

A New Record of the Southern Flying Squirrel (*Glaucomys volans*) in Southern Oklahoma

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The southern flying squirrel (*Glaucomys volans*) is a small nocturnal gliding mammal found in temperate forests across the eastern half of North America (Dolan and Carter 1977; Weigl 1978; Arbogast 1999; Bowman et al. 2005) with six disjunct Pleistocene relict populations remaining in montane habitats of Central America (Dolan and Carter 1977; Braun 1988; Argoblast 1999; Peterson and Stewart 2006). Although distribution of the southern flying squirrel is largely limited to mature deciduous woodlands, the species is not specific to forests dominated by any specific tree taxa (Muul 1974).

In Oklahoma, flying squirrels are best known from the eastern half of the state (Caire et al. 1989), although they have been recorded as far west as Comanche County in southwestern Oklahoma (e.g., Glass and Halloran 1961; Stangl et al. 1992; Tyler and Donelson 1996). Populations in western Oklahoma are thought to be contiguous with Cross-timbers populations via riparian corridors associated with major river tributaries (Caire et al. 1989; Stangl et al. 1992).

McDonald et al. (2006) suggested that some small mammal species go undetected due to low abundance, narrow habitat preferences, cyclic population dynamics, and seasonal shifts in behavior. Due to their secretive nocturnal habits, flying squirrels often go unnoticed (Sollberger 1940; Caire et al. 1989; Schultz and Schultz 2001) and thus Oklahoma distributional records may be incomplete. Provided here is a new Okla-

homa record for the south-central portion of the state (Figure 1).

A female flying squirrel specimen was salvaged from a domestic house cat (*Felis domesticus*) in Marshall County during March 2007 and deposited in the Cameron University Museum of Zoology (CUMZ 1307). The collection site is a post-oak (*Quercus stellata*) hickory (*Carya* spp) woodland near a residential property in northwestern Marshall County, Oklahoma (34°8'N 96°54'W). Based on growth models established by Hatt (1931) and Linzey and Linzey (1979) and measurements of the specimen (220-127-29-12; 57g), the animal's age was determined to be 84 to 147 d, thus providing evidence for late summer-fall breeding in Oklahoma. The southern flying squirrel is known to breed biannually, usually in late winter-early spring and again in late summer (Goertz et al. 1975). Results from Alabama suggest year round reproduction in some southern regions (Linzey and Linzey 1979). Signs of reproductive activity were not evident during examination of this particular specimen.

Examination of stomach contents revealed masticated soft green material, most likely tree buds which are readily available during early spring. Flying squirrels are the most omnivorous of sciurid rodents and diet varies with season and habitat structure. Known food items include: hard mast, seeds, fruits, fungi, tree buds, moths, beetles, bird eggs and nestlings, and carrion (Schultz and Schultz 2001).

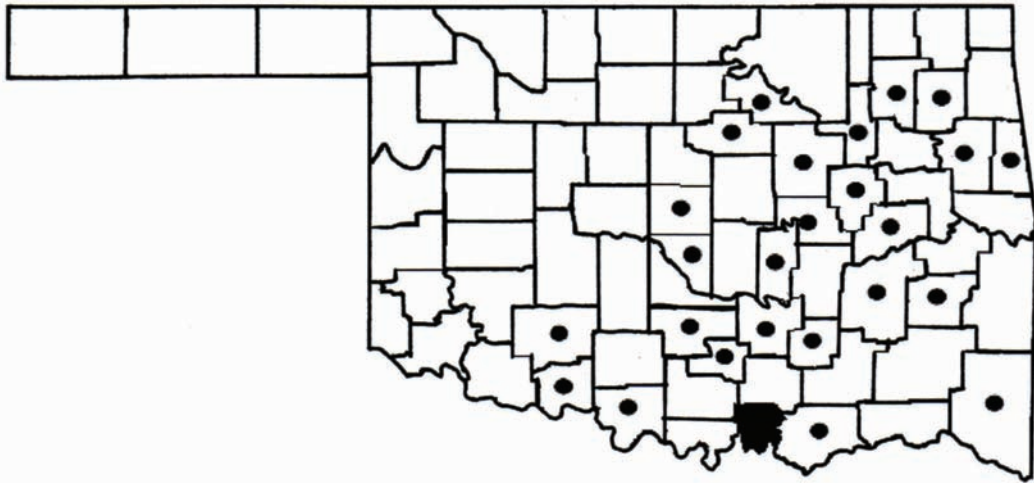


Figure 1. Oklahoma distribution of *G. volans* (black dots) based on Caire et al. (1989), Stangl et al. (1991), and Braun and Revelez (2005). Shaded county represents a verified record for Marshall County.

