Annex 1

Field survey and monitoring of flora and vegetation

This part of the research focuses on the analysis and characterization of olive grove agro-ecosystems in terms of flora biodiversity. A description of the survey area has to be made before assessing the floristic component for it to be set within the landscape, including few information on soil typology and illustrating the management features of the field.

It is first of all necessary to assess and analyse the presence of different vegetation structures with respect to the territorial area to be characterized and then to move to the subsequent characterization of the different vegetational components on the basis of a targeted floristic analysis. The investigated territory will be subdivided into homogeneous areas that may include several plots and/or different ecological infrastructures. Then, within each of these homogeneous areas, representative plots and representative ecological infrastructures for each different existing types (fields, field margins, hedges, uncultivated land, etc.) will be chosen.

Sampling of the floristic component

The assessment of vegetation biodiversity has to be made separately for the different land cover types taking into account the following two main categories:

a) Cultivated plots;
b) Ecological infrastructures.

Sampling method

Depending on the land cover categories to be sampled, a different sampling typology is applied relative to the prevailing ecological meaning that the area to be assessed takes in the agricultural context.

Cultivated plots

For the plot scale analysis of herbaceous species the *simplified* Raunkiaer method (Cappelletti, 1976) is proposed. It foresees a fixed number of throws (9 to 10 per plot) over the plot, using a square metal frame (*point quadrats*) of an agreed side of 0.25m. Sampling should include any vegetation cover existing on the plot. For this purpose, throws can be made in a randomized or systematic manner, depending on the shape of the area to be surveyed and on the cover pattern (continuous or discontinuous). In the case of ancient olive groves or of fields where ground cover is not necessarily uniform, systematic sampling is recommended. In systematic sampling, you are positioned inside the plot and, without sampling along the boundaries, you move along the diagonals end perform 4-5 throws for each diagonal (Figure 1). The surveyed species are noted in a form (Form 1) and the number of individuals surveyed for each species are counted. Based on the values thus acquired, the Diversity value is attributed by calculating Shannon indexes (H' E' and IR) (Shannon, 1949).

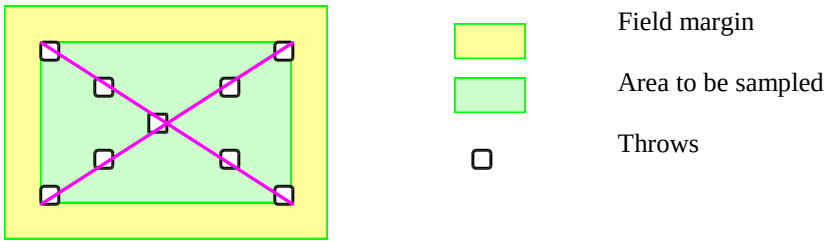

Figure an.1.1 Sampling of herbaceous vegetation by the throws method

Ecological infrastructures (Ecological focus areas)

For the analysis of herbaceous and tree species within the ecological infrastructures, like edges and weedy strips, the use of the simplified Braun-Blaunquet method is proposed (Braun Blanquet, 1932; Cappelletti, 1976). The method is based on the observation of test areas of a minimum size of 50 m^2. In the case of linear ecological infrastructures, like trees and hedges, the linear feature to be analysed can be subdivided into 100m long sub-units. The survey is made by walking along the sub-units, noting all the surveyed species in a form (Form 2), and attributing an abundance/dominance score to each of them on the base of a scale (Braun-Blaunquet coefficient as in) Table an1.1 .

After data recording indices can be calculated.

Diversity indices provide information about the flora community composition and not simply about species richness (i.e., the number of species present or specific contribution) and relative abundances of different species.

Biodiversity according to Shannon index

To quantify biodiversity composition at field level the Shannon's index is used, which emphasizes the richness component of diversity. In fact a diversity index is a mathematical measure of species diversity in a community. The Shannon index of Diversity (H,) is defined as:

$$H = -\sum_{i=1}^{S} (pi.1npi)$$

H - Shannon's diversity index
S - Total number of species in the community (richness)
pi - proportion of S made up of the i-th species
This index, ranges in theory from 0 to infinity.

In order to assess the degree of distribution existing in our field's diversity, Shannon Equitability Index was calculated.
Shannon's equitability (E_H) is defined as:
$E_H = H / Hmax = H/ln\ S$

E_H=Shannon's equitability index
Hmax =ln S
S=- Total number of species in the community (richness)

Equitability assumes a value between 0 and 1, with 1 being complete evenness.

Biodiversity according to Braun-Blanquet

In the case of Braun-Blanquet method, the several layers that compose the natural vegetation are taken into consideration, numbering 7 layers. For each of the layers the percentage of coverage of each species is assessed taking values between 0% and 100%.

At the end, the sum for all the plant coverage can be higher than 100%. After assessing the percentage of the coverage for each layer, the assessment about the species composition and dominance inside the layers have to be done.

In the Braun-Blanquet modified method, vascular plant diversity can be calculated estimating the cover percentages of the species and their distribution referring to the observed layer, in our case in the herbaceous plant layer. In this case only species ground covering percentages need to be considered. Area of assessment has to be representative of the field under study. For the assessment of the species coverage homogenous and representative areas of 50 square meters were considered. In these 50 square meter plots, the species identification and the assessment of coverage (in percentage) for each species were done.

The Braun-Blanquet modified method divides species into seven different classes according to their covering percentage as it is presented in Table an 1.1 below.

Table 1.1 The biodiversity values for each species coverage classes.

Coverage (%)	**Braun - blanquet**	**Species biodiversity**
	Coefficient (Code)	**Indicator**
Species coverage 80-100	5	1
Species coverage 60-80	4	2
Species coverage 40-60	3	3
Species coverage 20-40	2	4
Species coverage 1-20	1	5
Species coverage <1	(+)	6
Very rare species, or isolated individuals	®	7
Source: Lazzerini et al., 2000		

To each class of cover a score is given, inversely proportional to the species cover percentage.

The total sum of the single species scores gives the value of biodiversity indicator at field level.
The botanical species identification was performed and the identified species were compared with those previously classified in “Flora d’Italia” (Pignatti, 1982).

Form 1
Plot biodiversity survey

Sampling date ……………………………..Operator……………….

Farm/Site …………….………………………Plot … ……

Form 2
Ecological infrastructures biodiversity survey
Sampling date …….. Operator…….

Farm/Site …..……. Infrastructure number . … Survey number ….

