

A NATURAL STREAM CREATED BY HUMAN ENGINEERING: INVESTIGATIONS ON THE SUCCESSION OF THE MARCHFELD CANAL IN AUSTRIA

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ABSTRACT

The Marchfeld, north-east of the river Danube between the cities of Vienna and Hainburg (Austria) is known for its special geological and climatic conditions, including water shortage. Water is heavily used for agricultural purposes and for domestic use due to the proximity of Vienna, Austria's capital. An artificial channel resembling a natural river of 18.8 km was built to carry up to 15 m³/s of water diverted from the Danube. It is supposed to increase the groundwater level, supply sufficient water for irrigation and supplement flows in two small rivers, the Russbach and the Stempfelbach. In 1992 the channel was finally filled.

This project review describes the development of the fluvial ecosystem. The research encompassed limnology (nutrients, algae, macrophytes, evertebrates), fish-ecology (colonisation, migration, habitat preference, fish pass function), hydrology (current patterns, current model), sedimentology (surveys, types of structures, quality and quantity of the sediment) and bioclimatology (bioclimate, physical limnology). Main differences between the newly created watercourse and a natural river are highlighted. From an ecological point of view, the Marchfeld Canal could be regarded more like an artificial branch of the river Danube than an independent river system. © 1998 John Wiley & Sons, Ltd.

KEY WORDS: artificial watercourse; succession; colonisation

INTRODUCTION

The construction of the Marchfeld Canal System (MCS) in the East of Austria provided a rare opportunity to investigate the development of a newly created, nature-like watercourse. This paper gives an overview of the investigations, in order to advance our knowledge of succession, function and structure in artificial and natural river ecosystems. Additionally, the paper evaluates the attempt to create a nature-like river by human engineering. Differences between the MC and natural watercourses within the same geographical region and of comparable size are discussed. Detailed information on the methods used for the research is given in the corresponding reports and published papers.

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