

# **fuelinex dailylog**

*Christophe Rouleau-Desrochers*

**2023**

## August

*Saturday, August 22nd, 2023*

This is a test to see if it works

*Friday, August 23th, 2020*

Another day

*Tuesday, August 24th, 2020*

# September

*Tuesday, September 1st, 2023*

Write some more the next month!

**2024**

# January

*Monday, January 1st, 2024*

This is a test to see if it works

## February

***Thursday, February 1, 2024***

Christophe

***Friday, February 2, 2024***

Christophe

***Monday, February 5, 2024***

Christophe

***Tuesday, February 6, 2024***

Christophe

***Wednesday, February 7, 2024***

Christophe+Britany+Justin Started measuring the trees.

***Thursday, February 8, 2024***

Christophe

***Friday, February 9, 2024***

Christophe

***Sunday, February 11, 2024***

Christophe Started measuring the trees.

***Monday, February 12, 2024***

Christophe Had a talk with Lizzie regarding dendrometer modification. This will allow us to charge them all at one time. Dajeong will work in the next few weeks to move the board in a position where the wire will be able to go through the hole.

***Tuesday, February 13, 2024***

Christophe I flew back to Montreal

***Wednesday, February 14, 2024***

Christophe

*Thursday, February 15, 2024*

Christophe

*Friday, February 16, 2024*

Christophe

*Monday, February 19, 2024*

Christophe

*Tuesday, February 20, 2024*

Christophe

*Wednesday, February 21, 2024*

Christophe

*Thursday, February 22, 2024*

Christophe

*Friday, February 23, 2024*

Christophe

*Monday, February 26, 2024*

Christophe

*Tuesday, February 27, 2024*

Christophe

*Wednesday, February 28, 2024*

Christophe

*Thursday, February 29, 2024*

Christophe



## March

*Monday, March 1st, 2024*

*Friday, March 1, 2024*

Christophe

*Monday, March 4, 2024*

Christophe

*Tuesday, March 5, 2024*

Christophe

*Wednesday, March 6, 2024*

**Mao** All CoolS replicates moved in the climate chamber after discussion with Lizzie and Mao regarding the potential warm and early spring, we wanted to make sure to have a meaningful difference between treatments.

We are having a early warm spring this year, and to help cold spring treatments to stay cold, we decided to put them inside the growth chambers

Results: All the cold spring treatments were put inside the growth chambers, we used one walk-in chamber, two medium chambers and one small chamber. We stacked the pots into two layers to make sure every individual can get light

Comment: We might need to rotate the pots inside the growth chamber to reduce chamber effect

*Thursday, March 7, 2024*

**Mao** Hobo loggers were set up To record temperature and moisture changes in different growth chambers and green house

Results: One in each type of growth chamber, one at ceiling level in the green house, one at plant level in the green house, one outside the green house

*Friday, March 8, 2024*

*Monday, March 11, 2024*

*Tuesday, March 12, 2024*

Mao

*Wednesday, March 13, 2024*

Mao

*Thursday, March 14, 2024*

*Friday, March 15, 2024*

Mao

*Monday, March 18, 2024*

Mao

*Tuesday, March 19, 2024*

Mao

*Wednesday, March 20, 2024*

Mao

*Thursday, March 21, 2024*

Mao

*Sunday, March 24, 2024*

Mao+Justin+Julie

**Task:**Install dendrometers

**Results:**We installed dendrometers to the warm spring treatments (ones in the green house for the moment) in block 2, and made sure they were all working (with the green light on)

**Comments:** Charging: “It takes about 31 hours to get from 3.6 to 4.2V, they should last about 3 weeks once they’re fully charged (Dajeong, 2024).” We will charge them every two weeks for 1 day.

*Monday, March 25, 2024*

Mao

**Task:** Charge dendrometers

**Results :** Charged dendrometers

*Tuesday, March 26, 2024*

Mao

**Task:** Charge dendrometers

**Results :** Charged dendrometers

### ***Wednesday, March 27, 2024***

**Mao**

**Task:** Charge dendrometers

**Results :** Charged dendrometers

### ***Thursday, March 28, 2024***

**Mao + Britany**

**Task:** Rotate pots

**Reasons:** Reduce chamber effect

**Results:** We rotated pots from bottom to top and randomly put the pots in. We also watered the plants

### ***Friday, March 29, 2024***

**Mao**

### ***Saturday, March 30, 2024***

**Mao + Sylvia**

**Task:** Arrange plants in the green house

**Results:** We arranged all plants in the green house based on the layout design. We also watered the dry pots.

# April

## *Wednesday, May 1st, 2024*

**Christophe** Last few miles of my trip with Charlotte. For our last morning, we went to Billy Frank NWR. 41 species. Heard a Sora. We headed to Vancouver and set my things up in the afternoon.

