# ARANGE Deliverable D1.2

# Catalogue of harmonized environmental variables

06.09.2013

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ARANGE - Grant no. 289437- Advanced multifunctional forest management in European mountain ranges

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Abstract:

This document describes how in the ARANGE project current forest conditions in the seven Case Study Areas (CSA) are characterized and made accessible for quantitative analysis. In each CSA a set of Representative Stand Types (RST) is defined which provide a sufficient representation of forest conditions in each CSA. RSTs are defined via species composition, forest structure, management sytem (i.e. evenaged, unevenaged) and the site conditions. Site conditions in the CSAs are represented by a set of Site Types which include also climate data (baseline climate, climate change scenario data). Quantitative data available for each RST include: (i) water storage capacity, (ii) plant available Nitrogen, (iii) pH of the mineral soil, (iv) species specific diameter distribution for trees >10cm DBH including a representative tree height for each DBH class, (v) species specific seedling numbers in four predefined height classes. Additionally there is qualitative information provided on mixture pattern in trees and regeneration. RST numbers in CSAs range from 19 to 88, site types from 6 to 26. To allow the assessment of forest ecosystem provisioning at spatial scales beyond stand level one or more Representative Landscapes (RL) are defined in each CSA. The RLs provide a spatially explicit matrix of stand polygons and cover areas from 216 to more than 10000 hectares. Each of the stand polygons is represented by one of the RSTs (multiple asignments of RSTs to polygons is possible).

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# 1 Introduction

ARANGE is assessing forest management in seven case study areas (CSA) throughout European mountain regions. The term “forest management” is frequently used without proper definition. In the context of the ARANGE project forest management includes silvicultural measures and technical systems and approaches to actually implement silvicultural measures at various spatial scales, from individual trees to catchments and landscapes.

The smallest planning and treatment unit in silviculture is usually called “stand” (biology focused) or “compartment” (planning focused). A “stand” is defined as a forest area with (more or less) homogeneous conditions regarding to (i) site conditions, (ii) tree species composition, (iii) stand structure, (iv) tree age, (v) management objectives, and (vi) silvicultural treatments. The area size of such stands / compartments ranges from about 0.5ha to areas as large as 10-20ha, depending on attributes as listed above. Ownership characteristics play an important role as well.

In order to provide a common data base regarding site and stand conditions for all partners involved in implementing the ARANGE work plan the forest conditions in each ARANGE CSA was characterized by a set of “Representative Stand Types” (RST). To study implications of forest management at scales beyond the stand level at least one “Representative Landscape” (RL) per CSA was defined as well. RSTs and RLs, on one hand, are meant to provide the base to assess current management practices and its implications for ecosystem service provisioning, on the other hand the RSTs and RLs should also allow to explore potential alternative management regimes in the CSAs.

Details on RSTs and RLs are described in Chapters 2 and 3, links to various tasks in ARANGE Work packages in Chapter 4. In the Annex a technical description of RSTs and RLs in each CSA is given. The actual data is available to all ARANGE partners at the Internal Communication Platform (ICP).

# 2 Representative Stand Types (RST)

## 2.1 Defining the RSTs

In each case study area (CSA) the forest conditions are represented by Representative Stand Types (RST). These stand types are defined via (i) species mixture, (ii) tree age / stand development stage, (iii) site type (considering, i.a., altitude, slope & exposition, water storage capacity, nutrient supply), and (iv) whether they are even aged or uneven aged. The site type is an integral component of any RST and includes the link to a specific baseline climate record (see Deliverable D1.1).

In internal discussions 20(+) RSTs were considered as a realistic quantity per CSA. Typically, RSTs can be derived from (i) inventory data in the CSAs, or (ii) stand data available from management plans or (iii) from earlier research activities or gathered for the purpose of the ARANGE project. Whether synthetic stand types derived from measured data sets or selected "representative" stands which have been directly measured in the field are used depends on the specific situation in the CSAs.

In CSAs holding age class forests each RST should include the respective age class sequence.

The coding system for the RSTs considers the main features of a RST (e.g., species composition, structure, site; see above) as well as the stand development stages (i.e. age classes) (see Table 1).

Table 1. Coding system for RSTs.

| **Code position** | **Characterization** |
|---|---|
| 1.x | main RST, defining an entire chronosequence; |
| x.1-n | Chronosequence (stand development stages, age classes) of a main RST; should not exceed 6 categories; |

## 2.2 Variable definition

In defining the variables to characterize each RST the role of RSTs in the ARANGE context needs to be reviewed. Main approach in ARANGE is to assess the implications of silvicultural management on ecosystem service provisioning based on empirical data as well as with ecosystem simulation approaches. The latter approach is the backbone of the ARANGE concept. Thus, data used to characterize the RSTs must be suitable to initialize the various forest simulation models available within the ARANGE consortium (e.g., Bugmann 2001, Cordonnier et al. 2008, Lexer and Hönninger 2001, Seidl et al. 2005, Schuhmacher and Bugmann 2006, Fabrika and Dursky 2005, Lamas and Erikson 2003). Based on (i) a questionnaire send to all modelling

groups within the consortium and (ii) the data availability in the CSAs as reported by the Case Study Responsibles (CSRs) a common RST data model has been defined.

**Table 2**. Attributes to characterize the site types in a CSA.

| Attribute | Description [measurement unit] |
|---|---|
| Site-ID | ID of site type [1-n] |
| altitudinal range | [m a.s.l.] |
| Aspect | [0-360°] |
| Slope | [%] |
| Bedrock (geology) | calcareous, acidic, mixed |
| Soil type | FAO classification if possible |
| Soil depth | From topsoil mineral horizont to bedrock [cm] |
| Stoniness | Coarse fraction (>2mm) in mineral soil [%] |
| pH | Mineral layer (0-20cm) |
| Nutrient supply | Poor, intermediate, rich |
| plant available Nitrogen | Can be estimated from total N in mineral soil and a mineralisation rate (0.5-4%) [kg/ha*yr] |
| Water storage capacity | water column which can be stored in the mineral soil profile (soil depth); will be in the range of 50mm (sandy, shallow soil) and 250mm (high storage capacity in loamy deep soils with low stoniness) [mm] |
| Climate record ID | representative climate data records (baseline, climate change scenarios) are linked to the site types |

Attributes to characterize each representative stand are listed in Table 3, in Figure 1 examples for the representation of tree populations via the DBH distribution and regeneration status via seedling density in height classes is shown.

**Table 3.** Attributes to characterize the respresentative stands.

| Attribute | Description [measurement unit] |
|---|---|
| RST-ID | ID of RST (see Table 1) |
| Site-ID | ID of assigned site type |
| DBH distribution | each CSA should use the local minimum DBH used in forest inventories; as class width for the DBH distribution 0-10, 10-15, 15-20, 20-25cm etc. are proposed. If in a CSA diameter distributions can not be provided at this resolution in defining the diameter classes please to multiples of 5cm class width. [n/ha] per tree species |
| Tree height | Representative tree height per DBH class and species. Can either be provided via a height-diameter equation OR as a mean height value per diameter class and species. [m] |
| Mixture form | Qualitative description of the mixture form in mixed stands (e.g. random mixture, aggregation in patches); if patchy mixture please provide number of patches and mean size (patch diameter in [m]). |
| Regeneration | Seedling density per tree species in height classes: 10-30cm, 31-50cm, 51-80cm, 81-130cm; [n/ha] |
| Mixture form | a simple qualitative description of the distribution and mixture form of the regeneration in the RST. The following approach is used: (i) define whether the distribution is (a) patchy, (b) random, (c) regular. In case of patchy say how many patches/ha of which size; in case of regular say what the spacing is (in [a]m x [b]m). If there are more than one species present in the regeneration please define how these species are intermingled (intimate mixture, patchy). If there is any other distinctly different mixture form/distribution occuring in your RSTs please describe briefly in verbal form! |

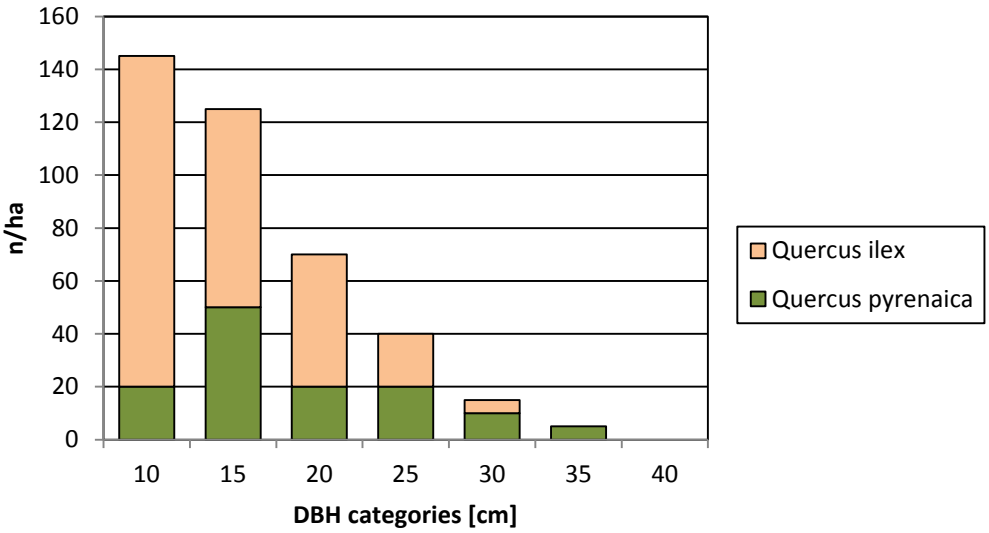


Figure 1a. Distribution of stems/ha over DBH categories per species in RST 2.1 from CSA1 (Valsain).

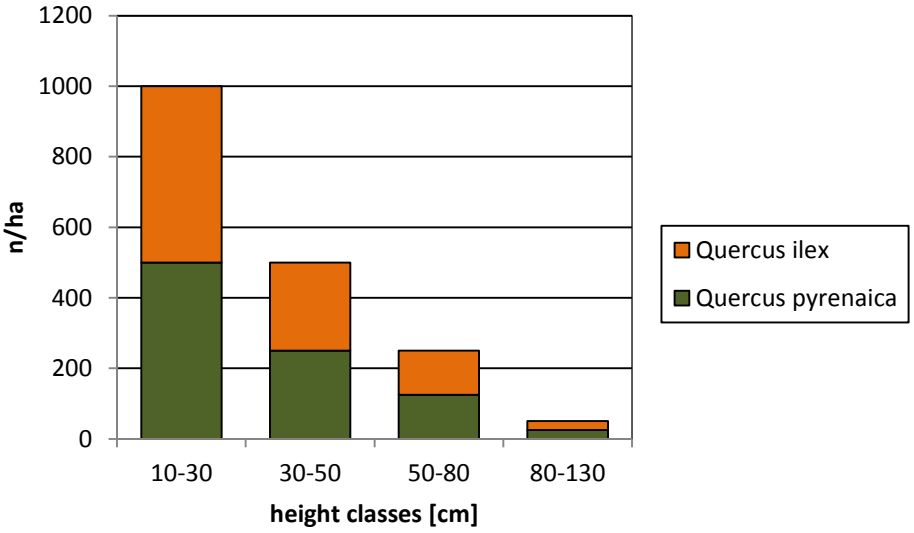


Figure 1b. Regeneration status in RST 2.1, CSA1 (Valsain). Seedling density per species in pre-defined height classes.

# 3 Representative Landscape (RL)

## 3.1 Defining the Representative Landscape

To study the implications of management for ecosystem service (ES) provisioning a spatial entity that goes beyond the stand scale is needed. Within the ARANGE project the term "landscape" was coined for that scale. The landscapes defined within ARANGE must represent typical conditions within the specific CSAs. At least one such "representative landscape" (RL) must be defined per CSA. The landscape must be spatially explicit in texture, i.e. a stand polygon map must be provided.

The most suitable size of these representative landscapes is not easy to define. The minimum size depends on relevant ES in each CSA. For instance, to assess the rockfall protection effect the minimum required area will be the slope scale. To assess habitat suitability for a woodpecker species 100-200 ha may be required as minimum home range area. If it is further assumed that one single woodpecker home range will not be sufficient to consider landscape level management issues the aim must clearly be for several woodpecker habitats in the studied landscape (e.g. at least 500ha).

Another aspect which must be considered in defining the landscape size is the number and size of stand polygons in the landscape (i.e. the spatial structure). The number/size of stand polygons will strongly affect the flexibility of assessing ES provisioning and the optimization of forest management at larger scales. If the landscape and the related number of stands are too small no landscape level strategy of "mixing" management concepts will be possible. Thus, approximately 100 stands (i.e. polygons) may be minimum requirement to create enough flexibility for shaping landscape level management pattern.

