

# SMALL MAMMAL COMMUNITIES OF STREAMSIDE ZONES IN THE OUACHITA MOUNTAINS

Philip A. Tappe, Ronald E. Thill, M. Anthony Melchiors,  
T. Bently Wigley, and David G. Peitz<sup>1</sup>

Natural forest stands along perennial and intermittent streams, commonly called streamside zones (SZs), frequently are retained for wildlife habitat enhancement and watershed protection when adjacent stands are harvested. However, little is known regarding wildlife habitat relationships within SZs, especially as they relate to SZ widths and influences of habitat surrounding SZs. Thus, our objective was to quantify effects of SZ width and age/structure of adjacent pine plantations on small mammal communities in the Ouachita Mountains of west central Arkansas.

We trapped small mammals in SZs of 6 width classes (0, 1-20, 21-41, 41-60, 61-100, and > 100 m) flanked by loblolly pine (*Pinus taeda*) plantations of 3 age/structural classes (young/open, closed canopy, and older/thinned) yielding a matrix of 18 stands. Three sets of these matrices were studied for 2 years each during February 1990–1995. During each 2-year sampling period we also sampled one untreated streamside forest with no adjacent plantations. For the 1990-91 sampling period we were unable to locate a > 100 m SZ within an older/thinned plantation; thus including the 3 untreated streamside forests, a total of 56 study areas were sampled on Weyerhaeuser and Ouachita National Forest lands.

Small mammals were sampled on each study area for 10 consecutive days using snap traps. Trap lines were parallel to the general stream course. Each line had 9 trap stations at 20-m intervals. Within SZs < 20 m wide, one trap line was placed on each side of and within 5 m of the stream; a second set of trap lines was placed within the plantations 40 m from each side of the stream. Small mammals were trapped only in plantation settings where the SZs were < 20 m wide. For SZs 20-60 m wide, two trap lines were again placed within 5 m of the stream; a second set of trap lines was placed within 5 m of the SZ/plantation edge (inside the

SZ). For SZs > 60 m wide, we placed two trap lines within 5 m of the stream, 5 m inside the SZ/plantation edge, and about midway between the stream and SZ/plantation edge trap lines, for a total of six trap lines.

Structure of adjacent pine plantations had a noticeable effect on small mammal numbers, richness, and diversity. SZs flanked by older/thinned and young/open plantations had higher numbers, richness, and diversity than those surrounded by closed canopy plantations. Untreated streamside forests were comparable in numbers, richness and diversity to SZs flanked by young/open and older/thinned plantations. SZs flanked by closed canopy pine plantations had the lowest small mammal numbers, richness, and diversity of all treatments.

Small mammal numbers tended to increase with SZ width. However, richness and diversity varied little with SZ width. Numbers, richness, and diversity in untreated streamside forests were comparable to other SZ widths. Small mammal species composition varied with SZ width. Species like the fulvous harvest mouse (*Reithrodontomys fulvescens*) and the woodland vole (*Microtus pinetorum*) tended to be associated more with narrower SZs. *Peromyscus* spp. tended to be more associated with wider SZs.

Small mammal richness and diversity did not increase with increasing SZ width, but was influenced by the structure of surrounding pine plantations. Young/open and older/thinned plantations likely support more species of small mammals than closed canopy plantations. Species from adjacent plantations with these structures could also utilize SZ habitat, particularly along edges. Thus, within pine-plantation dominated landscapes, SZs of a variety of widths embedded in plantations of different age/structural characteristics should enhance overall small mammal diversity.

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<sup>1</sup> Associate Professor, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas – Monticello, Monticello, AR 71655; Supervisory Research Wildlife Biologist, USDA Forest Service, Southern Research Station, Nacogdoches, TX 75962; Wildlife Research Biologist, Weyerhaeuser Company WTC 1A5 Federal Way, WA 98063; Wildlife Biologist, National Council for Air and Stream Improvement, Inc., Clemson University, Clemson, SC 29634; and Research Associate, School of Forest Resources and Arkansas Forest Resources Center, University of Arkansas – Monticello, Monticello, AR 71655, respectively.

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