Geophysical Research Abstracts
Vol. 13, EGU2011-5755, 2011
EGU General Assembly 2011

Chicken Creek after five years: what changed?

Wolfgang Schaaf (1), Detelf Biemelt (2), Anton Fischer (3), and Werner Gerwin (4)

(1) Brandenburg University of Technology, Soil Protection and Recultivation, Cottbus, Germany (schaaf@tu-cottbus.de), (2) Brandenburg University of Technology, Hydrology and Water Resource Management, Cottbus, Germany, (3) Geobotany, Dept. of Ecology and Ecosystem Management, Technische Universität München TUM, Freising, Germany, (4) Research Center Landscape Development and Mining Landscapes, Brandenburg University of Technology, Cottbus, Germany

To combine process-oriented research on initial development of ecosystems with interactions and co-development of spatial patterns and structures the Transregional Collaborative Research Centre (SFB/TRR) 38 was established as an initiative of three universities (BTU Cottbus, TU Munich and ETH Zurich).
To allow the clear definition of starting conditions at ′point zero′ and to be able to integrate spatially distributed processes and patterns to larger units, an artificial catchment was constructed in the mining area of Lusatia/Germany as the main research site (Gerwin et al. 2009). With an area of about 6 ha, this catchment ′Chicken Creek′ is to our knowledge the largest artificial catchment worldwide. It was constructed as a 2-4 m layer of post-glacial sandy to loamy sediments overlying a 1-2 m layer of Tertiary clay that forms a shallow pan and seals the whole catchment at the base. No further measures of restoration like planting, amelioration or fertilization were carried out to allow natural succession and undisturbed development.
Changes within the catchment are intensively monitored since 2005, when construction finished (Schaaf et al. 2010), including intensive on-site measurements and micro-drone based aerial images. Starting from relatively homogenous site conditions the catchment rapidly developed new structures and patterns due to soil erosion, sediment transport, stream formation, vegetation cover and succession, groundwater table rise and surface crust formation resulting in an increasing differentiation of subareas and site characteristics (Gerwin et al. 2010). Some of these structures and patterns formed as a result of the interaction of abiotic and biotic processes during initial development, some were influenced by structures caused by the construction process itself, and others were affected by single accidental events, e.g. the occurrence of high intensity thunderstorms.
Examples of the major changes within the first five years are presented.

References

Gerwin, W., Schaaf, W., Biemelt, D., Fischer, A., Winter, S., Hüttl, R.F. 2009. The artificial catchment “Chicken Creek” (Lusatia, Germany) - a landscape laboratory for interdisciplinary studies of initial ecosystem development. Ecol. Eng. 35, 1786-1796.
Gerwin, W., Schaaf, W., Biemelt, D., Winter, S., Fischer, A., Veste, M. und Hüttl, R.F., 2010: Overview and first results of ecological monitoring at the artificial watershed Chicken Creek (Germany). Phys. Chem. Earth (in press, DOI:10.1016/j.pce.2010.11.003).
Schaaf, W., Biemelt, D., Hüttl, R.F. (2010): Initial development of the artificial catchment Chicken Creek’ - monitoring program and survey 2005 – 2008. Ecosystem Development, 2.