A technical issue related to forest simulation models should also be considered in deciding about appropriate polygon sizes. If spatio-temporal heterogeneous silvicultural treatments should be implemented non-spatial models will have huge difficulties in mimicking resulting effects on stand structure (non-spatial forest models can just use "average" conditions for the entire polygon).

Another issue is the size of the stand polygons in relation to operational management considerations. If the area of a stand polygon is too large, silvicultural treatments (e.g. regeneration cuts) may take too much time for full implementation (e.g. irregular shelterwood systems with regeneration periods of up to 40-60 years). An average size of 2-5ha as stand area may be an appropriate approach.

## 3.2 Variable definition

Table 3 lists the main RL attributes. To define the spatial structure of the RL a shape file set up is required. A digital elevation model (DEM) is not mandatory.

**Table 3**. Attributes to characterize the Representative Landscape (RL) in a CSA.

| Attribute | Description [measurement unit] |
|---|---|
| RL-ID | ID of RL [1-n] |
| Number of polygons | [n] |
| Landscape area | [ha] |

The stand polygons in the landscape are then represented by the RSTs (see Chapter 2). This means that to each stand polygon in the landscape one of the RSTs (or age class stages of a RST) is assigned (Figure 2). It is no requirement to have each individual stand polygon in the landscape being represented by a unique RST.

The focus of ARANGE will be on forest ecosystem services. So, at landscape scale parts of the landscape may be non-forest land and this will affect the landscape structure. However, there will be no focus on ES provided by other landcover types than forests.

Table 4 lists details on RSTs and RLs in the CSAs.

**Table 4**. Key attributes of all Case Study Areas in ARANGE.

| Case Study Area | Location | RST definition | Site types | Landscape | comments |
|---|---|---|---|---|---|
| CSA1 | Valsain, Spain | 33 RSTs<br>(14 main RSTs) | 7 | 2616 ha (incl. 681 ha non-forest area),<br>(89 MU-polygons, 265 stands [no spatial polygons inside MUs]) | a MU-polygon contains more than 1 stand, usually also more than 1 RST (incl. non-forest area) |
| CSA2 | Vercors, France | 19 RSTs | 12 | *Not provided yet* | No regeneration data available! |
| CSA3 | Montafon, Austria | Rellstal: 53 RST<br>Silbertal: 18 RST | Rellstal: 14<br>Silbertal: 12 | Rellstal: 210ha (53 polygons)<br>Silbertal: 368ha (18 polygons) | |
| CSA4 | Sneznik, Slovenia | 47 RSTs<br>(23 main RSTs) | 8 | 5015.54 ha<br>(1438 polygons) | regeneration data is provided at the level of main RSTs. This information is representative for juvenile/thicket stages (x.1) and for rejuvenation stages (x.4) of age class RSTs and for unevenaged RSTs. |
| CSA5 | Vilhelmina, Sweden | 88 RSTs<br>(15 main RSTs) | 8 | 10668 ha (889 polygons)<br>3 owners | |
| CSA6 | Kozie chrbty, Slovakia | 45 RST<br>(25 main RST) | 6 | 5130 ha (1172 polygons) | |
| CSA7 | Shiroka laka, Bulgaria | 25 RSTs | 10 | 735 ha (290 polygons)<br>1000 ha (312 polygons) | |

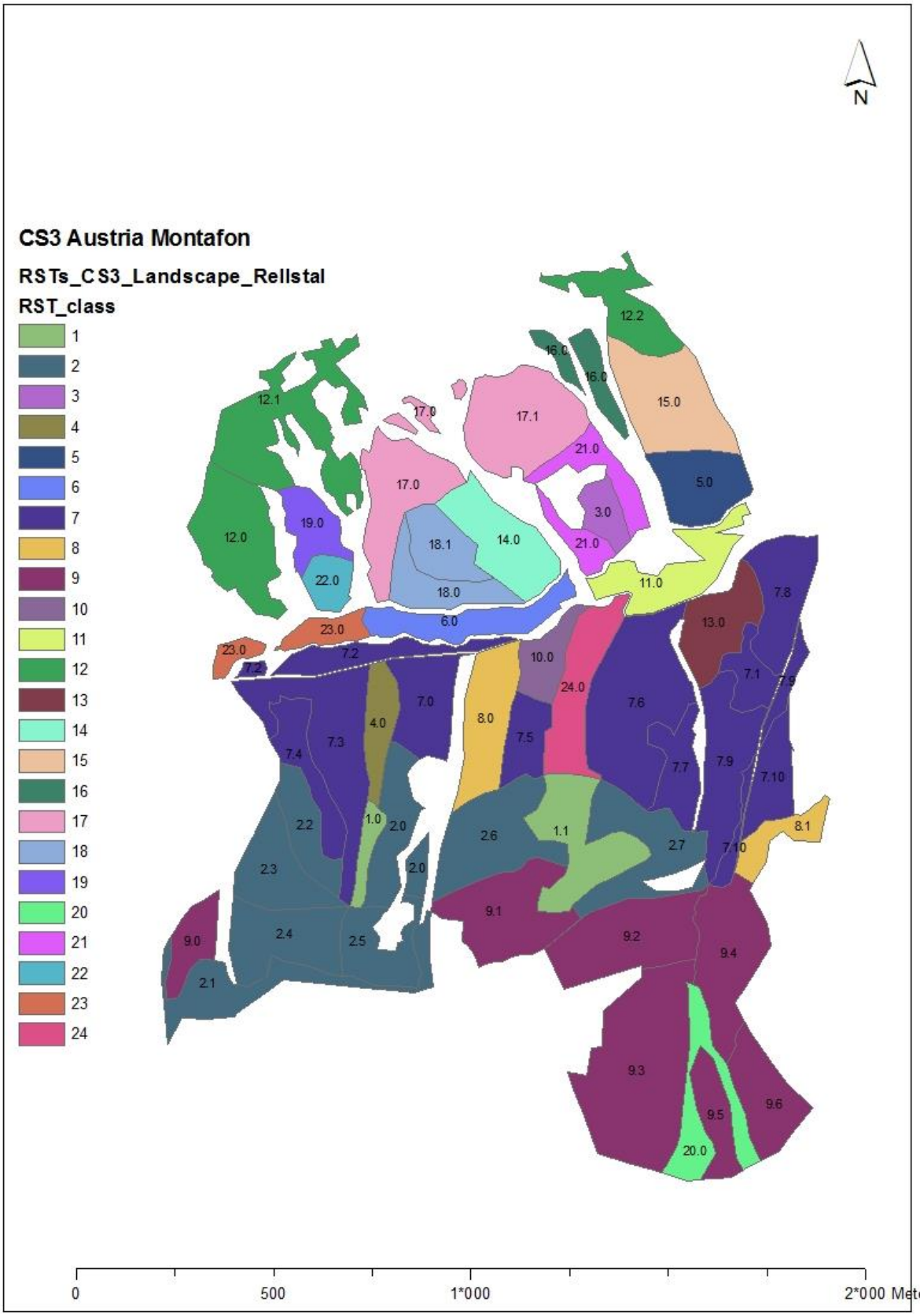


**Figure 2**. Representative Landscape (RL) "Rellstal" in the CSA3 (Montafon) in Austria. Colours denote main Representative Stand Types (RST), numbers in the polygons the stand development stages within a main RST (i.e. the chronosequence).

# 4 Interlink to other ARANGE Tasks

The RSTs are a core element in analysing current and potential alternative forest management regimes and their impact on forest structure and composition and related ecosystem service provisioning. Thus, manifold interlinkages to other Tasks and within Tasks have to be considered when defining the RSTs and when using them in the analysis.

## 4.1 Defining BAU and alternative management

The representative stands must be conceptually linked to the definition of BAU and potential alternative management (AM) as defined in Task 1.3. The explanation for this requirement is twofold:

(1) For any RST which may be defined for a study landscape some management must be defined in order to simulate effects of management on ecosystem service provisioning. Thus, with the exception of unmanaged forests, there should be no RST without BAU management.

(2) From the perspective of Task 1.3 (identifying current management practices in the case study areas) any practiced "baseline" management in a CSA must be linked to a "stand type" (i.e. forest type) in order to analyse its impacts on ecosystem service provisioning.

## 4.2 Analysing harvesting systems

A particular important aim in ARANGE is that emphasis will be put on realistic management practices that can be implemented given specific constraints in forest engineering and harvesting technology. In assessing the current status of employed harvesting systems the RSTs in combination with the silvicultural prescriptions (see Chapter 3.1) provide the frame regarding timber species, timber dimensions and harvest volumes. Road networks require the scale of landscapes, skyline logging systems the slope scale for meaningful analysis (Task 1.3).

## 4.3 Forest management planning and optimization

Work Package 4 sets focus on planning and optimization. Task 4.2 attempts to develop optimized management plans for larger parcels of forest (i.e. landscapes, forest management units) for a portfolio of ecosystem services. Landscape structure (i.e. forst types and their arangement in the landscape) may affect the provisioning of ecosystem services and the type of management strategy being suitable to provide specific ecosystem services. Here it is important that realistic landscapes are available that contain an appropriate level of diversity in stand conditions and provide sufficient flexibility for management regarding the size of the landscape

and number of basic management units (i.e. stands). Similar requirements arise from Task 4.3 where multi-criteria methods will be used to analyse from multi-stakeholder perspectives alternative forest management plans.

# 5 Literature


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# Appendix

## A1 CSA1 (Valsain)

**Table A-1.1.** Site types in CSA1 (Valsain). SD = soil depth [cm], CF = coarse fraction >2mm of mineral soil [%], paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| Site-ID | Alt | Climate record | geology | soil type | SD | CF | PH | paN | WSC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1125-1375 | 1250 (flat) | acidic | Cambisol | 60 | 58 | 4,1 | 94,2 | 61,0 |
| 2 | 1125-1375 | 1250 (0º) | Acidic | Cambisol | 60 | 58 | 4,1 | 94,2 | 61,0 |
| 3 | 1125-1375 | 1250 (315º) | acidic | Cambisol | 60 | 58 | 4,1 | 94,2 | 61,0 |
| 4 | 1125-1375 | 1250 (180º) | acidic | Cambisol | 100 | 52 | 4,1 | 48,9 | 120,0 |
| 5 | 1375-1625 | 1500 (315º) | acidic | Ranker, cambisol | 60 | 60 | 4,7 | 134,4 | 76,0 |
| 6 | 1625-1875 | 1750 (315º) | acidic | Ranker, Cambisol | 100 | 45 | 3,8 | 100,0 | 195,0 |
| 7 | >1875 | 2000 (270º) | acidic | Ranker | 100 | 52 | 5,6 | 60,0 | 73,0 |

**Table A-1.2**. Representative Stand Types (RST) in CSA1 (Valsain).

| RST-ID | species mixture [in % basal area] | age (or stand development stage) | site type |
|---|---|---|---|
| 1,1 | Q. ilex 100% | overmature (>120 years) | 1 |
| 2,1 | Q. pyrenaica 30%, Q. ilex 70% | Coppice | 2 |
| 3,1 | Q. pyrenaica 100% dense | Coppice | 2 |
| 4,1 | Q. pyrenaica 100% low dense | Coppice | 2 |
| 5,1 | Q. pyrenaica 70%, P. sylvestris 30% | Q.pyr: coppice, P.sylv: (80 years) | 3 |
| 6,1 | P. sylvestris 70%, Q. pyrenaica 30% | Q.pyr: coppice, P.sylv: (20 years) | 3 |
| 6,2 | P. sylvestris 70%, Q. pyrenaica 30% | Q.pyr: coppice, P.sylv: (50 years) | 3 |
| 6,3 | P. sylvestris 70%, Q. pyrenaica 30% | Q.pyr: coppice, P.sylv: (80 years) | 3 |
| 6,4 | P. sylvestris 70%, Q. pyrenaica 30% | Q.pyr: coppice, P.sylv: irregular | 3 |
| 7,1 | Q. pyrenaica 100% dense | Coppice | 3 |
| 8,1 | Q. pyrenaica 100% low dense | Coppice | 3 |
| 9,1 | Q. pyrenaica 100% dense | Coppice | 4 |
| 10,1 | Q. pyrenaica 100% low dense | Coppice | 4 |
| 11,1 | P. sylvestris 100% | thicket (20 years) | 5 |
| 11,2 | P. sylvestris 100% | pole (50 years) | 5 |
| 11,3 | P. sylvestris 100% | mature (80 years) | 5 |
| 11,4 | P. sylvestris 100% | over mature (>120 years) | 5 |
| 12,1 | P. sylvestris 70%, Q. pyrenaica 30% | Q.pyr: coppice, P.sylv: (80 years) | 5 |
| 12,1 | P. sylvestris 70%, Q. pyrenaica 30% | Q.pyr: coppice, P.sylv: (80 years) | 5 |
| 13,1 | P. sylvestris 100% | thicket (20 years) | 6 |
| 13,2 | P. sylvestris 100% | pole (50 years) | 6 |
| 13,3 | P. sylvestris 100% | mature (80 years) | 6 |
| 13,4 | P. sylvestris 100% | over mature (>120 years) | 6 |
| 14,1 | P. sylvestris 100% | thicket (20 years) | 7 |
| 14,2 | P. sylvestris 100% | pole (50 years) | 7 |
| 14,3 | P. sylvestris 100% | mature (80 years) | 7 |
| 14,4 | P. sylvestris 100% | over mature (>120 years) | 7 |

