by boat) to reduce illegal harvest.

Stocking should be increased in the areas below Helm's Landing in order to develop the trout fishery in this area. At least three additional access points to the river for stocking trucks should be sought in the area between Helm's Landing and Burkesville. Truck access should be found at approximately miles 10, 20, and 30.

The seasonal differences in angler catch rates of brown trout and rainbow trout complement each other and thus increase angling opportunity. This finding supports continued management efforts using both species of trout with different strategies.

The feasibility of stocking fingerling trout is currently being examined. Findings from the creel survey component of the fingerling study should be examined in consideration of this study in order to evaluate changes in angler activity, harvest, and population structure caused by changes in management strategy.

Further research should be done to examine genetic strains that exhibit desirable characteristics for meeting management objectives. The traits to be examined should include susceptibility to harvest (rainbow trout) and ability to contribute to natural reproduction (brown trout and rainbow trout). The latter may be examined by determining the genetic heritage of wild fish.

### Acknowledgements

We thank the personnel of the Kentucky Department of Fish and Wildlife Resources who assisted with trout tagging. Chris Murphy and Dwight Anderson collected the creel survey data. Kevin Frey prepared tables, graphs and assisted with the data analyses. Christy Van Arnum assisted with table preparation. Jeff Crosby, Benjy Kinman, and Jim Axon provided editorial comments. Partial funding was provided by the Sport Fish Restoration Act (Dingell-Johnson, Wallop-Breaux), Statewide Fisheries Investigation Grant F-40.

## References

- Coopwood, T. R., S. W. McGregor, T. S. Talley, and D. B. Winford. 1987. An investigation of the tailwater fishery below Wolf Creek Dam, Russell County, Kentucky to Celina, Tennessee. U. S. Fish and Wildlife Service. Ecological Services, Cookeville, Tennessee.
- Hale, S. R., M. Price, and E. Schneider. 1992. 1991 Kentucky angler survey. Urban Research Institute Bulletin, University of Louisville, Louisville, Kentucky.
- Hale, R. S. and J. H. Gray. 1997. Retention and detection of coded wire and elastomer tags in various body locations of brown trout and rainbow trout. North American Journal of Fisheries Management 18:197-201.
- Malvestuto, S. P., W. D. Davies, and W. L. Shelton. 1978. An evaluation of the roving creel survey with nonuniform probability sampling. Transactions of the American Fisheries Society 107:255-262.
- Scheiner, S. M. 1993. Introduction: theories, hypotheses, and statistics. Pages 1-13 in S. M. Scheiner and J. Gurevich, editors. Design and analysis of ecological experiments. Chapman & Hall. New York, New York.

Table 1. Stocking totals and number of returns for rainbow and brown trout stocked in the Lake Cumberland tailwater by month and stocking location in 1995.

Stocking Site	River mile	Number stocked	Number returned	Percent returns by site	Percent of all returns
Brown trout <sup>1</sup>					
Wolf Creek Dam	0.0	2,984	35	1.2	21.5
L. Indian Creek	2.0	3,152	46	1.5	28.2
Helms Landing	4.5	7,506	63	0.8	38.7
Winfrey's Ferry	15.7	6,959	9	0.1	5.5
Crocus Creek	25.7	5,053	7	0.1	4.3
Burkesville	33.5	4,506	3	0.1	1.8
Grand total		30,160	163	0.5	100.0
Rainbow trout					
Wolf Creek Dam	0.0				
Apr		11,198	82	0.7	10.7
May		7,171	81	1.1	10.4
Jun		6,869	58	0.8	7.5
Jul		7,155	58	0.8	7.5
Aug		7,340	137	1.9	17.7
Sep		5,900	140	2.4	18.2
Oct		3,500	44	1.3	5.7
Nov		4,075	6	0.1	0.8
Subtotal	(65%)	53,208	606	1.1	79.0
Helms Landing	4.5				
Apr		3,791	47	1.2	6.1
May		2,098	18	0.9	2.3
Jun		2,375	15	0.6	1.9
Jul		2,255	17	0.8	2.2
Aug		2,500	39	1.6	5.0
Sep		2,050	8	0.4	1.0
Oct		1,625	10	0.6	1.3
Nov		1,525	0	0.0	0.0
Subtotal	(22%)	18,219	154	0.8	20.0
Crocus Creek	25.7				
Apr		1,109	0	0	0.0
May		1,024	3	0.3	0.4
Jun		1,067	1	0.1	0.1
Jul		999	1	0.1	0.1
Aug		950	0	0.0	0.0
Sep		1,000	1	0.1	0.1
Subtotal	(8%)	6,149	6	0.1	<1.0
Burkesville	33.5				
Jun		1,072	2	0.2	0.3
Jul		1,556	1	0.1	0.1
Aug		1,160	0	0.0	0.0
Subtotal	(5%)	3,788	<1.0	0.1	<1.0
Grand total		81,364	769	0.9	100.0

<sup>1</sup> Brown trout stocked on March 20-21, 1995

Table 2. Marked rainbow and brown trout caught by anglers from the Lake Cumberland tailwater by stocking site and month.

Stocking site	River mile	Month									Total	% of stocking site returns	% of total returns
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
Brown trout <sup>1</sup>													
Wolf Creek Dam	0.0	2	8	7	5	5	5	2	1		35	21.5	
L. Indian Creek	2.0		4	8	4	11	9	5	5		46	28.2	
Helms Landing	4.5	4	23	3	9	11	8	4		1	63	38.7	
Winfrey's Ferry	15.7			2	4		1	1		1	9	5.5	
Crocus Creek	25.7			2	1	1	2			1	7	4.3	
Burkesville	33.5				2					1	3	1.8	
Total		6	35	22	25	28	25	13	6	3	163		
Percent		3.7	21.5	13.5	15.3	17.2	15.3	8.0	3.7	1.8		100.0	
Rainbow trout													
Wolf Creek	0.0												
Apr				10	34	9	7	19	3		82	13.5	
May				14	37	16	4	9	1		81	13.4	
Jun						20	11	21	6		58	9.6	
Jul						8	18	19	13		58	9.6	
Aug								91	44	2	137	22.6	
Sep								106	33	1	140	23.1	
Oct									43	1	44	7.3	
Nov										6	6	1.0	
Subtotal											606	78.7	
Helms Landing	4.5												
Apr			2	15	13	8	3	5	1		47	30.5	
May				4	4	3		5	2		18	11.7	
Jun						2	4	8		1	15	9.7	
Jul						7	3	3	4		17	11.0	
Aug								30	8	1	39	25.3	
Sep								3	5		8	5.2	
Oct									10		10	6.5	
Subtotal											154	19.8	
Crocus Creek	25.7												
May					1	1				1	3	50.0	
Jun								1			1	16.7	
Jul									1		1	16.7	
Sep										1	1	16.7	
Subtotal											6	0.7	
Burkesville	33.5												
Jun									1	1	2	66.7	
Jul								1			1	33.3	
Subtotal											3	0.4	
Total			2	43	93	75	53	322	176	12	776		
Percent			0.3	5.6	11.6	9.6	6.8	41.7	22.9	1.5			

<sup>1</sup>Brown trout stocked on March 20-21, 1995.

Table 3. Distance moved (mi) from stocking to capture site for rainbow trout and brown trout in the Lake Cumberland tailwater in 1995.

