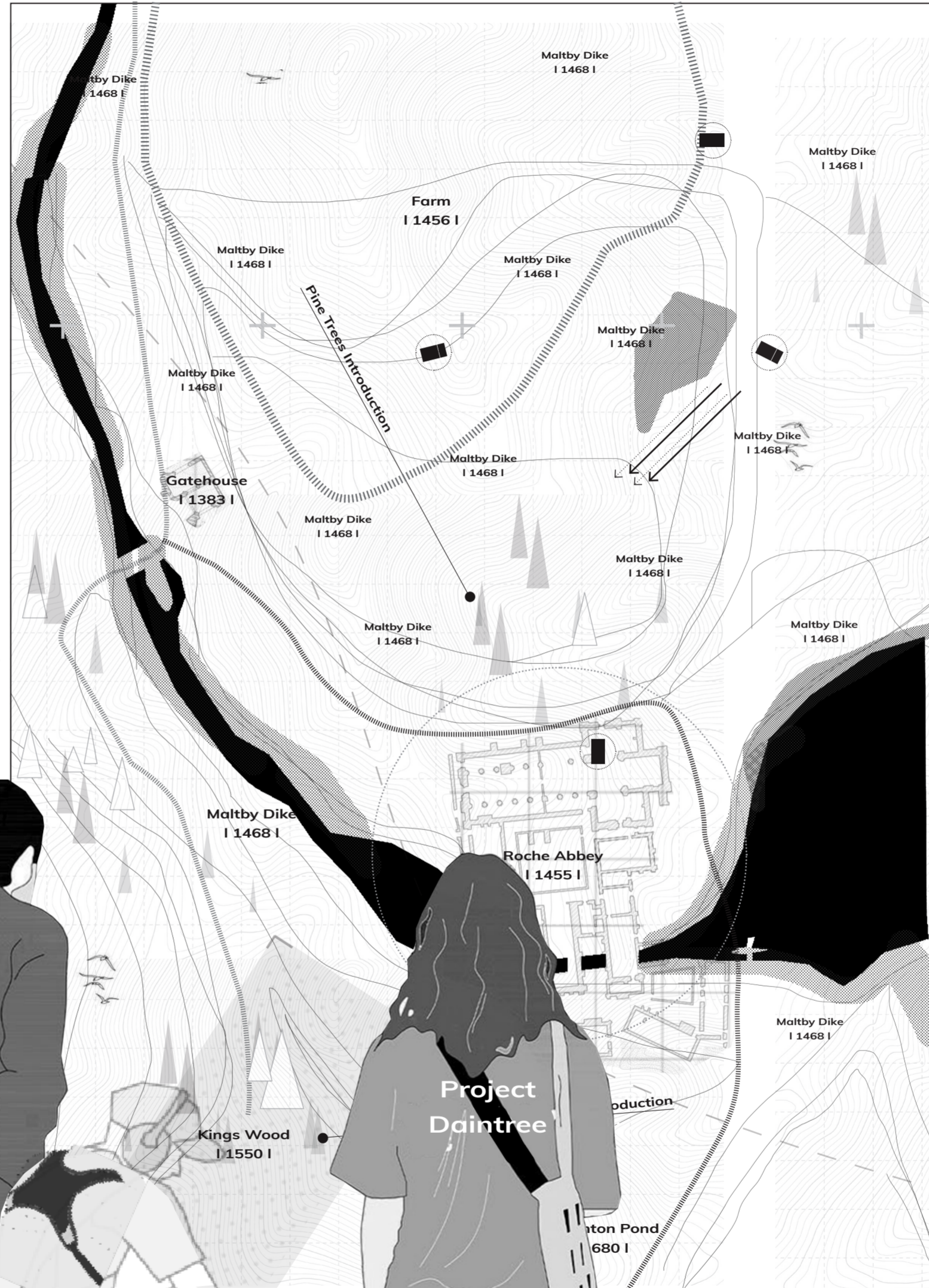


« The UK is still one of the least-wooded countries in Europe »
Woodland Trust



How well is the UK doing on an ecological level ?

After reading about it in many trustworthy journals and website we can see that the UK isn't doing well on an ecological point of view. Even in our daily lives we can see how the UK is so much more different than other countries in the world. Indeed according to The Guardian, National Geographics, WWF and many more the :

- «UK has been among the most nature depleted countries in the world for a long time» **The Guardian**
- «UK's Biodiversity Loss Nearly at 50%, At Risk of 'Ecological Meltdown'» **The Guardian**

Alongside the increase global warming issue the UK is believed to be less impacted than other zones in the world but :

- «The UK will confront 70% more floods and rainfall during the years to come» **National Geographics**
- «It is believed that in 2050 there will be 250 million Climate Refugees»

What does UK's ecosystem look like at the moment ?

After reading about it in many trustworthy journals and website we can see that the UK isn't doing well on the ecological plan. Even in our daily lives we can see how the UK is so much more different than other countries in the world. Indeed according to The Guardian, National Geographics, WWF and many more the :

- «The data show that since 1970 UK species have declined by about 19% on average, and nearly 1 in 6 species (16.1%) are now threatened with extinction» **UK GOV**
- «This figure is much higher for some groups such as birds (43%), amphibians and reptiles (31%), fungi and lichen (28%) and terrestrial

« Land-use change is still the biggest current threat to nature » Living Planet Report 2022

UK Wildlife Decline between 1970 and 2016

-- Living Planet Index (measure of biodiversity)

| Year | Living Planet Index (approx.) |
|------|-------------------------------|
| 1970 | 1.0 |
| 1980 | 0.8 |
| 1990 | 0.7 |
| 2000 | 0.6 |
| 2010 | 0.5 |
| 2016 | 0.4 |

How is it useful to the counterculture ?

Being an extremely accurate and reveal way of monitoring animals this is the perfect tool for them to finally have a large impact on the environment, being able to track and understand everything at all moments. This is a revolutionary tool on the wildlife conservation world and will help them to change the world. As you don't need to see it to monitor it anymore.

Why a Bioacoustics Device and what is it ?

A bioacoustics device records and analyzes sounds from living organisms. Used in wildlife research, conservation, and ecological monitoring, it captures animal vocalizations and subtle noises. These devices help identify species, monitor population health, detect environmental changes, and diagnose health conditions, using microphones, hydrophones, and advanced sound analysis software.

Project Brief

For our Major Project we were given a brief that asked us to create a counterculture in 2084 that fights against a society devastated by climate change and controlled by a virtual monoculture inspired by the film 1984. After discovering one of the relics on site (I was given the vacuum tube amplifier which I transformed into a bioacoustics device) the counterculture would curate a new way of living based on this object. All this, from the initial societal context, counterculture and new way of living was allowed to be chosen and researched by us. I thus decided to focus my lens on climate change and our lack of interaction with nature, especially within the UK. Researching into why this is and how we could possibly change it through architecture.