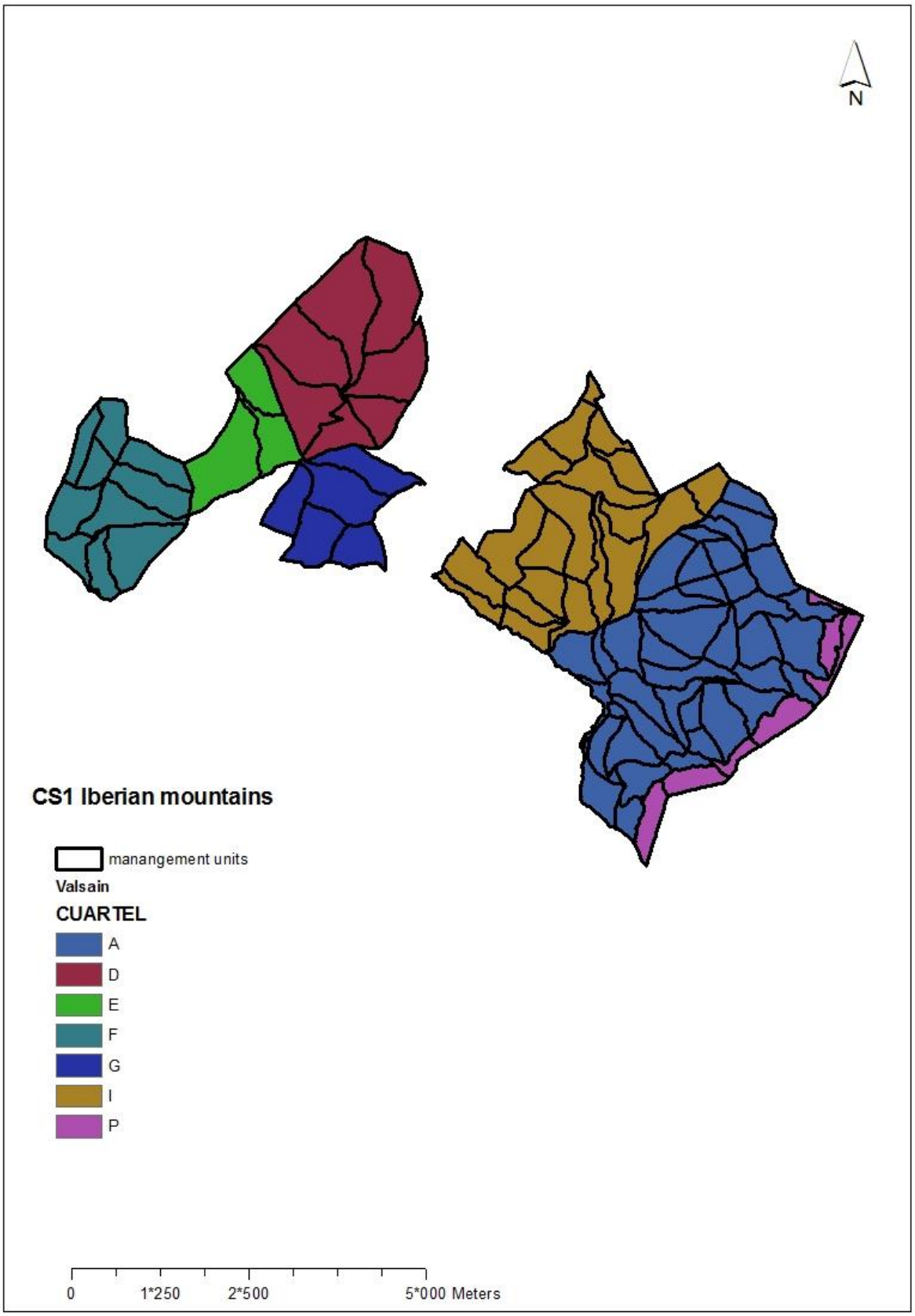


**Figure A-1.1**. Representative Landscape (RL) in CSA1 (Valsain).

# A2 CSA2 (Vercors)

**Table A-2.1.** Site types in CSA2 (Vercors). paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| site_ID | inclination | Aspect | bedrock | soiltype | pH | paN | WSC |
|---|---|---|---|---|---|---|---|
| 1 | >30° | 45°-225° | calcareous | Leptosol/Umbrisol | 5-5.5 | 34,0 | 30-60 |
| 2 | 10-30° | 225°-45° | calcareous | Cambisol/Umbrisol | 5-5.5 | 34,0 | 60-90 |
| 3 | 10-30° | 225°-45° | calcareous | Leptosol/Cambisol | 5.5-6 | 34,0 | 60-90 |
| 4 | 10-30° | 315-135° | calcareous | Cambisol/Umbrisol | 5.5-6 | 34,0 | 60-90 |
| 5 | 10-30° | 225°-45° | calcareous | Leptosol/Umbrisol | 5.5-6 | 34,0 | 30-60 |
| 6 | 10-30° | 225°-45° | calcareous | Leptosol/Umbrisol | 5.5-6 | 34,0 | 30-60 |
| 7 | 10-30° | 45°-225° | calcareous | Leptosol/Umbrisol | 5.5-6 | 34,0 | 30-60 |
| 8 | 10-30° | 45°-225° | calcareous | Leptosol/Umbrisol | 5.5-6 | 34,0 | 30-60 |
| 9 | 10-30° | 225°-45° | calcareous | Leptosol | 5.5-6 | 34,0 | 30-60 |
| 10 | 10-30° | 45°-225° | calcareous | Leptosol | 5.5-6 | 34,0 | 30-60 |
| 11 | 10-30° | 225°-45° | calcareous | Leptosol | 5.5-6 | 34,0 | <30 |

**Table A-2.2**. Representative Stand Types (RST) in CSA2 (Vercors).

| RST-ID | species mixture [in % basal area] | age (or stand development stage) | site type |
|---|---|---|---|
| 1,0 | 75% beech, 10% spruce, 10% other deciduous species | Coppice | 1 |
| 2,0 | 75%spruce, 25%fir | uneven-aged | 2 |
| 3,0 | 90% spruce, 10% fir | uneven-aged | 3 |
| 4,0 | 60%spruce, 40%fir | even-aged (mature/overmature) | 4 |
| 5,0 | 70%fir, 15%spruce, 15% deciduous species (beech dominant) | uneven-aged | 5 |
| 6,0 | 60%fir, 20%spruce, 20% deciduous species (beech dominant) | uneven-aged | 7 |
| 7,0 | 45%fir,45%spruce, 10% deciduous species (beech dominant) | uneven-aged | 6 |
| 8,0 | 50% fir, 20% spruce, 30% decidous species (maple dominant) | uneven-aged | 8 |
| 9,0 | 50% fir, 20% spruce, 30% decidous species (maple dominant) | uneven-aged | 9 |
| 10,0 | 40%spruce, 40%fir, 20% decidous species (beech dominant) | even-aged (mature/overmature) | 7 |
| 11,0 | 50%fir, 20%spruce, 30% deciduous species (beech dominant) | even-aged (mature/overmature) | 6 |
| 12,0 | 70%fir, 20%spruce, 10% deciduous species (beech dominant) | even-aged (mature/overmature) | 8 |
| 13,0 | 75%spruce, 25% secondary species and fir | even-aged (mature/overmature) | 9 |
| 14,0 | 40% spruce, 40%fir, 20%secondary species and mountain pine | uneven-aged | 11 |
| 15,0 | 70%spruce, 20%mountain pine, 10%fir | even-aged (mature/overmature) | 12 |

| | | | |
|---|---|---|---|
| 16,0 | 40% beech, 40%fir, 10%spruce, 10% other deciduous species | Mixed coppice high forests | 7 |
| 17,0 | 40% beech, 30%fir, 20%spruce, 10% other deciduous species | uneven-aged | 8 |
| 18,0 | 50% spruce, 25%fir, 25% deciduous species | uneven-aged | 10 |
| 19,0 | 50% spruce, 25%fir, 25% deciduous species | even-aged (mature/overmature) | 10 |

## A3 CSA3 (Montafon)

**Table A-3.1.** Site types in CSA3 (Montafon), Landscape Rellstal. SD = soil depth [cm], CF = coarse fraction >2mm of mineral soil [%], paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| Site ID | Slope | Geology | soiltype | SD | CF | pH | paN | WSC | Alt | climate_ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30-45 | Mixed | cambisol | 50 | 18 | 5 | 65 | 170 | 1125-1475 | 1300_north_35 |
| 2 | 30-45 | Mixed | cambisol | 50 | 18 | 5 | 65 | 170 | 1125-1475 | 1300_south_35 |
| 3 | 30-45 | Mixed | cambisol | 50 | 18 | 5 | 65 | 170 | 1475-1825 | 1650_north_35 |
| 4 | 30-45 | Mixed | ranker | 30 | 55 | 4,5 | 50 | 130 | 1125-1475 | 1300_north_35 |
| 5 | 30-45 | Mixed | ranker | 30 | 55 | 4,5 | 50 | 130 | 1125-1475 | 1300_south_35 |
| 6 | 30-45 | Mixed | ranker | 30 | 55 | 4,5 | 50 | 130 | 1475-1825 | 1650_north_35 |
| 7 | 30-45 | Mixed | ranker | 30 | 55 | 4,5 | 50 | 130 | 1475-1825 | 1650_south_35 |
| 8 | 30-45 | Mixed | ranker | 40 | 33 | 4,5 | 55 | 150 | 1125-1475 | 1300_north_35 |
| 9 | 30-45 | Mixed | ranker | 40 | 33 | 4,5 | 55 | 150 | 1475-1825 | 1650_south_35 |
| 10 | 30-45 | Acidic | rich cambisol | 60 | 19 | 5,5 | 75 | 250 | 1125-1475 | 1300_north_35 |
| 11 | 30-45 | Acidic | rich cambisol | 60 | 19 | 5,5 | 75 | 250 | 1125-1475 | 1300_south_35 |
| 12 | 30-45 | Acidic | rich cambisol | 60 | 19 | 5,5 | 75 | 250 | 1475-1825 | 1650_south_35 |
| 13 | 30-40 | Acidic | Semipodsol | 45 | 18 | 4,3 | 69 | 236 | 1125-1475 | 1300_north_35 |
| 14 | 30-40 | Acidic | Anmoor | 35 | 60 | 5 | 60 | 130 | 1125-1475 | 1300_north_35 |
| 15 | 25-35 | Acidic | Cambisol | 45 | 60 | 5 | 55 | 170 | 1475-1825 | 1650_north_35 |

**Table A-3.2**. Representative Stand Types (RST) in CSA3 (Montafon), Landscape Rellstal. Volume in $m^3$/ha; Reg: 1 = regeneration covers >12,5% of stand area, 0 = regeneration covers <12.5% of stand area.

