



## **Legend interpretation of different editions of the Land Cover Map of Catalonia**

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## Introduction

The Land Cover Map of Catalonia (MCSC) features four editions: MCSC-1, MCSC-2, MCSC-3 (with two versions, the first or v1 and its review or v2) and MCSC-4. These editions besides of having different dates on their base image (1st edition, 1993; 2nd edition, 2000-2002; 3rd Edition, 2005-2007; 4th edition, 2009), also show differences in the characteristics of these base images: pixel of 2.5 m for the 1st edition, 0.5 m for the 2nd and the 3rd editions, and 0:25 m for the 4th. It should be added that the legend of each edition have suffered a breakdown ever greater in less generalist categories, so that new categories have appeared between editions, although they were included in wider groupings of previous editions.

However, in the preparation of the Map, it has always been tried to maintain the comparability between editions. So the legend of the Map has a hierarchical structure, with levels of aggregation ranging from the maximum possible (level 1 in all editions) to the minimum aggregation (level 5, exclusive of the MCSC-3 and MCSC-4). In short, the legends of the editions of the MCSC ranges from level 1 to level 2 for the MCSC-1, to level 3 for the MCSC-2, and up to level 5 for the MCSC-3 and MCSC-4. In this way, MCSC-1 and subsequent coincide up to level 2 and MCSC-2, 3 and 4 have the same legend up to level 3. The MCSC-3v1 has its own legend at level 5 which is slightly modified in the editions of the MSCS-3v2 and MCSC-4. At the end of this document you will find tables of the hierarchical legend of each edition of the Map. The table 1 corresponds to the MCSC-1, the table 2 is from MCSC-2, the table 3 is the own of the MCSC-3v1 and the table 4 is the own of the MCSC-3v2 and MCSC-4.

The level 4, which only is found in the MCSC-3 and 4, is not considered a true level of the hierarchical legend of the MCSC, but a walkway between MCSC and SIOSE (Spanish Land Cover/Use Information System).

Although this aims to maintain a consistent methodology between editions, sometimes there are differences of minor order, in the meaning of the various categories, differences due to the aim to adapt the product to the requirements of each edition, which are not always compatible with each other. Thus, any study about cover changes using editions of the MCSC should have clear which are the methodology or conceptual differences that exist in the legend categories of the Map, so that it is evident the real scope of a change, and do not add up changes that are simply due to different methodologies and concepts sometimes different.

Consequently, the goal of this document is to detail how the different categories of the MCSC are grouped, with particular emphasis on what are the cases that have different meaning. To compare editions, we will take as a basis, the level 5 of the legend and we will see how these categories are classified according to each edition of the MCSC. Tables 5 and 6 summarize what are the categories that differ between editions of the MCSC.

## **Relation between categories of the MCSC according to common levels.**

As a basis for comparison, we use the categories of the level 5 which are equal for the MCSC-3v2 and the MCSC-4. In many cases, they are also the same as the MCSC-3v1, when not, we will indicate otherwise. As for the third, we recommend using version 2 as it is an improved revision of the MCSC-3v1.

**Stone pine forest ( $\geq 20\%$ cc)**  
**Maritime pine forest ( $\geq 20\%$ cc)**  
**Aleppo pine forest ( $\geq 20\%$ cc)**  
**Austrian pine forest ( $\geq 20\%$ cc)**  
**Scots pine forest ( $\geq 20\%$ cc)**  
**Mountain pine forest ( $\geq 20\%$ cc)**  
**Silver fir forest ( $\geq 20\%$ cc)**  
**Other conifers ( $\geq 20\%$ cc)**  
**Evergreen oak forest ( $\geq 20\%$ cc)**  
**Cork oak forest ( $\geq 20\%$ cc)**  
**Other evergreens ( $\geq 20\%$ cc)**  
**Silver birch forest ( $\geq 20\%$ cc)**  
**Spanish chestnut forest ( $\geq 20\%$ cc)**  
**European beech forest ( $\geq 20\%$ cc)**  
**Pedunculate oak forest ( $\geq 20\%$ cc)**  
**Sessile oak forest ( $\geq 20\%$ cc)**  
**Algerian oak forest ( $\geq 20\%$ cc)**  
**Pubescent oak forest ( $\geq 20\%$ cc)**  
**Portuguese oak forest ( $\geq 20\%$ cc)**  
**Pyrenean oak forest ( $\geq 20\%$ cc)**  
**Stone pine forest (5-20%cc)**  
**Maritime pine forest (5-20%cc)**  
**Aleppo pine forest (5-20%cc)**  
**Austrian pine forest (5-20%cc)**  
**Scots pine forest (5-20%cc)**  
**Mountain pine forest (5-20%cc)**  
**Silver fir forest (5-20%cc)**  
**Other conifers (5-20%cc)**  
**Evergreen oak forest (5-20%cc)**  
**Cork oak forest (5-20%cc)**  
**Other evergreens (5-20%cc)**  
**Silver birch forest (5-20%cc)**  
**Spanish chestnut forest (5-20%cc)**  
**European beech forest (5-20%cc)**  
**Pedunculate oak forest (5-20%cc)**  
**Sessile oak forest (5-20%cc)**  
**Algerian oak forest (5-20%cc)**  
**Pubescent oak forest (5-20%cc)**

**Portuguese oak forest (5-20%cc)**  
**Pyrenean oak forest (5-20%cc)**

The categories with suffix "> = 20% cc" are grouped at level 3 of the legend in "Dense forest (non-riparian)" The categories with suffix "5-20% cc" are grouped at level 3 in "Clear forests (non-riparian)". These categories of Level 3 are referred with the same name in the corresponding level 2 of legend. These covers have been interpreted equal for the level 2 and above for all editions of the MCSC, at level 3 for the editions 2, 3 and 4 and at level 5 for the editions 3 and 4 of the MCSC.

**Other deciduous trees (>= 20%cc)**  
**Common hazel forest (>=20%cc)**  
**Common ash forest (>=20%cc)**

These categories are grouped into a single category in the MCSC-3v1 called "Other deciduous trees (> = 20% cc)." These categories are grouped at level 3 of the legend with "Dense forest (non-riparian)" and are called equal in the corresponding level 2 of legend. This cover has been interpreted equal at level 2 and above, for all editions of the MCSC and at level 3 for the editions 2, 3 and 4 of the MCSC. At level 5 they have been interpreted equal for the editions 3v2 and 4 of the MCSC, but different with respect to the MCSC-3v1.

**Other deciduous trees (5-20%cc)**  
**Common hazel forest (5-20%cc)**  
**Common ash forest (5-20%cc)**

These categories are grouped into a single category in the MCSC-3v1 called "Other deciduous trees (5-20%cc)." These categories are grouped at level 3 of the legend with "Clear forest (non-riparian)" and are called equal in the corresponding level 2 of legend. This cover has been interpreted equal at level 2 and above, for all editions of the MCSC and at level 3 for the editions 2, 3 and 4 of the MCSC. At level 5 they have been interpreted equal for the editions 3v2 and 4 of the MCSC, but different with respect to the MCSC-3v1.

**Strawberry tree forest (>= 20%cc)**  
**Strawberry tree forest (5-20%cc)**

The Strawberry tree forests in Catalonia usually are shrubby, so it's easy to consider them as shrubs. In general, at the first and second editions have been considered in this way, unless that on the orthoimage they appear as trees. The differentiation of this species in the 3d and 4th editions of the MCSC has mapping support (Habitats Cartography of Catalonia, the Ecological and Forest Inventory of Catalonia, Third National Forest Inventory) and, if tree cover is > = 20% cc, the 3rd and 4th edition of the MCSC has tended to consider them as trees. If the occupation is 5-20%, we specify the species but for level 2 and 3 are considered a shrub. Therefore, for a direct comparison of the Strawberry

tree forests  $\geq 20\%$  cc, with previous editions, should take into account that at least a great part of the polygons of this species are considered forests on the 3rd and 4th, and not as a scrub as was done in previous editions.

**Buffer strip of stone pine**  
**Buffer strip of maritime pine**  
**Buffer strip of Aleppo pine**  
**Buffer strip of Austrian pine**  
**Buffer strip of Scots pine**  
**Buffer strip of evergreen oak**  
**Buffer strip of cork oak**  
**Buffer strip of Spanish chestnut**  
**Buffer strip of European beech**  
**Buffer strip of pedunculate oak**  
**Buffer strip of sessile oak**  
**Buffer strip of Algerian oak**  
**Buffer strip of pubescent oak**  
**Buffer strip of Portuguese oak**  
**Buffer strip of other deciduous trees**

The categories of buffer strips are grouped at level 3 of the legend with "Forest buffer strips". At level 2 they are grouped with the "Dense forest (non-riparian)", and at level 1F with "Dense forest". Here, there is a difference with the 2nd edition of the MCSC, since in this they were considered "Dense forest (non-riparian)" at level 2 and "Clear forest" at level 1F. While the 3rd edition was in process, we received information from the Department of Environment (Generalitat of Catalonia) about which must be the coverage of a forest buffer strip: it should be 30%. This explains this difference. Furthermore, this category did not appear in the legend of the MCSC-1, mainly due to its low presence in the territory, as these strips have been built recently, for the self-protection of residential areas, among other reasons. In case of being present in orthoimages of 1993 (base of the MCSC-1) it should be photointerpreted as "Dense woods (non-riparian)", allowing the comparison between the 1st and the 2nd edition. Therefore, a direct comparison of the buffer strips between editions of the MCSC, must take into account the different treatment at the levels 1F, and 2.

In the MCSC-3v1, we can find the following categories of buffer strips, which disappear from the MCSC3-v2 and 4, due to lack of representation in the territory: "**Buffer strip of mountain pine**", "**Buffer strip of silver fir**", "**Buffer strip of silver birch**", "**Buffer strip of Pyrenean oak**".

**Deciduous riparian forests ( $\geq 20\%$ cc)**  
**Deciduous riparian forests (5-20%cc)**

These two categories are the result from the breakdown, since the MCSC-3v2, of the category of "Riparian deciduous forests" in two new ones according to the percentage of cover: "Riparian Deciduous Forest ( $\geq 20\%$  cc)" and "Riparian deciduous forest (5-20% cc)". These categories are called, respectively, "Dense

riparian forests" and "Clear riparian forest" at levels 2 and 3 of the legend, as well as at the level 1F are called "Dense forest" and "Clear forest", respectively. These covers have been interpreted equal at level 2 and above for the editions 1, 2 and 3v1 of the MCSC, and at level 3 for the editions 2 and 3v1 of the MCSC. At level 5 and above have been interpreted equal for the editions 3v2 and 4. Therefore, a comparison of "Riparian deciduous forests" between different editions should take into account the different treatment of this category from level 5 to 1F.

At creation date of this document, in the MCSC-1, there is an area that roughly corresponds to Barcelona province, where the riparian forests were not differentiated; they were catalogued in the category of level 2 "Dense forest (non-riparian)". It is likely that this issue will be resolved in the future reinterpreting these covers of the MCSC-1, as it has been done in later editions of the Map. Therefore, a direct comparison of the riparian forests between the 1st edition of the MCSC and the others as they stand to date, must take into account the different treatment at levels 1F, and 2 for this area.

In the MCSC-3v1, one could find the category "**Evergreen riparian forests**," which, since the MCSC3-v2 disappears from the legend for lack of representation in the territory.

### **Poplar plantations**

#### **Plane trees plantations**

The categories of plantations of these forest species are referred equal to level 2, 3 and 5 of the legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 and above for the editions 2, 3v1, 3v2 and 4, and at level 5 of the MCSC for the editions 3v1, and 3v2 4 of the MCSC.

At creation date of this document, in MCSC-1, there is an area that roughly corresponds to Barcelona province, where these categories were not differentiated; they were grouped at level 2 in "Dense forests (not-riparian)". It is likely that this issue will be resolved in the future reinterpreting these covers of the MCSC-1, as has been done in later editions of the Map. Therefore, a direct comparison of these plantations between the 1st edition of the MCSC and the others as they stand to date, must take into account the different treatment at levels 1F, and 2 for this area.

### **Non-native conifer plantations**

#### **Eucalyptus plantations**

The categories of plantations of these forest species are referred equal to level 3. At level 2 they are grouped with the "Dense forest (non-riparian)". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 and above for the editions, 2, 3v1, 3v2 and 4, and at level 5 for the editions 3v1, 3v2 and 4 of the MCSC.

**Stone pine plantations**  
**Maritime pine plantations**  
**Aleppo pine plantations**  
**Austrian pine plantations**  
**Scots pine plantations**  
**Mountain pine plantations**  
**Silver fir plantations**  
**Cork oak plantations**  
**Spanish chestnut plantations**  
**Other deciduous trees plantations**

The categories of plantations of these forest species are grouped at level 3 with "Dense forest (not-riparian)". These categories are referred equal to level 3 in the corresponding level 2 of the legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for the editions 2, 3v1, 3v2 and 4 of the MCSC, and at level 5 for the editions 3v1, 3v2 and 4 of the MCSC.

### **Forest nurseries**

This cover is present at level 5, only in the MCSC-3v2 and 4. At the MCSC-3v1 was included in the plantations of different species. This category is grouped at level 3 with "Dense forests (non-riparian)" and is called equal at its corresponding level 2 of legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC and at level 3 for the editions 2, 3v1, 3v2 and 4 of the MCSC.

**Aleppo pine regeneration**  
**Maritime pine regeneration**  
**Austrian pine regeneration**  
**Evergreen oak regeneration**  
**Pubescent oak regeneration**  
**Portuguese oak regeneration**

The categories of regeneration are grouped at level 3 with "Dense forest (non-riparian)". These categories of level 3 are referred equal to their corresponding level 2 of legend. These categories of regeneration have not been interpreted in the same way by the different editions. These are absent from the MCSC-1 and 2, where they are interpreted as shrublands by the corresponding levels. Therefore, a direct comparison between the covers with regeneration, must take into account the different treatment at levels 1F, 2, and 3.

**Scots pine regeneration**  
**Mountain pine regeneration**  
**Silver fir regeneration**  
**Silver birch regeneration**  
**European beech regeneration**



These categories of regeneration are present, at level 5, in the editions 3v2 and 4 of the MCSC and do not exist in previous editions. At level 3, are grouped in "Dense forest (non-riparian)" and these are called equal in their corresponding level 2 of the legend. These categories of regeneration were interpreted as shrublands by the corresponding levels. Therefore, a direct comparison between the covers with regeneration of the MCSC, must take into account the different treatment at levels 1F, 2, 3, and 5.

