

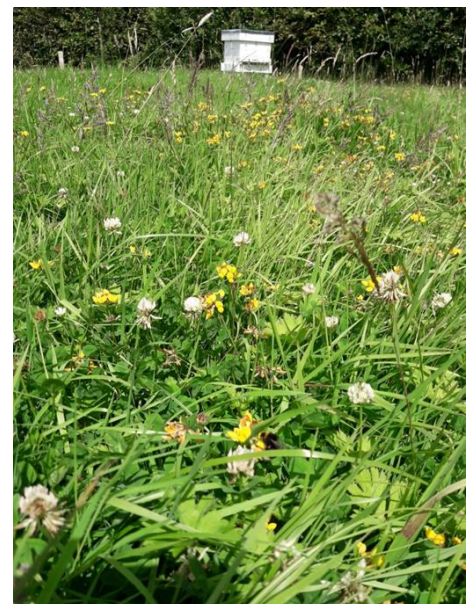


Iascach Intíre Éireann
Inland Fisheries Ireland

ShRBD Green Team

Establishment of Pollination Zone with Bee Hive in Listowel, Co. Kerry

Completed by Fisheries Officer - Liam Horrigan



Abstract

This report was compiled to identify and assess how a green approach to upcycling of waste materials and how the implementation of a pollination zone has been effectively carried out within Inland Fisheries Ireland.

This initiative is part of Inland Fisheries Ireland's Climate Action Programme and meets the climate action objective of the Shannon RBD, 2020 Business Plan where it was stated that Biodiversity gardens were included as requirements and outputs.

A specific area of lawn in the Listowel base was identified as been suitable for a pollination zone. The frequency of lawn cutting was reduced throughout the entire lawn area and it was stopped completely in the area of lawn that was zoned. This was to allow all wild plants within this zone to grow as they would in the wild and produce more pollinating plants for all pollinating insects, especially honeybees. A series of pollinating plants were also introduced to the pollination zone to attract and provide a food source for honeybees.

A bee hive was successfully constructed using waste wood material from wooden pallets. A variety of pollinating insects were observed throughout the pollination zone during the Summer months with the arrival of a honey bee swarm in early July.

This will be an ongoing project where the beehive and pollination zone will be monitored throughout the year.

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Introduction

This initiative is part of Inland Fisheries Ireland's Climate Action Programme and meets the climate action objective of the Shannon RBD, 2020 Business Plan where the introduction of biodiversity gardens were included as requirements and outputs of the High Level Corporate Objective 5.

For this reason it was decided to install a pollination zone within the IFI base in Listowel Co. Kerry as there is a large lawn area was utilized for this purpose. Pollination is an essential ecosystem service. Most pollination carried out in Ireland is by honeybees. A healthy honeybee population makes an enormous contribution to biodiversity and the overall health of the environment.

Pollinating insects are in decline all over the world and climate change has played a role in this decline. It was also decided to assess the potential for the inclusion of a beehive made from upcycled materials which could be placed within the pollination zone.

Upcycling of materials within IFI maintains the principle of promoting the circular economy. In a circular economy, products and materials are kept in use or recirculation through redesign, reuse, repair, remanufacturing and recycling. It keeps products and materials in use and if a product is broken or unwanted it is returned and used again - as in this case where pallets were redesigned, reused, and remanufactured to create a habitable environment for honeybees.

The circular economy aims to return used biological resources to the natural world so they can add positively to the environment. This reduces the need for new raw materials and reduces the environmental impacts associated with the extraction and processing of these materials.

Pollination Zone

I decided to install a pollination zone within a designated area on the grounds of the Listowel Fisheries base in Co. Kerry. An area measuring approximately 12 meters by 6 meters was specifically zoned off at the front of the Listowel base for this project. This enclosed area of the front lawn is to allow existing wild vegetation to grow naturally as well as creating and planting a series of flower beds containing pollinator friendly plants. A diverse assortment of flowering pollinator friendly plants were selected to attract honey bees to the pollination zone as there is a vacant beehive present.