| RST-ID | species mixture [% basal area] | age | site type | Volume (dbh 10-30) | Volume (dbh 30-50) | Volume (dbh >50) | Reg |
|---|---|---|---|---|---|---|---|
| 1,0 | Picea abies > 80% AND all other species <10% | 12 | 5 | 50 | 40 | 20 | 1 |
| 2,0 | Picea abies > 80% AND all other species <10% | 15 | 6 | 20 | 10 | 30 | 1 |
| 3,0 | Picea abies > 80% AND all other species <10% | 17 | 6 | 30 | 0 | 0 | 0 |
| 4,0 | Picea abies > 80% AND all other species <10% | 167 | 13 | 0 | 0 | 50 | 0 |
| 5,0 | Picea abies > 80% AND all other species <10% | UA | 1 | 20 | 120 | 560 | 1 |
| 6,0 | Picea abies > 80% AND all other species <10% | UA | 1 | 30 | 110 | 320 | 1 |
| 7,0 | Picea abies > 80% AND all other species <10% | UA | 3 | 10 | 80 | 330 | 1 |
| 8,0 | Picea abies > 80% AND all other species <10% | UA | 3 | 10 | 110 | 220 | 1 |
| 9,0 | Picea abies > 80% AND all other species <10% | UA | 3 | 50 | 110 | 400 | 1 |
| 10,0 | Picea abies > 80% AND all other species <10% | UA | 3 | 20 | 150 | 380 | 1 |
| 11,0 | Picea abies > 80% AND all other species <10% | UA | 3 | 50 | 50 | 150 | 1 |
| 12,0 | Picea abies > 80% AND all other species <10% | UA | 3 | 30 | 80 | 210 | 1 |
| 13,0 | Picea abies > 80% AND all other species <10% | UA | 3 | 10 | 130 | 680 | 1 |
| 14,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 20 | 50 | 70 | 1 |
| 15,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 30 | 30 | 20 | 1 |
| 16,0 | Picea abies > 80% AND all other species | UA | 4 | 80 | 120 | 90 | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | <10% | | | | | | |
| 17,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 10 | 100 | 230 | 1 |
| 18,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 0 | 40 | 400 | 1 |
| 19,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 10 | 20 | 60 | 1 |
| 20,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 0 | 100 | 360 | 1 |
| 21,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 0 | 130 | 560 | 0 |
| 22,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 20 | 180 | 350 | 1 |
| 23,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 50 | 280 | 390 | 1 |
| 24,0 | Picea abies > 80% AND all other species <10% | UA | 4 | 40 | 150 | 280 | 1 |
| 25,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 10 | 60 | 420 | 1 |
| 26,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 0 | 30 | 230 | 0 |
| 27,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 20 | 160 | 260 | 1 |
| 28,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 0 | 80 | 260 | 1 |
| 29,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 0 | 50 | 390 | 1 |
| 30,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 10 | 100 | 230 | 1 |
| 31,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 10 | 40 | 220 | 1 |
| 32,0 | Picea abies > 80% AND all other species <10% | UA | 6 | 10 | 110 | 210 | 1 |
| 33,0 | Picea abies > 80% AND all other species <10% | UA | 8 | 40 | 90 | 350 | 1 |
| 34,0 | Picea abies > 80% | UA | 11 | 110 | 60 | 0 | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | AND all other species <10% | | | | | | |
| 35,0 | Picea abies > 80% AND all other species <10% | UA | 12 | 0 | 140 | 820 | 1 |
| 36,0 | Picea abies > 80% AND all other species <10% | UA | 12 | 20 | 40 | 620 | 1 |
| 37,0 | Picea abies > 80% AND all other species <10% | UA | 12 | 100 | 210 | 460 | 1 |
| 38,0 | Picea abies > 80% AND all other species <10% | UA | 14 | 20 | 170 | 100 | 1 |
| 39,0 | Picea abies > 50% AND Fagus sylvatica > 10% AND all other species <10% | UA | 10 | 10 | 60 | 100 | 1 |
| 40,0 | Picea abies > 50% AND Fagus sylvatica > 10% AND Abies alba > 10% AND all other species <10% | UA | 5 | 20 | 150 | 360 | 1 |
| 41,0 | Picea abies > 50% AND Fagus sylvatica > 10% AND Abies alba > 10% AND all other species <10% | UA | 11 | 40 | 40 | 200 | 1 |
| 42,0 | Picea abies > 50% AND Acer pseudoplatanus > 10% AND all other species <10% | UA | 11 | 60 | 20 | 0 | 1 |
| 43,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 2 | 10 | 80 | 500 | 1 |
| 44,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 5 | 20 | 160 | 370 | 1 |
| 45,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 7 | 0 | 100 | 510 | 0 |
| 46,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 9 | 30 | 190 | 640 | 1 |
| 47,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 9 | 10 | 200 | 720 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 48,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 11 | 110 | 30 | 240 | 1 |
| 49,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 11 | 10 | 30 | 210 | 1 |
| 50,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 12 | 0 | 130 | 920 | 0 |
| 51,0 | Picea abies > 50% AND Abies alba > 10% AND all other species <10% | UA | 15 | 10 | 110 | 410 | 1 |
| 52,0 | Fagus sylvatica > 40% AND Abies alba > 10% AND Picea abies > 10% AND all other species <10% | UA | 5 | 40 | 90 | 70 | 1 |
| 53,0 | Abies alba > 40% AND Fagus sylvatica > 10% AND Picea abies > 10% AND all other species <10% | UA | 11 | 0 | 110 | 530 | 1 |

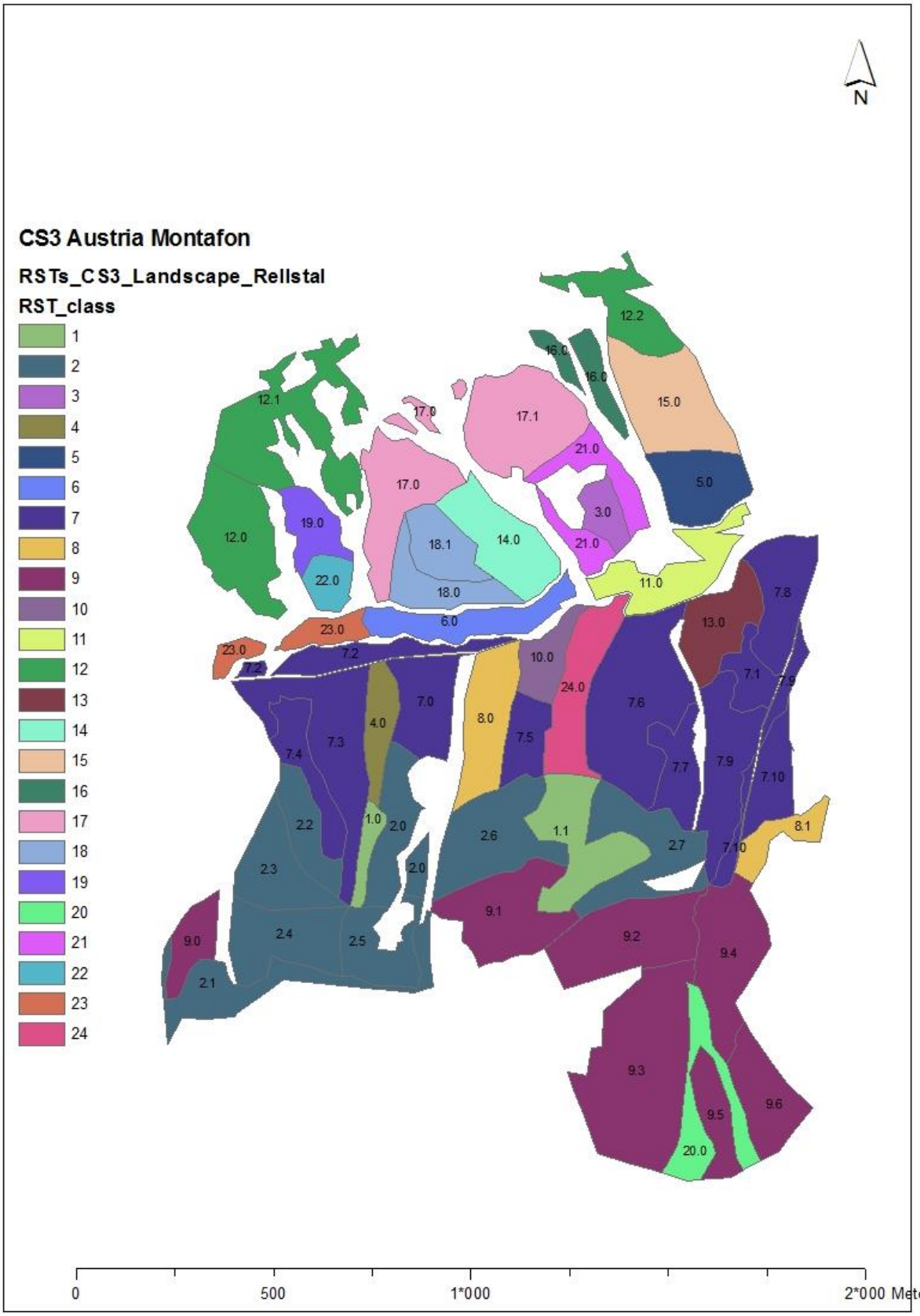


**Figure A-3.1**. Representative Landscape (RL) in CSA3 (Montafon), Landscape Rellstal.

**Table A-3.3.** Site types in CSA3 (Montafon), Landscape Silbertal. SD = soil depth [cm], CF = coarse fraction >2mm of mineral soil [%], paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| ID | Slope | bedrock | Soiltype | SD | CF | pH | paN | WSC | alt | climate_ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 25-42 | acidic | Cambisol | 50 | 18 | 5 | 65 | 170 | 1475-1825 | 1650_north_35 |
| 22 | 19-45 | acidic | Ranker | 30 | 55 | 4,5 | 50 | 130 | 1475-1825 | 1650_north_35 |
| 23 | 19-45 | acidic | Ranker | 30 | 55 | 4,5 | 50 | 130 | 1475-1825 | 1650_south_35 |
| 24 | 21-49 | acidic | Ranker | 40 | 33 | 4,5 | 55 | 150 | 1125-1475 | 1300_south_35 |
| 25 | 21-49 | acidic | Ranker | 40 | 33 | 4,5 | 55 | 150 | 1475-1825 | 1650_north_35 |
| 26 | 2-32 | acidic | rich cambisol | 60 | 19 | 5,5 | 75 | 250 | 1125-1475 | 1300_flat |
| 27 | 8-40 | acidic | rich cambisol | 60 | 19 | 5,5 | 75 | 250 | 1125-1475 | 1300_south_35 |
| 28 | 8-40 | acidic | Semipodsol | 45 | 18 | 4,3 | 69 | 236 | 1125-1475 | 1300_north_35 |
| 29 | 8-40 | acidic | Semipodsol | 45 | 18 | 4,3 | 69 | 236 | 1125-1475 | 1300_south_35 |
| 30 | 8-40 | acidic | Semipodsol | 45 | 18 | 4,3 | 69 | 236 | 1475-1825 | 1650_north_35 |
| 31 | 24-41 | acidic | Podsol | 45 | 60 | 4,3 | 55 | 170 | 1125-1475 | 1300_north_35 |
| 32 | 24-41 | acidic | Podsol | 45 | 60 | 4,3 | 55 | 170 | 1475-1825 | 1650_north_35 |

**Table A-3.4**. Representative Stand Types (RST) in CSA3 (Montafon), Landscape Silbertal. Volume in m3/ha; Reg: 1 = regeneration covers >12,5% of stand area, 0 = regeneration covers <12.5% of stand area.

| RST-ID | species mixture [% basal area] | Age | site type | Volume (dbh 5-30) | Volume (dbh 30-50) | Volume (dbh >50) | Reg |
|---|---|---|---|---|---|---|---|
| 60,0 | Picea abies > 95% AND all other species <5% | UA | 21 | 10 | 120 | 170 | 1 |
| 61,0 | Picea abies > 95% AND all other species <5% | UA | 22 | 40 | 40 | 110 | 1 |
| 62,0 | Picea abies > 95% AND all other species <5% | UA | 22 | 10 | 120 | 170 | 1 |
| 63,0 | Picea abies > 95% AND all other species <5% | UA | 23 | 20 | 70 | 40 | 1 |
| 64,0 | Picea abies > 95% AND all other species <5% | UA | 23 | 40 | 140 | 70 | 0 |
| 65,0 | Picea abies > 95% AND all other species <5% | UA | 24 | 20 | 70 | 40 | 1 |
| 66,0 | Picea abies > 95% AND all other species <5% | UA | 25 | 20 | 70 | 40 | 1 |
| 67,0 | Picea abies > 95% AND all other species <5% | UA | 25 | 40 | 40 | 110 | 1 |
| 68,0 | Picea abies > 95% AND all other species <5% | UA | 26 | 40 | 40 | 110 | 1 |
| 69,0 | Picea abies > 95% AND all other species <5% | UA | 27 | 20 | 70 | 40 | 1 |
| 70,0 | Picea abies > 95% AND all other species <5% | UA | 28 | 20 | 70 | 40 | 1 |
| 71,0 | Picea abies > 95% AND all other species <5% | UA | 29 | 20 | 70 | 40 | 1 |
| 72,0 | Picea abies > 95% AND all other species <5% | UA | 29 | 40 | 140 | 70 | 1 |
| 73,0 | Picea abies > 95% AND all other species <5% | UA | 30 | 40 | 40 | 110 | 0 |
| 74,0 | Picea abies > 95% AND all other species <5% | UA | 30 | 10 | 120 | 170 | 1 |
| 75,0 | Picea abies > 95% | UA | 31 | 20 | 70 | 40 | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | AND all other species <5% | | | | | | |
| 76,0 | Picea abies > 95% AND all other species <5% | UA | 32 | 40 | 140 | 70 | 0 |
| 77,0 | Picea abies > 95% AND all other species <5% | UA | 32 | 40 | 40 | 110 | 1 |