This specimen adds to our understanding of southern flying squirrel distribution in Oklahoma by adding a new county record, and provides important information regarding predation threats. Domestic cats are known predators of flying squirrels (Dolan and Carter 1977; Schultz and Schultz 2001) and routinely prey on the nocturnal rodents where natural habitats are bordered by human habitations. Tyler and Donelson (1996) reported observations of repeated cat-predation on flying squirrels in the city of Lawton in southwestern Oklahoma, with similar observations observed in central Oklahoma (M. Revelez, pers. comm.). Flying squirrels frequently visit bird feeders (Schultz and Schultz 2001), a behavior which increases vulnerability to ambush predators such as cats (Felidae) and owls (Strigiformes). Focused research efforts might further confirm flying squirrels in previously undocumented localities in Oklahoma and help to better understand the effects of house cats on local populations. The authors would like to thank M. T. Dunn, W. Caire, M. Revelez, and A. L. Husak for comments on previous versions of the manuscript.

REFERENCES

- Argoblast BS. 1999. Mitochondrial DNA phylogeography of the new world flying squirrels (*Glaucomys*): implications for Pleistocene biogeography. *J Mamm* 80:142-155.
- Bowmen J, Holloway GL, Malcolm JR, Middel KR, Wilson PJ. 2005. Northern range boundary dynamics of southern flying squirrels (*Glaucomys volans*): evidence of an energetic bottleneck. *Can J Zool* 83:1486-1494.
- Braun JK. 1988. Systematics and biogeography of the southern flying squirrel, *Glaucomys volans*. *J Mamm* 69:422-426.
- Braun JK, Revelez MA. 2005. Distributional records and comments on Oklahoma mammals. *Texas J Sci* 57:3-24.
- Caire W, Tyler JD, Glass BP, Mares MA. 1989. Mammals of Oklahoma. Norman (OK): University of Oklahoma Press. 567p.
- Dolen PG, Carter DC. 1977. *Glaucomys volans*. *Mamm Species* 78:1-6.
- Glass BP, Halloran AH. 1961. The small mammals of the Wichita Mountains Wildlife Refuge, Oklahoma. *J Mamm* 42:234-239.
- Goertz JW, Dawson RM, Mowbray EE. 1975. Response to nest boxes and reproduction by *Glaucomys volans* in northern Louisiana. *J Mamm* 56:933-939.
- Hatt RT. 1931. Habits of a young flying squirrel (*Glaucomys volans*). *J Mamm* 12:233-238.
- Linzey DW, Linzey AV. 1979. Growth and development of the southern flying squirrel (*Glaucomys volans*). *J Mamm* 60:615-620.
- McDonald BK, Wilson PW, Caire W. 2006. New county records of Oklahoma mammals based on remains identified in owl pellets. *Proc Okla Acad Sci* 86:47-52.
- Muul I. 1974. Geographic variation in the nesting habits of *Glaucomys volans*. *J Mamm* 80:142-155.

- Peterson SD, Stewart DT. 2006. Phylogeography and conservation genetics of the southern flying squirrel (*Glaucomys volans*) from Nova Scotia. *J Mamm* 87:153–160.
- Schultz CW, Schultz ER. 2001. *The Wild Mammals of Missouri*. Columbia (MS): University of Missouri Press. 368p.
- Sollberger DE. 1940. Notes on the life history of the small eastern flying squirrel. *J Mamm* 21:282–293.
- Stangl FB Jr, Dalquest WW, Baker RJ. 1992. Mammals of southwestern Oklahoma. *Occas Pap Texas Tech Univ* 151:1-47.
- Tyler JD, Donelson SL. 1996. Noteworthy mammal records for western Oklahoma. *Proc. Okla. Acad. Sci.* 76:103–104.
- Weigl PD. 1978. Resource overlap, interspecific interactions, and the distribution of the flying squirrels, *Glaucomys volans* and *G. sabrinus*. *Amer Midland Nat* 92:482–486.

Received October 10, 2007; Accepted February 8, 2008