

# THE GREAT MOJAVE METEORITE HUNT

by

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I had been thinking about going meteorite hunting with my metal detector for a long time, and watching “Meteorite Men” on TV last month finally pushed me over the edge – now was the time to do it!

As this is a quite different type of hunting than most of us normally do, I thought you might have some interest in knowing how I, as a complete novice, approached the problems of deciding where to go, what gear was needed, how to hunt, etc.

I began casually collecting meteorite articles 10 years or so ago, but I really started adding to them last month when I started planning the trip. In any type of hunting endeavor I work under the old adage, “If you want to find a pig, the best place to look is on a pig farm”. One of the areas I had identified long ago was the Mojave Desert area of northwestern Arizona. A known “strewn field” was discovered there in 1995, and has since produced hundreds, if not thousands, of meteorite fragments. Sounded like a pretty good meteorite “pig farm” to me! This area is called the “Gold Basin” field, named for the numerous small gold mines in the area. In fact, meteorites were first discovered here by a retired engineering professor who was using a metal detector to search for gold nuggets. Later work by Arizona University determined that a meteor exploded over this area about 15,000 years ago, showering fragments in an elliptical pattern at least 12 miles in length. I also read reports of a dry lake basin (Red Lake) only a few miles south of Gold Basin, where occasional meteorite fragments had been found. A third strewn field (Franconia) was located about 115 miles southwest of Gold Basin, and I figured that was also within the hunting range for this trip.



## **Mojave Desert: Joshua tree in Gold Basin**

Why desert localities for all these strewn fields? First of all, meteorites are mostly of two types: Iron meteorites and Stony (Chondrite) meteorites. There are also some rarer types, not considered here. Iron meteorites are just that: solid nickel-iron. Stony meteorites have lots of iron in them too, usually in the form of shiny flecks and streaks, but will also contain many tiny rounded objects called “chondrules”, which are composed of a couple of different magnesium-

iron silicate minerals. Chondrules give the formal name “Chondrites” to this, the most common, group of meteorites. Only about 5% of the meteorites that land on Earth are Irons. The other 95% are Chondrites (86%) and other rare, non-Iron, types (9%). So, back to the original question, why are meteorites found more commonly in desert conditions? Because iron oxidizes (rusts) away in the presence of water, and water also rapidly breaks down unstable magnesium-iron silicate minerals. Therefore, the drier the conditions the longer meteorite rocks will remain intact and not be destroyed by weathering. Today the best world meteorite collecting areas are in the Sahara of northwestern Africa, Oman, the Atacama Desert, and the American and Mexican desert regions.

I now had my hunting region selected. Next I contacted, Carlos, an old friend at Vanderbilt. Carlos used to be with the Archaeology program at Vandy before he went over to the “Dark Side” and joined the IT people. About 15 years ago, he and I spent a week together slogging around the Yucatan Peninsula on a project. He had invited me to go along on an archaeological trip down there to provide a little geological input. The project turned out to be a complete bust – a long, kind of funny, story -- but at least I got to visit a lot of remote Mayan ruins. In any case, Carlos is always up for an adventure, and leaped at the chance to come along to the Mojave.

Equipment. Apart from our metal detectors and usual field gear, we took the following:

GPS units for recording the coordinates of any meteorites found. There is something called the “Meteoritical Bulletin Database”, where the coordinates of all meteorite finds are, or should be, recorded. I found this database very helpful in locating specific areas within the Gold Basin, Red Lake and Franconia sites where the greatest number of meteorites had been found (or at least recorded). I wanted to narrow down more closely where on this large “pig farm” our best chance was going to be.

Magnets. Both kinds of meteorites are magnetic, and a lot of “meteorwrongs” littering the desert floor can be eliminated by touching a magnet to them. You need a good rare-earth (Neodymium) magnet. These can be found on the internet, are cheap, and are VERY strong. Be careful not to get one anywhere close to your credit card – it will wipe it – and don’t get your fingers caught between the magnet and an iron object; you will get a painful pinch! I taped one magnet to the end of a telescopic walking stick and another to my digging tool.

Maps. I pulled topographic maps for all three areas and took them in the field with me. I had marked GPS coordinates of known finds onto the maps in advance. I also bought some land ownership maps of the areas from a local gold prospector. These maps show BLM (Bureau of Land Management) land, private land, and state land within each strewn-field area. I wanted to hunt only on BLM land, where “casual prospecting” for gold, meteorites, and other minerals is still allowed and where I wouldn’t have to waste time locating property owners.

A good metal file and sanding paper. I spent time in the evenings roughly polishing “windows” on any questionable rock specimens collected during the day. Surface weathering and patina can obscure diagnostic iron flecks and chondrules.

Snake gaiters. I had never worn these before, but we were strongly advised to get them. There are Diamondback rattlers in the Mojave. Also an aggressive and particularly lethal brute called the “Mojave Green Rattlesnake” apparently gets very active at this time of the year. We saw lots of lizards and horned toads, but fortunately no snakes (although Carlos maintains he did hear one rattling away in a bush).



