

Building Horticulture Capacity in Montserrat

A Report on the horticultural upskilling carried out in Montserrat during May 2023 to support the delivery of Darwin Plus Project 155 by UKOTCF



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Summary

During May 2023 I visited Montserrat, to help build the horticultural skills of the Montserrat National Trust (MNT), specifically to help develop the nursery plant propagation at the MNT botanical garden, to increase local plant production to support the Adopt a Home for Wildlife element of Darwin Plus 155 project, managed by UKOTCF. In addition, I engaged more widely with the Montserrat Government Department of Agriculture & Environment, local farmers, secondary school, and public.

The nursery at MNT had been set up well >20 years ago, but over the years it has become in need of maintenance and good practices needed to be reinvigorated. Working closely with the MNT team, we made notable improvements to the propagation nursery facilities and techniques at MNT. The propagation benches were levelled and power washed, mist nozzles cleaned, electric leaf cleaned and put into use, the mist unit controller explained to the staff, and capillary matting, polythene cover and shade netting above all added to the structure. There is now a clear system for propagation tray washing, compost processing, and an agreed role description drafted for the propagation staff, to ensure good hygiene levels are maintained in the propagation house daily.

I visited five diverse Adopt a Home for Wildlife project sites, and the opportunity exists to hone down the plants produced by MNT for the project. This was agreed and a Production List for the nursery was formatted, and propagation recording re-instigated.

Chris Sealys had recently been appointed as the MNT Conservation Officer, he has a background in forestry, botany and horticulture in St Lucia. Chris was a great help to the capacity building on the trip and he will help ensure that the upskilling will sustain after this visit. MNT staff member Samantha Paul showed great potential, and a new role descriptor was drafted for her. Another staff member Mapi is close to retirement, he has good local plant knowledge and this needs to be sustained.

I delivered two focused propagation workshops, which provided useful sharing of knowledge and skills development. The first on vegetative propagation focused on all aspects of taking cuttings, and we set up a trial of Pribby cuttings (*Rondeletia buxifolia*), with six different rooting media, wounding and hormones all being tested. This was the most impactful capacity building of my trip, which I believe has left a legacy to enable MNT to produce more plants, under Chris' leadership.

The second Grafting & Air Layering workshop was delivered at Government nursery and was attended by a wide audience including the Minister of MALHE. I believe the greatest benefit of this second workshop for MNT is the fostering of even closer working links with the Montserrat Government staff. There is a great opportunity for this collaboration to develop further to benefit the environment.

There was wide enthusiasm and invitations to engage with me from several groups during my trip. I visited the two Government nurseries, several farms, met with the Farmers Association, had a tour of the buried city of Plymouth (the volcano and eruptions of 1995-2010 still dominate Montserrat culture), delivered an evening horticulture session for the public, met with the Student Leadership Team at the secondary school (with the aim of setting up links with an Isle of Man school), co-delivered a session for MNT's Childrens' club, Monty's Messengers, and had four appearances on local radio talking about my trip. In wider conservation, attended a talk on turtle conservation, and joined two boat trips to survey seabirds with Dr Tom Hart, Oxford Brookes University and MALHE staff, and carried out scuba dives to participate in coral reef conservation projects run by Scuba Montserrat.

In addition to nursery and plant production, I made additional recommendations for MNT to:

- Work more closely with MALHE on the Adopt a Home for Wildlife project.
- Aim to bring agriculture and environment closer together to benefit food and the environment.
- Develop the MNT agriculture plot as a model farm, potentially with intercropping on show.
- Join Botanic Gardens Conservation International (BGCI).

Overall, as well as building horticultural capacity, and facilitating more joint working and collaboration across the island, I personally had a wonderful time, and gained a broad understanding of Montserrat's conservation issues, which I believe will enhance my usefulness on the UKOTCF Council.

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1. Introduction

During the 11-29 May I visited the Caribbean Island and UK Overseas Territory of Montserrat, to help build the horticultural skills of the Montserrat National Trust (MNT) and support the delivery of Darwin Plus Project 155. I had been asked to go to Montserrat by the UK Overseas Territories Conservation Forum (UKOTCF), who, through my membership of the UKOTCF Council, were aware of my background in botanic garden development, horticulture, education, nursery plant production and capacity building overseas, including the UKOTs of St Helena and Ascension Islands. I had taken annual leave from my full-time job as CEO of Manx Wildlife Trust (MWT) to carry out the delivery in Montserrat. I worked as a volunteer, with UKOTCF covering my expenses under the project.

I had been specifically asked by Catherine/Mike at UKOTCF to help develop the nursery plant propagation at the MNT botanical garden, to increase local plant production to support the Adopt a Home for Wildlife element of the Darwin Plus 155 project, managed by UKOTCF. In addition to this, MNT were keen that I engaged more widely on the Island, that I connected to the Montserrat Government Department of Agriculture and Environment, local farmers, the island's only secondary school, and the public. I was pleased that MNT had put together a full schedule for me (Annex A), and I was greatly looking forward to carrying out the work.

My journey there was an EasyJet flight from the Isle of Man to Gatwick, overnight in Gatwick, morning British Airways flight to Antigua, then a small 8-seat aircraft of Fly Montserrat to the Island. I was met by Dalmaude Ryan the Administrator for MNT who was the coordinator for my visit I had the use of the MNT Toyota truck during my stay, and my accommodation was at Gingerbread Hill.

My first day was all about meeting people, agreeing my outline schedule, and having my first look at the botanic garden (Figures 1 & 2 below) and nursery. I met Sarita Francis in person for the first time, the Director of MNT, who is a fellow member of the UKOTCF Council. MNT had recently appointed a new Conservation Officer, Chris Sealys, from St Lucia, who has a strong background in botany, forestry, and botanic gardens, including previously completing a 10-week course at RBG, Kew. Chris is now going to oversee all things botanical and horticultural for MNT, he was the person who I worked most closely with while in Montserrat, and he will be key in terms of sustaining the new practices we developed during my stay.



Figure 1 (left): Entrance sign for the Montserrat National Trust (MNT) and botanical garden.

Figure 2 (right): A view inside the MNT botanic garden.

2. MNT Nursery

My understanding is that the nursery at Montserrat National Trust (MNT) had been set up with advice from the Royal Botanic Gardens, Kew (RBGK) over 20 years ago. The main structure is a high greenhouse, containing a potting, propagation/mixing area, three mist propagation benches and an area of floor for use as a standing area for plants (Figure 3 below). Outside the propagation house is a compost storage area, and there is a shade house in the MNT garden that is used to display plants for sale (Figure 4). My overall impression is that the nursery was set up very well, but over the years it has become in need of maintenance and good practices have fallen out of habit. There were some straightforward steps that we implemented while I was there that will make a significant difference.



Figure 3 (left): Propagation greenhouse at Montserrat National Trust. The three mist benches on the right side are cleared of plants in this photo as they are having extra wood added to level up the wire on the benches.

Figure 4: The display shade house containing plants for sale at Montserrat National Trust botanic garden.

The following issues were quickly identified as in need of attention/development at the nursery:

- The mist nozzles were spraying irregular patterns, due to build up of limescale and needed to be cleaned. This was done by soaking in white vinegar and cleaning out the nozzle holes with a needle.
- Dirty propagation module trays were being reused, without cleaning, which was a potential issue for disease spread (particularly fungal). A new system was set up with a large plastic drum being obtained and filled with 10% bleach solution. All propagation trays will now be soaked overnight in the bleach solution and rinsed with clean water before being used again. This system was in operation before I left, with staff championing the new culture.
- Propagation house (especially the mist propagation benches) needed a complete tidy to remove dead cuttings and weeds and put up the cuttings that are well rooted and becoming cell bound.
- The mist benches were covered in wire, which was undulating (resulting in the trays having differing degrees of water in the cells), and this was improved by the addition of more wooden cross pieces under the wire to level up the surface. The benches were power washed to clean them of dirt and old plant material (Figures 5 & 6 over page).
- Staff were not aware of what an electronic leaf was and were surprised when I found one hanging down the side of a bench. This was cleaned with very fine emery paper and reinstalled. NB: the mist controller may need to be replaced. It now needs a period where the MNT staff operate the system and get used to adjusting the settings in terms of burst length and leaf sensitivity.
- All the mist benches are connected to switch on together. I recommended that taps are added to the end of each mist line so that it is possible to switch 1-2 benches off to facilitate weaning of young rooted plants i.e. would allow 1-2 benches to have the mist switched off for part of the day.



