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Investigation of the Walleye Population in the Rockcastle River and Evaluation of Supplemental Stocking of Native Strain Walleye

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ABSTRACT

Widespread sampling of the Rockcastle River for walleye and subsequent genetic testing of 641 walleye using both mitochondrial DNA analysis and microsatellites analysis of nuclear DNA indicated that it is inhabited by a pure native southern strain of walleye and there is no evidence of northern strain genetic introgression. The native walleye population in the Rockcastle River remained reproductively isolated from northern strain walleye downstream in Lake Cumberland though there is not a physical barrier preventing upstream and downstream migration. Native walleye broodfish were collected from the Rockcastle River, spawned at Minor Clark Fish Hatchery to produce fingerling size (1.5 in) walleye for supplemental stocking from 2002 to 2007. The relatively low density population in the Rockcastle River was not enhanced by supplemental stocking of native walleye fingerlings. However, during stocking years, walleye year classes were composed almost entirely of stocked fish. At the cessation of stocking there was very low or no walleye recruitment for several years. A total of 483 native walleye were PIT tagged with excellent tag retention of 98.3%. There were 157 total recaptures representing 121 different walleye individuals.

INTRODUCTION

Walleye (*Sander vitreus*) are a large, piscivorous, fish of the Percid Family. They are highly valued both as a sportfish, and a commercial species in some areas, as the species grows to large size and is excellent table fare. They are considered a coolwater species that inhabit a variety of water body types and sizes such as medium to large rivers and natural lakes, and have now been stocked in impoundments of varying size around the country, many outside their native range. Walleye are native to North America east of the Continental Divide, including Canada, the Great Lakes, and much of the Mississippi River Basin with native populations also occurring on the mid-Atlantic slope and the Gulf Coast (Scott and Crossman 1973; Hackney and Holbrook 1978). Different lineages of walleye evolved due to isolation in river drainages in the unglaciated Eastern Highlands region, which includes the Cumberland River basin (Stepien et al. 2009). The southern riverine walleye strains spawn in shallow shoal areas of medium to large rivers in late winter/early spring. Southern walleye are known to grow and mature faster, reach a larger maximum size, but have shorter lifespans than their northern counterparts (Jenkins and Burkhead 1994).

Early ichthyologists documented the southern, riverine strain of walleye in most of the major watersheds in Kentucky. Only the Salt and Tradewater River drainages have no official historical records, although walleye may have been present in those locations as well. According to Evermann (1918), Constantine Rafinesque first described walleye from the Ohio River in 1818, and then collected the species from the Licking and Kentucky rivers in 1820. It wasn't until the late 1800's, before any more substantive ichthyological work was conducted in Kentucky. Evermann (1918) then reports that Jordan and Brayton recorded walleye from the Rockcastle River in 1878. In an extensive fish survey of Kentucky, Woolman (1892) noted the presence of walleye in the Tennessee River near Paducah, the Cumberland River near Kuttawa, the Green River and Pitman Creek near Greensburg, the Levisa Fork of the Big Sandy River near Pikeville, and the Little Sandy River near its mouth. Clark (1941) was able to document the presence of walleye in the "upper Levisa Fork" and Kinniconick Creek, a tributary to the Ohio River in northeastern Kentucky. He also reported that walleye reached a length of three feet and a weight of twenty pounds or more. In a Levisa Fork fish survey by Kirkwood (1957) in late 1956, he was not able to collect any walleye using an electric seine. However, he did note that the species was "common in the late winter and early spring creels from Levisa Fork, and especially Russell Fork".

By the late 1800's, there was growing concern that fisheries across the United States were in decline. The use of waterways for power, transportation, mining, and waste disposal and the use of watersheds for rapid exploitation of timber, minerals and crops were destroying the capacity of aquatic environments to sustain fish populations (Nielsen 1993). There were also widespread fears of overharvest of fishes due to detrimental commercial fishing methods. A quote from the Kentucky Game and Fish Commission Third Biennial Report (1917) illustrates the point: "Many good citizens were greatly worried and harassed by irresponsible and wandering market fishermen who destroyed the small as well as the large fish, and who were guilty at certain seasons of the year of placing nets of such size across the mouth of streams entering these navigable waters as to entirely cut off the fish therefrom, thereby preventing them from entering the smaller streams for the purpose of spawning".

Fish culture and stocking was developing in the late 1800's and was thought to be the remedy for declining fisheries. In 1871, the United States Fish Commission was formed by the U. S.

Congress to investigate "the causes of decrease in the supply of useful food-fishes of the United States, and of the various factors entering into the problem;" and "the determination and employment of such active measures as may seem best calculated to stock or restock the waters of the rivers, lakes and the sea". Restocking of important degraded fish stocks by the U.S. Fish Commission began the next year in 1872. Specialized rail cars were used to transport fish throughout the country. Kentucky Game and Fish Commission (1915 and 1917) records indicate that walleye (referred to as "pike perch") fry were stocked in various rivers and streams throughout Kentucky by the U. S. Fish Commission and by the KY Game and Fish Commission in at least 1912 and from 1914-1917. Some of these fish were documented coming from the Put-in-Bay Hatchery on Lake Erie so it is quite possible that all walleye stocked by the U. S. Fish Commission in Kentucky were of Lake Erie origin. It is notable that the waters stocked in Kentucky were mostly those same streams where walleye had been documented by early ichthyologists, including the Rockcastle River system and the Levisa Fork of the Big Sandy River. The stocking of walleye in these rivers was an apparent attempt to bolster the existing population.

Historically, large walleye still had been caught with regularity during spring spawning run fisheries throughout Kentucky into the early 20th century and as late as the 1950's in the Cumberland River of south central Kentucky. Declining spawning runs in the Cumberland River were noted within a decade of the completion of Lake Cumberland in 1952. Speculation for the population decline included: lack of spawning sites due to the inundation of major shoals by the reservoir, the over-harvest of adult walleye during the spawning season, and the occurrence of acid mine pollution in the limited remaining spawning areas (Kinman 1990). Extreme examples of pollution were also reported on the Levisa Fork during fish surveys by Clark (1941) and Kirkwood (1957). Hackney and Holbrook (1978) observed a similar pattern of declining native walleye fisheries after impoundments of southern rivers.

The native walleye populations were thought to have been completely lost until rumors of a remnant population of walleye existing in the Rockcastle River, a tributary to the Cumberland River, led to efforts to collect fish for genetic testing. Walleye were collected from the Rockcastle River in 1995 and tested using mitochondrial DNA (Billington 1997) and again in 1997 using mitochondrial DNA and allozyme analysis (Billington and Sloss 1998). Results confirmed that walleye inhabiting the Rockcastle River were genetically unique and there was no evidence of introgression of northern walleye alleles.

A research project was initiated in 2002 in an effort to conserve and enhance this unique walleye population. Initially, the objectives of the project were to: 1) determine the genetic origin of the existing walleye population throughout the Rockcastle River, 2) determine what, if any, temporal or spatial differences in distribution exist between native strain and northern strain walleye, 3) assess the walleye population density in the Rockcastle River, and 4) evaluate the contribution of stocked native strain walleye to the existing population.

METHODS

Beginning in spring 2002, walleye were collected from the Rockcastle River to use as broodfish for supplemental stocking efforts. Walleye were captured with diurnal electrofishing in February and March in the upper portion of the mainstem, between Rockcastle River Mile (RRM) 25.0 to 54.9, which generally had better access and it was thought that it would minimize chances of encountering northern strain walleye (Figure 1). All walleye to be used as broodfish were measured for total length (TL) and weighed to the nearest 0.1 inch and 0.01 lbs and individually marked with a Biomark® passive integrated transponder (PIT) tag (0.47 in x 0.08 in). From the ventrum, the tag was implanted subcutaneously just anterior to the pelvic girdle area using a modified syringe and hypodermic needle. PIT tag codes were read with a Biomark® Pocket Reader EX. The left pelvic fin was completely removed to serve as a permanent external mark of the presence of the PIT tag. A portion of the fin was excised and placed in a numbered vial containing isopropyl alcohol for genetic testing. Genetic testing of broodfish collected in spring 2002 was completed by Dr. Jeff Koppelman with Missouri Department of Conservation. All other walleye were tested by Dr. Matt White of Ohio University. The genetic testing agreement called for both mitochondrial DNA analysis and microsatellites analysis of nuclear DNA for every fish tested. See White et al. (2012) for procedures. Stocking of native walleye was also initiated in 2002 in Wood Creek Lake, a 660-acre Highland impoundment in the Rockcastle River watershed, void of an existing walleye population. The reservoir could act as a source of native walleye broodstock in subsequent years.