## *Thursday, May 2, 2024*

**Christophe+Deirdre + Ken + Selena**

**Task:**Orientation Move Cool/Cool treatments back to Totem for following species: - Acne - Bepa - Prvi

**Reasons:** These species don't look too happy in the chambers and most of the replicates are fully leafed out

**Results:** Deirdre got me orientated on the project and trained me on the phenological monitoring. I met with Ken and Selena so we can move the first batch of species Cool/Cool treatments back to Totem: Acne Bepa Prvi Alru \*\*\* we decided to move also Alru as they are probably dead. Plants in chambers watered

**Comments:** I need to request Totem truck a few days before I need it – Dan was using it that day. Therefore, we used the Subaru to move the trees. POT Effect : The roots for Bepa and Alru seem to be limited by the pots. Need to repot them ASAP.

## *Friday, May 3, 2024*

**Christophe+ Ken**

**Task:**Water B3 – not currently irrigated. Set up irrigation lines in B3 Print shoot elongation rulers Map how many drippers per line Make these decisions: 1. Whether or not to abandon dendrometers 2. Abandon Alru and Segi 3. Which potting mix to use 4. Pot size to use

**Reasons:** Don't want plants to dry Since we will install more lines and the irrigation system is at max capacity, we need to make sure to not overload it to avoid not having enough pressure. On decisions: 1. Many problems (too much time required to trouble-shoot them) 2. Not doing great either at Totem or in the chambers 3. Should I add clay (raise water retention) to the mix. Should I use the leftovers from last year? 4. 4-gal: extremely time consuming to build, repot and heavy to move around. 2-gal: should be enough for current growing season.

**Results:**Installed irrigation in B3. On one line, there is a fitting missing (will need to ask Dan to figure it out). In the mean time, I watered them manually. Ken counted drippers on each line and noted them in my note pad. Decisions: \*\*\* had a quick chat with Fredi in the afternoon to ask for his opinion. 1. Agreed to abandon dendrometers for now. We will reinstall them later in the summer. 2. Agreed to abandon Alru and Segi 3. Agreed to reuse potting mix from last year 4. 2-gal.

**Comments:**Need to fix the water hose: leaking from 2 places. Reasons to abandon Alru and Segi: 1. Loss of many replicates. 2. Even if they would suddenly come alive,

there wouldn't be a meaningful difference between the plants in the chambers and the ones outside. Since we reuse potting mix from last year, it's probably low on nutrient content. We need to solve this – should create a Git issue on this.

## ***Saturday, May 4, 2024***

**Christophe**

**Task:** Repot Acne and Bepa

**Reasons:** 2 most advanced species and the most limited by pot size

**Results:** Repotted Acne and Bepa

**Comments:** Time to repot Acne: 2 hours for +- 30 trees. Time to repot Bepa: 3.5 hours for +- 60 trees, which includes removing dendrometers.

## ***Monday, May 6, 2024***

**Christophe + Ken + Deirdre**

**Task:** Find a solution for paper rulers. Go to Staples (Amazon package never arrived)

**Reasons:** Talked with Deirdre and Ken about how we should avoid what happen last year where the rain ruined the rulers. Taping the end of the ruler should avoid them falling. Also helps the tape sticking to the ruler.

**Results:** Decided to use packaging tape to protect the end of rulers. Went to Staples. Going to return everything I bought.

**Comments:** Notes on repotting: I fill a layer at bottom and compact it very tight (about 1-2 inches depending on how much soil there is in the old pot. I delicately remove the tree from its current pot and place it in its new home. I had pot mix to fill the gaps. I compact the sides with my fingers and add mix until the pot is full.

## ***Tuesday, May 7, 2024***

**Christophe**

**Task:** Tape the end of the rulers. Paint Acne to mark from which point the shoot will be measured. Install rulers on Acne

**Reasons:** Installing rulers on trees is really time consuming. I thought I will try only 30 replicates (Acne B1) for now. I will keep going once all the species have had at least one shoot elongation measurement.

**Results:** 99 rulers have their end taped. Acne B1 have their rulers. Acne B1-B2-B3 were all measured. Set up a calendar

**Comments:** It takes 0,73 minutes to tape the end of 1 ruler. It takes 2.5 minutes to install the ruler on 1 tree. \*\*\* I am not too good at this right now so I will probably get faster soon.

## ***Wednesday, May 8, 2024***

**Christophe+ Ken**

**Task:** Paint on Bepa and Prvi Shoot elongation measurements on Bepa and Prvi

**Results:** Repotted Prvi Painted Bepa+Prvi Measured Prvi+Bepa

**Comments:** I need to buy more medical tape. 2 trees completely dead for prvi. Need to figure out what to do with resprouting and when there is more than 2 trunks.

***Thursday, May 9, 2024***

Christophe

- Answered a few emails.
- Move back Segi that I removed previously to the greenhouse (warm spring treatments).
- Phenological monitoring for all species
- Paint Pist/Poba
- Measure shoot elongation Pist/Poba
- Water plants in CC

**Comments** Once I realized Segi were turning back from brown to green, I decided to bring them back to the experiment. Issue 12 on Git describes this.

**On methods for shoot elongation:** I always measure the center shoot of Pist. If there is no “central” shoot, I put a red dot on the measured shoot.

***Friday, May 10, 2024***

Christophe

Painted Segi, Quma and Acma.

