

## Indicator: Green-blue areas (ha) as proxy for biodiversity

**Naturvation challenges:** Green space, habitats and biodiversity

**SDGs:** 15

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### Indicator description

Green-blue areas are a proxy for biodiversity and are linked to the Naturvation challenges green space, habitats and biodiversity. Biodiversity is defined as the variability among living organisms from all sources, but is mostly measured as species richness and is influenced by factors such as predation, resource availability and habitat complexity (e.g. number of vegetation layers, presence of old trees with cavities) (1). Assessing how such factors affect species richness can be time-consuming and difficult. An alternative approach for assessing species richness in a particular area is to measure the size of the area in question (e.g. 2-5) as it co-varies with the number of species (6, 7). Green-blue areas vary with nature-based solutions. The beneficial aspect of using green areas as a proxy for biodiversity is that area size assessments generate unbiased and quantitative data, and in addition, they do not need to be performed by trained biologists. For measurement of small areas, measuring tape may be used, whereas use of satellite images or GIS maps may be preferred for large areas or less easily accessible areas (e.g. 8).

### Indicator scoring

Scores assessed for the nature-based solutions were based on areas extracted from open street maps using the 300 largest cities within the European Union. The number of nature-based solution types in open street maps varied from 500 to nearly 140,000.

Birds can also be used as a proxy for biodiversity; they were the only organism group for which data was available to relate species richness in urban environments to green-blue areas (3, 4, 9-14).

Supporting information such as minimum area requirements for birds (e.g. 15, 16) was used to illustrate the expected number of species in an area, table 1. Scores were derived by normalising the median values between 0 and the maximum value onto the scale 1 to 5 (*Table 2*).

*Table 1. Expected number of bird species within area intervals.*

Area size range (ha)	0-1.0	1.1-5	5.1-20	20.1-50	>50
Mean bird species richness	6.2	15.5	25.3	33.3	62.2





Table 2.

Scores, green-blue areas (ha) a proxy for biodiversity		
Nature-based solution	Score	Median areas (min –max)
Parks and (semi)natural urban green areas (village green; brownfield; park; nature reserve)	5	15.01 (0.0001 – 92389)
Urban green areas connected to grey infrastructure (surface grass-parking; surface grass-paver)	1	0.08 (0.0009 – 23)
Blue areas (natural wetlands; natural water; land use-basin)	1	0.15 (0.001 – 106830)
External building greens (plants green roof; grass green roof; green roof)	1	0.02 (0.0003 – 43.6)
Allotments and community gardens (allotments; gardens; land use-allotments)	2	3.4 (0.001 – 1394)
Green areas for water management (ditch; canal; dyke; drain)	1	0.58 (0.0001 – 48.4)

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