

**RECENT OBSERVATION OF A FOX SQUIRREL  
(*Sciurus niger*) IN A COASTAL SALT MARSH**

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The fox squirrel (*Sciurus niger*) is a tree squirrel widely distributed throughout much of its native range east of the Rocky Mountains (Hall 1981, Koprowski 1994). In the southeastern United States (hereafter, Southeast), six subspecies (*S. n. cinereus*, *S. n. vulpinus*, *S. n. niger*, *S. n. shermani*, *S. n. avicennia*, and *S. n. bachmani*) of fox squirrel are collectively known as southeastern fox squirrels, grouped together because of their similarities in morphology and habitat use (Loeb and Moncrief 1993). Today, southeastern fox squirrels are said to be declining because  $\geq 97\%$  of native pine forests within their historic range have been lost and what remains is highly fragmented and degraded (Frost 1993). Due to the loss of habitat and declining populations, the State of Florida lists the Sherman's fox squirrel (*S. n. shermani*) as a species of special concern and the Big Cypress fox squirrel (*S. n. avicennia*) as state threatened (Humphrey and Jodice 1992, Loeb and Moncrief 1993).

Throughout their range, fox squirrels are considered to be obligates of mature forests. In the Southeast, mature pines (*Pinus* sp.), oaks (*Quercus* sp.) and other hardwood species provide seasonal sources of food (Weigl et al. 1989, Steele and Koprowski 2001, Perkins et al. 2008), refuge, and hold approximately 80% of fox squirrel nests (Kantola and Humphrey 1990, Conner and Godbois 2003). Although fox squirrels favor areas with open trees canopies, they prefer to remain in close proximity to trees, especially when foraging so they can consume bulky food items near cover where they have reduced vulnerability to predators (Weigl et al. 1989). Fox squirrels tend to avoid closed canopy forests (Conner et al. 1999), possibly because of the loss of major seasonal food sources (Weigl et al. 1989), competition with gray squirrels (Edwards et al. 1998), or because of increased risk of predation (Moore 1957, Wooding 1997).

Southeastern fox squirrels are typically considered to be upland species occurring in sandhill communities (Weigl et al. 1989), but are adaptable to land use change (e.g., low-intensity development, golf courses) (Jodice and Humphrey 1992, Lee et al. 2001, Ditgen et al. 2007) when vegetation structure is similar to the open pine-savannas, and supplemental food is available (McCleery et al. 2007). Southeastern fox squirrels also regularly occur in mesic sites such as the mesic flatwoods land cover type (FNAL 2010) when mature pine canopies are non-overlapping (University of Florida, unpublished data). In southwestern Florida, the Big Cypress fox squirrel (*S. n. avicennia*) occurs in the wet pine and cypress forests where they are seasonally restricted to the tree canopies during periods of inundation (Kellam et al. 2016). Regardless of where fox squirrels occur throughout their range, they are heavily dependent on close access to mature trees.

On 07 Mar 2013, we detected a Sherman's fox squirrel in a floating camera-trap (McCleery et al. 2014) within the salt marsh land cover type (FNAI 2010) at 17 R 298802 m E 3231090 m N (Fig. 1) at the Cedar Key National Wildlife Refuge in Levy County, Florida. The observation was at 1315 hours EST, between high tide (1127 hours) and low tide (1626 hours). The camera-trap was located approximately 40 m from the open water of the Gulf of Mexico in an area void of any trees or other woody vegetation. It is unclear how the squirrel accessed this area, but we believe it likely traveled along exposed mudflats or swam either: 1) between small islands comprised of scrubby flatwoods,

