

HERCULES

Sustainable futures for Europe's HERitage in CULtural landscapES: Tools for understanding, managing, and protecting landscape functions and values

GA no. 603447

D8.2 Report on stakeholder workshops and on translation of localised landscaping skills and knowledge into operational guidelines

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Executive summary

The project defines ‘good landscape practices’ as the land management practices that result from the interests and objectives of local communities and local industry being in tune with their landscapes.

The purpose of the project at this stage was to elaborate on this concept by identifying and collecting systematically localised landscape skills and knowledge, in the aim of providing cohesive guidance for local communities, associations of citizens, SMEs, public authorities, agencies and thereby empowering traditional skills and knowledge in cultural landscapes management.

This deliverable builds upon the input of local stakeholders during the local workshops organised in the frame of the HERCULES project. The fast-track study landscape workshops in the UK and France provided valuable first insights and lessons regarding the issues of well defining and identifying traditional landscape skills and knowledge: a landscape’s origins, its inherent cultural and natural features, as well as the actors who should be responsible for its management are not clear cut facts. Common ground has however been found in methodologies of recording both ‘Biodiversity Indices’ in situ and selected ‘Landscape Features’. The issues raised during the fast-track study landscape workshops paved the way for constructive debates and concrete realisations concerning the notion of Good Landscape Practices in the other local workshops in Spain, Greece, and Estonia.

On the basis of the results obtained in the local workshops, the present deliverable shows how to come to a cohesive guidance on localised landscape skills and knowledge for SMEs, associations, public authorities and agencies. Several methods of “ecosystem stewards inventories” (Schultz et al. 2007), which identify and empower landscape actors and practitioners, giving them the status of genuine stewards of their landscape management, are put in place. This deliverable is a step towards collecting examples of guidance, by means of systematic identification and collection of traditional landscape skills and knowledge, inclusion of sustainable agriculture innovation as good practices, involvement of and communication to all stakeholders, and most importantly, elaboration of a genuine efficient guidance structure through good practice collection on the Knowledge Hub.

Those examples are developed through this deliverable and introduced by Appendices that provide:

- A list of ‘good landscape practices’, together with:
- Information and discussion about how these practices link to the identifiable sources of ‘traditional skills and knowledge’ within local communities,
- A proposed methodology of recording good practices linked to landscape features and biodiversity richness, and
- Drafts of methodologies to facilitate the inclusion of identified good landscape practices and the existence of traditional skills and knowledge onto a map / satellite imagery database (the HERCULES Knowledge Hub: <http://kh.hercules-landscapes.eu>).

In the third round of local-level stakeholder workshops, the protocol and questionnaire developed here will be used to gather good landscape practices in the slow-track study landscapes in Spain, Greece, and Estonia.

Operational guidelines as presented in the current deliverable can be summarized through the figure below:

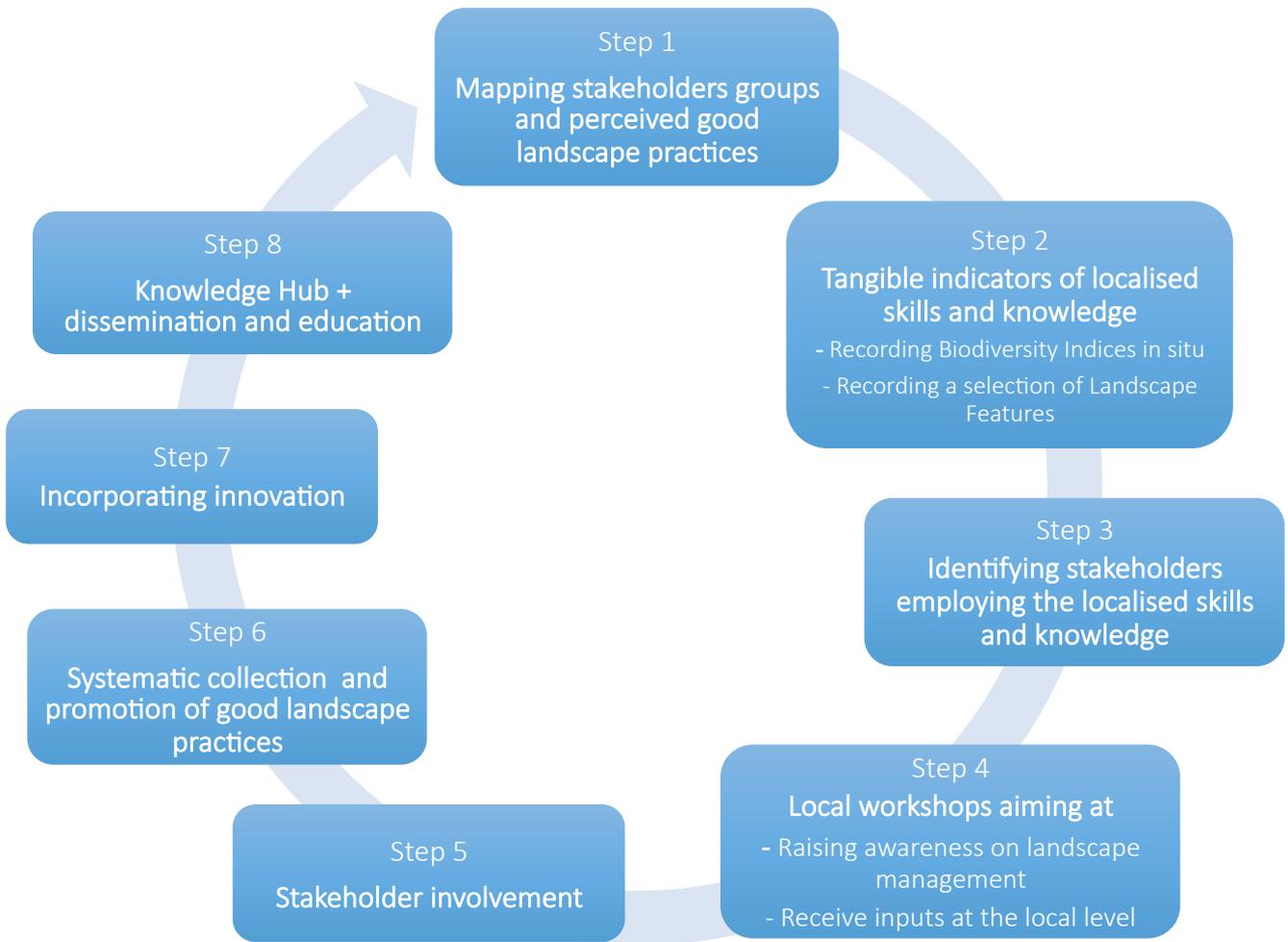


Fig.1. Operational Guidelines Summary for the Collection and Dissemination of Good Landscape Practices.

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Abbreviations

CAP	:	Common Agricultural Policy
CIME	:	Innovation Management and Environment Consulting
DOW	:	Description of Work
ELC	:	European Landscape Convention
EU	:	European Union
FOC	:	Forest Communication Network Ltd.
FT	:	Fast-track study landscape
GPMJ	:	Grand Parc Miribel Jonage
KH	:	Knowledge Hub for Good Landscape Practices
SL	:	Study landscape
ST	:	Slow-track study landscape
WP	:	Work package

1 Introduction

The complexity and diversity of European landscapes is matched by the complexity and diversity of the interests of those who live in, work in or visit any particular landscape in Europe.

There is, however, much common ground between them. As the HERCULES local workshops are proving, many “landscape issues” are shared across the political boundaries of Europe and the natural boundaries of European landscapes. Local peoples’ input – be it political, personal or practical – is vital in ensuring that the landscape remains a resilient cultural one.

To provide cohesive guidance towards good landscape practice, a subtle and non-exclusive approach is required by way of promoting case study and through celebration of landscapes. HERCULES must attempt to feed into a collaborative approach, in order to ensure practitioner organisations and others involved in the creation of guidance and / or technical advice do not represent conflicting interests, but rather landscape stewards working together with coherence.

At this interim stage of the HERCULES project, our local stakeholder workshops are ongoing and at the point where we are close to introducing demonstration activities towards knowledge transfer across national boundaries. This paper therefore develops some ideas which aim to provide easy methods that enable everybody to become involved in an evolving process of mapping real sustainable, traditional and innovative, good practice for landscapes, landscaping and land management across Europe. In doing so, the paper also acknowledges the importance of addressing the barriers to such knowledge transfer that are in place at present.

To inform this process, we have very much relied on the findings and feedback from the two British and French fast-track study landscapes (in the South-West Devon and the Rhône-Alpes areas respectively). The timescale for completion of the HERCULES project requires that the stakeholder studies in all the study landscapes need to be completed in a short timeframe to enable their findings to be incorporated into the wider project. The two fast-track study landscapes were therefore used to investigate good landscape practice and traditional landscape skills and knowledge, to facilitate a direction of investigation for all the case study areas as quickly as possible. Thus much of the text in this report derives from the initial British and French feedback. However, as the workshops progress we can continue to add to the list of good practice examples and identify those with the localised skills and knowledge relevant to this deliverable. More information about the wider suite of case study landscapes, and the Devon and Rhône-Alpes case studies, is given in the earlier reports D3.1 (List and documentation of case study landscapes selected for HERCULES) and D8.1 (Stakeholder Engagement Strategy).

How to facilitate future discussion about good landscape practice remains a key issue, particularly how to ensure this discussion remains rooted in facts and acknowledges the input of all. Everyone has a right to be listened to. Thus, facilitating communication for all with a viewpoint to contribute is of paramount importance to a sound understanding of this topic. Indeed, rather than merely stakeholders, the landscape actors and practitioners can be considered as stewards of their landscape, shaping and managing it through their use of it. Their voice is crucial, alongside the one of NGOs and state authorities for the landscape management. The HERCULES project would thus act as an “umbrella organization”, with

the Knowledge Hub for Good Landscape Practices (KH), implemented by HERCULES, aiming to become a permanent tool to empower the landscape stewards.

This deliverable specifically contributes to the following project tasks:

- (a) Development of a method to identify and collect traditional skills and knowledge on cultural landscapes that are available in the case study landscapes: section 2 and appendixes 1-5;
- (b) Reporting on the first sets of local-level stakeholder workshops, including the identification of local needs for landscape management and providing a forum for general exchange and feedback to HERCULES: section 3;
- (c) Classifying the objects, aims, and forms of localised good landscape practices: section 4 and appendixes 1-5; and
- (d) Incorporation of the list of good practices into a comprehensive set of guidance available to all for free, in the Knowledge Hub: appendix 3.

2 Methodology

In order to translate localised landscape skills into operational guidelines promoting good landscape practices, it appeared important to start from the most local level, *i.e.* from the landscapes techniques used by farmers, foresters, landscape architects and other actors involved in land management. From their inputs and in combination with the findings of the researchers who are members of HERCULES, a methodology and sets of tangible indicators were developed in WP8.

The starting point for our work on good landscape practice was to ask several questions:

- What are the tangible indicators of the existence of localised skills and knowledge of the past in the modern landscape?
- Is there still evidence of traditional skills and knowledge?
- With whom do the skills and knowledge rest?
- What are the threats? and
- Who is, or could be, charged with the creation and maintenance of what is identified as good landscape / landscaping practice by way of tangible indicators?

Once answered, we could then further explore the weaknesses and strengths of local landscape practices within specific study landscapes, how others perceive the situation, and how we can provide cohesive guidance across European landscapes relevant to the purposes and interests of all interested parties.

In linking the tangible, visible elements of a cultural landscape, the biodiversity and the perceptions held for these elements, with the socio-economic and recreational activity of the surrounding area, it is quickly apparent that there are many areas of confusion and potential / existing sources of conflict between those interested in landscapes (tourists and forestry, farmers and environmentalists etc.). In producing guidance on good landscape practice, therefore, we aim at investigating how to incorporate ‘conflict management’ and at informing landscape management and planning on these skills and knowledges.

At the heart of many conflicts in landscapes lies the fact that many European countries now have approaches to the designation of areas of landscape value which are based on two very different and competing concepts of ‘cultural landscapes’. The first concept is ‘top-down’ (↓)

and shaped by international and national interests, represented by the values underpinning the World Heritage Convention's cultural landscapes. This concept has steadily dominated over local 'bottom-up' (↑) viewpoints of landscape as 'an area, as perceived by people, which comprises natural and cultural elements', as represented by the principles enshrined in the European Landscape Convention (ELC). This conflict between 'top-down' and 'bottom-up' approaches makes for great complexity in decision making and planning at local level, which has to take both viewpoints into consideration, as both are valid (Fig. 2).

Cultural Landscapes: Two Competing Systems

System A (↓)	System B (↑)
<ul style="list-style-type: none"> • Culture as art • Heritage as jewels • Protected landscapes • World heritage sites • Top down • Outsiders 	<ul style="list-style-type: none"> • Culture as anthropology • Heritage as rights • Ordinary landscapes • European Landscape Convention • Bottom-up • Insiders

Fig. 2. Cultural Landscapes: Two Competing Systems.

To better understand the decision making and planning processes influencing cultural landscapes, the mapping of stakeholders groups stratified by their relationship to landscape and with regards to the nature of their engagement is of utmost importance and was the object of D8.1. This exercise not only enabled to organise the different local and EU workshops, but also showed that even the core group of stakeholders is operating in isolation at much localised level. Collaborative approach is necessary to decide what is desirable at community level and to implement it at a broader scale. This is the reason why HERCULES focuses on the one hand on a bottom-up approach (System B) for in depth analysis, and will on the other hand integrate a top-down perspective (System A) for the final policy recommendations.

The aim of the local workshops and study landscapes is to gather information on the visions chosen at local/community level, which methods and tools are considered as most effective to promote heritage and cultural landscape maintenance and enhancement at local level, and their potential replication capacity.

WP8 worked in close collaboration with WP6 on the identification of the good landscape practices. Mapping what is perceived as a good landscape practice, and more importantly methods to assess good landscape practices have been identified by WP8 to be the most helpful and effective ways of helping land management practitioners. Two sets of tangible indicators were therefore co-designed during the fast-track workshop discussions and further developed during the local workshops. They focus on biodiversity indices in situ and landscape features.

Integral part of the methodology developed is the HERCULES Knowledge Hub (KH). It was promoted as a means of exchanging information and facilitating rapid inclusion of all necessary guidance and additional information for the benefit of primary users and stakeholders, and for the benefit of all. It will help alleviating silo thinking; promote cooperation, dissemination of good practices and exchange of traditional skills and knowledge and their interaction with innovative methods.

This approach is completely in tune with the principles of ‘System B’ above, not least because it implicitly reflects the text of the ELC in this regard:

“Acknowledging that the landscape is an important part of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas;

Noting that developments in agriculture, forestry, industrial and mineral production techniques and in regional planning, town planning, transport, infrastructure, tourism and recreation and, at a more general level, changes in the world economy are in many cases accelerating the transformation of landscapes;

Wishing to respond to the public’s wish to enjoy high quality landscapes and to play an active part in the development of landscapes;

Believing that the landscape is a key element of individual and social well-being and that its protection, management and planning entail rights and responsibilities for everyone.” (European Landscape Convention, <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>)

3 Local workshop input

3.1 First input from the fast-track study-landscapes: UK & France

A difference was made between fast-track and slow-track study landscapes due to the necessity of personal interviews in the project’s first phase.

The fast-track covers Rhône-Alpes region near Lyon in France and South-West Devon in the United Kingdom. These two study landscapes were selected due to the proximity of HERCULES partners (FOC in the UK and CIME in France). This allowed a great deal of experimentation and pre-emptive feedback, before ‘rolling out’ to the other study landscapes as a much better defined package.

The slow-track study landscapes are the Sierra de Guadarrama foothills near Madrid in Spain; the Gera – Plomari area of Lesvos in Greece; and the drumlin-rich landscape Kodavere/Vooremaa in Estonia. Report from those can be found in chapter 3.2.

3.1.1 Determination of actors to identify genuine localised skills and knowledge

To better understand the decision making process influencing cultural landscapes, the mapping of stakeholders groups stratified by their relationship to landscape and with regards to the nature of their engagement is of outmost importance. In relation with exploring ‘traditional skills and knowledge’ issues within any particular landscape, as well as in regards the actors, landscape features and biodiversity issues, precautionary steps are to be taken before elaborating a common methodology for entering data onto the KH.

For example, a significant proportion of rural man-made landscape features at landscape-level, which are recognisable by the masses, were built in the first place by prisoners and immigrants. An important proportion of more localised farm-scale landscape features, both natural and man-made, were managed or built by women and / or children across Europe. A belief that there were teams of ‘craftsmen’ in each and every landscape who were chiefly

responsible for the design and construction of landscape features would be erroneous. Thus, we need to be careful in how we interpret traditional skills and knowledge in any landscape in relation to those who created that landscape.

Present day socio-economic realities in rural landscapes are rarely publicised correctly, and this can lead to inappropriate use of language about stakeholders and uncertainty about several aspects of stakeholder engagement, particularly in relation to the involvement of land management practitioners. For example, this sentence, published on the “landscapes for life“-website, “The South Hams is traditional Devon mixed farming country and the rural economy depends on agriculture, tourism and fishing” (<http://www.landscapesforlife.org.uk/south-devon-aonb.html>) tells only part of the story about that landscape since less than 3% of the number of people in employment (aged between 16–74) within the rural area of the South Hams actually work in the agriculture, fishing, hunting and forestry industries (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/88064/south-hams.pdf). The reality is that the majority of land management practitioners live and usually work within the urban/ peri-urban environment, as do the public who use rural landscapes for recreation and are therefore just as concerned about them as they are their own “home” landscapes. Land management practitioners who work in rural landscapes are often commuters from the urban centres, and as such do not register in socio-economic statistics as direct stakeholders in the landscapes concerned. They are therefore frequently excluded as “commentators“ on those landscapes.

It is thus very important to ensure that language is used precisely to ensure effective engagement with all relevant stakeholders. For example for all local stakeholders involved in the UK fast-track workshops and through Survey in France, ‘good landscaping practice’ means work resulting in positive, sustainable and (most significantly) visible on the ground land management operations.

Finally, stakeholders will be mainly identified in function of the results of the methodology used and previously described for the communication strategy (Figure 3).

3.1.2 Towards a collaborative approach for the local landscapes

Using the European Landscape Convention (ELC) as the principal platform helped tremendously, but the risk of continuing to disenfranchise the public in regards their landscape (s) remained acute: “Arguably it is the ranks of professionals and experts, and also politicians who need to learn to understand landscape, after all, landscape is created by people” (Paul Tabbush, Chairman LRG, <http://www.landscaperesearch.org/wp-content/files/mf/lre701.pdf>).

Listing those we saw as stakeholders highlighted the wide-ranging backgrounds of HERCULES. From the child catching a glimpse from a car window to the landowner at the heart of the landscape, all have an interest or a stake in their landscape. Yet there could be no “one size fits all”. It was therefore imperative to involve as many stakeholders as possible in the project, particularly as ultimately it is the people themselves who are paying towards any cohesive guidance in regards localised skills and knowledge in their landscapes directly through improvements on their own land or via taxes.

To facilitate discussion in the workshops, it was decided that it would be more helpful to focus on four aspects of landscape involvement:

- 1) Identify the elements the people see as beneficial in their landscape.

- 2) List what can be done to preserve these elements.
- 3) Investigate as much as possible the multiple benefits of these elements.
- 4) Match these to the socio-economics of that particular landscape.

Discussion of these four aspects inevitably resulted in different stakeholders having very different perspectives, sometimes to the point of very strong disagreement or “conflict”, in all workshops across Europe. Such tensions were a major issue at all times, with common “flashpoints” for discussions about both “Landscape Features” and “Biodiversity”. It was notable that “the public” could be clearly distinguished as a separate grouping in terms of its views and perspectives from those working or earning from the landscape on a wide range of topics, such as the removal of traditional landscape features, the installation of modern features, the loss of particular species and the spread of other species. All proved to be common “conflict” scenarios across Europe.

To enable discussion at the workshops, it was viewed that a failure to address any of these conflicts would be as disingenuous and misleading in understanding stakeholder perceptions as it would have been to organise a workshop which used a specific conflict as its main premise (for example, had we publicised any workshop headlining “wind turbines” as the topic for discussion, one would have expected a full house).

Therefore, attention was focused in the workshop discussions on the common types of conflict which were identified in the initial work in the UK and France, and on how these related to the selection of Landscape Features and Biodiversity Indices. Such an approach was considered to be useful because it enabled some common conflict issues to be included on the Knowledge Hub as examples, which could then be used to identify what measures that had proved successful in resolving conflict. As a result it was hoped that using a common information platform such as the Knowledge Hub could help to lessen conflicts and reduce the costs involved in doing so.

Whilst the axiom “Land is the property of someone who takes care of that and landscape is cherished by all” remains pertinent throughout HERCULES, and after it is completed because of the information base provided by the Knowledge Hub, it is still vital to remember that the landowners are in a central position in land management terms because it is their decisions and activities which link the economics of the land and its management with the landscape that results.

3.1.3 Design of practical indicators

Following on from the fast-track workshop discussions, it was decided that ongoing work, concurrent with setting up the local workshops, should focus on producing two key outputs. These outputs were considered to be the most helpful and effective ways of helping Land Management Practitioners to learn from the best practice discovered in the workshops, and facilitate a consistent approach to addressing some common concerns.

- A common methodology of recording Biodiversity Indices in situ, and
- A common methodology of recording a selection of Landscape Features.

The WP8 partners also agreed that it is desirable to incorporate innovative agricultural and forestry practices into any practical guidance that results from HERCULES, in an effort to try to prevent the creation of yet more disparity in landscape management practices.

It was further agreed that, whilst it was important to consider landscape values, it was important to remain focused on the “non-financial” values and “multiple benefits” of landscape, rather than adopting an “ecosystem services valuation” approach.

The objectives and approach for each of the two planned outputs may be summarised as follows:

A common methodology of recording Biodiversity Indices in situ

Objective: To design a basic method of measuring biodiversity in any given location by anybody, and to design a survey approach which incorporates landscape features and their existing / potential biodiversity rating.

Lead Hercules Partner: CIME, France

Initial Outputs:

- Relating Cultural Landscape Biodiversity Value Through a Biodiversity Plot Index Based on Heritage Landscape Features – see Appendix 1a
- Biodiversity Plotting Index – see Appendix 1b

A common methodology of recording a selection of Landscape Features

Objective: To design a basic method of surveying Landscape Features

Lead Hercules Partner: FOC, UK

Landscape features selected:

- Non woodland trees – the largest natural element in most people’s landscape.
- Ponds – Usually a human built element in the landscape; for biodiversity and aesthetic purposes. Found across all landscape typologies and importantly in the urban and particularly peri-urban landscape.
- Wind turbines – A modern landscape feature, which has proven to be controversial in the locations they have been introduced (with a strong amount of research on the effect on the landscape therefore).
- Hedgerows (to include dry stone hedgerows and plant hedgerows composed of the four layers that are tree layer, shrub layer, herbaceous layer or field margin, and moss layer) – One of, if not the, most iconic “traditional” landscape feature in many parts of Europe.
- Access routes (paths, tracks and bridleways) – A significant, often underrated, landscape feature in that the existence of such demonstrate a strong recreational element in any particular landscape.

Initial Outputs:

- Landscape Feature Recording Survey – see Appendix 2.

In developing both outputs, the team also agreed that they should be supported by a common questionnaire for workshop participants (see Appendix 5) as well as to be translated into all relevant languages for each local workshop.

3.2 Local stakeholder workshops: Estonia, Greece, Spain, UK and France

The local workshops are of particular importance for HERCULES because they create a bridge between research and practice. They enable researchers to gain more insights from practitioners on cultural landscapes management and on the specific landscape typology that characterizes the different study landscapes. Moreover, it makes the public as well as authorities, various organizations, and industry more aware of the importance of the cultural landscapes not only in terms of social well-being, but also in terms of economic, ecological rural prosperity and rural identity.

Local stakeholder workshops are also essential as they actively contribute to the vision of the project which is to identify local needs for landscape management and to provide a forum for general exchange on findings developed by HERCULES. They provide a platform for significant and meaningful interactions with local farmers, landowners, local public officials, industries, scientists, etc. Thus, they guarantee the engagement and contributions of local stakeholders to the project. This is crucial as these stakeholders are looking forward to not only receive solutions to the challenges deriving from landscape changes but they are also willing to be consulted and actively contribute to the decision-making process.

Three different series of workshops have been planned in five of the six selected study landscape areas. In the sixth country chosen, the Netherlands, the local workshops series will start in 2015-2016. For the other countries, Estonia, Greece, Spain, UK and France, two of these three series have already taken place. The first series of workshops took place between September 2014 and January 2015 while the second series of workshops is organized between March and May 2015. The planning of the workshops was adapted to the seasonal pattern of local activities of the local stakeholders, mainly farmers, foresters and other land managers. The planning was also tailored to the project's development in order to provide the possibility for other WPs to discuss, refine and/or provide insights about their results.

3.2.1 Aims of the local stakeholder workshops

As the main aim of the workshops is to share the solutions to problems relating to cultural landscapes, and to validate their applicability, it is very important to engage a wide range of local stakeholders to share their knowledge and views as it was defined by the D8.1. Stakeholder Engagement Strategy. More specifically, workshops activities seek to:

- 1) Identify local needs for landscape management,
- 2) Present insights from WP1, WP3 and WP6,
- 3) Discuss and validate the data gathered in WP2, WP4 and WP5,
- 4) Discuss and further refine good landscape practices identified within WP6,
- 5) Test, demonstrate and improve the Knowledge Hub,
- 6) Perform on-the-ground training and demonstration activities framed around 'cultural landscape days' organized with landscape users, and
- 7) Provide a forum for general exchange and feedback to HERCULES.

The first series of local workshops served to establish a first contact with the local stakeholders, to introduce them to HERCULES and to identify the elements they value in their landscape.

In Greece, Spain and Estonia, those first workshops provided the public with the opportunity to speak and be heard on the valuable components of their landscape (e.g. the production of olives in Lesbos, the dry stone walls in Sierra de Guadarrama, the linguistic heritage in Kodavere/Vooremaa). The various threats faced by these valuable elements have also been addressed in the workshops.

For the fast-track study landscapes, local workshops focused on stakeholders' engagement and awareness-raising within the communities about cultural landscapes. In France, as the area of the study landscape also serves as a pilot case for the HERCULES Knowledge Hub, the main goal of the workshop was on the one hand to collect information on the applicability of the Hub and collect data to be integrated on the other.

The second series of workshops focused on the notion of Good Landscape Practices and aimed to introduce the local participants to the HERCULES Knowledge Hub and its uses. In this perspective, an additional aim of this series of workshops is to train local stakeholders on data collection for the HERCULES Knowledge Hub. In France, which is more advanced in the integration of the information related to the study landscape in the Hub, the aim of this second workshop was also to discuss the mobile application linked to the Knowledge Hub. In this second series, the issues addressed in the first series of workshops regarding the valuable components of the cultural landscape were also followed-up.

3.2.2 Stakeholders who participated to the local workshops

In each country where the local workshops are taking place, a wide range of stakeholders have participated to the meeting and contributed to the realization of the HERCULES project. As set in the D8.1 Stakeholder Engagement Strategy, the aim is to involve in the discussion all kinds of stakeholder groupings with regard to landscape on voluntary basis: everybody is invited to share their views and knowledge, and it is their decision to get involved (Fig. 3). The engagement activities are meant to provide opportunity to share opinions, and then to incorporate them into reports and, subsequently, to policy recommendations.

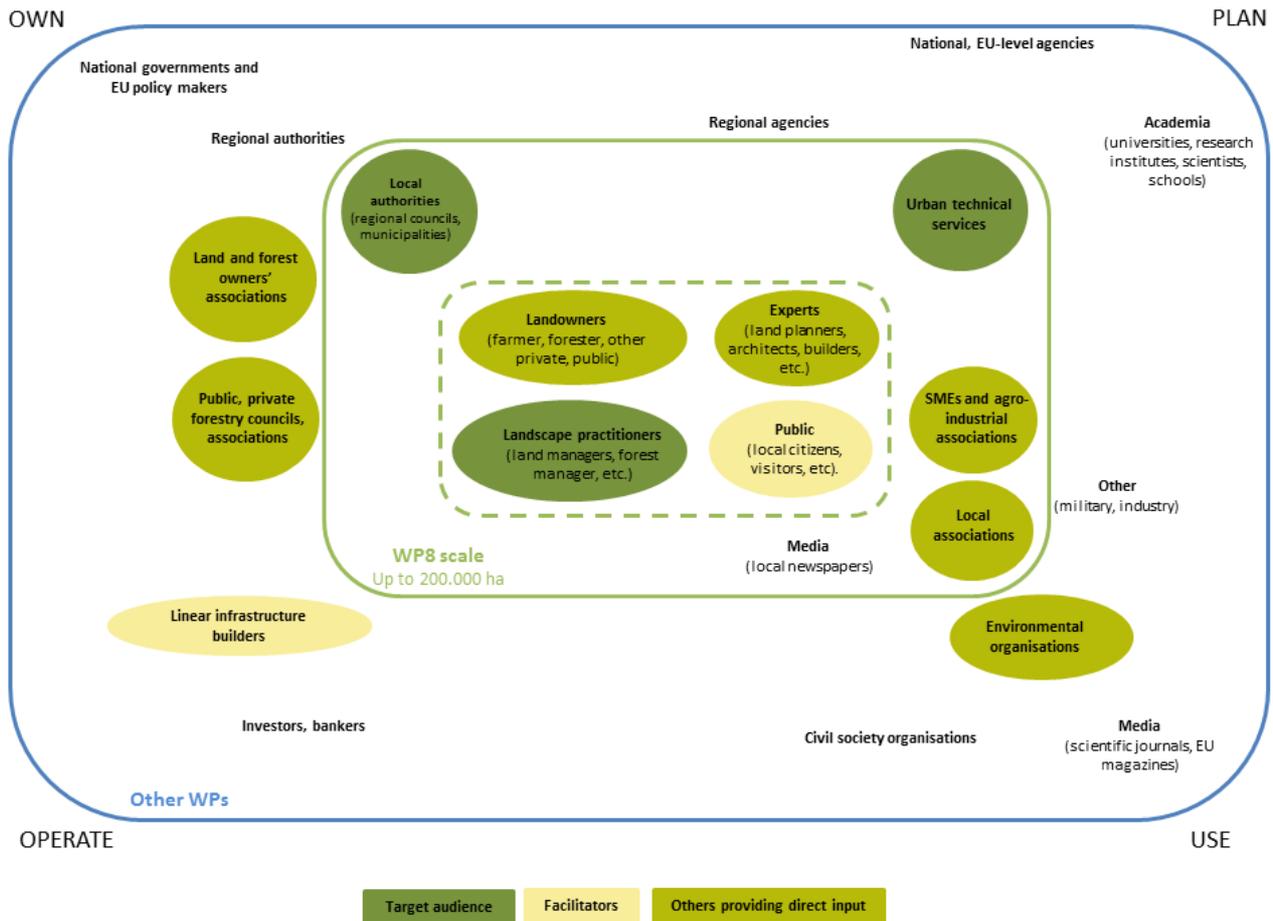


Fig. 3. Identified stakeholders' groups – stratified by their relationship to landscape and with regards to nature of engagement.

As a result of the preparation all five workshops well attended by a well-diversified group of stakeholders:

- In the United Kingdom, local workshops gathered academics, local associations, experts and landowners.
- In France, the workshops were attended by local community representatives, experts and landowners.
- In Spain, the stakeholders who participated to the workshops were local residents interested by the topic of HERCULES in addition to local officials, experts, academics and farmers.
- In Greece, local officials as well as academics, representatives from sector of olives production, local association defending olives producers and farmer consultants participated to the workshops.
- In Estonia, the participants who were involved in the local workshops were members of the municipality, universities, local associations, experts in heritage conservation as well as landowners and farmers. Local residents interested in the topic of HERCULES also contributed to the workshops.

3.2.3 Content of the local stakeholder workshops

During the first series of local workshops, discussions addressed the views of the participants on cultural landscape changes. Participants were asked to talk about the different values they associate with cultural landscapes, which aspects they consider are currently well protected and which are faced with threats. This provided insights on the various landscape characteristics valued by people across different areas and enabled the local particularities of the different landscape studies to be taken into account. Accordingly, workshops in Spain focus on linkages between landscapes and human well-being; in France, because the study landscape serves as a pilot case for the Knowledge Hub, the workshop addressed Good Landscape Practices and the uses and functionalities of the Hub; in the United Kingdom, special attention was given to landscape features' uses; in Greece, it is traditional agricultural activities which are more deeply addressed and in Estonia, workshops concentrate on the connections between landscape and cultural heritage preservation.

The second series of stakeholder workshops was a follow-up on the first series and focused on the notion of Good Landscapes Practices. Participants were invited to explore the content of the notion and to contribute by providing examples of good practices. For example, in Greece, an integrated management protocol for the production of olives and olive oil, which yields high quality olives while preserving the landscape and biodiversity, was build up after the first workshops and presented during the second workshop. In Spain, a particular partnership has been developed with the municipality of Colmenar Viejo which stimulates and gives incentives to stakeholders to further engage and contribute to the HERCULES (notably through the organization of photos contest of the Sierra de Guadarrama area). In Estonia, where an archaeological site was discovered in the area of the study landscape, the debates of the workshop focused on activities which are a threat to cultural heritage and how it is possible to preserve such a heritage without adopting laws which put tremendous burdens on the rural communities to pursue their activities. In France, the second workshop followed up on the first one and focused on the development of a mobile application of the HERCULES Knowledge Hub which was analysed and commented by the stakeholders.

