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LUOMU10 – EPOS Problem Solving Project for the Organic Sector

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## Introduction

Boreal forests feature a wealth of non-timber forest products (NTFPs) such as berries and fungi. Many of these are considered health promoting “super foods” with high nutritional value, antioxidants and even medicinal properties. In Finland, there is a long cultural tradition of household berry picking, which has been better maintained than in other Scandinavian countries, with over half of households participating in berry collection. Interest in berry picking and household demand for self-picked berries may even be on the rise. There may be however a slow decline in the harvest amounts in recent years and the amount of native Finns picking berries for commercial sale, so there is reason to promote these activities and to engage young people especially (Turtianen et al. 2011).

There is also a compelling commercial opportunity, considering that estimates of bilberry production alone are between 92 and 312 million kg of which up to up to 95% remain unexploited (Vaara et al. 2013). There is further value added when certifying these products as organic, through which rural inhabitants can improve their livelihoods by gaining access to urban or foreign markets through a differentiated product that may be preferable to buyers. According to Pro Luomu ry (2016), the organic food sector has grown by 7% last year despite overall consumer spending having decreased.

## The Challenge

The principles of organic production and labeling were initially set out by European Council Regulation 834/2007 and Commission Regulation 889/2008. The requirements for harvesting organic forest foods are more specifically defined by Evira, Finland’s authority on food safety (Evira guide 18221/1: Keruutuotanto 2009). The area of organically certified forests in Finland is now almost 12 million hectares, which is 30% of the worldwide area (Pro Luomu ry 2016). When it comes to the tracking of pickings however, a considerable amount of information needs to be maintained and shared between the various parties throughout the supply chain. Evira maintains a registry for the different roles and has a reasonable list of requirements and a presumably functioning process, however the system might benefit from a parallel service that would more directly connect the actors, perhaps all the way to the end consumer.

In Finland the freedom to roam law means that Forest owners may not directly benefit from the added value generated by the organic certification of products picked by others, so there may not be enough incentive to certify their forests.

## **The Solution**

Keruu.fi is a service I originally conceptualize while studying these Evira guidelines during the course Introduction to Organic Production (LUOMU101), in spring 2014. The idea is to track forest pickings and the transmission of products throughout the supply chain with a common platform supporting each of the roles and providing them all with some sort of added value. A portion of the organic premium on the final sale could be funneled back to the forest owner and a portion put towards the maintenance and development of the service. There are also other monetization channels that could be explored, like advertising or subscription payments.

## **Project Goals**

During the EPOS problem solving course, I will conduct stakeholder interviews with forest owners in the region of southern Savo who have the organic certification process completed or underway. At this point there are two potential candidates: an area of 1400 ha in Kangasniemi coordinated by Taina Laitinen and a smaller area of 100 ha belonging to a single owner in Mikkeli. The aim is to better understand the needs of this role as well and their motivations for undertaking the certification process. There are news stories cropping up about increasing small-holder organic forest certifications, for example Finland Proper region's first certified organic forest (Pro Luomu ry, 2015). According to that article, the reason for certification may be purely out of self-interest, when forest owners are involved with harvesting their own products, but it would be useful to gain insight into their views towards the other roles and possible cooperation already in place.

Ideally, we can establish a relationship that can continue all the way to a pilot phase of the service and beyond. We could collect map data for example and test the final implementation with special consideration for the forest owners. The same approach to stakeholder-centric design can then later be used to research the needs of other user roles.

## **Legal Considerations**

There are several legalities to investigate, especially from the perspective of the forest owner. In any case, the usage of the service and publishing of maps would be completely opt-in. Keruu.fi pickings can be tracked theoretically without any information about the forest. As the ultimate goal is anyways to gain the certification based on the extra layers of information, every step will be taken to satisfy all users sensibilities

in this area. Marja Pulkkinen from the Centre for Economic Development, Transport and the Environment (ELY-keskus) in South Savo can hopefully be consulted to verify the feasibility.

## **Stakeholder Research**

The practice of multi-objective forest planning involves understanding the varying values and objectives of forest owners. According to Karppinen (1998) the harvesting and silvicultural behavior of non-industrial private forest owners (NIPF) as other human behavior, is affected by structural, institutional and cultural factors that are closely linked to the immediate locale. Through a combined data set from a mail survey and personal interviews this study gained insight from 245 forest owners in southeastern Finland.

