

# Distribution and Habitat of Appalachian Cottontails in Kentucky<sup>1</sup>

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*Abstract:* Of 550 rabbit heads collected from 35 counties in central and eastern Kentucky, 73 (13.3%) were identified as Appalachian cottontails (*Sylvilagus obscurus*). These collections document the Appalachian cottontail in 20 counties covering a large part of Kentucky and suggest Appalachian cottontails exist throughout the Cumberland Mountains and Cumberland Plateau of the Eastern Coal Field and in portions of the Outer Bluegrass and Knobs physiographic regions. Appalachian cottontails and eastern cottontails (*S. floridanus*) often were found living sympatrically in early-successional forests. Appalachian cottontails were documented in lower elevations (260 m) and in a wider variety of habitat types than previously believed.

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 53: 444-448

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The Appalachian cottontail (*Sylvilagus obscurus* or *S. transitionalis obscurus*), also known in Kentucky as the gray rabbit, brush rabbit, mountain rabbit, or woods rabbit, is similar in appearance to the eastern cottontail. The Appalachian cottontail can be differentiated from the eastern cottontail by its darker overall pelage, a black stripe often around the outer edge of the ears, and often a black spot on the forehead between the ears (Fay and Chandler 1955, Litvaitis et al. 1991, Chapman et al. 1992). The Appalachian cottontail rarely has the white spot on the forehead characteristically found in the eastern cottontail (Chapman 1975, Chapman et al. 1992, Litvaitis et al. 1991). Appalachian cottontails also are slightly smaller than eastern cottontails (Chapman and Morgan 1973, Godin 1977, Litvaitis et al. 1991). The skulls of the 2 rabbits also differ, with the Appalachian cottontail having more jagged sutures between the nasal and frontal bones, smaller tympanic bullae, and differently shaped pre- and post-orbital processes (Johnston 1972, Chapman 1975, Chapman and Stauffer 1981, Chapman et al. 1992).

The distribution of the Appalachian cottontail was not well documented (Chapman et al. 1992, Litvaitis et al. 1997). Prior to this survey, the only Appalachian cottontail record in Kentucky was a specimen collected at an elevation of 1,190 m on

1. This project was financed with Pittman-Robertson funds.

Big Black Mountain in Harlan County (Barbour 1951, Barbour and Davis 1974). Recent surveys in Virginia (Fies and Coggin 1985) and South Carolina (Bunch pers. commun.) documented the Appalachian cottontail was more widespread in Virginia than previously believed. This study documents extended distribution of the Appalachian cottontail in Kentucky.

The author acknowledges the work of numerous Kentucky Department of Fish and Wildlife Resources (KDFWR) conservation officers and wildlife technicians who assisted in collecting and processing rabbit heads. A special thanks is given to R. D. Frederick (KDFWR geoprocessor) for generating the maps.

## Methods

Rabbit heads were collected from 1991–1995 from rabbit hunters in the Eastern Coal Field and Knobs physiographic provinces of Kentucky (Fig. 1) by KDFWR personnel. Conservation officers were asked to collect rabbit heads and provide locations of where the rabbits had been shot. Rabbit heads were collected from hunters during routine hunter bag checks during the mid-November through January hunting seasons. Hunter cooperators also were solicited. Respondents were sent data forms, maps, and freezer bags. Additionally, KDFWR wildlife division staff collected rabbit heads for the study, concentrating on areas where samples had not been obtained from hunters.

Before skinning the heads, pelage characteristics were noted to provide support information for identification. Records kept included presence or absence of white hairs on the forehead, presence or absence of a black spot between the ears, ear length, and coloration of the fur along the outer edge of the ear. The heads were then skinned and cleaned. Identification was based primarily on the more jagged appearing

