

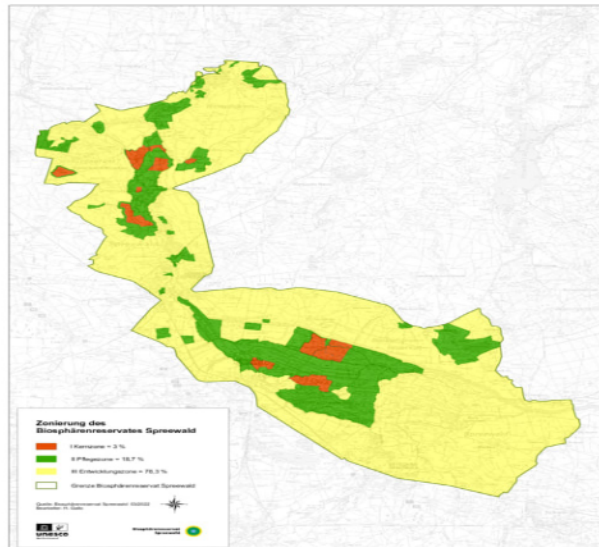
Modeling the taxonomic richness of amphibian and reptile communities in Spreewald Biosphere Reserve ecosystem groups

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Introduction



Spreewald Biosphere Reserve, founded in 1990 and recognized by UNESCO in 1991, is part of a worldwide network of 748 biosphere reserves. With the help of research data on amphibians and reptiles from the in-house scientific funds of the Spreewald Biosphere Reserve, in particular "Die Arbeit der Naturwacht im Biosphärenreservat Spreewald 2023. Im Einsatz für Mensch und Natur" and "Die Arbeit der Naturwacht im Biosphärenreservat Spreewald 2022. Im Einsatz für Mensch und Natur" we were able to assess the taxonomic diversity and similarity of groups of amphibians and reptiles

In accordance with the UNESCO program "Man and the Biosphere" (MAB), the activities of the Spreewald Biosphere Reserve are aimed at the sustainable development and protection of historically formed cultural landscapes. In the biosphere reserve, sustainable development is realized in the following vectors - from the production and marketing of certified regional products, the use of renewable energy sources to the preservation and restoration of particularly valuable habitats.

Ecosystem Group Spreewald Biosphere Reserve

Table 1. Taxonomic composition of amphibians and reptiles

Species of amphibians	Ecosystem Group					
	Forests	Wet meadows	Dry meadows (fields, cultivated areas)	Open areas (in settlements), special biotopes, built-up areas	Small water bodies (lakes, ponds, stagnant water bodies, swamps)	River banks and valleys of their tributaries
<i>Lissotriton vulgaris</i>	–	–	–	–	+++	–
<i>Triturus cristatus</i> ¹	+ ^w	–	–	+ ^w	++	+
<i>Hyla arborea</i> ¹	+	++	–	+	–	+
<i>Bombina bombina</i> ¹	+ ^w	+	–	–	+	+
<i>Bufo viridis</i> ¹	–	+	++	–	–	–
<i>Bufo bufo</i> ⁺⁺⁺	+	++	+++	+	–	–
<i>Epidalea calamita</i>	–	+	–	+	++	–
<i>Pelobates fuscus</i> ¹	–	–	+	–	–	–
<i>Rana temporaria</i>	+	+	–	+	+	+
<i>Rana arvalis</i> ¹	++	++	–	–	+	+
<i>Pelophylax esculentus</i> ⁺⁺⁺	+ ^w	–	–	–	+++	++
<i>Rana lessonae</i>	–	–	–	–	++	+
<i>Rana dalmatina</i>	+	+	+	+	+	–
A total of amphibian species	8	8	4	6	9	7
Species of reptiles						
<i>Anguis fragilis</i>	+	+	+	+	–	++
<i>Lacerta agilis</i> ¹	+	++	+++	++	–	+
<i>Zootoca vivipara</i> ¹	+	+	–	–	–	+
<i>Natrix natrix</i> [*]	+	+	+	+	+	+
<i>Coronella austriaca</i> [*]	+	–	–	+	–	–
A total of reptile species	5	4	3	4	1	4

Source: developed by the author based on data *Jahresbericht_Textteil_SW_23*

Notations:

* – the species under threat of extinction

+++ – the most widespread species

+^w – the species was noted during the wintering season

¹ – the species is protected by the Federal Law on Nature Protection and the European Habitat Directive (Fauna-Flora-Habitat Directive, Appendix II and IV)

The table uses point estimates of the relative number of species: + – the species is rare (it is usually registered only during individual excursions and surveys); ++ – ordinary species (registered regularly, during each excursion and registration); +++ – numerical species (characteristic for the group and registered during each accounting)

Photo from the Archives of the Spreewald Biosphere Reserve

Forests



Wet meadows



Small water bodies



Open areas



Dry meadows



River banks



Assessment of the taxonomic richness and diversity of amphibians and reptiles (index Shannon) communities of the Spreewald Biosphere Reserve

