

Rockfalls in the Jestřebí Castle area

Abstract

Rockfalls are one of essential causes of direct as well as indirect damages in residential areas. To mitigate negative impacts on society it is necessary to assess the risk posed by rockfall and choose suitable protective measures. Achievement of these targets needs a better understanding of the whole process of rockfall including natural conditions and trigger factors. Presented case study deals with rockfalls in the Jestřebí Castle area. The castle bedrock is formed by quartzose sandstones of the Cretaceous age. Stability of the massif deteriorates in the last 200 years. The first rockfall was registered in the year 1811. Main cause is imputed to human interventions after 1400 AD when construction of the castle began, including the sandstone quarrying in 1750 – 1850 AD. As additional adverse conditions and factors were identified the weathering along conglomerate and bioturbated horizons resulted in a horizontal dissection of the sandstone outcrop and also a vertical separation along joints caused by nearby fault zone. The latest significant rockfall in October 1st 2009 wasted over 100 m³ of rocks from the western wall of the sandstone massif. Further rockfalls due to low stability of the massif can be expected in the near future.

Keywords: rockfalls, slope movements, natural hazards and risks, sandstone, the Jestřebí Castle