

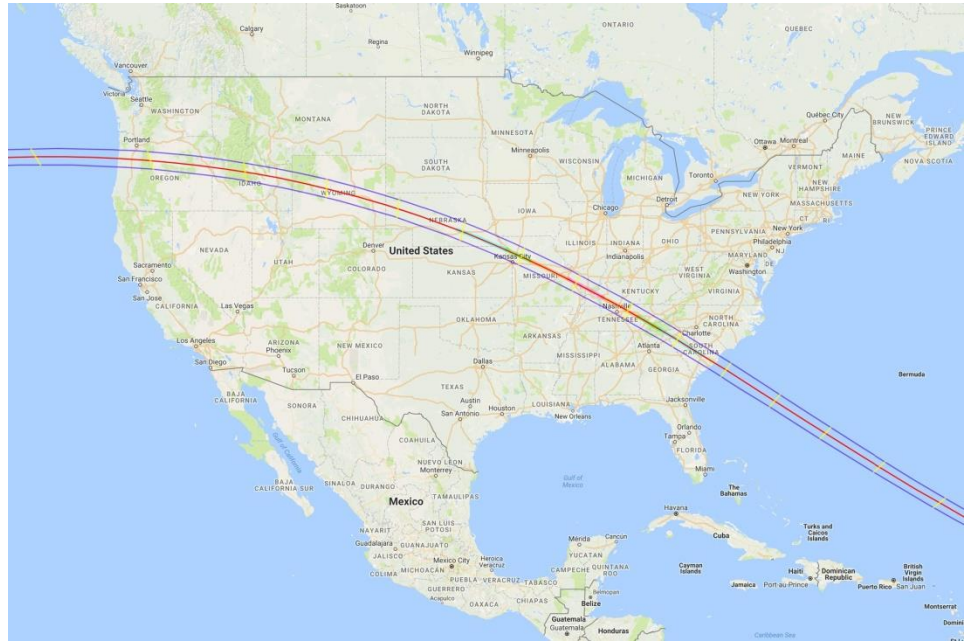
## 2017 Total Solar Eclipse Trip

Eugene & Sharon Cisneros

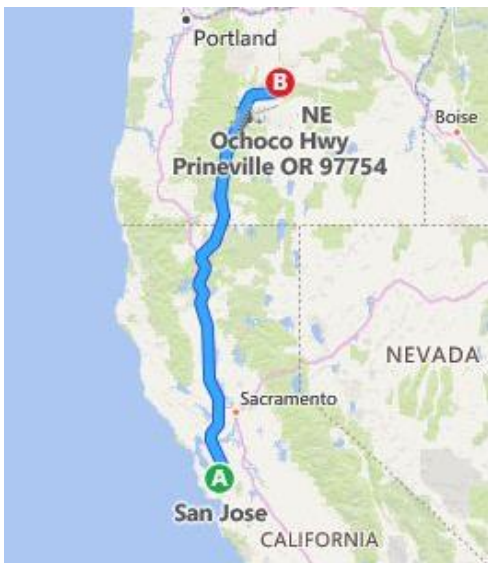
September 1, 2017

Having never viewed a total solar eclipse, we were excited at the prospect of seeing our first. Usually, viewing a total solar eclipse requires travel to far off places, as they occur worldwide. To our surprise this eclipse was made for us! The shadow, or umbra, would travel across the United States from the Oregon coast eastward, in a curved path, and reaching the eastern coast of South Carolina and finally, after 1h 33m 16.8s, into the Atlantic Ocean. This is the first total eclipse to traverse the United States coast to coast in nearly 100 years. How rare are total solar eclipses? There will be 69 total solar eclipses visible from somewhere on the Earth in the next 100 years.

It turned out that this eclipse was not only relatively close to us here in Central California, but the center line just happened to pass very close to Sharon's sister's Kozy K Ranch in the Ochoco Mountains of Eastern Oregon. We would have our own private viewing location at 4400 feet elevation! The prospects looked very good for clear skies at this time of the year.



**August 21, 2017 Total Eclipse Path**



**Our Path**

I began planning for the eclipse early on from when we first became aware of it in 2013, but didn't get serious about it until only a couple of months before it was to occur. Our plans were nearly foiled when one of our business trade shows was moved from its normal date to the weekend of the eclipse. It looked as if we would have to cancel the eclipse trip... Missing the trade show that we have attended for the past 20+ years might have meant losing our place as an exhibitor for future shows. However, only a month before the eclipse, Sharon was able to negotiate that we could miss the show and regain our position there next year. The eclipse trip was on again!

