












Environmental protection indicator ENV (EUSALP)

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Summary Measure of ecological integrity.

Protected areas are classified based on their legal protection status. The classification ranges from 0 (no protection) to 10 (strict conservation status; no economic use). It is one of the indicators belonging to the continuum suitability indices CSI (consisting of LAN, POP, FRA, TOP and ENV).

Legend

	10		6		2
	9		5		1
	8		4		0
	7		3		

1 Introduction

Environmentally protected areas express a positive contribution to ecological integrity. Protected areas vary in their legal protection status (how much and what management is allowed), but also in their goals. With regard to worldwide biodiversity loss (Pimm et al., 2014), not only the management, but also the size of the protected area is important. With the environmental protection indicator, an attempt is made to evaluate environmentally protected areas with regard to ecological connectivity.

2 Data

The World Database on Protected Areas WDPA (UNEP-WPMC, 2017) contains all protected areas listed by the European Environment Agency including the nationally designated areas (CDDA) and the Natura 2000 sites. The dataset is updated every month. As the composition of datasets varies among countries, it has been complemented with national and regional datasets. The complete list is provided in Table 1.

Table 1: Overview on protected area datasets

Dataset	Country / region	Year (created)	Year (updated)	Source
Protected areas	SI		2017	Slovenian Environmental Agency
Forests reserves	SI		2015	Slovenian Forest Service
Protected area - zonation	SI		2017	Slovenian Environmental Agency
Protective forests	SI		2015	Slovenian Forest Service
Natura2000 Slovenia	SI		2017	Slovenian Environmental Agency
Ecological important areas	SI		2017	Slovenian Environmental Agency
Natura2000	EU		2016	European Environment Agency
National list of protected areas (EUAP)	IT	2010		Ministero dell'Ambiente e della Tutela del Territorio e del Mare
Naturparke	Bayern		2015	Bayerisches Landesamt für Umwelt
Bioshärenreservate	Bayern		2014	Bayerisches Landesamt für Umwelt
Naturparks	Baden-Württemberg		2017	Landesamt für Geoinformation und Landentwicklung Baden-Württemberg

Dataset	Country / region	Year (created)	Year (updated)	Source
Biosphäreengebiete	Baden-Württemberg		2017	Landesamt für Geoinformation und Landentwicklung Baden-Württemberg
Biotopkartierung	Bayern		2017	Bayerisches Landesamt für Umwelt
Biotopkartierung	Baden-Württemberg		2017	Landesanstalt für Umwelt Baden-Württemberg
Naturdenkmal	Bayern			Bayerisches Landesamt für Umwelt
Naturdenkmal	Baden-Württemberg			Landesanstalt für Umwelt Baden-Württemberg
Geschützte Landschaftsbestandteile	Bayern			Bayerisches Landesamt für Umwelt
Moorkarte	Baden-Württemberg		2017	Landesanstalt für Umwelt Baden-Württemberg
Naturwaldreservate	Bayern			Bayerisches Landesamt für Umwelt
Trittsteine Netzwerk Naturwald	Oberösterreich / Steiermark		2017	Nationalpark Kalkalpen
Regionale Naturpärke	CH		2017	Netzwerk Schweizer Pärke
Naturerlebnispärke	CH		2017	Netzwerk Schweizer Pärke
Pro Natura Schutzgebiete	CH		2017	Pro Natura
Landschaften und Naturdenkmäler von nationaler Bedeutung (BLN)	CH		2017	Bundesamt für Umwelt Schweiz
Moorlandschaften von nationaler Bedeutung	CH		2017	Bundesamt für Umwelt Schweiz
Biosphere reservation	CH		2017	Bundesamt für Umwelt Schweiz

3 Methods

Directly comparing the management of individual protected areas with regard to ecological connectivity is not feasible, and criteria are subjective up to a certain point. For these reasons, a general classification scheme based on the legal protection status of protected areas has been developed (see Table 2).

Table 2: General classification scheme based on legal protection status

Legal protection status	Indicator value (0-10)
Strict conservation status, no economic use	10
Protected areas with strictly regulated economic use	9
Protected areas with legal restraints	6-7
Protected area where the management serves the sustainable development of natural ecosystems	5
Protected areas without legal restraints	5
No protection	0

The protected area categories of each country were then assigned to the different categories according to their legal protection status by national/regional experts. The resulting classifications are listed in Table 3.

After transformation and preparation of all datasets, they were assigned to classified feature classes and converted to raster datasets. Areas included in more than one category were assigned the value of the protected area category with the highest indicator value.