Stocking site	River mile	Distance from dam (mi)														Total	Percent of stocking site returns		
		0-0.5		0.6-1.9		2-2.9		3-4.9		5-9.9		10-19.9		20-29.9				30-49.9	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Brown trout																			
Wolf Creek	0.0	32	91.4	1	2.9			2	5.7									35	21.5
L. Indian Creek	2.0	20	43.5	7	15.2	18	39.1	1	2.2									46	28.2
Helms Landing	4.5	20	31.7	4	6.3	7	11.1	29	46.0	3	4.8							63	38.7
Winfrey's Ferry	15.7	1	11.1							1	11.1	2	22.2	5	55.6			9	5.5
Crocus Creek	25.7	1	14.3	1	14.3	1	14.3	1	14.3					3	42.9			7	4.3
Burkesville	33.5													1	33.3	2	66.7	3	1.8
<b>Total</b>		<b>74</b>		<b>13</b>		<b>26</b>		<b>33</b>		<b>4</b>		<b>2</b>		<b>9</b>		<b>2</b>		<b>163</b>	
<b>Percent</b>		<b>45.4</b>		<b>8.0</b>		<b>16.0</b>		<b>20.2</b>		<b>2.5</b>		<b>1.2</b>		<b>5.5</b>		<b>1.2</b>			
Rainbow trout																			
Wolf Creek	0.0																		
Apr		13	15.9	15	18.3	15	18.3	19	23.2	11	13.4	3	3.7	6	7.3			82	13.5
May		9	11.1	18	22.2	28	34.6	19	23.5	4	4.9	1	1.2	2	2.5			81	13.4
Jun		8	13.8	13	22.4	28	48.3	6	10.3	2	3.4			1	1.7			58	9.6
Jul		9	15.5	6	10.3	20	34.5	16	27.6	7	12.1							58	9.6
Aug		64	46.7	5	3.6	52	38.0	11	8.0	5	3.6							137	22.6
Sep		80	57.1	3	2.1	53	37.9	1	0.7	2	1.4			1	0.7			140	23.1
Oct		18	40.9	3	6.8	23	52.3											44	7.3
Nov		6	100.0															6	1.0
<b>Subtotal</b>		<b>207</b>		<b>63</b>		<b>219</b>		<b>72</b>		<b>31</b>		<b>4</b>		<b>10</b>				<b>612</b>	
Helms Landing	4.5																		
Apr		8	17.0	11	23.4	6	12.8	9	19.1	6	12.8	5	10.6	1	2.1	1	2.1	47	30.5
May		1	5.6	2	11.1	1	5.6	8	44.4	2	11.1	3	16.7	1	5.6			18	11.7
Jun		2	13.3	1	6.7	5	33.3	5	33.3	2	13.3							15	9.7
Jul						3	17.6	10	58.8	3	17.6	1	5.9					17	11.0
Aug		2	5.1			19	48.7	17	43.6	1	2.6							39	25.3
Sep						4	50.0	2	25.0	2	25.0							8	5.2
Oct								5	50.0	5	50.0							10	6.5
<b>Subtotal</b>		<b>13</b>		<b>14</b>		<b>38</b>		<b>56</b>		<b>21</b>		<b>9</b>		<b>2</b>		<b>1</b>		<b>154</b>	
Crocus Creek	25.7																		
May		1	33.3											2	66.7			3	50.0
Jun														1	100.0			1	16.7
Jul												1	100.0					1	16.7
Sep														1	100.0			1	16.7
<b>Subtotal</b>		<b>1</b>										<b>1</b>		<b>4</b>				<b>6</b>	
Burkesville	33.5																		
Jun		1	50.0													1	50.0	2	66.7
Jul														1	100.0			1	33.3
<b>Subtotal</b>		<b>1</b>												<b>1</b>		<b>1</b>		<b>3</b>	
<b>Total</b>		<b>222</b>		<b>77</b>		<b>257</b>		<b>128</b>		<b>52</b>		<b>14</b>		<b>17</b>		<b>2</b>		<b>769</b>	
<b>Percent</b>		<b>28.9</b>		<b>10.0</b>		<b>33.4</b>		<b>16.6</b>		<b>6.8</b>		<b>1.8</b>		<b>2.2</b>		<b>0.3</b>			

Table 4. Mean distance (mi) from stocking to capture location of brown trout and rainbow trout in the Lake Cumberland tailwater. Standard errors are in parentheses.

Movement direction	Brown trout			Rainbow trout		
	Time at large		Total	Time at large		Total
<90 days	≥90 days	<90 days		≥90 days		
Upstream	4.7 (6.3) n=21	3.5 (5.0) n=49	3.9 n=70	2.2 (1.7) n=73	6.2 (8.8) n=17	3.1 n=90
None	n=32	n=23	n=55	n=219	n=5	n=224
Downstream	1.6 (1.5) n=9	2.1 (3.4) n=29	2.0 n=38	3.0 (3.7) n=394	5.3 (5.5) n=61	3.4 n=455
Mean overall movement	1.8 (4.2) n=62	2.3 (4.1) n=101	2.0 n=163	2.0 (3.2) n=686	5.2 (6.2) n=83	2.4 n=769



Table 5. Number of days between stocking and capture of rainbow trout and brown trout by stocking site in the Lake Cumberland tailwater.

Stocking site	River mile	Days at large								Total	%
		0-29		30-59		60-89		≥90			
		No.	%	No.	%	No.	%	No.	%		
Brown trout <sup>1</sup>											
Wolf Creek	0.0	5	14.3	9	25.7	7	20.0	14	40.0	35	21.5
L. Indian Creek	2.0	3	6.5	8	17.4	4	8.7	31	67.4	46	28.2
Helms Landing	4.5	20	31.7	10	15.9	8	12.7	25	39.7	63	38.7
Winfrey's Ferry	15.7			2	22.2	1	11.1	6	66.7	9	5.5
Crocus Creek	25.7					2	28.6	5	71.4	7	4.3
Burkesville	33.5							3	100.0	3	1.8
Total		28		29		22		84		163	
Percent		17		18		14		52		100	
Rainbow trout											
Wolf Creek	0.0	305	50.3	154	25.4	88	14.5	59	9.7	606	78.8
Helms Landing	4.5	76	49.4	24	15.6	29	18.8	25	16.2	154	20.0
Crocus Creek	25.7	1	16.7	2	33.3	1	16.7	2	33.3	6	0.8
Burkesville	33.5			1	33.3			2	66.7	3	0.4
Total		382		181		118		88		769	
Percent		50		24		15		11		100	

<sup>1</sup>Brown trout stocked on March 20-21, 1995.

Table 6. Fish harvest statistics from a 1995 daytime creel survey on the Lake Cumberland tailwater (Wolf Creek Dam to Hwy 61 bridge).

	Rainbow trout	Brown trout	Trout combined	Total fish
<b>Fishing trips</b>				
Number of fishing trips				52,431
Average trip length (h)				5.1
<b>Fishing pressure</b>				
Total time (h)			244,107	269,123
Fishing hours/mi			6,374	7,027
Percent of all effort			91	
<b>Catch/harvest</b>				
Catch rate (fish/h)			0.5	0.4
Catch (fish/mi)				2,832
Harvest (fish/h)			0.3	0.2
Harvest (fish/mi)	1,254	340	1,594	1,715
Number of fish harvested	48,029	13,023	61,052	65,667
Pounds of fish harvested	24,809	6,357	31,166	44,428
Pounds/mi	648	166	814	1,160
Number of fish caught			79,326	108,478
Percent of total fish harvested	73	20	93	
Percent of total lb. harvested	56	14	70	
Mean length (in), tagged	11.0	9.7		
Mean length (in), untagged	12.4	13.9		
Mean weight (lb), tagged	0.4	0.3		
Mean weight (lb), untagged	0.9	1.1		
<b>Angler characteristics (%)</b>				
Male				84
Female				16
Resident				82
Non-resident				18
<b>Method (%)</b>				
Still fishing				72
Casting				20
Fly casting				7
Trolling				1

Table 7. Fish harvest statistics from a 1995 daytime creel survey on the Lake Cumberland tailwater (upper stratum: Wolf Creek Dam to Helms Landing).

	Rainbow trout	Brown trout	Trout combined	Total fish
<b>Fishing trips</b>				
Number of fishing trips				22,113
Average trip length				4.9
<b>Fishing pressure</b>				
Total time (h)			93,164	109,451
Fishing h/mi			20,703	24,322
Percent of all effort			87	
<b>Catch/harvest</b>				
Catch rate (fish/h)			0.45	0.46
Catch (fish/mi)				11,196
Harvest (fish/h)			0.36	0.30
Harvest (fish/mi)	5,448	1,193	6,642	7,286
Number of fish harvested	24,518	5,370	29,888	32,789
Pounds of fish harvested	9,228	1,623	10,851	15,521
Pounds/mi	2,051	361	2,411	3,449
Number of fish caught				50,384
Percent of total fish harvested	75	16	91	
Percent of total lb. harvested	60	10	70	
Mean length (in), tagged	9.8	9.5		
Mean length (in), untagged	11.8	9.6		
Mean weight (lb), tagged	0.4	0.3		
Mean weight (lb), untagged	0.7	0.4		
<b>Angler characteristics (%)</b>				
Male				82
Female				18
Resident				81
Non-resident				19
<b>Method (%)</b>				
Still fishing				79
Casting				16
Fly casting				4
Trolling				1

Table 8. Fish harvest statistics from a 1995 daytime creel survey on the Lake Cumberland tailwater (lower stratum: Helms Landing to Hwy 61 bridge).

	Rainbow trout	Brown trout	Trout combined	Total fish
<b>Fishing trips</b>				
Number of fishing trips				28,097
Average trip length				5.8
<b>Fishing pressure</b>				
Total time (h)			150,943	159,672
Fishing h/mi			4,466	4,724
Percent of all effort			96	
<b>Catch/harvest</b>				
Catch rate (fish/h)			0.57	0.36
Catch (fish/mi)				1,719
Harvest rate (fish/h)			0.31	0.21
Harvest (fish/mi)	696	226	922	973
Pounds harvested	15,581	4,734	20,315	28,907
Pounds/mi	461	140	601	855
Number of fish harvested	23,511	7,652	31,163	32,878
Number of fish caught				58,094
Percent of total fish harvested	72	23	95	
Percent of total lb. harvested	54	16	70	
Mean length (in), tagged	10.9	10.2		
Mean length (in), untagged	13.2	15.2		
Mean weight (lb), tagged	0.5	0.4		
Mean weight (lb), untagged	1.1	1.2		
<b>Angler characteristics (%)</b>				
Male				90
Female				10
Resident				83
Non-resident				17
<b>Method (%)</b>				
Still fishing				52
Casting				29
Fly casting				17
Trolling				1

Table 9. Fish harvest statistics derived from a 1995 daytime creel survey on the Lake Cumberland tailwater.

