

Nonprofit Organization Preserves National Champion Oak Cross-Section

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California's Central Valley is a great place to grow oak trees. The deep alluvial soils and generous Mediterranean climate allow riparian oaks to grow to astonishing proportions. These oaks are the backbone of California's fading riparian forest, providing critical habitat for wildlife and important sustenance for native human populations.

Since the discovery of gold and subsequent population explosion in California's Sacramento Valley, ongoing impacts and severe changes have been made to our native oak woodlands. A complex series of levees and other flood control structures were built around Sacramento to protect the growing cities and increase farmland while more recent urban sprawl have brought urban development deep within remnant oak savannahs. These actions, coupled with ongoing population growth pressures, have fragmented and isolated native oak woodlands throughout the valley.

Just north of downtown Sacramento along the Sacramento River, a \$360 million levee project is underway. Improvements to more than 18 miles of levees have resulted in the removal or relocation of more than 4,200 native trees, with the majority of them being native valley oaks (*Quercus lobata* Née). In this lower part of the Sacramento river system, just before entering the Sacramento river delta, levees were originally built as close to the main river channel as possible. This action helps move floodwaters quickly through the system but eliminates the natural river movements that are important to create and sustain riparian forests. In many places, the river elevation in the rainy winter months is several feet higher than the landside soil elevation with nothing but the levee protecting agricultural and residential properties which back directly up against levee walls. Within the small corridor on the river side of the levee and on the levee structure itself lie the last remnants of Sacramento's once great riparian forest. Estimates vary, but it is believed that less than 5% of California's riparian forest remains.

Among the thousands of oaks within the footprint of the Natomas Levee Project, a very special oak stood on a little mound less than 50 feet (15 m) from the base of the levee. This oak tree witnessed the building of the original levee, but would not be spared by the current reconstruction. The tree had been noticed by a local arborist and was submitted to the National Register of Big Trees overseen by American Forests during the earlier stages of the levee improvements.

For the Register, trees are measured and rated by trunk diameter, canopy spread and height to determine the largest of each species in the nation. Though the tree was reported to have been confirmed as the national champion and was scheduled to be evaluated by the Big Tree Register representatives, the tree was



The tree and Ray Tretheway, Sacramento Tree Foundation Executive Director
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removed on Monday, 2 May 2011, before the evaluation could occur.

Several months before the removal of the Sacramento River Champion Oak, notification of this special tree and requests to save it began pouring in to the Sacramento Tree Foundation (Tree Foundation). As a nonprofit organization dedicated to building the best urban forest in the nation, the Tree Foundation is frequently approached when controversial tree issues arise. After reviewing the situation and talking with the Sacramento Area Flood Control Agency (SAFCA),



In the background behind the tree, Interstate 5 can be seen as it crosses the Sacramento River just north of downtown Sacramento CA. photo©Matt Buland

the organization managing the levee project, the Tree Foundation found itself in a heartbreaking situation with no potential actions possible for preserving this very special tree. As almost an afterthought, Tree Foundation staff asked for a slice of this tree to be preserved during the removal process so that it could be shared with the community and used to educate people about how long it takes to establish magnificent trees and how quickly they can be erased from the landscape.

On the morning of Tuesday, 3 May 2011, SAFCA called to tell us that the deed had been done. The short call was to inform us that a slice of the tree had been cut and carefully stored for us and we had better “come and get it.” Without being sure of what we would find, I jumped in a Tree Foundation truck with our Executive Director Ray Tretheway and headed off to see what we would find.

The site looked completely different without the tree. For weeks, the project crew had been clearing the site around the tree, moving debris, a tree stump almost as large as the then-still-standing tree, several barns, a house, and all sorts of the type of junk that accumulates around agricultural properties. When we arrived on site, the only thing remaining was our slice of tree trunk and some large trunk quarters that had been left behind. The rest of the tree, including all 102 feet of trunk and the complete canopy of limbs, was gone.