In all the countries, good landscapes practices were discussed in the perspective of the Knowledge Hub. Indeed, the Knowledge Hub and its uses were presented to the participants during this second series and the aim is to collaborate with them to collect good landscape practices to be integrated with the Hub.

3.2.4 Issues and challenges raised during the local stakeholder workshops

Thanks to work already done for the fast-track study landscapes, some issues were already identified by the Stakeholder Engagement Strategy before the first series of workshops took place. Building on these identified issues the topics of the workshops were diversified.

Table 1.a. Issues discussed during the local stakeholder workshops based on stakeholder consultation in fast-track study landscapes.

Main issue	Actions
<p>1. Organise local participation</p> <p>Heritage preservation or promotion seems to be concentrated on big European programs and policies rather than helping and</p>	<p>HERCULES participated in identification and promotion of local initiatives, with a special focus on the identification of good land management practices, linked to</p>

supporting local and specific initiatives.	particular place and climate. Therefore, at local level in each of the study landscapes, HERCULES partners identified local initiatives acting on the field of landscape management and invite them to the workshops. (e.g. in case of the Spanish and Estonian workshops)
<p>2. Provide knowledge on traditional agricultural practices with low environmental impact</p> <p>Lack of information on good landscape practices, such as traditional landscape practices, that can be beneficial for the maintenance of the landscape they live in.</p>	<p>HERCULES' goal was to integrate traditional agricultural practices into the agenda of local workshops with the possibility of field visits where the agricultural practice can be showcased to the participants.</p> <p>In case of the Greece an integrated management protocol for the production of olives and olive oil is the main focus of the series.</p>
<p>3. Promote combination of green frames and soft mobility modes</p> <p>Eco-friendly transport (walking or cycling) may become more favourable when the landscape is more pleasant. Therefore, recovering landscape that supports biodiversity can be beneficial in terms of transport sustainability, too.</p>	<p>During French first stakeholders encounters and survey the relations between green frame and soft mobility, paths and heritage land, wildlife mobility and social issues on mobility of cyclists and pedestrians were discussed.</p>

Table 1.b. Issues discussed during the local stakeholder workshops based on other workshops and face to face discussions.

Main issues	Actions
<p>1. Cultural landscapes versus (new) infrastructures</p> <p>Infrastructure is seen as a major component to cultural landscapes. Linear transport such as railways and highways can fundamentally shape a landscape whether changes are positive or negative (e.g. collective transport in urban area can reorganise urbanisation in a positive way through dense knots and nature spots, rather than continuous centrifugal urban layer). Energy infrastructures such as windfarms are controversial. Landscape Convention is perceived as not being sufficiently weighted in the environmental assessments (lack of awareness of the assessors and authorities). Moreover, energy appears to be a major driver</p>	<p>The discussion at local level addressed the issue of infrastructure, by highlighting some prominent examples of the region.</p> <p>Better information of the local authorities and assessors on the Landscape Convention could be made through guidelines. Better inclusion of the cultural landscape in the environmental impact assessment should be checked.</p> <p>Developing cross-cutting policies are essential both at EU and local level. For example, recent conferences on landscape issues in France acknowledged the link between energy and biodiversity, and the creation of new professorship on 'Landscape and Energy' at the 'Ecole</p>

<p>in landscape transformation, not only by direct impact such as the ones mentioned through windfarms, but also from undirect impacts due to energy policies. Biofuels impacts are already mentioned as threats.</p>	<p>Nationale Supérieure du Paysage (ENSP)' in Versailles is a clear sign of this tendency. Research programs, like ITTECOP, are also engaged around energy networks and biodiversity.</p>
<p>2. Integration of sustainable intensive agriculture into cultural landscapes</p> <p>Farming activity is a key factor in shaping the visual features of rural areas and creating valuable habitats for wildlife. In order to continue to produce enough to meet the food security targets dictated by a growing population, continued development of sustainable intensive agriculture, while maintaining cultural landscapes, is essential.</p>	<p>Topics related to agroecology or sustainable intensive agriculture have been integrated into the agenda of the workshops, including trade-offs and reports on how they were addressed. Local food or labelled production are perceived as a key factor for landscape resilience (e.g. local label in GPMJ, Olive oil valuation in Lesvos).</p>
<p>3. Multifunctional land use</p> <p>Heterogeneity is a basic characteristic of landscapes. Across the EU, agricultural land management has created rich landscape diversity, including a mosaic of woodlands, wetlands, and extensive tracts of an open countryside. Some land take-over is inevitable for infrastructure to answer local community needs (infrastructure: dwellings, roads, bridges, sewers, electrical grids, telecommunications, water supply, and so forth).</p>	<p>The workshops discussed whether multifunctionality is a qualitative characteristic that combines economic and ecological principles in production and improves the end economic results in the area.</p> <p>Thus governance practices should allow discussing the diversity of stakeholders expectations, with regular continuous participation (not limited to single landscape projects on the area).</p> <p>Green corridors policies in progress are in some places (e.g. in France) seen as an opportunity to consider landscape as a whole and integrate heritage and biodiversity issues.</p>

From the first and the second series of stakeholder workshops, the following good practices were collected:

- Traditional agricultural practice – a major issue on Lesvos about how to maintain the traditional agricultural practices while maintaining the characteristic landscape. The participants present during the workshops recognised that the landscape of the olives plantations is both part of their and the island's identity. They have tried to work together towards this. They are all farmers and represent different accompanying activities (a guest house, a restaurant, an edible olives facility, two olive oil companies, tourism outdoor activities, a Turkish bath, etc.). The integrated management system might be able to provide the extra edge they need to bring more people in their effort and make this effort worth their while.
- Local food production – linked to vegetable and horticultural production history around Lyon - is a central topic in GPMJ, France. Good practices are settled around labelling

some local products (such as honey and beer) based on low carbon production, and local delivery through “Les saveurs du Grand Parc”.

- Agroforestry – a project in GPMJ is in progress.
- Pastoralism – developed to maintain the area of the GPMJ.
- Responsible water management – another big issue in GPMJ, as it has to deal both with water production for the whole area, and flood prevention. Good practice here is around managing multi-functional services for the neighbour city inhabitants.
- Management of historical places like the Dehesa de Navalvillar in Spain, or Kodavere heritage in Estonia, can be as well mentioned as good practice. The Dehesa de Navalvillar is an area of outstanding natural and cultural values, of public ownership. The new Uses and Management Plan (2010) and the labour of the municipality officials have achieved a management of the land that is helping to restore and enhance the values of the area. This management focuses on an integrated approach that combines the natural and cultural protection of the area with its use by local farmers and citizens.
- Restoration of historic civil patrimony and management of the holding Suerte Ampanera: the municipality of Colmenar Viejo, in collaboration with the National Heritage organisation and the Autonomous Community of Madrid, is rehabilitating and making accessible many of the medieval bridges, water mills and fulling houses that were very important in the economic activity of the municipality till the end of the 19th century. Management plans in the village of Sääritsa, Estonia, are developed in order to preserve heritage, for example by forbidding building modern houses at the site of an old farm.
- Knowledge enhancement – is also identified as good practices from which examples can be seen both in GPMJ and Colmenar Viejo.

Development of ecological routes – The municipality of Colmenar Viejo has developed eight ecological routes all over the municipality that enhance its natural and cultural values by making the landscape accessible for residents and visitors. Each route has a theme and brings the walker and cyclist into close contact with the natural features and culture of the area (Fig. 4). With the same approach, GPMJ has developed ecological trails for cultural and natural enhancement, and intend to use the KH to promote those. They produce as well panels and publications about local heritage features (Fig. 5).

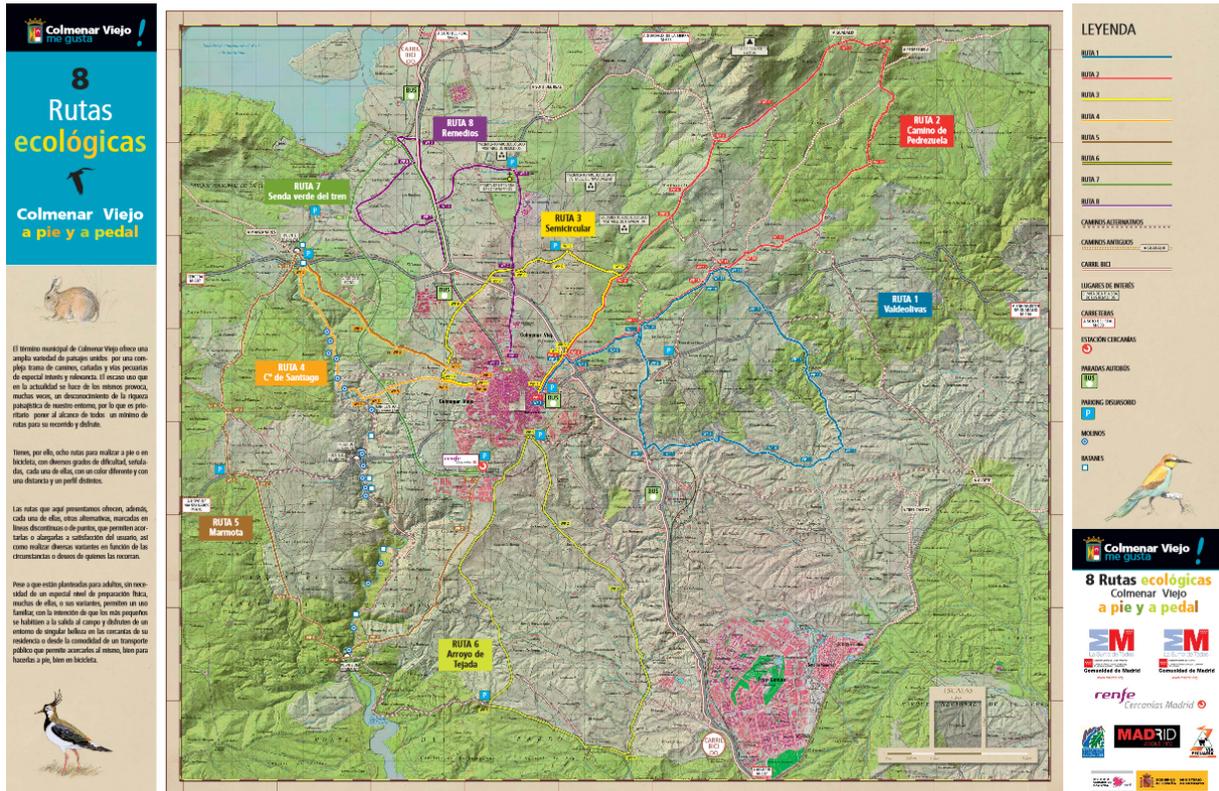


Fig. 4. Map with the eight routes provided by the municipality of Colmenar Viejo.

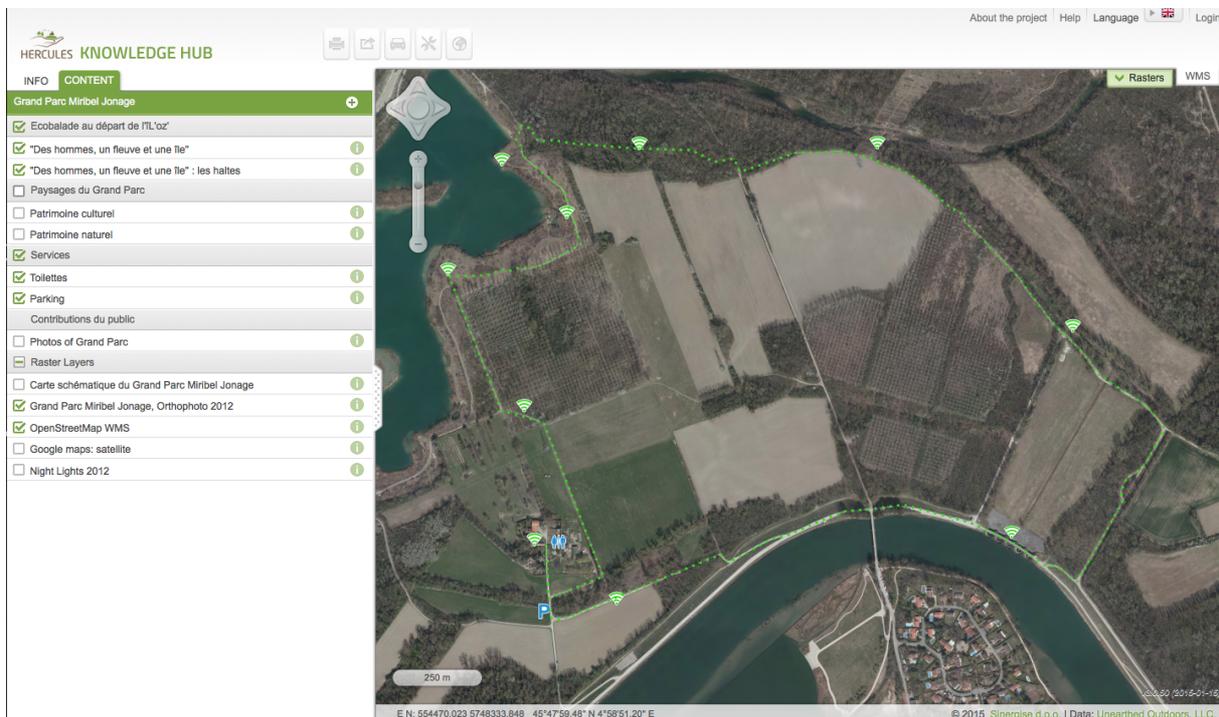


Fig. 5. An example on how heritage trails are enhanced on the Knowledge Hub in GPMJ.

http://kh.hercules-landscapes.eu/#T19_x555686.4466761285_y5748370.27515839_s15_b4

- The municipality of Colmenar Viejo and the Asociación Pico de San Pedro are also producing many interesting publications about the natural, historical and cultural features

of the area. This contributes to the dissemination and enhancement of the landscape values of the municipality.

One important concern was related to heritage preservation which seems to be concentrated on big European programs and policies rather than helping and supporting local initiatives. Through the stakeholders' workshops, HERCULES identifies local initiatives in the field of landscape management and relays them at the European level via the HERCULES Knowledge Hub.

In this perspective, consultations with local landowners, farmers and practitioners are essential to raise public awareness and to reach positive outcomes regarding the tensions that may arise between rural development and the preservation of landscapes. Thus, another issue concerns the necessity to find ways to enhance farmers' activities which preserve and contribute to the valorisation of landscapes.

Another issue identified was the balance to be found between the promotion of rural development, which implies the creation of infrastructure, and the conservation of cultural landscapes. Related to this, the integration of sustainable intensive agriculture into cultural landscapes is also a source of challenges. HERCULES proposes solutions to these issues by providing knowledge on those traditional agricultural practices having a low environmental impact. Furthermore, the project seeks to combine innovative models to these traditional practices in order to reach the most sustainable outcome on the medium and long terms.

During the second series of local workshops, in case of the slow-track study landscapes, the workshops offered a platform where HERCULES researchers, notably researchers from WP1, WP2 and WP6, could interact with stakeholders involved in issues related to Good Landscape Practices. First, the stakeholders were invited to discuss the notion of Good Landscape Practices and whether the result of these practices should be to enhance the economic value of the landscape. However, the risk of this definition was also underlined as every sector and stakeholder has a different view on what is a source of economic value. Another point that appeared as an issue is the balance which must be found between the use and enjoyment of the land and the preservation of landscapes and their cultural values.

3.2.5 Future planning of the workshops

The third series of workshops will take place in autumn 2015. It will present the findings of the regional case studies, and will also be diversified. Here, participants will be asked to provide feedback on the results attained through the case studies, and how these could be translated into meaningful policies.

During this series of workshops, comments on the HERCULES Knowledge Hub will be collected, while the benefits of using and contributing to the Hub will be demonstrated. Moreover, this series will also seek to further engage local stakeholders in continuing to use and contribute to the Hub.

3.3 Interactions with HERCULES European-level workshops, Brussels

In parallel to the local stakeholder workshops, European-level workshops are organized as part of WP9 of HERCULES in order to disseminate the information and data collected during the local workshops on the policy-making scenes.

The first EU level workshop took place on May 23, 2014 with 38 registered participants. The aim was to introduce HERCULES to a diverse group of stakeholders, ranging from landscape practitioners and academics to EU-level policy makers. One of the core objectives of the workshop was to engage attendees in a discussion on their views regarding cultural landscape change. Following talks by a number of policy experts and academics, workshop participants held fruitful debates with the panelists and amongst themselves. Topics included the values and judgments inherent in the contrasting definitions of cultural landscapes, the public policy implications of dealing with landscapes, and differing views of what constitutes cultural heritage in landscapes.

The second European level workshop took place on June 3, 2015, with 54 registered participants, and addressed the notion of landscape stewardship. The third EU level stakeholder workshop, scheduled for January 2016 (month 26), will present the findings of the regional case studies, and will also be diversified.

The discussions during local stakeholder workshops feed the agenda of the EU-level workshops. The findings of local events are presented and discussed with EU-level stakeholders, in order to explore issues, share ideas and best practices, generate ideas, and identify and raise awareness of emerging issues at local level. Good landscape practices identified during the local workshops are presented at the EU-level workshops. This is intended to link issues explored on the local and EU levels more explicitly and to broaden stakeholders' knowledge.

4 Towards guidance on localised skills and knowledge for cultural landscapes

4.1 Systematic identification and collection of landscape skills and knowledge

To identify landscape skills and knowledge, the methodology described in the second chapter of this deliverable was followed. The first part of the analysis focused on whether tangible indicators were sufficient to highlight the existence of a localised skill or particular knowledge that is valuable to preserve the landscape and heritage in which they are used. To collect such kind of skills and knowledge, it was necessary to identify the practitioners using them. This also contributes to assess whether the skill or knowledge relied on has a positive impact on landscape protection. In addition, to decide whether the practice underlined the cultural aspect of the landscape, attention was placed on observing whether that practice nourishes the connection that local communities or even the wider public entertain with the landscape or one of its specific feature.

The multiple values our ancestors placed on our cultural landscapes and the elements contained within it have changed considerably throughout the human history of all European landscapes. Across Europe, over the past century – longer in some countries, shorter in others – rural communities have experienced massive changes which have depleted not only their populations working in traditional agricultural and land management but also the cultural heritage in many of our landscapes. At the same time, new landscapes such as the suburban have grown rapidly, while the agricultural employment emphasis of more rural villages has often been replaced by residents who have little or no connection to the land.

Yet it is still possible to find rich cultural links to our landscapes and the elements within it. Celebration and local markets betray such locations. For example, in February 2015, well over 200 villagers turned out in the Devon village of Stoke Gabriel (UK) to celebrate “Wassail” – an ancient ritual to fertilise the apple trees. In France, the sale of “terroir” products increases gradually year by year; and in many other parts of Europe there are celebrations of the landscape derived from ancient tradition or simply the regional market. All of these celebrations and cultural traditions are in general strong indicators of where traditional sustainable land management has from time immemorial shaped the landscape, and they therefore highlight where we can home in on traditional landscape skills, knowledge and local identity.

A key problem in identifying good landscape practice is easily identifying those with the localised skills and knowledge necessary to deliver it. Attempting to clearly specify the roles of the practitioner, contractor, client and consumer (to use modern business terminology) would ignore the complexity and diversity of those with the relevant skills and knowledge, which is as complex and diverse as the landscapes in which they live and work. In traditional societies, such knowledge was often held by individuals as part of a wide-ranging understanding of the characteristics of their locality and its landscape, whereas in modern society it is often “broken down” into its component parts each of which is seen as a particularism in its own right. For example, the myriad of specialist knowledge required to “plant and maintain a copse of trees” would ideally require the specialist knowledge of several disciplines – a “Landscape Architect” to design and plan the layout, a “Silviculturalist” to examine the specifics of the chosen location, a “Plantsman” to select the right tree with the right rootstock, a “Landscape” to plant the tree, an “Arborist” to prune and maintain that tree, and an “Arboriculturalist” to test and regularly watch that tree. And involving those disciplines assumes that there has already been a separate decision-making process about the specific purpose of that copse of trees, for example to whether the landowner seeks to achieve amenity, fruit production or timber production objectives.

In reality of course, such a large number of disciplines would not be involved in the planting and maintenance of a copse of trees, even allowing for the “compartmentalisation” of the modern approach to specialist knowledge. There are many examples of disciplines which are based on cross-specialism, particularly in rural areas where tree planting would more often than not be carried out by one person, often the landowner himself. In France the title “Ingénieur Paysage” (Landscape Engineer) and in the UK the term “Landscape” is often used for the mix of skill sets which allows for this cross-specialism, which of course exists elsewhere. This concept therefore highlights that landscape practitioners and / or contractors are often linked to the landscape in which they work, having gained the knowledge to carry out numerous functions within a given place and nowhere else.

Therefore, for the sake of all work aimed at producing cohesive guidance to promote good landscape practice, the term “Land Management Practitioner” will be used as a generic term to cover all those who work with or on the land. The HERCULES team has set up a concrete way of collecting traditional landscape skills and knowledge in order to reach this aim of cohesive guidance, by elaborating a “Protocol for gathering localised landscape skills and knowledge”, which can be found as Appendix 4.

4.2 Good landscape practices as results from localised skills and knowledge

From the various skills and local knowledge having positive impacts on landscapes, the project aims to build upon the several practices that contribute to the preservation and protection of the landscapes in order to provide operational guidelines to practitioners. In accordance with the methodology set up for this deliverable, it is from these very local techniques that efficient practices in terms of landscapes preservation and valuation were identified. Such practices seek to reinforce biodiversity on the one hand or particular landscape features on the other. Indeed, these are the main sectors where consistent and meaningful guidance can be provided to/by landscape practitioners.

The techniques described below derive from discussions and interactions that took place in the course of the various local workshops. They are some examples of processes that can be implemented on the ground to value or protect cultural landscapes and heritage. However, good landscape practices and heritage can be identified in several forms and are not limited to the ones following.

Access – Well managed and regulated access to land greatly contributes to the preservation of landscape. Moreover, it strengthens the link that people have with the different features of a particular landscape. However, one shall be reminded that the financial costs of maintaining the landscapes do not fall within a ‘one size fits it all’ approach and should be shared between the beneficiaries of cultural landscapes.

Allotments – Many historic allotments across Europe contain small scale sustainable land management techniques, which have been created and honed over many generations for a specific, very small, location which is usually situated in the urban or peri-urban landscapes in which the majority of people live.

Art – Landscape has been for many centuries, and continues to be, greatly influenced by artistic activity and movements. Paintings, literature, music, and more recently photographs, films and television documentaries provide historic evidence which enables a wide audience to learn about and understand the changes that have occurred and are occurring in the landscape, for good or ill. Thus, they can provide a platform for discussion and collaborative action linked to landscape protection.

Bridging habitats – The fragmentation of our landscapes is a huge threat to the biodiversity that enables the health of our cultural landscapes to be sustained. Efforts to ensure nature-rich habitats are linked together, and thus ensure migratory routes for wildlife, have allowed the retention of many landscape features as well as the creation of new ones. Rural activities such as hunting and fishing also contribute to the maintenance of such ecological corridors. Developing such bridging features often involves developing innovative solutions to landscape management issues, again highlighting the need to share skills and knowledge over larger distances and also into peri-urban / urban landscapes.

Celebration – Celebratory traditions such as fairs, shows, competitions, traditional ceremonies and even sport have for many centuries provided a solid, tangible link between individual communities and their landscapes. Quite often, these traditions of celebration are highly localised in character, and they are also often linked to other good landscape practice examples, especially those related to the production of food and other products from the celebrated landscape.

Community planning – The push towards ‘neighbourhood planning’ and community driven strategies in some parts of the UK and elsewhere are exemplars of the ‘bottom up’ system of managing ‘landscapes’, where the communities themselves produce their own documentation setting out their objectives and priorities for the development and preservation of their local landscape, and, in doing so, commonly list those individuals within the particular community who have the skills and knowledge needed to deliver those priorities.

Heritage horticulture – The rich variation in seeds and plants, bred for a specific landscape, are very solid proof of the traditional skills and knowledge within a landscape. The loss of these varieties displays a loss of skills and knowledge. Any work towards identifying, recording and re-establishing these varieties allows for a rapid re-establishing of lost skills and knowledge – specifically relating to the soils and climate of particular landscapes.

Multiple values of landscape features (both man-made and natural) – Many specific features within any particular landscape (such as hedgerows, dry stone walls and localised landscape features – such as Fosses in Western France) commonly provide the most tangible example of the cultural heritage of that landscape. Such landscape features were placed with more than a single objective in mind and they have acquired multiple values throughout their existence in our landscapes. They remain as physical elements which are not only valued as attractive and/or biodiverse landscape features, but also can illustrate the skills and knowledge of our forebears, particularly their engineering skills and knowledge.

Rural activities – Traditional and modern rural activities; such as angling, hunting and localised small or bigger scale production (often linked to Terroir produce), have a considerable effect on local landscapes – sometimes defining that landscape over considerable time scales. Often, such activities are sustainable and help stabilise a local landscape.

Geographical indications and traditional specialities – Three EU schemes known as PDO (protected designation of origin), PGI (protected geographical indication) and TSG (traditional specialty guaranteed) promote and protect names of quality agricultural products and foodstuffs as a result from their specific character which is partly linked to landscape they are produced in or to the traditional skills used to produce them.

- Protected Designation of Origin - PDO: covers agricultural products and foodstuffs which are produced, processed and prepared in a given geographical area using recognised know-how.
- Protected Geographical Indication - PGI: covers agricultural products and foodstuffs closely linked to the geographical area. At least one of the stages of production, processing or preparation takes place in the area.
- Traditional Specialty Guaranteed - TSG: highlights traditional character, either in the composition or means of production.

Terroir – A French word for an almost philosophical method of valuing the land – especially the soil – and its management through the taste of a final product (such as a particular type of cheese, meat or wine). This concept is found across Europe. Such products command considerably higher profits than standardised food products and are readily publicised in the modern media surrounding the food and drink industries.

An on-the-ground ‘Set of Good Practice Examples to be put on the Knowledge Hub’ has been elaborated in the frame of HERCULES and can be found as Appendix 3.

4.3 Incorporating innovation

Agriculture is the largest by land area industry in European landscapes, yet “landscape” when measured and further discussed from an aesthetic point of view may not always take into account the highly significant cultural factors resulting from the long history of agriculture. Public perceptions are influenced regularly in the national media of many countries and agriculture itself is facing a huge image problem (particularly in the rapidly growing social media arena).

If agriculture is to evolve towards better sustainability and a secure financial future, it will be vital for it to adopt successful innovation strategies. An example of how this might be achieved was provided by the discussions at a workshop focusing on fruit production, which was held at the Eden project in Cornwall, and at which FOC (as part of the HERCULES project) were invited to take part. As one attendee, during discussion at the UK Cultural Landscapes Day Event 2014, stated: “Consider how long Devon could supply London in food? Weeks? Days? No – more likely measurable in hours, if even that. Devon, a rural county, cannot sustain itself. This should not weaken the position of farming, it should strengthen it. To achieve sustainability for everyone, everywhere we must be allowed the right to be at the table and be listened to”. The varied audience comprised people with an interest in the potential primary and secondary finance flow from sustainable fruit production, and the presenters included growers, machinery suppliers, service engineers, and representatives from supermarkets and other outlets.

One of the key learning points was the success of several producers who had achieved a route to market using local “landscape based” products, and the use of landscape features (such as hedgerows, “redundant” areas of land used for clump planting, agro-forestry etc.) as a source of considerable supplementary income, independent of subsidy. It was clear from the discussions that this approach was highly attractive to many attendees.

Interactions during the face to face meetings and workshops showed that cultural heritage and landscape practices are perceived as modern concepts. There is no nostalgia or push for the “good old times” but rather a demand for adaptation of practices with new/modern techniques and broader involvement of stakeholders. A lack of communication was pointed out which is hampering the dissemination of good practices.

4.4 Communication, governance and stakeholders involvement

Many wider issues discussed in the workshops or raised during survey work indirectly or directly relate to communication. Stakeholders identified many problems about ensuring effective, two-way, all-inclusive communication in a landscape, about that landscape. By far the biggest problem identified results from the myriad of different backgrounds of those involved in a landscape, which means that people very often communicate only with those of similar background – for example, farmers talk to farmers, foresters to foresters, etc.

To break down communication barriers, it was tested for the first Cultural Landscapes Day events in the UK the idea of focusing on one prominent landscape feature: Non Woodland Trees. A “walk and talk” with a well-known “tree” personality, followed by an evening lecture by a prominent arboriculturalist, was hosted by FOC in the Modbury study landscape. The event attracted a wide and mixed audience and allowed for a brief discussion on

landscapes within the program. But this was a slow and costly approach – although it may lead (as in the case of the Modbury event) to the establishment of a local group who wishes to take the discussion further and focus it more on the locality.

The language of landscape is a further problem. Each interest group in each locality, sharing a common language, could have several words for the same thing or several things described by the same word. When we add in the consistent desire of many from national and international levels to establish their own ideals or methodology, it simply results in further confusion, which thwarts progressive discussion.

The various workshops, the Cultural Landscape Days and other events have, however, consistently identified one way of overcoming this difficulty concerning the lack of clarity in communication about landscape issues. Virtually, all the events held so far suggest that discussions which focus on particular landscape issues or landscape features are the most effective method of engaging with a wide range of local stakeholders.

The media activities of HERCULES and the co-design of the Knowledge Hub are working toward reducing the lack of communication and creating an online community of involved followers.

4.5 Education

In the course of HERCULES, attention is placed on raising awareness of as many actors as possible on the protection of cultural landscapes and heritage. Involvement of young generation to ensure the long term benefits of the project is realised through several means: 1) information on cultural landscapes is spread through the CLD; 2) the participation of young people is encouraged during the different workshops organized at the local level; 3) the Knowledge Hub gathers examples of good landscape practices and is an interactive tool used to share knowledge and catch the attention of the public, whether young or not, on the protection of cultural landscapes.

4.6 Elaboration of a guidance structure through good practice collection on the Knowledge Hub

Some of the good practices collected are settled on the KH according to the index illustrated in Fig. 6 below, sorted through:

- Knowledge enhancement,
- Forest heritage management,
- Cultivated biodiversity and agroecology,
- Urban green corridors,
- Water protection through chemical free maintenance,
- Nature based engineering, and
- Heritage and cultural landscape (input from WP6).

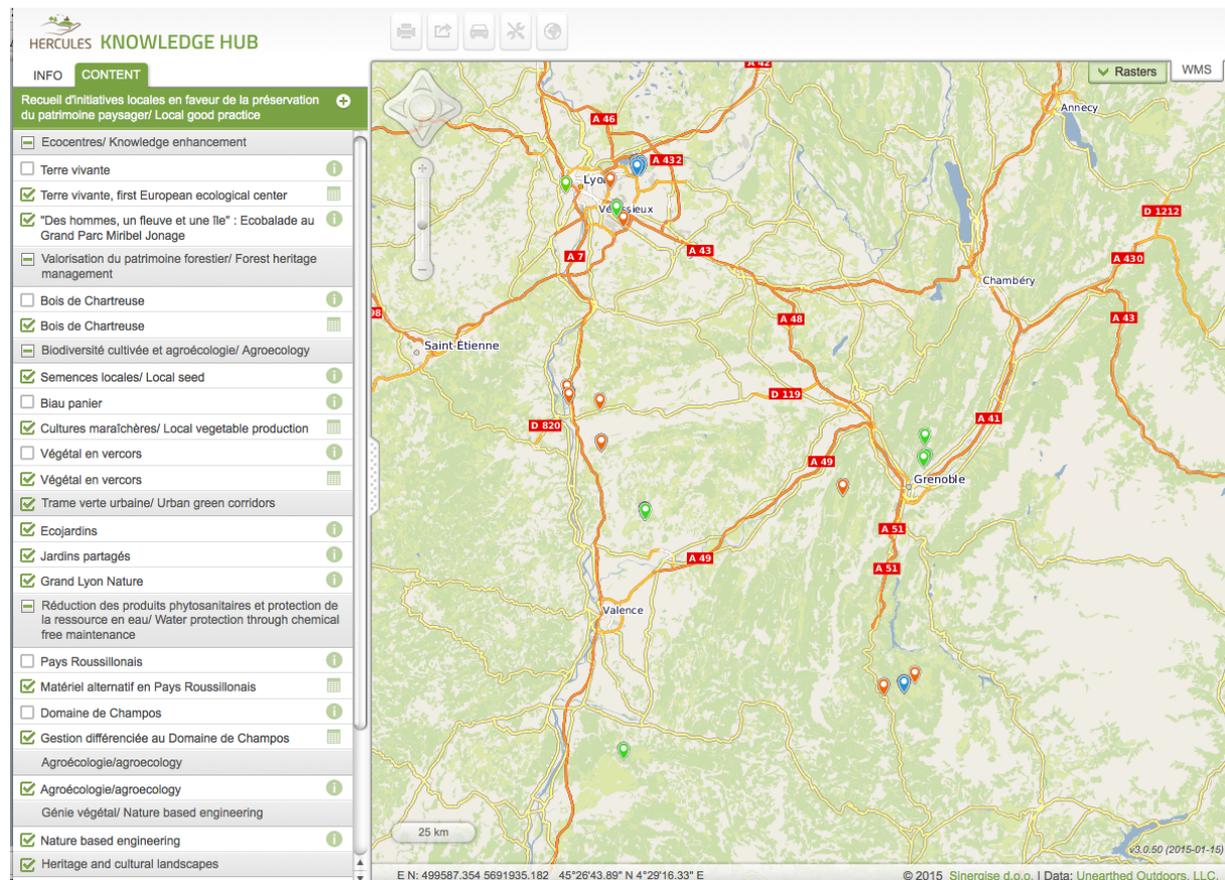


Fig. 6. Summary of local good practice inventory on the Knowledge Hub. http://kh.hercules-landscapes.eu/#T33_x604764.7046460258_y5654481.037993275_s9_b4

Others, like those collected through recent local workshops, should be integrated as well in the coming month. This is further work planned for the next task, T8.3, scheduled on month 30. In the end, the KH will be the structure hosting good landscape practises, thereby acting as the main tool to provide a clear and cohesive guidance for SMEs, associations of citizens, public authorities and agencies.