Once processing was completed at the river, walleye broodfish were loaded on to KDFWR Fish Transportation Section hauling trucks and transported to Minor Clark Fish Hatchery in Morehead. Early in the study, walleye were held in indoor raceways until close to spawning and then they were injected with the hormone Human Chorionic Gonadotropin (HCG) to help induce spawning. Unlike northern strain walleye that only need two injections to induce ovulation, typically native walleye are injected three times. Because of unusually high mortality, in later years of the study walleye broodfish that were collected early were stocked in hatchery ponds to minimize the amount of time in indoor raceways. The walleye broodfish pond was harvested in mid-March and then fish were brought inside and maintained on 1% salt 24 hours per day.

Walleye were stocked at multiple sites in the Rockcastle River over six consecutive years between 2002 and 2007 (Table 1). Fry and fingerlings were stocked in 2002 and 2003, after which only fingerlings were stocked. The target stocking rate was approximately 20 fish/acre based on acreage calculated by multiplying stream length by the estimated stream width. The annual walleye production goal for the Rockcastle River was 22,220 fingerlings; however, the number actually stocked varied with fluctuating production. All walleye were marked with oxytetracycline (OTC) prior to stocking.

Initial sampling of the walleye population beginning in fall 2002 was conducted over a wide area of the river in fall, winter, and spring in an attempt to ascertain the density of the walleye population in the Rockcastle River and to collect walleye genetic samples. Sampling was conducted as far downstream as Bee Rock boat ramp (RRM 8.0) and extending upstream past the Forks several miles into the Middle Fork and South Forks (Figure 1). Walleye collected outside of broodfish collections were also processed as described above as genetic analysis was desired for all fish and individual identification with PIT tags would provide growth and movement information and also genetic results could be associated with individual fish if captured later. Any walleye having a left pelvic fin clip were noted as a recapture, scanned with the PIT tag reader, and the PIT tag code was recorded. After spring 2005, sampling was limited to the same three or four standardized sites and genetic analysis was limited to only broodfish collections. Standardized sampling was conducted at access sites located at: 1) Forks (RRM 54.9), which is the confluence of the Middle and South forks and the origination of the Rockcastle River mainstem; 2) Livingston (RRM 42.2); 3) I-75 (RRM 36.0); and 4) Eagle Creek (RRM 29.1).

None of the access sites are concrete boat ramps but rather range from steep, rutted two-tracks to gently sloping gravel. However, the Eagle Creek access site became so washed out over the course of the project that it could no longer be used after 2008.

Routine PIT tag marking of walleye collected during standardized sampling was discontinued after spring 2007. Walleye collected during sampling that were suspected as being age-2 or less (based on size) were sacrificed, the otoliths removed, and later checked for the presence of an OTC mark. Otoliths were viewed with fluorescence microscopy at either 100 or 400 X magnification. OTC marks were very distinct and often could be seen in unsectioned otoliths. If the OTC mark was not seen in whole view, then the otolith was broken on the transverse plane through the focus and a final determination made. Walleye otoliths from sacrificed fish and from occasional broodfish mortality were also used for aging. Dorsal spines were removed from a subsample of walleye collected in the spring of 2011 and 2012 and used as a non-lethal aging method (Logsdon 2007).

Fall electrofishing was also conducted from 2003 to 2007 and in 2009 to collect walleye for calculation of condition. This sampling effort was suspended after 2009 due to frequent low water levels resulting from drought conditions and temporal proximity after the change to earlier spring sampling. Total catch rate was regressed on year to determine if there was a significant increase in the native walleye population over time. An alpha level of 0.05 was used.

A contract was initiated with Eastern Kentucky University in 2003 to conduct a radio telemetry study of walleye in the Rockcastle River to help answer the question of whether there is cohabitation of the native strain and northern strain walleye. The initial design of the radio telemetry study was to collect 30 individuals from the river of each of the two strains, implant them with radio transmitters and follow them for one year. After much sampling over the length of the Rockcastle River and collecting many individuals for genetics and transmitter implantation, it was determined that the native strain walleye in the Rockcastle show no evidence of genetic introgression with the northern strain and there were no northern strain walleye present in the Rockcastle River above the area of Lake Cumberland influence, which coincides with the area of steep gradient called the Lower Narrows. Thus the goals of the radio telemetry study were altered to determine spawning sites, seasonal habitat use and distribution of native walleye in the Rockcastle River. The results of the telemetry study can be found in Chapman (2005).

RESULTS and DISCUSSION

The genetic analysis of walleye collected over a wide area of the Rockcastle River during broodfish collections, the radio telemetry study, and standardized sampling proved that the Rockcastle River was inhabited by a pure strain of southern walleye (White et al. 2012). From fall 2002 through spring 2015, a total of 641 walleye collected from the Rockcastle River were genetically analyzed by Dr. Matt White using both mitochondrial DNA analysis and microsatellites analysis of nuclear DNA. All walleye tested as the native southern strain with the exception of a single individual that had been collected below the Lower Narrows in a lentic portion of the Rockcastle River arm of Lake Cumberland. Lake Cumberland is stocked annually with northern strain walleye so their presence in the inundated portion of the Rockcastle River was to be expected. The genetic integrity of the native southern strain walleye has been maintained even though northern strain walleye fry had been stocked in previous years in the

Rockcastle River and walleye populations have also had the potential to interbreed with northern strain walleye that have been stocked in Lake Cumberland since the early 1970's.

A similar incidence of a native southern walleye stock remaining distinct from stocked northern strain walleye in a downstream reservoir occurs in Virginia (Palmer et al. 2005a). Genetic testing of walleye from the Big South Fork of the Cumberland River has determined that the same native strain of walleye is present but some hybridization with northern strain walleye has taken place. However, there also continue to be pure native strain and pure northern strain present together in the Big South Fork of the Cumberland River (M. White, pers. comm.). It seems that early 20th century stockings of northern strain walleye fry in the Rockcastle River either suffered total mortality or that different reproductive life history characteristics served to isolate the two strains in some areas. It should be noted that while the Lower Narrows is a half-mile stretch of Class III and IV whitewater, it is not a physical barrier for upstream movement of walleye, at least for the native strain. During the radio telemetry study, a large female native strain walleye was captured and implanted with a radio transmitter in a pool above the Lower Narrows. The fish was subsequently found in a pool downstream of the Lower Narrows during one manual tracking event and then located back upstream where it originated in a later tracking event.

There were several differences observed between northern strain and native strain walleye during the spawning and culture processes. Generally, native walleye require 7 to 10 days post first injection of HCG before spawning while northern strain walleye are spawned 4 to 6 days post first injection depending upon water temperature. Northern strain walleye eggs and fry are smaller than native walleye eggs and fry as was also found in a Virginia southern walleye population (Palmer at al. 2005b). Northern strain walleye fry generally run about 130 fish per ml, while native walleye average about 80 fish per ml.

The actual number of native walleye fingerlings stocked in the Rockcastle River and tributaries (about 100 miles of water) ranged from 7,972 to 31,775 (80 to 318 fingerlings/mi). A total of 142 walleye were sacrificed and examined for OTC marks from the six stocked year classes. Of all that were examined, only one individual that was from the 2002 year class did not possess the OTC mark (Table 2) and no walleye stocked as fry were ever collected from the river. On one hand these results are encouraging in that the stocked fish apparently had good survival, but the results are concerning in that it indicates extremely limited natural reproduction over that time span. The length frequency histogram of the population in 2003, prior to any effects from stocking, showed significant gaps relative to years of stocking (Figure 2). This led to the assumption that there is typically highly variable natural year class production. During the six years of supplemental stocking, year class production was apparently more stable but there were not any particularly large year classes as length frequency histograms showed less gaps and no large peaks (Figure 2).

