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Recent changes in the relief of mountain raised bogs on the example of the Polish Carpathian Mountains

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The subject of this paper is the problem of anthropogenic changes in the relief of raised bogs in chosen parts of the Polish Carpathian Mountains: the intramontane Orawsko-Nowotarska Basin and valleys in the Bieszczady Mountains. This problem has not received a great deal of attention in the research literature. Changes in peat bog relief due to human activity are usually explained in the research literature as the result of sheep and cattle grazing, burning of peat deposits and drainage of peat bogs. Peat bog erosion is normally mentioned in the literature but few studies cover contemporary changes in peat bog relief in depth. In the Carpathian study areas human impact on raised bog relief is usually limited to peat extraction and drying. The expansion of post-peat areas at the expense of peat domes continues to be driven by the hand-cutting of peat by local landowners. The machine-cutting of peat over large areas and the drying of peat deposits in areas with drainage systems are also common occurrences. Special attention in the Carpathian study areas was paid to the remnants of peat domes and post-peat areas and the scarps separating them. Six phases in the development of scarps were identified. The rate of relief change was estimated and the role of exposure was assessed. Raised bogs in the study areas are characterized by weak mass movements that today affect only post-extraction scarps and their base. In light of the classification system of mass movements in peat bogs (Dykes and Warburton 2007), sliding peat packets on the scarps of interest may be designated bog slides, while peat flows may be designated bogflows. Attention was paid to changes in the relief of post-peat areas that are occurring because retention ponds and drainage ditches have become more shallow because of beaver activity and the results of stream channel regulation. Special attention was also paid to the geomorphological aspects of the restoration of post-peat areas. In the Carpathian study areas, peat bog scarps take longer to become overgrown with bush-type plants and pine and peat moss initially invades only peat hollows and drainage ditches. The paper is based on an analysis of maps produced over the last 230 years and the aerial photographs, and especially on the field and laboratory data.