

LUMIA HUHDANPÄÄ-JAIS

# WOOD RESILIENCE AT BEYOND BUCKTHORNS

DIPLOMA DESIGN 5/10  
DIPLOMA STARTED IN 4/22



*Wood resilience design by  
Lumia Huhdampää-Jais*





# SUMMARY AND DATA

## SUMMARY & DATES

Regenerative woodland management at Beyond Buckthorns.  
Dates 10/22-10/23; general observation started in 2016.

## ETHICS

Earth care: Protect and help regenerate the forest on our premises

People care: while making sure the residents are warm in wintertime (and can regenerate in the sauna from time to time)

Fair share/Limits of consumption: by taking only what we need and making sure the “surplus” growth is left to the forest.

## PRINCIPLES

Various, see slides 19-22.

## DESIGN FRAMEWORK

SADIMET

## TOOLS

Maps & overlays, PASTE, DAFOR, Client interview, Flow chart, Pictures & video, Facts & figures (research), Principles as analysis tool, Functions systems elements, PMI, Web of connections, Implementation plan/seasonal calendar, Spreadsheet trackers, SWOC, Roses thorns and buds.

All images mine if not stated otherwise. All decorative graphics by Canva if not stated otherwise.



# SURVEY

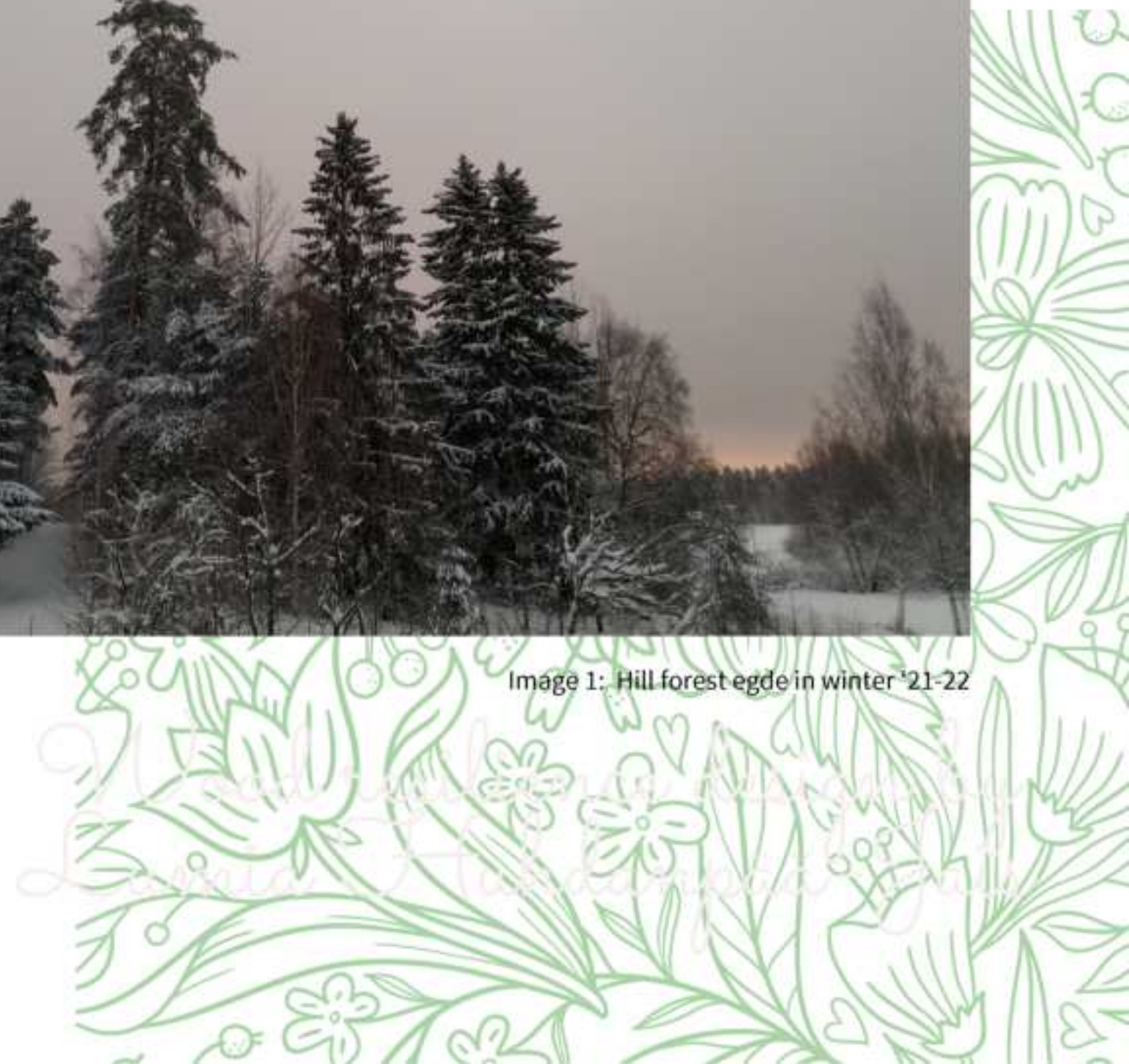
RECORD OBSERVATIONS, RESEARCH AND MAPPING

Contents:

- History
- Maps & Glossary
- PASTE of forest areas
- DAFOR of tree species
- Client interview
- Facts & figures
- Work effort flow chart



Image 1: Hill forest edge in winter '21-22





## HISTORY & NOW

The area was forest and hayfields before the homestead was built in 1952. Since then, until 2014, at least looking at the aerial images, the woodlands have been managed sustainably or much left to their own devices.

Between 1989 and 2019 the “western corner” was owned by someone else, who brought in some buildings and cleared the area around 1995.

The main forest, which was old spruce forest, was clear-cut in 2014. Hence, when we arrived on site in 2016, the majority of the forest was very young. Some areas were not touched, namely areas I will call the Spruce forest and the Hill forest moving on, as well as the Western corner which at that time did not belong to this plot.

That means now in 2023 we have different kinds of forested areas on our premises, and estimated about 2,5 hectares (6 acres) of our 3 hectare (7,5 acre) plot is forested area.



Image 2: Beyond Buckthorns aerial photo from 1949, before any buildings. The site is marked with yellow highlight. “Western corner” is marked with a black circle. Source: [paikkatietoikkuna.fi](http://paikkatietoikkuna.fi), yellow and black markings added.



Image 4 to the right: Beyond Buckthorns areal photo from 2002, source:paikkatiетоikkuna.fi



Image 3 above: Beyond Buckthorns areal photo from 1963, source:paikkatiетоikkuna.fi

# HISTORY & NOW

**SURVEY**



Image 5 above: Beyond Buckthorns areal photo from 2018, source:paikkatiетоikkuna.fi



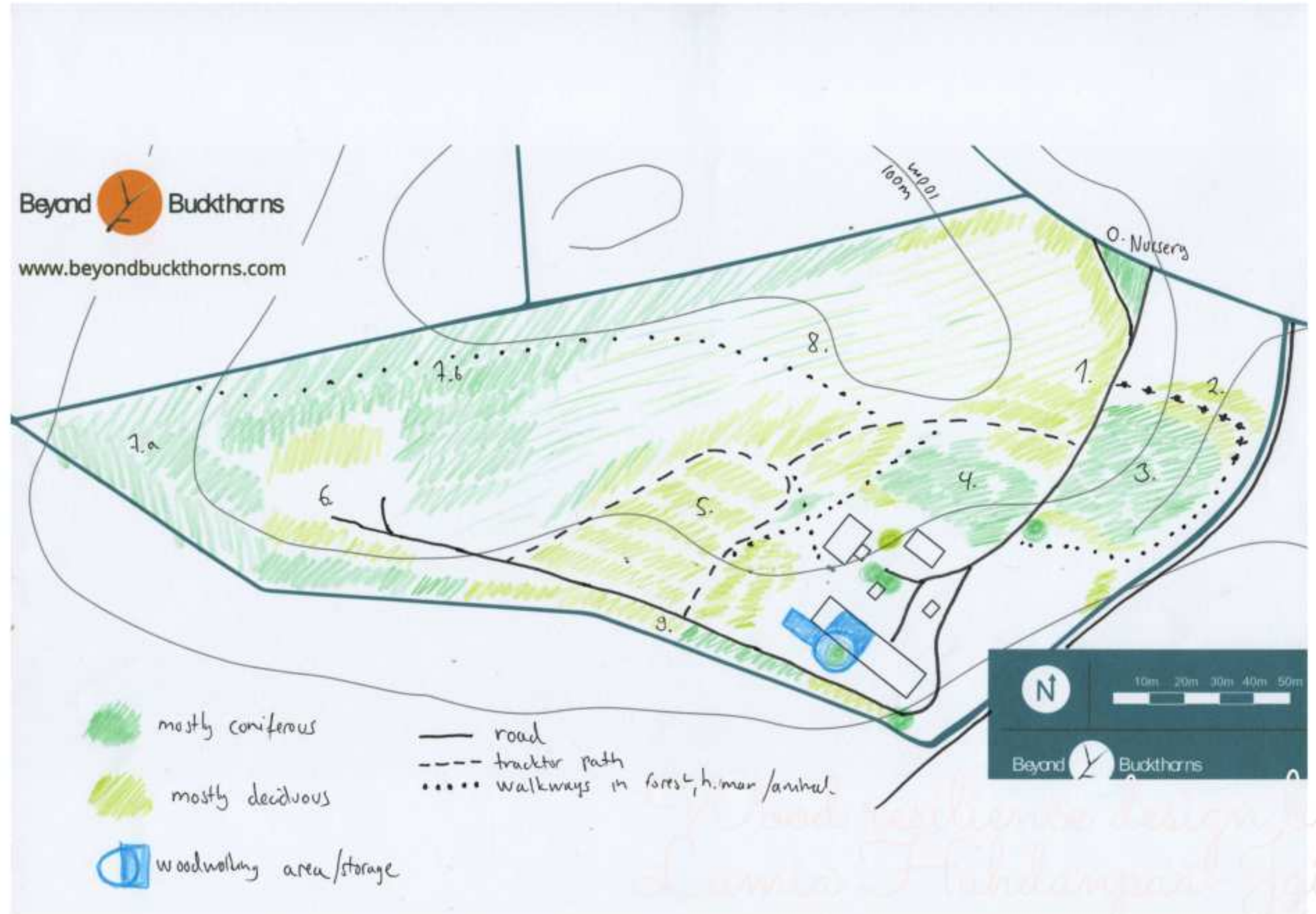
# MAP

SURVEY

Map 1:  
Map of Beyond Buckthorns including site borders, contours (every 5 metres, lowering from 100 m over sea level) and buildings, demonstrating the tree types and the 9 areas of forest used in this design as well as roads and paths

Base map created by Dominik Jais  
Tree type, area and road map additions by Lumia Huhdanpää-Jais

Date: 18.03.2023



*Handwritten signature: Lumia Huhdanpää-Jais*



# GLOSSARY

<b>Glossary of areas on the map</b>	
Area 0, Nursery	Small area in the entrance to the premises, where young trees naturally emerge
Area 1 , the Steep hill	Heavily clear-cut area on a rather steep slope
Area 2, the Edge slope	The edge between Eutopia borealis (the orchard) and the Hill forest
Area 3, the Hill forest	Forest untouched by the clear-cut on the hill
Area 4, the Spruce forest	Forest untouched by the clear-cut, very old spruce forest
Area 5, the Wood field	Heavily clear-cut, big area of now dense young forest, flat contour
Area 6, Korpi's yard	Yard area that has slowly been overgrown, also a small natural nursery area
Area 7 a&b, Western corner	Old mixed forest with some very old spruce
Area 8, Open forest	Previously forested area with slow regrowth, hilltop
Area 9, the Field's edge	Thin strip of various trees

Table 1: Glossary of areas on the site map



# SECTORS

SURVEY

Map 2:  
Map of Beyond Buckthorns demonstrating sectors



*Lumia Tuhdanpää-Jais*



# ZONES

SURVEY

Map 3:  
Map of Beyond Buckthorns demonstrating zones



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# PASTE

## PASTE - Beyond Buckthorns Forest

Plants	Animals and people	Structures	Technologies	Events
Trees, see DAFOR later on	Residents themselves visiting	Korpi's yard: Sauna, Container, Dry toilet & shed, piles of lumber	Wood field edge: biochar kiln	Firewood making
Wild raspberries	Course participants staying in Korpi's yard	Wood field edge: old shed, old car		Courses & occational camping
Various grasses	Rabbits			Wood field edge: biochar making
Various ferns	Deer			Walks & strolls
Virginia raspberry ( <i>Rubus odoratus</i> )	Various birds			
Various roses	Squirrels			
Various moss	Occational foxes, lynx and finnraccoons			
Red elderberry ( <i>Sambucus racemosa</i> )	Cat Miss Sophie visiting			
The Steep hill: Dandelion				
Open forest & Western corner: blueberries, lingonberries, chantarelle mushrooms				

Table 2: PASTE sheet of Beyond Buckthorns Forest areas, status 4/23

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# DAFOR

<b>DAFOR</b>	<b>Dominant</b>	<b>Abundant</b>	<b>Frequent</b>	<b>Occasional</b>	<b>Rare</b>
Area 0, Nursery		Spruce Pine		Birches	
Area 1, the Steep hill	Aspen	Silver birch Tea-leaved willow	Maple Downy birch Rowan	Spruce Pine Common alder (planted)	Oak
Area 2, the Edge Slope	Aspen	Grey alder	Silver birch Rowan	Common alder (planted)	
Area 3, the Hill Forest	Spruce	Pine Aspen	Silver birch	Juniper Rowan Hazel (planted)	
Area 4, the Spruce Forest	Spruce		Aspen	Juniper	
Area 5, the Wood field	Grey alder	Aspen Maple Goat willow	Tea-leaved willow Silver birch Rowan	Canopy silver birches Spruce Common alder (planted)	Oak Pine
Area 6, Korpi's yard	Spruce	Pine	Silver birch Aspen Juniper	Hazel (planted)	Decorative apple tree
Area 7 a&b, Western corner	Spruce	Pine	Silver birch Aspen Juniper		Oak
Area 8, Open forest				Spruce Pine Silver birch Aspen Rowan	Oak Planted speciality trees
Area 9, the Field's edge		Bird cherry Silver birch Aspen Rowan		Pine Spruce	

Table 3: DAFOR sheet of trees at Beyond Buckthorns per area, status 4/23

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# CLIENT INTERVIEW

Appendix 1: Client interview, see [Google Drive](#)

# HEARTHES

We have five hearths:

- Baking oven
- Stone fireplace
- Sauna stove
- Sauna's water pot stove
- Korpi's sauna stove

See more data on them below

Hearth	Heated times per year & season	Takes wood	Location	Use	Other
Baking oven	150, Oct-Mar	60 cm logs, all sizes and types	Living room	Heating of the living room, occasional cooking	
Stone fireplace	20, winter	30 cm small logs, birch	Office	Additional heating of study	
Sauna stove	40, throughout the year	30 cm smallish logs, all types	Sauna (outside of home)	Sauna :)	
Sauna's water pot stove	0-2, winter	30 cm smallish logs, all types	Washing room (outside of home)	Heating extra water for the sauna or heating the washing room by strong frost	Used very rarely
Korpi's sauna stove	5, summer	30 cm smallish logs, all types	Korpi's sauna (outside of home)	Sauna for the PDC course participants	

Table 4: Hearths at Beyond Buckthorns, overview



# HEATING OBSERVATIONS

We need to heat a hearth about 215 times a year. But how much wood does it take?

I measured the amount of wood I need to heat the baking oven, which is the main wood user.

I measured 60 cm wood in a carrier of about 30 x 30 cm, which results in 0,054 stacked cubic metres of wood. That times 150 yields 8,1 stacked cubic metres of wood.

The same with the other ones: 30 x 30 x30 cm makes 0,027 stacked cubic metres, times 65 gives 1,7 stacked cubic metres of wood.

All in all, we need about 10 stacked cubic metres of firewood per year as it stands in 2023.

Counted into solid cubic metres that 10 stacked cubic metres is about 6,7 st-m3.

## Pilkkeiden määrän mittayksiköt



**KIINTOKUUTIOMETRI**



**PINOKUUTIOMETRI**



**IRTOKUUTIOMETRI**

$$1 \text{ kiintokuutiometri m}^3 = 1.49 \times \text{pinokuutiometri} = p\text{-m}^3 = 2.5 \times \text{irtokuutiometri} = i\text{-m}^3$$

Lähde: Motiva, FINBIO

### Glossary:

- Kiintokuutiometri = Solid cubic metre
- Pinokuutiometri = Stacked cubic metre
- Irtokuutiometri = Loose cubic metre

Image 6: calculating solid to stacked to loose cubic metres

Image from

<https://www.bioenergia.neuvoja.fi/biopolttoaineet/polttopuu/kuu/>

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# WOOD AND TREE SIZES

## TYPES OF WOOD USED AT BB

I am not picky when it comes to wood. As long as it is nail-free and unpainted and of course not processed like terrace boards etc, I will burn it. Branches, twigs and stems that are thicker than my thumb are good for me. I tend to use thinner wood in the autumn and spring and thicker one in the winter. Birch logs, which have the highest burning value, I save for heart-winter when it is below -10 c.

Except: the mimosa of the house is the fireplace in the office. It's burning space is so small and funnily shaped, it needs wood that can stand and doesn't "spit" (like spruce does). That means smallish logs from deciduous trees – mostly birch.

## SIZES OF TREES AT BB

I measured\* some of our trees, growing and felled.

The canopy trees on our plot are silver birches, plus our yard pines. These trees reach about 25 metres height. The general height of mature trees on our premises is about 12-15 metres. The chest height diameter (about 130 cm high) varies greatly depending on location.

Next slide there some measurements of trees that were felled recently.

\* using a measuring tape, method shown at [this Youtube video](#) and Arboreal app, [www.arboreal.se](http://www.arboreal.se)

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# TREE SIZES

Tree	Height	Diameter	Volume
Standalone spruce	15 m	35 cm	0,6 m <sup>3</sup>
Spruce, forest/shade	12 m	20 cm	0,2 m <sup>3</sup>
Silver birch, shade	14 m	20 cm	0,2 m <sup>3</sup>

Table 4: tree sizes at BB. Volume counted using equation/calculator at <https://1plus1.fi/hyoty/puun-tilavuuden-arviointi/>

Note, these are solid cubic metres! Also what this calculation doesn't count is the volume of the branches of the trees, which especially with spruce can be substantial. Observing for example the branches of the standalone spruce, it has at least 50, partly very thick, branches that can be used for firewood.

What can be reached with younger trees?

Tree	Height	Diameter	Volume
Young aspen from Wood field	6,5 m	5 cm	0,006 m <sup>3</sup>
Young grey alder from Wood field (7 years)	8 m	6 cm	0,016 m <sup>3</sup>

Table 5: tree sizes at BB, young trees. Volume counted using calculator at <https://1plus1.fi/hyoty/puun-tilavuuden-arviointi/>

These numbers cannot be trusted so much as the trees are so young and the used equation doesn't work with very thin trees.

Let's use 0,01 m<sup>3</sup> as a general measurement for a young tree.

If I were to fell 100 of these trees, I would have 1 solid cubic metre of wood, that is 1,5 stacked cubic metres.

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# GROWTH OF TREES

## HOW MUCH WOOD DOES OUR FOREST PRODUCE?

The annual average growth of forests in Finland is 5,1 solid m<sup>3</sup> per hectare. In our area the growth is averaging 7,95 solid m<sup>3</sup> per hectare.

We have 2,5 hectares of forest land, so we can calculate conservatively to have about 16 solid m<sup>3</sup> of growth in our forest per year.

We've calculated we need about 6,7 solid m<sup>3</sup> of firewood per year.

To remove that amount from our forest yearly is, looking at the numbers, still allows the forest to regenerate.

Source: <https://www.luke.fi/fi/uutiset/metsien-kasvuvauhti-hidastui-mutta-puuston-tilavuus-suureni>

(Luke = Natural Resources Institute Finland)

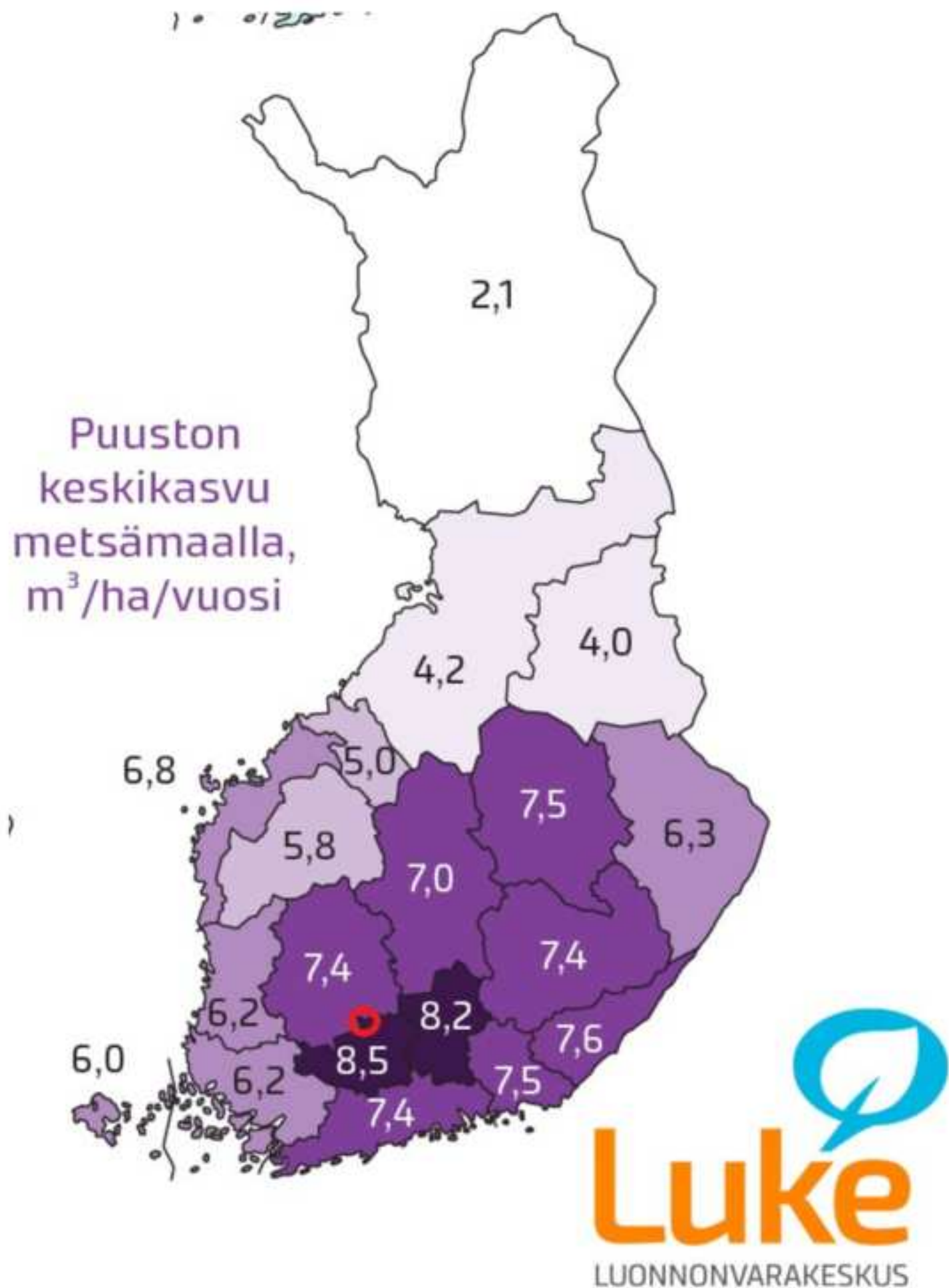


Image 7: Annual average growth of forests on forest lands, m<sup>3</sup> per hectare per year. Red dot shows BB on the map. Source: Luke, link in text.

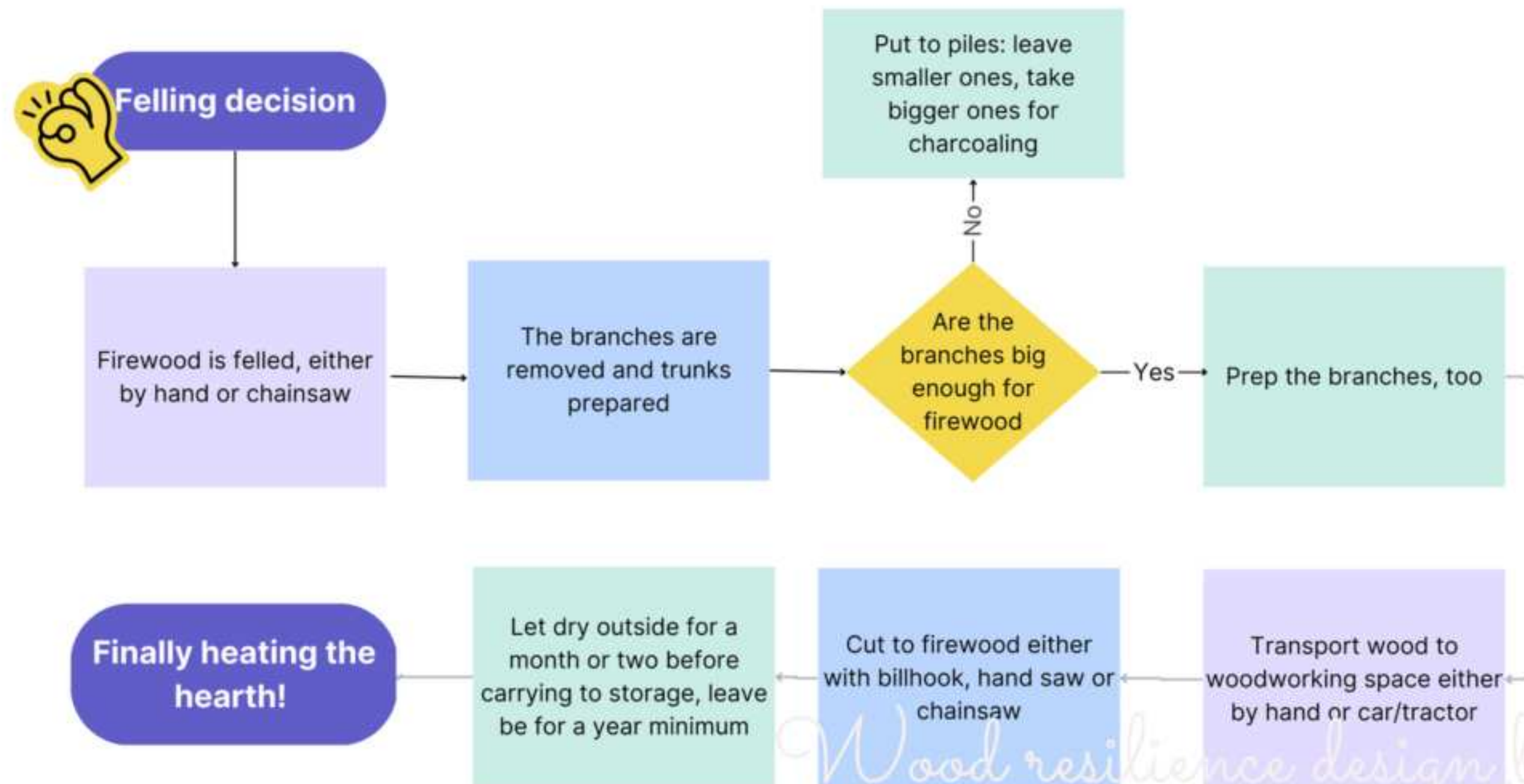
*Visual design by  
Lumia Huhdanpää-Jais*



# WORK EFFORT

Firewood making is a lot of work. Luckily, I like it. It's my kind of sport. We're also lucky my Mum likes it too, as does my brother-in-law. They can help us with the task.

Currently, I estimate I use at least 50 hours per usual year to fell/help fell, prepare and chop firewood every year. My Mum does at least 20 hours and my brother-in-law estimated 4 hours. Dominik works on firewood only occasionally, perhaps 2 hours per year.



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Image 8: Work effort flow chart at BB



# ANALYSIS

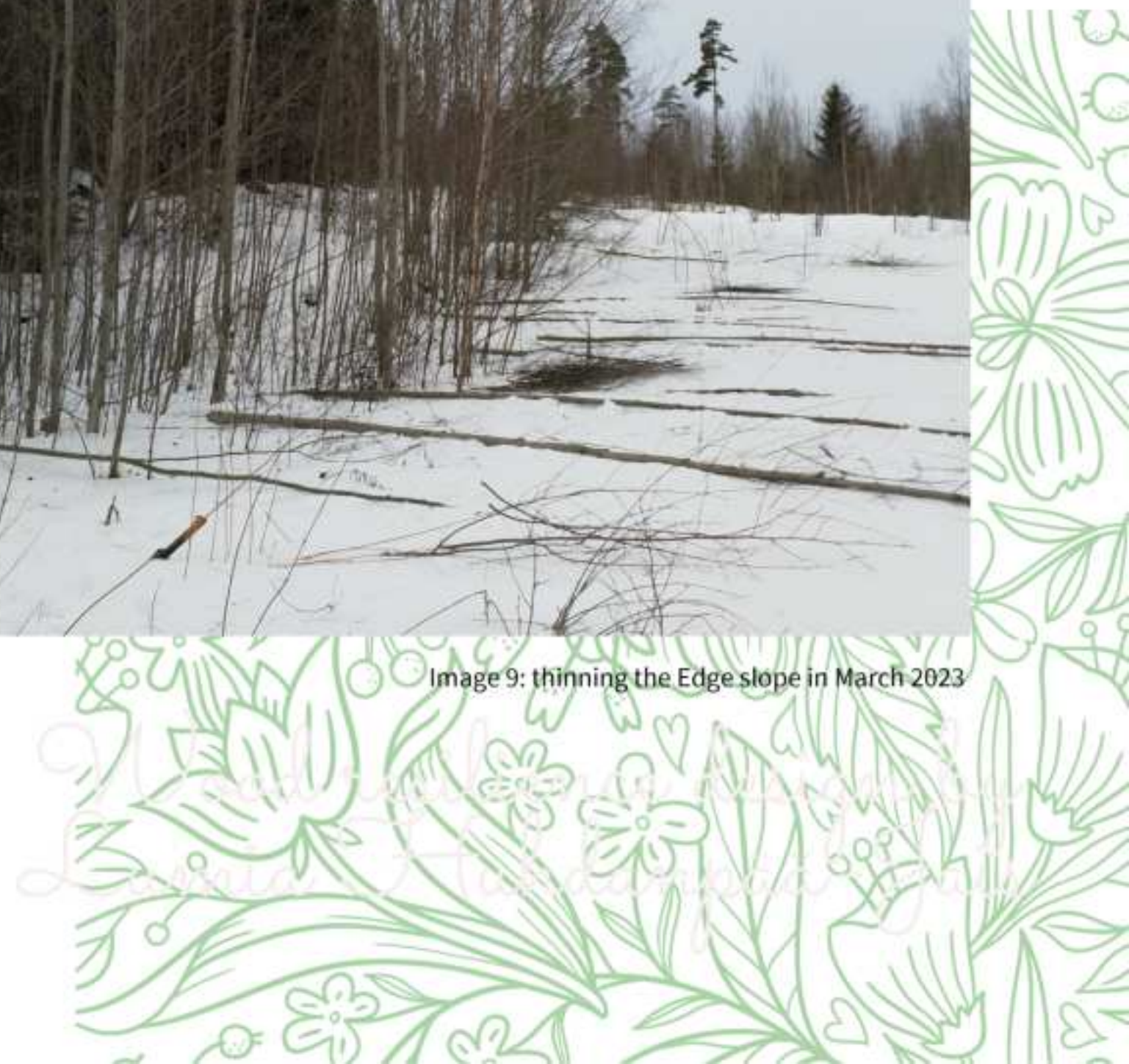
## SHARE OPTIONS AND POSSIBILITIES

Contents:

- Principles
- Functions, systems, elements
- PMI coppicing



Image 9: thinning the Edge slope in March 2023





# PRINCIPLES - MOLLISON & SLAY

## EFFICIENT ENERGY PLANNING & RELATIVE LOCATION

Use the areas that can be reached easily: alongside roads, close to the woodworking space, easily reachable areas, down slope.

## DIVERSITY

Biological diversity and a myriad of species is important to us. When tending to our forest, we should not only make sure we keep the wood mass increasing by planting new trees and felling less than the annual growth, but also

- protecting the different kinds of habitats that exist on the premises
- increasing biodiversity with new species of trees
- helping/allowing areas of young forest to grow into mature forest.

## USE BIOLOGICAL RESOURCES

No matter what they say in Brussels, firewood from your own, regeneratively managed forest is a biological resource. In the hierarchy of resource use (Designers Manual page 16), firewood is temporarily degrading or reduced in the long term – however that can be combated with planting new trees. Young forest can even be seen as a resource that increases by modest use, when giving space to some trees by removing others encourages growth.

The logical conclusion is to plant more trees than you fell. The other conclusion is to always fell less than the average growth of forest, which is about 7-8 solid m<sup>3</sup> per hectare in our region. With these strategies, the forest will be able to regenerate even though we fell trees from it.

Also to consider: I can fell trees about as thick as my own bicep per hand. For bigger trees I need a chainsaw. Also bigger trees tend to be too heavy for me to move on my own. In order to use my own human power instead of oil, I need to fell smaller trees (or get stronger).

*Interior design by  
Lumia Huhtanen - Jais*



# PRINCIPLES - MOLLISON & SLAY 2

## SMALL-SCALE INTENSIVE SYSTEMS

Another idea is to use coppicing. It is a method that has never been widely used in Finland, but I did find some interesting studies about it, and my own observations show that it is viable.

Instead of killing the tree, coppicing keeps the tree alive, and it works on a smaller, more manageable scale, still producing a lot of young firewood.

I will investigate this a bit more later on.

## ACCELERATING SUCCESSION

Planting new trees/transplanting them from the Nursery to the forest areas.

With coppicing, we're effectively setting back the clock on certain patches of the forest, creating a mosaic of different successional stages which increases biodiversity.