## **Shrublands**

### **Buffer strip of shrublands**

### **Shrublands under electric lines**

These categories are grouped into a single category in MCSC-3v1 called "Shrublands". These categories are grouped at level 3 of the legend in "Shrublands" and are named the same in the corresponding level 2 of legend. This covers have been interpreted equal at level 2 and above, for all editions of the MCSC and at level 3 for editions 2, 3 and 4 of the MCSC. At level 5 they have been interpreted equal in the editions 3v2 and 4 of the MCSC, but different with respect to the MCSC-3v1.

### **Shrublands on firewalls**

### **Shrub vegetation of dunes and sandy areas**

These shrublands are grouped at level 3 in "Shrublands". This category of level 3 is the same in its corresponding level 2 of the legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3v1, 3v2 and 4 and at level 5 for the editions 3v1, 3v2 and 4 of the MCSC.

### **Shrublands in riparian vegetation**

### **Reed beds**

These categories are grouped into a single category in MCSC-3v1 called "Shrublands in riparian vegetation." These categories are grouped at level 3 of the legend in "Shrublands" and are named the same in the corresponding level 2 of legend. These covers have been interpreted equal at level 2 and above, for all editions of the MCSC and at level 3 for editions 2, 3 and 4 of the MCSC. At level 5 they have been interpreted equal in editions 3v2 and 4 of the MCSC, but different with respect to the MCSC-3v1.

### **Shrublands coming from clearcutting**

This category is grouped at level 3 in the category of "Shrublands - clearcutting forests" which was called "Clearcutting forests" in the MCSC-2 and MCSC-3v1 for the same level. Despite the difference in name, editions 2, 3 and 4 have been interpreted, at level 3, with the same criteria. However, at level 2 and 1F,

there are differences: on the one hand, between MCSC-3 and 4, which are "Shrublands" on both levels; on the other hand, MCSC-2, which are "Dense forests (non-riparian)" or "Dense forest" respectively in each level. The difference is because, in the MCSC-2, the presence of these shrublands was considered a transitory state of forest regeneration, for this reason it was not considered as a shrubland, but as a forest; something similar happened with the meadows (see further category of meadows and grasslands from clearcutting). However, in the MCSC-3 and 4, the prevalent criteria are the current cover. In the MCSC-1, according to the development of trees at the time of taking the picture, it was considered as a shrubland or a forest. Therefore, a direct comparison between these shrublands between different editions of the MCSC, must take into account the different treatment at levels 1F, and 2.

**Coastal wetlands vegetation**  
**Inland wetlands vegetation**  
**High mountain peat bogs**

These categories of wetlands are referred equal at level 5 and level 3. At level 2 they are grouped in the "Wetlands." These covers have been interpreted equal for the level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3v1, 3v2 and 4 and at level 5 for editions 3v1, 3v2 and 4 of the MCSC.

**Meadows and grasslands**  
**Buffer strip of meadows and grasslands**  
**Meadows and grasslands under electric lines**

These categories are grouped into a single category in MCSC-3v1 called "Meadows and grasslands." These categories are grouped at level 3 of the legend in "Meadows and grasslands" and are named equal in the corresponding level 2 of the legend. This cover has been interpreted equal at level 2 and above, for all editions of the MCSC and at level 3 for editions 2, 3 and 4 of the MCSC. At level 5 they have been interpreted equal for editions 3v2 and 4 of the MCSC, but different with respect to the MCSC-3v1.

**High mountain meadows and grasslands**  
**Meadows and grasslands on firewalls**  
**Herbaceous vegetation of dunes and sandy areas**

The grouping of these meadows at level 3 is called "Meadows and grasslands." This category, at level 3, is called equal to its corresponding level 2 of the legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3v1, 3v2 and 4 and at level 5 for editions 3v1, 3v2 and 4 of the MCSC.

In the MCSC-3v1, we can find the category "**High mountain meadows and grasslands on firewalls**" which, from the MCSC3-v2 disappears from the legend due to the lack of representation in the territory

## **Meadows and grasslands coming from clearcutting**

### **High mountain meadows and grasslands coming from clearcutting**

These categories are referred equal at level 5 for editions 3v1, 3v2 and 4. However, at level 3, for the editions 3v2 and 4 of the MCSC are grouped in "Meadows and grasslands - Clearcutting forests" while for the MCSC-3v1 and MCSC-2 were denominated as "Clearcutting forests". However, at level 2 and 1F, there are differences: on one hand, between MCSC-3 and 4, which are "Meadows and grasslands" on both levels; on the other hand, MCSC-2, which are "Dense forest (non-riparian)" or "Dense forest" respectively in each level. The difference is because, in the MCSC-2, the presence of meadows was considered a transitory state of forest regeneration, for this reason it was not considered as meadows, but as a forest; something similar happened with the shrublands (see previous category of shrublands from clearcutting). However, in the MCSC-3 and 4, the prevalent criteria are the current cover. In the MCSC-1, according to the development of trees at the time of taking the picture, it was considered as meadows or forest. Therefore, a direct comparison between these meadows between different editions of the MCSC, must take into account the different treatment at levels 1F, and 2.

### **Burned areas**

This category has not been interpreted in the same way for all the editions of the MCSC. In the third and fourth, it has been interpreted as a burned forest vegetation. In the second, only the forests were interpreted as burned areas, so the category was called "Burned forests", this is because burned shrublands and burned meadows tend to quickly regenerate to its initial stage. However, in the first Map it was interpreted in the same way as the third and fourth Maps, although the category was called "Recent burned areas". Therefore, a direct comparison between editions of the MCSC to assess changes must take into account this different treatment. But the few acres that these categories add up represent a minor problem.

### **Rocky outcrops**

#### **Sea cliffs**

These categories are grouped, at level 3, in "Rocky outcrops." This category is called equal at level 3 and in its corresponding level 2 of the legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.

### **Screes**

The category of screes is called equal to the category of level 5 and 3. This category, at level 3, is called equal to its corresponding level 2 of the legend. This cover has been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.

### **Natural riverbeds**

The category of riverbeds is called equal to the category of level 5 and 3. This category of level 3 is grouped with the "Forest bare soils" in level 2 of the legend. These covers have been interpreted equal at level 3 and above for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC. Instead, the MCSC-1 mixes the "Forest bare soils" and "Urban bare soils" as "Bare soils". Therefore, a direct comparison between the first and subsequent editions of the MCSC to assess changes must take into account this different treatment. It should be noted that in the MCSC-1 differentiation urban-forest bare soils, is in process, although this version it is not available online yet.

### **Bare soil in firewalls**

#### **Eroded soil by natural agents**

The grouping of bare soils at level 3 is called "Forest bare soils." This category of level 3 is called equal in its corresponding level 2 of the legend. These covers have been interpreted equal at level 3 and above for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC. Instead, the MCSC-1 mixes the "Forest bare soils" and "Urban bare soils" as "Bare soils" at level 2 of the legend. It should be noted that in the MCSC-1 differentiation urban-forest bare soils, is in process, although this version it is not available online yet. It should also be said that these categories should be in natural environments. However, sometimes this cover is part of a composed artificial category; not always this labelling is the most appropriate, but it should be a category of bare soil in artificial environments, such as "Urban bare soils not built", "Urban areas under construction" or "Earthworks". The MCSC-2 has a category from the group of "Forest bare soils" (at level 2) that it is not present in any other edition: the "Forest tracks and paths" (at level 3), to collect this type of cover, in the MCSC-1 was catalogued as "Bare soils" at level 2. Therefore, a direct comparison between the editions of the MCSC to assess changes must take into account this different treatment.

### **Bare soil by anthropic action**

#### **Bare soil under electric lines**

These categories are grouped into a single category in MCSC-3v1 called "Bare soil by anthropic action". These categories are grouped at level 3 of the legend in "Forest bare soils" and are called equal at its corresponding level 2. These covers have been interpreted equal at level 3 and above for editions 2, 3 and 4

and at level 5 of the MCSC for editions 3 and 4 of the MCSC. However, as mentioned earlier, the MCSC-1 mixes "Forest bare soils" and "Urban bare soils" as "Bare soils" at level 2 of the legend. It should also be said that in the MCSC-3 there are some areas that should be classified as "Earthworks", but they have been catalogued as "Bare soil by anthropic action" since the distinction is not always easy.

## **Beaches**

### **Glaciers and snowdrifts**

These categories are called equal to the respective categories of level 5 and 3. These categories of level 3 are called equal in its corresponding level 2 of legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC.

## **Lakes and inland lagoons**

### **Coastal lagoons**

These categories of lakes and lagoons are called equal in the category of level 5 and 3. At level 2 they are grouped in the "Inland waters". They are present at level 3 and higher for the 2nd and 3rd editions of the MCSC, and at level 5 in the 3rd and 4th editions of the MCSC, but they were not interpreted in the same way: in the MCSC-3 and 4 were coastal lagoons if they are of brackish or salt water; while in the MCSC-2 coastal lagoons were all those which are present in the range between the sea and the Prelitoral Mountains. In terms of lakes and inland lagoons, in the MCSC 3 and 4 they include those of freshwater, while in the MCSC-2, they include those located between Prelitoral Mountains and inland Catalonia. These covers have been interpreted at level 2 and above for all editions of the MCSC. It is likely that this issue will be resolved in the future reinterpreting these covers of the MCSC-2, as it has been done in the MCSC-3. Therefore, a direct comparison between editions 2 and 3 of the MCSC to assess changes at level 3, must take into account this different treatment.

## **Rivers**

These categories are called equal to the respective categories of level 5 and 3. At level 2 they are grouped in the "Inland waters". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC.

## **Reservoirs**

These categories are called equal to the respective categories of level 5 and 3. At level 2 they are grouped in the "Inland waters". They have not been

interpreted equal between different editions of the Map. In the MCSC 3 and 4, the delimitation is according to the usual level of the reservoir. However, in the MCSC-1 the delimitation is according to the level of the water at the moment of the photography. An intermediate situation is the MCSC-2, which draws the water level of the reservoir, but also reflects its usual level; this area without water belongs to the category of "Edges of Reservoirs" at level 3; at level 2, is grouped into the "Forest bare soils", to maintain comparability with MCSC-1. Therefore, a direct comparison between editions of the MCSC, must take into account this different treatment.

## **Sea**

This category is absent from the MCSC-1 and 2, where the marine waters were not interpreted. Therefore, a direct comparison between editions of the MCSC to assess changes must take into account the different treatment.

## **Citrus**

**Non-citric fruit trees**

**Non-citric fruit trees - irrigated**

**Olive groves**

**Olive groves - irrigated**

**Citrus on terraces**

**Non-citric fruit trees on terraces**

**Non-citric fruit trees on terraces - irrigated**

**Olive groves on terraces**

**Olive groves on terraces - irrigated**

**Carob groves on terraces**

The grouping of these woody crops at level 3 is called "Woody crops (non-vineyard)." At level 2 it is grouped into "Crops." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC.

**Carob groves**

**Carob groves - irrigated**

These categories are grouped into a single category in MCSC-3v1 called "Carob groves". These categories are grouped at level 3 of the legend with "Woody crops (non-vineyard)" and at level 2 with "Crops". These covers have been interpreted equal at level 2 and above, for all editions of the MCSC and at level 3 for editions 2, 3 and 4 of the MCSC. At level 5 they have been interpreted equal for editions 3v2 and 4 of the MCSC, but different with respect to the MCSC-3v1.

## **Vineyards**

## **Vineyards on terraces**

The grouping of these woody crops at level 3 is called "Vineyards". At level 2 it is grouped into "Crops." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC.

## **Agricultural nurseries**

This category is present, at level 5, in the MCSC-3v2 and 4, but in the other editions was included in other types of woody crops (specifically irrigation in the MCSC-3v1). At level 3, the category of "Agricultural nurseries" is grouped with "Woody crops" and the "Crops" at level 2. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, and at level 3 for editions 2, 3 and 4 of the MCSC. As a new category, it has been interpreted equal, at level 5, for editions 3v2 and 4, but different from edition 3v1 of the MCSC.

## **Rice crops**

Rice crops category is called equal to the category of level 5 and 3. At level 2 it is grouped into "Crops." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC.

## **Other herbaceous crops**

### **Other herbaceous crops - irrigated**

### **Mowing meadows**

### **Garden crops under plastic**

### **Other herbaceous crops on terraces**

### **Other herbaceous crops on terraces - irrigated**

The grouping of these herbaceous crops at the level 3 is called "Herbaceous crops (non-rice crops)". At level 2 it is grouped into "Crops." These covers have been interpreted equal at the level 2 and above for all editions of the MCSC, and at level 3 for editions 2, 3 and 4 of the MCSC.

In the MCSC-3v1, we can find the category "**Mowing meadows on terraces**" which from the edition3v2 of the MCSC3 disappears from the legend due to the lack of representation in the territory.

## **Greenhouses**

### **Greenhouses on terraces**

The grouping of these categories at level 3 is called "Greenhouses". At level 2 it is grouped into "Crops." These covers have been interpreted equal at level 2

and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC.

### **Crops under transformation Agricultural breaking up**

The grouping of these categories at level 3 is called "Crops under transformation." At level 2 it is grouped into "crops." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 of the MCSC and for editions 3 and 4 of the MCSC.

### **Abandoned crops - forests**

At level 3 of the MCSC-3 and 4, this category is grouped into "Clear forests (non-riparian)", while in the MCSC-2 is grouped into "Abandoned crops - forests". At level 2 and above, in the MCSC-3 and 4 this category is grouped in "Clear forest" and, instead, in the MCSC-1 and 2, in "Crops". This change in levels 3 and above of the MCSC-3 and 4 was made for reasons of compatibility with SIOSE where an old crop next to forest areas was interpreted according to the current cover. Therefore, a direct comparison between editions of the MCSC to assess changes must take into account this different treatment.

### **Abandoned crops – shrublands**

At level 3 of the MCSC 3 and 4, this category is grouped into "Shrublands", while in the MCSC-2 is grouped into "Abandoned crops - Shrublands". At level 2 and above, in the MCSC 3 and 4 the category is grouped in "Shrublands" and, instead, in the MCSC-1 and 2 in "Crops". This change at levels 3 and above of the MCSC 3 and 4 was made for reasons of compatibility with SIOSE where an old crop next to forest areas was interpreted according to the current cover. Therefore, a direct comparison between editions of the MCSC to assess changes must take into account this different treatment.

