

Increasing power of using Ellenberg's indicator values for detecting changes in the environment.

M. Weiser^a and F. Kolář^a

^a Department of Botany,
Faculty of Science
Charles University in Prague,
Czech Republic
weiser2@natur.cuni.cz

Keywords: Ellenberg's indicator values, environmental indicators, site comparisons

Abstract: Ellenberg's indicator values (EIV, Ellenberg 1992) are frequently used for comparison of environmental conditions at sites where only plant species data are available. These comparisons are done both in space and time. EIVs are per species values of environmental conditions in its habitat, and deal with several factors, e.g. soil moisture and nutrients, temperatures, light availability. Species list includes more than 1000 Central European species. Values are tabulated on the ordinal scale. In a common praxis, EIV for certain factor (e.g. soil moisture) of species present at certain site are viewed as samples from random variable, therefore mean (weighted by species' abundance or not) is calculated and compared across sites (species lists) to assess spatial or temporal trends. We propose to exclude species that occur in both units (lists) to be compared from the calculations, hence using "paired" comparisons to increase the chance of detecting trends. Especially when dealing with replications in time, this helps to avoid false similarities that can arise due to plant longevity. On the other hand, it can be argued that such an approach exaggerates the magnitude of change. We think that this argument is invalid, as magnitude of change is not defined on the scale where there is no unit size. Using heterogeneous data that spanned an order of magnitude in size and several decades, we show that this simple adjustment allows to detect changes that went unnoticed previously.

References

Ellenberg, Heinz. 1992. *Zeigerwerte von Pflanzen in Mitteleuropa*. 2. verb. und erw. Aufl. Göttingen: Goltze.