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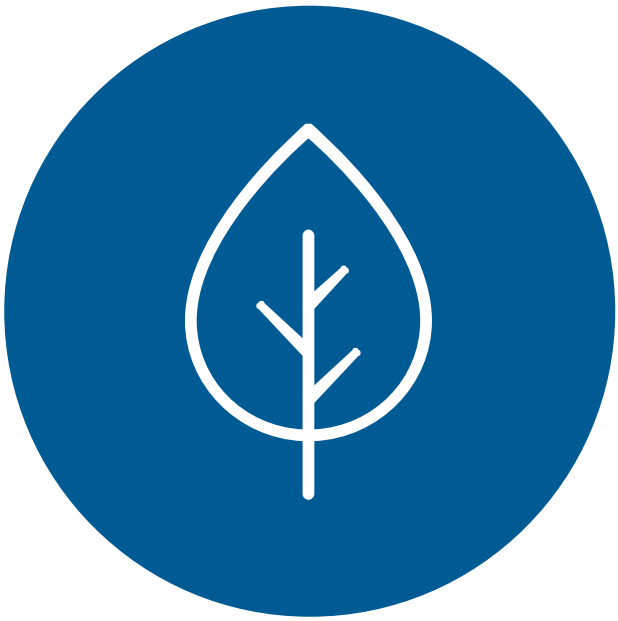
# ENVIRONMENTAL ECONOMIC ACCOUNTING

## Method of the Ecosystem Extent Account



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# Contents

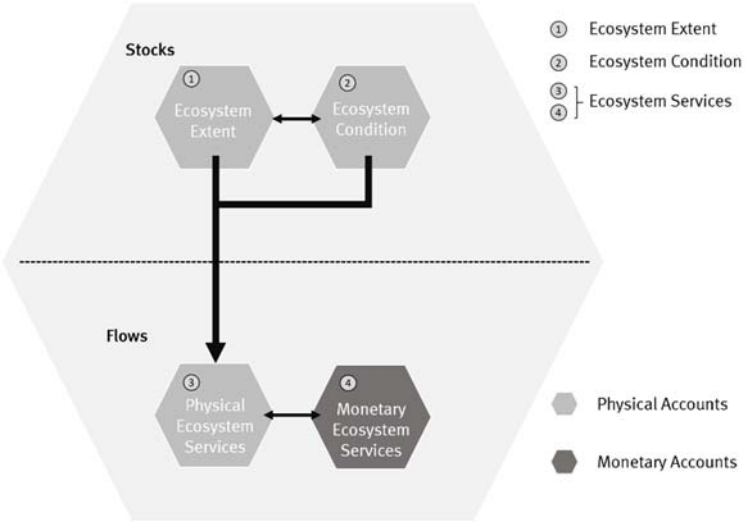
## Abbreviations

| | |
|---|---|
| ATKIS | Official Topographic Cartographic Information System |
| BfG | Federal Institute of Hydrology |
| BfN | Federal Agency for Nature Conservation |
| BGR | Federal Institute for Geosciences and Natural Resources |
| BKG | Federal Agency for Cartography and Geodesy |
| BSH | Federal Maritime and Hydrographic Agency |
| BÜK | Soil Map of Germany |
| CLC | Corine Land Cover |
| DLM | Digital Landscape Model |
| DTM | Digital Terrain Model |
| EEZ | Exclusive Economic Zone |
| EU | European Union |
| EUNIS | European Nature Information System |
| FFH | Flora-Fauna-Habitat |
| GIS | Geographic Information System |
| HELCOM | Helsinki Commission, Baltic Marine Env. Prot. Commission |
| IUCN | International Union for Conservation of Nature |
| LBM-DE | Land Cover Model for Germany |
| SEEA EA | System of Environmental Economic Accounting Ecosystem Accounting |
| WFD | Water Framework Directive |

# 1 Introduction

As part of the Environmental-Economic Accounts ("Umweltökonomische Gesamtrechnungen" – UGR), the Ecosystem Extent Account captures the extent of the ecosystems within Germany. An ecosystem is a dynamic complex of communities of plants, animals and microorganisms and their non-organic environment that interact as a functional unit.[1] The Ecosystem Extent Account is the first pillar of the ecosystem accounts, an economic-ecological reporting system that describes and evaluates the interaction between humans and the environment on a systemic basis (see Figure 1). The other accounts – the Ecosystem Condition Account and the Ecosystem Services Accounts (physical and monetary) – are founded directly on the extent account. Together, they explicitly capture the ecosystem services for humans in order to provide this information in coordination with the other environmental-economic accounts and the national accounts as an additional basis for political and economic decision-making.

Figure 1
Structure of ecosystem accounts and how they relate to each other (Destatis chart based on SEEA EA 2021)




The structure of all ecosystem accounts of the Federal Statistical Office is fundamentally based on the international System of Environmental Economic Accounting Ecosystem Accounting (SEEA EA) of the United Nations and is designed to provide the best possible interface for future international reporting obligations, e.g. by the European Union (EU).[2]

A small-scale and spatially highly resolved data basis is created for the extent account. It makes use of ecological-structural characterisation in the form of an ecosystem class for each area of Germany including the exclusive economic zone (EEZ) in the North Sea and Baltic Sea. The minimum mapping area is one hectare. The ecosystem areas are aggregated to create the extent account based on these classes. This shows the stock of ecosystems in the respective reporting year, creating a time series that also allows the changes to be analysed over time.

The theoretical basis of the extent account is the national ecosystem classification, which is hierarchically structured. The classification subdivides areas on the basis of ecological and structural characteristics. It comprises 74 classes, 21 groups, 6 divisions and (at the present time) 2 sections (terrestrial and marine).[3]

1 Definition taken from the Convention on Biological Diversity: https://www.bfn.de/fileadmin/ABS/documents/0.451.43.de.pdf
2 UNCEEA (2021): SEEA Ecosystem Accounting (SEEA EA): Final draft (as adopted by the UN Statistical Commission in March 2021): https://unstats.un.org/unsd/statcom/52nd-session/documents/BG-3f-SEEA-EA_Final_draft-E.pdf
3 Ecosystem sections C (subterranean) and D (middle and upper biosphere) are not currently captured according to the SEEA EA, but have already been created for any future expansions.

Clear and easily comprehensible allocation criteria reflecting these characteristics have been defined for each class. Transfer tables (crosswalks) can be used to render the classification compatible with international typologies.

The data basis, which enables complete classification of all areas of the national territory of Germany and the EEZ, consists of a large number of high-resolution spatial data sets that are prepared and processed using semi-automated processes of the Geographic Information System (GIS) software. This data basis is then transferred to a classification matrix that ensures complete and unambiguous allocation of all areas to ecosystem classes. The ecosystem extent accounts are produced by aggregating at the federal and state level and comparing different time periods. These ecosystems form the core of the published data. An ecosystem map is also published at the municipal association level in order to offer users the rich spatial information of the extent account.[4]

Chapter 2 describes the national classification for Germany and its integration into international reporting systems. Chapter 3 provides an overview of the data sources used and Chapter 4 explains the technical aspects of data processing and area classification. The last two chapters provide information on the form and details of the published results.

4 Municipal associations are amalgamations of several municipalities. Depending on the federal state, they can include offices, joint municipalities ("Samtgemeinden"), administrative communities ("Verwaltungsgemeinschaften"), rural parishes ("Kirchspiel-Landgemeinden"), administrative associations ("Verwaltungsverbände") and fulfilling municipalities ("erfüllende Gemeinden").

# 2 National ecosystem classification

The national ecosystem classification is a complete and uniform classification of all ecosystems which can occur in Germany. The classification is compatible with international frameworks and typologies as well as with the standards of official statistics. It permits simple and effective communication and visualisation of the data. The classification is largely based on the methodological guidelines of the SEEA EA framework. This framework does not lay down a uniform ecosystem classification for national and sub-national accounts, however, making it important to establish a national guideline for the classification of ecosystem types and for including the local context as accurately as possible.

## 2.1 Structure and nomenclature

The national ecosystem classification contains and classifies all ecosystems that i) exist and are relevant in the specific context of Germany, ii) are not (yet) present in Germany but are potentially relevant, iii) can be recorded in sufficient detail for the whole of Germany on the basis of the available data, and iv) support the capture of the ecosystem services. In particular, there are sufficient grounds for subdivisions if ecosystems in different classes provide different ecosystem services.

According to the SEEA EA framework, criteria or characteristics that can be used to distinguish ecosystems from one another are land cover (vegetation, sealing, building development, hydrology), land use (type of building development, use, cultivation), topography (elevation, slope), soil characteristics (soil type), climate zones, species and habitats. The classification and thus the extent account should fundamentally be based on stable characteristics. Dynamic properties are recorded in the ecosystem condition accounting.[5]

As the smallest subdivision, the national ecosystem classes constitute the basis for capturing and calculating all ecosystem accounts (stocks, condition, services). For the purpose of national reporting, the national ecosystem classes are in turn aggregated thematically into national ecosystem groups and ecosystem divisions. The environmental-economic accounts include ecosystem services as described in the SEEA EA sections (Ecosystem Sections) A: Terrestrial area (including troposphere) and B: Waters (marine and freshwater). Ecosystem sections C: Subterranean area and D: Middle and upper biosphere (parts of the atmosphere) are currently not captured. This yields:

- 6 National Ecosystem Divisions
- 21 National Ecosystem Groups
- 74 National Ecosystem Classes

The national classification of ecosystems requires uniform coding and nomenclature. Sections are coded using capital letters, divisions using two digits, and groups and classes using digits after a decimal point. Non-subdivided breakdown levels use the number 0 in the subsequent breakdown. "Other..." breakdown levels feature the number 9.

## 2.2 Links to international classifications

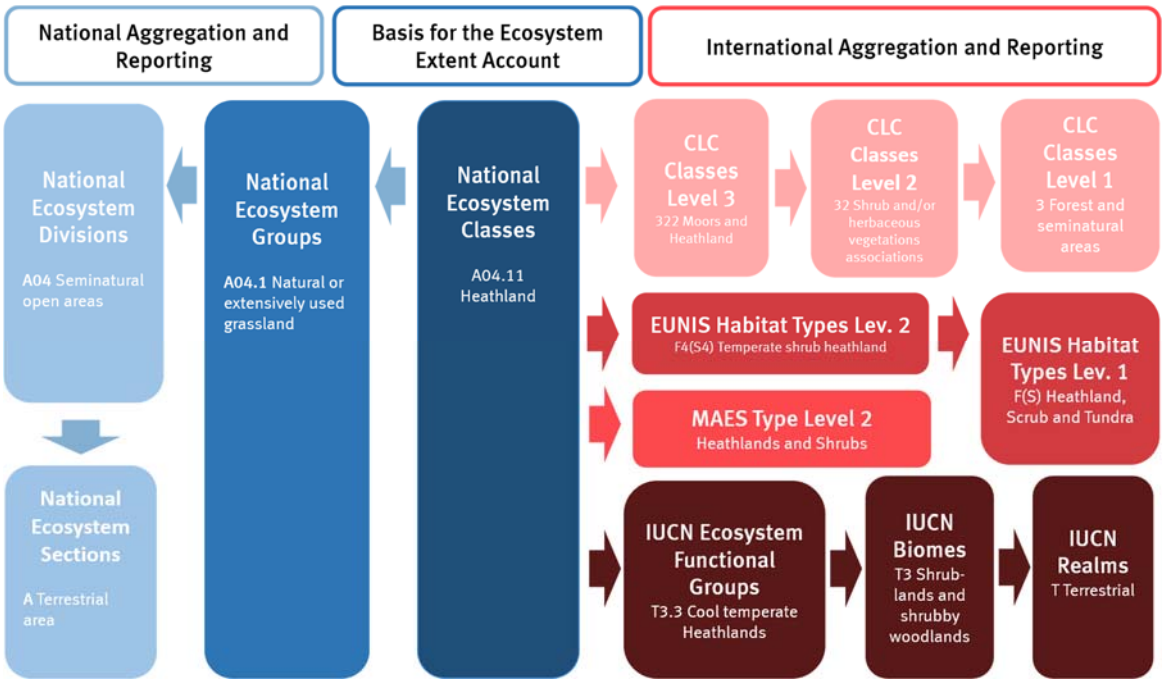
The national classification can be matched to international typologies in order to fulfil any international reporting obligations. The crosswalks that can be used for this purpose link the national classification in particular to the following international frameworks:

- Mapping and Assessment of Ecosystems and their Services (MAES) Level 2
- Corine Land Cover (CLC) classes
- Levels 2 and 3 of the European Nature Information System (EUNIS) Habitat classes
- Levels 2 and 3 of the International Union for Conservation of Nature (IUCN) classes

5 Stable properties of ecosystems, which are used e.g. for classification, can be recorded in additional accounts of the condition account, the so-called ancillary data accounts.

For example (see Fig. 2), the national ecosystem classes A04.11 "Heathland", A04.12 "Alpine meadows" and A04.19 "Other natural or extensively used grassland" are aggregated to ecosystem group A04.1 "Natural or extensively used grassland" and consequently fall into ecosystem division A04 "Semi-natural open areas". Internationally, class A04.11 "Heathland" can be assigned to IUCN Type T3.3 "Cool temperate heathlands", EUNIS Habitats Type F4(S4) "Temperate shrub heathlands" and CLC Class 322 "Moors and heathland" using crosswalks.

Figure 2
Classification structure and links to international typologies based on the example of A04.11 Heathland.




## 2.3 Spatial coverage

Ecosystem classification is limited to terrestrial areas and inland and marine waters. SEEA EA defines the lower troposphere as the upper ecosystem boundary in the vertical dimension and includes soil and groundwater in the next ecosystem above. Natural and artificial caves are currently not included in ecosystem accounting. This means that subterranean systems and higher strata of the atmosphere are not part of the national ecosystems at present. Consequently, the ecosystem sections C (Subterranean) and D (Middle and upper biosphere) set out in the SEEA EA are currently not further subdivided or captured, but may be included at a later date.

In terms of spatial delineation and classification, the capture of Germany's marine ecosystems, including the EEZ, is based primarily on the seabed and also on the distance to the coastal baseline.

Germany's national territory has a number of border sections which have special legal status. These include the unclear border with the Netherlands in the Ems-Dollart estuary, the condominium with Luxembourg on the Moselle, Sauer and Our rivers, and the border with Switzerland and Austria in Lake Constance. These areas of unclear territorial allocation are also included in the extent account. The special status of these areas is noted in the internal database. Ecosystem areas in disputed regions administered as condominiums are designated as national territory by default and can thus be designated separately, if necessary, for international reporting and other purposes to avoid double counting, for example.

# 3 Data sources

## 3.1 Land cover model, landscape model and terrain model

The Land Cover Model for Germany (LBM-DE) is currently produced and issued every three years by the Federal Agency for Cartography and Geodesy (BKG).[6] The LBM-DE is used to describe land cover and land use in vector format and also to derive the Corine Land Cover (CLC) classes. The representation of the area of Germany, with a minimum mapping unit of one hectare and a minimum mapping width of 15 metres, has no gaps or overlaps. The LBM-DE is based on the Official Topographic Cartographic Information System (Amtliches Topographisches-Kartographisches Informationssystem ATKIS) datasets of the Länder contained in the Digital Landscape Model (Basic DLM) as well as other data sources that varied during the development of the LBM-DE, including remote sensing data from the RapidEye and Sentinel 2 satellites, digital orthophotos and Copernicus IMAGE data. Harmonisation between the years 2012, 2015 and 2018 as well as further corrections were carried out in 2020 and published by the BKG in spring 2021.

The Basic DLM, also published by the Federal Agency for Cartography and Geodesy, describes the topographic landscape objects in vector format on the basis of three data sets – Amtliches Festpunktinformationssystem (AFIS), Amtliches Liegenschaftskatasterinformationssystem (ALKIS) and ATKIS – and the specifications of the ATKIS object type catalogue Basic DLM.[7] The objects in the Basic DLM are assigned to a specific object type and defined by their spatial location, geometric type, descriptive attributes and relationships to other objects. The positional accuracy is usually ±3 m for the most important point and linear objects and ±15 m for other objects. The basic timeliness of the data is determined e.g. by the data of the Länder and is between 3 and 5 years. The timeliness is greater for important anthropogenic objects, and ranges from 3 to 12 months. The terrain forms of the Earth's surface within the territory of the Federal Republic of Germany are represented over a one-year cycle by the Digital Terrain Model (DTM).[8] The DTM consists of a regular, georeferenced grid with a spacing of 10 m. Each grid cell describes the mean elevation above sea level. The surveying offices of the Länder use various methods (laser scanning, photogrammetry and digitisation of contour lines) to capture the elevation of the Earth's surface. The BKG collects these data, checks them, converts the formats and finally merges the data into a uniform DTM.

## 3.2 Further data sources

Other data sources which are used are described below. A list containing information on sources and reference years can be found in Overview 2.

### 3.2.1 Data set – Germany's large-area landscapes

The data set on Germany's large-area landscapes is an aggregation of natural areas and is provided by the Federal Agency for Nature Conservation (BfN).[9] The natural land classification takes into account the natural conditions of a region such as surface form, soil, rock structure, water bodies and climate (overall character, elevation and oceanity levels). Human influence on the form of the surface – current land cover, land use or change in surface form – plays only a minor role in the delineation. The data set is used to capture alpine habitats, which have different climatic and ecological conditions compared to the German low mountain ranges (Mittelgebirge).

6 BKG (2020): Land cover model of Germany 2018. https://www.bkg.bund.de/DE/Ueber-das-BKG/Geoinformation/Fernerkundung/Landbedeckungsmodell/landbedeckungsmodell.html

7 BKG (2019): Digital Basic Landscape Model (Basic DLM) https://gdz.bkg.bund.de/index.php/default/digitale-geodaten/digitale-landschaftsmodelle/digitales-basis-landschaftsmodell-kompakt-basis-dlm-kompakt.html

8 BKG (2020): Digital terrain model of Germany. https://gdz.bkg.bund.de/index.php/default/digitale-geodaten/digitale-gelandemodelle/digitales-gelandemodell-gitterweite-10-m-dgm10.html

9 BfN (2003): Large-scale landscapes data set https://www.bfn.de/index.php?id=1862. The data set was compiled by the German Federal Agency for Nature Conservation on the basis of the main units of the natural region categorisation of Germany according to Meynen, Schmidthüsen et al. (1953-62) and the landscape classification of the Institut für angewandte Geodäsie (IFAG 1979) for use in connection with the notification of Natura 2000 sites and for other nature conservation applications.

### 3.2.2 Soil Map of Germany (BÜK)

The Soil Map of Germany at a scale of 1:200,000 (BÜK200) is compiled by the Federal Institute for Geosciences and Natural Resources (BGR) in cooperation with the state geological services of the federal German Länder. It presents the distribution and associations of soils and their properties in Germany. The functions, potential and hazards of soils can be determined and represented from the basic extent data of the BÜK200, including primary and secondary soils, soil type, soil texture, soil parent rock, humus and carbonate content, soil layer and horizon depth as well as groundwater level, which are kept in a relational database.[10]

### 3.2.3 Water Framework Directive (WFD)

Coastal waters extending up to one nautical mile from the coastal baseline are subject to WFD reporting requirements with regard to ecological assessment and water protection. In response, the Federal Environment Agency has developed a corresponding water body typology for these waters. The relevant coastal waters of Germany were surveyed, mapped and their ecological status assessed based on this typology. In addition to this, the WFD also stipulates that transitional waters in Germany should be identified and captured in a separate data set.[11]
The WFD also requires the status of inland waters to be reported. For this purpose, both water courses (with a catchment area larger than 10 km²) and standing waters (covering more than 50 hectares) are classified and divided into natural, heavily modified or artificial waters. The data are supplied by the Länder to the Federal Institute of Hydrology (BfG), where they are made available as aggregated data sets. In the data set on water courses, the rivers are only represented as linear elements and no information is included on the actual dimensions of the water. This information is taken from the Basic DLM.

### 3.2.4 Riparian Zones Data Set (Copernicus Riparian Zones High Resolution Layer)

The Copernicus Riparian Zones data set identifies areas that characterise the transition between land and freshwater ecosystems.[12] These transition areas are characterised by the strong influence of stream water and the resulting biotic, hydrological and soil conditions. The data set is made available by the Copernicus programme and provided in raster and/or vector format with a minimum mapping unit of 0.5 hectares. This distinguishes between potential, observable and actual riparian zones. The actual riparian zones are the result of a combination of potential and observable riparian zones. This is where the highest probability of finding actual riparian zone properties occurs. Actual riparian zones are therefore used in further processing to identify riparian forests.

### 3.2.5 FFH/Natura2000 protected areas

The Flora-Fauna-Habitat Directive (FFH) serves to preserve biological diversity in EU territory. In Germany, FFH areas are selected and placed under protection by the Länder based on uniform EU-wide standards. Each EU Member State is required to report every six years on the measures applied and the present conservation status for the individual types of species and habitat. Natura 2000, the Europe-wide network of interconnected ecological sites, is based on the regulations of the Habitats Directive. The data set of the FFH and Natura 2000 protected areas is collected from the Länder and harmonised by the BfN. Data sets from the FFH mapping of reefs and sandbanks in the North Sea and Baltic Sea are used to classify marine areas for the extent account.

10 BGR (2020): Soil Map of the Federal Republic of Germany 1:200,000. https://www.bgr.bund.de/DE/Themen/Boden/Informationsgrundlagen/Bodenkundliche_Karten_Datenbanken/BUEK200/buek200_node.html
11 Federal Environment Agency (2020): Water Framework Directive for coastal and transitional waters https://www.gewaesser-bewertung.de/
12 European Environmental Agency (2020): Riparian Zones https://land.copernicus.eu/local/riparian-zones

### 3.2.6 Small Woody Features (Copernicus High Resolution Layer)

The Small Woody Features data set of the Copernicus Land Monitoring Service aims to provide homogeneous information on small woody features in the European Economic Area.[13] The data set includes linear structures such as hedgerows, but also patches of woody vegetation which can be identified using high-resolution Earth observation data. In the data set, a distinction is made between Small Woody Features (linear and small irregular elements) and Additional Woody Features. The linear elements of the Small Woody Features represent landscape features such as hedgerows or lines of trees. The non-linear, small and irregular (patchy) Small Woody Features represent areas with isolated and scattered elements of trees or scrub. Additional Woody Features are woody features that do not meet the criteria of linear or non-linear Small Woody Feature elements, but are associated with such an element, and/or isolated woody features with an area of more than 1500 m².

### 3.2.7 Biotope mapping of the Länder

In all federal states, biotope mapping is carried out or commissioned by the respective environment ministries. These are either comprehensive or selective mappings of the habitats, with the latter only covering the parts of the landscape that are relevant or particularly worthy of protection. The mapping is carried out on the basis of local inspections and the interpretation of aerial photos; the result is an inventory of the flora. The mapping is organised federally, meaning that the periodicity and mapping guidelines are not harmonised. However, some uniform landscape characteristics can be identified as a result of the common objective.

### 3.2.8 Marine macrophyte populations and mussel beds

The mapping of macrophyte populations is the responsibility of the federal states.[14] Accordingly, there is no uniform, comprehensive and consistent nationwide data set of marine macrophyte populations. Instead there are data sets for the North Sea and the Baltic Sea provided by the respective federal states. In principle, these data sets cover eelgrass and macroalgae in coastal waters, but the exact mapping spectrum varies between the different Länder. Furthermore, there are differences in the mapping methods for macrophyte populations in the North Sea and Baltic Sea. In the North Sea, mapping is carried out based on evaluations of aerial photos and field inspections. In the Baltic Sea, macrophyte populations in Schleswig-Holstein are modelled based on data obtained from towed camera transects.

As with marine macrophyte populations, the mapping of mussel beds in the Wadden Sea and the provision of these data are the responsibility of the Länder. The Wadden Sea of Lower Saxony and Hamburg was captured using stereoscopic evaluation of aerial photographs. The flights are generally undertaken in spring or summer. Mussel beds in the Schleswig-Holstein Wadden Sea are mapped using a combination of aerial photo evaluation and field inspections.

13 European Environmental Agency (2019): Resolution Layer Small Woody Features. https://land.copernicus.eu/pan-european/high-resolution-layers/small-woody-features

14 Green algae, eelgrass, mussel beds: Lower Saxony Wadden Sea National Park Authority, Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency, State Agency for Coastal Protection, National Park and Marine Conservation (Schleswig-Holstein), Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modelling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95 https://doi.org/10.3354/meps11133

# 4 Classification methods

## 4.1 Structure of the data processing

Based on the LBM-DE, the data sources listed above are integrated by means of semi-automated data processing in order to create the final structure of the vector geometries of the extent account and to equip them with the variables required for classification.

**Step 1:** Data sources are projected (ETRS 1989 UTM Zone 32N), standardised (e.g. biotope mapping of the Länder, water body data, marine data) and preselected (e.g. selection of bog soil types from the Soil Map of Germany). Data sets that are stable over time and vary annually are integrated into an input data structure for the respective reporting year.

**Step 2:** Additional data sources are carefully pre-processed in order to make the automated classification process more efficient. Accordingly, these data sets are prepared as fully as possible using various GIS processes, regardless of the order of priority. The order of priority stipulates, for example, that a coastal sand area that has been identified and classified as a dune in one processing step is not assigned to sand beaches in a subsequent process. However, such double designations are initially ignored in the pre-processing and corrected in a later step.

For some classes of transport infrastructure (roads and railways), seas (offshore and EEZ), rivers (complete capture) as well as hedgerows (buffering of linear objects), this means that entirely new polygon structures are established independently of the LBM-DE areas, as these are not (or not sufficiently) captured in the LBM-DE.

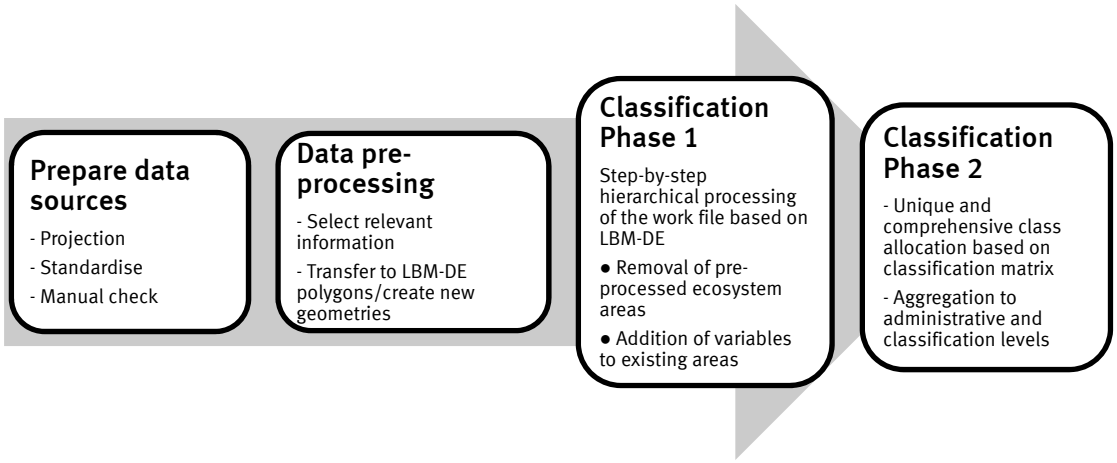
For other classes, LBM-DE areas are split with the help of additional data sources, e.g. for the capture of riparian forests or dunes. As a rule, such subdivisions are handled using majority rules (overlay) and minimum mapping boundaries (sliver polygons).

The inputting of extra information to existing LBM-DE areas is also carried out in advance, as far as possible. In the case of bogs, for example, this is done through majority rules (overlay) or, as in the case of beaches, through a neighbourhood components analysis (sandy areas adjacent to marine waters).

**Step 3:** On the basis of the LBM-DE data set of the respective federal state, or polygons for the North Sea and Baltic Sea, a working file is created to which the pre-processed additional data sources are then input using two different methods. If the original polygons are split or modified, the pre-processed areas replace those of the working file. In cases where data are added to existing areas, supplementary characteristics are assigned to the corresponding areas of the work file. The pre-processing in step 2 speeds up this process. It also follows the established order of priority (for example, dunes before sandy beaches), as the work file is updated step by step in a predefined sequence.

**Step 4:** Each polygon in the final structure of the vector geometries is uniquely assigned to an ecosystem class on the basis of the classification matrix. This matrix maps the relationship between variables of the extent account and ecosystem classes and is explained in more detail in point 4.2. The information used for classification (source and value of the variables) is registered for each polygon and allows manual controls and quality checks. Slivers and very small polygons are adjusted using a majority principle. The final spatial data set of the extent account is then aggregated to different administrative and classification levels by totalling the area contents of the respective unit.

Figure 3
Data processing structure for the extent account of ecosystems




## 4.2 Classification matrix and classification variables

The classification matrix is a function of the extent account variables for the ecosystem classes listed in overviews 1 and 2. Many of these variables are binary, as this was either specified in the data sources or was already determined in the pre-processing (see Figure 3) by means of selection algorithms.

Overview 1
Overview of the classification variables from the LBM-DE of the ecosystem extent account

| Land Cover Model Germany (LBM-DE) | |
|---|---|
| Land cover attribute (source: LBM-DE) | |
| Value | Description |
| B110 | Houses |
| B121 | Facilities |
| B122 | Sealed areas without buildings |
| B211 | Arable land |
| B221 | Winegrowing |
| B222 | Orchards and soft fruit |
| B224 | Hops |
| B231 | Homogeneous grassland |
| B233 | Grassland with trees (‹50%) |
| B242 | Mixed areas (regular structure) |
| B310 | Reafforestation, young trees |
| B311 | Deciduous trees |
| B312 | Coniferous trees |
| B313 | Deciduous and coniferous trees |
| B321 | Inhomogeneous grassland |
| B322 | Dwarf shrubs (heath) |
| B324 | Bushes, shrubs |
| B330 | Sand, stones, soil |
| B332 | Rock |
| B334 | Burnt areas |
| B335 | Snow (permanent) and ice |
| B411 | Swamp |
| B412 | Bog |
| B413 | Swamp with bushes/trees (‹50%) |
| B414 | Bog with bushes/trees (‹50%) |
| B423 | Mud flat |
| B511 | Watercourses |
| B512 | Waterbodies |
| B521 | Lagoon |
| B522 | Estuary |
| B523 | Open sea |

| Land use attribute (source: LBM-DE) | |
|---|---|
| Value | Description |
| N112 | Housing |
| N120 | Production |
| N121 | Public |
| N122 | Road and railway traffic |
| N123 | Port |
| N124 | Air services |
| N131 | Mining areas |
| N132 | Dumpsites |
| N133 | Under construction |
| N141 | Green urban areas |
| N142 | Sports and leisure |
| N211 | Agriculture (intensive) |
| N214 | Extensive use |
| N311 | Forestry |
| N510 | Water |
| N999 | Not relevant |

| Land use attribute (source: LBM-DE) | |
|---|---|
| Value | Description |
| 0–100% | SIE - Degree of sealing |
| 0–100% | VEG - Degree of vegetation |
| 0/1 | AX_Ortslage – from ZUS_AKT (O) |
| 0/1 | Military use – from ZUS_AKT (M) |

# 4 Classification methods

Overview 2
Overview of further classification variables of the ecosystem extent account

| Additional data sources | | | | |
|---|---|---|---|---|
| Attribute name | Description | Source | Year | Unit |
| alpen | Part of the alpine landscape | German landscapes (BfN) | --- | 0/1 |
| hoehe | Elevation above sea level | Digital Terrain model (BKG) | 2015/2018 | m |
| riparian | Riparian zone | Copernicus Riparian Zones High Resolution Layer | 2012 | 0/1 |
| moorwald | Bog forest | Basic DLM (BKG) | 2015/2018 | 0/1 |
| nachbar | Land cover of neighbouring polygon | Own calculation | --- | LB |
| ZUS_Nieder | Half-bog and lowland heath soil | Soil map of Germany (BGR) | 2020 | 0/1 |
| riffe | Reefs | SACs (BfN) | 2007-2019 | 0/1 |
| sandbank | Sandbanks | SACs (BfN) | 2007-2019 | 0/1 |
| seegras | Eelgrass populations | Mapping of the macrophyte populations of the Länder: Schleswig-Holstein Wadden Sea National Park Authority;<br>Lower Saxony Wadden Sea National Park Authority;<br>Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modeling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95; | 2015/2018<br>2015/2018<br>2015 | 0/1 |
| algen | Algae populations | State Office for the Environment, Nature Conservation and Geology Mecklenburg-Western Pomerania | 2017 | 0/1 |
| muschel | Mussel beds on mudflats | Mapping of the mussel populations of the Länder: Schleswig-Holstein Wadden Sea National Park Authority;<br>Lower Saxony Wadden Sea National Park Authority | 2013-2015<br>2016-2018<br>2016 | 0/1 |
| MODIFIED | Heavily modified inland water bodies | WasserBLIcK/BfG & relevant authorities of the Länder, 2017-04-30 | 2015 | 0/1 |
| ARTIFICIAL | Artificial inland water bodies | WasserBLIcK/BfG & relevant authorities of the Länder, 2017-04-30 | 2015 | 0/1 |
| k_nah | Coastal marine waters | WasserBLIcK/BfG & relevant authorities of the Länder, 2017-04-30 | 2015 | 0/1 |
| Shape_Area | Area of the polygon | Own calculation | --- | ha |
| meer | Marine area | Federal Maritime and Hydrographic Agency (BSH) + Water Framework Directive (BfG) | 2015 | 0/1 |
| fluss | Water courses | Basic DLM (BKG)+<br>Water Framework Directive (BfG) | 2015/2018<br>2015 | 0/1 |
| hecke | Hedgerows | Basic DLM (BKG)+<br>Copernicus Small Woody Features HRL | 2015/2018<br>2015 | 0/1 |
| strasse | Roads | Basic DLM (BKG) | 2015/2018 | 0/1 |
| schiene | Railroads | Basic DLM (BKG) | 2015/2018 | 0/1 |
| duene | Coastal dunes | Biotope mapping of the Länder | --- | 0/1 |
| hohe_baudichte | Building density | Calculations based on the 2.5D Model (BKG) | 2015/2018 | 0/1 |
| streuobst | Orchard meadows | Biotope mapping of the Länder | --- | 0/1 |

## 4.3 Overview of geodata processing

The following work steps shown in Overview 3 are carried out using GIS processes as part of the semi-automated data processing.

