Confirmation of the presence of Abert’s squirrel (Sciurus aberti) after a century in Sonora, México

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According to several authors, Abert’s squirrel (Sciurus aberti) is typically found in ponderosa pine (Pinus ponderosa) forest, which provides both shelter and food. Pinus ponderosa generally occurs between 1,800 and 3,000 m elevation in Wyoming, Colorado, New Mexico, Arizona, and Utah in the United States. In México, Pinus arizonica was formerly considered a variety of P. ponderosa in northern Sonora. Conifer forests in the Sierra Madre Occidental from southern Durango north to Sonora and Chihuahua are not monospecific but very diverse. Pine-oak forest is dominated by various species of pines and oaks, and mixed conifer forest by Douglas fir (Pseudotsuga spp.), spruce (Picea sp.), and southwestern white pine (Pinus strobus). There is a previously confirmed record of Abert’s squirrel from the Upper Bavispe River, Sonora, collected by the Lumholtz Archeological Expedition 1890-92, and another unconfirmed record of a likely Sciurus aberti in 1938 in northern Sonora. While conducting mammal surveys on foot (recording tracks of different mammals) and setting up camera traps, we observed the presence of S. aberti in the study area. We obtained two photographic records of S. aberti in pine-oak forest in the Sierra Madre Occidental at the town limit of Mesa Tres Ríos, and at 9.4 km southwest of Mesa Tres Ríos, Sonora. Sciurus aberti were found on areas with pine-oak and mixed-conifer forests, presumably used for food and cover by Abert’s squirrels, demonstrating that these squirrels are not strictly dependent on ponderosa pine (P. ponderosa) as previously reported, instead they rely on oak, Arizona (P. arizonica) and Apache (P. engelmannii) pines, that are widespread in the Madrean Archipelago (Sky Islands Region) and the northern Sierra Madre Occidental (SMO). These observations confirm the predictions of the presence of S. aberti and are an important addition to the mammal fauna of Sonora.

Key words: Mesa Tres Ríos; presence; Sciuridae; Sonora.

De acuerdo con algunos autores, la ardilla de Abert (Sciurus aberti) se encuentra típicamente en los bosques de pino blanco (Pinus ponderosa), árbol que les proporciona refugio y alimento. Estos pinos generalmente se distribuyen entre 1,800 y 3,000 m en Wyoming, Colorado, Nuevo México, Arizona y Utah en los Estados Unidos. Pinus arizonica era formalmente considerada una variedad de P. ponderosa en el norte de Sonora. Los bosques de la Sierra Madre Occidental no son monospecíficos, los bosques de pino-encino son muy diversos desde Sonora y Chihuahua hasta el sur de Durango en México. Existen también bosques de coníferas mixtos dominados por abetos (Pseudotsuga spp.), pinabes (Picea spp.) y piñon (Pinus strobus). Solo hay un registro previo confirmado de la presencia de la ardilla de Abert obtenido en el Alto Río Bavispe, Sonora, colectada por la Expedición Arqueológica de Lumholtz 1890-92, y otro registro sin confirmar de un probable S. aberti en 1938 al norte de Sonora. Mientras se monitoreaban rastros de mamíferos a pie (registros de huellas) y se ponían cámaras-trampa para su alimentación y cobertura, demostrando que estas ardillas no dependen estrictamente del pino ponderosa (P. ponderosa) como se ha reportado, sino que dependen del encino y los pinos (P. arizonica) y Apache (P. engelmannii), que se encuentran ampliamente distribuidos en el Archipiélago Madrense (Región de las Islas del Cielo) y en la porción norte de la Sierra Madre Occidental (SMO). Estas observaciones confirman la predicción de la presencia de S. aberti, y son una importante adición a la fauna de mamíferos de Sonora.

Palabras clave: Mesa Tres Ríos; presencia; Sciuridae; Sonora.

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Abert’s squirrel (*Sciurus aberti*) is a high-elevation species inhabiting conifer forests in the western United States and the Sierra Madre Occidental (SMO) in Chihuahua and Durango, México. There are 6 subspecies of *S. aberti* in the southwestern United States and 3 in México (Thorington and Hoffman 2005). *Sciurus aberti barberi* (J. A. Allen 1904) occurs in northwestern Chihuahua and now in eastern Sonora. There is a large gap (345 km in a straight line) in the species distribution between *S. a. barberi* in the SMO, and *S. a. aberti* in the Santa Catalina Mountains in Arizona (Hoffmeister 1986).

