Giant armadillos and ground sloths of the South American Pleistocene megafauna probably are the builders of the tunnels that can be found in this continent. The tunnels reach lengths and diameters of up to 100 and 3 meters, respectively. The discovery of these ichnofossils relies heavily on information provided by the population, who know the tunnels through hunting, fishing, tourism and other outdoor activities. However, it is useless to ask people about palaeovertebrate tunnels. Strategies for the discovery of these ichnofossils recommend considering carefully popular thoughts about the origins of the tunnels: (i) natural origins, (ii) historical characters and (iii) mythical beings. Often people, including engineers, associate the tunnels to the infiltration and flow of underground waters and talk about tunnels with lengths of many hundreds of meters, crossing the hills and mountains. Sometimes even ants are mentioned as tunnel makers. Historical characters in regions colonized by European immigrants (except from Portugal) are usually the Indians, responsible for the “Indian caves”, as the tunnels are called. Portuguese descendants know the tunnels as made by “the Jesuits to hide their gold” due to the memory of the Jesuit Reductions in the 17th and 18th centuries. In addition, the slaves are suggested as tunnel builders, even in regions with a historically very sparse slave presence. In the region of the city of Sapiranga, stage of the “Muckers” sect in the late 19th century, the tunnels are considered hideouts dug by “Jacobina”, the female leader of the group. Similarly, several tunnels located inside the city of Porto União (state of Santa Catarina) are attributed to João Maria de Jesus, a pacific wandering monk that visited the region in 1896. Mythical beings in folk tales as tunnel builders are, for example, the “curupira”, a male supernatural whose feet are turned to face backwards, that guards the forest and use tunnels to hide shotguns he has stolen from hunters. Along the Uruguai River, the tunnels are said to be from the “minhócão”, a black giant worm-like burrowing animal that lives near the river. Alongside entrenched Bible-based beliefs of floods and pre-historical times, all these popular thoughts need to be considered and respected for the successful prospecting of palaeovertebrate tunnels.