Overview 3
Overview of the geodata processing steps for creating the ecosystem extent account

| Geodata processing step | Description | Additional information |
|---|---|---|
| **Separation of marine and terrestrial areas (incl. inland waters)** | Selection based on land cover<br>+ correction (e.g. Bay of Lübeck) | Cut-off between marine and inland waters corresponds to that of the WFD |
| **Capture of Exclusive Economic Zone (EEZ)** | Based on data from BSH/HELCOM | |
| **Capture of offshore marine areas** | From WFD data<br>Coastal distance 1-12 nautical miles | Additional recording of the border area between Germany and the Netherlands (Ems-Dollart) |
| **Capture of inshore marine areas** | From WFD and LBM-DE data<br>Coastal distance baseline + approx. 1 nautical mile | Including mud flats |
| **Capture of sandbanks, reefs, mussel beds and macrophyte populations** | From SAC mapping and further mapping by the Länder offices<br>Reefs, sandbanks, mussel beds, eelgrass, green algae | Capture of macrophyte populations on the basis of largest annual expansion |
| **Capture of additional road geometries** | Taken from Basic DLM | Rural and built-up areas: Motorways, federal, state and district roads;<br>Rural: Municipal roads, private and other roads |
| **Capture of additional railway geometries** | Taken from Basic DLM | Rural and built-up areas: Railways (passenger and freight), suburban railways, funiculars, underground railway;<br>Rural: Light railway, tramway, amusement park railway |
| **Description of urban structures** | From LoD1 Germany 3D building models (LoD1-DE) | Allocation of high and low building density based on calculations of building volumes |
| **Capture of hedgerows** | Taken from Basic DLM<br>+ Small Woody Features data set<br>(Copernicus High Resolution Layer) | Capture of hedgerows located on/next to agricultural land and extensive grassland. Buffering of the linear hedgerow elements using estimators based on satellite data |
| **Capture of orchard meadows** | Taken from Basic DLM<br>+ biotope type mapping of the Länder | Re-classification of "grassland with trees" land cover to orchard meadows. Overlap ›50%, sealing ‹15%, minimum area 0.25ha |
| **Inland standing waters** | From WFD data | Harmonisation of LBM-DE polygons with WFD measurement areas |
| **Capture of anthropogenic influences on standing waters** | From WFD data<br>+ data from the Basic DLM on reservoirs and flooded gravel pits | Attributes: Natural, heavily modified, artificial for standing waters with area ›50 ha, additional manual checking and correction |
| **Capture of rivers** | Taken from basic DLM and identification based on WFD | Rivers from the Basic DLM that are identifiable from WFD rivers as well as rivers that are already included in the LBM-DE |
| **Capture of anthropogenic influences on rivers** | From WFD data | Attributes: Natural, heavily modified, artificial |
| **Capture of swamp forest** | Overlap of LBM-DE forest and bogland areas from Basic DLM is shown | Minimum area 1 ha |
| **Capture of riparian forests** | Overlap of LBM-DE deciduous forest and Copernicus riparian zones data set is shown | Minimum area 1 ha |

| | | |
|---|---|---|
| **Capture of coastal dunes** | Reclassification and overlaid with biotope type mapping | Application in LBM-DE areas with little or no vegetation |
| **Capture of moor types** | From soil profiles in the BÜK | Designation based on soil types<br>Allocation to half-bogs, fens, transitional mires and highland moors |
| **Capture of seashores** | By neighbourhood component analysis | Designation of areas of "sand, stones, soil" land cover adjacent to marine waters |
| **Capture of landscape and capture of elevation above sea level** | Designation of (pre-)alpine landscape from landscape map and calculation of average polygon height by DGM | Capture of Alps and Alpine foothills<br>Application on forest areas, extensively used grassland (alpine pastures) as well as areas with little vegetation (mountain heaths) |

# 5 Publications

## 5.1 Accounting tables

The results of the extent account are published online on the "Ecosystem accounts" topic page at www.destatis.de/ugr. For the extent account, two main data products are generated for publication: the accounting tables (compliant with the SEEA EA framework) and a digital atlas of the ecosystems in an online dashboard application.

The accounting tables present the stock of ecosystem areas at the federal, state and municipality level (as well as separately for the North Sea and Baltic Sea), at the ecosystem class level, aggregated into groups and compared with the previous period. They show gross and net changes as well as stable stocks in account form and the shifts between individual classes in a change matrix.

## 5.2 Ecosystem map

The ecosystem map can be accessed using an online application. This map shows the extent of the ecosystems at group level and at various administrative levels. Results can be zoomed in to reveal detail down to the level of a municipal association. Users can select a municipal association to call up a dashboard showing the absolute and percentage extent of the ecosystem classes of the selected group as well as the change from the previous time slice for this unit.

# 6 Periodicity, timeliness and revisions

The ecosystems extent account is currently calculated every three years due to the periodicity of the main LBM-DE data basis. In 2021 the accounts for 2015 and 2018 will be prepared and published retroactively as a first step.

The calculation process is largely automated, allowing the accounts to be revised on an ad hoc basis. Recalculations can be conducted as the result of newly available data sources, improved data quality (e.g. higher spatial resolution) or even a revision of the data sources themselves. The revisions may concern the most recent data or those from earlier reporting periods.

# 7 Appendix

## 7.1 Overview of the ecosystem classification

Overview A1
Overview of the ecosystem classification

| Section | Division | Group | Class |
|---|---|---|---|
| A Terrestrial areas | A01 Settlement areas and transport infrastructure | A01.1 Settlement areas with high building density | A01.11 Residential areas with high building density |
| | | | A01.12 Industrial areas with high building density |
| | | | A01.13 Commercial areas and public institutions with high building density |
| | | A01.2 Settlement areas with low building density | A01.21 Residential areas with low building density |
| | | | A01.22 Industrial areas with low building density |
| | | | A01.23 Commercial areas and public institutions with low building density |
| | | A01.3 Transport infrastructure | A01.31 Roads |
| | | | A01.32 Railroads |
| | | | A01.33 Ports |
| | | | A01.34 Airports |
| | | A01.4 Mining areas, dumpsites and construction sites | A01.41 Mining areas |
| | | | A01.42 Dumpsites |
| | | | A01.43 Construction sites |
| | | A01.5 Recreational and urban green spaces | A01.51 Green urban areas |
| | | | A01.52 Sport- and recreational areas |
| | | | A01.59 Other green urban areas |
| | A02 Agricultural land | A02.1 Arable land | A02.11 Non-irrigated arable land |
| | | | A02.19 Other arable land |
| | | A02.2 Permanent cropland | A02.21 Vineyards |
| | | | A02.22 Fruit and berry fruit stands |
| | | | A02.23 Orchard meadows |
| | | | A02.24 Tree nurseries |
| | | | A02.29 Other permanent cropland |
| | | A02.3 Pastures | A02.30 Pastures |
| | | A02.4 Hedgerows | A02.40 Hedgerows |

| | | | |
|---|---|---|---|
| A Terrestrial areas | A03 Forests and woodland | A03.1 Broadleaf forests | A03.11 Montane and subalpine broadleaf forests |
| | | | A03.12 Broadleaf bog forests |
| | | | A03.13 Riparian forests |
| | | | A03.19 Other broadleaf forests |
| | | A03.2 Coniferous forests | A03.21 Montane and subalpine coniferous forests |
| | | | A03.22 Coniferous bog forests |
| | | | A03.29 Other coniferous forests |
| | | A03.3 Mixed forests | A03.31 Montane and subalpine mixed forests |
| | | | A03.32 Mixed bog forests |
| | | | A03.39 Other mixed forests |
| | | A03.4 Transitional wood- and shrubland | A03.41 Reforestation |
| | | | A03.42 Forest glades and regeneration areas |
| | | | A03.49 Other transitional wood- and shrubland |
| | A04 Semi-natural open areas | A04.1 Natural or extensively used grassland | A04.11 Heathland |
| | | | A04.12 Alpine meadows |
| | | | A04.19 Other natural or extensively used grassland |
| | | A04.2 Wetlands | A04.21 Marshes |
| | | | A04.22 Peatbogs with active cutting |
| | | | A04.23 Natural or renaturalized peatbogs |
| | | | A04.24 Natural or renaturalized fens |
| | | | A04.25 Salt marshes |
| | | | A04.29 Other wetlands |
| | | A04.3 Sparsely or nonvegetated areas | A04.31 (Artificial) sand or pebble beaches, inhomogeneous coast |
| | | | A04.32 Coastal dunes |
| | | | A04.33 Inland sand, soil or rock surfaces |
| | | | A04.34 Screes |
| | | | A04.35 Natural bare rock |
| | | | A04.36 Glaciers and perpetual snow |
| | | | A04.37 Montane and subalpine heath or shrubland |
| | | | A04.39 Other sparsely vegetated areas |

Federal Statistical Office, Method of the Ecosystem Extent Account, 2023

| | | | |
|---|---|---|---|
| B Waters | B01 Freshwater | B01.1 Water courses | B01.11 Large natural water courses |
| | | | B01.12 Large heavily modified water courses |
| | | | B01.13 Large artificial water courses |
| | | | B01.19 Other, small water courses |
| | | B01.2 Lakes | B01.21 Large natural lakes |
| | | | B01.22 Large heavily modified lakes |
| | | | B01.23 Large artificial lakes |
| | | | B01.29 Other, small lakes |
| | B02 Marine waters | B02.1 Tidal flats | B02.11 Tidal flats with macrophytes |
| | | | B02.12 Tidal flats with mussel beds |
| | | | B02.19 Other tidal flats |
| | | B02.2 Coastal waters | B02.21 Coastal sea macrophytes |
| | | | B02.22 Coastal reefs |
| | | | B02.23 Coastal sandbanks |
| | | | B02.29 Other coastal waters |
| | | B02.3 Open sea | B02.31 Open sea with macrophytes |
| | | | B02.32 Open sea reefs |
| | | | B02.33 Open sea sandbanks |
| | | | B02.39 Other seabeds in the open sea |

Note: No areas are currently classified to ecosystems shown in grey (A02.19, A02.29, A04.29).

## 7.2 Ecosystem fact sheets

The ecosystem fact sheets contain summaries of the most important information for each ecosystem class. They are structured as follows:

Title Name of the ecosystem class as well as a hierarchical classification of the ecosystem class in the national ecosystem classification (group, division, section) and a schematic map in the top right-hand corner showing the distribution of the respective ecosystem class in Germany (based on the Ecosystem Extent Account 2018).

I) A description of the ecosystem. Parts of the ecosystem descriptions containing information on land cover and use are taken from the Documentation on the Land Cover Model for Germany (LBM -DE) of the Federal Agency for Cartography and Geodesy (BKG).

II) An aerial photograph (orthophoto) showing an example of the spatial delineation of the ecosystem class.

III) A list of the criteria on which allocation to the respective ecosystem class is based. These are combinations of land cover (LB) and land use (LN)[15], but also additional ecological or structural criteria (see "Criterion 1-5" columns).

IV) Information on the data sets used for classification.

V) Crosswalks to international ecosystem typologies such as the Corine Land Cover (CLC) classification, the EUNIS Habitat Classification or the IUCN Global Ecosystem Typology.

[15] See the Documentation on the Land Cover Model for Germany (LBM-DE) of the Federal Agency for Cartography and Geodesy (BKG) for a description of the land cover and land use coding. In particular, the LBM-DE describes the land cover and land use in vector format, and is the most important data source for the extent account.

A Terrestrial areas

A01 Settlement areas and transport infrastructure

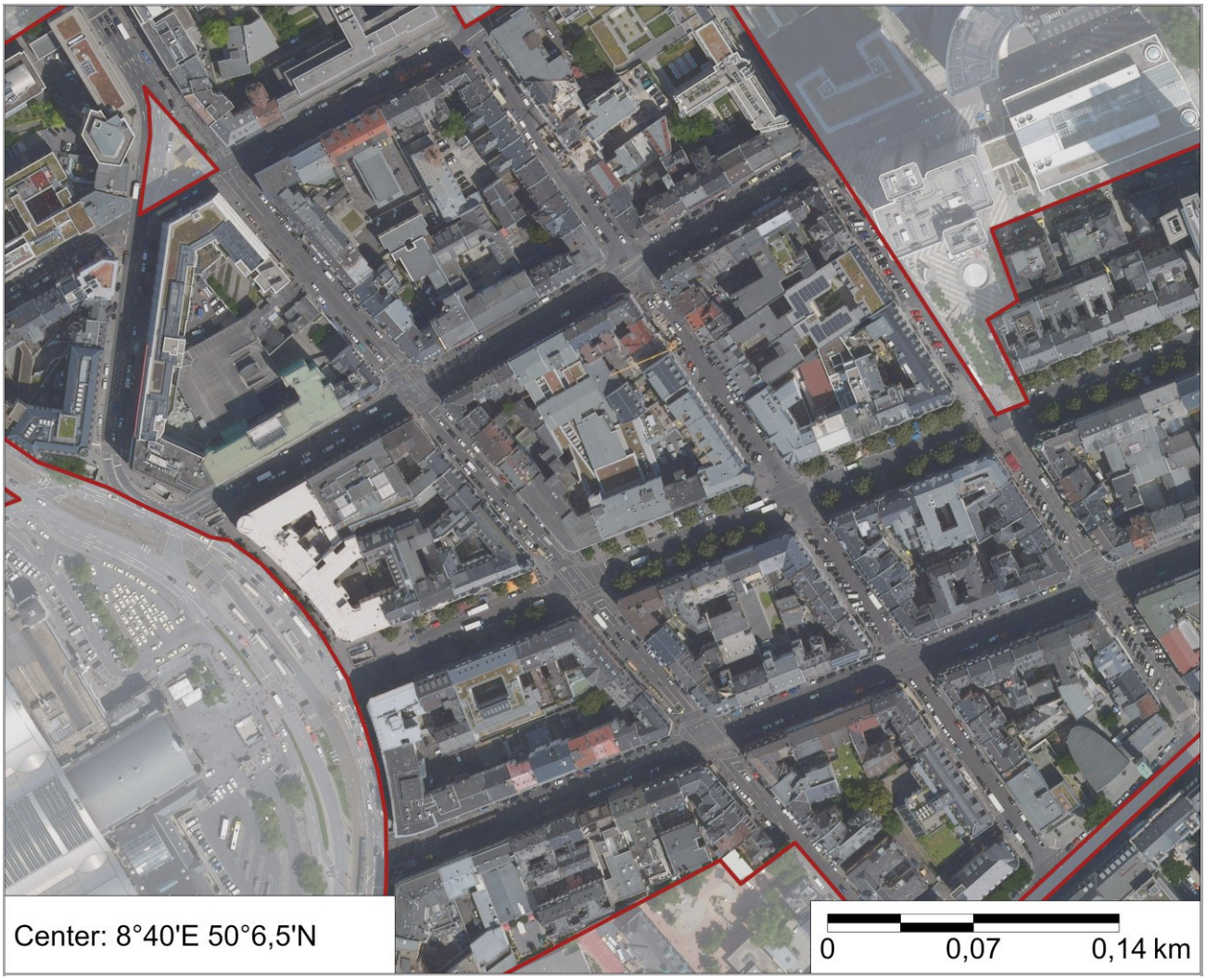
A01.1 Settlement areas with high building density

## A01.11 Residential areas with high building density

**I. Description:**

Residential areas with high building density are often characterised by block development. This structure is typical for the centres of larger cities. An area has a high building density if the average building height per square metre exceeds 4.8 metres. This value is derived from specifications in the Federal Land Utilisation Ordinance and the Building Energy Act. A high building density can therefore indicate high buildings or lower building heights with a simultaneously lower proportion of undeveloped open spaces.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B110 | N112 | High building density | | | | |
| B110 | N133 | High building density | | | | |
| B122 | N112 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| 3D Building Models LoD1 Germany (LoD1-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.1.1 | Continuous urban fabric | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J1 | Buildings of cities, towns and villages |
| J4 | Transport networks and other constructed hard-surfaced areas |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.1 Settlement areas with high building density

## A01.12 Industrial areas with high building density

**I. Description:**

Industrial areas with high building density are built up with industrial buildings or supply and disposal companies. These are, for example, production halls and industry, power plants or water and sewage facilities. An area has a high building density if the average building height per square metre exceeds 4.8 metres. This value is derived from specifications in the Federal Land Utilisation Ordinance and the Building Energy Act. A high building density can therefore indicate high buildings or lower building heights with a simultaneously lower proportion of undeveloped open spaces.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B110 | N120 | High building density | | | | |
| B121 | N120 | High building density | | | | |
| B122 | N120 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| 3D Building Models LoD1 Germany (LoD1-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.1 | Industrial and commercial units | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J1 | Buildings of cities, towns and villages |
| J4 | Transport networks and other constructed hard-surfaced areas |
| J5 | Highly artificial man-made waters and associated structures |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

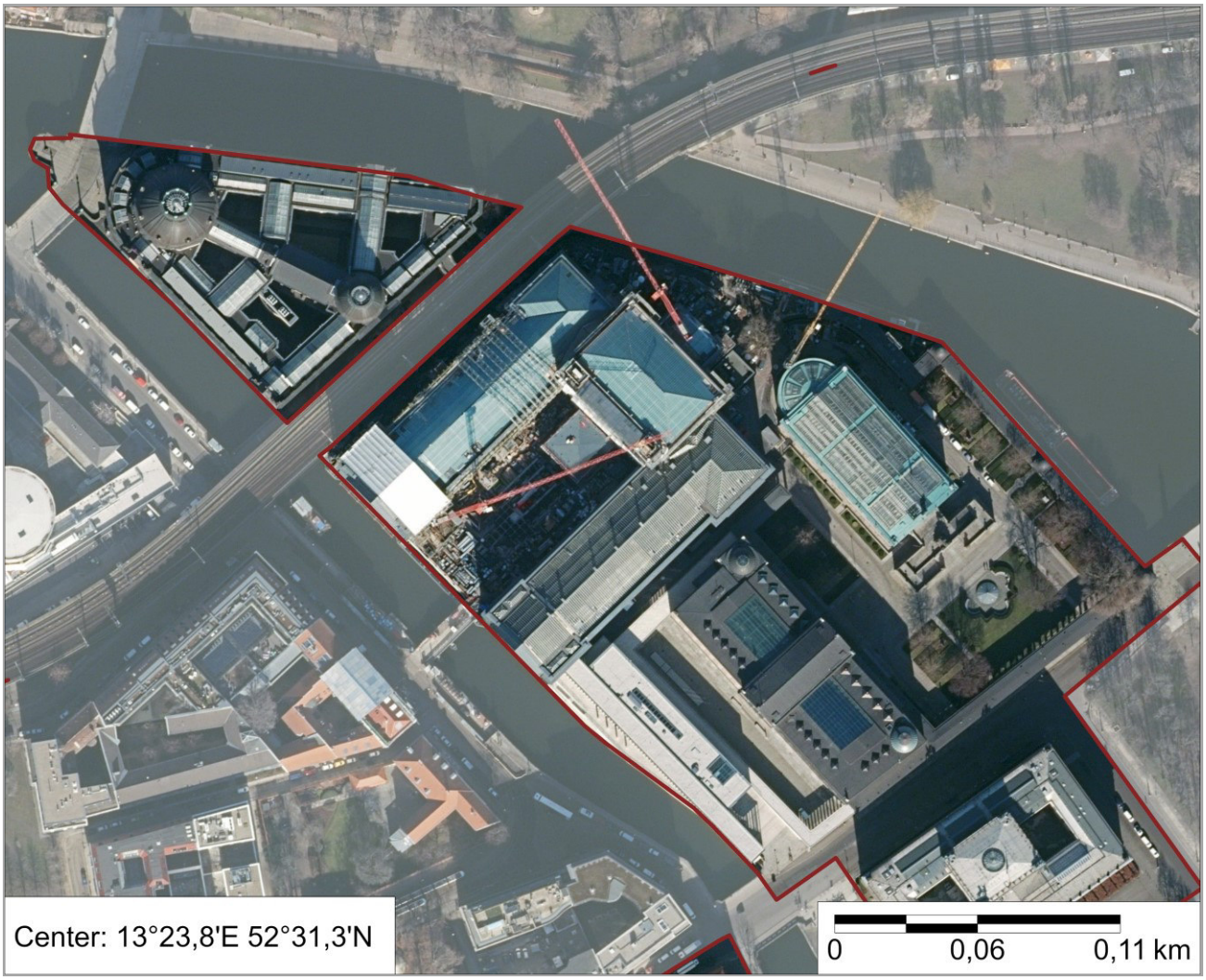
A01.1 Settlement areas with high building density

# A01.13 Commercial areas and public institutions with high building density

**I. Description:**

Commercial areas and public institutions with high building density are developed with buildings for commercial (trade, services) or public use (culture, security, religion, administration). These are, for example, shopping centres, administrative and office buildings, museums, universities or religious buildings such as churches, synagogues or mosques. An area has a high building density if the average building height per square metre exceeds 4.8 metres. This value is derived from specifications in the Federal Land Utilisation Ordinance and the Building Energy Act. A high building density can therefore indicate high buildings or lower building heights with a simultaneously lower proportion of undeveloped open spaces.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B110 | N121 | High building density | | | | |
| B110 | N122 | High building density | | | | |
| B110 | N142 | High building density | | | | |
| B110 | N211 | High building density | | | | |
| B121 | N121 | High building density | | | | |
| B121 | N133 | High building density | | | | |
| B121 | N142 | High building density | | | | |
| B121 | N211 | High building density | | | | |
| B121 | N999 | High building density | | | | |
| B122 | N121 | | | | | |
| B122 | N142 | | | | | |
| B122 | N211 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| 3D Building Models LoD1 Germany (LoD1-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.1 | Industrial and commercial units | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J1 | Buildings of cities, towns and villages |
| J4 | Transport networks and other constructed hard-surfaced areas |

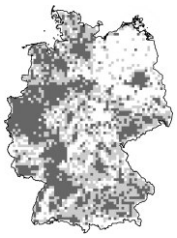
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.2 Settlement areas with low building density



## A01.21 Residential areas with low building density

**I. Description:**

Residential areas with low building density are rather sparsely developed with residential buildings, such as in single-family housing estates or village residential areas. An area has a low building density if the average building height per square metre is less than 4.8 metres. This value is derived from specifications in the Federal Land Utilisation Ordinance and the Building Energy Act. A low building density can therefore indicate low building heights or high buildings with a simultaneously higher proportion of undeveloped open spaces between built-up areas.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N112 | No orchard meadow | Soil sealing share greater than or equal to 15 % | | | |
| B242 | N112 | Soil sealing share greater than or equal to 15 % | | | | |
| B311 | N112 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N112 | Soil sealing share greater than or equal to 15 % | | | | |
| B110 | N112 | Low building density | | | | |
| B110 | N133 | Low building density | | | | |
| B231 | N112 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N112 | Soil sealing share greater than or equal to 15 % | | | | |
| B324 | N112 | Soil sealing share greater than or equal to 15 % | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |
| 3D Building Models LoD1 Germany (LoD1-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.1.2 | Discontinuous urban fabric | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J1 | Buildings of cities, towns and villages |
| J2 | Low density buildings |

| | |
|---|---|
| J4 | Transport networks and other constructed hard-surfaced areas |

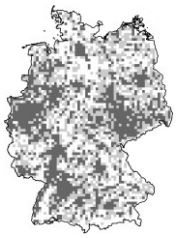
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.2 Settlement areas with low building density

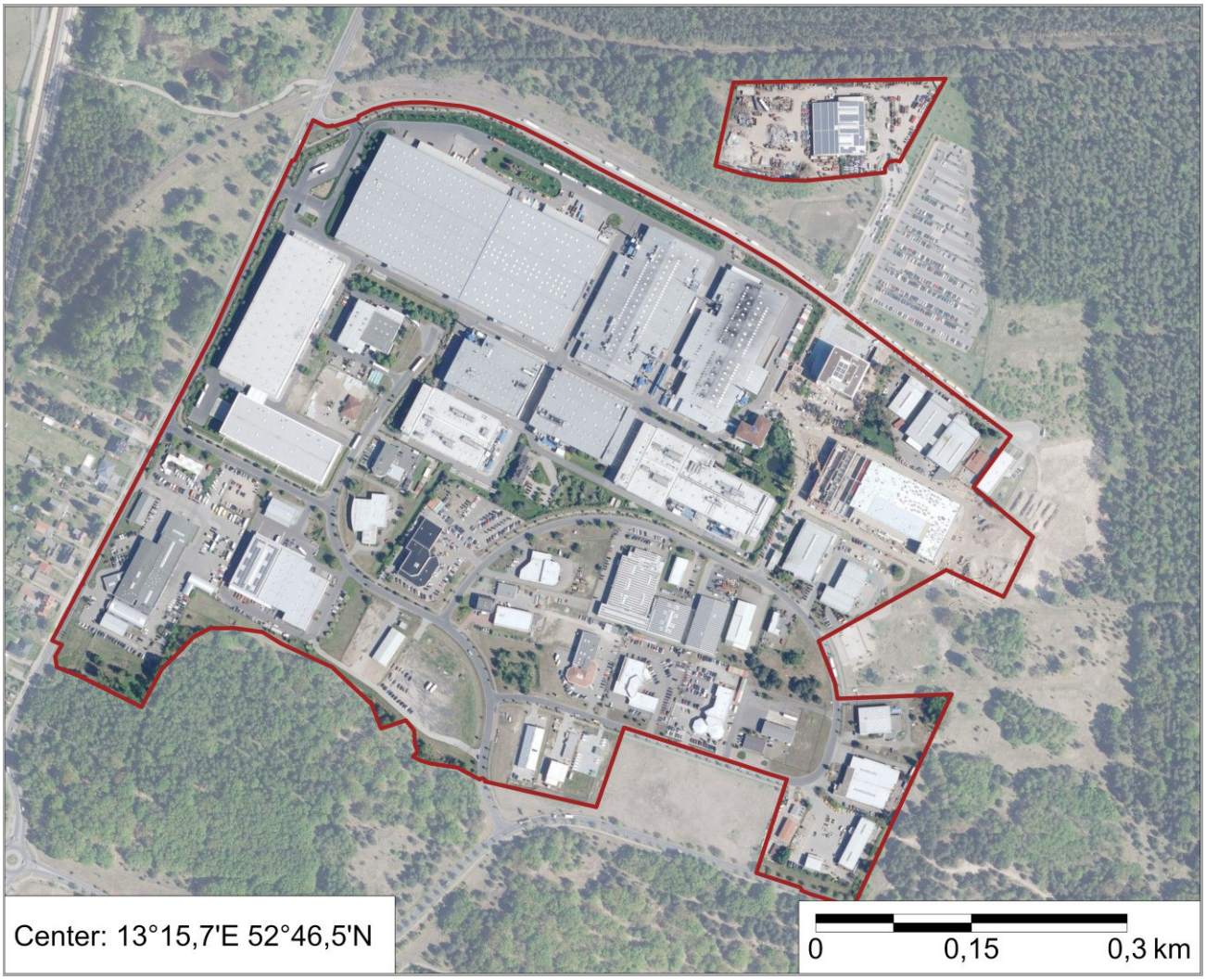


## A01.22 Industrial areas with low building density

**I. Description:**

Industrial areas with low building density are developed with industrial buildings or supply or disposal companies. These include, for example, smaller production buildings and wastewater or sewage treatment. An area has a low building density if the average building height per square meter is less than 4.8 meters. This value is derived from specifications in the Federal Land Utilisation Ordinance and the Building Energy Act. A low building density can therefore indicate low building heights or high buildings with a simultaneously high proportion of undeveloped open spaces between built-up areas.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N120 | No orchard meadow | Soil sealing share greater than or equal to 15 % | | | |
| B242 | N120 | Soil sealing share greater than or equal to 15 % | | | | |
| B311 | N120 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N120 | Soil sealing share greater than or equal to 15 % | | | | |
| B110 | N120 | Low building density | | | | |
| B121 | N120 | Low building density | | | | |
| B231 | N120 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N120 | Soil sealing share greater than or equal to 15 % | | | | |
| B321 | N120 | Soil sealing share greater than or equal to 15 % | | | | |
| B324 | N120 | Soil sealing share greater than or equal to 15 % | | | | |
| B330 | N120 | Vegetation share is greater than or equal to 10 % | Soil sealing share greater than or equal to 15 % | | | |
| B330 | N120 | Vegetation share is less than 10 % | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |
| 3D Building Models LoD1 Germany (LoD1-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.1 | Industrial and commercial units | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J1 | Buildings of cities, towns and villages |
| J2 | Low density buildings |
| J4 | Transport networks and other constructed hard-surfaced areas |
| J5 | Highly artificial man-made waters and associated structures |

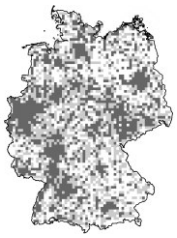
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.2 Settlement areas with low building density

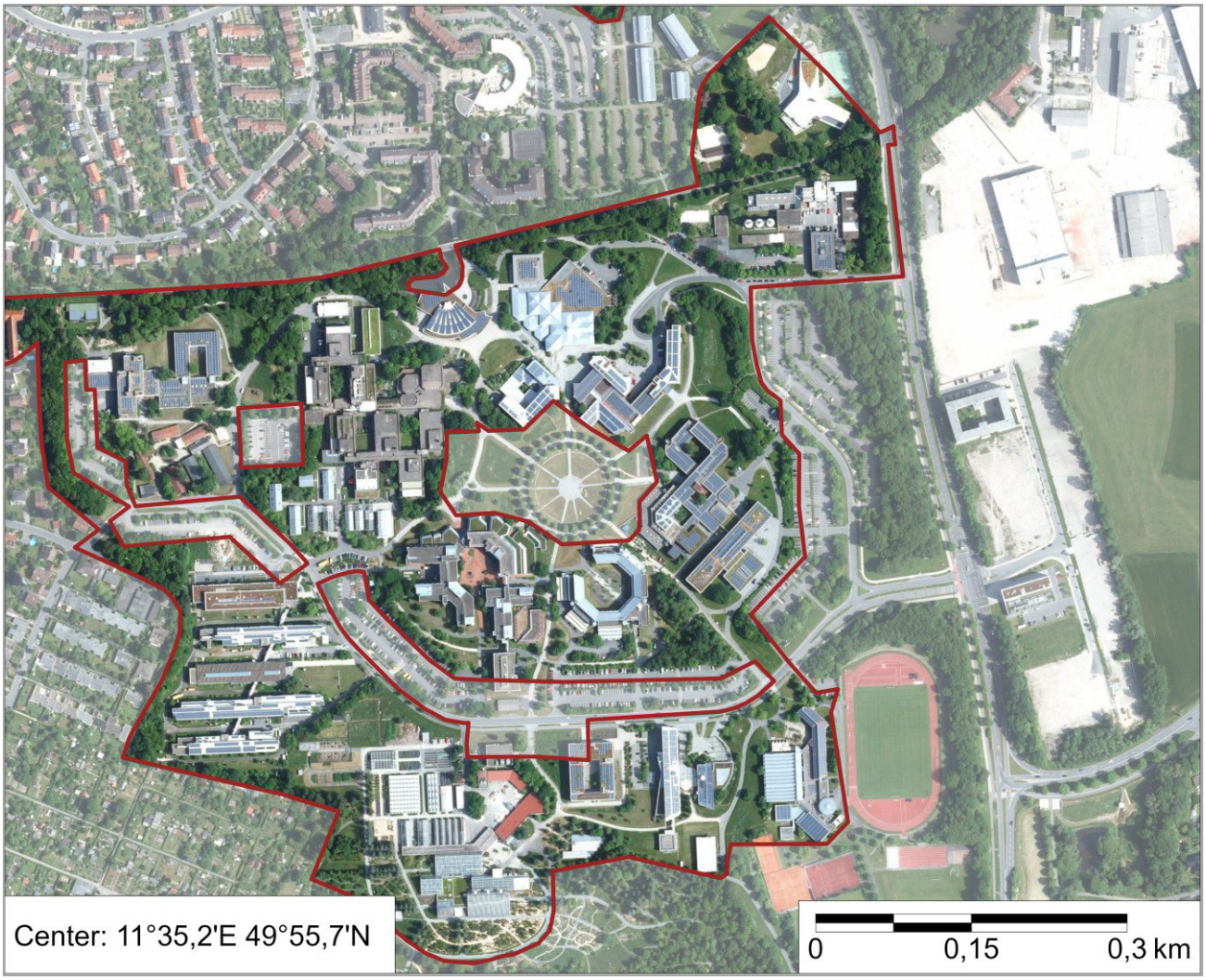


# A01.23 Commercial areas and public institutions with low building density

**I. Description:**

Commercial areas and public institutions with low building density are developed with buildings for commercial (trade, services) or public use (culture, security, religion, administration). These include administration buildings, grocery stores, museums, universities as well as churches, synagogues or mosques. An area has a low building density if the average building height per square meter is less than 4.8 meters. This value is derived from specifications in the Federal Land Utilisation Ordinance and the Building Energy Act. A low building density can therefore indicate low building heights or high buildings with a simultaneously high proportion of undeveloped open spaces between built-up areas.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N142 | No orchard meadow | Soil sealing share greater than or equal to 15 % | | | |
| B233 | N121 | No orchard meadow | No military use | Soil sealing share greater than or equal to 15 % | | |
| B242 | N121 | Soil sealing share greater than or equal to 15 % | | | | |
| B242 | N142 | Soil sealing share greater than or equal to 15 % | | | | |
| B311 | N121 | Soil sealing share greater than or equal to 15 % | | | | |
| B311 | N142 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N121 | Soil sealing share greater than or equal to 15 % | | | | |
| B110 | N121 | Low building density | | | | |
| B110 | N142 | Low building density | | | | |
| B110 | N211 | Low building density | | | | |
| B121 | N121 | Low building density | | | | |
| B121 | N133 | Low building density | | | | |
| B121 | N142 | Low building density | | | | |
| B121 | N211 | Low building density | | | | |
| B121 | N999 | Low building density | | | | |
| B231 | N121 | No military use | Soil sealing share greater than or equal to 15 % | | | |
| B231 | N142 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N142 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N121 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N142 | Soil sealing share greater than or equal to 15 % | | | | |

| | | | |
|---|---|---|---|
| B321 | N121 | No military use | Soil sealing share greater than or equal to 15 % |
| B321 | N142 | Soil sealing share greater than or equal to 15 % | |
| B322 | N121 | No military use | Soil sealing share greater than or equal to 15 % |
| B324 | N121 | Soil sealing share greater than or equal to 15 % | |
| B324 | N142 | Soil sealing share greater than or equal to 15 % | |
| B330 | N121 | Vegetation share is greater than or equal to 10 % | Soil sealing share greater than or equal to 15 % |
| B330 | N121 | Vegetation share is less than 10 % | |
| B110 | N122 | Low building density | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |
| 3D Building Models LoD1 Germany (LoD1-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.1 | Industrial and commercial units | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J1 | Buildings of cities, towns and villages |
| J2 | Low density buildings |
| J4 | Transport networks and other constructed hard-surfaced areas |

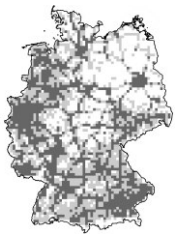
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.3 Transport infrastructure