	Total		Upper stratum		Lower stratum	
	Bank	Boat	Bank	Boat	Bank	Boat
<b>Fishing trips</b>						
Number of fishing trips	27,133	26,915	15,123	7,511	12,267	17,523
Average trip length (h)	4.7	5.2	4.8	5.0	4.6	5.9
<b>Angling effort</b>						
Total effort (h)	127,914	141,209	71,835	37,616	56,078	103,593
SE	(8,872)	(20,723)	(4,107)	(3,601)	(7,865)	(20,408)
<b>Catch statistics</b>						
Number of fish caught	52,174	56,303	34,997	15,387	17,178	40,916
SE	(7,240)	(16,173)	(4,514)	(3,248)	(5,660)	(15,844)
Number of fish harvested	34,649	31,018	23,115	9,674	11,534	21,344
SE	(5,564)	(7,777)	(3,333)	(2,522)	(4,455)	(7,356)
Pounds of fish harvested	17,903	26,523	10,997	4,531	6,906	8,680
<b>Harvest rates</b>						
Fish/h	0.27	0.22	0.32	0.26	0.21	0.21
Fish/mi	905	810	5,137	2,150	341	632
Pounds/mi	467	693	2,444	1,007	204	257
<b>Catch rates</b>						
Fish/h	0.41	0.40	0.49	0.41	0.31	0.39
Fish/mi	1,362	1,470	7,777	3,419	508	1,211
<b>Angler characteristics (%)</b>						
Male	80	91	79	90	85	93
Female	20	9	21	10	15	7
Resident	82	84	82	80	83	88
Non-resident	18	16	18	20	17	12
<b>Method (%)</b>						
Still fishing	76	65	81	75	53	52
Casting	14	29	14	22	15	39
Fly-fishing	10	4	5	2	32	7
Trolling	0	2	0	1	0	2

Table 10. Monthly trout harvest statistics at the Lake Cumberland tailwater (Wolf Creek Dam to Burkesville) during the 1995 creel survey.

Month	Total trout harvest		Rainbow trout harvest		Brown trout harvest		Fishing pressure (h)		Trout caught/h		Trout harvested/h	
	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat
Mar	537	152	136	114	401	38	10,180	4,856	0.16	0.08	0.10	0.05
Apr	1,544	1,947	243	1,344	1,301	603	12,488	17,272	0.31	0.41	0.22	0.27
May	6,537	342	3,445	245	3,092	97	12,290	6,180	0.71	0.17	0.37	0.09
Jun	4,404	8,685	3,878	6,641	526	2,044	16,471	37,715	0.48	0.82	0.38	0.26
Jul	7,031	3,477	5,539	3,297	1,492	180	29,153	21,199	0.53	0.57	0.37	0.44
Aug	1,582	5,282	632	4,249	950	1,033	8,962	13,214	0.33	0.55	0.18	0.54
Sep	6,122	3,288	5,846	3,229	276	59	13,114	12,454	0.61	0.49	0.49	0.36
Oct	5,362	4,721	4,894	4,264	468	457	12,257	15,352	0.41	0.55	0.37	0.39
Nov	39	0	31	0	8	0	973	653	0.38	0.14	0.21	0.00
Total	33,158	27,894	24,644	23,383	8,514	4,511	115,889	128,897				
Mean									0.47	0.57	0.33	0.33

Table 11. Monthly trout harvest statistics at the Lake Cumberland tailwater (upper stratum: Wolf Creek Dam to Helms Landing) during the 1995 creel survey.

Month	Total trout harvest		Rainbow trout harvest		Brown trout harvest		Fishing pressure (h)		Trout caught/h		Trout harvested/h	
	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat
Mar	188	152	136	114	52	38	4,540	943	0.18	0.43	0.05	0.26
Apr	819	1,043	47	709	772	334	6,419	4,465	0.30	0.78	0.16	0.59
May	3,240	342	2,297	245	943	97	8,083	4,843	0.40	0.22	0.36	0.12
Jun	2,136	869	1,639	758	497	111	8,169	4,082	0.38	0.75	0.26	0.44
Jul	3,163	1,957	2,232	1,856	931	101	13,152	6,020	0.40	0.48	0.32	0.42
Aug	1,521	742	571	669	950	73	5,576	2,296	0.34	0.37	0.26	0.37
Sep	6,004	1,932	5,736	1,928	268	4	8,899	3,014	0.72	0.46	0.64	0.45
Oct	4,845	901	4,694	858	151	43	8,055	3,204	0.50	0.42	0.48	0.38
Nov	39	0	31	0	8	0	733	438	0.30	0.21	0.28	0.00
Total	21,953	7,938	17,383	7,135	4,570	800	63,627	29,305				
Mean									0.42	0.21	0.34	0.38

Table 12. Monthly trout harvest statistics at the Lake Cumberland tailwater (lower stratum: Helms Landing to Hwy 61 bridge) during the 1995 creel survey.

Month	Total trout harvest		Rainbow trout harvest		Brown trout harvest		Fishing (h)		Trout caught/h		Trout harvested/h	
	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat	Bank	Boat
Mar	349	0	0	0	349	0	5,640	3,913	0.14	0.00	0.14	0.00
Apr	725	905	196	636	529	269	6,069	12,808	0.33	0.29	0.27	0.16
May	3,297	0	1,148	0	2,149	0	4,207	1,338	1.30	0.00	0.41	0.00
Jun	2,268	7,816	2,239	5,883	29	1,933	8,303	33,633	0.58	0.82	0.50	0.24
Jul	3,867	1,521	3,306	1,441	561	80	16,001	15,180	0.64	0.60	0.41	0.45
Aug	61	4,541	61	3,581	0	960	3,387	10,918	0.33	0.59	0.05	0.58
Sep	118	1,355	110	1,300	8	55	4,215	9,440	0.38	0.50	0.19	0.33
Oct	516	3,821	200	3,407	316	414	4,202	12,418	0.23	0.58	0.15	0.40
Nov	0	0	0	0	0	0	240	215	0.60	0.00	0.60	0.00
Total	11,203	19,959	7,262	16,249	3,941	3,710	52,263	99,592				
Mean									0.52	0.59	0.32	0.32



Table 13. Length frequency of angler caught trout on the Lake Cumberland tailwater in 1995 (upper stratum: Wolf Creek Dam to Helms Landing).

	Inch class													Total			
	6	7	8	9	10	11	12	13	14	15	16	17	18		19	20	21
Rainbow trout																	
Harvested	1		66	254	269	135	58	18	8	7	1	3		1			821
Released	2	9	17	11	27	30	21	12	5								134
Brown trout																	
Harvested			26	54	55	13	4	1	1								154
Released	5	8	11	14	28	10	1	2		1							94

Table 14. Length frequency by species of angler caught trout on the Lake Cumberland tailwater in 1995 (lower stratum: Helms Landing to Hwy 61 Bridge).

	Inch class																Total
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Rainbow trout																	
Harvested		1	10	57	104	86	79	27	18	8	8	1		1	3	1	404
Released		1	30	20	66	46	31	4	7		4	3	1				213
Brown trout																	
Harvested			6	8	18	12	4	1	4	3	3	2	5	3		1	70
Released	1	5	17	26	39	12	13	1	2	2	1		1				120

Table 15. Length frequency of angler caught trout on the Lake Cumberland tailwater in 1995 (Wolf Creek Dam to Hwy 61 bridge).

	Inch class																Total
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Rainbow trout																	
Harvested	1	1	76	311	373	221	137	45	26	15	9	4		2	3	1	1,225
Released	2	10	47	31	93	76	52	16	12		4	3	1				347
Brown trout																	
Harvested			32	62	73	25	8	2	5	3	3	2	5	3		1	224
Released	6	13	28	40	67	22	27	2	4	2	2		1				214

Table 16. Length frequency distribution and CPE (fish/h) of trout collected by nocturnal electrofishing for in the Lake Cumberland tailwater for 4.08 hours on November 5, 1995.