### **Abandoned crops - grasslands in forest areas Abandoned crops - high mountain grasslands in forest areas**

At level 3 of the MCSC 3 and 4, these categories are grouped into "Meadows and grasslands", while in the MCSC-2 they are grouped into "Abandoned crops - grasslands." At level 2 and above, in MCSC-3 and 4 these categories are grouped into "Meadows and grasslands" and, instead, in MCSC-1 and 2 in "Crops". This change at levels 3 and above of the MCSC 3 and 4 was made for reasons of compatibility with SIOSE where an old crop next to forest areas was interpreted according to the current cover. Therefore, a direct comparison between editions of the MCSC to assess changes must take into account this different treatment.



**Abandoned citrus- grasslands in agricultural areas**  
**Abandoned citrus- grasslands in agricultural areas on terraces**  
**Abandoned non-citric fruit trees - grasslands in agricultural areas**  
**Abandoned non-citric fruit trees - irrigated - non-watered- grasslands in agricultural areas**  
**Abandoned non-citric fruit trees - grasslands in agricultural areas on terraces**  
**Abandoned non-citric fruit trees - irrigated - non-watered- grasslands in agricultural areas on terraces**  
**Abandoned vineyards - grasslands in agricultural areas**  
**Abandoned olive groves - grasslands in agricultural areas**  
**Abandoned olive groves irrigated - non-watered- grasslands in agricultural areas**  
**Abandoned carob groves - grasslands in agricultural areas**  
**Abandoned rice crops irrigated - non-watered- grasslands in agricultural areas**  
**Abandoned other herbaceous crops - grasslands in agricultural areas**  
**Abandoned other herbaceous crops irrigated - non-watered- grasslands in agricultural areas**  
**Abandoned other herbaceous crops - grasslands in agricultural areas on terraces**  
**Abandoned other herbaceous crops irrigated - non-watered- grasslands in agricultural areas on terraces**  
**Abandoned mowing meadows irrigated - non-watered- grasslands in agricultural areas**  
**Abandoned mowing meadows irrigated - non-watered- high mountain grasslands in agricultural areas**  
**Abandoned vineyards - grasslands in agricultural areas on terraces**  
**Abandoned olive groves - grasslands in agricultural areas on terraces**  
**Abandoned olive groves - irrigated - non-watered- grasslands in agricultural areas on terraces**  
**Abandoned carob groves - grasslands in agricultural areas on terraces**

The grouping of these categories at level 3 is called "Abandoned crops - grasslands." At level 2 it is grouped into "Crops." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4 of the MCSC.

In the MCSC-3v1, we can find the following categories of abandoned crops, which, from the edition 3v2 of the MCSC disappear from the legend for lack of representation in the territory: "**Other abandoned herbaceous crops - high mountain grasslands in agricultural areas**", "**Other abandoned herbaceous crops - irrigated - non - watered - high mountain grasslands in agricultural areas**", "**Other abandoned herbaceous crops - high mountain grasslands in agricultural areas on terraces**", "**Other abandoned herbaceous crops - irrigated - non - watered - high mountain grasslands in agricultural areas on terraces**", "**Abandoned mowing meadows - irrigated - non - watered -**

**grasslands in agricultural areas on terraces", "Abandoned mowing meadows - irrigated - non - watered - high mountain grasslands in agricultural areas on terraces".**

### **Market and kitchen garden Residential agricultural settlement**

These categories are absent from the MCSC-1 and 2, in which were interpreted as "Crops" with (most common in the MCSC-2) or without (more common in the MCSC-1) separation of artificial elements and natural vegetation. Therefore, a direct comparison between editions of the MCSC to assess changes must take into account the different treatment.

### **Fish farms and aquacultural crops on the ground**

This category, at level 5, is new in the MCSC-3v2 and 4, and it is a variation of the category of the MCSC-3v1 "Fish farms and aquaculture crop of fresh water". This modification consists in adding the covers located in land from the category "Marine fish farms and aquacultural crops" of MCSC-3v1, which should be taken into account in case of comparing this edition with the others (as we mentioned above, we recommend the use of the edition 3v2, instead of 3v1). This category at level 3 is called "Fish farms and aquacultural on the open pit". These covers have been interpreted equal at level 3 for editions 2 and 3v1 of the MCSC. However, the MCSC-2 differs from the MCSC-3 and 4 at level 2 and above, due to MCSC-3 and 4 (according to SIOSE) consider them as "Urbanized areas" while the MCSC-2 considers them as "Crops". On the other hand, this category is absent from the MCSC-1, in which it was interpreted, at level 2, as the cover where it was surrounded, usually "Crops". Therefore, a comparison, at level 2 and above, between editions of the MCSC to assess changes must take into account this different treatment.

### **Fish farms and aquacultural crops into the sea**

This category is new at level 5 in the MCSC-3v2 and 4, and it is a variation of the category of the MCSC-3v1 "Marine fish farms and aquacultural crops." This modification is that it only includes the covers of this category which are located at sea. This category is absent from the MCSC-1, 2, and 3v1 in which fish farms located at sea were not interpreted. Therefore, a direct comparison between editions of the MCSC to assess changes must take into account this different treatment.

### **Artificial channels Agricultural ponds**

These categories are called equal to the category of level 3. At level 2 they are grouped in "Agricultural channels and ponds". These covers have been

interpreted equal at level 3 and above for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4 of the MCSC. However, in spite that the MCSC-1 included this category at its level 2 of the legend, they were not interpreted and were included in the agricultural terrains. Therefore, a direct comparison between the first and subsequent editions of the MCSC to assess changes must take into account this different treatment.

### **Residential area Isolated houses**

The grouping of these categories at level 3 is known as "Urban residential detached areas" At level 2 it is grouped in "Urbanized areas." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.

### **City centre City expansion Administrative complexes Health facilities Educational facilities Prisons Religious centres Cultural centres**

The grouping of these categories at level 3 is known as "Urban residential compact areas". At level 2 it is grouped in "Urbanized areas." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.

### **Single family houses**

This category is grouped at the level 3 in the "Urban residential compact areas". In the MCSC-2, however, at level 3 it was grouped as "Urban residential detached areas". At level 2 it is grouped in "Urbanized areas." These covers have been interpreted equal at level 2 and above for all editions of the MCSC. Therefore, a direct comparison between editions 2 and 3 and/or 4 of the MCSC to assess changes must take into account this different treatment.

**ATTENTION! This category is under review. The correct correspondence is:**

This category is grouped at level 3 into "Urban residential detached areas". At level 2, are grouped into "Urbanized areas". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4 of the MCSC.

### **Colonies and isolated urban cores**

This category is grouped at the level 3 in the "Urban residential detached areas". In the MCSC-2, however, at level 3 it was grouped as "Urban residential compact areas". At level 2 it is grouped in "Urbanized areas. These covers have been interpreted equal at level 2 and above for all editions of the MCSC. Therefore, a direct comparison between editions 2 and 3 and/or 4 of the MCSC to assess changes must take into account this different treatment.

**ATTENTION! This category is under review. The correct correspondence is:**

This category is grouped at level 3 into "Urban residential compact areas". At level 2, are grouped into "Urbanized areas". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4 of the MCSC.

**Industrial polygon - ordered**

**Industrial polygon - unordered**

**Isolated industries**

**Sawmills**

**Commercial and office complexes**

**Hotel complexes**

**Other constructions**

**Wind power plants**

**Solar power plants**

**Nuclear centrals**

**Thermal power plants**

**Electrical infrastructures**

**Sewage treatment and water purification plants**

**Desalination plants**

**Telecommunications**

**Treatment plants**

The grouping of these categories at level 3 is called "Industrial and commercial areas". At level 2 it is grouped in "Urbanized areas". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4.

A special case is that of "Other Constructions". In the MCSC 3 and 4 this category can be alone, or be part of a composed category. Being a category alone, generally includes the deposits, which in the MCSC-2 were classified as "Commercial and industrial areas". For this reason, at level 3 of the MCSC-3, this category is classified at the same group as it does in the MCSC-2. However, when it is a simple of a composed category, is strictly another type of construction (e.g. paved runways), which only have to do with "Commercial and industrial areas" in those cases that the composed category is of such type. As for level 2, "Urbanized areas" presents no problem for both MCSC-1 and 2. Therefore, a direct comparison at level 3 for editions 2, 3 and 4 of the MCSC on the basis of the category "Other Constructions", cannot treat equally a simple category and a composed category.

## **Plant nurseries**

This category is incorporated the level 5 of the legend since the MCSC-3v2 and it is a segregation of the category "Commercial and office complex" that already existed in the MCSC-3v1. This category is grouped at level 3 into "Industrial and commercial areas". At level 2 is grouped into "Urbanized areas". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, and at level 3 for editions 2, 3 and 4 of the MCSC. As it is a new category, it has been interpreted equal at level 5, for editions 3v2 and 4, but different from edition 3v1 of the MCSC, which was interpreted as "Commercial and office complex."

## **Warehouses for agricultural use Farms**

The grouping of these categories at level 3 is called "Farms". At level 2 it is grouped in "urbanized areas". These covers have been interpreted equal at level 3 and above for editions 2, 3 and 4 of the MCSC. However, in spite of being included at level 2 of the legend of the MCSC-1, often were not interpreted and were included in the agricultural terrains. Therefore, a direct comparison between the first and subsequent editions of the MCSC to assess changes must take into account this different treatment.

## **Dams Cemeteries**

These categories are called equal to the category of level 3. At level 2 they are grouped in "Urbanized areas" These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4 of the MCSC.

## **Big avenues Parking areas**

The grouping of these categories at level 3 is called "Big avenues and parking areas." At level 2 it is grouped in "Urbanized areas." These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4.

## **Urban parks**

This category is grouped at level 3 in the "Urban green areas." At level 2 it is grouped in "Urbanized areas". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4.

## **Urban ponds**

The category urban ponds are named equal to the category of level 3. At level 2 it is grouped in "Urbanized areas." These covers have been interpreted equal at level 3 and above for editions 2, 3 and 4 of the MCSC, and at level 5 for editions 3 and 4 of the MCSC. However, it is absent in the MCSC-1, which were included in the surrounding cover. Therefore, a direct comparison between the first and subsequent editions of the MCSC to assess changes must take into account this different treatment.

## **Motorways and dual carriageways Roads**

These categories are named equal to the respective categories of level 3. At level 2 they are grouped into "Transport network". The MCSC-1 interprets as road network those elements measuring 10 m or more in width; in the case of the MCSC-2, the road network is digitized from 8 m or more; whereas the MCSC-3 and 4 includes all roads catalogued in the 1:50.000 topographic base v.3.1 r.5 from the Cartographic Institute of Catalonia, and those that are not catalogued and measures 15 m or wider.

Another different point between editions is the capture of the bridges of the road network. In the first two editions, the bridges of roads, motorways or dual carriageways were not photointerpreted, but the bottom cover. In this way there was a continuity of covers that were mostly natural, under the bridge; this option is very useful for studies of biological connectors. However, the 3rd edition, and according with SIOSE, still did not pick up the bridges directly on the land cover vector, but they were captured on a separate vector. If the bridge was below the minimum size (500 m<sup>2</sup>), it was not drawn in this separated vector, and instead there was a continuity of the road network. To produce the maps corresponding to different administrative areas, these bridges were incorporated by automatic methods to the land cover vectors, so that the product reflected exactly the upper cover. In the 4th edition, and in order to facilitate the compatibility with SIOSE, bridges are already included when photointerpreting.

We also found differences between the MCSC-1 and other editions when the road network pass through towns: in MCSC-1, the road is cut at the entrance of the town; while in MCSC-2, 3 and 4, roads are maintained on all the way through the town while they are catalogued as road network, i.e., it is not an urban section.

Therefore, a direct comparison between the editions of the MCSC to assess changes must take into account this different treatment.

## **Railroad tracks**

This category is named equal to its category of level 5 and 3. At level 2 is grouped into "Transport network". The MCSC-1 and 2 interpret, in general, only those elements with double track as a rail network; whereas the MCSC-3 and 4 includes the entire rail network both double as one-way, with the exception for one-way roads designed to transport goods, in this case the rail is not interpreted when entering enclosed spaces of industries and logistics.

Another different point between editions is the capture of the bridges of the railroad network. In the first two editions, the bridges of railroads were not photointerpreted, but the bottom cover. In this way there was a continuity of the covers that were mostly natural, under the bridge; this option is very useful for studies of biological connectors. However, the 3rd edition, and according with SIOSE, still did not pick up the bridges directly on the land cover vector, but they were captured on a separate vector. If the bridge was below the minimum surface and width (500 m<sup>2</sup> and 10 m respectively), it was not drawn in this separated vector, and instead there was a continuity of the railroad network. To produce the maps corresponding to different administrative areas, these bridges were incorporated by automatic methods to the land cover vectors, so that the product reflected exactly the upper cover. In the 4th edition, and in order to facilitate the compatibility with SIOSE, bridges are already included when photointerpreting.

Therefore, a direct comparison between the editions of the MCSC to assess changes must take into account this different treatment.

### **Airports Port areas**

These categories are named equal to its respective categories of level 3. At level 2 they are grouped into "Transport network". These covers have been interpreted equal at level 3 and above for editions 2, 3 and 4 and at level 5 of the MCSC for editions 3 and 4. Instead, in the MCSC-1 they are interpreted as "Urbanized areas." Therefore, a direct comparison between the editions of the MCSC to assess changes must take into account this different treatment.

### **Road green areas**

This category is named equal to its respective category of level 3. At level 2 it is grouped into "Transport network". At these levels 2 and 3, editions 2, 3 and 4 of the MCSC have interpreted this category in the same way, like for the level 5, editions 3 and 4 of the MCSC. However, it is absent in the MCSC-1 and 2, where these green areas were interpreted as the type of vegetation present (Grasslands, Shrublands, etc.). Therefore, a comparison at level 2 and above between editions of the MCSC to assess changes must take into account this different treatment.

### **Railroad green areas**

This category is grouped at level 3 into "Railroad tracks". At level 2 it is grouped into "Transport network". This category is absent in the MCSC-1 and 2, where these green areas were interpreted as the type of vegetation present (Grasslands, Shrublands, etc.). Therefore, a comparison at level 2 and above between editions of the MCSC to assess changes must take into account this different treatment.

### **Areas of service in road network**

This category is grouped at level 3 into "Industrial and commercial areas". At level 2 it is grouped in "Urbanized areas". At these levels 2 and 3, editions 2, 3 and 4 of the MCSC have interpreted in the same way like for level 5, for editions 3 and 4 of the MCSC. However, this category is absent in the MCSC-1 and 2, where these areas were interpreted as "Transport network". Therefore, a direct comparison between the first and following editions of the MCSC to assess changes must take into account this different treatment.