Standardized sampling from 2003 through 2012 showed that there was a low density walleye population in the Rockcastle River (Table 3). Electrofishing catch rates ranged from 4.3 to 9.0 fish/h and averaged 6.7 fish/h over the ten years. No sampling was conducted prior to initiation of supplemental stocking. However, there is no evidence of an increase in the native walleye population in the Rockcastle River from 2003 to 2012 ($P = 0.68$). Supplemental stocking also contributed heavily to a Gulf coast walleye population in a Mobile River tributary but did not enhance the population (Schramm et al. 2004). This contrasts with interior Iowa rivers where supplemental stocking of northern strain walleye significantly increased walleye density (Paragamian and Kingery1992; Gelwick 2001). The Rockcastle River catch rate of walleye

≥15.0 in from 2003 to 2012 averaged 3.7 fish/h. Rockcastle River native walleye otoliths were acquired for aging purposes from various sources (broodfish and surgery mortality, fish for OTC examination and angler harvest) from 2002 to 2008, but none were taken from walleye captured during normal sampling activities because of reluctance to sacrifice adult native walleye of the low density population. Otoliths from 11 females, 35 males and 34 walleye of unknown sex were used to make back-calculations and estimate average length at age (Table 4). The back-calculated length at age estimates showed that females grew much faster and attained a much larger maximum size than males. Males reached a maximum length of about 21 in. Females exceeding 30 in were collected several times over the ten years of the study including a 32.0 in female weighing 15.0 lbs that was collected in the spring of 2003. Though sample sizes were low with dorsal spine aging from 2011 and 2012, the variation in growth among the two sexes was again evident and mean length at age was comparable to backcalculated lengths from otoliths (Table 5). The limited amount of age data showed that the maximum age of males is 12 years and females were found up to age-10; however some larger specimens were not aged.

Over the course of the project, growth of age-1 and age-2 walleye was variable. Walleye collected in the spring from the Rockcastle River ranged from 6 to 9 in at age-1 and 10 to 14 in at age-2. The mean length at capture of age-1 fish declined from 7.8 in in 2003 to 6.8 in in 2005 (Table 6). In 2003, the length at capture of age-2 walleye ranged from 11 to 15 in, but by 2006, the length at capture of suspected age-2 fish had declined and ranged from 9 to 12 in (Figure 2). Length frequency analysis of sampling data revealed that the 2001 and 2002 year classes were strong based the strong peaks of estimated age-2 walleye collected in 2003 and 2004 (Figure 2). The 2003 walleye year class was weak based on the lack of any 6 to 9 in fish in the 2004 sample and the relative lack of walleye in the 10 to 14 in classes in 2005. The relatively good catch rate of the 2004 year class at age-1 suggested at least an average year class. However, subsequent data showed that the 2004 year class was weak as well, as indicated by relatively few 10 to 14 in walleye collected in the spring 2006 sample (Figure 2). This discrepancy may have several explanations. What determines year-class strength is likely a product of density, growth rate, and environmental factors, but in any case year-class strength may not be set until age-2. Judged by known growth rates, length frequency histograms suggested that there was poor year-class survival in 2005 and 2006 and no year class survival in 2007. It was apparent that the lack of walleye natural reproduction observed during the years of supplemental stocking continued after stocking concluded in 2007 as electrofishing samples did not show any indication of walleye recruitment until 2012, when five walleye were collected that were age-3.

Though data is limited, some trend analysis by size is possible. From 2009 to 2012, spring sampling indicated that the walleye population in the Rockcastle River was dominated by fish in the 15.0-19.9 in range (Figure 2, Table 3). The catch rates over this period were above the long term average (Table 3) and were likely a product of more consistent year class survival during years of stocking. The catch rates of ≥25.0 in walleye were also at or above average over the same period.

Condition of walleye in the Rockcastle River declined from 2003 to 2005, following a similar pattern as walleye growth rate. The overall relative weight of 81 in 2003 declined to 74 by 2005 (Table 7). There are critical gaps in local gage data but historical discharge data from nearby Lake Cumberland supports empirical evidence that there were significant flood events leading to unusually wet years on the Rockcastle River in both 2003 and 2004 (Figure 3). Condition had rebounded by the last relative weight sample taken in 2009.

Routine PIT tagging of all walleye captured and released in the Rockcastle River from 2003 through 2007 resulted in the marking of 483 fish. PIT tag retention was excellent as, of the 121 walleye identified as a recapture based on the presence of a left pelvic clip, the PIT tag was detected in all but two fish. Since the tag insertion area was not investigated internally, there was no way of determining if the PIT tag had been lost or if the tag malfunctioned, but in either case this translated into a tag failure rate of 1.7%. There were 157 total recaptures representing 121 different walleye individuals (See Appendix A). Most walleye were only recaptured one time, however 22 fish were recaptured twice, 4 individuals were recaptured three times and 2 fish were recaptured four times. There are multiple individuals with a year or more separation in captures, which gives excellent data on growth rates. This data is important because of the reluctance to sacrifice fish for a true age and growth study. Observed growth rates from recaptures matches favorably with the backcalculated lengths and estimates of length at age from the limited aging conducted.

MANAGEMENT IMPLICATIONS

As the first substantive investigation into a native walleye population in Kentucky, this research study provided a multitude of information. The most important of which is that there is a pure native southern strain of walleye in the Rockcastle River with no evidence of northern strain genetic introgression. It is apparent that this is a relatively low density population and though stocked fingerlings contributed greatly to individual year classes, overall walleye recruitment did not increase. It could be possible that consistent recruitment is a negative in the Rockcastle River and that variable year class strength actually benefits the population by reducing intraspecific competition. However, it will be important to continue to monitor the Rockcastle River walleye population to be sure that natural recruitment does pick up again. If not, occasional supplemental stocking may be warranted along with an investigation to determine what recent change is impacting natural recruitment. The KDFWR Native Walleye Management Committee relied heavily on the results of this investigation during the development of a management plan entitled Conservation and Management Plan for the Native Walleye of Kentucky. Many of the sampling and culture techniques developed through the current project are now being applied in native walleye restorations in the Barren River, Levisa Fork, upper Cumberland River, and upper Kentucky River.

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Table 1. Number of fry and fingerling native walleye stocked at various locations in the Rockcastle River watershed from 2002 to 2007. All walleye fry and the fingerlings stocked in 2002 were OTC-marked at the fry stage and fingerlings stocked after were marked at the fingerling stage.

	Fry Stockings		Fingerling Stockings					
Stocking Location	04/23/02	04/21/03	05/28/02	05/29/03	05/27/04	06/08/05	06/01/06	05/24/07
Middle Fork of Rockcastle River								
Jct. Hwy 89 and 2002	9,000	10,250	2,133	4,000	4,372		2,043	
South Fork of Rockcastle River								
Bridge crossing near Cornette	20,000	8,000	2,133		4,373		2,043	
Roundstone Creek								
Mullins bridge crossing			2,133					
Rockcastle River								
Confluence of Middle and South Forks	20,000	10,585	2,132	4,000	4,373		3,028	3,700
Near Trace Branch	20,000	15,000	6,132	4,000			2,029	
Livingston (Sand Hill Road)	20,000	15,000	3,000	4,000	4,373		3,029	3,700
I-75 bridge			3,000	8,000	4,373	3,986	3,044	3,700
Billows				7,775	4,373	3,986	3,043	
Total	89,000	58,835	20,663	31,775	26,237	7,972	18,259	11,100
Mean size at stocking (in)	0.25	0.25	1.4	1.5	1.8	2.1	1.8	1.4

Table 2. Results of examination of walleye otoliths for OTC mark. Walleye were collected from the Rockcastle River from 2003 to 2007.

Year Class	Number of fish examined for OTC mark	Wild	Stocked	Percent contribution of stocked walleye to year class
2002	58	1	57	98%
2003	6	0	6	100%
2004	38	0	38	100%
2005	16	0	16	100%
2006	23	0	23	100%
2007	1	0	1	100%

Table 3. Spring electrofishing catch per unit effort (CPUE) for each size class of native strain walleye collected from three sites on the Rockcastle River (Forks, Livingston, and I-75) from 2003 to 2012. CPUE = fish/h.

	Size Class											
	< 10.0 in		10.0-14.9 in		15.0-19.9 in		20.0-24.9 in		≥ 25.0 in		Total	
Year	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error
2003	1.6	0.6	4.2	1.2	0.2	0.2	0.6	0.3	0.5	0.3	7.2	1.5
2004	0.0		6.0	2.5	2.6	0.7	0.2	0.1	0.3	0.2	8.9	2.8
2005	1.1	0.5	2.1	0.9	1.1	0.5	0.8	0.2	0.0		5.1	1.7
2006	1.0	0.3	1.8	0.5	0.8	0.3	0.7	0.2	0.1	0.1	4.3	0.9
2007	0.4	0.3	5.0	1.2	2.4	0.7	0.9	0.3	0.3	0.2	9.0	1.4
2008	0.0		3.6	1.0	3.1	0.8	0.2	0.1	0.1	0.1	7.0	1.6
2009	0.0		2.3	0.8	5.0	1.1	0.1	0.1	0.5	0.3	7.9	2.0
2010	0.0		0.4	0.3	3.4	1.0	0.5	0.2	0.3	0.2	4.5	1.1
2011	0.0		0.0		6.3	2.6	1.6	0.6	0.4	0.2	8.2	2.6
2012	0.0		0.6	0.3	3.6	1.7	0.5	0.3	0.6	0.3	5.4	2.2
Average	0.4		2.6		2.8		0.6		0.3		6.7	

Table 4. Mean estimated length at age based on back-calculation of sporadic collections of otoliths from native walleye from 2002-2008.