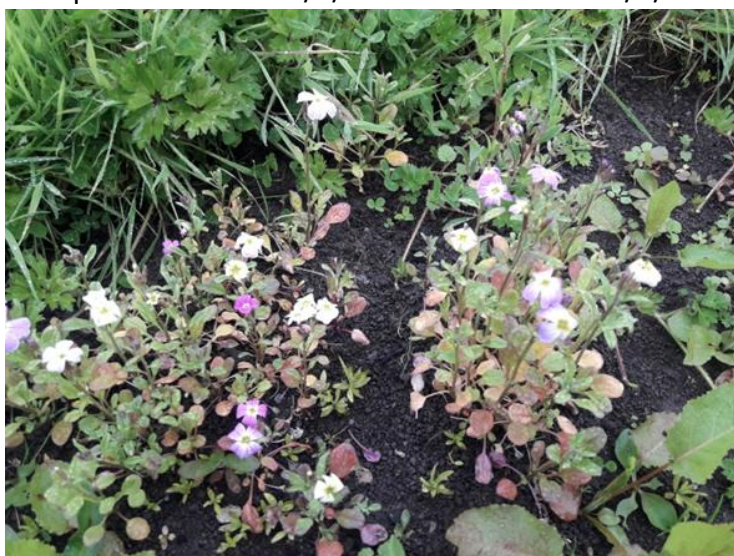
Native flowers and plants now growing within the pollination zone:

- Clover
- Dock Leaves
- Buttercups
- Dandelion
- Reeds
- Grass
- Daisies

Types of pollinator friendly plants introduced to the pollination zone:

- Love in a Mist
- Virginian Mixed
- Californian Poppy
- Poached Eggs
- Bird Attracting Mix - Asters, Sunflowers, Rudbekia and Ornamental Grasses

The pollination zone does require a small amount of maintenance to be carried out on a weekly basis so as to ensure it remains effective e.g. weeding and grass trimming around the border areas of the flower beds. The pollination zone was zoned off on the 1/5/2020 and pollinator plants planted on the 15/5/2020 and as of the 30/6/2020 the pollination zone has begun to flower.



The intention is that the honeybees located within the pollination zone will have a readily available food source nearby and this will aid them in their long term survival which in turn, will increase and promote the population of pollinators in the surrounding local areas.

Construction of Flower Beds with Pollinator Plants

The soil in the area was very poor so I decided to dig it up, break it down, remove roots and lumps, sieve it and mix it with compost to make it finer and more suitable for the range of pollinator plants. I placed this new soil in the flower beds, planted a variety of seeds and used a sieve to filter a fine layer of soil over the newly planted seeds.



Digging and raking of flower beds to break up the soil.



Mixing the original soil with peat compost



Sieving the soil and peat compost to create a fine mixture.



Finished flower bed with pollinator seeds planted.

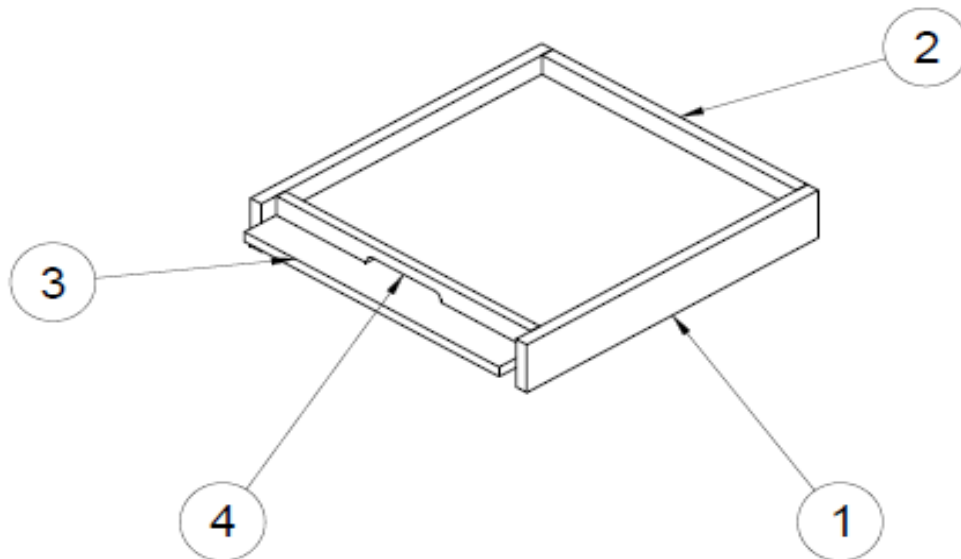


As well as the introduction of the pollination zone, there is also a large lawn area in the Listowel base and we have cut down on the frequency of lawn cutting to encourage the natural growth of native plants already present such as wild clover.