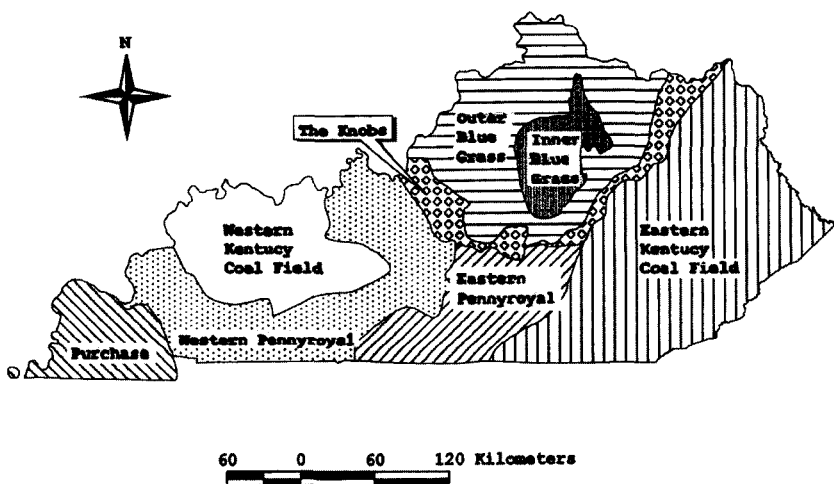


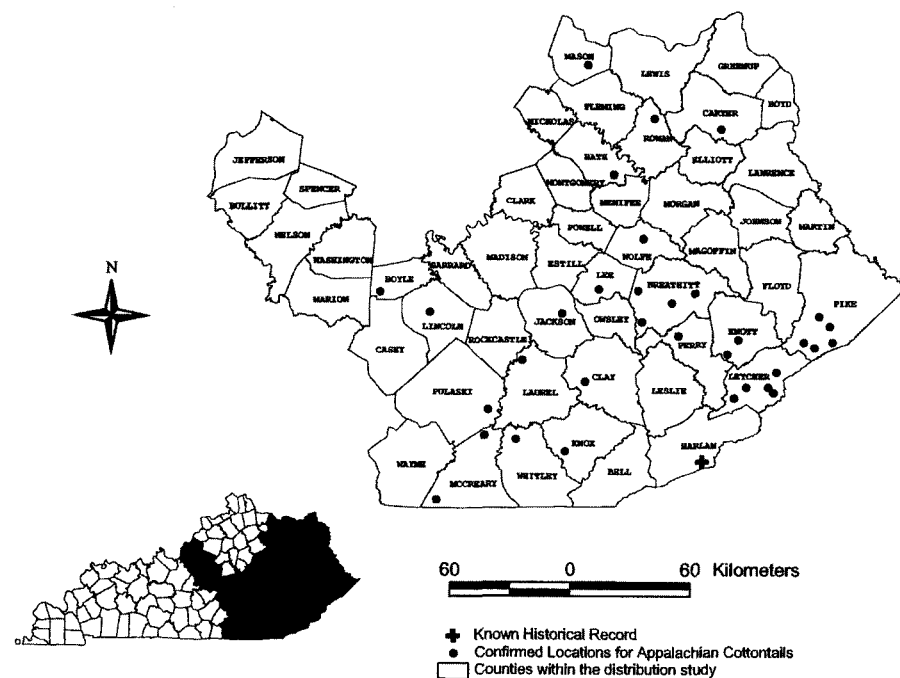
Figure 1. Physiographic regions of Kentucky.

sutures between the nasal and frontal bones, smaller tympanic bullae, and differences in characteristics of the pre- and post-orbital processes (Johnston 1972, Chapman 1975, Chapman and Stauffer 1981, Chapman et al. 1992).

### Results and Discussion

Five hundred and fifty rabbit heads were collected during 1991–1995. Seventy-three (13.3%) were identified as Appalachian cottontails. Thirty-nine skulls identified as Appalachian cottontails during the first year of the study were sent to the U.S. Fish and Wildlife Service, National Museum of Natural History, Washington, D.C., for verification of identification. All of these specimens were confirmed as Appalachian cottontails. Those specimens were subsequently used as reference material for verifying identification of skulls collected during the remainder of the study.

Appalachian cottontails were newly documented in 20 counties widely scattered over the eastern half of Kentucky, suggesting that they are found throughout the Eastern Coalfield and in portions of Knobs and Outer Bluegrass physiographic regions of Kentucky (Figs. 1, 2). Appalachian cottontails were documented from 3 counties in the Knobs physiographic region of the state: Lincoln, Boyle and Rowan



**Figure 2.** Study area and distribution of Appalachian cottontail during the 1991–1995 survey in eastern Kentucky.

(Figs. 1, 2). Appalachian cottontails also were collected from Mason County in the Outer Bluegrass physiographic region. These collections indicated the Appalachian cottontail is more widely distributed and found at lower elevations than believed. Some hunters who harvested these rabbits stated the species may exist throughout the Knobs.

