The Alligator Snapping Turtle *(Macroclemys temmincki)* in Southeast Oklahoma

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The historic and current status of the alligator snapping turtle *(Macroclemys temmincki)* in the Little River system of southeast Oklahoma was studied by locating specimens that were taken in the study area, and by gathering anecdotal records dating from 1935 to 1996 in interviews with local fishermen. Hydrologic changes that could affect population levels of this species in the study area such as nutrification, siltation, chemical contaminants, and construction of flood control dams are discussed. It is probable that this species has suffered a drastic population decline in southeast Oklahoma during the past 60 years.

INTRODUCTION

Few records exist for the alligator snapping turtle *(Macroclemys temmincki)* in southeastern Oklahoma, and the only way to establish records of their historic status and habitat preferences is to document the recollections of people who had contact with these turtles. This paper documents records of alligator snapping turtles from the Little River system of southeastern McCurtain County, Oklahoma, by providing the locations and other data regarding the remains of this species as well as a live specimen, and by summarizing interviews with local people who have encountered them during the past 50 years.

The Little River originates in the Ouachita Mountains of southwest LeFlore County, flows eastward into northeastern Pushmataha County, and south into and through McCurtain County, and enters southwestern Arkansas. Its confluence with the Red River is approximately 32 km northeast of Texarkana, Arkansas (Fig. 1). The streams of the Little River system exhibit bottom topographies of alternating shallow riffle areas and deep holes. Flow is erratic depending on rainfall in the watershed, but holes retain water year round. Because riverbanks in this system are not stabilized, floodwater erosion results in trees and brush being swept into the rivers and, after water levels recede, deposited in the deep holes. These tangled masses of trees provide habitat for a diversity of aquatic and semi-aquatic species including the alligator snapping turtle.

DOCUMENTED RECORDS

Two records from the study area have been published; both were carapaces from turtles collected in the Mountain Fork River within 8 km from its junction with the Little River downriver from the Highway 70 bridge. One carapace was collected in 1934 (*1*), and the other was taken from the Mountain Fork River in 1947 and is housed in the Museum of Zoology at Oklahoma State University (*2*).

Additional specimen evidence from the study area includes five carapaces and a photograph in Broken Bow, one live turtle and a skull in Tulsa, and a skeleton at the Oklahoma Archeological Survey in Norman.

A carapace belonging to Dr. Lewis R. Stiles of Broken Bow measured 49.5 × 38.1 cm. This turtle was gigged by Stiles' father, Robert H., in the Mountain Fork River downstream from the Highway 70 bridge in approximately 1945. Unfortunately, it was not weighed.

A carapace belonging to Eugene C. Gregory of Broken Bow measured 48.3 × 43.2 cm, and the turtle, caught in 1955, weighed 28.6 kg. Gregory caught it in the Little River downstream from the mouth of Yashau Creek.

James L. Jones of Broken Bow owns a carapace that measured 42.5 × 38.0 cm, but this turtle was not weighed. Virgil L. Bailey, of Eagletown, caught this turtle in Rock Creek near the Highway 70 bridge in 1971.