Figure 5 (left): Power washing the mist benches at MNT.

Figure 6: The carpenter making the additions to the wooden benches to level up the wire surface.

- It is recommended that high levels of tidiness are maintained in the nursery, particularly in the propagation house on a day-to-day basis, checking the mist benches for watering, checking for pests and diseases, and removing any dead plant material and weeds. Needs to be several bins located in the nursery so that it is quick and easy to dispose of dead plant material and weeds.
- To improve the humidity on the mist benches, capillary matting was added to the surface of the netting and polythene tent covers put over the top of the bench (Figures 7 & 8) where new cuttings were placed after the propagation workshop (see section 5). This will raise the temperature within the bench, and so to mitigate the risk we purchased shade netting to go over the propagation house, which was installed by MNT staff post my visit. NB: I was informed that there used to be shade net over the house but for some reason it was removed and not put back.



Figure 7 (left): Covering the surface of one of the mist benches with capillary matting.



Figure 8: The mist bench covered with polythene to create a tent to retain humidity.

- The composting bays needed a complete tidy and a system setting up where the organic material moves around the beds on a cycle, ending up in the two bays as composted and sieved media for use in potting compost (i.e., not in propagation mixes due to the disease risk). During my stay the area was tidied in part, and crucially two clean bays and a sieving system set-up to produce and store graded potting media. This is a big step forward (Figure 9 & 10 over page).



Figure 9 (left): The organic material / composting area. The two bays just in shot on the left (and **Figure 10 right**) are now designated for the storage of well composted and sieved material to be used in potting compost.

- I was unhappy with the rooting media being used by the nursery, which was 100% pure, very fine ghaut/river sand. The sand was so fine that drainage was very poor and consequently the rooting zone was saturated and there was no oxygen. I believe this prevented, at best reduced, rooting on many plants/cuttings. I explained this to staff and showed them examples of Pribby cuttings that had only rooted at the very top of the sand where there would have been some oxygen coming in from the surface. Below this the cutting was dead (Figure 11 & 12). The sand also meant that watered trays were very heavy and almost impossible to pick up by one person.



Figure 11 & 12 (left): Two Pribby cuttings that had been inserted into pure fine sand. There is some root at the very top of the inserted area (where there would be some oxygen), but below that zero root and dead stem.

- If budget can be found, there is need of some additional irrigation equipment, including watering lances for the hosepipes and mobile sprinkler systems, to make watering easier and quicker.
- Need to source some white plant labels for use in the propagation so that all trays can be clearly labelled (with a pencil – which I explained is the best and most long-lasting type of ‘pen’).
- We went on a shopping trip and, although the choice is limited on island, we found some items of use, including secateurs, watering cans, knives for grafting, cool box, zip-lock bags, pH testing kits, gloves, and Jiffy 7s propagation trays, that we purchased one of for the propagation trial.
- Overall, with the improvements we made to the propagation facilities and system (summarised in a [short film](https://www.youtube.com/watch?v=OyvzDdJA_eY) available on YouTube www.youtube.com/watch?v=OyvzDdJA_eY and shown in Figures 13-15 below), I believe the success of MNT’s propagation should now increase significantly.

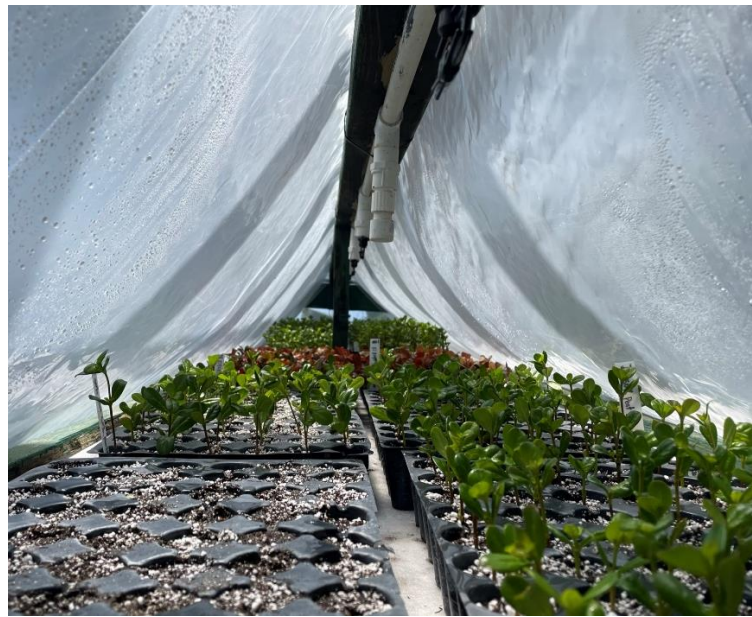


Figure 13 (above left): One of the mist propagation benches on the day I arrived at MNT.

Figure 14 (above right): A rejuvenated mist propagation bench at MNT. Power washed bench, cleaned mist nozzles, trays of cuttings in clean trays, no weeds or dead plants, a more open rooting media, capillary matting and polythene tent to raise the humidity, and a cleaned and operating electronic leaf.

Figure 15: The propagation house at the end of my trip. All three benches cleaned, and with additional wood for levelling the surface. One bench covered and full of cuttings.

3. Plant Production Planning - Adopt a Home for Wildlife Project

The core aim of my trip was to upskill the MNT team to enable them to produce more native plants to supply adopter sites in the Adopt a Home for Wildlife project. I was given a tour to five very diverse recently agreed sites (Figures 16-19 below), including a school, two small back gardens, and a larger site managed by a Montserratian called Norman (also my tour guide when I visited Plymouth), which is being developed as an area people could visit.

In terms of the plants the project needs, although I only gained a snapshot of the project while on the Island, I learnt that the smaller gardens are keen to plant fruit trees and perhaps regard the native plants as an addition around their fruit. My perception is that there is a long list of native plants that could be planted around Montserrat under the project, and the opportunity exists to hone down the plant list to make a far more streamlined plant production plan for the MNT nursery. In my discussions with Sarita, Delmaude and Chris, I advocated that MNT grow larger quantities of key plant species (e.g. Pribby, Sea Grapes, and Lignum vitae) and aim to have a core pallet of 10-30 different plants that the MNT nursery focuses on producing. These would be the framework plants that the three project officers then use as the core plants they suggest to adopters. There was broad agreement on this as an aim and I advocated we meet to set the first MNT Plant Production List.

At the subsequent meeting, we agreed that the original Core List of plants will be developed into a more detailed production plan by the new Conservation Officer, Chris Sealys, who will take responsibility for the plant production. We agreed the Plant Production List would be produced in EXCEL and we set the key headings that will be included in the spreadsheet. Chris immediately grasped this and produced a great working document. I believe this will need regular review and amendments as the project and nursery develops, and it will become a key document for MNT. Beyond the core list of 10-30 species, the ideal is that the wider flora could still form part of the project and, when chatting with Norman at his garden, we agreed that the MNT should focus on propagating a narrower range of plants and the other varieties could potentially be grown by volunteers.



Figure 16-19: Four of the five Adopt a Home for Wildlife sites I visited. The school playing field is top right.

4. Nursery Staffing

Chris Sealys has recently been appointed as the MNT Conservation Officer and he started in post two weeks prior to my visit. Chris has a background in forestry, herbarium management and horticulture in St Lucia. Having Chris in post before my visit was extremely useful from me and I am very confident that the training and changes to the plant production system will sustain after my visit with Chris in post. Chris was excellent to work with, I believe he is an excellent appointment and will take full responsibility for the botanical and horticultural work of MNT.

Mapi is the most experienced in terms of horticulture in the MNT staff, but he is over retirement age so there is a strong need for succession planning. Samantha Paul is great and I was very impressed with her interest in developing and her ability to learn. I spent time with Samantha and Chris who worked with me in carrying out the changes to the propagation benches and system and I believe Samantha will sustain the good practices we put in place (e.g. tray washing, picking over the cuttings daily, etc.). I encouraged her to *'look after her baby plants well'*. My recommendation is that Samantha should be made responsible for maintaining high levels of tidiness in the nursery, particularly in the propagation house on a day-to-day basis and daily checking of the mist benches to become one of her tasks. I believe that Samantha should also be the person leading on the propagation and I recommend that she spends all her time in the nursery to ensure the plant production is up to speed.