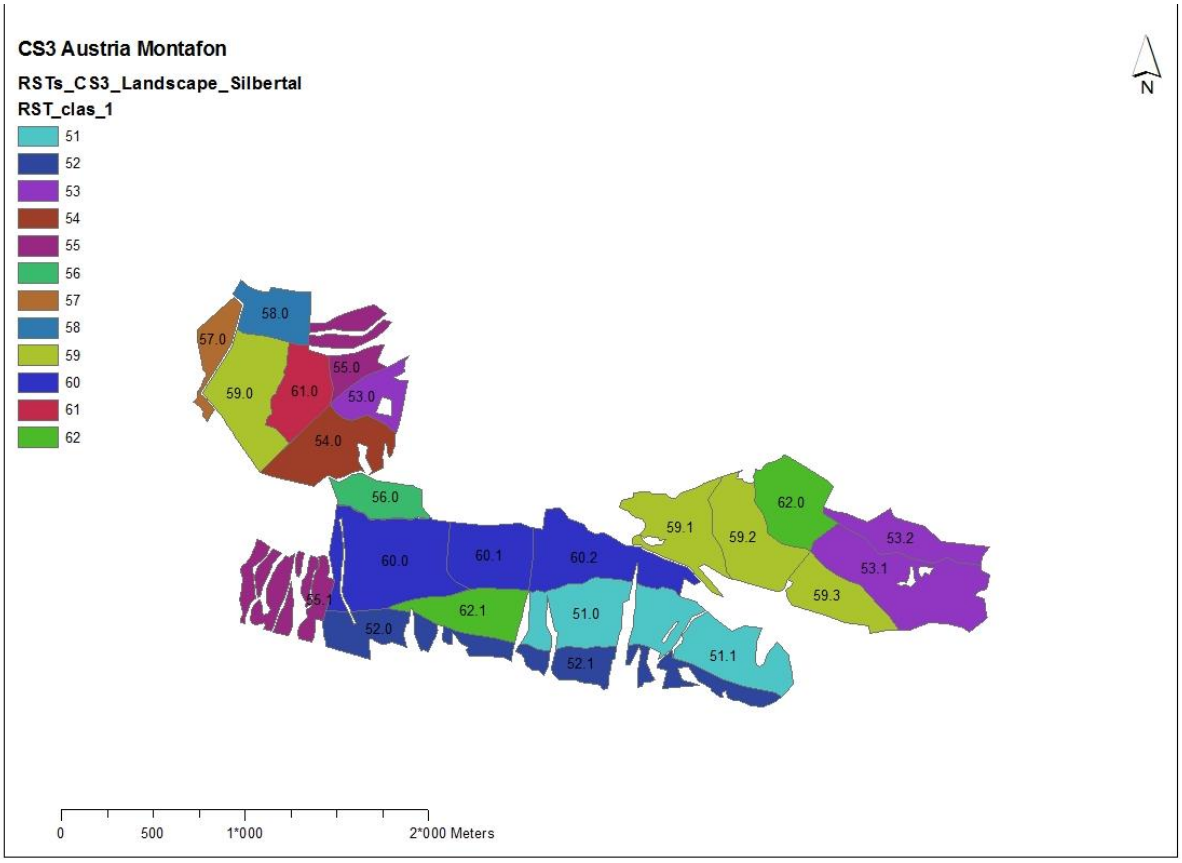


**Figure A-3.2**. Representative Landscape (RL) in CSA3 (Montafon), Landscape Silbertal.

# A4 CSA4 (Sneznik)

**Table A-4.1.** Site types in CSA4 (Sneznik). SD = soil depth [cm], CF = coarse fraction >2mm of mineral soil [%], paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| ID | altitude | baseline climate record | bedrock | soil type | SD | CF | ph | paN | WSC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 600-900 | 600 m (flat) | limestone | chromic cambisols (80%) + rendzic leptosol (20%) | 30 | 25 | 6,5 | 68 | 98 |
| 2 | 700-1100 | 900 m (flat) | limestone | chromic cambisols (80%) + rendzic leptosol (20%) | 30 | 25 | 6,5 | 68 | 98 |
| 3 | 740-1140 | 900 m (25°N) | limestone | chromic cambisols (80%) + rendzic leptosol (20%) | 30 | 25 | 6,5 | 68 | 98 |
| 4 | 760-1090 | 900 m (25°S) | limestone | chromic cambisols (80%) + rendzic leptosol (20%) | 30 | 25 | 6,5 | 68 | 98 |
| 5 | 780-1220 | 900 m (25°N) | limestone | chromic cambisols (60%) + rendzic leptosol (40%) | 25 | 30 | 6,5 | 66 | 85 |
| 6 | 1050-1400 | 1200 m (25°N) | limestone | chromic cambisols (60%) + rendzic leptosol (40%) | 25 | 30 | 6,5 | 66 | 85 |
| 7 | 1350-1797 | 1500 m (25°N) | limestone | rendzic leptosols (100%) | 15 | 10 | 6,5 | 59 | 58 |
| 8 | 1350-1797 | 1500 m (25°S) | limestone | rendzic leptosols (100%) | 15 | 10 | 6,5 | 59 | 58 |

**Table A-3.4**. Representative Stand Types (RST) in CSA4 (Sneznik).

| RST-ID | species mixture | age (or stand development stage) | site type |
|---|---|---|---|
| 1,1 | 66% Fagus sylvatica, 21% Abies alba, 7% Picea abies, 3% Acer pseudoplatanus, 1% other conifers, 2% other broadleaves | regeneration/thicket | 2 |
| 1,2 | 66% Fagus sylvatica, 21% Abies alba, 7% Picea abies, 3% Acer pseudoplatanus, 1% other conifers, 2% other broadleaves | Pole | 2 |
| 1,3 | 66% Fagus sylvatica, 21% Abies alba, 7% Picea abies, 3% Acer pseudoplatanus, 1% other conifers, 2% other broadleaves | Mature | 2 |
| 1,4 | 66% Fagus sylvatica, 21% Abies alba, 7% Picea abies, 3% Acer pseudoplatanus, 1% other conifers, 2% other broadleaves | rejuvenation | 2 |
| 2,1 | 86% Fagus sylvatica, 4% Abies alba, 6% Picea abies, 4% Acer pseudoplatanus | regeneration/thicket | 6 |
| 2,2 | 86% Fagus sylvatica, 4% Abies alba, 6% Picea abies, 4% Acer pseudoplatanus | Pole | 6 |
| 2,3 | 86% Fagus sylvatica, 4% Abies alba, 6% Picea abies, 4% Acer pseudoplatanus | Mature | 6 |
| 2,4 | 86% Fagus sylvatica, 4% Abies alba, 6% Picea abies, 4% Acer pseudoplatanus | rejuvenation | 6 |
| 3,1 | 93% Fagus sylvatica, 2% Abies alba, 5% Picea abies | regeneration/thicket | 7 |
| 3,2 | 93% Fagus sylvatica, 2% Abies alba, 5% Picea abies | Pole | 7 |
| 3,3 | 93% Fagus sylvatica, 2% Abies alba, 5% Picea abies | Mature | 7 |
| 3,4 | 93% Fagus sylvatica, 2% Abies alba, 5% Picea abies | rejuvenation | 7 |
| 4,3 | 17% Fagus sylvatica, 72% Abies alba, 9% Picea abies, 2% other broadleaves | Mature | 1 |
| 4,4 | 17% Fagus sylvatica, 72% Abies alba, 9% Picea abies, 2% other broadleaves | rejuvenation | 1 |
| 5,3 | 36% Fagus sylvatica, 57% Abies alba, 4% Picea abies, 3% Acer pseudoplatanus | Mature | 2 |
| 5,4 | 36% Fagus sylvatica, 57% Abies alba, 4% Picea abies, 3% Acer pseudoplatanus | rejuvenation | 2 |
| 6,2 | 19% Fagus sylvatica, 69% Abies alba, 8% Picea abies, 3% Acer pseudoplatanus, 1% other broadleaves | Pole | 2 |
| 6,3 | 19% Fagus sylvatica, 69% Abies alba, 8% Picea abies, 3% Acer pseudoplatanus, 1% other broadleaves | Mature | 2 |
| 6,4 | 19% Fagus sylvatica, 69% Abies alba, 8% Picea abies, 3% Acer pseudoplatanus, 1% other broadleaves | rejuvenation | 2 |
| 7,3 | 13% Fagus sylvatica, 59% Abies alba, 26% Picea abies, 2% Acer pseudoplatanus | Mature | 3 |
| 7,4 | 13% Fagus sylvatica, 59% Abies alba, 26% | rejuvenation | 3 |

| | | | |
|---|---|---|---|
| | Picea abies, 2% Acer pseudoplatanus | | |
| 8,3 | 17% Fagus sylvatica, 67% Abies alba, 10% Picea abies, 5% Acer pseudoplatanus, 1% other broadleaves | Mature | 4 |
| 8,4 | 17% Fagus sylvatica, 67% Abies alba, 10% Picea abies, 5% Acer pseudoplatanus, 1% other broadleaves | rejuvenation | 4 |
| 9,1 | 17% Fagus sylvatica, 9% Abies alba, 72% Picea abies, 1% Acer pseudoplatanus, 1% other broadleaves | regeneration/thicket | 1 |
| 9,2 | 17% Fagus sylvatica, 9% Abies alba, 72% Picea abies, 1% Acer pseudoplatanus, 1% other broadleaves | Pole | 1 |
| 9,3 | 17% Fagus sylvatica, 9% Abies alba, 72% Picea abies, 1% Acer pseudoplatanus, 1% other broadleaves | Mature | 1 |
| 9,4 | 17% Fagus sylvatica, 9% Abies alba, 72% Picea abies, 1% Acer pseudoplatanus, 1% other broadleaves | rejuvenation | 1 |
| 10,1 | 9% Fagus sylvatica, 4% Abies alba, 83% Picea abies, 2% Acer pseudoplatanus, 1% other conifers, 1% other broadleaves | regeneration/thicket | 2 |
| 10,2 | 9% Fagus sylvatica, 4% Abies alba, 83% Picea abies, 2% Acer pseudoplatanus, 1% other conifers, 1% other broadleaves | Pole | 2 |
| 10,3 | 9% Fagus sylvatica, 4% Abies alba, 83% Picea abies, 2% Acer pseudoplatanus, 1% other conifers, 1% other broadleaves | Mature | 2 |
| 10,4 | 9% Fagus sylvatica, 4% Abies alba, 83% Picea abies, 2% Acer pseudoplatanus, 1% other conifers, 1% other broadleaves | rejuvenation | 2 |
| 11,1 | 34% Fagus sylvatica, 37% Abies alba, 19% Picea abies, 8% Acer pseudoplatanus, 2% other broadleaves | regeneration/thicket | 2 |
| 11,2 | 34% Fagus sylvatica, 37% Abies alba, 19% Picea abies, 8% Acer pseudoplatanus, 2% other broadleaves | Pole | 2 |
| 11,3 | 34% Fagus sylvatica, 37% Abies alba, 19% Picea abies, 8% Acer pseudoplatanus, 2% other broadleaves | Mature | 2 |
| 11,4 | 34% Fagus sylvatica, 37% Abies alba, 19% Picea abies, 8% Acer pseudoplatanus, 2% other broadleaves | rejuvenation | 2 |
| 12,0 | 62% Fagus sylvatica, 22% Abies alba, 13% Picea abies, 2% Acer pseudoplatanus, 1% other conifers | uneven-aged | 6 |
| 13,0 | 50% Fagus sylvatica, 10% Abies alba, 40% Picea abies | uneven-aged | 8 |
| 14,0 | 9% Fagus sylvatica, 84% Abies alba, 5% Picea abies, 1% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 2 |
| 15,0 | 35% Fagus sylvatica, 56% Abies alba, 7% Picea abies, 1% Acer pseudoplatanus, 1% | uneven-aged | 2 |

| | | | |
|---|---|---|---|
| | other broadleaves | | |
| 16,0 | 18% Fagus sylvatica, 69% Abies alba, 10% Picea abies, 2% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 2 |
| 17,0 | 33% Fagus sylvatica, 58% Abies alba, 7% Picea abies, 1% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 3 |
| 18,0 | 19% Fagus sylvatica, 65% Abies alba, 13% Picea abies, 2% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 3 |
| 19,0 | 21% Fagus sylvatica, 65% Abies alba, 11% Picea abies, 2% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 4 |
| 20,0 | 20% Fagus sylvatica, 58% Abies alba, 19% Picea abies, 2% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 5 |
| 21,0 | 33% Fagus sylvatica, 45% Abies alba, 19% Picea abies, 3% Acer pseudoplatanus | uneven-aged | 3 |
| 22,0 | 34% Fagus sylvatica, 44% Abies alba, 17% Picea abies, 4% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 5 |
| 23,0 | 31% Fagus sylvatica, 37% Abies alba, 28% Picea abies, 3% Acer pseudoplatanus, 1% other broadleaves | uneven-aged | 6 |

