Of the accessioned trees, shrubs, and vines you encounter at the Arnold Arboretum, those which originated as a wild collection from the plant's natural range offer the most value as specimens for scientific study and as germplasm for plant conservation. To source these plants, the institution has led or supported more than 150 discrete collecting events in over 70 countries since the late 1800s, including landmark expeditions by Charles Sprague Sargent, Ernest Henry Wilson, and Joseph Rock. The Campaign for the Living Collections—a new 10-year initiative for plant exploration, collection, and production—ramps up these continuing efforts extensively, targeting some 400 taxa of woody plants from around the temperate world. The Campaign kicked off officially in late summer 2015 with a domestic collecting trip to northern Idaho led by Manager of Plant Records Kyle Port, and continued through the month of September with an expedition through western China by Curator of Living Collections Michael Dosmann. In this interview, Kyle and Michael share some of their experiences, successes, and insights about the Arboretum’s Campaign and collecting plants in the twenty-first century.

Q: What do you find most compelling about the art and act of plant collecting?

Michael Dosmann: For me, what sets collecting plants apart as an endeavor is that there’s a physical component, an intellectual component, and an emotional component. Depending on the geography and the elevation, working in the field can be quite demanding physically and requires stamina. Finding plants you’re looking for—and even those you may not be looking for—requires a sharpness of mind and relying on everything you’ve learned about plants. And emotionally, it requires a level of fortitude and resilience to keep going, particularly if conditions are poor. Successful plant collectors need to rely on all of these, because after all the planning and great distances involved you truly want to be successful.

Q: In mounting a plant collecting trip, how do you know what to collect and where to collect it?

Kyle Port: Our starting point was a desiderata of plants developed by Michael and our Living Collections Advisory Board during the planning of the Campaign. Of the hundreds of temperate zone species on the list, Northwest taxa were prioritized and North Idaho selected for its abundant forest resources and inland geography. Target list in hand, we made contact with the National Forest Service (NFS) who provided a collecting permit and contact information for several forest service botanists who monitored populations for cone and fruit development in advance of our arrival. Their expertise combined with that of our travel partners at the University of Idaho Arboretum and Botanical Garden and Washington State University led us to success.

Michael Dosmann: Because great distances may separate collecting sites in China we often “car collect” opportunistically—as we travel we may spot plants of interest from the car that warrant stopping even if it’s not something on the target list. Often the best and most heavily fruited plants grow right...
at the edge of the road where they benefit from having less competition for light and other resources. There are certainly cases where you spend all day in one location, or more surgical instances where you know the spot and make that one collection because you know right where the target plant is. Three things contribute to finding what you need in the field. Planning is paramount. Finding something in a particular place means researching and understanding something about its biology—where has it been found before or where might you expect it to be found? Second, you cannot underestimate the value of reaching out to collaborators or local experts for their help in locating populations, just as Kyle mentioned with the NFS. Last, there is often a bit of serendipity involved in finding interesting or desirable things that you weren’t expecting or weren’t one of your desiderata. Luck is important, not only in finding it but finding it in fruit that can be collected.

Q: What are some of the challenges you encounter seeking plants on expedition?

Kyle Port: Wildfires were the biggest concern on the expedition I led to North Idaho last fall. Descending into the region, even at 30,000 feet, it was clear dynamic fires were reducing visibility and impacting air quality across the region. With the majority of our collecting sites on National Forest Service land, we kept in close contact with ranger station staff who informed us of closures and fire progression. In the end, only three preplanned collection areas (Scotchman Peaks, Elk City, Freezeout Mountain) were closed due to fire and despite the challenges, a total of sixty collections from forty-two species (thirty of these are new to the Arboretum’s living collections) were gathered.

Michael Dosmann: When collecting in China or anywhere outside of the US, one of the challenges can be the amount of time required for cleaning and preparing seeds. Sometimes this is done in the evening after making the collection, or at the end of the expedition in preparation to send back to the Arboretum. Some species are easy, but others with fleshy fruits or hard coatings may require a great deal of effort or time to dry and open before you have a seed that’s ready and clean enough to pass inspection. On this trip, Syringa komarowii (nodding lilac) was difficult to deal with—the capsule needs to be broken apart without crushing the delicate seed inside. Davidia involucrata (dove tree) is another one—its fruit is like a hard pear which needs to be whittled away to get to the apricot-like pit inside, and then scrubbed and dried. Any fleshy parts left on the seed could mean its rejection and confiscation when it arrives in America, which would negate all our hard-fought efforts to collect, clean, and prepare it.