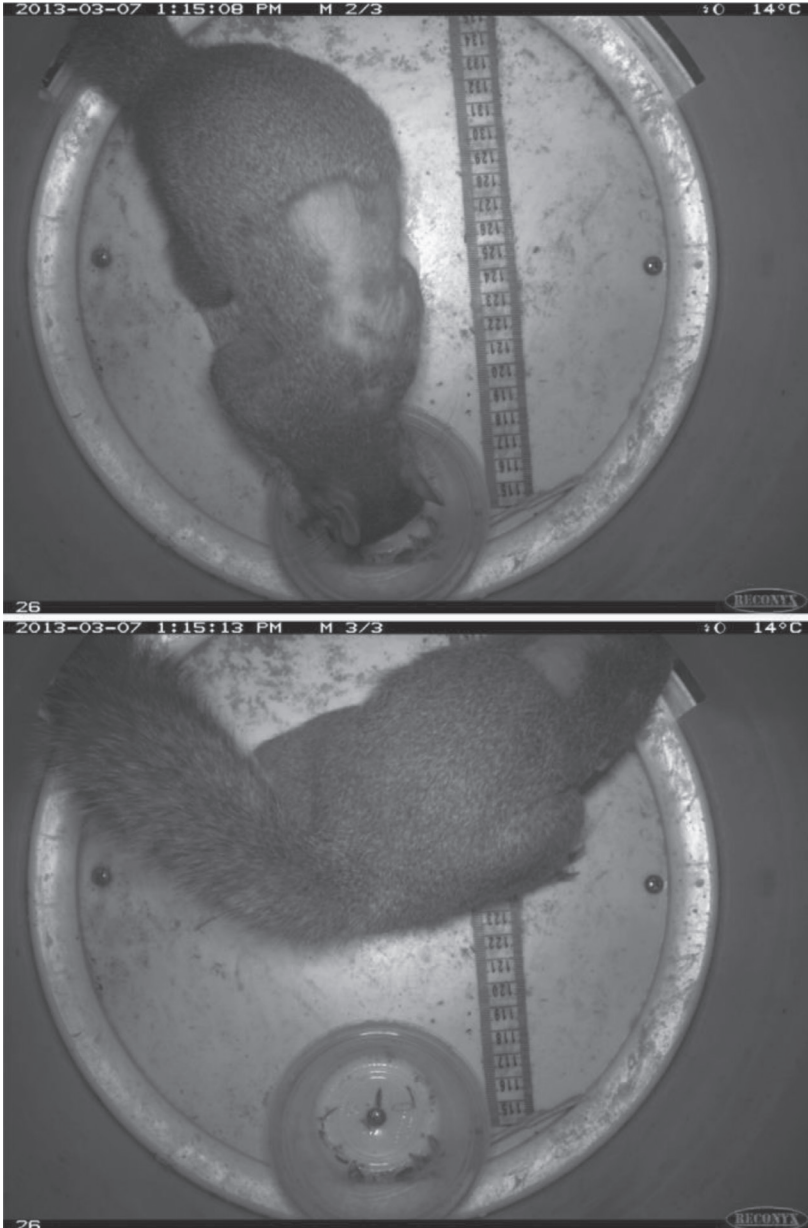
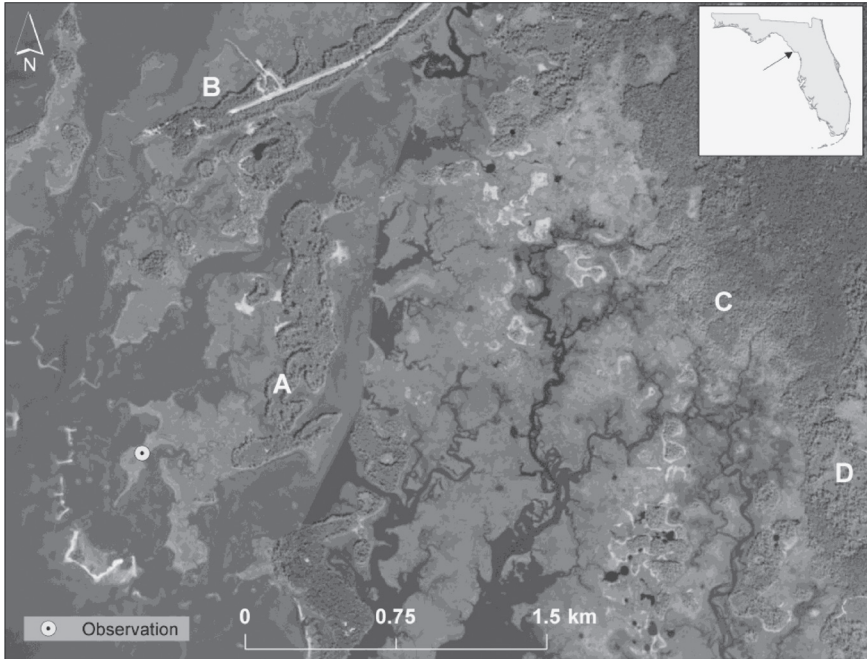


Figure 1. Camera-trap photographs of a Sherman's fox squirrel (*Sciurus niger shermani*) observed at Cedar Key National Wildlife Refuge in Levy County, Florida. The squirrel can be seen entering the bucket trap and is identifiable by its dark head and white ears (top image). In the bottom image the fox squirrel exits the bucket trap and can be identified by its long, bushy tail. The area without hair is likely a result of molting or notoedric mange.



**Figure 2. Location of the Sherman's fox squirrel (*Sciurus niger shermani*) detected at a floating camera-trap located in the coastal salt marsh land cover type at the Cedar Key National Wildlife Refuge in Levy County, Florida (inset). Probable dispersal routes include moving along exposed mudflats or swimming to the camera-trap: between several small islands (e.g., A); from a roadway (B) to the north, or; from a hydric hardwood forest (C) or mesic flatwoods (D) located to the east on mainland Florida.**

with the nearest island occurring 450 m to the east; 2) from a roadway with a corridor connecting to the mainland 1.7 km to the north; or 3) from the east where the mainland's nearest tree line is between 2.7 km (hydric hammock land cover type where fox squirrels are unlikely to occur) to 3.3 km (mesic flatwoods where fox squirrels commonly occur) (University of Florida, unpublished data) (Fig. 2). Regardless of how the fox squirrel ended up at the camera-trap, the individual would have moved through at least 0.45 km and upwards of 1.45 km of treeless coastal salt marsh. To our knowledge this is the only observation of a fox squirrel anywhere in its range within a coastal salt marsh and at such a great distance from tree cover, making this a very unusual observation.

#### ACKNOWLEDGMENTS

We thank Annemarie Prince for suggestions that improved the manuscript.

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