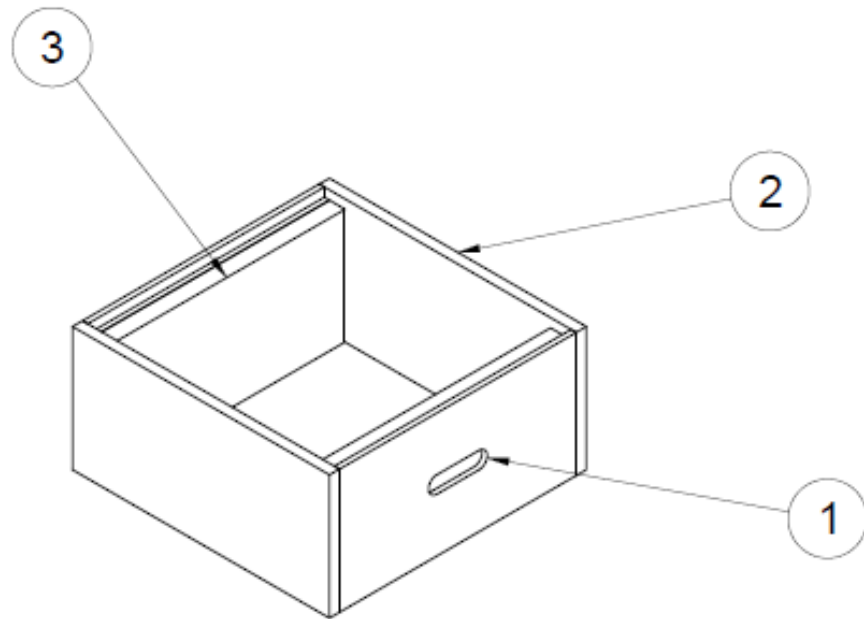


Flower beds with bee friendly plants growing and starting to flower.

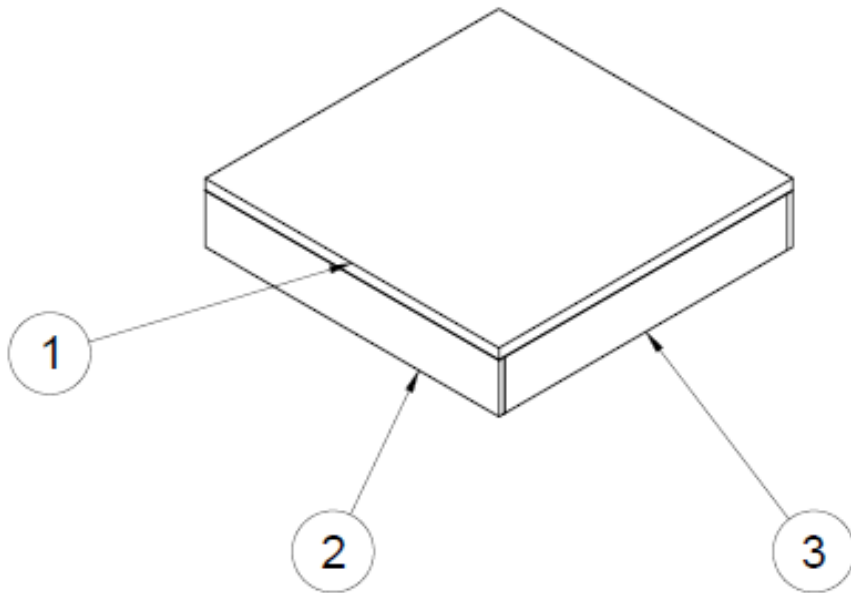
Cutting Lists



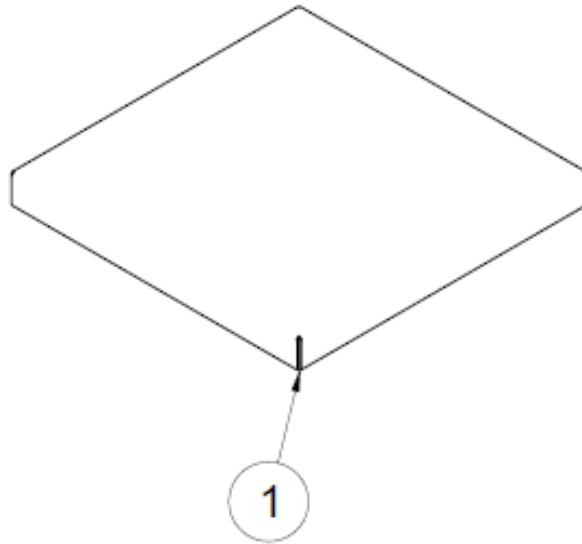
Parts List			
Item	Qty	Description	Material
1	2	Hive Base Sides 18mm Wood (485mm x 75mm)	Wood
2	1	Hive Base Back 18mm Wood (424mm x 75mm)	Wood
3	1	Hive Floor 15mm Wood (495mm x 424mm)	Wood
4	1	Hive Entry Piece 15mm Wood (424mm x 30mm)	Wood



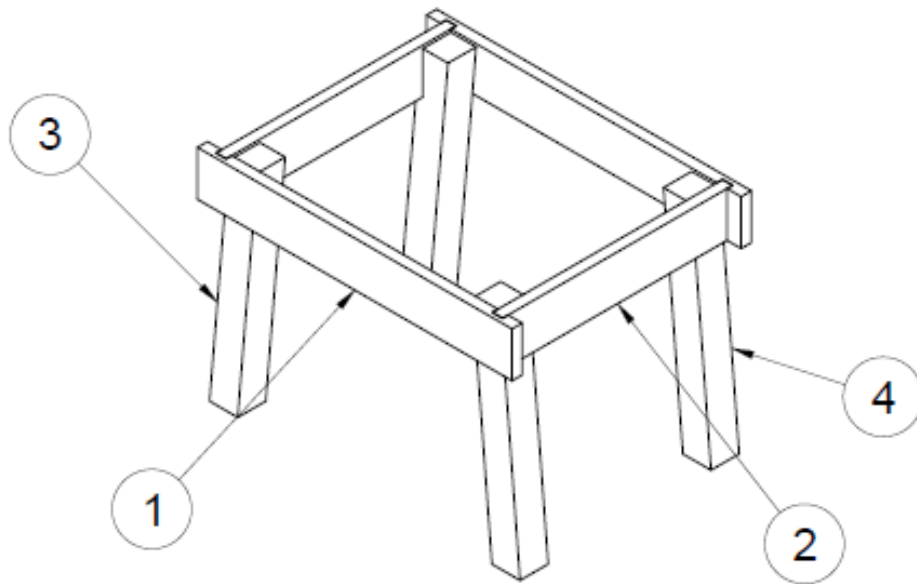
Parts List			
Item	Qty	Description	Material
1	2	Brood Box Sides 18mm Wood (424mm x 222mm)	Wood
2	2	Brood Box Front & Back 18mm Wood (460mm x 222mm)	Wood
3	2	Brood Box Spacer Piece 28m Wood (424mm x 206mm)	Wood



Parts List			
Item	Qty	Description	Material
1	1	Hive Roof 18mm Wood (510mm x 510mm)	Wood
2	2	RooFront & Back 18mm Wood (510mm x 85mm)	Wood
3	2	Roof Side Pieces 18mm Wood (490mm x 85mm)	Wood

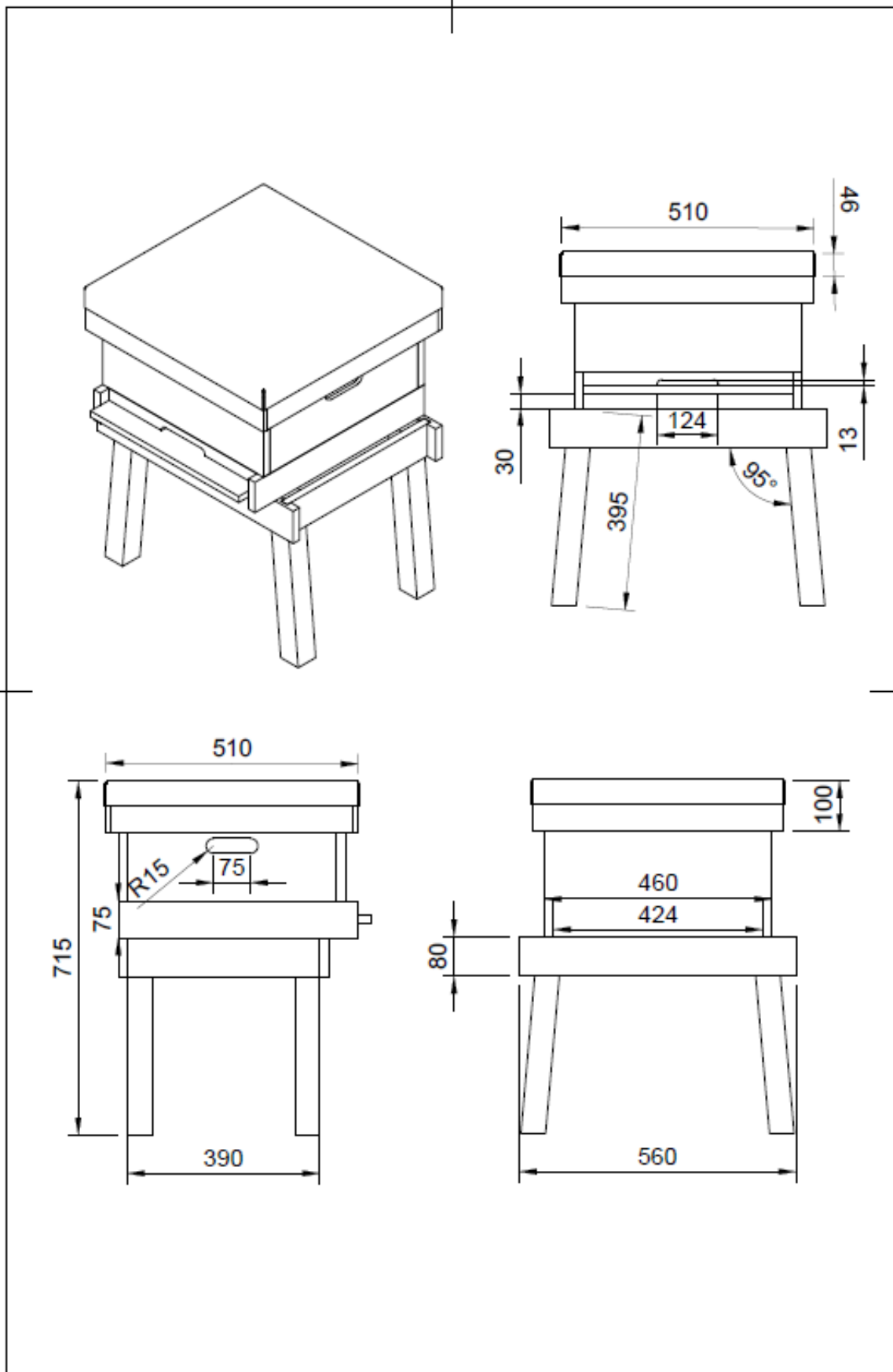


Parts List			
Item	Qty	Description	Material
1	1	Aluminium Flashing (615mm x 615mm)	Aluminum



Parts List			
Item	Qty	Description	Material
1	2	Stand Front & Back Piece 18mm Wood (560mm x 80mm)	Wood
2	2	Stand Side Pieces 18mm Wood (410mm x 80mm)	Wood
3	2	Stand Leg 50mm Wood (395mm x 50mm)	Wood
4	2	Stand Leg 50mm Wood (395mm x 50mm) (1)	Wood

Plans



3D Renders





Construction and Installation of National Beehive

There is a large store area in the Listowel base which is used to store plastic timber for projects within the Shannon RBD. Plastic timber is usually delivered on wooden pallets and these pallets are disposed of as they have no other uses. I decided to assess the viability of upcycling these pallets as material that could be used in the making of a beehive and create a home for honeybees within the pollination zone.



Pallets used for delivery of plastic timber for NSAD projects within the Shannon River Basin District.



Selection of suitable pallets to be used for making a National Bee Hive.



Stripping down and cutting of pallets.



Wood from pallets that will be used in construction of the beehive from upcycled materials.