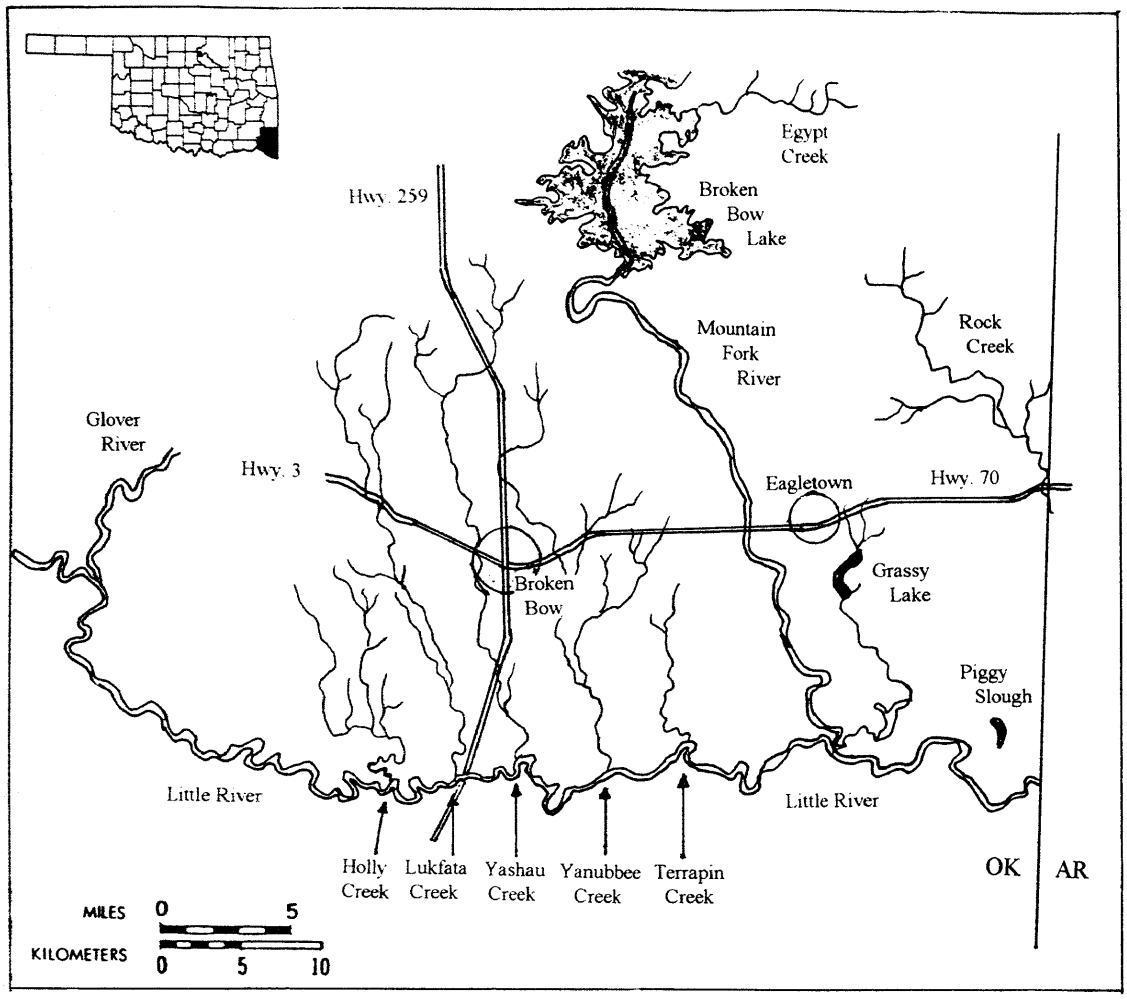

Figure 1. Study area, McCurtain County, Oklahoma.

Ted T. McFarland of Eagletown owns two carapaces from turtles he caught in the Mountain Fork River at its confluence with the Little River. One measured 49.0 × 43.0 cm, the other 38.1 × 35.5 cm. The former specimen was taken in 1975, the latter in 1976; neither was weighed.

A skull, taken from an alligator snapping turtle found dead, floating in the Mountain Fork River downstream from the Highway 70 bridge in 1982, is owned by Mike L. Keeling of Sapulpa (pers. comm., 1996). He stated that this individual weighed an estimated 18 kg and apparently had been shot in the head.

A skeleton sans carapace (OU OAS 187) is housed in the museum of the Oklahoma Archeological Survey (Kent J. Buehler, pers. comm., 1997). This turtle was caught in 1991on a trotline in the Little River upstream from the mouth of Yanubbee Creek by Bruce S. Henry of Broken Bow. Its weight is unknown.