	Age											
	1	2	3	4	5	6	7	8	9	10	11	12
Mean Growth for Females (N=11)	9.5	13.0	16.8	21.4	23.5	25.0	26.2	27.1	28.0			
Mean Growth for Males (N=35)	9.1	12.3	15.2	16.6	17.6	18.5	19.2	19.7	20.3	19.4	20.1	20.4
Mean Growth for Sex Unknown (N=34)	8.2	11.8	15.1	16.0	17.1	18.3	19.0	19.8	20.5	20.9	21.2	
Overall Mean Growth	8.8	12.3	15.4	16.9	17.9	19.0	19.7	20.4	21.1	20.3	20.6	20.4

Table 5. Length at age of walleye collected from the Rockcastle River in spring 2011 and 2012 and aged using dorsal spines.

Females	3	4	5	6	7	8	9	10
n		2	2	8	6		1	1
Mean Length		18.1	21.9	23.5	25.0		28.7	28.0
Minimum Length		16.8	20.8	21.3	22.1		N/A	N/A
Maximum Length		19.4	22.9	26.2	26.7		N/A	N/A
Range		2.6	2.1	4.9	4.6		N/A	N/A

Males	3	4	5	6	7	8	9	10
n	6		8	5	2	3	1	
Mean Length	14.4		17.6	17.9	18.1	18.4	18.6	
Minimum Length	12.9		16.3	15.4	18.0	17.6	N/A	
Maximum Length	16.0		20.4	19.5	18.2	19.7	N/A	
Range	3.1		4.1	4.1	0.2	2.1	N/A	

Combined	3	4	5	6	7	8	9	10
n	6	2	10	13	8	3	2	1
Mean Length	14.8	18.1	18.4	21.2	23.3	18.4	23.7	28.0
Minimum Length	12.9	16.8	16.3	15.4	18.0	17.6	18.6	N/A
Maximum Length	16.0	19.4	22.9	26.2	26.7	19.7	28.7	N/A
Range	3.1	2.6	6.6	10.8	8.7	2.1	10.1	N/A

Table 6. Mean length and catch per unit effort (CPUE) of estimated age-1 native strain walleye collected in spring electrofishing on the Rockcastle River from 2003 to 2012. CPUE = fish/h.

Year Class	n	Mean Length	Std. Error	CPUE	Std. Error
2002	13	7.8	0.2	1.6	0.6
2003	0	N/A		0.0	
2004	14	6.8	0.2	1.0	0.5
2005	10	7.1	0.1	0.7	0.3
2006	4	7.5	0.4	0.4	0.3
2007	0	N/A		0.0	
2008	0	N/A		0.0	
2009	0	N/A		0.0	
2010	0	N/A		0.0	
2011	0	N/A		0.0	
2012	0	N/A		0.0	

Table 7. Number of fish and the relative weight (Wr) for three size ranges of native walleye collected from the Rockcastle River during fall 2003-2009. Standard error is in parentheses.

	Size Range							
	10.0-14.9 in		15.0-19.9 in		≥20.0 in		Total	
Year	No.	Wr	No.	Wr	No.	Wr	No.	Wr
2003	45	80 (0.6)	50	79 (0.8)	18	87 (2.0)	113	81 (0.6)
2004	32	79 (0.8)	33	78 (0.9)	12	80 (1.0)	77	79 (0.5)
2005	11	75 (1.8)	9	73 (1.2)	3	73 (1.5)	23	74 (1.0)
2006	28	77 (0.7)	25	79 (0.8)	2	76 (2.7)	55	78 (0.5)
2007	28	77 (0.7)	24	76 (2.2)	0	----	52	76 (1.1)
2008	No sampling was conducted							
2009	5	79 (2.0)	31	81 (0.8)	4	77 (0.9)	40	80 (0.7)

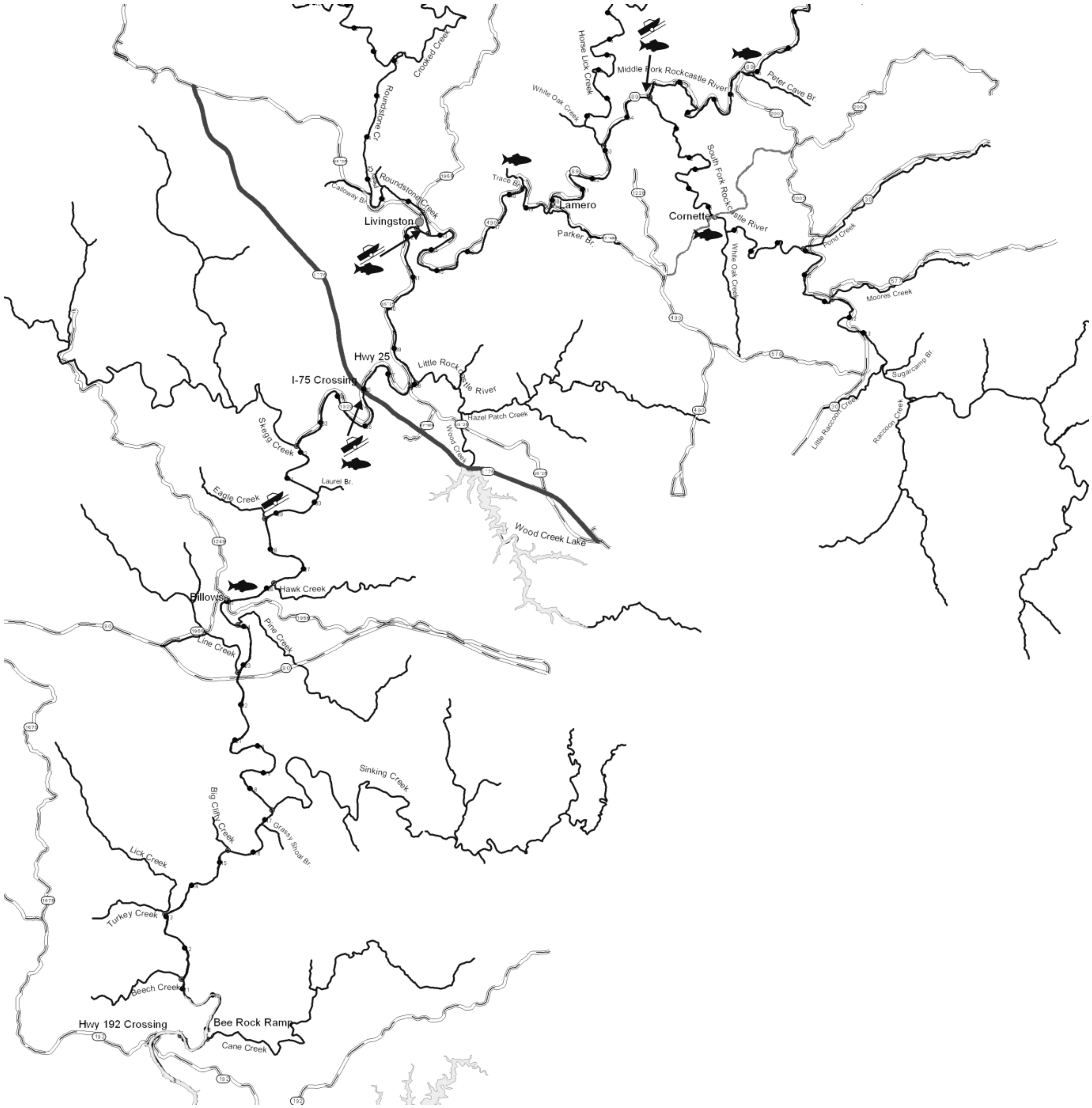

Figure 1. Map of Rockcastle River showing stocking locations and sampling sites. Stocking sites are designated with the fish symbol and access sites used for sampling are indicated with the boat launch symbol.

