

BIODIVERSITY IN SLOVENIA

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Slovenia occupies less than 0.004% of the entire world's surface and 0.014% of its land. Its numeric share of the world's population is slightly higher. However, Slovenia is also home to more than one percent of all known species of living beings on earth and more than 2% of continental (land and freshwater) species. This means that every hundredth known species of all current living beings or every fiftieth known continental species lives in Slovenia. Such a high number ranks Slovenia among the naturally richest areas of Europe and even the world (Mršič 1997, p. 9). This richness is the consequence of the contact between the Mediterranean, Alpine, Pannonian, and Dinaric macroregions and directly reflects these biogeographical regions. Human activity has also contributed to the biodiversity in the territory of today's Slovenia, the result of the interweaving of the Slavic, Germanic, and Romance cultures. Due to its modest number of natural resources and exceptionally diverse natural characteristics, Slovenia's biotic diversity has been well preserved.

Table 1: Natural characteristics of Slovenia (Part 2: State of Biodiversity, p. 13).

Regional elements	Characteristics
Geological foundation	Junction of four geotectonic units (Eastern Alps, Dinaric Alps, Pannonian Basin, Adriatic-Apulian foothills) and diverse geological foundation
Biogeographical regions	The Alps (30%), Dinaric Alps (30%), Mediterranean Basin (10%), and Pannonian plain (30%) on an area of 20,273 km ² give Slovenia a transitional character.
Relief	Diverse relief; altitudes from 0 to 2,864 meters; 1/6 of the territory covered by Quaternary sediments; about 44% of the bedrock is carbonate, largely karstified (more than 7,000 registered caves).
Hydrological conditions	Two river systems: 2/3 of the water flows to the Black Sea, 1/3 to the Mediterranean; five watershed: the Soča, Sava, Drava, and Mura rivers and the Slovene littoral; relatively large karst area without surface watercourses.
Land use	61% of the surface is covered by forest; 36% of the surface is farmland
Flora	About 3,200 higher plants (ferns and flowering plants); 60 endemic taxa, 22 of which with exclusive or predominant distribution in Slovenia
Fauna	13,000 to 15,000 species; about 4,000 endemic animal species (mostly subterranean animals)

Regrettably, in recent decades the development of industry, agriculture, and the transportation infrastructure and urbanization have contributed substantially to the pollution of surface and underground waters, soil, and air as well as to the destruction of individual natural areas. The consequence of pollution, particularly the destruction of parts of environment, is decreasing biotic diversity at the ecosystem, species, and genetic levels, which causes a decrease in landscape diversity. Relative to past and present economic development, a study of the condition of natural and semi-natural habitats revealed that the most threatened habitat types in Slovenia are the littoral, shoreline, and maritime habitat types, running waters and their corresponding wetlands, dry grasslands, and subterranean habitats with an emphasis on subterranean fauna (Part 2: State of Biodiversity, p. 13).



Figure 1: *The moor on Pohorje (photography Matevž Lenarčič).*

Forests are the dominant original (natural) ecosystems in Slovenia, and among non-forest ecosystems are areas above the tree line, the sea and its shoreline, and subterranean ecosystems. Slovenia is a country of forests as they cover 61% of the surface (Statistics Yearbook of Slovenia 2003) and, regarding forest cover, ranks in third place in Europe. In Slovenia's large complexes of unbroken forest, species have been preserved that no longer have adequate living space for their survival in many other places (for example, bear, wolf, lynx, wild boar).

The varied and mosaic composition of Slovenia's regions is the consequence of natural assets, traditional settlement patterns, and the recent intensive urbanization and construction of infrastructure. According to Ilešič's geographical regionalization of 1979, Slovenia is divided on the basis of climate and geological conditions into five basic regions: alpine, subalpine, subpannonian, karst, and littoral. Specific flora developed in each of these regions.

The alpine region encompasses northwestern Slovenia and its highest mountain groups: the Julian Alps, Karavanke Mountains, and Kamniške-Savinjske Alps. Due to the prevalence of carbonate rock and the younger mountain-forming processes, a very irregular relief with large altitude differences between the highest Slovene peaks and the glacial valleys is characteristic of the region. The vegetation adapted to the alpine climate. In the valleys, there are rare and partly preserved shrubby meadows. With increasing altitude, deciduous forests are replaced by spruce forests and then a belt of dwarf pine with larch and high-mountain grass. Settlements are rare in the Alps with villages clustered on high-lying sun-lit terraces and isolated farms higher up. For raising cattle, forests were cleared to make pastures.

The subalpine area stretches from the border with Italy along the Nadiža River across the western subalpine hills, the central Slovene plain with Ljubljana, the eastern subalpine hills along the Sava River to the Pohorje and Kozjak mountains along the Austrian border. The area is composed of limestone, dolomite, and igneous and metamorphous rock, and there are extensive gravel deposits in the Ljubljana and Celje basins. Due to the diverse geological composition, the surface is irregular. Rounded hills

of softer rock alternate with steep rocky peaks of limestone and dolomite that reach or exceed 1,000 meters above sea level. Beech forests in associations with spruce, hornbeam, and characteristic white wood rush and wood anemone cover extensive surfaces. The Cerkljansko, Idrija, and Škofja Loka hills are steeper, while in the eastern part the surface is more gently sloping with individual higher peaks (Paški Kozjak, Kum, Lisca, Boč) of limestone where characteristic calciphilic plants grow on rendzina. For the needs of agriculture and settlement on the plains, the wetlands along periodically flooding streams were drained.

Subpannonian Slovenia encompasses all of eastern Slovenia, the region with the Posavsko-Obsoteljsko and Krško hills, Krško-Brežiško polje, and the Krka River valley with its peripheral areas. The plains are composed of clay sediments and gravel alluvia on which riverine soils developed and in some places moist pseudogley. There are cultivated fields on hydromeliorated areas and meadows elsewhere. This part of Slovenia is known for its vast plains and its hills where grapevines grow well due to the temperate continental climate. Forests cover steep and shady sites, and in recent decades, the proportion of forest has increased. There are flood groves along the Mura River of major ornithological significance, and the reservoirs built to retain floodwaters along the Ledava, Pesnica, and Drava rivers perform a similar role.

Along with central and southern Slovenia, the karst regions of Slovenia's interior also encompass the Gorjanci mountain range to the east and Trnovski gozd and Banjšica ridges in the west. The relief is characteristically karstic with all the variety of karst phenomena from karst poljes and disappearing rivers to dolines and caves. A continental climate is connected with average altitudes of around 500 meters. Preserved fir-beech forests and karst poljes are characteristic of the region.

Littoral Slovenia encompasses southwestern Slovenia from the Adriatic Sea to Matarsko podolje, the Vipava Valley, Kras, and the Soča Valley to Most na Soči and has a submediterranean climate. The uniformity of the region is reflected in its littoral vegetation and ecosystems from natural karst vege-



Figure 2: The Sečovlje salt flats (photography Milan Orožen Adamič).