

Operationalization of the Wilderness Targets of the German National Strategy on Biological Diversity

Albert Reif

Abstract—The German government's National Strategy on Biological Diversity (NSBD) aims at protecting its biodiversity in a broad sense. The NSBD calls for 5% of Germany's forest land area to be permanently set aside for natural forest protection, i.e., natural processes taking place, and as a second target, for 2% of Germany's land area to become "wilderness areas," where the land is left to develop without human interventions.

Introduction

The German government's National Strategy on Biological Diversity (NSBD) aims at protecting its biodiversity in a broad sense. Integrated approaches are combined with two complementary targets: The NSBD calls for 5% of Germany's forest land area to be permanently set aside for natural forest protection, i.e., natural processes taking place, and as a second target, for 2% of Germany's land area to become "wilderness areas," where the land is left to develop without human interventions. Both targets provide the frame conditions for areas with permanent protection of completely natural processes, i.e. without physical human impacts, where undisturbed successions and dynamics take place. The area covered by these two concepts is overlapping by definition.

The NSBD should be implemented so that it can be completed by 2020. Due to this strategy, two "research and development projects" were launched by the Federal Agency for Nature Conservation, "Natural forest protection (5%)" and "Implementation of the 2% wilderness-goal". Forest areas with natural protection (FAND) are by definition areas without direct human impacts, where undisturbed successions and dynamics take place (Meyer et al. 2007). This also implies permanent cessation of forestry and absence of other management measures. Wilderness areas (WA) have to be

"sufficiently" large, unfragmented, and have no exploitation of natural resources, or human interventions. Wilderness restoration areas (WRA) have been heavily modified by human activities and are at present under conversion to more natural conditions, and will become WA in the near future.

Common Characteristics

Common characteristics of the two concepts are

- protection and development of biodiversity in a broad and undetermined sense;
- protection of undisturbed natural processes will be guaranteed permanently by law, regulations, contract, testament;
- absence of all physical uses; recreation and research may be permitted.

For certain cases, an initial introduction of large grazers may occur, replacing the extinct "megaherbivores".

Differences

Despite WA and FAND having many similarities some differences are pronounced (table 1). WA tend to be larger in size and cover all types of natural ecosystems, whereas FAND areas are confined to forest habitats and can also be very small (table 1).

Nature Conservation Criteria

The core criterion in terms of nature conservation for FAND as well as for WA/WRA is the dominance of natural processes in absence of physical use and interventions by humans as the long-term final objective of both categories (table 2). Besides the protection of natural processes, other criteria contribute to the value of single areas and/or the area system.

(1) Size, representing the completeness of processes, states, and species composition.

FAND have at least as minimum standard to be localized, which implies a minimum size of 0.3 hectare. With increasing size, the value of FAND for nature conservation increases.

Size criteria for wilderness areas in a densely populated country like Germany have to take into account the limited availability of large unfragmented areas but also have to be chosen to allow for ecosystem specific natural processes.

Dr. Albert Reif is Chair of Vegetation Science, Faculty of Environment and Natural Resources, Albert-Ludwigs-University, Tennenbacher Str. 4, D-79085 Freiburg, Germany. E-Mail: albert.reif@waldbau.uni-freiburg.de

In: Watson, Alan; Carver, Stephen; Krenova, Zdenka; McBride, Brooke, comps. 2015. Science and stewardship to protect and sustain wilderness values: Tenth World Wilderness Congress symposium; 2013, 4-10 October; Salamanca, Spain. Proceedings RMRS-P-74. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 208 p.

Therefore a minimum size for wilderness areas in Germany of approximately 1000 ha has been proposed for ecosystems like forests and (sub-)alpine areas and approximately 500 ha for azonal ecosystems like mires and alluvial areas.

(2) Habitat continuity

The value of FAND increases with increasing age of the locality bearing forest (Glaser and Hauke 2004) and with increasing average age of the trees of the stand. For wilderness restoration areas, habitat continuity will not be applied.

(3) Rareness and endangerment.

Strictly protected forest areas have a higher value if they harbour rare and/or endangered forest vegetation types (Rennwald 2000) of the potential natural vegetation (Suck and Bushard 2011), and are composed of a near-natural tree species composition. It is assumed, that rare forest types can act as “surrogates” for extreme site conditions also in future, e.g., after environmental (and vegetation) change. The criterion is applied for the whole reserve system on the national scale, and for seven terrestrial biogeographical regions within Germany.

For wilderness areas, rarity is included when aiming on protecting natural processes which largely or completely were eliminated from cultural landscapes, including in alluvial areas, avalanche screes, eroding slopes, or when permitting natural fires.

(4) Connectivity and absence of fragmentation

For large-sized WA, connectivity was not applied. In FAND reserve systems, small reserves lack completeness, but they provide connectivity for certain species and processes, e.g., migration of species.