In nurseries around the world, the best propagators are almost always female and in an ideal situation, Samantha would be joined by another female, and they would be the Propagation Team. Another of the MNT staff, Jody, was excellent on the plant propagation course I ran (Section 5) and is keen to work in the nursery. I don't understand the wider MNT priorities fully, but I would see Samantha and Jody making an excellent pairing to produce all the plants, working under Chris's direction. Myself and Chris drafted a Role Descriptor for a Nursery Propagator (Annex B).

I recommend the need for detailed and accurate plant propagation records to be maintained, which will be extremely useful when reviewing and revising the Plant Production List. The project assistant Antwone has previously kept some records apparently, but this ceased. I recommended, however, that the responsibility for keeping propagation records is passed to Chris/Samantha/(Jody?) and whenever plants are propagated the person responsible completes the record book in the nursery. Periodically, Antwone (or another) can digitise the records, but fundamentally they must be kept daily.



Figure 20: Samantha Paul watering the Orchid House. When time allows, she should spend her time propagating.

5. Propagation Workshops

I prepared and delivered two focused propagation workshops during my visit:

- Introduction to Vegetative Propagation (22nd May all day and morning of 23rd May).
- Grafting & Air Layering (24th May all day).

5.1 Introduction to Vegetative Propagation

I believe this workshop was the most important session during my time on Montserrat. The core participants were MNT staff, and the aim was to upskill them so that the quantity and quality of plant propagation increases to grow more plants for the Adopt a Home for Wildlife project. It was consequently delivered in the MNT event/meeting room and the MNT botanic garden and nursery. There was great interest from the Government to participate in my workshops and we had some staff from both the agriculture and environment teams at the Ministry of Agriculture, Land, Housing and the Environment (MALHE) join the workshop.

I initially delivered a one-hour interactive lecture on vegetative propagation, with the focus being propagation by cuttings and management of the propagation environment (Figures 21-23) and I was very pleased with how the group interacted, with lots of questions and answers both ways.



Figures 21-23: Delivering classroom based interactive session to MNT and MALHE staff in MNT meeting room.

After a short break we reconvened in the nursery where I briefed the group on the task ahead. I had designed a simple propagation trial (Annex C), to look at different rooting media and the use of rooting hormone. I had decided to choose the plant Pribby (*Rondeletia buxifolia*) for the workshop/trial because it's a key framework plant for the Adopt a Home for Wildlife programme (MNT want to grow lots of them), and there is a hedge in the MNT botanic garden with lots of cutting material on it. We went as a group to collect cuttings of Pribby from the hedge and utilised the plastic bags, hand sprayers, cool box, and ice packs that we'd purchased to help preserve plant material post-collection and increase the chances of rooting (Figures 24-25 below).



Figures 24 & 25: Collecting Pribby cutting material in the MNT garden, and then transporting it in sealed bags, containing some sprayed water to maintain turgidity of the material, inside a cool box.

After collection of Pribby material, I demonstrated rooting media mixing, and we had a good group discussion around water and oxygen holding (AFP – Air Filled Porosity) properties of rooting media and why the balance must be correct to sustain life and then root cuttings. During the discussion we decided on the six rooting media mixes we would use in our trial:

- Existing MNT fine ghaut sand.
- Pro-Mix (predominantly peat moss, plus mycorrhizae and small amount of perlite).
- 50% Pro-Mix and 50% Perlite.
- 33% Pro-Mix : 33% Perlite : 33% fine ghaut sand.
- 50% Pro-Mix and 50% fine ghaut sand (x72)
- Jiffy 7s (fine peat moss).

The group prepared cuttings and all had a go at mixing media, filling trays and inserting Pribby cuttings (Figures 26-31 over page). Within each tray we had 4 different treatments, to also trial wounding and the use of rooting hormone (in total 24 different treatments 6 media x 4 treatments below):

- Hormone & wounded
- Hormone and no wounding
- No hormone & wounded
- No hormone and no wounding.

Post insertion, the trays were watered and were put onto the now clean mist bench, and I added a polythene sheet over the top to help retain humidity. The day concluded with a good summary discussion, which continued for the next morning when the group carried out more propagation by cuttings to develop their skills. This included the taking of even shorter Pribby tip cuttings. The workshop went well, all participated well, and I believe learnt much. Sam and Jodie from MNT were particularly engaged, and Chris was excellent as a co-tutor. I made a particular effort to include Mapi and make him (and his knowledge) feel valued, which I believe was appreciated and worked well.



Figures 26 to 31:

Fig. 26 (top left): Mixing one of the rooting media mixes.

Fig. 27 (top right): Filling a module/cell tray with rooting media.

Fig. 28 (middle left): Preparation of the Pribby cuttings.

Fig. 29 (middle right) and Fig. 30 (bottom left): Insertion of Pribby cuttings.

Fig. 31 (bottom right): Most of the class who participated in the practical elements of the workshop.

5.2 Grafting and Air Layering Workshop

This was delivered at MALHE Environment Department nursery, who carry out bench grafting of citrus, mangoes, and avocados as part of their annual work plan. We had an excellent turnout for the workshop, with staff from MNT and MALHE (both agriculture and environment departments), and we were joined by the Director of Environment, the Acting Director of Agriculture, and the Minister of Agriculture & Environment, who was particularly engaged, did some grafting and videoed several attendees with their comments on the training, which he posted onto his Facebook page. I was delighted that three of the farmers I had met at a Farmers Association meeting the day before also attended, and they clearly enjoyed the workshop (Figures 32-35 below).



Fig. 32 (top left): The Acting Director of Agriculture, welcoming everyone to the workshop. **Fig. 33 (top right):** The attendees at the start of the workshop. Most stayed all day, but others departed and were replaced by other MALHE staff during the day. **Fig. 34 (bottom left):** Hon. Crenston Buffonge, Minister of Agriculture, Lands, Housing & Environment. **Fig. 35 (bottom right):** Farmers Billy and Mildred.

The morning session (8-12 noon) was grafting and budding. I did demonstrations of various grafting techniques on mango and avocado, including Whip, Whip & Tongue, Double Cleft, Side, and Chip Budding. MALHE staff did demonstrations of grafts they use, including Side, T Budding and Cleft. There was much interest, active participation and much discussion and knowledge sharing. The group were particularly interested when I demonstrated the Whip & Tongue graft and chip budding and I believe some of the MALHE staff will be experimenting with these techniques themselves in future.

The lead person in the MALHE environment nursery (Kitty) demonstrated T-budding of citrus (Figure 37 below) using my specialist budding knife. Kitty has always used a standard grafting knife for the task and she was delighted at how good my specialist budding knife is. I promised Kitty I'd send her a budding knife and also a left-handed grafting knife for one of her team.



Fig. 36 (top left): The author demonstrating grafting techniques. **Fig. 37 (top right):** MALHE Nursery Supervisor, Kitty, demonstrating T Budding of citrus. **Fig. 38 (bottom left):** MALHE Agri-extension Officer (and MNT Adopt a Home for Wildlife advisor), Elvis, demonstrating side-grafting of mango. **Fig. 39 (bottom right):** MATLH staff practicing new grafting techniques on mango.

We enjoyed another lovely Montserrat lunch curtesy of MNT/Delmaude and then had a one-hour session on air layering to end the day, in which Chris, Mapi, Kitty and myself all demonstrated, before all the participants had a go. Many were flagging in the heat post lunch, so an hour was sufficient.

This had proved to be one of the most enjoyable horticulture workshops I've ever delivered. The participants were interested, enthused, and clearly valued the opportunity to do training. It reinforced to me why I so enjoy capacity building work overseas.

6. Agriculture Engagement:

6.1 Montserrat Government MALHE Nurseries:

A secondary aim of my trip to Montserrat was to engage with the farming community and, if possible, help build capacity and strengthen connections with MNT. During week 1 of my trip myself and Chris Sealys joined Elvis Gerald the MALHE Agri-Extension (Crops) Officer (who is also a part-time Project Officer for the Adopt a Home for Wildlife), for visits to various sites. These included the MALHE Department of Environment and Agriculture nurseries, the former growing fruit trees and plants for landscape/amenity sites, and the other vegetable transplants, bananas, pineapples, and other crop plants. The plants from both nurseries are supplied to local farmers at a heavily subsidised rates, which is part of the MALHE plan to increase local food production by 25%.



Fig. 40 (top left): Young citrus seedlings (to be used as grafting rootstocks in the future) at the MALHE Environment nursery. **Fig. 41 (top right):** A range of ornamental plants at the MALHE Environment nursery. **Fig. 42 (bottom left):** Vegetable transplants and **Fig. 43 (bottom right)** MALHE Agri-extension Officer Elvis Gerald with young banana plants, both in production at the MALHE Agriculture nursery.