Species	Cover %	Braun-Blanquet coefficient	Van der Maaler conversion coefficient

References
Braun Blanquet J. Plant sociology. the study of plant communities. New York: *McGraw-Hill*; 1932;xviii:439 p.
Cappelletti C. Trattato di botanica, Utet, Torino. 1976.
Sabatini S, Staglianò N, Argenti G, et al. Analysis of ecological diversity data collecteds with different methods in some grasslands of Italian Alps. In: editor. *International Occasional Symposium EGF, Witzenhausen (D).(In corso di stampa)*. 2001.
Shannon CE, Weaver W. *The mathematical Thoery of Comunication*. Urbana: University of Illinois Press; 1949.
Van der Maaler E. On the tranformation of cover-abundance values in phytosociology. *Report Bot. Lab, Njjmegen*. 1972.

Annex 2
Analysis of the agroecosystem diversity
Different kind of indexes and indicators are available in literature aiming to express or better focus on some specific aspects of the landscape. In order to test the ability of the territories surrounding the olive groves under survey to enhance and/or protect biodiversity a set of indicators was selected. The purpose was to measure the landscape heterogeneity to achieve a quantification of the overall diversity; the selected indicators are designed and suggested to assess the structure of landscape and to quantify its relationship with the ecological and agro-ecological functions.
The following categorization of indicators of landscape diversity is reported:

i. Indicators of compositions
ii. Indicators of fragmentations

iii. Indicators of connection, as shown in the table an 2.1 below:

Table 2.1 Indicator of landscape diversity

Indicator of composition	1	Relative Richness Number (RR) (Turner, 2001)
	2	Relative Richness Area (RA) (Turner, 2001)
	3	Land Use Sustainability (LUS)
Indicators of fragmentations	4	Patch Average Area (PAA) (Elkie *et al*., 1999)
	5	Patch Average Area (for individual classes) (Elkie *et al*., 1999)
	6	Patch Density (PD) (McGarigal and Marks, 1995)
	7	Patch Density (for individual classes) (McGarigal and Marks, 1995)
	8	Sustainability of the Ecotope System (SUS)
	9	Agricultural Ecotope Composition (CEtopeC)
	10	Road Density(RD)
Indicators of connection	11	Crop Ecotone Composition (CEtoneC)
	12	Water Body Density (WBD) (UNEP, 2001)
	13	Ecotone Length (EL)
	14	Ecotone Intensity (EI)

Indicators of composition

Relative Richness number (RR)

The indicator Relative Richness Number (Turner *et al.*, 2001) measure the ecotope diversity through the frequency (%) of each class of ecotope compared to the total number of ecotopes. It quantifies the diversity by describing the breakdown of numerical ecotypes within the studied ecoregion in percentage terms. This indicator is particularly useful in regional comparisons across time. The formula of this indicator is:

$$RA = \frac{n_j}{\sum_{j=1}^{s} n_j} \times 100$$

n= number of patches of each category.

Relative richness area (RA)

The indicator frequencies of ecotopes (Turner *et al*., 2001) measure the diversity ecotope through the frequency (%) of each class of ecotope relation to the total area of that specific ecotope. It quantifies the diversity describing the breakdown of the surface of ecotopes within the studied ecoregion in percentage terms. This indicator is particularly useful in regional comparisons across time, calculated as:

$$RA = \frac{a_j}{\sum_{j=1}^{s} a_j} \times 100$$

a= area of the categories.

Land use sustainability(LUS)

The indicator expresses the sustainability of land use by measuring the relationship between the percentage area of ecosystems bearing the lower impact of human activity and the cultivated area.

$$LUS = \frac{Eus}{Ems} \times 100$$

Eus = area of ecosystems bearing a lower impact of human activity in our case the vegetative area with unmanaged soil.

Ems = ecosystem categories or in our case vegetated areas with managed soil.

Indicators of fragmentation

The fragmentation is the result of the process that leads to structural changes in the functional habitats. This phenomenon has an intimate and old relationship with agriculture since it generated the main alterations of the landscape. The indicators chosen to assess the state of fragmentation of the landscape and have the task to detect positive and negative aspects that fragmentation generates on sustainability through the change in the diversity of land cover

Patch average area (PAA)
The indicator expresses the average surface of the ecotopes (McCarigal *et al*., 2002; Caporali *et al.*, 2003) and focuses on the size composition of the landscape cover.

$$PAA = \frac{\sum_{j=1}^{S}\sum_{i=1}^{n} a_i}{\sum_{i=1}^{s} n_j}$$

a = area of classes (ha)
n = number of plots of classes

Patch average area (for individual classes)
The index can calculated for individual classes in order to investigate the patch composition for each class of the landscape cover.

$$PAA_j = \frac{\sum_{i=1}^{n} a_i}{n_j}$$

a = area of class (ha)
n = number of plots of classes.

Patch density (PD)
The indicator shows the density of the ecotope (McGarigal and Marks, 1995) expresses the degree of fragmentation of agro-ecomosaic and complemenrs the previous one to express size composition of the landscape. It can be caluculated for the whole mosaic and for the individual classes.

$$PD = \left(\frac{\sum_{I=1}^{S} n_j}{\left(\sum_{j=1}^{s}\sum_{i=1}^{n} a_i\right)} \right)$$

a = area of classes (ha)
n = number of plots of classes

Patch density (for individual classes)
(McCarigal *et al.*, 2002; Caporali *et al.*, 2003)

$$PD_j = \frac{n_j}{\sum_{i=1}^{n} a_{ij}} \times 100$$

a = area of classes (ha)
n = number of plots of classes

Sustainability of Ecotone System (SES)

$$SES = \frac{CUS}{CMS} = \frac{\sum_{i=1}^{n} P_{i\,CUS}}{\sum_{i=1}^{n} P_{i\,CMS}}$$

P = Length of ectone.
CMS = Classes cover with managed soil.
CUS = Classes cover with unmanaged soil.

Agriculture Ecotope composition (CEtopeC)

$$CEtopeC = \frac{SEP}{SEH} = \frac{\sum_{i=1}^{n} P_{LEP}}{\sum_{i=1}^{n} P_{LEH}}$$

SEP =areas of ecotopes in classes of permanent cover

SEH =areas of ecotopes of classes with coverage herbaceous

Road Density(RD) ***(B.E.F., 2000)***

$$DSt = \frac{St}{A}$$

St= total roads lenght (km)
A= total area of the ecoregion (square km)

Indicators of connections
The connectivity (or connection) refers to the degree that the structure of a landscape facilitates or impedes the ecological flows (for example, the movement of organisms between ecotypes).

A sudden change in the connection of the elements of the landscape can lead to the reduction and isolation of populations, due to habitat loss and fragmentation and dispersal.