### **Bus stations**

This category is grouped at level 3 "Industrial and commercial areas". At level 2 it is grouped in "Urbanized areas" These categories are absent in MCSC-1, which were included into the surrounding covers, in terms of the MCSC-2 in general were also included in the surrounding covers, except for some cases that were considered like at the level 2 and 3 of the MCSC-3. Therefore, a comparison at level 2 and above, between editions of the MCSC to assess changes must take into account this different treatment.

### **Sport areas**

#### **Recreational parks**

These categories are grouped at level 3 into "Sport and leisure areas (except campsites and golf courses)". At level 2, it is grouped into "Sport and leisure areas" in its corresponding level 2 of the legend. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.

### **Campsites**

#### **Golf courses**

This category has the same name at level 5 and 3. At level 2 it is grouped into "Sport and leisure areas". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.



## **Mining extraction areas Dumps**

These categories have the same name at level 2 and 3. These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.

## **Salt works**

This category presents the same name at level 3. These covers have been interpreted equal at level 3 for editions 2, 3 and 4 of the MCSC. At level 2 they are grouped into "Wetlands", however in the MCSC-1 and 2 this category is grouped into "Mining extraction areas". Therefore, a comparison at level 2 and above, between editions of the MCSC to assess changes must take into account this different treatment.

**ATTENTION! This category is under review. The correct correspondence is:**

This category presents the same name at level 3. At level 2 this category is grouped into "Mining extraction areas". These covers have been interpreted equal at level 2 and above for all editions of the MCSC, at level 3 for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC.

## **Non-built urban bare soils Urban areas under construction Earthworks**

These categories are grouped at levels 2 and 3 into "Urban bare soils." These covers have been interpreted equal at level 3 and above for editions 2, 3 and 4 and at level 5 for editions 3 and 4 of the MCSC. Instead, the MCSC-1 mixes the "Forest bare soils" and the "Urban bare soils" as "Bare soils". It should be noted that in the MCSC-1 the differentiation urban-forest bare soils is in process, although there is not a version available online. It should also be said that in MCSC 3 and 4, some areas that should be classified as "Earthworks" have been classified as "Bare soil by anthropic action" since the distinction is not always easy. Therefore, a direct comparison between the first and subsequent editions of the MCSC to assess changes must take into account this different treatment.

## **Simple and composed categories of MCSC-3 and MCSC-4**

Categories of level 5 of the MCSC-3 and 4 legends are divided into two groups: simple (Tables 9 and 10) and composed (Tables 7 and 8). The simple categories are almost entirely natural (agriculture and forestry), while the composed are artificial (City expansion, Isolated industries, Solar power plants,

etc.), or mixtures of both (Market and kitchen garden and Residential and agricultural settlement).

In SIOSE, artificial composed categories are classified as such because they can be made up from 7 types of artificial simple categories relating to:

- Edification: fixed construction for accommodating people, animals, vehicles, machinery, equipment, etc.
- Artificial green areas and urban forest: surface with artificial vegetation, or natural vegetation which presents ordering processes or gardening tasks.
- Artificial water sheet: water surface which occupies a tank built to contain it.
- Avenue, parking or pedestrian area without vegetation: asphalted or cemented place where vehicles run or park and pedestrians can transit.
- Non-built soils: Non asphalted or paved surface, with or without natural vegetation.
- Other constructions: constructions for any other purpose other than accommodate people, animals, vehicles, machinery, equipment, etc.
- Mining extraction and dump areas: terrains strongly altered by human activities

The simple category of "Edification" presents two types of attributes:

- Edification typology (Table 12).
- Construction state (Table 13).

The composed categories which are formed for both artificial and natural cover (Market and kitchen garden and Residential agricultural settlement), can present these categories:

- Edification.
- Artificial water sheet.
- Herbaceous crops.
- Woody crops.
- Forest woodland.

In the case of "Residential agricultural settlement", it must add these other possible categories:

- Mowing meadows.
- Shrublands.

Therefore, to define a composed category in SIOSE, it must assign: the composed category type that it is, the simple category, the type of construction and the building state.

The digitization of artificial categories is not exactly the same between the third and fourth edition of the Map and the previous ones. This difference is because it is needed to make compatible MCSC and SIOSE, since it in Catalonia, the second one derives from the first one. Thus, in the first two editions of the

MCSC, an urban parcel with natural vegetation or crops was classified according to the observed cover, whereas in the MCSC-3 this category is interpreted as the place where the artificial category is placed. For example, a parcel with forest vegetation and not yet constructed, located in a residential area, will correspond to the composed category "Residential area", and to the simple category of SIOSE "Non-built soils". However, and to keep comparability with the first editions, the simple category that is assigned to the MCSC-3 and MCSC-4 is the observed cover. In the example above, it would be the category corresponding to the forest vegetation.

The relationship between simple categories of MCSC-3 and SIOSE is in Table 14. This table is made of the simple categories from Table 6, plus the artificial simple categories (Table 11) required to complete the description of the artificial composed categories. There aren't all the simple natural categories, because when making the step from MCSC to SIOSE it was considered that it was only possible, in urban environments, the presence of the simple categories detailed there.

This is why, to compare the 3rd and 4th editions with the previous ones, it must take into account these peculiarities. Otherwise, there will be an overestimation in the increase of the artificial surface of the MCSC-3 and 4, compared to previous editions.

**Table 1. Hierarchical legend of the MCSC-1.**

LEVEL 2	LEVEL 1F	LEVEL 1
Dense forest (non-riparian)	Dense forest	Forest lands
Riparian forest	Dense forest	Forest lands
Recent reforestations	Dense forest	Forest lands
Poplar plantations	Dense forest	Forest lands
Plane trees plantations	Dense forest	Forest lands
Clear forests (non-riparian)	Clear forest	Forest lands
Shrublands	Shrublands	Forest lands
Wetlands vegetation	Wetlands	Forest lands
Meadows and grasslands	Meadows and grasslands	Forest lands
Recent burned areas	Recent burned areas	Forest lands
Rocky outcrops	Unproductive natural	Forest lands
Screes	Unproductive natural	Forest lands
Forest bare soils	Unproductive natural	Forest lands
Beaches	Unproductive natural	Forest lands
Glaciers and snowdrifts	Unproductive natural	Forest lands
Inland waters	Inland waters	Inland waters
Crops	Crops	Crops
Agricultural channels and ponds	Crops	Crops
Urbanized areas	Unproductive artificial	Unproductive artificial

Urban ponds	Unproductive artificial	Unproductive artificial
Transport network	Unproductive artificial	Unproductive artificial
Sport and leisure areas	Unproductive artificial	Unproductive artificial
Mining extraction areas	Unproductive artificial	Unproductive artificial
Urban bare soils	Unproductive artificial	Unproductive artificial

**Table 2. Hierarchical legend of the MCSC-2.**

LEVEL 3	LEVEL 2	LEVEL 1F	LEVEL 1
Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Non-native conifer plantations	Dense forest (non-riparian)	Dense forest	Forest lands
Eucalyptus plantations	Dense forest (non-riparian)	Dense forest	Forest lands
Clearcutting forests	Dense forest (non-riparian)	Dense forest	Forest lands
Riparian forest	Riparian forest	Dense forest	Forest lands
Recent reforestations	Recent reforestations	Dense forest	Forest lands
Poplar plantations	Poplar plantations	Dense forest	Forest lands
Plane trees plantations	Plane trees plantations	Dense forest	Forest lands
Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Forest buffer strips	Clear forests (non-riparian)	Clear forest	Forest lands
Burned forests	Recent burned areas	Recent burned areas	Forest lands
Shrublands	Shrublands	Shrublands	Forest lands
Coastal wetlands vegetation	Wetlands vegetation	Wetlands	Forest lands
Inland wetlands vegetation	Wetlands vegetation	Wetlands	Forest lands
High mountain peat bogs	Wetlands vegetation	Wetlands	Forest lands
Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Rocky outcrops	Rocky outcrops	Unproductive natural	Forest lands

Screes	Screes	Unproductive natural	Forest lands
Naturals riverbeds	Forest bare soils	Unproductive natural	Forest lands
Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Edges of reservoirs	Forest bare soils	Unproductive natural	Forest lands
Forest tracks and paths	Forest bare soils	Unproductive natural	Forest lands
Beaches	Beaches	Unproductive natural	Forest lands
Glaciers and snowdrifts	Glaciers and snowdrifts	Unproductive natural	Forest lands
Lakes and inland lagoons	Inland waters	Inland waters	Inland waters
Coastal lagoons	Inland waters	Inland waters	Inland waters
Rivers	Inland waters	Inland waters	Inland waters
Reservoirs	Inland waters	Inland waters	Inland waters
Woody crops (non-vineyard)	Crops	Crops	Crops
Vineyards	Crops	Crops	Crops
Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Rice crops	Crops	Crops	Crops
Crops under transformation	Crops	Crops	Crops
Greenhouses	Crops	Crops	Crops
Fish farms and aquacultural crops on the open pit	Crops	Crops	Crops
Abandoned crops - grasslands	Crops	Crops	Crops

Abandoned crops - shrublands	Crops	Crops	Crops
Abandoned crops - forests	Crops	Crops	Crops
Artificial channels	Agricultural channels and ponds	Crops	Crops
Agricultural ponds	Agricultural channels and ponds	Crops	Crops
Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Farms	Urbanized areas	Unproductive artificial	Unproductive artificial
Dams	Urbanized areas	Unproductive artificial	Unproductive artificial
Cemeteries	Urbanized areas	Unproductive artificial	Unproductive artificial
Urban green areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Urban ponds	Urban ponds	Unproductive artificial	Unproductive artificial
Motorways and dual carriageways	Transport network	Unproductive artificial	Unproductive artificial
Roads	Transport network	Unproductive artificial	Unproductive artificial
Airports	Transport network	Unproductive artificial	Unproductive artificial
Railroad tracks	Transport network	Unproductive artificial	Unproductive artificial
Port areas	Transport network	Unproductive artificial	Unproductive artificial
Road green areas	Transport network	Unproductive artificial	Unproductive artificial
Sport and leisure areas (except campsites and golf courses)	Sport and leisure areas	Unproductive artificial	Unproductive artificial



Campsites	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Golf courses	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Mining extraction areas	Mining extraction areas	Unproductive artificial	Unproductive artificial
Salt works	Mining extraction areas	Unproductive artificial	Unproductive artificial
Dumps	Mining extraction areas	Unproductive artificial	Unproductive artificial
Urban bare soils	Urban bare soils	Unproductive artificial	Unproductive artificial

**Table 3. Hierarchical legend of the MCSC-3v1.**

LEVEL 5	LEVEL 4	LEVEL 3	LEVEL 2	LEVEL 1F	LEVEL 1
Stone pine forest (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Maritime pine forest (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Aleppo pine forest (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Austrian pine forest (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Scots pine forest (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Mountain pine forest (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver fir forest (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other conifers (>= 20%cc)	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Evergreen oak forest (>= 20%cc)	Evergreens (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Cork oak forest (>= 20%cc)	Evergreens (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Strawberry tree forest (>= 20%cc)	Evergreens (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other evergreens (>= 20%cc)	Evergreens (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver birch forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Spanish chestnut forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
European beech forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands

Pedunculate oak forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Sessile oak forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Algerian oak forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Pubescent oak forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Portuguese oak forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Pyrenean oak forest (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other deciduous trees (>= 20%cc)	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Stone pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Maritime pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Aleppo pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Austrian pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Scots pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Mountain pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Silver fir forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Other conifers (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Evergreen oak forest (5-20%cc)	Evergreens (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands

Cork oak forest (5-20%cc)	Evergreens (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Strawberry tree forest (5-20%cc)	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Other evergreens (5-20%cc)	Evergreens (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Silver birch forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Spanish chestnut forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
European beech forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Pedunculate oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Sessile oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Algerian oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Pubescent oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Portuguese oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Pyrenean oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Other deciduous trees (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Buffer strip of stone pine	Conifers ( $\geq 20\%cc$ )	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of maritime pine	Conifers ( $\geq 20\%cc$ )	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Aleppo pine	Conifers ( $\geq 20\%cc$ )	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands

Buffer strip of Austrian pine	Conifers (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Scots pine	Conifers (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of mountain pine	Conifers (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of silver fir	Conifers (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of evergreen oak	Evergreens (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of cork oak	Evergreens (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of silver birch	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Spanish chestnut	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of European beech	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Pedunculate oak	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of sessile oak	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Algerian oak	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of pubescent oak	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Portuguese oak	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Pyrenean oak	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of other deciduous trees	Deciduous trees (>= 20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands

Deciduous riparian forests	Deciduous trees. Riverbank	Riparian forest	Riparian forest	Dense forest	Forest lands
Evergreen riparian forests	Evergreens. Riverbank	Riparian forest	Riparian forest	Dense forest	Forest lands
Stone pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Maritime pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Aleppo pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Austrian pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Scots pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Mountain pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver fir plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Non-native conifer plantations	Conifers. Plantation	Plantations de Non-native conifer	Dense forest (non-riparian)	Dense forest	Forest lands
Cork oak plantations	Evergreens. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Spanish chestnut plantations	Deciduous trees. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other deciduous trees plantations	Deciduous trees. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Eucalyptus plantations	Evergreens. Plantation	Eucalyptus plantations	Dense forest (non-riparian)	Dense forest	Forest lands
Poplar plantations	Deciduous trees. Plantation	Poplar plantations	Poplar plantations	Dense forest	Forest lands
Plane tree plantations	Deciduous trees. Plantation	Plane tree plantations	Plane tree plantations	Dense forest	Forest lands
Aleppo pine regeneration	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands

Maritime pine regeneration	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Austrian pine regeneration	Conifers (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Evergreen oak regeneration	Evergreens (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Pubescent oak regeneration	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Portuguese oak regeneration	Deciduous trees (>= 20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Shrublands	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Shrublands on firewalls	Shrublands. Firewall function	Shrublands	Shrublands	Shrublands	Forest lands
Shrublands coming from clearcutting	Shrublands. Clearcutting	Clearcutting forests	Shrublands	Shrublands	Forest lands
Shrublands in riparian vegetation	Shrublands. Riparian vegetation	Shrublands	Shrublands	Shrublands	Forest lands
Coastal wetlands vegetation	Coastal wetlands	Coastal wetlands vegetation	Wetlands vegetation	Wetlands	Forest lands
Inland wetlands vegetation	Inland wetlands	Inland wetlands vegetation	Wetlands vegetation	Wetlands	Forest lands
High mountain peat bogs	Peatbogs	High mountain peat bogs	Wetlands vegetation	Wetlands	Forest lands
Meadows and grasslands	Meadows	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Meadows and grasslands high mountain	Meadows. High mountain	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Meadows and grasslands on firewalls	Meadows. Firewall function	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Meadows and grasslands high mountain on firewalls	Meadows. High mountain. Firewall function	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Meadows and grasslands coming from clearcutting	Meadows. Clearcutting	Clearcutting forests	Meadows and grasslands	Meadows and grasslands	Forest lands