The propagation methodology for bananas was interesting, and a technique I'd not encountered previously. The growing point/meristem is cut from a mature plant and the surface is deeply cut all over, before being plunged into growing media within a humid environment (small polythene covered structure inside the main greenhouse). Young plantlets then grow from the deep cuts, and when large enough are cut away and planted/potted-up. A crude/un-sterilized form of micropropagation, which I was told works very well.

6.2 Farmers Association:

On my first evening I met at MNT with the Minister of MALHE, plus Claude Brown the President, and other members of the committee of the Montserrat Farmers Association to agree how farmers could best interact with my visit. There was enthusiasm from them to gain any useful knowledge from me to help them in their work. We agreed days when framers could interact with me and on May 15th I was interviewed by Claude on his weekly farming programme on Montserrat Radio, to promote the opportunity to farmers.

On Tuesday 23rd I went to the Farmers Association where I met over a dozen farmers, with Claude in the Chair. The meeting (like all others in Montserrat) started with a prayer of thanks, and we then had a really good discussion, with the farmers asking me questions and visa-versa. It was interesting to hear the importance the majority of the farmers put on working in accordance with the moon cycle. I explained that in the UK, although people practicing permaculture do factor this in, the majority of farmers do not base any of their work on the moon, but I also stressed that the moon clearly has a big impact on many things in nature and it is likely that UK farmers have long forgotten the importance of synchronising with the moon cycle. I asked the farmers what the key issues are, and irrigation is at the top of their list, alongside the control of the agouti and iguanas (and feral chickens – ‘fouls’).



Fig. 44-47: I engaged with the Montserrat Farmers Association on a few occasions, to purchase materials for MNT from their wholesale site (Fig 45 top right), joining President Claude Brown on his weekly farming radio show (Fig 46) and meeting a group of farmers on May 23rd (Fig 47).

6.3 Montserrat Farms

Elvis took Chris and I into the northern hills to visit a farmer who is growing various crops, including white potatoes as a Govt. subsidised crop, alongside sweet potatoes, bananas, and onions. There is a significant weevil problem on sweet potatoes grown in Montserrat (according to Elvis it can cause 95% losses.), and some of the farmers are using pheromone traps to help with their control. This is something Elvis believes could be government supported and rolled out across more farms.

There were large plastic water tanks in one of the fields, which is part of the Governments support programme to develop irrigation on farms, which is seen as a major blocker on greater food production. These tanks need to be filled up by a water bouser/truck and the farmer had no field irrigation system to apply the water. My sense is that there is more opportunity to develop the irrigation support programme, with water collection, storage, distribution and application to crops.



Fig. 44 (top left): Montserrat farmer harvesting white potatoes, with Elvis and Chris. **Fig. 45 (top right):** Upland banana crop, also acting as a shelter belt for the field vegetables. **Fig. 46 (bottom left):** A home-made pheromone trap for trapping adult weevils in the sweet potato crop. **Fig. 47 (bottom right)** Elvis next to the water tanks.

While out for an evening walk towards the end of my trip, I came across local Farmer, Mildred, on her roadside stall. Mildred had attended (and been an enthusiastic participant at) the meeting on my first evening, then at the Farmers association, my grafting workshop, and the public evening event. Mildred said she would like to show me her farm and wasn't taking no for an answer! I spent the next c.3 hours taken in her little van, travelling to four different farm sites (Figs 48-51); her pig (and soon chicken) farm, plantain, banana, papaya, and pineapple patches, and a plot owned by Billy - who also attended my previous sessions. It was a lovely tour and conversation, and I was delighted to remind myself that this was precisely the sort of experience I'd aimed for when I did my MSC in International Horticulture, with a Tropical Crops module 21 years ago. Mildred clearly is a very hardworking farmer, who is keen to learn more, she has one of my business cards and I suspect she'll be in touch.



Fig. 48-51: I enjoyed a 2-3 hour tour with Mildred of her farm plots, also visiting her friend Billy's farm – both of whom had joined my grafting workshop (see Fig. 35)

In addition to being an Agriculture Extension Officer for MALHE, Elvis also has a few farm plots of his own. We visited some of his field plots where he grows an excellent range of crops, of great quality, using techniques including intercropping combined with drip irrigation system (Figs 52 & 53). I spent some time with Elvis during my trip, including much time chatting in a truck together as we drove from site-to-site. He is an interesting/nice chap. I think the way he is carrying out intercropping on his small farms is excellent. Elvis claims he is the only person in Montserrat to do this, and both he and I agreed that it has wider potential. I see this as something that could perhaps be showcased in the MNT garden, as an enhancement of the area that currently demonstrates local crop growing. This could become a strong feature to educate and inspire others to do the same. Elvis is keen to help.



Fig. 52 & 53: Elvis in one of his farm plots, with intercropping, mulching and drip irrigation systems.

7. Wider Engagement

7.1 Soufriere Hills Volcano

The eruptions of the Soufriere Hills Volcano between 1995-2010 destroyed the capital Plymouth and resulted in c.66% of the island remaining off-limits to people without prior Government permission, and accompanied by a registered tour guide. The culture of Montserrat is so dominated by the volcano that a guided visit to the buried city of Plymouth was something I believed I had to do.

Chris and I were picked up by our guide, Norman (who also looks after one of the MNT Adopt a Home for Wildlife sites), for a tour of Plymouth. We drove first to the Montserrat Volcano Observatory (MVO) to watch an excellent film, made up of lots of news clips from the eruption. Then into Plymouth, most of which is buried under ash and pyroclastic flow, and the living interpretation from Norman with large photos of what it looked like pre-volcano was excellent. We parked on the old port jetty and realised that most of the jetty is now under debris and part of an extended land mass. It was interesting to see the trucks bringing graded volcanic sand to the dock ready for shipping – an example of Montserrat trying to recover and now making a commercial income from selling volcanic debris.

In the evening of Tuesday 23rd I attended the screening of a new documentary on the volcano eruptions of 1995-2010, entitled *Ben Fogle and the Buried City*. It was fantastic to sit in the auditorium at the Montserrat Cultural Centre, surrounded by local people, showing a film of places that I've visited in the last 10 days. The ad-hoc commentary from the locals really added to the whole experience (one of the locals interviewed in the film is a Rastafarian living in the excluded zone – he had some great quotes that caused much laughter). A special experience to remember from my visit to Montserrat.



Fig. 54: A display on the volcano at Hilltop Café. **Fig 55 (top right):** A 5-story building in Plymouth. **Fig 56 (bottom left):** Graded volcanic debris awaiting shipment, volcano behind. **Fig 57:** Screening *Ben Fogle and the Buried City*.

7.2 Public Lecture

MNT were keen I delivered a public lecture/workshop, assisted by Chris, on horticultural techniques, which I did towards the end of my second week (Thurs 25th) at MNT. Just over 20 people turned up and we had a good evening. My introductory slide show gave an insight into my background, Manx Wildlife Trust, UKOTCF and the work we had been doing over the last two weeks. This was followed by a walk to the propagation house to discuss what we had altered and the trial we had set up. I then demonstrated different grafting techniques, assisted by Mildred the farmer who had been on my course yesterday. Throughout the evening there was good discussion and lots of questions.

Food was provided at the end of the evening, during which I introduced myself to the one 'young person' in the room and was delighted when Shaun told me that he was at the secondary school and was looking forward to seeing me in the following morning. Shaun was keen on agriculture and conservation but told me that he had to choose between PE and agriculture at school, he had chosen PE, but was still keen to learn about both agriculture and conservation. This reinforced my view that we need to better link agriculture and conservation together at all levels of society all over the world. Delmaude asked the attendees to each complete a short feedback form and they looked positive. I was a little disappointed more people didn't attend, but overall the evening was a success.



Fig. 58 (top left): Introductory talk. **Fig 59 (top right):** Chris assisting me with the tour in the nursery. **Fig 60 (bottom):** Delivering grafting demonstrations to the enthusiastic audience.

7.3 Young People

Monty's Messengers is the club the MNT run on weekends for young people. I was delighted to help out with the session taking place while I was on the island. Some of the children were sick (a bug in one of the schools) so we only had 6 children on the day, but they were enthusiastic and very interactive. I chatted to them about the IOM and botanic gardens, and then Chris led a session where we all made (and decorated) bird feeders out of used plastic bottles.