Location	Inch class																		Mean CPE	
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	(fish/h)
Brown trout																				
Wolf Creek Dam			1	8	5	1													15	3.7
Above Helm's				13	14	2													29	7.1
Below Helm's			1	14	15														30	7.4
Winfrey's Ferry			1	8	5	12	4	1	1		1		1						34	8.3
Crocus Creek				2	6	7	3				1	1							20	4.9
Total			3	45	45	22	7	1	1		2	1	1						128	31.4
Rainbow trout																				
Wolf Creek Dam		3	17	19	6	1						1				1	1		49	12.0
Above Helm's	1	5	11	27	19	3	1	1				1							69	16.9
Below Helm's	1	8	11	32	30	13	4	6											105	25.7
Winfrey's Ferry			1	6	13	17	3	1	1										42	10.3
Crocus Creek	1	2	8	14	5	2	1	1	2	1									37	9.1
Total	3	18	48	98	73	36	9	9	3	1		2				1	1		302	74.0

Table 17. Length distribution and catch rate of trout collected by nocturnal electrofishing in the Lake Cumberland tailwater for 5 hours on November 3, 1996.

Location/Species	Inch class																												Total
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28							
Wolf Creek Dam																													
Rainbow trout	1	6	12	7	7	2																							35
Brown trout			5	8	4					1	2	1																	21
Above Helm's Landing																													
Rainbow trout	1	3	16	30	28	14	10	4		1																			107
Brown trout			4	15	3		1		1	2	1																		27
Below Helm's Landing																													
Rainbow trout				12	29	21	14	13	1		1		1																92
Brown trout				2	4	2				1	1																		10
Winfrey's Ferry																													
Rainbow trout					4	1	9	19	10	3	2	1			1														50
Brown trout					3	6	1	2		4	7	10	3				2	3									2		43
Crocus Creek																													
Rainbow trout		1	4	8	9	13	10	2		1				1															49
Brown trout			1	2	2					2	1	1					1	1											12
Total																													
Rainbow trout	2	10	44	78	66	52	52	17	3	5	1	1	2																333
Brown trout			12	32	17	1	3		8	5	14	4				3	4										2		113

27

Table 18. Monthly trout angling success at the Lake Cumberland tailwater (Wolf Creek Dam to Hwy 61 Bridge) during the 1995 creel survey.

Month	Effort (h)	Catch	Catch rate (trout/h)	Harvest rate (trout/h)	Trout harvested	Rainbow trout harvested	Harvest rate (rainbow trout/h)	Brown trout harvested	Harvest rate (brown trout/h)
Mar	14,647	1,025	0.12	0.07	690	251	0.02	439	0.03
Apr	29,622	7,406	0.38	0.25	3,494	1,588	0.05	1,906	0.06
May	18,546	5,193	0.55	0.28	6,879	3,690	0.20	3,189	0.17
Jun	54,150	15,162	0.74	0.28	13,088	10,519	0.19	2,569	0.05
Jul	50,294	20,118	0.55	0.40	10,508	8,836	0.18	1,672	0.03
Aug	22,017	9,027	0.47	0.41	6,863	4,881	0.22	1,982	0.10
Sep	25,582	11,000	0.55	0.43	9,407	9,074	0.40	333	0.01
Oct	27,605	10,214	0.48	0.37	10,084	9,159	0.33	925	0.03
Nov	1,644	181	0.24	0.11	39	31	0.02	8	0.01
Total	244,107	79,326			61,052	48,029	0.20	13,023	0.05
Mean			0.45	0.28					

Table 19. Monthly trout angling success at the Lake Cumberland tailwater (upper stratum: Wolf Creek Dam to Helms Landing) during the 1995 creel survey.

Month	Effort (h)	Catch	Catch rate (trout/h)	Harvest rate (trout/h)	Trout harvested	Rainbow trout harvested	Harvest rate (rainbow trout/h)	Brown trout harvested	Harvest rate (brown trout/h)
Mar	5,383	538	0.24	0.10	341	251	0.05	90	0.17
Apr	11,002	4,181	0.51	0.38	1,861	755	0.07	1,106	0.10
May	13,001	3,380	0.33	0.26	3,581	2,542	0.20	1,039	0.08
Jun	12,342	4,320	0.55	0.35	3,003	2,397	0.19	606	0.05
Jul	19,321	6,569	0.42	0.34	5,120	4,088	0.21	1,032	0.05
Aug	7,767	2,485	0.36	0.32	2,262	1,240	0.16	1,022	0.13
Sep	11,899	6,901	0.64	0.58	7,935	7,663	0.64	272	0.02
Oct	11,260	4,954	0.46	0.44	5,746	5,551	0.49	195	0.02
Nov	1,189	178	0.26	0.15	39	31	0.03	8	0.01
Total	93,164	33,506			29,888	24,518	0.26	5,370	0.06
Mean			0.42	0.33					

Table 20. Monthly trout angling success at the Lake Cumberland tailwater (lower stratum: Helm's Landing to Hwy 61 bridge) during the 1995 creel survey.

Month	Effort (h)	Catch	Catch rate (trout/h)	Harvest rate (trout/h)	Trout harvested	Rainbow trout harvested	Brown trout harvested
Mar	9,265	463	0.05	0.05	349	0	349
Apr	18,619	3,538	0.30	0.19	1,632	832	800
May	5,544	1,830	1.06	0.33	3,297	1,148	2,149
Jun	41,808	11,288	0.80	0.27	10,084	8,123	1,961
Jul	30,973	13,318	0.62	0.43	5,389	4,748	641
Aug	14,250	6,555	0.53	0.46	4,602	3,642	960
Sep	13,683	3,968	0.47	0.29	1,472	1,410	62
Oct	16,346	5,394	0.49	0.33	4,338	3,608	730
Nov	455		0.18	0.00	0	0	0
Total	150,943	46,354			31,163	23,511	7,652
Mean			0.57	0.31			



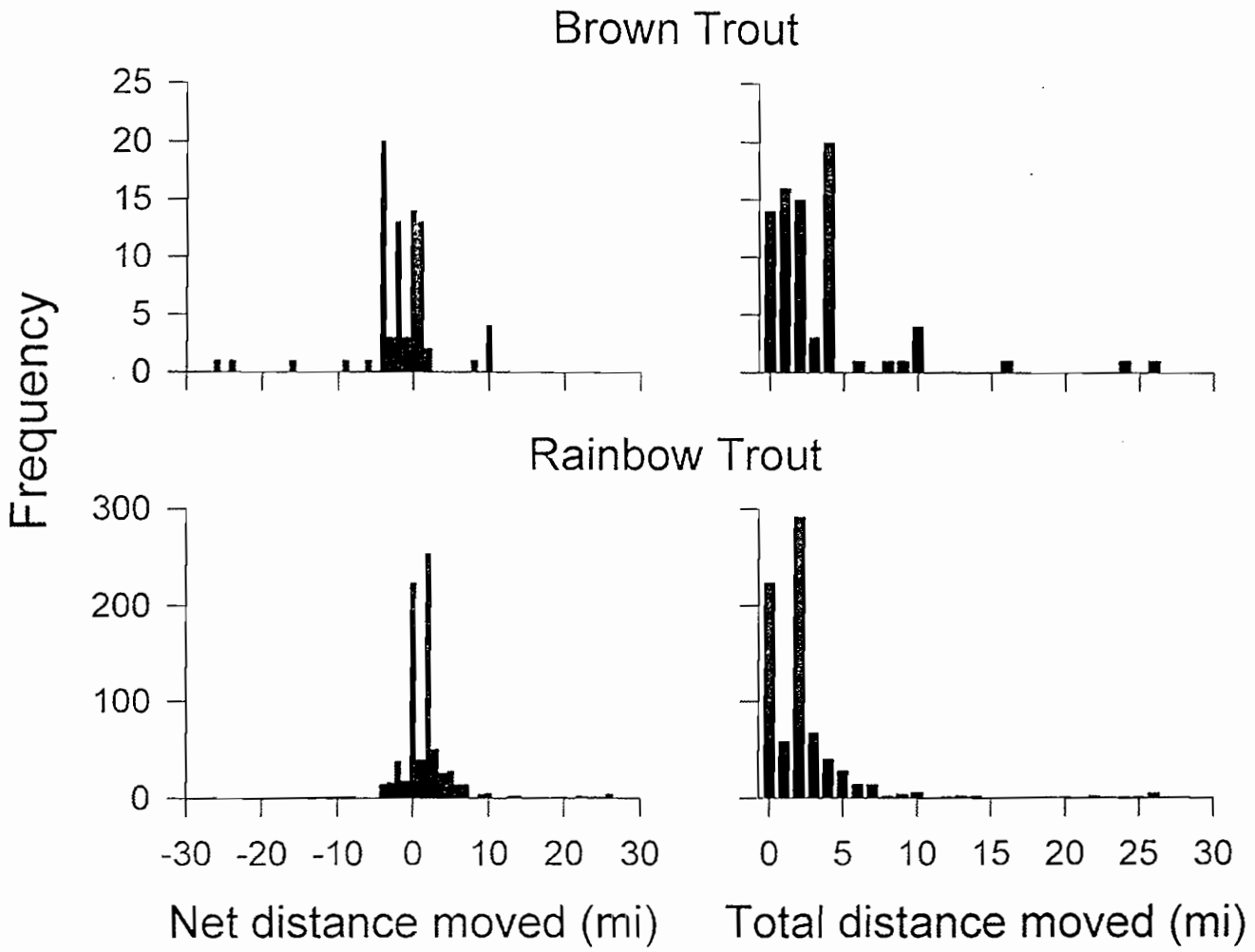


Figure 1. Frequency of distances between stocking location and harvest location for marked brown and rainbow trout in the Lake Cumberland tailwater during 1995.

