NewsMAC

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Archaeological Site Protection, the Public, and Confidentiality

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EDITOR'S INTRODUCTION – AND FAREWELL

This *NewsMAC* is my last as editor. I leave that task now in the more than capable hands of Dr. Hannah Mattson, with the promise that I will offer as much help as she wants during her tenure. A heartfelt thanks to everyone who was helpful to me over the last two-plus years.

This current *NewsMAC* got its start in early 2016 and continued to grow as authors slowly submitted essays. The genesis was in an initial discussion raised among Listeros about matters regarding the confidentiality of site locations – how secret should they be, how secret *can* they be, in fact, and who gets to know how much about where sites are. That initial discussion distilled several general questions posed to authors:

- how do we communicate with one another professionally without revealing too much, because plenty of non-archaeologists have access to publications?
- how can we (or can't we) control information when we hand it over to our clients (for those of us who have clients) and, I would add, landowners?
- how can we fulfill the objectives of public education and public outreach without populating the Location-Knowing-In-Crowd with people of uncertain loyalty to preservation?
- how can we satisfy tribal interests for confidentiality?
- what have different agencies developed as best practices to manage these concerns?
- how do we specifically guard *against* encouraging any of those sorts who would do damage to sites?

I do not advocate that everybody should have easy access to site location information. My own personal opinion leans heavily towards confidentiality.

In terms of opinions about information sharing, where you stand depends on where you sit. Many of us working in CRM sign rights to our first-born away whenever we request access to any agency-controlled site location information. We are forbidden to share it except within narrowly restricted circumstances and even then under penalty of all manner of scary things. Naturally, perhaps, we tend to lean towards maintaining strict secrecy about site locations, because that is what is required of us.

I have certainly heard plenty of horror stories about landowners who share information not only about sites on their own properties, but also about sites on adjacent state and federal lands. And how, frequently, those same landowners provide not only information, but access to sites – including the right of trespass across their own private farms and ranches – so that vandals can reach publicly-owned sites.

Landowners, of course, are not the only Location Leakers. I have certainly heard plenty of other stories about non-archaeologist agency personnel and private developers who (maybe) unwittingly handed out the "dig here" maps. And I'm pretty sure we would all agree that dedicated pothunters don't need our help to find sites to loot.

I am especially and deeply sensitive to the desires of tribes and individual American Indian people regarding the maintenance of confidentiality with respect to archaeological site locations. Tribes are concerned not only with protecting (including forbidding access to) sites on their own lands. Rather, many are extremely troubled by the difficulties they face in attempting to safeguard sites with which they are inextricably linked, but that are not located on tribally-controlled lands – difficulties that include having little or no control over the disclosure of the locations of those sites.

With increasing age, I find that I am becoming a stronger proponent for greater public involvement in research, interpretation, and preservation of the archaeological record – which I think (or maybe I just hope) can be accomplished without handing out "dig here" maps.

As I spoke to various people within and without NMAC, as well as with the authors of the following essays and a number of would-be authors for this issue, the central topic flowered into other related areas, including the necessity – indeed, the obligation – of sharing the things that we do and learn in archaeology with various interested publics.

In my first *NewsMAC* issue as editor in 2015, I championed the information and wisdom sharing opportunities that organizations like NMAC have the opportunity to offer to fellow members. In this final issue on my watch, I urge everyone to find new, *thoughtful* ways for including interested publics in our work.

Because people who are interested in something often tend to be people who vote in its best interests.

And THAT couldn't possibly be more important at any time in our history as a discipline than now.

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2017 Lifetime Achievement Award in Archaeology Recipient David T. Kirkpatrick

It is our privilege to announce that this year's winner of NMAC's Lifetime Achievement Award goes to David Kirkpatrick. David has worked as an archaeologist for many years, first in California and then in New Mexico. He was an Archaeological Society of New Mexico trustee (1987 and 1996) and has served on the Certification Council since 1987. He is also the co-editor for the Society's *Papers in Honor of* series and directed the ASNM Field School.

David served as the President of NMAC in 1989 and continues to organize workshops for the organization. He has also been the President and Vice-president of the Doña Ana Archaeological Society. In 2003, he received the El Paso Archaeological Society's Award of Distinction. David is active in the Texas Archeological Society's "Texas Archeology 101 Academy," providing lectures on local archaeology and leading field trips to Firecracker Pueblo. Educating the public about archaeology has been one of David's life goals, and we applaud and recognize his work in achieving this.

David Kirkpatrick receiving the New Mexico Archaeological Council's 2017 Lifetime Award in Archaeology from Cherie Walth, NMAC President, at the Annual Meeting in Albuquerque November 11, 2017.