Meadows and grasslands high mountain coming from clearcutting	Meadows. High mountain. Clearcutting	Clearcutting forests	Meadows and grasslands	Meadows and grasslands	Forest lands
Shrub vegetation of dunes and sandy areas	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Herbaceous vegetation of dunes and sandy areas	Meadows	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Burned areas	Burned areas	Burned areas	Burned areas	Burned areas	Burned areas
Sea cliffs	Sea cliffs	Rocky outcrops	Rocky outcrops	Unproductive natural	Forest lands
Rocky outcrops	Rocky outcrops	Rocky outcrops	Rocky outcrops	Unproductive natural	Forest lands
Scree	Scree	Scree	Scree	Unproductive natural	Forest lands
Natural riverbeds	Natural riverbeds	Natural riverbeds	Forest bare soils	Unproductive natural	Forest lands
Bare soil on firewalls	Bare soil. Firewalls	Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Eroded soil by natural agents	Bare soil. Eroded areas	Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Bare soil by anthropic action	Bare soil. Eroded areas	Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Beaches	Beaches, dunes and sandy areas	Beaches	Beaches	Unproductive natural	Forest lands
Glaciers and snowdrifts	Glaciers and permanent snow	Glaciers and snowdrifts	Glaciers and snowdrifts	Unproductive natural	Forest lands
Lakes and inland lagoons	Lakes and lagoons	Lakes and inland lagoons	Inland waters	Inland waters	Inland waters
Coastal lagoons	Coastal lagoons	Coastal lagoons	Inland waters	Inland waters	Inland waters
Rivers	Water courses	Rivers	Inland waters	Inland waters	Inland waters
Reservoirs	Reservoirs	Reservoirs	Inland waters	Inland waters	Inland waters
Sea	Seas and oceans	Sea	Sea	Sea	Sea
Citrus	Citrus	Woody crops (non-vineyard)	Crops	Crops	Crops
Non-citrus	Non-citric fruit trees	Woody crops (non-vineyard)	Crops	Crops	Crops



Non - citrus - irrigated	Non - citric fruit trees. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Vineyards	Vineyards	Vineyards	Crops	Crops	Crops
Olive groves	Olive groves	Woody crops (non-vineyard)	Crops	Crops	Crops
Olive groves - irrigated	Olive groves. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Carob groves	Non - citric fruit trees	Woody crops (non-vineyard)	Crops	Crops	Crops
Rice crops	Rice crops	Rice crops	Crops	Crops	Crops
Other herbaceous crops	Herbaceous crops different from rice	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Other herbaceous crops irrigated	Herbaceous crops different from rice. Irrigated land - watered	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Mowing meadows	Mowing meadows	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Crops under transformation	Herbaceous crops different from rice	Crops under transformation	Crops	Crops	Crops
Agricultural breaking up	Herbaceous crops different from rice	Crops under transformation	Crops	Crops	Crops
Greenhouses	Herbaceous crops different from rice. Forced cultivation	Greenhouses	Crops	Crops	Crops
Garden crops under plastic	Herbaceous crops different from rice. Forced cultivation	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Citrus on terraces	Citrus. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops
Non - citrus on terraces	Non - citric fruit trees. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops

Non-citrus on terraces - irrigated	Non - citric fruit trees. Crops on terraces or terraced. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Vineyards on terraces	Vineyards. Crops on terraces or terraced	Vineyards	Crops	Crops	Crops
Olive groves on terraces	Olive groves. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops
Olive groves on terraces - irrigated	Olive groves. Crops on terraces or terraced. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Carob groves on terraces	Non - citric fruit trees. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops
Other herbaceous crops on terraces	Herbaceous crops different from rice. Crops on terraces or terraced	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Other herbaceous crops on terraces - irrigated	Herbaceous crops different from rice. Crops on terraces or terraced. Irrigated land - watered	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Mowing meadows on terraces	Mowing meadows. Crops on terraces or terraced	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Abandoned crops - forests	Shrublands. Provenance from crops	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Abandoned crops - shrublands	Shrublands. Provenance from crops	Shrublands	Shrublands	Shrublands	Forest lands
Abandoned crops - grasslands in forest areas	Meadows. Provenance from crops	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Abandoned crops - high mountain grasslands in forest areas	Meadows. High mountain. Provenance from crops	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands

Abandoned citrus-grasslands in agricultural areas	Citrus	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned citrus-grasslands in agricultural areas on terraces	Citrus. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - grasslands in agricultural areas	Non - citric fruit trees	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - irrigated - non-watered - grasslands in agricultural areas	Non - citric fruit trees. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - grasslands in agricultural areas on terraces	Non - citric fruit trees. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - irrigated - non-watered - grasslands in agricultural areas on terraces	Non - citric fruit trees. Crops on terraces or terraced. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned vineyards - grasslands in agricultural areas	Vineyards	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - grasslands in agricultural areas	Olive groves	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - irrigated - non-watered - grasslands in agricultural areas	Olive groves. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned carob groves - grasslands in agricultural areas	Non - citric fruit trees	Abandoned crops - grasslands	Crops	Crops	Crops

Abandoned rice crops. Irrigated - non-watered-grasslands in agricultural areas	Rice. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops - grasslands in agricultural areas	Herbaceous crops different from rice	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops. Irrigated - non-watered-grasslands in agricultural areas	Herbaceous crops different from rice. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops - high mountain grasslands in agricultural areas	Herbaceous crops different from rice	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops. Irrigated - non-watered - high mountain grasslands in agricultural areas	Herbaceous crops different from rice. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops - high mountain grasslands in agricultural areas on terraces	Herbaceous crops different from rice. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops. Irrigated - non-watered - high mountain grasslands in agricultural areas on terraces	Herbaceous crops different from rice. Crops on terraces or terraced. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops

Other abandoned herbaceous crops - grasslands in agricultural areas on terraces	Herbaceous crops different from rice. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops. Irrigated - non-watered - grasslands in agricultural areas on terraces	Herbaceous crops different from rice. Crops on terraces or terraced. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned mowing meadows. Irrigated - non-watered - grasslands in agricultural areas	Mowing meadows. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned mowing meadows. Irrigated - non-watered - high mountain grasslands in agricultural areas	Mowing meadows. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned vineyards - grasslands in agricultural areas on terraces	Vineyards. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - grasslands in agricultural areas on terraces	Olive groves. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - irrigated - non-watered - grasslands in agricultural areas on terraces	Olive groves. Crops on terraces or terraced. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned carob groves - grasslands in agricultural areas on terraces	Non - citric fruit trees .Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops

Abandoned mowing meadows. Irrigated - non-watered - grasslands in agricultural areas on terraces	Mowing meadows. Crops on terraces or terraced. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned mowing meadows. Irrigated - non-watered - high mountain grasslands in agricultural areas on terraces	Mowing meadows. Crops on terraces or terraced. Irrigated - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Greenhouses on terraces	Herbaceous crops different from rice. Forced cultivation. Crops on terraces or terraced	Greenhouses	Crops	Crops	Crops
Market and kitchen garden	Market garden	Market and kitchen garden	Market and kitchen garden	Market and kitchen garden	Market and kitchen garden
Residential agricultural settlement	Residential agricultural settlement	Residential agricultural settlement	Residential agricultural settlement	Residential agricultural settlement	Residential agricultural settlement
Fresh water fish farms and aquacultural crops	Fish farms	Fish farms and aquacultural crops on the open pit	Urbanized areas	Unproductive artificial	Unproductive artificial
Marine fish farms and aquacultural crops	Fish farms	Fish farms and aquacultural crops into the sea	Marine fish farms and aquacultural crops	Marine fish farms and aquacultural crops	Marine fish farms and aquacultural crops
Artificial channels	Pipes and channels	Artificial channels	Agricultural channels and ponds	Crops	Crops
Agricultural ponds	Artificial sheet of water	Agricultural ponds	Agricultural channels and ponds	Crops	Crops
Residential area	Detached	Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
City centre	City centre	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
City expansion	City expansion	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial

Single family houses	City expansion	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Colonies and isolated urban cores	Detached	Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Isolated houses	Detached	Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Industrial polygon - ordered	Industrial polygon - ordered	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Industrial polygon - unordered	Industrial polygon - unordered	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Isolated industries	Isolated industries	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Sawmills	Forestry	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Commercial and office complexes	Commercial and office	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Hotel complexes	Hotel complexes	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Other constructions	Other constructions	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Warehouses for agricultural use	Agricultural / Livestock	Farms	Urbanized areas	Unproductive artificial	Unproductive artificial
Farms	Agricultural / Livestock	Farms	Urbanized areas	Unproductive artificial	Unproductive artificial
Dams	Hydroelectric	Dams	Urbanized areas	Unproductive artificial	Unproductive artificial
Cemeteries	Cemeteries	Cemeteries	Urbanized areas	Unproductive artificial	Unproductive artificial
Big avenues	Avenue, parking or pedestrian area without vegetation	Big avenues and parking areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Parking areas	Avenue, parking or pedestrian area without vegetation	Big avenues and parking areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Urban parks	Urban parks	Urban green areas	Urbanized areas	Unproductive artificial	Unproductive artificial

Urban ponds	Artificial sheet of water	Urban ponds	Urban ponds	Unproductive artificial	Unproductive artificial
Motorways and dual carriageways	Road network	Motorways and dual carriageways	Transport network	Unproductive artificial	Unproductive artificial
Roads	Road network	Roads	Transport network	Unproductive artificial	Unproductive artificial
Airports	Airport	Airports	Transport network	Unproductive artificial	Unproductive artificial
Railroad tracks	Railroad network	Railroad tracks	Transport network	Unproductive artificial	Unproductive artificial
Port areas	Port	Port areas	Transport network	Unproductive artificial	Unproductive artificial
Road green areas	Road network	Road green areas	Transport network	Unproductive artificial	Unproductive artificial
Railroad green areas	Railroad network	Railroad tracks	Transport network	Unproductive artificial	Unproductive artificial
Areas of service in road network	Road network	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Bus stations	Road network	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Sport areas	Sport	Sport and leisure areas (except campsites and golf courses)	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Recreational parks	Recreational park	Sport and leisure areas (except campsites and golf courses)	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Campsites	Campsite	Campsites	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Golf courses	Golf course	Golf courses	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Administrative complexes	Institutional administrative	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Health facilities	Sanitary	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Educational facilities	Education	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Prisons	Penitentiary	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Religious centres	Religious	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial



Cultural centres	Cultural	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Wind power plants	Wind energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Solar power plants	Solar energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Nuclear power plants	Nuclear energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Thermal power plants	Thermal energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Electrical infrastructures	Electric energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Sewage treatment and water purification plants	Sewage treatment and water purification plants	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Desalination plants	Desalination plants	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Telecommunications	Telecommunications	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Mining extraction areas	Mining extractive	Mining extraction areas	Mining extraction areas	Unproductive artificial	Unproductive artificial
Salt works	Salt works	Salt works	Wetlands vegetation	Wetlands	Forest lands
Dumps	Landfills and slag heaps	Dumps	Mining extraction areas	Unproductive artificial	Unproductive artificial
Treatment plants	Treatment plants	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Non-built urban bare soils	Non-built soils	Urban bare soils	Urban bare soils	Unproductive artificial	Unproductive artificial
Urban areas under construction	Non-built soils	Urban bare soils	Urban bare soils	Unproductive artificial	Unproductive artificial
Earthworks	Extraction or pouring areas	Urban bare soils	Urban bare soils	Unproductive artificial	Unproductive artificial

**Table 4. Hierarchical legend of the MCSC-3v2 and MCSC-4.**

LEVEL 5	LEVEL 4	LEVEL 3	LEVEL 2	LEVEL 1F	LEVEL 1
Stone pine forest (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Maritime pine forest (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Aleppo pine forest (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Austrian pine forest (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Scots pine forest (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Mountain pine forest (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver fir forest (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other conifers (>=20%cc)	Conifers (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Evergreen oak forest (>=20%cc)	Evergreens (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Cork oak forest (>=20%cc)	Evergreens (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Strawberry tree forest (>=20%cc)	Evergreens (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other evergreens (>=20%cc)	Evergreens (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver birch forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Spanish chestnut forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
European beech forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Pedunculate oak forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands

Sessile oak forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Algerian oak forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Pubescent oak forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Portuguese oak forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Pyrenean oak forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Common hazel forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Common ash forest (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other deciduous trees (>=20%cc)	Deciduous trees (>=20%cc)	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Deciduous riparian forests (>=20%cc)	Deciduous trees (>=20%cc). Riparian vegetation	Riparian dense forest	Riparian dense forest	Dense forest	Forest lands
Stone pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Maritime pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Aleppo pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Austrian pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Scots pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Mountain pine forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Silver fir forest (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Other conifers (5-20%cc)	Conifers (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands

Evergreen oak forest (5-20%cc)	Evergreens (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Cork oak forest (5-20%cc)	Evergreens (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Strawberry tree forest (5-20%cc)	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Other evergreens (5-20%cc)	Evergreens (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Silver birch forests (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Spanish chestnut forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
European beech forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Pedunculate oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Sessile oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Algerian oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Pubescent oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Portuguese oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Pyrenean oak forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Common hazel forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Common ash forest (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Other deciduous trees (5-20%cc)	Deciduous trees (5-20%cc)	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forest	Forest lands
Deciduous riparian forests (5-20%cc)	Deciduous trees (5-20%cc). Riparian vegetation	Riparian clear forest	Riparian clear forest	Clear forest	Forest lands

Buffer strip of stone pine	Conifers (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of maritime pine	Conifers (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Aleppo pine	Conifers (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Austrian pine	Conifers (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Scots pine	Conifers (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of evergreen oak	Evergreens (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of cork oak	Evergreens (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Spanish chestnut	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of European beech	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of pedunculate oak	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of sessile oak	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Algerian oak	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of pubescent oak	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of Portuguese oak	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Buffer strip of other deciduous trees	Deciduous trees (>=20%cc)	Forest buffer strips	Dense forest (non-riparian)	Dense forest	Forest lands
Stone pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Maritime pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Aleppo pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands

Austrian pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Scots pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Mountain pine plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver fir plantations	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Forest nurseries	Conifers. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Non-native conifer plantations	Conifers. Plantation	Non-native coniferous plantations	Dense forest (non-riparian)	Dense forest	Forest lands
Cork oak plantations	Evergreens. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Spanish chestnut plantations	Deciduous trees. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Other deciduous trees plantations	Deciduous trees. Plantation	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Eucalyptus plantations	Evergreens. Plantation	Eucalyptus plantations	Dense forest (non-riparian)	Dense forest	Forest lands
Poplar plantations	Deciduous trees. Plantation	Poplar plantation	Poplar plantation	Dense forest	Forest lands
Plane tree plantations	Deciduous trees. Plantation	Plane tree plantation	Plane tree plantation	Dense forest	Forest lands
Aleppo pine regeneration	Conifers ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Maritime pine regeneration	Conifers ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Austrian pine regeneration	Conifers ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Scots pine regeneration	Conifers ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Mountain pine regeneration	Conifers ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver fir regeneration	Conifers ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands

Evergreen oak regeneration	Evergreens ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Silver birch regeneration	Deciduous trees ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
European beech regeneration	Deciduous trees ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Pubescent oak regeneration	Deciduous trees ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Portuguese oak regeneration	Deciduous trees ( $\geq 20\%cc$ )	Dense forest (non-riparian)	Dense forest (non-riparian)	Dense forest	Forest lands
Shrublands	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Shrublands under electric lines	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Buffer strip of shrublands	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Shrublands on firewalls	Shrublands. Firewall function	Shrublands	Shrublands	Shrublands	Forest lands
Shrublands coming from clearcutting	Shrublands. Clearcutting	Shrublands - clearcutting forest	Shrublands	Shrublands	Forest lands
Shrublands in riparian vegetation	Shrublands. Riparian vegetation	Shrublands	Shrublands	Shrublands	Forest lands
Reed beds	Shrublands. Riparian vegetation	Shrublands	Shrublands	Shrublands	Forest lands
Coastal wetlands vegetation	Coastal wetlands	Coastal wetlands vegetation	Wetlands	Wetlands	Forest lands
Inland wetlands vegetation	Inland wetlands	Inland wetlands vegetation	Wetlands	Wetlands	Forest lands
High mountain peat bogs	Peat bogs	High mountain peat bogs	Wetlands	Wetlands	Forest lands
Salt works	Salt works	Salt works	Wetlands	Wetlands	Forest lands
Meadows and grasslands	Meadows	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Meadows and grasslands under electric lines	Meadows	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Buffer strip of meadows and grasslands	Meadows	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands

High mountain meadows and grasslands	Meadows. High mountain	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
High mountain meadows and grasslands under electric lines	Meadows. High mountain	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Meadows and grasslands on firewalls	Meadows. Firewall function	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Meadows and grasslands coming from clearcutting	Meadows. Clearcutting	Meadows and grasslands - clearcutting forests	Meadows and grasslands	Meadows and grasslands	Forest lands
High mountain meadows and grasslands coming from clearcutting	Meadows. High mountain. Clearcutting	Meadows and grasslands - clearcutting forests	Meadows and grasslands	Meadows and grasslands	Forest lands
Shrub vegetation of dunes and sandy areas	Shrublands	Shrublands	Shrublands	Shrublands	Forest lands
Herbaceous vegetation of dunes and sandy areas	Meadows	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Burned areas	Burned areas	Burned areas	Burned areas	Burned areas	Burned areas
Sea cliffs	Sea cliffs	Rocky outcrops	Rocky outcrops	Unproductive natural	Forest lands
Rocky outcrops	Rocky outcrops	Rocky outcrops	Rocky outcrops	Unproductive natural	Forest lands
Screes	Screes	Screes	Screes	Unproductive natural	Forest lands
Naturals riverbeds	Naturals riverbeds	Naturals riverbeds	Forest bare soils	Unproductive natural	Forest lands
Bare soil in firewalls	Bare soil. Firewalls	Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Eroded soil by natural agents	Bare soil. Eroded areas	Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Bare soil by anthropic action	Bare soil. Eroded areas	Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Bare soil under electric lines	Bare soil. Eroded areas	Forest bare soils	Forest bare soils	Unproductive natural	Forest lands
Beaches	Beaches, dunes and sandy areas	Beaches	Beaches	Unproductive natural	Forest lands



Glaciers and snowdrifts	Glaciers and permanent snow	Glaciers and snowdrifts	Glaciers and snowdrifts	Unproductive natural	Forest lands
Lakes and inland lagoons	Lakes and lagoons	Lakes and inland lagoons	Inland waters	Inland waters	Inland waters
Coastal lagoons	Coastal lagoons	Coastal lagoons	Inland waters	Inland waters	Inland waters
Rivers	Water courses	Rivers	Inland waters	Inland waters	Inland waters
Reservoirs	Reservoirs	Reservoirs	Inland waters	Inland waters	Inland waters
Sea	Seas and oceans	Sea	Sea	Sea	Sea
Citrus	Citrus	Woody crops (non-vineyard)	Crops	Crops	Crops
Non-citric fruit trees	Non-citric fruit trees	Woody crops (non-vineyard)	Crops	Crops	Crops
Non-citric fruit trees - irrigated	Non-citric fruit trees. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Agricultural nurseries	Non-citric fruit trees. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Vineyards	Vineyards	Vineyards	Crops	Crops	Crops
Olive groves	Olive groves	Woody crops (non-vineyard)	Crops	Crops	Crops
Olive groves - irrigated	Olive groves. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Carob groves	Non-citric fruit trees	Woody crops (non-vineyard)	Crops	Crops	Crops
Carob groves - irrigated	Non-citric fruit trees. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Rice crops	Rice	Rice crops	Crops	Crops	Crops
Other herbaceous crops	Herbaceous crops different from rice	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Other herbaceous crops - irrigated	Herbaceous crops different from rice. Irrigated land - watered	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Mowing meadows	Mowing meadows	Herbaceous crops (non-rice crops)	Crops	Crops	Crops

Crops under transformation	Herbaceous crops different from rice	Crops under transformation	Crops	Crops	Crops
Agricultural breaking up	Herbaceous crops different from rice	Crops under transformation	Crops	Crops	Crops
Greenhouses	Herbaceous crops different from rice. Forced cultivation	Greenhouses	Crops	Crops	Crops
Garden crops under plastic	Herbaceous crops different from rice. Forced cultivation	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Citrus on terraces	Citrus. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops
Non-citrus on terraces	Non-citric fruit trees. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops
Non-citrus on terraces - irrigated	Non-citric fruit trees. Crops on terraces or terraced. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Vineyards on terraces	Vineyards. Crops on terraces or terraced	Vineyards	Crops	Crops	Crops
Olive groves on terraces	Olive groves. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops
Olive groves on terraces - irrigated	Olive groves. Crops on terraces or terraced. Irrigated land - watered	Woody crops (non-vineyard)	Crops	Crops	Crops
Carob groves on terraces	Non-citric fruit trees. Crops on terraces or terraced	Woody crops (non-vineyard)	Crops	Crops	Crops
Other herbaceous crops on terraces	Herbaceous crops different from rice. Crops on terraces or terraced	Herbaceous crops (non-rice crops)	Crops	Crops	Crops

Other herbaceous crops on terraces - irrigated	Herbaceous crops different from rice. Crops on terraces or terraced. Irrigated land - watered	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Abandoned crops - forests	Shrublands. Provenance from crops	Clear forests (non-riparian)	Clear forests (non-riparian)	Clear forests	Forest lands
Abandoned crops - shrublands	Shrublands. Provenance from crops	Shrublands	Shrublands	Shrublands	Forest lands
Abandoned crops - grasslands in forest areas	Meadows. Provenance from crops	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Abandoned crops - high mountain grasslands in forest areas	Meadows. High mountain. Provenance from crops	Meadows and grasslands	Meadows and grasslands	Meadows and grasslands	Forest lands
Abandoned citrus - grasslands in agricultural areas	Citrus	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned citrus - grasslands in agricultural areas on terraces	Citrus. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - grasslands in agricultural areas	Non-citric fruit trees	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - irrigated - non-watered - grasslands in agricultural areas	Non-citric fruit trees. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - grasslands in agricultural areas on terraces	Non-citric fruit trees. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned non-citrus - irrigated - non-watered - grasslands in agricultural areas on terraces	Non-citric fruit trees. Crops on terraces or terraced. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops

Abandoned vineyards - grasslands in agricultural areas	Vineyards	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - grasslands in agricultural areas	Olive groves	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - irrigated - non-watered - grasslands in agricultural areas	Olive groves. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned carob groves - grasslands in agricultural areas	Non-citric fruit trees	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned rice crops - irrigated - non-watered - grasslands in agricultural areas	Rice. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops - grasslands in agricultural areas	Herbaceous crops different from rice	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops - irrigated - non-watered - grasslands in agricultural areas	Herbaceous crops different from rice. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops - grasslands in agricultural areas	Herbaceous crops different from rice. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Other abandoned herbaceous crops - irrigated - non-watered - grasslands in agricultural areas on terraces	Herbaceous crops different from rice. Crops on terraces or terraced. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops

Abandoned mowing meadows - irrigated - non-watered - grasslands in agricultural areas	Mowing meadows. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned mowing meadows - irrigated - non-watered - high mountain grasslands in agricultural areas	Mowing meadows. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned vineyards - grasslands in agricultural areas on terraces	Vineyards. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - grasslands in agricultural areas on terraces	Olive groves. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned olive groves - irrigated - non-watered - grasslands in agricultural areas on terraces	Olive groves. Crops on terraces or terraced. Irrigated land - non-watered	Abandoned crops - grasslands	Crops	Crops	Crops
Abandoned carob groves - grasslands in agricultural areas	Non-citric fruit trees. Crops on terraces or terraced	Abandoned crops - grasslands	Crops	Crops	Crops
Greenhouses on terraces	Herbaceous crops different from rice. Forced cultivation. Crops on terraces or terraced	Greenhouses	Crops	Crops	Crops
Market and kitchen garden	Market garden	Herbaceous crops (non-rice crops)	Crops	Crops	Crops
Residential agricultural settlement	Residential agricultural settlement	Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Fish farms and aquacultural crops on the ground	Fish farms	Fish farms and aquacultural crops on the open pit	Urbanized areas	Unproductive artificial	Unproductive artificial

Fish farms and aquacultural crops into the sea	Fish farms	Fish farms and aquacultural crops into the sea	Urbanized areas	Unproductive artificial	Unproductive artificial
Artificial channels	Pipes and channels	Artificial channels	Agricultural channels and ponds	Unproductive artificial	Unproductive artificial
Agricultural ponds	Artificial sheet of water	Agricultural ponds	Agricultural channels and ponds	Unproductive artificial	Unproductive artificial
Residential area	Detached	Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
City centre	City centre	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
City expansion	City expansion	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Single family houses	City expansion	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Colonies and isolated urban cores	Detached	Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Isolated houses	Detached	Urban residential detached areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Industrial polygon - ordered	Industrial polygon - ordered	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Industrial polygon - unordered	Industrial polygon - unordered	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Isolated industries	Isolated industries	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Sawmills	Forestry	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Commercial and office complexes	Commercial and office	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Plant nurseries	Commercial and office	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Hotel complexes	Hotel complexes	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Other constructions	Other constructions	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial

Warehouses for agricultural use	Agricultural / Livestock	Farms	Urbanized areas	Unproductive artificial	Unproductive artificial
Farms	Agricultural / Livestock	Farms	Urbanized areas	Unproductive artificial	Unproductive artificial
Dams	Hydroelectric	Dams	Urbanized areas	Unproductive artificial	Unproductive artificial
Cemeteries	Cemeteries	Cemeteries	Urbanized areas	Unproductive artificial	Unproductive artificial
Big avenues	Avenue, parking or pedestrian area without vegetation	Big avenues and parking areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Parking areas	Avenue, parking or pedestrian area without vegetation	Big avenues and parking areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Urban parks	Urban parks	Urban green areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Urban ponds	Artificial sheet of water	Urban ponds	Urban ponds	Unproductive artificial	Unproductive artificial
Motorways and dual carriageways	Road network	Motorways and dual carriageways	Transport network	Unproductive artificial	Unproductive artificial
Roads	Road network	Roads	Transport network	Unproductive artificial	Unproductive artificial
Airports	Airport	Airports	Transport network	Unproductive artificial	Unproductive artificial
Railroad tracks	Railroad network	Railroad tracks	Transport network	Unproductive artificial	Unproductive artificial
Port areas	Port	Port areas	Transport network	Unproductive artificial	Unproductive artificial
Road green areas	Road network	Road green areas	Transport network	Unproductive artificial	Unproductive artificial
Railroad green areas	Railroad network	Railroad green areas	Transport network	Unproductive artificial	Unproductive artificial
Areas of service in road network	Road network	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Bus stations	Road network	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial

Sport areas	Sport	Sport and leisure areas (except campsites and golf courses)	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Recreational parks	Recreational park	Sport and leisure areas (except campsites and golf courses)	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Campsites	Campsite	Campsites	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Golf courses	Golf course	Campsites	Sport and leisure areas	Unproductive artificial	Unproductive artificial
Administrative complexes	Institutional administrative	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Health facilities	Sanitary	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Educational facilities	Education	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Prisons	Penitentiary	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Religious centres	Religious	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Cultural centres	Cultural	Urban residential compact areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Wind power plants	Wind energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Solar power plants	Solar energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Nuclear power plants	Nuclear energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Thermal power plants	Thermal energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Electrical infrastructures	Electric energy	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Sewage treatment and water purification plants	Sewage treatment and water purification plants	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial



Desalination plants	Desalination plants	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Telecommunications	Telecommunications	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Mining extraction areas	Mining extractive	Mining extraction areas	Mining extraction areas	Unproductive artificial	Unproductive artificial
Dumps	Landfills and slag heaps	Dumps	Mining extraction areas	Unproductive artificial	Unproductive artificial
Treatment plants	Treatment plants	Industrial and commercial areas	Urbanized areas	Unproductive artificial	Unproductive artificial
Non-built urban bare soils	Non-built soils	Urban bare soils	Urban bare soils	Unproductive artificial	Unproductive artificial
Urban areas under construction	Non-built soils	Urban bare soils	Urban bare soils	Unproductive artificial	Unproductive artificial
Earthworks	Extraction or pouring areas	Urban bare soils	Urban bare soils	Unproductive artificial	Unproductive artificial

**Table 5. Categories of the MCSC-3v1 with different interpretation respects to the MCSC-1 and 2, according to the common level of maximum definition.**