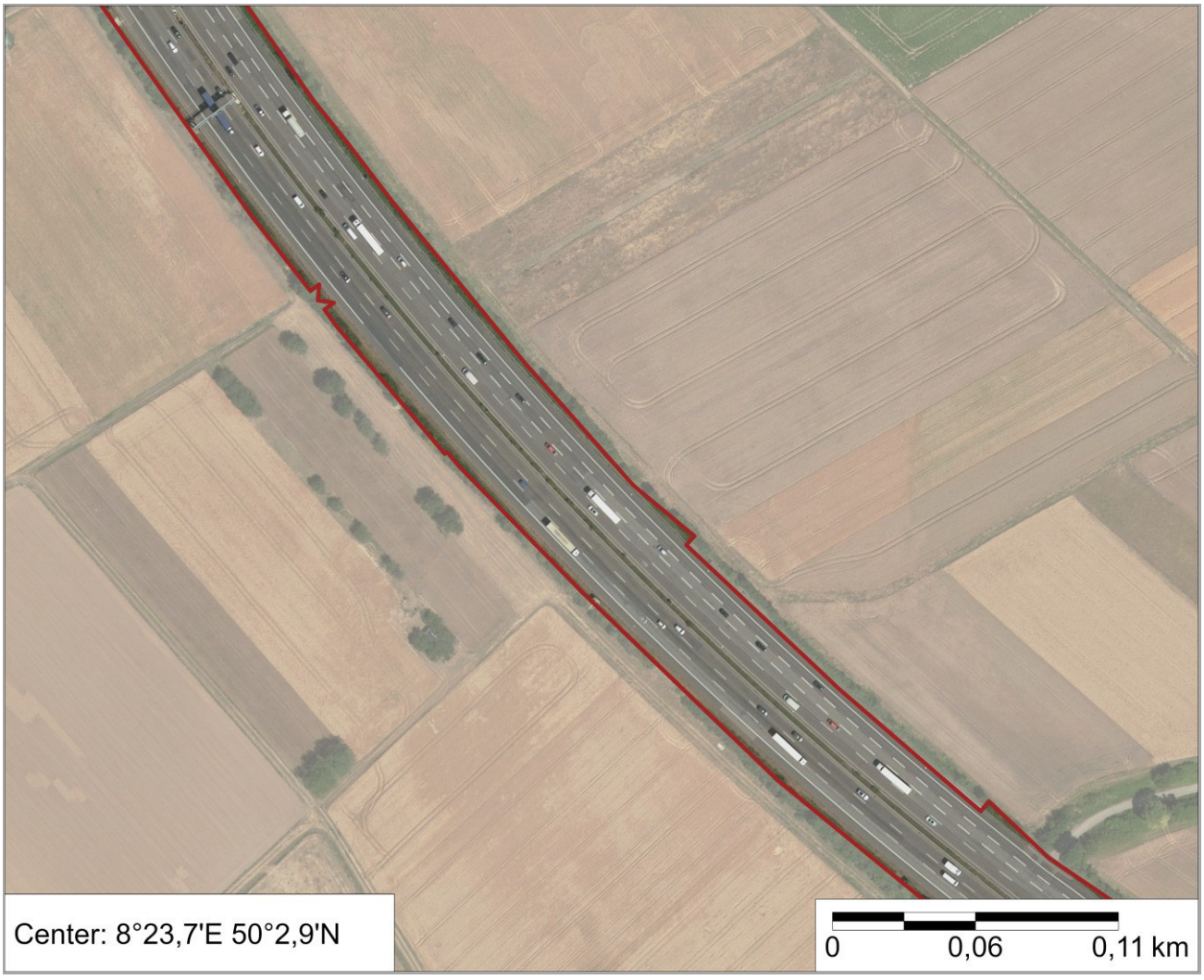


## A01.31 Roads

**I. Description:**

Roads are built-up areas that are primarily used for motor traffic or are occupied by such traffic. These include in particular all district, state and federal roads, motorways and other characteristic areas dedicated to road traffic, such as large parking lots. Roadside greenery is not assigned to this ecosystem class.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B122 | N122 | | | | | |
| B122 | N999 | | | | | |
| | | Road | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J4 | Transport networks and other constructed hard-surfaced areas |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

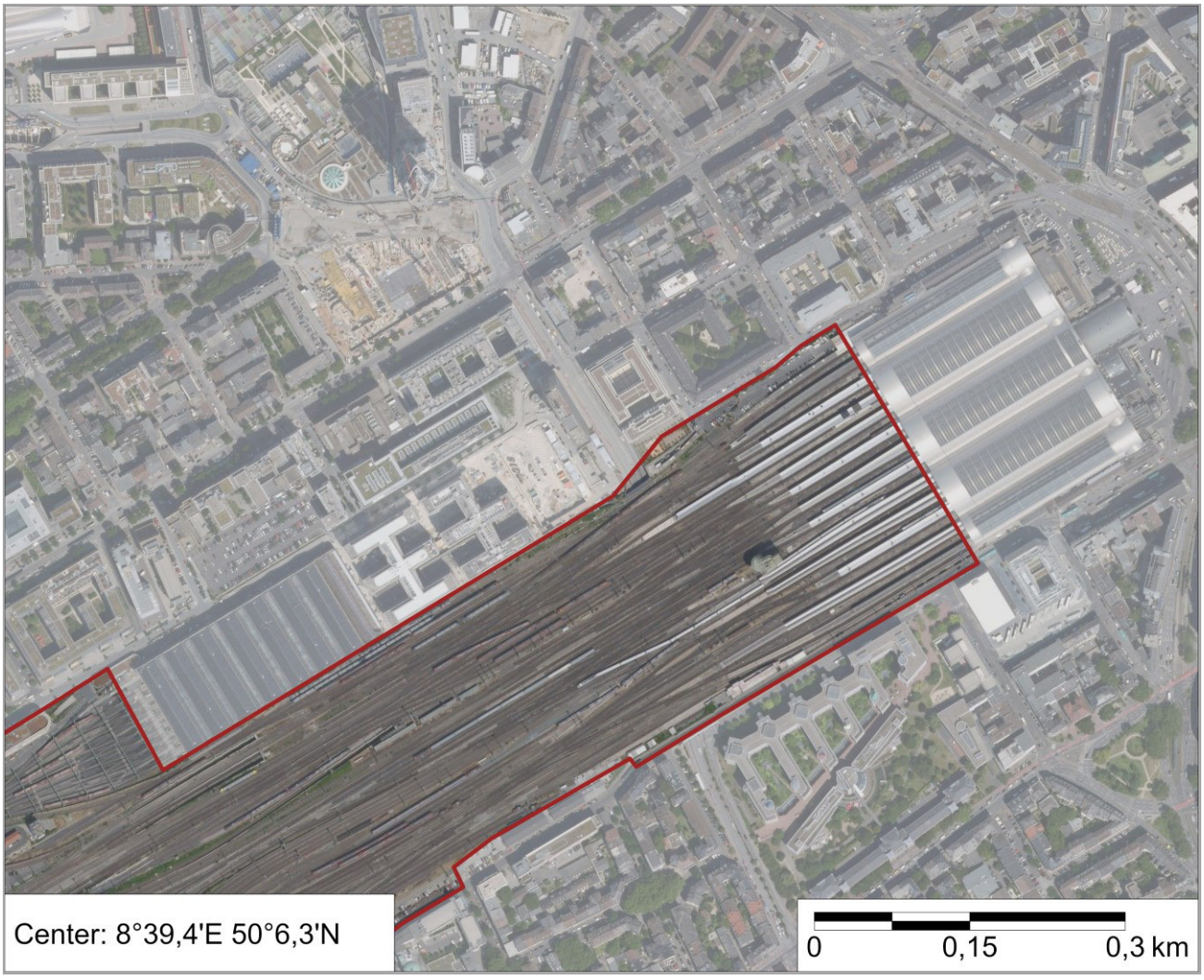
A01.3 Transport infrastructure

## A01.32 Railroads

**I. Description:**

Railroads are built-up areas that serve rail traffic or are used by rail traffic. Track beds usually consist of crushed rock, gravel or slab track. The railroads ecosystem class can provide a habitat for lizards and pioneer plants (herbs, grasses). In contrast to these actively used areas, overgrown, unused areas that formerly served rail traffic are not assigned to this ecosystem class.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B121 | N122 | | | | | |
| B330 | N122 | | | | | |
| | | Railroads | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J4 | Transport networks and other constructed hard-surfaced areas |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

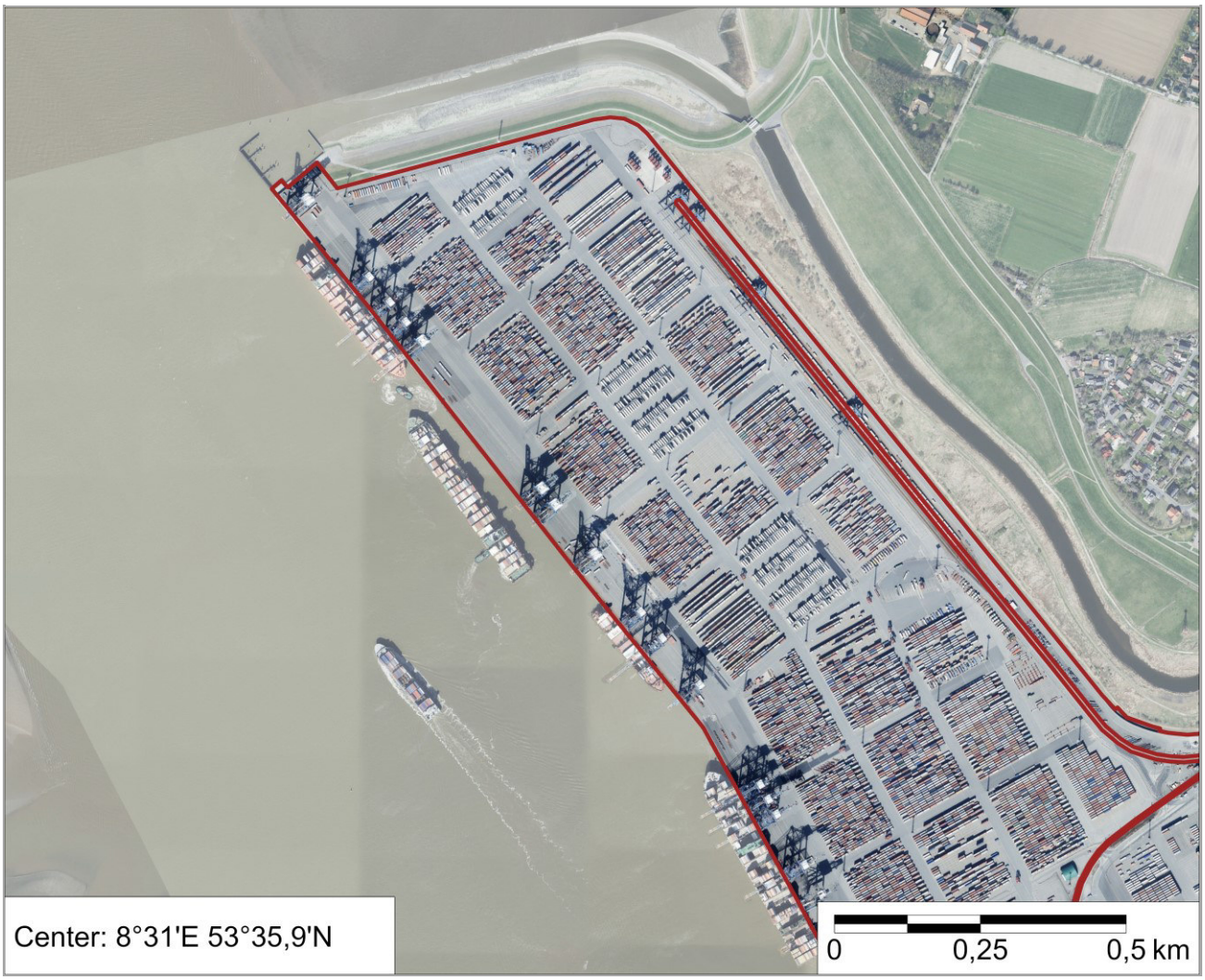
A01.3 Transport infrastructure

## A01.33 Ports

**I. Description:**

Ports are built-up areas that are exclusively or mainly used for shipping traffic, such as port facilities, shipyards and locks. Sealed surfaces at ports and buildings or halls of the port also belong to this class. Roads and railroads do not belong to this ecosystem class.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N123 | No orchard meadow | Soil sealing share greater than or equal to 15 % | | | |
| B242 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B311 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B110 | N123 | | | | | |
| B121 | N123 | | | | | |
| B122 | N123 | | | | | |
| B231 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B321 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B322 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B324 | N123 | Soil sealing share greater than or equal to 15 % | | | | |
| B330 | N123 | Vegetation share is greater than or equal to 10 % | Soil sealing share greater than or equal to 15 % | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.3 | Port areas | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J4 | Transport networks and other constructed hard-surfaced areas |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.3 Transport infrastructure

## A01.34 Airports

**I. Description:**

Airports are built-up areas that are primarily used for air traffic. Airport buildings or halls, taxiways and the apron also belong to this class. Grass areas located on the airport site are not assigned to this ecosystem class.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N124 | No orchard meadow | Soil sealing share greater than or equal to 15 % | | | |
| B311 | N124 | Soil sealing share greater than or equal to 15 % | | | | |
| B110 | N124 | | | | | |
| B121 | N124 | | | | | |
| B122 | N124 | | | | | |
| B231 | N124 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N124 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N124 | Soil sealing share greater than or equal to 15 % | | | | |
| B321 | N124 | Soil sealing share greater than or equal to 15 % | | | | |
| B322 | N124 | Soil sealing share greater than or equal to 15 % | | | | |
| B324 | N124 | Soil sealing share greater than or equal to 15 % | | | | |
| B330 | N124 | Vegetation share is greater than or equal to 10 % | Soil sealing share greater than or equal to 15 % | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.4 | Airports | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J4 | Transport networks and other constructed hard-surfaced areas |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

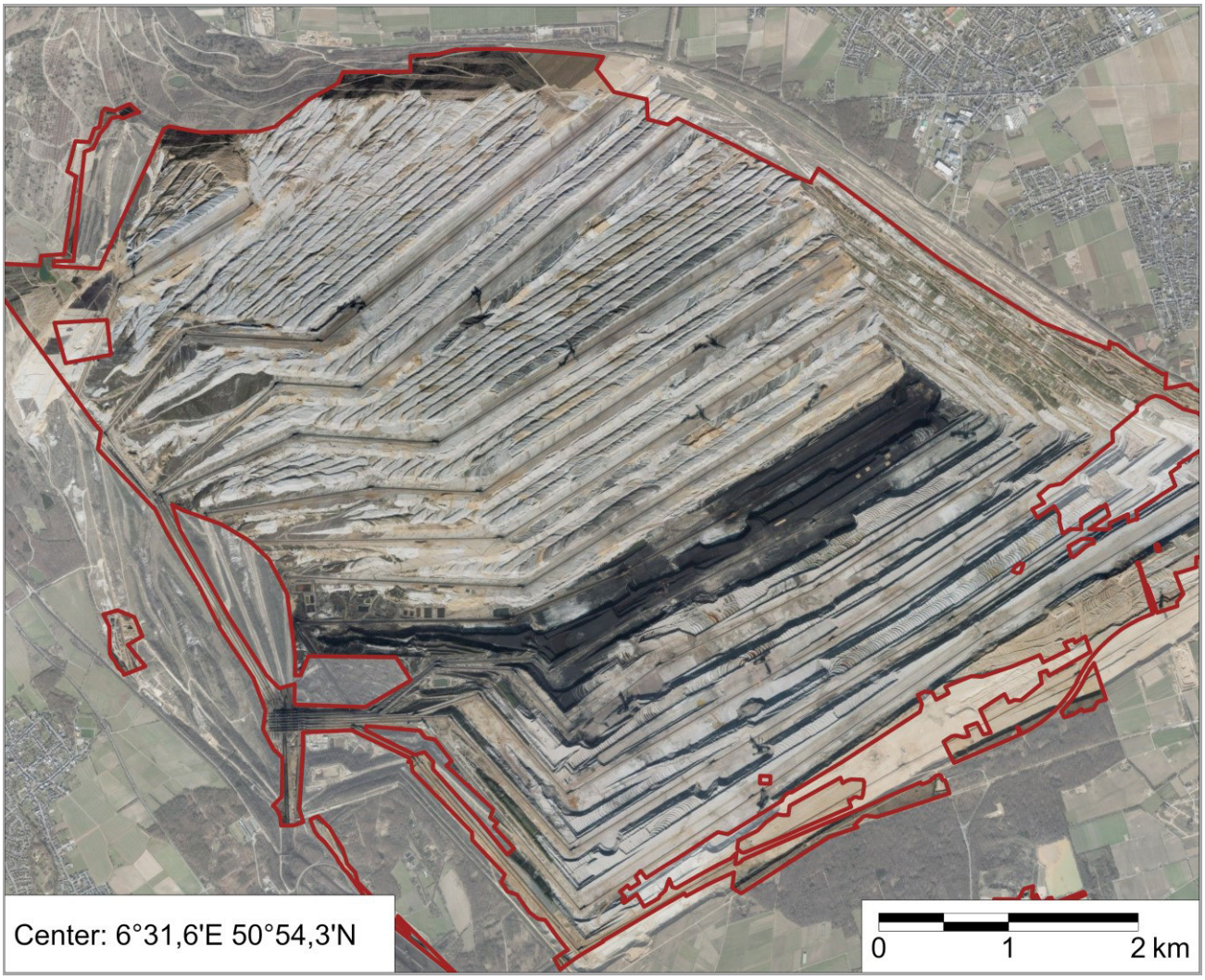
A01.4 Mining areas, dumpsites and construction sites

## A01.41 Mining areas

**I. Description:**

Soil material is extracted above ground on mining areas. Examples are opencast mines, clay pits or quarries. In addition, buildings, halls and sealed surfaces of the mining company belong to this class.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N131 | No orchard meadow | Soil sealing share greater than or equal to 15 % | | | |
| B311 | N131 | Soil sealing share greater than or equal to 15 % | | | | |
| B110 | N131 | | | | | |
| B121 | N131 | | | | | |
| B122 | N131 | | | | | |
| B231 | N131 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N131 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N131 | Soil sealing share greater than or equal to 15 % | | | | |
| B321 | N131 | Soil sealing share greater than or equal to 15 % | | | | |
| B324 | N131 | Soil sealing share greater than or equal to 15 % | | | | |
| B330 | N131 | | | | | |
| B332 | N131 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.3.1 | Mineral extraction sites | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J3 | Extractive industrial sites |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.4 Mining areas, dumpsites and construction sites

## A01.42 Landfills and spoil heaps

**I. Description:**

Waste materials and overburden are stored above ground in landfills and spoil heaps. These include buildings or halls of the landfills, as well as facilities, sealed areas, slag lakes and liquid waste.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N132 | No orchard meadow | Soil sealing share greater than or equal to 15 % | | | |
| B311 | N132 | Soil sealing share greater than or equal to 15 % | | | | |
| B110 | N132 | | | | | |
| B121 | N132 | | | | | |
| B122 | N132 | | | | | |
| B231 | N132 | Soil sealing share greater than or equal to 15 % | | | | |
| B312 | N132 | Soil sealing share greater than or equal to 15 % | | | | |
| B313 | N132 | Soil sealing share greater than or equal to 15 % | | | | |
| B321 | N132 | Soil sealing share greater than or equal to 15 % | | | | |
| B324 | N132 | Soil sealing share greater than or equal to 15 % | | | | |
| B330 | N132 | | | | | |
| B512 | N132 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.3.2 | Dump sites | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J6 | Waste deposits |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.4 Mining areas, dumpsites and construction sites

## A01.43 Construction sites

**I. Description:**

On construction sites soil is removed and excavation works and construction activities are carried out. Construction sites are included in this ecosystem class throughout the entire construction process, i.e. from undeveloped areas with roads already laid out to the full completion of the structure. Areas on which soil is removed but not built upon fall into the category of mining areas (A01.41).

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B122 | N133 | | | | | |
| B231 | N133 | | | | | |
| B321 | N133 | | | | | |
| B330 | N133 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.3.3 | Construction sites | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| J1 | Buildings of cities, towns and villages |
| J2 | Low density buildings |

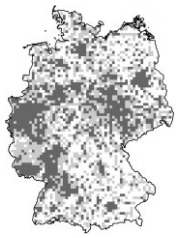
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.5 Recreational and urban green spaces

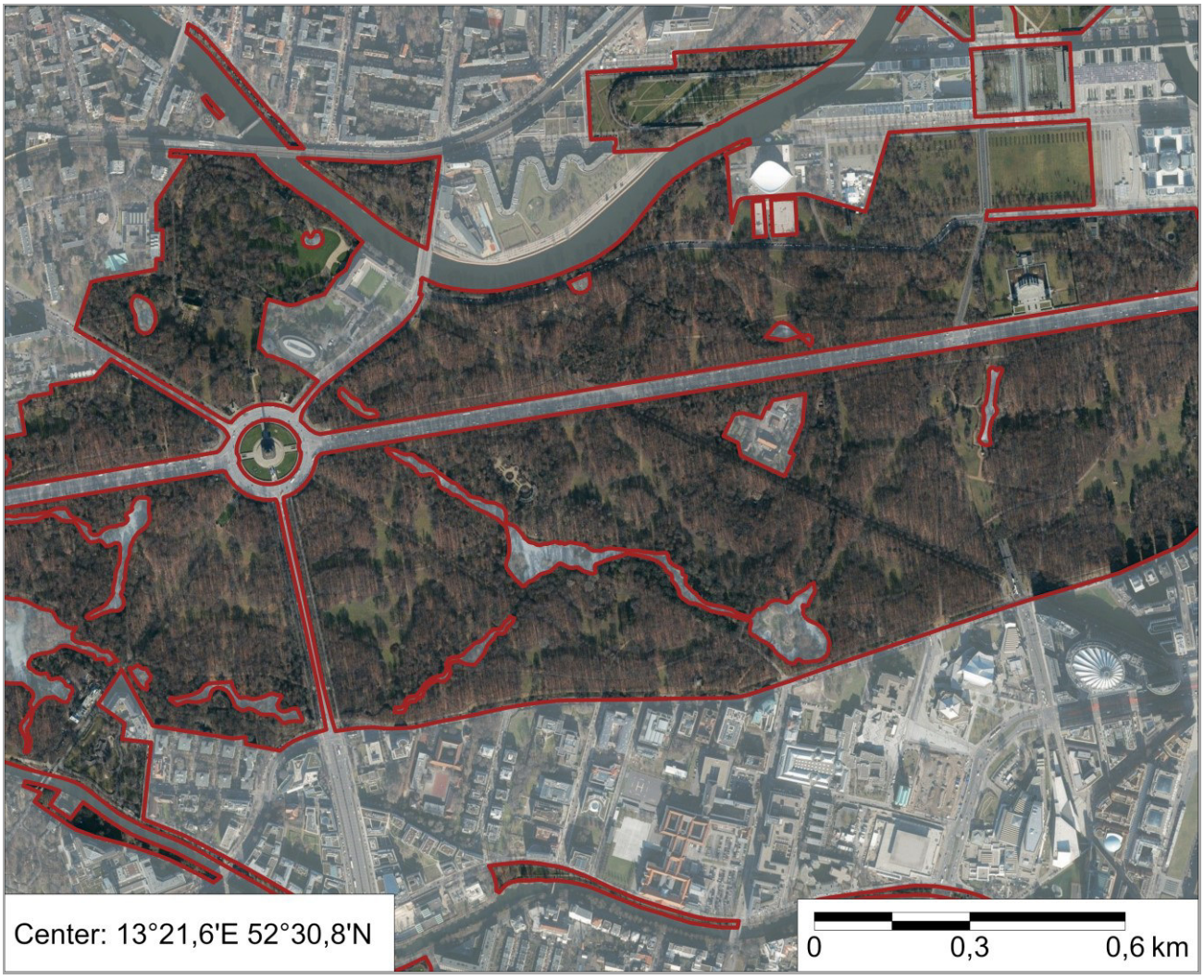


## A01.51 Green urban areas

**I. Description:**

Green urban areas are undeveloped and can be found within or directly adjacent to continuously built-up areas with an extension of at least about ten hectares or ten propertie. These include parks, zoos and cemeteries as well as green spaces. Areas in this ecosystem class are generally permanently accessible to the public, are used for recreation and are landscaped.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B242 | N141 | Soil sealing share greater than or equal to 15 % | | | | |
| B311 | N141 | | | | | |
| B231 | N141 | | | | | |
| B233 | N141 | No orchard meadow | | | | |
| B312 | N141 | | | | | |
| B313 | N141 | | | | | |
| B324 | N141 | | | | | |
| B330 | N141 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.4.1 | Green urban areas | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| I2 | Cultivated areas of gardens and parks |
| X11 | Large parks |
| X22 | Small city centre non-domestic gardens |
| X23 | Large non-domestic gardens |

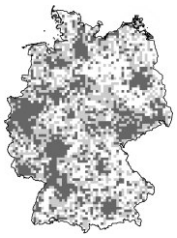
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.5 Recreational and urban green spaces



## A01.52 Sport and recreational areas

**I. Description:**

Sport and recreational areas are used for sports, leisure activities or recreation. They have a soil sealing share of less than 15 %. They include parks, zoos and cemeteries as well as sports facilities, allotments, dog parks, amusement parks, campsites and holiday homes in discontinuous built-up areas with an extension of less than ten hectares or ten properties.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N112 | No orchard meadow | Soil sealing share smaller than 15 % | | | |
| B233 | N142 | No orchard meadow | Soil sealing share smaller than 15 % | | | |
| B324 | N142 | Soil sealing share smaller than 15 % | | | | |
| B242 | N214 | Continuously built-up area | | | | |
| B242 | N999 | | | | | |
| B231 | N112 | Soil sealing share smaller than 15 % | | | | |
| B231 | N142 | Soil sealing share smaller than 15 % | | | | |
| B242 | N112 | Soil sealing share smaller than 15 % | | | | |
| B242 | N142 | Soil sealing share smaller than 15 % | | | | |
| B311 | N112 | Soil sealing share smaller than 15 % | | | | |
| B311 | N142 | Soil sealing share smaller than 15 % | | | | |
| B312 | N112 | Soil sealing share smaller than 15 % | | | | |
| B312 | N142 | Soil sealing share smaller than 15 % | | | | |
| B313 | N112 | Soil sealing share smaller than 15 % | | | | |
| B313 | N142 | Soil sealing share smaller than 15 % | | | | |
| B321 | N142 | Soil sealing share smaller than 15 % | | | | |
| B324 | N112 | Soil sealing share smaller than 15 % | | | | |
| B330 | N142 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.4.2 | Sport and leisure facilities | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| E2 | Mesic grasslands |
| J4 | Transport networks and other constructed hard-surfaced areas |

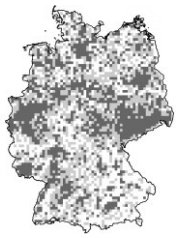
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A01 Settlement areas and transport infrastructure

A01.5 Recreational and urban green spaces



## A01.59 Other green urban areas

**I. Description:**

Other green urban areas include the green areas accompanying traffic areas (motorways, airports) and undeveloped areas with a soil sealing share below 15 % in continous built-up areas with an extension of at least ten hectares or ten properties (developed plots of land).

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N120 | No orchard meadow | Soil sealing share smaller than 15 % | Continuously built-up area | | |
| B233 | N123 | No orchard meadow | Soil sealing share smaller than 15 % | Continuously built-up area | | |
| B233 | N124 | No orchard meadow | Soil sealing share smaller than 15 % | Continuously built-up area | | |
| B233 | N131 | No orchard meadow | Soil sealing share smaller than 15 % | Continuously built-up area | | |
| B233 | N132 | No orchard meadow | Soil sealing share smaller than 15 % | Continuously built-up area | | |
| B233 | N121 | No orchard meadow | No military use | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B233 | N122 | No orchard meadow | Continuously built-up area | | | |
| B233 | N999 | No orchard meadow | Continuously built-up area | | | |
| B311 | N122 | Continuously built-up area | | | | |
| B312 | N122 | Continuously built-up area | | | | |
| B211 | N122 | Continuously built-up area | | | | |
| B231 | N121 | No military use | Soil sealing share smaller than 15 % | Continuously built-up area | | |
| B231 | N122 | Continuously built-up area | | | | |
| B231 | N999 | Continuously built-up area | | | | |
| B231 | N120 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |
| B231 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |
| B313 | N122 | Continuously built-up area | | | | |
| B231 | N124 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |
| B231 | N131 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |
| B231 | N132 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |
| B242 | N120 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |
| B242 | N121 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |
| B242 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | | | |

| | | | | |
|---|---|---|---|---|
| B242 | N141 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B311 | N120 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B311 | N121 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B311 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B311 | N124 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B321 | N121 | No military use | Soil sealing share smaller than 15 % | Continuously built-up area |
| B321 | N122 | Continuously built-up area | | |
| B311 | N131 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B311 | N132 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B312 | N120 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B312 | N121 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B312 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B312 | N124 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B312 | N131 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B312 | N132 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B313 | N120 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B321 | N999 | Continuously built-up area | | |
| B322 | N121 | No military use | Soil sealing share smaller than 15 % | Continuously built-up area |
| B322 | N122 | Continuously built-up area | | |
| B313 | N121 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B313 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B313 | N124 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B313 | N131 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B313 | N132 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B321 | N120 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B321 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | |

| | | | | |
|---|---|---|---|---|
| B321 | N124 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B321 | N131 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N122 | Continuously built-up area | | |
| B321 | N132 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B322 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B322 | N124 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N120 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N121 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N123 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N124 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N131 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N132 | Soil sealing share smaller than 15 % | Continuously built-up area | |
| B324 | N999 | Continuously built-up area | | |
| B330 | N120 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Continuously built-up area |
| B330 | N121 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Continuously built-up area |
| B330 | N123 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Continuously built-up area |
| B330 | N124 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Continuously built-up area |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| - | Diverse | Based on LC |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| X22 | Small city centre non-domestic gardens |

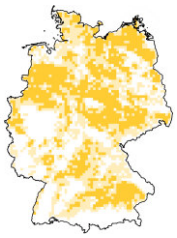
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.4 | Urban and industrial ecosystems |

A Terrestrial areas

A02 Agricultural land

A02.1 Arable land



## A02.11 Non-irrigated arable land

**I. Description:**

Non-irrigated arable land that is regularly ploughed and mostly cultivated in crop rotation. Crops grown on the land include cereals, vegetables, fodder crops, industrial crops and root crops. Areas, that are occasional sprinkler-irrigated or that are regularly turned fallow, are part of the class. The largest shares of arable land are found in the northern federal states, where it often occurs in large-scale, homogeneous structures.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B211 | N211 | | | | | |
| B211 | N214 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 2.1.1 | Non-irrigated arable land | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| I1 | Arable land and market gardens |
| I2 | Cultivated areas of gardens and parks |

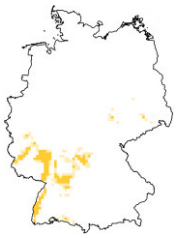
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.1 | Annual croplands |

A Terrestrial areas

A02 Agricultural land

A02.2 Permanent cropland



## A02.21 Vineyards

**I. Description:**

Vineyards are planted with vines in a permanent cultivation. Wine is often grown on southern slopes. The vineyards are mainly found in the south-west of Germany in and along the Rhine Graben as well as on various tributaries of the Rhine such as the Main, the Neckar, the Moselle and the Ahr.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B221 | N211 | | | | | |
| B221 | N214 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 2.2.1 | Vineyards | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| FB4 | Vineyards |

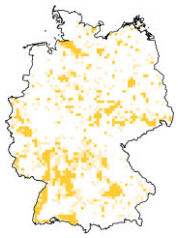
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.3 | Plantations |

A Terrestrial areas

A02 Agricultural land

A02.2 Permanent cropland



## A02.22 Fruit trees and berry plantations

**I. Description:**

Fruit trees and berry plantations are parcels with fruit trees and bushes. Fruit is grown there in permanent cultivation and in a plantation structure. Hop fields with scaffolds also belong to this ecosystem class. Typical types of fruit include apples, pears, cherries, currants, blackberries and raspberries as well as gooseberries and cultivated blueberries. Relevant cultivation areas can be found around Lake Constance in the south and in the Alte Land in the north of Germany. Hops are mainly grown in the Bavarian Hallertau region.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B222 | N211 | | | | | |
| B222 | N214 | | | | | |
| B224 | N211 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 2.2.2 | Fruit trees and berry plantations | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| FB1 | Shrub plantations for whole-plant harvesting |
| FB2 | Shrub plantations for leaf or branch harvest |
| FB3 | Shrub plantations for ornamental purposes or for fruit, other than vineyards |

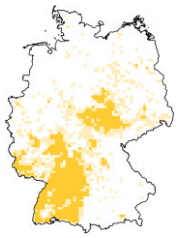
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.3 | Plantations |

A Terrestrial areas

A02 Agricultural land

A02.2 Permanent cropland



## A02.23 Orchard meadows

**I. Description:**

Orchard stands are areas with regular cultivation of standard fruit trees (at the base of the crown at least 180 -220 cm high) and the usage of the areas below as meadows and pastures. The tree cover is not subject to an exact structure. Due to extensive management and the avoidance of fertilizer, orchard meadows have a particularly high biodiversity. Occurrence of orchard meadows are mainly in central and south-west Germany.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N120 | Orchard meadow | | | | |
| B233 | N121 | Orchard meadow | | | | |
| B233 | N122 | Orchard meadow | | | | |
| B233 | N123 | Orchard meadow | | | | |
| B233 | N124 | Orchard meadow | | | | |
| B233 | N131 | Orchard meadow | | | | |
| B233 | N132 | Orchard meadow | | | | |
| B233 | N141 | Orchard meadow | | | | |
| B233 | N142 | Orchard meadow | | | | |
| B233 | N211 | Orchard meadow | | | | |
| B233 | N214 | | | | | |
| B233 | N311 | Orchard meadow | | | | |
| B233 | N999 | Orchard meadow | | | | |
| B233 | N112 | Orchard meadow | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 2.2.2 | Fruit trees and berry plantations | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| G1 | Broadleaved deciduous woodland |

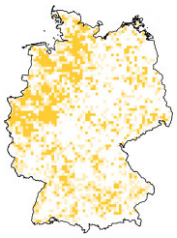
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.3 | Plantations |

A Terrestrial areas

A02 Agricultural land

A02.2 Permanent cropland



## A02.24 Tree nurseries

**I. Description:**

Tree nurseries are areas where young seedlings grow into trees. During the perennial cultivation, the trees are replanted several times. This ecosystem class also includes Christmas tree cultivation and short rotation plantations. Short rotation plantations are agricultural land on which fast-growing trees are cultivated in order to process them into woodchips within a few years. They are not forests within the meaning of the Federal Forest Act and the conversion of forests into short rotation plantations is prohibited by law.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B310 | N211 | | | | | |
| B311 | N211 | | | | | |
| B312 | N211 | | | | | |
| B313 | N211 | | | | | |
| B324 | N211 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 2.1.1 | Non-irrigated arable land | if LC=B324, LC=B310, LC=B311 or LC=B313 |
| 3.1.2 | Coniferous forest | if LC=B312 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| G1 | Broadleaved deciduous woodland |
| G2 | Broadleaved evergreen woodland |
| G3 | Coniferous woodland |
| G4 | Mixed deciduous and coniferous woodland |
| G5 | Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice |

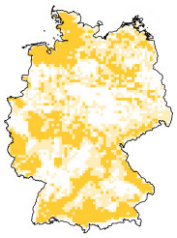
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.3 | Plantations |