- Took pictures of all Segi replicates as I want to keep track of their color change.
- Ken removed some dendrometers.
- Shoot elongation measurements for Segi, Quma and Acma (both in field and CC)
- Plants were rotated and watered in the chambers
- Worked 2 hours on irrigation and greenhouse arrangement.
- Started pruning Alru and weeding plants.

**Comments** I was not feeling well this morning, so I came in at 11 and finished at 8:30. I realized pruning Alru, weeding the plants outside the greenhouse will take many hours. Dan and I will install automatic watering for trees outside the greenhouse.

## ***Monday, May 13, 2024***

### **Christophe**

- Moved Poba/Pist back to Totem
- Repotted Pist (all of them)
- Brought home and aped the end of roughly 100 rulers in the evening

**Comments** : Pist show root limitation. Will post pictures on git. Poba didn't need to be repotted as they were already in 2-gal pots from the cuttings planted in March

## ***Tuesday, May 14, 2024***

### **Christophe**

Personal appointment to fix my car. So did mostly computer work. Emails, git issues, update data, etc. Came in for 3 hours in the afternoon to move around some plants and start weeding some from outside of the greenhouse.

## ***Wednesday, May 15, 2024***

### **Christophe+Ken+Justin**

- I bought tape.
- Taped the end of rulers.
- Shoot elongation measurements of:-Acne -Bepa -Poba -Prvi

**Comments** : Before May 15, Hobo loggers were very much exposed to the sun. Therefore, they are heating which I assume influences the temperature sensor greatly.

**On phenological monitoring of Pist:** Justin and I talked about it and we figure that for this species, from 1-2-3 are the shoot elongation and 4 is leaf emergence. This species elongates its shoots before the needles emerge. Justin will start an issue on this with upcoming pictures.

## ***Thursday, May 16, 2024***

### **Christophe+Justin** I came in at 9:30 and Justin at 10

- We did shoot elongation measurements for : -Quma -Segi
- We took pictures of Segi, Quma and Pist for phenostages. Justin started an issue to figure out Segi phenostages.
- We watered and rotated Acma, Segi and Quma (in chambers).
- 
- I installed white paper with a half pot to protect Hobo loggers from getting sun heat.
- I installed a bird feeder.

**Comments** : left early for an appointment at ICBC.

### ***Friday, May 17, 2024***

**Christophe+Selena** I arrived at Totem at 11am. I had to go back to ICBC to get my Driver's license done. Selena arrived at Totem at 11am.

- We installed the paper rulers on Poba and Quma, both in the greenhouse and in the chambers.
- I had to buy more medical tape.
- I fixed a couple of leaks on the irrigation system .
- I saved the vegetable plants for Dan that he forgot in the truck.
- I weeded almost all the plants outside of the greenhouse. I finished at 8:30.

### ***Friday, May 20, 2024***

**Christophe**

- 
- Started a git issue on nutrient addition and answered a few emails.
- I removed 2 species from the chambers: -Quma -Acma
- I took the hobo loggers from those chambers as I want to install them at Totem. CC4 and CC1 are the ones removed.
- I placed all the Segi in the Walk-in chambers.
- Since the Subaru was very dirty from all the plants moved around, I cleaned it with a very bad vaccum that I found in the basement.
- First visitor at my bird feeder! Black-capped chickadee. I am very excited.
- I did the phenomonitoring for all trees.
- Put back drippers in Quma

### ***Tuesday, May 21, 2024***

**Christophe**

- Took some time to learn Latex.
- I attended a talk on AI in Academia with Deirdre. Then we talked about a few questions I had regarding how to organize my data, the summer plans of the lab and other stuff.



- Then I chatted with Mao about our respective projects and how Mount Rainier is going to be like.
- Then I answered a few get issues and emails.
- 
- I changed the photoperiod in CCWalkin and set the remaining chambers to a constant 10 PAR and 15 degrees so they consume less energy.

### ***Wednesday, May 22, 2024***

**Christophe + Ken** I started marking the rulers and Ken arrived at 10. We finished marking the rulers at 12 and Ken went to get extra paper rulers because we forgot some trees on Friday. I talked with Dan, we will shrink the irrigation system, remove the compost and cut the grass around the greenhouse. I talked with Deirdre regarding the car battery A crow stole my granola bar :( We finished taking the measurements around 3. I left as I had another appointment at ICBC to register my car. I went to Costco during the night to buy a new car battery for the lab.

**Comments** :

### ***Thursday, May 23, 2024***

**Christophe** Started the day with some readings on growing season extensions. Added two quick notes in my obsidian slip box. I have been procrastinating on this and should be more consistent. I answered emails to Lizzie, Deirdre and Mao regarding egret retreat, lab meeting, rbs retreat, etc. Submitted my expenses to Lizzie Lizzie agreed to the switch of car responsibility from Deirdre to me.

### ***Friday, May 24, 2024***

**Christophe** Went back to ICBC to register my car in BC. Came back at Totem to clean the greenhouse so it's presentable for my presentation on Sunday Last step of fixing the irrigation has been done with Dan in the morning. We I changed the Subaru's battery with the one I bought at Costco. I charged it so it's at maximum capacity with the car charger at Totem. Met with Deirdre and Mao at 1pm to discuss: -Egret retreat, -Mao's fieldwork, -General plan for the summer I also mentioned to them that I thought of removing the Segi from the chambers because they've been there for a long time and because of the power outage that will happen the day after (Saturday). We agreed to remove them and place them back at Totem. I moved the Segi back to Totem, and placed the irrigation back into the pots.