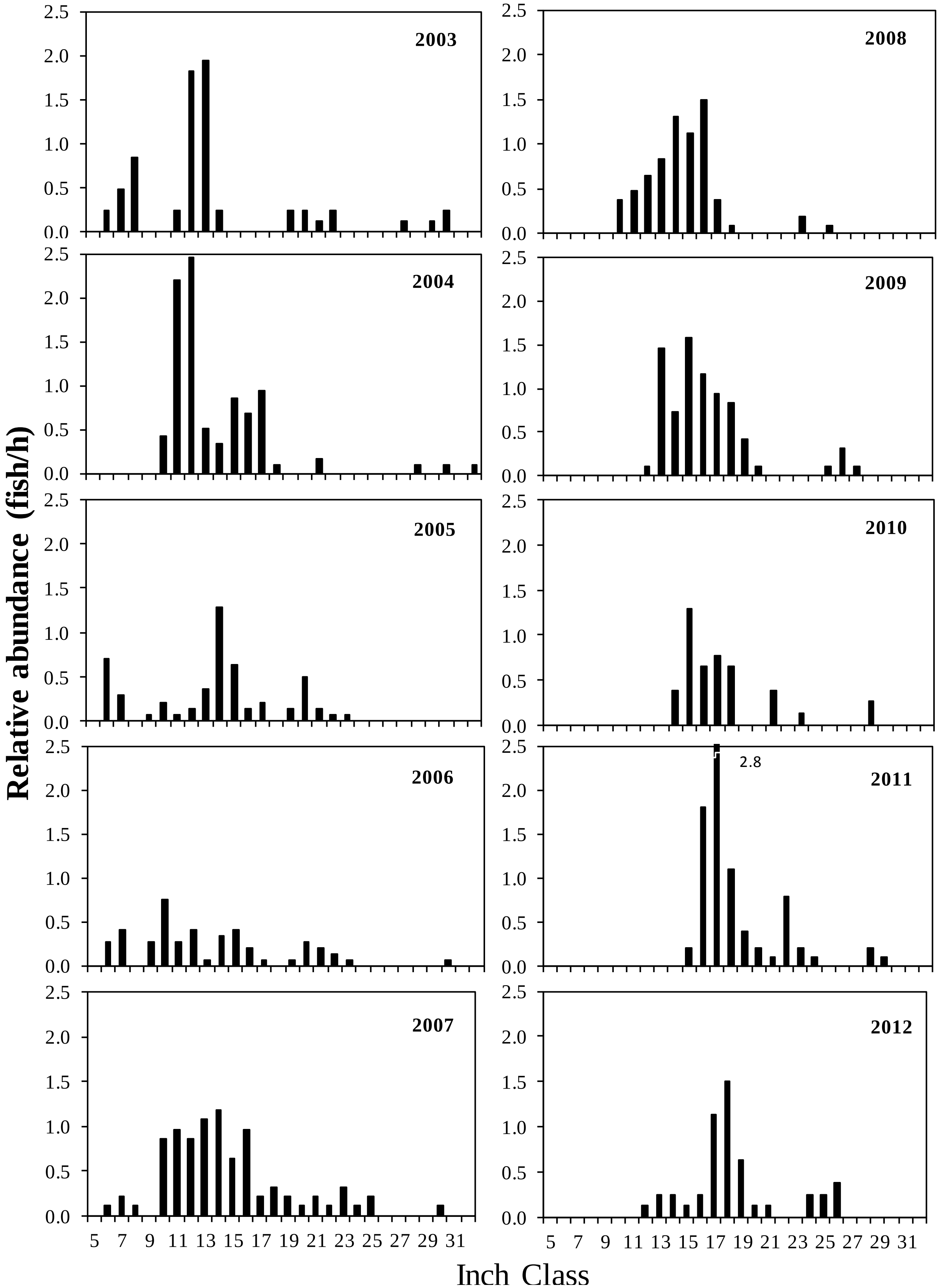

Figure 2. Relative abundance of native walleye collected in the Rockcastle River during spring electrofishing from 2003 to 2012.

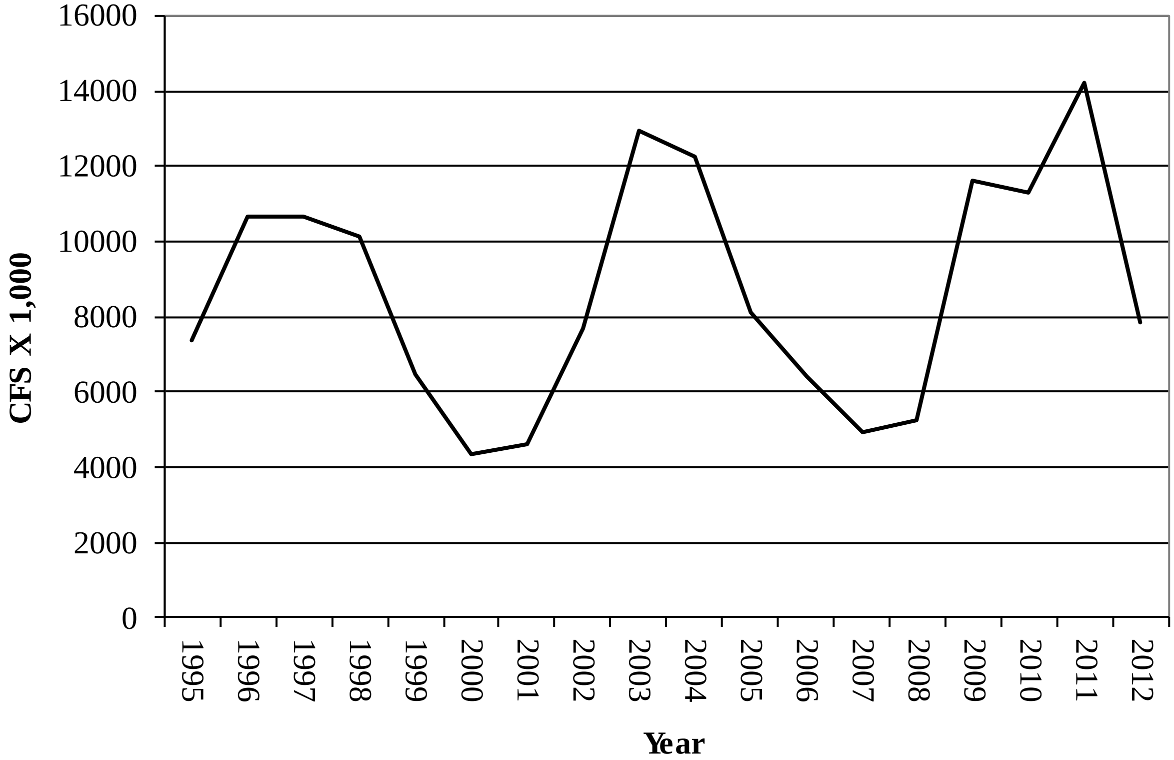

Figure 3. Annual mean hourly discharge from Lake Cumberland from 1995 to 2012.