## CYCLING OF NUTRIENTS

We should always leave enough organic material to the forest and not remove everything. We need to leave the thin branches in the forest to fertilize the forest itself.

The somewhat thicker branches that are too thin to burn as firewood can be used to make charcoal, which in turn will be loaded with urine and biogas slurry to create biochar, which will then be added into the garden and orchard.

The ashes from the fireplace are used to fertilize and raise the pH of the annual garden.

## EDGE EFFECT

The edges of the different forest types to each other can be valuable areas for biodiversity.

We must remember that this design is a part of a greater energy concept for the house, and decisions made there effect this design (and vice versa).

*Wood resilience design by  
Sanna Tuohimäki - Jais*



# PRINCIPLES - MOLLISON

## WORK WITH NATURE

Fell trees where there are too many, where they are suffocating each other. Create space for nature to grow.

Use trees that have fallen on their own. Remember to leave enough deadwood in the forest for biodiversity.

## MAKE THE LEAST CHANGE FOR MAXIMUM EFFECT

Always take so little wood at once as not to disturb the water retention and soil health/soil coverage of a specific area.

Use coppicing.

## EVERYTHING GARDENS

Fell small trees from dense bushy areas instead of mature trees that have a big effect on their local area. A big tree creates a tiny biome around itself, that can be destroyed by felling the tree.

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Lumia Huhdanpää-Jais*



# PRINCIPLES - HOLMGREN

## OBSERVE AND INTERACT

Observe the forest and find out the best places to fell trees.

Ask a tree before felling it if it is willing to be felled. If it sticks you in the eye, leave it be! Thank the tree after you've felled it.

## OBTAIN A YIELD

Don't fell too small trees with low heat value.

See woodlot management and firewood making as exercise and stack functions.

## USE & VALUE DIVERSITY

Don't just fell birch, as is usual in Finland, but use various woods - what the forest gives you. All wood has heat value, and just because birch is the best (in Finland), doesn't mean you need to use that only.

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# FUNCTIONS, SYSTEMS, ELEMENTS

<b>Functions (needs as per client interview)</b>	<b>Systems (strategies)</b>	<b>Elements (to-dos/how-tos)</b>
Sustainable firewood production while still keeping warm	Decreasing the amount of needed firewood	Keeping low room temperature Keeping hearths effective (annual chimney sweep) Installing an air heat pump Installing a solar furnace Existing: solar panels
	Felling grown trees that are in the way / are damaged	Observing the plot throughout the year to recognize candidates The actual felling
	Felling young trees that grow too densely	Identifying the areas that have this type of growth The actual felling
	Setting up coppicing	Identifying the areas that are suitable Initial coppicing and maintenance
	Getting superfluous timber from others (neighbours, friends etc)	Put the word out for extra timber Pick wood up, if offered any Remember to thank neighbours, friends etc for received wood
Increasing biodiversity	Keep various areas of different types of forest	Maintain mature areas without changing their character too much Keep some areas of forest young Keep some areas unforested (meadows etc)
	Introduce new species into the forest	For example Larch ( <i>Larix</i> ), more of the common hazel ( <i>Corylus avellana</i> ), small-leaved linden ( <i>Tilia cordata</i> ) and remember Dominik's wish for Swiss pines ( <i>Pinus cembra</i> )
	Plant slower-growing trees after felling mature ones	Spruce, pines from nurseries

Table 6: Functions, systems, elements analysis of the woodland management ideas at BB

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# COPPICING EXPLANATION & PMI

Coppicing is a traditional method of managing woodlands and producing wood that has been used for centuries. It involves cutting back trees or shrubs to near ground level, allowing them to regrow from the base. This regrowth is called a coppice stool or coppice shoot. The process can be repeated on a regular cycle, typically every few years, depending on the species and desired wood product.

Plus	Minus	Interesting
Renewable resource: coppicing provides a sustainable and renewable source of wood without killing the tree, ensuring long-term productivity.	Labor intensive: regular cutting requires more labor than felling a few mature trees every year.	Historical relevance: coppicing is an ancient practice, and many woodlands in Europe have been coppiced for centuries. This can offer insights into traditional management practices.
Biodiversity boost: the cycles of cutting and regrowth can increase biodiversity, benefiting various plants, insects, birds, and other animals.	Limited to certain species: not all tree species respond well to coppicing, limiting its applicability.	Regrowth dynamics: the way trees regrow after being coppiced (often with multiple stems) can change the structural dynamics of a woodland.
Soil protection: Since the root systems remain intact, there's less risk of soil erosion.	Competition: regrowing trees face competition from ground flora, which might require management to ensure the trees aren't outcompeted.	Coppice cycles: The length of time between coppice cuts (the coppice cycle) can be adjusted based on objectives, species, and ecological considerations, adding a layer of complexity to the practice.
Carbon sequestration: young, regrowing trees capture more carbon dioxide than mature trees, making coppicing a potential carbon sink.		

Table 7: Coppicing PMI analysis

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# DESIGN

## IMPORTANT DESIGN DECISIONS

Contents:

- Web of connections
- Decisions



Image 10: trunks waiting for chopping, April 2023



# WEB OF CONNECTIONS

The web of connections is useful to visualize the connections between different systems and elements of the project.

Systems and elements with more connections can be the most important because they can have the most effect in the system.

With this quick drawing I get a clearer picture of the whole system and can identify the main areas and the ones not so connected that should not be used to build the system on, but to see as supporting elements.

Key elements:

- Decreasing the need of wood
- Grown forests & trees
- Young forests & trees
- Coppicing
- Considering biodiversity in everything

Supporting:

- Friends & neighbours

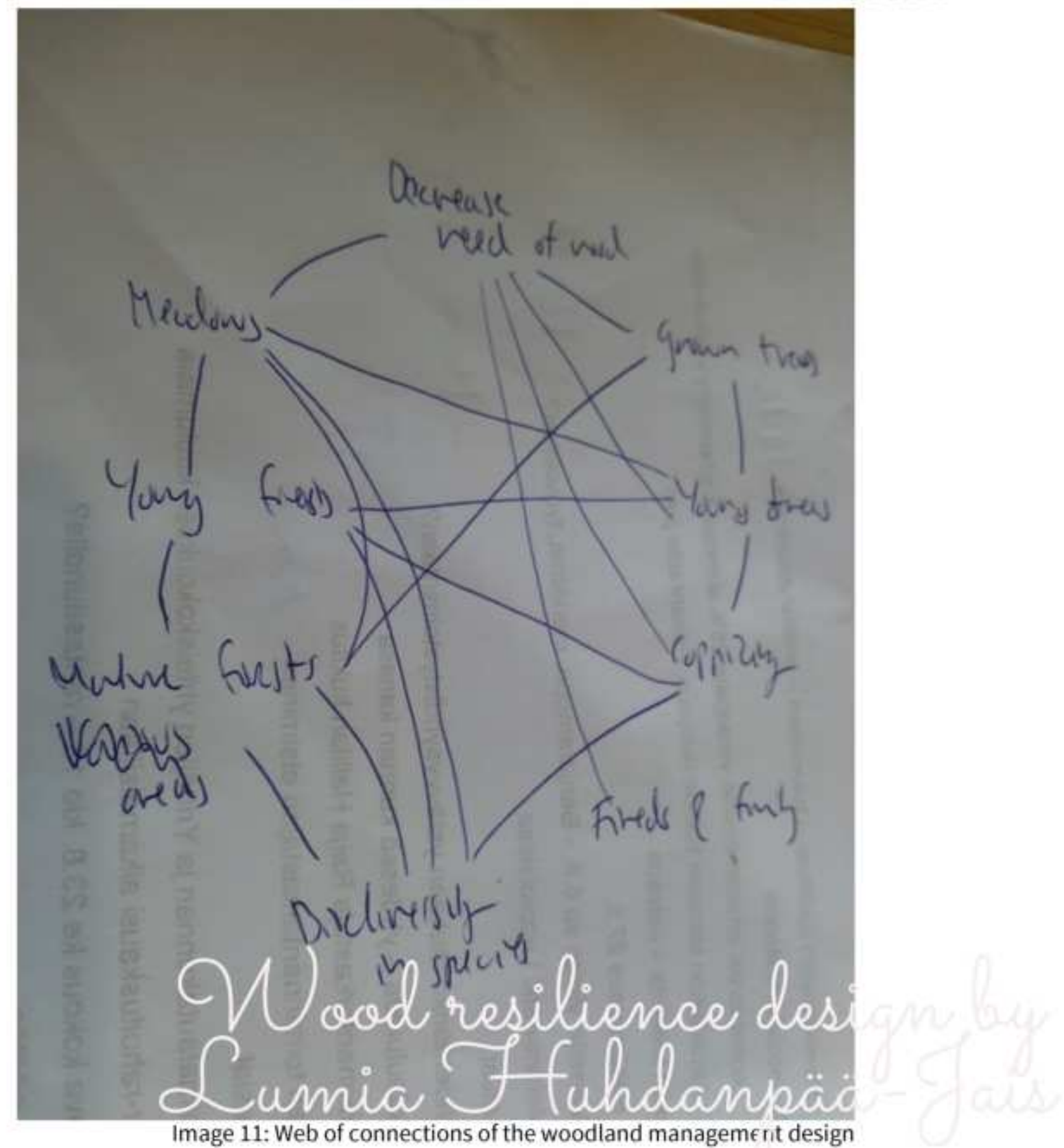


Image 11: Web of connections of the woodland management design



# COPPICING AT BB

## COPPICING IN FINLAND

Hytönen (2019) in his study “Stump diameter and age affect coppicing of downy birch (Betula pubescens Ehrh.)” finds out, that at least for downy birch, the best size to coppice is a small tree, with stem below 10 cm in diameter (but above 1 cm). The cutting height was not so important (between 2-10 cm of ground level).

Generally only deciduous trees can be coppiced. Generally cutting all trees is done while the tree is dormant (usually November-March).

I also read the study “Metsäenergian mahdollisuudet Suomessa” (1985) which was the most comprehensive look into commercial coppicing in Finland that I could find and enriched my knowledge.

Link: <https://jukuri.luke.fi/handle/10024/522207> (in Finnish)

## COPPICING AT BB

Based on my observations and the studies, the areas for coppicing should be

- accessible - as close to roads or wood making spot as possible, also in winter
- full of young, deciduous trees.

To begin, I will fell trees with a diameter of around 5-9 cm, and watch if they sprout. In case they sprout, I am looking at a harvest cycle of perhaps 5-10 years.

To begin, I will fell very conservatively even in these areas, to not to disturb the water cycles, soil health or the local biome.

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# DECISIONS

The methods for regenerative woodland management we will use are

- Establishing coppicing areas in the Wood field, Slope Edge and Steep Hill.
- Felling about 100 young trees (chd 3-10 cm) yearly
  - a. first from all areas, from locations that they are in the way or inhibiting growth of more viable trees
  - b. then from Wood Field, Slope Edge and Steep Hill
  - c. and on the edges of meadow areas.
  - d. Moving forward, first from coppiced areas.
- Felling 10-20 adult trees (depending on size)
  - e. damaged trees from all areas
  - f. from locations that they are in the way or inhibiting growth of more viable trees.
- Planting at least as many trees as we fell adult trees yearly.
- Putting the word out to receive superfluous wood from friends and neighbours (but not counting on this).
- Continue improve the energy efficiency of our house, by installing an electric heat pump and looking into re-insulating the top roof.



Image 12: brother-in-law felling a crooked pine 7/23



# IMPLEMENT

## HOW TO GET IT DONE

Contents:

- Implementation plan and seasonal calendar combination



Image 13: installed electric heat pump, external unit, May 2023



# IMPLEMENTATION PLAN & SEASONAL CALENDAR

Work plan Woodland Management at BB	Winter '22-'23	Summer 2023	Winter '23-'24	Summer 2024	Winter '24-'25	Moving on
Establish coppicing areas	Establish areas in Wood field, Slope Edge and Steep Hill by cutting this year's young trees here	Observe if stumps have sprouted	Establish areas in Wood field, Slope Edge and Steep Hill by cutting some of this year's young trees here, tweak based on summer's observation	Observe if stumps have sprouted	Based on observation, conservative new coppicing if it seems to produce results. If needed, tweak.	Observe (summer) / coppice (winter)
Fell young trees	None this year (see above)	n/a	If needed in addition to above, fell at Hill forest, Korpi's yard and Field's edge	n/a	If needed in addition to above, fell at Hill forest, Korpi's yard and Field's edge	Observe (summer) / fell (winter)
Fell adult trees	Fell chosen trees (5 big ones, 5 smaller adult ones)	n/a	Fell chosen trees (5 big ones, 5 smaller adult ones)	n/a	Fell chosen trees	Fell chosen trees in winter
Planting trees	n/a	Plant 20 new trees	n/a	Plant 20 new trees	n/a	Plant at least amount of felled adult trees
Putting the word out	Ask some friends and neighbours if they have excess wood	n/a	n/a	Ask some friends and neighbours if they have excess wood	n/a	Ask friends and neighbours at suitable occasions
Increasing energy efficiency of the house	Observe use of electricity & wood	Install an electric heat pump	Observe and tweak electricity & wood use based on data from the tracking & electricity price	Analyze possibilities for re-insulating the top roof	Observe and tweak electricity & wood use based on data from the tracking & electricity price	Observe & tweak, search new opportunities
Skills	Learn how to use the gasoline chainsaw	Implement electricity tracking software to track electricity use & production	Continue learning to operate the chainsaw and fell trees in desired direction	Continue observing and adjusting electricity and wood use	Continue observing and adjusting electricity and wood use	Continue woodland management skills & observation

Table 8: Implementation plan and seasonal calendar combined for the Woodland Management at BB design

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# IMPLEMENTATION STATUS

As of October 2023 as this design is written, of the tasks in the implementation plan everything for Winter '22-'23 is done, as is Summer 2023 - apart from planting 20 trees. This is planned for October 2023.

