

How can Swiss Regional Nature Parks improve the functionality of the ecological infrastructure? Pilot-scheme in two Nature Parks in the Canton of Berne

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Keywords

target species, target habitat, ecological infrastructure, connectivity, nature park

Introduction

In Switzerland, the term 'ecological infrastructure' has been anchored in the National Biodiversity Strategy and its Action Plans (SCHWEIZERISCHE EIDGENOSSENSCHAFT 2012). The implementation of the ecological infrastructure did only just begin with pilot-schemes such as the one presented here.

The government (Federal Office for the Environment, FOEN) assigned the Regional Nature Parks the role of pioneers for the establishment of ecological infrastructure. In the Parks, the government finances pilot-schemes to develop appropriate methods and analysis in 2016 / 2017, which can be implemented from 2018 onwards. Already now it is apparent, that the open framework conditions by The Federal Office for the Environment allowed the cantons and parks to develop a variety of projects with different means to reach their goals.

The Regional Nature Parks of Switzerland arise from regional initiatives. Even so the substantial participation of the affected communes in the sponsorship of the park is prerequisite. The operative aspects as well as the quality assurance of the park are regulated by a charter. Regional Nature Parks are of national importance as they feature high nature and landscape values. As the parks usually encompass whole communities, also less valuable areas can be found within its boundaries.

The following chapters present a possible approach and first results using the example of two Regional Nature Parks in the canton of Berne.

Methods

The base of the following work was formed by the collection of all existing knowledge and data available to the different participants of the project. The results of this step were more than 90 data layers such as:

- national and cantonal inventories and data on occurrence of habitats and species
- spacial planning (development concepts, protected landscapes,...)
- protected areas (forest reserves, game reserves, conservation areas, ...)
- surfaces of high quality within the agricultural land (land set aside for biodiversity)

The concept of target species and habitats was used as the basis for the choice of actions. All species and habitats of national priority were evaluated according to their importance within the park boundaries. The experts assigned the park specific responsibility for a certain species or habitat, if their occurrence in the park was remarkably higher than in other regions of the country. The result of the subsequent dialog with the park institutions was a list of target species and habitats. The working hypothesis postulated, that the role of the ecological infrastructure should not only be to provide overall habitat connectivity, but most of all to maintain and promote these target species and habitats.

The packages of measures developed by the experts based on the ecological requirements of the target species and habitats. In close collaboration with the park officials a plan of action is developed incorporating all evaluation criteria such as different players in the park and priorities.

Results

Ecological infrastructure on the level of landscape

The assessment of the current state shows a high density of potentially valuable areas. Not all of them, however, do yet have the required quality and long-term protection. The comparison of areas with long-term legal protection with areas of high quality or potential show, there is great scope for future actions and optimisations.

Among the areas with long-term protection are forest reserves, legally protected objects of federal inventories or protected nature reserves. The areas of potential for ecological infrastructure are more variable, amongst them are areas set aside for biodiversity on the agricultural land, watercourse corridors or forest edges with high potential for special habitats.

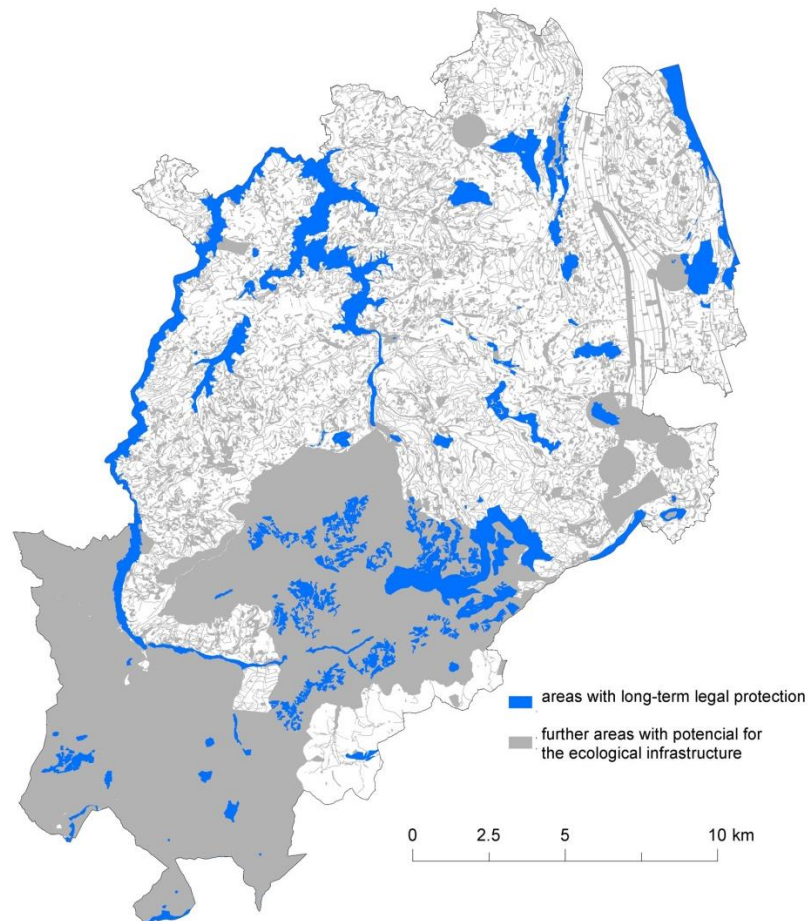


Figure 1: Areas with long-term protection and further areas with potential for the ecological infrastructure in the Regional Nature Park Gantersch.

