

2019 Trip Report(s)



Bat Dai Son conifer conservation forest (Ha Giang Province, Vietnam)

Part I: China (March 8-20) – Guangdong Province (China National Gene Bank, Shenzhen Fairy Lake Botanical Garden, Yingde County), Beijing Botanical Garden, Shanghai Botanical Garden.

Part II: Vietnam (April 16-24) – Hanoi, VAST meeting, FFI meeting.

Part III: China (Oct. 8-24) – Jiangxi Province (Jianggangshan and Sanqingshan natural areas), Hunan (Bamianshan natural area), Shanghai Botanical Garden.

Part IV: Vietnam (Nov. 11-25) – Da Lat, Ha Giang Province, FFI meeting.

Part I: Eastern China (March 8-20)



CNGB in Shenzhen, China

As we have done for the past six years, Dr. Donglin Zhang (University of GA) and I took off for Shanghai in early March with the goal of visiting with a few colleagues while making a solid plan for a seed collecting trip in the fall. We would begin this adventure by flying into the Shanghai airport, then spending the night in the city. The next day we flew down to the bustling city of Shenzhen in the southern part of Guangdong province and were picked up at the airport by scientists from the China National GeneBank (CNGB) who had been asking Donglin to visit their facilities for quite some time. While this first stop had nothing really to do with plants, it was fascinating to get the behind the scenes tour of their facility and learn about the mind-blowing genetics work being done there. The CNBG is China's first national level gene storage bank. The facility opened in 2016 and is currently partnered with Harvard in the development of high-density DNA storage technology.

After spending one night in a rather spartan dorm room at CNGB, Donglin and I were picked up the next day by a man named Mr. Liu who is a friend of Donglin's in the Tea Oil business. Not only was Mr. Liu going to give us a ride back to Guangzhou, the capitol city of Guangdong, he was also going to take us to visit his tea plantation as well as to see the extremely rare *Magnolia guangdongensis* in the wild. However, we had one more quick stop to make before our long drive back to Guangdong...Shenzhen

Fairy Lake Botanical Garden. Upon our arrival we were once again greeted by Donglin's friends with open arms. Our host was Dr. Shouzhou Zhang who is the director of the garden and a huge Begonia and Magnolia lover; we couldn't have been in better hands. Since our time was unfortunately limited on this visit we took a brief driving tour of the actual botanical garden and then drove a short distance to where all of the magic happens at Fairy Lake BG, the Species Conservation Center. As soon we got out of the car, I immediately saw what I had flown half way across the world to see...*Magnolia guangdongensis*. A whole row of uniformly grafted plants were growing at the end of the greenhouse range. I could do nothing but drool and take picture after picture trying to capture the beauty of this species that is virtually unknown outside of China. While lusting over these plants, Dr. Zhang explained to me that these were all grafts of the type specimen of *M. guangdongensis* from the only known wild population in Yingde county. He also told us that this plant rarely makes seed in the wild and is extremely difficult to propagate via cuttings, so they must graft it. Researchers from several institutions are now working with this relatively new species (discovered in 2004).



Grafted row of *Magnolia guangdongensis* at Fairy Lake BG



Underside of *Magnolia guangdongensis*



Dr. Shouzhou Zhang from Fairy Lake BG (left), Dr. Donglin Zhang from Univ. of Georgia (center)

While I could have spent the rest of the afternoon photographing this stunning Magnolia, we had other things to see. Dr. Zhang knew I also wanted to see their renowned Begonia collection so we made our way there next. As we walked into the greenhouse I was floored by the diversity and how well grown and maintained the collection was. Dr. Zhang introduced the handful of staff that took care of the Begonias then explained that they grew roughly 400 different Begonias with about 200 being straight species and 200 being hybrid cultivars. I could feel the hairs on my arms beginning to stand up as we walked through bench after bench of rarities that I had only see before in books. Dr. Zhang speaks good English so as we walked we also talked of where each of these plants had been collected by his staff, mostly on the steep limestone mountains that create the border between southern China and northern Vietnam. We also spoke of the new Begonia hot spot, northeastern India. Because of political problems, Chinese nationals are not allowed to travel to certain parts of remote northeast India and that just happens to be where these Begonias grow. It also happens to be a place I was able to botanize in several times in the past, so I began telling a few quick stories of my time in India. Before I knew it, I had been invited to return to Fairy Lake on my next visit to give a lecture on Indian Begonias.



Begonia madness at Fairy Lake Botanical Garden

After leaving the Begonias Dr. Zhang wanted to show me one final collection that he was particularly proud of, their Gesneriad collection. Once again this is a collection that we have a very large inventory of at ABG, but virtually all of the plants at Fairy Lake had been collected in the wild throughout southeastern China. Just like in the Begonia house, the woman who was the curator of these plants knew exactly what she was doing when it comes to caring for these hard to grow plants. Not only did they have an immaculate greenhouse where they were growing the Gesners, but they also had a limestone mountain mock up that allowed them to grow the plants in a simulated natural habitat. Truly amazing!!



After our brief tour of the highlights of Fairy Lake BG, it was time to drive for several hours towards the capital city of Guangdong province, Guangzhou. The plan was for us to get a tour of a very large nursery that specialized in producing plants for Tea Oil (Camellia oil) production and then we would travel out to the countryside to Yindge county to see *Magnolia guangdongensis* in the wild. Early the next morning we were picked up by our host and then zipped off to see a HUGE nursery operation just outside of town. Our host took us through every step of the process from grafting the desired clone at a very young age, to planting out hundreds of thousands of plants to get the yeilds needed to make the oil, to finally sampling their product. Camellia oil is an expensive product, but it is a very healthy alternative to other cooking oil that has the added benefit of having a much higher smoke point than olive or coconut oils making it perfect for high temperature Asian cooking. The only drawback so far is that the oil is still expensive to purchase. Over time the hope is that large farms of *Camellia oleifera* (the species which produces seed with the highest oil content and happens to be the most cold hardy) will be planted in other parts of the world to aide in production. Currently, a large tract of land in southern Georgia is being considered for the next Camellia oil farm.