You can see phases of the design's implementation in the pictures throughout this presentation, as well as the videos on next slide.

Update: so far, we have received about 1/4 stacked m3 of birch logs from my friend Erika, who has needed to fell some trees but doesn't use the wood.



Wood resilience design by  
Lamia Fuhdanpaal-Juuri

Image 14: felled spruce, April 2023



# IMPLEMENTATION

Social media video showing some steps in the woodmaking process. Video is from Spring of 2023, link [https://youtube.com/shorts/4vZTYtoQx\\_0](https://youtube.com/shorts/4vZTYtoQx_0)



Wood resilience design by  
Lamia Fuhdanpää-Jais



# MAINTAIN

## KEEP IT GOING

Contents:

- Woodland management yearly tracker
- Coppicing tracker



Image 15: Measuring trees, April 2023



# TRACKERS

MAINTAIN

In order to stay on track on what we are doing in the forest and if the plan is effective, I've created these two trackers to be filled. The yearly tracker serves as a checklist if everything has been done in the course of a year, and with the coppicing tracker we can keep track of how many trees have been initially coppiced and their success rate. These trackers will first be used for season 2023-20204.

## WOODLAND MANAGEMENT YEARLY TRACKER

Not linked here.

## COPPICING TRACKER

Not linked here.

*Wood resilience design by  
Lumia Huhdanpää-Jais*



# EVALUATE

HOW IS IT GOING / HOW IT WENT?

Contents:

- Evaluating design
  - Roses, thorns, buds
- Reflecting on process & my learning
  - SWOC and evaluation of tools
  - Lessons learned
- Thanks



Image 16: Treetops at Beyond Buckthorns April 2023



# EVALUATING THE DESIGN

EVALUATE

Roses, thorns and buds is a variation of asking yourself What went well/what worked, what didn't and what would you do (differently) next time/moving forward.

## ROSES

- Important design for homestead resilience
- The design fulfills the needs it is meant to fill with the ethics in heart -> successful design
- Highlight: calculating the real numbers and knowing we have enough -> peace and joy in working in the forest

## THORNS

- Coppicing and young tree felling are time-consuming solutions

## BUDS

- Risk mitigation: what if we fall ill and can't maintain - is the electric heat pump enough?
- Plan for not having Mum to help in the coming years
- Moving on, expand even further into intelligent energy design

*Wood resilience design by  
Lumia Huhdanpää-Jais*



# TOOLS USED - EVALUATION

<b>Strengths</b> Principles as analysis tool PMI Client interview Facts & figures (research) SWOC Roses, thorns, buds	<b>Weaknesses</b> Maps & overlays
<b>Opportunities</b> PASTE DAFOR Functions, systems, elements Web of connections Implementation plan / seasonal calendar Spreadsheet trackers	<b>Challenges</b> Flow chart Pictures & video

Table 9: SWOC of tools used

<b>Used before, will use again</b> Principles as analysis tool PMI Client interview Facts & figures (research) SWOC Roses, thorns, buds Flow chart Pictures & video Maps & overlays	<b>Haven't used before, will use again</b> PASTE DAFOR Functions, systems, elements Web of connections Implementation plan / seasonal calendar Spreadsheet trackers	<b>Will not use again</b> None
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Table 10: Evaluating the tools used

EVALUATE



*Wood resilience design by  
Lumia Fuhdarpas July*



# LESSONS LEARNED

## EVALUATE - REFLECTION

### FRAMEWORK

SADIMET was straightforward and functional framework for this design and I will use it again. It felt natural and helpful.

### PROCESS

Having observed the area since 2016, pulling a design together was easy and like the logical next step.

I used organisational tools I set up in my last design and have since learned more of in my design work, which made the process or working feel safe and forward-moving.

### ETHICS

I believe deeply that this design helps us to fulfill our stated goal of “Protect and help regenerate the forest on our premises while making sure the residents are warm in wintertime (and can regenerate in the sauna from time to time) by taking only what we need and making sure the “surplus” growth is left to the forest.”

### PRINCIPLES

were used extensively, forming a skeleton for the design by using them integrally throughout the design.

### ME AS A DESIGNER

I feel this is my best design yet. It is compact and effective. I have used lots of tools and integrated my learning from previous designs, as well as learned about forestry a bit.

### NEXT STEPS

As I am now halfway at my Diploma, I will prepare for my IPA and concentrate on my portfolio outside the design work (activities, profile etc). I will stay concentrated and continue on my next designs to bring my Diploma forward! fast over the winter season. I will continue learning new strategies and tools. I will also take an online course on forest management at Uni Helsinki.



# TWEAK

After one season of implementation, no tweaks yet.

If the design should not work at some point, the tweak steps are to go through the design again and see where the problem lies, look at it through the principles and tweak accordingly.



Image 17: firewood in the making, April 2023

*Wood resilience design by  
Lusina's Suburban Farm*





Image 18: The woodshed in spring sun

# THANKS

Thanks to my Mum Sirpa and brother-in-law Seppo for always helping us with firewood.

Thank you Erika for gifting us your excess firewood.

Thanks to the forest and the soil for keeping up such a great growth that we can be wood-self-reliant on this small lot.

Thank you Dominik for your continued support on my Diploma journey!

*Wood resilience design by  
Lumia Huhdanpää-Jais*



# RESOURCES

<b>Trees at BB, names in our languages</b>			
<b>Type/Name in Eng</b>	<b>In Fin</b>	<b>In Ger</b>	<b>In Latin</b>
<b>Deciduous</b>			
Aspen	Haapa	Espe	<i>Populus tremula</i>
Bird cherry	Tuomi	Gewöhnliche Traubenkirsche	<i>Prunus padus</i>
Common alder	Tervaleppä	Schwarz-Erle	<i>Alnus glutinosa</i>
Common hazel	Euroopanpähkinäpensas, hasselpähkinä	Haselnuss	<i>Corylus avellana</i>
Downy birch	Hieskoivu	Moor-Birke	<i>Betula pubescens</i>
European rowan	Kotipihlaja	Vogelbeere	<i>Sorbus aucuparia</i>
Goat willow	Raita	Sal-Weide	<i>Salix caprea</i>
Grey alder	Harmaaleppä	Grau-Erle	<i>Alnus incana</i>
Oak	Tammi	Eiche	<i>Quercus robur</i>
Silver birch	Rauduskoivu	Hänge-Birke	<i>Betula pendula</i>
Tea-leaved willow	Kiiltopaju	Teeblättrige Weide	<i>Salix phylicifolia</i>
<b>Coniferous</b>			
Juniper	Kataja	Wacholder	<i>Juniperus communis</i>
Pine	Mänty	Waldkiefer	<i>Pinus sylvestris</i>
Spruce	Kuusi	Fichte	<i>Picea abies</i>

Table 11: Trees at Beyond Buckthorns, names in "our" languages Eng, Fin, Ger and Latin

Wood resilience design by  
Lumia Fuhrdörpke