Although the connection is an "essential element of the structure of the landscape" (Taylor *et al.*, 1993) there is no clear definition and therefore it is difficult to quantify in practice. In part this is due to differences between the "structural links" between the elements of landscape (ecotopes) and the "functional connection" of the landscape as perceived by a body or in relation to the "going on" of the ecological processes. The structural connection refers to physical continuity of a class of ecotype (or a habitat) throughout the landscape. The structural connection can be evaluated by a combination of various measures of constituent characteristics of the landscape.

Crop ecotone composition (CEtoneC)
P = length of ecotones in classes of permanent cover

$$CEtoneC = \frac{LEP}{LEH} = \frac{\sum_{i=1}^{n} P_{LEP}}{\sum_{i=1}^{n} P_{LEH}}$$

LEH = length of ecotones of classes with coverage herbaceous

Water body density (WBD) *(U.N.E.P.., 2001)*

$$DCI = \frac{Ci}{A}$$

Ci = water body lenght (km)
A = Area of the ecoregione (square kmq)

Ecotone Length
The indicator refer to the average size of ecotones (Ritteres et al., 1995). It is an important investigative tool capable of describing the availability of quantitative environmental reality with a high level of diversity. The ecotones represent bands of transition between two different biosensors which generally express a greater degree of biodiversity of their adjacent areas.

$$EL = \frac{\sum_{J=1}^{S} j}{n_j}$$

j = length of single ectone
n = number of ecotones of class
j = the class of land cover

Ecotone intensity (EI)
The indicator of ecotones intensity quantifies the number of ecotones on 100 km of perimeter of the ecotypes. Such an entity describes the degree of diversification of quantitative ecotonals bands and the connection between different ecotypes (higher is the value of the indicator, the greater the number of ecotones contained in 100 km, the greater the diversity of coverage).

$$EI = \frac{Nj}{\sum_{i=1}^{n_j} e_{ij}} \times 100$$

e = length of ecotone
n = number of ectones of j class
j = the class of land cover
i = the considered ecotype patch

References

B.E.F. (2000). 2nd Baltic state of the Environment Report based on the environmental indicators, *Baltic Environmental Forum.* "Gandrs" Ltd., Latvia.

Calabrese G., Ceglie F. G., Perrino E. V., Verrastro V., Giannini P. B. and La Notte P. (2014). Correlation between grape and wine quality, landscape diversity, on-field biodiversity, in DOC Gioia del Colle, Italy.In: (eds). *Proceedings of the Xth International Terroir Congress 2014, 7-10 July, Tokaj-Eger*. Borbàla Bàlo, Petra Majer & Gyula Vàradi - Corvinus University of Bucharest - Hungary. 2.

Caporali F., Mancinelli R. and Campiglia E. (2003). Indicators of cropping system diversity in organic and conventional farms in central Italy. *International Journal of Agricultural Sustainability*, 1(1): 67-72.

Elkie P., Rempel R. and Carr A. (1999). Patch analyst user's manual. *Ontario Ministry of Natural Resources Northwest Science and Technology, Thunder Bay, Ontario, Canada* .

McGarigal K. (2002). Landscape pattern metrics. *Encyclopedia of environmetrics* .

McGarigal K. and Marks B. J. (1995). Spatial pattern analysis program for quantifying landscape structure .*Gen. Tech. Rep. PNW-GTR-351. US Department of Agriculture, Forest Service, Pacific Northwest Research Station* .

Riitters K. H., O'neill R., Hunsaker C., Wickham J. D., Yankee D., Timmins S., Jones K. and Jackson B. (1995). A factor analysis of landscape pattern and structure metrics. *Landscape ecology*, 10(1): 23-39 .

Taylor P. D., Fahrig L., Henein K. and Merriam G. (1993). Connectivity is a vital element of landscape structure. *Oikos*: 571-573.

Turner M. G. (2001). *Landscape ecology in theory and practice: pattern and process*. Springer Science & Business Media .

UNEP (2001). SBSsTA. In: *Main theme: forest biological diversity. Report of the adec technical expem group on forest biological diversity SBSTTA seventh meeting, Montreal*.

Annex 3

Results tables and data bases

Table an.3.1 List of species recorded in the sampling period (Autumn 2014 - Spring 2015)

Species	**Family**	**Life-form**	**Chorotype**	**Conserv. interest**	**Invasive status in apulia region**
Acanthus spinosus L.	Acanthaceae	H	Mse		
Achnatherum bromoides (L.) P. Beauv.	Poaceae	H	Ms		
Aegilops ovata Auct.	Poaceae	T	Mst		
Ajuga chamaepitys (L.) Schreber	Lamiaceae	T	Me		
Allium ampeloprasum L.	Amaryllidaceae	G	Me		
Allium subhirsutum L.	Amaryllidaceae	G	Ms		
Ammi majus L.	Apiaceae	T	Me		
Amaranthus retroflexus L.	Amaranthaceae	T	C		Neophyte Invasive
Anagallis arvensis L.	Primulaceae	T	Me		
Anemone hortensis L. subsp. hortensis	Ranunculaceae	G	Mn		
Anthemis arvensis L.	Asteraceae	T/H	Cs		
Arabidopsis thaliana (L.) Heynh.	Brassicaceae	T	C		
Arabis verna (L.) R. Br.	Brassicaceae	T/H	Ms		
Arbutus unedo L.	Ericaceae	P	Ms		
Arenaria serpyllifolia L. subsp. serpyllifolia	Caryophyllaceae	T	Cs		
Arisarum vulgare Targ.-Tozz.	Araceae	G	Ms		