A Terrestrial areas

A02 Agricultural land

A02.3 Pastures



## A02.30 Meadows and pastures

**I. Description:**

Meadows and pastures are grassland areas with continuous grass cover, whereby the former are mown regularly and the latter are grazed by animals. Ploughing of the land is not permitted, otherwise it falls into ecosystem class non-irrigated arable land (A02.11). Meadows and pastures are characterized by a mixture of grasses and herbaceous plants, often perennial, such as dandelion and plantain, and are managed to provide animal feed. Due to the different management of meadows and pastures, their species composition differs. Frequent mowing favours cut-tolerant plants on meadows. On the other hand, certain plants that are avoided by grazing animals are more prevalent on pastures. Meadows and pastures occur throughout Germany, but have a regional focus in the Bavarian Alpine foreland and on the North Sea coast.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N120 | No orchard meadow | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B233 | N123 | No orchard meadow | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B233 | N124 | No orchard meadow | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B233 | N131 | No orchard meadow | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B233 | N132 | No orchard meadow | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B233 | N122 | No orchard meadow | Discontinuous built-up area | | | |
| B233 | N999 | No orchard meadow | Discontinuous built-up area | | | |
| B233 | N121 | No orchard meadow | No military use | Soil sealing share smaller than 15 % | Discontinuous built-up area | |
| B231 | N120 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B231 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B231 | N124 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B231 | N131 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B231 | N132 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B242 | N120 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B242 | N121 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B242 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B242 | N141 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B242 | N214 | Discontinuous built-up area | | | | |
| B321 | N120 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B211 | N122 | Discontinuous built-up area | | | | |
| B231 | N121 | No military use | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B231 | N122 | Discontinuous built-up area | | | | |
| B231 | N211 | | | | | |

| | | | | |
|---|---|---|---|---|
| B231 | N214 | | | |
| B231 | N999 | Discontinuous built-up area | | |
| B233 | N211 | No orchard meadow | | |
| B321 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | |
| B321 | N124 | Soil sealing share smaller than 15 % | Discontinuous built-up area | |
| B321 | N131 | Soil sealing share smaller than 15 % | Discontinuous built-up area | |
| B321 | N132 | Soil sealing share smaller than 15 % | Discontinuous built-up area | |
| B322 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | |
| B322 | N124 | Soil sealing share smaller than 15 % | Discontinuous built-up area | |
| B321 | N121 | No military use | Soil sealing share smaller than 15 % | Discontinuous built-up area |
| B321 | N122 | Discontinuous built-up area | | |
| B321 | N999 | Discontinuous built-up area | | |
| B322 | N121 | No military use | Soil sealing share smaller than 15 % | Discontinuous built-up area |
| B322 | N122 | Discontinuous built-up area | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 2.3.1 | Pastures | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| E2 | Mesic grasslands |

| | |
|---|---|
| E7 | Sparsely wooded grasslands |
| X09 | Pasture woods (with a tree layer overlying pasture) |
| X10 | Mosaic landscapes with a woodland element (bocages) |

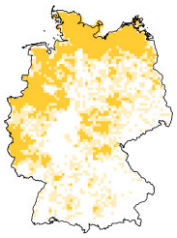
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.2 | Sown pastures and fields |

A Terrestrial areas

A02 Agricultural land

A02.4 Hedgerows



## A02.40 Hedgerows

**I. Description:**

Hedgerows are closely spaced, mostly wild-growing shrubs and trees in rows. Only hedgerows on or between agricultural land and grassland belong to the ecosystem class hedgerows. Shrubs and trees in settlement or forest areas are assigned to other ecosystem classes. Hedgerows are structural elements in the agricultural land and thus important as habitats for animals. This is especially true for birds and insects. They connect ecosystems and thus promote genetic exchange, provide shelter and are feeding and breeding habitats. For humans, they serve, among other things, as protection against soil erosion and soil drying. Large occurrences of hedgerows and wall hedges ('Knicks') can be found especially in northern Germany, where some of them are also protected as nature reserves. Knicks are artificial mounds of earth, stone or peat overgrown with woody plants.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| | | Hedgerow on agricultural land/grassland | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Small Woody Features HRL | Copernicus (EU) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 2.1.1 | Non-irrigated arable land | if LC=B211 |
| 2.2.1 | Vineyards | if LC=B221 |
| 2.2.2 | Fruit trees and berry plantations | if LC=B222 |
| 2.3.1 | Pastures | if LC=B231 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| FA | Hedgerows |

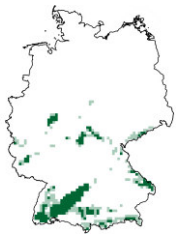
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.3 | Plantations |

A Terrestrial areas

A03 Forests and woodland

A03.1 Broadleaf forests

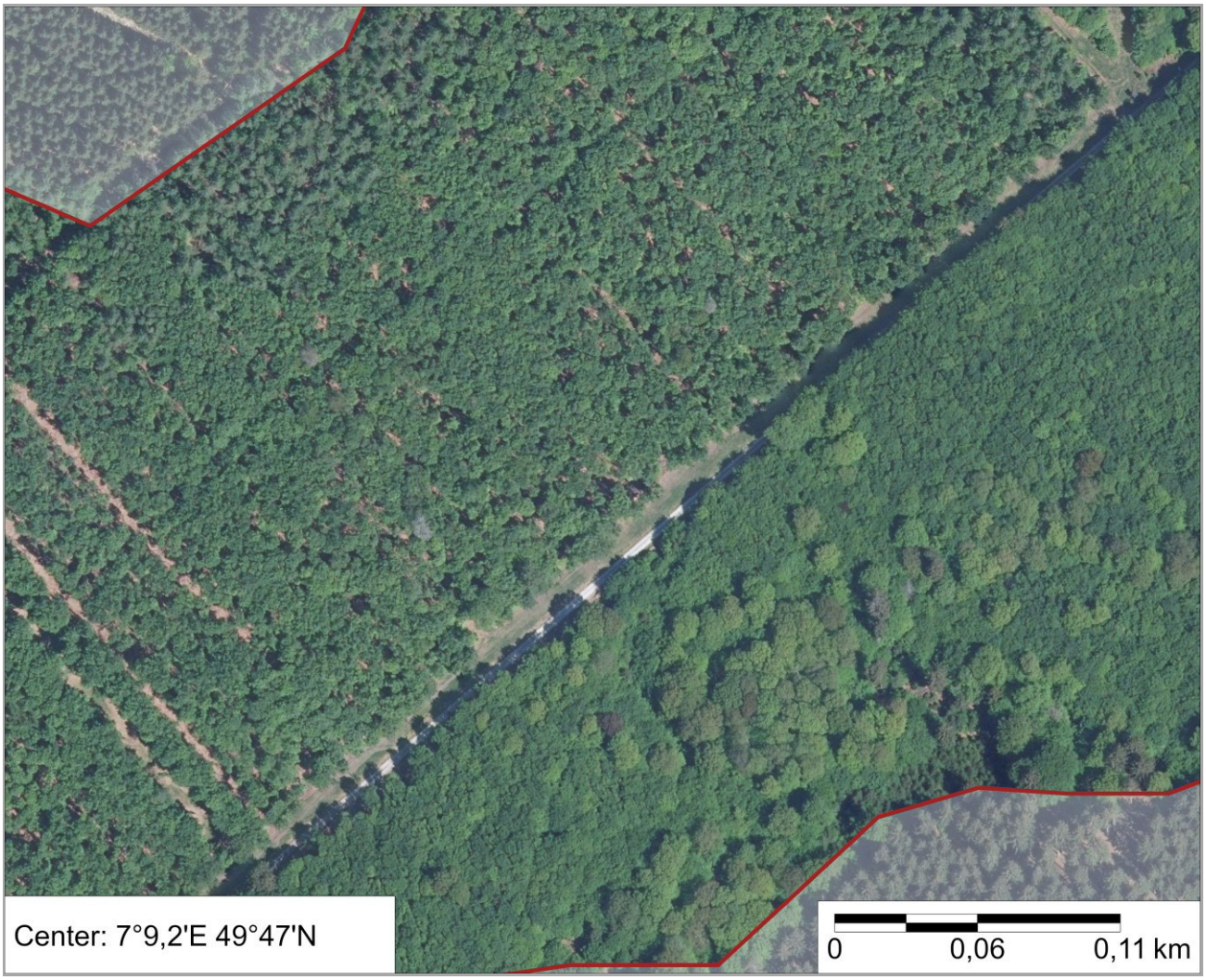


## A03.11 Montane and subalpine broadleaf forests

**I. Description:**

Areas of the ecosystem class montane and subalpine broadleaf forests are found above an elevation of 600 m in the low mountain ranges and above 900 m in the Alpine foothills and the Alps. In addition to the elevation, this class is characterised by a tree cover per area of at least 50 %, of which at least 75 % are broadleaf tree species. Native deciduous tree species such as European hornbeam (Carpinus betulus), sessile oak (Quercus petraea) or sycamore maple (Acer pseudoplatanus) can be found in these forests. Distribution focus are, among others, Hochwald and Idarwald, Hochsauerland (Rothaar Mountains), Vogelsberg, Long Rhön or the Swabian Alps.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B311 | N311 | No riparian zone | No bog forest | Not part of the alpine zone | Elevation above 600 m | |
| B311 | N999 | No riparian zone | No bog forest | Not part of the alpine zone | Elevation above 600 m | |
| B311 | N311 | No riparian zone | No bog forest | Part of the alpine zone | Elevation above 900 m | |
| B311 | N999 | No riparian zone | No bog forest | Part of the alpine zone | Elevation above 900 m | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.1 | Broad-leaved forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |

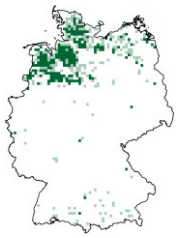
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T2.1 | Boreal and temperate high montane forests and woodlands |

A Terrestrial areas

A03 Forests and woodland

A03.1 Broadleaf forests

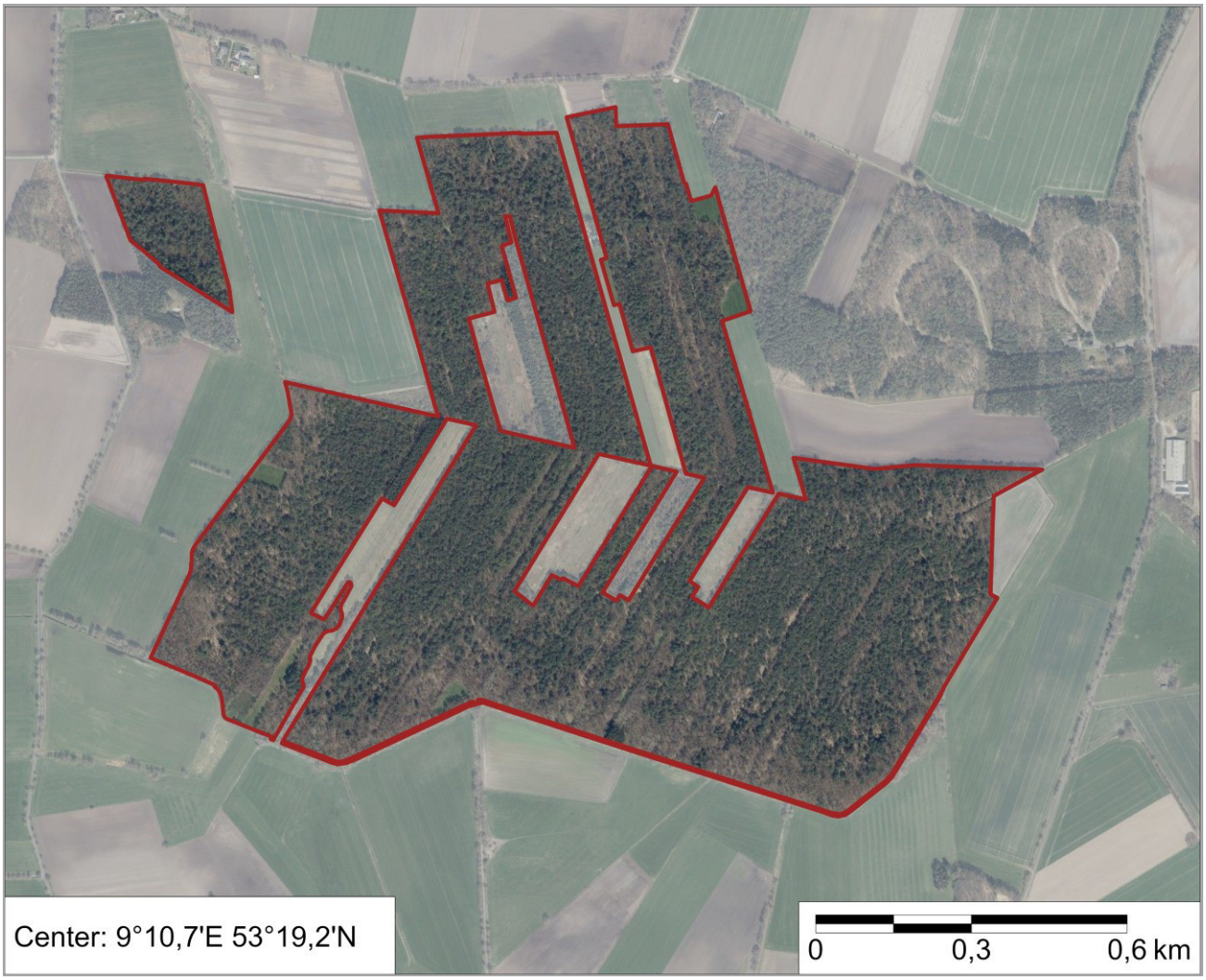


## A03.12 Broadleaf bog forests

**I. Description:**

Broadleaf bog forests with broadleaf trees are characterised by a tree cover of at least 50 % per area, of which at least 75 % are broadleaf trees, and are located on peatland. Broadleaf tree species such as bog birch (Betula pubescens) or alder buckthorn (Frangula alnus) can be found here. Broadleaf bog forests occur on high and low peatland soils in Northern and Southern Germany, which formed after the last ice age. They are characterised by a cool and humid climate, so that moisture supply is higher than evaporation and infiltration during the course of the year. Soils within this ecosystem class are nutrient-poor, highly organic, anaerobic and acidic. These conditions create ecological niches inhabited by specialised and especially rare species.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B311 | N311 | No riparian zone | Bog forest | | | |
| B311 | N999 | No riparian zone | Bog forest | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.1 | Broad-leaved forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |

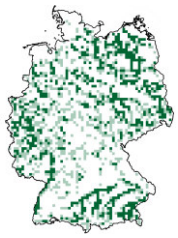
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.6 | Boreal, temperate and montane peat bogs |

A Terrestrial areas

A03 Forests and woodland

A03.1 Broadleaf forests

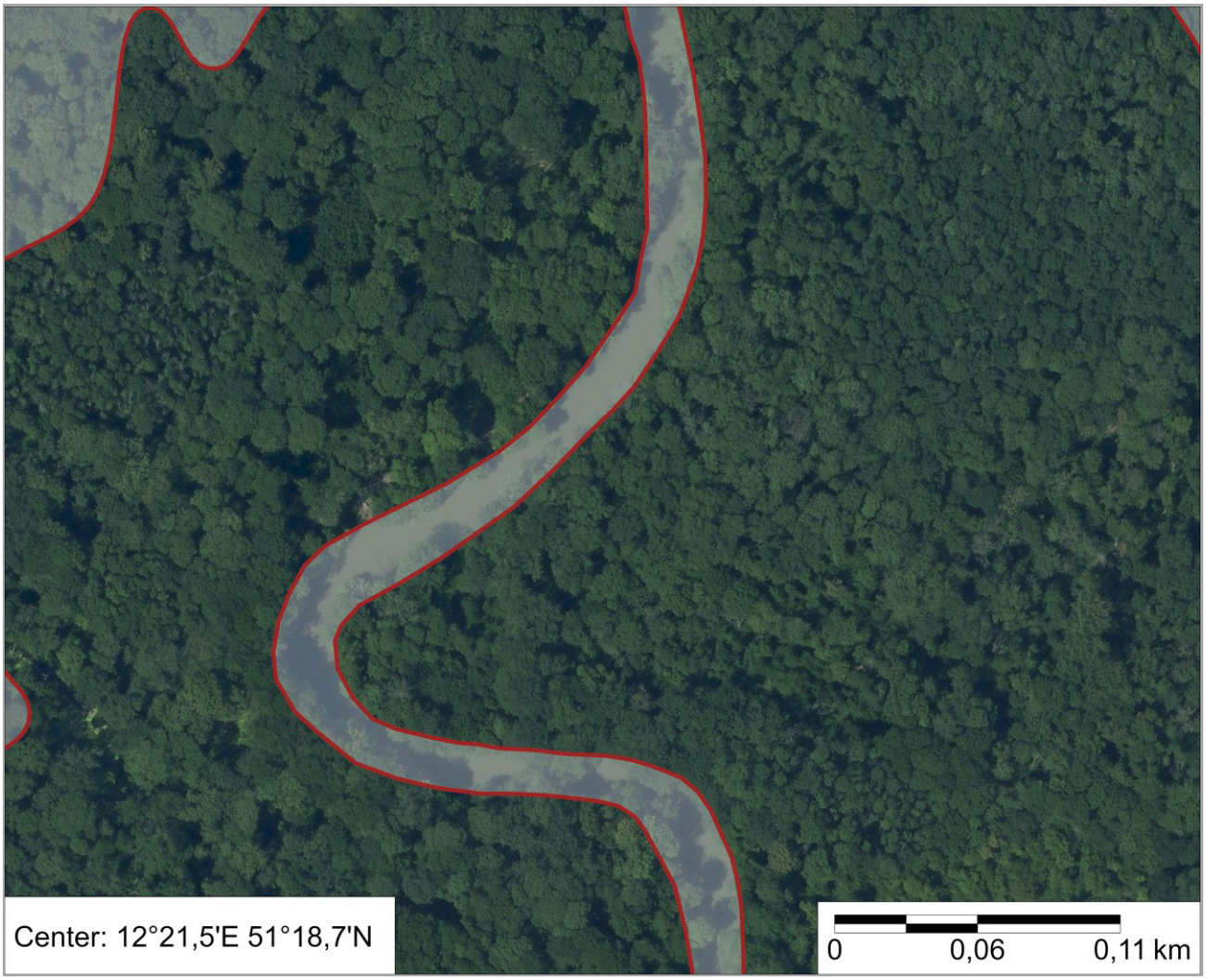


## A03.13 Riparian forests

**I. Description:**

Riparian forests are always found near bodies of water, as they are characterised by regular temporary flooding. A distinction is made between two types of riparian zones. Old floodplains are only flooded when water levels rise sharply and are today often separated from the watercourse by dams or similar. Recent or active floodplains, on the other hand, are regularly flooded. If at least 50 % of these areas are covered with trees, with 75 % or more being broadleaf trees, a riparian forest is present. Typical broadleaf tree species of the riparian forest are white willow (Salix alba, Salix fragilis), black poplar (Populus nigra), black and grey alder (Alnus glutinosa, Alnus incana) as well as field elm and wych elm (Ulmus minor, Ulmus laevis).

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B311 | N311 | Riparian zone | | | | |
| B311 | N999 | Riparian zone | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Riparian Zones High Resolution Layer | Copernicus (EU) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.1 | Broad-leaved forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |

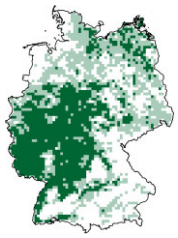
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.2 | Subtropical-temperate forested wetlands |

A Terrestrial areas

A03 Forests and woodland

A03.1 Broadleaf forests

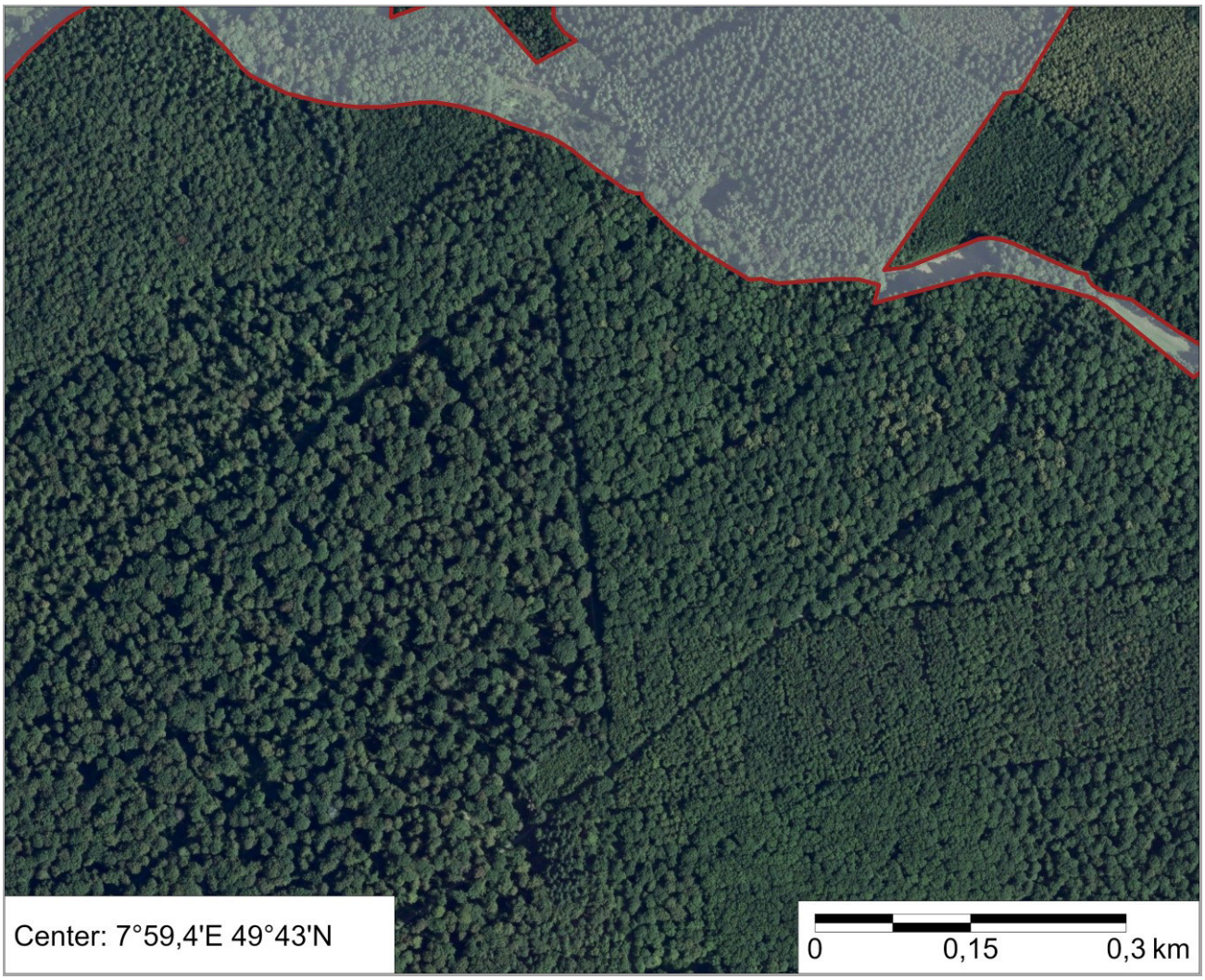


## A03.19 Other broadleaf forests

**I. Description:**

Other broadleaf forests describe a broadleaved forest that is neither montane and subalpine broadleaf forest (A03.11) nor broadleaf bog forest (A03.12) or riparian forest (A03.13). On the one hand, this means that at least 50 % of the area is covered by trees, of which 75 % or more are broadleaf trees. On the other hand, broadleaf forest is below the corresponding elevation, but neither on bog nor riparian zones. Broadleaf forests are characterised by the seasons. The maximum vegetation is in summer, when most energy is converted by photosynthesis, before the leaves start to fall in autumn and winter and energy reserves are stored in the trunk and roots. Characteristic broadleaf tree species include european beech and hornbeam (Fagus sylvatica, Carpinus betulus), pedunculate oak and sessile oak (Quercus robur, Quercus petraea) or silver birch (Betula pendula).

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B311 | N120 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B311 | N121 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B311 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B311 | N124 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B311 | N131 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B311 | N122 | Discontinuous built-up area | | | | |
| B311 | N132 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B311 | N311 | No riparian zone | No bog forest | Not part of the alpine zone | Elevation below 600 m | |
| B311 | N999 | No riparian zone | No bog forest | Not part of the alpine zone | Elevation below 600 m | |
| B311 | N311 | No riparian zone | No bog forest | Part of the alpine zone | Elevation below 900 m | |
| B311 | N999 | No riparian zone | No bog forest | Part of the alpine zone | Elevation below 900 m | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.1 | Broad-leaved forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |

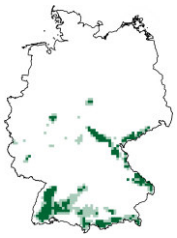
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T2.2 | Deciduous temperate forests |

A Terrestrial areas

A03 Forests and woodland

A03.2 Coniferous forests

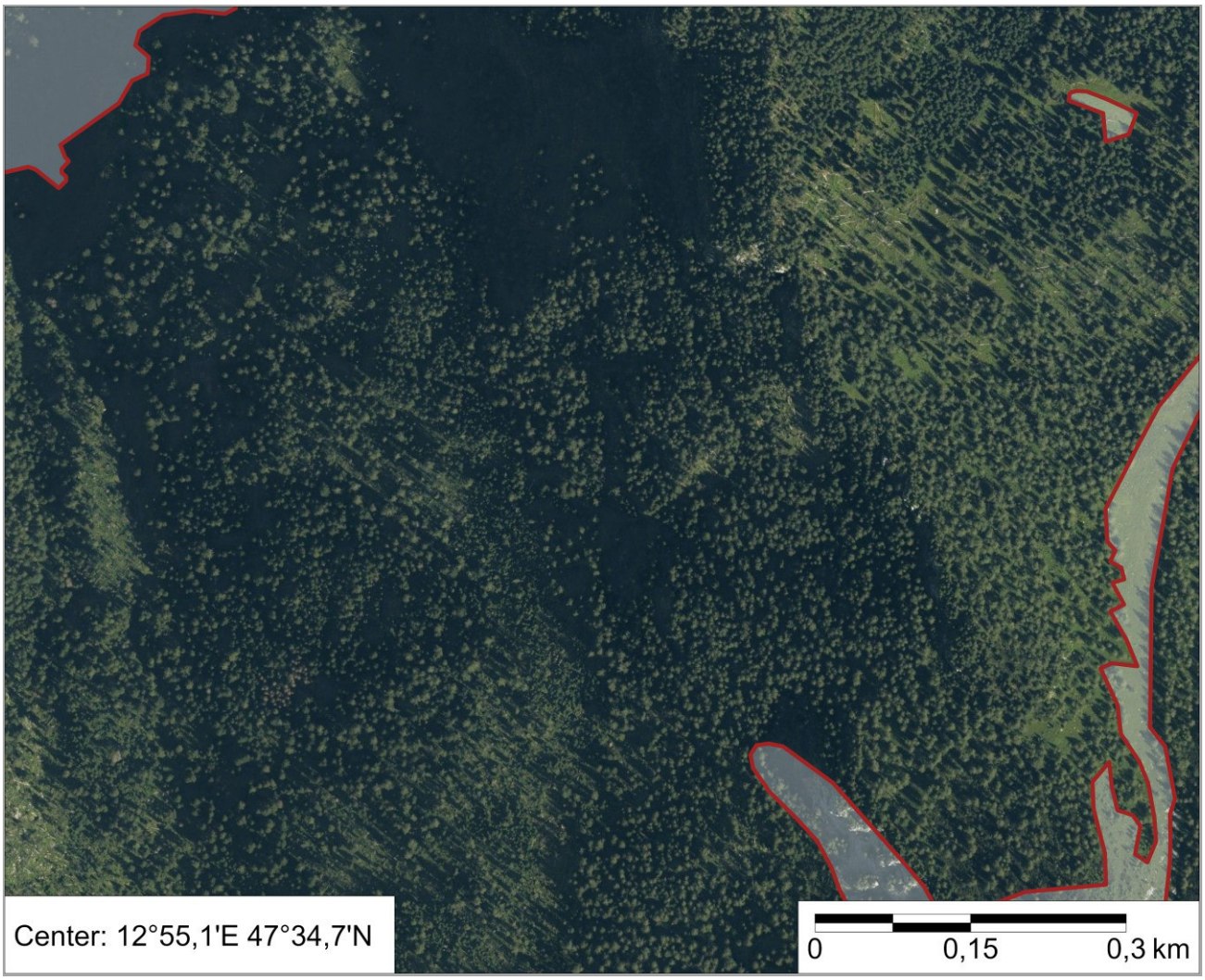


## A03.21 Montane and subalpine coniferous forests

**I. Description:**

Montane and subalpine coniferous forests are found above an elevation of 600 m in the low mountain ranges and 900 m in the Alpine foothills and in the Alps. The areas of this ecosystem class have a tree cover of at least 50 %, of which 75 % or more are conifers. European spruce (Picea abies), european larch (Larix decidua) or mountain pine (Pinus mugo), among others, can be found in this ecosystem. With the exception of the European larch, the coniferous species are evergreen and do not shed their leaves in autumn. Long-term cool temperatures with frost in winter lead to this circumstance and are characteristic for the montane and subalpine coniferous forests. In addition to the Alps and the Alpine foreland, the eastern low mountain ranges such as the Bavarian Forest or the Ore Mountains are focal points for the distribution of this ecosystem class.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B312 | N311 | No bog forest | | Elevation above 600 m | | |
| B312 | N999 | No bog forest | Not part of the alpine zone | Elevation above 600 m | | |
| B312 | N311 | No bog forest | Part of the alpine zone | Elevation above 900 m | | |
| B312 | N999 | No bog forest | Part of the alpine zone | Elevation above 900 m | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.2 | Coniferous forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T3 | Coniferous forest |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T2.1 | Boreal and temperate high montane forests and woodlands |

A Terrestrial areas

A03 Forests and woodland

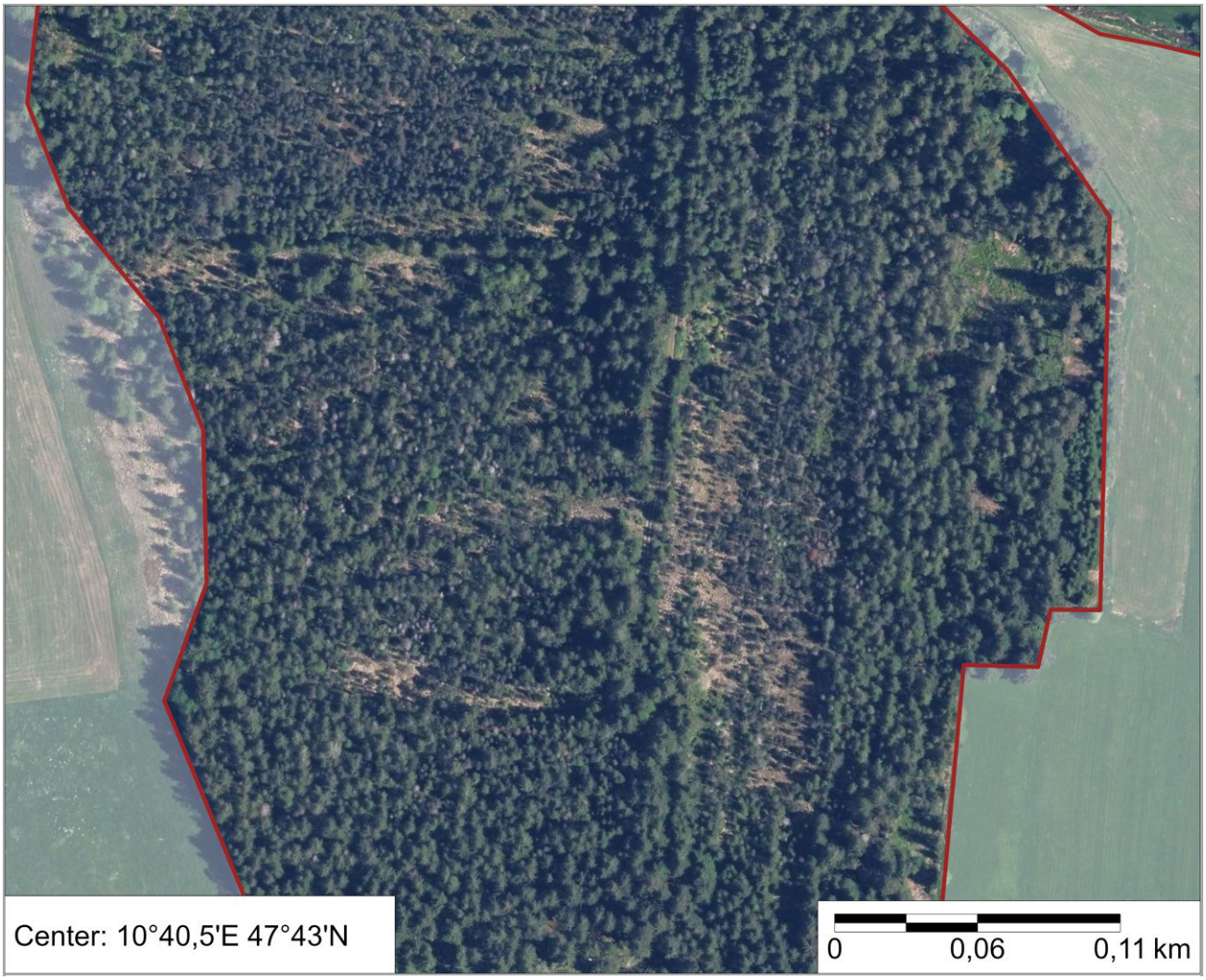
A03.2 Coniferous forests

## A03.22 Coniferous bog forests

**I. Description:**

Coniferous bog forests are characterised by their location on peatland and a tree cover of at least 50 %, of which 75 % or more are occupied by conifers. Bog forests are found on the high and low bog soils in northern and southern Germany, which formed after the last ice age. They are characterised by a cool and humid climate, so that moisture supply is higher than evaporation and infiltration during the course of the year. Soils in this ecosystem class are nutrient-poor, highly organic, anaerobic and acidic. These conditions create ecological niches inhabited by specialised and especially rare species.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B312 | N311 | Bog forest | | | | |
| B312 | N999 | Bog forest | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.2 | Coniferous forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T3 | Coniferous forest |

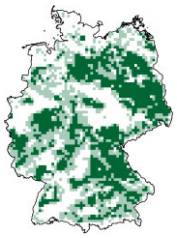
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.6 | Boreal, temperate and montane peat bogs |