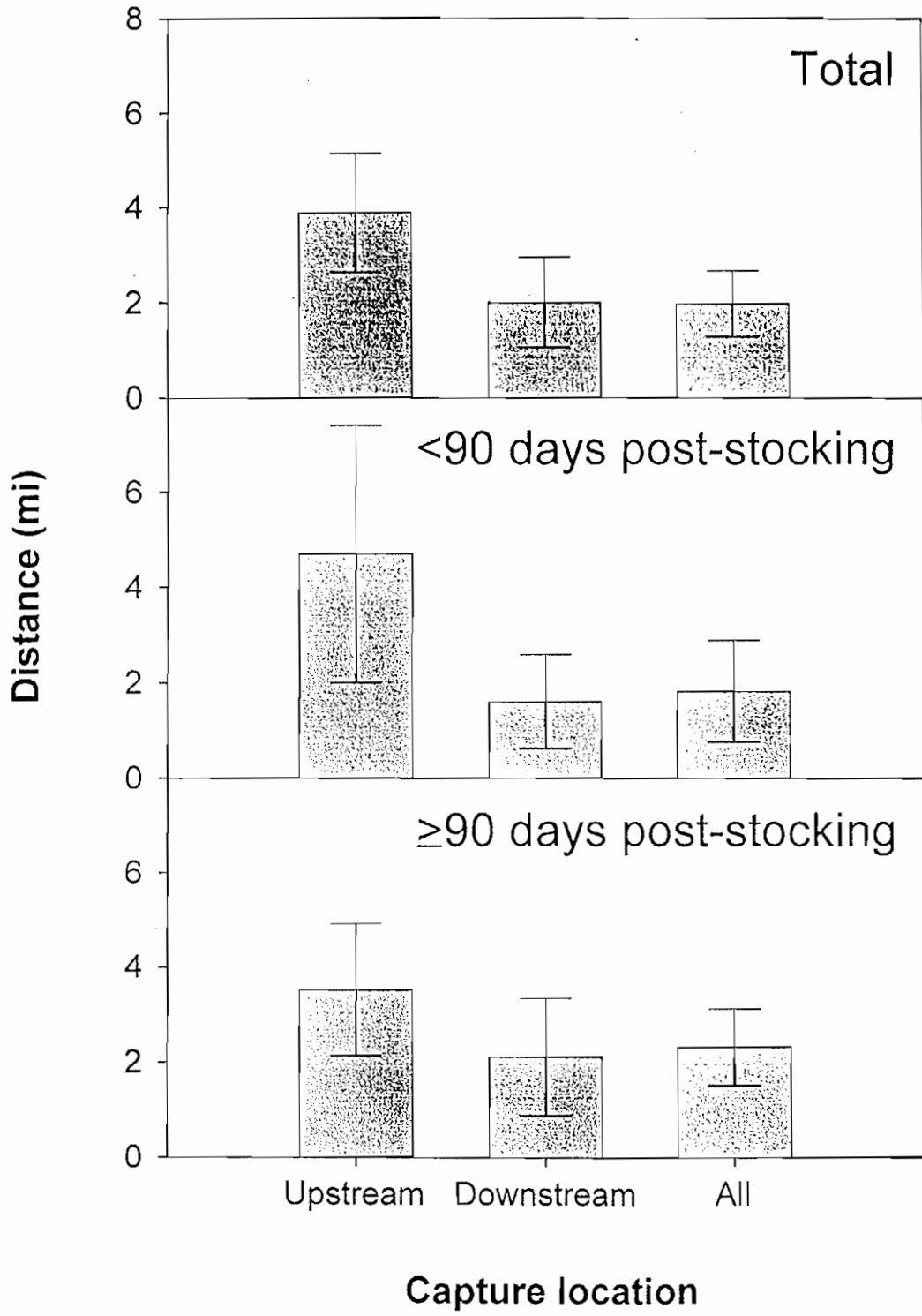


Figure 2. Mean distance of brown trout from stocking location to capture location in the Lake Cumberland tailwater. "All" category includes fish captured at stocking location (i.e., distance dispersed = 0). Error bars are 95% confidence intervals.

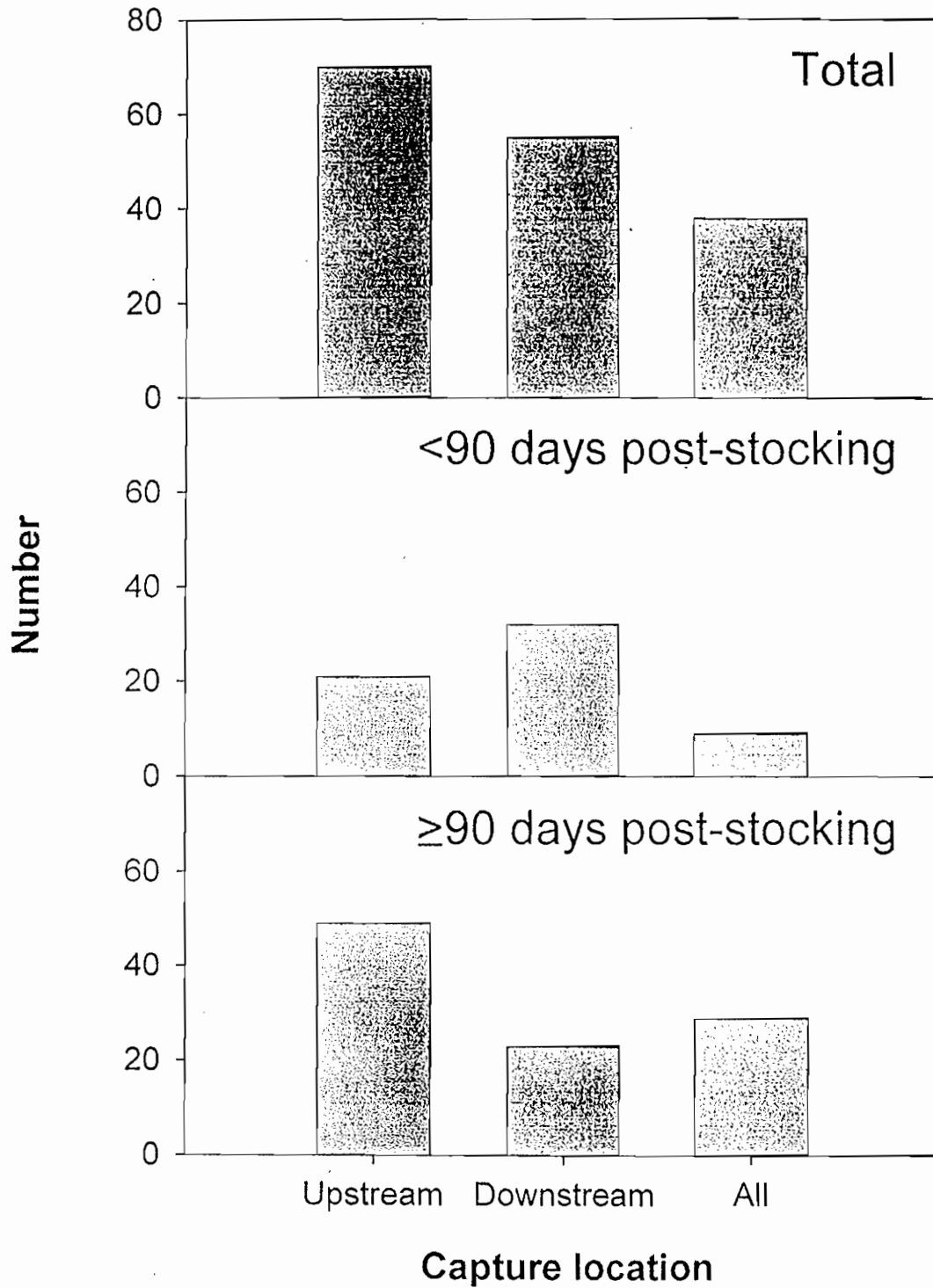


Figure 3. Number of marked brown trout detected in creel survey and capture location relative to stocking area in the Lake Cumberland tailwater.

