

The Status of *Rattus rattus* and *Rattus norvegicus* in Southwestern Oklahoma

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The distribution of *Rattus rattus* and *Rattus norvegicus* in southwestern Oklahoma is unclear. *Rattus norvegicus* has been found only in the Wichita Mountains Wildlife Refuge in Comanche County. Collections made between 1969 and 1989 in Comanche, Kiowa, Tillman, Caddo, Jackson, Cotton and Stephens counties yielded 44 specimens of *Rattus rattus*, none of *Rattus norvegicus*.

INTRODUCTION

The black or roof rat (*Rattus rattus*) was introduced by Europeans into South and Middle America in the sixteenth century, and was established in America by the beginning of the 1700s (1). *Rattus norvegicus*, the wharf or Norway rat, of supposed Asian origin, arrived in the United States on ships about 1775 (1). This latter species has supplanted the smaller and more urban black rat over much of its former range (2,3).

Almost nothing is known of the present distribution of these two species in Oklahoma. In *Guide to Mammals of the Plains States* published in 1985, Jones et al. (4) stated that *Rattus norvegicus* "occurs widely in the plains states but is mostly limited to urban areas or other human habitations such as farm buildings." By 1988, Jones and his co-workers at Texas Tech University (5) had collected only *Rattus norvegicus* from the Texas Panhandle and indicated that *Rattus rattus* could probably not survive the Panhandle's harsh climate and scarcity of large cities. They viewed it as being apparently "strictly limited to urban environments, mostly large cities" in the plains. Hall (2) reported numerous locations in Kansas for *Rattus norvegicus*, but only one (Wichita) for *Rattus rattus*.

Thus, the predominant species in southwestern Oklahoma, a semiarid region with dramatic fluctuations of precipitation and temperature, should be *Rattus norvegicus*. The historical record and recent collections, however, show that this is not the case.

During the spring of 1904, James H. Gaut (6), a U. S. Biological Survey biologist, reported that the Norway rat was "very annoying about the houses at Mount Scott" in the Wichita Mountains of Comanche County. He collected two specimens from these mountains, now in the U.S. National Museum (male, USNM No. 132680; female, USNM No. 132681). In 1961, Glass and Halloran (7) reported only *Rattus norvegicus* from the Wichita Refuge. Norway rats were sometimes found around buildings on the Refuge, but they apparently had never been numerous. A specimen taken there in 1964 is in the University of Oklahoma collection (UOMZ No. 738), but another in the small refuge collection has been lost. This is apparently the only location in southwestern Oklahoma where *Rattus norvegicus* has been collected.

In 1954, Blair (8) reported neither species of *Rattus* from the mesquite plains of extreme southwestern Oklahoma or contiguous areas in Texas. Likewise, Martin and Preston (9) did not find either species in Harmon County in 1970. However, Tyler and Jensen (10) recovered the remains of 12 *Rattus rattus* from 169 Great Horned Owl (*Bubo virginianus*) pellets collected during 1977 near Duke in Jackson County. They calculated that this species contributed almost 13% of the total biomass consumed and was present in 7% of all pellets cast by this pair of owls and their young.

Invariably associated with human habitations, *Rattus rattus* is widely distributed throughout north-central Texas counties coterminous with the study area, but *Rattus norvegicus* is known only from Wichita Falls (11). Between 1978 and 1989, students at Cameron University in Lawton collected 11 specimens of *Rattus rattus* in southwestern Oklahoma counties, but no *Rattus norvegicus*.

This study was initiated during the spring of 1989 to clarify the distributional status of these two Old World rats in southwestern Oklahoma.

METHODS

Trapping was done at 12 sites in Comanche, Caddo, Kiowa, Tillman and Jackson counties between February and May, 1989. At each site, 20 Sherman live traps were baited with cheddar cheese and checked daily. Traps were located at each location from one to six days (20 to 120 trap-nights) for a total of 900 trap-nights.

Barns, grain bins, outbuildings, and farmer's cooperative grain storage facilities provided optimal trapping areas. Because *Rattus rattus* ordinarily inhabits upper levels and the Norway rat is more ground-loving, traps were set under buildings, on the first floor, and in higher places where possible. The presence of fecal pellets, hair, nests and runways indicated recent activity.

RESULTS AND DISCUSSION

During this study, 33 specimens of *Rattus rattus* were taken at 11 of 12 trapping sites in Comanche, Kiowa, Caddo and Tillman counties, but no *Rattus norvegicus*. Only two other species were trapped: one house mouse (*Mus musculus*) and three cotton rats (*Sigmodon hispidus*). The 16 locations from which black rats have been collected in southwestern Oklahoma between 1969 and 1989 are shown in Figure 1. Some of these were obtained from specimens that were in the Cameron University Museum prior to our study and others from specimens at Oklahoma State University.

The only specimens of *Rattus norvegicus* known from southwestern Oklahoma counties are three from the Wichita Mountains Wildlife Refuge. Trapping in seven counties from 1969 to 1989 produced 44 *Rattus rattus* specimens but none of *Rattus norvegicus*. A few small and highly localized populations of *Rattus norvegicus* possibly still exist in southwestern Oklahoma, but *Rattus rattus* is now decidedly the predominant species.

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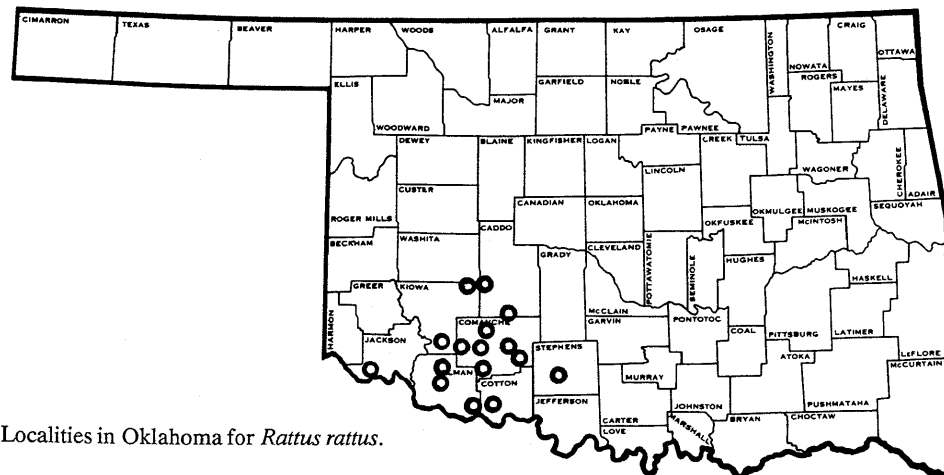


Figure 1. Localities in Oklahoma for *Rattus rattus*.