

## Patch Cohesion COH – Landscape Heterogeneity

### Layer Description

Definition: To define capacity of step stones for migration of species in an area.

Patch Cohesion Index (COHESION): Measures the physical connectedness of the corresponding patch type. Patch cohesion increases as the patch type becomes more clumped or aggregated in its distribution; hence, more physically connected.

$$\text{COHESION} = \left[ 1 - \frac{\sum_{j=1}^n p_{ij}}{\sum_{j=1}^n p_{ij} \sqrt{a_{ij}}} \right] * \left[ 1 - \frac{1}{\sqrt{A}} \right]^{-1} * 100$$

$p_{ij}$  – perimeter of patch  $ij$  in terms of number of cell surfaces

$a_{ij}$  – area of patch  $ij$  in terms of number of cells

$A$  – total number of cells in the landscape

Realization: The Patch Cohesion Index was calculated by the Fragstats Tool for ArcGIS. The Analysis Type Moving Window was applied. Thereby a continuous surface is calculated, whereas all the natural and semi natural landscape patches are considered for the calculation.

Type of Landscape Patches:

- natural landcover types: different wood types, biotope mappings, hedges, shrubs, water bodies.
- agriculture landcover types: extensive and low intensive agriculture types.

Classification: The classification of the COHESION values is based on reference areas. For this, some areas known for their high quantity of structure elements were chosen. These were areas within the Tyrol and the Engadine region.

Current classification:

COHESION	Indicator Value (0-100)
0	0
75	10
89	20
90	30
92	40
93	50
95	60
96	70
97	80
98	90
100	100

### Layer Legend