Now, with little time to plan, I scaled down the type and amount of photographic equipment that we would take along. I tried to do this in a way that would insure that we could get some decent photos at the expense of less automation of the process. That is, it would require more manual intervention of the previously planned automated process. I ditched the original plan of using my 4" fluorite refractor telescope and an equatorial tracking mount for a much simpler setup. It was very close to trip time and I hoped that I could still purchase the equipment that I needed and have it delivered in time. Fortunately that went without any issues and a Canon 100-400mm telephoto lens, solar filter and tripod gimbal arrived with a couple of weeks to spare. This would be used with a B&L heavy duty tripod that I already had. Since my setup would not be completely automated, as previously planned, I would have to do much of the work of tracking the sun and setting exposures manually. This would take precious time from being able to physically view the eclipse, so I

choreographed the process and practiced to optimize the procedure as much as possible. The equipment functioned as expected and I was able to find a camera control software program that could run user created scripts. Hence, I was able to create two scripts that would be used to photograph the partial and the total eclipse. The “partial” script would simply fire off three consecutive exposures, varying the shutter speed for each exposure. That bracketing would ensure that at least one of the exposures would be good. The “total” script would do the same thing but bracket 9 exposures varying from 1/1000 sec to 1 sec. This would insure capturing the greatest brightness range of the solar corona, an aura of plasma that extends millions of miles into space and is not normally visible except during an eclipse. The images taken at different shutter speeds could later be used to create high dynamic range (HDR) composite images showing far more corona than that of any single image.

The days leading to our departure passed quickly and we were soon on the road. As on all of our past trips to Oregon, we stopped to view Mt. Shasta but the haze made it seem far away and enigmatic. Still, Frenchie (our dog) was thankful for the stop. As we approached Klamath Falls, OR we met with heavy forest fire smoke that limited visibility to perhaps a couple of miles. We were still 200 miles from our destination and we had heard that there were several major fires burning in Oregon. To cast more difficulties on reaching our destination, we were told at the motel and a restaurant that there were gas

shortages ahead as well as a two hour traffic jam along our route just east of Prineville. We departed Klamath Falls early the next morning and headed towards Bend. To our surprise, the traffic was light and we were able to keep to the speed limit. Fuel was not a problem for us, as our RAM EcoDiesel truck was showing a range of 700 miles. We had been averaging an astounding 33.0 mpg, which is 5 mpg higher than the EPA rating. About five non-eventful hours later, we arrived at the Kozy K Ranch.



**Mt. Shasta**

We spent the next three days anxiously waiting to see if the smoke and clouds would be a problem on eclipse day. The night before, it looked dismal and the chances that the viewing would be good were very low. However, we arose early the next morning to set up my equipment and were elated to see that the eclipse gods had smiled upon us; it was clear!

As I had choreographed and practiced the entire procedure several times, the setup went quickly and without any issues. A smartphone “Eclipse Timer” app that I was using would announce all of the phases of the eclipse to the fraction of a second, based upon our GPS location. While waiting for first contact, I visualized the dynamics of what was about to occur. The Sun, approximately 94 million miles away from Earth, would soon be obscured by the moon, about 232 thousand miles from Earth; the two in perfect alignment. For a brief moment in the life of the Solar System, this alignment is possible because the Sun is 400 times larger than the Moon, but 400 times more distant. In the far distant future, the moon will have moved away from the Earth such that total eclipses will no longer be viewable from Earth.



At first contact, and for each 5 minute interval afterwards, the Eclipse Timer app announced when to run my “partial” script. Eventually, it announced that it was one minute until 2<sup>nd</sup> contact (totality). The temperature had been slowly dropping, but in the last couple of minutes before totality, it dropped rapidly and very noticeably. The totally eclipsed solar disc was indescribable and nothing like what one may imagine from seeing photographs. It was pitch dark and four planets, Mercury, Venus, Mars and Jupiter, should have been visible, but I only glimpsed Venus because it was the most prominent and in the direction that I was looking. Totality only lasted one minute and fifty seconds and most of that was spent running the camera



**Our gang waiting for first contact**

control software, so I estimate that I actually only saw about thirty seconds of totality. Third contact and it was over! For the next hour, I again photographed the partial eclipse until fourth contact.



**Me anxiously awaiting first contact**

The high lasted throughout the day and I wondered if my photographic endeavors had been successful. Finally, sitting at the kitchen table with my laptop that evening, I was almost afraid to look... But, to my relief, there were over a hundred images of the partial eclipse phases and about twenty during totality. Considering that this was a first attempt at photographing a total solar eclipse I was more than satisfied with the results, though I doubt that any will win prizes.



**Four planets visible during totality**

All too soon we were leaving the Kozy K Ranch and saying goodbyes to Sharon’s sister Carol and our daughter Sherry, who lives just fifty miles away. It was clear sailing down the mountain into Prineville and also to Bend. We turned onto Highway 97 only to find the traffic at a standstill.