Species	**Family**	**Life-form**	**Chorotype**	**Conserv. interest**	**Invasive status in apulia region**
Arum italicum Miller subsp. italicum	Araceae	G	Ms		
Asparagus acutifolius L.	Asparagaceae	NP	Ms		
Asperula aristata L.	Rubiaceae	H/Ch	Mm		
Astragalus hamosus L.	Fabaceae	T	Mt		
Avena barbata Pott. ex Link	Poaceae	T	Me		
Avena sativa L.	Poaceae	T	-		
Bellis annua L. subsp. annua	Asteraceae	T	Msm		
Beta vulgaris L.	Amaranthaceae	H	Me		
Bituminaria bituminosa (L.) C.H. Stirt.	Fabaceae	H	Me		
Borago officinalis L.	Boraginaceae	T	Me		
Brachypodium sylvaticum (Huds.) P. Beauv.	Poaceae	H	Tmp		
Brassica tournefortii Gouan	Brassicaceae	T/H	Mssi		
Briza maxima L.	Poaceae	T	Tps		
Bromus diandrus Roth subsp. diandrus	Poaceae	T	Tpsp		
Bromus hordeaceus L.	Poaceae	T	Cs		
Buglossoides arvensis (L.) I. M. Johnst.	Boraginaceae	T	Me		
Buglossoides purpureocaerulea (L.) I.M. Johnst.	Boraginaceae	H	Esp		
Calamintha nepeta (L.) Savi	Lamiaceae	H	Oes		
Calendula arvensis (Vaill.) L.	Asteraceae	T	Me		
Calicotome infesta (C. Presl) Guss. subsp. infesta	Fabaceae	P	Ms		
Calystegia sepium (L.) R. Br. subsp. sepium	Convolvulaceae	H	Tmp		
Capparis spinosa L.	Capparaceae	Np	Ea		
Capsella bursa-pastoris (L.) Medik. subsp. bursa-pastoris	Brassicaceae	H	C		
Capsella rubella Reut.	Brassicaceae	T	Me		
Cardamine hirsuta L.	Brassicaceae	T	C		
Carduus pycnocephalus L. subsp. pycnocephalus	Asteraceae	H	Mt		
Catapodium rigidum (L.) C.E. Hubb.	Poaceae	T	Me		
Centaurium erythraea Rafn	Gentianaceae	H	Tmp		
Cerastium glomeratum Thuill.	Caryophyllaceae	T	Cs		
Ceratonia siliqua L.	Fabaceae	P	Mss		
Cercis siliquastrum L. subsp. siliquastrum	Fabaceae	P	Esp		
Cerinthe major L.	Boraginaceae	T	Ms		
Charybdis pancration (Steinh.) Speta	Asparagaceae	G	Msm		
Chenopodium album L.	Amaranthaceae	T	Cs		
Chondrilla juncea L.	Asteraceae	H	Me		
Cichorium intybus L.	Asteraceae	H	Tmp		
Cistus creticus L.	Cistaceae	NP	Mec		
Clematis vitalba L.	Ranunculaceae	P	Eca		
Clinopodium vulgare L.	Lamiaceae	H	Cb		
Convolvulus arvensis L.	Convolvulaceae	G	C		
Crataegus azarolus L.	Rosaceae	P	Mes		
Crataegus monogyna Jacq.	Rosaceae	P	Tmp		
Crepis brulla Greuter	Asteraceae	T	I	I	
Crepis corymbosa Ten.	Asteraceae	T	I	I	
Crepis rubra L.	Asteraceae	T	Msne		
Crepis sancta (L.) Babc. subsp. sancta	Asteraceae	T	Me		
Cyclamen hederifolium Aiton	Primulaceae	G	Msn	CI	
Cynodon dactylon (L.) Pers.	Poaceae	G	C		
Dactylis glomerata L. subsp. hispanica (Roth)	Poaceae	H	Ms		

Species	**Family**	**Life-form**	**Chorotype**	**Conserv. interest**	**Invasive status in apulia region**	
Nyman						
Daphne gnidium L.	Thymelaeaceae	P	Msm			
Dasypyrum villosum (L.) P. Candargy	Poaceae	T	Met			
Daucus carota L. subsp. carota	Apiaceae	H	Cs			
Diplotaxis erucoides (L.) DC. subsp. erucoides	Brassicaceae	T	Msw			
Diplotaxis tenuifolia (L.) DC.	Brassicaceae	H	Masb			
Dittrichia viscosa (L.) Greuter	Asteraceae	H	Me			
Dorycnium hirsutum (L.) Ser.	Fabaceae	Ch	Me			
Echium parviflorum Moench	Boraginaceae	T	Ms			
Echium plantagineum L.	Boraginaceae	T/H	Me			
Emerus major Mill. ssp. emeroides (Boiss. & Spruner) Soldano & F. Conti	Fabaceae	NP	-			
Epilobium parviflorum Schreb.	Onagraceae	H	Tmp	r		
Erica forskalii Vitm.	Ericaceae	Ch/NP	Mes	VU		
Erigeron canadensis L.	Asteraceae	T	Avv.		Neophyte	Invasive
Erodium cicutarium (L.) L'Her	Geraniaceae	T/H	Cs			
Erodium malacoides (L.) L'Hér. subsp. malacoides	Geraniaceae	T	Ms			
Eryngium campestre L.	Apiaceae	H	Me			
Euphorbia characias L.	Euphorbiaceae	NP	Ms			
Euphorbia helioscopia L. subsp. helioscopia	Euphorbiaceae	T	C			
Euphorbia peplus L.	Euphorbiaceae	T	Esb			
Euphorbia segetalis L.	Euphorbiaceae	T	Mw			
Ferula communis L.	Apiaceae	H	Msd			
Ficus carica L.	Moraceae	P	Mt			
Foeniculum vulgare Miller	Apiaceae	H	Msd			
Fraxinus ornus L. subsp. ornus	Oleaceae	P	Menp			
Fumana thymifolia (L.) Spach ex Webb	Cistaceae	Ch	Ms			
Fumaria capreolata L. subsp. capreolata	Papaveraceae	T	Me			
Fumaria officinalis L.	Papaveraceae	H	Mem			
Fumaria parviflora Lam.	Papaveraceae	T	Mt			
Galactites elegans (All.) Soldano	Asteraceae	H	Ms			
Galium aparine L.	Rubiaceae	T	Ea			
Galium verrucosum Huds.	Rubiaceae	T	Ms			
Geranium molle L.	Geraniaceae	H	Cs			
Geranium purpureum Vill.	Geraniaceae	T	Me			
Geranium rotundifolium L.	Geraniaceae	T	Tmp			
Glebionis coronaria (L.) Spach	Asteraceae	T	Ms			
Glebionis segetum (L.) Fourr.	Asteraceae	T	Me			
Hedera helix L.	Araliaceae	P	Meas			
Helianthemum jonium Lacaita	Cistaceae	Ch	I	I		
Helminthotheca echioides (L.) Holub	Asteraceae	T	Me			
Hordeum murinum L. subsp. leporinum (Link) Arcang.	Poaceae	T	Cb			
Hymenocarpus cincinnatus (L.)Savi	Fabaceae	H	Ms			
Hyparrhenia hirta (L.) Stapf subsp. hirta	Poaceae	H	Tpp			
Hypericum perforatum L.	Hypericaceae	H	Tmp			
Hypericum triquetrifolium Turra	Hypericaceae	H	Mse			
Hypochaeris achyrophorus L.	Asteraceae	T	Ms			
Juncus articulatus L.	Juncaceae	G	Cb			
Juncus hybridus Brot.	Juncaceae	T	Ma			
Lactuca serriola L.	Asteraceae	H/T	Mess			

