

Thème 1 – La Terre dans l'Univers, la vie, l'évolution du vivant
 1-A – Génétique et évolution

Speciation Abert & Kaibab squirrels

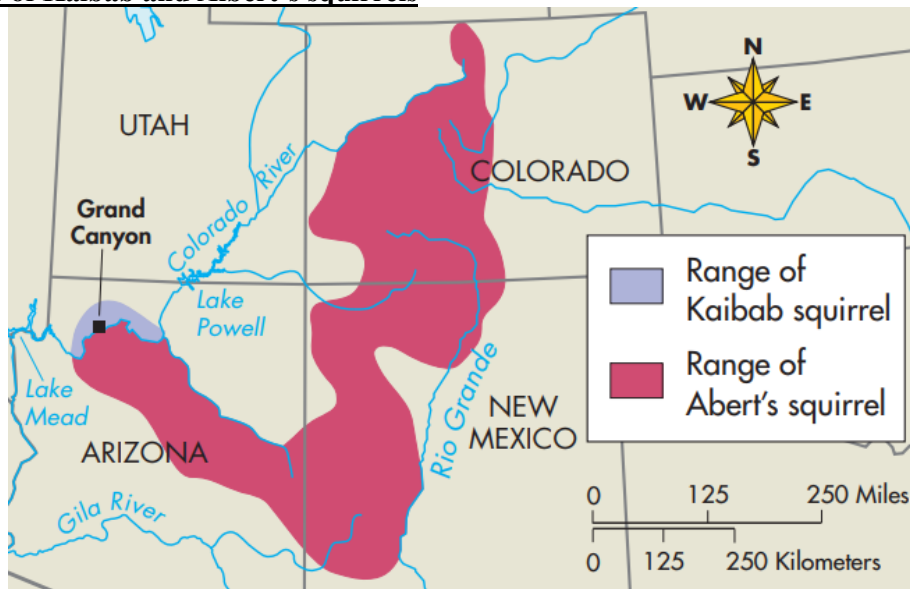
Give a definition for 'a species' then explain how the species became isolated and how interbreeding has stopped.

Document 1: (Source: Columbia public schools)

In the southwest part of the United States there are two kinds of similar ground squirrels, the Abert and the Kaibab ground squirrel. They share many common characteristics but do not interbreed in nature and are considered to be separate species.

Historically it is believed that at one time in the past they were both a part of the same population and the same species. However, as time passed in their desert habitat the Colorado River continued to erode deeper and deeper into the ground, eventually forming a big canyon. This canyon was deep enough and with no kind of shelter or cover for the squirrels. Rarely would any squirrels cross the canyon to get to the other side. In effect, the original population was split in two parts. As time passed, the habitat to the north of the canyon became more shaded and the vegetation increased since it wasn't as hot. To the south of the canyon, the area actually became warmer with less shade and only those squirrels with sparse hair and good digging claws were able to reproduce well. Eventually each part of the population adapted to its separate environments and habitats. Even the mating behavior of the one population is now no longer recognizable by the other. The two population has evolved separately. Even if you bring them together today, they will not interbreed and are considered separate species.

Document 2: range of Kaibab and Albert's squirrels



The Kaibab squirrel (*Sciurus aberti kaibabensis*) is a tassel-eared squirrel that lives in the Kaibab Plateau in the Southwest of the United States, in an area of 20 by 40 miles (30 by 60 km). The squirrel's habitat is confined entirely to the ponderosa pine forests of the North Rim of the Grand Canyon National Park and the northern section of the Kaibab National Forest around the town of Jacob Lake, Arizona. This squirrel is not found anywhere else in the world.

Source: https://en.wikipedia.org/wiki/Kaibab_squirrel

Document 3: a geographic barrier.

25 A geographic barrier (mountain range, river, ocean) results in reproductive isolation and eventual changes occur in the newly separated species.

The Kaibab squirrel (*Sciurus aberti kaibabensis*) became geographically isolated from the common ancestor it shared with its closest relative, the Abert quirrel (*Sciurus aberti aberti*) in the North Rim of the Grand Canyon about 10,000 years ago.

30 Geographic Isolation. The Abert squirrel and the Kaibab squirrel are distinct subspecies within the same species. Their gene pools are separate.

Source: <https://www.basdk12.org/cms/lib/PA01916433/Centricity/Domain/689/17-3.pdf>