Archaeologists on site had thoughtfully covered the tree trunk to keep it out of the sun and were quite interested in our rescue operation. Members from the nearby Shingle Springs Band of Miwok Indians were on site as archeological monitors, and were at first concerned by our intent to take a piece of this

magnificent tree. The gentlemen we spoke with were visibly heartbroken by the loss of so large a tree and spoke eloquently about how trees of this size are family members and what a tragedy it is to see them destroyed. After explaining our intent to preserve the spirit of the tree by using it to educate the community, we were given assistance in loading the slab.

At over seven feet (2.1 m) long, 4 ½ feet (1.4 m) across and 12-18 inches (30-45 cm) thick, this was way more chunk of tree than we had expected. The Tree Foundation doesn't possess a vehicle large enough to move the tree slice, so we quickly went to a local construction materials store to rent one of their trucks by the hour. This turned out to be the very best way possible to move our prize, as we realized upon inspection that a significant area of included bark was visible in the center of the slab. We were very afraid that this inherent weakness might cause the slab to crack in half while being lifted and transported. Luckily, the trucks available for rent have fold-down sides to allow for easy loading. The tree slab just barely fit. Our thanks go out to the kind construction worker who offered to help us get the slab into the truck with his forklift. Without this assistance, we never would have been able to safely lift and load the slab. We estimate that the original wet weight of the slab was well over 1,200 pounds.

After the trials of loading the piece were complete, we realized we didn't have any idea how we were going to unload it once we returned to the office. We don't own a forklift and we weren't prepared to get one that day. Once again, the kindness of others prevailed. Joni Ramirez, our Mature Trees Program Manager, set off into our business park to see if she couldn't find some help. She happened to find a gentleman sitting on his forklift taking a break, just around the corner from our office. He generously gave up the rest of his lunch break to drive over to our office and unload the unwieldy chunk of tree into the back of our office. Momentary panic set in when we realized it wouldn't fit through the standard



A man on his lunch break from a nearby lumber company warehouse helps us unload the slab and install it safely in our office. photo©Zarah Wyly



The tree cookie the next day. Biltmore stick for reference. photo©Zarah Wylie

double doors. Luckily, our forklift driver was a pro and managed to swing it in sideways so it just barely fit. We placed the slab on wooden skids and then began the process of figuring out just what we had gotten ourselves into.

Many people were contacted while trying to figure out how to preserve our tree slice, by now fondly dubbed our “Tree Cookie” by staff and interns. Our main concerns were drying the wood without the whole piece falling apart and balancing the slow wood drying process with the mold and fungus growth this process encourages. The best advice we were given was to immediately soak the whole tree cookie in glycerin.

We contemplated how to do this effectively, and considered bringing in a children’s pool big enough to bathe it in. In the end we decided the only feasible course of action would be to coat the top surface thickly with glycerin and cover



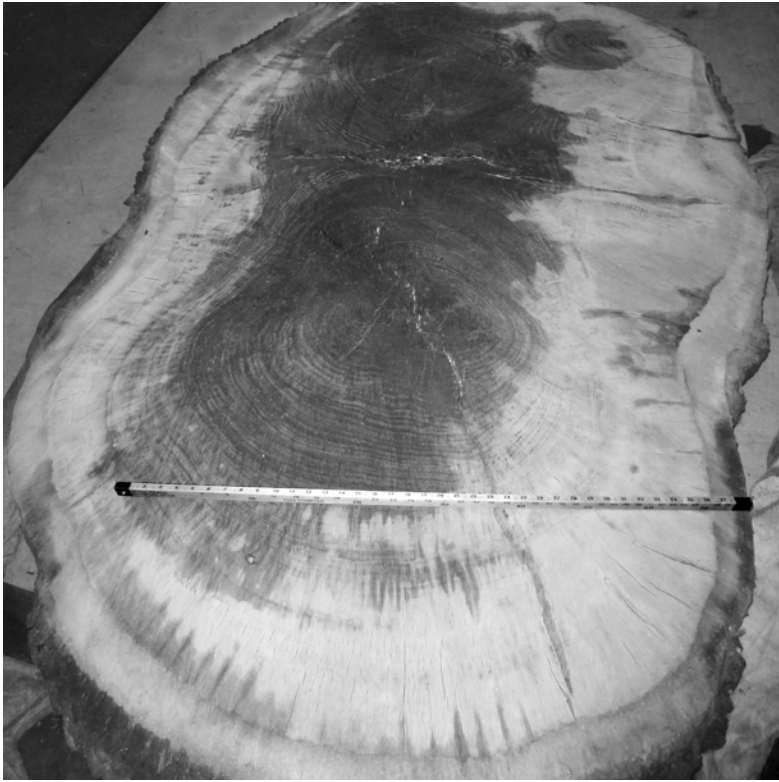
Tree Cookie, after one week in (3 June 2011)