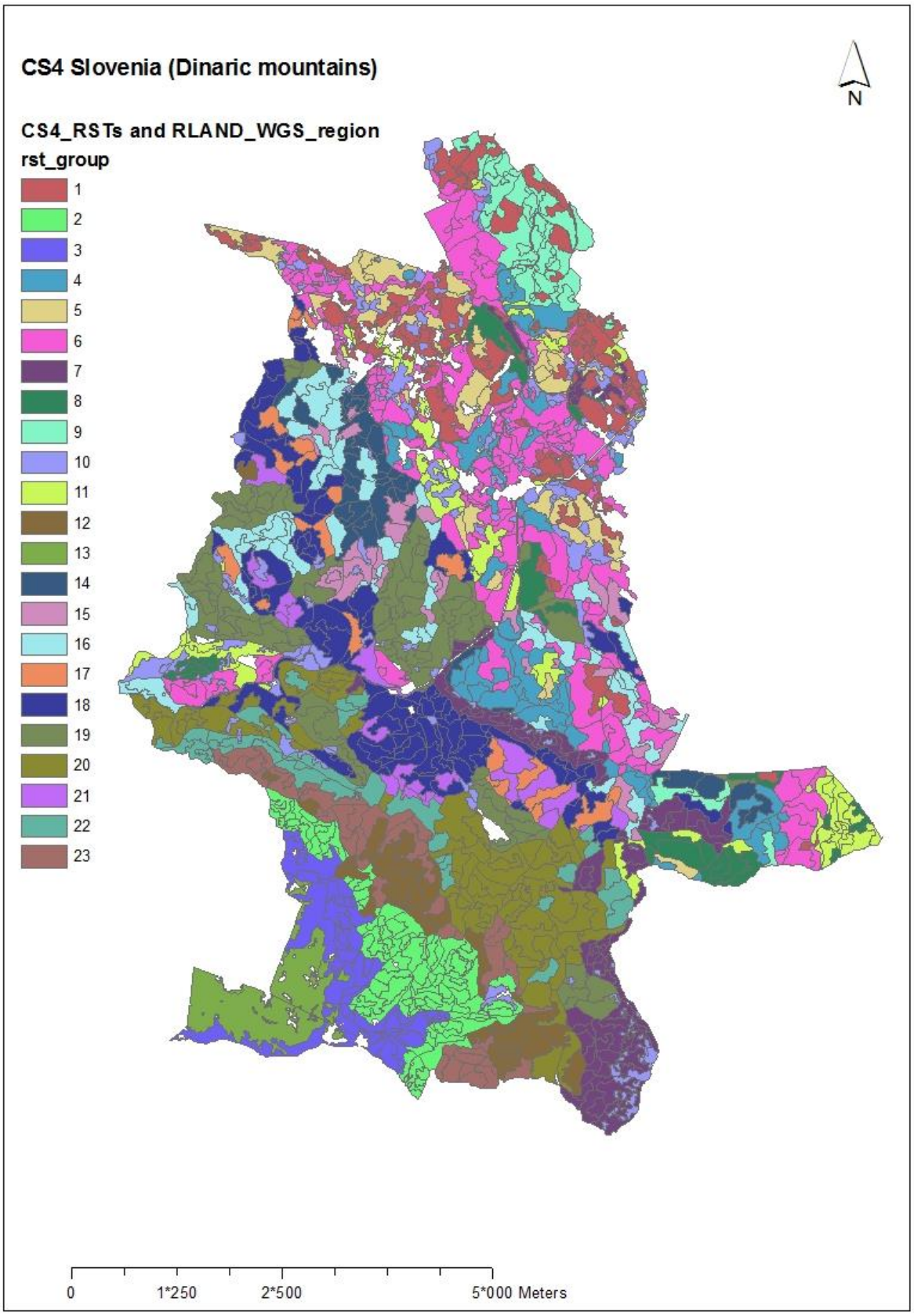


**Figure A-4.1**. Representative Landscape (RL) in CSA4 (Sneznik).

# A5 CSA5 (Vilhelmina)

**Table A-5.1.** Site types in CSA5 (Vilhelmina). SD = soil depth [cm], CF = coarse fraction >2mm of mineral soil [%], paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| ID | bed-rock | soil type | SD | CF | ph | paN | WSC | Soiltype | Alt | baseline climate |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | acidic | Podzol | 400 | 45 | 5,1 | 5 | 300 | Sandy loam (Till) | 300-400 | 350_flat |
| 2 | acidic | Podzol | 200 | 50 | 5,2 | 16 | 325 | Sandy loam (Till) | 300-400 | 350_north_20 |
| 3 | acidic | Podzol | 300 | 60 | 5,1 | 12 | 275 | Sandy loam (Till) | 300-400 | 350_south_20 |
| 4 | acidic | Arenosol | 1000 | 3 | 4,9 | 10 | 50 | Sand (Sediment) | 300-400 | 350_flat |
| 5 | acidic | Umbrisol | 250 | 35 | 5,3 | 30 | 350 | Silt loam (Till) | 400-500 | 500_north_20 |
| 6 | acidic | Podzol | 250 | 50 | 5,2 | 10 | 325 | Sandy loam (Till) | 400-500 | 500_flat |
| 7 | acidic | Podzol | 250 | 50 | 5,2 | 12 | 325 | Loam (Till) | 500-600 | 500_flat |
| 8 | acidic | Podzol | 175 | 65 | 5,1 | 6 | 275 | Sandy loam (Till) | 500-600 | 500_flat |

**Table A-3.4**. Representative Stand Types (RST) in CSA5 (Vilhelmina).

| RST-ID | Site | development stage | Volume [$m^3$/ha] | Species compisition | | | | Age |
|---|---|---|---|---|---|---|---|---|
| | | | | Pinus sylvestris | Picea abies | Betula pubescens | Pinus contorta | |
| 1,01 | 1 | 1 | 0 | 0,0 | 30,0 | 70,0 | 0,0 | 1 |
| 1,02 | 1 | 2 | 11 | 0,0 | 57,1 | 42,9 | 0,0 | 11 |
| 1,03 | 1 | 3 | 20 | 0,0 | 50,0 | 50,0 | 0,0 | 30 |
| 1,04 | 1 | 4 | 50 | 5,0 | 5,0 | 90,0 | 0,0 | 50 |
| 1,05 | 1 | 5 | 75 | 11,0 | 42,0 | 47,0 | 0,0 | 70 |
| 1,06 | 1 | 6 | 79 | 1,7 | 49,7 | 48,7 | 0,0 | 90 |
| 1,07 | 1 | 7 | 110 | 10,0 | 45,0 | 45,0 | 0,0 | 110 |
| 1,08 | 1 | 8 | 110 | 0,0 | 10,0 | 90,0 | 0,0 | 130 |
| 1,09 | 1 | 9 | 64 | 0,0 | 62,0 | 38,0 | 0,0 | 150 |
| 2,01 | 5 | 1 | 0 | 0,0 | 25,0 | 75,0 | 0,0 | 1 |
| 2,02 | 5 | 2 | 4 | 10,0 | 40,0 | 50,0 | 0,0 | 11 |
| 2,03 | 5 | 3 | 20 | 5,0 | 30,0 | 65,0 | 0,0 | 30 |
| 2,04 | 5 | 4 | 57 | 1,5 | 51,5 | 47,1 | 0,0 | 50 |
| 2,05 | 5 | 5 | 126 | 0,0 | 50,0 | 50,0 | 0,0 | 70 |
| 2,06 | 5 | 6 | 122 | 0,0 | 20,0 | 80,0 | 0,0 | 90 |
| 2,07 | 5 | 7 | 134 | 0,0 | 53,0 | 47,0 | 0,0 | 110 |
| 2,08 | 5 | 8 | 160 | 0,0 | 40,0 | 60,0 | 0,0 | 130 |
| 3,01 | 8 | 1 | 0 | 32,6 | 2,2 | 65,2 | 0,0 | 1 |
| 3,02 | 8 | 2 | 2 | 10,0 | 30,0 | 60,0 | 0,0 | 11 |
| 3,06 | 8 | 6 | 80 | 30,0 | 20,0 | 50,0 | 0,0 | 90 |
| 3,07 | 8 | 7 | 90 | 10,0 | 50,0 | 40,0 | 0,0 | 110 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3,09 | 8 | 9 | 120 | 15,0 | 49,0 | 36,0 | 0,0 | 150 |
| 4,01 | 5 | 1 | 1 | 0,0 | 25,0 | 75,0 | 0,0 | 1 |
| 4,02 | 5 | 2 | 1 | 0,0 | 87,5 | 12,5 | 0,0 | 11 |
| 4,03 | 5 | 3 | 20 | 0,0 | 85,0 | 15,0 | 0,0 | 30 |
| 4,04 | 5 | 4 | 70 | 0,0 | 70,0 | 30,0 | 0,0 | 50 |
| 4,05 | 5 | 5 | 73 | 0,2 | 78,0 | 21,8 | 0,0 | 70 |
| 4,06 | 5 | 6 | 106 | 0,0 | 70,0 | 30,0 | 0,0 | 90 |
| 4,07 | 5 | 7 | 121 | 0,0 | 71,7 | 28,3 | 0,0 | 110 |
| 4,08 | 5 | 8 | 158 | 0,0 | 79,1 | 20,8 | 0,0 | 130 |
| 4,09 | 5 | 9 | 213 | 0,1 | 87,8 | 12,2 | 0,0 | 150 |
| 4,10 | 5 | 10 | 242 | 4,7 | 88,8 | 6,6 | 0,0 | 170 |
| 5,01 | 7 | 1 | 0 | 0,0 | 30,0 | 70,0 | 0,0 | 1 |
| 5,02 | 7 | 2 | 1 | 1,8 | 72,3 | 25,9 | 0,0 | 11 |
| 5,03 | 7 | 3 | 25 | 0,0 | 71,2 | 28,8 | 0,0 | 30 |
| 5,04 | 7 | 4 | 37 | 2,6 | 71,3 | 26,0 | 0,0 | 50 |
| 5,05 | 7 | 5 | 60 | 10,0 | 80,0 | 10,0 | 0,0 | 70 |
| 5,06 | 7 | 6 | 79 | 1,5 | 72,6 | 25,9 | 0,0 | 90 |
| 5,07 | 7 | 7 | 91 | 0,0 | 72,7 | 27,3 | 0,0 | 110 |
| 5,08 | 7 | 8 | 119 | 1,9 | 77,4 | 20,7 | 0,0 | 130 |
| 5,09 | 7 | 9 | 153 | 2,4 | 88,0 | 9,6 | 0,0 | 50 |
| 5,10 | 7 | 10 | 183 | 0,0 | 92,4 | 7,6 | 0,0 | 170 |
| 6,01 | 8 | 1 | 0 | 0,0 | 32,0 | 68,0 | 0,0 | 1 |
| 6,02 | 8 | 2 | 0 | 33,3 | 66,7 | 0,0 | 0,0 | 11 |
| 6,03 | 8 | 3 | 20 | 0,0 | 70,0 | 30,0 | 0,0 | 30 |
| 6,05 | 8 | 5 | 50 | 0,0 | 70,0 | 30,0 | 0,0 | 70 |
| 6,06 | 8 | 6 | 60 | 0,0 | 70,0 | 30,0 | 0,0 | 90 |
| 6,07 | 8 | 7 | 68 | 0,0 | 72,7 | 27,3 | 0,0 | 110 |
| 6,08 | 8 | 8 | 65 | 1,2 | 79,2 | 19,6 | 0,0 | 130 |
| 6,09 | 8 | 9 | 114 | 1,1 | 93,0 | 5,9 | 0,0 | 150 |
| 6,10 | 8 | 10 | 97 | 5,0 | 87,4 | 7,6 | 0,0 | 170 |
| 7,01 | 5 | 1 | 0 | 0,0 | 1,4 | 69,4 | 29,2 | 1 |
| 7,03 | 5 | 3 | 10 | 0,0 | 2,4 | 11,3 | 86,3 | 30 |
| 8,01 | 6 | 1 | 0 | 0,0 | 1,7 | 66,7 | 31,7 | 1 |
| 8,02 | 6 | 2 | 2 | 0,0 | 0,0 | 5,3 | 94,7 | 11 |
| 8,03 | 6 | 3 | 4 | 5,0 | 5,0 | 11,0 | 79,0 | 30 |
| 9,01 | 8 | 1 | 0 | 0,0 | 2,1 | 62,5 | 35,4 | 1 |
| 9,02 | 8 | 2 | 2 | 0,0 | 5,0 | 15,0 | 80,0 | 11 |
| 9,03 | 8 | 3 | 8 | 0,0 | 10,6 | 24,2 | 65,2 | 30 |
| 10,01 | 3 | 1 | 0 | 31,7 | 1,7 | 66,7 | 0,0 | 1 |
| 10,02 | 3 | 2 | 3 | 70,0 | 0,0 | 30,0 | 0,0 | 11 |
| 10,03 | 3 | 3 | 57 | 69,2 | 17,7 | 13,1 | 0,0 | 30 |
| 10,04 | 3 | 4 | 70 | 65,0 | 25,0 | 10,0 | 0,0 | 50 |
| 10,05 | 3 | 5 | 128 | 78,0 | 12,0 | 10,0 | 0,0 | 70 |
| 10,08 | 3 | 8 | 120 | 70,0 | 30,0 | 0,0 | 0,0 | 130 |
| 10,10 | 3 | 10 | 150 | 75,0 | 20,0 | 5,0 | 0,0 | 170 |
| 11,01 | 4 | 1 | 0 | 35,4 | 2,1 | 62,5 | 0,0 | 1 |
| 11,06 | 4 | 6 | 36 | 81,7 | 18,3 | 0,0 | 0,0 | 70 |
| 11,07 | 4 | 7 | 50 | 95,0 | 5,0 | 0,0 | 0,0 | 90 |
| 11,10 | 4 | 10 | 52 | 85,0 | 10,0 | 5,0 | 0,0 | 170 |
| 12,01 | 5 | 1 | 0 | 29,2 | 1,4 | 69,4 | 0,0 | 1 |
| 12,02 | 5 | 2 | 4 | 66,0 | 0,0 | 34,0 | 0,0 | 11 |
| 12,03 | 5 | 3 | 20 | 80,0 | 15,0 | 5,0 | 0,0 | 30 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12,04 | 5 | 4 | 141 | 89,5 | 4,3 | 6,2 | 0,0 | 50 |
| 12,05 | 5 | 5 | 201 | 88,0 | 7,7 | 4,3 | 0,0 | 70 |
| 12,06 | 5 | 6 | 130 | 75,0 | 23,0 | 2,0 | 0,0 | 90 |
| 12,08 | 5 | 8 | 160 | 80,0 | 19,0 | 1,0 | 0,0 | 130 |
| 12,09 | 5 | 9 | 180 | 80,0 | 19,0 | 1,0 | 0,0 | 150 |
| 13,01 | 2 | 1 | 0 | 5,1 | 27,1 | 67,8 | 0,0 | 1 |
| 13,02 | 2 | 2 | 3 | 40,0 | 40,0 | 20,0 | 0,0 | 11 |
| 13,03 | 2 | 3 | 6 | 48,0 | 33,0 | 19,0 | 0,0 | 30 |
| 13,04 | 2 | 4 | 46 | 29,7 | 51,6 | 18,7 | 0,0 | 50 |
| 13,07 | 2 | 7 | 110 | 40,0 | 55,0 | 5,0 | 0,0 | 110 |
| 13,08 | 2 | 8 | 54 | 63,0 | 23,0 | 14,0 | 0,0 | 130 |
| 13,09 | 2 | 9 | 134 | 25,0 | 57,0 | 18,0 | 0,0 | 150 |
| 14,01 | 5 | 1 | 0 | 4,2 | 25,4 | 70,4 | 0,0 | 1 |
| 14,02 | 5 | 2 | 5 | 50,0 | 50,0 | 0,0 | 0,0 | 11 |
| 14,03 | 5 | 3 | 10 | 0,0 | 31,7 | 18,0 | 50,3 | 30 |
| 14,04 | 5 | 4 | 120 | 20,0 | 60,0 | 20,0 | 0,0 | 50 |
| 14,08 | 5 | 8 | 105 | 38,9 | 33,3 | 27,8 | 0,0 | 130 |
| 14,09 | 5 | 9 | 190 | 27,0 | 62,0 | 11,0 | 0,0 | 150 |
| 15,01 | 8 | 1 | 0 | 6,4 | 29,8 | 63,8 | 0,0 | 1 |
| 15,03 | 8 | 3 | 30 | 40,0 | 30,0 | 30,0 | 0,0 | 30 |
| 15,04 | 8 | 4 | 11 | 30,0 | 50,0 | 20,0 | 0,0 | 50 |
| 15,06 | 8 | 6 | 80 | 40,0 | 50,0 | 10,0 | 0,0 | 90 |
| 15,07 | 8 | 7 | 90 | 20,0 | 60,0 | 20,0 | 0,0 | 110 |
| 15,08 | 8 | 8 | 85 | 60,0 | 40,0 | 0,0 | 0,0 | 130 |
| 15,09 | 8 | 9 | 120 | 45,0 | 50,0 | 5,0 | 0,0 | 150 |
| 15,10 | 8 | 10 | 100 | 40,0 | 50,0 | 10,0 | 0,0 | 170 |