(5) Representativeness

Representativeness is another important criterion for FAND: Reserve systems should contain all types of forest habitats / ecosystems in a balanced way (Pressey et al. 1993, Branquart et al. 2008).

Tools and Methods

The methods applied for the two land classifications are different. The FAND-project compiles all existing areas under strict protection (> 0,3 ha), using the information provided by the forest owners. The WA-project aims at selecting potential WA and WRA in Germany using GIS-shapes of unfragmented areas (Hänel 2007) and other thematic maps.

Both projects apply the nature conservation criteria mentioned above. Tools are GIS-shapes of maps of the potential natural vegetation; a digital terrain model, providing information on elevation and topography; geological map of Germany that provides information on the susceptibility of the bedrock to erosion, a map of existing strictly protected forest reserves and core areas of National Parks, and others. The compilation will involve the overlay of thematic maps, combining polygons with the specific criteria mentioned above.

Table 1—Differences in function and habitat types in relation to the concepts of “wilderness areas”/“wilderness restoration areas” and “Forest areas with natural development” in Germany

	Wilderness areas	Forest areas with natural forest development
Function	Protection of natural processes on ecosystem level including large natural disturbances, offering habitat to species which require large areas undisturbed by humans	Clear emphasis on protection of natural processes, , strict exclusion of physical utilization
Habitat type	To a large extent natural areas (WA) or sites modified by humans (WRA: former military areas, mining areas, embanked rivers), where succession towards natural states can take place or where natural processes can be induced. Habitat types: (prospective) forests, subalpine and alpine habitats, mires and swamps, alluvial areas, coastal areas.)	Areas with forest or the site potential to develop forest, where succession takes place or can be foreseen (e.g., areas which will be released from physical use by 2020)

Table 2—Criteria of nature conservation in relation to the targets of “wilderness areas”/“wilderness restoration areas” and “Areas with natural forest protection” in Germany.

	Wilderness areas	Areas with natural forest development
Size	>1000 ha for zonal vegetation types, and >500 ha for areas selected because of azonal vegetation (sensu NSBD), to protect processes and species depending from large-scaled disturbances, dynamics, and populations of human-fleeing animals.	≥0,3 ha (limit of localization).
Habitat continuity	(not applied for WRAs)	- Time period of bearing forest, stand age, threshold 200 years - Age of stand
Rareness and endangerment	Rare natural dynamic processes are protected	Rare/endangered forest vegetation types of the potential natural vegetation increase the value of FAND reserve systems
Fragmentation and connectivity	Absence of fragmentation within WA	Also small areas are included, they can act as stepstones for dispersal-limited species, e.g., of deadwood dwellers
Representativeness	Germany in total and its ecoregions	Germany in total and its ecoregions

Bibliography

- Branquart, E., Verheyen, K., Latham, J., 2008. Selection criteria of protected forest areas in Europe: The theory and the real world. *Biological Conservation* 141, 2795–2806
- Glaser, F.F., und U. Hauke. 2004. Historisch alte Waldstandorte und Hudewälder in Deutschland. Bd. 61. BfN. Münster-Hiltrup: LV Druck im Landwirtschaftsverlag
- EUROPARC Deutschland 2010: Richtlinien für die Anwendung der IUCN-Managementkategorien für Schutzgebiete. Deutsche Übersetzung von: Dudley, N. (Editor) (2008) Guidelines for Applying Protected Area Management. Berlin: EUROPARC Deutschland e.V.
- Hänel, K. (2007): Methodische Grundlagen zur Bewahrung und Wiederherstellung großräumig funktionsfähiger ökologischer Beziehungen in der räumlichen Umweltplanung - Lebensraumnetzwerke für Deutschland. Dissertation, Universität Kassel, Fachbereich 06 - Architektur, Stadtplanung, Landschaftsplanung, URN: <http://nbn-resolving.org/urn/resolver.pl?urn=nbn:de:hebis:34-2007121319883>
- Pressey, R., Humphries, C., Margules, C., Vanewright, R., Williams, P., 1993. Beyond opportunism: Key principles for systematic reserve selection. *Trends in Ecology and Evolution* 8, 124–128.
- Rennwald, E. 2000. Verzeichnis und Rote Listen der Pflanzengesellschaften Deutschlands. Schriftenreihe für Vegetationskunde Heft 35. Bonn-Bad Godesberg: LV Druck im Landwirtschaftsverlag.
- Wild Europe 2012: A Working Definition of European Wilderness and Wild Areas [Online]. Verfügbar unter: <http://www.panparks.org/sites/default/files/docs/iyw/Definition-of-wilderness-for-Europe.pdf> [Zugegriffen 17. September 2012].