**Intrepid Nashville meteorite hunter on the hunt in Gold Basin.  
Note magnet cane on shoulder.**

Preparation done. Now all we needed to do was find some meteorites. Carlos and I flew into Las Vegas two weeks ago, picked up a 4WD Jeep Wrangler at the airport, and headed for the desert. We had planned one travel day to get to the area and one day to get back, leaving a full five hunting days in the field. We drove from Las Vegas to Meadview, a small town about 2 ½ hours away, where I had booked a cabin. The second day we reconnoitered Gold Basin and Red Lake, which are close to each other and only about 15 miles from Meadview. We drove along some rough prospectors’ tracks deep into Gold Basin, and finally picked a place to start, just to see what desert hunting was going to be like. I was carrying some unaccustomed gear, and it always takes me a while to get organized at a hunt site. So, while Carlos was already out there, swinging his detector and disappearing behind a Joshua tree, I was still back at the Jeep, fastening snake gaiters, dropping sunscreen and water bottles, organizing my lunch, checking my camera, stowing maps and other gear in my knapsack, and trying to tune my MXT. The MXT was sputtering, crackling, and popping like a thing possessed in the magnetite-rich rock debris littering the desert floor. Anyway, I finally got organized and off I went. The accompanying pictures give some idea of what the desert is like at this time of year – simply beautiful and a pleasure to be in. Many plants were blooming, and the weather was still reasonably cool. In fact, we wore light jackets early in the morning for the first few days we were there.



### **Desert plants in bloom**

After a few hours in Gold Basin on this day, we drove down to Red Lake to see what it was going to be like. The lake is about 6 miles by 5 miles in size and is completely dry at this time of year. Here we could drive right out across the lake. I've seen mirages before, but none like we saw at Red Lake. Several times Carlos and I both absolutely swore that there was water in the distance, half a mile or so ahead, but when we got there – bone dry. There were also clear signs of ancient Indian activity on the dried up lake: occasional pieces of worked chert, and one broken mano (grinding stone).



### **The dry basin of Red Lake**

The third day, we decided to reconnoiter Franconia. Franconia is a two-hour drive from Meadview. Carlos and I passed the driving time swapping stories about travel adventures in exotic, far-away parts of the world. Some of the stories were probably even true. The name

Franconia comes from the name of a railroad crossing located there – although not a habitation in sight as far as the eye can see. The desert there is even worse than the Gold Basin field: full of magnetite and hot rocks. The MXT (Sputter, Crackle, Pop) let me know very quickly that it didn't like the ground. I did manage to find one very badly weathered, but quite iron-rich meteorite about the size of a lemon. The reported Franconia meteorites are mostly Chondrites, but with some Irons; the Gold Basin and Red Lake meteorites are all Chondrites, and low-iron Chondrites at that. Before we left to return to Meadview, we drove down to Lake Havasu, which is only about 12 miles from Franconia. Yes, Lake Havasu is where some moron bought, transported, and re-erected London Bridge a few years ago. I had both driven and walked across London Bridge years ago (when it was in London, of course), so now I guess I can say I've driven across it on two continents. Nevertheless, it was a jarring experience to see the grand old bridge now surrounded by desert, spanning a piddling little stream instead of the mighty Thames. I suppose it does bring in the tourists.

The fourth day we searched Gold Basin, the fifth day Red Lake, and the sixth and last hunt day we hunted Gold Basin again. I was running the MXT (S,C,P) at a gain of +3 by this time, because of the low iron content of the Chondrites. I also swung my detector over every piece of quartz I saw, as quartz commonly encloses nuggets and small wires of gold. Alas, no gold found. If I were focusing on gold, I think I would try a mile or so west of where we were, in the foothills where most of the small gold mines are located.



### **Typical gravel-strewn floor of the Mojave**

On the last afternoon we drove down to the west rim of the Grand Canyon to see the Skywalk (it's only 25 miles from Meadview). Most of you will know that this is the recently-opened glass walkway that extends out over the Grand Canyon. You walk out on it and look straight down through clear glass (gulp!) to the canyon floor, 4,000 feet below. The initial words of many people as they first walk out onto the glass are best not printed here.

The areas we hunted have all been hunted hard in the past, but they are large, and clearly still produce a bit even for first-time desert hunters such as Carlos and me. After all, how many can say that they have found a piece of space rock, formed at the same time our solar system formed (~ 4.6 billion years ago), which long resided in orbit between Mars and Jupiter, then chanced to fall on Earth some 15,000 years ago? I was lucky enough to find a total of five meteorite fragments on this trip (one at Franconia, two at Gold Basin, two at Red Lake); I came back a tired, but happy, hunter!



**Two of the meteorites found in Gold Basin**