### ***Saturday, May 25, 2024***

**Christophe** Came in at 5pm to prepare my presentation for tomorrow. I installed dendrometers on trees and prepared a bunch of graphs. I finished cleaning the greenhouse

## ***Sunday , May 26, 2024***

**Christophe + Justin** Came in at 8am to set up my monitor and my presentation. Justin came in at 10:30 to take pictures of my presentation while I was presenting the graphs to him! Grad students from Isabelle Laforest's lab came to my talk Another student from Ontario also came.

In the night, I went to the reception. It was very nice. Mao and Deirdre were also there, and I saw Steven K who just arrived in Vancouver.

## ***Monday, May 27, 2024***

**Christophe** CSEE conference Deirdre and I met with Patrick from biochambers in the morning. We decided to meet with him on Friday morning and since Deirdre won't be able to attend, Mao will join. Attended many talks In the night, I went to the grad/post doc mix at Koerners.

## ***Tuesday, May 28, 2024***

**Christophe** I started the day with a visit of the greenhouse for the students of Steven K lab. Then I came back to the nest with them. Attended many talks once again

## ***Wednesday, May 29, 2024***

**Christophe + Britany** Came in at 9:30 and Britany at 11. Started marking the rulers for shoot elongation measurements. We finished the measurements with the metal ruler at 2pm. I went back to the nest to attend the last talks. Britany finished logging in the paper rulers marks. She didn't finish it. I fill finish logging in the data tomorrow. Had a chat with Dan regarding the mildew that's attacking the Acne. We decided to spray them with systemic fungicide. It was done the same day by Dan

## ***Thursday, May 30, 2024***

**Christophe** First work day after the conference. Lots of things to do:

- Bring 20 plants in the lab to start testing the dendrometers
- Attend Deirdre and Britany's graduation and take pictures of them – done
- Meet with Rob Guy – done
- Update nutrient issue to inform Lizzie/Freddi – done
- Check Segi W/W 14 and 15. They were switched, so I wanted to make sure that phenomonitoring was done properly – done
- Phenomonitoring
- Add archive folder to fuelinex repo – done
- Email Lizzie for next week meeting – done

- Student profile on Forestry site – done
- Review notes from last year's egret retreat – done
- Start issue on disease management – done
- Answer Lizzie on aseiversity – done
- Finish setting up Hobo loggers

### ***Friday, May 31, 2024***

**Christophe, Mao, Britany** Started the day with the interview with Patrick from Biochambers. It went great! He answered many concerns I had with the chambers and found possible reasons why the trees were not doing great in the spring. After that, I started repotting the Segi around noon. Britany arrived shortly later. She left at 1:30 and I finished alone around 4pm. I worked on my computer for the rest of the day,

### ***Monday, June 3, 2024***

**Christophe** Started the day by answering many emails. I answered the git issue on nutrient depletion which took my quite some time. I also finished installing the dendrometer. I did this just so I can check if they are all working. Met with Mao at 3:30pm to discuss worklearn. We updated the offer and will send to Lizzie to confirm the info with her.

# May

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**Reasons:** These species don't look too happy in the chambers and most of the replicates are fully leafed out

**Results:** Deirdre got me orientated on the project and trained me on the phenological monitoring. I met with Ken and Selena so we can move the first batch of species Cool/Cool treatments back to Totem: Acne Bepa Prvi Alru \*\*\* we decided to move also Alru as they are probably dead. Plants in chambers watered

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**Comments** :

### ***Thursday, May 23, 2024***

**Christophe** Started the day with some readings on growing season extensions. Added two quick notes in my obsidian slip box. I have been procrastinating on this and should be more consistent. I answered emails to Lizzie, Deirdre and Mao regarding egret retreat, lab meeting, rbs retreat, etc. Submitted my expenses to Lizzie Lizzie agreed to the switch of car responsibility from Deirdre to me.

### ***Friday, May 24, 2024***

**Christophe** Went back to ICBC to register my car in BC. Came back at Totem to clean the greenhouse so it's presentable for my presentation on Sunday Last step of fixing the irrigation has been done with Dan in the morning. We I changed the Subaru's battery with the one I bought at Costco. I charged it so it's at maximum capacity with the car charger at Totem. Met with Deirdre and Mao at 1pm to discuss: -Egret retreat, -Mao's fieldwork, -General plan for the summer I also mentioned to them that I thought of removing the Segi from the chambers because they've been there for a long time and because of the power outage that will happen the day after (Saturday). We agreed to remove them and place them back at Totem. I moved the Segi back to Totem, and placed the irrigation back into the pots.