Table 3: Classification scheme per country

	Protected area category	Indicator value (0-10)
Austria	Nationalparks (Kernzone, Sonderschutzzone)	9
	Europaschutzgebiete (Natura 2000)	6
	Naturschutzgebiete (IUCN Cat. IV)	7
	Naturschutzgebiete (IUCN Cat. Ia)	10
	Landschaftsschutzgebiete	5
	Natur- und Landschaftsschutzgebiete	5
	Naturparke	5
	Geschützte Landschaftsteile (IUCN Cat. III)	6
	Geschützte Landschaftsteile (IUCN Cat. IV)	7
	Geschützte Landschaftsteile (IUCN Cat. V)	5
	Biosphärenparks	5
	Ramsargebiete	5
	Pflanzenschutzgebiet (IUCN Cat. IV)	7
	Pflanzenschutzgebiet (IUCN Cat. V)	5
	Ruhegebiet	7
	Örtliche Schutzgebiete	5
	Sonderschutzgebiet (IUCN Cat. Ib)	10
	Sonderschutzgebiet (IUCN Cat. IV)	7
	Naturdenkmal (IUCN Cat. III)	6
	Naturdenkmal (IUCN Cat. Ib)	10
	Naturdenkmal (IUCN Cat. IV)	7
	Schutzgebiet nach Ortsbildgesetz	5
	Geschützte Naturgebilde von örtlicher Bedeutung	6
	Geschützter Lebensraum	7
	Geschützte Biotope	6
	Ökologische Entwicklungsfläche	7
Trittsteine (Netzwerk Naturwald)	9	
Wildnisgebiet	10	
Urwaldflächen	10	
France	Arrête de protection de biotope	7
	Parc national, Buffer zone /adhesion zone	5
	Parc national, core area	9
	Parc naturel régional	5
	Ramsar Site	5
	Réserve biologique (IUCN Cat. IV)	7
	Réserve biologique (IUCN Cat. Ia)	10
	Réserve intégrale de parc national	10
	Réserve nationale de chasse et de faune sauvage	6
	Réserve naturelle nationale	7
	Natura 2000 (habitat & birds)	6

	Protected area category	Indicator value (0-10)
	Specially Protected Areas of Mediterranean Importance (Barcelona convention)	5
	Terrain acquis par le Conservation du Littoral	7
	Terrain acquis par un conservation d'espaces naturels	7
	UNESCO MAB Biosphere Reserve	5
	Réserve naturelle régionale	7
Germany	Bayern: Naturwaldreservat	10
	Nationalpark (Kernzone)	9
	Naturschutzgebiet	7
	Ba-Wü: Waldschutzgebiet	7
	Gesetzlich geschützte Biotope (Biotopkartierung, Moorkarte)	6
	Natura 2000 (Habitat & Bird)	6
	Biosphärenreservat	6
	Landschaftsschutzgebiet	5
	Naturpark	5
	Naturdenkmal	5
	Geschützte Landschaftsbestandteile (Bayern)	5
Italy	Other Protected Natural Regional Areas (Monumento naturale) (IUCN Cat. III)	5
	Other Protected Natural Regional Areas (Monumento naturale) (IUCN Cat. V)	6
	Other Protected Natural Regional Areas (Monumento naturale) (IUCN Cat. IV)	7
	Int. significance Natural Marine Area	7
	Regional/Provincial Nature Park (IUCN Cat. V)	6
	Regional/Provincial Nature Park (IUCN Cat. IV)	7
	National Park	9
	Ramsar Site	7
	Natural Marine Reserve and Natural Protected Marine Area	7
	Regional/Provincial Nature Reserve (IUCN Cat. IV)	7
	Regional/Provincial Nature Reserve (IUCN Cat. Ia)	10
	Regional/Provincial Nature Reserve (IUCN Cat. V)	6
	State Nature Reserve (IUCN Cat. Ia)	10
	State Nature Reserve (IUCN Cat. IV)	7
	Natura 2000 (Habitat & Bird)	7
Specially Protected Areas of Mediterranean Importance (Barcelona Convention)	8	
	World Heritage Site	6
Liechtenstein	Pflanzenschutzgebiet	5
	Naturschutzgebiet	10
	Ramsar Site	10
	Sonderwaldflächen	7
	Waldreservat	10
	Landschaftsschutzgebiet	5
Slovenia	Nature reserve, strict nature reserve, natural monument	10
	Forest reserves (category I)	10
	Triglav National Park zone 1, Triglav National Park zone 2	9
	Forest reserves (category II)	9
	Regional park	7
	Landscape park	7
	Triglav National Park zone 3	7

	Protected area category	Indicator value (0-10)
	Protective forests	7
	Natura 2000	6
	Ecological important areas	5
Switzerland	Ramsar	5
	World Heritage Site	5
	Schweizerischer Nationalpark	10
	Bundesinventar der eidg. Jagdbanngebiete	7
	Bundesinventar der Wasser- und Zugvogelreserv.	7
	Bundesinventar der Auengebiete	7
	Bundesinventar der Hoch- und Übergangsmoore	10
	Bundesinventar der Flachmoore	7
	Bundesinventar der Amphibienlaichgebiete	7
	Bundesinventar der Trockenwiesen und -weiden	7
	Smaragd-Gebiete	7
	Regionale Naturpärke	5
	Naturerlebnispärke	9
	Pro Natura Schutzgebiete	7
	Landschaften und Naturdenkmäler von nationaler Bedeutung (BLN)	5
	Moorlandschaften von nationaler Bedeutung	5
	Biosphere reservation	5

4 References

- Pimm, S. L., Jenkins, C. N., Abell, R., Brooks, T. M., Gittleman, J. L., Joppa, L. N., Raven, P. H., Roberts, C. M., Sexton, J. O., 2014, The biodiversity of species and their rates of extinction, distribution, and protection, *Science* **344**(6187).
- UNEP-WPMC, 2017, The World Database on Protected Areas (WDPA)