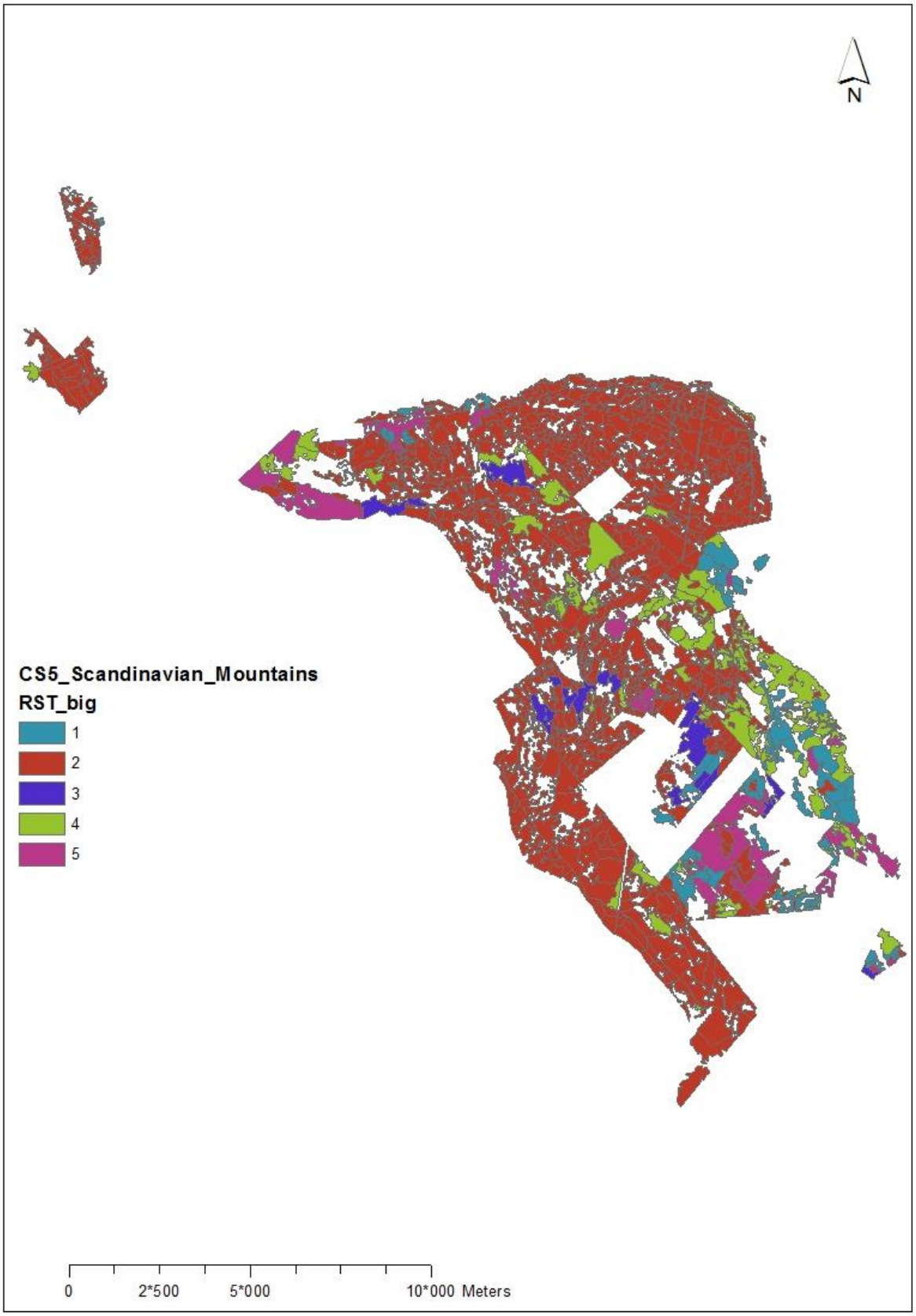


**Figure A-5.1**. Representative Landscape (RL) in CSA5 (Vilhelmina).

# A6 CSA6 (Kozie chrbty)

**Table A-6.1.** Site types in CSA6 (Kozie chrbty). SD = soil depth [cm], CF = coarse fraction >2mm of mineral soil [%], paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| site_ID | slope | bedrock | Soiltype | SD | CF | pH | paN | WSC | Climate-ID |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0-25 | acidic | Cambisol | 55 | 35 | 4,8 | 70 | 150 | 650m (flat) |
| 2 | 0-25 | acidic | Cambisol | 50 | 40 | 4,4 | 60 | 150 | 950m (flat) |
| 3 | 0-20 | acidic | Podzol | 55 | 35 | 3,8 | 45,0 | 170,0 | 950m (flat) |
| 4 | 0-25 | acidic | Cambisol | 55 | 35 | 4,4 | 65,0 | 170,0 | 1250m (flat) |
| 5 | 0-20 | acidic | Podzol | 50 | 45 | 3,8 | 45 | 150 | 1250m (flat) |
| 6 | 20-45 | calcareous | Rendzina | 35 | 50 | 6,5 | 50 | 100 | 1250m (flat) |

**Table A-6.1**. Representative Stand Types (RST) in CSA6 (Kozie chrbty). Aa = Abies alba, as = acer sp., cs = castanea sativa, ld = larix decidua, pa = picea abies, pp = picea pungens, ps = pinus sylvestris.

| RST-ID | Site-ID | Species composition | | | | | | | Age |
|---|---|---|---|---|---|---|---|---|---|
| | | aa | as | cs | ld | Pa | Pp | ps | |
| 1.0 | 1 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 85 |
| 2.1 | 2 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 25 |
| 2.2 | 2 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 60 |
| 2.3 | 2 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 105 |
| 3.1 | 3 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 60 |
| 3.2 | 3 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 105 |
| 4.1 | 4 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 25 |
| 4.2 | 4 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 60 |
| 4.3 | 4 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 105 |
| 5.1 | 5 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 25 |
| 5.2 | 5 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 60 |
| 5.3 | 5 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 105 |
| 6.1 | 6 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 60 |
| 6.2 | 6 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 105 |
| 7.1 | 1 | 0 | 0 | 0 | 6 | 94 | 0 | 0 | 45 |
| 7.2 | 1 | 0 | 0 | 0 | 6 | 94 | 0 | 0 | 100 |
| 8.1 | 2 | 0 | 0 | 0 | 11 | 89 | 0 | 0 | 45 |
| 8.2 | 2 | 0 | 0 | 0 | 11 | 89 | 0 | 0 | 75 |
| 8.3 | 2 | 0 | 0 | 0 | 11 | 89 | 0 | 0 | 95 |
| 9.1 | 3 | 0 | 0 | 0 | 7 | 93 | 0 | 0 | 45 |
| 9.2 | 3 | 0 | 0 | 0 | 7 | 93 | 0 | 0 | 95 |
| 10.1 | 4 | 0 | 0 | 0 | 10 | 90 | 0 | 0 | 45 |
| 10.2 | 4 | 0 | 0 | 0 | 10 | 90 | 0 | 0 | 75 |
| 10.3 | 4 | 0 | 0 | 0 | 10 | 90 | 0 | 0 | 90 |
| 11.1 | 5 | 0 | 0 | 0 | 10 | 90 | 0 | 0 | 45 |
| 11.2 | 5 | 0 | 0 | 0 | 10 | 90 | 0 | 0 | 75 |
| 11.3 | 5 | 0 | 0 | 0 | 10 | 90 | 0 | 0 | 90 |
| 12.1 | 6 | 0 | 0 | 0 | 8 | 92 | 0 | 0 | 45 |
| 12.2 | 6 | 0 | 0 | 0 | 8 | 92 | 0 | 0 | 75 |
| 12.3 | 6 | 0 | 0 | 0 | 8 | 92 | 0 | 0 | 95 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 13.1 | 1 | 0 | 0 | 0 | 32 | 41 | 0 | 27 | 80 |
| 13.2 | 1 | 0 | 0 | 0 | 32 | 41 | 0 | 27 | 105 |
| 14.1 | 2 | 0 | 0 | 0 | 32 | 41 | 0 | 27 | 80 |
| 14.2 | 2 | 0 | 0 | 0 | 32 | 41 | 0 | 27 | 105 |
| 15.0 | 3 | 0 | 0 | 3 | 15 | 76 | 0 | 6 | 90 |
| 16.0 | 1 | 0 | 0 | 5 | 30 | 65 | 0 | 0 | 30 |
| 17.0 | 2 | 0 | 0 | 5 | 30 | 65 | 0 | 0 | 30 |
| 18.0 | 3 | 0 | 0 | 5 | 30 | 65 | 0 | 0 | 30 |
| 19.0 | 4 | 0 | 0 | 5 | 30 | 65 | 0 | 0 | 30 |
| 20.0 | 6 | 0 | 10 | 25 | 15 | 45 | 5 | 0 | 15 |
| 21.0 | 1 | 20 | 0 | 10 | 30 | 40 | 0 | 0 | 20 |
| 22.0 | 2 | 20 | 0 | 10 | 30 | 40 | 0 | 0 | 20 |
| 23.0 | 4 | 20 | 0 | 10 | 30 | 40 | 0 | 0 | 20 |
| 24.0 | 5 | 20 | 0 | 10 | 30 | 40 | 0 | 0 | 20 |
| 25.0 | 6 | 20 | 0 | 10 | 30 | 40 | 0 | 0 | 20 |