A Terrestrial areas

A03 Forests and woodland

A03.2 Coniferous forests

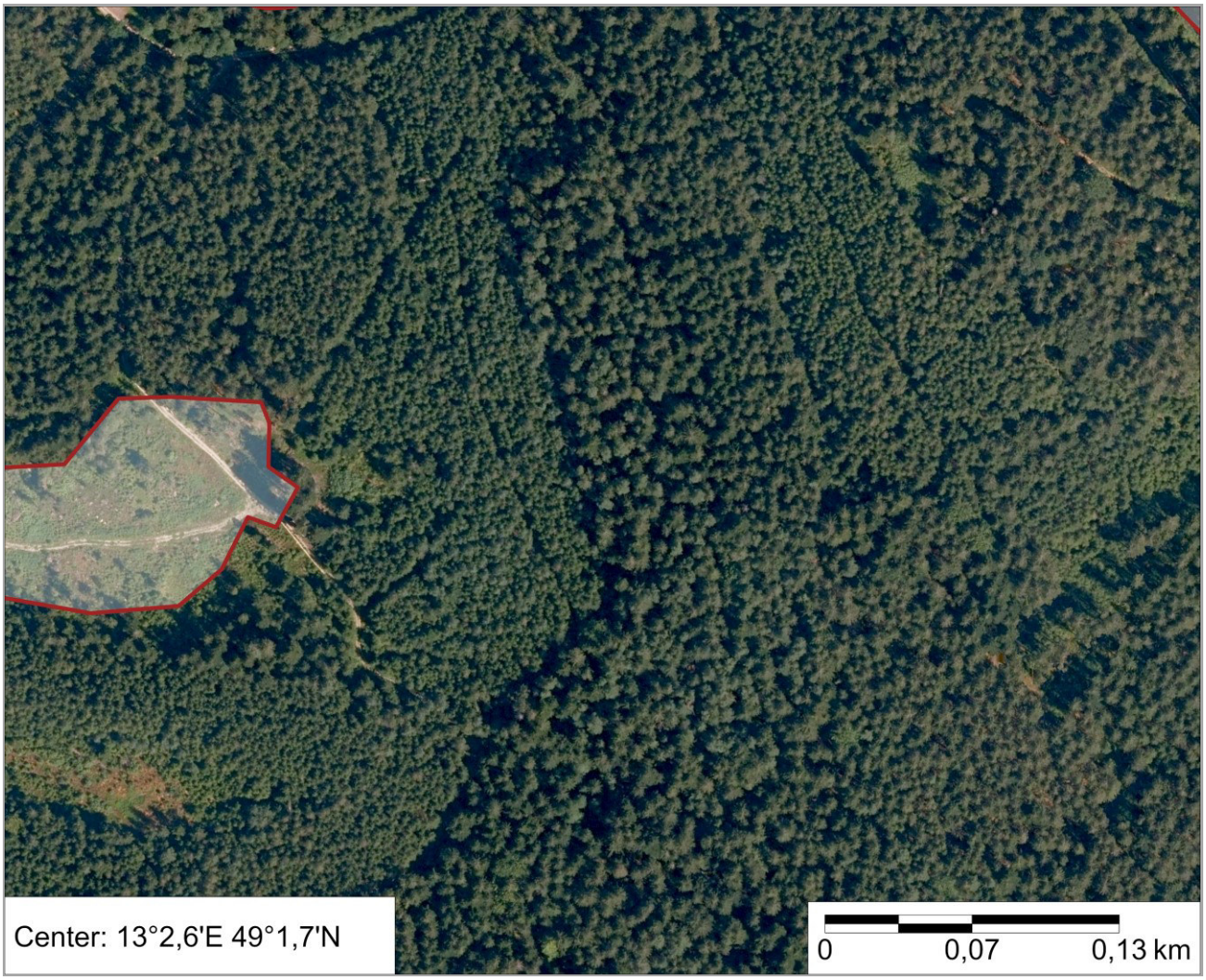


## A03.29 Other coniferous forests

**I. Description:**

Other coniferous forests describe a coniferous forest that is neither montane or subalpine (A03.21) nor a bog forest (A03.22). On the one hand, this means that at least 50 % of the area is covered with trees, of which at least 75 % or more are conifers. On the other hand, the coniferous forest is below the corresponding elevation but not on bog. European spruce (Picea abies), pine (Pinus sylvestris) and douglas fir (Pseudotsuga menziesii) are among the most common species in this ecosystem class. On the sandy soils in north-eastern Germany, pine (Pinus sylvestris) dominates. In the south and south-east of Germany, on the other hand, European spruce (Picea abies) is very widespread. In this ecosystem class, forestry plays a formative role alongside natural distribution.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B312 | N120 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B312 | N121 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B312 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B312 | N124 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B312 | N131 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B312 | N132 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B312 | N311 | No bog forest | Not part of the alpine zone | Elevation below 600 m | | |
| B312 | N999 | No bog forest | Not part of the alpine zone | Elevation below 600 m | | |
| B312 | N122 | Discontinuous built-up area | | | | |
| B312 | N311 | No bog forest | Part of the alpine zone | Elevation below 900 m | | |
| B312 | N999 | No bog forest | Part of the alpine zone | Elevation below 900 m | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.2 | Coniferous forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T3 | Coniferous forest |

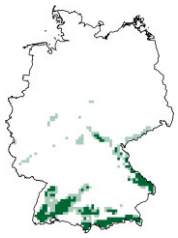
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.3 | Plantations |

A Terrestrial areas

A03 Forests and woodland

A03.3 Mixed forests

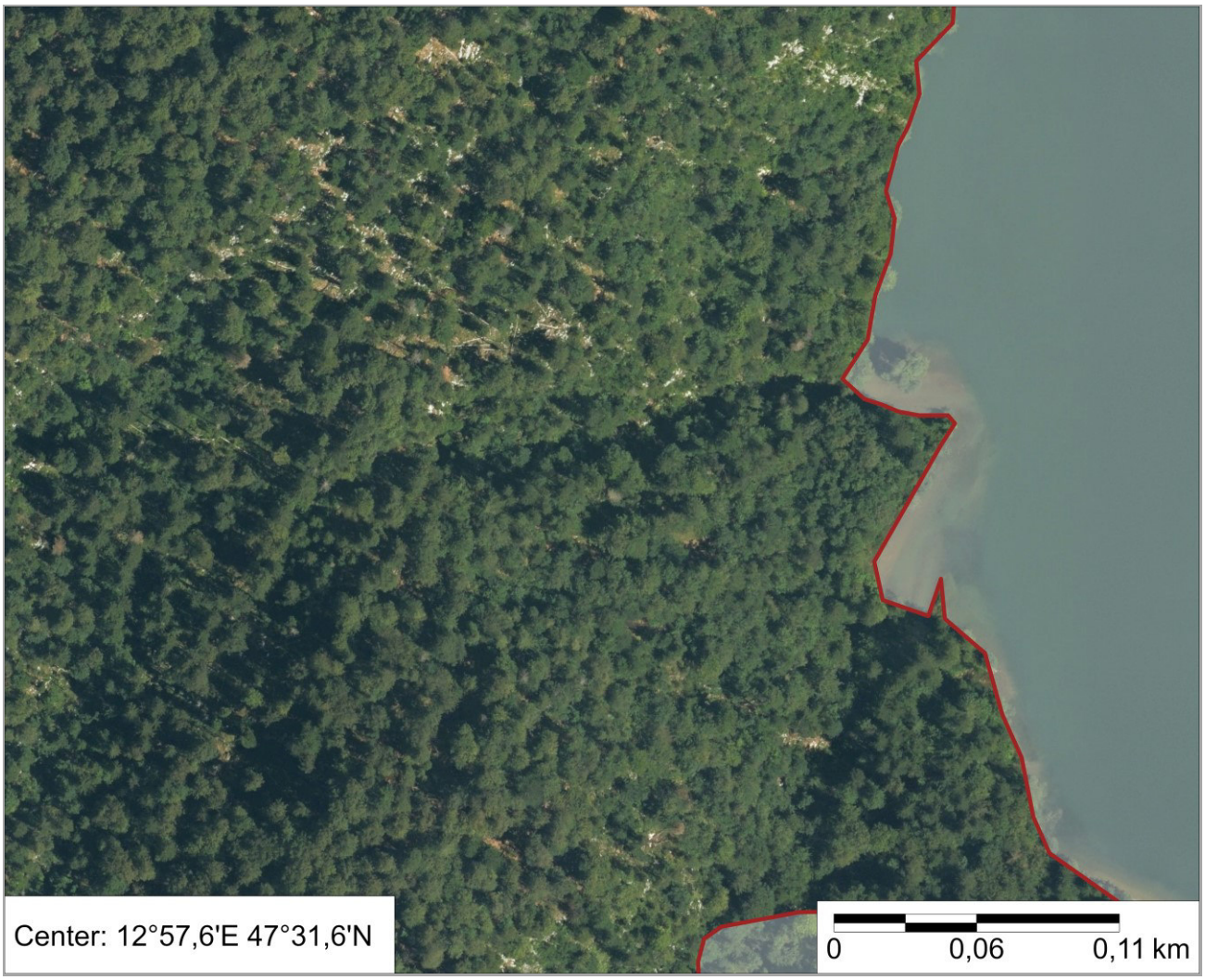


## A03.31 Montane and subalpine mixed forests

**I. Description:**

Montane and subalpine mixed forests are located above 600 m in the low mountain ranges and above 900 m in the Alpine foreland and the Alps. Mixed forests are forests that are neither broadleaf nor coniferous. Thus, they are areas that are at least 50 % covered with trees, but in which neither broadleaf nor coniferous tree species have a share of 75 % or more. Instead, there is a mixture of broadleaf and coniferous trees or groups of trees. European spruce (Picea abies), european larch (Larix decidua), pine (Pinus mugo) as well as european hornbeam (Carpinus betulus), sessile oak (Quercus petraea) or sycamore maple (Acer pseudoplatanus) can be found in such areas. The main distribution areas are, among others, the Bavarian Forest and the Swabian-Upper Bavarian Alpine foreland.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B313 | N311 | No bog forest | Not part of the alpine zone | Elevation above 600 m | | |
| B313 | N999 | No bog forest | Not part of the alpine zone | Elevation above 600 m | | |
| B313 | N311 | No bog forest | Part of the alpine zone | Elevation above 900 m | | |
| B313 | N999 | No bog forest | Part of the alpine zone | Elevation above 900 m | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.3 | Mixed forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |
| T3 | Coniferous forest |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T2.1 | Boreal and temperate high montane forests and woodlands |

A Terrestrial areas

A03 Forests and woodland

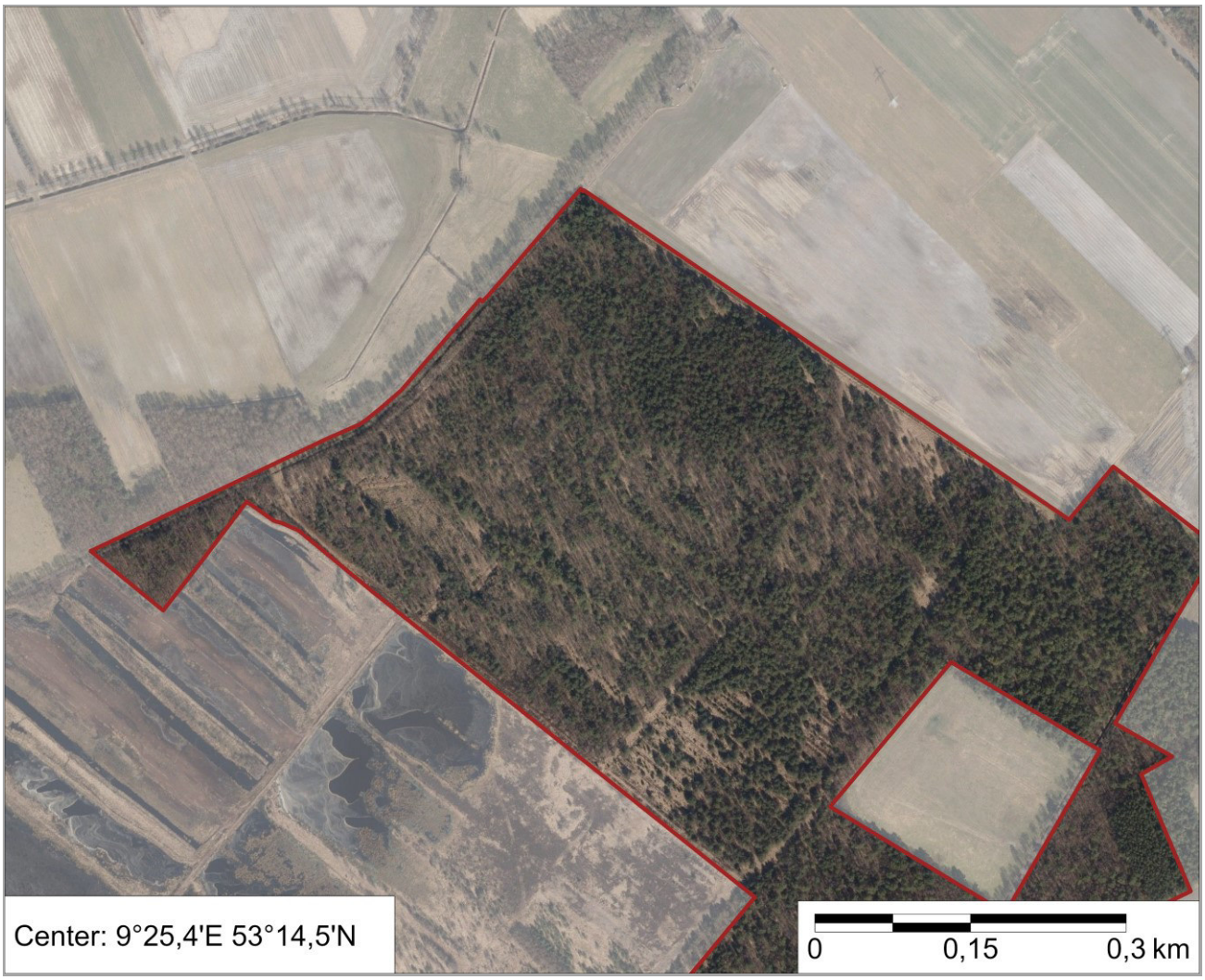
A03.3 Mixed forests

## A03.32 Mixed bog forests

**I. Description:**

Mixed bog forests with broadleaf and coniferous trees are mixed forests on peatland areas. These areas are at least 50 % covered with trees, whereby neither broadleaf nor coniferous tree species have a share of more than 75 %. Instead, there is a mixture of broadleaf and coniferous trees or groups of trees. Mixed bog forests with broadleaf and coniferous trees are found again on the high and low bog soils in northern and southern Germany that formed after the last ice age. Mixed bog forest is characterized by a cool and humid climate, so that moisture supply is higher than evaporation and infiltration during the course of the year. Soils within this ecosystem class are nutrient-poor, highly organic, anaerobic and acidic. These conditions create ecological niches inhabited by specialized and especially rare species.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B313 | N311 | Bog forest | | | | |
| B313 | N999 | Bog forest | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.3 | Mixed forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |
| T3 | Coniferous forest |

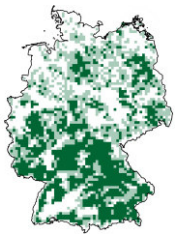
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.6 | Boreal, temperate and montane peat bogs |

A Terrestrial areas

A03 Forests and woodland

A03.3 Mixed forests



## A03.39 Other mixed forests

**I. Description:**

Other mixed forests describe a mixed forest that is neither montane or subalpine (A03.21) nor a coniferous bog forest (A03.22). On the one hand, this means that at least 50 % of the area is covered by trees, but in which neither broadleaf nor coniferous species dominate with a share of more than 75 % or more. Instead, there is a mixture of broadleaf and coniferous trees or groups of trees. On the other hand, mixed forests are found below the corresponding elevation, but not on peatland. Mixed forests are particularly resistant to diseases, drought or pests. The diversity of different tree species is responsible for this and provides ecological niches for various animal species as well as other plant species.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B313 | N120 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B313 | N121 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B313 | N311 | No bog forest | Not part of the alpine zone | Elevation below 600 m | | |
| B313 | N999 | No bog forest | Not part of the alpine zone | Elevation below 600 m | | |
| B313 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B313 | N124 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B313 | N131 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B313 | N132 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B313 | N122 | Discontinuous built-up area | | | | |
| B313 | N311 | No bog forest | Part of the alpine zone | Elevation below 900 m | | |
| B313 | N999 | No bog forest | Part of the alpine zone | Elevation below 900 m | | |
| B334 | N999 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.1.3 | Mixed forest | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |
| T3 | Coniferous forest |

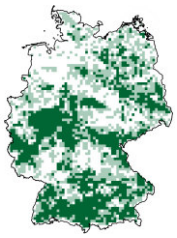
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T2.1 | Boreal and temperate high montane forests and woodlands |
| T2.2 | Deciduous temperate forests |

A Terrestrial areas

A03 Forests and woodland

A03.4 Transitional wood- and shrubland

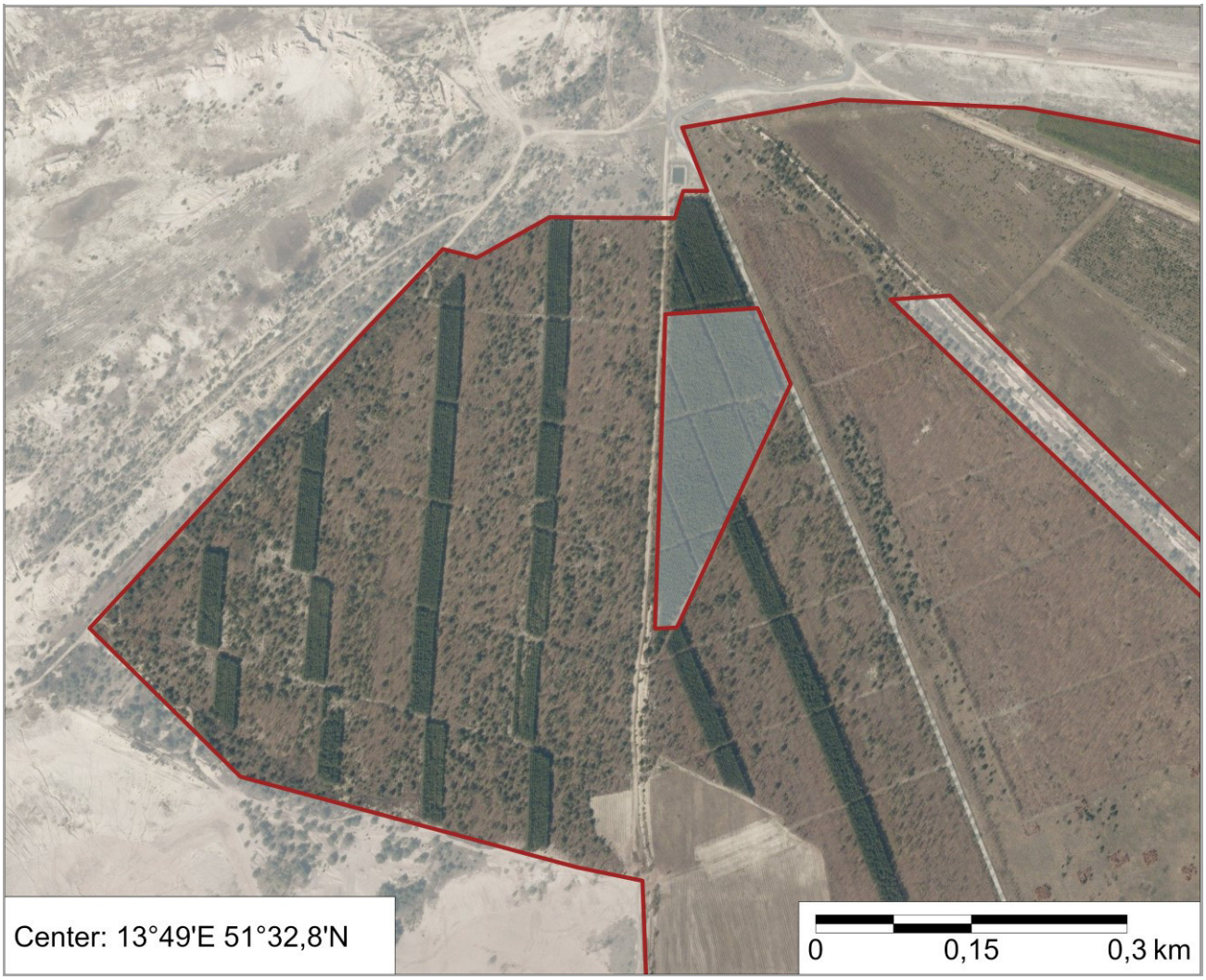


## A03.41 Reforestation

**I. Description:**

Reforestation is defined as those forest areas that are covered with trees up to 5 m in height. They have either been afforested or have been created by natural regeneration. No distinction is made between broadleaf, coniferous or mixed forests. Forest areas that have been subject to windthrow, fire or other external influences are only to be found in this class if the area is covered again by young plants.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B310 | N311 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.2.4 | Transitional woodland/shrub | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| T1 | Broadleaved deciduous forest |
| T3 | Coniferous forest |

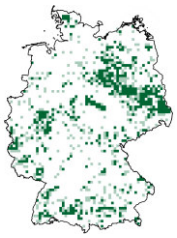
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T7.3 | Plantations |

A Terrestrial areas

A03 Forests and woodland

A03.4 Transitional wood- and shrubland

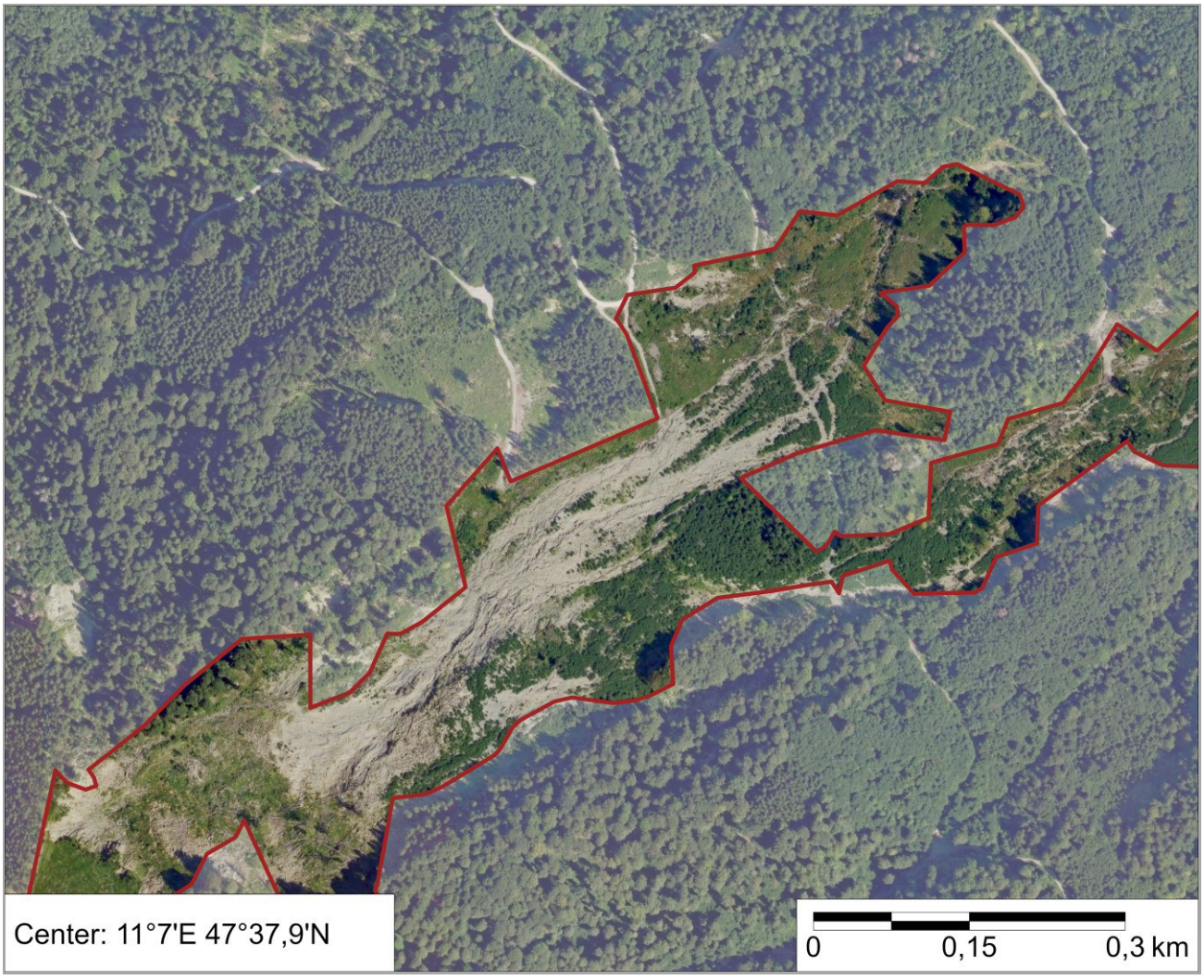


## A03.42 Forest glades and regeneration areas

**I. Description:**

Forest glades and regeneration areas are defined by grassland areas in the forest that are covered to a maximum of 50% by trees. This ecosystem can have a high level of biodiversity, especially at its borders with other ecosystems, mainly because different light conditions prevail here. This circumstance stems from the loose cover of trees on those areas.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B321 | N311 | | | | | |
| B330 | N311 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.2.4 | Transitional woodland/shrub | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| X13 | Land sparsely wooded with broadleaved deciduous trees |
| X14 | Land sparsely wooded with broadleaved evergreen trees |
| X15 | Land sparsely wooded with coniferous trees |
| X16 | Land sparsely wooded with mixed broadleaved and coniferous trees |

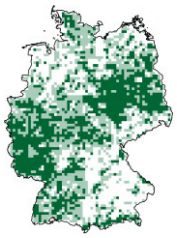
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T2.2 | Deciduous temperate forests |

A Terrestrial areas

A03 Forests and woodland

A03.4 Transitional wood- and shrubland



## A03.49 Other transitional wood- and shrubland

**I. Description:**

Other areas with shrubs and bushes are occupied by shrub or bush vegetation and individual trees. They developed from forest areas through gradual degeneration or through natural regeneration of the forest. This reflects the typical chronological sequence of plant communities, in which a recolonization of the habitat takes place after natural causes such as fires, storms, or after human intervention through clearing. Isolated young trees up to a height of 5 m are possible. Unused or overgrown areas that no longer fulfil the purpose of their former land use and now correspond to the vegetation described above are also found in this class. Common representatives within this ecosystem class include silver birch (Betula pendula), blackberry (Rubus fruticosus), broom (Cystisus scoparius), blackthorn (Prunus spinosa) or common hawthorn (Crataegus monogyna).

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B310 | N999 | | | | | |
| B233 | N311 | No orchard meadow | | | | |
| B324 | N120 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B324 | N121 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B324 | N123 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B324 | N124 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B324 | N131 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B324 | N132 | Soil sealing share smaller than 15 % | Discontinuous built-up area | | | |
| B324 | N122 | Discontinuous built-up area | | | | |
| B324 | N311 | | | | | |
| B324 | N999 | Discontinuous built-up area | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.2.4 | Transitional woodland/shrub | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| X13 | Land sparsely wooded with broadleaved deciduous trees |

| | |
|---|---|
| X14 | Land sparsely wooded with broadleaved evergreen trees |
| X15 | Land sparsely wooded with coniferous trees |
| X16 | Land sparsely wooded with mixed broadleaved and coniferous trees |

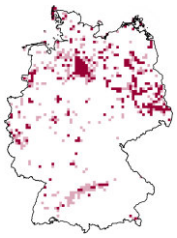
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T2.2 | Deciduous temperate forests |

A Terrestrial areas

A04 Semi-natural areas

A04.1 Natural or extensively used grassland

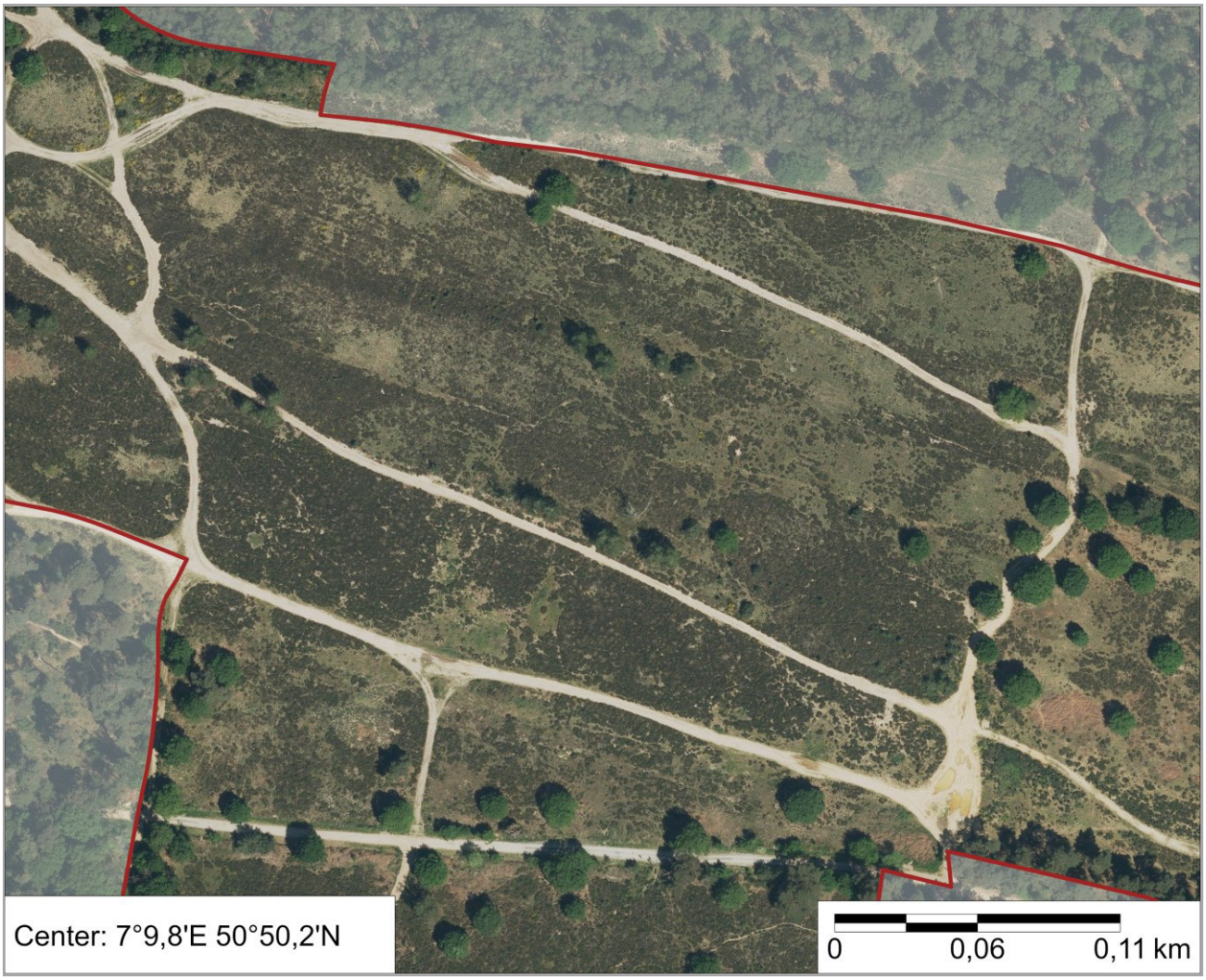


## A04.11 Heathland

**I. Description:**

Heathland has a low and closed vegetation cover with dwarf shrubs (bushes, shrubs, herbs) and/or low tree cover (‹50 % of the area). Heaths are predominantly found on dry and sandy soils below 900 m above sea level. Heathland has mostly been created by anthropogenic influence, for example by forest clearing or peat draining. Intensive grazing, field farming and the removal of vegetation and humus layer left nutrient-poor mineral soils. Heather (Calluna vulgaris) and broom (Cytisus scoparius) are typical plant species in this ecosystem class. A prominent area in this ecosystem class is the Lüneburger Heathland in north-eastern Lower Saxony.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B322 | N311 | Not part of the alpine zone | | | | |
| B322 | N311 | Part of the alpine zone | Elevation below 900 m | | | |
| B322 | N121 | Military use | Part of the alpine zone | Elevation below 900 m | | |
| B322 | N121 | Military use | Not part of the alpine zone | | | |
| B322 | N999 | No coastal dune | Not part of the alpine zone | | | |
| B322 | N999 | No coastal dune | Part of the alpine zone | Elevation below 900 m | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 3.2.2 | Moors and heathland | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| F4 | Temperate shrub heathland |
| S4 | Temperate shrub heathland |

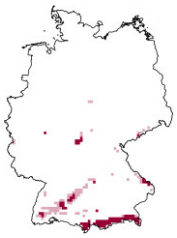
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T3.3 | Cool temperate heathlands |