Species	**Family**	**Life-form**	**Chorotype**	**Conserv. interest**	**Invasive status in apulia region**	
Lamium amplexicaule L.	Lamiaceae	T	Tmp			
Lathyrus aphaca L. subsp. aphaca	Fabaceae	T	Me			
Lathyrus cicera L.	Fabaceae	T	Me			
Lathyrus ochrus (L.) DC.	Fabaceae	T	Ms			
Laurus nobilis L.	Lauraceae	P	Ms			
Legousia hybrida (L.) Delarbre	Campanulaceae	T	Ma			
Leontodon hispidus L.	Asteraceae	H	Eca			
Leontodon tuberosus L.	Asteraceae	H	Ms			
Linaria reflexa (L.) Desf.	Plantaginaceae	T	Msdw			
Linaria vulgaris Mill. subsp. vulgaris	Plantaginaceae	H	Ea			
Linum strictum L.	Linaceae	T	Ms			
Lolium rigidum Gaudin	Poaceae	T	Tpsp			
Lotus corniculatus L.	Fabaceae	H	C			
Lotus edulis L.	Fabaceae	T	Ms			
Lotus ornithopodioides L.	Fabaceae	T	Ms			
Lotus pedunculatus Cav.	Fabaceae	H	Tmp			
Malva sylvestris L. subsp. sylvestris	Malvaceae	H	Esb			
Matricaria chamomilla L.	Asteraceae	T	Cs			
Medicago arabica (L.) Huds.	Fabaceae	T	Mw			
Medicago minima L.	Fabaceae	T	Tscm			
Medicago orbicularis (L.) Bartal.	Fabaceae	T	Me			
Medicago polymorpha L.	Fabaceae	T	Me			
Medicago truncatula Gaertn.	Fabaceae	T	Ms			
Melilotus sulcatus Desf.	Fabaceae	T	Msd			
Mentha pulegium L. subsp. pulegium	Lamiaceae	H	Cs			
Mercurialis annua L.	Urticaceae	T	Tmp			
Micromeria graeca (L.) Benth. ex Rchb. subsp. graeca	Lamiaceae	Ch	Ms			
Muscari comosum (L.) Mill.	Asparagaceae	G	Me			
Muscari neglectum Guss. ex Ten.	Asparagaceae	G	Me			
Muscari parviflorum Desf.	Asparagaceae	G	Mece	PI-r		
Myrtus communis L. subsp. communis	Myrtaceae	P	Ms			
Olea europaea L.	Oleaceae	P	Ms			
Ononis reclinata L.	Fabaceae	T	Mts			
Ophrys incubacea Bianca	Orchidaceae	G	Ms	CI		
Opuntia ficus-indica (L.) Miller	Cactaceae	P	Nen		Neophyte	Invasive
Orchis palustris Jacq.	Orchidaceae	G	Me	CI-EN		
Orchis purpurea Huds.	Orchidaceae	G	Ea	CI		
Ornithogalum comosum L.	Asparagaceae	G	Mm			
Ornithogalum umbellatum L.	Asparagaceae	G	Me			
Orobanche crenata Forssk.	Orobanchaceae	T	Met			
Ostrya carpinifolia Scop.	Betulaceae	P	P			
Oxalis pes-caprae L.	Oxalidaceae	G	Afs		Neophyte	Invasive
Paliurus spina-christi Miller	Rhamnaceae	P	Ese			
Papaver rhoeas L. subsp. rhoeas	Papaveraceae	T	Mes			
Parietaria judaica L.	Urticaceae	H	Mem			
Phalaris minor Retz.	Poaceae	T	Tpsp			

Species	**Family**	**Life-form**	**Chorotype**	**Conserv. interest**	**Invasive status in apulia region**	
Phagnalon rupestre (L.) DC.	Asteraceae	Ch	Msdw			
Phillyrea latifolia L.	Oleaceae	P	Ms			
Picris hieracioides L.	Asteraceae	H	Esb			
Pinus halepensis Miller	Pinaceae	P	Ms			
Piptatherum miliaceum (L.) Coss. subsp. miliaceum	Poaceae	H	Mst			
Piptatherum miliaceum (L.) Coss. subsp. thomasii (Duby) Freitag	Poaceae	H	Ms			
Pistacia lentiscus L.	Anacardiaceae	P	Mss			
Plantago afra L.	Plantaginaceae	T	Ms			
Plantago lanceolata L.	Plantaginaceae	H	Ea			
Plantago major L.	Plantaginaceae	H	Cs			
Poa annua L.	Poaceae	T	C			
Portulaca oleracea L. subsp. oleracea	Portulacaceae	T	Cs			
Prasium majus L.	Lamiaceae	Ch	Ms			
Prunus dulcis Miller D.A. Webb	Rosaceae	P	Msd			
Prunus spinosa L. subsp. spinosa	Rosaceae	P	Eca			
Pteridium aquilinum (L.) Kuhn subsp. aquilinum	Dennstaedtiaceae	G	C			
Pyrus spinosa Forssk.	Rosaceae	P	Ms			
Quercus ilex L. subsp. ilex	Fagaceae	P	Ms			
Quercus pubescens Willd. subsp. pubescens	Fagaceae	P	Esep			
Raphanus raphanistrum L.	Brassicaceae	T	Cb			
Raphanus sativus L.	Brassicaceae	T			Archeophyte	Fortuitous
Rapistrum rugosum (L.) Arcang.	Brassicaceae	T	Me			
Reichardia picroides (L.) Roth	Asteraceae	H	Ms			
Reseda alba L.	Resedaceae	T	Ms			
Rhagadiolus stellatus (L.) Gaertn.	Asteraceae	T	Me			
Rhamnus alaternus L. subsp. alaternus	Rhamnaceae	P	Me			
Rosmarinus officinalis L.	Lamiaceae	NP	Ms			
Rostraria cristata (L.) Tzvelev	Poaceae	T	Cs			
Rubia peregrina L.	Rubiaceae	P	Msm			
Rubus ulmifolius Schott	Rosaceae	NP	Me			
Rumex buchephalophorus L. subsp. buchephalophorus	Polygonaceae	T	Mmc			
Rumex crispus L.	Polygonaceae	H	Cs			
Ruscus aculeatus L.	Asparagaceae	Ch	Me			
Sambucus nigra L.	Adoxaceae	P	Eca			
Sanguisorba minor Scop.	Rosaceae	H	Tmp			
Satureja cuneifolia Ten.	Lamiaceae	Ch	Msn	PI		
Scandix pecten-veneris L.	Apiaceae	T	Cs			
Scorpiurus muricatus L.	Fabaceae	T	Me			
Scrophularia lucida L.	Scrophulariaceae	H/Ch	Mm	Ad-PI		
Sedum rubens L.	Crassulaceae	T	Meas			
Senecio vulgaris L.	Asteraceae	T	C			
Setaria viridis (L.) Beauv.	Poaceae	T	Cs			
Sherardia arvensis L.	Rubiaceae	T	Cs			
Silene latifolia Poiret	Caryophyllaceae	T/H	Ms			