Several photographs owned by Floyd E. Proctor of Broken Bow show a 33.8 kg turtle that he caught on a trotline in mid-April 1969. The turtle was taken in the Little River approximately 1.6 km downstream from the mouth of Yanubbee Creek. (Fig. 2)

Art L. Statum, Jr., of Tulsa, owns a live turtle which, according to Virgil L. Bailey of Eagletown and James L. Jones of Broken Bow, weighed approximately 18 kg when it was caught on a trotline by Bailey in 1970 from Rock Creek below the Highway 70 bridge at the Arkansas state line. Bailey gave this turtle to Jones to eat, and Jones put the turtle into an upright concrete culvert that pro-

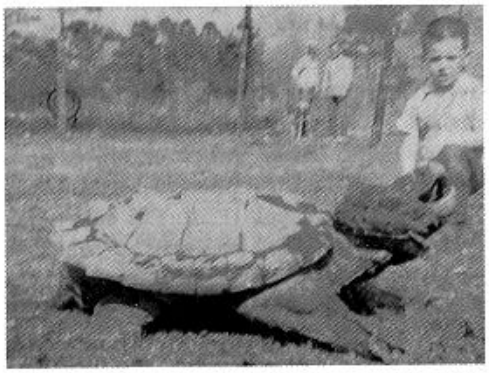

Figure 2. Alligator snapping turtle (33.8 kg) caught mid-April 1969 by F.E. Proctor, Broken Bow, OK (see text). Photo: Proctor, April 1969.

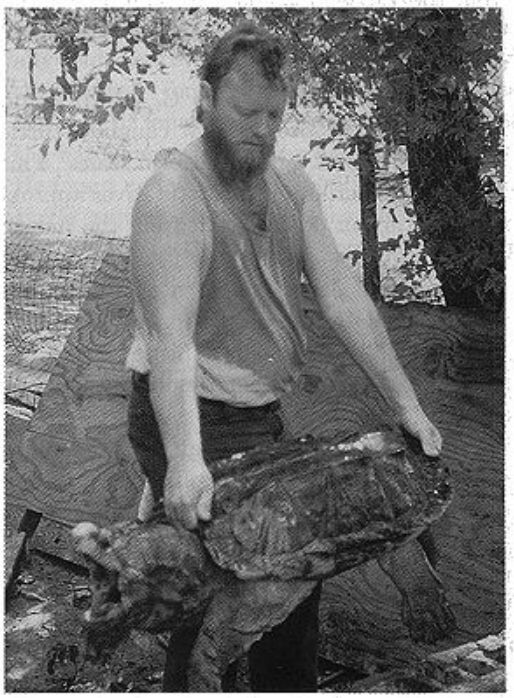

Figure 3. Alligator snapping turtle (40.8 kg in Aug 1996) with owner, Art L. Statum, Tulsa, OK (see text). Photo by author, July 1996.

tected his spring beside the Mountain Fork River to hold it until the next day. I measured this culvert in 1996, and its dimensions are 91.4 cm in diameter, 139.7 cm in length, and 99.1 cm from the top down to the water level. A hole 8.9 cm. in diameter was chiseled though the side of the culvert as an outlet for the water. The next day when Jones went to retrieve this turtle, he could not see it in the culvert and assumed that the turtle had escaped.

In 1983, Jones shot a squirrel which fell into the culvert. He could not reach the squirrel in the culvert; a rake was used to drag it out. While using the rake to retrieve the squirrel, he dragged a large, living turtle from the silt and sand in the bottom of the culvert. Jones is certain that this turtle was the same one that he had placed in the culvert 13 years earlier because its carapace was similar in size, and it was emaciated. When I questioned Jones about a source of food during this time, he said that the culvert held crayfish and that sometimes minnows entered through the water outlet hole. It is unlikely that birds or mammals would enter the culvert except by accident.