5 A way forward

The HERCULES Knowledge Hub has been set up as the key tool to enable continued discussion about good landscape practice after the end of the research project. It will provide clearly identifiable and recorded examples of good landscaping practice, with an emphasis on traditional knowledge and localised skills, which can be readily linked back to their locality and serve as cohesive guidance. However, there remains the need to create a backdrop to enable the Knowledge Hub to be central to a Europe-wide data-set of good landscape practice.

Most of the practices listed in the appendices are taken for gardening and small-scale landscaping work in “post-production” landscapes and peri-urban spaces. An important next step will be to also consider more large-scale landscaping efforts that affect “production” spaces, in particular intensively used agricultural landscapes, in the Knowledge Hub. Also, the protocol and questionnaire developed for identifying good landscape practices in the fast-track study landscapes in the UK and France need to be transferred to the slow-track study landscapes. This will be done through the third round of local-level workshops in these study

landscapes. WP8 will, together with local case study landscape leaders, have compiled a list of such practices for each slow-track study landscape after the end of the final workshop round. Some recommendations to achieve the necessary centrality of the HERCULES Knowledge Hub are proposed below, together with some wider issues discussed in this report, which result from the initial workshops and surveys.

Collaborative measures to ensure common communication.

The identification of any other governmental or non-governmental organisations (local, national and international) and individuals working on issues related to the ongoing objectives of HERCULES towards potential collaboration should be encouraged at all times and has been included in the Communication Strategy. As the KH develops, it has the potential to provide an ongoing platform to enable comparison, whereby we can all learn from others' successes or mistakes. Synergies with other EU wide initiatives have been developed such as links with the Biogeographical Seminars or the EU Green Week.

Third local stakeholders' workshops

Taking place between September and November 2015 in the different case study landscapes, the third series of local stakeholders' workshops aims at testing and demonstrating the KH with the landscape practitioners on the ground. The usability of the Hub will be evaluated by local actors in regard to different criteria such as efficiency of target achievement, acceptance, and cost effectiveness.

Incorporating existing, proven practitioner methodology

There are many constraints placed upon the land management practitioner industries, which have been in the past and will continue to be a problem towards providing cohesive guidance. To use existing, well-tested practitioner methodologies insures against the risk of proposing guidance which does not take account of constraints, and allow for the easy integration of guidance into the land management practitioner industries.

Examples include:

- Site specifics; This simple methodology of evaluating mapping data before evaluating "on site" or lateral data can be easily added by way of providing a "one stop shop" for an evolving amount of information from a myriad of sources – as well as specific requirements to investigate whilst on site.
- Visual analysis; There are many different methods for undertaking a "Visual Analysis" of landscapes, which can be an extremely effective planning system to avoid aesthetic mistakes. Appendix 1 includes a suggested guidance technique, which can be easily adapted to meet the varying needs of a wide range of stakeholders, whether local, national or international.

Use of and continued trialling of online resources

Whilst the internet is rapidly becoming available to all, many rural locations do not have good connection (that is to say fast broadband). There are many reasons for this, but one resulting problem identified in the UK workshop is a reflection of the conflicts over landscape priorities, mentioned above. In the South Hams area of Devon, many people not involved in land management have successfully lobbied against the installation of communication masts and other internet infrastructure, on the grounds of their adverse impact on landscape quality.

Clearly, this is an example of different socio-economic priorities between different stakeholders based on different perceptions of landscape quality and purpose.

However, those involved on a day-to-day basis with the management of land and landscapes are increasingly using online and social media methods to interact with their peers, accreditation organisations and others. Indeed, many Twitter and Facebook accounts are now used as repositories of information because the storage of data on larger social media sites is free, thus attracting followers by default.

In this context, the development of the Knowledge Hub through links to deposited data linked to a specific location will increase its data storage capacity, which will be of considerable benefit in the site specific approach.

Cultural Landscape Days – Celebrating Landscapes

Due to the success of such events aiming at discussing selected landscape features, planning etc., and the ongoing high turnout at local and regional fairs and shows, it should be considered to participate in such events as much as and when possible. Many other options are available: competition, social media pages dedicated to a particular landscape or theme, etc. Promoting landscapes as a fun introduction to the myriad of issues which affect everyone working and living in any and all landscapes should be considered a priority. “Road Shows” are a novel, innovative approach to this, with recorded success at dissemination of wider material – if people feel a part of something, then they feel they are being listened to.

6 Conclusion

The aim of this deliverable is to provide a method which can be relied on to translate localised skills and knowledge into broader good landscape practices implemented by practitioners. Fig. 7 below set forward the different steps that one shall take to collect and disseminate practices that contribute to the preservation of cultural landscapes and heritage in a sustainable way. This is the approach that was endorsed by the members of HERCULES. It is important to underline that this is an ever on-going process as good landscape practices can always emerge as a results from innovation, stakeholders’ interactions, new landscape features or change in biodiversity indices. In this way, HERCULES hopes to ensure the legacy of the project and produce long term results.

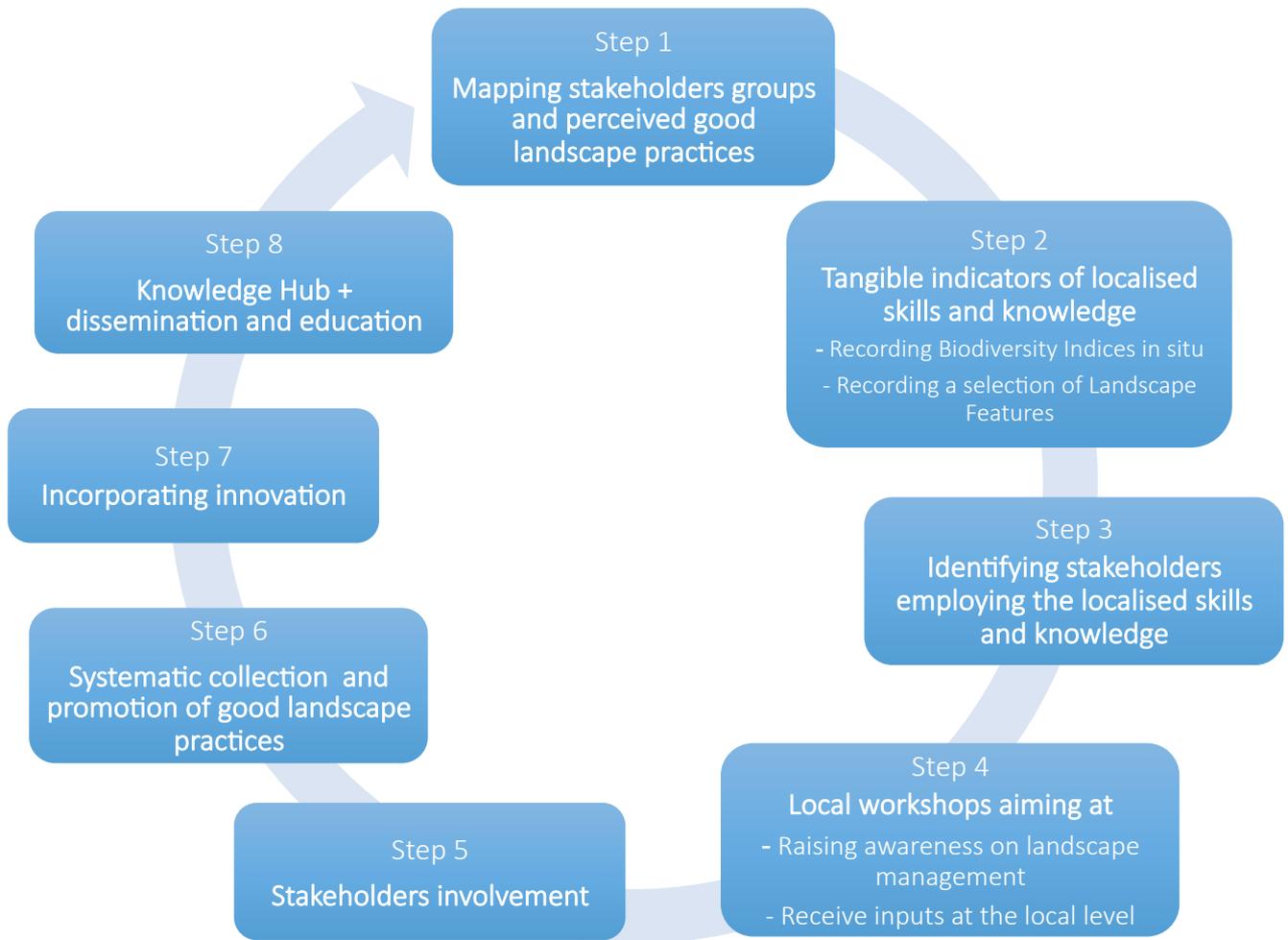


Fig. 7. Operational guidelines summary for the collection and dissemination of good landscape practices.

7 Appendices

Appendix 1a. Relating Cultural Landscape and Biodiversity Value through a biodiversity plot index based on heritage landscape features

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HERCULES

Sustainable futures for Europe's HERitage in CULTural landscapES: Tools for understanding, managing, and protecting landscape functions and values

GA no. 603447

Appendix 1a Relating cultural landscape and biodiversity value through a biodiversity plot index based on heritage landscape features

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ABSTRACT:

Keywords: landscape, biodiversity index, survey, heritage, HERCULES, inventory

Biodiversity is an existential subject in our societies where landscape issues permit to think about its conservation at different scales. Under European HERCULES Program, the goal was to realize a plot biodiversity index tied to natural and cultural landscape features.

Firstly, biodiversity index was instituted on the basis of questionnaire linked to each landscape features. Flora inventory performed into two sites on Grand Parc de Miribel-Jonage (France) didn't show evident correlation between biodiversity index measurement and real species richness. Moreover, Lepidoptera and Odonata inventories didn't support hypothesis that moist and dry landscape features alternative could increase species richness present into site. As landscape perception survey conclusions from D8.1 demonstrated stakeholders attachment both on local natural and cultural heritage and biodiversity issues, further development of such indicator could be ensured to be operational in future.

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Appendix 1

Introduction

1.1 Presentation

This work is meant to emphasize relationships between heritage landscape features and biodiversity value. It aims to link biodiversity with cultural landscape features creating a biodiversity plot index. Chosen landscape features were compared with a flora inventory set up in GPMJ.

1.2 Latest developments

Biodiversity erosion remains as being a recurrent assessment in our current society with habitat eradication and fragmentation remaining the main causes of this decline (Millennium Ecosystem assessment, 2005). This erosion has never been higher for the last 40 years and seems to accentuate today (Butchart et al. 2010). Several factors could explain it. With much especially linked to agriculture land change uses post-war or urbanisation (UNEP, 2014).

To offset this decline, studies are first focused on intra- and inter-species habitat to determine conservation of natural environments and resources at the local level. The concept of habitat quality is defined by Hall et al (1997) as "the ability of the environment to provide the conditions necessary for an individual to the persistence of a population." It gives a capacity index Home and population retention. In terms of habitat, several factors may determine proper operation. In particular, the role of rare or endangered species but also of species richness that enable better control the middle trophic interactions and disturbances (Loreau 2001; Tscharntke et al, 2005). In addition, the size and type of habitats plays an important role on the relative abundance of certain species of birds as demonstrated Chiron et al (2013). However, Tscharntke et al (2005) emphasizes the need to think about a biodiversity conservation on a larger scale. The concept of connectivity between habitats showed a positive impact on the persistence of metapopulation (Schooley & Branch, 2007). Connectivity between habitat or patch is also linked to the concept of habitat availability, which considers a patch as a space where connectivity is an essential component of the landscape and allows species to reach their food resource. It is also linked to ecological processes (dispersal ability) and genetic (gene flow) for the sustainability of metapopulation (Luque et al, 2012). Mortelliti (2010) adds the effect of the size of the habitat for the food

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resource availability. Also, the diversity of larger scale environments induces a greater species richness in soil (Atlas of Soil Biodiversity (EU), 2013).

This concept of connectivity between habitat and landscape suggests to us that, at the European level, storage and protection of habitats and species (92/43 / EEC or 79/409 / EEC) have therefore limitations if they are not embedded in a larger scale analysis (Mortelliti, 2010; Luginbühl & Terrasson, 2012; Ohnesorge et al, 2013). Laws, decrees and agreements to take into account landscape issues in land management exist at different scales (European Landscape Convention (CEP), 2000; Grenelle II environmental, 2010). In France, Green and Blue Corridors (TVB) aim to improve the quality and diversity of landscapes (Article L 371-1 of the Environment Code) and preserve and good state ecological continuity. The National Orientations for Green and Blue corridors (Decree No. 2014-45, 2014) describe the functionality of ecological continuity through the diversity and structure of the media but also the level of fragmentation and the interactions between environment, species and species and environments.

Therefore, landscape ecology is of major importance in the sustainable management of territory and aims to assess and maintain sustainably key ecosystem services of a territory (Iverson et al, 2014). Habitat fragmentation induces a loss of connectivity between them and a decrease of species dispersal ability and diversity at the regional scale (Loreau, 2001).

Our study focus on landscape markers as they allow to describe, identify and make visible the surrounding landscape. However, it seems necessary to confront them to the socio-ecological dynamics of a territory in a sustainable development context (Luginbühl & Terrasson, 2012). These markers may indicate a heritage often related to one or more local human activities. They reflect a particular attachment to territory and include the concept of biodiversity as they can transcribe a synthetic counterpart of the natural environment (Jansen et al, 2012; Luginbühl & Terrasson, 2012; Bieling & Plieninger, 2012). In addition, some ancient cultural practices and certain ecosystems special permit renewed in biodiversity and cultural services (EEA, Copenhagen, 2010; Harrison et al, 2010). The MEA (2005) reflects the cultural ecosystem services as a non-material benefit from the enrichment of spiritual thought, cognitive development, reflection, recreation and aesthetic experience. Jansen et al (2012) adds the notion of tourism related to cultural heritage.

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1.3 Objectives

This work is meant to conduct a biodiversity assessment tool directly linked to the cultural heritage of this territory. This objective is part of a holistic approach to integrating landscape ecology, socio-economic approach and cultural needs in the scientific, political and cultural practice (Landscape Character Assessment, 2002, Schultz et al, 2007; Biodiversity Indicator Partnership, 2010; Luque et al, 2012; Plieninger & Bieling, 2013). This tool is intended to provide the basis for vertical and horizontal approach to landscape that includes both ecosystems and the landscape dimension while including the attachment to certain elements of the landscape of actors of our territory study (Schultz and al, 2007; Secretariat of the Convention on Biological Diversity, 2011; Chiron et al, 2013).

Flora and fauna inventories come in support of the method to correlate or disprove results measured on two selected plots, through statistical analysis. This method could be used within WP8 work to assess good practices observed.

2 Material and Methods

2.1 Presentation of study area

2.1.1 Location

The French study landscape area is based in Rhône-Alpes region (long 5°02' lat 45°48') and more specifically in Grand Parc Miribel Jonage. The two tested areas are: “Garenne” and “Plançon”. Garenne is a more natural landscape than Plançon. It includes several natural aquatic and terrestrial elements. Plançon is identified as an agricultural landscape giving rise to terrestrial agriculture within a natural heritage mosaic. Nearly 3,5 kilometers separate “Garenne” to “Plançon” (Fig. 1).

Grand Parc Miribel Jonage is in Rhône-Alpes area, upstream to the city of Lyon, and marked by historical functions, including water provision for the city inhabitants.

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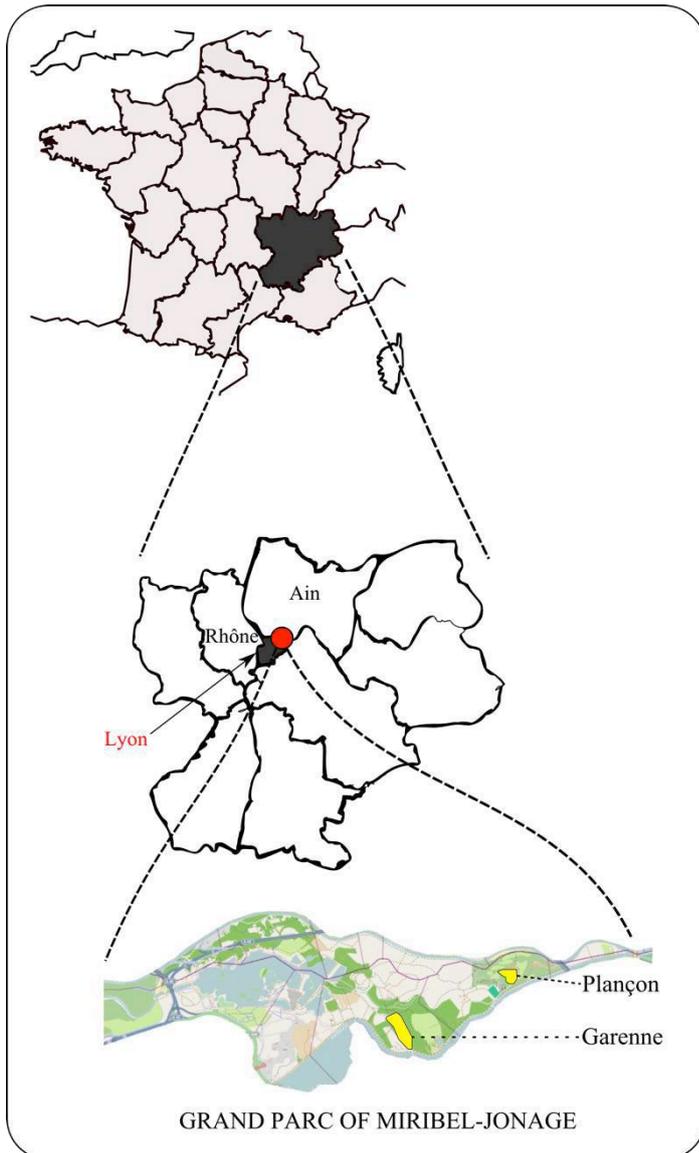


Fig. 1 Localisation of “Grand Parc de Miribel Jonage” and study are “Garenne” and “Plançon”

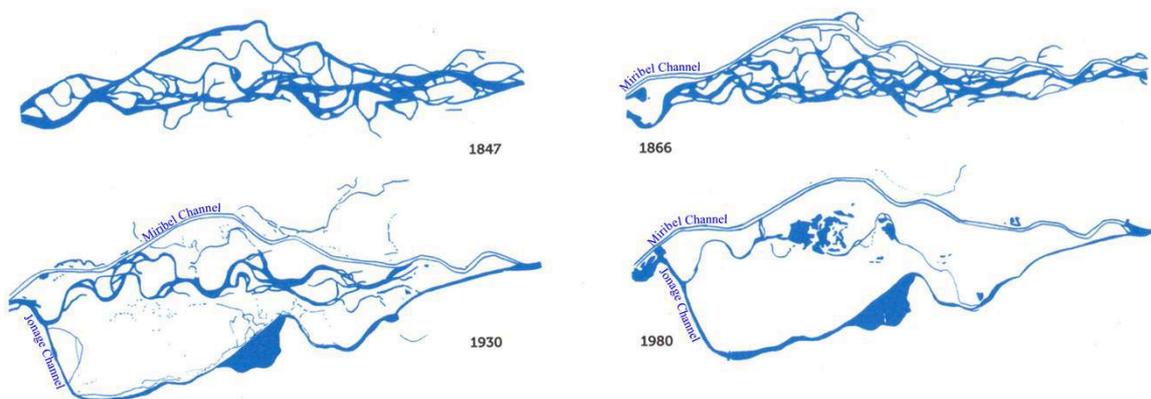


Fig. 2 Weaving evolution of Rhône from 1847 to 1980. Source: Claire Monard in Symalim (2013)

Appendix 1

2.1.2 Landscape history and environmental characteristics

From the junction of the Rhône with the Ain river to the entry of the city, the study landscape encompasses one of the last natural, unaltered confluences of Europe with a dense riparian vegetation. The delta offers a variety of remarkable environments of running or standing water, willow gravel bars, alluvial forests, dry steppes, and “lônes”. Although some areas with a largely natural character still exist today, other parts of the study landscape are heavily altered by human influence, including several drinking water catchments (Charmy-Crépieu, Jonage, Décines ,Mezieu) that are exploited.

The dynamics of water flow and sedimentation is complex, and since a long time humans tried to find a good balance that complies with their needs. Today, climate change and changes undergone by the river system in the upper basin, such as infrastructure development in the area near Lyon for 150 years, are at the centre of “readjustement” processes that aim to reduce the trend of urban expansion and acknowledge the Lyon tradition for protection of the upstream to benefit the city.

In the early 1960s, while industrial development concentrated in the areas Rhône downstream, upstream infrastructure had to accommodate the new tertiary centre of Lyon without retaining its hydraulic functions. The area served as backfill for transport infrastructure and was used to produce construction material and accommodate flood flows.

A second wave of hydraulic impacts came in the late 1980s, when urban development increasingly threatened the area’s drinking water resources. It became clear that the Rhône upstream could not accommodate mutually incompatible economic functions and the proliferation of devices like the motorway A 46, TGV route, and hotel and camping projects. Choices had to be made and in 1991 the Grand Lyon community set the place as “unalterable natural site” to protect a part of upstream Rhône from development projects.

The Grand Parc Miribel Jonage is settled between a suburban economical sector and a more rural landscape towards the Ain river. The Grand Parc itself is a natural park (2200 ha) and includes large water areas (350 ha) as well as farmland (400 ha) and forest. Dry grassland supplies pasture area (Fig. 3) (Symalim, 2013). It has a very rich biodiversity and attracts four million visitors per year. The vast space combining features of transport, water production and recreation amazes by its size and relatively wild character at the gates of the second largest city of France and claims to be the largest park in suburban Europe.

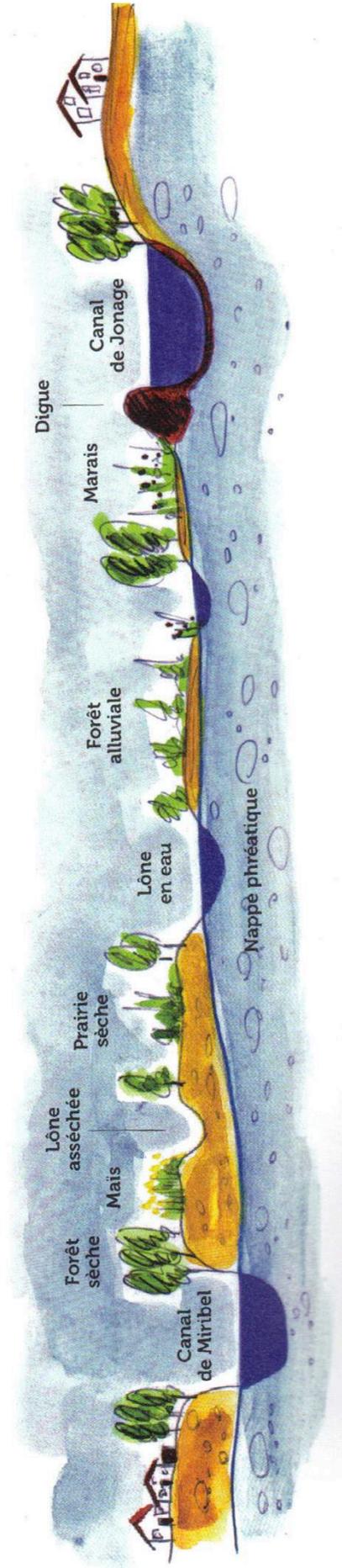


Fig. 3 Cross section of GPMJ. With “Canal de Miribel”= Miribel channel”, “Forêt sèche”= Dry forest, “Maïs”= Corn, “Lône asséchée”= Dried lône, “Prairie sèche”= Dry grassland, “Lône en eau”= Water lône, “Forêt alluviale”= Alluvial forest, “Marais”= Marsh, “Digue”= Dyke, “Canal de Jonage”= Jonage channel..

Source: Claire Monard in Symalim (2013).

2.2 Biodiversity index

2.2.1 Appearance

For easiest use, the indicator was realised on Microsoft Excel v.2007 and can be used also on Open office version (Appendix 1b). The goal was to define the five major pressures on biodiversity described in Millenium Assessment (habitat destruction, habitat fragmentation, resource depletion, disruption of trade, input) across landscape features and landscape management.

Eleven landscape features and three types of landscape management have been investigated. Amongst landscape features are; roads, structural heritage, path, ditches, bridges, quarries, dry stone walls, fences, wetland and waterways, hedgerows, Non Woodland Trees (NWT) and groves. Three types of landscape management are defined through extensive culture, intensive culture and free evolution.

Basic questions state to use 1 to answer “yes” and 0 to answer “no”, with two exceptions :

- 1) question’s referring to habitat destruction and inputs where points are attributed and/or correlated with the benefits or lack of the presence of landscape features in regards biodiversity.
- 2) multiple choice question where points are attributed and/or correlated with the benefits of an answer with point allocated by any profit to biodiversity.

2.2.2 Delivery method

This method is practical on both private and public plots allowing to assess biodiversity. Today, it is reserved to rural, natural, agricultural and land which contains natural or cultural heritage. It is not suitable for urban use or individual housing plots.

Principle to detect landscape features on the ground is inspired by potential biodiversity index created by National Center of Forest Property (CRPF) (Larieu and Gonin, 2013).

Before going into the field, one has to split up secure and open environment. Existing mapping software could help to determine them. Estimation of surface area will be necessary to determine what type of wandering chosen. If secure or open environment is integral between zero and five hectares, wandering is carried out in streamer with ten meters between passings for secure environment and twenty meters between passings for open environment (Appendix 1c).

Time for wandering, estimated thirty minutes, is necessary to homogenize prospecting effort. Each landscape features met during passings will be written down mapping. Assessment is based on questions answered though exploration, in accordance to landscape features found. When several times same landscape features, start again questionnaire because each landscape features have different characteristics.

Landscape features are recorded and quoted on Excel, with 0 when none on plot. Index is measured for one plot. Assessment of biodiversity is thought as an arithmetic mean. The calculation is shown below:

$$Biodiversity\ Index = \frac{\sum ((\sum Landscape\ features\ points\ color) * number\ of\ landscape\ features)}{\sum ((\sum Landscape\ features\ total\ points\ color) * number\ of\ landscape\ features)}$$

Plots of study area

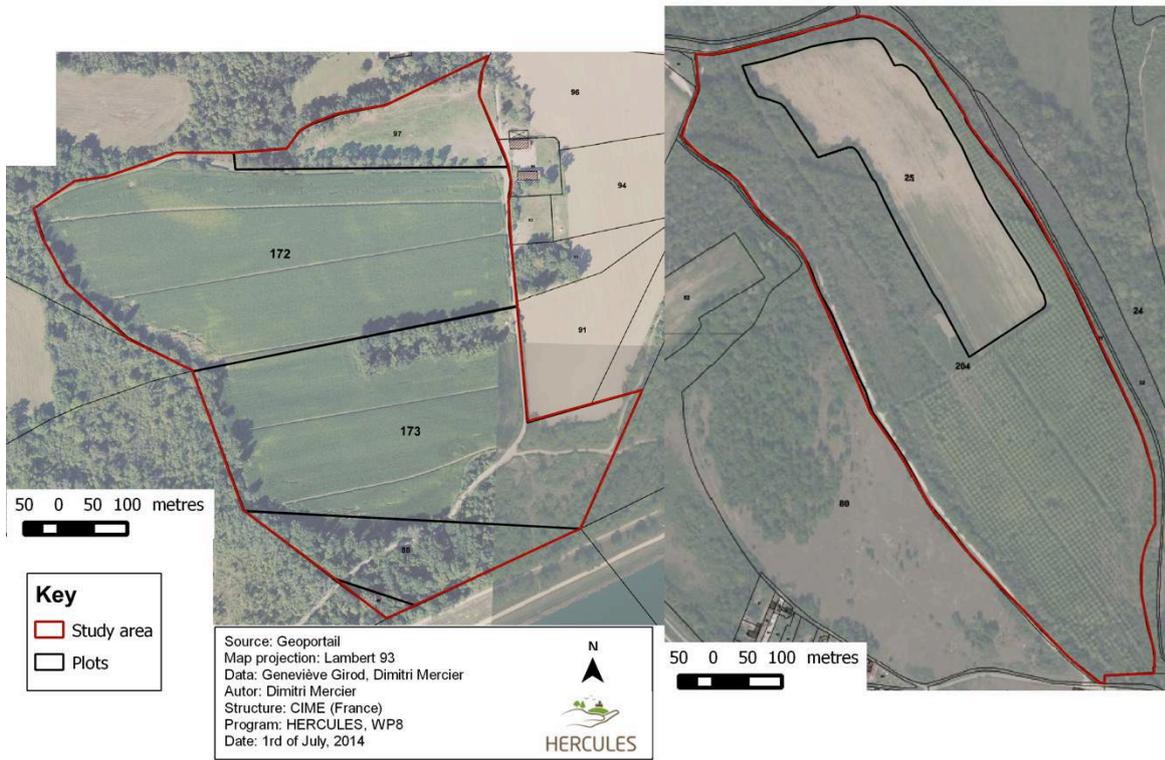


Fig. 4 “Plançon” (on the left) and “Garenne” (on the right) study area.

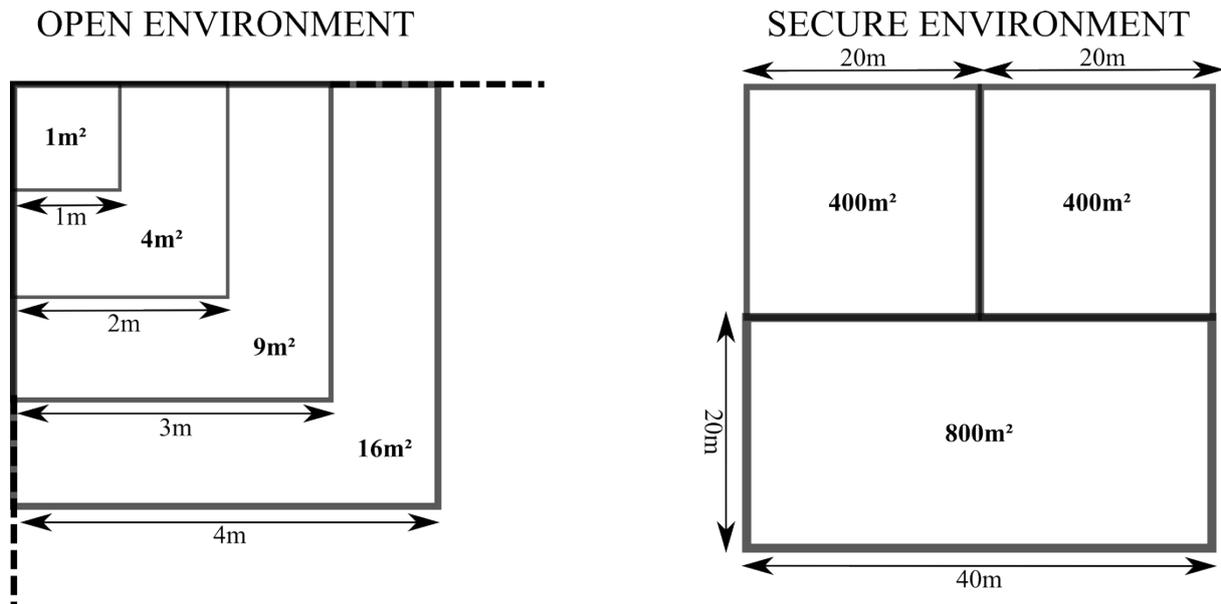


Fig. 5 Methods use on the ground to determine minimum area for flora inventory

2.2.3 Selection of questions

Questions have been chosen through bibliography research on the Web of Science, Google search engine, as well as books, and videos on YouTube. It was designed to link in with scientific papers or existing international or national programs and indexes on good management for biodiversity according to landscape features. Local, national or international associations or organisations were important to help establish field results and observations. They were ordered as functions of pressure on biodiversity enumerated before (§ 2.2.1).

2.3 Fauna and Flora inventory

Fauna and Flora protocols were realised on “Garenne” and “Plançon” study area from 19th of May to 30th of May 2014 for Flora and the 20th, 21th, 26th, 28th of May and the 2nd of June for Fauna. Sampling was carried out on adults (Giugliano *et al.*, 2012; Langlois and Gilg, 2007). Fauna orders studied were Lepidoptera and Odonata. These two study areas group seven plots (Fig. 4) and 50,89 hectares (Ha) was analysed.

2.3.1 Flora inventory

Flora inventory is carried out by habitat type thanks to CORINE biotope (Rameau *et al.*, 2003) and realised in accordance with vegetative study methodology (Walter, 2006). In phytosociology, habitat is defined as an organism, ecosystem or habitat living environment equivalent to an ecological entity, including species and communities and their biotic and abiotic environment (Géhu, 2006). Each habitat was visually located in the field and defined in advance with mapping already marked (Ecosphère, 2009). Each statement is equal to one quadrat or transect and recorded in a general database used towards statistical analysis (Appendix 1d).