Every plant at this nursery was a grafted selection of *Camellia oleifera* for tea oil production



Huge tea oil plantations going in just outside of Guangzhou

The time had finally arrived for what I had been waiting for, we were actually going to see *Magnolia guangdongensis* in its native habitat. I had heard reports of this tree since 2008 and was able to see it for myself for the first time while I was visiting the South China Botanical Garden in 2016 where their prized specimen was literally under lock and key. Because of Donglin's connections, we were able to drive deep into the mountains, nearly to the site in Yingde where these unique trees grow. To be honest, it was a bittersweet moment to arrive at the home of this beautiful *Magnolia*. On one hand I was thrilled to be there and filled with anticipation of what I thought I would see, but on the other was the reality of the situation. What we came upon was not a lush forest, but instead a very disturbed area that had been cut over many times. Our guides took us to marked trees they were doing genetics and propagation research on, but they were just stumps with a season or two of new growth on them. We saw about a dozen trees, or should I say stumps, in this area and they all looked the same...on the verge of death. What I have come to learn is that the type specimen of this species is particularly beautiful with thick, brown indumentum on the undersides of small evergreen leaves. It has pure white, fragrant flowers in the early spring and seems to be a perfect candidate for introduction except it is exceedingly difficult to propagate. For that reason, several *Magnolia* experts in China have been grafting cuttings from the type specimen and now it is being grown more and more throughout China as an ornamental. However, those are basically the only genetics being preserved while the few hundred plants that remain in the wild maybe be withering away due to habitat destruction. Multiple botanical gardens in southern China are now working to preserve as many individuals as they can, but time will tell how successful they will be.



Stump of *Magnolia guangdongensis* with silver research tag around the base. Only a handful of sprouts remain on this plant.



Roadside plant that has remained uncut for several years we found near the other populations

The next day we had a very nice tour of a couple of private gardens in Guanzhou and then it was time for Donglin and I to part ways. He was off to visit his mother near Wuhan and I was going to make a quick visit to Beijing Botanical Garden before traveling back to Shanghai to fly home. While Donglin and I were in the parking lot saying goodbye to our friends, I was bent over repacking my duffle bag. When I stood up to sling my bag into the back of a pickup truck, I felt (and heard) a loud pop come from the back of my right leg. I didn't know it at the time, but I had nearly torn my hamstring from my pelvic bone. I was literally on the way to the airport to fly to Beijing, so I continued on with my plans not really knowing what else to do. I arrived to Beijing late in the evening and was picked up by a researcher with the Beijing Botanical Garden who took me straight to my hotel. By the time I woke up the next morning I knew that I had done something pretty serious to my leg, but since I only had a few more days of travel I decided to continue on.



Central lake at Beijing Botanical Garden

I arrived at the Beijing Botanical Garden on the morning of March 15, not the best time to visit the garden as it is still basically the dead of winter at that time in northeastern China. However, I had never been there before and I had a couple of days in between appointments, so Donglin once again made a call for me. The Garden was established in 1955 and is situated between two mountains...the Fragrant Hills and Jade Spring Mountain. The campus is an enormous 400 hectare (nearly 1,000 acre) piece of property with stunning views of the mountains all throughout the Garden. I was carted around like a dignitary thanks in part to hobbling around like an old man, but mostly because I was a friend of Donglin's. While most of the collections were still fully dormant, we did see the occasional Magnolia or Chimonanthus beginning to come into bloom. For me, the main goal of this quick trip was to introduce myself and make a few good contacts at this garden which I was able to do. After a long and late lunch with several people from the Garden I was taken back to the airport to catch a flight to Shanghai.

By the time my flight landed in Shanghai, my friends from the Shanghai Botanical Garden who were there to pick me up had already heard of my leg injury. There were three of them waiting for me at the baggage claim with a half dozen creams and salves that I was to apply to my muscle...thank God I wasn't required to drink any of them. I assured them after a few beers and a good dinner I would be fine and off we went. I had one full day left in Shanghai before I was to fly home and I wanted to see the Magnolia collection at the Shanghai BG because I knew it should be in full bloom, which it definitely was. Chinese breeders, like breeders around the world, have recently been focusing on creating new and exciting hybrids using both deciduous and evergreen species. Some of them have amazing potential as new ornamental selections and my friend Dr. Xiao, Iris breeder for the Shanghai BG, was anxious to tour me through their trial fields.



Magnolia sprengeri 'Dusty Pink'



Magnolia sinostellata



Magnolia guangdongensis beautifully grown at Shanghai Botanical Garden



Magnolia sprengeri hybrid



Evergreen Magnolia hybrid using *M. crassipes* x *M. maudiae*

After an amazing tour of the Magnolia collection at Shanghai BG, Dr. Xiao then took me back to their research greenhouses to see her breeding work with Iris. Dr. Xiao has been working for many years collecting Iris throughout China, evaluating various species in Shanghai, then breeding and selecting with those species that are most promising. While most of her crosses were still too young to flower, I was fascinated to hear all about her passion for this remarkably diverse genus. Before I left the Garden to begin packing for my trip home, Dr. Xiao gave me a few of her newest hybrids to trial back in the US. Two of the plants were her hybrid selections of *Iris japonica* with beautiful flowers and the third was a very unique hybrid that is turning out to be one of the most exciting Iris in recent history. More on that one in a future report.....

My trip to China this spring was comprised of yet another rigorous travel schedule plus a pretty serious leg injury, but all in all I would call it a success. It is never a waste of time to visit face to face with colleagues half way around the world to discuss the subjects you are most passionate about and concerned with. It was a pleasure to visit with old friends and to create future plans with new acquaintances. I look forward to getting back here again this fall, hopefully with two strong legs.

Part II: Vietnam (April 16-24)

My second trip of the year was to be a three week trip back to northern Vietnam with Dr. Peter Zale from Longwood Gardens. Our plan was to travel with our colleagues from the Vietnam Academy of Science and Technology (VAST) north to the China / Vietnam border to Cao Bang province to scout for rare species of *Paphiopedilum* and *Magnolia* while they were in bloom. Unfortunately, during the last few days of my spring trip to China I severely tore my right hamstring which made it impossible for me to be physically able to hike in the extremely steep areas that we had planned to visit. I went back and forth in my mind as to what I should do about the trip that we had already put months into planning. Ultimately, Peter and I decided that the trip should proceed as planned, but Peter would have to do the field work without me. I would still make the trip to Vietnam, but I would arrive about 10 days after Peter and only travel to Hanoi to see the Biodiversity Station that VAST was using to house rare collections from all over the country as well as to participate in an important meeting with the leaders of the Vietnam division of Fauna and Flora International (FFI) and the director of VAST about a collaborative conservation project focused on Orchids, Magnolias and Conifers.

After traveling for nearly two days straight, I landed in Hanoi on the afternoon of April 18th. This was going to be, by far, the shortest trip I had ever made to Asia only lasting about 6 days before I had to retrace my steps all the way back to the US. Peter and our colleague from VAST, Dr. Dzu Nguyen, would not be coming back from their field work in Cao Bang until the next morning, so I had one evening to catch up on rest and make a plan for the coming few days. Early the next morning Dzu had arranged for a cab to pick me up at my hotel in Hanoi and drive me nearly 3 hours due north to the VAST Biodiversity Station where I would meet Peter and the rest of the crew. We arrived at the Station at about the same time, so we spent the next few hours eating a delicious lunch and catching up on what all they had seen and experienced with exploring the karst hills of Cao Bang. I had been to two of the same sites in Cao Bang just one year earlier while on a scouting trip with Dzu, but this was Peter's first time to the area and he was overwhelmed by the diversity that could still be found at the top of each of the limestone "mountains" that make up much of the border between China and Vietnam.

After catching up on the highlights of their weeklong trip to the north, we were given a tour of the Biodiversity Station and the facility as it exists now. Our meeting here was not accidental. On our previous visit to Vietnam, Dzu and his director had mentioned to Peter and I that VAST had been given funds from the central government of Vietnam to basically rehabilitate the entire Station and bring it up to current standards including a larger nursery, better growing facility, a small tissue culture lab that could be used to help unlock some of the propagation protocols of the extremely rare Orchids that occur there, as well as updated housing for the researchers staying there. This is a project that both ABG and Longwood Gardens feel is a huge step in the right direction when it comes to conservation in Vietnam. Not only will both Gardens be involved in the collection of material studied at the Station, it will also serve as an in-country training center for scientist studying many different aspects of the flora of Vietnam.

The next day was a busy one...Peter, Dzu and I were to meet with Dzu's boss and the director of VAST, Dr. Sinh Van Nguyen and then have lunch with our colleagues from Flora and Fauna International. I had

one brief meeting with Dr. Sinh the previous year when ABG and VAST entered into a memorandum of understanding between the two institutions allowing us to freely work together both in Vietnam and the US. However, this meeting was to introduce Peter to the director as well as to discuss how the three institutions (ABG, VAST and Longwood) could work together to study, propagate and publish new information about Orchids, Magnolias and Conifers found growing in the remote regions of northern Vietnam. Once Peter and I explained to Dr. Sinh that both ABG and Longwood were committed to working on this project long term, including helping to train researchers from VAST back at our institutions in the US, the smiles and handshakes commenced. Our partnership had been solidified. Dr. Sinh has a revolving door of meetings during the day, so once we were all in agreement, we were politely ushered out so the next group could come in and ask their favor of the director. This worked fine with our schedule as we also had back to back meetings that day. It was now time to visit with our friends from FFI across town.

I always enjoy meeting with Josh, Lam and Van from FFI while I am in Hanoi. They have big plans for conservation in Vietnam and I am proud ABG and now Longwood Gardens are a part of executing those plans. We had all met one another before and knew, basically, what we needed to talk about which is how to go about properly exploring and cataloging the most biodiverse areas left in northern Vietnam. FFI has multiple locations in the north where they are already working on conserving a few species of Magnolia, so what we really wanted to introduce during this meeting was the idea of including Orchid and possibly conifer conservation within the areas already being protected for the Magnolias. In many cases, the habitats are the same so it would just require additional expertise which would be provided by ABG and Longwood. Josh and the rest of the FFI crew loved the idea, especially if it meant getting more work done within these newly established preserves. With that agreement made, we focused the rest of our time on making plans for a fall trip to visit a couple of the areas where FFI currently has encampments established and working on Magnolia propagation.

That evening Peter and I had yet another fabulous dinner sitting in small, plastic chairs drinking warm beer on the bustling streets in the Old Quarter of Hanoi. While my portion of the trip was short and sweet we both agreed that despite the revised itinerary, the trip had been a resounding success. Peter had made some great collections and observations while in Cao Bang and plans were already in motion for us to return again in the fall for another follow up trip to include seed collection and site visits. I had flown half way around the world only for a few days of work, but that effort had shown our colleagues in Vietnam that we were serious about our work there and that together we could accomplish great things.

Part III: China (Oct. 8-24) – Jiangxi Province (Jianggangshan and Sanqingshan natural areas), Hunan (Bamianshan natural area), Shanghai Botanical Garden.

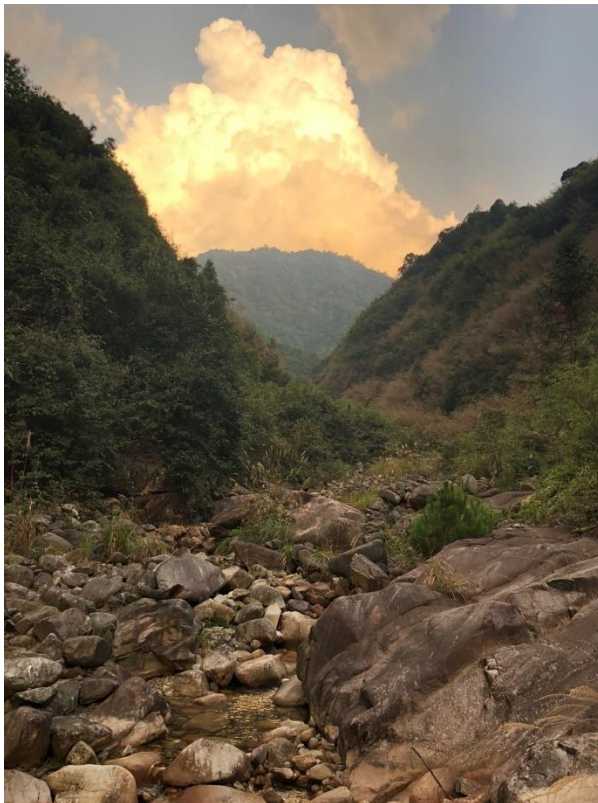


View of Sanqingshan natural area at 5,000'.

Late in the year when the crisp, cool air can be detected in the early morning, that is a sure sign my fall collecting trip is just around the corner. This year Dr. Donglin Zhang (UGA), Mark Weathington (JCRA) and I left in early October to make a trip to several spots in southern China. However, this time we had a new addition to our comfortable group in a young man named Tim Marchlik. Tim began working for me in the IPEP program in the fall of 2018 and it was time for his first (hopefully of many) trips to Asia with us learning the ropes of what it means to explore for plants. Tim and I boarded the plane in Atlanta, flew up to Detroit to meet Mark and the three of us were off to Shanghai. Donglin had flown to China a week before us to spend some time with his family during the Chinese National Holiday on Oct 1. We would meet up with him in a few days at the train station outside of Guangzhou, capitol city of Guangdong province.

