

# Dr. Felix Müller: "Indicating Ecosystem Health and Integrity"

## Abstract

The ecosystem approach is a new guideline which has recently been formulated by the Convention of Biological Diversity. To apply the corresponding ecosystem conception in environmental management it is necessary to define variables that describe ecosystem states and developments on the base of holistic, systems oriented methodologies and guidelines. In this paper, an attempt concerning this purpose is described, focussing on the selection and application of ecosystem variables to indicate the state of ecological entities on different scales.

The general guidelines for the derivation of the ecosystem indicators originate in thermodynamic ecosystem theory, empirical ecosystem analysis and in the concept of ecosystem health / integrity. The respective fundamental concepts are principles of self-organisation, the ecological orientor approach, an integration of structural and functional items and the normative idea of ecological risk prevention. These principles are explained in a first part of the paper that leads to a presentation of the indicator set, which aims at a depiction of the self-organising capacity of ecological entities.

In the second part, some applications of the indicator set are shown. They refer to the ecosystem scale (comparison of a forest ecosystem and an arable land ecosystem), to the landscape scale (characterising different wetland ecosystem types in a Northern German watershed) and to the development of sustainable landscape management regimes in Northern Fennoscandia (consequences of different approaches for reindeer herding in an ecological, social and economic context).

## Curriculum Vitae

Felix Müller, born 26th of November 1954 in Kiel married, 3 children

### Studies:

1976-1979	Biology and Geography at the University of Kiel
1979-1980	Chemistry, Biology and Geography at the University of Regensburg
1980-1983	Biology and Geography at the University of Kiel
1983	State examination

### Doctoral studies:

1983-1987	Junior Scientist at the Institute for Geography, University of Kiel
1987	Doctoral Degree at the Faculty of Mathematics and Sciences: "Geo-ecological examinations on the impact of selected environmental chemicals on the soil"      Science Coordination

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International Autumn Academy „Sustainability in River Basins – A Question of Governance“  
December 6-8, 2004, Berlin-Schmöckwitz, Germany

Organized by the Institute for Ecological Economy Research (IOEW)

1987-1995      Scientific Coordinator of the RD-project "Ecosystem Research in  
the                      Bornhöved Lakes District"

Fields of Research: since 1996 Coordinator and Senior Scientist at the Ecology  
Center, University of Kiel

Ecosystem theory and ecosystem analysis  
Ecological modelling  
Environmental applications of ecosystem theories  
Ecological indicators  
Landscape analysis

Co-director NATO CCMS Pilot Study "Use of Landscape Sciences for Environmental  
Assessment"

Member of editorial boards "Ecological Modelling" and "Ecological Complexity"  
Editor-in-Chief of the journal "Ecological Indicators"

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