Appendix 1

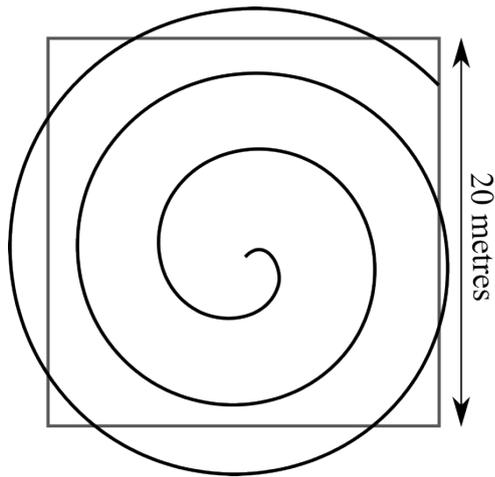


Fig. 6 Illustration of helically increasing method

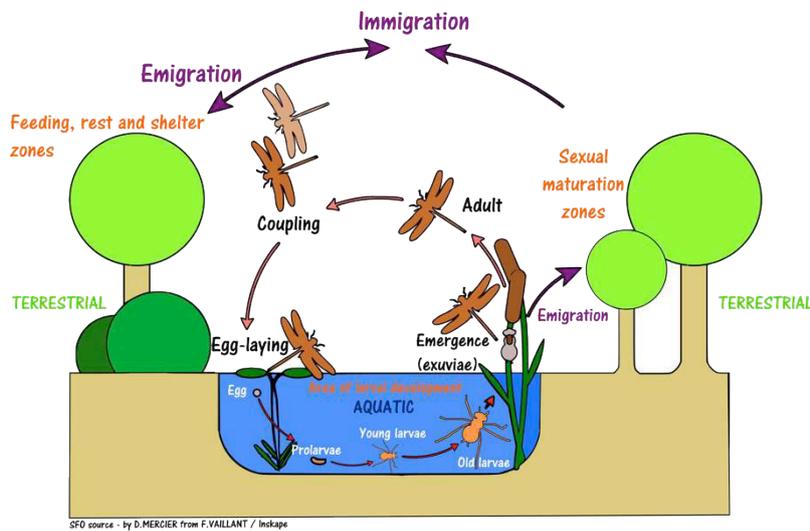


Fig. 7 Life cycle drawing of Odonata. Source: Iorio (2014)

Drawing : De Vlinderstichting - Dutch Butterfly Conservation

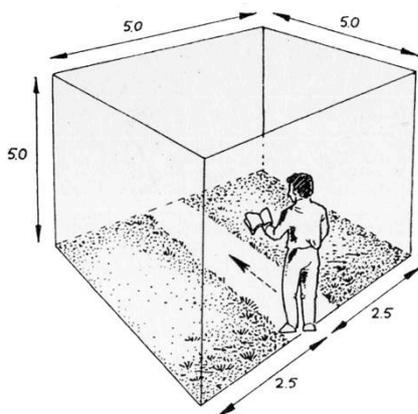


Chart 1 : Minimum area by Habitat. Source: Walter (2006)

HABITATS	MINIMUM AREA INVENTORIES
Forests with shrub layer	200–500 m ²
Only undergrowth	50–200 m ²
Grass (Pelouse)	50–100 m ²
Heath	10–25 m ²
Grassland	10–25 m ²
Grazing	5–10 m ²
"Weed" crop community	25–100 m ²
Moss community	1–4 (0,1–0,4) m ²
Lichen community	0,1–1 m ²

Fig. 8 Drawing of Lepidoptera wandering

Source : Langlois and Gilg (2007)

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Flora listings were established by above ground form (Fig. 5). In an open environment the start area surface is 1m², whilst it is 400m² in a secure environment. Secure environment keeps the same square size of any another. A helically increasing method is used for recording (Fig. 6). Open environment increases its square sides of a metre at each time. A minimum area is written in chart 1. Linear sites such as ditches, roads, hedgerows, pathways and edging revealed other method. It consisted to materialise a transect of fifteen metres long and 1 metre on either side of each end of each element. For example, a pathway two metres wide will have a linear transect of fifteen metres long and four metres wide. Three transects are defined by element present, one in each end and one in the middle. Only species richness is recorded because of the analysis requirements. Determination of the plants is via Guide of Wildflowers (Fitter *et al.*, 1997), Delachaux Guide of Europe trees (Johnson and More, 2004) and the guide of grasses, sedges, rushes and fern (Fitter *et al.*, 2009).

Every map was elaborated with GIS tool QGis v. 2.0.1 and all useful field observations recovered with GPS Garmin Etrex 30. Mapping used is an NGI orthophoto dated on 2012. Each polygon referring to habitat, landscape features or landscape management reveal at least one flora statement.

2.3.2 Fauna inventory

Fauna inventory referred to Odonata and Lepidoptera Order. I chose them because Odonata have two life steps: one in the water for growth and one terrestrial for reproduction (Chinery 1986; Iorio, 2014) (Fig. 7). Lepidoptera grow thanks to vegetation and need to have a contrast in landscape features to assimilate to open and secure environment to develop (Delacre, 2013). These two orders seem to be relevant in order to prove the importance of contrast between water and terrestrial landscape features on a plot and to show the importance of land management. However, it was important also to record the autochthony level of Odonata to establish whether species are migratory or are sedentary (Vanappelghem, 2007).

Ground protocol is to carry out classical sampling as per “Plançon” and random sampling excluding agricultural areas as per “Garenne”, because of the difficulty of access (Besnard and Salles, 2010). Random wandering was carried out on plots during a four hour period. Individual specimens were counted 2.5 metres to either side of the observer (Langlois and Gilg, 2007) (Fig. 8). Three inventories were realised in the area in May-June (PCN, 2008). Climate conditions were between 17°C (62,6 °F) to 27°C (80,6°F), with good sunshine and no

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wind. It was the same conditions days before (Pont and Mathieu, 2011). The majority of species were caught with butterfly net and photographed to identify them. Guide to the Insects of France and Western Europe (Chinery, 1986) and also the work of Thomas Cherpitel and Emilien Jomat were necessary to identify species.

As with the Flora method, each species was indexed and recorded in a general database towards statistical analysis (Appendix 1d). Only species richness was notified.

2.4 Statistical analysis

Raw chart was created on Microsoft Excel v.2007 with species found on the ground in column and habitat sampled in line. In the chart, “0” signifies absence of species and “1”, presence. Then, the database was transferred onto RStudio containing R 3.0.1 console.

Firstly, we produce an Ascending Hierarchical Classification (CAH). Each statement is grouped in dendrogram according to Jaccard dissimilarity index because of presence/absence database (Mérigot, 2014). With a 2-norm permit to choose what dendrogram to use towards having a better possible interpretation (Mérigot *et al.*, 2010). 2-norm will be calculated thanks to R. With this method, I want to show if such landscape features have similarities between them.

Secondly, plots allow the demonstration of correlation between values. To prove this correlation, I used Pearson test or Spearman test according to normality, homoscedasticity and data independance. Normality was tested with Shapiro test and homoscedasticity with variance test (Claude, 2013). Also, an ‘average’ test is used with Lepidoptera and Odonata data to show differences between “Garenne” and “Plançon”. Student test or Wilcoxon test will be chosen according to Normality and Variance test.

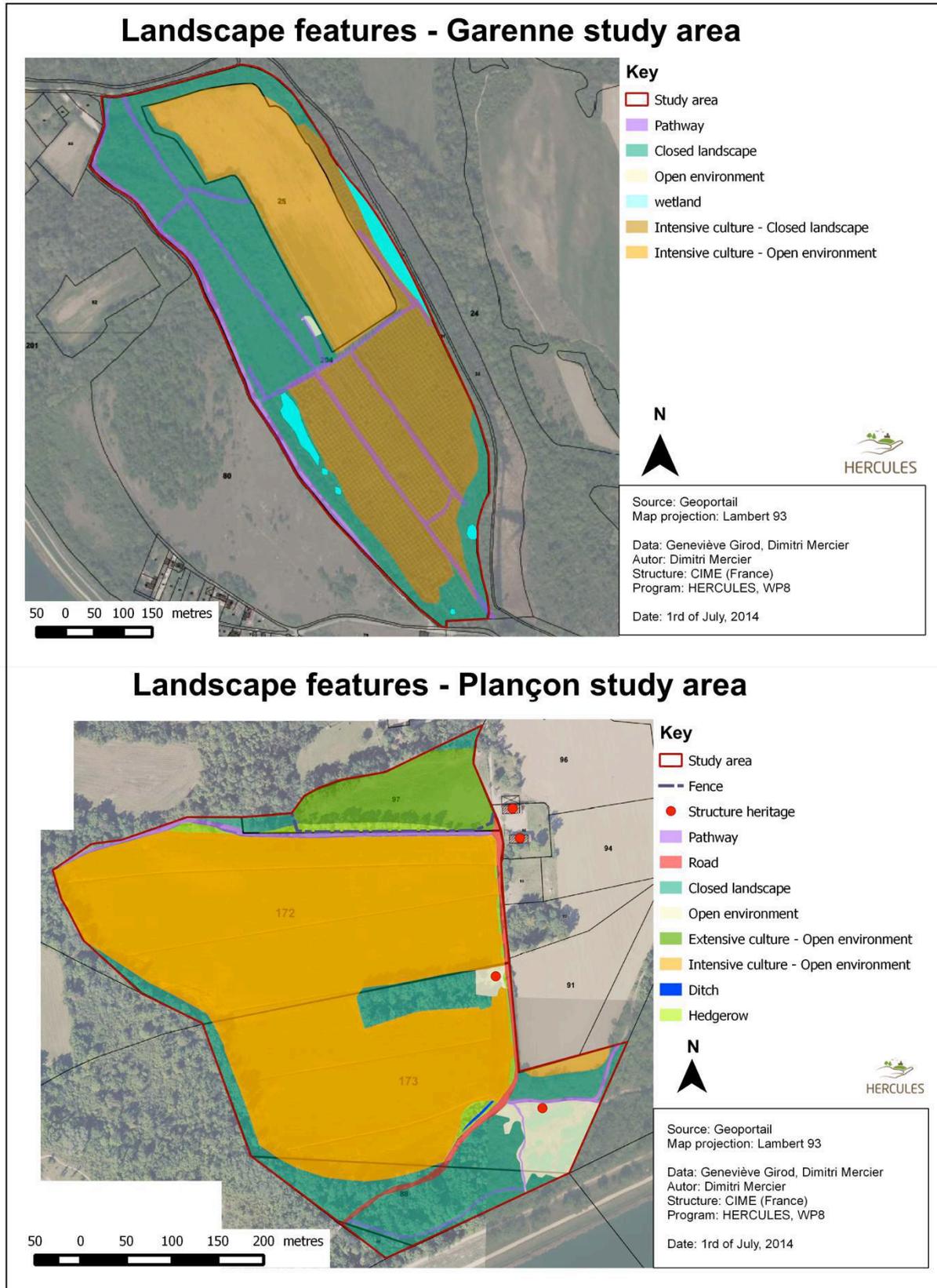


Fig. 9 Landscape features determine in each study area

3 Results

3.1 Biodiversity index

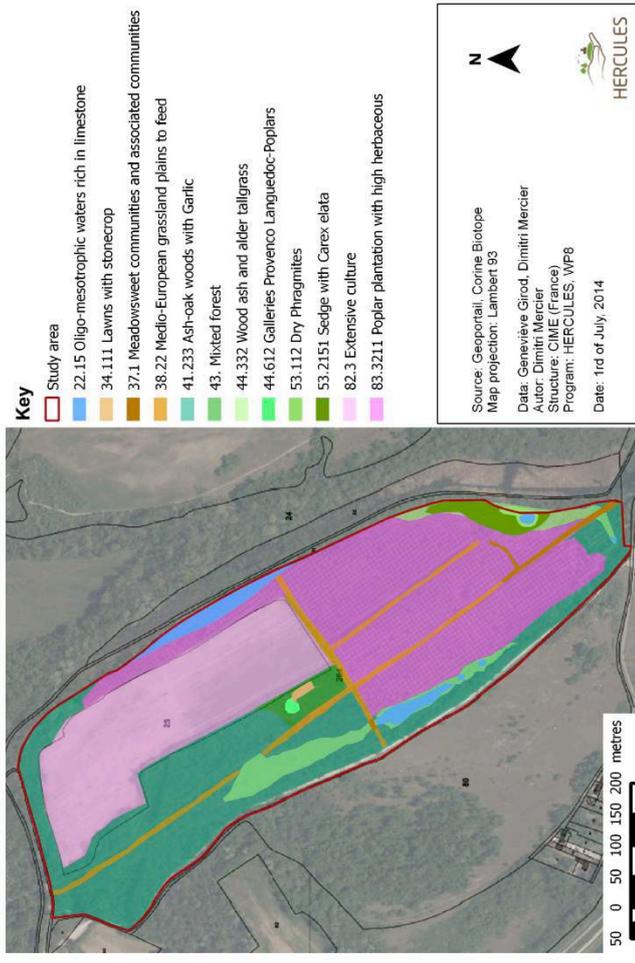
Work on the biodiversity index provided 59 pages of questions (Appendix 1b). First of all, landscape features were determined on the ground and mapped (Fig. 9). Using “Garenne” and “Plançon”, the index was set up with methodology for a surface area plot < 5 ha (§ 2.2.2). In total, six landscape features were found on “Garenne” and nine on “Plançon”. Biodiversity index was calculated on landscape features and land management. It was applied into two plots in “Garenne” and five plots in “Plançon”. Respectively, in “Garenne”, plot number 25 received 0,6023 and plot number 204 received 0,8163. In “Plançon”, plot number 86 received 0,5556, plot number 88 received 0,5041, plot number 173 received 0,51, plot number 172 received 0,3680 and plot number 97 received 0,5.

3.1 Fauna and Flora inventory

3.1.1 Flora inventory

Inventories permit to determine 282 plant species found in “Garenne” and “Plançon” (Appendix 1d). They permit to create a mapping habitat of study areas (Fig. 10). First analysis was to do an AHC. A 2-norm calculation shows what type of dendrogram to choose. The smaller figure is equal to the dendrogram throughout. Here, UPGMA dendrogram match our expectations (Fig. 11). In it, I see differences between culture edge and culture in “Plançon” where edges hold more similar species with other related environment (Fig. 12 | 1). “Plançon” n°5 and “Garenne” n°9 pathways seem to be equal. Both are situated in Ash-Oak woods (Fig. 12 | 2). I can illustrate the same phenomenon with two species of open environment scatter on pathways in “Garenne”: *Anacamptis pyramidalis* (European red list of UICN (LC) and French red list of orchids (LC)) and *Melampyrum arvense* (Fig. 13). Also, it is noted in AHC (Fig. 12 | 3 and 4).

Habitat mapping - Study area Garenne



Habitat mapping - Plançon study Area

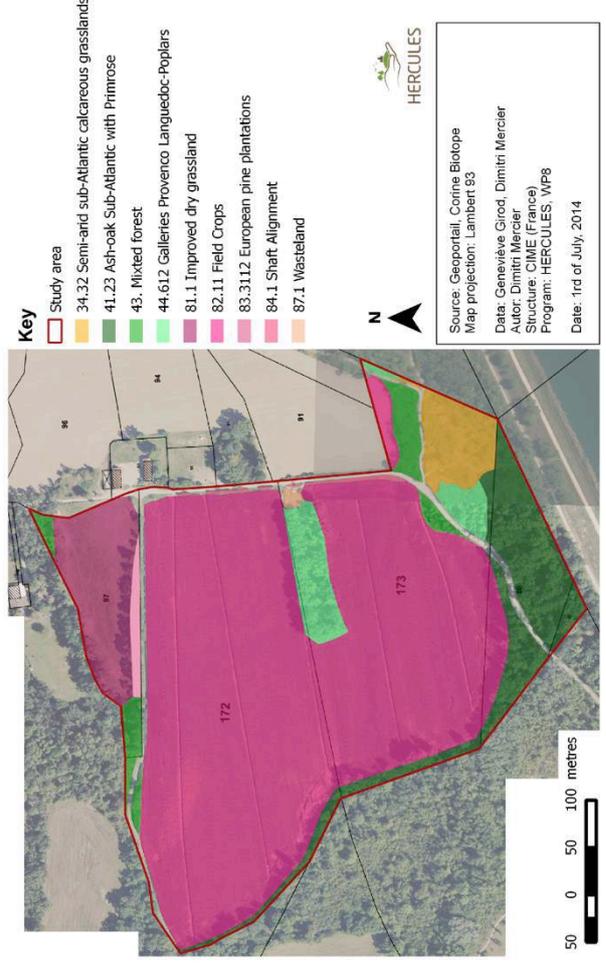


Fig. 10 Habitat mapping in each study area

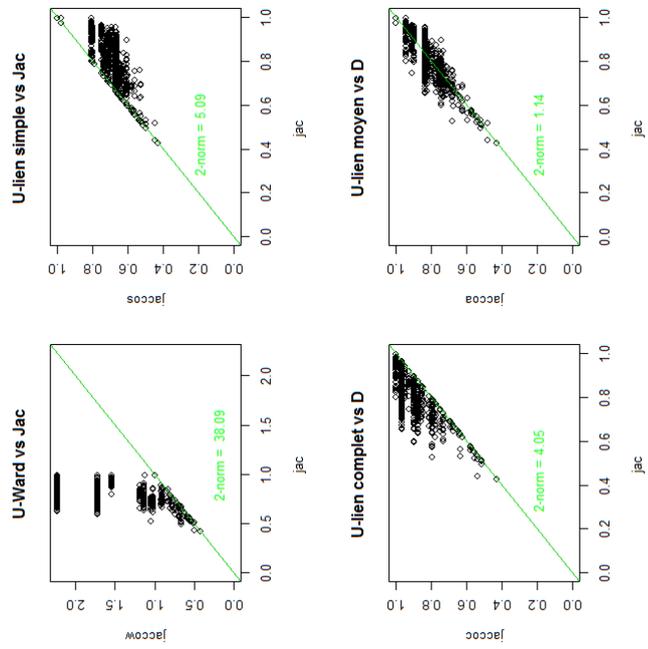


Fig. 11 "2-Norm" calculation in each dendrogram

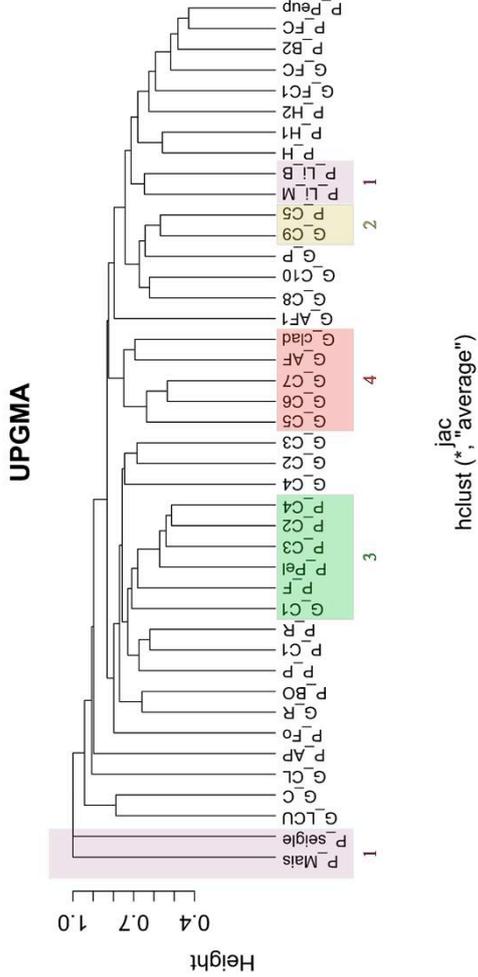


Fig. 12 UPGMA dendrogram choose for flora inventory

Appendix 1

3.1.2 Correlation tests

Plots were chosen between flora species richness, plot area, number of landscape features and biodiversity index calculated with a new tool. The Shapiro test is significant for plot area value and not significant for species richness, landscape features and biodiversity index. Variance test is significant for each variable placed in relation between them. Spearman's test was used for correlation because of the lack of normality in data. It is a non parametric test with a null hypothesis: two variables are independent. This test is only significant between flora species richness and the number of landscape features present in plot with $R=0,9$ (Fig. 14)(chart 2). The null hypothesis can be disproved and prove that species richness is linked to number of landscape features present in the plot.

3.1.3 Fauna inventory

Inventories permit to show 42 of Lepidoptera and Odonata species in "Garenne" and "Plançon" area. More precisely, 28 species was recorded in "Garenne" in which 17 species of Lepidoptera and 11 species of Odonata. "Plançon" possess 24 species with 21 species of Lepidoptera and 3 species of Odonata (Appendix 1d). Number of species found on each date was noted and illustrated in figure 15. Many Odonata species were seen in breeding in "Garenne" and near to wetland. Some of them were discovered on tall grasses in open environment without nearby watering places as was the case with aeshnidae species. The number of Odonata species differs between both "Garenne" and "Plançon" but the number of species found on each date show a smaller gap. Lepidoptera species richness seems to be more balanced between the two sites. The number of species found on date 2 in "Garenne" collapsed compared to date 1 and 2 easily explained as a storm occurred between the two dates.

Also, abundance was not recorded in this study but it was more important in Odonata species in "Garenne" particularly for *Coenagrion puella* and *Platycnemis pennipes*. "Plançon" show an abundance much less marked where each species was only seen one time. Moreover, Odonata species was not shown in breeding and seen furtively.

Appendix 1

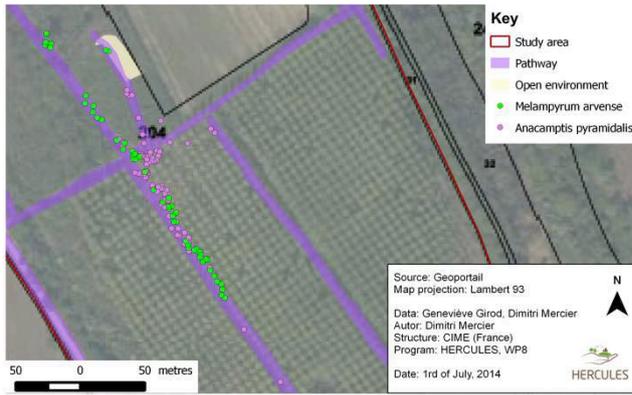


Fig. 13 Distribution map of *Melampyrum arvense* and *Anacamptis pyramidalis* in “Garenne” study area

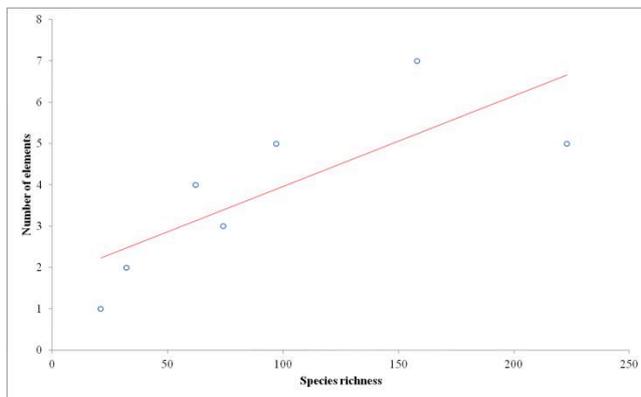


Fig. 14 Plot between number of landscape features and species richness

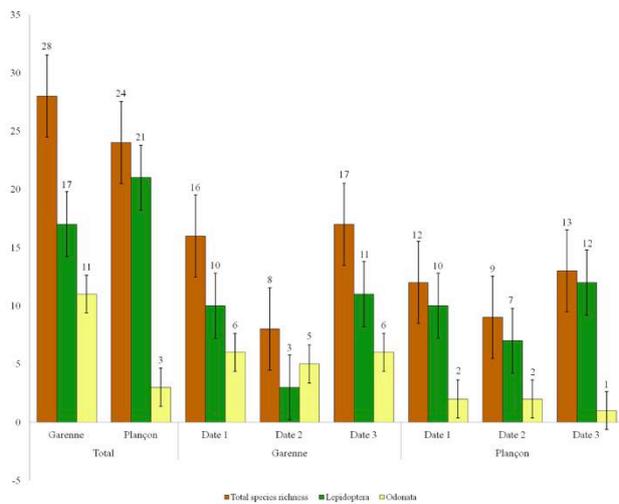


Fig. 15 Histogram of Lepidoptera and Odonata species richness

3.1.4 Average test

Before doing an average test, normality and variance of data had to be checked. Both the Shapiro test and Variance test were used with same method as for flora study. Shapiro test is significant for Odonata data in “Garenne” and “Plançon” and not significant for Lepidoptera data in “Garenne” and “Plançon”. Variance test is not significant between Lepidoptera and Odonata data in both areas. Wilcoxon test was used to show a potential average difference. It is not significant and demonstrates equality of average between the two study areas and periods.

4 Discussion

This indicator answers the initial goal of building relation between biodiversity and heritage landscape features. Correspondence between landscape features and flora species richness show that natural landscape elements of heritage value are drivers of floral biodiversity. If we maintain them, we maintain some of the habitats.

Landscape features chosen for study seem to be able to adapt well to a biodiversity index tool to show how biodiversity evolution is linked to management of landscape features.

First results prove no correlation between flora richness species and biodiversity index value though. But, we can see that landscape features are linked with flora species richness. Four possible answers could explain this analysis:

- Questions are not relevant and need to be asked again to adjust them.
- Percentage of surface area could be taken into account in each value of landscape features
- The number of sample is not sufficient
- Flora richness is not efficient to value biodiversity (Orth *et al.*, 2008)

Method does not include historical aspects but valuation proved to be good from first test. Number of landscape features into plot should be inserted too as each landscape features have to be taken as a whole and not individually. For large plots (>5Ha), it will be relevant to apply

Appendix 1

IBP method to avoid too long prospecting time in utilising several square experimental plots of one hectare surface area into plot (Larieu and Gonin, 2013).

This indicator should be tried as well in other regions (mountain for example) including artificial plots and other countries. It could be relevant in all European Union countries included in the other HERCULES study landscape as the questions are based on visual aspects. The questionnaire permits to value some answers and landscape as good or bad which could influence social environmental appreciation (López-Santiago *et al.*, 2014).

It was difficult to make correspondence between one species and one plot in the Lepidoptera and Odonata study because of the capacity of dispersion in each individual. Nevertheless, ground observations allow to emit a hypothesis: Open environments appear to be beneficial to butterflies and dragonflies, providing rest areas and resources. Most Lepidoptera were discovered in 34.32 habitat in “Plançon”. Pathway rules in species dissemination and maintenance of open environment biodiversity. Behaviour more common in cold blooded animals like reptiles was observed in the insects near to pathway or into open environment (34.32 habitat in “Plançon” and 34.111 habitat in “Garenne”).

Moreover, many dragonflies were seen near wetland with many individuals breeding. It could prove a possible species autochthony in “Garenne” from Vanappelghem (2007). “Plançon” area shows transient species linked to the proximity with canal of Jonage in the South and “Violette” wetland in the North, which would explain this, however, the Wilcoxon test is not conclusive. The minimal passing (only three) in the transect inventory might certainly influence my result. It may be more significant to carry out over a longer period with more repetition, the average number of species would be more precise and accurate. I can see differences between “Garenne” and “Plançon” with regards to the total number of species of Odonata. Alternation between moist and dry landscape features is a factor of biodiversity increase (Orth *et al.*, 2008). Indeed, habitat and environmental conditions are diverse and more important, providing more resources and more habitats for specialised species. As in the case of *Filipendula ulmaria* which is essentially found only in “Garenne” wetlands.

Land management must be taken into consideration because of the impact on biodiversity. Taxa respond differently in accordance to land management (Plieninger *et al.*, 2014). For example, fungi communities change according to land forest management (Purahong *et al.*, 2014). Values given by questions allow the assessment of the management of landscape features present in the plot. The way cultural and natural aspects of landscape are coupled.

5 Conclusion

Our main goals were to realise a plot biodiversity index linked to landscape features. The biodiversity index tool is created on Excel file. Our ground inventories on flora show no exact correlation between flora species richness and value of biodiversity index. But, our work does demonstrate a correlation between a number of landscape features present in the plot and the flora species richness, which could be confirmed by further use of the index on territories of good practices. The method exists and needs to be completed and polished in the future.

The addition of Lepidoptera and Odonata species inventory didn't prove any differences between the "Plançon" and "Garenne" areas. Alternation between dry and moist landscape features have not proved significant for increased of biodiversity within those taxa.

Those were preliminary steps to good practice collection. In the future the HERCULES project shall integrate those into the knowledge hub, which shall be available for stakeholders.

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Appendix 1b – Biodiversity plot index on joint excell file

Appendix 1

Appendix 1c: view and explanations about plot biodiversity index

HOW USED PLOT BIODIVERSITY INDEX ?

STEP 1

Plot and observer informations

Method to apply on the ground

Materialization of 5 pressures of biodiversity chosen

One tab by landscape feature or king of management

STEP 2

Color and letter reference of biodiversity pressures

Answer to questions about landscape features in selecting good points

Refer totality of points obtained in chart located below questionnaire. Each total are automatically sent to final chart

STEP 3

Indicate number of elements present into plot for each landscape features

Spider web graphic to illustrate percent of biodiversity according to pressure acting on biodiversity

Discover value of biodiversity present into plot

Éléments du paysage	Éléments	Pressions	Pressions sub	Urbain	Total	Plus	Carbone	Sur de plantes locales
nombre d'éléments du paysage	0	0	0	0	0	0	0	0
nombre de points par élément	0	0	0	0	0	0	0	0
nombre de points total par pression	4,0	3,0	4,0	0	3	2	0	0
	1,0	3,0	3,0	0	0	0	0	0
	10,0	14,4	10,0	0	20	2	0	7
	10,0	12,0	12,0	0	10	0	0	0
	20,4	20,4	20,4	0	10	0	0	0

Appendix 1

Appendix 1d: flora and fauna synthesis note

FLORA	Scientific Name	Origin	Last observer	Red lists - Conservation					Community Text		Regulation - Protection		
				Orchidaceae chap.	World list	UE	National list	Regional list	CDH5	CCB	Nat.	Reg.	Dep.
	<i>Acer campestre L.</i>	Native	D.MERCIER					LC					
	<i>Acer platanoides L.</i>	Exotic	D.MERCIER					LC					
	<i>Acer pseudoplatanus L.</i>	Native	D.MERCIER					LC					
	<i>Achillea millefolium L.</i>	Native	D.MERCIER					LC					
	<i>Achnatherum calamagrostis (L.) P.Beauv.</i>	Native	D.MERCIER					LC					
	<i>Adonis vernalis L.</i>	Native	D.MERCIER			LC	NT				2		
	<i>Agrostis clavata Trin.</i>	Native	D.MERCIER										
	<i>Allium oleraceum L.</i>	Native	D.MERCIER			LC		LC					
	<i>Allium ursinum L.</i>	Native	D.MERCIER			LC		LC					
	<i>Alnus glutinosa (L.) Gaertn.</i>	Native	D.MERCIER		LC			LC					
	<i>Ambrosia artemisiifolia L.</i>	Exotic	D.MERCIER										
	<i>Anacamptis coriophora (L.) Bateman, Pridgeon & Chase</i>	Native	D.MERCIER	VU				EN			1		
	<i>Anacamptis pyramidalis (L.) Rich.</i>	Native	D.MERCIER	LC		LC		LC					
	<i>Angelica sylvestris L.</i>	Native	D.MERCIER										
	<i>Apera spica-venti (L.) P.Beauv.</i>	Native	D.MERCIER										
	<i>Arabis hirsuta (L.) Scop.</i>	Native	D.MERCIER										
	<i>Arenaria serpyllifolia L.</i>	Native	D.MERCIER										
	<i>Arrhenatherum elatius (L.) P.Beauv</i>	Native	D.MERCIER			LC							
	<i>Artemisia vulgaris L.</i>	Native	D.MERCIER			LC							
	<i>Arum italicum Mill.</i>	Native	D.MERCIER										
	<i>Asparagus officinalis L.</i>	Native	D.MERCIER			LC							
	<i>Avena fatua L.</i>	Native	D.MERCIER		DD	LC							
	<i>Bellis perennis L.</i>	Native	D.MERCIER										
	<i>Berula erecta (Huds.) Coville</i>	Native	D.MERCIER		LC	LC							
	<i>Blackstonia perfoliata (L.) Huds.</i>	Native	D.MERCIER										
	<i>Blysmus compressus (L.) Panz. ex Link</i>	Native	D.MERCIER		LC								
	<i>Brachypodium pinnatum (L.) P.Beauv</i>	Native	D.MERCIER										
	<i>Briza media L.</i>	Exotic	D.MERCIER										
	<i>Bromus benekenii (Lange) Trimen</i>	Native	D.MERCIER					LC					

Appendix 1

FLORA	<i>Bromus carinatus</i> (Hook. & Arn.) Tutin	Native	D.MERCIER										
	<i>Bromus commutatus</i> Schrad.	Native	D.MERCIER					LC					
	<i>Bromus erectus</i> Huds.	Native	D.MERCIER					LC					
	<i>Bromus madritensis</i> L.	Native	D.MERCIER					LC					
	<i>Bromus pseudosecalinus</i> P.Sm	Native	D.MERCIER										
	<i>Bromus racemosus</i> L.	Native	D.MERCIER					LC					
	<i>Bromus ramosus</i> Huds.	Native	D.MERCIER					LC					
	<i>Bromus secalinus</i> L.	Exotic	D.MERCIER					NT					
	<i>Bromus sterilis</i> L.	Native	D.MERCIER					LC					
	<i>Bryonia cretica</i> L.	Native	D.MERCIER					LC					
	<i>Bupleurum falcatum</i> L.	Native	D.MERCIER					LC					
	<i>Calamagrostis canescens</i> (Weber) Roth	Native	D.MERCIER					EN				1	
	<i>Carduus nutans</i> L.	Native	D.MERCIER					LC					
	<i>Carex acutiformis</i> Ehrh.	Native	D.MERCIER		LC	LC		LC					
	<i>Carex demisa</i> Vahl ex Harm.	Native	D.MERCIER										
	<i>Carex elata</i> All.	Native	D.MERCIER		LC	LC		LC					
	<i>Carex flacca</i> Schreb.	Native	D.MERCIER					LC					
	<i>Carex flava</i> L.	Native	D.MERCIER		LC			LC					
	<i>Carex hostiana</i> DC.	Native	D.MERCIER					LC					
	<i>Carex laevigata</i> Sm.	Native	D.MERCIER					VU					
	<i>Carex lasiocarpa</i> Ehrh.	Native	D.MERCIER		LC	LC		EN				1	
	<i>Carex lepidocarpa</i> Tausch	Native	D.MERCIER										
	<i>Carex otrubae</i> Podp.	Native	D.MERCIER		LC								
	<i>Carex panicea</i> L.	Native	D.MERCIER					LC					
	<i>Carex paniculata</i> L.	Native	D.MERCIER		LC	LC		LC					
	<i>Carex pendula</i> Huds.	Native	D.MERCIER					LC					
	<i>Carex pseudocyperus</i> L.	Native	D.MERCIER		LC	LC		LC				2	
	<i>Carex riparia</i> Curtis	Native	D.MERCIER		LC	LC		LC					
	<i>Carex tomentosa</i> L.	Native	D.MERCIER					LC					
	<i>Carex vesicaria</i> L.	Native	D.MERCIER		LC	LC		LC					
	<i>Carpinus betulus</i> L.	Native	D.MERCIER					LC					
	<i>Centaurea scabiosa</i> L.	Native	D.MERCIER					LC					
	<i>Centaureum erythraea</i> Rafn	Native	D.MERCIER		LC	LC		LC					
	<i>Chaerophyllum temulentum</i> L.	Native	D.MERCIER										
	<i>Chenopodium album</i> L.	Native	D.MERCIER					LC					
	<i>Chenopodium bonus-henricus</i> L.	Native	D.MERCIER					LC					
	<i>Circaea lutetiana</i> L.	Native	D.MERCIER					LC					
	<i>Cirsium arvense</i> (L.) Scop.	Native	D.MERCIER					LC					

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<i>Festuca altissima</i> All.	Native	D.MERCIER					LC						
<i>Festuca arundinacea</i> Schreb.	Native	D.MERCIER					LC						
<i>Festuca gigantea</i> (L.) Vill.	Native	D.MERCIER					LC						
<i>Festuca ovina</i> L.	Native	D.MERCIER			LC	DD	LC						
<i>Festuca pratensis</i> Huds.	Native	D.MERCIER					LC						
<i>Fétuque hybride x Festulolium loliaceum</i>	Native	D.MERCIER											
<i>Filipendula ulmaria</i> (L.) Maxim.	Native	D.MERCIER		LC	LC		LC						
<i>Fragaria vesca</i> L.	Native	D.MERCIER			LC		LC						
<i>Fraxinus angustifolia</i> ssp <i>oxycarpa</i> Vahl	Native	D.MERCIER					LC						
<i>Fraxinus excelsior</i> L.	Exotic	D.MERCIER					LC						
<i>Fraxinus latifolia</i> Benth.	Native	D.MERCIER											
<i>Galium aparine</i> L.	Native	D.MERCIER			LC		LC						
<i>Galium mollugo</i> L.	Native	D.MERCIER		LC			LC						
<i>Galium palustre</i> L.	Native	D.MERCIER		LC			LC						
<i>Galium verum</i> L.	Native	D.MERCIER			LC		LC						
<i>Geranium dissectum</i> L.	Native	D.MERCIER					LC						
<i>Geranium molle</i> L.	Native	D.MERCIER					LC						
<i>Geranium pyrenaicum</i> Burm.f.	Native	D.MERCIER					LC						
<i>Geranium robertianum</i> L.	Native	D.MERCIER					LC						
<i>Geum rivale</i> L.	Native	D.MERCIER					LC						
<i>Geum urbanum</i> L.	Native	D.MERCIER			LC		LC						
<i>Glechoma hederacea</i> L.	Native	D.MERCIER		DD	LC		LC						
<i>Hedera helix</i> L.	Native	D.MERCIER			LC		LC						
<i>Helianthemum nummularium</i> (L.) Mill.	Native	D.MERCIER					LC						
<i>Heracleum sphondylium</i> L.	Native	D.MERCIER		LC			LC						
<i>Himantoglossum hircinum</i> (L.) Spreng	Native	D.MERCIER	LC		LC		LC						1
<i>Hippophae rhamnoides</i> L.	Native	D.MERCIER					LC						
<i>Holcus lanatus</i> L.	Native	D.MERCIER											
<i>Holcus mollis</i> L.	Native	D.MERCIER					LC						
<i>Hordeum murinum</i> L.	Native	D.MERCIER			LC		LC						
<i>Hordeum vulgare</i> L.	Exotic	D.MERCIER											
<i>Humulus lupulus</i> L.	Native	D.MERCIER			LC		LC						
<i>Hypericum perforatum</i> L.	Native	D.MERCIER				LC	LC						
<i>Hypochaeris maculata</i> L.	Native	D.MERCIER											
<i>Hypochaeris radicata</i> L.	Native	D.MERCIER					LC						
<i>Iris pseudacorus</i> L.	Native	D.MERCIER		LC	LC		LC						
<i>Juglans regia</i>	Exotic	D.MERCIER		NT									
<i>Juncus inflexus</i> L.	Native	D.MERCIER		LC			LC						

FLORE

Appendix 1

FLORA	<i>Lactuca serriola</i> L.	Native	D.MERCIER			LC		LC					
	<i>Lappula myosotis</i> Moench	Native	D.MERCIER										
	<i>Lapsana communis</i> L.	Native	D.MERCIER					LC					
	<i>Lemna trisulca</i> L.	Native	D.MERCIER		LC	LC		LC					1
	<i>Leontodon hispidus</i> L.	Native	D.MERCIER					LC					
	<i>Leucanthemum maximum</i> (Ramond) DC.	Native	D.MERCIER				LC	LC					
	<i>Ligustrum vulgare</i> L.	Native	D.MERCIER					LC					
	<i>Linaria vulgaris</i> Mill.	Exotic	D.MERCIER					LC					
	<i>Linum austriacum</i> L.	Native	D.MERCIER					EN					
	<i>Lithospermum arvense</i> Thunb.	Native	D.MERCIER										
	<i>Lithospermum purpureocaeruleum</i> L.	Native	D.MERCIER										
	<i>Lonicera periclymenum</i> L.	Native	D.MERCIER					LC					
	<i>Lonicera xylosteum</i> L.	Native	D.MERCIER					LC					
	<i>Lotus corniculatus</i> L.	Native	D.MERCIER			LC		LC					
	<i>Lotus pedunculatus</i> Cav.	Native	D.MERCIER			LC		LC					
	<i>Lysimachia arvensis</i> (L.) U.Manns & Anderb.	Native	D.MERCIER										
	<i>Lysimachia foemina</i> (Mill.) U.Manns & Anderb.	Native	D.MERCIER										
	<i>Lysimachia thyrsoiflora</i>	Native	D.MERCIER			LC	NT					1	
	<i>Lysimachia vulgaris</i> L.	Native	D.MERCIER		LC	LC		LC					
	<i>Malus coronaria</i> (L.) P. Mill.	Native	D.MERCIER										
	<i>Malus sylvestris</i> Mill.	Native	D.MERCIER		DD	DD		LC					
	<i>Medicago lupulina</i> L.	Native	D.MERCIER			LC		LC					
	<i>Melampyrum arvense</i> L.	Native	D.MERCIER					LC					
	<i>Melica nutans</i> L.	Native	D.MERCIER										
	<i>Mentha aquatica</i> L.	Native	D.MERCIER		LC	LC		LC					
	<i>Mentha pulegium</i> L.	Native	D.MERCIER		LC	LC		LC					
	<i>Minuartia verna</i> (L.) Hiern	Native	D.MERCIER		DD	DD		LC	1	1			
	<i>Muscari comosum</i> (L.) Mill.	Native	D.MERCIER					LC					
	<i>Myosotis arvensis</i> Hill.	Native	D.MERCIER			LC		LC					
	<i>Myosotis discolor</i> Pers.	Native	D.MERCIER					LC					
<i>Nepeta cataria</i> L.	Native	D.MERCIER											
<i>Oenanthe aquatica</i> (L.) Poir.	Native	D.MERCIER		LC	LC		LC						
<i>Oenanthe lachenalii</i> C.C.Gmel.	Native	D.MERCIER					NT						
<i>Oenothera stricta</i> Ledeb. Ex Link.	Exotic	D.MERCIER											
<i>Onobrychis viciifolia</i> Scop.	Exotic	D.MERCIER		LC	LC		LC						

Appendix 1

<i>Ononis natrix L.</i>	Native	D.MERCIER					LC						
<i>Ophrys apifera Huds.</i>	Native	D.MERCIER	LC		LC		LC						
<i>Orchis militaris L.</i>	Native	D.MERCIER	LC		LC		LC						
<i>Orchis simia Lam.</i>	Native	D.MERCIER	LC		LC		LC						
<i>Ornithogalum pyrenaicum L.</i>	Native	D.MERCIER											
<i>Orobanche elatior</i>	Native	D.MERCIER											
<i>Papaver dubium L.</i>	Native	D.MERCIER					LC						
<i>Papaver rhoeas L.</i>	Native	D.MERCIER			LC		LC						
<i>Parietaria judaica L.</i>	Native	D.MERCIER					LC						
<i>Paris quadrifolia L.</i>	Native	D.MERCIER					LC						
<i>Parthenocissus quinquefolia (L.) Planchon</i>	Exotic	D.MERCIER											
<i>Petasites hybridus (L.) P.Gaertn., B.Mey. & Scherb.</i>	Native	D.MERCIER			LC		LC						
<i>Phragmites australis (Cav.) Steud.</i>	Native	D.MERCIER			LC		LC						
<i>Picris echioides L.</i>	Native	D.MERCIER											
<i>Picris hieracioides L.</i>	Native	D.MERCIER					LC						
<i>Pimpinella major (L.) Huds.</i>	Native	D.MERCIER					LC						
<i>Pinus pinea L.</i>	Exotic	D.MERCIER			LC								
<i>Plantago lanceolata L.</i>	Native	D.MERCIER				LC	LC						
<i>Plantago major L.</i>	Native	D.MERCIER					LC						
<i>Poa pratensis L.</i>	Native	D.MERCIER			LC	LC	LC						
<i>Poa trivalis L.</i>	Native	D.MERCIER					LC						
<i>Polygala vulgaris L.</i>	Native	D.MERCIER					LC						
<i>Polygonatum multiflorum (L.) All.</i>	Native	D.MERCIER					LC						
<i>Populus alba L.</i>	Native	D.MERCIER					LC						
<i>Populus nigra L.</i>	Native	D.MERCIER			LC		LC						
<i>Populus nigra var. italica Münchh.</i>	Exotic	D.MERCIER											
<i>Populus tremula L.</i>	Native	D.MERCIER					LC						
<i>Potentilla reptans L.</i>	Native	D.MERCIER					LC						
<i>Prunus avium (L.) L.</i>	Native	D.MERCIER				LC	LC						
<i>Prunus mahaleb L.</i>	Exotic	D.MERCIER				LC	LC						
<i>Prunus spinosa L.</i>	Native	D.MERCIER				LC	LC						
<i>Prunus suburbmettella nutomnalis</i>	Native	D.MERCIER											
<i>Quercus ilex L.</i>	Native	D.MERCIER					LC						
<i>Quercus robur L.</i>	Native	D.MERCIER			LC	LC	LC						
<i>Ranunculus acris L.</i>	Native	D.MERCIER					LC						
<i>Ranunculus aquatilis L.</i>	Native	D.MERCIER			LC	LC	LC						
<i>Ranunculus arvensis L.</i>	Native	D.MERCIER					LC						
<i>Ranunculus bulbosus L.</i>	Native	D.MERCIER					LC						

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<i>Ranunculus repens L.</i>	Native	D.MERCIER			LC		LC						
<i>Ranunculus sceleratus L.</i>	Native	D.MERCIER			LC		LC				1		
<i>Reseda lutea L.</i>	Native	D.MERCIER					LC						
<i>Rhamnus cathartica L.</i>	Native	D.MERCIER					LC						
<i>Ribes rubrum L.</i>	Exotic	D.MERCIER					LC						
<i>Robinia pseudoacacia L.</i>	Exotic	D.MERCIER											
<i>Rosa canina L.</i>	Native	D.MERCIER			LC		LC						
<i>Rubia peregrina L.</i>	Native	D.MERCIER					LC						
<i>Rubus caesius L.</i>	Native	D.MERCIER			LC		LC						
<i>Rubus fruticosus L.</i>	Native	D.MERCIER			LC		DD						
<i>Rumex acetosa L.</i>	Exotic	D.MERCIER					LC						
<i>Rumex obtusifolius L.</i>	Native	D.MERCIER					LC						
<i>Salix alba L.</i>	Native	D.MERCIER		LC			LC						
<i>Salix caprea L.</i>	Native	D.MERCIER					LC						
<i>Salvia nemorosa L.</i>	Exotic	D.MERCIER											
<i>Salvia pratensis L.</i>	Exotic	D.MERCIER					LC						
<i>Sambucus nigra L.</i>	Native	D.MERCIER			LC		LC						
<i>Sanguisorba minor Scop.</i>	Native	D.MERCIER					LC						
<i>Saponaria officinalis L.</i>	Native	D.MERCIER			LC		LC						
<i>Scabiosa columbaria L.</i>	Native	D.MERCIER					LC						
<i>Scorzonera humilis L.</i>	Native	D.MERCIER					LC				1		
<i>Scrophularia nodosa L.</i>	Native	D.MERCIER			LC		LC						
<i>Secale cereale L.</i>	Exotic	D.MERCIER											
<i>Securigera varia (L.) Lassen</i>	Native	D.MERCIER			LC		LC						
<i>Sedum acre L.</i>	Exotic	D.MERCIER			LC		LC						
<i>Senecio jacobaea L.</i>	Native	D.MERCIER											
<i>Sherardia arvensis L.</i>	Native	D.MERCIER					LC						
<i>Silene latifolia Poir.</i>	Native	D.MERCIER					LC						
<i>Silene vulgaris (Moench) Garcke</i>	Native	D.MERCIER					LC						
<i>Sisymbrium altissimum L.</i>	Exotic	D.MERCIER											
<i>Sium latifolium L.</i>	Native	D.MERCIER			LC								
<i>Solidago canadensis L.</i>	Exotic	D.MERCIER											
<i>Sonchus arvensis</i>	Native	D.MERCIER											
<i>Sonchus oleraceus L.</i>	Native	D.MERCIER											
<i>Stachys officinalis (L.) Trevis.</i>	Native	D.MERCIER											

FLORA

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FAUNA

Scientific Name	Order	Origin	Last observer	Red lists - Conservation				Community Text		Regulation - Protection			Odonata autochtony level (Vanappelghem 2007)*
				World list	UE	Nat. list	Reg list	CDH5	CCB	Nat.	Reg.	Dep.	
<i>Aglais urticae</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Apatura ilia</i> (Denis & Schiffermüller, 1775)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Apatura iris</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Aspitates gilvaria</i> (Denis & Schiffermüller, 1775)	Lepidoptera	Native	D.MERCIER										
<i>Brachytron pratense</i> (O. F. Müller, 1764)	Odonata	Native	D.MERCIER		LC		NT						PA (G)
<i>Callophrys rubi</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Calopteryx splendens</i> (Harris, 1780)	Odonata	Native	D.MERCIER	LC	LC		LC						NC
<i>Calopteryx virgo</i> (Linnaeus, 1758)	Odonata	Native	D.MERCIER		LC		LC						NC
<i>Coenagrion mercuriale</i> (Charpentier, 1840)	Odonata	Native	D.MERCIER	NT	NT	E**	LC+Lor***	1	1	1			NC
<i>Coenagrion puella</i> (Linnaeus, 1758)	Odonata	Native	D.MERCIER	LC	LC		LC						PA (G)
<i>Coenonympha pamphilus</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Colias crocea</i> (Geoffroy in Fourcroy, 1785)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Ematurga atomaria</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER										
<i>Enallagma cyathigerum</i> (Charpentier, 1840)	Odonata	Native	D.MERCIER	LC	LC		LC						NC
<i>Euclidia glyphica</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER										
<i>Euthrix potatoria</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER										
<i>Gomphus vulgatissimus</i> (Linnaeus, 1758)	Odonata	Native	D.MERCIER		LC		LC+Lor****						NC
<i>Gonepteryx rhamni</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Hyphantria cunea</i> (Drury, 1773)	Lepidoptera	Exotic	D.MERCIER										
<i>Ladoga camilla</i> (Linnaeus, 1764)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Lysandra coridon</i> (Poda, 1761)	Lepidoptera	Native	D.MERCIER	LC	LC	LC							
<i>Melanargia galathea</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Melitaea deione</i> (Geyer, [1832])	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Ochlodes sylvanus</i> (Esper, 1777)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Orthetrum cancellatum</i> (Linnaeus, 1758)	Odonata	Native	D.MERCIER	LC	LC		LC						NC
<i>Ostrinia nubilalis</i> (Hübner, 1796)	Lepidoptera	Native	D.MERCIER										
<i>Pararge aegeria</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Pyrrhosoma nymphula</i> (Sulzer, 1776)	Odonata	Native	D.MERCIER		LC								NC
<i>Pieris rapae</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER		LC	LC							
<i>Platycnemis pennipes</i> (Pallas, 1771)	Odonata	Native	D.MERCIER	LC	LC								NC
<i>Polyommatus icarus</i> (Rottemburg, 1775)	Lepidoptera	Native	D.MERCIER		LC	LC							

Appendix 1

<i>Pseudopanthera macularia</i> (Linnaeus, 1758)	Lepidoptera	Native	D.MERCIER										
<i>Tyta luctuosa</i> (Denis & Schiffermüller, 1775)	Lepidoptera	Native	D.MERCIER										

* CA= Certain autochtony; LA= Likely autochtony; PA= Possible Autochtony; NC= No Clear evidence of autochtony | (G)="Garenne"; (P)="Plançon"

Old category, it means "EN" * Species to monitor, indicator **** Species to monitor, rare

Source: Museum National d'Histoire Naturelle ; Liste rouge de la flore vasculaire de Rhône-Alpes (CBNA 2012); Liste rouge des libellules de la région Rhône-alpes (Sympetrum, 2006)

HERCULES

Sustainable futures for Europe's HERitage in CULtural landscapES: Tools for understanding, managing, and protecting landscape functions and values

GA no. 603447

Appendix 2 Landscape Feature Recording Survey

DRAFT

Author: Pip A Howard

An Introduction

Landscape features remain the strongest connection between people and their recognition of their landscape, particularly in regards the recognition of cultural heritage elements within that landscape.

Thus the removal or threat of removal, together with the positioning of new landscape features within a landscape is the most likely landscape issue to result in conflict.

The Landscape Feature Recording Survey is towards the identification of good landscape practice.

Good landscape practice does not automatically equate with good land management as the latter does not and often cannot ‘fit’ the characteristics of the wider landscape.

To take into consideration this difference between ‘landscape’ and ‘land’ it has been necessary to design the survey to be as easily understood by the layman as by the practitioner.

This experimental survey is the result of studying 1000’s of common landscape features in SE France, W France and SW England, UK. It is a land management practitioner based survey, which is detailed to recognise the common sustainable attributes of landscape features. It takes a default position that traditional historic landscape features, which remain in the landscape, have an inherent aesthetic value. Local materials, site specific design and a requirement to fulfil more than a single purpose (the placement of historic features invariably aided long term land management purposes further) further add value to these features.

For many features the surface area of the feature dramatically increases the value of the feature; aesthetically in terms of added functions and in terms of biodiversity and added habitat. For example a mature field or hedgerow tree surface area can be in excess of a hectare; thus it has a huge visual impact as well as a vast platform for biodiversity.

This landscape feature recording survey works towards the mapping of features in as simple of manner as possible with an objective towards easy inclusion on the HERCULES Project Knowledge Hub.

The tested survey and all images (except the wind turbine) are taken within the boundaries of the HERCULES project study landscape of Modbury, Devon, UK.

Pip A Howard
Director Forest Communications Network Ltd.
September 2014

Features Chosen & Methodology

- 1. Paths, Tracks and Vehicular Access.**
- 2. Hedgerows**
- 3. Man Made Ponds**
- 4. Wind Turbines**
- 5. Non Woodland Trees**

These 5 landscape features are chosen due to: a) a prominent and regular addition to many common landscape typologies across Europe b) linkage between rural and urban landscapes c) all are well known to the average layman.

The survey is designed to be carried out on a lateral scale, from the ground. The use of a camera is essential and this experimental landscape feature recording survey is designed to allow further extension of its purpose towards public and practitioners evaluating landscapes based on lateral photographic imagery, which is gaining momentum in academia also and thus presents a valuable opportunity towards bridging a chasm between all those with an interest in landscape – most significantly the public.

Each landscape feature requires a slightly different recording method. A considerable amount of surveying towards identifying common or mean attributes and measurements of the features has already been carried out in order to establish a base platform for each landscape feature.

All that is required of the recorder is to visit the location of the features and either take an image or walk a section of a route through the landscape concerned.

The materials needed by the recorder are a camera, map (1:25000 scale or smaller) and a pencil and notebook.

A simple scoring method is used with each feature scoring 10 prior to recording.

Final scores are:

- 0 – 5 :** **Features are non existent / removed.**
- 5 – 9 :** **Features are threatened / or of negligible value.**
- 10 :** **Features exist.**
- 11 – 15 :** **Features exist with some evidence of maintenance.**
- 16 – 19 :** **Features are protected / preserved.**
- 20:** **Exemplary Landscape Practice**

Scores are denoted onto map using colour coding.

Paths, Tracks and Vehicular Access.

Access Routes: To include all roads, tracks and footpaths. The average depth of non-highway tracks and roads is 23cm to 'active' soil (soil which is still capable of growing). The width of most single lane tracks still allow for the transfer of soil micro-fauna and fungal cords below the surface. Maintenance, including pesticide usage, is regular - normally bi-annual.

Vehicular Track

Permeable:

Inlaid with Stone + 5. Add 5 if local material

Surface is made from laid stones. Average depth of stones is 20mm, directly onto compacted soil.



Loose Gravel + 5. Add 5 if local material. Remove 3 if under-laid.

Surface is loose gravel, or chippings. Average depth of stones 14mm, laid directly onto compacted stones of an average depth of 20mm. Soil is often active immediately below the surfacing material. Under laid sometimes using 'weed retention' material – although this technique is less frequent than 15 years ago.



Appendix 2

Bare Earth 0. Add 2 if following contours (<math><3^\circ</math>). Add 2 if cross drainage and drains at <math><3^\circ</math> and / or silt traps in evidence. Remove 5 if signs of erosion.

Bare earth tracks are invariably new additions to the landscape and a very useful gauge of the knowledge and management intentions at the location as guidelines are prepared for their construction by most land management industries. A spongy surface, lack of drain on inside edge (if on a slope), piled earth against the base of trees are all evidence of a lack of adherence to good practice guidelines.



Maintained Grass + 5.

It cannot be assumed that a bare earth track will simply become a grass track in time. Creating a grass swath on a track is costly and time consuming. Most grass tracks are historic and have developed over considerable lengths of time. Modern innovative 'cell' products are expensive but a useful material in the land managers arsenal.



Appendix 2

Surfaced:

Concrete 0. + 5 if ramped.

The average depth of a concrete track is 18mm (well below guidelines), laid on infill material of an average depth of 13mm to active soil. The concrete track is usually raised and commonly contains good drainage measures. As per the image the concrete is often set in ramps, allowing for good permeability.



Tarmac -2. + 2 if measures for cyclists / wheelchair mobility in place.

Tarmacadam surfacing contains contaminants which greatly affects neighbouring soil. Drainage is often compromised also.

**Additional scores:**

Cross Drainage + 2

Historic Feature (shown on pre WWII maps) + 2

Highway -2

More than single carriageway - 5

Horse / Foot Path

Permeable:

Bare Earth Track 0



Maintained Grass (including pastoral field)



Trodden Arable Field 0



Additional Scores:

Inlaid with stone +5 Add a further 5 if local material

Loose Gravel +5 Add a further 5 if local material

Other loose material; woodchip, straw etc.,

Sloped with cross drainage +2

Signs of Erosion -5

If banked either side, are drainage ditches cut through bank. If yes -2 if no +2

Surfaced / permeable wheelchair access, not a highway but including raised pavements scores 15.

Appendix 2

Hedgerows

Hedgerows are arguably the most prominent landscape feature in many areas, particularly in the 'Bocage' landscapes. There are many variables to a hedge and as such the common measurements are divided into 3 different basic hedge styles for the purpose of the landscape feature recording survey. As with other field and access boundary features the scoring is given per length between junctions.

Banked Soil Hedgerow +3. + additional 2 if 'sod' built.

There are 2 main types of banked soil hedgerow: A **Banked Hedge** is built using 'waste' soil and field material from drainage and other operations, with an average height of 0.8m, width of 1.3 (at base) and surface area (not including vegetation) of 2.1m² per linear metre. A **Devon Hedge** is built using 'sod' bricks (cut turf), with an average height of 1.2m, width of 1.5 and surface area of 3.4m² / linear m.

Vegetation Atop Banked Soil Hedgerow if more than 0.6m + 2 if includes more than 2 mature trees per 100m +5.



Devon Hedge, without trees: Final Score 17



Banked Hedge with trees: Final Score 18

Many hedgerows and other field boundary features are greatly threatened by management changes. The 3 most common types of damage are:



Degradation by Livestock. Minus 3



Damage by Intensive Agriculture. Minus 3

Appendix 2



Damage by Access Needs. Minus 2
Dry Stone Hedge

The majority of raised hedgerows following a contour are dry stone faced to varying heights. The material used for construction was waste from the agriculture land, not just the stones but more often than not vegetative waste used in the back fill also. These hedges are usually constructed using a layer of soil between each stone. As with dry stone retaining walls, stones laid vertically are done so for drainage purposes (as vertical stones are less resistant to 'planing' – where the stone loses friction with water and slide out). The foundation of these hedges was often dug out and filled with stone, creating a highly efficient slow drainage unit and in some cases used to manage water more effectively than any modern equivalent. The average dry stone hedge is 0.8 high, 1.2m wide and a surface area of 4.1m² / linear m.

Dry Stone Hedge +6, if on contour or minimal degree of slope +2, vegetation on top >60cm
+2



Appendix 2

Dry Stone Hedge, with protection against livestock – modern farming often recognise still the exceptional quality of these features in land management.

Degradation of dry stone hedges is rare and a very obvious sign of a lack of both traditional and innovative land management knowledge.



This dry stone hedge has had all its facing stones removed for use in construction elsewhere.

Vegetative Hedge

Virtually all modern hedgerows are simply lines of planted trees, normally 2 lines, both planted at 1m spacing, the parallel line 0.5m away with alternated plantings. At an average age of 12 years after planting, the trees form a solid barrier, with changes in the soil also. There are 2 principal types of vegetative hedge; Single species or Multi Species.

Single Species Vegetative Hedgerows + 2. + 3 if signs of traditional ‘hedge-laying’ techniques.

Average height is 2.1m and width 0.7m.



Hazel (Corylus avellana) single species hedgerow.

Multi Species Vegetative Hedgerow + 5. + 2 if signs of traditional hedge-laying.

Appendix 2

Average height is 2.9m and width 2.1m. +2 if width exceeds 2.5.



5m wide Multi Species Vegetative Hedgerow

Man Made Ponds

The definition of a pond for the purposes of this survey is: A body of water, created by the work of man, deeper than 0.5m but no larger than 1 ha. The frequency of ponds in a rural landscape is heavily influenced by localised historic land use, whilst garden design trends have greatly influenced the frequency of ponds in a peri-urban landscape and a pond as a landscape feature in modern rural settings are thus also a strong focal point to the general populace.



The ecological value of a pond is arguably stronger than any other man made landscape feature relative to their size. And unlike many natural and man made landscape features specific visits to the site of ponds is common.

Appendix 2



For recording purposes, even though many ponds are irregularly shaped, it is easier to assume a circle as the scores are relative to a percentage of 360°.

The vegetation buffer zone is a 4m wide circumference of the pond; 2m into the water for semi aquatic / aquatic plants, 2m onto the surrounding land for riparian plants.

Man Made Pond + 5.

Additional Scores:

- + 2 if vegetation buffer complete.
- + 3 if island or sand bank.
- 2 if no vegetation buffer.
- 2 if livestock has access to full circumference.

Wind Turbines

A large wind turbine can in many rural landscapes be the largest man made landscape feature by far. Thus conflict is assured in many locations. Putting aside economic and environmental concerns for now, the social angle is very interesting. Wind turbines clearly polarise the population in terms of aesthetics and as, arguably, in many landscapes across Europe wind turbines expose the flaws of inherent ‘top down’ planning, and thus there is a real need “to ascertain why a landscape is valued and by whom”*. This exposed problem also highlights the need for effective ‘bottom up’ methodology in assessing landscape values for all landscapes, when considering the rapid increase in using Europe’s landscapes as a resource bank.

A standardised, simple methodology for assessing Wind Turbines remains elusive and thus the technique below is a simplified method, based on land management practitioner techniques and design ‘on the ground’ solely for existing wind turbines, without the knowledge of any background survey or assessment.



Wind Turbine, on the boundary of Winkliegh and Broadwoodkelly parishes, Devon.

If we take the generalisation that the more landscape features, both natural and man made in a landscape, increase that landscape value then can we use basic visual analysis techniques – from a lateral point of view to assess the placement of a wind turbine? The difficulty here is that wind turbines are usually always a prominent ‘point’ in any landscape and whilst wind turbines remain unattractive to many, to some they are pleasing. Thus any ‘score’ attributable to wind turbines is in reality subjective.

Firstly, using survey techniques for other landscape features, in particular for Vehicular Access, record from the location of the wind turbine the score of the construction and maintenance of the turbine access tracks, and effects on landscape features pre-existing the turbine.

Secondly, from a location that has a prominent viewpoint onto the area of the landscape in which the turbine is situated, it is possible to record a simplified landscape design score for the turbine.

Appendix 2

The technique is as follows: Firstly perform a Visual Force Analysis

“When we look at the landform, our eye tends to follow the skyline.

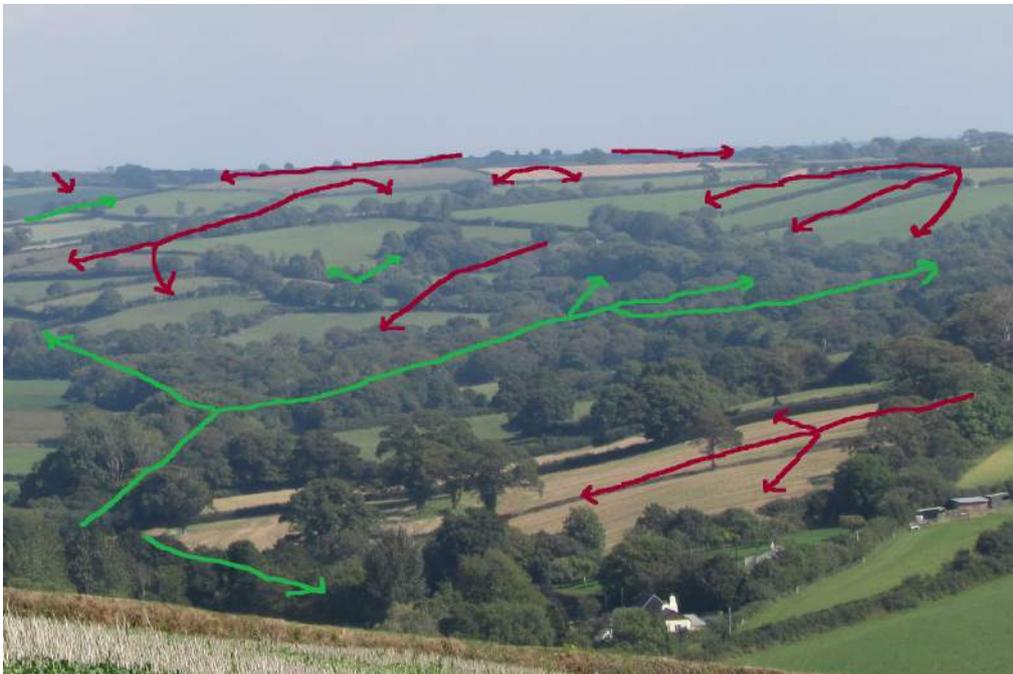
Then our vision tends to follow down spurs, ridges and convex landforms.”

Mark these in Red downward arrows

“Our gaze also tends to flow up hollows, valleys and concave landforms.”

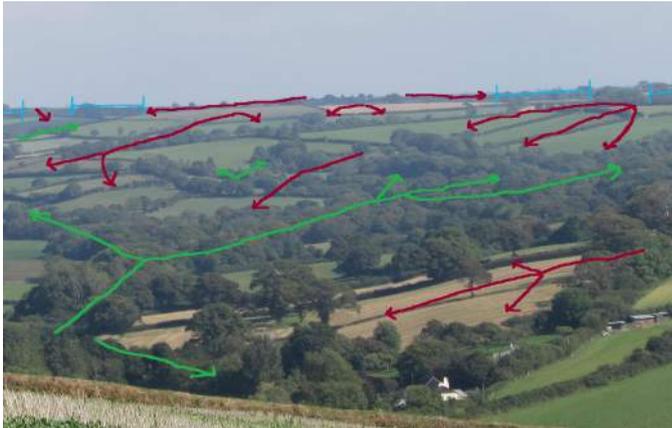
Mark these as Green upward arrows

The result is as follows:



This image is from the Modbury Ridgeway, looking South.

From this basic visual force analysis, we can identify areas which are less intrusive on our gaze. These areas are as follows, marked in blue (assuming the wind turbine needs to be placed on higher ground for practical reasons):



Therefore wind turbines are better sited as such:



Than:



Score +3 for siting in less prominent location.

*Scottish Natural Heritage 'Siting and designing wind farms in the landscape - Version 2' May 2014

Appendix 2

Non Woodland Trees

All trees outside of woodland and forest, to include but not exhaustive; Hedgerow trees, Fruiting trees and Orchards, Shelterbelt trees, Ancient trees, Wood Pasture trees, Field trees, Garden trees and Tree Avenues.

Each tree holds different values (few of which are clearly studied in cultural terms) and there is much crossover between trees varying status's which define such values. Progress on defining Ancient & Venerable trees as well as 'Heritage' trees is well advanced, with, in the first case, available recording mechanisms for these trees in some countries.

On a local level many trees can enjoy an enviable status as a 'culturally significant landscape feature' as many distinctive trees will hold personal values to particular individuals, families or groups of people. To attempt to 'value' such trees to include personal values is virtually impossible leading towards a need for general disclaimer in valuation techniques, be it for amenity, environmental, ecological, production etc.,.

As such a single tree in landscape can be of the personal value as a complete arboreal landscape.



The 'Ridge Way' Scots Pine of Modbury – A dominant row of trees in the Modbury landscape.

In order to set a score for Non Woodland Trees in the landscape in terms of measuring good landscape practice, it is necessary to determine a sub class of landscape typology. Is the wider landscape (including peri urban and urban) an 'arboreal' (a majority of non woodland trees) / 'silvicultural' (a majority of woodland / forest cover) / Hedgerow without canopied trees / Moorland etc.,? Each of these simplified landscape typologies would alter the potential scoring of a group or individual non woodland tree.

Appendix 2

Without establishing what was there throughout the majority of the history of the cultural landscape (when people were actively managing the land) we cannot evaluate good landscape practice in terms of existing non woodland tree cover.

It is also essential to have some background knowledge with regards native local tree species in order to establish amenity planting.

For the purpose of this survey, trees are recorded on a field to field basis, (including hedgerow trees).

Amenity Trees (to include garden and parkland trees) + 5 / enclosed area or 100m length. + 3 if more than 1 per enclosed area or 100m length. + 2 if tree avenue.



Parkland Amenity Trees: More than 1 per enclosed areas (marked in red). Total score 18 per field

Fruit or Nut Bearing Tree +5 / enclosed area or 100m length. + 3 if more than 1 per enclosed area or 100m length. +2 if orchard.



Mature Cider Apple Tree in Grazed Field. Total score 15

Hedgerow Tree + 5 if 1 / 100m length. + 3 if more than 1 per 100m length. + 2 if field boundary contains 2 per 100m / whole perimeter.



Although denser on the left hand hedgerow, all hedgerows in this field contain more than 2 trees per 100m. Total score 20

Field Tree + 5 / enclosed area. + 3 if more than 1 / enclosed area. + 2 if wood pasture.

Appendix 2



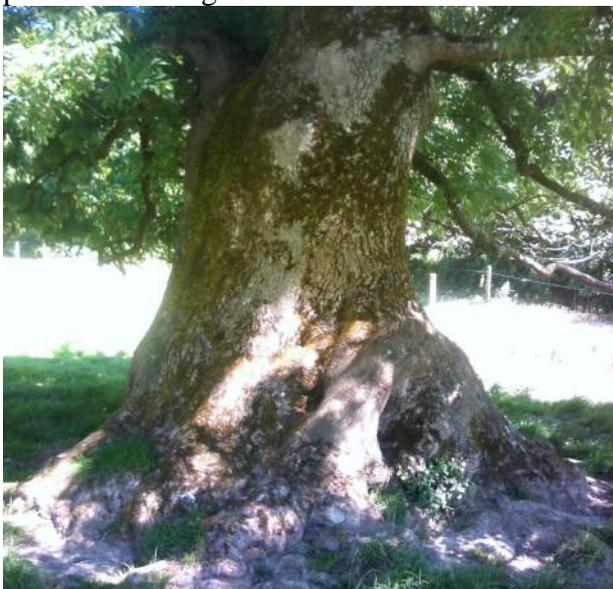
It is rare to find 'Field Trees' in the Modbury landscape which are not parkland or more usually hedgerow remnant trees. But these 2 clumps, presumably planted and retained initially for hunting cover, remain. Total Score 18

Shelterbelt / New Planting + 5 / enclosed area. + 3 if mature.



Shelterbelt planting. Total score 15

Ancient Trees or Culturally Significant Trees + 10. To be marked separately on survey plan / Knowledge Hub.



One of the pollarded Ash trees of Modbury, recorded onto the UK Ancient Tree Register. A tree of significant regional cultural value.

HERCULES

Sustainable futures for Europe’s HERitage in CULtural landscapES: Tools for understanding, managing, and protecting landscape functions and values

GA no. 603447

Appendix 3 Set of good practice examples to be put on knowledge hub

Authors: Geneviève, Girod, Sarah Torrecillas

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Introduction

This is an inventory of good practices collected through stakeholder interviews on site in Rhône-Alpes area, France. Six sites were included and practice cover:

- Knowledge enhancement on ecological gardening and landscaping,
- Sustainable farming for local food production,
- Cultivated biodiversity,
- Forest heritage management,
- Water heritage preservation,
- Traditional skills and tools.

Each practice is presented on one page card, which correspond to one point on the map, with an additional description for each site, that correspond to the layer description on Knowledge Hub.

This work can be found on :

http://kh.hercules-landscapes.eu/#T33_x604764.7046460258_y5654481.037993275_s9_b4

1. Knowledge enhancement and landscape stewardship in ‘Terre vivante’, first European ecological center

Website: www.terrevivante.org



Created in 1980 with the magazine "4 seasons for gardening" first gardening magazine that explain to amateur gardeners how to garden without chemicals, Terre vivante moved in 1992 to Mens in the Trièves with the assistance of the European Union, General Council of Isère, the state and individuals.



The first ecological center in Europe opened in 1994, and is a place for enhancement of ecological gardening and sustainable habitat. 5 hectares of organic gardens (in the heart of 50 hectares of forest) were initially open to the public, and are today open on reservation and for guided tours. Many workshops are also organised as well as various events such as “Rendez-vous au jardin”. The courses are varied: organic gardening, creating a pond, achieving a hive, the art of weaving and the creation of cosmetics with garden plants.

Organic gardening technics are enhanced in the flower garden and in the vegetable garden: mulching, vegetable associations, compost, birdhouses, insects shelters, reasoned mowing, light cut, profits of a pond, composting toilets...

Many alternative building technics are also shown: different materials such as mud brick building mud for the restaurant, cob for cabin gardeners, various insulation materials ... All site buildings were built with local materials.

The center is also home of the publishing house Terre vivante, which edit books on organic garden and ecological building but also food, well-being and society.

Since 2005, Living Earth has become a SCOP with 37 employees who are members and who co-manage the company.



1.1 Reasoned mowing



Description :

Most popular places are regularly mowed while those less used, like trees neighbourhood or the garden, are mown once over three times. Mowing height is 6 cm minimum and each mower passage should cut no more than 1/3 of the grass height.

Interest: Reasoned mowing is a method that promotes biodiversity in the garden, saves time and reduces waste.

A short mow stresses the plant that will grow faster, requiring more frequent mowing, and thus generate more waste. Stress also makes the lawn more susceptible to disease and competition from weeds.

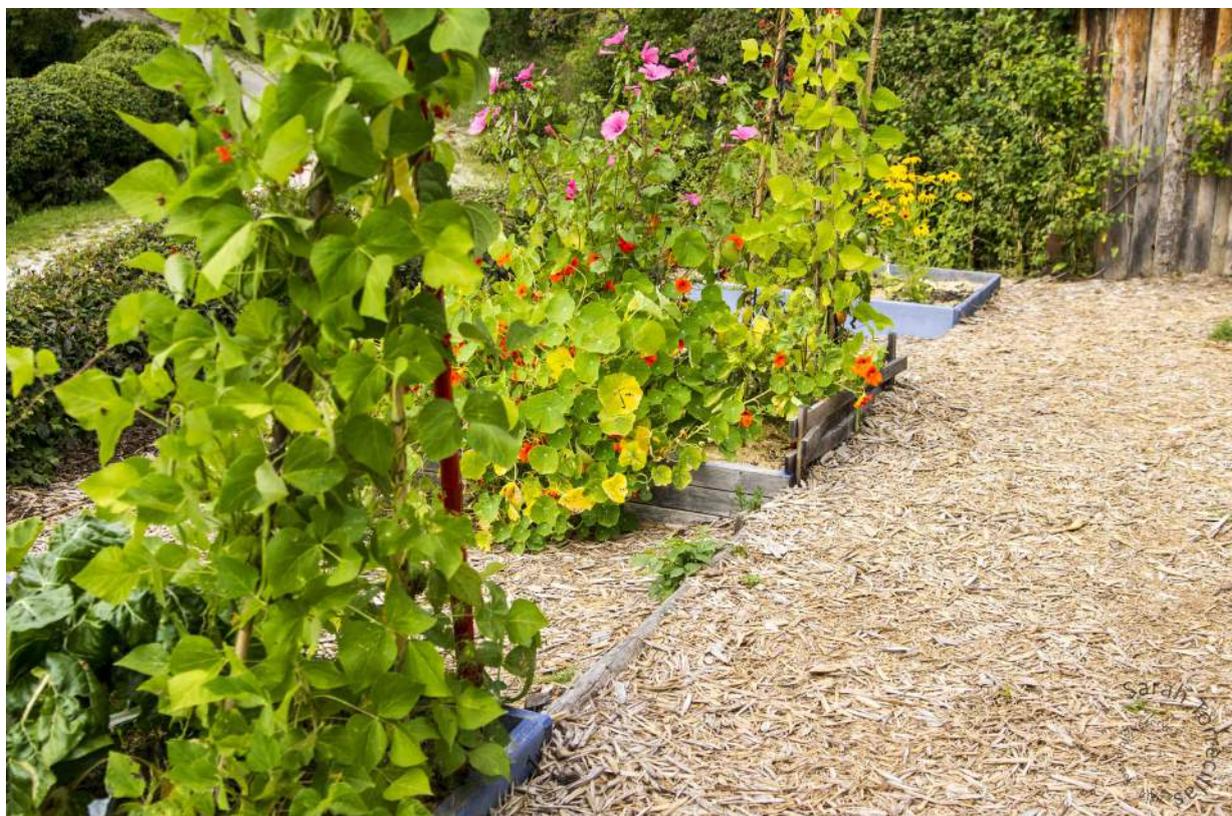
High lawn mowing allows grass to root deeper in the soil and makes it less susceptible to drought during warm periods. High Mowing also gives place to greater biodiversity and shelters for insects that can help the gardener fighting parasites.

Cost: No cost unless buying a lawnmower if necessary to mow higher (most mowers today can mow up to 7 / 9cm.)

Variation: Use a "mulching" mower for not waste but requires more regular mowing for proper display.

Avoid: Mowing should be done from the inner to the outer and not the opposite, so that microfauna are able to escape instead of being locked up and milled.

1.2 Mulching pathways



Description :

Clay path can be mulched with crushed limbs, pine bark, wood pellets, nut shell, or mineral mulch such as gravel, slate, pozzolan, local tile...

Shrubs and small tree branches cut can be crushed and directly put on the pathways.

Depending on the materials, three or four inches layers of mineral mulching will be enough while for organic mulch five to ten centimetres will be required. The latest will be biodegraded within 2 years so it will be necessary to recharge the path with mulch.

Interest: Mulching limits the growth of weeds and avoids the use of herbicides. Organic mulch pathways are very pleasant.

Where to find this practice: In path or gardens.

Cost: Cost varies depending on the material chosen: It may be free if a crusher is available.

Pine bark cost around 10 € / m², wood pellets and nutshells 2-3 € / m², gravel 1-2 € / m², slate 3-4 € / m² and pozzolan 5 € / m².

Variation: It is also possible to set up a geosynthetic under the mulch.

Avoid: Do not choose a light mulch if the pathway is submitted to strong winds.

1.3 A pond in the garden

Description :

A pond should be at least 2-3 m², preferably in the sun, on relatively flat ground and away from large trees and conifers to avoid the pond being filled with silt.

Plants and animals have their water depth preferences (plants for banks, semi aquatic plants and aquatic plants) and a pond should have different water depths. By creating levels of different depths, the pond can host greater diversity.



Unless the soil is very clayey and impermeable, use a thick PVC membrane (0.5 mm to 2 mm thick) settled on a geotextile or a sand bed.

Once the pond made, install local and non-exotic plants that can be found in other pond (be careful however not to take protected species in a nature reserve) or in specialized nurseries.

Wildlife spontaneously colonize the pond, including dragonflies, beetles, gerris ... Fish can be introduced in a small pond at the risk of unbalancing the natural equilibrium. Frogs, newts, toads will come if they are already present within 2km of the pond.

Interest: A pond is an important place for biodiversity, it can play the role of habitat, breeding and feeding areas. A simple observation or counting (birds, insects) before and after the creation of the pond shall testimony for the increase in wildlife. The pond can also attract beneficial insects that help the gardener. In addition, the aesthetic and educational value is great.

Cost: PVC fabric: from 4 to 5 € / m². The price of plants is variable depending on the variety chosen.

Variation: Preformed small ponds are available to simplify the creation of the pond.

Avoid: Banks should not be abrupt. The depth should not exceed five feet. Pond plants often have tendencies to expand rapidly, make sure the first year not to introduce too many plants.

1.4 Making a compost at home

Description :

Composting can be achieved in a composter (bottomless so that the soil fauna is in contact) or only piled. Compost should be placed in shade to avoid dryness.

Kitchen waste (vegetable peelings, coffee grounds, tea bags, egg shells...), newspaper (except glossy paper), cardboard, wood ash, garden waste (leaves dead unless disease, grass mowing ...) can be put in the compost. Ideally crush material to facilitate composting.

There must be one third of "brown" material (cardboard, sawdust, crushed branches) for two-thirds of green material (kitchen waste, cutting...).

Regular aeration is important and compost should be mixed. According input waste compost can be ready after 5 to 12 months, when he has a fine structure and a brown colour.

The compost is spread at the foot of the plants and can be incorporated by scratching if necessary.

Interest: Compost can recycle many household waste and garden waste, and is an important provider of organic matter for the plants, which contributes to the soil microbial activity.

Cost: A composter can be made or purchased (from 30 to 100 € depending on model).

Variation: Put kitchen waste directly at the leg of the plants mixed with mowing. This creates mulch, reduces weeds, keeps moisture and adds organic matter. This has to be done on the plants that do not fear high humidity.

Avoid: Meat and fish waste, diseased plants, plastics, metals and glass. Avoid also using the compost in the bottom of the hole when planting a tree : organic matter is useful only on surface.



1.5 Composting toilets



Description :

A bucket of 20 to 40 litres is covered by a lid toilet seat. The bottom of the bucket is filled with 5 cm of sawdust or branch crushed. After each use, add sawdust before closing the door.

Once the bucket full, it is transported to the garden, and covered with dry materials such as crushed, dried grass, cardboard, straws ... The compost will be used after a 1,5 to 2 years.

Dry toilets are no smellier than traditional toilets.

Interest: Dry toilets save 40 litres of water per day per person. The resulting compost can be used in the garden, on border plants, shrubs and trees (be careful though in case of use in the vegetable garden: there is a risk of re-introducing pathogenic germs if the compost has not spent at least 1,5 year in the composting area.)

Where to find this practice: The Terre Vivante ecological center has composting toilets. Many festival offer this alternative to traditional toilets.

Cost: The cost of implementation is low (planed wood panel, bucket seat), sawdust or crushed material can be purchased (about 0.5 € per litre).

Variation: Manufactured dry toilets can be purchased for a significant cost. The bucket needs to be emptied less often than homemade dry toilets.

Avoid: Do not use the compost before 1,5 year.

1.6 Mulch the garden

Description :

Mulching is covering the ground under vegetables with various materials. It has to be done when plants are installed, to avoid suffocation. The thickness of the mulch should not exceed 6 cm thick.



Various materials can be used as mulch, each material having a different lifetime, some of which can hold a season and some less.

Mowed grass can be used as mulch if allowed to dry before implementation. Straw, flax, hemp, dead leaves, crushed limbs, cocoa hulls, buckwheat hulls, pine bark, cardboard ... can be used as mulch. If after harvest mulching is still there, it can be buried with a Grelinette (spade fork with two handle to avoid turning the soil.)

Interest: Mulching helps to limit the growth of weeds. It protects plants from late spring frosts, keeps moisture at the foot avoiding evaporation, and enriched the soil as it decomposes. After several years of crops, in association with the provision of compost, clay soils become less compact and sandy soils increase their water holding capacity.

Cost: The cost varies depending on the selected mulching: 2 € to 10 € / m².

Variation: Mulching can be done under hedges, shrubs, borders, provided it does not cover the tree neck (at the base of the trunk).

Avoid: Mulch should not be spread too early in the spring, otherwise it would prevent the earth to warm up properly and plants would grow less rapidly.

Using a plastic film prevents water from seeping into the soil and may require more watering.

1.7 Install plants to attract auxiliary (beneficial insects to the garden)

Description :

In a garden, as well as in a vegetable garden, some plants are featured to attract auxiliary:

Dill, angelica, fennel, nettle, yarrow, tansy, marigold, chamomile, aster, cornflower, mint, nasturtium, phacelia, borage, garlic, ricin, the cosmos are plants that attract many beneficial insects. Hedgerows, all plants with hollow stems, and numerous flowers complete this list. These plants can be installed in the garden and around.

Interest:

Auxiliary insects will help the gardener to fight against some parasites and insects and will ensure good pollination. For example, the ladybug, lacewing or syrphid are hungry for aphids, mealybugs eliminates the rove beetle, flies and slug, Osmia and wild bees are great pollinator ...

Where to find this practice: Terre vivante gives the example of a dozen plants which attract beneficial insects.



Cost: The cost of the seed or shrub.

Variation: Birds can also be attracted by wild teasel, named the Cabaret birds (where they find to eat and drink).

Establishing insect shelters in addition to plants allows other auxiliary to come and stay all year in the garden.

Avoid: Buy auxiliaries can answer a harmful attack but it is better to attract and retain naturally auxiliaries.

1.8 Birdhouses

Description :

Birdhouses should be placed in a quiet area, out of reach of cats; they should not be placed in direct sunlight, in full shade or in a place subject to strong winds. The depth varies according to species, as well as the width of the opening, from 25mm diameter for chickadees



(except the great tit) to 32 mm, and even up to 110mm for tawny owl. Some birds prefer semi open birdhouses with 150 by 70mm openings for the robin or the grey wagtail.

The installation is best in autumn so that the birds have time to see it before spring, although nothing prevents installing the birdhouse at any time of the year.

In October-November, to prevent the risk of disease and pest outbreaks, it is necessary to clean the birdhouse.

Interest: Birdhouses help some species to nest, as birds find fewer places (condemned or destroyed natural shelters, consolidation...). Some birds, such as the great tit, may also come to help in the garden, eating aphids and worms.

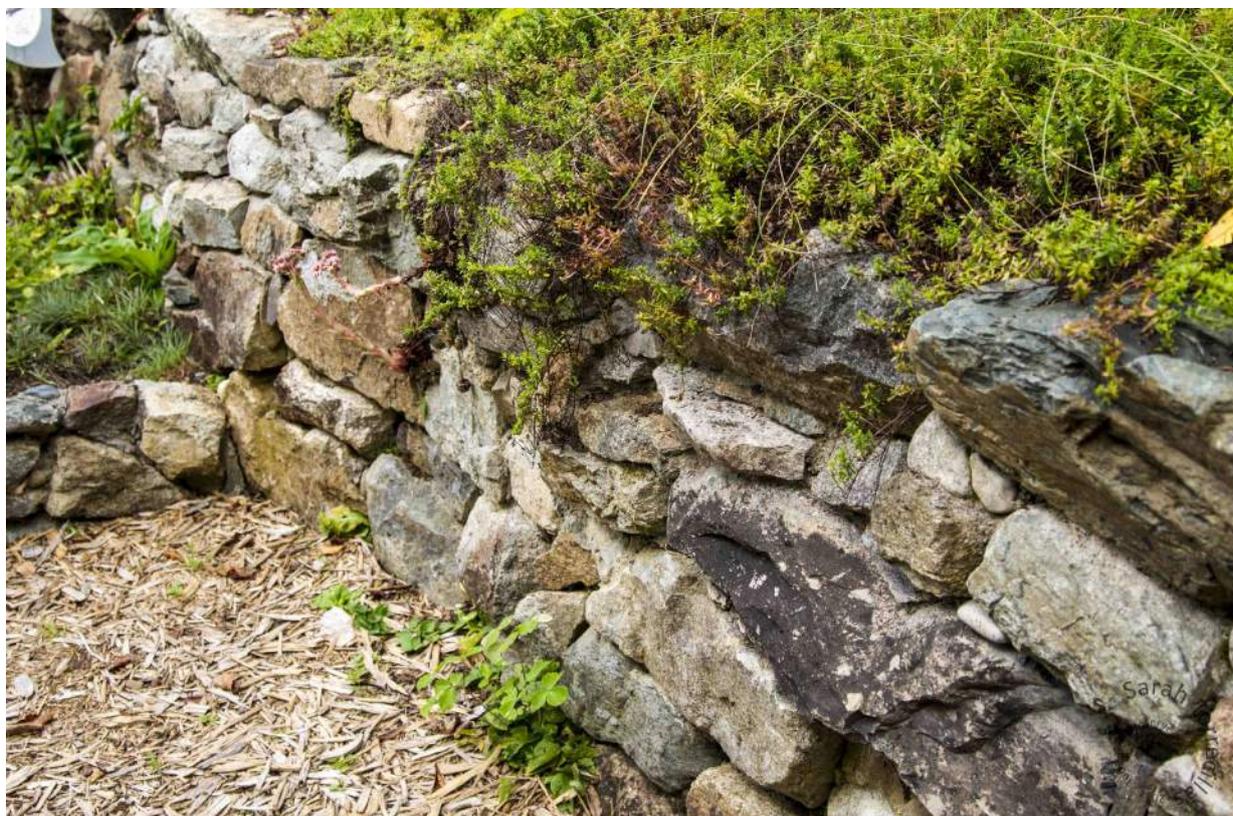
Cost: Board cost if it is homemade, otherwise on specialized websites starting from 10 €. Be careful not to buy "standards" birdhouses that will suit no species.

Variation: "Anti predators" birdhouses exist; they are longer than the height, with anti chamber between the inlet and the nest, which prevents predators from reaching the nest.

Avoid: To install birdhouses for birds that are not present in the geographical area: search for information.

Be patient and do not remove the nest after one year, it may take time for the birds to come and nest.

1.9 Insect hotels and shelters, microhabitats for auxiliary



Description :

To be able to keep beneficial insects, one must ensure they find "food and shelter". Drystone walls, rock piles (which remains all over the year) are the favourite places for the lizard. Stumps, wood piles and dead leaves (still around the whole year) are suitable for hedgehog. The uncut areas on the edge of the garden and the leaves into piles allow shrew stay in the garden, and the pond gives shelter to the toad and the dragonfly. Elderberry branch bundles, tree trunks pierced with holes of different diameters, pots filled with straw, are other shelters for beneficial insects that can be spread throughout the garden.

Interest: The auxiliary will help the gardener: the lizard will eat the cabbage butterfly, the hedgehog will feast with snails, shrews with the larvae of click beetles, toads loves slug, the dragonfly will eat the carrot fly... Other insects will help for aphids control or for pollination.

Where to find this practice: Terre vivante shows a large number of these practices that can be installed in any garden.

Cost: Minimal.

Variation: Insects hotels have the characteristic to gather a large number of inhabitants on the same structure. However, some unsociable species, prefers to be alone rather than next to other insects.

Avoid: One must not create a pile of wood, leaves or stone for a few years and move them at once: auxiliary may have their home in the place.

Appendix 3

1.10 Vegetable and plant association, companionship

Description :

Some plants go well together, here are the associations:

Les meilleures associations de légumes

	Ail	Aneth	Arbre fruitiers	Basilic	Bettrave rouge	Bourrache	Carotte	Céleri	Chicorée	Chou blanc , chou rouge, chou de Milan, chou de bruxelles	Chou de chine	Chou-fleur	Chou-rave	Ciboulette	Concombre	Courgette	Cresson	Epinard	Fenouil	Fraisier	Haricot à rames	Haricot nain	Menthe	Oignon	Panais	Phacélie	Pomme de terre	Poireau	Pois	Radis	Salade	Sariette	Tomate			
Ail			♥				♥			✗										♥	✗	✗		♥				♥	✗				♥			
Aneth					♥											♥						♥	♥							♥						
Arbres fruitiers	♥																																			
Basilic																♥	♥																			
Bettrave rouge		♥								♥			♥					✗			♥	♥	♥		♥							♥	✗			
Bourrache										♥											♥	♥	♥													
Carotte	♥						✗		♥	♥				♥				♥	✗		♥	♥	♥	✗	♥				♥	♥	♥	♥	♥	♥		
Céleri								✗		♥		♥						♥	♥		♥	♥	♥						♥	♥		✗		♥		
Chicorée										♥										♥																
Chou blanc , chou rouge, chou de Milan, chou de bruxelles	✗				♥	♥	♥	♥			✗	✗	✗		♥					♥		♥			✗		♥			♥				♥		
Chou de chine										✗			♥								♥	♥	♥												♥	
Chou-fleur										✗		♥									♥	♥	♥		✗										♥	
Chou-rave					♥					♥										♥	✗	♥	♥												♥	
Ciboulette										♥											♥	♥	♥													
Concombre	♥	♥								♥							✗				♥	♥	♥													
Courgette																					♥	♥	♥													
Epinard					✗		✗	♥		♥	♥		♥								♥	♥	♥													
Fenouil													✗								♥	♥	♥												✗	
Fraisier	♥																				♥	♥	♥													
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♥ Association bénéfique
 ✗ Association néfaste

Interest: Some plants emit repellent against insects that may be useful for other plants susceptible to the same insects. Associating the set limit diseases and repels pests.

Where to find this practice: Terre vivante shows a large number of these practices that can be installed in any garden.

Cost: no.

Avoid: Some plants cannot bear to be associated with others, it can create negative associations (see table above).



2. Local food production: Biau panier

Website: <http://www.biaupanier.com/>



This association was created in 2005 following strong demand from Trièves residents for a bio short circuit. The purpose of this non-profit association, is to offer a wide range of local organic products. The association currently groups nineteen producers to offer a variety of products. Vegetables, pasta, bread, flour, eggs, jams, cheeses, meats, beers, syrups, processed products, cosmetics, ... are offered to individuals.

The producers grouped to facilitate access to their products throughout the country. Another advantage for vegetable producers: they gather the customer order: there is no waste. The producers set their prices as convenience but are obliged to charge the same prices on the regional markets.

With the spirit of short circuit and organic agriculture, producers try to sow and plant the largest percentage of local seeds or very close. Similarly for breeders who favour local breeds adapted to the climate and the region.

As for a "drive" of a supermarket, customers choose on the website in a catalogue for the desired Wednesdays products, customers pick up their baskets in one of six collection points, preferably in carpooling. There is no obligation to buy each week, a customer can order only once or every week if he wants to.

The customer profile is multiple, young, older, single, couple, working on Grenoble or locally.



The location of this association is a "sustainable" Place. Trièves is composed of 28 towns of about 10 000 inhabitants. The Trièves region is a center of organic agriculture: one-third of farmers are and retraining of farmers working in traditional towards greener practices is increasing. Most new installations of young farmers is organic. The disparate geography has created small plots that leave little room for "conventional" agriculture especially as in some villages like Monestier, there was no consolidation.

2.1 Mixed hedgerow

Description:

The mixed hedgerow is composed of native trees and shrubs (not exotic) of different species.

The plants are planted not at the same distance from each other, but at distances considering their adult sizes. As in nature, plants are installed in a pattern that repeats itself, but randomly.



Interest:

Planting hedges protects soil from erosion, slows runoff and facilitates infiltration. The hedgerow creates a micro climate by cutting wind, creates shade and thus promotes biodiversity. A broad hedge made up of shrubs and trees can play the role of an ecological corridor.

Native plants have the characteristic of being adapted to the climate and soil. In addition, they fit perfectly into the landscape. They require no watering (except for the first year of planting) and are less prone to disease.

Where to find this practice: All over Natura 2000 areas are involved in the preservation of hedgerows.

Cost: According trees, shrubs chosen, sizes ... Shrubs bought "small" can in a few years catch up with the most beautiful big size planted shrubs: large plant to take longer to go.

Variation: Hedgerow made with shrubs only

Avoid:

- Choosing non-native species, interest in terms of biodiversity will be less.
- Planting shrubs and trees too close

2.2 Minimum maintenance under vegetables



Description:

In this case, there is little or no weed control for this Biau Panier biological gardening. As long as the plant has adequate access to light, the plant at its feet grows up without excess or with no hold on it is not going to interfere.

Interest: The interests are multiple: This limits the time to weed and intervention is only occasional if the adverse happens to be a danger to the plant; This will create a little more diversity and thus attract the auxiliaries (Garden allies insects); it also helps maintain soil moisture and limit water intake.

Cost: No cost.

Variation: The introduction of mulch also helps keep moisture and reduces the appearance of weeds.

Avoid: During the shoot-off, it is important not to let other weeds invade because the seedlings that are too weak, will in most cases be suppressed.

2.3 Know your soil for better growth

Description:

Here the cultivated land is wet, so watering is limited but it can accentuate certain diseases. Whether soil is rather clay (and therefore retains water) or somewhat sandy, allow better cultivation. Tests reveal the physical characteristics of the soil.



The "sausage test" allows to know

about the soil type: take a handful of soil, moisten it a little and knead to try to get a ball or a rod. If the coil is easily achievable, soft and pliable, it is a clay soil. If the rod is more difficult to achieve and defeated quickly, it is a silty soil, and finally if it is impossible to make a pudding, it is a sandy soil.

Clay soils hold water and minerals, but are difficult to work with. Sandy land filter (usually less disease) but do not hold water.

Interest: Knowing soil components enables to better choose vegetables that can be planted (those who like a lot of water will have trouble on sandy soils, improve soil (implementation of mulching on non-clay soils contribution sand in clay soils) and better calibrate their watering.

Sandy soils generally have low organic matter aside for growing vegetables. The contribution of organic fertilizer, compost, manure will help to enrich the soil gradually. Among sandy soils friendly vegetables are root vegetables like carrot, radish, parsnip, beetroot ...

Clay soils, harder working, can accommodate most vegetables.

Cost: No cost, a better vegetable choice gives more abundance.

Variation: Knowledge of soils can also be applied to ornamental garden.

Avoid: Seeking to improve its soil without knowing it can be counterproductive.

3. Cultivated biodiversity: Végétal en Vercors

Website: <http://vegetal-en-vercors.blogspot.fr/>



This nursery was established in 2011 with the objective to meet the demand of people in mountainous having acclimatized plants in their climate. The purpose is to provide quality plants having spent at least one winter in altitude (elevation of the nursery is about 1000m) unlike other nurseries selling seedlings. The recovery rate of altitude sold plants is well above 95%.

The other particularity of this nursery is that it is organic and willing to create a dynamic and preserve, see create flora fauna exchange for limiting diseases. Plants are therefore mixed and unclassified, vegetables and flowers line the walkways and plant diversity is very important.

The garden surrounding the nursery and the latter are thus "refuge LPO" and "Jardin de Noé". Counts are made on butterflies, earthworms and birds (more than twenty-one bird species in the

nursery year). Criteria in terms of ecological gardening are met. Important criteria for these two charters, natural resources are preserved to the maximum: water, all pots are mulched, watering is minimum with spring absorption mats are in place under the pots most sensitive to drought, organic fertilizer is also given in small doses, plant cuttings are crushed, compost is made. In addition, chickens and rabbits adjacent to the nursery take care of slugs and wastes of all kinds.

Thus produced plants are more resistant and recovery in a "real" land without the constraints of the pot is facilitated. The production is made of local mountain climate, the seeds are plants, cuttings and divisions are common. The production is made of shrubs and perennials repotted regularly.



of ecological gardening are met. charters, natural resources are watering is minimum with spring absorption mats are in place to drought, organic fertilizer is cuttings are crushed, compost is rabbits adjacent to the nursery all kinds.

resistant and recovery in a "real" the pot is facilitated. The plants, alpine or adapted to organic or come from mother are common. The production is products in suitable pots and

Some individuals make specific requests for acclimatization of certain trees or shrubs.

Finally, in a sustainable way, the nursery offers advice for planting and maintenance of plantations and established plants.

3.1 Non-chemical weed control: weeding solarization

Description:

Weeding by solarization consist in anchoring a black sheet, thick and non biodegradable on the surface to weed. Deprivation of light associated with a rise in temperature for one to two months (depending on weed vegetation, some plants are less susceptible than others.

If the grass is high, you should mow before putting the tarp for efficiency. Sheeting shall be firmly seated (rocks, boards, stones) to prevent it from moving or lifts. After a few weeks, the cover can be removed and the plants put in place.



Interest: This technique destroys plants effortlessly and allows once sheet withdrawn, soil life to come back quickly. Plastic sheeting can be reused as long as it is not punctured or damaged.

Cost: For a thick black tarp, count 3-5 € / m².

Variation: One can camouflage the tarpaulin by bringing mulch (crushed, bark, gravel ...) over it, giving a more aesthetic result.

Transparent sheeting can be used in the summer after thoroughly moistened the soil, creating a strong rise in temperature, which destroys existing plants and some seeds from the ground. For this technique, the time is shorter: four to five weeks is sufficient for most plants.

Avoid: Do not choose a biodegradable or too thin tarp: the light could pass and solarization won't be effective.

3.2 Hens in the Garden

Description:

Chickens need a chicken coop killing at least 0,5m² per hen, to protect them from the cold and predators. An outdoor enclosure of 3m² per hen is enough if kitchen waste is brought: pulled weeds, kitchen scraps, crooked fruit, wilted vegetables and grains such as wheat, buckwheat, oats, sunflower, flax, but barley ... The chicken also need clean water.

The hen will lay eggs in the perfect location, nest boxes (one for three hens minimum) will be placed in heights and lined with straw. Perches will be installed in the chicken coop for them to sleep.

Interest: The hens are fond of multiple garden pests such as slugs, worms, larvae. Their release for a short time in the garden in late season and late winter cleans the place. The chickens provide fresh eggs (one every two days see by race). Local varieties will be favoured, more suited to the climate and more resistant to disease. In the nursery Vegetal en Vercors, the indigenous Vercors gray hens are mixed with other resistant varieties.



Where to install this practice: Chickens can live in the city (provided you have a small garden) or in the countryside.

Cost: To make a homemade chicken coop, it takes less than € 100, chicken coop, trough, and included exterior fence. Commercial barns are sold around € 200.

For hens, according to race and origin, it takes about 30 € per hen.

Variation: To recycle kitchen waste and garden, one can think of rabbits. Requiring less space than the chicken, it also has the advantage of being used as a lawn mower.

Avoid: The hen needs water, check each day watering, as seeds or granulates provision.

Avoid having roosters if you are in a small house in the city, often sources of conflict.

3.3 Position of the absorption mat under the pots



Description:

A sheet of absorption can be installed under the pots, tubs, planters during the warm season. However, one must regularly check that the roots do not go down too much in the pot that have to be repoted regularly.

Interest: The absorption mat keeps and retains water, allowing the plants to benefit from more moisture and be less prone to drought.

Where to install this practice: The absorption mat goes as a carpet under the pot, planter or flower box.

Cost: The absorbent mat cost about 4 € / m².

Variation: Different materials are available for the absorbent mat.

Avoid: Placing a sheet of absorption under plants kept dry can have adverse consequences.

3.4 Install plant covering on trees feet



Description:

To install the plants under a tree, choose shade-loving plants such as covering perennial spreading rapidly like mints, ivy, periwinkle, bugle ... with preference to native plants, endemic.

Interest: If the tree is a fruit tree, pollination will be better because the plants at the base will attract pollinating insects. Weeding or mowing the grass under the tree will not be a problem, as, in times of drought, moisture will be higher at the foot of the tree. The ground cover plant can attract beneficial insects that will prevent certain tree diseases and vice versa.

Where to install this practice: Plants can be planted under any type of trees, providing than the plant sunshine preferences are taken into account.

Cost: The cost varies depending on the selected plants.

Variation: Mulching (crushed, bark, hemp, straw ...) can limit plant growth under the trees. But this will attract less pollinators.

Avoid: Choosing sun-loving plants or plant not suited to the type of soil.

3.5 Create biodiversity and mix species

Description:

In the nursery, the plants are not all together, between the rows we can find vegetables, salad, cabbage, fennel, small shrubs, mother plants...

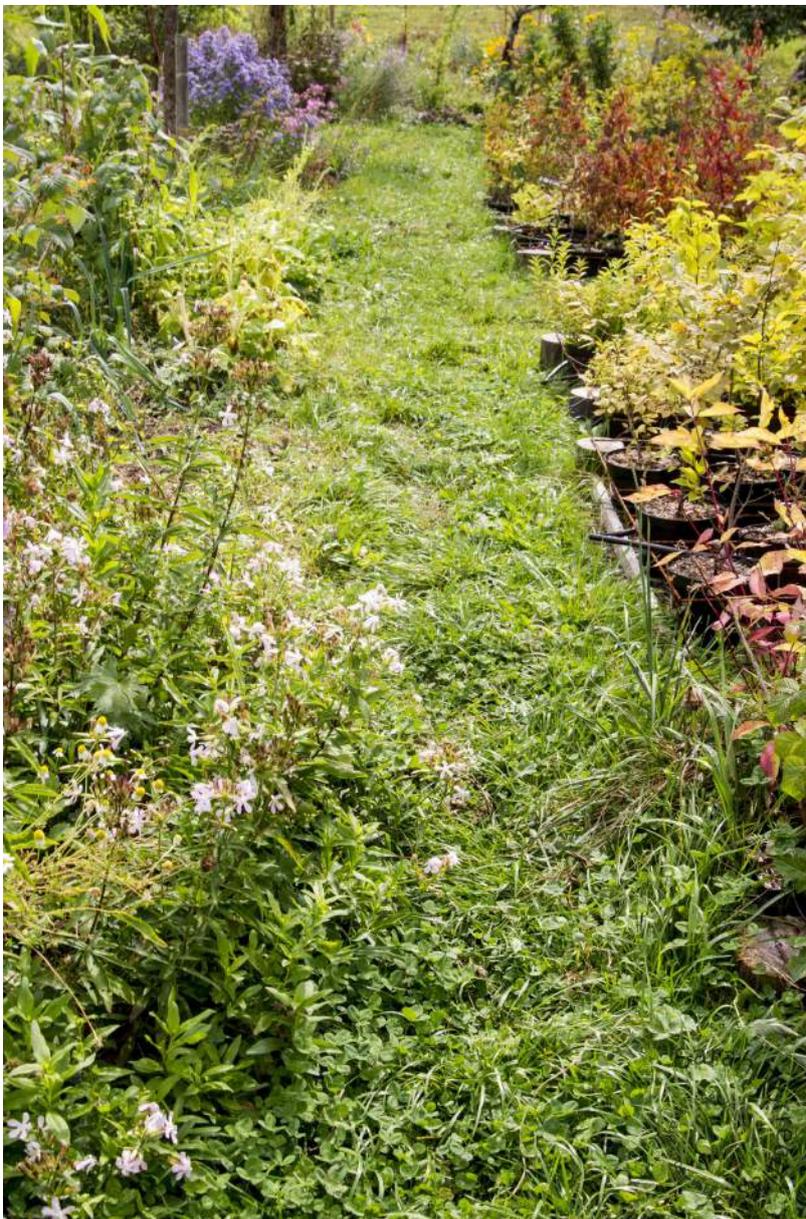
Interest: Biodiversity thus created can attract beneficial insects and so limit the disease. More plants are mixed, the greater biodiversity and plants will be less affected by disease. Sometimes insects prefer to eat softer vegetables, rather than the plants for sale.

Where to find this practice: In some small nurseries, gardens...

Cost: Having the same plants scattered can waste time, though the cost remains the same.

Variation: The ranks may be less broad and perennials can run along the rows.

Avoid: In a personal garden, mixing plants is also feasible provided to leave room for each plant to spread.



3.6 Keep deadwood

Description:

A non deciduous tree in poor condition was cut up to 1 meter above the ground outside the nursery. Keeping dead timber can be dangerous if the timber is positioned in a passage area. Cutting should be made according to attendance: a timber at the bottom of a garden can be kept dead if there is no visitors.

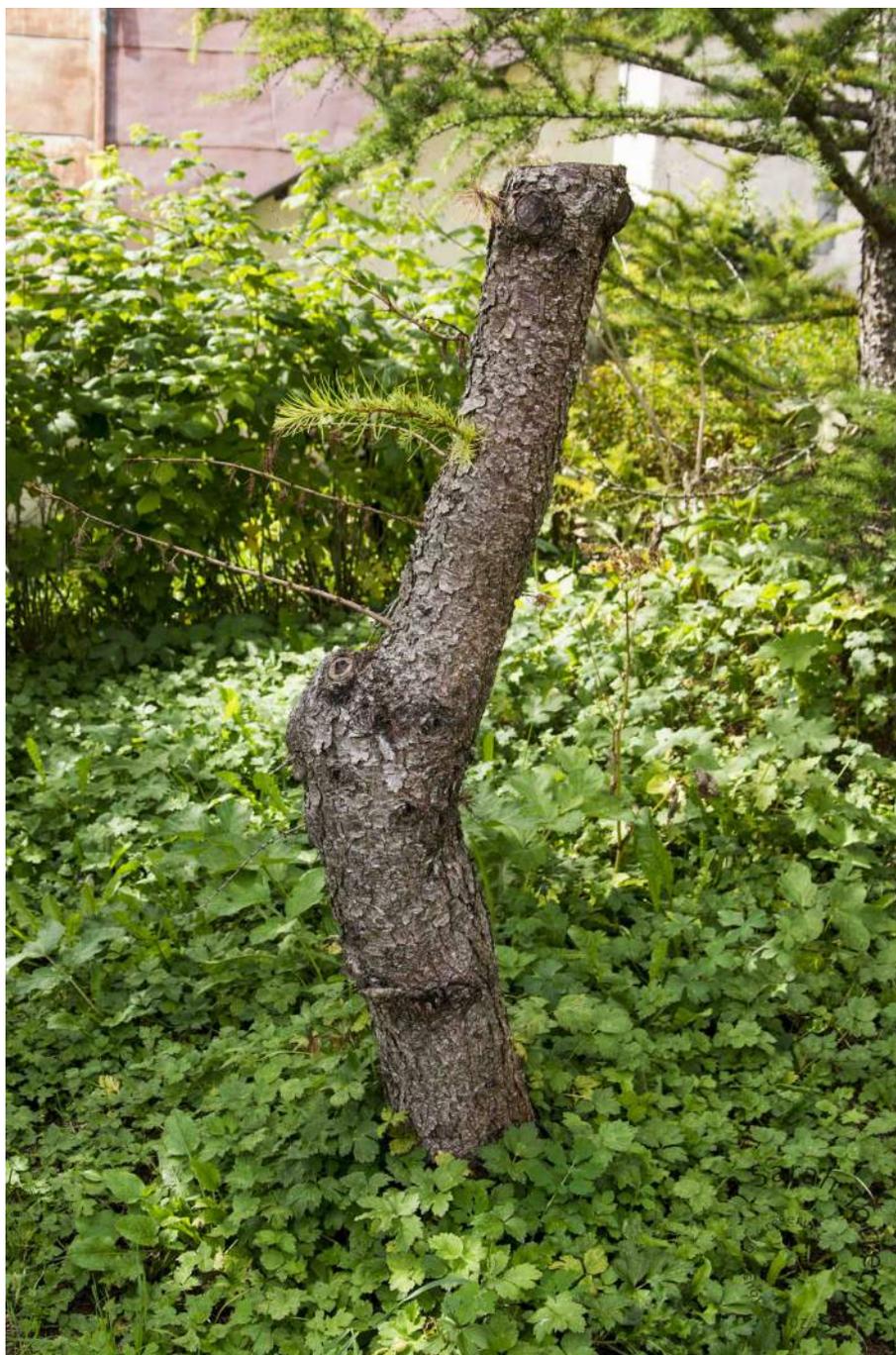
Interest: The dead timber provides rich biodiversity that will settle. Among insects are decomposers of dead wood, harmless to living trees nearby. It will also draw useful auxiliary insects to the garden.

Where to install this practice: All venues are subject to this practice.

Cost: The cost is zero. But it can be worth not to pay the stump.

Variation: The dead tree can be lying on the ground. Biodiversity created is different from that of a stand up timber but the result is the same and beneficial insects are attracted.

Avoid: Leave a dead timber on a busy area without removing the most dangerous branches in case of dropping.



4. Forest heritage management: Bois de Chartreuse

Website: <http://www.bois-de-chartreuse.fr/>



Located in Iserre and Savoie, next to Grenoble, Chartreuse massif is an important place of forestry. The Regional Natural Park of Chartreuse (RNP) work for preservation of timber, made of multiple traditional knowledge. Since medieval times, the forest has been used to make building materials, to produce renewal energy, to make tools ... Many areas have specific status: Natura 2000, ZNIEFF (Natural Area of Ecological, Floristic and Fauna Interests), biotope protection order, ENS (Sensitive Natural Area) Classified sites ...

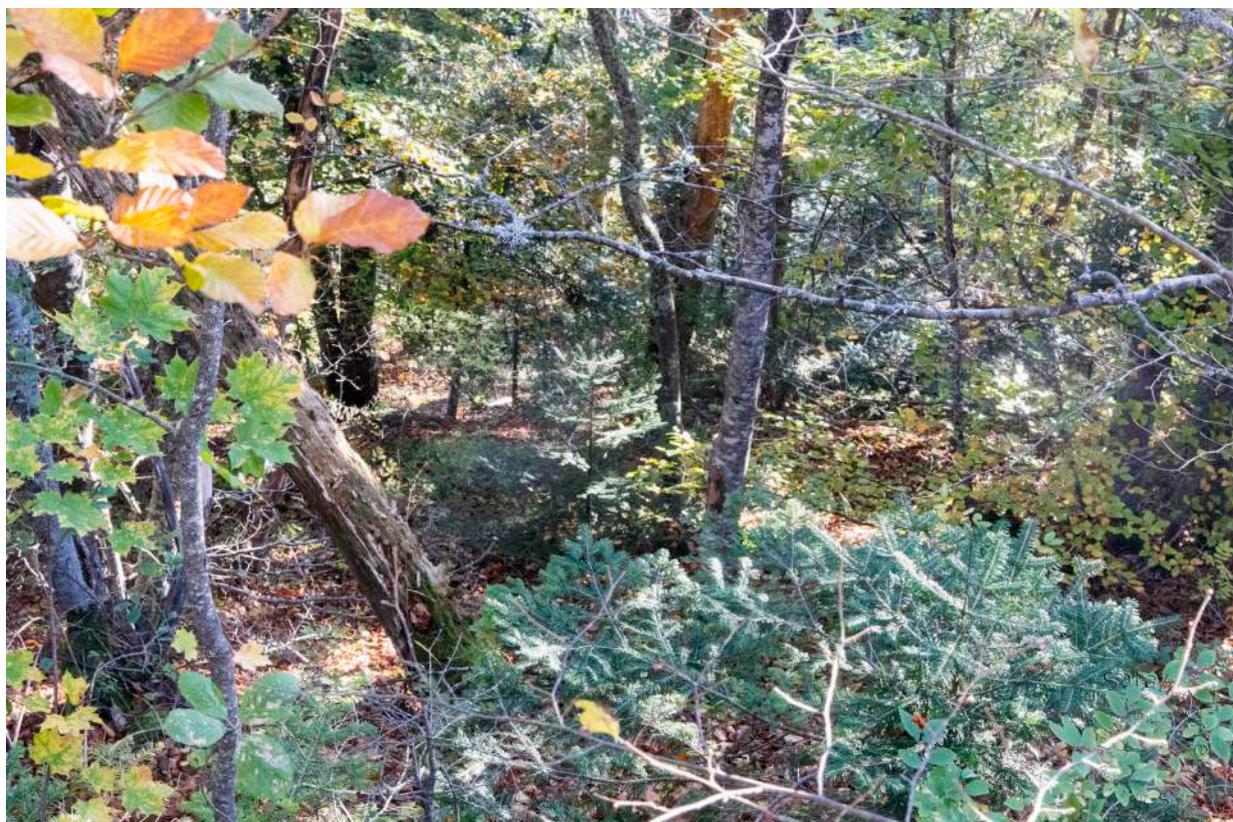
The forest is either public (state forests, municipal) or private. Chartreuse, private forest represents 55% of the forestry area, the 13 000 forest owners congregate mostly in sylviculteurs group. Forest is mainly composed of silver fir and Norway spruce. The climatic conditions are very favorable for tree growth (high rainfall, cool spring, winter has rarely too long severe cold).



In 2005 was created CIBC (Interprofessional Committee of Bois de Chartreuse) to enhance the timber of Chartreuse. The CIBC, in connection with the RNP, includes forest owners, forest operations managers and operators, sawmills, carpenters and architects. These "Bois de Chartreuse ®" meet a set of strict requirements to value traditional knowledge: irregular stands (no clearcut), natural renewal, proximity (60km maximum between cutting and planing) ... The timber has a

low carbon, high strength and robustness and traceability. The purpose of RNP and CIBC is eventually to have this recognized as an AOC. (french heritage recognition as Controlled Origin Appellation) Steps are undertaken in this direction since 2007.

4.1 Dead wood in forests



Description :

Dead wood in forests is a reservoir of biodiversity. While walking in the forest, blown over trees (dead tree to the ground without human intervention), or candles (dead trees still standing up), can be found.

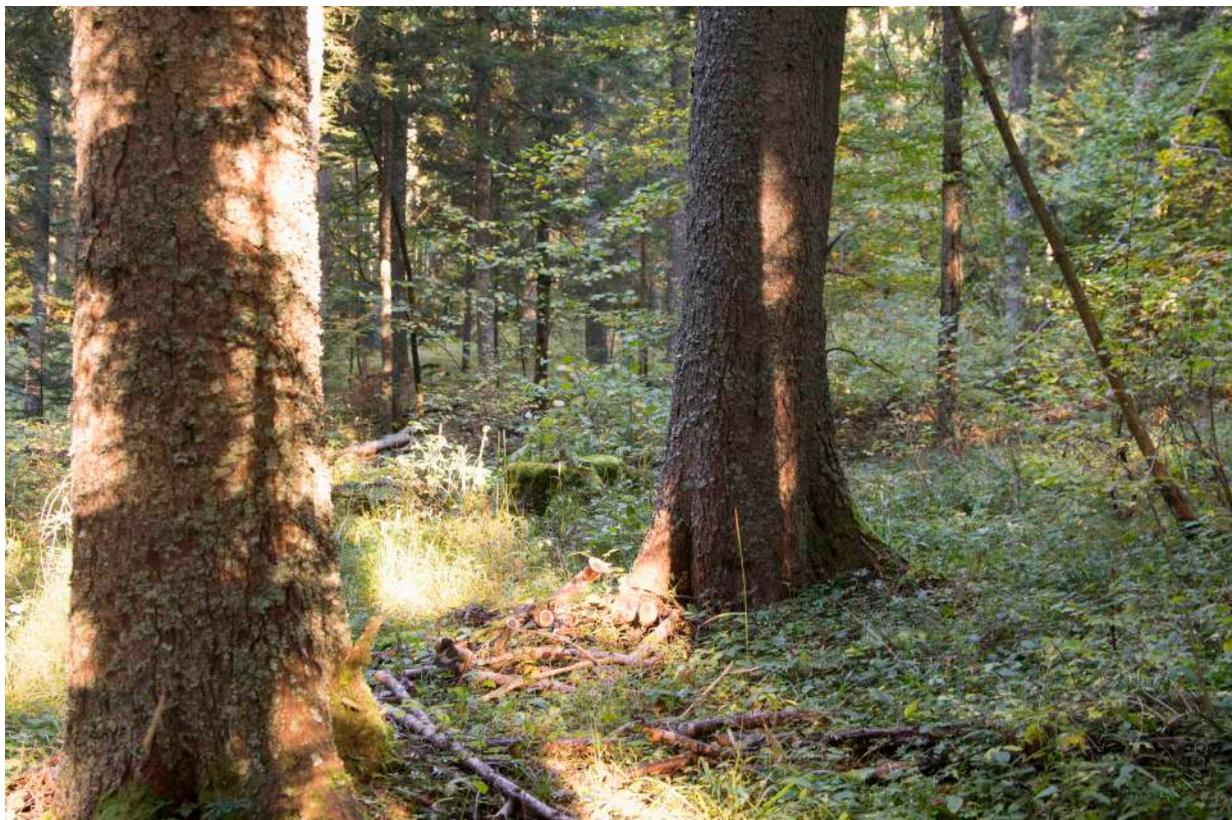
Interest: Many plant and animal species found in the forest depend on dead wood. (about 20% of them such as beetles, mosses, lichens, mushrooms, ..). The species that will benefit from this dead wood will be different according to the type of wood, its importance, or according to it being standing or on the ground.

Cost: The cost is zero but could be a shortfall. However, the operator may choose to "let die" trees with large defects and low values.

Variation: In case one cannot let dead standing timber, one can deliberately lie them on the ground.

Avoid: Avoid leaving dead standing timber next to a path, road or crossing point.

4.2 Irregular timberland and natural regeneration



Description :

Irregular timberlands consist in having trees of different ages on the same plot and in the same forest. Regularly, foresters just collect the older trees and let nature regenerate the space left free. Forests like Chartreuse, made of silver fir and Norway spruce are more suited to this type of management than woodland made of oak and other strongly loving light species.

Chartreuse timber comes exclusively from irregular timberland.

Interest: Irregular timberland reduces erosion that can be generated by clear-cut. It preserves the landscape by not creating holes in the forest. It allows foresters to cut large subjects, with more expensive resale and without having to buy seedlings.

Finally, biodiversity is richer than in regular high forests, the ecosystem is respected and the forest is more resistant to weather damage.

Cost: No additional cost but requires regular monitoring and more frequent cuts than other types of management.

Variation: Irregular timberland can be performed grove by grove or on the whole plot.

Avoid: Light management is important to obtain the desired species. Large slaughtering can quickly disrupt the forest.

4.3 Cutting and shaft supply chain



Description :

In Chartreuse, private owners are grouped in foresters groups to build roads to serve the underserved areas. The irregular timberland management mode (trees in the same forest at different stages of development) requires regular cuts, and must be close to roads.

The cut wood are brought into sawmill that are mostly related to each other to offer a large multiple and varied stock to professional and particulars. In 2004, with the Regional Natural Park participation, a collective dryer was installed to complete this short circuit.

Interest: From cutting to sales, timber tracking is provided.

The grouping of wood products by different actors on the same platform allows a large stock and quick source of supply for professional and particular.

The carbon footprint is low for wood: it travels less than 60km from its cut (wood marking cut with a specific label) until processed.

Cost: The cost of short-die approach and traceability is higher but can be profitable if valued through a label like AOC.

5. Preservation of water heritage: Domaine de Champos

Website: <http://www.lacdechampos.com/>



The first part of weeding plan was to map water pollution risk areas of the field and perform an audit of current practice. The second part was an exchange between the design office and ACPD to find multiple solutions to lower crop protection products.

Domaine de Champos includes a leisure center, a lake and a camp and is managed by the Herbasse municipalities community (ACPD).

In 2013, the Romans Valence Sud Rhône-Alpes Urban Community, wanted to achieve weeding plans diagnosis because of water contamination by nitrates and pesticides. The area includes Champos sites where weed control plans were to be realized.

Three consulting firms are chosen to achieve these weeding plans. In the neighbourhood municipalities, other weeding plans are launched in the same period, to allow municipalities to consider alternative materials pooling and sharing their successes and challenges.

Weeding plan in Domaine de Champos aims to pursue actions to reduce pesticides and to find alternatives to chemicals by alternative materials or other solutions.



5.1 Establish a map of water pollution risks

This step allows to identify all areas of the site where there is a risk of water pollution in the case of weeding with chemicals, fungicides or insecticides application,...

For each region, the goal is to:

- Identify water sources: Lake, grids, ditches, drains.
- Identify areas connected to water points: areas on slopes that take water from a water point.



- Identify the nature of the coating in the area to maintain, determine whether the areas are permeable or not, or if they are waterproof and water can run off. Some initially permeable surfaces, under the influence of weather and soil compaction, highlight puddles after a rain event, which is a sign of soil impermeability and a risk for pesticides transfer.

The intersection of these criteria allows the definition of two types of areas:

- Areas classified as 'high risk' for products transfer to shallow waters (mapped red); these areas, with water sources neighbourhood, coating type, or slope, are areas where the environmental risk is strong.
- Areas classified 'reduced risk' (green mapped) where chemical weed control has a low risk of water pollution.

'High risk' areas should not be processed with chemical weed control because of water pollution. Alternative methods are therefore preferred upon those 'high risk' areas.

5.2 Mastering grass before / after 6 months without chemical treatment.

Description:

Some areas on Champos were weeded more out of habit than necessity. Most often these are gravel, sanded or stabilized coatings in poor states. The choice was made on some of these areas to stop weeding and let the grass grow while cutting regularly.

On roads and gravel areas, the grass grows only if there is no trampling. Without weed killer frequented

path remain without grass while grass will grow on non-frequented fields could be treated as the lawn.

This is the case of this space where the chemical herbicide was replaced by the mower or ROTOFIL.



Interest:

Leaving grass in many places allows to stop weed killers, including areas with high risk of water transfer, which is the case in many areas of Champos.

Cost: No cost except purchase of equipment to cut the grass. Be careful though extra time is needed, four times than without chemical weed killer.

Variation: Instead of leaving grass growth, one can choose to change the coating if it is required to have no grass in this area for some reason.

One can also choose to plant ground cover plants for less maintenance. For this choose plants settling quickly adapted to the soil and climate.

Avoid: In the 'Domaine de Champos', open to the public, the growth of tall grass by low maintenance (no regular mowing) can surprise or even be seen very negatively by users. In case of choosing to let the grass grow high (more than 15cm), communication towards users of the place should explain what are the reasons: reduction of pesticides, including herbicides, to avoid water pollution, especially for the swimming lake.

5.3 Reasoned mowing

Description:

Most popular places are regularly mowed while those less used, like this hill behind a cottage, are mown once over three times. Mowing height is 6 cm minimum and each mower passage should not cut more than 1/3 of the grass height.

Interest: Reasoned mowing is a method that promotes biodiversity in the garden, saves time and reduces waste.



A short mow stresses the plant that will grow faster, requiring more frequent mowing, and thus generate more waste. Stress also makes the lawn more susceptible to disease and competition from weeds.

High lawn mowing allows grass to root deeper in the soil and makes it less susceptible to drought during warm periods. High Mowing also gives place to greater biodiversity and shelters for insects that can help the gardener fighting parasites.

Where to find this practice: In places of little used.

Cost: No cost unless buying a lawnmower if necessary to mow higher (most mowers today can mow up to 7 / 9cm.)

Variation: Use a "mulching" mower for not waste but requires more regular mowing for proper display.

Avoid: Mowing should be done from the inner to the outer and not the opposite, so that microfauna are able to escape instead of being locked up and milled.

5.4 Placing concrete base under the furniture

Description:

Maintenance under furniture (Picnic tables, pikes, baskets, under fences, plots, signs...) is time-consuming and needs regular weeding or grass cutting with ROTOFIL.

One solution Champos technical staff tried was to implement concrete bases in order to solve this problem.

Interest: Time saving can be considerable if, like here, there is a lot of furniture feet.



Where to implement this practice: Under each street furniture that have to be regularly maintained.

Cost: Variable cost depending on the number of pad and size of area. However, the cost of materials will be amortized very quickly with time saving and cost less wire (for passage of the brush cutter) or herbicides (for passage with herbicides)

Variation: In some furniture like posts feet, perennial soil cover plants can be established, with plants settling quickly and adapted to soil and climate. For other locations, the acceptance of the grass can be a solution. And grass mowing shall be made once or twice per season.

And thinking of environmental friendly furniture can be a solution as well.

Avoid: Concrete must be a minimum of 3 cm so that the grass does not cross it. Carbon (environmental) cost is then high and large surface covering should be avoided, also to allow water permeation.

5.5 Flower meadow

Description:

A flower meadow in bloom is of lower cost than annual plants. The establishment is more delicate than with annual flowers and must follow specific steps in order to obtain a suitable result.

The best time to make a planting is fall (it takes less to water it), but in some cases it can be made in spring, being careful watering enough.

- Preparation: The goal is to achieve optimum seedbed to receive seeds: prepare the land by returning a few centimetres, remove as much of unwanted roots, equalize.
- False planting: Leave the seeds of the unwanted plants germinate for a few weeks and remove the weeds that grow there (ideally by hand or hook)
- Sowing: calculate the amount to sow according to area size and mixtures. Sand mixture can be added to facilitate the sowing. A seed drill should be preferred to manual seeding. Otherwise take small handles that can disperse slowly through closed fist and open index. Seeds and sand should be regularly mixed, some seeds are heavier than others. Finally, tamp land for soil and seeds contact.
- Watering: Just after planting water by sprinkling 1 to 2 mm during the first 4 days (natural rain supply or manual watering) and once a week in the absence of rain (8mm) even during flowering.
- Weeding: If unwanted plants appear, manually remove as soon as possible.
- Late season mowing: 10cm Mowing in September. The export is done a few days after to give time for the seeds to fall to the ground and thus perpetuate the prairie.



Appendix 3

Interest: Flower meadow (annual or perennial and annual) enables large bloom on average cost with significant visual effect.

In the case of pesticides free maintenance, it allows to flourish spaces devoted to weed (choosing suitable mixtures).

According mixtures, plants can be more or less melliferous and bring birdseed.

Cost: Cost varies depending on the chosen mixture, around 0.20 € / m². To this must be added the maintenance time and watering.

Variation: A natural flower meadow can be achieved to express soil bank. Unlike a horticultural flower meadow, it does not contain exotic species not adapted to the soil and will make it more sustainable. For more flowers, it is necessary to remove the top few centimetres of soil to deplete the substrate.

Avoid: Put more seeds in the seeding: it has the opposite effect and unwanted plants may take over.

Put organic matter does not improve flower meadow, on the contrary, the flowers will be disadvantaged at the expense of unwanted plants.

6. Alternative materials to chemical treatment in the municipalities of Pays Roussillonnais



Situated midway between Lyon and Valence in the Rhone valley, the country offers a varied Roussillonnais agriculture, industries and housing for the people who work in Lyon. In 2013, following strong pesticide concentrations rates (from agricultural and other municipality or private use) in the water union of SIGEARPE (Water Sanitation Management Toll Roussillon Surroundings Intercommunities Syndicate) encourages municipalities of Roussillonnais countries to launch weeding plans to reduce or

even stop pesticides use, especially near sensitive catchments areas. An information campaign to farmers is launched.



Two consulting firms are chosen to achieve these weeding plans. Six municipalities are engaged in the process, and joint training courses are organized to allow officers to exchange and train each other. They participate to the selection of future maintenance technics with representatives and technicians.

Alternative weeding technic taking more time than chemical weed control, communities have joint investments in the alternative equipment, set up test sites and disseminate informations to the inhabitants through various means (posters on site, articles in the local News Bulletin, article in the local newspaper ...).

Appendix 3

6.1 Sweeper

Use: Use on paved surfaces, asphalt, concrete. The chosen sweeper can pass on some very narrow sidewalks while riding both the road and the sidewalk.

Advantage:

Waste collection

Additional cleaning Action

Good efficiency gutters

Use possible inter

Default:

High investment when purchasing

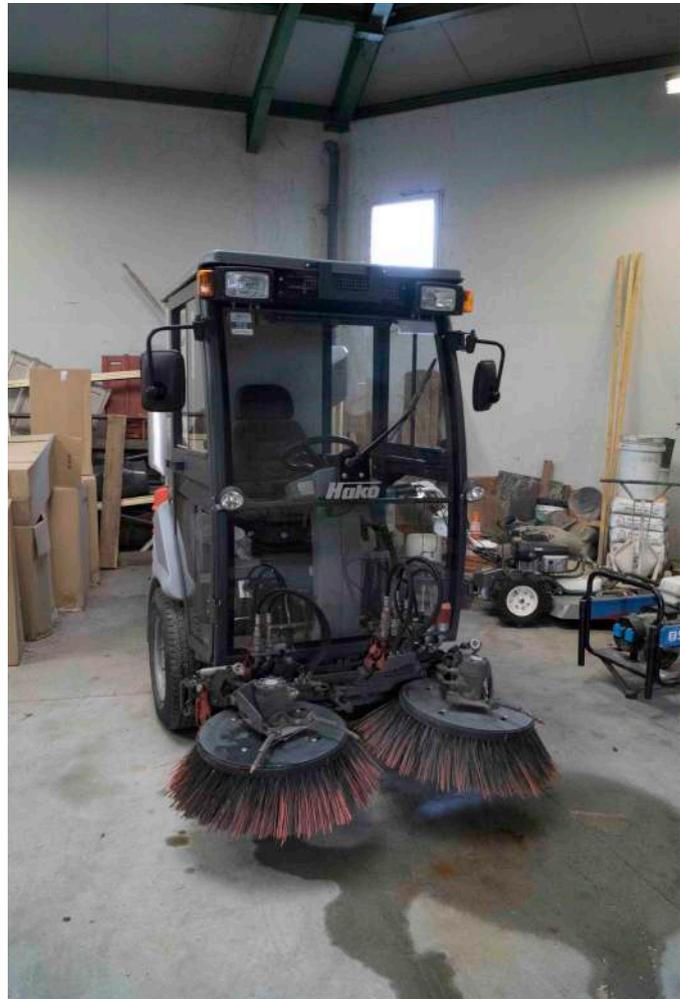
High number of passages

Degradation of joints and damaged coatings

Cost: Sale: 50 00 € 150 000 depending on the model and brand

Operation: 4 € / km

Maintenance: 3000 to 5000 € per year



6.2 Electric hoe



Use: Electric hoe is used for hoeing, weeding, aerating the soil, planting, fertilizing, root, cut edges. It is best used in soft not compacted ground (rolled gravel, pozzolan ...).

