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Coyote Dry Lake Meteorites: what can Holocene meteorite falls tell us about the recent drainage history of the Coyote basin?

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The Coyote Dry Lake meteorites are named after the California dry lake on which they were found, a large playa 20 miles NE of Barstow in San Bernardino County. For the past 10 years, over 250 chondritic stone fragments and individuals (meteorites) have been found at this locality. Every known find has been documented. Each of them has had its date-of-find, weight in grams, and GPS coordinates recorded. This information was reported to the Nomenclature Committee of the Meteoritical Society. Having supplied all of the required information, it was now possible to get provisional numbers assigned to each of the more than 250 finds.

The first known find from this locality was made by this author in 1995, but it wasn't classified until 1999. It was characterized as being "H5 S2 W3", as are the majority of the finds from this locality. But, over the years as finds were continually made, each would be closely scrutinized, and every specimen that was deemed "out of character" (from the original H5 S2 W3 stones) would be turned in for classification. Presently, there are nearly 50 of these specimens that have been classified. Although a proper pairing study has yet to be done, here is the breakdown of the current classifications:

Number of classified finds (stones)	Classification(UCLA)	Pairing determination
21	H5 S2	(most are "probably paired")
10	H4	(1 group of whole individuals are "probably paired" and at least 2 other groups of "possibly paired" stones)
5	H6	(1 group of whole, fresh stones are "probably paired" and another group of weathered stones are "possibly paired")
2	H5-6 S2 breccia	("probably paired")
1	H5-6 S4 breccia	(unpaired)
1	H3	
2	L5-6 S2-3 W1	("probably paired")
2	L6 S4 W5	("probably paired")
1	LL6	

The recovery information for each of these classified stones were tabulated, and this table was submitted to the Nomenclature Committee. The name "Coyote Dry Lake" was approved by the Committee for these classified stones, as well as for the remaining 200 "provisionally numbered" finds. The name "Coyote Dry Lake" appeared for the first time in print when the Meteoritical Bulletin #89 (2005) was published in the "Supplement" to the *Meteoritics & Planetary Science* – Journal of the Meteoritical Society (Volume 40).

Based upon the pairing scheme in the above table, it can be reasoned that there have been at least 10 separate events, called "meteorite falls", which have occurred over time. It is this phrase "over time" that is now at the center of the discussion about Coyote Dry Lake meteorites. Over HOW MUCH time is the question. For if it can be shown that these various meteorites accumulated over geologic time, and that their recovery was fortuitous due to recent exhumation by accelerated deflation/erosion of this lakebed, then 10 separate fall events is not an unusually high number. But, the consensus among geomorphologists is that Recent drainage of these Mojave Desert basins has been relatively static.

Coyote Dry Lake meteorites have garnered attention recently, albeit for the large number of meteorites found upon the lakebed (more than 250 stony fragments and individuals), yet, if the number of separate fall events can NOT be shown to have occurred over geologic time, and are accepted as having occurred recently, this will be of great interest to those researchers studying the rate of flux(influx) for meteorite(s) in fall(falling) upon this planet.

Reconciling the number of Coyote Dry Lake meteorite falls with the Recent drainage history of the Coyote Basin is an endeavor that will require more in depth study by various, cross-disciplined researchers in order to resolve. It is to this end that the finding of the Coyote Dry Lake meteorites are being presented to this workshop.

Presentations from a workshop held in April 2005 at the Desert Studies Center in Zzyzx, California, are now published. Key issues addressed in the workshop included the following: (1) "Correlating patterns with current interpretations of drainage history based on the physical record and seeking explanations for major discrepancies." (2) "The meeting encouraged geologists and biologists to interact to develop a broader perspective on the types of research that are being conducted to address issues of regional drainage history. The convenors hope that these new opportunities of interaction among scientists of different disciplines will lead to future proposals for collaborative studies."

In keeping with the above perspectives, this abstract endeavors to promote a more in depth study of the Recent drainage history of the Coyote Basin and to petition fellow researchers at this workshop to assist in this "cross-disciplined" study.

Bibliography:

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