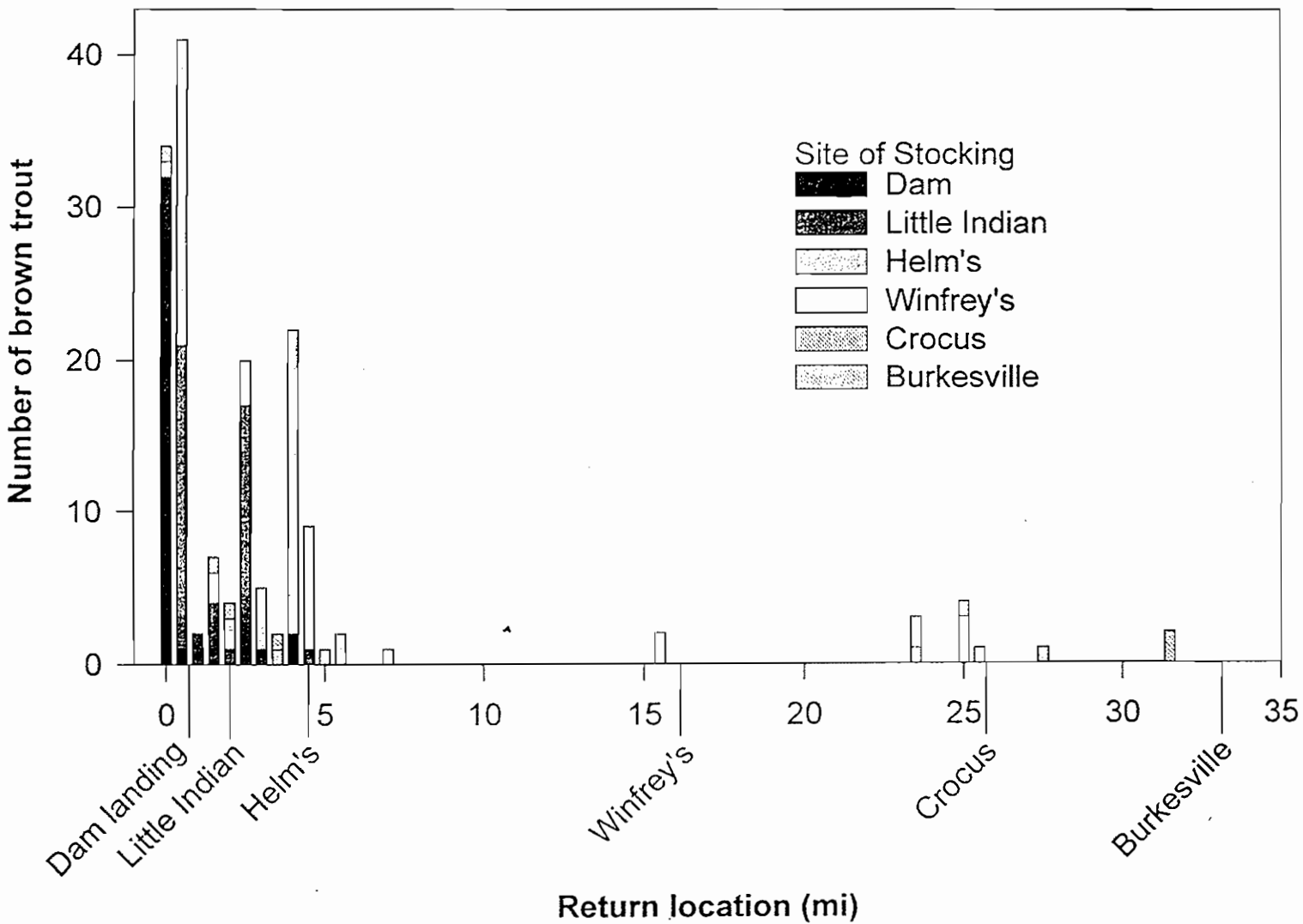


Figure 4. Harvest locations of brown trout marked per site of stocking on the Lake Cumberland tailwater during 1995. Stocking sites are indicated along the x-axis. Return location is miles below Wolf Creek Dam.

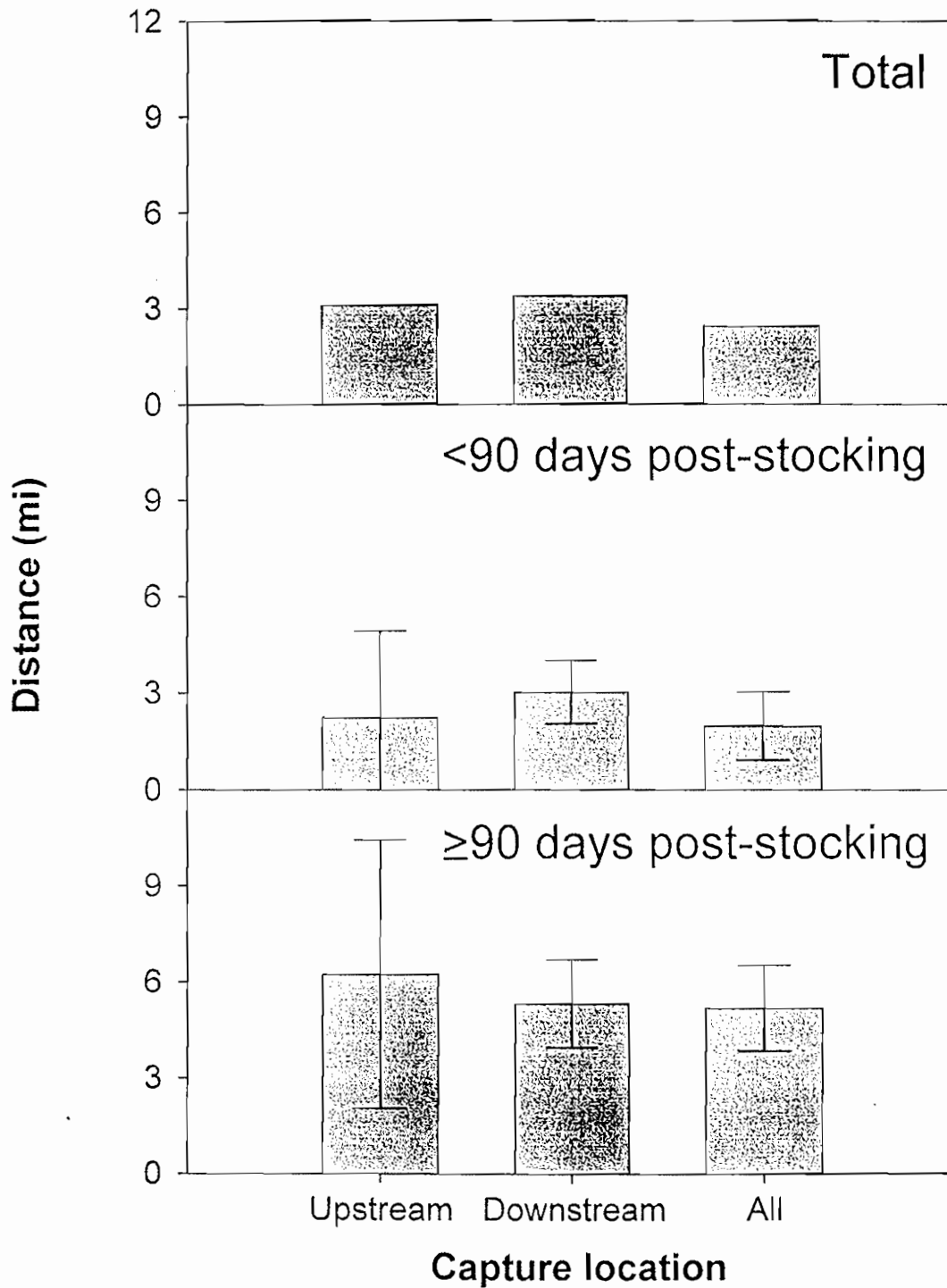


Figure 5. Mean distance of rainbow trout from stocking location to capture location in the Lake Cumberland tailwater. "All" category includes fish captured at stocking location (i.e., distance dispersed = 0). Error bars are 95% confidence intervals.

