THE ASSESSMENT OF FLOODED MINE SUBSIDENCE RECLAMATIONS IN THE UPPER SILESIA THROUGH THE PHYTO AND ZOOCENOSIS

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ABSTRACT

The northeaster part of the Czech Republic is since the early 19th century associated with underground coal mining. This activity brings economic benefit in addition to changes in the landscape – soil depression followed by habitat destruction. Flooded mine subsidences are an example of such degradation of native plant and animal communities, biodiversity decline and wetland and aquatic ecosystems establishment. For a long time, these ecosystems were considered worthless and unproductive [10]. The aim of the various reclaim methods was to restore the function; some flooded subsidences were on the contrary left to the process of spontaneous development. The present research was focused on comparing the effectiveness of biotechnical reclamation methods to the directed succession and to the spontaneous development of ecosystem. The main criterion was the malacocoenosis and phytocoenosis characteristics. It was found that the reclamation method has a significant influence on the emerging ecosystems. The vegetation characteristic assessment according to the phytosociological classes share confirmed the usability of the method in assessing reclamation efficiency. Data obtained on the basis of molluscs (terrestrial and aquatic species) research are more difficult to assess. The reclamation controlled by managed succession seems to be a suitable alternative to biotechnical reclamation, but the concrete used methods must be further clarified in order to achieve higher efficiency in this type of restoration.

Keywords: reclamation of postmining landscape, spontaneous succession, managed succession, wetland, Mollusca

INTRODUCTION

As a result of underground coal mining in the area of Karviná and Katowicka Upland (Czech and Polish part of Upper Silesia), there was the formation of new aquatic, to the development accessible habitats – flooded mine subsidences. Sierka and Sierka [15] or [4] also involved the issue of development and biodiversity of such a habitats in their work.Reclamations of flooded mine subsidences in the fifties of twentieth century led to the complete removal of these objects, often by filling with tailings. In the next phase, those areas were converted to arable land or afforested [14]. In many cases, then there are at newly created flooded mine subsidences carried out different interferences with various intended objectives. For different reasons, natural values and potential production possibilities of these units are not respected [1, 2]. In principle, there are used three fundamental approaches to rehabilitation of flooded mine subsidences [11]: