

Return to Auca Mahuevo with Alberto Garrido



Alberto Garrido and Art Ballard

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Auca Mahuevo, by Alberto Carlos Garrido (translation by Art Ballard)

To be a member of a research team dedicated to the search and study of dinosaurs is to have achieved the dream of my childhood. Because of that, when I was invited by Rodolfo Coria and Luis Chiappe to participate in the field campaign of Auca Mahuevo, I felt a great excitement, but also a great responsibility.

Being a student of geology at the National University of Córdoba (Argentina), I happened to read in a scientific journal of the find Luis and Lowell Dingus had made in the Province of Neuquen, nothing less than an outcrop full of dinosaur eggs! This of course sparked my curiosity and imagination; I wondered what that site was like and thought about how wonderful it would be to work there, and now, almost without expecting it,

I was presented with that opportunity.

Like all beginners, I tried to hide my nerves and do things as best as possible, trying to learn everything I could from the professionals in my team. Looking back, I can say that the experience gained and the things learned have been many, but I think the most important thing is having had the chance to work on the project, and not only to have been a part of the team, but also a part of a family of those who work in Auca Mahuevo.

(Translator's Note: The term Auca Mahuevo is the name given by Luis Chiappe and Lowell Dingus to the dinosaur nesting area, and is a Spanish play on words derived from the Spanish words "mas huevos", meaning "more eggs", and the general Patagonian geographic area of Auca Mahuida.)



Alberto Garrido, Auca Mahuevo

Working in Geology

Studying rocks allows us to understand various aspects of what happened in Auca Mahuevo during the time it was inhabited by the egg-laying dinosaurs. Common questions like "what was the climate like in those days?" and "What happened to the eggs and their embryos?", "How were they preserved as fossils?", and many others can only be answered by careful analysis carried out not only on the fossils, but also on the sediment which contains them.

By the joint work of the geologic team, each one with distinct specialties,

we try to answer all these unknowns. In my case, my own work consists of preparing stratigraphic profiles. Yes, I already know, surely you are asking "What is that....?", well, this area of study consists of making a graphical representation of each of the layers of earth. Sometimes, when necessary, we also take samples back to the laboratory for further study. All this information, together with the entire group's data, allows us to form interpretations of the environment of Auca Mahuevo as it existed approximately 80 million years ago.

Compared to the paleontologist, this work does not require you to transport large amounts of equipment, at least not heavy equipment; it is sufficient to take your pencil, compass, measuring tape, hand lens (loupe), GPS, rock hammer, and other small tools. Of course it is important not to forget to put in your backpack your canteen and food for the day! In general it is a job wherein you walk a lot, paying constant attention to any evidence the rock presents. At times something that appears at first glance to be insignificant can provide extremely valuable data for interpretation.

Nevertheless, don't think that all we do is look at rocks; sometimes, if you are lucky, you may also come across a dinosaur!

The Aucasaurus

Finding a fossil is always exciting, especially if it is a dinosaur previously unknown to science. Finding Aucasaurus was a stroke of luck, and as it usually happens, occurred as a matter of chance in the least expected place.

That day we had been collecting numerous samples of rock all morning, which would later be used by Dr. Lowell Dingus to derive paleomagnetic data in order to determine the age of the deposits. We had just finished our work, and walked down the hill we had been working on to join up for lunch with the rest of the group. Along the way and nearly at the foot of a small mound I stopped to look at some interesting white objects spread around the ground, which turned out to be fossil bone.



At the moment of the find, there was nothing to indicate that it was anything important, only a few bone fragments appeared which I took to Lowell and Julia (translator's note: Julia Clarke is a graduate student in paleontology at Yale University) so they could be analyzed later by the paleontologists. It was a major surprise (and satisfaction) to me when Rodolfo and his team began their excavation, and as they removed the sediment, little by little there began to appear first the tail with their vertebrae perfectly articulated, then a hip together with the feet, then ribs, the arms, and finally the skull. It was a complete dinosaur! I could hardly believe it, finally another dream had been realized, I had found a dinosaur!



Alberto, nest

The Nests

As I mentioned earlier, the act of carefully examining the different layers of rock that crop out on the surface allows you to sometimes find fossils. It was doing this that, on just another work day when I was preparing a stratigraphic profile, a small structure in the sediment bothered me, which caused me to look more closely.

A "stringer" of yellowish silt appeared to stick out between layers of red clay. I thought it could be a loose fragment, but when I went to pick it up, I noticed that it was fairly firm. Without knowing what it might be, and trying to discover some logic behind what I was seeing, I began to clean

around it softly to see what that structure was. Generally, when one is working, one tries to form some mental model or example to serve as a comparison by which to be able to interpret what one is seeing, but the more I cleaned the structure, the stranger it looked, and the more difficult it was to form a sedimentological interpretation.



After working for a while, the stringer became a ring and when I uncovered the center, dinosaur eggs appeared. For an instant, I was doubtful, that ring of silt appeared to form an approximately circular rim which confined and contained more than two dozen eggs. A nest? I started to think I was dreaming; by luck, Jim and Mary were not far off. They are geologists of Montana State University and are experienced in this subject, so I quickly called them over. When they arrived and saw the structure, both became more than pleased, confirming my suspicions. There were no more doubts, this was for sure a nest, or we were all three dreaming.

Up to that moment, even though hundreds of eggs had been found in "clusters", there was no firm evidence that could prove how they had come to be in that position. Two main points of debate were argued at that time. The first was whether egg clusters were (*italicize*) in situ (just as the dinosaur left them), or if they had been carried by water and deposited together where they are found. The second, even if they were (*italicize*) in situ, was it possible that the dinosaurs excavated their nests, or did they use natural depressions in the terrain to deposit their eggs? This discovery eliminated those uncertainties and also allows us to deduce behavioral habits of this group of dinosaurs. Additionally, these were the first known nests of sauropod dinosaurs.

Auca Mahuevo, 80 Million Years Ago



Can you imagine enormous herds of herbivorous dinosaurs composed of hundreds of individuals migrating together to lay their eggs? Truly, this image of how Auca Mahuevo came to be is really incredible.

According to what we know up to now, Auca Mahuevo must have been a plain with abundant vegetation, but not with great forests; the plants were rather of medium height, among which grew abundant shrubs. The climate was temperate to warm, with well differentiated seasons. Winding rivers, not very large, crossed the region; on occasion, these rivers overflowed their banks, flooding the plains and depositing a thick cover of mud which buried the nests of the dinosaurs. With time and the effects of many geological factors, the eggs and in some cases their embryos were fossilized, lasting until our time.

There is still much to research, new elements will permit us to continue to learn a little more about the life of these dinosaurs; after all, who knows what surprises await us in Auca Mahuevo next year?