Species	Family	Life-form	Chorotype	Conserv. interest	Invasive status in apulia region	
Silene vulgaris (Moench) Garcke	Caryophyllaceae	H				
Silybum marianum (L.) Gaertn.	Asteraceae	H	Mt			
Sinapis alba L.	Brassicaceae	T	Mes			
Sinapis arvensis L. subsp. arvensis	Brassicaceae	T	Ms			
Sisymbrium irio L.	Brassicaceae	T	Tm			
Sixalis atropurpurea (L.) Greuter & Burdet ssp. grandiflora (Scop.) Sold. & Conti	Caprifoliaceae	H	Ms			
Smilax aspera L.	Smilacaceae	NP	Tps			
Smyrnium olusatrum L.	Apiaceae	H	Ma			
Solanum nigrum L.	Solanaceae	T	C			
Sonchus asper (L.) Hill	Asteraceae	T	Ea			
Sonchus oleraceus L.	Asteraceae	T	Ea			
Sonchus tenerrimus L.	Asteraceae	T	Ms			
Sorghum halepense (L.) Pers.	Poaceae	G	Ctr		Archeophyte	Invasive
Stellaria media (L.) Vill. subsp. media	Caryophyllaceae	T	C			
Symphyotrichum squamatum (Spreng.) G.L. Nesom	Asteraceae	T/H	Nen		Neophyte	Invasive
Tamus communis L.	Dioscoraceae	G	Me			
Tetragonolobus purpureus Moench	Fabaceae	T	Ms			
Teucrium capitatum L. subsp. capitatum	Lamiaceae	Ch	Ms			
Thymbra capitata (L.) Cav.	Lamiaceae	Ch	Mse			
Tordylium apulum L.	Apiaceae	T	Ms			
Tragopogon porrifolius L.	Asteraceae	H	Me			
Tribulus terrestris L.	Zygophyllaceae	T	C			
Trifolium alexandrinum L.	Fabaceae	T	Mes			
Trifolium campestre Schreb.	Fabaceae	T	Mmpw			
Trifolium hybridum L.	Fabaceae	H	-			
Trifolium lappaceum L.	Fabaceae	T	Me			
Trifolium pratense L.	Fabaceae	T	Cs			
Trifolium resupinatum L.	Fabaceae	T	Tmp			
Trifolium scabrum L. subsp. scabrum	Fabaceae	T	Me			
Trifolium squarrosum L.	Fabaceae	T	Me			
Trifolium stellatum L.	Fabaceae	T	Me			
Trifolium tomentosum L	Fabaceae	T	Tmp			
Umbilicus horizontalis (Guss.) DC.	Crassulaceae	G	Ms			
Urospermum picroides (L.) Scop. ex F.W. Schmidt	Asteraceae	T	Me			
Urtica dioica L. subsp. dioica	Urticaceae	H	Cs			
Valantia muralis L.	Rubiaceae	T	Ms			
Valerianella muricata (Stev. ex M. Bieb.) J.W. Loudon	Caprifoliaceae	T	Ms			
Verbascum pulverulentum Vill.	Scrophulariaceae	H	Ecs			
Verbascum thapsus L.	Scrophulariaceae	H	Eca			
Verbena officinalis L.	Verbenaceae	H	C			
Veronica hederifolia L.	Plantaginaceae	T	Ea			
Veronica polita Fries	Plantaginaceae	T	Cs			
Viburnum tinus L. subsp. tinus	Adoxaceae	P	Ms			
Vicia lutea L.	Fabaceae	T	Me			
Vicia sativa L.	Fabaceae	T	Cs			
Vicia sativa L. subsp. nigra (L.) Ehrh.	Fabaceae	T	-			
Vicia villosa Roth.	Fabaceae	T	Me			

Species	Family	Life-form	Chorotype	Conserv. interest	Invasive status in apulia region	
Vinca major L. subsp. major	Apocynaceae	Ch	Me			
Xanthium spinosum L.	Asteraceae	T	Ams		Neophyte	Naturalized

Notes Taxa are listed in alphabetical order and grouped into families according to Pignatti (1982). Species were determined according to Pignatti, 1982 and Tutin et al., 1964. Taxa nomenclature follows Conti et al. (2005) and subsequent integration (Conti et al., 2007); The biological forms and the chorology were named according to Raunkiear (1934). - Different acronyms were used for biological forms: Ch - chamaephytes; P - phanerophytes; G - geophytes; H - hemicryptophytes; NP - nanophanerophytes; T - therophytes. Different acronyms were used for chorologic types. A - Atlantic; Ad - Amphi-Adriatic; Afs - south-African; Ams -southern American; Ase - eastern Asiatic; Aus - Australian; Ascm - centre Asiatic-Medit.; Assw - south-western Asiatic; Asw - western Asiatic; Avv - adventitious; C- Cosmopolitan; Cb - Circumboreal; Cn - China; Cs - Subcosmopolitan; Ctr - Ther mocosmopolit; E - European; Ea - Euroasiatic; Easw - western European-Asiatic; Eat- Euroasiatic temperate; Ec - central-European; Eca - European-Caucasic; Ecca - central-European Caucasic; Ecs - south-central European; Es - southern European, Esb- Eurosiberian; Ese - south-eastern European; Esep - south-eastern European Pontic;Esesp - southern European and southern Siberian Pontic; Esp - southern European Pontic; Hi - Himalaya; I - Endemic; Ma - Medit.-Atlantic; Masb - Medit.-Subatlantic; Me - Euri-Medit.; Mea - Euri-Medit.-Atlantic; Meas - Euri-Medit.-Subatlantic; Mec-central-Medit.; Mece - centre-eastern Medit.; Mecw - central-Medit. western; Mem- Euri-Medit.-Macaronesian; Menp - northern Euromedit.-Pontic; Mess - Euri-Medit.southern-Siberian; Met - Euri-Medit.-Turanian; Mne - north-eastern Medit.; Mm -Medit.-Mountain; Mmc - Medit.-Macaronesian; Mmms - southern Medit.-Macaronesian; Mmne - north-eastern Medit.-Mountain; Mmw - western Medit.-Mountain; Mn - northern Medit.; Ms - Steno-Medit.; Msa - Steno-Medit.-Atlantic; Msd – southern Medit.; Msde - south-eastern Medit.; Msdw - south-western Medit.; Mse – eastern Steno-Medit.; Msm - Steno-Medit.-Macaronesian; Msn - northern Steno-Medit.; Msp - Steno-Medit. Pontic; Mss - southern Steno-Medit.; Mssw - south-western Steno-Medit.; Mst - Steno-Medit.-Turanian; Msw - western Steno-Medit.; Mt - Medit.-Turanian; Mts - southern Medit.-Turaniano; Mw - western Medit.; Nen – Neotropical nat.;- Oes - Orophil south-European; Oesec - Orophil European-Caucasic southeastern; Omne - north-eastern Orophil-Medit.; Omw - western Orophil-Medit.; P -Pontic; Pn - Pantropical; Tmp - Paleotemperate; Tmpw – western. Different acronyms were used for species of conservation interest, indicating their vulnerability: CR: critically endangered; EN: endangered; VU: vulnerable; LR: lower risk; NT: near threatened; I: endemic; Ad: amphiadriatic, PI: phytogeographic interest; B: International Convention of Berne, 1979; CI: Convention on International Trade in Endangered Species (CITES, 1973); DH: Habitat Directive 92/43 EEC; r: rare; (*) common to all selected and explored olive groves.