Level 5 category	Differences with MCSC-2	Differences with MCSC-1
Strawberry tree forest (>= 20%cc)	Yes	Yes
Buffer strip of stone pine	Yes	Yes
Buffer strip of maritime pine	Yes	Yes
Buffer strip of Aleppo pine	Yes	Yes
Buffer strip of Austrian pine	Yes	Yes
Buffer strip of Scots pine	Yes	Yes
Buffer strip of mountain pine <sup>1</sup>	-	-
Buffer strip of silver fir <sup>1</sup>	-	-
Buffer strip of evergreen oak	Yes	Yes
Buffer strip of cork oak	Yes	Yes
Buffer strip of silver birch <sup>1</sup>	-	-
Buffer strip of Spanish chestnut	Yes	Yes
Buffer strip of European beech	Yes	Yes
Buffer strip of Pedunculate oak	Yes	Yes
Buffer strip of sessile oak	Yes	Yes
Buffer strip of Algerian oak	Yes	Yes
Buffer strip of pubescent oak	Yes	Yes
Buffer strip of Portuguese oak	Yes	Yes
Buffer strip of Pyrenean oak <sup>1</sup>	-	-
Buffer strip of other deciduous trees	Yes	Yes
Deciduous riparian forests <sup>2</sup>	No	Yes
Evergreens riparian forests <sup>1</sup>	-	-
Poplar plantations <sup>2</sup>	No	Yes
Plane trees plantations <sup>2</sup>	No	Yes
Aleppo pine regeneration	Yes	Yes
Maritime pine regeneration	Yes	Yes
Austrian pine regeneration	Yes	Yes
Evergreen oak regeneration	Yes	Yes
Pubescent oak regeneration	Yes	Yes
Portuguese oak regeneration	Yes	Yes
Shrublands coming from clearcutting	Yes	Yes
Meadows and grasslands coming from clearcutting	Yes	Yes

Meadows and grasslands high mountain coming from clearcutting	Yes	Yes
Burned areas	Yes	No
Natural riverbeds	No	Yes
Bare soil on firewalls	No	Yes
Eroded soil by natural agents	No	Yes
Bare soil by anthropic action	No	Yes
Lakes and inland lagoons	Yes	No
Coastal lagoons	Yes	No
Sea	Yes	Yes
Abandoned crops - forests	Yes	Yes
Abandoned crops – shrublands	Yes	Yes
Abandoned crops - grasslands in forest areas	Yes	Yes
Abandoned crops - high mountain grasslands in forest areas	Yes	Yes
Market and kitchen garden	Yes	Yes
Residential agricultural settlement	Yes	Yes
Fresh water fish farms and aquacultural crops	Yes	Yes
Marine fish farms and aquacultural crops	Yes	Yes
Artificial channels	No	Yes
Agricultural ponds	No	Yes
Single family houses <sup>3</sup>	Yes	No
Colonies and isolated urban cores <sup>3</sup>	Yes	No
Other constructions <sup>4</sup>	Yes	Yes
Warehouses for agricultural use	No	Yes
Farms	No	Yes
Urban ponds	No	Yes
Road green areas	No	Yes
Railroad green areas	Yes	Yes
Areas of service in road network	No	Yes
Bus stations	Yes	Yes
Salt works	Yes	Yes
Non-built urban bare soils	Yes	Yes
Urban areas under construction	Yes	Yes
Earthworks	Yes	Yes

<sup>1</sup> These categories are only specific to the MCSC-3v1. In fact, it has not found any surface with them in Catalonia. For this reason they are not included in any other MCSC edition.

<sup>2</sup> The MCSC-3 only differs from the MCSC-1 in a zone which corresponds, more or less, to Barcelona province.

<sup>3</sup> The differences between MCSC-2 and 3 are due to an adaptation of the SIOSE legend, which will be changed to make these editions completely compatible at common levels.

<sup>4</sup> More than differences between editions, it is a warning of a possible mix between the category with simple treatment, or composed category.

**Table 6. Categories of the MCSC-3v2 and MCSC-4 with different interpretation respect to the MCSC-1, 2 and 3v1, according to the common level of maximum definition.**

Level 5 category	Differences with MCSC-3v1	Differences with MCSC-2	Differences with MCSC-1
Other deciduous trees (>= 20%cc)	Yes	No	No
Other deciduous trees (5-20%cc)	Yes	No	No
Common hazel forest (>= 20%cc)	Yes	No	No
Common hazel forest (5-20%cc)	Yes	No	No
Common ash forest (>= 20%cc)	Yes	No	No
Common ash forest (5-20%cc)	Yes	No	No
Strawberry tree forest (>= 20%cc)	No	Yes	Yes
Buffer strip of stone pine	No	Yes	Yes
Buffer strip of maritime pine	No	Yes	Yes
Buffer strip of Aleppo pine	No	Yes	Yes
Buffer strip of Austrian pine	No	Yes	Yes
Buffer strip of Scots pine	No	Yes	Yes
Buffer strip of evergreen oak	No	Yes	Yes
Buffer strip of cork oak	No	Yes	Yes
Buffer strip of Spanish chestnut	No	Yes	Yes
Buffer strip of European beech	No	Yes	Yes
Buffer strip of Pedunculate oak	No	Yes	Yes
Buffer strip of sessile oak	No	Yes	Yes
Buffer strip of Algerian oak	No	Yes	Yes
Buffer strip of pubescent oak	No	Yes	Yes
Buffer strip of Portuguese oak	No	Yes	Yes
Buffer strip of other deciduous trees	No	Yes	Yes
Deciduous riparian forests (>= 20%cc) <sup>1</sup>	Yes	Yes	Yes
Deciduous riparian forests (5-20%cc) <sup>1</sup>	Yes	Yes	Yes
Poplar plantations <sup>1</sup>	No	No	Yes
Plane trees plantations <sup>1</sup>	No	No	Yes
Forest nurseries	Yes	No	No
Aleppo pine regeneration	No	Yes	Yes
Maritime pine regeneration	No	Yes	Yes
Austrian pine regeneration	No	Yes	Yes
Evergreen oak regeneration	No	Yes	Yes
Pubescent oak regeneration	No	Yes	Yes

Portuguese oak regeneration	No	Yes	Yes
Scots pine regeneration	Yes	Yes	Yes
Mountain pine regeneration	Yes	Yes	Yes
Silver fir regeneration	Yes	Yes	Yes
Silver birch regeneration	Yes	Yes	Yes
European beech regeneration	Yes	Yes	Yes
Reed beds	Yes	No	No
Buffer strip of Shrublands	Yes	No	No
Shrublands under electric lines	Yes	No	No
Shrublands coming from clearcutting	No	Yes	Yes
Buffer strip of meadows and grasslands	Yes	No	No
Meadows and grasslands under electric lines	Yes	No	No
Meadows and grasslands coming from clearcutting	No	Yes	Yes
Meadows and grasslands high mountain coming from clearcutting	No	Yes	Yes
Burned areas	No	Yes	No
Naturals riverbeds	No	No	Yes
Bare soil on firewalls	No	No	Yes
Eroded soil by natural agents	No	No	Yes
Bare soil by anthropic action	Yes	No	Yes
Bare soil under electric lines	Yes	No	Yes
Lakes and inland lagoons	No	Yes	No
Coastal lagoons	No	Yes	No
Sea	No	Yes	Yes
Reservoirs	No	Yes	Yes
Carob groves - irrigated	Yes	No	No
Agricultural nurseries	Yes	No	No
Abandoned crops - forests	No	Yes	Yes
Abandoned crops – shrublands	No	Yes	Yes
Abandoned crops - grasslands in forest areas	No	Yes	Yes
Abandoned crops - high mountain grasslands in forest areas	No	Yes	Yes
Market and kitchen garden	No	Yes	Yes
Residential agricultural settlement	No	Yes	Yes
Fish farms and aquacultural crops on the ground	Yes	Yes	Yes
Fish farms and aquacultural crops	Yes	Yes	Yes

into the sea			
Artificial channels	No	No	Yes
Agricultural ponds	No	No	Yes
Single family houses <sup>2</sup>	No	Yes	No
Colonies and isolated urban cores <sup>2</sup>	No	Yes	No
Other constructions <sup>3</sup>	No	Yes	Yes
Plant nurseries	Yes	No	No
Warehouses for agricultural use	No	No	Yes
Farms	No	No	Yes
Urban ponds	No	No	Yes
Road green areas	No	No	Yes
Railroad green areas	No	Yes	Yes
Areas of service in road network	No	No	Yes
Bus stations	No	Yes	Yes
Salt works	No	Yes	Yes
Non-built urban bare soils	No	Yes	Yes
Urban areas under construction	No	Yes	Yes
Earthworks	No	Yes	Yes

<sup>1</sup>: The MCSC-3 only differs from the MCSC-1 in a zone which corresponds, more or less, to Barcelona province.

<sup>2</sup>: The differences between MCSC-2 and 3 are due to an adaptation of the SIOSE legend, which will be changed to make these editions completely compatible at common levels.

<sup>3</sup>: More than differences between editions, it is a warning of a possible mix between the category with simple treatment, or composed category.

**Table 7. Composed categories of Level 5 of MCSC-3v1.**

Residential agricultural settlement
Market and kitchen garden
Residential area
Isolated houses
Colonies and isolated urban cores
City centre
City expansion
Single family houses
Farms
Warehouses for agricultural use
Sawmills
Mining extraction areas
Fresh water fish farms and aquacultural crops
Marine fish farms and aquacultural crops
Industrial polygon - ordered
Industrial polygon - unordered
Isolated industries
Commercial and office complexes
Recreational parks
Hotel complexes
Campsites
Administrative complexes
Health facilities
Cemeteries
Educational facilities
Prisons
Religious centres
Cultural centres
Sport areas
Golf courses
Urban parks
Motorways and dual carriageways
Roads
Road green areas
Areas of service in road network
Bus stations
Railroad tracks
Railroad green areas
Port areas
Airports
Wind power plants
Solar power plants
Dams
Nuclear power plants
Thermal power plants



Electrical infrastructures
Sewage treatment and water purification plants
Desalination plants
Artificial channels
Telecommunications
Dumps
Treatment plants

**Table 8. Composed categories of Level 5 of MCSC-3v2 and MCSC-4.**

Residential agricultural settlement
Market and kitchen garden
Residential area
Isolated houses
Colonies and isolated urban cores
City centre
City expansion
Single family houses
Farms
Warehouses for agricultural use
Sawmills
Mining extraction areas
Fish farms and aquacultural crops on the ground
Fish farms and aquacultural crops into the sea
Industrial polygon - ordered
Industrial polygon - unordered
Isolated industries
Commercial and office complexes
Plant nurseries
Recreational parks
Hotel complexes
Campsites
Administrative complexes
Health facilities
Cemeteries
Educational facilities
Prisons
Religious centres
Cultural centres
Sport areas
Golf courses
Urban parks
Motorways and dual carriageways
Roads
Road green areas
Areas of service in road network
Bus stations
Railroad tracks
Railroad green areas
Port areas
Airports
Wind power plants
Solar power plants
Dams
Nuclear power plants

Thermal power plants
Electrical infrastructures
Sewage treatment and water purification plants
Desalination plants
Artificial channels
Telecommunications
Dumps
Treatment plants

**Table 9. Simple categories of Level 5 of MCSC-3v1.**

Rice crops
Other herbaceous crops
Other herbaceous crops irrigated
Greenhouses
Garden crops under plastic
Other herbaceous crops on terraces
Other herbaceous crops on terraces - irrigated
Greenhouses on terraces
Citrus
Non-citric fruit trees
Non-citric fruit trees - irrigated
Carob groves
Vineyards
Olive groves
Olive groves - irrigated
Citrus on terraces
Non-citric fruit trees on terraces
Non-citric fruit trees on terraces - irrigated
Carob groves on terraces
Vineyards on terraces
Olive groves on terraces
Olive groves on terraces - irrigated
Mowing meadows
Mowing meadows on terraces
Abandoned crops - grasslands in forest areas
Abandoned crops - high mountain grasslands in forest areas
Abandoned crops - shrublands
Abandoned crops - forests
Abandoned rice crops - irrigated - non-watered- grasslands in agricultural areas
Other abandoned herbaceous crops - grasslands in agricultural areas
Other abandoned herbaceous crops - irrigated - non-watered- grasslands in agricultural areas
Other abandoned herbaceous crops - high mountain grasslands in agricultural areas
Other abandoned herbaceous crops - irrigated - non-watered- high mountain grasslands in agricultural areas
Other abandoned herbaceous crops - grasslands in agricultural areas on terraces
Other abandoned herbaceous crops -irrigated - non-watered- grasslands in agricultural areas on terraces
Other abandoned herbaceous crops - high mountain grasslands in agricultural areas on terraces
Other abandoned herbaceous crops - irrigated - non-watered- high mountain grasslands in agricultural areas on terraces
Abandoned citrus- grasslands in agricultural areas
Abandoned non-citric fruit trees - grasslands in agricultural areas
Abandoned non-citric fruit trees - irrigated - non-watered- grasslands in agricultural areas
Abandoned carob groves - grasslands in agricultural areas
Abandoned vineyards - grasslands in agricultural areas

Abandoned olive groves - grasslands in agricultural areas
Abandoned olive groves - irrigated - non-watered- grasslands in agricultural areas
Abandoned citrus- grasslands in agricultural areas on terraces
Abandoned non-citric fruit trees - grasslands in agricultural areas on terraces
Abandoned non-citric fruit trees - irrigated - non-watered- grasslands in agricultural areas on terraces
Abandoned carob groves - grasslands in agricultural areas on terraces
Abandoned vineyards - grasslands in agricultural areas on terraces
Abandoned olive groves - grasslands in agricultural areas on terraces
Abandoned olive groves - irrigated - non-watered- grasslands in agricultural areas on terraces
Abandoned mowing meadows - irrigated - non-watered- grasslands in agricultural areas
Abandoned mowing meadows - irrigated - non-watered- high mountain grasslands in agricultural areas
Abandoned mowing meadows - irrigated - non-watered- grasslands in agricultural areas on terraces
Abandoned mowing meadows - irrigated - non-watered- high mountain grasslands in agricultural areas on terraces
Meadows and grasslands
Herbaceous vegetation of dunes and sandy areas
High mountain meadows and grasslands
Meadows and grasslands on firewalls
High mountain meadows and grasslands on firewalls
Meadows and grasslands coming from clearcutting
High mountain meadows and grasslands coming from clearcutting
Stone pine forest (>= 20%cc)
Maritime pine forest (>= 20%cc)
Aleppo pine forest (>= 20%cc)
Austrian pine forest (>= 20%cc)
Scots pine forest (>= 20%cc)
Mountain pine forest (>= 20%cc)
Silver fir forest (>= 20%cc)
Other conifers (>= 20%cc)
Evergreen oak forest (>= 20%cc)
Cork oak forest (>= 20%cc)
Strawberry tree forest (>= 20%cc)
Other evergreens (>= 20%cc)
Silver birch forest (>= 20%cc)
Spanish chestnut forest (>= 20%cc)
European beech forest (>= 20%cc)
Pedunculate oak forest (>= 20%cc)
Sessile oak forest (>= 20%cc)
Algerian oak forest (>= 20%cc)
Pubescent oak forest (>= 20%cc)
Portuguese oak forest (>= 20%cc)
Pyrenean oak forest (>= 20%cc)
Other deciduous trees (>= 20%cc)
Stone pine forest (5-20%cc)
Maritime pine forest (5-20%cc)