Myself, Chris and Delmaude went twice to the Montserrat Secondary School to meet the Student Leadership Team (SLT) and teacher Audris Jon-Baptiste. On the first visit I gave an insight into the IOM, and they were very interested in the IOM fairies, TT races and long tails NB: it is bad luck to use the R-A-T word in the IOM, and when I'd informed them of this, the students felt that they should perhaps refer to their island as Montser-longtail when they meet people from the IOM!

There was enthusiasm to link up with school(s) in the IOM and to help foster the link, I returned for a second visit and recorded the students talking about their island and asking questions for IOM students. Shaun, the student who attended my public event, was there and he and others contributed brilliantly. We will share this film with the high schools in the IOM and aim to have an initial on-line meeting of students in autumn term 2023.

7.4 Radio Interviews

In addition to my appearance on the weekly farming show, I was asked to appear three more times on Montserrat Radio while there. Elvis, Chris and I were interviewed live on the weekly radio Montserrat farming and environment show by Nicole and another who works for Ministry of Agriculture in planning. We chatted for over an hour and covered the MNT work, agriculture and food.

I was interviewed by local celebrity/radio DJ Rose on The Cultural show for 30 mins, but the best thing about this appearance was that I arrived about 15 mins early and sat in the waiting room listening to the live on-air speaker. School students were being interviewed and they spoke enthusiastically about our meeting at the school earlier in the week and recited the information about the Isle of Man, particularly that we don't say the word 'rat'. They were debating the use of the word *Montser-longtail* should they ever visit the IOM, and also enthused about the potential link up with a school in the IOM. This made me even more keen to make this happen.

My fourth radio appearance was with Chris, joining Delmaude for the MNT's weekly 30-minute show (Fig. 64 over page). Another enjoyable chat live on air, a chance to reaffirm the importance of MNT's work and promote the new Conservation Officer.



Fig. 61 (left): Monty's Messengers with the bird feeders we made out of plastic bottles. **Fig 62 (middle):** The Student Leadership Team (SLT) and their teacher Audris Jon-Baptiste at Montserrat Secondary School. **Fig. 63 (right):** My 4th appearance on Radio Montserrat was the weekly show by MNT, hosted by Delmaude.

8. Wider Conservation Engagement

While on Montserrat I had the wonderful opportunity to engage with other conservation work taking place in and around the island. This included bird surveys and coral reef conservation.

8.1 Bird Surveys

Dr Tom Hart (Oxford Brookes University) was on the island as part of another Darwin project working with the MALHE Department of the Environment (DoE). I joined Tom, Ahjermae White and others from the DoE for two boat trips to carry out bird surveys.

The first trip was one late evening, when we boarded a boat in Little Bay at 8.40pm for a trip to survey Audubon's Shearwaters. This involved playing the call of shearwaters next to cliffs and listening for responses, which came, sometimes from multiple birds. Wonderful! Tom/Ahjermae also flew a drone Marvic 3 Thermal (with a thermal imaging camera), to try and observe birds on the cliffs or in flight. The challenge was that the cliffs were still hot from the days sun, so it was not easy to spot birds on the cliffs. The water (at 28 degrees) also had quite a thermal glow. We returned to harbour at 1am. A great way to spend a few hours and reaffirmed that drones are something I need to upskill more on.

For the second boat trip we left Little Bay at 5.45am for a bird survey tour right around the island. It rained at the start (lovely rainbow) and then sun. An excellent c.3 hours seeing the entire island, including the pyroclastic flows from the volcano, and spotting/counting sea birds, including 3 species of terns (several Least Terns near Plymouth), Brown Pelicans, 100s of Caribbean Martins, good numbers of Brown Boobies, Tropic Birds, and a single Laughing Gull.

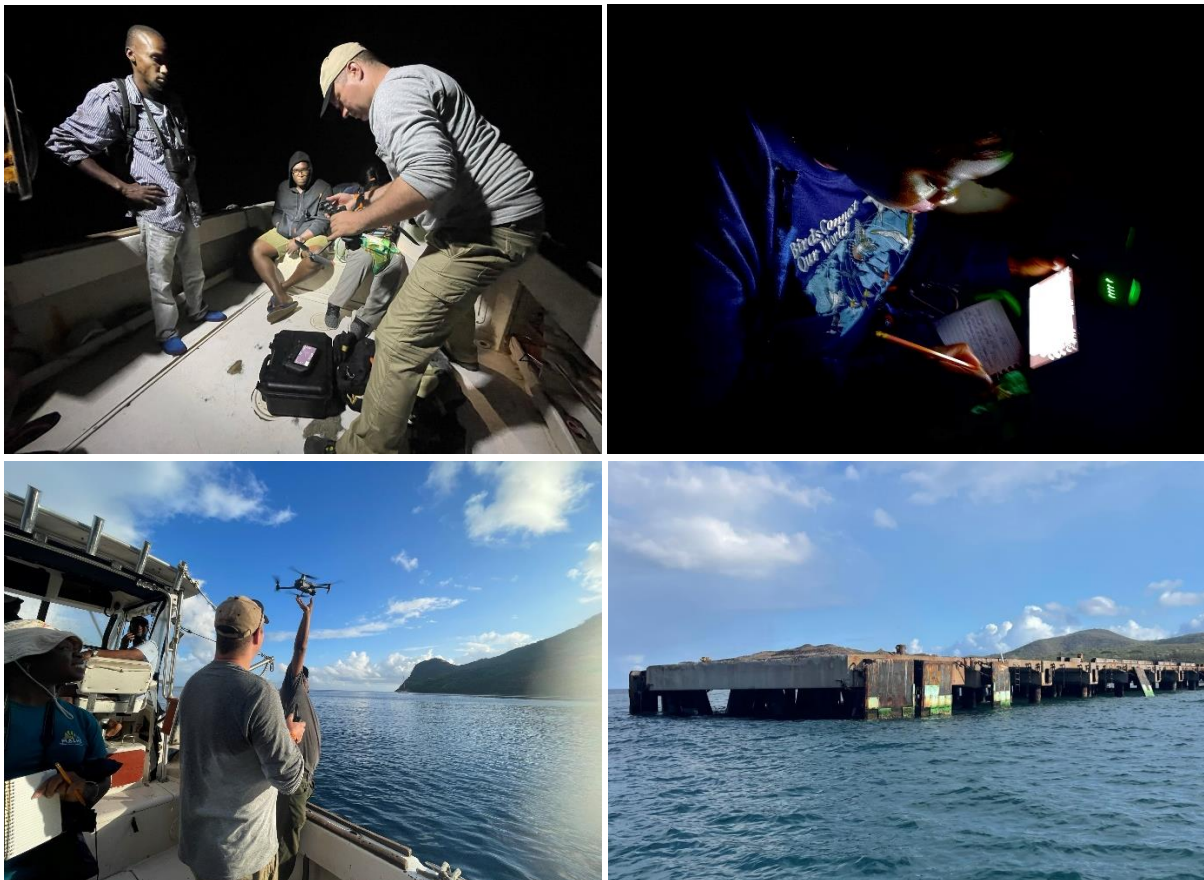


Fig. 64 (top left): Dr Tom Hart preparing the drone for launch. **Fig 65 (top right):** Ahjermae flying the drone and making notes on the birds spotted. **Fig. 66 (bottom left):** Launching the drone on the day trip to help with the whole-island bird survey. **Fig. 67 (bottom right):** The jetty at Plymouth, now the nesting site for terns.

8.2 Marine Conservation

On my first day on Montserrat I was invited to attend a presentation by Dr Nicola Webber (Exeter University) and Amdeep Sanghera (Marine Conservation Society - MCS) on Montserrat Turtle Conservation, which was a great introduction. I previously sat on the Board of MCS for seven years, so knew about Amdeep's work, and it was great to hear firsthand about the project MCS are working on with Exeter University. Particularly interesting is the social side that Amdeep is leading on.



Fig. 68 (left): Dr Nicola Webber (Exeter University) and Amdeep Sanghera (Marine Conservation Society) presenting their turtle research. **Fig 69:** Sarita (MNT Director), Amdeep, author, Delmaude, Nicola and Chris.

On my three Sundays on the island, I went diving with Scuba Montserrat, based in Little Bay, and was delighted to be able to see firsthand three of their coral reef conservation projects (Figures 70-75 over the page), which one of the co-owners, Andrew, showed me on guided dives:

- **Montserrat Artificial Reef Project in Woodland's Bay**, created by Scuba Montserrat. Impressive project that has created habitat with concrete structures on the seabed where there was previously just sand. Interesting to see the invasive dwarf seagrass species (*Halophila stipulacea*), which was in large meadows, and the invasive Lionfish.
- **Combating Stony Coral Tissue Loss Disease (SCTLD)** in Rendezvous Bay. They treat the infected areas with patches containing chemicals, but they have recently received funding to experiment with the use of pro-biotics.
- **Translocation of rare corals from Little Bay to Rendezvous Bay.** I joined Andrew Shafe, who works for Montserrat Govt, Fisheries team, and Chris who is in the Marine Police and is one of 10 Government staff on a dive training scholarship with Scuba Montserrat. Andrew has a contract to relocate rare corals from Little Bay, where there will soon be significant dredging carried out as part of the construction of the expanded port facilities. The corals were previously tagged by a marine ecologist and so our job was to cut the marked corals out of the reef and move them into the neighbouring Rendezvous Bay. Interesting to see the quite brutal use of hammers and masonry chisels to remove corals from the reef and put them into baskets. We loaded the corals into tanks and drove the boat into Rendezvous where we dropped in and positioned the corals onto a fabricated metal table nestled on a sand patch between other reefs. The corals were then wired onto the benches where they will remain until they are put into their final positions.

It was excellent to see the conservation work of Montserrat Scuba, which far exceeded my ambitions and expectations for the marine conservation work I'd be able to see underwater. Brilliant, and Andrew has been successful securing Darwin Local grants for three more coral conservation projects.

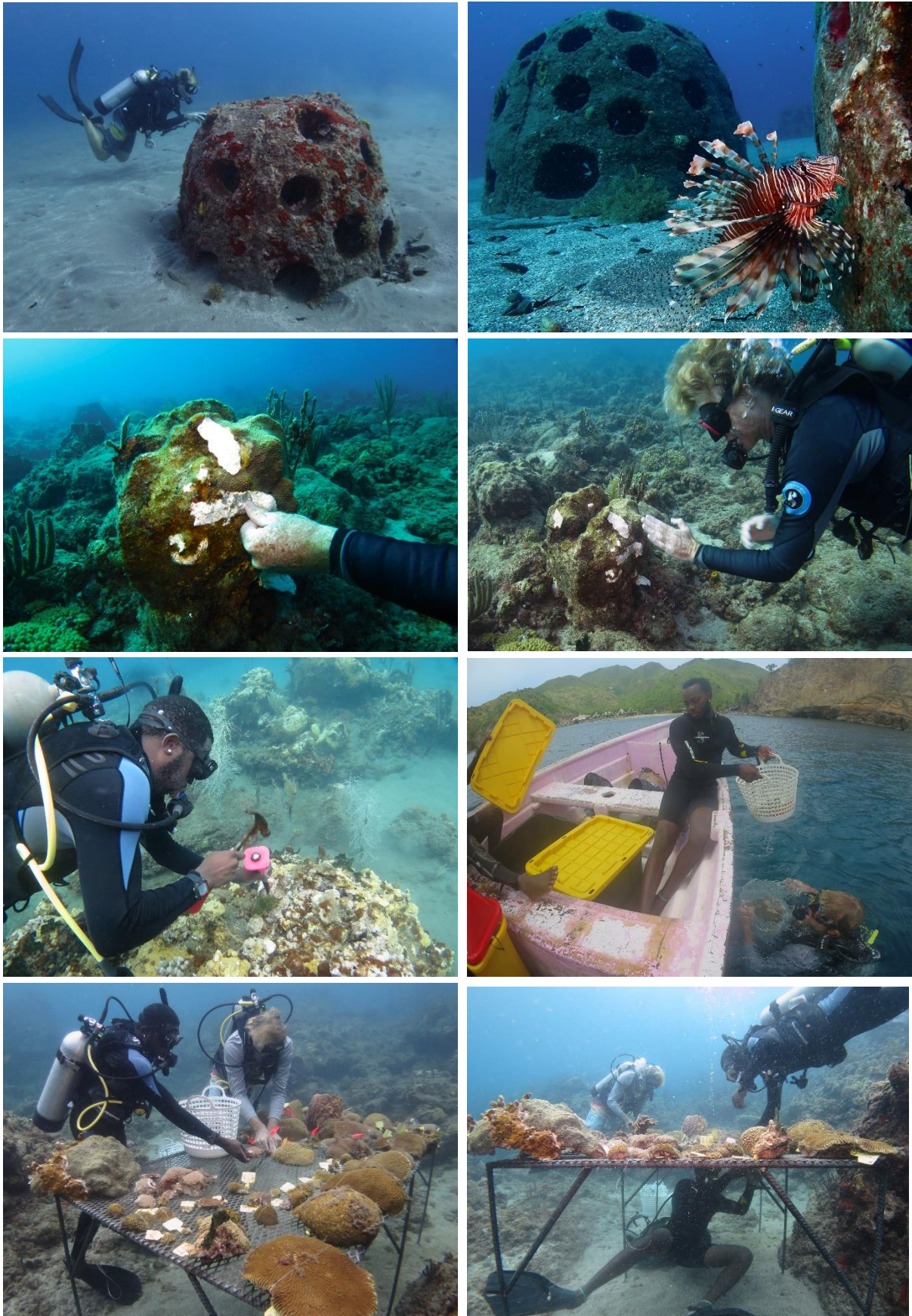


Fig. 70 & 71 (top): Some of the structures in the artificial reef project and an invasive Lionfish. **Fig 72-73 (row 2):** Combating Stony Coral Tissue Loss Disease (SCTLD). **Fig. 74-75 (row 3):** Collecting corals for translocation; **Fig. 76-77 (bottom):** Translocated corals being wired on the table in Rendezvous Bay.

9. Reflections

The main aim of my trip was to build horticulture capacity in the MNT to ultimately increase the production of native plants in the MNT nursery, to supply the Adopt a Home for Wildlife project sites for Darwin Plus Project DPLUS155m (NB: my work also delivered outputs that will contribute to the creation of a biodiversity and wellbeing toolkit for the parallel project DPLUS192). This was carried out in two ways, firstly working with the MNT team to make improvements to the nursery propagation house, and secondly by staff training, both informally to the MNT staff and as part of the two workshops I delivered on vegetative propagation and grafting and air layering.

Working closely with the MNT team, particularly Chris Sealys and Samantha Paul, we were able to make what I believe are significant improvements to the propagation nursery facilities and techniques at MNT. The propagation benches were levelled and power washed, mist nozzles cleaned, electric leaf cleaned and put into use, the mist unit controller explained to the staff, and capillary matting, polythene cover and shade netting above all added to the structure. There is now a clear system for propagation tray washing, and an agreed role description drafted for the propagation staff, to ensure good hygiene levels are maintained in the propagation house daily. A Production List for the nursery is formatted, propagation recording is now a key task for all, and the area for composting and the making of growing media for potting up plants has been tidied and reorganised.

The two workshops I delivered provided useful sharing of knowledge and skills development. The one delivered at MNT focusing on cuttings propagation was the most impactful, as I believe all MNT staff who attended gained a better understanding of the principles of successful propagation, and crucially knowing that small differences at all stages of the propagation process can make a large difference to the success. Notably the importance of bags/water/cool box for cuttings collection, good hygiene at all stages, the need for oxygen in the rooting environment, and the need for good/clean tools.

The grafting workshop was more of a 'look see' and there wasn't such a strong output or legacy for MNT, although the knowledge level has raised, and new techniques were learnt. Grafting is a skill that is better taught to groups of a similar skill/knowledge, so ideally, I'd have delivered an advanced session for the Govt staff who already do grafting, alongside an introductory session for others. I believe the greatest benefit of the second workshop for MNT is likely the fostering of even closer working links with the Montserrat Government staff and I see great opportunity in this collaboration developing further. I believe that the MALHE staff enjoyed the two workshops, and their participation was excellent and added much to both sessions.

The lack of appropriate tools and resources hindered both workshops, particularly the grafting workshop as trying to graft without a specialist knife makes an already highly skilled and dexterous task even more challenging. I was delighted that the DoE nursery supervisor Kitty was impressed with my specialist budding knife and that UKOTCF have ordered her one of her own, along with a left-handed grafting knife for one of Kitty's team (which was taken to Montserrat by Catherine Wensink in June 2023). A good relationship builder and I am certain the knives will be well used.