A Terrestrial areas

A04 Semi-natural areas

A04.1 Natural or extensively used grassland

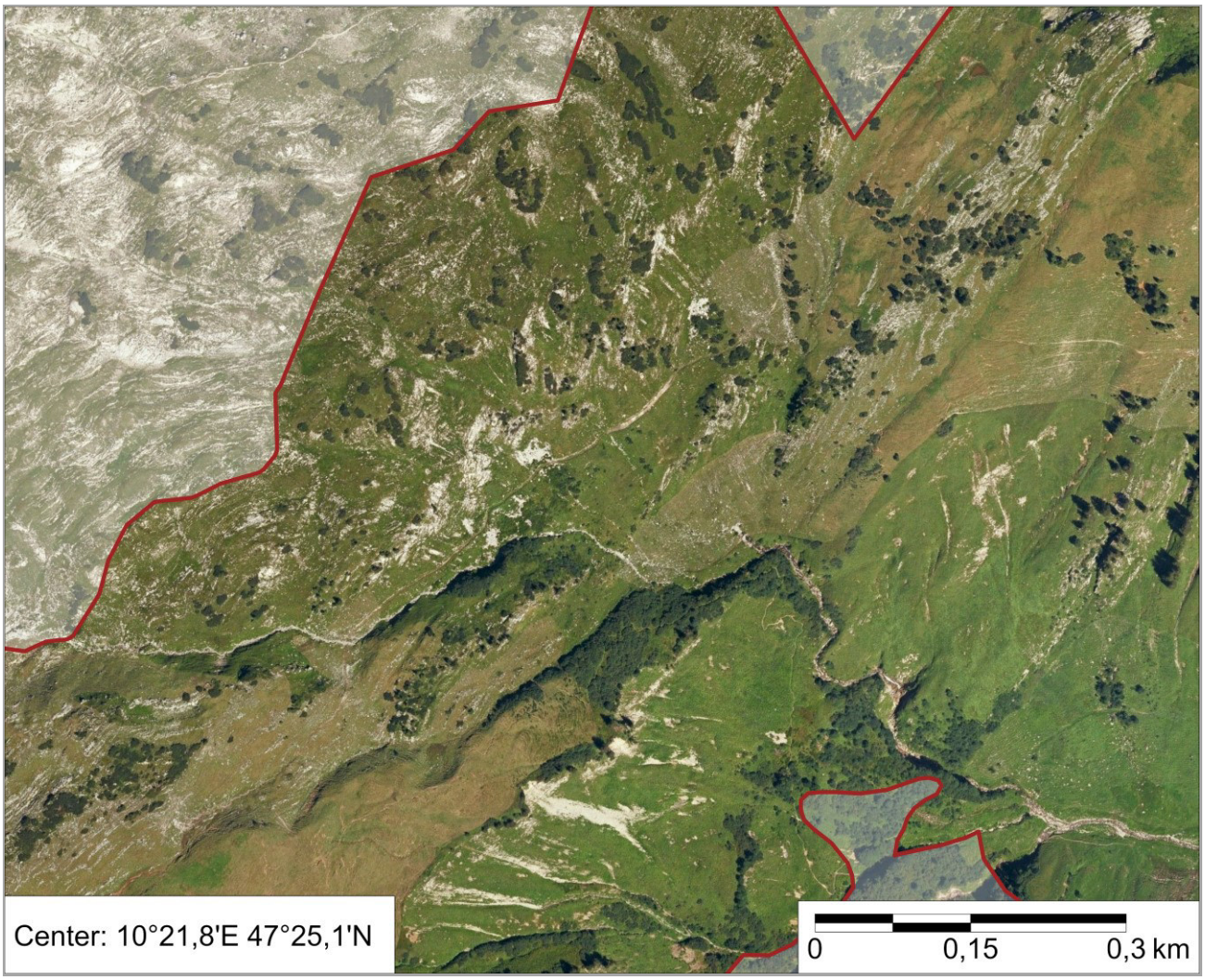


## A04.12 Alpine meadows

**I. Description:**

Alpine meadows are extensively managed grassland areas above an elevation of 600 m and 900 m in the Alpine foothills and the Alps. Extensive management is characterized by irregular grazing with typically a maximum of two mowings per year. Due to the infrequent mowing and the often nutrient-poor soils, ecological niches exist in this ecosystem class that can produce a high species diversity. Alpine pastures and mountain meadows are characterized by an irregular appearance, often interspersed with shrubs, scrub, stones and rocks, and have shorter vegetation periods due to the climatic conditions of the high elevation. The occurrences of this ecosystem class are limited to the Alps, the Alpine foothills and low mountain ranges such as the Black Forest, the Harz Mountains or the Bavarian Forest.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N121 | No orchard meadow | Military use | Not part of the alpine zone | Elevation above 600 m | |
| B233 | N121 | No orchard meadow | Military use | Part of the alpine zone | Elevation above 900 m | |
| B231 | N121 | Military use | Part of the alpine zone | Elevation above 900 m | | |
| B231 | N121 | Military use | Not part of the alpine zone | Elevation above 600 m | | |
| B321 | N214 | Not part of the alpine zone | Elevation above 600 m | | | |
| B321 | N121 | Military use | Part of the alpine zone | Elevation above 900 m | | |
| B321 | N121 | Military use | Not part of the alpine zone | Elevation above 600 m | | |
| B321 | N214 | Part of the alpine zone | Elevation above 900 m | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.2.1 | Natural grassland | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| E4 | Alpine and subalpine grasslands |

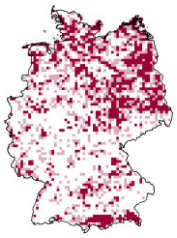
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T6.4 | Temperate alpine grasslands and shrublands |

A Terrestrial areas

A04 Semi-natural areas

A04.1 Natural or extensively used grassland

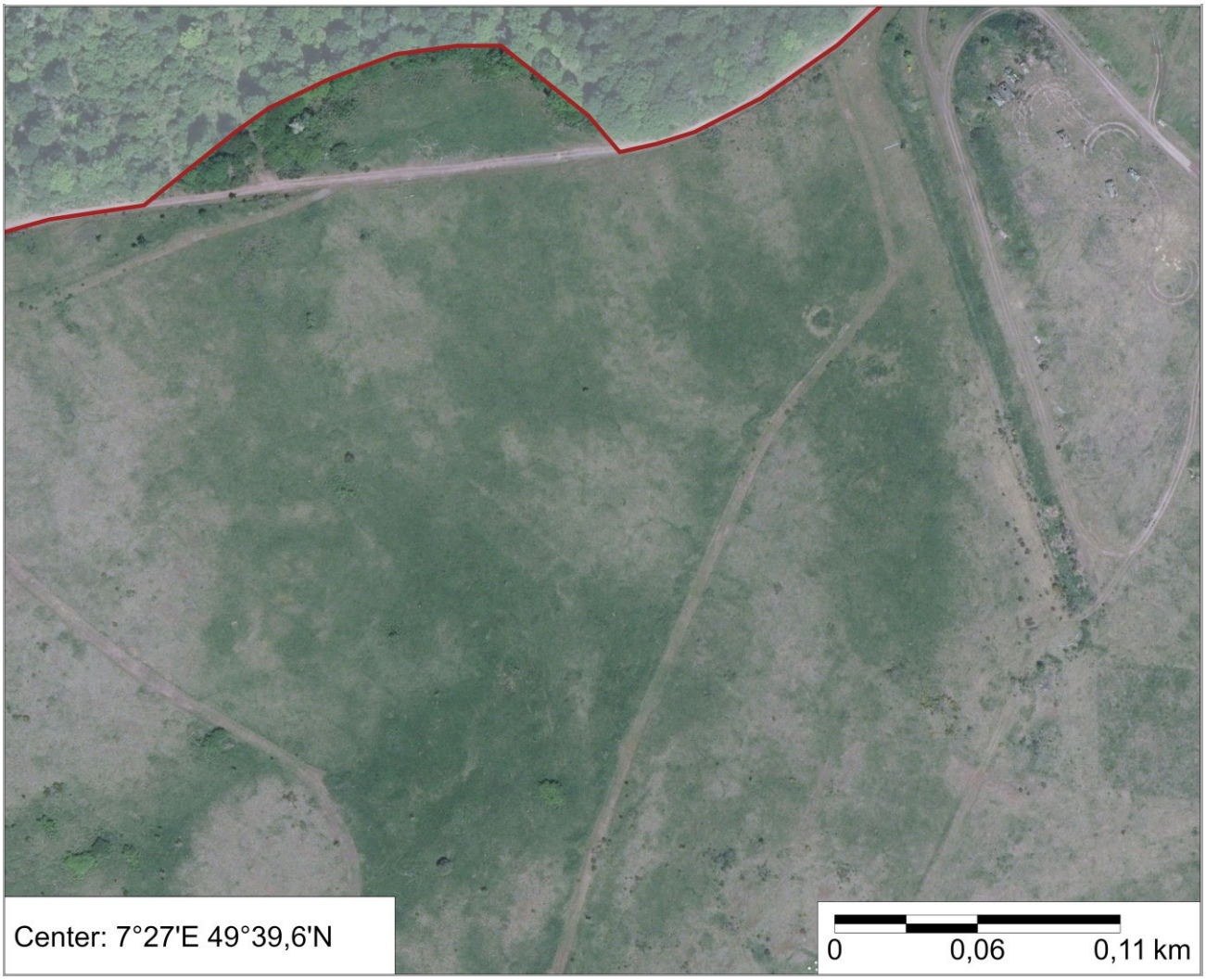


## A04.19 Other natural or extensively used grassland

**I. Description:**

Other natural or extensively used grassland areas are located below an elevation of 600 m and 900 m in the Alpine foothills and the Alps. Extensive management is characterized by irregular grazing with usually a maximum of two mowings per year. They are characterized by a heterogenous appearance, often interspersed with shrubs and scrub. This ecosystem class also includes heterogeneous and extensively used coastal grasslands.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B233 | N121 | No orchard meadow | Military use | Not part of the alpine zone | Elevation below 600 m | |
| B233 | N121 | No orchard meadow | Military use | Part of the alpine zone | Elevation below 900 m | |
| B321 | N214 | Not part of the alpine zone | Elevation below 600 m | | | |
| B231 | N121 | Military use | Part of the alpine zone | Elevation below 900 m | | |
| B231 | N121 | Military use | Not part of the alpine zone | Elevation below 600 m | | |
| B321 | N214 | Part of the alpine zone | Elevation below 900 m | | | |
| B321 | N121 | Military use | Part of the alpine zone | Elevation below 900 m | | |
| B321 | N121 | Military use | Not part of the alpine zone | Elevation below 600 m | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.2.1 | Natural grassland | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| E2 | Mesic grasslands |

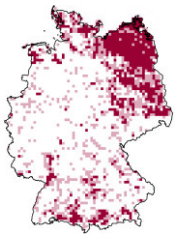
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T3.3 | Cool temperate heathlands |

A Terrestrial areas

A04 Semi-natural areas

A04.2 Wetlands



## A04.21 Marshes

**I. Description:**

Marshes are non-forested areas that are partially or temporarily wet due to flowing or standing water. These low-lying areas are often located on mineral soils and were partly formed from silted up lakes or in the direct vicinity of surface water. Marshes occasionally dry out with complete decomposition the organic matter in the soil. Thus, there is no peat formation.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B411 | N999 | | | | | |
| B413 | N999 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.1.1 | Inland marshes | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| D2 | Valley mires, poor fens and transition mires |
| D4 | Base-rich fens and calcareous spring mires |
| D5 | Sedge and reedbeds, normally without free-standing water |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.3 | Permanent marshes |

A Terrestrial areas

A04 Semi-natural areas

A04.2 Wetlands

## A04.22 Peatbogs with active cutting

**I. Description:**

Peatbogs with active cutting, this means with actual peat extraction, are non-forested, wet or damp areas. Peat is formed by the decomposition of peat moss and other incompletely decomposed plant matter. This organic sediment is therefore rich in soil organic carbon. Peat extraction sites are usually raised bogs and are characterized by industrial peat harvesting. Harvested peat had originally been mainly used as solid fuel and is now mainly used as in plant/gardening substrates. The typical peatland vegetation, including rare species such as cotton grass (Eriophorum angustifolium) and sundews (Drosera longifolia / Drosera anglica), is severely affected by peat extraction. For environmental reasons, peat cutting is gradually being reduced. The last occurrences of this ecosystem class in Germany can be found in the northwest.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B412 | N131 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.1.2 | Peatbogs | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| D1 | Raised and blanket bogs |
| D3 | Aapa, palsa and polygon mires |

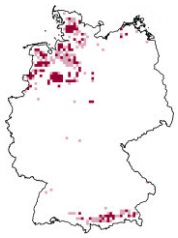
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.6 | Boreal, temperate and montane peat bogs |

A Terrestrial areas

A04 Semi-natural areas

A04.2 Wetlands

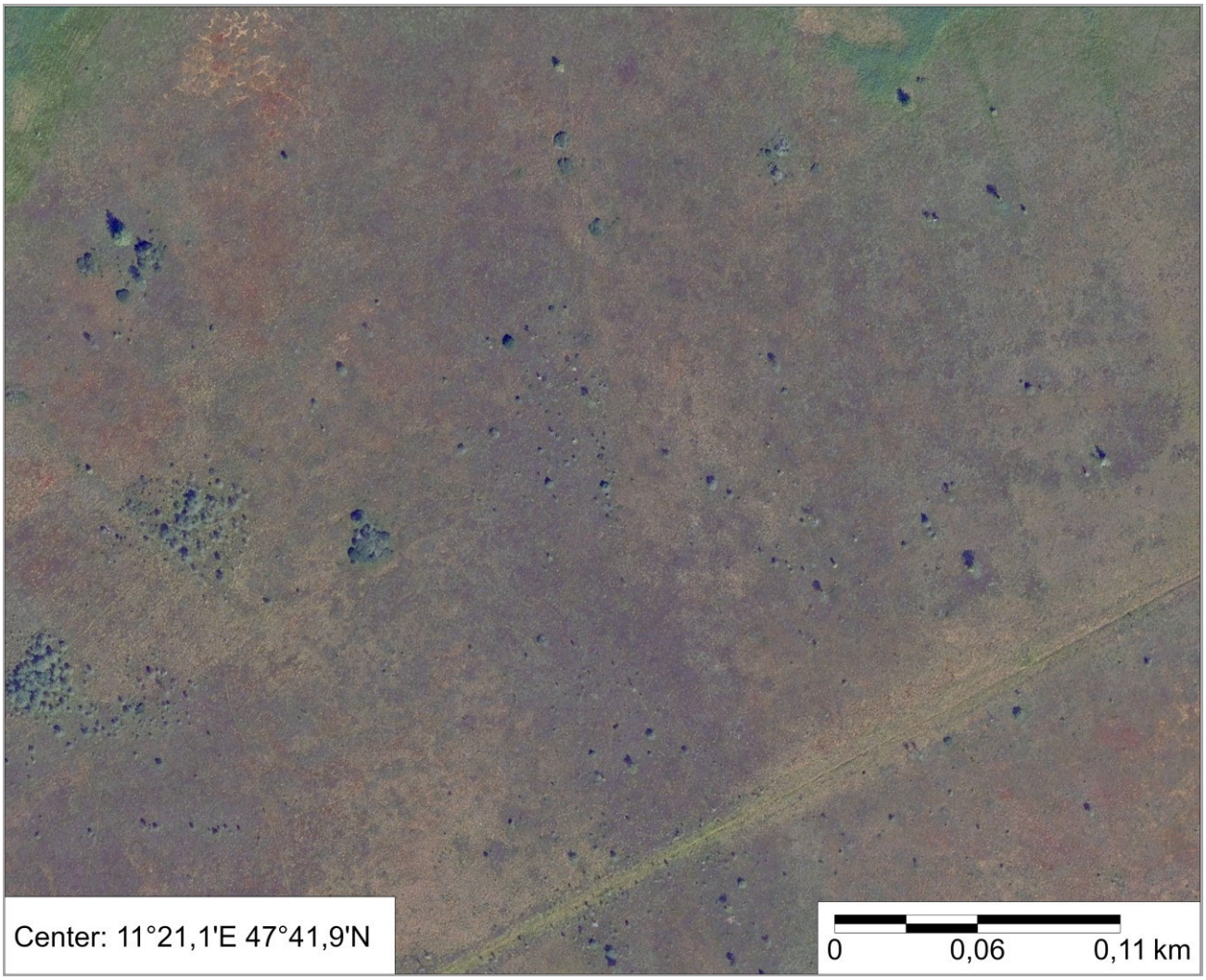


## A04.23 Natural and renaturalized peat bogs

**I. Description:**

Natural and renaturalized peat bogs are mostly non-forested, wet or damp areas whose soil consists mainly of peat moss and incompletely decomposed plant matter. The peat layer is at least 30 cm thick and the proportion of organic matter exceeds 30%. Forest cover of up to 50% is possible. Peat bogs are partly or completely on intermediate or raised bog soils. Peat bogs are poor in nutrients, have acidic soils and are dependent on precipitation. The typical vegetation consists of peat moss and heather plants, but rare species such as cotton grass (Eriophorum angustifolium) and sundews (Drosera longifolia / Drosera anglica) are also characteristic. Intermediate bogs represent the transition from fens to bogs and are dependent on both soil and rainwater.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B412 | N999 | Soil type is mainly half-bog or bog | | | | |
| B414 | N999 | Soil type is mainly half-bog or bog | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Soil map | Federal Institute for Geosciences and Natural Resources (BGR) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.1.2 | Peatbogs | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| D1 | Raised and blanket bogs |

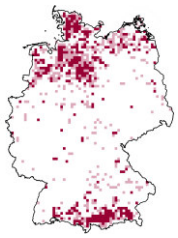
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.6 | Boreal, temperate and montane peat bogs |

A Terrestrial areas

A04 Semi-natural areas

A04.2 Wetlands

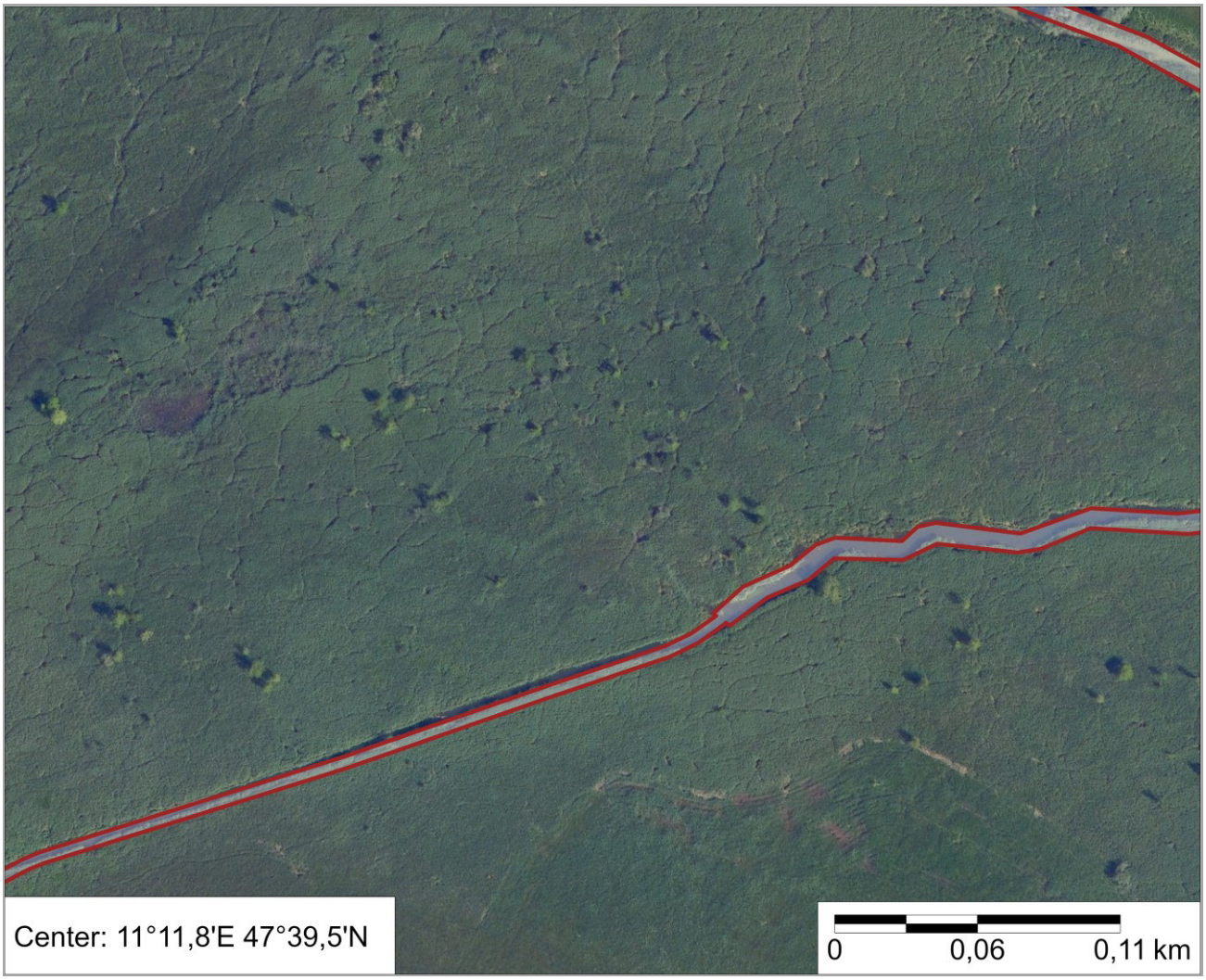


## A04.24 Natural and renaturalized fens

**I. Description:**

Natural and renaturalized fens are mostly non-forested, wet or damp areas whose soil consists mainly of peat moss and incompletely decomposed plant matter. The proportion of organic substances is at least 30% for fens and between 15% and 30% for anmoor soil. A degree of forest cover of up to 50% is possible. The areas are partly or completely on fen or anmoor soil. There is usually a direct connection to the groundwater, standing or flowing water through which the moor feeds. The typical vegetation consists of peat moss and heather. Compared to other bogs, fens are more nutritious and alkaline. Anmoor soils often represent the transition from groundwater-influenced soils (gley) to fens (peat layer at least 30 cm thick).

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B412 | N999 | Majority soil profile is mire or fen | | | | |
| B414 | N999 | Majority soil profile is mire or fen | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Soil map | Federal Institute for Geosciences and Natural Resources (BGR) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.1.2 | Peatbogs | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| D3 | Aapa, palsa and polygon mires |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| TF1.7 | Boreal and temperate fens |

A Terrestrial areas

A04 Semi-natural areas

A04.2 Wetlands

## A04.25 Salt marshes

**I. Description:**

Salt marshes lie just above the mean high tide line and are regularly flooded by salt water (10 to 250 days per year). They are found in front of dikes, mainly on the North Sea coast, but also as smaller areas on the Baltic Sea coast. Salt marshes are sometimes grazed and are an important habitat for breeding birds. A characteristic plant species for salt marshes is the pioneer plant Salicornia (Salicornia europaea), which settles in areas with a high level of salt water inflow.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B231 | N510 | | | | | |
| B321 | N510 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.2.1 | Salt marshes | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| A2 | Littoral sediment |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| MFT1.3 | Coastal saltmarshes |

A Terrestrial areas

A04 Semi-natural areas

A04.3 Sparsely or non-vegetated areas

## A04.31 (Artificial) sand or pebble beaches, inhomogeneous coast

**I. Description:**

(Artificial) sand or pebble beaches, inhomogeneous coasts are unsealed, sparsely vegetated areas with loose rock, gravel, soil and/or sand as surface material. These ecosystems are located directly adjacent to marine waters or the mouths of large rivers and are influenced by the tides on the North Sea coast. Artificial and natural bathing beaches also fall into this ecosystem class.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B330 | N510 | No coastal dune | Marine beach | | | |
| B330 | N999 | Vegetation share is less than 10 % | No coastal dune | Marine beach | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 3.3.1 | Beaches, dunes, sands | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| B1 | Coastal dunes and sandy shores |
| B2 | Coastal shingle |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| MT1.2 | Muddy shores |
| MT1.3 | Sandy shores |
| MT1.4 | Boulder-cobble shores |
| MT2.1 | Coastal shrublands and grasslands |

A Terrestrial areas

A04 Semi-natural areas

A04.3 Sparsely or non-vegetated areas

## A04.32 Coastal dunes

**I. Description:**

Coastal dunes are wind blown sand dunes along the coast or on islands, with heights from 0.5 to 20 m. Coastal dunes may occur in different phases such as primary dunes, white dunes and gray or brown dunes, characterized by their dominant vegetation. Coastal dunes are mostly sparsely vegetated and often characterized by grasses and heather as well as other herbaceous vegetation. This ecosystem class also includes dune slacks and edges with associated vegetation.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B322 | N999 | Coastal dune | | | | |
| B330 | N999 | Coastal dune | | | | |
| B330 | N510 | Coastal dune | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 3.3.1 | Beaches, dunes, sands | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| B1 | Coastal dunes and sandy shores |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| MT2.1 | Coastal shrublands and grasslands |
| MT1.3 | Sandy shores |

A Terrestrial areas

A04 Semi-natural areas

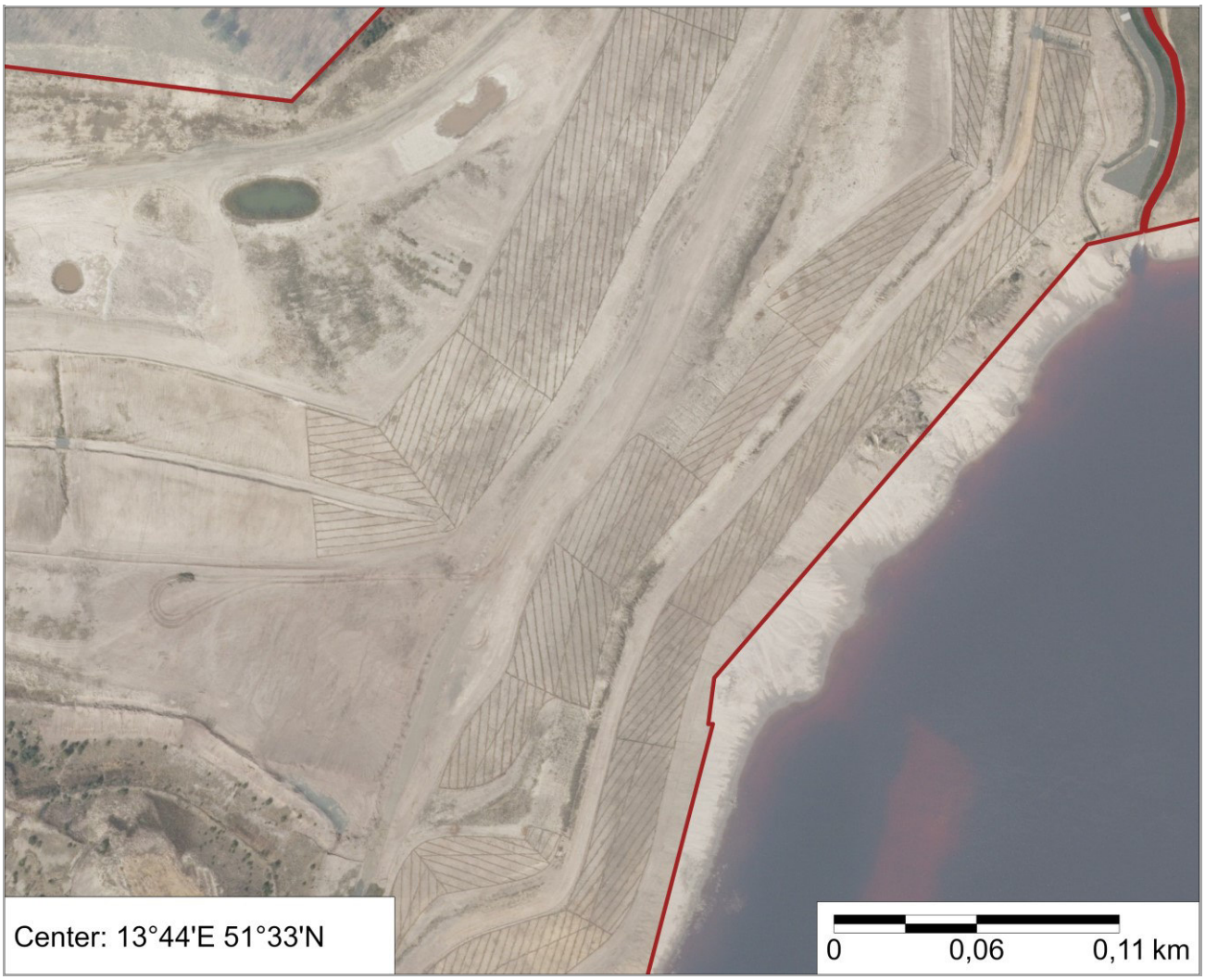
A04.3 Sparsely or non-vegetated areas

## A04.33 Inland sand, soil or rock surfaces

**I. Description:**

Inland sand, soil and rock surfaces include unsealed, sparsely vegetated areas with loose rock, gravel, sand and/or soil as the surface. This ecosystem class includes artificial and natural bathing beaches on inland waters, inland sand dunes and heterogeneous areas near the coast.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B330 | N510 | No coastal dune | No marine beach | | | |
| B330 | N123 | Vegetation share is less than 10 % | | | | |
| B330 | N124 | Vegetation share is less than 10 % | | | | |
| B330 | N999 | Vegetation share is less than 10 % | No coastal dune | No marine beach | Part of the alpine zone | Elevation below 900 m |
| B330 | N999 | Vegetation share is less than 10 % | No coastal dune | No marine beach | Not part of the alpine zone | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 3.3.1 | Beaches, dunes, sands | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| H5 | Miscellaneous inland habitats with very sparse or no vegetation |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T3.4 | Rocky pavements, lava flows and screes |

A Terrestrial areas

A04 Semi-natural areas

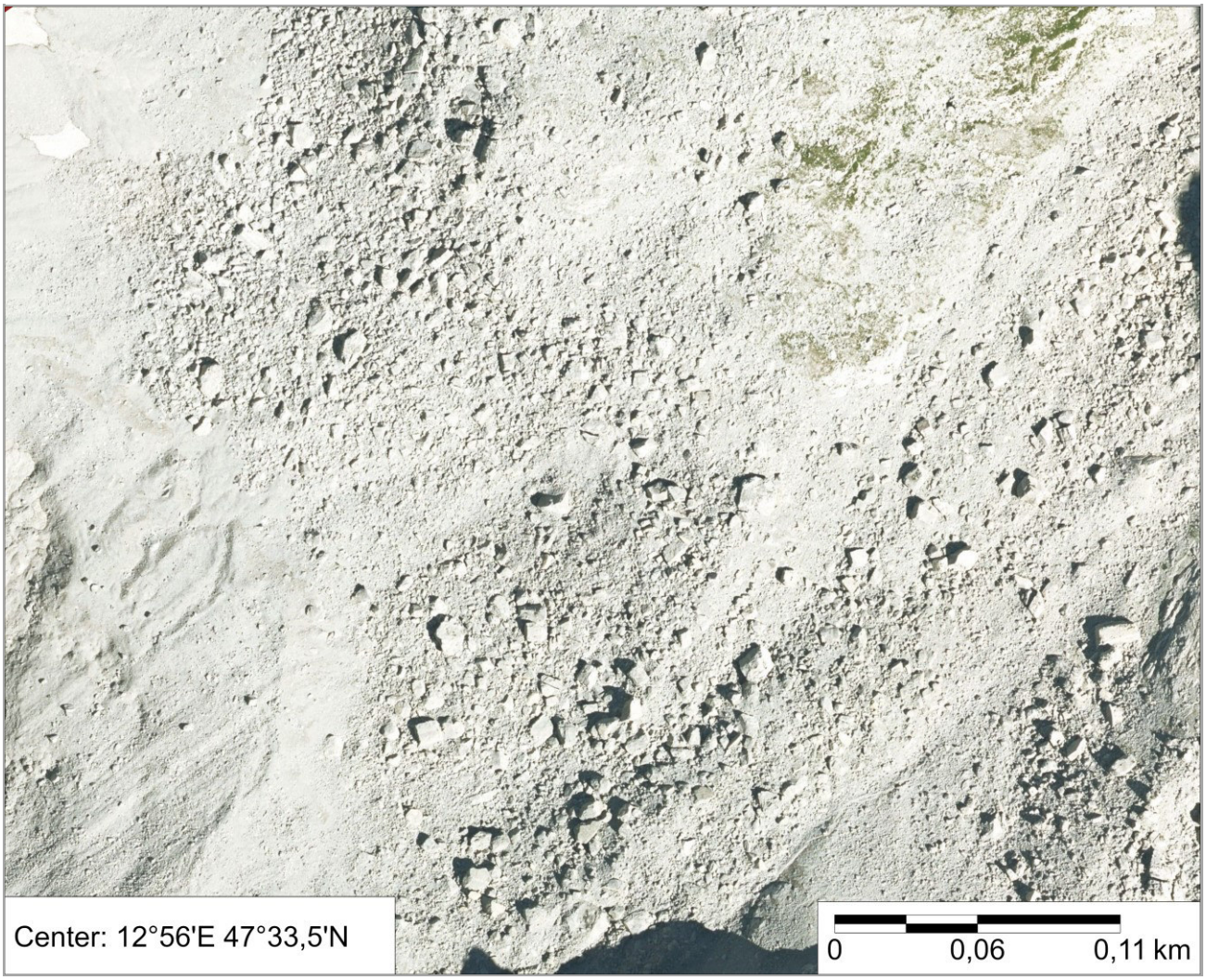
A04.3 Sparsely or non-vegetated areas

## A04.34 Screes

**I. Description:**

Screes are located above 900 m above sea level in the montane and alpine zone of the Alpine foreland and the Alps. These sparsely vegetated areas with loose rock, gravel, sand and/or soil as a surface were mainly created by frost weathering and glacial erosion. This ecosystem class mainly includes limestone and silicate screes in the Alps. Due to the high elevation, the frost and the wind, the vegetation is sparse with isolated grasses, mosses and herbaceous vegetation.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B330 | N999 | Vegetation share is less than 10 % | No coastal dune | No marine beach | Part of the alpine zone | Elevation above 900 m |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 3.3.1 | Beaches, dunes, sands | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| H2 | Screes |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T3.4 | Rocky pavements, lava flows and screes |

A Terrestrial areas

A04 Semi-natural areas

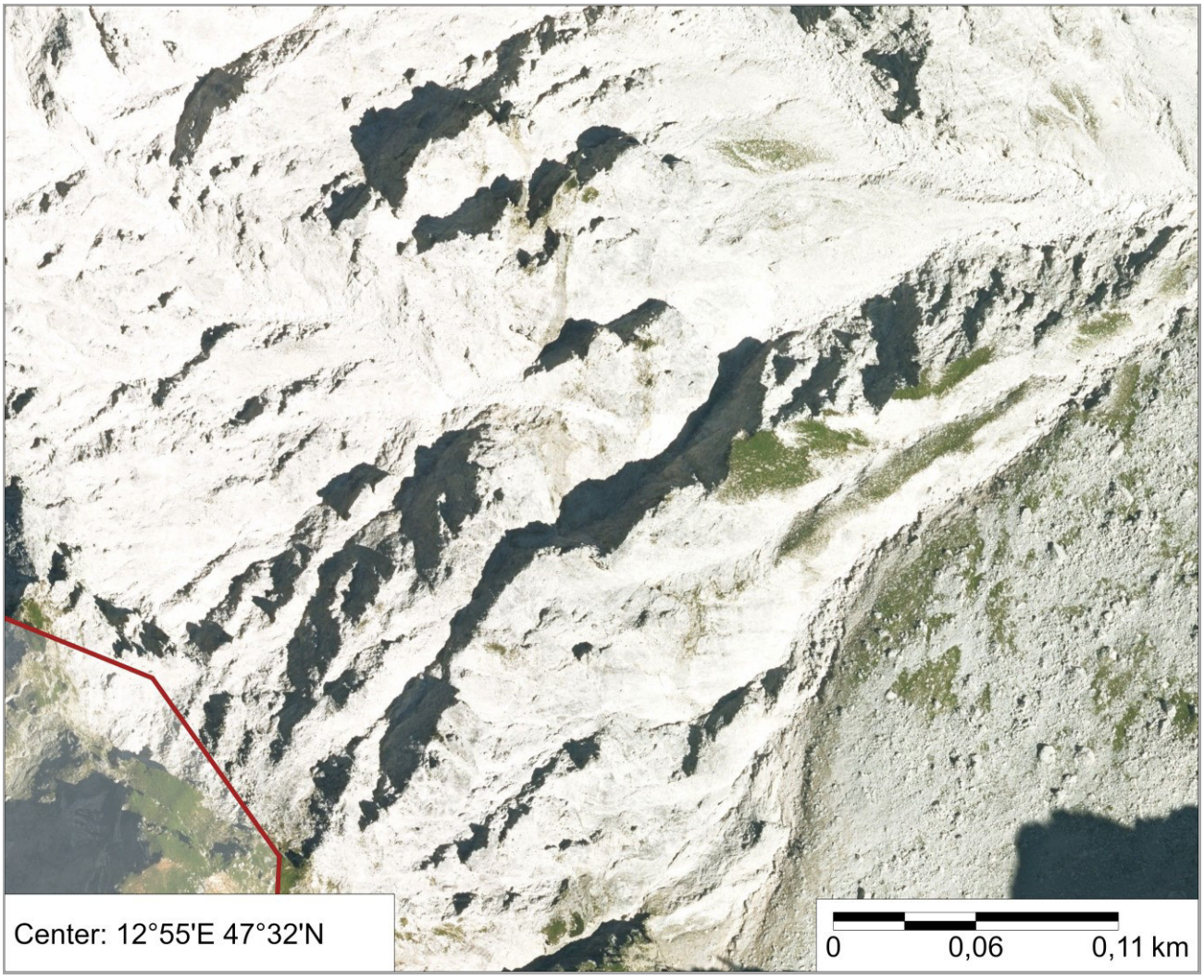
A04.3 Sparsely or non-vegetated areas

## A04.35 Natural bare rock

**I. Description:**

Natural bare rock includes rocks, rock formations and bedrock. This ecosystem class can be found in the montane areas of the Mittelgebirge, the alpine foreland and the Alps. They also include coastal rocks (for example, Heligoland and Rügen) and inland rock formations (such as in the Teutoburg Forest or Saxon Switzerland).