The only previous specimen of Abert’s squirrel from the state of Sonora was from the Upper Bavispe (sic) River by the Humholtz Archeological Expedition of 1890-92, “one skin, in the gray phase, and an additional skull and skeleton” (Allen 1893). Burt (1938) reported another observation of Abert’s squirrel in Sonora: “Mountains of northeastern Sonora. Recorded as being seen in oak-covered mountains about Santa Cruz.” Burt remarked, “No specimens have been taken in Sonora, but the sight records recorded above probably were of this race”. Based on Burt’s observation, Nash and Seaman (1977) and Cassola (2017) took the presence of Abert’s squirrel in Sonora for granted. Caire (2019) doubted the presence of the species in the Municipality of Santa Cruz, suggesting that Burt probably observed an Arizona squirrel (*S. arizonensis*) instead. Sandoval et al. (2020) reported Abert’s squirrels presence in the State of Chihuahua at Campo Verde Natural Protected Area east of Mesa Tres Ríos.

In the Madrean Archipelago between the northern SMO and the Mogollon Rim in central Arizona, there are 55 Sky Island (SI) mountain ranges, 32 of them in Sonora (Deyo et al. 2013; Van Devender et al. 2013). These Sky Islands are isolated mountain ranges with crowns of oak woodland and pine-oak forests (Van Devender et al. 2013) that support a mixture of species typical of the Madrean Tropical subprovince of the SMO, as well species from the southwestern United States (Reina-Guerrero and Van Devender 2005; Van Devender and Reina-Guerrero 2016; Haire et al. 2021). The pine-oak forests on the higher Sky Islands are potential Abert’s squirrel habitat. Here we report two new records of Abert’s squirrel, confirming its presence in Sonora. *Sciurus aberti* is listed under special protection (Pr) by Mexican Official Norm NOM-059-SEMARNAT-2010 (SEMARNAT 2010).

Field expeditions to Mesa Tres Ríos were conducted to survey the presence of Neotropical otters (*Lontra longicaudis*) from August 24-29, 2015 (Gallo-Reynoso et al. 2015), and for wildlife distributions in June 2018. We visited several places along the Río Bavispe where the first surveys were conducted 15 years ago to confirm the otter’s continuous presence. Greater Good Charities’ Madrean Discovery Expedition (MDE) to Mesa Tres Ríos was conducted in August 2018, for mammal surveys with wildlife cameras as part of MDE Wildlife Program. The study area included pine-oak forest in the northern SMO in Sonora. Detailed records of our field observations and our corresponding images of Abert’s squirrels and other species of Sciuridae from Sonora are available in the MDE database (https://madreandiscovery.org).

We recorded the presence of Abert’s squirrel at two localities in two different years (2015 and 2018) in the SMO in eastern Sonora. Individuals of Abert squirrels observed were large, they presented the diagnostic characteristic of long and broad ears with hair tufts at the ear apex, as our observations were carried on summer, the ear hair tufts were shorter than in winter when they are long; both presented dorsal dark gray coloration with white undersides typical of the species (Nash and Seaman 1977). The individuals were observed in pine-oak-cypress forest, in rugged, montane terrain near Mesa Tres Ríos, Municipality of Nácori Chico, Sonora. The first observation was on August 26, 2015 at 10:50 hr, near Mesa Tres Ríos town (29° 50‘ 54.82” N, 108° 42‘ 13.28” W) at 1,845 m (Figures 1 and 2). There were two squirrels eating cones of Arizona pine and moving through the canopy (Figure 2a). The second observation was obtained while setting up a camera trap, it was of

![Figure 1](https://madreandiscovery.org)

**Figure 1.** Records location of Abert’s squirrels, *Sciurus aberti*, observed near Mesa Tres Ríos, Sonora (red dots). Near Mesa Tres Ríos town (29° 50’ 54.82”N, 108° 42’ 13.28”W) at 1,845 m and southwest of Mesa Tres Ríos (29° 47’ 17.42”N, 108° 47’ 27.88”W) at 2,020 m. APFF stands for Área de Protección de Flora y Fauna (Protection Area for Flora and Fauna). RB stands for Reserva de la Biosfera (Biosphere Reserve).
After 128 years, these observations confirm the presence of *S. aberti* in the mammal fauna of Sonora and document Abert’s squirrels living in pine-oak forest other than areas dominated by ponderosa pine. These observations confirm the predictions of Sandoval *et al.* (2020) on the probable distribution models of *S. aberti* that includes Sonora. The previous record from the Lumholtz expedition only stated that the upper Bavispe River (Allen 1893) locality was probably also near Mesa Tres Ríos where this river originates. Additional squirrels seen in the Mesa Tres Ríos area were the Apache fox squirrel (*Sciurus nayaritensis*), the rock squirrel (*Otospermophilus variegatus*), and the cliff chipmunk (*Neotamias dorsalis*). The Apache fox squirrel is the most common tree squirrel in the Mesa Tres Ríos area and the Sierra Huachinera to the west.

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