Upcycling of Pallets

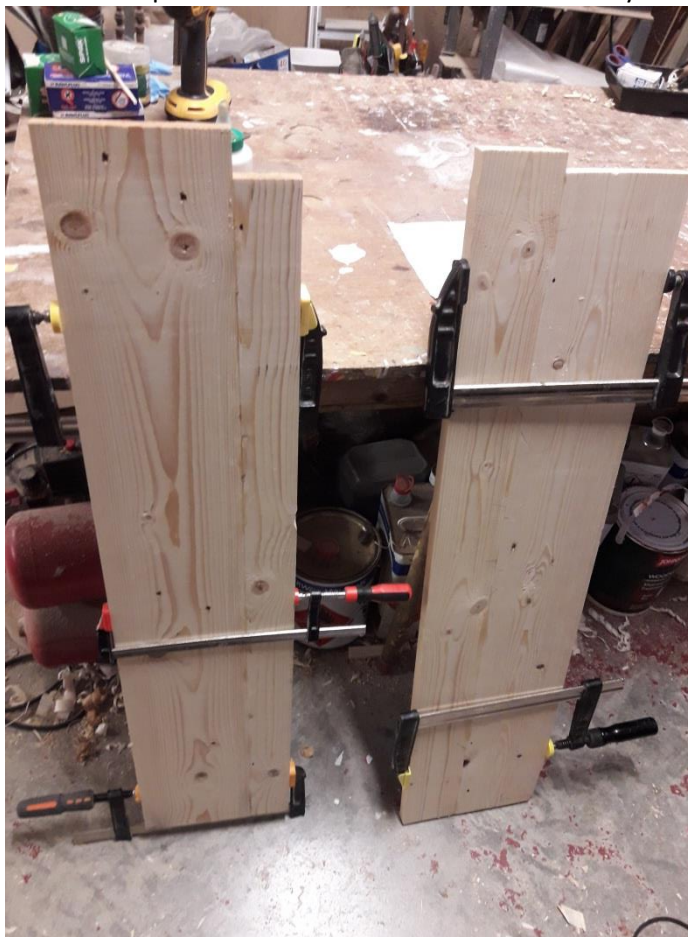
There is a lot of variation in the quality of the wood in pallets. Different pallets were suitable for different parts of the beehive. For example the brood box and stand were made with straighter, wider and cleaner pallets, whilst the roof and floor of the bee hive were made up of wood from the poorer quality pallets.



Selection of pallet wood to be assessed for suitability



Pallet wood being planed to a suitable thickness



Gluing, joining and clamping of wood to be used for the sides of brood box. 17



Gluing, joining and clamping of wood to be used for the floor of the beehive.

National Beehive

I decided on constructing a bee hive called a National Hive as it was the most suitable for the type and quality of the wood available. A National beehive is one of the most common types of hives used in Ireland as it is easy to handle and maintain.



Wood cut to size to be used as sides for the brood box part of the beehive.



Side pieces being assembled for beehive



Biscuit joints used to join the side pieces to add strength to the structure of the beehive.



Router used to route handle pieces so the beehive can be easily carried.

Beehive Stand

The hive stand ensures the hive is dryer and will extend the useful life of the beehive as well as making it inaccessible for small predators. The stand also helps to keep the beehive away from damp ground that may cause damp rot and shorten the life of the wood. It also creates a comfortable working height for a beekeeper.



I managed to locate this heavy pallet within the Listowel store.



Wood cut and planed to size so it can be used as a stand.



Assembly of stand using joints and screws.



Finished beehive stand.



Making of the beehive floor.



Finished beehive floor with entrance.



Attaching brood box to the floor.



Making of beehive roof.



Aluminium sheet bent and attached to roof to prolong the life of the beehive.



Delivery of beehive to Listowel base.



Insertion of some wax frames and scraping of a frame with wax and some ivy honey being carried out to attract a swarm of bees to the beehive.



Finished beehive placed inside the pollination zone and facing south.



Arrival of Honeybee Swarm

Scout bees were observed visiting the hive during late June and early July. A swarm of bees arrived on the 9th of July. It was an extremely small swarm of bees and had to be fed. Hopefully the swarm will gain some strength to help them make it through the Winter.



Inspection of the beehive to see if bees had entered.



Bees had entered into the beehive and were beginning to build up wax frames with comb.



Inspections of the beehive at night time to fully assess the size of the swarm as all bees are present inside the hive at night time.



Conclusion

This pilot project is comprised of a green approach to upcycling and habitat creation to improve and enhance biodiversity while making a positive contribution to climate change.

The project has made a positive contribution to the overall objectives of the IFI Climate Change Programme and provides a template for other Green Teams to build upon within Inland Fisheries Ireland.

Pollinators such as honeybees are vital to the reproduction of wild plants and without them existing populations of plants would decline, even if soil, air, nutrients, and other life-sustaining elements were available. Green spaces around other IFI bases have the potential to hold beehives on site and to be utilized and transformed into pollination zones.

As an environmental agency it is important that Inland Fisheries Ireland continues to engage in projects that have a positive impact on the environment and wider community which meet the obligations of Irelands Climate Action Plan.