Assessing the Potential for Pollen Preservation from Ancestral Pueblo Water Reservoir Features, Jemez Mountains, New Mexico

Michael Aiuvalasit and Christopher Kiahtipes
Southern Methodist University – NMAC Grant Recipient

Introduction

Pollen is typically not well preserved in archaeological contexts in the arid Southwest (i.e. Bryant et al. 1994, Hall 1981); however certain archaeological features may provide the right conditions for pollen preservation. This report presents an initial evaluation of the potential for pollen preservation in sediments from prehistoric water reservoir features in the Jemez Mountains, New Mexico. These small water catchment basins are found near some of the largest Ancestral Pueblo villages in the region. A NMAC grant funded the processing of 30 sediment samples from six archaeological sites. Initial counts of all samples, and 200+ grain counts of seven samples from the reservoir at the site of Amoxiumqua (LA 481), show that high concentrations of pollen can preserve in reservoir sediments. Yet, high concentrations of pollen were not recovered in all samples. Geoarchaeological observations and analyses inform interpretations as to why there is differential preservation. Finally, this report explores the

potential for reservoir sediments to contain archaeological integrity and for palynological analyses to contribute to addressing significant questions regarding prehistoric occupation histories, water resource use, and anthropogenic impacts to near-settlement landscapes.

Prehistoric water reservoir features as pollen sinks

This study is not the first to evaluate the potential for extracting pollen from prehistoric reservoirs in the North American Southwest, but it is the first to sample multiple features across two adjacent regions (the Southern Jemez and Pajarito Plateaus). Ancestral Puebloan reservoir features, or water storage basins according to Crown's typology of water features (1987), are reported from all across the Southwest. They are typically small excavated basins with horse-shoe shaped earthen or stone berms on the downslope side designed to catch surface runoff from an upslope catchment area.

The potential for the sediments accumulating in these basins to trap and bury pollen during the feature's use-life has been appreciated since at least Don Wyckoff's (1977) pollen study of the Far View Reservoir (née Mummy Lake) on Chapin Mesa in Mesa Verde National Park. While the proposed function of this particular feature has come into question (Benson et al. 2014), the recovery of pollen from fine grained sediments accumulating within the basin is irrefutable. Wycoff's interpretations from pollen records of shifting vegetation sequences, potentially reflective of anthropogenic impacts to local vegetation communities, and subsequent forest regeneration after abandonment, have been integrated into studies of regional socio-ecological dynamics (e.g. Kohler and Mathews 1988, Romme et al. 2009). Pollen studies from other reservoir features have focused more on identifying whether or not the basins held water, and therefore concentrated on recovering palynomorphs of wetland species (e.g. Bayman et al. 2004, MacWilliams et al. 2009, Murrell 2006, Murrell and Shelley 2009, Wright 2006).

Processing methods and preliminary analyses

Samples for pollen processing were subsampled from sediment cores collected from both reservoir basin and berm sediments from six reservoir features (Table 1). Cores were collected in plastic sleeves and sealed in the field. Descriptions and subsampling took place in controlled laboratory conditions. Subsampled sediments were immediately stored in refrigerated conditions until processing. Samples from reservoir basins were selected from the top, middle, and bottom of infilling sedimentation sequences. When possible, fine-grained deposits were sampled to maximize preservation potential. Basin samples reflect vegetation sequences from deposits contemporaneous to both reservoir use and after the abandonment of the feature and/or site. Cores extracted from reservoir berms frequently encountered buried natural paleosols beneath berm fill, like those observed in other reservoir features (e.g. Wilshusen et al. 1997). Buried paleosols were sampled to evaluate vegetation dynamics before reservoir construction. Together with the basin sediments, these samples provide vegetation records from before, during, and after reservoir use.

Laboratory procedures applied to the samples followed standard palynological methods (Faegri et al. 1989), with minor adaptations from Bryant (Pers. Comm. 2012). Subsamples were collected by volume, weighed, dried overnight, and weighed again to establish concentrations by both weight and volume. Tracer spores of Lycopodium sp. were added as tablets (batch #414831), two of which were added per sample (~12100 tracer spores per tablet + 334). Samples were then disaggregated in a 10% HCl solution, which also facilitated the dissolution of any carbonates.

Samples were centrifuged, decanted, mixed with a vortex mixer, and then rehydrated until the samples reached neutral pH. Samples were then screened through 150 micron mesh and the clay fraction was removed by decanting after using shorter centrifuge spins. Next, samples were left in a concentrated (>46%) HF bath overnight to remove silicates and clay minerals not removed during centrifuge-decant cycles. Samples were again centrifuged, decanted, mixed, and rehydrated until neutral pH again before adding 10% KOH and placing the samples in a warm (80º F, 30º C) water bath for 10 minutes.

Adopting the method employed by Bryant (pers. comm.), the KOH bath was followed by a concentrated (>46%) HCl rinse to break down and remove humus and organic material. Samples were

centrifuged, decanted, mixed, and rehydrated until neutral pH before adding glacial acetic acid, which is hydrophobic and forces the water out of the samples. This is necessary for the acetolysis process, which is a series of reactions triggered through addition of a 9:1 solution of acetic anhydride and sulfuric acid, which reacts strongly with H2O. After adding this solution, samples are left in a hot water bath (~90º F, 30º C) for six minutes. Samples were centrifuged, decanted, and mixed with glacial acetic acid again before being rehydrated and returned to neutral pH.

The final step is a density separation using 5% HCl and Zinc Bromide solution with a specific gravity of 2.0, which segregates pollen, charcoal, and other low density durable organics from the remainder of the sample. The samples were centrifuged, decanted, and inverted to allow air drying before the addition of roughly 4 ml of the ZnBr/HCl solution. Samples were then mixed with a vortex mixer and centrifuged at 1,500 rpm for a minute and a half after which 5 ml of ethanol was added to the samples. This pushed the low-density organic material to the contact between the ZnBr/HCl solution and the ethanol, which is then pipetted into 1-dram vials. Excess ethanol was removed by centrifuging and decanting the samples. Glycerol was then added to the samples and they were allowed to dry on a hot plate (at 80º F) or to stand overnight until the remaining ethanol evaporated.

All thirty samples were mounted on microscope slides using glycerine and were analyzed at 400x magnification using a binocular light microscope. Rapid assessment of pollen preservation was conducted by counting to either 50 identifiable pollen grains or 20 Lycopodium tracer spores (Table 1). General observations of sample preparation, pollen types, and overall preservation potential were made as was a preliminary calculation of pollen concentrations, using the formula below (see Bonny 1972). Seven samples from the site of Amoxiumqua (LA481) were formally counted to 200 palynmorphs.

A comparison of pollen concentration values between the preliminary scan and final counts show significant differences in estimations of pollen concentrations, but in each case the preliminary counts underestimated pollen concentrations (Table 2). This speaks to the utility of conducting rapid preliminary scans of pollen preservation to assess preservation potential.

$$PC = \frac{K * \Sigma p}{\Sigma L * S}$$

where: PC = Pollen Concentration
K = Lycopodium spores added
Σp = Fossil pollen counted
ΣL = Lycopodium spores counted
S = Sediment weight (grams)

Pollen concentration values reflect pollen production in the ecosystem, sedimentation rates, and pollen taphonomy. Rapidly aggrading sediments typically have lower pollen concentrations than slowly accumulating surfaces because there is a shorter duration for pollen to accumulate before burial. Yet, attributes of sediment texture, chemistry, and soil moisture may play a larger role than accumulation rates in pollen preservation. Deleterious conditions include alkaline soil chemistry, high oxidation potential (Eh), course textured, poorly sorted sediments with large void and pore spaces, and frequent wetting and drying. All of these conditions are typical to arid to semi-arid settings, and is why these regions are considered poor for pollen preservation (see review in Bryant et al. 1994). To better understand the taphonomic properties of the reservoir samples we measured soil pH using an Oakton EcoTestr pH 2 Pocket Tester, and estimated soil particle sizes (>2mm fraction by determined by sieving and <2mm factions by using a Beckman-Coulter LA 13 320 Laser Diffraction Particle Size Analyzer) (Table 1).

Pollen analysts typically do not analyze samples from open sites with concentration values less than 1000 grains/gr, as post-depositional processes are likely to have compromised the interpretative potential of the sample population of palynmorphs (Bryant et al. 1994). Pollen concentration values of the samples from reservoir sediments in the Jemez Mountains are very high. Nearly all samples exceed the 1000 grains/gr threshold, and two thirds have concentrations greater than 10,000 grains/gr (Table 1). Samples processed from basin deposits have on average much higher concentrations than buried paleosols (118,935 g/gr vs. 19,125 g/gr).

Table 1. Sediment and Pollen Data from Ancestral Puebloan Reservoir samples.

Sample Context				Sedimentary Context						Pollen Recovery				
LA#	Site Name	Sample #	Context	pH	G%	S%	Si%	C%	Mean Φ	Tracer	Pollen	No ID	Sample Weight (g)	Pollen Concentration (pollen/gr)
481	Amoxiumqua	2.204	B(6-8)	5.4	0.5	13.3	57.2	29.5	6.3	0	50	3	3.1446	384787
481	Amoxiumqua	2.210	B(18-20)	5.7	3.2	15.8	53.9	30.3	6.3	2	52	6	3.0132	208815
481	Amoxiumqua	2.211	B(20-22)	5.7						3	52	7	3.0784	136261
481	Amoxiumqua	2.212	B(22-24)	6.0	2.0	17.9	49.5	32.6	6.2	3	50	5	3.1486	128099
481	Amoxiumqua	2.215	B(28-30)	6.2	13.0	12.4	58.8	28.8	6.3	3	52	5	3.1362	133750
481	Amoxiumqua	2.224	B(46-48)	6.0	2.1	20.5	48	31.5	6.1	9	54	7	3.1341	46329
481	Amoxiumqua	3.154	P(118-120)	6.5	11.5	32	41.4	26.6	5.5	20	28	4	3.1565	10733
136	Boletsakwa	2.320	B(38-40)	6.8	44.0	76.3	17.27	6.43	2.4	20	5	9	3.0170	2005
136	Boletsakwa	2.340	B(78-80)	6.9	21.9	57.4	29.1	13.5	3.8	20	1	8	3.0151	401
136	Boletsakwa	2.346	B(90-92)	8.3	24.2	55.5	32.7	12.1	3.9	20	0	0	3.0313	0
136	Boletsakwa	3.113	P(24-26)	7	16.6	58.9	30.7	10.4	3.5	20	2	0	3.0699	788
482	Kwastiyukwa	2.302	B(2-4)	6.2	0.2	14.2	52.8	33	6.4	1	50	4	3.1528	383786
482	Kwastiyukwa	2.307	B(13-15)							8	50	9	3.1878	47447
482	Kwastiyukwa	2.312	B(23-25)	6.4	0	11	54.7	34.3	6.5	7	52	8	3.1154	57704
482	Kwastiyukwa	2.319	B(37-39)							20	53	12	2.8914	22180
482	Kwastiyukwa	2.321	B(41-43)	6.6	0	14.9	56.9	28.2	6.2	21	10	2	3.1665	3639
482	Kwastiyukwa	2.329	B(57-59)	6.6	4.8	10.8	59	30.2	6.4	20	5	0	3.1670	1910
482	Kwastiyukwa	3.128	P(58-60)	7.6	0	26.2	60.7	13.1	5.7	20	18	4	3.0556	7128
61641*	Tovakwa	2.303	B(4-6)	6.0	0	12.9	54.7	32.4	6.4	11	50	2	1.6602	66257
61641*	Tovakwa	2.333	B(64-66)	7.0	28.9	19.2	48.1	32.7	6.1	20	17	11	1.6017	12843
61641*	Tovakwa	3.150	P(110-112)	6.3	8.9	37.6	43.6	18.8	4.9	20	10	8	1.7510	6910
170	Tsirege	2.101	B(0-2)	6.6	3.4	29	50.6	20.4	5.4	1	55	5	2.8125	473244
170	Tsirege	2.128	B(54-56)	6.5	2.6	10.9	61	28.1	6.3	2	54	13	2.6072	250614
170	Tsirege	2.137	B(72-74)	6.2	3.1	12.7	59.6	27.7	6.2	24	54	13	2.6610	20462
170	Tsirege	3.437	P(70-74)	6.2	3.5	59.5	26.8	13.7	3.3	20	1	5	2.9857	405
70798*	Yapashi	2.210	B(18-20)	5.7	3.8	10.3	65.1	24.6	6.2	5	51	2	2.0701	119241
70798*	Yapashi	2.214	B(26-28)	5.6	19.0	13.8	55.6	30.6	6.3	3	53	5	2.1110	202526
70798*	Yapashi	2.220	B(38-40)	5.6	10.4	28.8	44.4	26.8	5.7	16	51	9	2.3227	33210
70798*	Yapashi	3.202	P(4-6)	6.9	25.7	23.3	51.4	25.3	5.8	7	57	8	1.9986	98598
70798*	Yapashi	3.209	P(18-20)	7.0	15.4	43.2	43.2	13.6	4.0	20	22	6	2.8593	9310
*nearby reservoir feature associated with site			B=basin, P=paleosol below berm											

Particle size distributions and pH values appear to correlate to pollen preservation in these samples. On average, samples with <10,000 grains/gr are neutral (pH = 6.93) loam with 13.9% gravels. Samples between >10,000 and <100,000 grains/gr are on average slightly acidic (pH = 6.32) silty clay loam with 10.2% gravels, while those with concentrations >100,000 are moderately acid (pH = 5.96) silty clay loam with only 5.3% gravels. Over 70% of the samples from buried paleosols have pollen concentration values less than 10,000 grains/gr, which is not surprising considering these former surfaces were once exposed to the same deleterious conditions that modern surface samples are exposed.

Pollen preservation is lowest in samples from Boletsakwa and Tovakwa (LA61641), and highest in reservoir features from the Pajarito Plateau (Tsirege and Yapashi [LA90978]). The acidic soils, fine-grained texture, and relatively short residency time of pollen in these sediments make the preliminary pollen concentrations of these samples some of the highest recorded from reservoirs in the Southwest. Average pollen concentrations reported from samples of other reservoir features are lower, and span from 4,712.6 grains/gr from the reservoir at Pueblo Oso Negro (LA1073) (Murrell 2006); 22,133.6 grains/cc from the FB9122 (LA30116) reservoir on Fort Bliss (Smith 2009); to 38,299 grains/gr at Mummy Lake/Farview Reservoir at Mesa Verde (Wyckoff 1977). Reported pH values of sediments from Pueblo Oso Negro range from moderately to strongly alkaline (8.0-9.0) (Murrell 2006), and slightly to moderately alkaline (7.5 to 8.0) at FB9122 (MacWilliams et al. 2009).

Observations of pollen from the Amoxiumqua reservoir samples

Preliminary interpretations of 200+ grain counts of samples from Amoxiumqua demonstrate the potential to recover diverse pollen assemblages in high concentrations reflective of landscapes impacted by prehistoric activities. Final results, with pollen diagrams and counts by species types will be presented in future publications. Here, species are grouped broadly by vegetation community type and reported as percentages of the sample counts (Figure 1). The pollen record shows that mixed herbs and shrubs dominated the vegetation cover in the area surrounding at Amoxiumqua both before and during the construction and use of the feature. These samples are also associated with generally lower concentration values. The radiocarbon dated paleosol (cal AD 1031-1157 [KECK-165068]) from below the reservoir earthen berm predates the commonly accepted age of the site (~AD 1300), yet the pollen assemblage (AMO 3.154) is dominated by herb/forb types more typical of cleared, disturbed landscapes.

Exceptionally large (> 70 microns) graminoid pollen grains consistent with *Zea maize* pollen were identified in this sample as well, which suggests the herb/forbs within the assemblage may reflect anthropogenic impacts on the mesa-top and surrounding landscape. This is the commonly held chronology for the beginning of intensive land-use atop the mesas of the Southern Jemez Plateau, and particularly west of San Diego Canyon (Kulischeck 2005). Yet the presence of *Sporormiella* dung fungus, which occurs only in the dung of large herbivores, indicates the presence of large game contemporaneous to soil formation. Sedimentation within the basin during village occupation (AMO 2.224, 2.215, 2.212) reflects continued mixed vegetation communities dominated by herbs/forbs, and open shrublands.

A stratigraphic unconformity in the depositional sequences is reflected in the pollen sequence between samples 2.212 and 2.211. Samples 2.211, 2.210, and 2.204 have high pollen concentrations with mixed conifer woodlands species (dominated by *Pinus sp.*) making up the majority of the upper pollen sequence. These assemblages are similar to modern vegetation conditions. The consilience of multiple lines of evidence (which are framed by a suite of six radiocarbon dates, on-site dendrochoronological records, and stable carbon isotope measurements that will be reported on in future publications) strongly suggests that this unconformity was the result of a cultural clean-out event of the basin towards the end of the early Historic Jemez occupation of Amoxiumqua. This was followed by new sedimentation within the basin and pollen recovery suggesting the recruitment of ponderosa pine forests after Spanish removal of the Jemez peoples from the mesa-tops of the Jemez Plateau in the late 16th century through the 17th century. This corroborates evidence for delayed population decline in the Jemez Mountains until the 17th century (Liebmann et al. 2016, Kulisheck 2005).

Figure 1. Summary of palynological results from Amoxiumqua samples grouped by vegetation cover and presented as their percent of the pollen sum alongside estimated and complete determinations of pollen concentration per gram dry sediment.

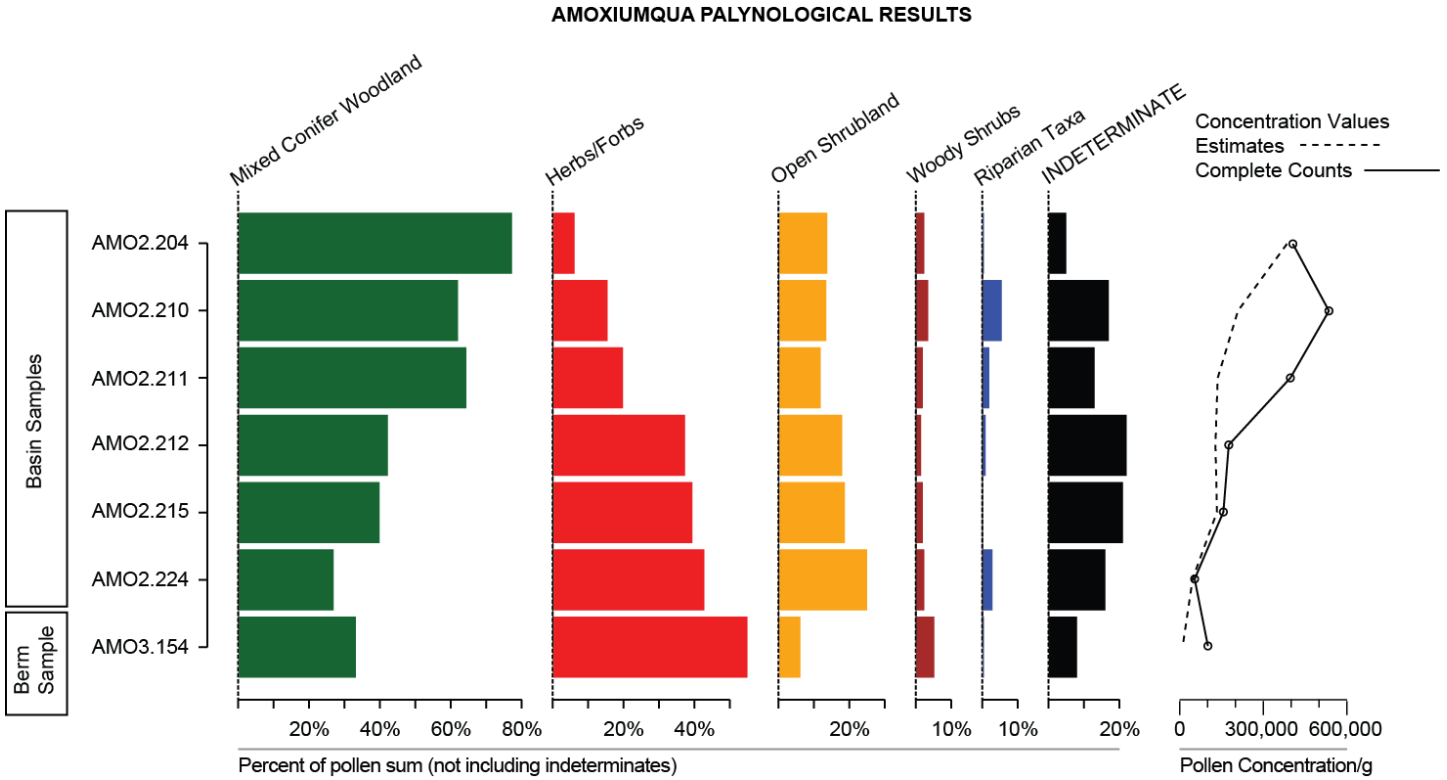

Table 2. Comparison of pollen concentration values of sediment samples between preliminary counts and final counts.

Counting Method	**AMO2.204**	**AMO2.210**	**AMO2.211**	**AMO2.212**	**AMO2.215**	**AMO2.224**	**AMO3.154**
pollen concentration (50 grain/20 Lyco count)	384,787	208,815	136,261	128,099	133,750	46,329	10,733
pollen concentration (200+ grain count)	405,950	535,422	396,992	175,923	156,642	53,536	101,105

Conclusion

This study demonstrates that under the right conditions pollens can be well preserved in sediments from cultural features, and even in arid lands. At Amoxiumqua, pollen records show that vegetation transitioned from a heavily disturbed open area that was potentially farmed before reservoir construction, to disturbed local vegetation during village occupation, followed by forest recruitment after Pueblo depopulation of the Plateau in the 17th century. This dataset offers an unprecedented glimpse into past vegetation near major occupations during an era of profound cultural and ecological change. The data presented here and elsewhere (e.g. Liebmann et al. 2016 and Edwards and Trigg 2016) illustrates that Ancestral Pueblo responses to European contact were not monolithic, but unfolded through a process of contact, exchange, oppression, and exclusion. It is also valuable for a range of research questions surrounding prehistoric resource management, climate change, and ecological succession. The potential for these features to preserve such records should be incorporated into evaluations of their integrity and significance when encountered during compliance-based investigations. However, the range of pollen concentration values from reservoir features should serve to caution researchers for making blanket assessments of feature integrity. Evaluating preservation potential by preliminary counts, such as done here, should be done to maximize time and effort towards basins with high pollen concentrations. Rapid pollen processing, potentially even by a pollen analyst in the field (e.g. Stolze 2015), coupled with a well understood geoarchaeological context would maximize efforts towards contexts with the greatest potential for significant findings.

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References

Bayman, James M., Manuel R. Palacios-Fest, Suzanne K. Fish, and Lisa W. Huckell
2004 The paleoecology and archaeology of long-term water storage in a Hohokam reservoir, southwestern Arizona, USA. *Geoarchaeology,* 19(2):119–140.

Benson, L. V., E. R. Griffin, J. R. Stein, R. A. Friedman, and S. W. Andrae
2014 Mummy Lake: An Unroofed Ceremonial Structure within a Large-Scale Ritual Landscape. *Journal of Archaeological Science*, 44: 164-179.

Bryant Jr, Vaughn M, Richard G. Holloway, John G. Jones, and David L. Carlson
1994 Pollen preservation in alkaline soils of the American Southwest. In *Sedimentation of organic particles*, edited by Alfred Traverse, pp. 47–58. Cambridge Press, England.

Bonny, Anne P.
1972 Method for Determining Absolute Pollen Frequencies in Lake Sediments. *New Phytologist* 71:393-405.

Crown, Patricia L.
1987 Water Storage in the Prehistoric Southwest. *Kiva*, 52(3):209–228.

Edwards, Kyle. W., and Heather B. Trigg
2016 Intersecting Landscapes: A Palynological Study of Pueblo, Spanish, and Anglo-American Land Use in New Mexico. *Historical Archaeology*, *50*(1): 135-153.

Faegri, K., P. E. Kaland, and K. Krzywinski
1989 *Textbook of pollen analysis*. 4th ed. Blackburn Press, Caldwell, NJ.

Hall, Stephen A.
1981 Deteriorated pollen grains and the interpretation of Quaternary pollen diagrams. *Review of Palaeobotany and Palynology*, 32(2-3):193–206.

Kulisheck, Jeremy
2005 The Archaeology of Pueblo Population Change on the Jemez Plateau A.D. 1200 to 1700: The Effects of Spanish Contact and Conquest. Unpublished Ph.D. dissertation, Department of Anthropology, Southern Methodist University, Dallas, Texas.

Liebmann, Matthew J., Joshua Farella, Christopher I. Roos, Adam Stack, Sarah Martini, and Thomas W. Swetnam
2016 Native American depopulation, reforestation, and fire regimes in the Southwest United States, 1492-1900 CE. *Proceedings of the National Academy of Sciences of the United States of America*, 113(6):E696-704.

MacWilliams, A. C., and David D. Kuehn, Monica L. Murrell, Phillip O. Leckman
2009 FB 9122 Reservoir. In *Archaeological Mitigation at FB 17 (LA 91017) and FB 9122 (LA 30116) on the Dona Ana Range, Fort Bliss, Dona Ana County, New Mexico.* edited by *A. C.* MacWilliams, Bradley Vierra, and Kari Schmidt, pp. 155–212, El Paso, Texas.

Murrell, Monica
2006 An Investigation of Prehistoric Water Management in the Chupadera Arroyo Basin, Central New Mexico, New Mexico State University.

Murrell, Monica, and Phillip A. Shelley
2009 Geoarchaeology of a Late Prehistoric Water Storage Feature at Pueblo Oso Negro, Chupadera Basin, New Mexico. *Kiva*, 75(1):11–33.

Rohn, Arthur H.
1963 Prehistoric Soil and Water Conservation on Chapin Mesa, Southwestern Colorado. *American antiquity*, 28(4):441–455.

Romme, William H., Craig D. Allen, John D. Bailey, William L. Baker, Brandon T. Bestelmeyer, Peter M. Brown, Karen S. Eisenhart, M. L. Floyd, David W. Huffman, and Brian F. Jacobs
2009 Historical and modern disturbance regimes, stand structures, and landscape dynamics in pinon–juniper vegetation of the western United States. *Rangeland Ecology & Management*, 62(3):203–222.

Scarborough, Veron L.
1988 A Water Storage Adaptation in the American Southwest. *Journal of Anthropological Research*, 44(1):21–40.

Smith, Susan
2009 Pollen Analysis. In *Archaeological Mitigation at FB 17 (LA 91017) and FB 9122 (LA 30116) on the Dona Ana Range, Fort Bliss, Dona Ana County, New Mexico.*, edited by *A. C.* MacWilliams, Bradley Vierra, and Kari Schmidt, pp. 369–376, El Paso, Texas.

Stolze, Susann
2015 Rapid determination of the pollen content in lake sediment cores as a tool in paleoenvironmental research. *Journal of Paleolimnology*, 54(1):161–170.

Wilshusen, Richard H.; Churchill, Melissa J.; and James Potter
1997 Prehistoric reservoirs and water basins in the Mesa Verde Region: intensification of water collection strategies during the great Pueblo period. *American Antiquity*, 62(4): 664-681.

Wright, Kenneth R.
2006 *The Water Mysteries of Mesa Verde.* Big Earth Publishing.

Wyckoff, Don G.
1977 Secondary Forest Succession Following Abandonment of Mesa Verde. *Kiva*, 42(3/4):215–231.

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Preserving the Confidentiality of SHPO Records in a Digital Age: Thoughts from a Records Manager in New Mexico

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Section 101 of the National Historic Preservation Act of 1966 (NHPA) requires every State Historic Preservation Officer (SHPO) to "…direct and conduct a comprehensive statewide survey of historic properties and maintain inventories of such properties" (16 U.S.C. 470a). In order to manage the huge volume of information, most SHPOs organize their inventories through some combination of relational databases and geographic information systems. Many SHPO's have taken advantage of new web technologies to make these databases and digital maps accessible online to a select group of stakeholders outside of their own organization. However, online access to so much information about archaeological sites carries with it significant risk. SHPOs have both a legal and ethical obligation to keep information about archaeological sites confidential in order to minimize harm to these resources. At the same time, NHPA requires SHPOs to, "provide public information, education and training, and technical assistance in historic preservation" (16 U.S.C. 470a).