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B332 | N999 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 3.3.2 | Bare rock | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| B3 | Rock cliffs, ledges and shores, including the supralittoral |
| H3 | Inland cliffs, rock pavements and outcrops |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T6.2 | Polar alpine rocky outcrops |

A Terrestrial areas

A04 Semi-natural areas

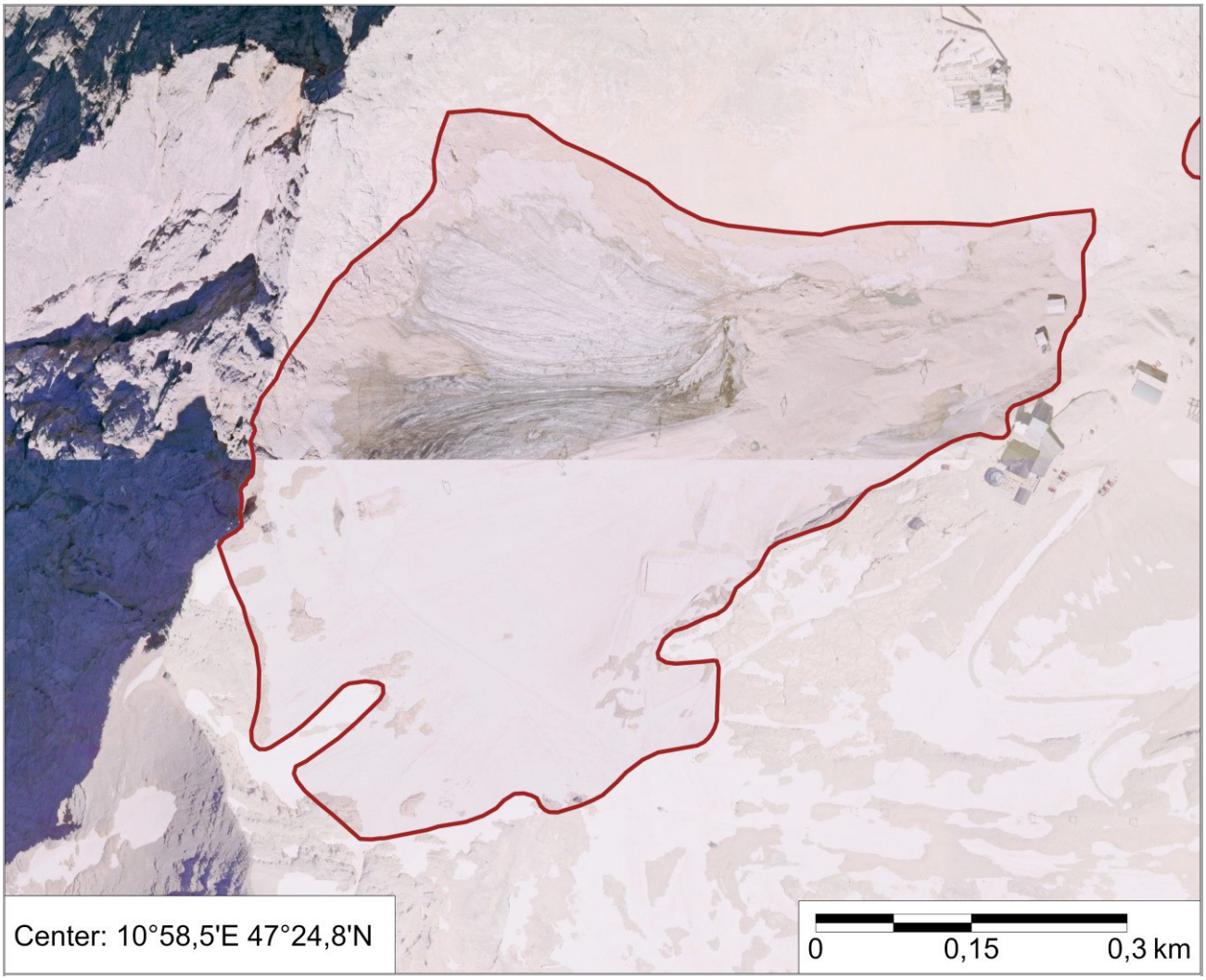
A04.3 Sparsely or non-vegetated areas

## A04.36 Glaciers and perpetual snow

**I. Description:**

Glaciers and perpetual snow areas refer to areas in the Alps covered by glaciers and permanent snow. Glaciers are ice fields of compressed snow. There are currently five glaciers in Germany, the Northern and Southern Schneeferner, the Höllentalferner (Zugspitzmassiv), the Watzmann Glacier and the Blaueis (Hochkalter), all of which are located in Bavaria. Permanent snow areas with a smaller area or volume than glaciers are located in the Wetterstein Mountains, the Berchtesgaden Alps and the Allgäu Alps.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B335 | N999 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 3.3.5 | Glaciers and perpetual snow | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| H4 | Snow or ice-dominated habitats |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T6.1 | Ice sheets, glaciers and perennial snowfields |

A Terrestrial areas

A04 Semi-natural areas

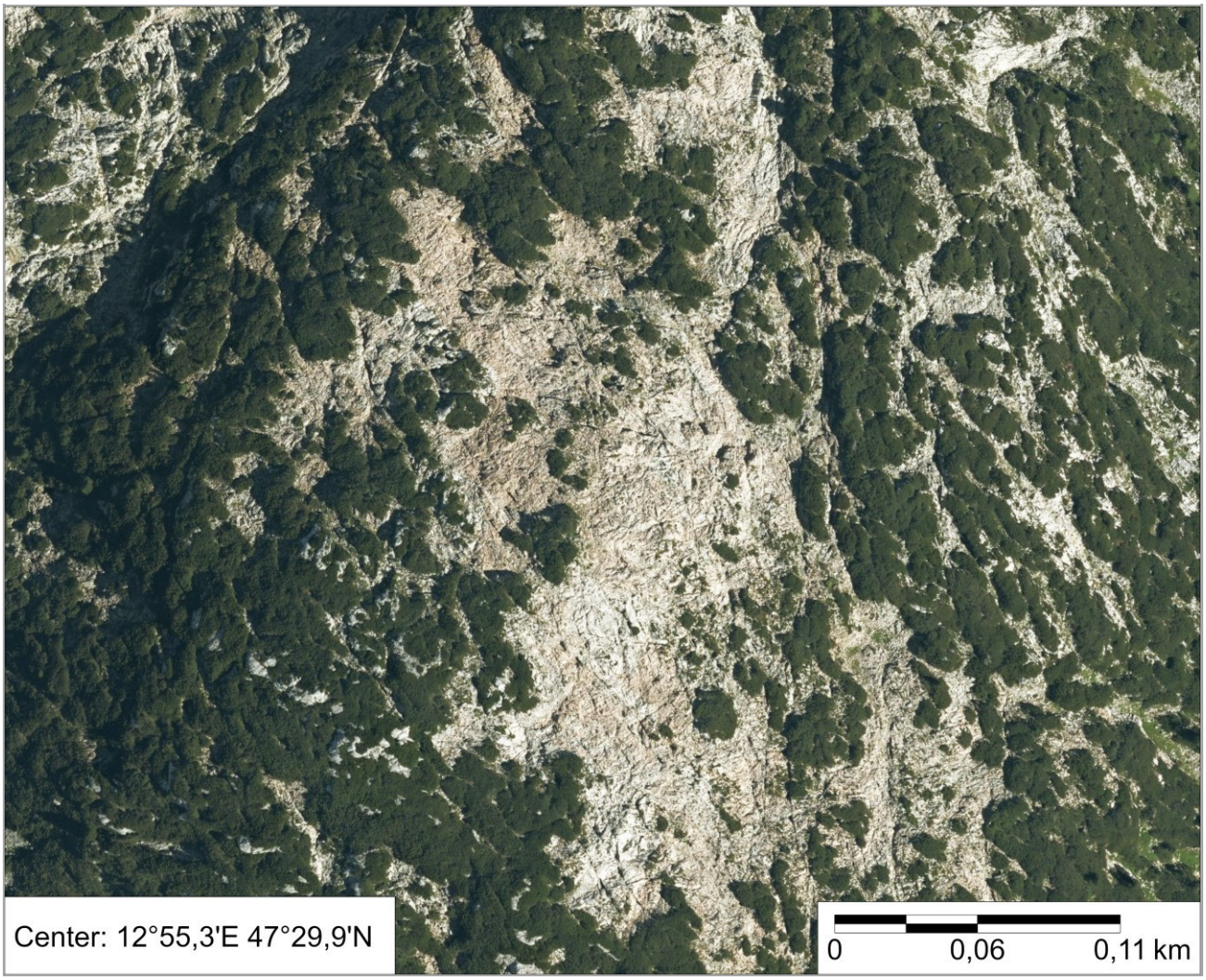
A04.3 Sparsely or non-vegetated areas

## A04.37 Montane and subalpine heath or shrubland

**I. Description:**

Montane and subalpine heath or shrubland, alpine grassland and tundra (cold steppes) are areas in the mountainous regions of the Alpine foothills and the Alps above 900 m elevation and above the tree line. Due to the climatic conditions at this high elevation, the vegetation is characterized by dwarf shrubs, heather and lichens. Some of the areas are grazed extensively and sometimes used intensively for tourism (winter sports).

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B322 | N121 | Military use | Part of the alpine zone | Elevation above 900 m | | |
| B322 | N311 | Part of the alpine zone | Elevation above 900 m | | | |
| B322 | N999 | No coastal dune | Part of the alpine zone | Elevation above 900 m | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| German landscapes | Federal Agency for Nature Conservation (BfN) |
| Digital elevation model | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.3.3 | Sparsely vegetated areas | |
| 3.3.4 | Burnt areas | if LC=B334 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| F2 | Arctic, alpine and subalpine scrub |
| S2 | Arctic, alpine and subalpine scrub |

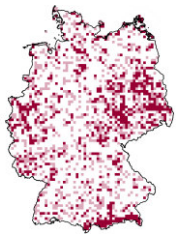
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| T6.4 | Temperate alpine grasslands and shrublands |

A Terrestrial areas

A04 Semi-natural areas

A04.3 Sparsely or non-vegetated areas



## A04.39 Other sparsely or vegetated areas

**I. Description:**

Other sparsely vegetated areas are unsealed areas with sparse vegetation below 900 m above sea level. This ecosystem class includes former mining areas, burnt areas and heterogeneous coastal areas.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B330 | N120 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B330 | N121 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B330 | N123 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B330 | N124 | Vegetation share is greater than or equal to 10 % | Soil sealing share smaller than 15 % | Discontinuous built-up area | | |
| B330 | N999 | Vegetation share is greater than or equal to 10 % | | | No coastal dune | |
| B334 | N122 | | | | | |
| B334 | N311 | | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Biotope mappings | Multiple data sources from Federal States |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 1.2.2 | Road and rail networks and associated land | if LU=N122 |
| 1.2.3 | Port areas | if LU=N123 |
| 1.2.4 | Airports | if LU=N124 |
| 3.3.3 | Sparsely vegetated areas | |
| 3.3.4 | Burnt areas | if LC=B334 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| H5 | Miscellaneous inland habitats with very sparse or no vegetation |

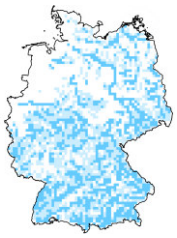
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| MT2.1 | Coastal shrublands and grasslands |

B Waters

B01 Freshwater

B01.1 Water courses

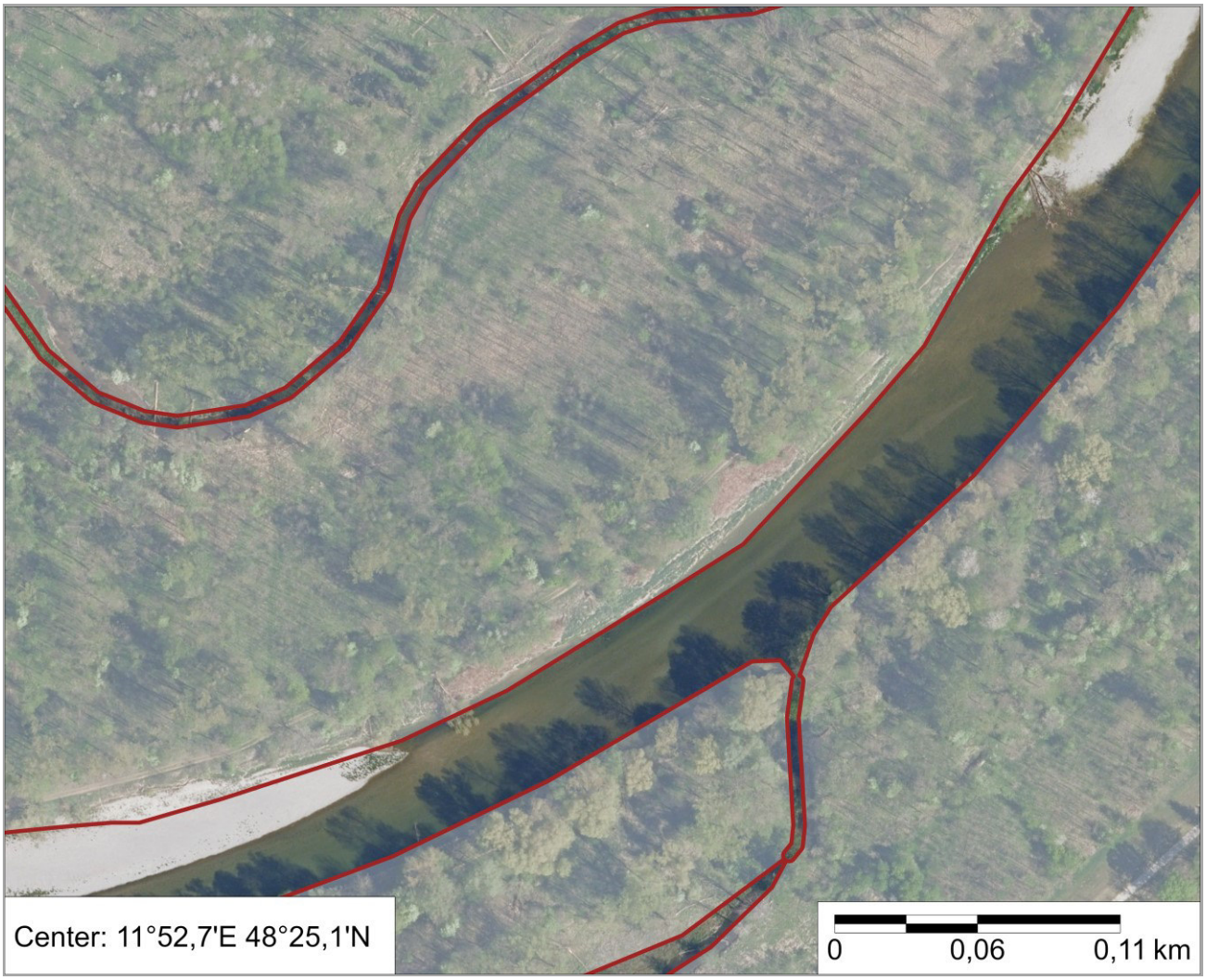


## B01.11 Large natural water courses

**I. Description:**

Large natural water courses are streams and rivers whose water course structure has not been significantly anthropogenically altered with a catchment area is at least 10 km². The catchment area is the area in which all surface runoff flows into the water course under consideration. Water courses are characterized by the fact that the water is always in motion. In addition to the water itself, nutrients and animals are also moved along the direction of flow. The classification of water courses in the National Ecosystem Classification is based on the classification of water courses used for reporting on the European Union's Water Framework Directive. Only water courses with a catchment area of more than 10 km² are recorded and their condition is assessed.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N510 | No marine area | | | | |
| B522 | N999 | No marine area | | | | |
| | | Water course (Basis-DLM) | Water body not heavily modified | Water body not artificial | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.1 | Water courses | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C2 | Surface running waters |

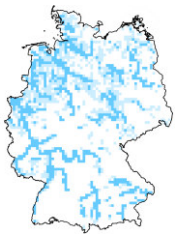
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| F1.1 | Permanent upland streams |
| F1.2 | Permanent lowland rivers |

B Waters

B01 Freshwater

B01.1 Water courses



## B01.12 Large heavily modified water courses

**I. Description:**

Large heavily modified water courses have been significantly influenced in their form by physical changes caused by humans. This includes, for example, straightening and barrages, but not reservoirs. Their catchment area is at least 10 km². The catchment area is the area in which all surface runoff flows into the water course under consideration. Large heavily modified water courses are characterized by the fact that the water is always in motion. In addition to the water itself, nutrients and animals are also moved along the direction of flow. The classification of water courses in the National Ecosystem Classification is based on the classification of water courses used for reporting on the European Union's Water Framework Directive. Only water courses with a catchment area of more than 10 km² are recorded and their condition is assessed.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | No marine area | | | | |
| | | Water course (Basis-DLM) | Heavily modified water body | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.1 | Water courses | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C2 | Surface running waters |

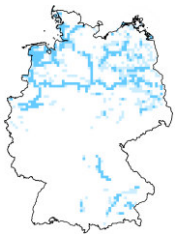
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| F1.1 | Permanent upland streams |
| F1.2 | Permanent lowland rivers |

B Waters

B01 Freshwater

B01.1 Water courses

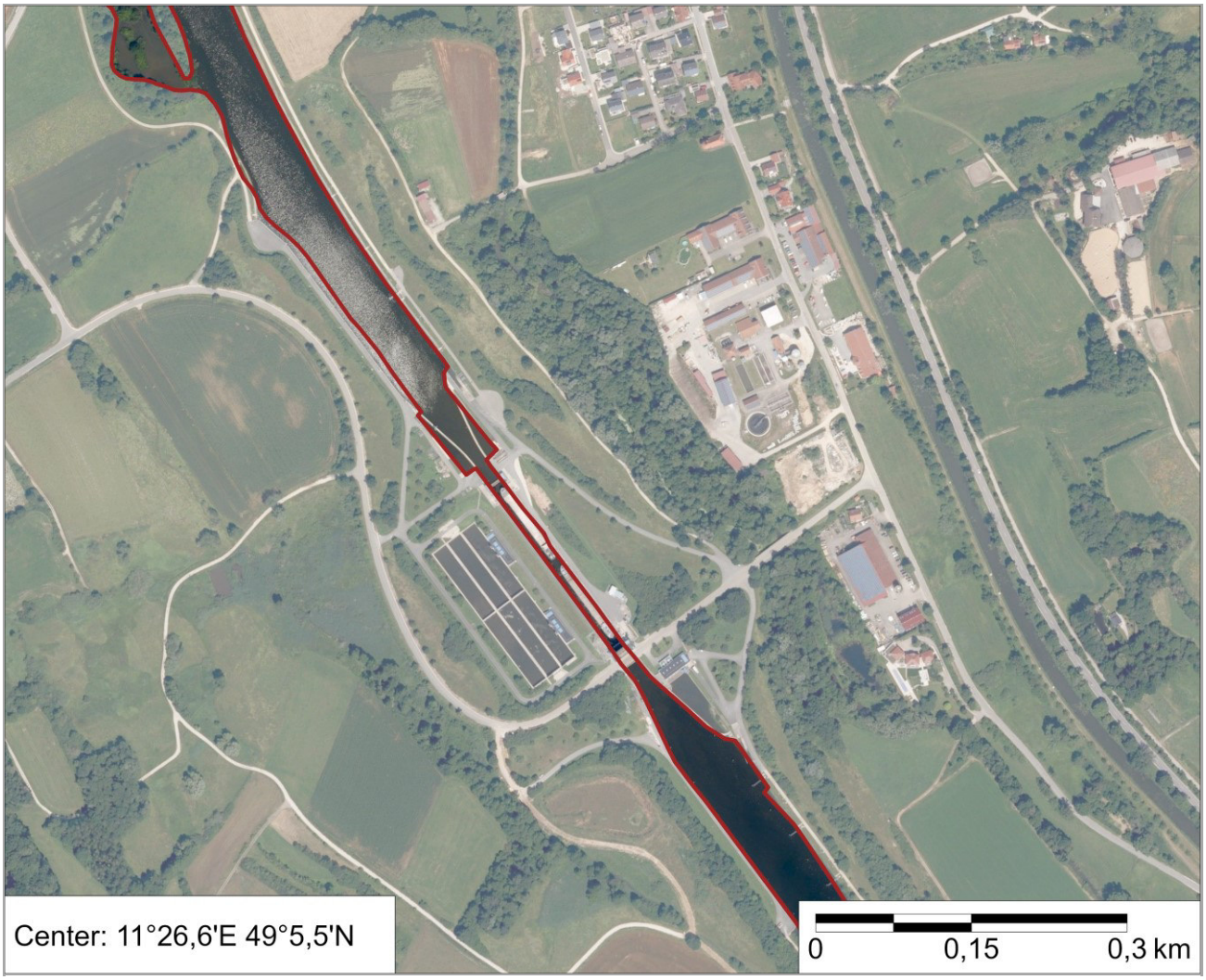


## B01.13 Large artifical water courses

**I. Description:**

Large artificial water courses are located in a place where there was previously no water. This mainly includes channels. Water courses are characterized by the fact that the water is always in motion. In addition to the water itself, nutrients and animals are also moved along the direction of flow. The assignment of water courses in the National Ecosystem Classification is based on the classification of water courses used for reporting on the European Union's Water Framework Directive. Only water courses with a catchment area of more than 10 km² are recorded and their condition is assessed.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| | | Water course (Basis-DLM) | Water body not heavily modified | Artificial water body | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.1 | Water courses | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C2 | Surface running waters |

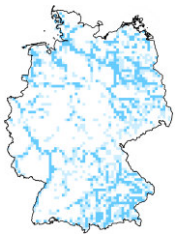
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| F3.5 | Canals and storm water drains |

B Waters

B01 Freshwater

B01.1 Water courses



## B01.19 Other, small water courses

**I. Description:**

Other, small water courses are rivers and streams with a catchment area of less than 10 km². The catchment area is the area in which all surface runoff flows into the watercourse under consideration. Water courses are characterized by the fact that the water is always in motion. In addition to the water itself, nutrients and animals are also moved along the direction of flow. Small water courses are not subject to reporting under the European Union's Water Framework Directive and are not classified as natural, heavily modified or artificial. Other, small water courses are not systematically recorded in the ecosystem balance sheet. As a result, this ecosystem class does not offer a comprehensive, areal recording of small water courses, but includes water courses that do not fall into any of the other water course classes.

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| | | Water course (Basis-DLM) | No information on water body modification | No information on artificial water body | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Digital landscape model (Basis-DLM) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.1 | Water courses | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C2 | Surface running waters |

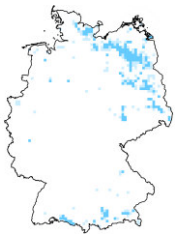
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| F1.1 | Permanent upland streams |
| F1.2 | Permanent lowland rivers |

B Waters

B01 Freshwater

B01.2 Lakes

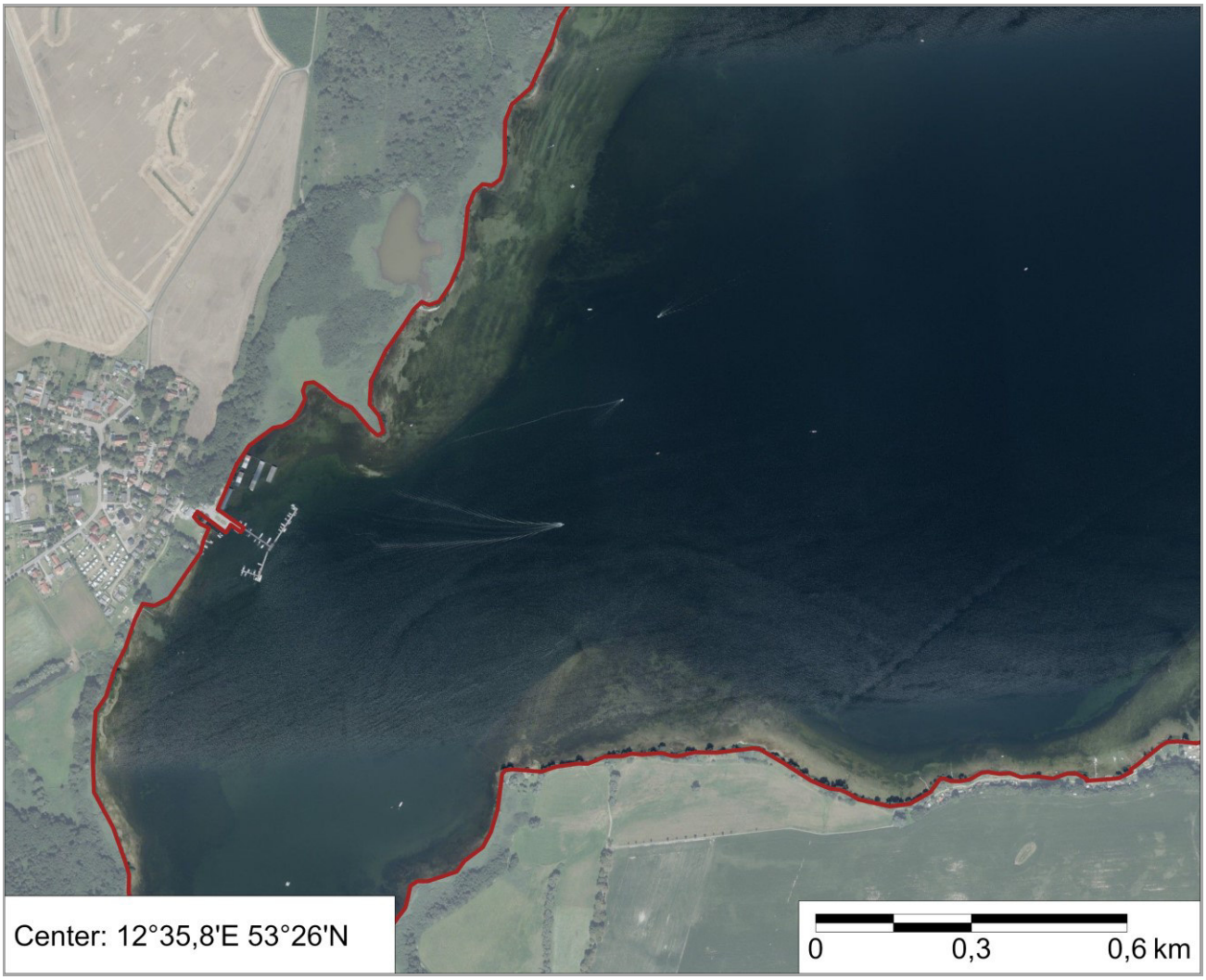


## B01.21 Large natural lakes

**I. Description:**

Large, natural lakes are standing water bodies whose water structure has not been significantly anthropogenically altered and whose area is more than 50 hectares. Large natural lakes are mainly found in the North German Plain and in the foothills of the Alps as a product of the last ice age. The allocation of lakes in the National Ecosystem Classification is based on the classification of standing water bodies that is used for reporting on the European Union's Water Framework Directive. Only standing water bodies with a size of more than 50 hectares are recorded and their condition is assessed.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B512 | N120 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Water body not artificial | | |
| B512 | N123 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Water body not artificial | | |
| B512 | N124 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Water body not artificial | | |
| B512 | N142 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Water body not artificial | | |
| B512 | N510 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Water body not artificial | | |
| B512 | N999 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Water body not artificial | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.2 | Water bodies | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C1 | Surface standing waters |

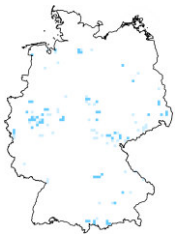
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| F2.1 | Large permanent freshwater lakes |
| F2.2 | Small permanent freshwater lakes |

B Waters

B01 Freshwater

B01.2 Lakes

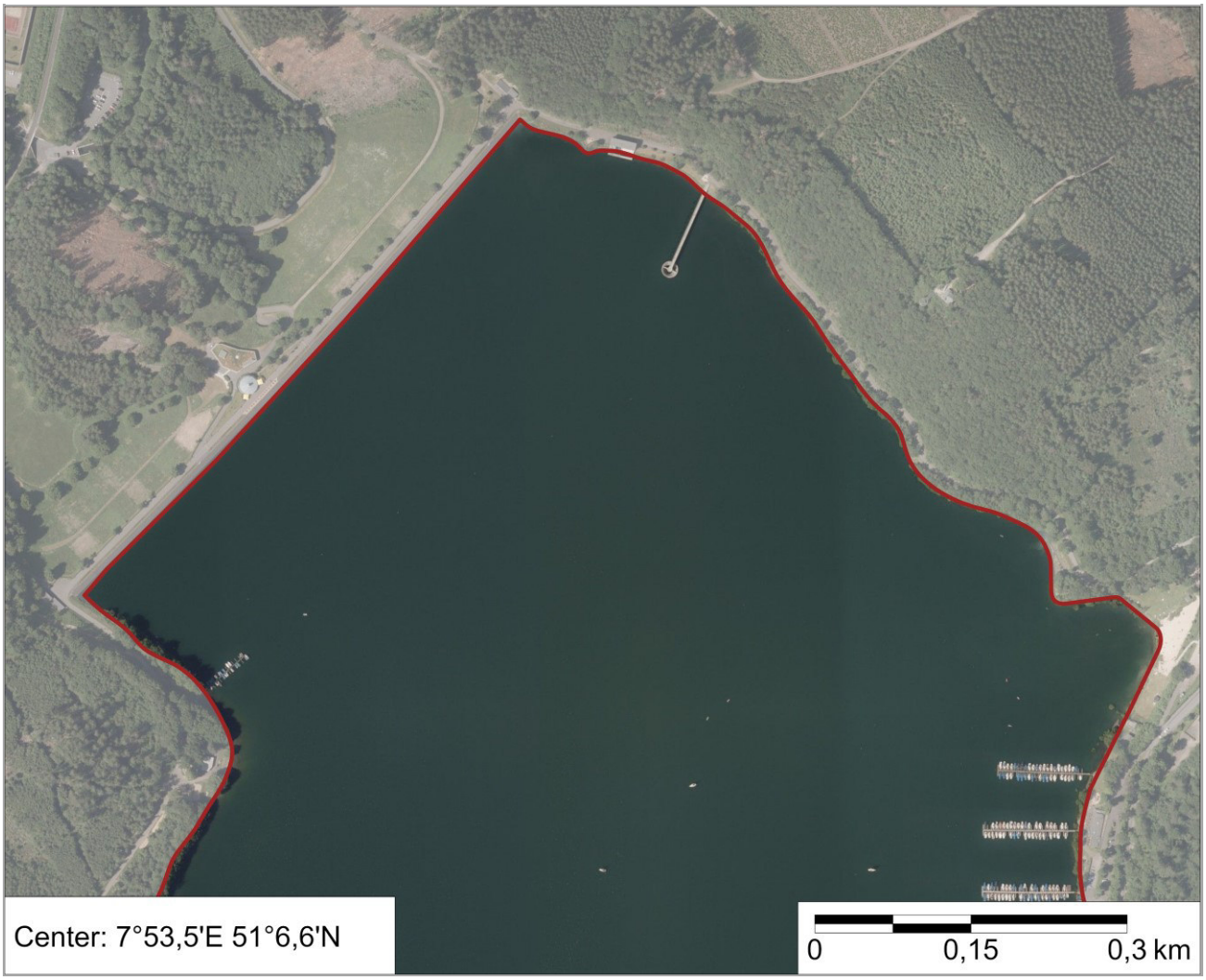


## B01.22 Large heavily modified lakes

**I. Description:**

Large heavily modified lakes are standing water bodies whose character has been significantly influenced by physical alterations caused by humans and whose area is more than 50 hectares. This also includes reservoirs. The classification of lakes is based on the classification of standing water bodies used for reporting on the European Union's Water Framework Directive. Only standing water bodies with a size of more than 50 hectares are recorded and their condition is assessed.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B512 | N120 | Area is greater than or equal to 50 hectares | Heavily modified water body | | | |
| B512 | N123 | Area is greater than or equal to 50 hectares | Heavily modified water body | | | |
| B512 | N124 | Area is greater than or equal to 50 hectares | Heavily modified water body | | | |
| B512 | N142 | Area is greater than or equal to 50 hectares | Heavily modified water body | | | |
| B512 | N510 | Area is greater than or equal to 50 hectares | Heavily modified water body | | | |
| B512 | N999 | Area is greater than or equal to 50 hectares | Heavily modified water body | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.2 | Water bodies | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C1 | Surface standing waters |

IUCN Global Ecosystem Typology

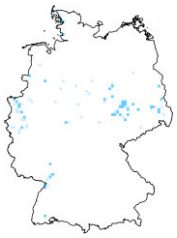
| IUCN | Description |
|---|---|
| F2.1 | Large permanent freshwater lakes |
| F2.2 | Small permanent freshwater lakes |