Jones gave the turtle to Mike L. Keeling of Tulsa, Oklahoma, who was present when the turtle was found. Keeling stated that the turtle weighed 12.2 kg when it was retrieved from the culvert. It was so weak when taken out of the water that it could not crawl or hold up its head. Keeling gave the turtle to Art L. Statum of Tulsa who housed it in his collection until he passed away. His son, Art L. Statum, Jr., has housed the turtle since that time. I visited Statum in August 1996; with a spring scale we determined the turtle's weight as 40.5 kg. We also measured the carapace: 61.0 cm long, 43.2 cm wide. This male turtle appeared to be healthy and vigorous (Fig. 3); it is fed the fish remains from Statum's taxidermy business.

ANECDOTAL RECORDS

One of the earliest records for this species in the Little River system came from Eugene C. Gregory, who saw a large turtle in 1935 that had been caught in Hochatown Lake, an oxbow of the Mountain Fork River, upstream from the mouth of Egypt Creek. This lake was inundated by Broken Bow Reservoir in 1969. Gregory recalled that several children were seated on its back, but he could not estimate its size.

Raymond B. Carter of Broken Bow caught an alligator snapping turtle in 1935

from the Little River at the mouth of Holly Creek that he estimated weighed between 36 and 40 kg.

In about 1953, Eugene C. Gregory and Ray H. Plum of Broken Bow caught a turtle that weighed 46.7 kg on platform scales. This turtle was taken from the Little River approximately 1.6 km downstream from the mouth of Yashau Creek.

James L. Jones caught a turtle in 1964 that weighed 41.7 kg on platform scales. This turtle was taken from the Little River, upstream from the mouth of Yanubbee Creek. In about 1965, he captured another turtle weighing 47.2 kg from Piggy Slough, an oxbow lake near the Little River, approximately 13 km southeast of Eagletown.

Virgil L. Bailey caught a turtle in 1967 that weighed 32.7 kg on cotton scales. It was taken from Grassy Lake, approximately 5 km south of Eagletown.

Most of these turtles were caught on trotlines baited for flathead catfish (*Pylodictis olivaris*) with live or fresh cut fish. Both Gregory and Jones noted that alligator snapping turtles, like flathead catfish, eat live or fresh killed fish and rarely take stink bait from a trotline.

Trotline fishing occurred primarily from late spring to mid-summer, and alligator snapping turtles became more active as the water warmed. Eugene C. Gregory reported that he rarely caught alligator snapping turtles after late summer. All the fishermen interviewed agreed that large alligator snapping turtles were nearly always found in or near debris, such as logjams in deeper sections of area rivers and streams. Gregory, Virgil L. Bailey, and James L. Jones all recalled catching many alligator snapping turtles, which were considered nuisances, on a trotline; they would take them home to eat or shoot them in the head and cut them off the lines. Jones recalled that most of the large turtles he caught were taken from the Little River on size 7/0 hooks and averaged about 25 kg. He did not notice any decline in turtle numbers during his 25-odd years of fishing from the mid 1930s to the late 1950s, and during the warm months, he usually caught about three per week.

Gregory, who fished from 1945 to 1963, caught most of his turtles in the Little River, but he also took many from the Mountain Fork River. He did not notice any decline in turtle numbers during his years of fishing, catching from the Little River each week about three that averaged approximately 9 kg. In early May of 1957, he caught 12 turtles in the 5 kg to 11 kg range during one week of fishing in the Little River downstream from the mouth of Holly Creek.

Bailey caught about five turtles per year from 1952 until 1978. Their average weight ranged from 13 to 18 kg. During this time he noticed a decline in large turtles, but not in smaller ones.

According to Gregory, local people ate only softshell turtles *(Apalone* spp.*)* prior to 1957. Between 1957 and 1961, a commercial turtle trapper from Iowa came to Broken Bow each summer to hunt for turtles in the Little River drainage and showed local people that alligator snapping turtles were edible. After that, some people began to catch them for food.

