

Accepted Manuscript

Title: Review of Hydro-morphological management Criteria on a river basin scale For preservAtion and restoration of freshwater pearl mussel habitats

Author: C. Hauer

PII: S0075-9511(14)00075-9
DOI: <http://dx.doi.org/doi:10.1016/j.limno.2014.11.002>
Reference: LIMNO 25427

To appear in:

Received date: 12-5-2014
Revised date: 17-11-2014
Accepted date: 17-11-2014

Please cite this article as: HAUER, C., Review of Hydro-morphological management Criteria on a river basin scale For preservAtion and restoration of freshwater pearl mussel habitats, *Limnologica* (2014), <http://dx.doi.org/10.1016/j.limno.2014.11.002>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 **REVIEW OF HYDRO-MORPHOLOGICAL**
 2 **MANAGEMENT CRITERIA ON A RIVER BASIN**
 3 **SCALE FOR PRESERVATION AND**
 4 **RESTORATION OF FRESHWATER PEARL**
 5 **MUSSEL HABITATS**

6
 7 HAUER, C.¹

8
 9 ¹*Institute for Water Management, Hydrology and Hydraulic Engineering, Department for Water –*
 10 *Atmosphere – Environment, BOKU - University of Natural Resources and Life Sciences Vienna,*
 11 *Muthgasse 107, 1190 Vienna, Austria*
 12

13 **Abstract:**

14 Increases in the fine sediment supply and fine sediment deposits have been highlighted as
 15 one of the main pressures affecting the ongoing degradation of Freshwater Pearl Mussel
 16 *Margaritifera margaritifera* (L.) (FWPM) habitats. Those impacts, however, have been
 17 mostly investigated on a local scale without considering catchment scale boundaries that
 18 might decisively influence sediment production over the short to the long term. Hence, the
 19 aim of this review study was to reveal the importance of scaling sedimentological and
 20 morphological processes especially in terms of the preservation and restoration of freshwater
 21 pearl mussel habitats. The focus was on the Austrian territory, where the crystalline
 22 catchments of the Mühl- and Waldviertel exhibited site specific characteristics of sediment
 23 production and sediment transport. The importance of the variability in the grain size
 24 distribution as well as the variability in river morphology for evaluating freshwater pearl
 25 mussel habitats are reviewed, especially in terms of the implementation of possible mitigation
 26 measures. For evaluating FWPM rivers, a revised sedimentary link concept is discussed,
 27 considering the main driving processes to be an increase in the fine sediment supply from
 28 tributaries. As possible mitigation measures, structural measures, such as transversal
 29 obstructions or boulder placement, and non-structural measures, such as initiation of the
 30 overbank deposition of fines and land use changes, are presented. The validation of mitigation
 31 is discussed based on monitoring the results of boulder placements and overbank deposits of
 32 tributaries after a 10-year flood in 2013. Based on a review of habitat needs of FWPM and the
 33 variability of the abiotic environment, it could be concluded that it is necessary to consider the
 34 catchment scale approach in the preservation and restoration of freshwater pearl mussel rivers,
 35 linked from the headwater tributaries to the selected habitats over the mid to the long term.

36 **Key words:** *Freshwater Pearl Mussel, sedimentology, river morphology, mitigation measure;*
 37

Download English Version:

<https://daneshyari.com/en/article/6305572>

Download Persian Version:

<https://daneshyari.com/article/6305572>

[Daneshyari.com](https://daneshyari.com)