Through the geographical position of the Regional Nature Parks Diemtigtal and Gantersch at the periphery of the intensively used land, they show an overall rather good habitat connectivity. Extensive actions are therefore not necessary. Nevertheless, a few deficits in the following fields on the level of landscape were located:

- Revitalisation of watercourses
- Amelioration of the edges of settled areas (improvement of permeability)
- Habitat connectivity in a intensively cultivated plane (the plane of Gürbe)

Target species and habitats

| target species | | | | National Priority | Red List |
|----------------|--|-----------------------|--|-------------------|----------|
| Lichens | <i>Lobaria pulmonaria</i> | lung lichen | Echte Lungenflechte | 4 | VU |
| Bats | <i>Rhinolophus hipposideros</i> | lesser horseshoe bat | Kleine Hufeisennase | 1 | En |
| Bats | <i>Myotis mystacinus</i> | whiskered bat | Bartfledermaus | 4 | LC |
| Bats | <i>Plecotus auritus</i> | brown long-eared bat | Braunes Langohr | 3 | VU |
| Plants | <i>Crepis praemorsa</i> | Leafless Hawk's-beard | Trauben-Pippau | 4 | VU |
| Plants | <i>Rosa chamvini</i> , <i>Rosa elliptica</i> , <i>Rosa sherardii</i> | "rare wild roses" | Chavins Rose, Duft-Rose, Sherards Rose | 3 | VU |
| Moss | <i>Cephalozia varians</i> | a liverwort | Arktisches Kleinkopfsprossmoos | 4 | VU |
| Reptiles | <i>Vipera aspis</i> , <i>Vipera berus</i> , <i>Coronella austriaca</i> | | Aspiviper, Kreuzotter, Schlingnatter | 2 | CR |
| Birds | <i>Bonasa bonasia</i> | hazel grouse | Haselhuhn | 1 | NT |

| target habitats | | | | National Priority | Red List |
|--|---|-------------|---|-------------------|----------|
| Quellen | Cratoneurion, Cardamino-Montion | | | 1 | CR |
| Mires and Peatlands | Caricion fuscae, Caricion fuscae, Calthion, Sphagnion | | | 3 | EN |
| mesophile calcareous grasslands (low altitude) | | Mesobromion | | 3 | VU |
| nutrient-poor mountain grasslands | grasslands of blue sesteria | | Seslerion | 4 | NT |
| | grasslands of rusty sedge | | Caricion ferrugineae | 3 | NT |
| | mat-grass pastures rich ... | | Nardion (only artenreich) | - | LC |
| woodlands | Alluvial forests with <i>Alnus incana</i> | | <i>Alnion incanae</i> | 2 | VU |
| | Boreal bog conifer woodlands | | Ledo-Pinion | 2 | VU |
| | Subalpine and montane <i>Pinus uncinata</i> forests with Swiss stone pine | | Erico-Pinion uncinatae with <i>Pinus cembra</i> | 4 | LC |
| Sycamore-pastures | | | | - | - |

Table 1: target species and habitats for the Regional Nature Park Diemtigtal

Legend: National Priority (BAFU 2011, BAFU 2017b): 1 very high, 2 high, 3 medium, 4 moderate

Red List (BAFU 2011, DELARZE et al 2016): CR Critically Endangered, EN Endangered, VU Vulnerable, 4/NT Near Threatened, LC Least Concern

Where more than one species/habitat are summarized, the highest priority/status in the red list is listed.

Rare wild roses as an example for promotion and exploitation

The data basis of Info Flora (www.infoflora.ch) contained remarkable occurrences of a single wild rose of National Priority. In collaboration with the botanical gardens of Bern, volunteers have thus scanned potential areas for further occurrences of rare wild roses over the course of two field seasons. They found new sites as well as not yet registered species for this area. This enabled the experts to draw a spatial map of dimensions in terms of ecological infrastructure for this species:

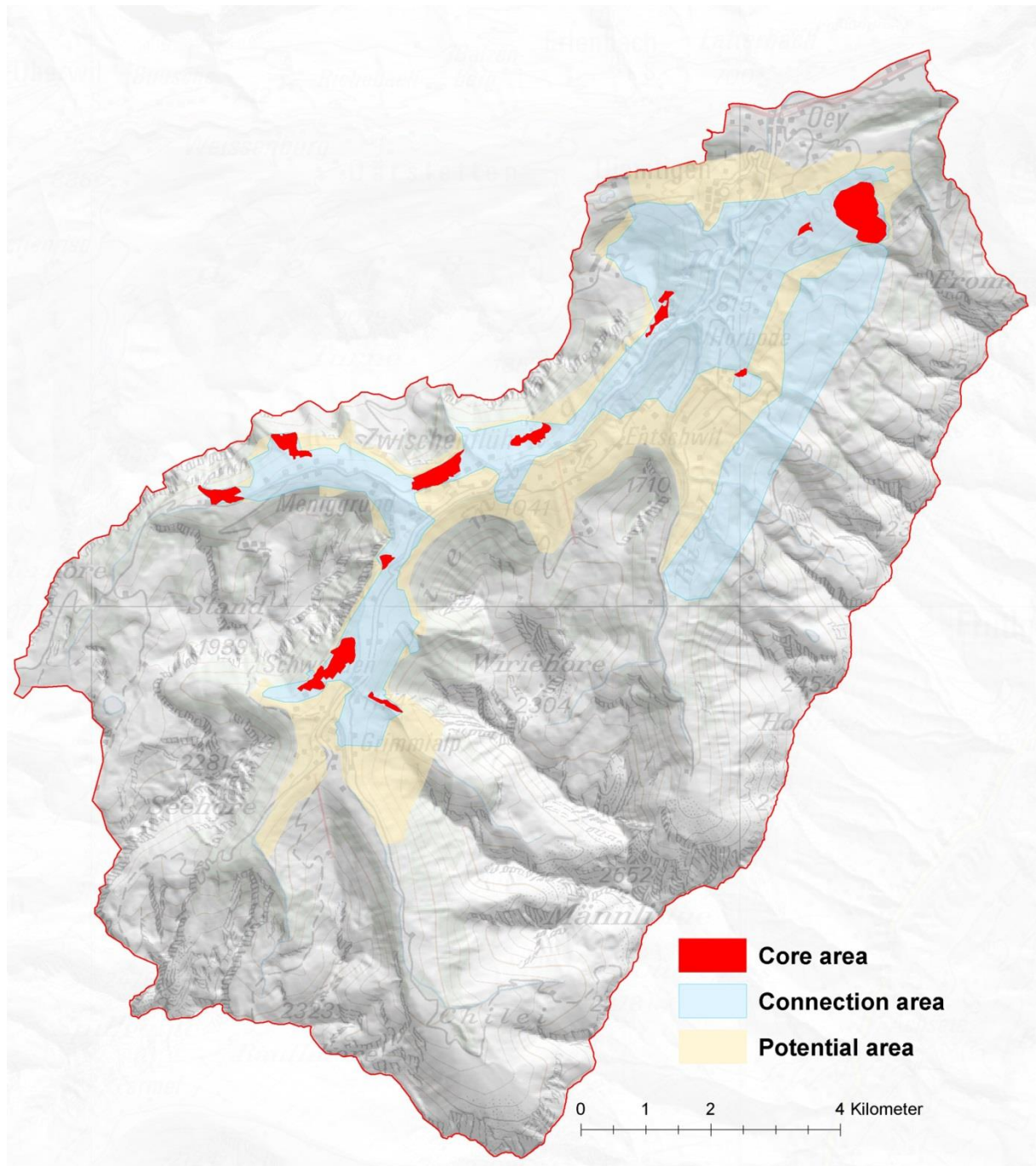


Figure 2: Wild roses in the Dientigtal – a remarkable element of ecological infrastructure in this park.

The rose was made to an emblematic element for this park through a campaign including leaflets for park visitors and farmers. The park officials supported the farmers with work efforts to ensure the protection of wild roses through careful management of extensively farmed pastures. In parallel, a marketing opportunity was found for the exploitation of the rosehip. On a 'rosehip day' in autumn, everyone in the park can let their collected rosehips be cored with a special machine. Thus the regionally produced rosehip jam finds good sales.



Figure 3: a: wild roses in an extensively farmed pasture; b: removal of shrubs by volunteers; c: processing of rosehips

Wild roses serve as mediator to bring the value of structural elements in extensively farmed pastures back into focus. With the adequate quality and quantity of these elements in pastures many other species can be promoted. This successful experience, however, cannot be transferred to many other target species, of whom much less is known. Also, the possibility to gain added value through products is probably an exception.

Conclusions

Regional Parks are welcome partners in the network of actors that care for nature values and their conservation. Through their close relationships with land managers and communes, they can provide the important connection between official agencies and people directly affected. The previous experiences are promising, particularly when the promotion of species and habitats can be linked with added economic value for the region. The establishment of ecological infrastructure is a chance as well as a challenge for parks to widen their spectrum of activities.

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