From 1945 to 1951, Bruce S. Henry of Broken Bow trotlined intensively for catfish using crayfish as bait. He set his lines in shallow riffle areas in the Little River, between the mouths of Yashau and Yanubbee creeks. During that period he caught many alligator snapping turtles estimated to weigh from 4 to 7 kg. The largest individual taken by Henry weighed approximately 14 kg, but his hooks were sometimes broken which he attributed to large turtles.

Henry frequently gigged fish at night in the shallow water of the Little River and reported that he saw many alligator snapping turtles in the shallow areas at night where, on the basis of their activities, he thinks that they were foraging for crayfish in the gravel.

Henry left the area in 1951, but retired and returned to trotline fish the Little River from 1987 to 1995. His practice was to fish for 5 days in a row, twice in May and twice in June each year. He said that during this period he hooked about four alligator snapping turtles per year, at estimated weights of 4 to 7 kg. Henry believes that from 1951 to 1987,

there was a tremendous decline in the number of alligator snapping turtles in the areas of the Little River where he fished.

The Little River upstream from the Mountain Fork River was trotline fished by Kelsie V. Williams of Wright City from 1969 to 1987. He fished for 2 weeks each May and estimated that he caught two alligator snapping turtles in the 13 kg class per week. The largest turtle he captured in 1987 weighed an estimated 31 kg. Williams believes that the number of alligator snapping turtles declined during the years he fished.

Ted McFarland from Eagletown is a scuba diver who captured six turtles from the Mountain Fork River downstream from the Highway 70 bridge in 1975 and 1976. He saved two of the carapaces (see above). The estimated weight of each of these six turtles was 11 kg to 16 kg. In 1978 he captured two turtles from the Little River just east of the Oklahoma line in Arkansas. Each turtle weighed an estimated 22 kg.

In 1992, during dives in the Mountain Fork River approximately 2.4 km downstream from the Highway 70 bridge, McFarland saw five alligator snapping turtles, each of which he estimated to weigh 14 kg. In 1995, while diving in the same area, he observed one turtle that he estimated to weigh 18 kg.

McFarland is convinced that there has been a severe decline in the numbers of this species locally during the past 20 years. He no longer sees them near the confluence of the Mountain Fork and Little Rivers and rarely elsewhere.

A live turtle weighing 40.8 kg was caught in the Mountain Fork River downstream from the Highway 70 bridge in July 1991 by Mark B. Patrick of Broken Bow. This turtle was held overwinter by Paul S. Shipman of Emporia, Kansas, then tagged and released at the capture site during the summer of 1992, but has not since been reported (Patrick and Shipman, pers. comm., 1996).

The only nesting record for alligator snapping turtles was provided by Mike L. Keeling who reported that, prior to 1982, he sometimes saw tracks in a sandy area where an old gravel pit is located, on the east side of the Mountain Fork River approximately 1 km downstream from the Highway 70 bridge. Raccoons usually had destroyed the nests before he found them, but he found one hatchling in 1982, the last year he found evidence of nesting. He kept the hatchling for one year before releasing it. He found no evidence of an alligator snapping turtle nesting elsewhere along the Mountain Fork or the Little River in approximately ten years of searching.

CURRENT STATUS

I interviewed several people who currently trotline fish the rivers in the study area and all reported that they no longer catch alligator snapping turtles. The Oklahoma Department of Wildlife Conservation designated *Macroclemys temmincki* a protected species in 1992, which could make fishermen reluctant to disclose information regarding their contact with this species.

Linda V. LaClaire with the U.S. Fish and Wildlife Service, Jackson, Mississippi, stated that in 1983, the U.S. Fish and Wildlife Service was petitioned to list the alligator snapping turtle as a threatened species. In 1984, a determination was made that there was insufficient information regarding this species to warrant listing. However, this determination did recognize that commercial take, along with habitat loss and pollution, were major factors contributing to the decline of this species.