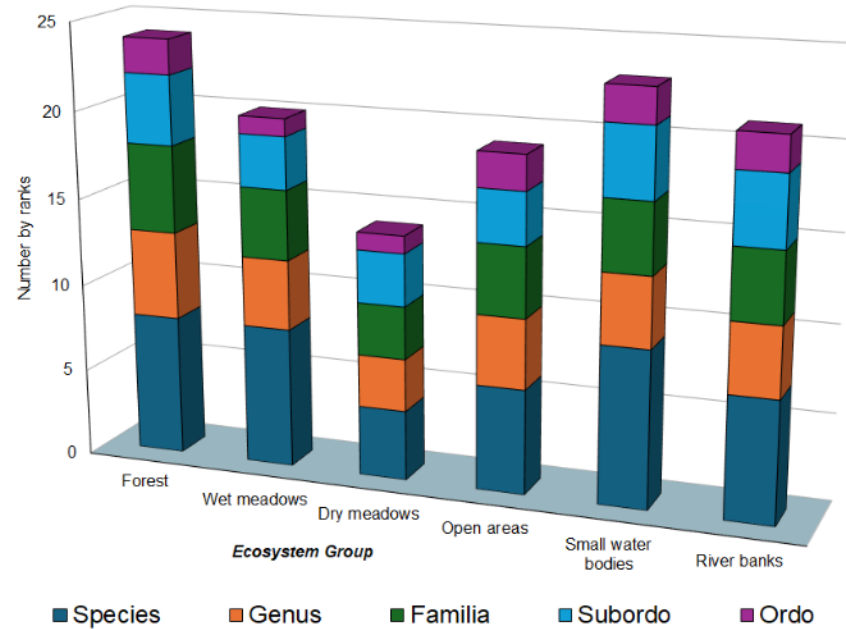


Fig. 1 Diagram of the number of taxa (amphibian) by Ecosystem Group Spreewald Biosphere Reserve

Ecosystem Group	(H')
Forest	1,35
Wet meadows	1,45
Dry meadows (fields, cultivated areas)	1,54
Open areas (in settlements), special biotopes, built-up areas	1,55
Small water bodies (lakes, ponds, stagnant water bodies, swamps)	1,49
River banks and valleys of their tributaries	1,56

