

Roadsides, railway verges and borderlines in the Great Hungarian Plain – and their conservation (SE Hungary)

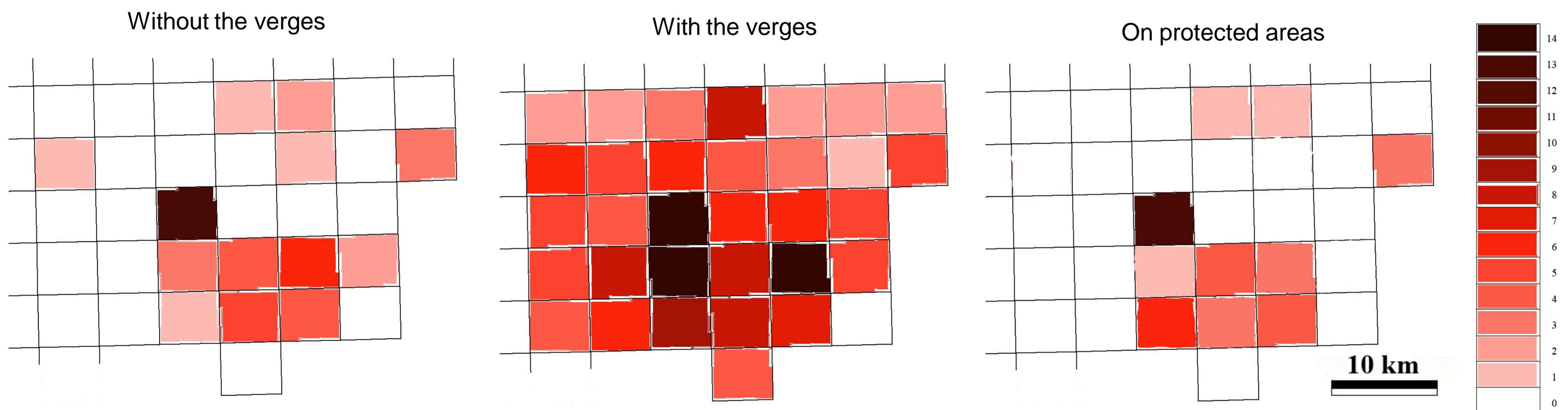
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In the fragmented agricultural landscape of the Great Hungarian Plain the plant species of Pannonian loess steppe, which show the original vegetation often survived only in verges (boundaries, field margins). Verges are few (on average 2-15, max. 50) meters wide lawn strips running along roads, railways, borderlines and ditches. Two main types of the verges can be distinguished in the landscape: The primary verges take a slice of the original vegetation with several protected or endangered plant species of steppe. The secondary verges are abandoned from arable field, valuable species are found on these habitats only rarely.

These small grassland fragments are supposedly also of great importance in other loess lowland areas (e.g. Central and E Hungary, W Romania, N Serbia). The verges are very endangered because of lack of treatment (mowing, grazing), shrubs, ploughing and pollution. The preservation of the verges needs new nature conservation strategies in the Pannonian Biogeographical Region. Establishment of numerous small nature reserves (including further Natura 2000 sites) in the primary verges are necessary and realization of the adequate treatment also.



Number of protected plant species in each mapping unit of the Central European Flora Mapping system of the Csanádi-hát region (SE Hungary).

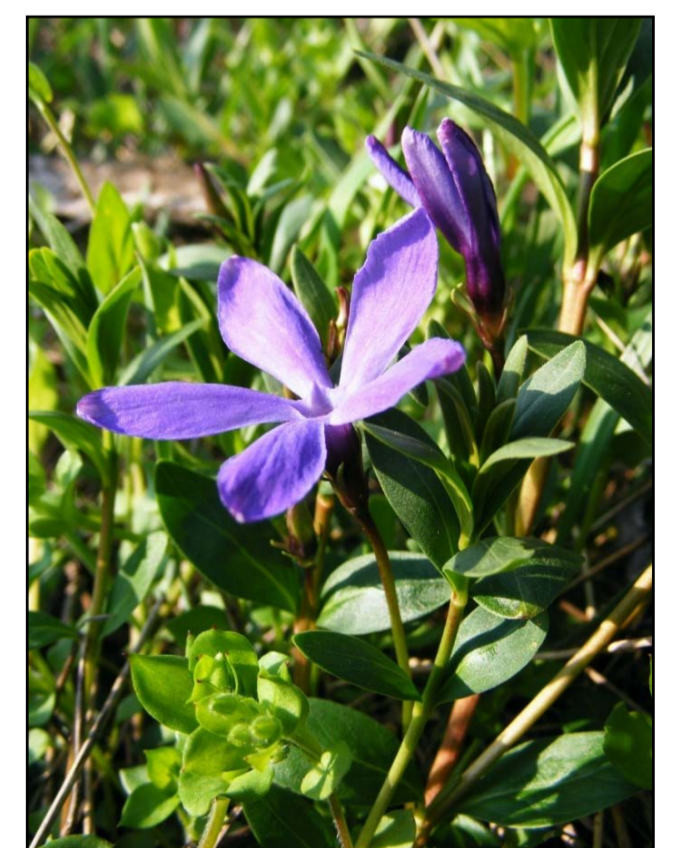
Our study was undertaken in the Csanádi-hát loess region (SE Hungary) (approx. 940 km²). During the 10-year long investigation in each mapping unit of the Central European Flora Mapping System (approx. 6.5x5.5 km) of this area the average number of the protected plant species was 5.5. Among these species 1.0 (18.6%) species was found only in coherent areas (meadow, forest, arable land etc.), 0.4 species (6.6%) occurred both in coherent areas and verges and 4.2 species (74.9%) occurred only in verges. In the Csanádi-hát considering the number of habitats and the size of populations 90-100% of the protected plant species *Adonis vernalis*, *Ajuga laxmannii*, *Anchusa barrelieri*, *Clematis integrifolia*, *Inula germanica*, *Oxytropis pilosa*, *Prunus tenella*, *Silene bupleuroides* and the *Vinca herbacea* were found in the verges. Further species *Carduus hamulosus*, *Linaria biebersteinii*, *Ornithogalum brevistylum*, *Phlomis tuberosa*, *Sternbergia colchiciflora* etc. have also significant populations in roadsides and boundaries. At present, the verges are in general not protected. In Csanádi-hát in each mapping unit of the flora mapping system 71,0% of the protected plant species was found in unprotected verges only.



Ajuga laxmannii



Sternbergia colchiciflora



Vinca herbacea

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Phlomis tuberosa is a typical species of the primary verges of the Great Hungarian Plain.



A large number of *Anchusa barrelieri* in roadside.