### ***Saturday, May 25, 2024***

**Christophe** Came in at 5pm to prepare my presentation for tomorrow. I installed dendrometers on trees and prepared a bunch of graphs. I finished cleaning the greenhouse

## ***Sunday , May 26, 2024***

**Christophe + Justin** Came in at 8am to set up my monitor and my presentation. Justin came in at 10:30 to take pictures of my presentation while I was presenting the graphs to him! Grad students from Isabelle Laforest's lab came to my talk Another student from Ontario also came.

In the night, I went to the reception. It was very nice. Mao and Deirdre were also there, and I saw Steven K who just arrived in Vancouver.

## ***Monday, May 27, 2024***

**Christophe** CSEE conference Deirdre and I met with Patrick from biochambers in the morning. We decided to meet with him on Friday morning and since Deirdre won't be able to attend, Mao will join. Attended many talks In the night, I went to the grad/post doc mix at Koerners.

## ***Tuesday, May 28, 2024***

**Christophe** I started the day with a visit of the greenhouse for the students of Steven K lab. Then I came back to the nest with them. Attended many talks once again

## ***Wednesday, May 29, 2024***

**Christophe + Britany** Came in at 9:30 and Britany at 11. Started marking the rulers for shoot elongation measurements. We finished the measurements with the metal ruler at 2pm. I went back to the nest to attend the last talks. Britany finished logging in the paper rulers marks. She didn't finish it. I fill finish logging in the data tomorrow. Had a chat with Dan regarding the mildew that's attacking the Acne. We decided to spray them with systemic fungicide. It was done the same day by Dan

## ***Thursday, May 30, 2024***

**Christophe** First work day after the conference. Lots of things to do:

- Bring 20 plants in the lab to start testing the dendrometers
- Attend Deirdre and Britany's graduation and take pictures of them – done
- Meet with Rob Guy – done
- Update nutrient issue to inform Lizzie/Freddi – done
- Check Segi W/W 14 and 15. They were switched, so I wanted to make sure that phenomonitoring was done properly – done
- Phenomonitoring
- Add archive folder to fuelinex repo – done
- Email Lizzie for next week meeting – done

- Student profile on Forestry site – done
- Review notes from last year's egret retreat – done
- Start issue on disease management – done
- Answer Lizzie on aseiversity – done
- Finish setting up Hobo loggers

### ***Friday, May 31, 2024***

**Christophe, Mao, Britany** Started the day with the interview with Patrick from Biochambers. It went great! He answered many concerns I had with the chambers and found possible reasons why the trees were not doing great in the spring. After that, I started repotting the Segi around noon. Britany arrived shortly later. She left at 1:30 and I finished alone around 4pm. I worked on my computer for the rest of the day,

### ***Monday, June 3, 2024***

**Christophe** Started the day by answering many emails. I answered the git issue on nutrient depletion which took my quite some time. I also finished installing the dendrometer. I did this just so I can check if they are all working. Met with Mao at 3:30pm to discuss worklearn. We updated the offer and will send to Lizzie to confirm the info with her.

## June

### *Monday, June 3, 2024*

**Christophe** Started the day by answering many emails. I answered the git issue on nutrient depletion which took my quite some time. I also finished installing the dendrometer. I did this just so I can check if they are all working. Met with Mao at 3:30pm to discuss worklearn. We updated the offer and will send to Lizzie to confirm the info with her. I checked in with Dan regarding mildew on the Acne. They don't look great right now. He told me it can take up to a week before we see any improvement. Also, I thought we had the same problem with Prvi, but its just residu of the fongicide on their leaves.

### *Tuesday, June 4, 2024*

**Everyone from the lab** Reifel Bird Sanctuary retreat. When we arrived, it was raining a bit, but it slowed down after 15 minutes. It was very quiet. Justin will do a slideshow of the pictures that were taken. I started working for real at 3pm. I added 2 notes to my slipbox! It was on the paper Fredi shared in git issue 14 about how to define stress in plants. I still need to cross-reference those. After this, I replied to a couple of emails that Lizzie and Christine sent me about my expense report. It took me about an hour to get this done.

### *Wednesday, June 5, 2024*

**Christophe** I went to get the Subaru serviced. I also filled up the gas tank. While I was waiting, I finished what Christine told me to do to get my expense report done. I also registered to my classes in the fall. I talked to Deirdre on my way back to talk about my talk with Christine which was very difficult. We had an idea of getting a list of things over the course of the summer of things that Deirdre should teach us. TO DO TODAY

- Scan the receipts from yesterday (dominos and rbs) – done
- Scan the receipts from today (Chevron and Kon auto) – done
- Go back downstairs to grab the ziplock in the Xterra with the maintenance. Add maintenance to Git? – done
- Start a list of things Deirdre should pass on to us. – done

### *Thursday, June 6, 2024*

**Christophe** Lizzie and I met over Zoom in the morning to discuss many things. Details are in my notes. Main conclusion is that we will drop using the dendrometers in the fall and I should reach out to the people at OpensLab to see if they can help me troubleshoot the dendrometers. We also talked about which classes I should and shouldn't take in the fall. We talked about the nutrients and I told her that I was concerned trees were showing nutrient stress symptoms. So she gave me green light to give them liquid nutrients. I searched lots of

papers to figure out what would be a good nutrient concentration to add to the trees because we want to mimic natural conditions. I asked Dan's opinion and he brought fertilizer from the greenhouse. In his opinion, this will work perfectly and will provide fast release nutrients to the plants. Mao and I met at 3pm, so I can show her how to take the shoot elongation measurements and finish the pheno monitoring. We had to leave before we finished because we had a lab meeting. We presented the trips we had been doing in the following weeks. I came back to Totem after to finish phenomonitoring and take the measurements on the paper rulers.

### ***Friday, June 7, 2024***

**Christophe** Started at 10am. I kept on looking at how much fertilizer I should add to the trees. It's very ambiguous, so I decided to add very small amounts at first and readjust later on. For now, I diluted the solution Dan gave me by half with tap water. I added 125mL of liquid fertilizer to all plants today. In the afternoon, I downloaded all the data from the hobo loggers that were already in the greenhouse. Then, I added 22 temp/light hobo sensors all over the greenhouse, because I strongly suspect that we will have a big light effect because of the forest behind the greenhouse. The plants at the front of the greenhouse most likely receive much more light than the ones at the back of the greenhouse. I also took some time to move my bird feeders because I caught a squirrel eating in them.

- Figure out fertilization and do it – done
- Reserve camping
- deliver Mao's package – done
- 

### ***Friday, June 7, 2024***

**Christophe** Came in at noon, mainly to take care of the plants at Totem. I finished setting up the light meters. I decided to remove logging in the temperature data, because anyway it's extremely biased because the sun directly hits them and make them really hot. I need to finish the greenhouse design with them in.

### ***Monday, June 10, 2024***

**Christophe**

- check new hobo sensors – done
- update the greenhouse arrangement with all the new loggers
- make sure irrigation is back on – done
- start writing up the methodology on hobo loggers and fertilizer – done
- shoot elongation protocole – done
- DEFENETILY do the apical shoot death monitoring – done

- Write to Mao to tell her what she will need to do – done
- phenomonitoring – done
- load shoot elongation measurements in excel file – done
- write to Lizzie and colleagues to tell them that I won't be checking my email – done
- Move Alru back to the soil pit – done
- Weed all the plans – done
- update the pheno monitoring and shoot elongation of all the segi that I removed from the experiment.
- Email Lizzie about her class– done
- return book to Amazon
- Add notes to the labgit on chambers
- email Melina regarding the greenhouse – done
- Inventory of trees outside at Totem – done
- Clean up the mess at Totem – done
- Answer Lizzie's email on Google Drive issue. – done
- start loggers at the top of Greenhouse – done
- add csv file description for aserdiversity – done
- text dan to spray again – done

I worked a lot on the methodology today. I wrote up on the hobo loggers, fertilization, shoot elongation monitoring. I also added a file of apical shoot monitoring because many trees have a dead apical shoot. Therefore, I don't think we will be able to estimate their initial biomass.

I followed up on the git issue regarding fertilization

Asevdiversity: reuploaded the methodology text and added column description to the .tex file as requested by Lizzie.

Big day! I did pretty much all the things I listed today! I finished with weeding all the plants in and out the greenhouse. I replied to Lizzie and Mao to finish. Break is tomorrow!

***Tuesday, June 11, 2024***

Christophe Vacation

***Wednesday, June 12, 2024***

Christophe Vacation

***Thursday, June 13, 2024***

Christophe Vacation

***Friday, June 14, 2024***

Christophe Vacation

***Monday, June 17, 2024***

Christophe Vacation

***Tuesday, June 18, 2024***

Christophe Vacation

***Wednesday, June 19, 2024***

**Christophe** Hectic mess with the UBC residences. They kicked me out of my place on my last day of vacation and I needed to fix this issue in the morning. Therefore I arrived at the office around 11.

Read all the emails I received during my holidays and. Following is the to do list I need to do today:

- Start git issue on the tree inventory
- update the greenhouse arrangement with all the new loggers – done
- update the pheno monitoring and shoot elongation of all the segi that I removed from the experiment – done
- Add notes to the labgit on chambers
- elongation monitoring – done
- check hobo loggers with the lights –done
- check hobo temperature loggers and replace the one that isn't working – done
- contact opens lab to trouble shoot the dendrometers

I noticed Mao didn't do phenomonitoring last Thursday (doy165). It's not a big deal since most plants are already at phenostage 3-4.

Britany came to meet me at 2pm to do the shoot elongation monitoring. We finished around 4, but we didn't fill in the trees with paper rulers.

## ***Thursday, June 20, 2024***

**Christophe** I started a R script to check the hobo light loggers. It took me quite some time. After, I met Britany again to finish shoot elongation logging in the excel. I also did phenomonitoring of Segi as it's the only species that has not fully leafed out.

I also finished the greenhouse arrangement with the light loggers that are now included in it.

In the afternoon, we had a nice lab meeting at the Botanical Garden.

## ***Friday, June 21, 2024***

**Christophe** I worked from home this morning. I did some emails. Then I went to Totem to maintain the plants and clean around a little.