APPENDIX A

PIT Tag	Capture	Length	Weight	Date	Sex	Location	Specific Location
430314610B	1	11.4	0.37	03/16/04	M	Rockcastle River	Below Forks
430314610B	2	13.9	0.75	10/11/04	M	Rockcastle River	Above Livingston
435055673C	1	11.0	0.35	10/23/03	U	Rockcastle River	Below Forks
435055673C	2	13.2	0.63	10/12/04	U	Rockcastle River	Below Forks
43530E1B5E	1	12.7	0.57	04/03/03	U	Rockcastle River	Eagle Creek
43530E1B5E	2	20.5	2.96	04/19/05	U	Rockcastle River	Above Eagle Creek
4354361642	1	14.9	0.95	01/13/04	M	Rockcastle River	Above Livingston
4354361642	2	17.9	1.38	03/26/08	M	Rockcastle River	Above Livingston
4354394F08	1	13.4	0.88	04/29/03	F?	Rockcastle River	Above Livingston
4354394F08	2	16.6	1.40	10/02/03	F?	Rockcastle River	Above Livingston
4354394F08	3	16.9	1.64	10/30/03	F?	Rockcastle River	Above Livingston
4354394F08	4	17.0		03/16/04	U	Rockcastle River	Above Livingston
4354394F08	5	19.5	2.22	10/11/04	U	Rockcastle River	Above Livingston
435443690F	1	18.1	1.74	01/13/04	U	Rockcastle River	Above Livingston
435443690F	2	17.9	1.62	03/18/04	IF	Rockcastle River	Below Livingston
4354565374	1	11.5	0.44	04/29/03	F?	Rockcastle River	Above Livingston
4354565374	2	14.8	1.20	05/06/04	U	Rockcastle River	Below Livingston
435460384F	1	17.2	1.71	01/13/04	U	Rockcastle River	Above Livingston
435460384F	2	22.4	3.35	12/19/05	U	Rockcastle River	Above Livingston
435460384F	3	22.5	3.47	02/23/06	F	Rockcastle River	I-75
43563D6B6A	1	13.5	0.75	04/03/03	U	Rockcastle River	Eagle Creek
43563D6B6A	2	20.8	2.67	11/17/04	U	Rockcastle River	Above Eagle Creek
4356546D71	1	13.9	0.79	03/27/03	IF?	Rockcastle River	Above Livingston
4356546D71	2	17.5	1.61	03/16/04	IF	Rockcastle River	Above Livingston
43565F3514	1	11.8	0.45	04/29/03	M?	Rockcastle River	Above Livingston
43565F3514	2	14.1	0.82	01/13/04	U	Rockcastle River	Below Livingston
4356651900	1	19.8	2.49	01/13/04	U	Rockcastle River	Above Livingston
4356651900	2	19.9	2.27	10/11/04	U	Rockcastle River	Above Livingston
4357071307	1	12.6	0.57	04/03/03	U	Rockcastle River	Eagle Creek
4357071307	2	16.8	1.49	04/08/04	U	Rockcastle River	Above Eagle Creek
4357071307	3	18.9	1.86	09/30/04	U	Rockcastle River	Eagle Creek
435C5B551F	1	12.4	0.55	04/29/03	F?	Rockcastle River	Above Livingston
435C5B551F	2	17.7	1.63	11/21/06	U	Rockcastle River	Above I-75
435C742633	1	16.8	1.46	03/16/04	IF	Rockcastle River	Below Forks
435C742633	2	19.8	2.38	10/12/04	F?	Rockcastle River	Below Forks
435C79694E	1	28.6	8.55	11/14/02	U	Rockcastle River	I-75
435C79694E	2	28.9	10.39	01/13/04	U	Rockcastle River	Below Livingston
435C7A6676	1	15.8	1.21	10/23/03	U	Rockcastle River	Below Forks
435C7A6676	2	17.7	1.56	02/23/06	M	Rockcastle River	Forks
435C7C204A	1	11.0	0.34	01/13/04	U	Rockcastle River	Above Livingston
435C7C204A	2	11.0	0.35	03/18/04	IF	Rockcastle River	Above Livingston

PIT Tag	Capture	Length	Weight	Date	Sex	Location	Specific Location
435D062004	1	14.4	1.02	04/29/03	F?	Rockcastle River	Above Livingston
435D062004	2	18.5	2.03	05/06/04	?	Rockcastle River	Above Livingston
451619602B	1	14.1	0.84	03/16/04	IF	Rockcastle River	Below Forks
451619602B	2	25.8	5.02	03/23/09	F	Rockcastle River	Above Forks
451635376D	1	19.7	2.30	09/30/04	U	Rockcastle River	Above Eagle Creek
451635376D	2	20.1	2.53	04/19/05	U	Rockcastle River	Above Eagle Creek
451635376D	3	20.5	2.73	04/28/06	U	Rockcastle River	Above Eagle Creek
451763022B	1	15.1	0.91	03/16/04	M	Rockcastle River	Below Forks
451763022B	2	16.5	1.21	02/23/06	M	Rockcastle River	Forks
45176A1A50	1	31.8	13.74	01/13/04	F	Rockcastle River	Below Livingston
45176A1A50	2	31.7	10.74	03/25/04	F	Rockcastle River	Above I-75
4517773002	1	14.6	0.87	01/13/04	U	Rockcastle River	Below Livingston
4517773002	2	16.5	1.08	03/23/06	M	Rockcastle River	Forks
4518015662	1	11.5	0.42	05/06/04	U	Rockcastle River	Above Livingston
4518015662	2	12.9	0.52	12/19/05	U	Rockcastle River	Livingston
451804544E	1	12.1	0.45	03/16/04	M	Rockcastle River	Below Forks
451804544E	2	13.8	0.71	10/11/04	M	Rockcastle River	Above Livingston
4518050E2F	1	15.2	1.06	03/18/04	M	Rockcastle River	Below Livingston
4518050E2F	2	16.6	1.44	11/10/04	M	Rockcastle River	Above I-75
4518063F02	1	12.5	0.54	03/16/04	M	Rockcastle River	Below Forks
4518063F02	2	15.0	1.00	11/10/04	M	Rockcastle River	Above I-75
4518083833	1	21.9	3.36	12/04/03	M	Rockcastle River	Eagle Creek
4518083833	2	22.0		03/16/04	M	Rockcastle River	Above Livingston
4518083833	3	22.8		02/23/06	M	Rockcastle River	Above I-75
45180E5147	1	16.3	1.26	10/30/03	U	Rockcastle River	Above Livingston
45180E5147	2	16.3	1.40	03/18/04	IF	Rockcastle River	Above Livingston
4518112941	1	16.2	1.25	01/13/04	F	Rockcastle River	Below Livingston
4518112941	2	21.2	2.65	03/29/06	F	Rockcastle River	Below Livingston
45185C5620	1	20.9	2.97	10/30/03	U	Rockcastle River	Above Livingston
45185C5620	2	20.8	2.93	10/11/04	U	Rockcastle River	Above Livingston
45186B012E	1	12.3	0.56	05/06/04	U	Rockcastle River	Above Livingston
45186B012E	2	15.2	0.93	10/11/04	U	Rockcastle River	Above Livingston
45190F6E01	1	10.6	0.37	03/18/04	M	Rockcastle River	Above Livingston
45190F6E01	2	14.4	0.87	12/19/05	M	Rockcastle River	Livingston
45190F6E01	3	14.7	0.85	03/23/06	M	Rockcastle River	Forks
45190F6E01	4	15.5	1.09	11/21/06	M	Rockcastle River	Above Livingston
4519161161	1	12.3	0.60	01/13/04	F	Rockcastle River	Below Livingston
4519161161	2	18.9	2.24	03/22/07	F	Rockcastle River	Below Livingston
4519182845	1	21.1	3.57	01/13/04	U	Rockcastle River	Below Livingston
4519182845	2	21.3	3.35	03/18/05	M	Rockcastle River	Above Forks

PIT Tag	Capture	Length	Weight	Date	Sex	Location	Specific Location
45191A2A16	1	11.3	0.38	03/16/04	M	Rockcastle River	Below Forks
45191A2A16	2	12.9	0.61	11/10/04	M	Rockcastle River	Above I-75
451921366B	1	14.3	0.89	01/13/04	U	Rockcastle River	Above Livingston
451921366B	2	20.1	2.47	03/23/06	F	Rockcastle River	Forks
4519300F0B	1	28.5	8.71	01/14/04	F	Rockcastle River	Above Eagle Creek
4519300F0B	2	28.5	7.28	03/18/04	F	Rockcastle River	Above Livingston
4519311727	1	12.0	0.50	03/16/04	M	Rockcastle River	Below Forks
4519311727	2	14.2	0.90	10/12/04	M	Rockcastle River	Below Forks
4519322941	1	32.5	11.16	03/18/04	F	Rockcastle River	Above I-75
4519322941	2	32.5	10.78	03/25/04	F	Rockcastle River	Above I-75
451E446906	1	16.7	1.32	12/09/03	U	Rockcastle River	Above Livingston
451E446906	2	16.7	1.35	01/14/04	U	Rockcastle River	Above Eagle Creek
451E457F42	1	21.3	3.15	12/09/03	U	Rockcastle River	Below I-75
451E457F42	2	21.4	3.20	01/14/04	U	Rockcastle River	Above Eagle Creek
451E457F42	3	21.5	3.07	11/10/04	U	Rockcastle River	Above I-75
451E465C25	1	11.8	0.48	01/13/04	U	Rockcastle River	Below Livingston
451E465C25	2	12.0	0.47	05/06/04	U	Rockcastle River	Above Livingston
451E4E0F62	1	12.3	0.53	01/14/04	U	Rockcastle River	Above Eagle Creek
451E4E0F62	2	17.1	1.46	10/08/06	U	Rockcastle River	Above Eagle Creek
451E504846	1	12.5	0.53	03/16/04	M	Rockcastle River	Below Forks
451E504846	2	15.7	1.08	12/19/05	U	Rockcastle River	Livingston
451E525637	1	17.8	1.97	03/18/04	F	Rockcastle River	Above I-75
451E525637	2	17.8	2.02	03/25/04	F	Rockcastle River	Above I-75
451E525637	3	22.6	3.89	02/23/06	F	Rockcastle River	I-75
451E537703	1	14.9	0.92	03/18/04	M	Rockcastle River	Below Livingston
451E537703	2	17.1	1.40	12/19/05	M	Rockcastle River	Above Livingston
451E537703	3	21.8	3.51	03/17/15		Rockcastle River	Above Livingston
451E585E41	1	17.8	1.79	01/13/04	U	Rockcastle River	Below Livingston
451E585E41	2	21.0	2.70	10/12/04	U	Rockcastle River	Below Forks
451E5E320C	1	13.0	0.66	03/18/04	IF	Rockcastle River	Above Livingston
451E5E320C	2	19.5		02/16/06	F	Rockcastle River	Above Lamero
451E5E5458	1	17.5	1.78	03/23/04	F	Rockcastle River	Below Billows
451E5E5458	2	20.0	2.59	03/18/05	F	Rockcastle River	Below Livingston
451E5F633C	1	11.9	0.47	03/16/04	M	Rockcastle River	Below Forks
451E5F633C	2	15.4	1.03	12/19/05	M	Rockcastle River	Below Forks
451E631B5E	1	15.1	1.10	04/08/04	U	Rockcastle River	Above Eagle Creek
451E631B5E	2	17.8	1.71	09/30/04	U	Rockcastle River	Above Eagle Creek
451E706220	1	11.7	0.40	10/30/03	U	Rockcastle River	Above Livingston
451E706220	2	13.9	0.76	10/11/04	U	Rockcastle River	Above Livingston