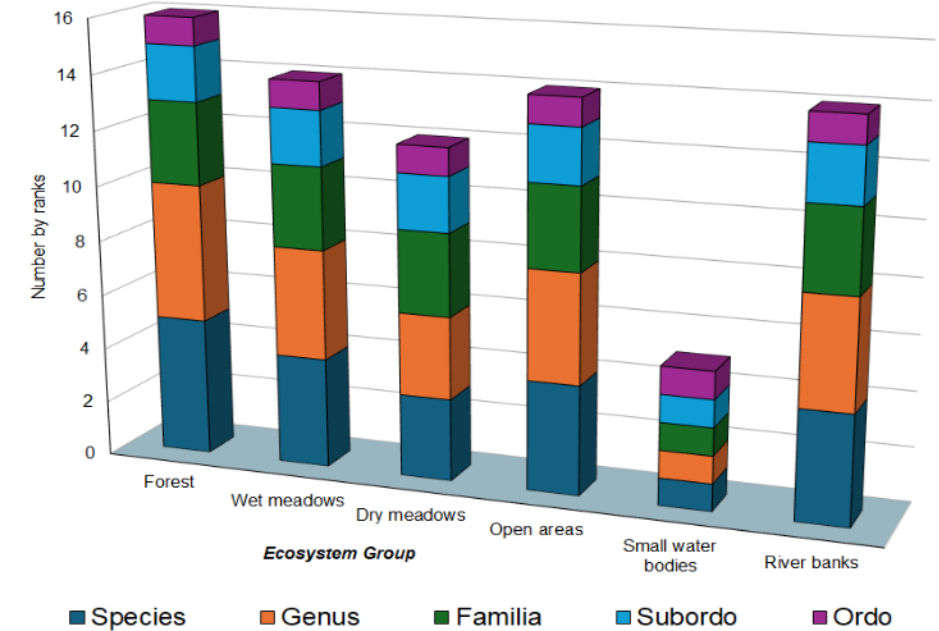
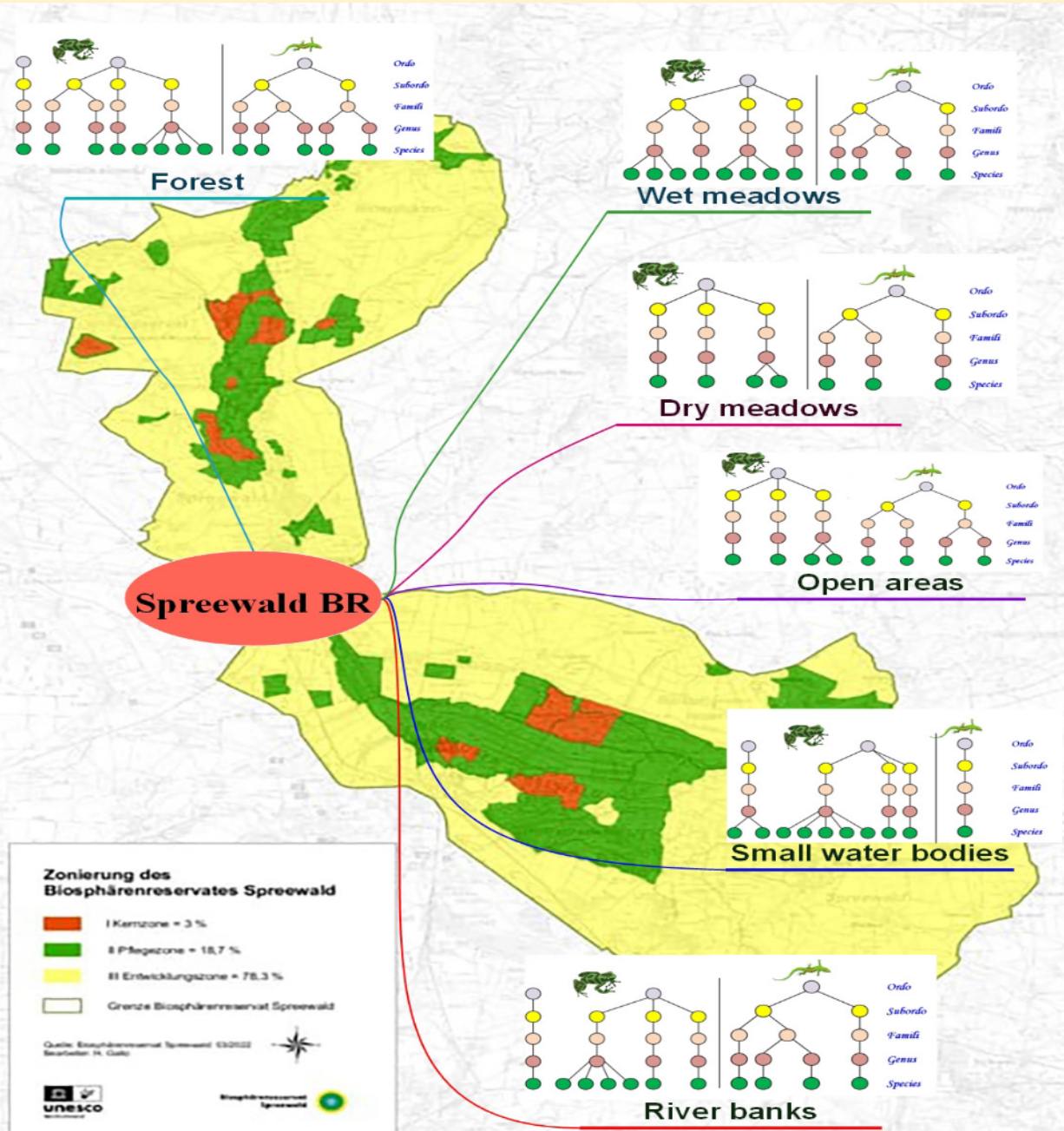


Fig.2 Diagram of the number of taxa (reptile) by Ecosystem Group Spreewald Biosphere Reserve

Ecosystem Group	(H')
Forest	1,48
Wet meadows	1,52
Dry meadows (fields, cultivated areas)	1,55
Open areas (in settlements), special biotopes, built-up areas	1,52
Small water bodies (lakes, ponds, stagnant water bodies, swamps)	1,60
River banks and valleys of their tributaries	1,52

Taxonomic composition amphibians and reptiles Spreewald Biosphere Reserve



Thus, 5 species of reptiles belonging to the row *Squamata* and 3 families and 5 genres and 13 species of amphibians belonging to 2 rows, 6 families and 6 genres were found on the territory of the Spreewald Biosphere Reserve. Taxonomic biodiversity for groups of amphibians and reptiles shows the stability and sustainable development of the ecosystem groups of the Spreewald Biosphere Reserve, which are home to amphibians and reptiles. According to the state and structure of amphibian and reptile groups, no significant differences were registered between disturbed and undisturbed ecosystem groups located in different functional zones of the Spreewald Biosphere Reserve. The constant free movement of amphibians and reptiles between ecosystem groups located in different functional zones of the Spreewald Biosphere Reserve. indicates the safe conditions created by the reserve's workers for the preservation and restoration of amphibian and reptile communities. Thus, the reserves are model sites for the sustainable development of territories for the preservation and restoration of diversity in the territories of nature protected areas and territories partially used by humans.

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