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BIODIVERSITY IN LIMESTONE QUARRIES: A REVIEW AND FUTURE PERSPECTIVES

The demand for cement and other building materials is increasing due to the growth of the human population and will continue to grow. Consequently, there will be an increase in the areas dedicated to the extraction of limestone and other materials needed to produce cement. Mining through quarrying has significant impacts on the environment (SOUZA and SANCHEZ 2018). In addition to large-scale habitat destruction, dust, noise and vibration emissions further exacerbate the environmental impact (KUMARASINGHE *et al.*, 2013). Limestone quarries mostly occur in calcareous and karst environments, which has an outstanding biodiversity value and are in rapid, as a result of mining activity (CLEMENTS *et al.*, 2006). These environments host a huge variety of endemic species, both vertebrates (GRISMER *et al.*, 2013) and invertebrates (OSIELE *et al.*, 2022). However, the knowledge about biodiversity and the impact from quarrying is still scarce and targeted to few taxa. Here, we report the results of a systematic bibliographic review addressed to highlight the state of knowledge in this field. Through a keyword search in WOS we extracted 795 articles related to biodiversity. Only 135 of these have been assessed for eligibility and included in the review. The 46% of the studies were focused on “Quarry rehabilitation”, considering especially habitat restoration at abandoned mining sites, but most of them concerned vegetation and only nine studies focused on fauna. Only 12 papers focused on analysing quarrying impacts, with a particular attention to the effects of dust pollution on lichens. About Quarry rehabilitation studies, the 69% of them analysed the management and dynamics during the process of recovery in the quarry through the plant community. Only 14% of these studies used animals, all invertebrates, as bioindicators to assess the success and trajectory of the revegetation process during extraction site recovery. Six of them (66%) used terrestrial arthropods, mostly at community level. Regarding spatial distribution, the outcome shows that Europe dominates 69% of studies, with the Czech Republic (22 papers) having the highest number of scientific works followed by Spain (17 papers). Our results show the presence of a wide knowledge gap, at the expense of active sites and their impacts on biodiversity, and a generalized lack of data regarding animal biodiversity for those sites where vegetation successional stages have been monitored during restoration activities.