



GIS in Land Management
International Summer School
Székesfehérvár, Hungary, 14 – 19 August 2003



Draft Programme

WG3 - Geo-Information in Nature Protection
Zoltán Vekerdy (ITC) – Takács András Attila (GEO)

Key Aspects of Training

Fundamentals: Understanding the importance of international and national nature conservation; Familiarity with the biological indicator theory; Knowledge on threatened plant and animal species; Familiarity of biological succession; Geometric, radiometric and spectral characteristics of remote sensed image data; Soil Evaluation.

GIS Analysis: Vectorisation of raster data, Overlay operations, Spatial operations, Visualisation of results.

Digital Image Processing: Radiometric calibration, Spectral Classification, Interpretation, Segmentation.

Skills: practice in the use of 3D modeling GIS software, open mind for discussion.

Method

A case study, which will be introduced by a few lectures (nature conservation specialist on wetland restoration, and one from the water balance from the Water Authority), a field trip, and an assignment worked out by the students. A preliminary report on the findings will be presented orally by the students at the end of the week, and credits will be awarded only for those who submit a report two weeks after the end of the Summer School.

The following issues will be tackled (This is a longer list than what will be possible in the time available for the assignment):

- General concept of biological succession especially on wetland areas.
- Indicator species of wetlands.
- Volume of the lake and the effects of runoff (dry year, wet year) on the water level. Simple calculation of water balance with GIS.
- Land use (changes) on the watershed in the last 20 years (depending on the available remote sensed data).
- Change of municipality pollution load. Change of population in the watershed.

Test site

The test site is the Catchment area of Lake Velence and Dinnyési Fertő Nature Reserve. The western basin of the lake (Lake Velence Biodiversity Reserve) and the Dinnyési Fertő Nature Reserve is protected on international level also as a Ramsar site.

Project Objective

To demonstrate how to assess the impacts of the watershed on wetlands set of Ramsar site around Lake Velence.

Software Used

ArcGIS with 3D analyst extension.

Data needed:

DEM, including bathymetry of the lake

Discharge data of incoming streams

Satellite images (at least two different dates, one as recent as possible the others from an extreme dry year and from an extreme high tide year).

Land use maps, CLC50

Soil map

Statistical data: land use by years (just remote sensed images are available), population by settlements and years, industrial activity, water use/treatment in the area, the parameters of the sluices on the catchment area.

Water bird population in the protected areas

Water control data of the Lake