F3.4 Freshwater aquafarms

B Waters

B01 Freshwater

B01.2 Lakes

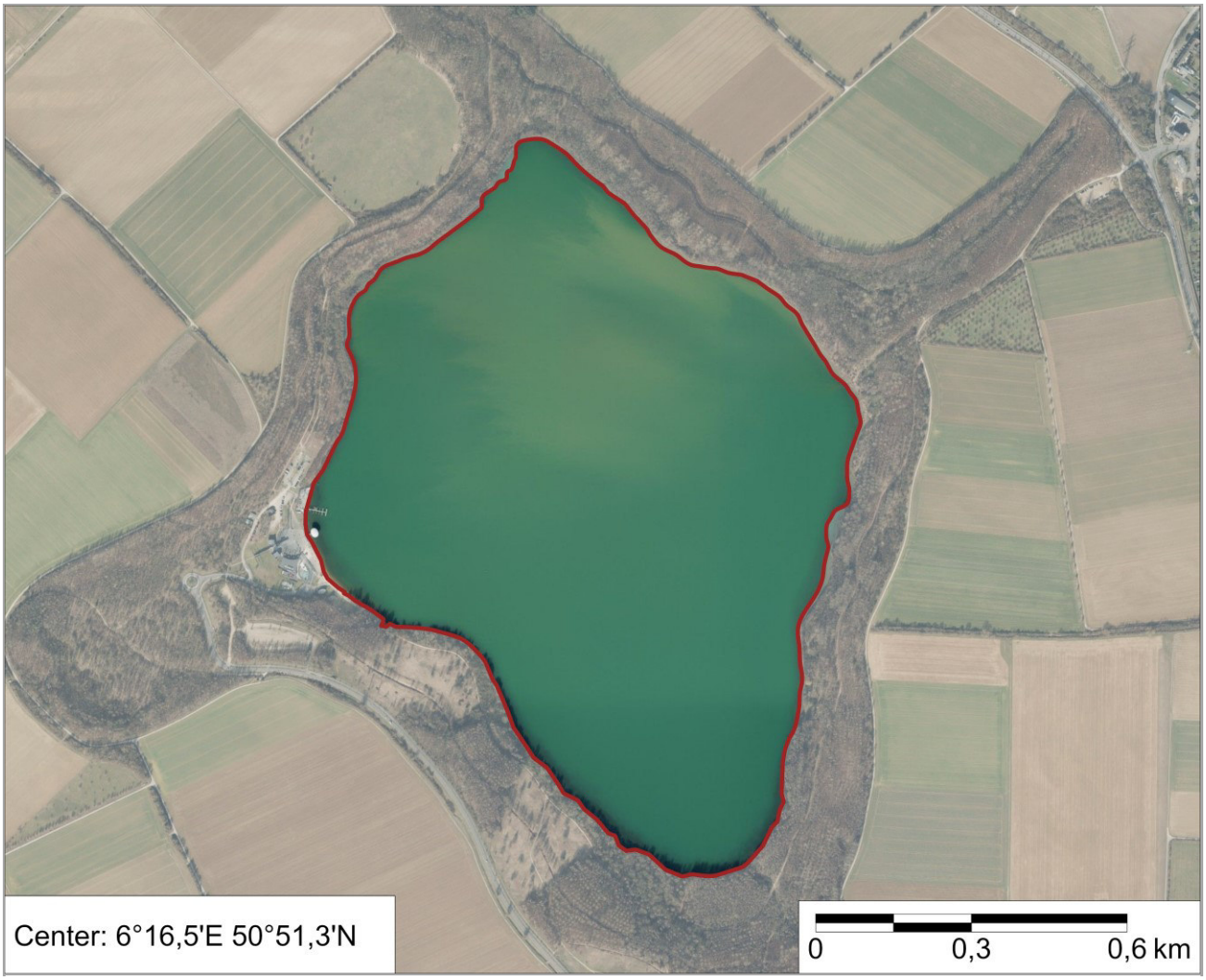


## B01.23 Large artificial lakes

**I. Description:**

Large, artificial lakes are man-made standing water bodies with a size of more than 50 hectares. In Germany, these are mainly quarry lakes that have been created in post-mining landscapes. Reservoirs do not belong to this ecosystem class, but are assigned to the class large heavily modified lakes (B01.22). The classification of lakes is based on the classification of bodies of water used for reporting on the European Union ‘s Water Framework Directive. Only standing water bodies with a size of more than 50 hectares are recorded and their status is assessed.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B512 | N131 | Area is greater than or equal to 50 hectares | | | | |
| B512 | N120 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Artificial water body | | |
| B512 | N123 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Artificial water body | | |
| B512 | N124 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Artificial water body | | |
| B512 | N142 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Artificial water body | | |
| B512 | N510 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Artificial water body | | |
| B512 | N999 | Area is greater than or equal to 50 hectares | Water body not heavily modified | Artificial water body | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.2 | Water bodies | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C1 | Surface standing waters |

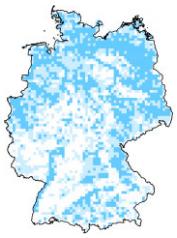
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| F3.1 | Large reservoirs |
| F3.2 | Constructed lacustrine wetlands |

B Waters

B01 Freshwater

B01.2 Lakes

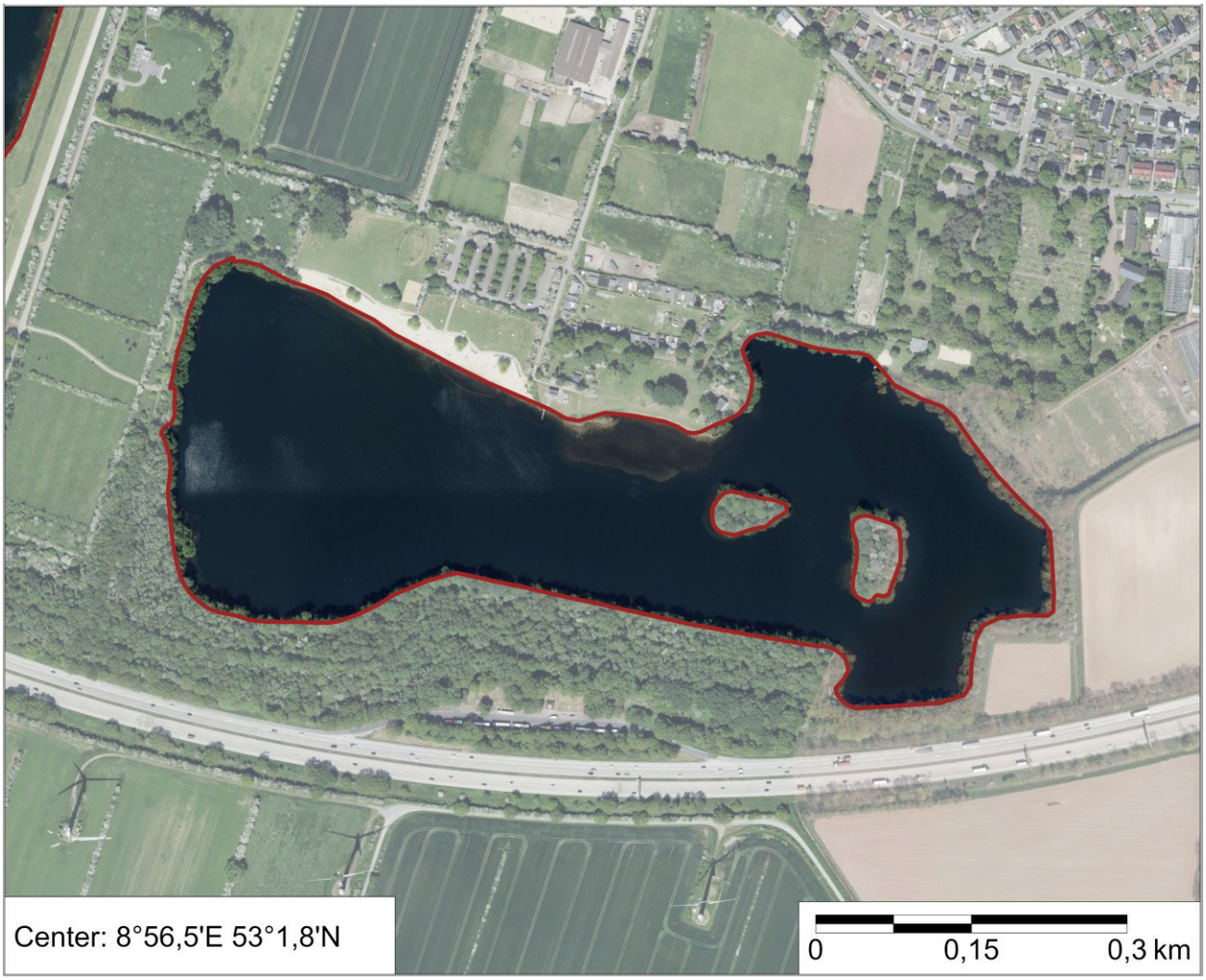


## B01.29 Other small lakes

**I. Description:**

Other small lakes include standing water bodies with an area of less than 50 hectares. Water bodies smaller than one hectare fall under the minimum mapping unit and are not always recorded and classified as other small lakes. The classification of lakes is based on the classification of standing water bodies used for reporting on the European Union's Water Framework Directive. Standing waters bodies smaller than 50 hectares are not recorded and their condition is not assessed.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B512 | N120 | Area is smaller than 50 hectares | | | | |
| B512 | N123 | Area is smaller than 50 hectares | | | | |
| B512 | N124 | Area is smaller than 50 hectares | | | | |
| B512 | N131 | Area is smaller than 50 hectares | | | | |
| B512 | N142 | Area is smaller than 50 hectares | | | | |
| B512 | N510 | Area is smaller than 50 hectares | | | | |
| B512 | N999 | Area is smaller than 50 hectares | | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.1.2 | Water bodies | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| C1 | Surface standing waters |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| F2.2 | Small permanent freshwater lakes |
| F3.2 | Constructed lacustrine wetlands |

B Waters

B02 Marine waters

B02.1 Tidal flats

## B02.11 Tidal flats with macrophytes

**I. Description:**

Tidal flats with macrophytes are areas of nearshore mud, sand and rock covered with seagrass and/or green algae that are within one nautical mile of the baseline (reference line used to define maritime boundaries). They are located between the mean high and low tide levels and thus dry out at low tide. This ecosystem class includes sandy, mixed and silt mudflats and occurs in the German Bight (North Sea), where these areas are protected by national parks in the states of Lower Saxony, Hamburg and Schleswig-Holstein. Mud flats are habitats for snails, worms, crabs, diatoms and numerous bird species. Large algae and seagrass are called macrophytes. These represent an important source of food and are a habitat for many animal species. In addition, macrophytes represent an important carbon store.

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B423 | N999 | Marine area | Seagrass or green algae | No mussel beds | | |
| B423 | N510 | Marine area | Seagrass or green algae | No mussel beds | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Macrophyte mappings | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration; Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modeling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95; Ministry for the Environment, Nature Conservation and Geology of Mecklenburg-Western Pomerania |
| Mappings of mussel beds | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.2.3 | Intertidal flats | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MA1 | Littoral rock |
| MA2 | Littoral biogenic habitat |
| MA4 | Littoral mixed sediment |
| MA5 | Littoral sand |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| M1.1 | Seagrass meadows |
| M1.2 | Kelp forests |

| | |
|---|---|
| MT1.2 | Muddy shores |
| MT1.4 | Boulder-cobble shores |

B Waters

B02 Marine waters

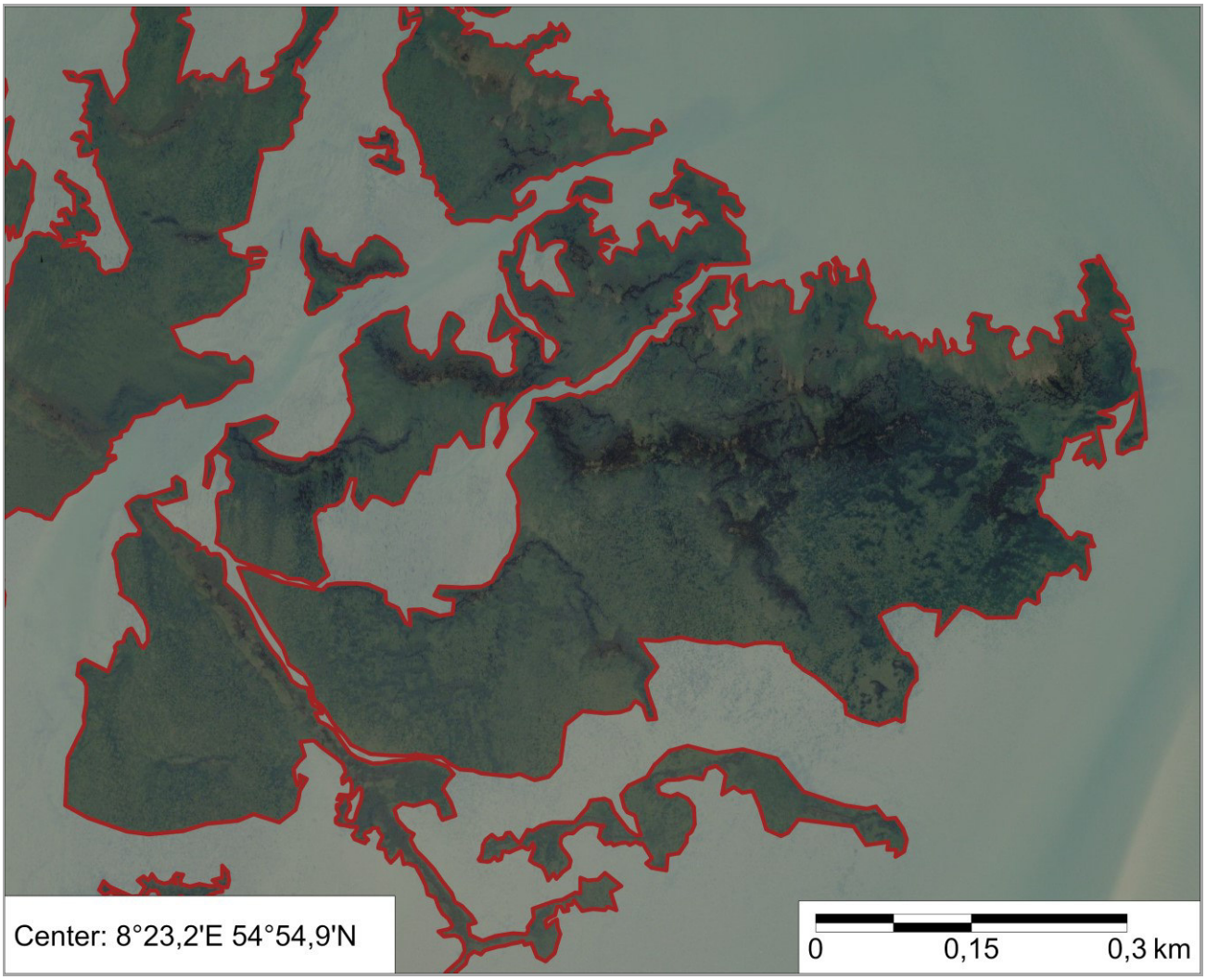
B02.1 Tidal flats

## B02.12 Tidal flats with mussel beds

**I. Description:**

Tidal flats with mussel beds are mussel-populated coastal areas of mud, sand and rock within one nautical mile of the baseline (reference line used to define maritime boundaries). They are located between the mean high and low tide levels and thus dry out at low tide. This ecosystem class includes sandy, mixed and silt mudflats and occurs in the German Bight (North Sea), where these areas are protected by national parks in the states of Lower Saxony, Hamburg and Schleswig-Holstein. Tidal flats with mussel beds are habitats for snails, worms, crabs, diatoms and numerous bird species. Mussels and oysters are an important part of the food chain in the Wadden Sea.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B423 | N999 | Marine area | Tidal flats with mussel beds | | | |
| B423 | N510 | Marine area | Tidal flats with mussel beds | | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Mappings of mussel beds | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.2.3 | Intertidal flats | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MA1 | Littoral rock |
| MA2 | Littoral biogenic habitat |
| MA3 | Littoral coarse sediment |
| MA4 | Littoral mixed sediment |
| MA5 | Littoral sand |
| MA6 | Littoral mud |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| M1.4 | Shellfish beds and reefs |
| MT1.2 | Muddy shores |

B Waters

B02 Marine waters

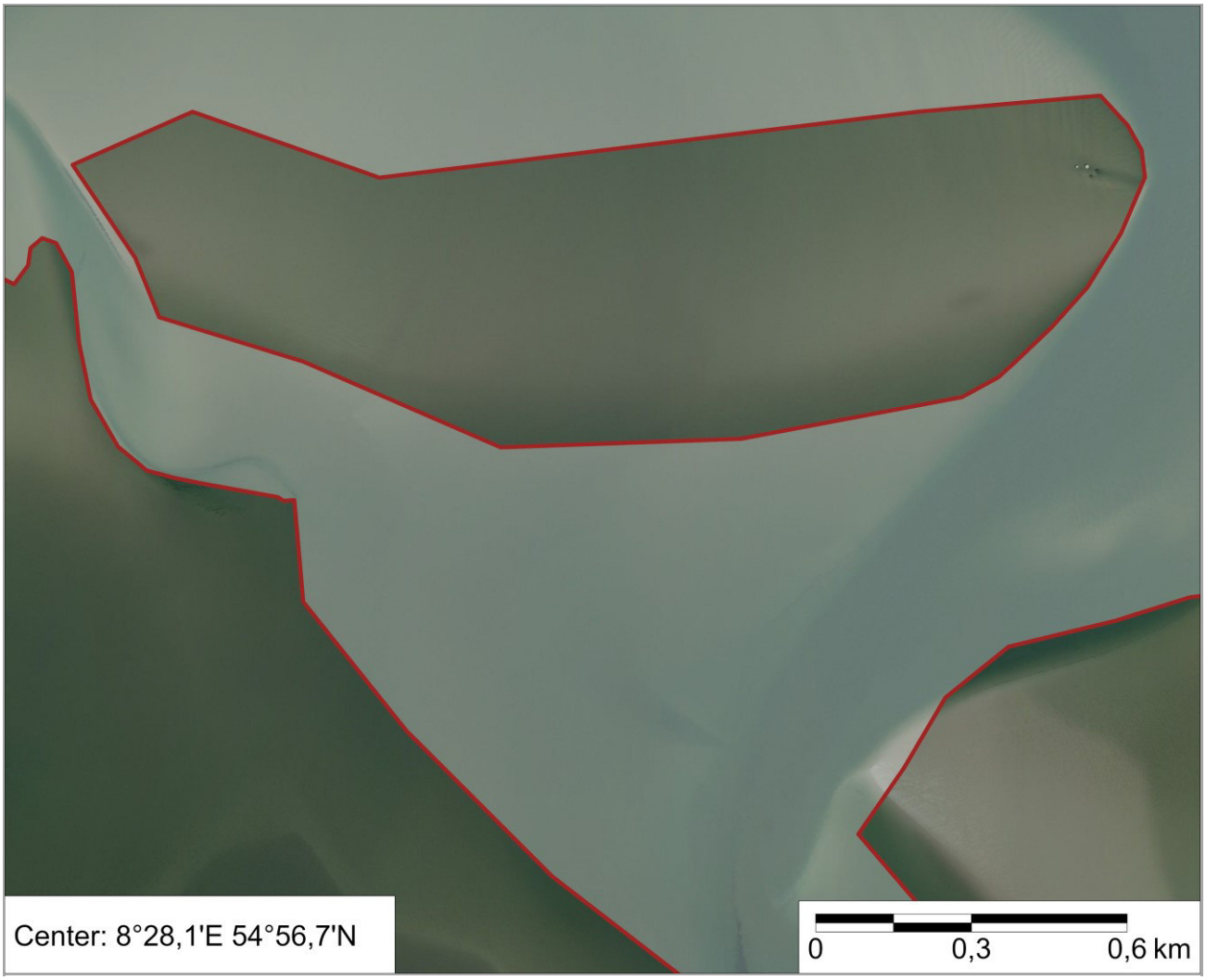
B02.1 Tidal flats

## B02.19 Other tidal flats

**I. Description:**

Other tidal flats are unvegetated near-shore areas of mud, sand or rock that lie within one nautical mile of the baseline (reference line used to define maritime boundaries). They are located between the mean high and low tide levels and thus dry out at low tide. This ecosystem class includes sandy, mixed and silt mudflats and occurs in the German Bight (North Sea), where these areas are protected by national parks in the states of Lower Saxony, Hamburg and Schleswig-Holstein. Other tidal flats are habitats for snails, worms, crabs, diatoms and numerous bird species.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B423 | N999 | Marine area | No seagrass or green algae | No mussel beds | | |
| B423 | N510 | Marine area | No seagrass or green algae | No mussel beds | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Macrophyte mappings | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration; Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modeling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95; Ministry for the Environment, Nature Conservation and Geology of Mecklenburg-Western Pomerania |
| Mappings of mussel beds | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 4.2.3 | Intertidal flats | |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MA1 | Littoral rock |
| MA2 | Littoral biogenic habitat |
| MA3 | Littoral coarse sediment |
| MA4 | Littoral mixed sediment |
| MA5 | Littoral sand |
| MA6 | Littoral mud |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| MT1.2 | Muddy shores |
| MT1.3 | Sandy shores |
| MT1.4 | Boulder-cobble shores |

B Waters

B02 Marine waters

B02.2 Costal waters

## B02.21 Coastal sea macrophytes

**I. Description:**

Coastal sea macrophytes are areas of seagrass and/or green algae growth within one nautical mile of the baseline (reference line used to define maritime boundaries) or the estuaries of large rivers and are generally continuously covered by water. Large algae and seaweed are called macrophytes. These represent an important source of food and are a habitat for many animal species. In addition, macrophytes represent an important carbon store.

**II. Orthophoto:**


Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B522 | N510 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B522 | N999 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B523 | N123 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B523 | N510 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B523 | N999 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B521 | N123 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B521 | N510 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |
| B521 | N999 | Marine area | Coastal waters | No reefs | No sandbanks | Seagrass or green algae |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Macrophyte mappings | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration; Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modeling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95; Ministry for the Environment, Nature Conservation and Geology of Mecklenburg-Western Pomerania |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MB1 | Infralittoral rock |
| MB3 | Infralittoral coarse sediment |
| MB4 | Infralittoral mixed sediments |
| X01 | Estuaries |
| X02 | Saline coastal lagoons |
| X03 | Brackish coastal lagoons |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| FM1.2 | Permanently open riverine estuaries and bays |
| FM1.3 | Intermittently closed coastal lagoons |
| M1.1 | Seagrass meadows |
| M1.2 | Kelp forests |

B Waters

B02 Marine waters

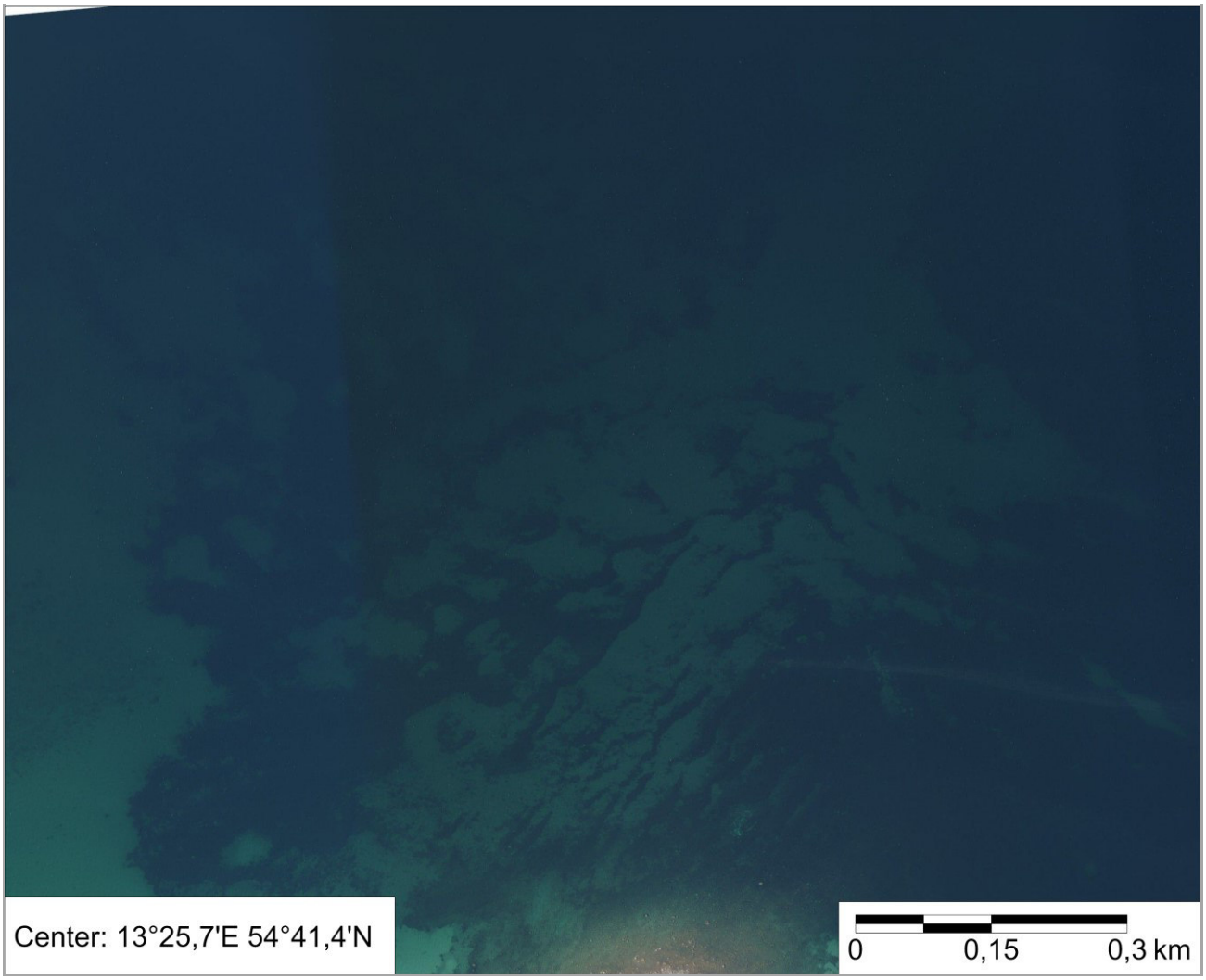
B02.2 Costal waters

## B02.22 Coastal reefs

**I. Description:**

Coastal reefs are located within one nautical mile of the baseline (reference line used to define maritime boundaries) or the estuary of large rivers. Reefs are permanently flooded mineral or biogenic hard substrates such as rocks, stones, sand corals or mussel beds that rise from the sea floor. They are partly overgrown with mussels and macroalgae and are the habitat and nutrient habitat of fish, birds and marine mammals.

**II. Orthophoto:**




Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Coastal waters | Reefs | | |
| B522 | N510 | Marine area | Coastal waters | Reefs | | |
| B522 | N999 | Marine area | Coastal waters | Reefs | | |
| B523 | N123 | Marine area | Coastal waters | Reefs | | |
| B523 | N510 | Marine area | Coastal waters | Reefs | | |
| B523 | N999 | Marine area | Coastal waters | Reefs | | |
| B521 | N123 | Marine area | Coastal waters | Reefs | | |
| B521 | N510 | Marine area | Coastal waters | Reefs | | |
| B521 | N999 | Marine area | Coastal waters | Reefs | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MB2 | Infralittoral biogenic habitat |
| X01 | Estuaries |
| X02 | Saline coastal lagoons |
| X03 | Brackish coastal lagoons |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| FM1.2 | Permanently open riverine estuaries and bays |
| FM1.3 | Intermittently closed coastal lagoons |
| M1.2 | Kelp forests |
| M1.4 | Shellfish beds and reefs |
| M1.6 | Subtidal rocky reefs |

B Waters

B02 Marine waters

B02.2 Costal waters

## B02.23 Coastal sandbanks

**I. Description:**

Coastal sandbanks are located within one nautical mile of the baseline (reference line used to define maritime boundaries) or the estuaries of large rivers. They are raised, oblong, rounded, or irregular surfaces of sandy sediment that are permanently flooded and mostly surrounded by deeper water. Coastal sandbanks are an important nutrient habitat for numerous fish and bird species.

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B522 | N510 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B522 | N999 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B523 | N123 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B523 | N510 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B523 | N999 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B521 | N123 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B521 | N510 | Marine area | Coastal waters | No reefs | Sandbanks | |
| B521 | N999 | Marine area | Coastal waters | No reefs | Sandbanks | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MB5 | Infralittoral sand |
| X01 | Estuaries |
| X02 | Saline coastal lagoons |
| X03 | Brackish coastal lagoons |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| FM1.2 | Permanently open riverine estuaries and bays |
| FM1.3 | Intermittently closed coastal lagoons |
| M1.7 | Subtidal sand beds |

B Waters

B02 Marine waters

B02.2 Costal waters

## B02.29 Other coastal waters

**I. Description:**

Other coastal waters are located within one nautical mile of the baseline (reference line used to define maritime boundaries) or the estuaries of large rivers. These areas are permanently flooded and show no significant macroalgal growth or occurrence of reefs or sandbanks.

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B522 | N510 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B522 | N999 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B523 | N123 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B523 | N510 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B523 | N999 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B521 | N123 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B521 | N510 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |
| B521 | N999 | Marine area | Coastal waters | No reefs | No sandbanks | No seagrass or green algae |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Macrophyte mappings | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration; Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modeling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95; Ministry for the Environment, Nature Conservation and Geology of Mecklenburg-Western Pomerania |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MB1 | Infralittoral rock |
| MB3 | Infralittoral coarse sediment |
| MB4 | Infralittoral mixed sediments |
| MB5 | Infralittoral sand |
| MB6 | Infralittoral mud |
| X01 | Estuaries |
| X02 | Saline coastal lagoons |
| X03 | Brackish coastal lagoons |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| FM1.2 | Permanently open riverine estuaries and bays |
| FM1.3 | Intermittently closed coastal lagoons |
| M1.8 | Subtidal mud plains |

B Waters

B02 Marine waters

B02.3 Open sea

## B02.31 Open sea with macrophytes

**I. Description:**

Open sea with macrophytes are areas of seagrass and/or green algae growth beyond the baseline (reference line used to define maritime boundaries). Macrophytes refer to large algae and seagrass. They represent an important source of food and are a habitat for many animal species. In addition, macrophytes represent an important carbon store.

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B522 | N510 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B522 | N999 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B523 | N123 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B523 | N510 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B523 | N999 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B521 | N123 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B521 | N510 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |
| B521 | N999 | Marine area | Open waters | No reefs | No sandbanks | Seagrass or green algae |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Macrophyte mappings | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration; Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modeling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95; Ministry for the Environment, Nature Conservation and Geology of Mecklenburg-Western Pomerania |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MB1 | Infralittoral rock |
| MB3 | Infralittoral coarse sediment |
| MB4 | Infralittoral mixed sediments |
| MC1 | Circalittoral rock |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| M1.1 | Seagrass meadows |
| M1.2 | Kelp forests |
| M1.5 | Marine animal forests |

B Waters

B02 Marine waters

B02.3 Open sea

## B02.32 Open sea reefs

**I. Description:**

Open sea reefs lie beyond the baseline (reference line used to define maritime boundaries). Reefs are permanently flooded mineral or biogenic hard substrates such as rocks, stones, sand corals or mussel beds that rise from the sea floor. They are partly overgrown with mussels and macroalgae and are the habitat and nutrient habitat of fish, birds and marine mammals.

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Open waters | Reefs | | |
| B522 | N510 | Marine area | Open waters | Reefs | | |
| B522 | N999 | Marine area | Open waters | Reefs | | |
| B523 | N123 | Marine area | Open waters | Reefs | | |
| B523 | N510 | Marine area | Open waters | Reefs | | |
| B523 | N999 | Marine area | Open waters | Reefs | | |
| B521 | N123 | Marine area | Open waters | Reefs | | |
| B521 | N510 | Marine area | Open waters | Reefs | | |
| B521 | N999 | Marine area | Open waters | Reefs | | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MC2 | Circalittoral biogenic habitat |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| M1.6 | Subtidal rocky reefs |

B Waters

B02 Marine waters

B02.3 Open sea

## B02.33 Open sea sandbanks

**I. Description:**

Open sea sandbanks are areas beyond the baseline (reference line for defining maritime boundaries). They are raised, oblong, rounded, or irregular surfaces of sandy sediment that are permanently flooded and mostly surrounded by deeper water. Sandbanks are an important nutrient habitat for numerous fish and bird species.

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Open waters | No reefs | Sandbanks | |
| B522 | N510 | Marine area | Open waters | No reefs | Sandbanks | |
| B522 | N999 | Marine area | Open waters | No reefs | Sandbanks | |
| B523 | N123 | Marine area | Open waters | No reefs | Sandbanks | |
| B523 | N510 | Marine area | Open waters | No reefs | Sandbanks | |
| B523 | N999 | Marine area | Open waters | No reefs | Sandbanks | |
| B521 | N123 | Marine area | Open waters | No reefs | Sandbanks | |
| B521 | N510 | Marine area | Open waters | No reefs | Sandbanks | |
| B521 | N999 | Marine area | Open waters | No reefs | Sandbanks | |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MB5 | Infralittoral sand |

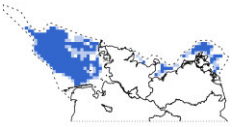
IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| M1.7 | Subtidal sand beds |

B Waters

B02 Marine waters

B02.3 Open sea



## B02.39 Other seabeds in the open sea

**I. Description:**

Other seabeds in the open sea refer to marine waters without marine macroalgae stocks, reefs or sandbanks. This ecosystem class lies beyond the baseline (reference line used to define maritime boundaries).

**II. Orthophoto:**

No orthophoto available for this ecosystem class

Source Orthophoto: © GeoBasis-DE / BKG

## III. Classification criteria:

For Information on the coding of land cover (LC) and land use (LU) see:
Documentation of the land cover model (LBM-DE/BKG)

| LC | LU | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 |
|---|---|---|---|---|---|---|
| B522 | N123 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B522 | N510 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B522 | N999 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B523 | N123 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B523 | N510 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B523 | N999 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B521 | N123 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B521 | N510 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |
| B521 | N999 | Marine area | Open waters | No reefs | No sandbanks | No seagrass or green algae |

## IV. Sources:

| Dataset | Source |
|---|---|
| Land cover model (LBM-DE) | Federal Agency for Cartography and Geodesy (BKG) |
| Special Areas of Conservation | Federal Agency for Nature Conservation (BfN) |
| Macrophyte mappings | Federal Agency for Nature Conservation (BfN); Schleswig-Holstein Wadden Sea National Park Administration; Lower Saxon Wadden Sea National Park Administration; Schubert PR, Hukriede W, Karez R, Reusch TBH (2015) Mapping and modeling eelgrass Zostera marina distribution in the western Baltic Sea. Mar Ecol Prog Ser 522:79-95; Ministry for the Environment, Nature Conservation and Geology of Mecklenburg-Western Pomerania |
| Water framework directive, reporting units of the Marine Strategy Framework Directive | German Federal Institute of Hydrology (BfG); Federal Maritime and Hydrographic Agency (BSH) |
| Exclusive Economic Zone (EEZ) | Federal Maritime and Hydrographic Agency (BSH) |

## V. Crosswalk of international classifications:

CORINE Land Cover Classification (EU)

| CLC | Description | Condition |
|---|---|---|
| 5.2.1 | Coastal lagoons | if LC=B521 |
| 5.2.2 | Estuaries | if LC=B522 |
| 5.2.3 | Sea and ocean | if LC=B523 |

EUNIS Habitat Classification (EEA)

| EUNIS | Description |
|---|---|
| MB1 | Infralittoral rock |
| MB4 | Infralittoral mixed sediments |
| MB5 | Infralittoral sand |
| MB6 | Infralittoral mud |
| MC1 | Circalittoral rock |
| MC3 | Circalittoral coarse sediment |
| MC4 | Circalittoral mixed sediments |
| MC5 | Circalittoral sand |
| MC6 | Circalittoral mud |

IUCN Global Ecosystem Typology

| IUCN | Description |
|---|---|
| M1.7 | Subtidal sand beds |
| M1.8 | Subtidal mud plains |
| M2.1 | Epipelagic ocean waters |