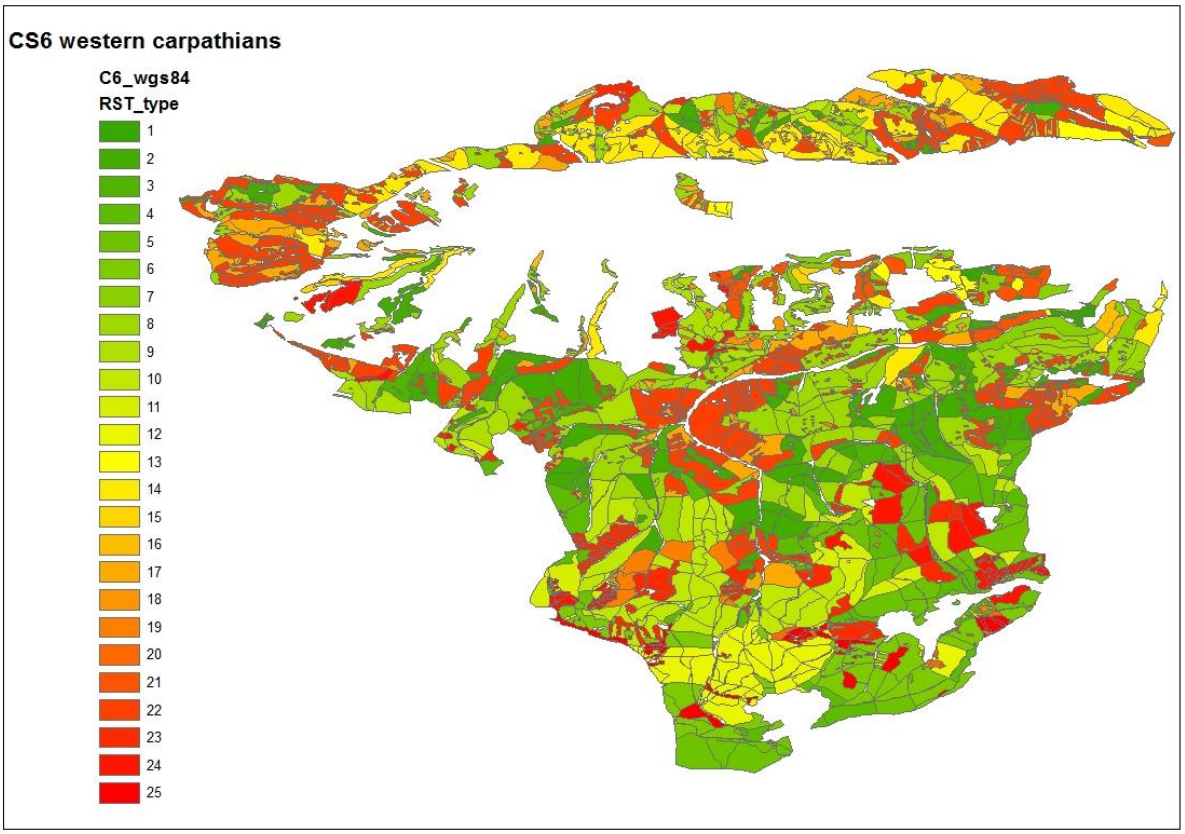


**Figure A-6.1**. Representative Landscape (RL) in CSA6 (Kozie chrbty).

# A7 CSA7 (Shiroka laka)

**Table A-7.1.** Site types in CSA7 (Shiroka laka). SD = soil depth [cm], CF = coarse fraction >2mm of mineral soil [%], paN = plant available Nitrogen [kg/ha*yr], WSC = water storage capacity [mm], alt = altitudinal range [m].

| ID | slope | bedrock | soiltype | SD | CF | pH | paN | WSC | alt | baseline climate record |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25-35 | mixed | cambisol | 45 | 40 | 6,0 | 50 | 170 | 1000-1150 | 1000m (25° north) |
| 2 | 35 | limestone | Rendzina | 20 | 65 | 8,0 | 30 | 80 | 1200-1450 | 1250m (25° north) |
| 3 | 25-35 | limestone | Rendzina | 35 | 55 | 7,5 | 40 | 120 | 1200-1450 | 1250m (25° north) |
| 4 | 25-35 | mixed | cambisol | 55 | 35 | 6,5 | 60 | 180 | 1200-1400 | 1250m (25° north) |
| 5 | 20-25 | acidic | cambisol | 40 | 50 | 5,5 | 40 | 130 | 1100-1300 | 1250m (25° north) |
| 6 | 30 | acidic | cambisol | 60 | 30 | 5,5 | 65 | 200 | 1200-1350 | 1250m (25° north) |
| 7 | 25-35 | acidic | cambisol | 80 | 20 | 5.5 | 75 | 220 | 1550-1850 | 1750m (25° north) |
| 8 | 30-40 | acidic | cambisol | 45 | 40 | 5.5 | 55 | 170 | 1550-1850 | 1750m (25° north) |
| 9 | 25-35 | acidic | cambisol | 45 | 40 | 4,5 | 50 | 170 | 1900-2050 | 2000m (25° north) |
| 10 | 5-15 | acidic | cambisol | 60 | 30 | 5,0 | 70 | 220 | 1900-2100 | 2000m (flat) |

**Table A-7.1**. Representative Stand Types (RST) in CSA7 (Shiroka laka).

| RST-ID | species mixture | age (or stand development stage) | site type | Landscape |
|---|---|---|---|---|
| 1,1 | 100% Fagus sylvatica | pole (60 years) | 1 | Landscape 1 |
| 1,2 | 100% Fagus sylvatica | mature (100 years) | 1 | Landscape 1 |
| 2,1 | 90% Pinus nigra, 10% Picea abies and Fagus sylvatica | pole (60 years) | 2 | Landscape 1 |
| 3,1 | 75% Pinus nigra, 15% Picea abies, 10% Fagus sylvatica | thicket (20 years) | 3 | Landscape 1 |
| 3,2 | 75% Pinus nigra, 15% Picea abies, 10% Fagus sylvatica | pole (60 years) | 3 | Landscape 1 |
| 3,3 | 75% Pinus nigra, 15% Picea abies, 10% Fagus sylvatica | mature (100 years) | 3 | Landscape 1 |
| 4,1 | 45% Pinus nigra, 45% Picea abies, 10% Fagus sylvatica | pole (60 years) | 4 | Landscape 1 |
| 4,2 | 45% Pinus nigra, 45% Picea abies, 10% Fagus sylvatica | mature (100 years) | 4 | Landscape 1 |
| 5,1 | 60% Pinus sylvestris, 20% Pinus nigra, 20% Picea abies and Fagus sylvatica | pole (60 years) | 5 | Landscape 1 |
| 5,2 | 60% Pinus sylvestris, 20% Pinus nigra, 20% Picea abies and Fagus sylvatica | mature (100 years) | 5 | Landscape 1 |
| 6,1 | 60% Picea abies,40% Abies alba | thicket (20 years) | 6 | Landscape 1 |
| 6,2 | 60% Picea abies,40% Abies alba | pole (60 years) | 6 | Landscape 1 |
| 6,3 | 60% Picea abies,40% Abies alba | mature (100 years) | 6 | Landscape 1 |
| 7,1 | 100 % Picea abies | thicket (20 years) | 7 | Landscape 2 |
| 7,2 | 100 % Picea abies | pole (60 years) | 7 | Landscape 2 |
| 7,3 | 100 % Picea abies | mature (100 years) | 7 | Landscape 2 |
| 7,4 | 100 % Picea abies | over mature (140 years) | 7 | Landscape 2 |
| 8,1 | 100 % Picea abies | thicket (20 years) | 8 | Landscape 2 |
| 8,2 | 100 % Picea abies | pole (60 years) | 8 | Landscape 2 |
| 8,3 | 100 % Picea abies | mature (100 years) | 8 | Landscape 2 |
| 8,4 | 100 % Picea abies | over mature (140 years) | 8 | Landscape 2 |
| 9,1 | 100 % Picea abies | mature (100 years) | 9 | Landscape 2 |
| 9,2 | 100 % Picea abies | over mature (140 years) | 9 | Landscape 2 |
| 10,1 | 100 % Picea abies | thicket (15 years) | 10 | Landscape 2 |
| 10,2 | 100 % Picea abies | pole (50 years) | 10 | Landscape 2 |

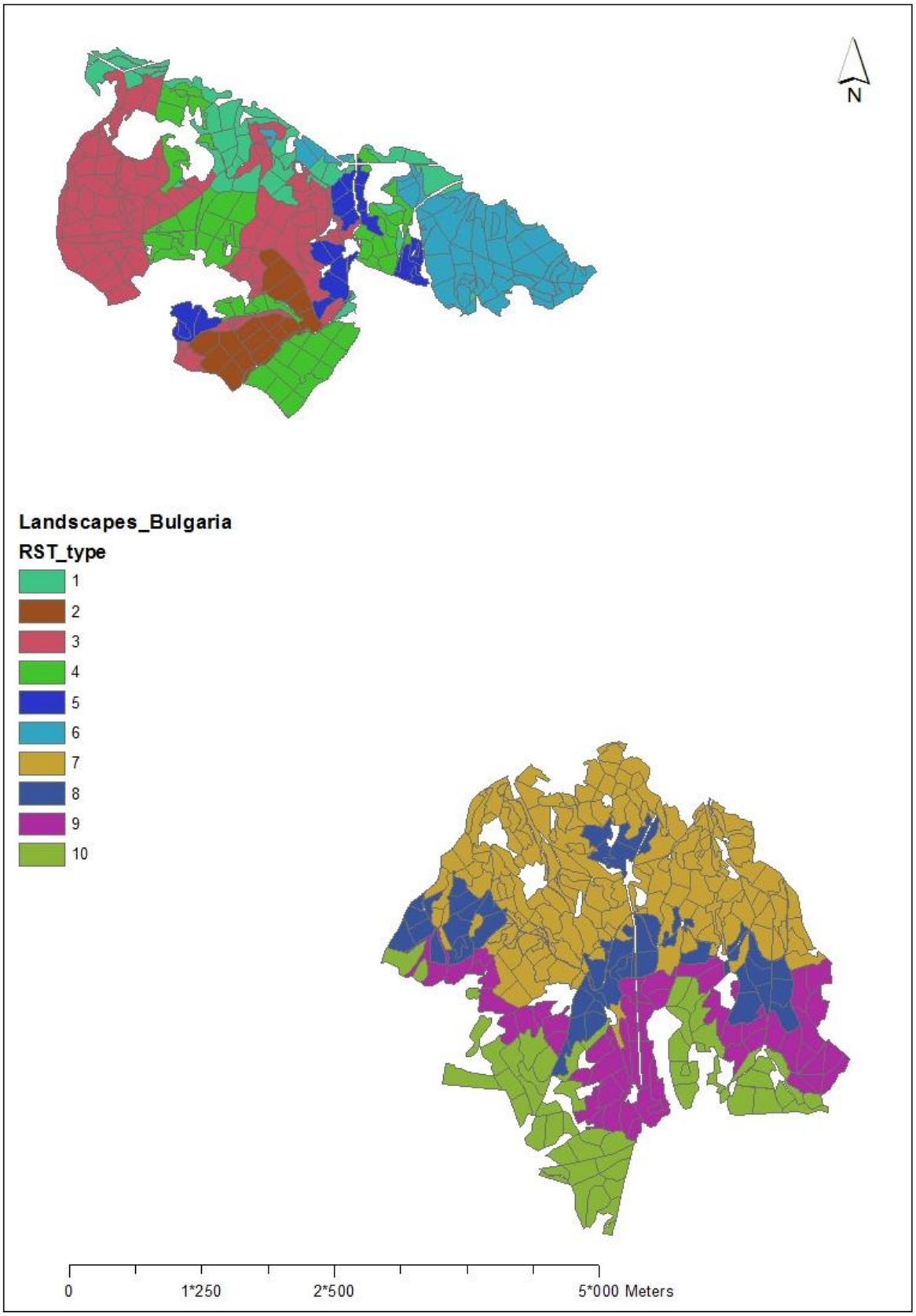


**Figure A-7.1**. Representative Landscape (RL) in CSA7 (Shiroka laka).