# Demographic Changes in a North American Wood Turtle Population Over Four Decades David E. Collins and Evan R. Collins Tennessee Aquarium, Chattanooga, TN, dec@tnaqua.org; 1163 New St. Francis St., Mobil, AL 36604



### Introduction

A population of wood turtles (*Glyptemys insculpta*) in Schoharie County, New York was studied extensively from 1973 through 1977. These investigations addressed home range, habitat use and

demographics. During the course of this work 97 turtles were marked and a total of 1712 captures of these turtles was recorded. By the end of the third year of the project virtually all adult turtles in the population were marked as evidenced by the extremely low proportion of new captures to recaptures of previously marked turtles. This study provides an excellent baseline of information for future work on this population.



## Methods

This study area was resurveyed during spring and fall of 1995 and 1996 and again in fall of 2017 and spring and fall of 2018 and 2019 to evaluate the status of this population and the habitat. To the extent possible, survey dates were selected to coincide with spring and fall aquatic activity periods to enhance detectability. Aquatic and adjacent terrestrial habitat were searched visually and by probing undercut banks and root snags by either one or two investigators. Locations of all turtles captured were plotted on field maps developed during previous work to facilitate accurate placement and comparison to historical movement patterns of individuals.

#### Results

Forty wood turtles were captured during 13 survey days during 1995 and 1996. These included 11 individuals (28% of total captured) that were previously marked between 1973 and 1977 and 29 new captures. The new captures included 11 juveniles (defined as individuals less than 150 mm plastron length), representing 38% of all new captures, and 16 adults. The three groups may represent three distinct demographic elements: surviving residents, new recruits born into the population since last work, and immigrants or transients.

This population was surveyed again in the fall of 2017 and the spring and fall of 2018 and 2019. During these visits a total of 41 wood turtles was captured during 31 survey days. These included 7 individuals (17% of total captured) that were previously marked and 34 new captures. These recaptures included two individuals marked during 1973-77 period, documenting ages in excess of 55 years, and five turtles marked during the 1995-96 surveys. The new captures included 12 juveniles (32% of new captures) and 22 adults (greater than 150mm plastron length).

#### Results

Wood turtle use of a small tributary northeast of the main stream was discovered relatively late in the previous (1973-77) study. Several main stream "residents" (individuals that typically over-wintered in the primary hibernacula areas of the main stream) were found to incorporate this small stream in their summer ranges while several individuals were found only in this small stream and never in the main stream.

These findings raise interesting questions regarding overlap of adjacent populations and possible shifts of home ranges which may include the use of widely separated hibernacula. Observations during the 1973 -77 surveys suggested very strong fidelity to hibernacula, however an occasional main stream turtle was observed in the small northeast tributary late in the fall suggesting that wood turtles may use alternate hibernacula if they are "caught" away from their primary wintering site by the onset of cold weather.



Male Number 48, first encountered as a 10 year old in spring of 1973 clearly incorporated both areas in his home range over this 40 year period.

#### Discussion

The relatively high percentage of juveniles in both the 1995-96 surveys (38%) and the 2017-19 surveys (32%) is encouraging, compared to the percent juveniles in the population in the 1973-77 period (27%).

Capture of previously marked individuals varied considerably between the 1995-95 surveys (28%) and the 2017-19 surveys (17%) Capture rates also varied notably between the two survey periods, 3.08 captures/day in 1995-96 vs. 1.3 captures/day in 2017-19. These results need to be examined much more closely For example the fall 2019 survey was conducted earlier than optimal and the site had experienced a severe draught resulting in water being absent in many areas that typically provided good

habitat. However, the differences may also be related to catastrophic flooding resulting from Hurricane Irene in August 2011 that may have displaced or entombed many turtles.



Rock deposited by flooding dramatically altered wood turtle habitat.