It was excellent and synchronous that Chris Sealys had commenced his role as Conservation Officer at MNT two weeks before my visit. I immediately got on well with Chris and he has an excellent plant/botany/horticulture knowledge. We worked well together, he understands plants and people, and through him I believe that the changes we made to the MNT systems will sustain. Samantha Paul is another great member of the MNT staff, and I believe she has the potential to oversee successfully all the nursery propagation and production. Mapi is close to retirement, but he has a huge amount of local plant knowledge that would be difficult to replace. Perhaps there is a way that his knowledge

can be retained, but Samantha is positioned to take day-to-day oversight of the nursery working under Chris? I believe this would work well, especially if another person could work with Samantha.

I was delighted at the overall sense of appreciation I received from several of the people I worked with and trained. The best example being one morning towards the end of my trip when I arrived at MNT. Johnson is one of the two Haitians working in the garden (typically carrying out leaf sweeping and other manual tasks) and he had attended three of my sessions. As I did every morning I arrived and said good morning to the two Haitians sat under a tree in the shade. Johnson gave me the now standard response of *'good morning sir'*, then as I was walking down the steps he called after me. I turned and he beckoned me to him. He then said in broken English *'the training sessions have been very good, and I want to thank you for your teaching of us. I hope you will come back'*. This is without doubt the best praise I could have received from anybody. I was also delighted at the updates I've been receiving since my visit from Chris and Samantha.

In terms of my wider engagement during my trip. Overall, I believe that my schedule was too ambitious, and perhaps I should have simply spent more days working with the MNT team carrying out propagation and other nursery work. I understand, however, that many people wanted to engage with me and I believe everything I did was to some degree useful to MNT. I found the meetings with farmers very informative, and I was delighted at how some of them positively engaged with me and that they are keen to further develop their skills. I see opportunities for Montserrat food production to increase and further upskilling would certainly assist with that.

The meetings with the Student Leadership Team at Montserrat Secondary School were inspiring and I will certainly aim to foster links for them with schools in the IOM. There is a great opportunity to link young people across other UKOTs and Crown Dependencies and connecting to the Isle of Man will be a good place to start. The public session was a good showcase for MNT, as were the appearances I made on local radio.

I had hoped to see wider conservation (including marine) and the time I spent with Scuba Montserrat on weekends and the two seabird surveys I participated in, were both tremendously interesting and enjoyable. Overall, I believe that in the time I was in Montserrat I gained a broad understanding of the island's conservation issues, which I am confident will enhance my usefulness on the UKOTCF Council.

On the final working day of my trip a de-brief meeting took place at MNT, chaired by Sarita, with Delmaude, Chris and four from MALHE (Stephen, Barry, Ajhermae and Elvis). There was much positivity about my visit from Sarita and others, and Sarita was keen that MNT might twin with Manx Wildlife Trust, which I will suggest to my Board. Chris said he was pleased that the two of us are on the same page, but there is now a need for MNT to avoid complacency and the risk of regressing from progress made. Chris is keen that the two of us continue to work together and I encouraged MNT to loop me in as/when it could be useful e.g. I'd be keen to join on-line meetings with MNT if/when I can.

There was enthusiasm about the interactions between MALHE and MNT during my visit, with one of the MALHE team stating this week was the best example of collaboration he'd seen to date and was keen to see more. MALHE identified the need for more upskilling, both for their staff and farmers. Pesticide use was one area they felt would be useful and I would agree. I have experience of delivering pesticide training and I see benefits to Montserrat both in terms of efficacy of use and health and safety of the operators. Another indicated the desire for more training resources, booklets, etc. and there was a suggestion that the annual MNT flower show could be linked to Garden Tours of the island.

In addition to my nursery and plant production recommendations (see sections 2-5), I made additional recommendations for MNT at our de-brief meeting to:

- Work more closely with MALHE on the Adopt a Home for Wildlife project, with MNT growing the native plants and MALHE supplying grafted fruit trees.
- Aim to bring agriculture and environment closer together to benefit food and the environment.
- Develop the MNT agriculture plot as a model farm, potentially with intercropping on show. The current space could be made far more relevant to farmers and the public (and help support MALHE ambition to increase local food production).
- Join Botanic Gardens Conservation International (BGCI) and connect with other similar botanic gardens around the world. This would be an excellent network for Chris in particular.

During the de-brief session, I received a message from Alba Smeriglio-Heimpold, Development Attaché for FCDO in Montserrat. We'd exchanged some messages and she invited me to call in which I did. Good to meet her and talk wider development issues for Montserrat (and some comparisons with St Helena). We agreed on the need for an agriculture strategy for Montserrat. We discussed BGCI and UKOTCF and she is keen to continue discussions with UKOTCF.

The full cost of my trip to Montserrat was £3200 which covered all my travel, accommodation, food and other direct expenses. My time was given freely to the project (taken as annual leave from my role with Manx Wildlife Trust), but this can be valued at 16 days @ £300/day = £4800 (£8000 in Total).

10. Farewell

On my last day, Delmaude, Chris, myself and a Haitian friend of Delmaude, enjoyed a 4+ hour hike through forest and down into a dry riverbed/gorge to see the petroglyphs discovered only as recently as 2016. We chewed on sugar cane as we walked and, with the aid of Chris' excellent botanical knowledge, we enjoyed eating a range of plants and fruits, including begonia flowers that Chris called cheese and bread, which had an acquired (sour) taste! I saw Oriole birds, both yellow and red heliconias, and three Racer Snakes, as well as the interesting petroglyphs in a river gorge. It was a delightful walk and a lovely conversation with some great humour with new friends. An excellent and appropriate way to spend the morning of my last full day in Montserrat.

The following morning, I was at the airport early for my flight and was delighted to be met by Sarita and Delmaude who'd made the early morning trip to say goodbye. Sarita presented me with a card and a pin badge of the Montserrat flag, which I said I'd wanted and hadn't managed to find. We hugged and said our goodbyes. I hung back at the boarding and went last in line, which meant I boarded the aircraft last and once again had the seat behind the empty co-pilot chair. Another enjoyable flight and I returned home with a sense of satisfaction and feeling that hopefully I'd been useful.



Figs. 76-77: A woodland walk with new friends, and a view of the petroglyphs on my final day in Montserrat.

Annex A

Montserrat Visit Itinerary May 2023 Capacity building in botanic garden and agriculture

UK Team: Leigh Morris (CEO, Manx Wildlife Trust)

MNT Team: Sarita Francis (SF; Director of MNT); Delmaude Ryan (DR; Admin/Finance Officer); Antwone Sinclair (Intern, AHW), Virginie "Chris" Sealys (VS, Conservation Officer)

Others: Elvis Gerald (Department of Agriculture), Ahjermae White (Department of Environment),

Day	Date	Time	Event	Description	Attendees
Thursday	11 th May 2023	5:30 pm	Travel Day	Leigh Arrives Fly Montserrat Departs Antigua 11 May 17:10 Arrives Montserrat 11 May 17:30 Accommodation Ginger Hill	LM
Friday	12 th May 2023	9am	Island Tour	Visit to the Trust & Discussion on revised itinerary	LW,VS, DR,SF
Saturday	13 th May 2023	6-9 pm	Orientation Meeting & Team Dinner	MNT Team to meet with the MNT and Ministry teams to discuss work programme, Farmers Association etc.,	LM, + MNT + MAHLE + Farmers Association
Sunday	14 th May 2023				
Monday	15 th May 2023	9am	Consultations	Meet with stakeholders visit botanic garden with MNT colleagues	LM, VS, DR, AS, MM, SP
		10am	Radio Recording	Meet at ZJB for Farmers Association Radio Recording	LM, CB, VS
Tuesday	16 th May 2023	9 am-12pm	Consultations	Meet with stakeholders visit other sites Department of Agriculture & Environment, Visit Agricultural Sites in Blakes/Duckpond	LM, MNT Staff, DoE
		1:30	Island Tour	Tour to Plymouth	LM, VS,NAMCAS
Wednesday	17 th May 2023	TBC	Volunteer	Round the Island boat survey of sea birds	LM, DR, VS, ED
		2-2:30pm	Youth Opportunities	Leigh and Senior MNT team meet with MSS Teachers on MSS and MSS Student Leadership Team	LM, SF, VS, DR
Thursday	18 th May 2023	8-10am	Consultation	MNT Gardeners	LM, VS,DR,
		11-5pm	Consultations	Visit Adopter Sites	LM, ED,VS,DR,AW
		7pm	Radio Appearance	MALHE Vibes at ZJB Studios	LM, ED,VS
Friday	19 th May 2023	9-12pm	Training session planning	Finalize Capacity Building activities for Week 2 for all stakeholders and Monty Messengers Activities	LM, MNT, MALHE
Saturday	20 th May 2023	9-9:30 om	Rose Willock Show	To attend an interview on the Cultural Show on Rose Willock Show to discuss the outcome of the first week consultations and visits	LM, DR