I modified how the comments were entered in the shoot elongation file on doy164 (moved them back to the note column)

## ***Monday, June 24, 2024***

**Christophe** Started the day with a meeting with Roman. I took some notes on the chambers that I should add to the lab git. After, I finally started a document on the notes on the climate chambers maintenance and schedule creation.

- Start git issue on the tree inventory – done
- Change the schedule in the CC so they are at 20C and the lights were turned down.
- Email the maintenance guy for the biochambers for 2 things: clean the filters and tell him not to repair the copper pipes. – done
- Add notes to the labgit on chambers – done
- contact opens lab to trouble shoot the dendrometers

In the afternoon, I went back to Totem so I can install 6 more temperature loggers. Lizzie came to meet me at 2:30. We discussed the project, expectations for the summer and the egret retreat. To do list for tomorrow is the things I will need to get done soon.

## ***Tuesday, June 25, 2024***

**Christophe** I started the day with the creation of a new spreadsheet: miscellaneous which includes the different monitoring. Either if the apical shoot is dead, if there was chlorosis, mildew, etc.

After this, I started rearranging my repo because it started to be quite messy. I also created some notes on how to use the hobo loggers. Then I wrote a blog post for the trip at RBS.

- Check how much light difference there is between the loggers. Ideally, we would remove this factor from the models as it would complicate things a lot. I will talk with Fredi about this.
- Email the person Lizzie recommended on the Segi physiology



- make a note of chlorosis monitoring and the plants that got light damage in the spring (this might not be possible anymore) – done
- Change the schedule in the CC so they are at 20C and the lights were turned down.

In the afternoon, I got lots of things done: finalized the hobo loggers description, I reorganized my repo and I did some research on the bud set. Then I read 2 papers and made two permanent notes out of them. Lizzie stopped by and asked me to figure out which software, languages and others she could explain during the lab meeting.

### ***Wednesday, June 26, 2024***

**Christophe+Mao** Emailed Alana Chin. Lizzie recommended reaching out to her cause she might have information on growing sequoia. After I kept working on some notes that I started yesterday.

At 1 pm, I went to pick up Fredi at the airport. His flight was delayed so I returned to the office at 3 pm. Mao and I went to monitor the shoot elongation together. We didn't finish all the measurements as it was raining quite much. We'll get it done tomorrow morning.

I came back to the office and worked on the script for the light hobo loggers. I want to find out if there is a big difference between the light intensity between the different blocs.

I read two more papers. Took fleeting notes, but I have to make them permanent

### ***Thursday, June 27, 2024***

**Christophe+Mao** Mao and I finished the shoot elongation measurements this morning. I started around 9:45. I replied to Alana regarding the phenology of Segi and to Sally Otto for the biomathematics class in the fall.

I started taking the bayesian class Lizzie recommended. Then I worked again on my script for the light hobo loggers.

We had the training on wilderness at 1 pm.

### ***Friday, June 28, 2024***

**Christophe** Started the day with a meeting with Alana Chin to discuss how should I monitor better the Se **To do list for today**

- Install Stan on R
- Make sure to run the script Deirdre told me to run. 8 school tutorial
- Finish first class of the Stats class
- Finish organizing the repo: Objects, greenhouse design, ordering, equipments, in the note folder. Once methods are typed nicely, it goes in docs folder.
- contact opens lab to trouble shoot the dendrometers

in the afternoon, I met with Fredi for 2 hours to discuss many things I have yet to answer. All the notes are in my obsidian folder. I finished the day with some quick questions I asked Lizzie. One of them was in regards to using the tidyverse. She recommends not using it if

there is a way with base R because it's less future proof and running pieces of code by itself isn't good.

Then, we went to get icecream and beers.

# July

## *Monday, July 1, 2024*

**Christophe** This morning, I tried adding a table of contents to this dailylog. I don't know why it's so complicated, but I couldn't figure out a way to do it. I let that go.

Then I tried installing Stan on R, as Deirdre suggested. It didn't work either. I will ask her when she's back from vacation.

I worked for most of the afternoon on my script for the shoot elongation measurements. It doesn't look too bad! I needed a break, so I went to install hobo light loggers in the climate chambers so I can see how much light they are giving to the trees when they are in there. I also brought back the bepás that were in the lab to totem field.

at totem, I monitored bud set for prvi and took pictures of the acne. For prvi, I think they are far more advanced than I was expecting. Some of them seem to already be at complete dormancy. For acne, it's confusing. Mildew have impacted them a lot. They show very tiny leaves, but they have been there for a while now, so as Fredi told me, it might just be the upcoming scales that will cover the bud.

I removed the drippers from the Segi. I will put them back on Friday. After discussing with Fredi, we thought giving them a water break would be good.

I came back to the office to finish what I started.

I modified slightly Fredi's notes on budset so they keep going after 4 (5,6,7,0)

## *Tuesday, July 2, 2024*

**Christophe** Lizzie, Mao and I talked about getting a power bank for the lab. Lizzie ordered it. It should arrive on Friday. Fredi and I discussed about literature reviews, how he does them and where I should start

Britany and I discussed the fertilization plan and we figured that there are no good amount we could add to the trees. We rather run in the problem of the studies used seedlings and not saplings. A lot of them were using % of N, P or K of leaf tissue and not actually of much mg were added to the plants. I also discussed this with Fredi. He suggested looking at the atmospheric deposition, but I argued that this is for a whole ecosystem and figuring out how much nutrients a sapling is actually getting would be hard and perhaps impossible. So I just decided to be consistent and add nutrients again this week. I'll do this just after we weed all the plants.

