

The late Paleozoic deposits of the Czech Republic are famous for their rich occurrence of silicified stems. Despite the fact they have been often described and are well-known among scientists and collectors, their modern evaluation is lacking. This work summarizes results of recent anatomical and paleoenvironmental studies of silicified stems of the Intra Sudetic and Krkonoše Piedmont basins, where these fossils are found very frequently. Based on field research and review of public and private collections, the presence of silicified remnants was proved in several stratigraphic units. Firstly, this work deals with silicified stems of calamitaleans, which are known from the Ploužnice Horizon of the Krkonoše Piedmont Basin, and some gymnosperms. Based on anatomical studies of the secondary xylem and other related features there were found two species of calamitaleans: *Arthropitys* cf. *bistriata* and *Calamitea striata*. Secondly, the more abundant *Agathoxylon* – type of wood was divided into two groups, which are assigned to cordaitaleans, and conifers. The palaeoenvironmental conditions were partly reconstructed according to sedimentary structures and also according to cordaitaleans – conifers ratio in each wood-bearing layer.