Day	Date	Time	Event	Description	Attendees
		3-5 pm	Monty's Messenger Session	Planned activities for Monty Messenger at MNT	Monty Messengers, LM, AS, VS, DR, AW, ED
Sunday	21 st May 2023				
Monday	22 nd May 2023	8:00 am-2:00pm	Training Session 1	Training in propagation principles, Taking cuttings, use of hormones , good hygiene and Pesticide Use & Safety for Nursery Workers	MNT Nursery Workers, DOE and DOA Nursery Workers
Tuesday	23 rd May 2023	8- 10 am	Training Session 2	Training in propagation principles, Taking cuttings, use of hormones , good hygiene and Pesticide Use & Safety for Nursery Workers (cont'd)	MNT Nursery Workers, DOE and DOA Nursery Workers
		10:30am	Consultations	Meet with Farmers at Farmers Association Meeting -St Peters	LM,VS,ED,DR
		3:30pm	Heritage Radio Show	Interview on Heritage show on visit so far and promote public activity	LM,VS,EG
Wednesday	24 th May 2023	8am-2p.m.	Training Session 3	Training in Graphing, Air layering and potting mix composition	MNT , DOE & DOA & Adopters
Thursday	25 th May 2023	9am-12noon	Training Session 4	MNT Plant Production Planning	LM,VS,DR,SF
		4:30 pm	Public event	Open Invitation for Farmers, Adopters , the Community ; demonstrations on graphing & budding, biodiversity friendly methods and importance of locally grown crops, at National Trust	ALL
Friday	26 th May 2023	9:00 a.m.	Team Wrap-up Meeting	Wrap-up meeting to discuss the outcomes of the activities that have taken place.	ALL
Saturday	27 th May 2023				
Sunday	28 th May 2023	9:00 am	Hike (Trails)	A hike to see some of other sites on island	ALL
Monday	29 th May 2023	7:30am	Travel Day	MNT to arrange lift to airport Fly Montserrat to Antigua Departs Montserrat 29 May 09:10 Arrives Antigua 29 May 09:30	LM

Annex B

Role Description: Nursery Propagator

Reports to: Conservation Officer

Aim and Purpose: To organise the day-to-day running of the Montserrat National Trust (MNT), Nursery Propagation Unit under the direction of the Conservation Officer.

Main Function: The core aim to propagate, establish and maintain young plants in the nursery. To carry out the full range of appropriate plant propagation techniques, that are required in order to achieve the production targets dictated by the MNT Plant Production List. This will include trees, shrubs, flowers and other plants for the botanical garden, sale or delivery for landscape and Adopt a Home for Wildlife projects. To keep accurate records of the propagation that has been carried out, and be responsible for carrying out routine tasks, watering, pruning, fertilizing, pest or disease control, and maintaining very high levels of hygiene and tidiness within the nursery.

Main Duties/Responsibilities:

1. Carry out plant propagation in accordance with MNT Plant Production List, protocols, and targets set by the Conservation Officer, by seeds, spores and vegetative methods.
2. Maintain and care for all young plants (pre, during and post-propagation) to ensure losses are minimised. To include: plant material collection, watering, weeding, removal of dead/diseased plant material, fertilizing, and pruning.
3. Maintain extremely high standards of tidiness and hygiene in all nursery and propagation areas.
4. Monitor and inspect the young plants post-propagation to assess growth and health, and to identify signs of pests and/or diseases. Treat any problems and inform Conservation Officer as required.
5. Maintain the most appropriate environmental conditions within the propagation house, propagation benches and compost storage and mixing areas. Adjust watering/humidity if/as required.
6. Ensure the irrigation and climate control systems are working properly; performs basic maintenance and repairs and informing the Conservation Officer if additional maintenance/repairs is required.
7. Keep accurate records of all plants propagated, in accordance with the information requested by the MNT Conservation Officer. To include propagation success, growth, feeding, and any products used.
8. Maintain the inventory of nursery resources and consumables, inform the Conservation Officer if more supplies are required, and handle incoming and outgoing supplies.
9. Maintain nursery equipment, including personal secateurs, to a high standard.
10. Comply with workplace safety and health regulations and policies.

Other Duties:

1. Maintenance of plants in the MNT grounds and/or garden. To include weeding, fertilization and pruning.
2. Assist the Conservation Officer in the development of propagation protocols for individual plant species, through research and experimentation.
3. Provide advice and guidance to customers on the choice and care of flowers and plants, operating the nursery's point of sale system.
4. To undertake such other duties related to the work of MNT, which are consistent with the nature of the job and its level of responsibility.
5. To undertake occasional weekend duty on a roster basis, as directed by the Conservation Officer
6. Attendance at MNT meetings as required.

Annex C



Rooting Media Trials – May 2023

Work in small groups to, carry out a rooting trial on **Pribby** (*Rondeletia buxifolia*). Pribby is a key plant species and MNT need to discover and adopt the best way to grow them, and look to evaluate and potentially improve the rooting media used in MNT nursery.

The trials is being set up on 22nd May 2023 and evaluated in June/July. The trial will use six different rooting media mixes and also test the use of rooting hormone within all six media. NB: The trays used will be standard 72 cell plastic trays available in Montserrat (apart from the Jiffy 7s), although other tray sizes and dimensions might be better.

Aims of the Trial:

- To trial different rooting media in the MNT propagation system.
- To discover the optimum media to use to propagate Pribby.
- Learn from the trial to help inform the propagation of other plant species.

Six types of rooting media:

- Standard MNT fine ghaut sand (x72)
- Pro-Mix (peat moss, plus mycorrhizae and small amount of perlite) (x72)
- 50% Pro-Mix and 50% Perlite (x72)
- 33% Pro-Mix : 33% Perlite : 33% fine ghaut sand (x72)
- 50% Pro-Mix and 50% fine ghaut sand (x72)
- Jiffy 7s peat moss (x72)

Within each x72 Tray:

- Rooting hormone and wounded (x18)
- Rooting hormone and NOT wounded (x18)
- No rooting hormone and wounded (x18)
- No rooting hormone and NOT wounded (x18)

Trial Set Up:

- Work in four groups, each group setting up one tray.
- Use 72 cell module trays (6 x 12). There will be one tray used for each type of growing media being trialed (6 trays in total)
- Within each tray insert 4 x 18 cuttings (see tray layout diagram over the page).
- Cutting length and quality will be agreed and standardised between the four trays (groups).
- Groups must liaise during the set up to ensure consistency in the size/type of cuttings in all trays.
- Labelling of each tray is crucially important

It is vital that the trial is set up as directed to give consistent results. The trays will be placed in the mist bench

Evaluation (at end of June):

- Every cutting must be given a score:
 - 0. No roots at all.
 - 1. Tiny amount of roots
 - 2. Well rooted
- Total scores for each treatment added up.
- The different treatments will be ranked.
- Conclusions on the most successful and unsuccessful treatments.

Tray Layout (each box below represents a single cutting/cell)

Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded
Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded
Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded	Hormone & Wounded
Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound
Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound
Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound	Hormone No Wound
No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded
No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded
No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded	No Hormone Wounded
No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound
No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound
No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound	No Hormone No Wound

Diagrammatic representation of the layout of one individual tray in the rooting trials. Each square represents an individual cutting.

Shaded Cells = where label must be placed

Ensure every tray is set up exactly as above!

Six types of rooting media:

- Standard MNT fine ghaut sand (x72)
- Pro-Mix (peat moss, plus mycorrhizae and small amount of perlite) (x72)
- 50% Pro-Mix and 50% Perlite (x72)
- 33% Pro-Mix : 33% Perlite : 33% fine ghaut sand (x72)
- 50% Pro-Mix and 50% fine ghaut sand (x72)
- Jiffy 7s peat moss (x72)

Within each x72 Tray:

- Rooting hormone and wounded (x18)
- Rooting hormone and NOT wounded (x18)
- No rooting hormone and wounded (x18)
- No rooting hormone and NOT wounded (x18)