Forest values were measured by evaluating ten statements representing forest management philosophies using a five-point Likert scale (Strongly disagree - Strongly agree). Principal component analysis was used to connect these statements to a theoretical topology of values in three categories: Primitivism-mysticism, humanism and materialism. Twenty-one different forest objectives including aspects like outdoor recreation, berry-picking and aesthetic values were evaluated using a three-point scale (Not important, Cannot say, Important). These were condensed into the following three principal components: non-timber objectives, economic security and asset motive, and sales income and self-employment opportunities. These two sets of components were correlated and weak relationships between values and long-term objectives were found. Materialism had a negative connection with non-timber objectives and was positively correlated with economic objectives, though these were not statistically significant. Primitive-mysticism values however, strongly correlated with non-timber objectives.

Based on the three primary components of forest ownership objectives, k-means clustering was used to group the forest owners into four groups: multi-objective owners, recreationists, self-employed owners and investors. These classifications could then be linked with certain probability to specific ownership characteristics, age of owner, area of forest holdings, location of residence or level of education for example. This level of profiling is especially valuable in terms of tailoring aspects Keruu.fi service and marketing for these different forest owner archetypes.

## **Other Frameworks for Understanding Values and Objectives**

Despite Karppinen's (1998) assertion that values and objectives are difficult to compare between regions, there is certainly similar research that has been conducted in Sweden and beyond. Though oriented particularly around wood fuel supply Bohlin (2002) has investigated forest owner motivations through similar methods asking questions about forest owner initiative, concerns about soil fertility as well as incorporating

aspects of market demand and prices into the forest owner's decision making framework. Andersson & Gong (2010) have studied in Northern Sweden, how profiles of forest owner's objectives correlate with aversion to risk from natural factors (storms, fire) as well as market risks like roundwood prices and interest rates. A very recent study from Sweden, "In the eye of the stakeholder" (Stens 2016) values and objectives are mapped in a fairly novel way with own categories for hunting & fishing, Sami livelihood and cultural heritage. While the categories between studies may not be directly comparable, there is certainly valuable insight that can be gained from each and it would certainly be a challenge to design a unified model for every application.

Blanco et al. (2015) argue that a supranational understanding of forest owner typologies are necessary given the global and interconnected nature of drivers of forest land-use change. By comparing 31 studies from at least 8 different countries, they were able to profile forest owners in terms of management intensity and according to the following groups: productionists, multi-objective owners, recreationists, conservationists and passive owners, with a further dimension regarding their expectation for income.

In a pilot study in British Columbia, Canada by Sheppard (2015), similar value mapping is described as an essential component of sustainable forest management (SFM) and are applied during participatory consultation from a range of stakeholders to determine preferences for various forest maintenance treatments. In both this study as well as the aggregation of studies conducted by Blanco et al. (2015) all objectives are grouped into three major categories: Ecological, Economical, Social. In this case a set of points are allocated by each stakeholder across the following sub-components: biological richness, forest / soil productivity, timber production, non-timber production, water supply, recreation, visual, cultural and safety.

Certain forest owner demographics may experience their own specific dynamics, for example Vaino (2013) has investigated how gender can affect conservation decisions and why women despite typically expressing stronger ecological objectives are less active in conservation programs. The tradition of forest inheritance in Finland also carries with it a whole set of psychological implications as explored in Lähdesmäki's (2014) study "Born to be a forest owner?".

Pouta (2011) has applied a similar objective based approach to categorizing Finnish farm owners and the themes are strikingly common. Given that there is some crossover between the two types of land ownership these aspects could also be considered, especially if the respondent identifies as a farmer as well as forest owner and the holdings are connected or within close proximity.

### **Online Survey of Forest Owners**

Karppinen (1998) mentions that while rapidly diverging values in a modern society are the reason for value-oriented studies, it is the structural changes that are most disruptive in the Finnish forestry industry, that is

the transfer of ownership to an increasingly varying demographic. Modern forest owners are increasingly likely to be non-farmers, women or absentee / joint-owners living in urban environments. Up-to-date insight into these changes would be beneficial and so an ongoing online survey for forest owners as well as other relevant stakeholders (pickers, wholesalers, consumers) should be maintained as part of Keruu.fi.

