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REHABILITED QUARRY DETRITUS AS PARENT MATERIAL FOR CURRENT PEDOGENESIS

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The studies were carried out in North-East Estonia (27°08′–27°47′ E, 59°19′–59°21′ N) where in the early 1960s forest rehabilitation of the levelled skeletal quarry detritus of open-cast oil-shale mining was initiated with two-year-old seedlings of Scots pine (Pinus sylvestris), silver birch (Betula pendula), hybrid alder (Alnus hybridum), etc. The formed genetic soil horizons (A–AC) were studied, described, and sampled to a depth of 20–25 cm where signs of pedogenesis were disappeared. Milled dry ground litter and fine earth with particle size less than 2 mm were analyzed. Methods well known in soil science were applied. The organic C and N of oil shale (kukersite), present in detritus, were subtracted from the obtained values when the organic matter of plant origin was calculated. Highly productive stands developed with an annual increment of 5.4 ± 0.6 m^3 ha^{-1} *in the growing stock as well as with an average annual increase of* 43.2 ± 2.6 *cm in height,* 4.1 ± 0.2 *mm in breast-height diameter and* 2.8 ± 0.3 dm^3 *in the growing stock per tree. Calcaric Regosols and/or Rendzic Leptosols have formed on detritus. The depth of the A–AC sequence of the O2–A–AC–(B)C profiles is* 21.6 ± 1.5 *cm. An average of* 1.36 ± 0.2 *Mg* ha^{-1} yr^{-1} *of organic carbon and* 49 ± 8 *kg* ha^{-1} yr^{-1} *of nitrogen have accumulated in the humus section and in Moder-type ground litter. The level of organic carbon was the highest (*1.57 ± 0.56 *Mg* ha^{-1} yr^{-1}*) under deciduous stands, but also under pine with grasses.* R_2O_3*-humic-fulvic humus, rich in Ca-fulvates, is characteristic of both ground litter and of the epipedon which is close to mollic. The amount of ash elements in ground litter is* 318 ± 46 *kg* ha^{-1} yr^{-1}*; compared with initial detritus, the increase in base exchange capacity, clay content and specific surface area is accompanied with the progress of forest–soil system.*

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