I documented the Appalachian cottontail at elevations ranging from 260 m to 867 m in Kentucky. Literature describing habitat used by Appalachian cottontails and the species description by Chapman et al. (1992) suggested that these cottontails were only found at high elevations (>610 m) and associated with conifers and ericaceous vegetation characteristic of high altitude or boreal habitats (Llewellyn and Handley 1945, Handley and Patton 1947, Chapman and Morgan 1973, Chapman and Stauffer 1981). Blymer (1976) reported the cottontail to exist in 6- to 7-year-old clearcuts at elevations between 549 and 604 m. Bunch (pers. commun.) reported finding the Appalachian cottontail in various aged stands of pines with ericaceous understories at elevations from 305 to 933 m. Paul and Quay (1968) reported the species from an elevation of 427 m in North Carolina.

During this study, Appalachian cottontails were collected from early-successional forests only, in contrast to most other reports (Llewellyn and Handley 1945, Handley and Patton 1947, Chapman and Morgan 1973, Chapman and Stauffer 1981). Many of these habitats were a result of coal mining, recently harvested forests, or abandoned, reverting to farmland. Most were young hardwood stands. Some of these habitats had an ericaceous understory of mountain laurel (*Kalmia latifolia*), blueberries (*Vaccinium* spp.) and/or evergreen species of greenbrier (*Smilax* spp.), but it was not requisite for an area to be Appalachian cottontail habitat. Appalachian and eastern cottontails live sympatrically in Kentucky. However, Appalachian cottontails were only found in wooded habitats and were never collected in open farmland associated habitats. Appalachian cottontails are more widespread in Kentucky than previously believed and use lower elevations and a wider array of habitat types than the literature suggests.

In Kentucky, Appalachian cottontails are managed as a game species under the same regulations as the eastern cottontail. Appalachian cottontails are actively sought by hunters, both as a target species and incidental to eastern cottontail hunting. It was apparent that some of the hunters noted differences in running behavior and habitat utilization by the 2 cottontail species.

## Literature Cited

- Barbour, R. W. 1951. The mammals of Big Black Mountain, Harlan County, Kentucky. *J. Mammal.* 32:100-110.
- and W. Davis. 1974. *Mammals of Kentucky*, Univ. Ky. Press, Lexington, 322 pp.
- Blymer, M. J. 1976. A new elevation record for the New England Cottontail (*Sylvilagus transitionalis*) in Virginia. *Chesapeake Sci.* 17:220-221.
- Chapman, J. A. 1975. *Sylvilagus transitionalis*. *Mammalian Species* 55:1-4.
- and R. P. Morgan. 1973. Systematic status of the cottontail complex in western Mary-

- land and nearby West Virginia. Wildl. Monogr. 36. 54pp.
- and J. R. Stauffer, Jr. 1981. The status and distribution of the New England cottontail. Pages 973–983 in K. Myers and C. D. MacInnes, eds. Proceedings of the World Lagomorph Conference 1979. Univ. Guelph, Guelph, Ontario, Can.
- , K. L. Cramer, N. J. Dippenaar, and T. J. Robinson. 1992. Systematics and biogeography of the New England cottontail, *Sylvilagus transitionalis*, with the description of a new species from the Appalachian mountains. Proc. Biol. Soc., Washington, D.C. 105:841–866.
- Fay, F. H. and E. H. Chandler. 1955. The geographical and ecological distribution of cottontail rabbits in Massachusetts. J. Mammal. 36:415–424.
- Fies, M. and J. Coggin. 1985. New England cottontail investigations. Va. Comm. Game and Inland Fish. Final Rep. PR Proj. W-74-R-3. Pp. 389–396.
- Godin, A. J. 1977. Wild mammals of New England. Johns Hopkins Univ. Press, Baltimore, Md. 304pp.
- Handley, C. O., Jr. and C. P. Patton. 1947. Wild Mammals of Virginia. Va. Comm. Game and Inland Fish., Richmond, Va. 220pp.
- Johnston, J. E. 1972. Identification and distribution of cottontail rabbits in southern New England. Rep. Storrs Conn. Agric. Exp. Sta., Proj. No. 376. 70pp.
- Litvaitis, J. A., D. L. Verbyla, and M. K. Litvaitis. 1991. A field method to differentiate New England and eastern cottontails. Trans. Northeast Sect. Wildl. Soc. 48:11–14.
- Litvaitis, M. K., J. A. Litvaitis, W. Lee, and T. D. Kocher. 1997. Variation in the mitochondrial DNA of the *Sylvilagus* complex occupying the northeastern United States. Can. J. Zool. 75:595–605.
- Llewellyn, L. M. and C. O. Handley. 1945. The cottontail rabbits of Virginia. J. Mammal. 26:379–390.
- Paul, J. R. and T. L. Quay. 1968. Notes on the mammalian fauna of the Toxaway River Gorge, North Carolina. J. Elisha Mitchell Soc. 84:124–126.