Table 3.2 life-form spectra of flora communities in the fields and in ecological infrastructures and average data

Field ID	Field/ei	Ch	G	H	NP	P	T
1	1-field	1,3	10,4	31,2	3,9	1,3	51,9
	1-ei	2,9	20,0	11,4	14,3	34,3	17,1
2	2-field	2,6	7,7	17,9	0,0	2,6	69,2
	2-ei	14,3	6,1	20,4	4,1	16,3	38,8
3	3-field	0,0	6,5	6,5	0,0	3,2	83,9
	3-ei	0,0	20,0	0,0	0,0	0,0	80,0
4	4-field	2,9	2,9	17,1	0,0	0,0	77,1
	4-ei	7,1	7,1	14,3	14,3	14,3	42,9
5	5-field	0,0	13,3	6,7	0,0	6,7	73,3
	5-ei	5,0	15,0	5,0	0,0	0,0	75,0
6	6-field	0,0	4,0	8,0	0,0	4,0	84,0
	6-ei	0,0	4,5	9,1	4,5	18,2	63,6
7	7-field	0,0	6,7	16,7	0,0	0,0	76,7
	7-ei	0,0	5,3	23,7	2,6	7,9	60,5
8	8-field	0,0	7,4	7,4	0,0	3,7	81,5
	8-ei	2,2	10,9	30,4	4,3	8,7	43,5

9	9-field	0,0	17,1	14,5	2,9	2,9	62,9
	9-ei	0,0	7,1	7,1	7,1	3,6	75,0
10	10-field	0,0	15,4	3,8	3,8	3,8	73,1
	10-ei	0,0	16,0	12,0	4,0	8,0	60,0
11	11-field	1,7	13,6	22,0	1,7	6,8	54,2
	11-ei	8,7	4,3	21,7	17,4	39,1	8,7
12	12-field	2,0	2,0	20,0	2,0	2,0	72,0
	12-ei	1,8	9,1	21,8	3,6	10,9	52,7
13	13-field	0,0	12,5	15,6	0,0	0,0	71,9
	13-ei	0,0	4,0	24,0	0,0	0,0	72,0
Averages (fields)		**0,81**	**9,19**	**14,42**	**1,10**	**2,85**	**71,67**
Averages (ecological infrastructures)		**3,23**	**9,95**	**15,45**	**5,86**	**12,41**	**53,06**

T–therophytes; P-phanerophytes; NP-nanophanerophytes; H-hemicryptophytes; G-geophytes; Ch–chamaephytes

Table an.3.3 reports the data of the landscape (ecoregion) around the fields under survey. Data coming from the export of the data base from GIS, describe and characterize the *ecoregions* (landscapes) under analysis in detailed way. They were extracted for ArcGis after the validation phase. In the Table 1 the ecoregions are named following the Field IDs; Data (the number of patches, the surfaces of the patches, the length of the corresponding ecotones) were aggregated into the macrocategories described in the materials and methods part (Table 2.6).

Table 3.3 Data aggregated into macrocategories of land-cover with ecotopes and ecotones characterizing the different ecoregions (landscapes) under analysis

Ecoregions

ecoregion (10km diameter)	macro categories	cover classes	number of patches (ecotopes)	ecotone lenght (km)	Surface (ha)
1 Vico del Gargano	MA	artifacts (urban fabric and other man made categories)	372	168451	315,85
	EN	natural herbaceous vegetation	229	227733	582,90
	AN	natural arboreous vegetation	378	476426	1362,60
	ASN	natural herbaceous and arboreous	400	361373	755,69
	W	wetlands	3	4070	3,36
	SW	salty wetlands	0	0	0,00
	CP	permanents crops	430	614492	2460,35
	CE	herbaceous crops	138	73133	184,50
	CA	associated crops	91	70266	164,85
	tot	ecoregion area	2041	1995944	5830,0948
2 Fasano	MA	artifacts (urban fabric and other man made categories)	414	148358,63	295,53831
	EN	natural herbaceous vegetation	91	93348,353	226,66928
	AN	natural arboreous vegetation	13	11292,491	28,539584
	ASN	natural herbaceous and arboreous	6	17606,397	29,182916
	W	wetlands	2	579,93514	0,4762874
	SW	salty wetlands	1	7885,3279	113,88294
	CP	permanents crops	392	528203,66	3620,3634
	CE	herbaceous crops	286	330693,17	1860,8602
	CA	associated crops	16	15290,94	56,365639
	tot	ecoregion area	1221	1153258,9	6231,8785
3 Ostuni_livrano	MA	artifacts (urban fabric and other man made categories)	276	135938,75	402,068
	EN	natural herbaceous vegetation	203	195932,66	438,977
	AN	natural arboreous vegetation	41	58405,693	356,137
	ASN	natural herbaceous and arboreous	29	32519,214	78,934
	W	wetlands	2	474,808	0,718
	SW	salty wetlands	1	1730,107	2,627
	CP	permanents crops	389	568625,69	4212,773
	CE	herbaceous crops	376	359129,4	1581,679
	CA	associated crops	77	85091,048	407,682