## *Wednesday, July 3, 2024*

**Christophe + Britany** We started the shoot elongation measurements. As I won't be there next week, I showed Britany how to take the measurements. We didn't have time to log in the paper ruler measurements.

Dan delivered the organic spray bottles to keep killing the powdery mildew (some of the new shoots are getting it again). He also delivered the fertilizer. It's the same one as last time. I will fertilize the trees perhaps on Thursday

I asked him to reduce the watering of all trees to once a day, in the morning for 15 minutes, instead of 3x a day.

In the afternoon, I started a new cv file on latex  
Deirdre and I talked about literature reviews

I finished my power point presentation for the lab meeting tomorrow on research tools. Deirdre and I tried to trouble shoot the installation of Stan on my computer. It still doesn't work. I'll try again maybe tomorrow – although I won't have time with the budset and other things

### ***Thursday, July 4, 2024***

**Christophe+Britany+Ken+Selena+Justin** Came in at 8 to check the egret coordinates. I checked the data, and then cleaned the entries I could. Then I went to Totem to meet Britany and figure out budset. She worked on this during the week, and we needed to figure out some other species. Acne is most likely ongoing budset, so we took photos of those. We did the same for the oaks and the pines. These two were tricky, because some of the oaks are doing a second flush, but some don't seem like they will. For the pines, I had no photos to base budset on, so we discussed what stages they could be. I'll talk to Fredi about that tomorrow.

At 1pm, Ken and Selena arrived to weed the plants. Justin arrived at 2:15pm and we finished at around 3. Britany and I finished taking photos of some good budset examples after I went to pick

### ***Friday, July 5, 2024***

**Christophe** Britany and I finished login in the data for shoot elongation and budset. Then I finished the document for budset, I still need to figure out pist.

I met with Lizzie in the afternoon to talk about literature reviews, who will take care of my experiment while I am gone. She asked me to ask Britany to meet with rob with ken and Justin.

### ***Saturday, July 6, 2024***

**Christophe** I came in to finish egret coordinates cleaning. I managed to fix almost all issues. Some remain.

I did the map for egret also

I went to totem to fertilize the trees for the second fertilization of the season. I used the same method as the first time. I diluted the fertilizer by half and added 125mL.

### ***Monday, July 8, 2024***

**Christophe** Egret Retreat! We started the day with some break-out teams. I was with Fredi to try to figure out question 2. We came back 1 hour later and debriefed. In the afternoon, Lizzie showed me how I could proceed with the experiment design with a for loop.

### ***Tuesday, July 9, 2024***

**Christophe** Egret Retreat! I arrived late this morning. We worked for 2 hours before leaving for the ferry. On the ferry Lizzie helped me with some tasks I had.

### ***Wednesday, July 10, 2024***

**Christophe** Egret Retreat! We went to the pub for beers, onion rings and fried pickles. We went to the eastern point to see if we could spot whales but we couldn't find any...

### ***Thursday, July 11, 2024***

**Christophe** Egret Retreat! We finished around 4pm after a long discussion about authorship. I found this talk very insightful and got to address my concerns of me being a co-author. We worked for a little bit after and drove dan to the plane in the evening.

### ***Friday, July 12, 2024***

**Christophe** Egret Retreat! Last day of the retreat! Not the most productive on a coding basis, but we had a lot of fun! We did the 4hour hike Lizzie recommended. It was beautiful. The weather was great. We came back to the cabin, packed, cleaned the place and left. Lizzie bought us an early dinner at the pub right next to the ferry. The second ferry after we left Saturna was left so we had a chance to have Deirdre give us a small talk about phylogeny. In the ferry I worked on my code to clean coordinates. I thought I solved the issue, but I didn't. I came back home around 10pm.

### ***Monday, July 15, 2024***

**Christophe** I had a quick chat with Ken about the monitoring of shoot elongation and phenology in the following weeks. We walked to the lab after to start packing the gear for Smithers. We left at 12pm after saying bye to Lizzie.

The drive went pretty well. We saw a wild fire on our way up. We stayed at the camping \*\*\*\*. Worst ever!! It was so warm (about 32o)

### ***Tuesday, July 16, 2024***

**Christophe**

### ***Wednesday, July 17, 2024***

**Christophe**

### ***Thursday, July 18, 2024***

**Christophe**

### ***Friday, July 19, 2024***

**Christophe**

### ***Monday, July 22, 2024***

**Christophe**

*Tuesday, July 23, 2024*

Christophe

*Wednesday, July 24, 2024*

Christophe

*Thursday, July 25, 2024*

Christophe

*Friday, July 26, 2024*

Christophe

*Monday, July 29, 2024*

Christophe

*Tuesday, July 30, 2024*

Christophe

*Wednesday, July 31, 2024*

Christophe