

# Rapid Changes Create New Challenges in Seed Collection

## Interview with Carl (Carlos) Jackovich

### What led you to want to become a seed collector and how long have you been collecting?

I have always collected stuff since I was a little kid of maybe six or so. I would collect things like berries, fish and all kinds of stuff in the woods, all throughout my childhood and teenage years. I then started becoming more involved in arborist, thinning and climbing work. Then in 1980, some foresters asked if I would climb the ponderosas around my house to gather cones for seeds. In the 80s, there was a lot of energy around research and all these scientists started having projects for me. I started working for more and more agencies like the Forest Service as well as for private folks. I started doing more difficult collections because I like challenges. I began working with mature giant sequoia and coast redwoods, which are some of the most difficult species to get seeds from. I don't keep exact track, but I've worked with maybe 150 species of trees all throughout California, Oregon, Arizona, Nevada and New Mexico. I've done projects in Mexico, Chile and New Zealand, so it's a job that has taken me all over the place.

### How have extreme weather events impacted seeds and seed collection?

Huge areas that I usually collect on have been burned are just simply not there anymore, so they certainly won't be collectable again during my lifetime. In some of these burned areas, it will take a really long time for anything to even get established there and it'll be years and years before they're old enough to produce new cones and seeds. Some

species are gone totally or they're just remaining in remnant stands with hardly any cone and seed production. Some of the cypresses like the tecate and the cuyamaca cypress, they've been burned and as far as I know from what I've seen and heard, there could only be one little stand of each species left. These species are serotinous, and so they put out seedlings after a fire, but if another fire comes through before they start to make new cones and seeds at ten or fifteen years old, then they'll be gone. There could be some other hidden pockets of these species, but everywhere I look that seems to be the case.

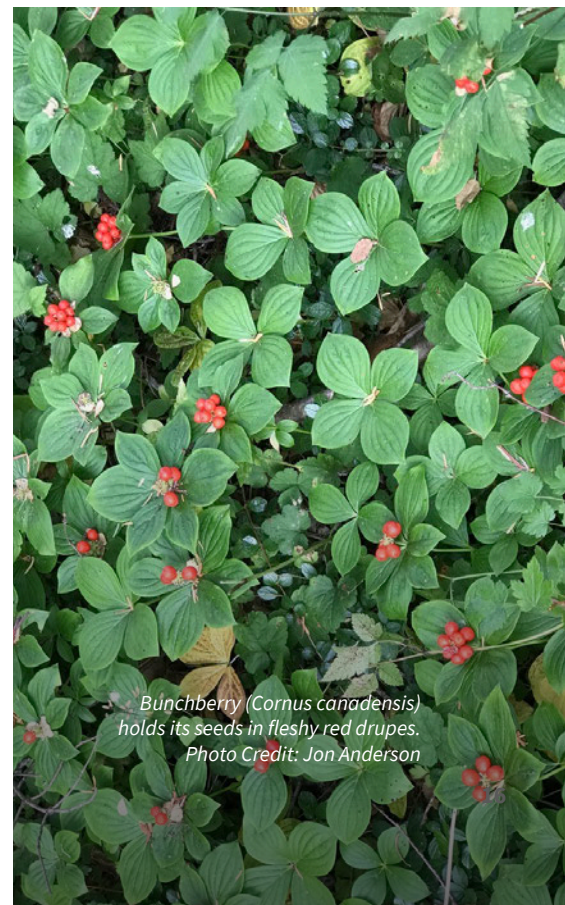
This last summer, after doing a giant sequoia collection, I heard that all the sequoia cones had opened from a fire and bunches of them were burned so badly they died. Even in places where the fires didn't go, the heat waves were so bad that it opened all of the cones in the serotinous trees, so there's no residual cones except for maybe this year's crop. I've never seen anything like that. The heatwaves definitely are having an impact.

### What do you foresee as future impacts you might imagine on seed availability and cost in coming years?

Probably like with everything else, prices will keep going up as there are fewer and fewer places to collect. One major barrier to seed collection is that it's really hard to get permits on Forest Service property. The last 10-15 years, the Forest Service has been really reluctant to allow for any collections in a lot of areas. You'd think the Forest Service would be happy to see seeds and trees being planted, but for some reason

they seem to be very reluctant. People want these huge insurance policies to enter their lands and so it just gets to be more cumbersome and the area where you can collect keeps shrinking.

It is way easier to get permits on private land. Big private ranches and Timber companies in particular are easy to work with and allow collecting on their properties. Generally however, the future of seed collection looks pretty grim. The timber companies have been high grading for years, and they're logging for clear cut, so a lot of their ground isn't very good for collecting diverse seeds. With the fires and the



Bunchberry (*Cornus canadensis*) holds its seeds in fleshy red drupes.  
Photo Credit: Jon Anderson

droughts, the seed quality of many species of pines has been pretty dismal the last 15-20 years, so there are a lot of empty cones and often lots of insects. It's always been challenging work and could become more challenging. I don't know if these heat waves will continue, but all these trees have their limits of what they can take. Some species are just not making it anymore, they're just too stressed out and they're dying or burning. You never know, things might turn out great actually, but who knows?

### **How are you adjusting your work and meeting or not meeting demand?**

I'm looking for seeds in a lot more places. I probably drove 15,000 miles this year just searching areas for cones and seeds. I'm always adapting by making new tools, trying to get new contacts and find new places to collect. A lot of the agencies I work with have really strict specs for their seed and cone quality. So in marginal areas that don't meet the standards of these agencies, I have started doing my own collection and then working to find somebody who wants them. There are just so few seeds, and so many of these areas are burning up. At least if I'm doing my own collection, there will be seeds available to be planted somewhere rather than a fire coming through and then there's nothing available. I'm also starting to work with another group that is interested in creating a big seed bank, so we're talking about that and how we might go about that task.

### **What future needs do you foresee and how could partners support?**

Having the Forest Service be more willing to allow collections would be a huge help. Allowing collections in State and National Parks would also help. I think some of these entities are becoming more willing to allow collections because of all the fires and that's a good thing. Seed collectors could offer to store some of the seeds they collect for these agencies in exchange for allowing collections. That way in case they have any catastrophic fire events they will have seed stored. These parks and lands often have some of the better holdings of seeds with great diversity because they don't log there.

Any place or agency with large holdings of land that haven't been cut heavily that would be willing to allow seed collection would be super helpful.

### **Have there been any really meaningful or profound things you've encountered while seed collecting that you'd like to share?**

Once I was collecting redwood seed in Sonoma where a big fire had gone through and burned almost all the trees. The area surrounding the redwood I was in wasn't totally clear cut, but you had this incredible view. I was in the top of this redwood and saw these bald eagles flying right at my same level and then I

watched them fly down beneath me. It was a pretty unique thing to see, to be looking down on a bald eagle flying.

Another time I was working in the bristlecone pines with some scientists and I got a permit to collect some wood pieces because I do a lot of woodworking. The scientists were telling me that these bristlecone pines can grow to be 4,000 years old, and the oldest one they found was 8,000 years old. They said that the pieces of wood that I was getting were likely dead and down for 10 to 15 thousand years and alive for at least 4,000 years. That was pretty interesting to think about. These trees had likely been in this spot since about the last ice age or so.



*Osoberry (Oemleria cerasiformis) seeds nearly ready to be propagated.*  
Photo Credit: Jon Anderson