Q: Did you make a particularly thrilling or satisfying acquisition on your expedition?

Kyle Port: There were many! One was hiking high above the Snake River along Pittsburgh Saddle, between the boundary of the Nez Perce National Forest and Hells Canyon National Recreation Area. As is often the case in temperate forests, fire is a rejuvenating force and a recent burn had scarred the area. At the base of charred Pinus ponderosa boles, scattered Spiraea betulifolia var. lucida had mass flowered and we harvested abundant seed. The adrenaline rush of collecting a new variety for the Arboretum in a storied landscape is unparalleled.

Michael Dosmann: The first part of my trip was a collaborative effort by the North America China Plant Exploration Consortium dedicated to Acer griseum (paperbark maple), and we traveled 3,000 or so kilometers over 18 days as part of a broad conservation effort to voucher most populations and collect germplasm for DNA analysis. Of course, we hoped to find seed as well. We scouted 10 of the 17 or so known populations in China, ranging from one tree to hundreds of mature individuals, weedy seedlings, and young saplings. Out of all of those populations and all of those trees, we found only one individual with seed—and it was only one branch! Of course, since trifoliate maples like paperbark maple are notorious for bearing seed that is empty or unviable, there’s always the chance that this single collection may not result in a plant.

For the second leg of my trip, I inventoried and collected plants in the Huanglong Nature Reserve with their staff.
scientists and Professor Gao Xinfen, of the Chengdu Institute of Biology. One unexpected discovery was a plant not among our desiderata, yet a new genus for me to encounter in the wild—a member of the rose family called Sibiraea angustata. It is closely related to Spiraea, but it has never grown at the Arboretum. It will be interesting to see if we can germinate it and grow it here. Finding something in the wild you’ve never seen before can be exhilarating, and hopefully it will mean we’ve acquired not only a new species but a new genus for the Arboretum collections.

Q: Looking ahead, how would you characterize the Living Collections Campaign in terms of what it means for the Arboretum now and in the future?

Kyle Port: I’m excited that the Campaign has rallied the Arboretum behind bold aspirations for collections development. Each department plays a role, collaborating in new ways to meet our ten-year goals. The reinvigorated focus on China, particularly with the trilateral agreement (see related article below), in a hotspot of botanical diversity is thrilling. Imagine what we’ll discover in that area alone!

Michael Dosmann: We’ve designed a strategy we feel is both ambitious but achievable, and very focused on where we think the Arboretum needs to be decades down the road to maintain our importance both as a collecting institution and as a resource for science. There could be new taxa—varieties or perhaps new species—that we find in the course of the campaign. And, even more likely, we will document range extensions for taxa when we encounter them in places no one knew about previously. A critical part of how we give back with something like this lies in expanding the world’s knowledge of plants, particularly those that may be rare or endangered. This—as well as preserving their germplasm in living collections like the Arboretum—can be crucial to protecting them from loss.

To strengthen collaboration in the conservation and study of plants between the U.S. and China, the Arnold Arboretum signed a memorandum of understanding with two scientific institutions in China: the Huanglong Nature Reserve and the Chengdu Institute of Biology of the Chinese Academy of Sciences. Signed at Chengdu, China, on September 28 by Arnold Arboretum Director William (Ned) Friedman, Chengdu Institute of Biology Director Xinquan Zhao, and Huanglong Nature Reserve Director Qi Ling, the tri-lateral agreement sets guidelines for cooperation in the documentation, conservation, and preservation of plants native to China’s richly biodiverse Sichuan Province.

The partnership forged between the three organizations aims to advance the study and conservation of biodiversity, build capacity for conserving threatened and endangered plant species, and promote education on wildlife conservation. To achieve these goals, the signatories will promote academic and staff exchange visits as well as collaborative field work and research. These interactions will include inventorying and collecting plants in natural areas throughout Sichuan and tracking the propagation and growing habits of rare species both inside and outside of China. The signing of the memorandum is a direct reflection of growing cooperation between the U.S. and China on studying and conserving biodiversity, and responding to threats posed by global climate change.

Since 1905, the Arboretum has partnered with Chinese botanists and naturalists to explore and document the magnificent beauty and diversity of the flora of China, which bears strong evolutionary links with plants native to North America. This partnership with the Huanglong Nature Reserve and the Chengdu Institute of Biology continues this legacy through enhanced scientific and cultural exchange, and begins as the Arboretum initiates the Campaign for the Living Collections.