



## Hydromorphology – Quantifying a creek's naturalness

Philipp Stadler (1,2) and Elmar Pröll (1)

(1) Nationalpark O.ö. Kalkalpen Ges.m.b.H., Nationalpark Allee 1, A-4591 Molln/Austria, (2) University of Vienna, Department of Environmental Geosciences, Althanstrasse 14, A-1090 Vienna/Austria

Since 2008 a hydromorphological survey and mapping of semi natural creeks is done at the National Park Kalkalpen in Upper Austria. In addition to the hydrochemical water-documentation programme running at the Nationalpark Kalkalpen there is the request to classify the hydromorphological situation (especially level of anthropogenic interaction and grade of renaturation) of small and midsize semi natural creeks. The system of mapping which was developed during the pilot mapping in 2008 realigns an instruction for a European water framework directive compatible hydromorphological mapping of streams (Lebensministerium 2006). As presented before this allows a consistent and representative exposition of the hydromorphological situation of creeks (Stadler, 2009).

Picturing the channel's naturalness is the main parameter, other value was set on typical riverbed structures and torrent control buildings. In order to allow an efficient field work a clearly arranged mapping-schedule was developed. With this schedule a consistent and representative mapping out of the creek's characteristic is possible. Due to the steep and overgrown valleys of the National Park interpretation of remote sensing material is not suitable. Therefore fieldwork becomes the most important basis for data acquisition. Detailed hydromorphological parameters are marked in a schedule for every 500 meter intercept of the stream.

During three years of riverine mapping the main creeks in the National Park area were investigated. Covering 47 kilometers of flow course, 93 creek intercepts were mapped in detail. The gathered date is stored in an SQL database and linked to a GIS (Stadler et al., 2010). This enables to merge hydromorphological data with other GIS available data, like the valley's topography or other stream linked surveys (e.g. hydrochemistry, biology). The captured hydromorphological singularities of various creeks in distinct topographies of the National Park Kalkalpen allow an overview of the streams' condition. The investigation shows also an explicit correlation between hydromorphological parameters like riverbed structures and level of anthropogenic interaction (torrent control buildings) or rather renaturation.

### References:

LEBENSMINISTERIUM (2006): Bereich Wasser. A-Fliessgewässer Hydromorphologie, Leitfaden für die hydromorphologische Zustandserhebung, 46 Seiten, Wien

STADLER, Ph. (2009) Hydromorphological classification of semi-natural brooks in Nationalpark Kalkalpen; European Geosciences Union, General Assembly 2009, April 2009, Vienna.

STADLER, Ph., STEINWENDER, N., PRÜLLER St., MILLAUER I., PRÖLL E. (2010) Hydromorphological Data Management – From Fieldwork to Database; European Geosciences Union, General Assembly 2010, May 2010, Vienna.