HABITAT CHANGES

A number of factors other than overharvesting have probably contributed to the decline in the number of alligator snapping turtles in area rivers: construction of several dams in the Little River system (Fig. 4); increased urban sewage and industrial discharge; and greater siltation, turbidity, and chemical runoff resulting from changing land management practices.

A dam can present an insurmountable obstacle to movements of alligator snapping turtles, which are highly aquatic and rarely leave the water except to lay eggs. Millwood Lake Dam, located on the Little River in Arkansas approximately 48 km east of the Oklahoma line, was constructed in 1966 and prevents upstream movement of alligator snapping turtles from the Red River. At the western boundary

of McCurtain County, Pine Creek Dam was constructed on the Little River in 1969. This dam blocks the movement of alligator snapping turtles, but it has also changed the hydrology of the river downstream by partially stabilizing flows and decreasing flooding. Broken Bow Dam was constructed on the Mountain Fork River in 1969, approximately 24 km north of its confluence with Little River. Its spillway has a deep intake for mandated releases of water into the lower river, and the intake for generation of electricity is located near the lake bottom. Discharged water, therefore, has a much lower temperature than historic flows in the river, and this difference is evident all the way to the Little River.

Water quality in the Little River has changed during the past 30 years because of a combination of factors. Nutrification has been increased as a result of the discharge of treated sewage into the Little River by the cities of Broken Bow and Idabel. Tyson Foods, Inc. processes approximately 1.3 million chickens per week at their plant near the Little River south of Broken Bow. Chicken processing generates large volumes of waste water, which are discharged into Little River. Chicken growers are scattered throughout the watershed and their growing houses generate large amounts of fecal wastes, which are spread on pastures and hay fields for fertilizer and are subject to erosion into waterways, contributing to the nutrification of Little River.

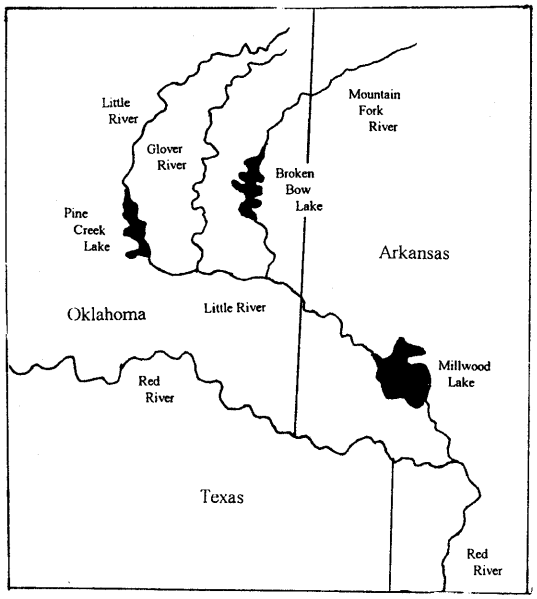

Figure 4. Locations of dams in Little River and tributaries.

In the late 1960s, Weyerhaeuser Company, Inc. procured more than 200,000 ha of forested land in the Little River watershed in McCurtain County. Their forest management practices have included cutting large tracts of timber and constructing hundreds of kilometers of logging roads. Most of their holdings have been converted from an oak, hickory, and pine association to pine plantations, which are treated by applying fertilizer and other chemicals. Weyerhaeuser Company protects water courses with green belts of native timber, but runoff resulting from heavy rains in this rocky, mountainous terrain can result in the nutrification of the streams and rivers and in greater turbidity resulting from movement of disturbed soil into the waterways.

These environmental changes and other factors have had unknown effects on alligator snapping turtles. However, it is probable that this species has suffered a drastic decline in population in southeastern Oklahoma, a decline that correlates with increased human activities in the area during the past 50 years.

ACKNOWLEDGMENT

I thank Jack D. Tyler, Department of Biology, Cameron University, Lawton, Oklahoma, for his encouragement, advice, and help in reviewing and organizing this document.

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Received: 1997 Aug 25; Accepted: 1998 Apr 02.