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the surface, thus forcing moisture out the bottom of the slice and hopefully drawing the glycerin in. We were able to find an industrial glycerin supplier who would sell to our organization and promptly ordered five gallons to start with. The first treatment of the tree slice began on May 26 2011, 23 days after the tree was cut down.

Treatment of our tree cookie began with a daily coating of glycerin and water. We started using a 50/50 treatment but then rapidly switched to a mixture of 90% glycerin to 10 % water. This seemed to allow for easy application and was thick enough not to run off the top but liquid enough to be absorbed. After treatment, we let the coating sit for several hours before covering the whole piece with a tarp. Due to our climate, our office building is constantly air conditioned in the late spring and summer months and air moisture levels are quite low. Leaving the tree cookie uncovered would have dried it out too quickly, while covering it constantly kept it too moist. About a week into the process, after a long weekend covered, we noticed a fine white mold over a significant portion of the tree cookie. We treated it with a 10% Chlorine bleach solution and have continued to spot treat areas when mold appears. This seemed to work well, and only minor applications of bleach solution have been needed since.

About three weeks into the process, we began to notice that our tree cookie was giving off a different odor. The first few days it smelled like fresh cut lumber, but as the glycerin treatments continued on a daily basis the scent shifted to a sweet baked-goods smell. Tree cookie indeed! The odor was also likened by some of the staff to brewing beer or fresh leather. The scent only lingered for a few weeks and was not unpleasant. By the second week in June we had used the first 5



The tree cookie after six months (22 November 2011)

photo©Zarah Wyly

gallons of glycerin and another 5 gallons was put on order. By this time our grand experiment had cost us approximately \$325.

Throughout the rest of June and July we treated the tree cookie two times per week and left it covered most of the time. By this point small fissures began to form, radiating from the center of the tree cookie and creating the largest gaps in the areas where the wood is softest. By looking closely we could see where the glycerin had been absorbed into the cells, keeping them plump. The easiest time to see the individual tree rings was right after a glycerin treatment so we used push pins and strained our eyes to determine a rough age of the tree. From our best estimate, this magnificent tree was between 175 and 190 years old when it met its early demise in the name of levee integrity and public convenience.

We ran out of glycerin the second time in early September. Since then we have been monitoring the tree cookie on a weekly basis, treating minor mold issues (and a rather disturbing cricket infestation) and waiting to see what will happen. A few areas have begun to check significantly, with the largest cracks appearing in the thinnest portions of the slice. Overall, we are pleased with how the drying process is progressing and believe that the glycerin treatment made a

significant difference in the integrity of the tree cookie as it dries.

We expect another six to 12 months of slow drying before we can finally preserve the piece. Though we still aren't sure exactly how or when we will be able to mount and present this amazing piece of local history, each person who looks upon this physical reminder of how quickly we can erase 200 years of quiet determination leaves with a greater respect for the big trees that lurk in our cities, urban forests and wild lands.

We hope this enormous physical reminder will foster an ongoing ethic of tree preservation in our community. In this small way, the champion that never quite received its recognition will live on in the City of Trees forever.



The slice has started to check, but not as badly as expected given 6 months of preparation and drying time. photo©Zarah Wyly