Project Response

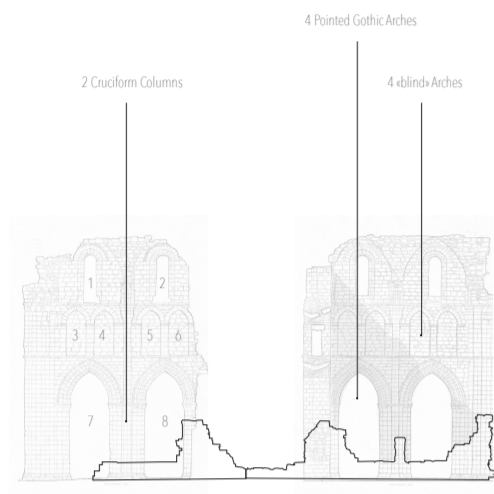
As the World and especially the UK are at the mist of an ecological meltdown it seemed important to explore new ways of constructing and new ways of being part of our planet. The ruined Abbey has thus been readapted by an eco-activist group seeking to re-imagine how buildings and humans coexist within their ecosystems. How instead of being a destructive outsider, humans and their creations could become an essential part of this new environment. The aim of the project is to showcase how architecture and interior design could possibly play a major role in the re-introduction and conservation of endangered animal species while catering for all human comforts. Showcasing how human centric buildings can leave space to buildings that perfectly blend with their ecosystems. How designing for all can bring benefits not only to the planet but create a multi sensory and grounding environment for humans as well.

All in all, the project will act as a medium for rangers and scientist to observe and re-introduce endangered species in a way that blends both worlds together. Also known as Interspecies Architecture (PS : this is a conceptual project that aims to push the boundaries of what could be done. Not everything will be realistic but will hopefully raise questions about certain things that occur or could be questioned when designing our spaces).



Final Conceptual Shape Final Concept Shape + Scale Study

Using Gothic Numerology in the design
When thinking of symbols inspired by the object I first thought of the shapes but then while creating my bioacoustics device I thought it would be more interesting to look at sound. As that is the main similarity between the two objects



Proposal Numerology
Only Used 16 needles to create the shape as an echo to the number 16 present in the abbey's numerology



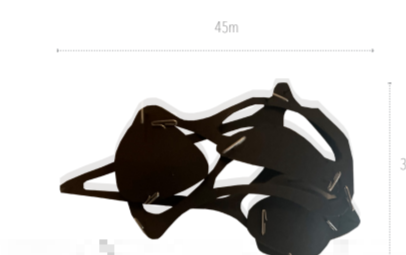
Scale Study 1
When thinking of symbols inspired by the object I first thought of the shapes but then while creating my bioacoustics device I thought it would be more interesting



Scale Study 2
When thinking of symbols inspired by the object I first thought of the shapes but then while creating my bioacoustics device I thought it would be more interesting



Scale Study 3
When thinking of symbols inspired by the object I first thought of the shapes but then while creating my bioacoustics device I thought it would be more interesting



Pine Needle Cells :
Looking at interspecies ergonomics and macro wildlife management I thought it would only make sense to also look at the micro world of this ecosystem, exploring how pine needles might be able to inform the design

Pine Micro Study Exploring The Micro World in order to influence our design on the Surroundings

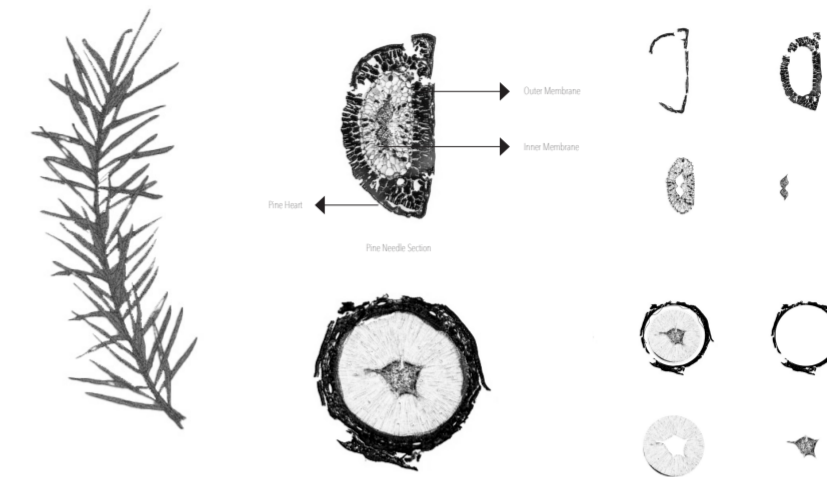


Fig.X, Etienne Hoedemaker, Initial Micro Scan by ...

Why Needle Cells :
Pine martens in Britain inhabit a variety of forested habitats, including mixed woodlands, coniferous forests, and scrubland. They prefer areas with dense vegetation cover, such as mature trees, shrubs, and rocky outcrops, providing ample hiding spots and den sites. Pine martens are skilled climbers, using trees for shelter, resting, and hunting prey like small mammals and birds. They also require access to water sources for drinking. Maintaining a mosaic of woodland habitats with diverse vegetation and sufficient prey populations is essential for supporting healthy pine marten populations in Britain.

How could they Inform the Design ?