Aleppo pine forest (5-20%cc)
Austrian pine forest (5-20%cc)
Scots pine forest (5-20%cc)
Mountain pine forest (5-20%cc)
Silver fir forest (5-20%cc)
Other conifers (5-20%cc)
Evergreen oak forest (5-20%cc)
Cork oak forest (5-20%cc)
Strawberry tree forest (5-20%cc)
Other evergreens (5-20%cc)
Silver birch forest (5-20%cc)
Spanish chestnut forest (5-20%cc)
European beech forest (5-20%cc)
Pedunculate oak forest (5-20%cc)
Sessile oak forest (5-20%cc)
Algerian oak forest (5-20%cc)
Pubescent oak forest (5-20%cc)
Portuguese oak forest (5-20%cc)
Pyrenean oak forest (5-20%cc)
Other deciduous trees (5-20%cc)
Deciduous riparian forests
Evergreen riparian forests
Buffer strip of stone pine
Buffer strip of maritime pine
Buffer strip of Aleppo pine
Buffer strip of Austrian pine
Buffer strip of Scots pine
Buffer strip of mountain pine
Buffer strip of silver fir
Buffer strip of evergreen oak
Buffer strip of cork oak
Buffer strip of silver birch
Buffer strip of Spanish chestnut
Buffer strip of European beech
Buffer strip of Pedunculate oak
Buffer strip of sessile oak
Buffer strip of Algerian oak
Buffer strip of pubescent oak
Buffer strip of Portuguese oak
Buffer strip of Pyrenean oak
Buffer strip of other deciduous trees
Stone pine plantations
Maritime pine plantations
Aleppo pine plantations
Austrian pine plantations
Scots pine plantations
Mountain pine plantations

Silver fir plantations
Non-native conifer plantations
Cork oak plantations
Spanish chestnut plantations
Other deciduous trees plantations
Eucalyptus plantations
Poplar plantations
Plane tree plantations
Maritime pine regeneration
Aleppo pine regeneration
Austrian pine regeneration
Evergreen oak regeneration
Pubescent oak regeneration
Portuguese oak regeneration
Shrublands
Shrub vegetation of dunes and sandy areas
Shrublands in riparian vegetation
Shrublands on firewalls
Shrublands coming from clearcutting
Burned areas
Sea cliffs
Rocky outcrops
Screes
Naturals riverbeds
Bare soil on firewalls
Eroded soil by natural agents
Bare soil by anthropic action
Crops under transformation
Agricultural breaking up
Non-built urban bare soils
Urban areas under construction
Beaches
Glaciers and snowdrifts
Agricultural ponds
Urban ponds
Other constructions
Big avenues
Earthworks
Coastal wetlands vegetation
Inland wetlands vegetation
High mountain peat bogs
Salt works
Lakes and inland lagoons
Coastal lagoons
Rivers
Reservoirs
Sea

**Table 10. Simple categories of Level 5 of MCSC-3v2 and MCSC-4.**

Rice crops
Other herbaceous crops
Other herbaceous crops - irrigated
Greenhouses
Garden crops under plastic
Other herbaceous crops on terraces
Other herbaceous crops on terraces - irrigated
Greenhouses on terraces
Citrus
Non-citric fruit trees
Non-citric fruit trees - irrigated
Agricultural nurseries
Carob groves
Carob groves - irrigated
Vineyards
Olive groves
Olive groves - irrigated
Citrus on terraces
Non-citric fruit trees on terraces
Non-citric fruit trees on terraces - irrigated
Carob groves on terraces
Vineyards on terraces
Olive groves on terraces
Olive groves on terraces - irrigated
Mowing meadows
Abandoned crops - grasslands in forest areas
Abandoned crops - high mountain grasslands in forest areas
Abandoned crops - shrublands
Abandoned crops - forests
Abandoned rice crops - irrigated - non-watered- grasslands in agricultural areas
Other abandoned herbaceous crops - grasslands in agricultural areas
Other abandoned herbaceous crops - irrigated - non-watered- grasslands in agricultural areas
Other abandoned herbaceous crops - grasslands in agricultural areas on terraces
Other abandoned herbaceous crops - irrigated - non-watered- grasslands in agricultural areas on terraces
Abandoned citrus- grasslands in agricultural areas
Abandoned non-citric fruit trees - grasslands in agricultural areas
Abandoned non-citric fruit trees - irrigated - non-watered- grasslands in agricultural areas
Abandoned carob groves - grasslands in agricultural areas
Abandoned vineyards - grasslands in agricultural areas
Abandoned olive groves - grasslands in agricultural areas
Abandoned olive groves - irrigated - non-watered- grasslands in agricultural areas
Abandoned citrus- grasslands in agricultural areas on terraces
Abandoned non-citric fruit trees - grasslands in agricultural areas on terraces
Abandoned non-citric fruit trees - irrigated - non-watered- grasslands in agricultural areas on terraces



Abandoned carob groves - grasslands in agricultural areas on terraces
Abandoned vineyards - grasslands in agricultural areas on terraces
Abandoned olive groves - grasslands in agricultural areas on terraces
Abandoned olive groves - irrigated - non-watered- grasslands in agricultural areas on terraces
Abandoned mowing meadows - irrigated - non-watered- grasslands in agricultural areas
Abandoned mowing meadows - irrigated - non-watered- high mountain grasslands in agricultural areas
Meadows and grasslands
Meadows and grasslands under electric lines
Buffer strip of meadows and grasslands
Herbaceous vegetation of dunes and sandy areas
High mountain meadows and grasslands
High mountain meadows and grasslands under electric lines
Meadows and grasslands on firewalls
Meadows and grasslands coming from clearcutting
High mountain meadows and grasslands coming from clearcutting
Stone pine forest ( $\geq 20\%cc$ )
Maritime pine forest ( $\geq 20\%cc$ )
Aleppo pine forest ( $\geq 20\%cc$ )
Austrian pine forest ( $\geq 20\%cc$ )
Scots pine forest ( $\geq 20\%cc$ )
Mountain pine forest ( $\geq 20\%cc$ )
Silver fir forest ( $\geq 20\%cc$ )
Other conifers ( $\geq 20\%cc$ )
Evergreen oak forest ( $\geq 20\%cc$ )
Cork oak forest ( $\geq 20\%cc$ )
Strawberry tree forest ( $\geq 20\%cc$ )
Other evergreens ( $\geq 20\%cc$ )
Silver birch forest ( $\geq 20\%cc$ )
Spanish chestnut forest ( $\geq 20\%cc$ )
European beech forest ( $\geq 20\%cc$ )
Pedunculate oak forest ( $\geq 20\%cc$ )
Sessile oak forest ( $\geq 20\%cc$ )
Algerian oak forest ( $\geq 20\%cc$ )
Pubescent oak forest ( $\geq 20\%cc$ )
Portuguese oak forest ( $\geq 20\%cc$ )
Pyrenean oak forest ( $\geq 20\%cc$ )
Common hazel forest ( $\geq 20\%cc$ )
Common ash forest ( $\geq 20\%cc$ )
Other deciduous trees ( $\geq 20\%cc$ )
Deciduous riparian forests( $\geq 20\%cc$ )
Stone pine forest (5-20%cc)
Maritime pine forest (5-20%cc)
Aleppo pine forest (5-20%cc)
Austrian pine forest (5-20%cc)
Scots pine forest (5-20%cc)
Mountain pine forest (5-20%cc)

Silver fir forest (5-20%cc)
Other conifers (5-20%cc)
Evergreen oak forest (5-20%cc)
Cork oak forest (5-20%cc)
Strawberry tree forest (5-20%cc)
Other evergreens (5-20%cc)
Silver birch forest (5-20%cc)
Spanish chestnut forest (5-20%cc)
European beech forest (5-20%cc)
Pedunculate oak forest (5-20%cc)
Sessile oak forest (5-20%cc)
Algerian oak forest (5-20%cc)
Pubescent oak forest (5-20%cc)
Portuguese oak forest (5-20%cc)
Pyrenean oak forest (5-20%cc)
Common hazel forest (5-20%cc)
Common ash forest (5-20%cc)
Other deciduous trees (5-20%cc)
Deciduous riparian forests (5-20%cc)
Buffer strip of stone pine
Buffer strip of maritime pine
Buffer strip of Aleppo pine
Buffer strip of Austrian pine
Buffer strip of Scots pine
Buffer strip of evergreen oak
Buffer strip of cork oak
Buffer strip of Spanish chestnut
Buffer strip of European beech
Buffer strip of Pedunculate oak
Buffer strip of sessile oak
Buffer strip of Algerian oak
Buffer strip of pubescent oak
Buffer strip of Portuguese oak
Buffer strip of other deciduous trees
Stone pine plantations
Maritime pine plantations
Aleppo pine plantations
Austrian pine plantations
Scots pine plantations
Mountain pine plantations
Silver fir plantations
Forest nurseries
Non-native conifer plantations
Cork oak plantations
Spanish chestnut plantations
Other deciduous trees plantations
Eucalyptus plantations

Poplar plantations
Plane tree plantations
Maritime pine regeneration
Aleppo pine regeneration
Austrian pine regeneration
Scots pine regeneration
Mountain pine regeneration
Silver fir regeneration
Evergreen oak regeneration
Silver birch regeneration
European beech regeneration
Pubescent oak regeneration
Portuguese oak regeneration
Shrublands
Shrublands under electric lines
Buffer strip of Shrublands
Shrub vegetation of dunes and sandy areas
Shrublands in riparian vegetation
Reed beds
Shrublands on firewalls
Shrublands coming from clearcutting
Burned areas
Sea cliffs
Rocky outcrops
Screes
Naturals riverbeds
Bare soil on firewalls
Eroded soil by natural agents
Bare soil by anthropic action
Bare soil under electric lines
Crops under transformation
Agricultural breaking up
Non-built urban bare soils
Urban areas under construction
Beaches
Glaciers and snowdrifts
Agricultural ponds
Urban ponds
Other constructions
Big avenues
Earthworks
Coastal wetlands vegetation
Inland wetlands vegetation
High mountain peat bogs
Salt works
Lakes and inland lagoons
Coastal lagoons

Rivers
Reservoirs
Sea

**Table 11. Artificial simple categories from the composed categories of MCSC-3 and 4.**

Dumps
Parking areas
Isolated single family houses
Terraced single family houses
Detached buildings
Buildings between party walls
Industrial building form
Artificial urban green areas
Urban forest
Pedestrian areas without vegetation

**Table 12. Building typology of the composed categories of MCSC-3 and 4.**

Isolated single family houses
Terraced single family houses
Detached buildings
Buildings between party walls
Large construction with only one level, used as a factory or warehouse

**Table 13. Construction state of the composed categories of MCSC-3 and 4.**

Under construction
Not under construction

**Table 14. Simple categories of MCSC-3 and 4 their correspondence with SIOSE.**

Simple categories MCSC-3	Simple categories SIOSE
Isolated single family houses	Building
Terraced single family houses	
Detached buildings	
Buildings between party walls	
Large construction with only one level, used as a factory or warehouse	
Artificial urban green areas	Artificial green area and urban woodland
Urban forest	
Other constructions	Other constructions
Stone pine forest ( $\geq 20\%cc$ )	Non-built soil
Maritime pine forest ( $\geq 20\%cc$ )	
Aleppo pine forest ( $\geq 20\%cc$ )	
Austrian pine forest ( $\geq 20\%cc$ )	
Scots pine forest ( $\geq 20\%cc$ )	
Other conifers ( $\geq 20\%cc$ )	
Evergreen oak forest ( $\geq 20\%cc$ )	
Cork oak forest ( $\geq 20\%cc$ )	
Strawberry tree forest ( $\geq 20\%cc$ )	
Pubescent oak forest ( $\geq 20\%cc$ )	
Other deciduous trees ( $\geq 20\%cc$ )	
Stone pine forest (5-20%cc)	
Maritime pine forest (5-20%cc)	
Aleppo pine forest (5-20%cc)	
Austrian pine forest (5-20%cc)	
Scots pine forest (5-20%cc)	
Other conifers (5-20%cc)	
Evergreen oak forest (5-20%cc)	
Cork oak forest (5-20%cc)	
Strawberry tree forest (5-20%cc)	
Pubescent oak forest (5-20%cc)	
Other deciduous trees (5-20%cc)	
Aleppo pine plantations	
Aleppo pine regeneration	
Evergreen oak regeneration	
Pubescent oak regeneration	
Shrublands	
Shrublands coming from clearcutting	
Meadows and grasslands	
High mountain meadows and grasslands	
Meadows and grasslands coming from clearcutting	
High mountain meadows and grasslands coming from clearcutting	
Citrus	
Non-citric fruit trees	
Vineyards	
Olive groves	
Carob groves	



Other herbaceous crops	
Greenhouses	
Garden crops under plastic	
Other abandoned herbaceous crops - grasslands in agricultural areas	
Abandoned citrus- grasslands in agricultural areas	
Abandoned non-citric fruit trees - grasslands in agricultural areas	
Abandoned carob groves - grasslands in agricultural areas	
Abandoned vineyards - grasslands in agricultural areas	
Abandoned olive groves - grasslands in agricultural areas	
Abandoned crops - shrublands	
Eroded soil by natural agents	
Bare soil by anthropic action	
Non-built urban bare soils	
Rocky outcrops	
Dumps	Mining extractive or dumps
Urban areas under construction	
Earthworks	
Agricultural ponds	Artificial water sheet
Lakes and inland lagoons	
Sea	
Urban ponds	
Big avenues	Big avenues, parking or pedestrian area without vegetation
Parking areas	
Pedestrian areas without vegetation	