The estimated 350,000 Oregon eclipse chasers had to make their exodus by way of three major routes, over several days. What would have normally taken about six hours to Redding, CA took us around eleven hours. As a welcome break in the monotony, we met with a brief fierce thunder, lightning and rain storm just before crossing the border into California. The rest of the trip home was non-eventful and we reflected on our first viewing of an amazing total eclipse. Almost immediately after our return home, I researched the next total eclipse that we could reasonably get to. We are already talking about Waco, Texas in April of 2024, the lure being four minutes of totality, twice the length of the one that we had just experienced. We're hooked!



**Last waves goodbye as we leave the Kozy K Ranch**

All photos taken with Canon 7D with an EF 100-400mm f/4.5-5.6 L IS II USM Telephoto Lens.



Collage of the phases of totality

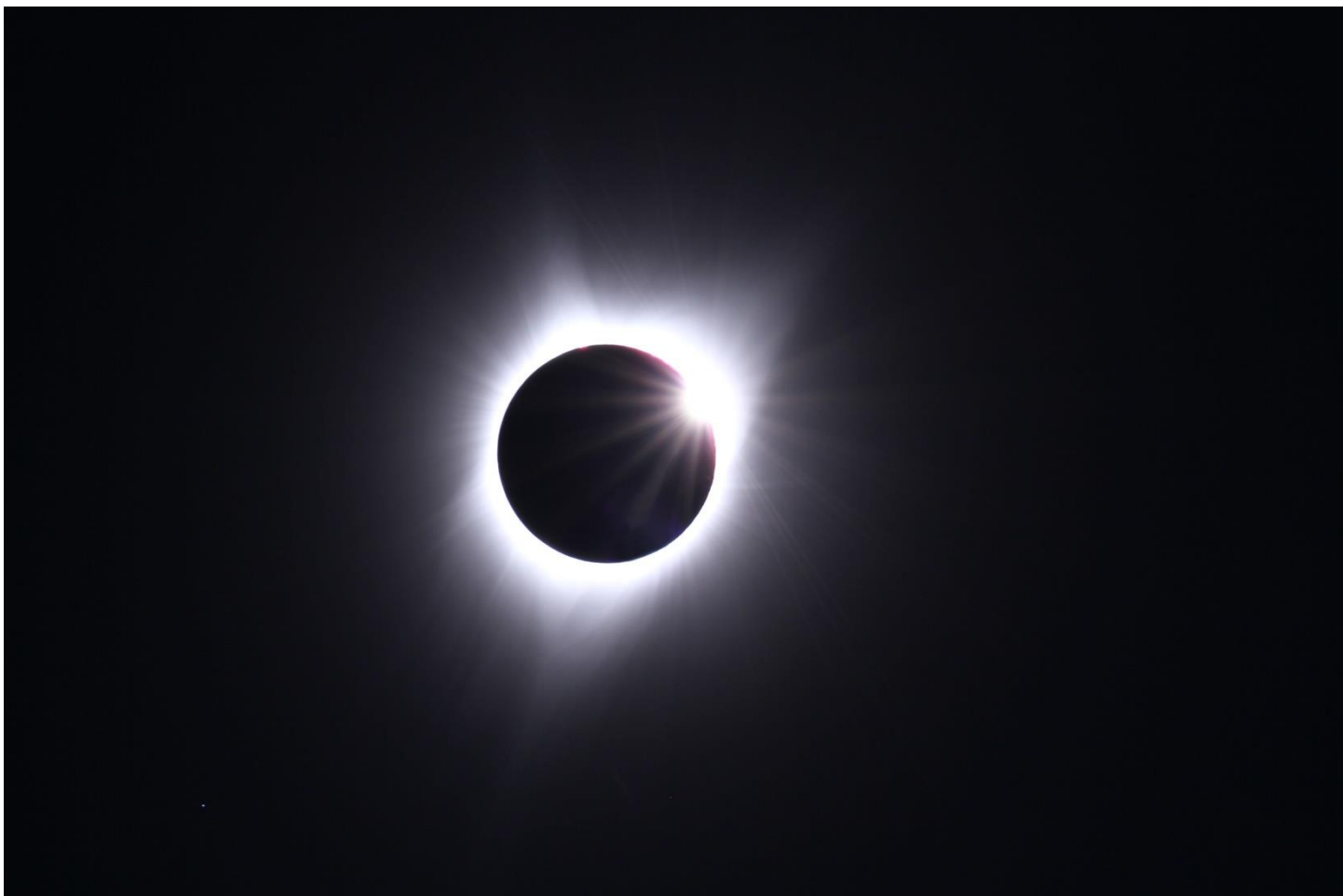


A short exposure, 400mm, 1/1000 sec, f/8, ISO 200 shows solar flares (prominences), but little of the corona.



A High Dynamic Range (HDR) composite image of 6 combined images ranging from 1/1000 sec to 1/2 sec, f/8, 400mm, ISO 200, showing the greater extent of the corona.





A short exposure, 400mm, 1/15 sec, f/8, ISO 200 – The “Diamond Ring” at third contact, with the planet Mercury as a small speck in lower left.