Advantage:

No smell or pollution

Low noise

Low maintenance

Default:

Short time battery (4 hours for the small model)

Battery life

Charging time: 6 hours

Cost: Purchase: Hoe 720 € + 400 Battery: 660 € or 700 Battery (day autonomy): 990 €

Operation: a few pennies for each load.

Maintenance: 40 € per year.

6.3 Reciprocator or brush cutter

Use:

Grass cutting: edges of walls, curbs, stabilized soil grassy, tree trunks, shock-absorbing surfaces child's play chips and gravel rolled, weed cutting.

The reciprocator is thermal, while the brush cutter is electric.

Advantage:

Moderate investment

Manoeuvrability and easy use

Little or no projections

Usable by all time

Default:

Expensive labor (time consuming)

Fossil fuel consumption for the reciprocator

Limited to small and medium sized

Cost:

Purchase: 560-900 € + purchase of the battery for the brush cutter.

Operation: 0,40 € / m² / year for 4 passes for reciprocator. Data not available for brush cutter

Maintenance: 60 € / year for reciprocator. Data not available for brush cutter.



6.4 Wheel hoe



Use:

Wheel hoe is widely used in vegetable gardening tool for hoeing, weeding, aerating the land on soft not compacted ground (rolled gravel, pozzolan...) It can include different accessories such as a roller and a harrow.

Advantage:

Easier work than usual hoe.

Default:

Can not work in compacted soils, low speed forward, hand tool.

Cost:

400 to 500 € with or without accessories.

6.5 Mechanical harrow



Use: Mechanical harrow is hitched to a tractor but can also be available as independent model. One to four grids will scratch the surface of the soil and thus allow weeds to grow. According to the tools it is possible, for example, to rake and roll simultaneously. Use on permeable surfaces (driveway, instead sanded, bowling, athletic tracks...).

Advantage:

Soil levelling

Quick and easy to use

Moderate investment

Default:

Needs many passages per year

Requires good condition coatings

Need another passage 5-6 days after each passage with harrows to remove stale seedbed.

Cost:

Purchase: 300 € to € 15,000 depending on the brand and model

Operation: 0,05 € / m² / year for 6 passages.

Maintenance: 1000 € / year

6.6 Before / after 1 year without chemical treatment



Description:

Controlled grassing

This train station parking was difficult to maintain and was weeded more out of habit than necessity. Choice was made to let the grass coat the stabilized surface while cutting regularly. The chemical weedkiller was replaced by mowing with reciprocator and ROTOFIL.

Interest: This helps stop weed herbicides, especially in this area where chemicals are likely to be transferred to the water, which is the case in most places.

Cost: No cost except purchase of equipment to cut the grass. Be careful though as extra time is needed (four times labour without chemical weed killer).

Variation: Instead of letting the grass invade the place, changing the coating is required if no grass in this space is mandatory for some reason. Here the grass does not hinder the use of the car park.

One can also choose to plant perennial ground cover for less maintenance. Choose then plants settling quickly and adapted to the soil and climate.

Avoid: As with any place open to the public, leaving tall grass (without mowing or regular mowing) can surprise or even be seen very negatively by users. In case of choosing to let the grass grow high (more than 15cm), communication should be made towards users the place to explain what are the reasons: reduction of pesticides, including herbicides, to avoid water pollution, which is high in this region.

6.7 Coating change



Description:

In this Roussillon Park, created when chemistry was common, there are large sandblasted pathways. In an effort to decrease chemicals, alternative equipment where used in some parts. For others like this one, it was decided to change the coating for a lawn. Natural grass has been spread and the borders will be removed in order to treat this space like the adjacent one.

Interest: The interest of the coating change is to have less use of chemicals, easier maintenance and spaces adapted to the uses of the inhabitants who attend this park.

Cost: In the case of a spontaneous grass cover, the cost is minimal (except fees for withdrawing the old borders). Subsequently, the passage of the mower will be the only cost. However, as the technical services have a large mower, time will not increase too much.

Variation: According to places and uses, sandblasted coating can be changed for shrubbery, perennials ... Choose plants that require little maintenance for area of little used.

Grass cover may be encouraged with just a few inches of soil and some seeds to accelerate the process of grassing.

Avoid: In case of a coating change one must take into account the cost for maintenance (and lifetime).

6.8 Acceptance of grass

Description:

In the case of a decrease in crop protection products, the appearance of spontaneous plants in selected places will occur. Here, the roadside got a grass and flower cover.

For acceptance of the grass, it is necessary to provide:

- Communication on multiple media (News Bulletin newspaper, panels on site)
- communication on multiple topics (health, water pollution, biodiversity)
- increase of waste collection so that the place doesn't look abandoned
- a cut of the grass at least once a year

Interest: The acceptance of the grass can:

- reduce the use of pesticides in certain areas
- increase biodiversity and create micro urban corridors
- allow bloom.

Where to implement this practice: It's easier in city outskirts or little traffic areas. With good communication, acceptance can occur in any part of the city, but it's more difficult in cemeteries or in front of City Hall.

Cost: No cost except purchase of equipment to cut the grass. But extra talk time is needed (four times than with chemical weedkiller).

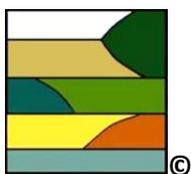
Variation: The first year, horticultural flowers can be sown (flower mixtures), so that the visual change is more accepted by the people.

Avoid: Woody plants (trees, shrubs, ...) should not be allowed to settle: one must know how to recognize and pull them quickly so they do not damage the coatings with their powerful roots.



Protocol for gathering of localised landscape skills and knowledge

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MS 82

HERCULES Project

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Protocol for gathering of localised landscape skills and knowledge

1.0 Introduction

The cultural aspects within the landscapes of Europe are unarguably richer and more varied than any other continent and in many respects define a common 'Europe' for many. The landscapes themselves with an extraordinary array of geology and geography when combined with the social variations result in such complexity and diversity that any methodology towards defining localised landscape skills and knowledge is indeed a herculean task.

Most existing study and research, academic, scientific or by the practitioners working within their own landscapes is by default very isolated. A common approach towards identifying landscape skills and knowledge of use to all across Europe needs to be as simple as possible yet take account of the complexity and diversity at all times. We are, perhaps for the first time ever, by way of the internet in a position to provide basic platforms and tools to enable the overlaying of all information at our disposal, by anyone, towards a common database where we can compare landscape against landscape and therefore identify not just existing problems but highlight threatened areas allowing for mitigation in advance.

In designing a protocol it is necessary to highlight problems regarding those in the wide spectrum of land management industries as well as their strengths – to empower the land management practitioner (LMP) is to help conserve, protect and strengthen the landscapes themselves.

Also, in striving to discover a way forward in the gathering of localised skills and knowledge it is vital to hone in landscape features and the common attributes of these features across Europe. Landscape features provide the most tangible link between people and practitioners to their landscape and indeed when traditional and / or historic features are threatened or at risk of displacement by larger modern features such as wind turbines, pylons etc., is when people are motivated to become involved with their landscape and thus seek to establish their values upon it.

Contents:

1 Introduction and the Land Management Practitioner (LMP); those with the localised landscape skills and knowledge. The Importance of 'Site Specifics'.

2 The Land Information Search (LIS); Sources and potential sources of information regarding localised landscape skills and knowledge.

3 Landscape Features as a basis in gathering localised landscape skills and knowledge. Practitioner engagement – towards pan – European good practice guidelines

1.1 Land Management Practitioners (LMP's)

LMP is an umbrella term covering the vast range of those paid to work in our landscapes. Well beyond the limited recognition of agriculture and silviculture alone, the bank of LMP's engaged in much more specific roles in the landscape is significant. However as they are traditionally small, often one person, businesses they lack a cohesive voice which has led to a massive decline and disenfranchisement of their various land industries. This decline, started by the industrial revolution and accelerated during WWI & WWII, has not abated. Modern economic situations, combined with lack of media and other attention, have resulted in a fragile bank of LMP's left in charge of the consultation and practical skills required to maintain our cultural landscapes.

LMP's with the required skills and knowledge to maintain traditional, sustainable man-made and natural landscape features are greatly threatened.

1.1.1 Much recent (post 1960), research into landscape features and the landscapes they sit in has recognised the importance of the LMP's often by way of a recognition of the many values attributable to what they are charged with. Any diminishment of this base of knowledge and skills equals a diminishment in the quality, diversity and resilience of all landscapes.

Very little has been done to empower these LMP's themselves, their contribution to rural economies as well as their fundamental role in establishing sustainable land management in peri-urban or urban environments towards Sustainable Development Goals (SDG's).

1.2 The Barriers

A myriad of modern circumstances has combined to create a barrier against the existing LMP's with the traditional skills and knowledge needed. Including and non exhaustive:

1.2.1 Design and Fashion

Modern culture and widespread general media, understandably, ignore the role of LMP's whose skills are often site specific and as diverse as the landscapes they work and live in as it is simply too much information to centralise by general media. Innovative design by definition will not acknowledge the traditional, as it thwarts progressive design. Fashion, usually by way of television and magazine media, is vital to the suppliers (particularly in the horticultural and landscaping industry), and is based almost solely on the aesthetic or amenity values which do not account for the host of other values, often not yet fully researched, honed over centuries to be of multifunctional benefit.

1.2.2 Organisations

Including governmental (quangos, local and central Government), non governmental (NGO's), accreditation groups and societies; the diversity and complexity of all landscapes and the elements

within them are immensely difficult to account for in the search towards standardised guidelines and policy. Interests are incredibly varied and seeking a solution which can be embedded into policy between the polarised camps with regards any single issue continually risks disenfranchising one or the other interest, let alone accounting for other interests based in any particular location. The 'lobby' culture with its rich and powerful and therefore PR friendly voice automatically leads to homogenisation of landscapes and more generally halts any progression towards realising site specific sustainable land management wider [see 1.4]

1.2.3 Materials and Supply

Planning constraints, fashion and design and most importantly macro economics have led to a severe decline in the availability of materials and plants which can be sourced locally. This has led to wider problems than simply a lack of local products for any specific landscape with pests, diseases and other non native invasive species unintentionally released into the wider landscape as well as diminishment in local character.

1.3 Existing Strengths of Traditional Knowledge and Skills LMP Base.

1.3.1 Protected Landscape Designations

The plethora of landscapes and zones designated for varying reasons, principally for nature conservation purposes, has been more beneficial than harmful, so far, in preserving a base of localised skills and knowledge¹. Additionally other more holistic and / or regional and national philosophies help in this preservation of localised skills and knowledge also, (for example in France 'Terroir'). The need to preserve a landscape for aesthetic, environmental or for economic purposes (tourism and terroir), automatically ensures a requirement of the LMP trained or qualified in a specific practice. However, as seen in the UK, the over reliance on volunteers has led to an abrupt end for certain LMP's trained in specific roles leading also to poor quality maintenance and new construction of certain landscape features and planting.

It is worth noting that practitioners usually refer to land designations as 'constraints'.

¹In many areas the 'charge' of maintaining landscape boundary features becomes under the control of local authorities away from those who traditionally managed them. The result is a homogenisation of features that were previously very individualistic.

1.3.2 Multi Skilled LMP's

Most vocational training and educational establishments realised the need to expand their training to cover more aspects of land and countryside management during the 1980's and 90's to take account of the rapid acknowledgement of environmental and sustainable issues. Inadvertently this has led to a new base of LMP's well versed in maintenance, planting and construction for various purposes. The base of sole traders and SME's working in local landscapes still remains large enough in most areas to enable progress with any initiatives towards wider good practice with a significant proportion trained adequately in localised landscape skills and knowledge of high heritage and sustainable landscape features.

1.3.3 Internet & Social Media

Referring back to 1.2.2 and 1.2.3 many of those with localised skills and knowledge have been further thwarted in having their voice heard by the very nature of their work despite a much wider internet coverage. Traditional working hours (usually 8am to 6pm), limit options to engage with online general media sources as well as the organisations involved on the periphery of their relevant industries. Social media allows these LMP's and others to engage much wider at suitable times to them and there now exists a very evident 2 tier system. The LMP's and others (a considerable amount of interested people, of envy to general media and commentators, can be found following skilled and knowledgeable practitioners) are often 'live' and available for discussion after 8pm in the evenings, early morning and at the weekend. This discussion now quite often precedes and indeed determines general media coverage. Blog and Industry forums, Facebook and Twitter predominate in this regard. There is little doubt this has empowered those speaking on behalf of the preservation of localised skills and knowledge.

1.3.4 Strong Recognition of Need

Academic and scientific research regularly concludes the need to recognise and further protect and enhance the base of localised landscape skills and knowledge. Policy making has adopted this recognition and incorporated it into legal instruments, most noticeably the European Landscape Convention.

1.4 The Practitioner Methodology

1.4.1 Site Specifics

It is generally recognised that the standard LMP methodology is and always has been 'Site Specifics' although there are numerous different titles for this system and in the main it is simply regarded as 'common sense'.

'Site specifics' has a standpoint that fully recognises the complexity and diversity of issues and elements within any particular location. Many existing 'tools'² in various countries have been developed by particular industries for those working towards site specifics – principally mapped information, (geology, soils, legal or planning constraints etc.). These maps are combined with the independent knowledge of that area together with more general identification knowledge (held by the LMP) to provide a vertical plan. This vertical is then used as a 'blueprint' in liaison with clients or other stakeholders who help towards obtaining a lateral plan and then finally the 'plan of operations' and subsequent work itself.

²*It is important to note that certain words used within academic and / or policy making writing are not transferable or indeed completely at odds with definitions held by LMP's even if the meaning has a common use or came from a common use. Such a word is 'tool', which to most LMP's is a physical machine of specific purpose – thus referring to convention text, maps etc., is confusing and often deemed nonsensical to LMP's.*

1.4.2 LMP's and others with localised landscape skills and knowledge have worked largely on their own for many, many years. Practitioner's have developed and honed many skills and acquired much knowledge which will not be easily shared with good reason as it is their livelihood. For example the

vertical drain is an easy and often used method of strengthening tree roots, increasing fine roots and improving local drainage, it is nothing more than hole of a depth of around 30cm – 50cm (depending on locality) of a small circumference usually the width of the spade specific to that locality and backfilled with small stones or organic waste. It can be found across Europe and further, with various names often very local. Around 12 years ago a company based in the USA, tried (unsuccessfully) to patent this simple trick – what would the consequences have been if they had been successful?

Therefore any engagement with practitioners has to be done with consideration towards any requests to mask certain procedures and / or methodology. It is worth noting that practitioners in general only take heed from established scientific research and generally consider academics to be ‘neutral’.

The following recommendations for procedure in compiling landscape skills and knowledge is in line with ‘Site Specifics’ methodology and thus should easily corroborate with practitioners and other local stakeholders working within the locality concerned.

2.0 Recommendations towards the Gathering of Localised Landscape Skills and Knowledge.

2.1 The Land Information Search (LIS)

An LIS check is the sourcing of relevant data and map based information in providing the vertical perspective of the landscape concerned. It is rare to find specific information with regards localised landscape skills and knowledge and the LIS is a convenient method of following the practitioners to relevant sites and thence the people working on these sites and landscape features.

Map based information is best at a scale of 1:25000 or smaller.

2.1.1 Geology & Soil

Geological and Soils data; It is an axiom that man made landscape features of high historic and sustainable value will occur more in areas where the soils and bedrock allow for successful human exploitation of the land. In many countries the overlay of the general map onto geology and soil data will easily expose sites which contain an abundance of landscape features in which the skills and knowledge sought will be placed.

2.1.2 Local Information Sources

Government agency or local government sources (including library); whilst some European countries provide relatively comprehensive data free online, notably the UK and France, it is still essential to source boundary and/ or planning maps for designated areas and zones (Constraints maps).

2.1.3 Historical Maps

Historical maps and data help to highlight farms or areas of activity during pre industrial times. These same areas, particularly if now absorbed into the peri-urban landscape, are often sites rich in landscape features which are the result of ongoing skills and knowledge.

2.2 On Site

Remote gathering of information cannot replace the worth of on site investigation which is often at complete odds to 'assumptions' still at large in written literature and online. *For example; In 2004 Cornwall Sustainable Landscapes (CSL) carried out a basic study to determine the style and construction of dry stone hedgerows across different geological areas in South Cornwall. The methodology was basic, with a transect line drawn from the highest point in mid Cornwall down to the coast. Each time a dry stone wall was encountered the landowner allowed for a dissection of a small part of the wall for analysis. Other anecdotal facts were forthcoming from these landowners including that the walls were often built by women over significant time periods. The back fill of the wall, usually assumed to be waste material from ditch construction, was very high in organic content – similar only to long abandoned compost sites. The design of the stone facia was often highly individualistic, local in style to the land belonging to one family and reflecting favoured patterns by the landowner and his family.*

2.2.1 Transect.

A transect through an identified area is the easiest 'on the ground' method to follow, Old railway lines, roads and ancient tracks provide simple lines to follow and boundary features, running parallel or at an angle from the transect line followed, are often the easiest landscape features to study in order to provide more general information regarding landscape skills and knowledge in any given area.

2.2.2 Identification.

Distinguishing between landscape practice of merit, worth investigation and poor landscape practice is relatively easy for virtually all landscape features except drainage in small localities. Identifying clean cuts on vegetation, avoidance of cement and non-local materials, no defined areas of bare land not in cultivation etc., can be more difficult than identifying poor practice. In larger areas there are many situations where good practice is less noticeable due to construction for no other reason than design. A good simple rule is to investigate landscape features during adverse weather conditions when water management and soil consolidation issues are easily identifiable.

2.2.3 Be wary of 'Pseudo' Landscape Features.

Many large scale landscape features are often the result of external forces; for example the use of prisoners of war to construct miles of dry stone walling or the result from the awarding of a landscaping contract to a large multinational company. Whilst such landscape features can become regionally distinct and a very prominent aesthetic in the wider landscape, they cannot be included within discussion with regards localised landscape skills and knowledge. Such features have a 'shelve life' and in some cases are already reverting to style more relevant to the locality during maintenance or repair.

2.2.4 Recording and Listing LMP's in Location.

The recording of areas where practice illustrates the continued existence of landscape skills and knowledge onto a map allows for an easy calculation against nearby areas of population, where any

LMP resident in that area will usually have a database of fellow LMP's with specific skills and knowledge. Despite immigration and migration of many, in the majority of landscapes the skills needed towards the preservation of locally distinct landscape features ensures it is someone from that landscape who remains the principal point of contact, however some landscapes have a disproportionate migration / immigration of workforce. Immigrants of a common origin corner the market in particular landscape skills resulting in the almost whole scale change in the landscape itself. As in the Cotê d'Azur, where Moroccan 'wallers' have become the predominant contractors for all external hard landscaping, the subsequent new style of walling quickly becomes locally distinct and the desired effect for all new projects.

2.3 Off Site or Remote

In light of the fact that not all landscapes can be investigated as outlined in 2.2, it may be appropriate in large scale landscapes to outline a methodology for gathering the localised landscape skills and knowledge remotely. In this regard it is recommended to use the rapidly growing base of LMP's using the internet. In many respects the proposed HERCULES 'knowledge hub' is the anticipated tool for establishing this engagement and at present it's need is very apparent as it is very difficult to perform due to problems identified in part 1.0.

2.3.1 Social Media Engagement with LMP's

In order to engage with LMP's to an extent where they may be of assistance in the gathering of localised landscape skills and knowledge consideration must be given to contractual agreements prior to engagement in certain circumstances due to the blight on most land industries by way of 'rogue trader's'. Industry forums provide safe, neutral territory for engagement with LMP's, without resorting to 'closed door' discussion, but such forums are in their infancy or non existent in many countries, but Facebook appears to be a dominant tool for communities in burgeoning EU states and elsewhere. Twitter is useful for open debate and the spread of academic papers and articles – but not used for practitioner discussion in regards methodology.

The need for a glossary of 'landscape' terms is a paramount importance here, several words used by academics and those on the periphery of the industries involved have a completely separate meaning for LMP's and public.

2.3.2 Social Media Engagement with Public

Open discussion with public about the landscape and its values to them using social media will be easy to achieve but more difficult to disseminate for purposes towards the gathering of localised landscape skills and knowledge.

Discussing 'landscape' issues with the public is synonymous with debate on specific issues, which at present abound social media in terms of landscape across Europe. Protest drives public commentary and to this end it may be useful to seize opportunities arising from protest to study general public perceptions of the value of their landscape and features therein.

3.0 Towards a Library of Localised Landscape Skills and Knowledge.

3.1 Landscape Features

Landscape features, man-made or natural, are the ideal platform for engagement with LMP's and public with regards their wider as well as for establishing study and discussion towards good practice guidance.

3.1.1 Register of Landscape Features

To date it is surprising that there is no definitive work detailing, (although an attempt at simply listing as been done – dictionary of landscape by the American George A. Goult), generic features in a landscape. And 20th century attempts towards valuation concentrate solely on a particular value, rather than the multi – values accrued by such features. For example; work towards valuing or scoring based solely on the ecology (for example; Assessing Ecological Value of Trees – Franks and Reeves & 'Hooper's Law' Estimating the Age of a Hedgerow – Max Hooper) amenity value (for example; Visual Amenity Valuation of Trees and Woodlands – Helliwell System).

The range of landscape types, according to climatic, geological and geographical zones, as well as the complexity and diversity within each landscape does not, surprisingly, create such differences between common features to complicate the publication of a standard reference. For example dry stone walls are rarely found to be more than of 4 basic types across Europe and further; 1) double faced wall 2) retaining wall with soil in gaps 3) retaining wall stone on stone 4) double faced wall for buildings. The same is true with hedgerow, orchards, fencing etc.

Therefore a simple survey sheet, merely recording existence and type of landscape feature, in the first instance is the best approach towards a general register, which can subsequently be used to hone in on areas worthy of further study.

3.1.2 Example of Possible Survey Sheet for Landscape Features

The table in the following survey sheet is filled in with data to illustrate the methodology. The survey is designed to work in the majority of landscapes – including the peri urban. It is of interest that many protected landscapes will not have give up as much data as ordinary landscapes.

Location: International Coordinate / Length in Metres / International Coordinate (SW to NW)^{1,1}

Elevation: Metres above sea level. ^{1,2}

Geology: ^{1,3}

Soil Type and Depth:^{1,4}

Type of Feature ²	Position to transect line ³	Age ⁴	Land Use ⁵	Notes ⁶
Dry Stone Wall ^{2,1}	Parallel SE – following contour 22m along transect at 310m. Perpendicular at angle of 40° SE at 600m.	Ancient	Agricultural	Type 2, 1.2 m high, with grass coping.
		Old	Silviculture	Type 3, 1.2 m high, with gravel coping.
Hedgerow ^{2,2}	Perpendicular at angle of 30° to West	Mature	Agricultural pastoral.	Earth Bank, 40cm high, 50cm wide. Mixed species; 5 stems per m.
Non Woodland Tree (NWT) ^{2,3}	Isolated in field to SE at 50m.	Mature	Agricultural arable.	Single Walnut tree – for produce.
Fence ^{2,4}	Perpendicular at angle of 45° to SE	Old	Agricultural arable.	Post & Rail – materials of local source
Earth Bank ^{2,5}	Parallel SE along transect at 750m for 20m	Old	Agricultural arable.	Waste pile from adjacent ditch.
Ditch ^{2,6}	Parallel SE along transect at 750 for 20m	Old	Ag, ar.*	Slow drainage – follows contour.
Track ^{2,7}	1000m, track used for transect.	Ancient	Mixed.	Following contour, track built from placed stones.

^{1,1} As many maps remain in full copyright it is suggested that using Google Earth /Maps or another internet resource is preferred. These maps and satellite images (the latter useful for ongoing remote surveying of identified features) use international coordinates, which are also compatible with GPS and GIS tools. The chosen transect line is as described in 2.2.1. The chosen line of survey should be short, accessible to all and chosen by investigating a map beforehand. 1000m every 10 – 20km in a small section of a landscape, should suffice.

^{1,2} Elevation, in metres above sea level, should be entered for the beginning and the end of the transect line. This allows for easy dissemination of data, particularly towards water management issues.

^{1,3} Geological data, taken from survey data if available, alternatively by identification on site is essential for investigating just how local materials used are.

¹⁴ Soil Type based on simple percentage of sand : clay : silt ratio. Soil depth can be estimated by agricultural practice – but is better to use data from the European Soil Atlas, freely available online.

² Type of Feature: The list on the example is non-exhaustive but covers the majority of boundary features. Space should be left for more locally unique features. Many landscape features divide into sub categories which can be identified and noted in ⁶. A possible example of these sub categories is as follows, which includes those features which cannot be easily sub divided with an explanation as to why:

²¹ Dry Stone Walling; Type 1 Double faced wall. 2 Retaining wall with soil in gaps. 3 Retaining wall stone on stone. 4 Double faced wall for buildings.

²² Hedgerow; Type 1 Planting on Earth Bank. 2 Planting on ditch/swale spoil. 3 Single row. 4 Double or staggered row. It should be noted that a hedgerow needs to contain at least 1 stem per 2 linear metres to constitute a hedge. It may be too time consuming to accurately record the species or species percentage mix and this data is not of great usefulness for the purpose of the survey.

²³ Non Woodland Trees (NWT). All NWT, be it groups or individual specimens should be recorded. NWT include Orchards, Riparian Planting, Hedgerow / woodland / copse remnants, Amenity trees etc., The purpose or presumed purpose of the tree (s) should be entered into the notes ⁶.

It is important to separate silviculture, plantations, worked semi natural woodland as well as ancient woodland, from NWT. This data is to be entered into ⁵.

²⁴ Fence (modern galvanised fencing and electric fencing should only be included if the posts are made from local materials – fencing is a very useful indicator of the general approach to management of any particular landowner or tenant); Type 1 Post & Rail. 2 Post & Wire. 3 Lattice or wattle (localised panel or in situ fencing using small diameter wood). 4 Panel.

²⁵ Earth Bank (of significant importance in determining period of cultural activity within any particular landscape), it is difficult to list banks under particular types due to the myriad of purposes for which a bank may have been built, for example; small banks of heavily consolidated soil following a contour hint towards extensive prehistoric land use. Simplified notes on the bank; size, consolidation of the soil, angle of sides etc., allow for later identification of areas requiring further study. The existence of earth banks should never be ignored.

²⁶ Ditches, swales and other drainage features; The principal difference between a swale and a ditch is that a swale follows the contours and a ditch has a slope of varying degree. The degree of slope can be calculated afterwards by way of the elevation data. Surface water management techniques illustrated by the features in a landscape are an invaluable guide towards the resilience of that landscape in climate terms.

²⁷ Tracks and paths; The axiom that to protect a track it must remain in use is very apparent in most landscapes. Many tracks are ancient and as with dry stone walls there exists a common technique in construction – principally the use of smaller stones compacted into sub soil surface and / or the use of crushed local stone as overlay. Tarmac and concrete remove the attributes of these surfacing in terms of water management, but in general the tracks are not destroyed below these modern

surfacing techniques. Heavy machinery and leisure activities are the greatest threat to the many significant historic tracks.

³ Position to survey or transect line; simple data taken by using a compass whilst walking the line allows for an accurate placement of the boundary features, which corroborates with general survey information and allows for easy dissemination afterwards - particularly useful for future remote study by way of Google Earth or similar.

⁴ Age; it is impractical and expensive to determine the age accurately through scientific techniques. The aging of hedgerows and NWT's is fairly simple by way of an estimate of age according to the diameter of the trunk (s) into 3 categories. Estimating the age of other features by way of growth (of lichens and other colonising flora and fungi) and rot (damage by fungi, insects etc) on the stone or wood materials is enough to divide into the 3 basic categories of ancient, old or modern.

It is largely up to the discretion of the surveyor to distinguish what features are worthy of note.

⁵ Land Use; subdividing the land use into simple categories; agricultural pastoral / arable, silviculture, viticulture, horticultural (including smallholding / allotment / fruit), industrial, garden etc., is just enough data to quantify LMP presence in that area.

⁶ Notes; on species, if identifiable, materials used and source of said material, measurements of features and all other relevant observations, help towards discovering the value of that area in terms of quantifiable landscape skills and knowledge.

*Abbreviations as per user's discretion

3.2 Land Management Practitioner Listings

This has been attempted at many times across Europe, both regionally and nationally. And has been largely unsuccessful, asides from some rare examples where an accreditation group specific to a profession within the wider land management industry have been successful in publicity terms in ensuring that only registered, qualified members are suitable for specific work.

To avoid the mistakes made by others previously and specifically the high costs involved it is recommended to not list LMP's against skills and knowledge with regards any particular landscape operation but only seek towards registering LMP's in any particular locality as stakeholders.

3.3 Towards Valuation

It has long been considered within the practitioner world that valuation methods towards recognising multi values of features within a landscape would be hugely beneficial and a progression for the industries involved and the landscape itself. Valuation of features to include the following (but non exhaustive); ecological, environmental, sustainable, production, amenity and holistic, would aid to strengthen reasoning towards the protection of historic, traditional landscape features as well as promote new construction of such features.

3.4 Practitioner Engagement – Towards Pan-European Good Landscape Practice Guidelines

3.4.1 Experimental Workshop

To test the above methodology two small scale workshops were held in the County of Devon, SW England during January 2014. The workshops were informal, with 8 landowners and practitioners from various sectors of land management in attendance at both.

The test area was an Eastern tributary of the River Erme, covering an area of 450ha. 7 transects were completed. The data was then transposed onto a map covering 5 square kilometres and presented to the practitioners. Open discussion was started with the basic questions:

“What is most useful to you with regards the data collected?”

“Does the data adequately match the landscape features you consider to be of higher value?”

“What more would you like to see / what would you like to see less off?”

That particular period of time coincided with major weather events; notably the wettest period ever recorded in the region. It is no surprise then that discussion was dominated by water management issues. In this regard the data was considered very useful. It was easy to assume that localised flooding was linked to positioning of boundary features. This was felt to be of high potential to all.

It was commonly agreed that it would be appropriate to invite the landowner and a practitioner to participate in the survey work themselves. To which end the data could be linked to non accessible areas and aid the landowner and consultation practitioners to use the data in other situations – particularly with regards public engagement as it would be open. It was felt the method could conflict with ‘top down’ landscape character assessments (The UK approach towards LCA’s was from the outside expert led – which is different from many other European countries), which were the tools of the AONB staff and Local Planning Office*. It was considered that the methodology would have to include tourists to more clearly define their opinion with regards the high value of landscape features.

The ‘Example of Possible Survey Sheet for Landscape Features’ as per 3.1.2 has been altered following these meetings to take account of what the LMP / Landowner stakeholders suggested at these meetings. Non Woodland Trees, Tracks and Fences were added to the list and the suggested length of transect was increased to 1km to ease interpretation via a 1:25000 map or smaller.

**The workshop minutes, attendees etc are withheld from publication at present owing to the fact that the AONB representatives, as well as local council representatives were unable to attend, thus it must be noted that the workshops were unofficial and purely an aid towards correct procedure and awaiting decision on the chosen study landscapes for WP8 .*

3.4.2 A Common Roadmap towards Good Landscape Practice.

The identification of landscape features, with multi values and of strong cultural heritage, which listed onto a single internet tool, (perhaps the proposed ‘Knowledge hub itself) and then further added to by academic research and other material specific to single identified location amongst others, would be of huge benefit to local stakeholders.

There are many chasms between those involved and / or interested in land management and landscape, which can be filled by standardised text on landscape features, with fixed definitions.

To this end, many elements within the HERCULES project combine to fill these gaps and the inclusion of local stakeholders, (public, visitors, LMP's and landowners in particular), from the outset of the project allows the process to be perfected by those in the landscapes concerned themselves – A truly 'bottom up' approach.

The glossary, knowledge hub and research on wider 'landscape' issues needs to be in collaboration with a register of those features and elements in a landscape, both man made and natural, of high multi value. It is proposed as part of successful local stakeholder engagement that the protocol in the gathering of localised landscape skills and knowledge clearly defines the list of types of landscape feature. Once done then official workshops within the study landscapes of WP8 and other WP's can be trialled to see how effective the methodology is across European physical and political boundaries.

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Sustainable Futures for Europe's Heritage in Cultural Landscapes:

Tools for understanding, managing, and protecting landscape functions and values

Survey on cultural landscapes

Introduction

With the following survey we try to get a full picture of the diversity of perspectives on cultural landscapes in Lesvos, in order to learn how our research activities can be made relevant to you. Please share your views with us. The survey will be treated fully anonymous and no personal information about you will be collected or transferred to third parties.

For more information regarding HERCULES, visit www.hercules-landscapes.eu

Survey

Name (optional): Email address (optional):	<input type="checkbox"/> Male <input type="checkbox"/> Female
Who are you? Please tick every box that applies to you!	Age:
<input type="checkbox"/> Land owner <input type="checkbox"/> Land manager <input type="checkbox"/> Policy maker <input type="checkbox"/> Academic <input type="checkbox"/> Resident <input type="checkbox"/> Member of a landscape-related association <input type="checkbox"/> Other (please specify)	<input type="checkbox"/> 0-16 <input type="checkbox"/> 17-25 <input type="checkbox"/> 26-45 <input type="checkbox"/> 46-65 <input type="checkbox"/> over 65



4) Which policies currently have a significant impact on the landscape of Lesvos?

5) Do you believe these policies can/should be improved? If yes, how so?

6) Please identify the 2-3 most important issues that the HERCULES project should address to become most relevant for the sustainable development of the landscapes of Lesvos.