We will design a survey for forest owners with particular focus on importance of non-timber products in their forest management regime, though as much as possible, consistent with those historically conducted in Finland so that the wider range of values can be compared. The questions will be linked various indexes and the rating of importance from zero to five (0-5), for example, recorded and used as a factor when calculating the value indexes.

### **Background Information**

A range of general information about the forest owner should be collected to help with the profiling and as has been seen in previous studies (Karppinen 1998, Bohlin 2002) may correlate with different objectives and management styles. The most basic information collected would be the forest location at least by province, area of landholdings, age and gender of forest owner. Additional useful information would be the forest owner's education, status as a farmer as well as full/part-time residency on the holdings and proximity otherwise. It would also be valuable to know if there are other holdings beside the current forests, other participants in the ownership (family or otherwise), and how many generations the forest has been in the family.

### **Indexes of Values & Objectives**

The indexes that can be used for mapping values and objectives can be seen to vary quite greatly and often there is certain hierarchy. The top most level of ecological, economical and societal values might be more applicable on an international scale, but in Finland other values like recreation are often featured as their own primary indexes. On the contrary, non-timber forest product production is rarely considered in an economic category, but rather as a social benefit. Given the general unrealized potential of forest food that we explored in the beginning of this paper, this may not be an appropriate approach. With Keruu.fi we will try to raise the value of these activities in the eyes of the forest owner and provide tools for all to generate more income from NTFPs as well as enjoy the social benefits. With this goal, the following primary forest objective indexes are proposed: Timber Production, Non-Timber Forest Product Production, Financial Security, Biodiversity, Recreation and Social.

These primary categories could be more specifically explored with questions relating to subcomponents, for example under the theme of biodiversity, one could also ask about the importance of soil fertility, dead wood, old growth, forest treatments and deciduous tree species.

The social component would include aesthetic value, cultural features and worker / visitor safety. Questions could be connected to more than one index, for example the question “Should visitors be able to pick berries in the forest?”, would connect to both the NTFP production index as well as the social index.

Questions about non-timber forest products could also be developed to measure the importance of these sub-categories: Game, Fungi, Berries, Herbs and Others (Birch sap, birch branches for sauna, lichen, Chaga mushroom, etc.)

Certain inferences would be particularly beneficial to draw on when designing the Keruu.fi service. The social aspect could indicate how likely a forest owner is to engage in the sharing of information about forest and how they view the access of resources to visitors through the everyman’s right. A specific altruism sub-component could even be derived. Motivation to certify and potential to sell permits (hunting/fishing/timber products) would be useful metrics to develop, perhaps based on both social and NTFP production indexes with a component based specifically on the question “are you interested in developing new revenue streams from your existing forest holdings?”. This could also be a useful statistic in terms of marketing, ie. “Over 80% of forest owners are interested in new sources of forest income”.

## **NTFP Calculator**

A forest food calculator will be another important step in selling the service to forest owners, by illustrating the scale of extra income that could be obtained by sharing the portion of picked food that is certified as organic. Here we will use production estimates of commonly picked forest foods based on research and present each as a row with the total estimation of revenue if all sales were to go through Keruu.fi.

## **Conclusion & Next Steps**

Forest owners, while essential to get on board to as greatest extent possible, are still only one stakeholder in the wider Keruu.fi “ecosystem”, so it’s important that this approach to gaining user insights is continued for the other stakeholders in the service (pickers, wholesalers, retailers, consumers). More important at this stage than insights may in fact be a working prototype with basic functionality that can be tested in the field

by each user group. A small-scale pilot test could be conducted this summer with forest owners, pickers, wholesalers and retail in the area of Southern Savo where there are contacts at each level, including Tuorepuoti a retail outlet specialized in local produce. Pickings can be tracked from organic forests and transmitted through the supply chain all the way to the end user, while sharing the extra value generated by organic certification. Another approach would be to allow for general registration to the service and allow hobbyists to test the tools, however if the service gains popularity, there could be problems with scalability. A limited beta test (ie. 1000 users) would be a way to establish a core group of users, while avoiding an overload of the service before monetization mechanisms are in place.

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