PIT Tag	Capture	Length	Weight	Date	Sex	Location	Specific Location
451E7B3D48	1	15.9	1.20	10/30/03	U	Rockcastle River	Above Livingston
451E7B3D48	2	16.0		01/13/04	U	Rockcastle River	Above Livingston
451E7B3D48	3	17.3	1.59	10/11/04	U	Rockcastle River	Above Livingston
451E7B3D48	4	18.8	2.06	11/21/06	M	Rockcastle River	Above Livingston
451E7B3D48	5	22.4	3.58	03/15/13	M	Rockcastle River	Above Livingston
451F412820	1	16.3	1.57	01/14/04	U	Rockcastle River	Above Eagle Creek
451F412820	2	20.5	2.71	11/17/04	U	Rockcastle River	Above Eagle Creek
451F533976	1	12.9	0.61	03/16/04	M	Rockcastle River	Below Forks
451F533976	2	15.8	1.14	02/23/06	M	Rockcastle River	Forks
451F55270B	1	17.0	1.65	03/18/04	F	Rockcastle River	Below Livingston
451F55270B	2	20.2		03/14/05	F	Rockcastle River	Below Forks
451F7B021A	1	15.9	1.10	03/18/04	M	Rockcastle River	Above Livingston
451F7B021A	2	17.1	1.38	11/10/04	M	Rockcastle River	Above I-75
454E681C08	1	13.8	0.75	11/10/04	U	Rockcastle River	Above I-75
454E681C08	2	17.3	1.58	11/21/06	U	Rockcastle River	Above I-75
454E7D3F68	1	13.3	0.68	10/11/04	U	Rockcastle River	Above Livingston
454E7D3F68	2	13.9	0.74	12/19/05	U	Rockcastle River	Above Livingston
454E7D3F68	3	14.9	0.91	03/13/07	M	Rockcastle River	Below Forks
454F031256	1	20.0	2.53	11/17/04	U	Rockcastle River	Above Eagle Creek
454F031256	2	20.0	2.58	04/19/05	U	Rockcastle River	Above Eagle Creek
454F0F5E28	1	16.3	1.17	10/11/04	U	Rockcastle River	Above Livingston
454F0F5E28	2	16.6	1.22	12/19/05	U	Rockcastle River	Above Livingston
454F3B6573	1	17.2	1.55	10/12/04	U	Rockcastle River	Below Forks
454F3B6573	2	19.8	2.54	03/23/06	F	Rockcastle River	Forks
454F40023A	1	16.6	1.36	11/10/04	F	Rockcastle River	Above I-75
454F40023A	2	21.7	3.24	04/19/07	F	Rockcastle River	Above I-75
454F40023A	3	23.4	3.73	03/27/08	F	Rockcastle River	Above I-75
454F40023A	4	27.1	6.87	03/10/10	F	Rockcastle River	I-75
454F554419	1	12.8	0.58	10/11/04	U	Rockcastle River	Above Livingston
454F554419	2	13.4	0.71	12/19/05	U	Rockcastle River	Above Livingston
455B024B5A	1	13.3	0.77	05/06/04	U	Rockcastle River	Above Livingston
455B024B5A	2	16.7	1.64	03/14/05	F	Rockcastle River	Above Livingston
455B056659	1	14.2	0.83	11/17/04	U	Rockcastle River	Above Eagle Creek
455B056659	2	14.2	0.92	04/19/05	U	Rockcastle River	Above Eagle Creek
455B3F2B14	1	16.1	1.21	04/19/05	U	Rockcastle River	Above Eagle Creek
455B3F2B14	2	17.6	1.65	10/08/06	U	Rockcastle River	Above Eagle Creek
455B402077	1	21.3	3.26	11/10/04	U	Rockcastle River	Above I-75
455B402077	2	21.5	2.93	03/18/05	F	Rockcastle River	Near Sturgill Property
455B402077	3	28.6	8.68	04/20/10		Rockcastle River	I-75
455B47346C	1	20.4	2.33	12/19/05	U	Rockcastle River	Livingston
455B47346C	2	25.4	5.85	03/10/09	F	Rockcastle River	Forks

PIT Tag	Capture	Length	Weight	Date	Sex	Location	Specific Location
455B4B1517	1	13.7	0.75	10/12/04	M	Rockcastle River	Below Forks
455B4B1517	2	14.5	0.83	12/19/05	M	Rockcastle River	Forks
455B4B1517	3	16.0	1.32	12/20/07	M	Rockcastle River	Below Forks
455B5D567E	1	13.8	0.74	11/10/04	M	Rockcastle River	Above I-75
455B5D567E	2	15.8	1.14	04/19/07	M	Rockcastle River	Above I-75
455B5D567E	3	16.0	1.19	12/19/07	M	Rockcastle River	Above I-75
455B737656	1	19.8	2.41	09/30/04	U	Rockcastle River	Above Eagle Creek
455B737656	2	20.7	2.88	04/28/06	U	Rockcastle River	Above Eagle Creek
455B737656	3			10/08/06	U	Rockcastle River	Above Eagle Creek
455E522C18	1	15.6		09/30/04	U	Rockcastle River	Above Eagle Creek
455E522C18	2	15.6	0.91	11/17/04	U	Rockcastle River	Above Eagle Creek
455E522C18	3	15.5	1.01	04/19/05	U	Rockcastle River	Above Eagle Creek
455E634A23	1	14.1	0.84	10/11/04	U	Rockcastle River	Above Livingston
455E634A23	2	14.3	0.79	03/14/05	M	Rockcastle River	Above Livingston
455F377570	1	20.6	2.85	10/12/04	U	Rockcastle River	Below Forks
455F377570	2	21.0	2.57	03/18/05	F	Rockcastle River	Above Forks
461F393A4E	1	14.1		03/14/05	M	Rockcastle River	Below Forks
461F393A4E	2	18.7	1.90	03/24/09	M	Rockcastle River	Livingston
461F393A4E	3	19.7	2.65	03/09/10	M	Rockcastle River	Livingston
462D45434C	1	20.8	2.63	12/19/05	U	Rockcastle River	Above Livingston
462D45434C	2	23.0	3.78	04/19/07	U	Rockcastle River	Above I-75
4649164B02	1	14.7	0.81	12/19/05	U	Rockcastle River	Forks
4649164B02	2	15.5	1.05	11/14/06	U	Rockcastle River	Forks
4649203E2F	1	17.8	1.68	12/19/05	M	Rockcastle River	Above Livingston
4649203E2F	2	19.0	1.93	03/22/07	M	Rockcastle River	Above Livingston
4649395305	1	10.0	0.26	03/29/06	M	Rockcastle River	Above Livingston
4649395305	2	15.2	0.90	03/26/08	M	Rockcastle River	Above Livingston
46493A3F50	1	14.6	0.95	11/21/06	M	Rockcastle River	Above Livingston
46493A3F50	2	15.2	0.97	03/26/08	M	Rockcastle River	Above Livingston
46493A3F50	3	17.2	1.51	03/16/11	M	Rockcastle River	Forks
4649625615	1	19.1	2.31	04/19/05	U	Rockcastle River	Above Eagle Creek
4649625615	2	20.8	2.77	04/28/06	U	Rockcastle River	Above Eagle Creek
4649625615	3	22.6	3.40	10/08/06	U	Rockcastle River	Above Eagle Creek
4649666B1B	1	10.3	0.29	03/29/06	M	Rockcastle River	Below Livingston
4649666B1B	2	16.6	1.27	03/26/08	M	Rockcastle River	Above Livingston
464A48500F	1	11.4	0.37	03/29/06	M	Rockcastle River	Below Livingston
464A48500F	2	14.2	0.81	03/22/07	M	Rockcastle River	Below Livingston
464A48500F	3	15.3	0.98	03/26/08	M	Rockcastle River	Above Livingston
464A60650B	1	13.9	0.80	04/19/05	M	Rockcastle River	Above Eagle Creek
464A60650B	2	17.3	1.64	04/24/08	M	Rockcastle River	Above Eagle Creek