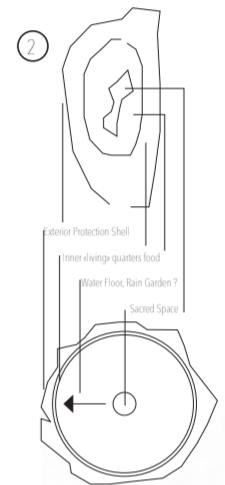
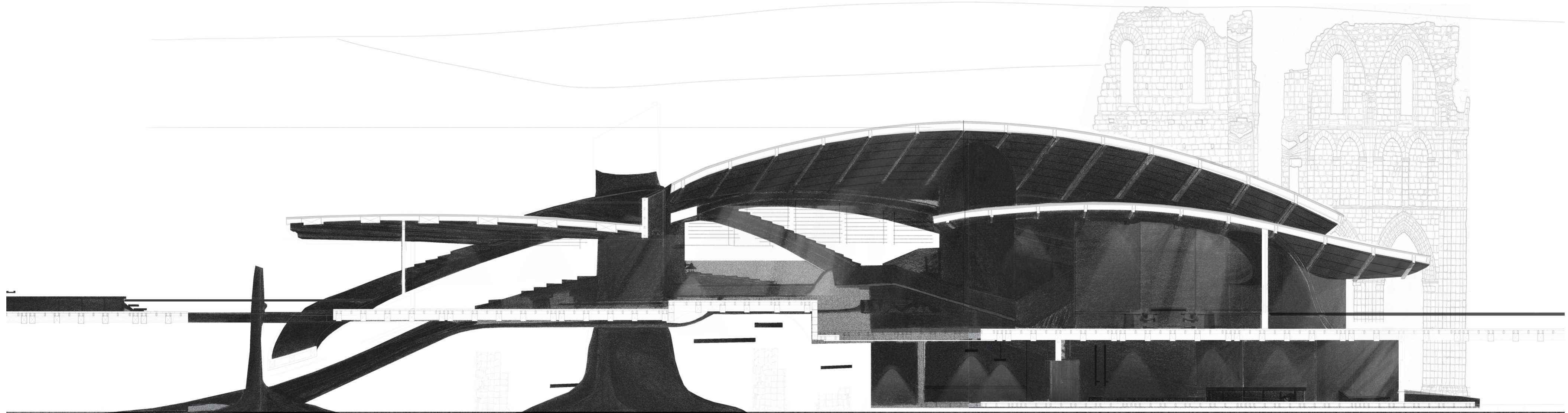
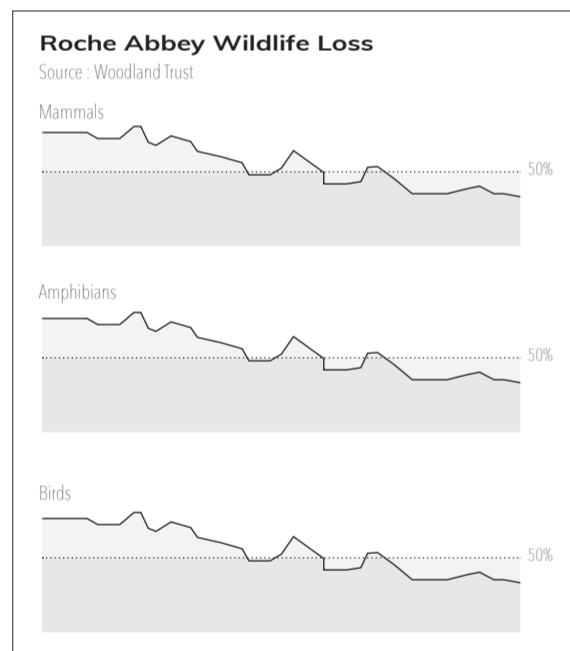
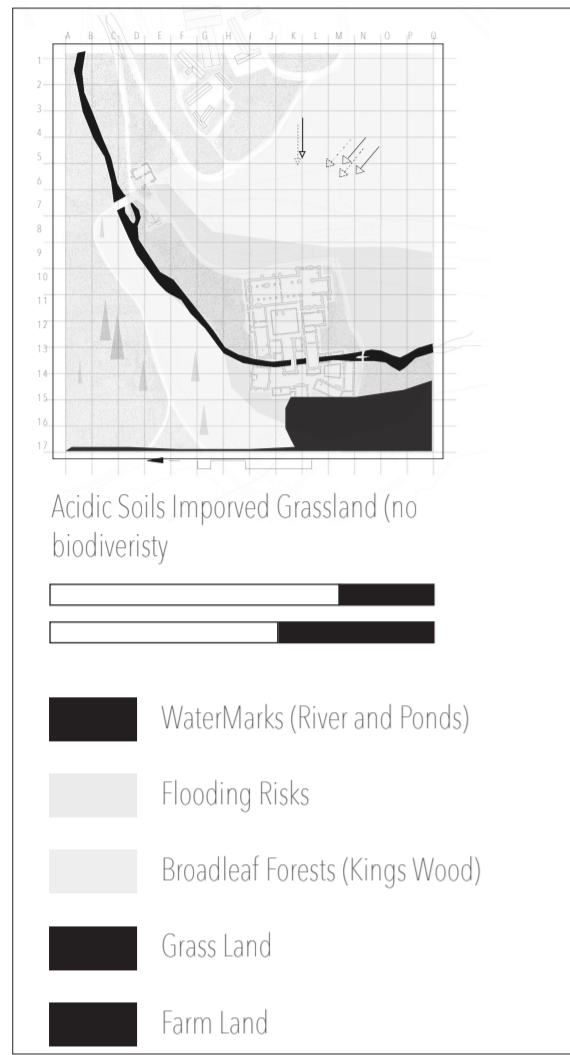


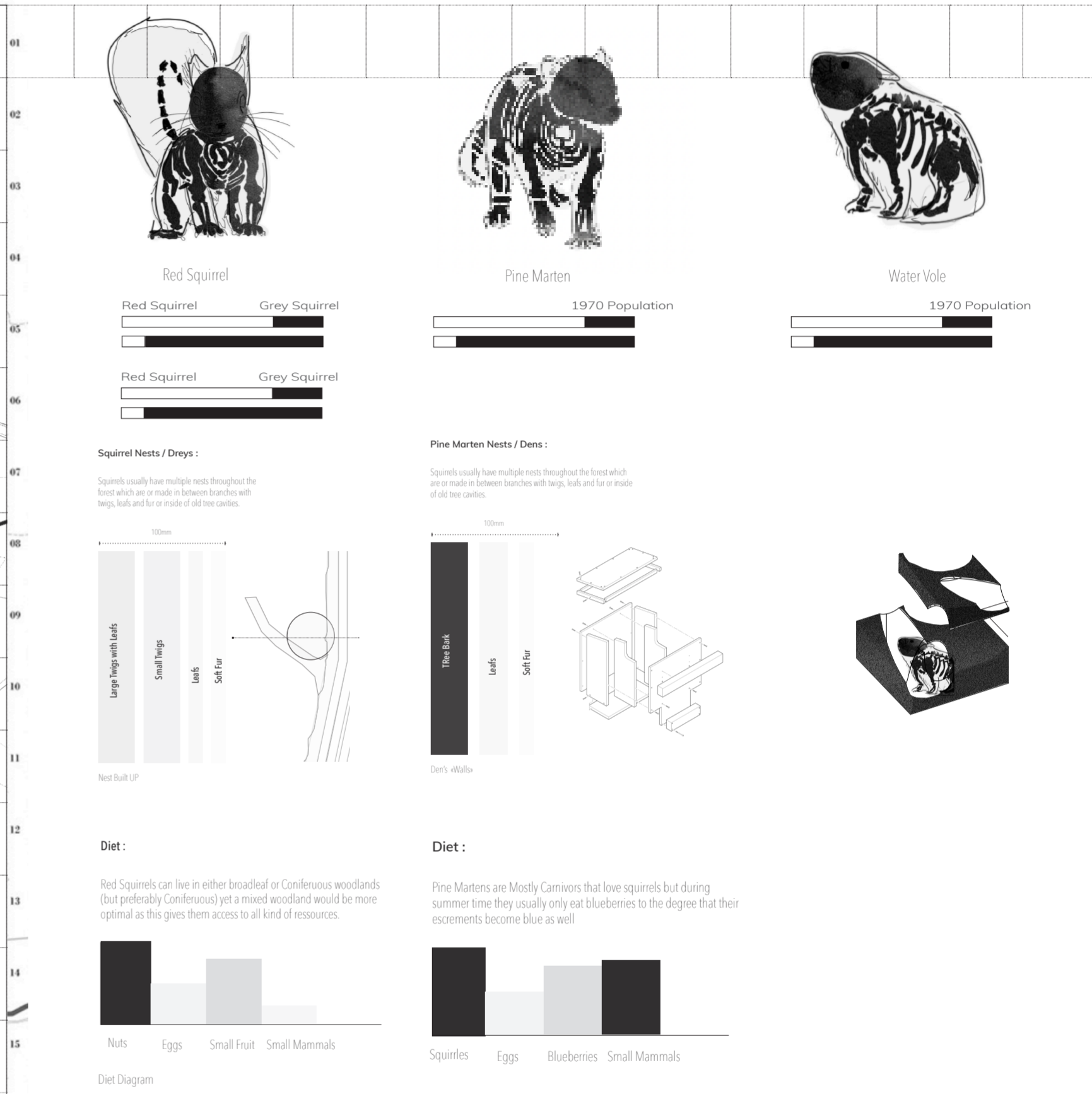
Fig.X, Etienne Hoedemaker



03 Existing Site and Endangered Species | Data in Context



04 Endangered Species Research |



05 Re-introduction methods and site management | Data in Context

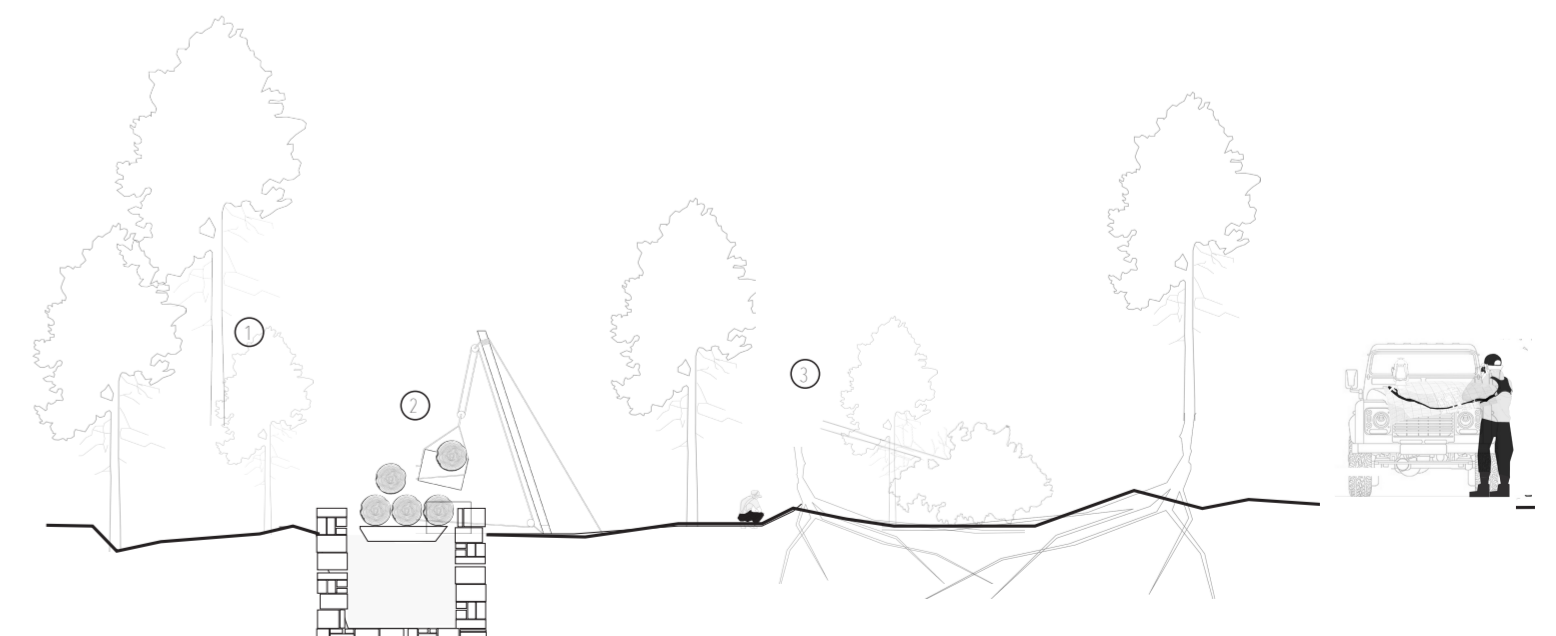
How to introduce a new tree species in an existing woodland :

- Introducing a new tree species in an existing woodland involves several steps. Begin by assessing the woodland's soil, climate, and ecological conditions to ensure compatibility with the new species. Obtain healthy, disease-free saplings from a reputable source. Plant these saplings during the appropriate season, typically in early spring or fall, allowing for proper root establishment. Prepare the soil by clearing weeds and enriching it with organic matter if needed. Space the trees correctly to prevent overcrowding. After planting, regularly water the saplings and protect them from pests and herbivores with fencing or guards. Monitor the new trees' growth and health, gradually integrating them into the ecosystem to maintain balance.



Woodland Management and Construction :

- Formative Pruning** is a practice used on trees in order to control the shape in which they grow, in order to get a straight, knot free timber for instance or to shape the tree in the building.
- Thinning** is a practice used to source wood without damaging the ecosystem. Essentially only cutting down trees that are younger and struggling to grow in order to leave space for more light to come down to let new trees grow
- Species Management** In order to bring back UK's ecosystem the projects also aims to re-introduce old species such as scottish pine trees. Helping create a more diverse landscape that aids to the survival of native species.



06 Area of Focus Design Moments

| Data in Context



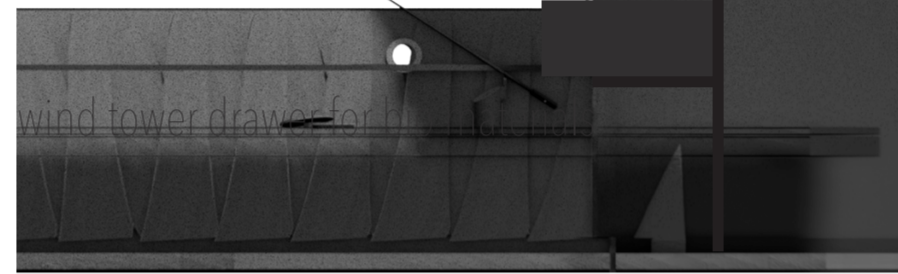
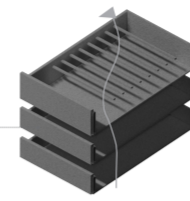
Proposed Area of Focus
 Second Floor + 1SD
 Hand Down + CAD

- 1 Biomaterial Workshop
- 2 Vet Area
- 3 Interspecies Staircase
- 4 Squirrel Loft
- 5 Commercial Study
- 6 Equipment Area
- 7 Food to Feeding Area

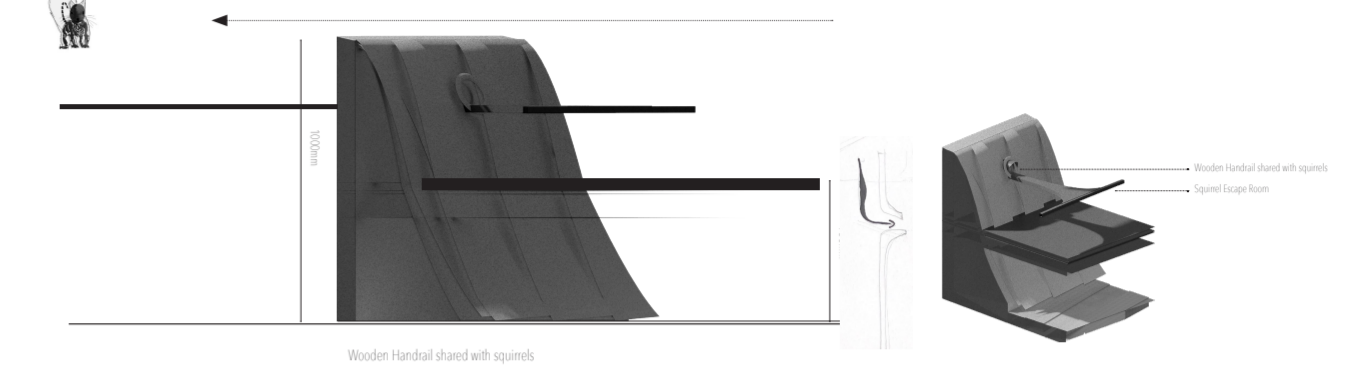
Interspecies Desk

Built in Bio Material Storage:

The small desk located just next to the wind tower would be the perfect place to locate a small biomaterial drying space that utilizes the wind of the tower to dry the samples off.

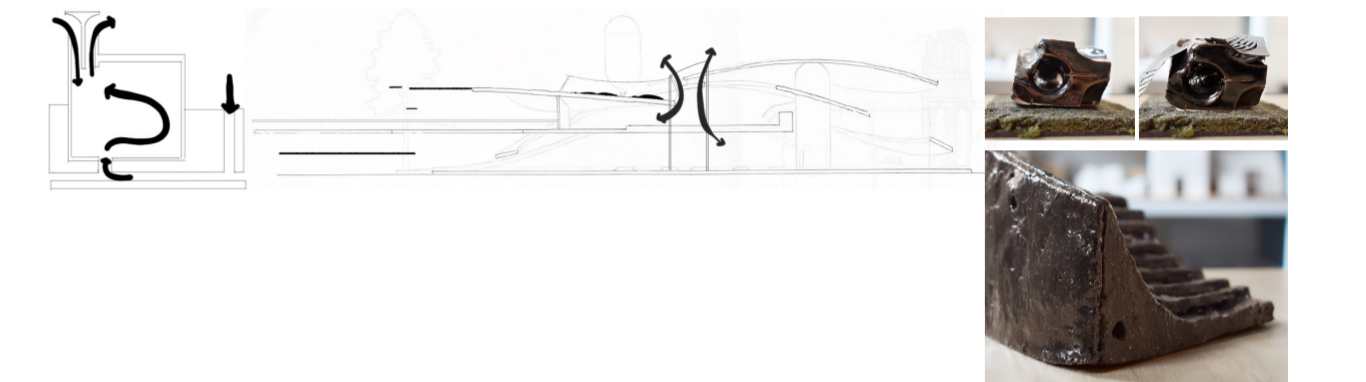


Allow Space for the person to look outside into the canopy and the squirrels



Iranian Windflowers:

To cool down the building during hot summers, we decided to utilize and mimic an ancient ventilation method. Iranian Wind towers date back to the 16th century and use cold and warm air to naturally ventilate and cool down the premises. Utilizing this in our building could help us not only cool down but also dry our materials and cool our cooling stones on the roof.



07 Biomateriality Experiments

The Interspecies Staircase

Adapting River Vole Burrows



Squirrel Entrance

Squirrels usually dig their burrows but if they are nesting in their habitat or need to be in a specific place to store their food, they will dig a hole to get in and out of their burrow system.

Wooden Stairing

The handrail will be shared by both the squirrels and the human. It will be made of wood and will be made of a material that is safe for the squirrels and the human. It will be made of a material that is safe for the squirrels and the human.

Interchangeable Finish

The handrail will be shared by both the squirrels and the human. It will be made of a material that is safe for the squirrels and the human. It will be made of a material that is safe for the squirrels and the human.

Biodegradable

The handrail will be shared by both the squirrels and the human. It will be made of a material that is safe for the squirrels and the human. It will be made of a material that is safe for the squirrels and the human.

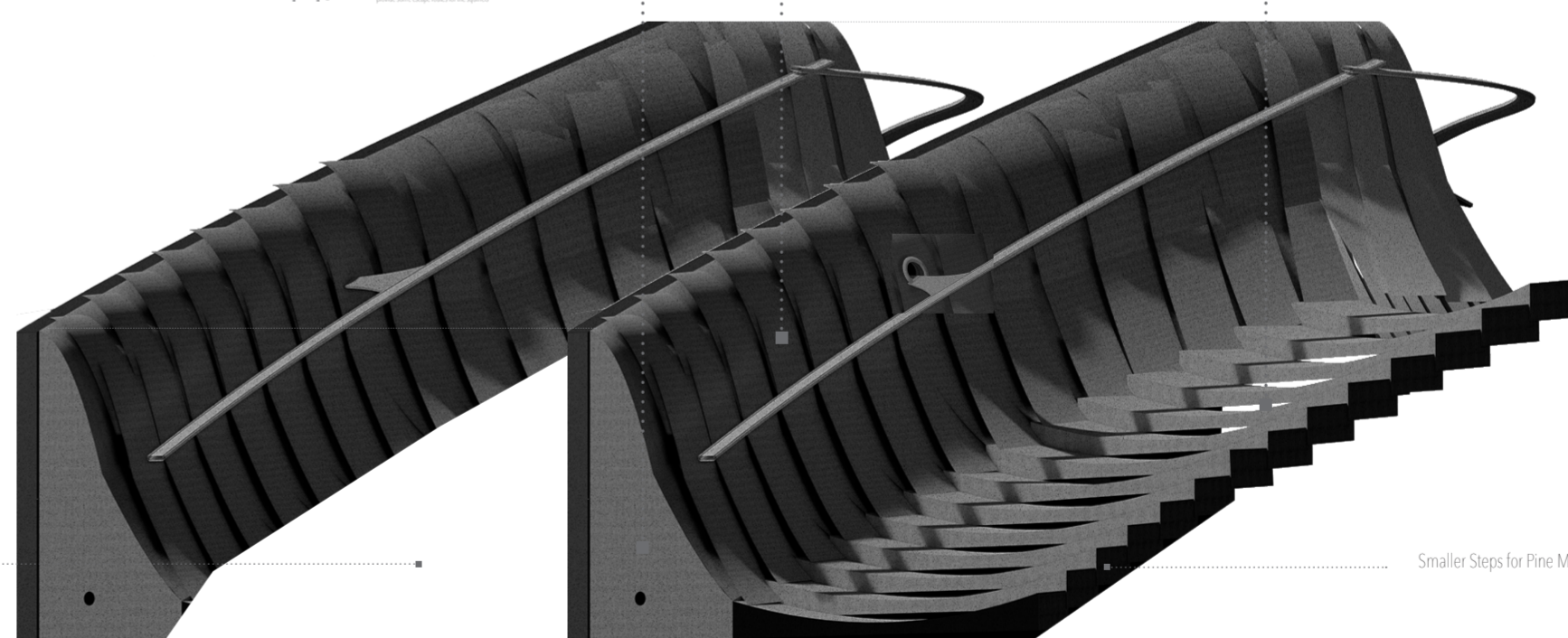
Wooden Handrail shared with squirrels

Squirrel Escape Route

Squirrel Bump

Squirrel Escape Route

Because of the hostile relationship between the pine marten and the red squirrel it seemed important to provide some escape routes for the squirrels

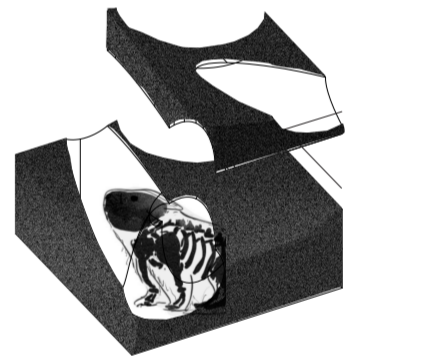


Squirrel Escape Route

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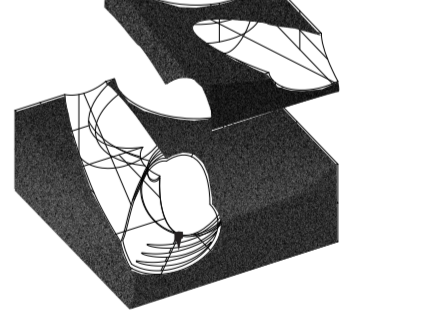
Squirrel Escape Route

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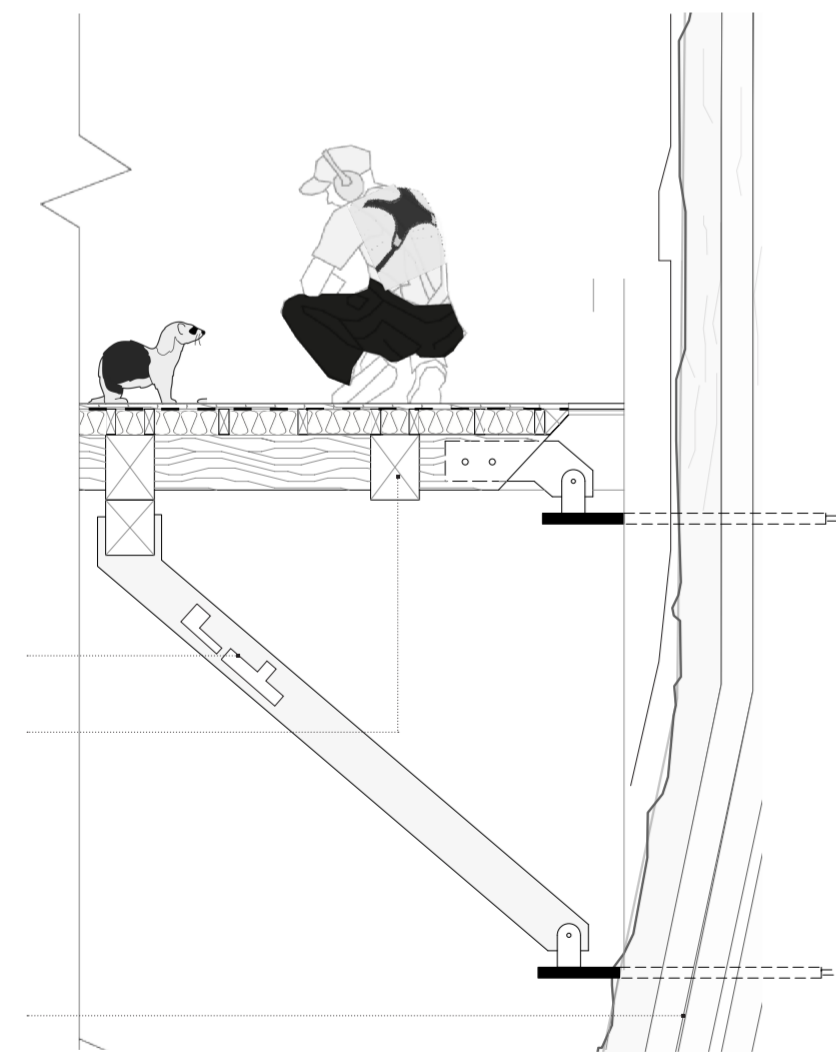
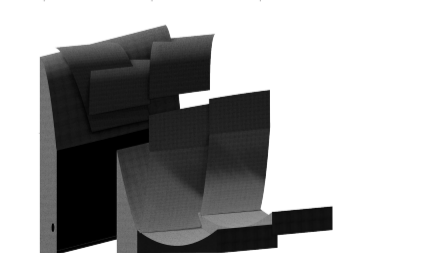
Water Vole Burrows

Located in the middle of the building, the design of the staircase will have to be able to accommodate all species comfortably and be aware of their behavior between each other. Knowing that there is one predator (pine marten)



Squirrel Escape Route

Because of the hostile relationship between the pine marten and the red squirrel it seemed important to provide some escape routes for the squirrels

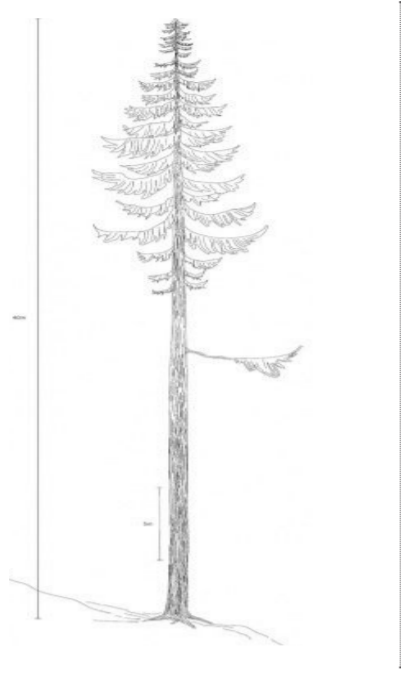


1:50 Detail Section



07 Biomateriality Exploration | Working with on site materials + Interspecies Chair

Micro Environment Study Exploring Materiality



Scots Pine Tree
(*Pinus sylvestris*)

Fig. X; Etienne Hoedemaker

Pine Needle Case Study

Why re-introduce the scots pine tree as well ?

The late 20th century saw just a fraction of the original left standing, regeneration has now started to occur, especially in areas fenced off from browsing deer.

Specifications


Physical Characteristics:

Height: Typically grows between 35 to 45 meters (115 to 150 feet), though some can reach up to 60 meters (200 feet).
Trunk: The trunk is straight with a diameter of up to 1 meter (3.3 feet) and covered with thick, scaly bark that is orange-brown and flaky towards the top.
Leaves: The needles are blue-green, twisted, and grow in pairs, measuring 4 to 7 cm (1.6 to 2.8 inches) long.
Cones: The tree produces small, woody cones that are 3 to 7 cm (1.2 to 2.8 inches) long. When mature, they turn brown and release winged seeds.
Growth and Lifespan: Growth Rate: Scots pine grows relatively quickly when young but slows down as it matures. It can live up to 700 years.
Soil and Climate: Prefers well-drained soils and can thrive in a variety of soil types, including sandy and acidic soils. It is highly adaptable to different climates but typically favors cooler regions.
Ecological Importance: Biodiversity: Supports a wide range of wildlife, including birds, insects, and mammals. Red squirrels, capercaillies, and crossbills are some species that rely on Scots pine for food and habitat.
Carbon Sequestration: Like other trees, Scots pine plays a significant role in carbon sequestration, helping to mitigate climate change.

Woodland Management and Construction :

- Formative Pruning** is a practice used on trees in order to control the shape in which they grow in order to get a straight, knot free timber for instance of to shape the tree in the building.
- Thinning** is a practice used to source wood without damaging the ecosystem. **Essentially only cutting down trees that are younger and struggling to grow in order to leave space for more light to come down to let new trees grow**
- Species Management** in order to bring back uk's ecosystem the projects also aims to re-introduce old species such as scottish pine trees. Helping create a more diverse landscape that aids to the survival of native species.

Pine Materials :

- Pine Needles** could eventually be used as a material
 Case Study on how to create a pine needle composite by Cheer Project India
- The pine wood** will also of course be a important for the proposal
- Sap** the Sap of the tree could also be used for the creation of bioplastics, to act as a polymer.

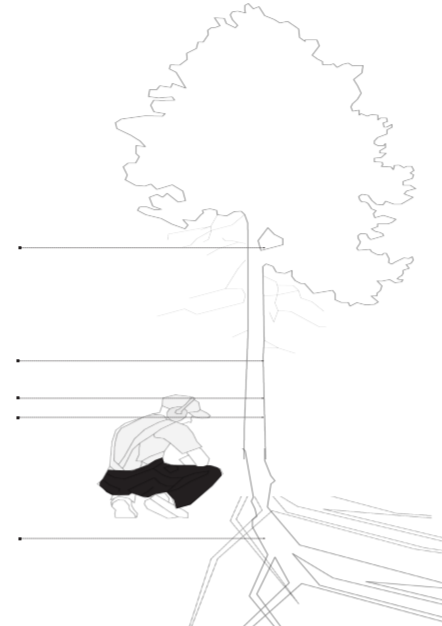
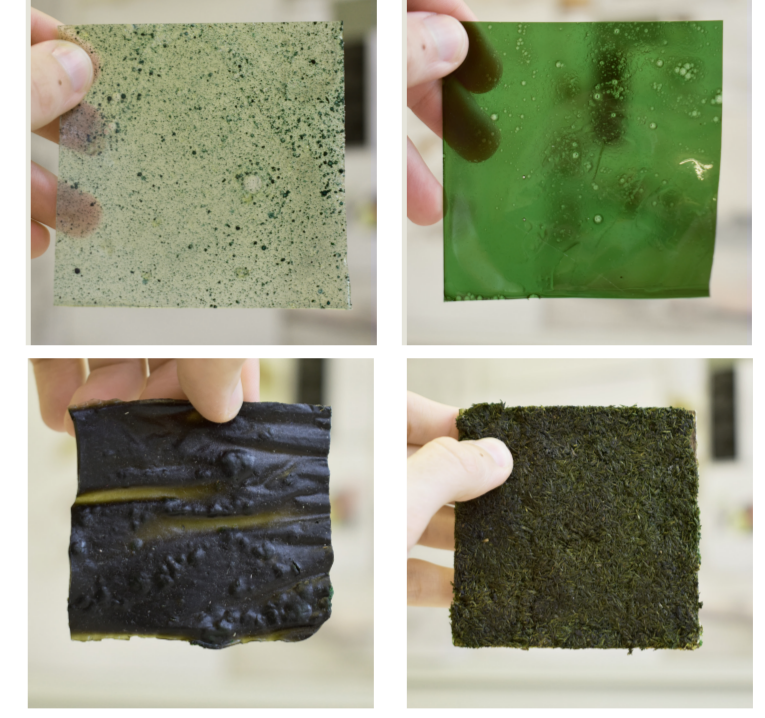


Fig. X; Etienne Hoedemaker



Materiality and Interspecies Architecture :

Wood Treatment Yakuji is a traditional Japanese technique for treating wood, primarily pine, to enhance its durability and aesthetic appeal. The process involves charring the surface of the wood using fire, followed by brushing and sealing to apply yakuji to pine wood, the surface is first cleaned and smoothed. Then, it's exposed to an open flame, typically from a propane torch or controlled bonfire. The heat from the flames chars the surface of the wood, creating a layer of charred carbon that acts as a protective barrier against moisture, pests, and decay. After charring, the wood is brushed to remove loose charred particles, revealing the natural wood grain beneath. Finally, the wood is sealed with...

Recycled Wool and Plastic Insulation (from site) Recycled wool and plastic insulation repurpose post-consumer materials, reducing waste and carbon footprint. They offer effective thermal and acoustic insulation, improving energy efficiency and indoor comfort. Non-toxic and sustainable, they contribute to eco-friendly building practices, aligning with efforts to combat climate change and promote circular economy principles.

I plan to create **Biomaterials** using pine wood offcuts like wood, needles, and oil to craft temporary nests for red squirrels and pine martens. These materials will also be utilized in designing furniture and other appliances, such as chairs, within the building. By integrating these biomaterials, the building becomes part of the ecosystem, promoting sustainability and harmony with nature while providing habitats for local wildlife and functional, eco-friendly furnishings.

Biomaterial and Building Life Cycle :

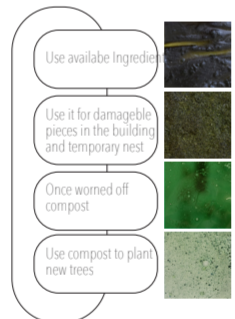
Once worn or damaged, the biomaterials crafted from pine wood offcuts can be composted to serve as fertilizers. Returning these materials to the soil completes the natural cycle, enriching it with nutrients and supporting ecosystem health, ensuring a sustainable and regenerative approach to resource utilization. As these will for instance be used for the hand rails in order to prevent squirrels to damage the wood. Moving the biomaterial will be a good replacable cover.

Biomaterial Initial Testing

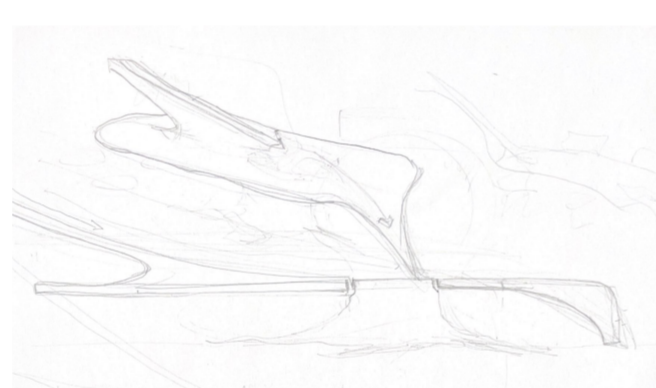


Composites are basically wood or pine needle dust and chip offcuts that are glued together in a strong compacted material. For this initial testing I have tried to use tree sap instead of industrial glue to see how it would hold together and if works very well !

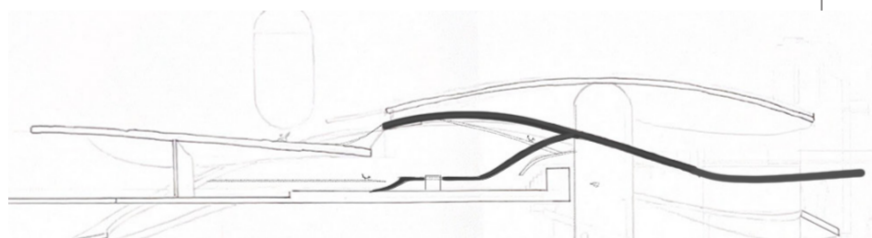
Bioplastics are made with a mixture of things, as a beginner I have thus first tried the basics knowing using water glycerol and gelatin with an additional aesthetic agent like the pine needles.



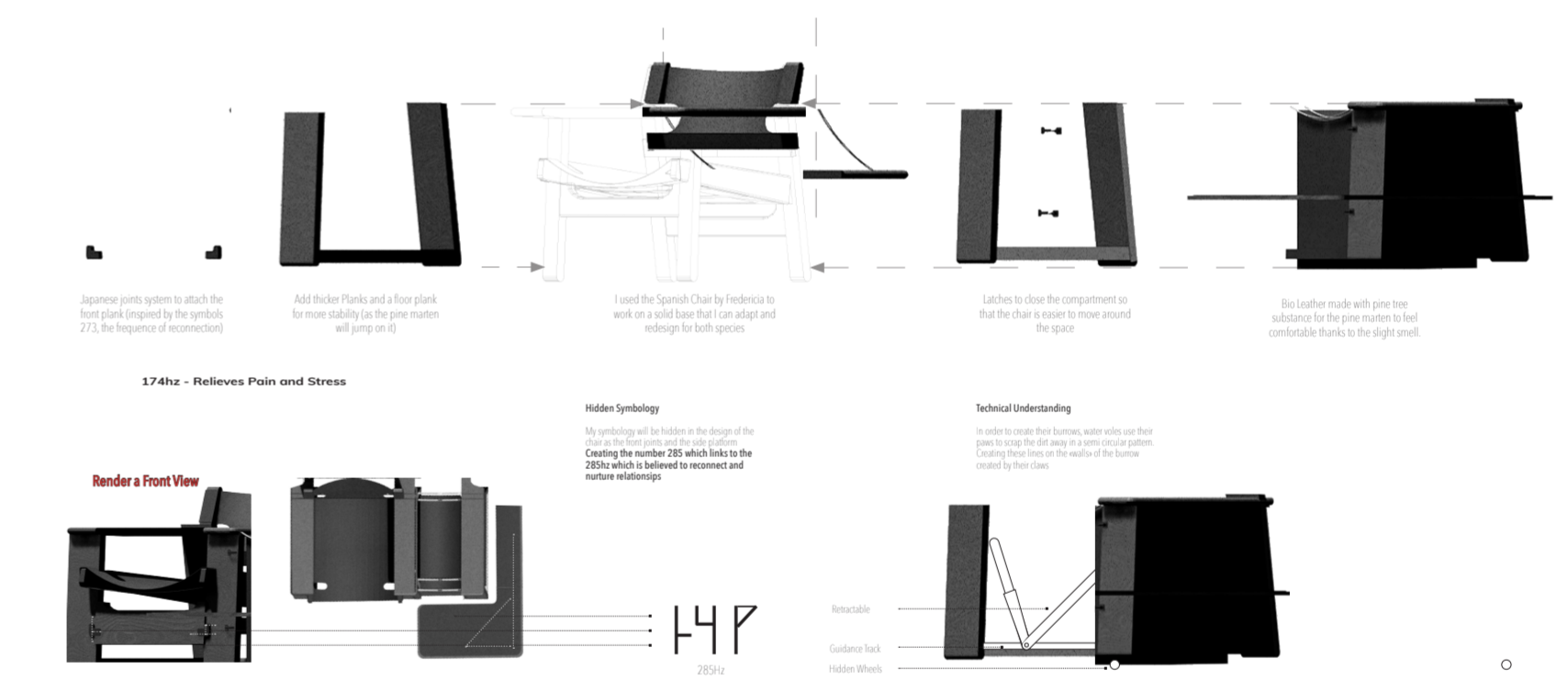
The Interspecies Table Meeting table and Desk



Pine Marten Access :



The Interspecies Lounge Chair Final Design



06 Mock Visuals

| Data in Context



Squirrel Passive Cooling Area Introducing the Project