After a very long day and a half of travel, Mark, Tim and I spent the night at a hotel connected to the Shanghai Pudong Airport because we would need to catch another flight early the next morning down to Shenzhen. Our first stop would be back down south to visit with our friends at the Shenzhen Fairy Lake Botanical Garden. I had promised them when I visited back in early March that I would give a lecture on

my travels to northeastern India and the Begonias that occur there, so that needed to be done before we could head out to the field. Like my last visit to Fairy Lake, we were given a wonderful, but hurried tour of the Garden before I was ushered into a small conference room where Chinese Begonia experts from around the country had been invited to hear the lecture and then a few were asked to give lectures themselves on the genetic work they were doing to receive their PhDs. While I have had the pleasure of seeing many rare Begonia species in the wild on my travels, I am far from an expert on the subject and I felt a bit out of my league once I learned that my audience had spent the better part of their academic careers studying Begonias. However, pictures say more than 1,000 words and once I began showing photos of some of the stunning Indian species in their native habitat higher degrees went out the window and the love of plants took over. After all, Latin is the language plant geeks the world over speak. The lectures went off without a hitch and although the three of us were extremely jetlagged, it was time for dinner and drinks with our host before going to bed and catching an early train to finally meet up with Donglin.



Evening hike from Taxus nursery to see Amentotaxus in the wild.



Striking stomatal bands on the underside of Amentotaxus sp.

The next morning we all woke up early, still on Eastern Standard Time, and were shuttled off to the train station. I had ridden the high speed train in China many times before, but never without Donglin or another Chinese colleague who I could rely on to get us off at the correct station. Between us, Mark and I hoped that our cumulative experience on the train would be enough to make this fairly short trip a success. The hardest part turned out to be ensuring one of us was awake at all times to listen for the stop on the loudspeaker. Fortunately, we made it and found Donglin with a huge smile on his face

waving frantically in the middle of the bustling train station. After being on the road for 5 days, we were finally all together and would soon be headed to the mountains.

Donglin had rented an SUV for us and we now needed to drive to the northwest into Hunan province to meet up with our host and guides. Our first stop would be the home and nursery of Mr. Liu, who specializes in bonsai of all sizes. I had met Liu a few times before when I was traveling with Donglin and he had always been extremely helpful. At Liu's nursery we had lunch and met up with two other nursery folks who were going to take us into the mountains and link us up with yet another, official guide. So far the beginning of this trip was starting off as a bit of a slog, but after another days driving we would be able to put our boots on and start hiking. After lunch, we left Liu's place and began to make our way towards the mountains. Donglin wanted to make one more stop along the way at a nursery that has selected red, yellow and purple fruited forms of *Taxus wallichiana* var. *mairei*. Not only that, but they had a native grove of *Amentotaxus* aff. *argotaenia* growing within walking distance of their country home / nursery that we all were excited to see.

We arrived at the *Taxus* nursery late in the day with only a few hours before sunset. While we were all hungry, we first had to see the *Amentotaxus*. The Chinese flowering catkin-yew (*Amentotaxus argotaenia*) is probably the most widely distributed species of this very rare and slow growing conifer. It can be identified in the fall by the red, grape-like fruit that appear as well as by the pair of white stomatal bands on the underside of the needles. Even though this species occurred at one time all across southern China, Hong Kong and into Taiwan, because of slow growth rate, very low seedling regeneration percentages and habitat loss it is now quite rare in the wild. Needless to say, we were all excited to see these magnificent conifers in their native habitat. The elder nurseryman was summoned and we were off. Within a short, 10 minute walk we were at the base of a timber bamboo hillside that had been hacked down to allow for more light to get to the small grove of *Amentotaxus* that were growing midway up the hill. While they weren't the most majestic specimens, they were healthy with a lot of visible new growth and were now being taken care of by this group of local stewards. They were thrilled to see how impressed we were and insisted we make our way back down to the road and to the house for dinner and, of course, some *Taxus* wine.

After dinner we drove late into the night to before we reached a hotel that was still half a day's drive from the mountainous area we were headed to, Jinggangshan. We all got some sleep, had breakfast and then piled back into the vehicles for what we knew was going to be another long day of driving. Thankfully, towards the end of the day, we began to climb up into the beautiful Jinggang Mountains which make up the border between Jiangxi and Hunan provinces. Once we gained elevation we were able to make short stops along the roadside to begin to get a feel for the flora of the area. Even though we were quite obviously on the dry side of the mountains, we were still seeing multiple interesting species of *Rhododendron*, spineless *Ilex* and beautiful ferns. We continued to weave and wind our way up the exceptionally curvy mountain roads until well after dark which made for a very stressful drive for Donglin. We did finally arrive, get checked in and found a very good local restaurant for dinner before going to bed in preparation for our first day on the trail.



Tim Marchlik helping to locate seed.



Unknown, large foliated Rhododendron collected at the top.



Ternstroemia kwangtungensis



Dr. Donglin Zhang posing with one of our best collections of the trip, *Halesia macgregorii* in seed.

We spent the next few days exploring several different parts of this vast and diverse mountain range. It rained nearly continuously while we walked, but we were still able to make some wonderful collections. We saw and collected a wide range of seed from things like *Veratrum schindleri*, *Enkianthus* sp., *Lithocarpus hancei*, various *Rhododendrons*, *Polygonatum*, *Triptospermum* and (my personal plant of the trip) *Halesia macgregorii*. I was thrilled to find, at LONG last, *Halesia macgregorii*. We could have very easily have walked under it and missed it completely as it was misting heavily that day and thick as pea soup. It was the only plant we saw of it the whole trip and it was loaded with perfectly ripe seed...I was in heaven. Who knows what other treasures we may have walked under that day in those miserable conditions, but at that point I didn't care...we found *Halesia macgregorii*. That was to be our last night in the Jinggangshan area, so we were invited to a dinner with the local forestry dignitaries. We had a lot to celebrate and being the special occasion that it was, he brought out some local seasonal hootch made from the delicious summer fruit, *Myrica rubra*. This was going to be Tim's first "banquet" style meal in China complete with a giant lazy Susan for family style dining and plenty of toasting to solidify our new friendships.



Purple foliated *Liquidambar acalycina*.



Magnolia maudiae 'Lucky' producing a few early flowers



Yellow fruited *Ilex rotunda*



Enormous specimens of *Osmanthus aurantiacus* in full bloom

The next day it was time to change locations. Of all of the things we have to do during a collecting trip, traveling from A to B and then onto C is by far the biggest drain on our time. We would be driving back to Hunan province to make one more stop at Bamiashan natural area before concluding our trip in Shanghai. Since we needed to break up the drive between mountains, we decided to spend the night near one of the field nursery locations owned by the nurseryman we were traveling with so we could tour his facility and take a bit of a break. We drove nearly all day stopping only for lunch when we finally pulled into Dexing, a small town in Jiangxi province that had been financed by all of the strip mining that was going on nearby. The town looked like a mini Las Vegas with very high end stores, car dealerships, flashing lights, restaurants, etc...., but the town seemed nearly empty. All of the development was to try and tempt more people to live out in this very remote area where the land was being decimated, but it hadn't caught on yet. It was very strange. On top of that, with all of the glitzy hotels around for some reason our host chose what had to be the worst roach motel in town for us to stay. Worst of the trip, but it was only for one night fortunately.

Before leaving Dexing and heading back up into the mountains, we stopped in to tour the nursery of one of our local hosts, Rongxing Nursery. They were most excited to show us their selection of the Asian

sweetgum (*Liquidambar acalycina*) with purple foliage. They had fields full of these trees and I will say they had almost black foliage even in mid-October which was impressive. As we continued to walk through their plantings, we saw specimens of yellow fruited *Ilex rotunda* that were magnificent, hundreds of the largest tree form *Osmanthus aurantiacus* I have ever seen in full bloom, as well as an entire bank of a fairly new *Magnolia* selection called *Magnolia maudiae* 'Lucky'. *M. maudiae* is one of the earliest to bloom (usually in January or February in Georgia) with fragrant, white flowers, but the weather in that area had been such that it had triggered a few of the plants to begin to bloom which gave us an opportunity to see this remarkable pink flowering selection in person. After our tour, we were taken to an exceptionally nice hotel for another banquet style meal where we were to meet a few of the local dignitaries. Since it was the middle of the day and no alcohol was allowed our new Chinese friends were very nice, but less inclined to linger which worked out fine for us. We still had several hours to drive before we would reach our final stop of the trip, Sanqingshan natural area.



View from the trail on Sanqingshan

After lunch we loaded up in our vehicles and began to make the trip up into the mountains. As we were driving, more details began to emerge about where we were headed and what the plan actually was. Our host thought it would be nice for us to stay at a hotel high up on the mountain, which sounded fine until he told us that we would need to first catch a cable car up into the mountains and then we would have to walk 2 hours to the hotel. He did not take into account that we were all traveling out of large

duffle bags and didn't have our things separated out to allow us to just take an overnight supply of gear. We pulled into the parking lot as the cable car was about to close, so we had no time to repack. In a bit of a huff, I pulled my heavy gear out of the vehicle and mumbled under my breath how much of a pain in the ass this was going to be. The next thing I knew, we were loaded up and had begun our ascent. Once we reached the top and made our way to the trailhead, our host and a couple of his colleagues helped us redistribute our gear and we began our walk. We had about 90 minutes of daylight to do a 2 hour hike, so we didn't have much time to waste. The weather was clear and cool. It took about 10 minutes of walking for me to realize that while it was not an easy place to get to; this was going to be well worth this effort.

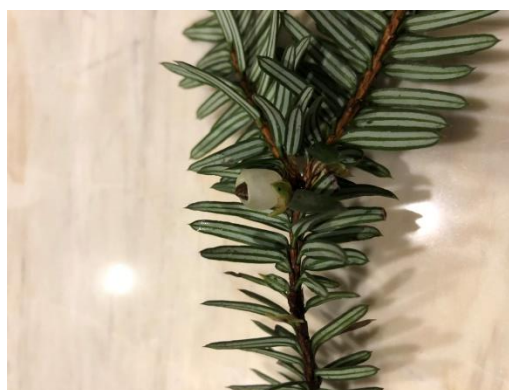


Sorbus aff. *dunnii* with heavy, waxy bloom on the underside of the leaf and countless clusters of bright red fruit.



Ilex aff. *ficoidea*

Clethra *barbinervis*



Goodyera aff. *henryi*

Pseudotaxus *chienii* (female; white fruit in middle of pic)

Mt. Sanqing (Sanqingshan) is well known in China as being a sacred Taoist mountain with three steep peaks representing the “Three Pure Ones” making up the Taoist trinity. This area has been well protected and is home to more than 2,300 species of plants and 400 species of animals. We were lucky to be able to spend the night well inside the preserve and it was new territory for all of us. Right away we began seeing interesting plants such as *Disanthus cercidifolius* in full fall glory, *Sorbus dunnii* with beautiful foliage and fruit, peeling bark of *Clethra barbinervis* and several species of *Ilex* (all without spines) covered in bright red fruit with birds of all colors darting between them enjoying the feast. The whole group was mesmerized by the beauty all around us....the scenery was like a Chinese painting and the plants were fascinating. Then, someone realized we had traveled all of about 100 yards in the past 30 minutes and we still had two “Chinese” hours of walking ahead of us. When hiking/trekking in Asia and you ask your guide how long from point A to B they will always respond with a very confident number, but it is understood that this is nothing more than a VERY loose estimate based on what they think you want to hear. So at best, we still had a couple of hours to go. We all tried to hustle along as quickly as we could, but there were just too many distractions. We finally stumbled into the hotel in pitch black darkness using our phones as flashlights. Just as we were sitting down at our table for a well-deserved beer and peanut appetizer, we were told that the hot water would be cut off in 1 hour and would not be turned on for another 24 hours. Our group was famished, so we ordered a dozen or so delicious dishes, ate them family style as we always do in China and hurried off to try and avoid an icy shower to end the day.



Briggsia sp.



Euonymus cornutus

The next day, our plan was to hike further up into the mountains and finally end up at another cable car for our descent back to the vehicles. We woke up early to meet for breakfast, but only Tim, Mark, Donling and I showed up. As we began sucking down our morning noodles, Donglin’s phone rang...it was Mr. Liu, one of the nurserymen in our group. He had gotten up early and was on the very top of the mountain. He then sent a text of the plant we had hoped to see in seed while we were there, the Chinese White Berried Yew (*Pseudotaxus chienii*). He had found multiple plants, but only one in seed which meant at least that plant was definitely a female. We quickly finished our meal and headed out to meet our friend at the top. The weather cooperated beautifully that day, which gave us another opportunity to stare in awe at the remarkably picturesque scene that surrounded us as we hiked. At

these higher elevations the plant diversity starts to decline a bit, which was beginning to be the case for us. We were still seeing wonderful plants, but it was more of the same around the higher corners rather than always something new and different. A few of the things we did see in only one or two spots at this elevation were the super rare *Pseudotaxus chienii*, a very showy, fine textured *Euonymus* called *E. cornutus* and a large, solitary, groundcover-like patch of *Goodyera henryi* full of ripe seed pods that was a real show stopper. Soon after finding the orchid patch, we had made it to the cable car on the other side and were taken back down to the bottom. A short drive later, we would be at yet another hotel just in time to clean up and prepare for the end of the trip meal with our colleagues and their families.

For the past several years, my final stop before getting on the plane and flying back to the US is a night or two in Shanghai so I can visit my friends at both Shanghai Botanical Garden (SBG) and Chenshan Shanghai Botanical Garden (CSBG). On this trip we would only have time to visit SBG, but since it was Tim's first time and Mark and I wanted to visit with Dr. Xiao it worked out perfectly. We were able to spend the whole day with Dr. Xiao touring almost all of the extensive collections at the SBG. Two of our favorite places in the Garden to visit are the world renowned Bonsai Collection and the nursery where the new plants and wild collections are grown. This was my first time walking through the entire Bonsai garden at SBG and I was completely blown away by the artistry and thoughtful way each piece was displayed. Hundreds of priceless pieces of bonsai masterpieces are constantly being curated, turned and even swapped out depending on the time of year and how the piece is performing. From the looks of it, the behind the scene bonsai nursery has as many or more pieces to take care of as are on display at any one time. A stunning collection to say the least. A fitting end to our time in China was our stop in Xiao's nursery to drool over some of the newest collections made by the SBG staff from all over China as well as some of the breeding being done by their very knowledgeable staff. We saw everything from Vietnamese Camellias to evergreen Acers in the SBG nursery waiting to be planted.

We spent the evening packing and preparing for our trip home. I felt good that we had yet another successful trip under our collective belts and that Donglin, Mark and I were able to take Tim with us. Hiring Tim and ultimately bringing him along on exploration expeditions is a big step in perpetuating this cause of plant exploration / conservation at ABG. Without the next generation there to pick up where we leave off, things will begin to deteriorate rapidly. Therefore, I am so very grateful for all of those who contribute to this program and allow us to not only explore and help to conserve, but also to train.



Acer aff. tonkinense



Camellia sp. collected in Vietnam



Behind the scenes bonsai back up nursery



Part IV: Vietnam (Nov. 11-25) – Da lat and Ha Giang Province



Ha Giang village. The view from the back of our accommodations, the Hotel 345.

I had been home from my fall China trip exactly 16 days (during which time I gave two out of town lectures) when it was time to wake up at the crack of dawn and head back to the airport for my fourth adventure of the year. The plan was to meet Greg Paige (Director of Horticulture and Arboretum Curator at Bartlett Research Lab and Arboretum; Charlotte, NC) in Detroit and we would then fly together to Seoul. From there we would fly to Dalat, Vietnam via a hot, hellish transfer in Ho Chi Min City. Our plan was to meet Dr. Peter Zale (Longwood Gardens) in Dalat for a few days of field work prior to traveling to the far northern border of Vietnam to Ha Giang province. While Peter and I had traveled together to Vietnam several times, including a trip to Dalat, this would be Greg's first time in Vietnam and he was wildly excited about what was in store.

After traveling for three days and dozens of hours on a plane, Greg and I finally arrived in Dalat. Our usual host, Dr. Dzu from the Vietnam Academy of Science and Technology (VAST), would not be able to meet us for this first part of our trip, but he had arranged for us to be taken out in the field by one of the best young field botanists in northern Vietnam, Dr. Khang Nguyen also from VAST. Khang's specialty is Vietnamese orchids (of which he has described dozens of new species), but he is also an extremely keen plantsman who has a firm grasp on much of the flora of Vietnam. I had met Khang briefly when Peter

and I were in Vietnam in the spring and I was looking forward to working with him in the field. Khang was waiting for us at our hotel when Greg and I arrived. It was getting late and we were way past tired and hungry, so we decided to have dinner across the street where we waited for Peter to arrive and discussed our plan for the next few days.

We had come back to Dalat to visit Bidoup Nui Ba National Park, just as Peter and I had done about a year prior, in hopes of securing more seed of *Pinus krempfii* as well as to search for a very rare, very small orchid called *Corybas annamensis*. *Corybas* in general are extremely rare in the wild due mainly to habitat destruction. They are only found growing in moss on the floor of undisturbed primary forest. Since we knew some of the forest inside of Bidoup Nui Ba included *Pinus krempfii* that were well over 1,000 years old, Peter surmised that *C. annamensis* should be growing there as well if we could find the proper habitat. It sounded a bit like a needle in haystack to me, but I was happy to help hunt for it especially since it required walking through enormous specimens of *Pinus krempfii* and *Fokienia hodginsii*. In addition to finding the *Corybas* in seed, we were also hoping to get our hands on more ripe seed of *Pinus krempfii*. The handful of potentially viable seed Peter and I were able to collect in late 2018 had only produced 1 seedling which succumbed to some sort of root rot just a few weeks after germinating. We had two full days to try and get these tasks accomplished before moving on to the north.



Greg Paige and Dr. Truong at the base of one of the oldest *Pinus krempfii* in the park, known as the BBC tree.

The forecast was not looking great for our time in the Dalat area, but cool and rainy with bursts of sun seem to be the norm in the central highlands of Vietnam during the fall and winter. The town of Dalat is about an hour away from Bidoup Nui Ba and in a bit of a valley. As we drove up from the lowlands into the higher elevations, we could see the tops of the mountains were shrouded in clouds which would at least keep us cool during our hike. Southern Vietnam can get incredibly hot and humid during the summer and fall months, but the high mountains around Dalat provide an ideal respite which has encouraged stunningly beautiful and ancient diversity. Our first stop was at the national park headquarters to have tea and meet up with our local guide / host for the next couple of days, Dr. Truong Quang Cuong. We also had to get permission from the director of the park to collect seed samples to ship back to the US and potentially a few young plants for the VAST biodiversity station north of Hanoi. Once our visit was explained, the director was happy to welcome us and allowed us to make sample collections throughout the park. He did have a bit of unfortunate news for us in that he felt like we may be too late to find ripe cones on *Pinus krempfii* this year. Peter and I had been to the same area the year before in early December when we found about a dozen decent cones, but much of the seed in those cones was hollow. So we thought if we came in mid-November the following year we would have better timing. Sadly, it was not to be. We hiked around for several hours and to the bases of a dozen or so massive trees, but we were having no luck. Even though we were there several weeks earlier, this time we weren't even able to collect one good cone as they had all fallen and been eaten. The few green cones that did remain were so very high up in the trees, there was no way to get to them even with climbers. I was disappointed. *Pinus krempfii* had eluded us again.



Ancient *Fokienia hodginsii*. AWESOME bark!!



Corybas annamensis in seed. (Photo by G. Paige)

After spending the better part of a day inspecting every Pine we could see for accessible seed, we finally admitted defeat. However, we still had an orchid to find and Peter was not going to let us forget about that. Peter had been keeping his eye out all day looking for the small orchid, but he'd not had any luck yet either. Greg and I decided to train our eyes to the ground rather than to the sky looking for cones. I had only seen photos of *C. annamensis* blooms before and really had no idea what it was we were looking for, particularly since these plants would only have foliage and/or seed. When I asked Peter about the size of the plants we may see, he said they would have only one leaf about the size of your thumbnail growing at ground level!! Now I knew we would never find it. I was wrong....Peter was in the zone. Sometimes in the plant world, if you want to see something bad enough and you've done your homework on where exactly it should grow, you can actually will the plant into being and I'm convinced that's exactly what Peter did that day. Not long after we had all begun to make a concerted effort to find this little orchid, Peter called out that he had spotted it. Not only had he found a plant, but it had a perfectly ripe seed pod attached. Peter was ecstatic. It turned out to be very fortunate he found that plant because while we did find a few other plants in the area, not a single one had any seed. Our trip to Dalat was not in vain.

The next day we were to catch a short flight north to Hanoi so we could meet up with Dr. Dzu from VAST before driving even further north towards the Chinese border to Ha Giang province. We arrived in Hanoi that afternoon, got checked into our hotel and waited for Dzu to call. The plan was to meet Dzu for dinner and go over our schedule for the next week or so in and around Ha Giang village. When we finally met Dzu, we found out he had been to a family member's wedding that day and had been drinking. He began telling us there maybe problems getting permits for exporting seed material and now we may go camping after all (even though I asked him multiple times about camping gear and he said we would not need it) and it went on and on. I was not happy and let that be known. We finished our meal, parted ways and all got some much needed sleep. The next morning, I received a call from Dzu early. He was finishing up with the permits we would need to work in Ha Giang and he would be over soon. Whatever the problems were the night before they had been seemingly solved, at least for now and Dzu was back to his normal self. So Peter, Greg and I loaded up our gear and settled in for a very long and bumpy ride.

I had been to Ha Giang a few times, so I knew the long road we had ahead us before we would arrive at our hotel that would be home for most of the week, Hotel 345. We were headed to Ha Giang "city" and from there we would be able to hike in several different directions over the coming days looking for *Xanthocyparis vietnamensis*, *Calocedrus rupestris*, a number of *Magnolia* species and, of course, the amazing assortment of Orchids that grow alongside these rare trees. Our first stop would be the Bat Dai Son Conifer Conservaton office to check in and meet up with our local guide. From there we walked down the dirt road through the village, in between a few mud homes following a narrow footpath and fell into line as we began our ridiculously arduous climb.



Headquarters of the Conifer Conservation Center for Bai Dot Son



Our goal for the day was to hike up to the highest ridge we could climb to and still make it back down to the village before sunset. It would take us several hours of very rigorous hiking straight up the side of the mountain to reach the pockets of uncut forest left in these hills. When we did reach the top we hoped to see specimens of at least a few of the 5 genus of conifers being preserved in the area as well as one of our top priorities for species preservation in the area, *Paphiopedilum helenae*. The five rare conifers that can be found on these limestone ridges are *Xanthocyparis vietnamensis*, *Amentotaxus hatuyenensis*, *Nagaia* sp., *Fokienia hodginsii* and *Calocedrus rupestris*. As with all of these sorts of hikes, there are no guarantees of anything other than one of the most difficult hiking experiences of your life. The weather was looking a little overcast that day, but we hoped for the best and trudged upward.



View of our starting point in Bai Dot Son



Halfway up the mountain.



Greg Paige resting at the abandoned hut.



Begonia sp. (spotted leaves)



Begonia sp. (narrow leaves)



Climbing to the top

The hiking was difficult from the get go. The locals don't seem to believe in switch backs when creating their trails up into the mountains, so we slowly climbed feeling the sun beating down on us with every step. It was a hot, humid slog up to the first saddle where we would take a break to catch our breath. The three locals that were leading the way immediately squatted down in the shade and all lit cigarettes. It was painfully obvious that this little excursion was child's play to them, but it got them out of farming for the day and it was well worth the money they would earn dragging us up the mountain. Once we had regrouped and rehydrated we began again, but this time the going was a little steeper. We were making good time, but about an hour after our first stop we began to feel a breeze. Since we were still well below the line at which poachers feel like the effort is too great for their reward we were seeing no plants of interest, but we were now high enough to see that there may be some wet weather in the distance. We stopped once more at a seemingly abandoned hut for a quick snack and to mentally prepare for the steep, sharp climb we had ahead of us. Now we had arrived at the base of the exposed karst, or limestone, that makes up the ridgeline of these mountains. From here on up, the plants would become much more interesting because the hiking becomes much more difficult and dangerous. It is hard to describe what it is like climbing / hiking through these jagged rock mazes with vines and trees growing out of every crack and crevice. Truly, the hardest part is focusing on what you are doing with your hands and feet rather than becoming distracted by the fascinating plants that are tucked in all around you. In fact, if you take your eyes off of the person in front of you for just a minute or two to take a picture or adjust your pack they can easily be out of view causing you to lose your way.

We had just arrived at a high spot on the ridge where we could fan out and start to look closely at what was growing up there when a very loud rumble of thunder rolled overhead. The refreshing breeze we felt earlier had now changed to a stiff gust as the weather we saw in the distance an hour or so before had now caught up to us. We had literally spent less than 15 minutes at this spot we had worked so hard to get to and we were all now scrambling to figure out the best way down. As the lighting began to pop, our guides scurried quickly over the sharp rocks hopping from one to another leaving us far behind. The heavy rain began and we immediately realized we could not safely keep up with our guides. The rest of our group (Greg, Peter, Dzu, Khang and myself) decided the safest thing to do would be to turn around and try to go back exactly the way we came up which sounds much easier than it turned out to be. Finally, after slipping and sliding down the now slick as glass limestone, all of us reconnected just before we arrived back at the abandoned hut. We were covered in mud and certainly smelled worse than we looked, but we all piled into the dark, smoky shack to try and escape the downpour and have a bite to eat. I soon realized that there was an extra person sitting in our crowd. It turns out someone did live in this dingy little hut after all and we had barged right in on him, but for some reason he was grinning from ear to ear. Once the rain stopped and we had begun walking back down the mountain, Dzu explained to me that the man in the shack was born deaf and at a very young age was basically banished by his village to the remote mountains so as not to be a burden on anyone. No one EVER goes to see him and most avoid that area because of him. He was so excited we had stopped that he began to cry when we had to leave.



The storm rolling in



Acer aff. heptaphlebium



From L to R: Khang, Greg Paige, Peter Zale, myself



Hiking into Tung Vai

The next couple of days were spent exploring a few miles away from Bat Dai Son nature reserve in an area called Tung Vai. The air was clean and cool thanks to the storms that rolled through the day before, but it would be hot before long. Our hike began down a well-worn, dusty foot path that would eventually lead us into a rich forest. Along the way, however, in hot and exposed road cuts we found some beautiful Begonias tucked into small pockets of the seemingly dry soil. The path we were traveling on was a popular route with families on the move and the occasional motorbike zooming by headed into the forest to chop wood. After an hour or so on the more populated path we veered off down a valley and into a dense, protected forest where the dominate trees were enormous Oaks and multiple species of Magnolia...most notably *Magnolia megaphylla*. Just as we anticipated, by noon it was sweltering. We were all soaked with sweat and still a bit worn out, quite honestly, from our previous day's adventure, but just as we would think of turning back we would encounter a plant that would pull us further and further along in hopes of finding something equally as interesting. By the time we did finally turn around, our findings that day would run the gamut from unusually drought tolerant Begonia species to purple foliated Impatiens to arboreal Aucubas with three different species of Ophiopogon growing under them to land crabs. To say it was a day full of biological diversity is an understatement.



Begonia sp. (red, fuzzy leaves) growing fully exposed almost flat against the soil.



Begonia sp. growing with a bit more protection.



Fellow travelers along the trail.



Peter Zale with *Magnolia megaphylla*.



Impatiens sp. (purple folige)



Ophiopogon aff. *peliosanthoides*



Ophiopogon aff. *peliosanthoides* (entire plant w/ size 14 boot for scale)

Our final day in Ha Giang was another wet and rainy one, but we still were able to make the most of it. One of the most important target plants for Orchid conservation in northern Vietnam is an extremely rare terrestrial orchid known from only one or two locations called *Cypripedium subtropicum*. Khang has worked with this orchid in the past, but we were there to try and document another location for *C. subtropicum* by talking to a few local medicinal plant hunters who scour the surrounding mountains looking for all sorts of plants. It was a nasty day and we had driven so far north that we had actually reached a concrete road block representing the border with Vietnam and China. From here we got out to visit with our new friends and try to convince them to come out with us to try and find orchids with seed. When we arrived at the house, there were already multiple people hanging around bundling herbs and various plants to sell across the border in markets in China. Khang began talking to the leader and we were summoned inside. I assumed we were going in to do the usual, which is have tea while Khang and this guy talked politics and plant locations. Once we sat down I could see our friend was not drinking tea, but homemade wine (a.k.a. Moonshine) and he wanted us to have some too. It was barely 10 AM, but he let it be known that he would be of no help to us if we didn't try his wine. So we sat down on very small, plastic stools and nodded towards him letting him know we were game. He filled a grungy tea cup with what smelled like gasoline and handed it to Greg. Greg slurped the tiniest amount and tried to pass it over to me, but was immediately stopped from doing so. We were to each have our own cup...no sharing. So he prepared a cup for each of us, we gave a quick toast referring to the ridiculous things we do for plants and poured it down the hatch. It was terrible (albeit effective). When we all slammed our cups down on the table in local fashion there was some attempt made at refilling them, so we quickly and kindly got up from our stools and made our way outside. We had seemingly passed the test and were shown some of the goodies that had been collected recently. When Khang finally emerged from the house he explained to us that our friend had no intentions of going out in the rain that day, but he did point us in the general direction of where to look and offered his guide services next time we are there...as long as it's sunny.



Greg Paige outside the house of local medicinal plant hunters

The effects of our mid-morning shot were wearing off and we were getting hungry, so we decided to eat the soggy sandwiches we picked up earlier that morning while sitting in shadow of the Vietnamese / Chinese border and decide how to spend the afternoon. Since we weren't going to get anyone to go out hiking with us, we decided to drive further down the road until we found a spot that look promising. Within just a few minutes we decided to park the van on the side of the road and make our way up and over the hills just in the distance. It was still spitting rain, which made walking over the exposed limestone very slippery, but we slowly continued until we finally reached a piece of dense forest. Peter was in full orchid mode, so he and I began bushwhacking up the side of a hill with some exposed limestone which should create the perfect habitat for certain orchids. After 20 minutes of scrambling over rock and through spiny vines and bamboo, Peter hollered that he had found a small clump of *Paphiopedilum helenae*. It wasn't in flower or seed, but it was there and that was a great sign. We continued on a little further and found an even larger clump of *P. helenae*, but again no flower or fruit. By now, it had started to rain again and we had basically reached the top of the limestone knoll we were on, so it was time to turn around. While the day had started out very strangely, all's well that ends well. We hadn't found the orchid we were hoping to see that day, but we were able to record a new location for the increasingly rare *Paphiopedilum helenae* which was definitely a highlight of the trip.



Paphiopedilum helenae in situ

Having finished our time in the north, the next day we began the long drive back to Hanoi. While there we would spend a few days processing, packaging, labeling and getting permits to export the material we had collected. Peter, Greg and I also had lunch again with our friends from the Fauna and Flora, Inc. (FFI) office in Hanoi. We had a wonderful lunch meeting where we were able to discuss what we had seen while working in Ha Giang as well as to make tentative plans for future work together. In the coming years we hope to be able to work with FFI and the Vietnam Academy of Science and Technology (VAST) to create a conservation program focused on field work, in situ conservation and seed storage of the rare and endangered Conifers, Magnolias, Orchids and *Lilium* species that call northern Vietnam home.