PIT Tag	Capture	Length	Weight	Date	Sex	Location	Specific Location
464B093064	1	17.0	1.28	03/29/06	M	Rockcastle River	Below Livingston
464B093064	2	17.8	1.81	11/21/06	U	Rockcastle River	Above I-75
464D133A61	1	15.2	0.94	03/29/06	M	Rockcastle River	Below Livingston
464D133A61	2	16.5	1.28	03/22/07	M	Rockcastle River	Above Livingston
46581F5515	1	14.9	0.97	03/14/05	M	Rockcastle River	Below Forks
46581F5515	2	15.5	0.93	12/19/05	M	Rockcastle River	Forks
46581F5515	3	16.5	1.26	11/21/06	M	Rockcastle River	Above I-75
4748776115	1	21.8	3.10	03/23/06	F	Rockcastle River	Forks
4748776115	2	26.9	6.05	03/23/09	F	Rockcastle River	Below Forks
4748776115	3	28.8	7.04	03/17/11	F	Rockcastle River	Forks
474C0A311B	1	14.8	0.87	03/23/06	M	Rockcastle River	Forks
474C0A311B	2	15.6	1.14	11/14/06	M	Rockcastle River	Forks
474C1E1C07	1	14.1	0.82	11/14/06	M	Rockcastle River	Forks
474C1E1C07	2	15.6	1.07	03/25/08	M	Rockcastle River	Forks
474C1E1C07	3	16.6	1.31	03/23/09	M	Rockcastle River	Above Forks
474C245D16	1	16.2	1.35	11/21/06	M	Rockcastle River	Above Livingston
474C245D16	2	16.3	1.33	03/13/07	M	Rockcastle River	Above Forks
474C581E39	1	10.7	0.32	03/22/07	U	Rockcastle River	Below Livingston
474C581E39	2	14.9	1.01	03/26/08	U	Rockcastle River	Below Livingston
474C640536	1	15.9	1.16	03/22/07	M	Rockcastle River	Below Livingston
474C640536	2	16.0	1.30	04/19/07	M	Rockcastle River	Above I-75
474D241911	1	12.7	0.49	03/28/06	M	Rockcastle River	Above Livingston
474D241911	2	12.7	0.46	03/29/06	M	Rockcastle River	Below Livingston
474D5D1C71	1	11.5	0.40	03/22/07	M	Rockcastle River	Below Livingston
474D5D1C71	2	14.4	0.78	03/26/08	M	Rockcastle River	Above Livingston
474E707C40	1	16.2	1.17	03/22/07	M	Rockcastle River	Below Livingston
474E707C40	2	18.1	1.59	03/24/09	M	Rockcastle River	Livingston
474E707C40	3	19.5	1.91	03/22/11	M	Rockcastle River	Livingston
474F097336	1	18.1	1.77	03/10/09	F	Rockcastle River	Forks
474F097336	2	21.1	2.94	11/05/09	F	Rockcastle River	Above Livingston
474F097336	3	23.1	3.44	03/14/11	F	Rockcastle River	Forks
474F097336	4	25.3	5.62	03/07/12	F	Rockcastle River	Forks
474F470541	1	13.4	0.69	11/14/06	U	Rockcastle River	Forks
474F470541	2	15.6	1.03	03/10/09	M	Rockcastle River	Forks
474F470541	3	17.8	1.58	03/16/11	M	Rockcastle River	Forks
474F544404	1	30.4	8.80	03/23/06	F	Rockcastle River	Forks
474F544404	2	30.3	11.16	03/13/07	F	Rockcastle River	Below Forks
474F765D6F	1	11.1	0.32	03/22/07	F	Rockcastle River	Roundstone Cr.
474F765D6F	2	14.7	0.80	03/26/08	F	Rockcastle River	Livingston
474F7C751A	1	15.5	1.20	04/28/06	U	Rockcastle River	Above Eagle Creek
474F7C751A	2	16.8	1.45	10/08/06	U	Rockcastle River	Above Eagle Creek

PIT Tag	Capture	Length	Weight	Date	Sex	Location	Specific Location
4752500772	1	23.7	4.53	03/22/07	F	Rockcastle River	Below Livingston
4752500772	2	23.5	4.14	04/19/07	F	Rockcastle River	Above I-75
4752500772	3	25.1	4.97	03/27/08	F	Rockcastle River	Above I-75
4752500772	4	28.0	7.24	04/20/10	F	Rockcastle River	I-75
4753203F37	1	10.8	0.32	03/22/07	M	Rockcastle River	Above Livingston
4753203F37	2	19.5	2.19	03/14/14	M	Rockcastle River	Above Livingston
4753227824	1	16.0	1.25	04/19/07	U	Rockcastle River	Above I-75
4753227824	2	17.5	1.39	03/24/09	M	Rockcastle River	Below Livingston
47532E466A	1	12.5	0.56	11/14/06	M	Rockcastle River	Forks
47532E466A	2	14.1	0.78	12/19/07	M	Rockcastle River	Above I-75
47533C392E	1	12.1	0.43	03/22/07	U	Rockcastle River	Below Livingston
47533C392E	2	19.1	1.96	03/24/09	M	Rockcastle River	Below Livingston
4753614F46	1	21.5	3.26	03/22/07	F	Rockcastle River	Below Livingston
4753614F46	2	23.6	4.35	03/27/08	F	Rockcastle River	Above I-75
47537B675F	1	17.1	1.55	03/13/07	M	Rockcastle River	Above Forks
47537B675F	2	17.8	1.80	12/19/07	M	Rockcastle River	Above Livingston
47540B0770	1	10.9	0.33	03/22/07	U	Rockcastle River	Below Livingston
47540B0770	2	14.9	0.89	03/23/09	M	Rockcastle River	Above Forks
47540F0E19	1	12.2	0.46	03/23/06	M	Rockcastle River	Forks
47540F0E19	2	16.2	1.04	03/25/08	M	Rockcastle River	Forks
4754112864	1	14.0	0.76	03/13/07	M	Rockcastle River	Below Forks
4754112864	2	16.7	0.51	12/19/07	M	Rockcastle River	Above Livingston
900118001103055	1	18.2	1.75	03/07/12	M	Rockcastle River	Forks
900118001103055	2	19.4	2.51	03/17/15	M	Rockcastle River	Above Livingston
900118001103565	1	16.2	1.25	03/15/13	M	Rockcastle River	Above Livingston
900118001103565	2	18.6	2.15	03/17/15	M	Rockcastle River	Above Livingston
900118001104710	1	16.0	1.17	03/14/14	M	Rockcastle River	Above Livingston
900118001104710	2	17.1	1.53	03/17/15	M	Rockcastle River	Above Livingston
900118001106735	1	17.2	1.65	02/28/12	U	Rockcastle River	Livingston
900118001106735	2	17.0	1.41	03/28/12	M	Rockcastle River	I-75
900118001106865	1	12.9	0.63	02/28/12	M	Rockcastle River	Above Livingston
900118001106865	2	17.5	1.83	03/17/15	M	Rockcastle River	Above Livingston
900118001356520	1	17.4	1.68	03/11/14	M	Rockcastle River	Forks
900118001356520	2	18.1	1.92	03/17/15	M	Rockcastle River	Above Livingston
989001003953794	1	30.1	9.40	03/17/15	F	Rockcastle River	Above Livingston
989001003953794	2	30.1	9.40	03/18/15	F	Rockcastle River	Below Livingston