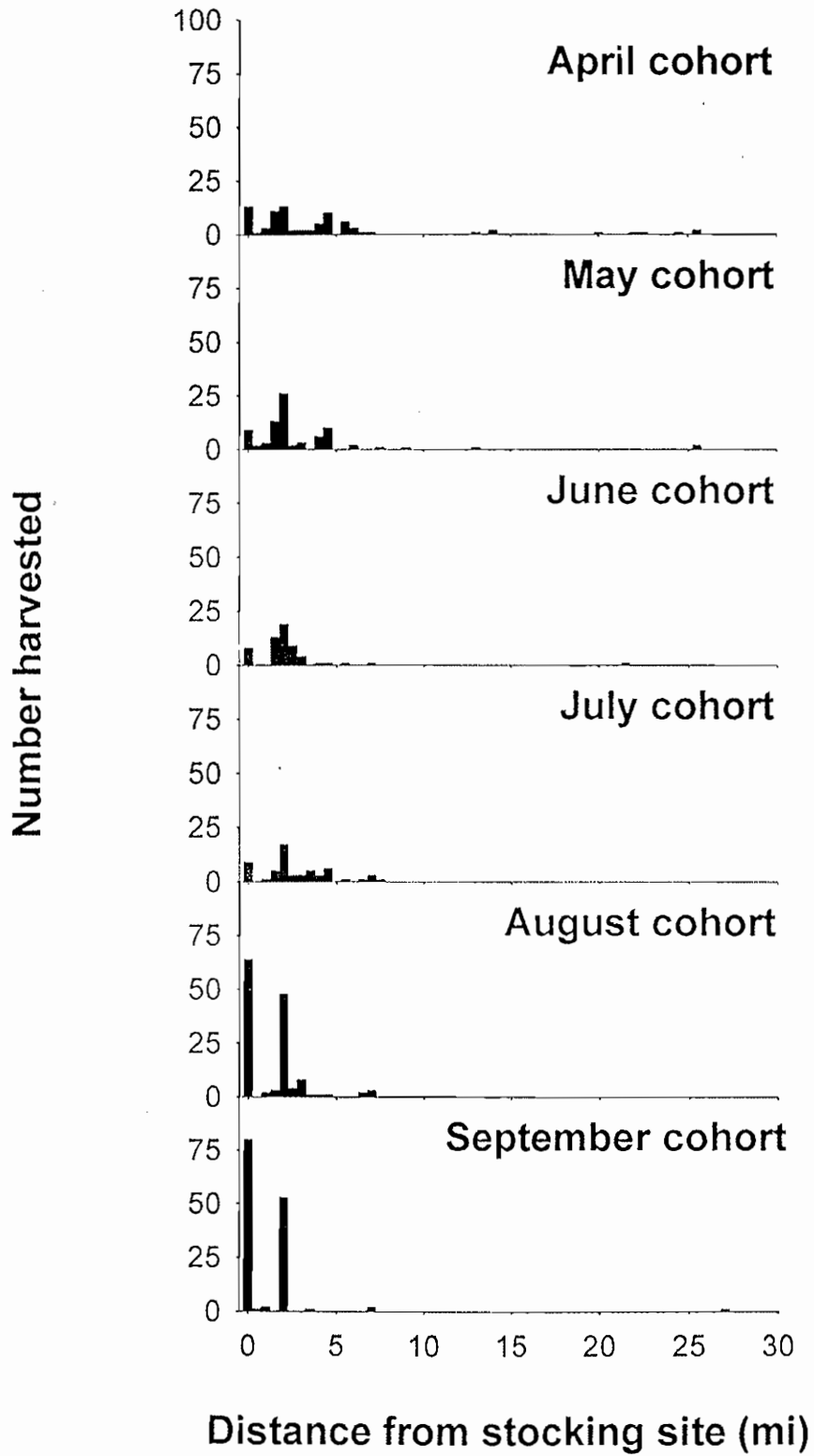


Figure 6. Dispersal of batch-marked rainbow trout stocked at Wolf Creek Dam monthly in 1995.

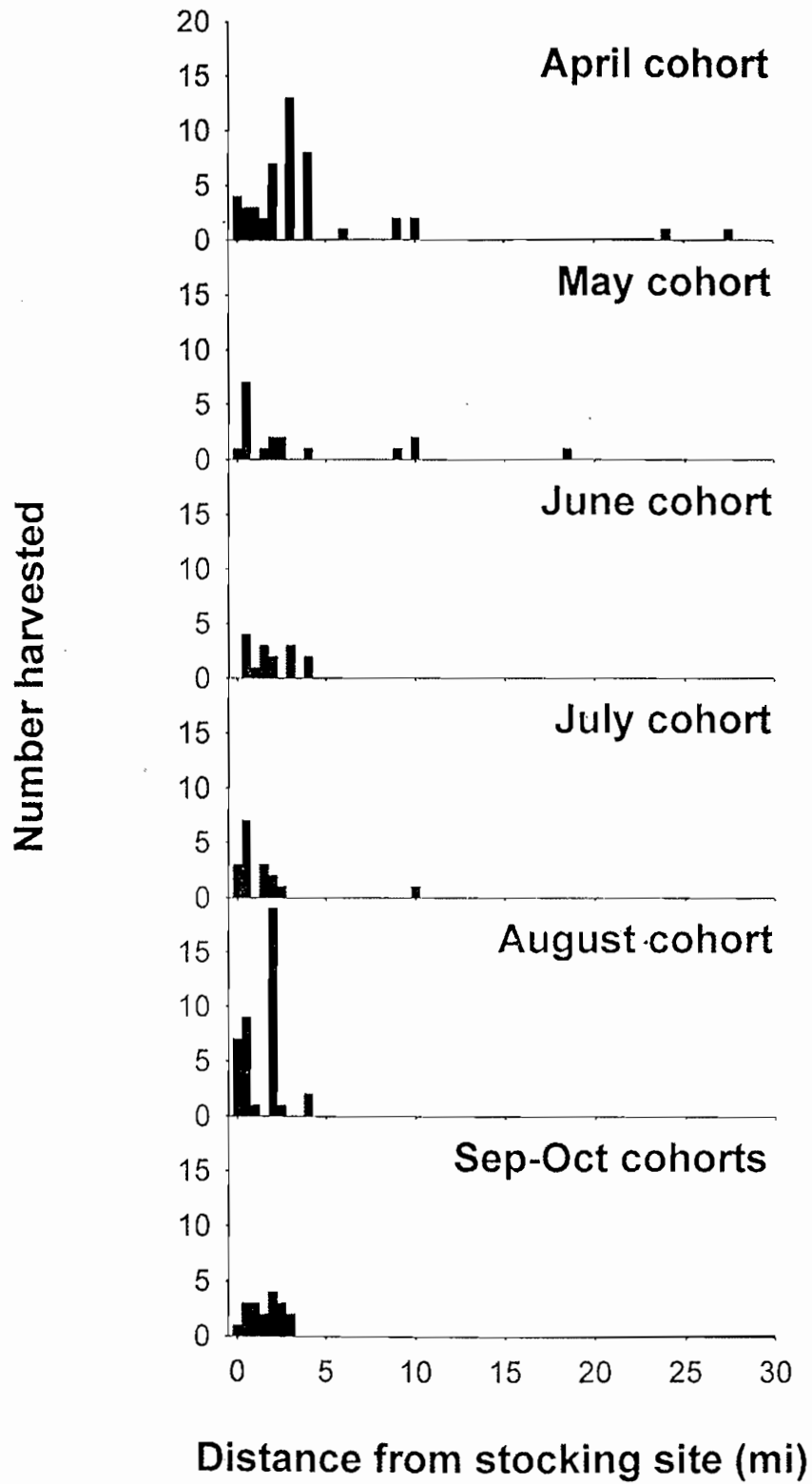


Figure 7. Dispersal of batch-marked rainbow trout stocked at Helm's Landing monthly in 1995.