	tot	ecoregion area	1394	1437847,4	7481,595
4 Ostuni turco	MA	artifacts (urban fabric and other man made categories)	292	140891,25	426,249
	EN	natural herbaceous vegetation	217	203630,43	510,763
	AN	natural arboreous vegetation	48	80778,204	448,29
	ASN	natural herbaceous and arboreous	28	29329,135	67,232
	W	wetlands	3	1556,835	1,004
	SW	salty wetlands	1	1267,301	1,634
	CP	permanents crops	433	614503,28	4352,521
	CE	herbaceous crops	406	360508,39	1449,448
	CA	associated crops	72	73459,443	348,044
	tot	ecoregion area	1500	1505924,3	7605,185
5_Torre guaceto 1	MA	artifacts (urban fabric and other man made categories)	387	141635,25	286,365
	EN	natural herbaceous vegetation	88	94783,764	230,975
	AN	natural arboreous vegetation	12	11127,543	28,422
	ASN	natural herbaceous and arboreous	6	17678,457	29,251
	W	wetlands	2	579,935	0,476
	SW	salty wetlands	1	7885,328	113,883
	CP	permanents crops	373	598623,17	4353,47
	CE	herbaceous crops	276	345227,99	2004,176
	CA	associated crops	15	14957,885	55,823
	tot	ecoregion area	1160	1232499,3	7102,841
6_Torre guaceto 2	MA	artifacts (urban fabric and other man made categories)	406	153105,73	319,858
	EN	natural herbaceous vegetation	88	95531,623	230,85
	AN	natural arboreous vegetation	12	11127,543	28,422
	ASN	natural herbaceous and arboreous	6	17678,457	29,251
	W	wetlands	2	579,935	0,476
	SW	salty wetlands	1	7885,328	113,883
	CP	permanents crops	384	608244,69	4376,346
	CE	herbaceous crops	285	353066,35	2030,702
	CA	associated crops	16	15290,938	56,365
	tot	ecoregion area	1200	1262510,6	7186,153
7_Torre guaceto 3	MA	artifacts (urban fabric and other man made categories)	388	143014,48	288,742
	EN	natural herbaceous vegetation	86	93385,095	229,527
	AN	natural arboreous vegetation	13	11448,661	28,832
	ASN	natural herbaceous and arboreous	6	17678,457	29,251
	W	wetlands	2	579,935	0,476
	SW	salty wetlands	1	7885,328	113,883
	CP	permanents crops	373	602059,98	4344,015

	CE	herbaceous crops	275	341589,33	1973,25
	CA	associated crops	15	14957,885	55,823
	tot	ecoregion area	1159	1232599,1	7063,799
8_Torre guaceto 3	MA	artifacts (urban fabric and other man made categories)	396	150095,12	315,53
	EN	natural herbaceous vegetation	87	94394,918	231,968
	AN	natural arboreous vegetation	13	11448,661	28,832
	ASN	natural herbaceous and arboreous	6	17678,457	29,251
	W	wetlands	2	579,935	0,476
	SW	salty wetlands	1	7885,328	113,883
	CP	permanents crops	376	614951,65	4584,18
	CE	herbaceous crops	275	334859,62	1925,423
	CA	associated crops	15	14957,885	55,823
	tot	ecoregion area	1171	1246851,6	7285,366
9_Torre guaceto 5	MA	artifacts (urban fabric and other man made categories)	375	137390,27	277,686
	EN	natural herbaceous vegetation	88	94783,764	230,975
	AN	natural arboreous vegetation	12	11127,543	28,422
	ASN	natural herbaceous and arboreous	6	17678,457	29,251
	W	wetlands	2	579,935	0,476
	SW	salty wetlands	1	7885,328	113,883
	CP	permanents crops	369	576746,68	4204,932
	CE	herbaceous crops	276	345227,99	2004,176
	CA	associated crops	15	14957,885	55,823
	tot	ecoregion area	1144	1206377,9	6945,624
10_Torre guaceto 6	MA	artifacts (urban fabric and other man made categories)	384	140812,26	284,697
	EN	natural herbaceous vegetation	86	93431,521	229,452
	AN	natural arboreous vegetation	12	11127,543	28,422
	ASN	natural herbaceous and arboreous	6	17678,457	29,251
	W	wetlands	2	579,935	0,476
	SW	salty wetlands	1	7885,328	113,883
	CP	permanents crops	371	594061,72	4308,649
	CE	herbaceous crops	275	339207,22	1959,831
	CA	associated crops	15	14957,885	55,823
	tot	ecoregion area	1152	1219741,9	7010,484
11_Vernole	MA	artifacts (urban fabric and other man made categories)	130	83300,585	394,48225
	EN	natural herbaceous vegetation	215	229174,42	650,86657
	AN	natural arboreous vegetation	65	92370,47	419,02708
	ASN	natural herbaceous and arboreous	29	48761,794	129,79

					92
	W	wetlands	11	10657,254	7,646599
	SW	salty wetlands	22	49726,651	177,76181
	CP	permanents crops	167	240573,21	1754,3601
	CE	herbaceous crops	170	251540,17	1378,0439
	CA	associated crops	40	23327,662	65,752662
	tot	ecoregion area	849	1029432,2	4977,7402
12_Crispiano	MA	artifacts (urban fabric and other man made categories)	233	111959,14	423,725
	EN	natural herbaceous vegetation	133	214077,15	1226,484
	AN	natural arboreous vegetation	54	179481,58	2181,355
	ASN	natural herbaceous and arboreous	70	89717,946	372,292
	W	wetlands	1	2668,178	5,83
	SW	salty wetlands	1	446,065	1,03
	CP	permanents crops	422	382165,06	1427,853
	CE	herbaceous crops	330	380900,98	1845,19
	CA	associated crops	80	73589,507	265,921
	tot	ecoregion area	1324	1435005,6	7749,68
13_Martina F.	MA	artifacts (urban fabric and other man made categories)	333	164,381	382,854
	EN	natural herbaceous vegetation	296	261,381	789,415
	AN	natural arboreous vegetation	88	207,578	1563,848
	ASN	natural herbaceous and arboreous	61	88,179	246,819
	W	wetlands	1	0,273	0,438
	SW	salty wetlands	0	0	0
	CP	permanents crops	627	581,551	2666,934
	CE	herbaceous crops	435	522,696	1995,352
	CA	associated crops	48	28,439	81,917
	tot	ecoregion area	1889	1854,478	7727,577