In this article I detail how past Umwelten can be studied by applying Jakob von Uexküll’s Umwelt theory and informed by contemporary science. I argue that the methodological challenges raised by the lack of present organisms available for real-time observations and whole-body physiological studies can be partly overcome by making qualified assumptions drawn from relevant knowledge and reconstructing likely Umwelt relations. As groundwork for such studies, I outline some basic assumptions in studies of past, current and future Umwelten, consider methodological issues related to the study of past Umwelten in particular, and present a few empirical assumptions that are informative with regard to the study of past Umwelten in different historical periods. I also discuss the relevance of such studies for current conservation work, specifically contemporary discussions about de-extinction, and for economics conceived of as a branch of ecology in the fashion of ecological economics.