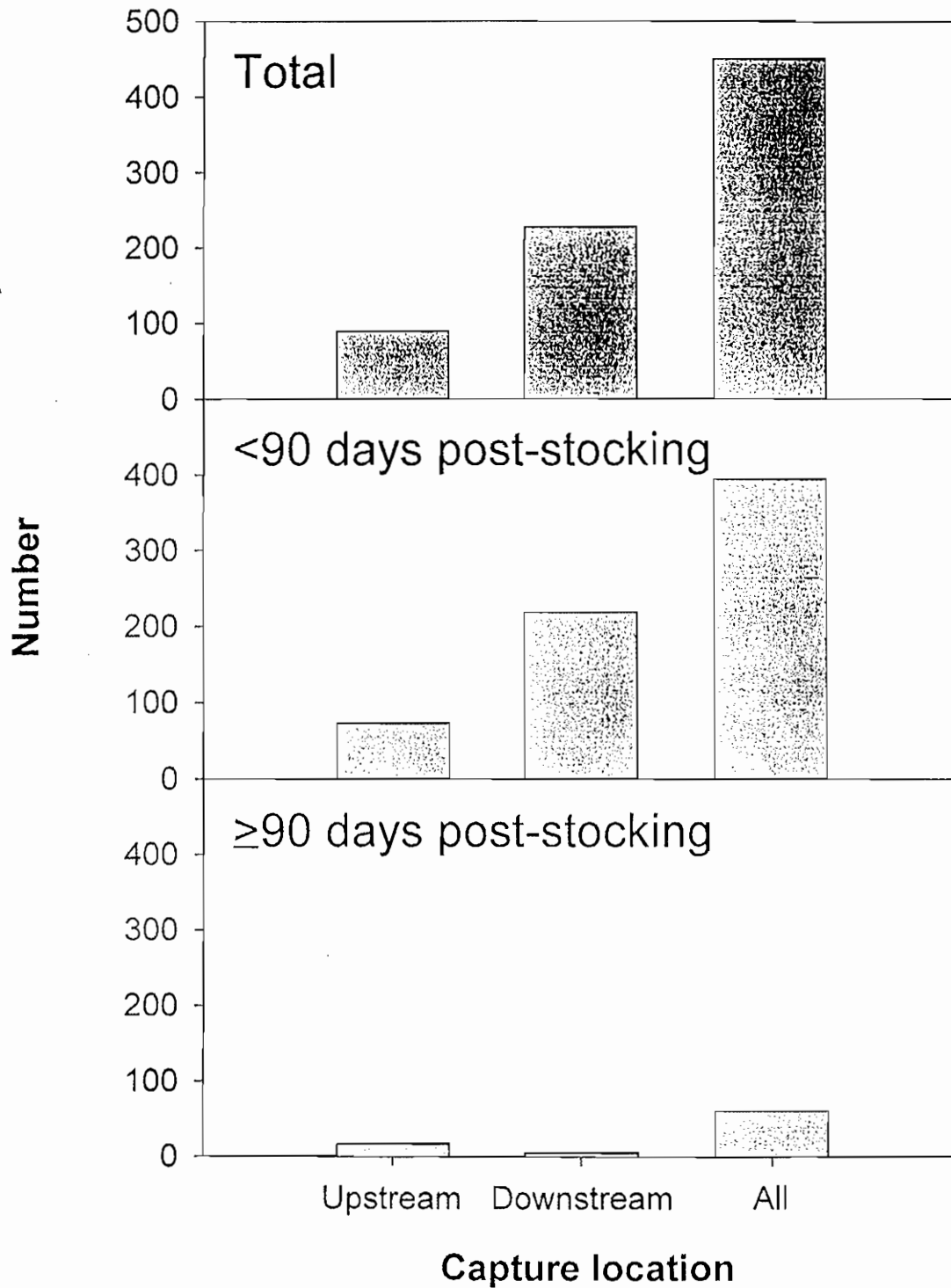


Figure 8. Number of marked rainbow trout detected in creel survey and capture location relative to stocking area in the Lake Cumberland tailwater.



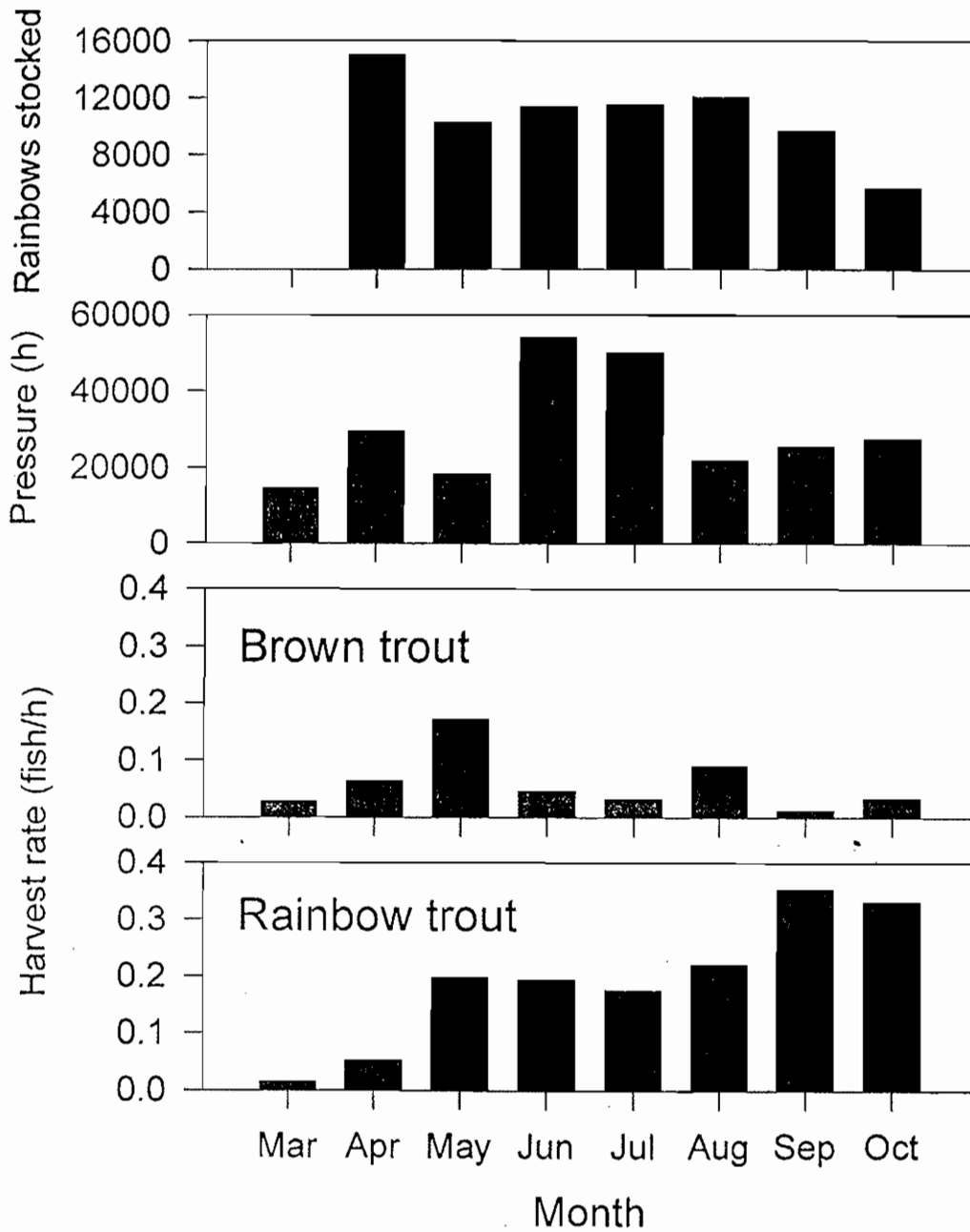


Figure 9. Number of rainbow trout stocked, fishing pressure, and harvest rates for brown trout and rainbow trout in the Lake Cumberland tailwater in 1995. Brown trout were stocked March 20-21, 1995.

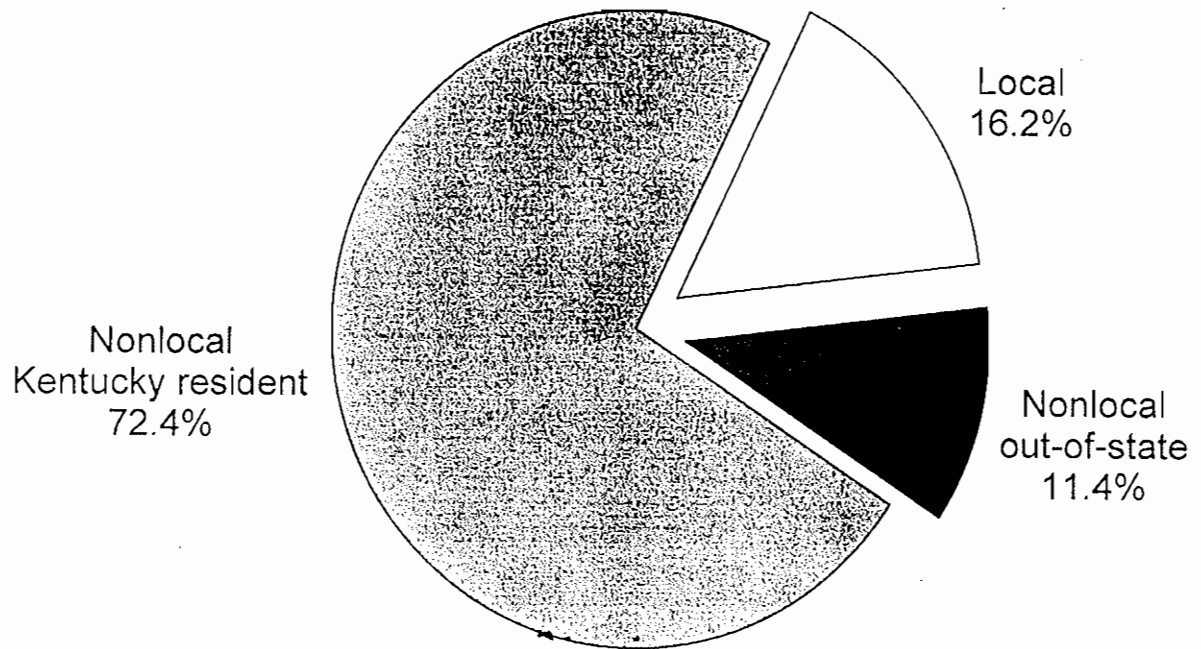


Figure 10. Residency of anglers (N=105) completing the telephone angler survey during 1997.