To meet these seemingly contradictory requirements SHPOs must strike the best possible balance between the benefits and the very real risks of sharing confidential information. Finding that balance requires SHPOs to consider myriad questions. Who should be allowed access to the information and under what circumstances? Should that access be wholesale or situational? Is some information especially sensitive and should it be managed differently? What are members of the public legally entitled to see and how can SHPOs respond to public requests without creating a risk to the resources? How will the information be used and what, if any, control can SHPOs exercise over the information after releasing it? Protecting the sensitive information contained in online databases is a complicated undertaking that requires SHPOs to plan carefully and make sometimes contentious choices. This essay discusses some the choices the New Mexico SHPO and staff have made, the measures we've implemented to reduce the risks, and the continuing challenges we face.

In New Mexico, both the archaeological records repository (the paper records) and the SHPO database are managed by the Archaeological Records Management Section (ARMS), a bureau within the Historic Preservation Division. The author serves as registrar of both the records repository and the database. ARMS makes much of the information contained within the SHPO database available online through the New Mexico Cultural Resource Information System (NMCRIS). The rich database contains information on the location and setting of archaeological sites, archaeological components and phases represented, associated features, classes of artifacts present, site stratigraphy, survey and excavation history, and eligibility recommendations. Registered users can view all of this information online or download database reports as .pdf files. In the last few years ARMS has also started scanning original site records, including site sketch maps and photographs, and making these available as .pdf files. Spatial information is available through an online map service. Both the database and the map service support online editing, allowing users to contribute their own site and project information. This wealth of information makes NMCRIS a powerful resource for land managers, cultural resource consultants, academic researchers, and other professionals concerned with managing and preserving New Mexico's archaeological heritage. At the same time, the New Mexico SHPO and the ARMS staff are keenly aware of the potential for misuse, either intentional or through oversight, of this online application. We've put in place protocols and technological safeguards to address many of

these challenges. There are certainly other challenges, however, for which we're still seeking effective solutions.

Access is certainly one of the paramount questions that every SHPO must address in managing an online database. Determining who to let in and who to keep out requires both strict, well-defined policies and the flexibility to make judgement calls where situations warrant. By statute, access to New Mexico's NMCRIS application is restricted to qualified users. A qualified user is defined as,

> an individual listed in the state historic preservation officer directory or an individual with a bachelor's degree in archaeology, anthropology, architecture, architectural history, historic architecture, history, American studies, historic preservation, or a closely related field from an accredited educational institution or other appropriate education, professional experience, and training as determined by the registrar [4.10.19.7 NMAC].

Many readers will immediately recognize that this definition is broader than the professional standards for archaeologists advocated by the Secretary of the Interior or the Register of Professional Archaeologists. The greater latitude reflects the practical reality that many organizations committed to preserving the state's cultural heritage simply don't have staff that meet these stricter standards. In the judgement of ARMS and the SHPO, the benefits of the more inclusive definition of a qualified user outweigh the risks. Certainly not all of our stakeholders agree with the balance we've struck. Some would prefer us to limit access to archaeologists who meet the Secretary of Interior's standards. Others continually lobby us to broaden the definition still further to include, for example, natural resource specialists who have to consider archaeology as part of NEPA compliance. ARMS has used this definition for many years now, however. It has proven quite serviceable and there have been no known abuses by those with "softer" credentials.

Another decision SHPOs face is whether to put special restrictions on potentially sensitive records or to apply uniform access requirements to all archaeological records in the database. The latter approach is certainly more straight-forward and easier to implement. ARMS followed this model until quite recently. Status as a qualified user was essentially the single key that granted access to both the records repository and every record in the NMCRIS. Recently, we've reconsidered our policies with regard to information about archaeological sites located on Indian lands within New Mexico. This reexamination reflects our desire to honor the right of New Mexico's Tribal Historic Preservation Officers (THPOs) to serve as primary stewards of information about the sites they manage. New Mexico has eleven federally designated THPOs, with several more tribes on the verge of achieving that status. Once THPOs achieve designation, they assume the responsibility for managing all of the archaeological records reviewed by their office. However, ARMS may have many decades worth of site documentation collected before THPO designation. We believe that THPOs should have some say in setting access policies for these legacy records. Toward that end, we've signed memoranda of agreement with the THPOs of the Pueblo of Isleta, the Pueblo of Laguna, and the Jicarilla Apache Nation. These agreements authorize the parties to exchange information. They also commit ARMS to seek THPO concurrence before releasing any information about archaeological sites under the THPO's management.

Public access requirements create another significant challenge to SHPO efforts to protect information about archaeological sites. Most cultural resource professionals are aware that federal and state statutes restrict access to information about archaeological sites. But many of these same professionals may suffer under the misconception that the information is therefore "immune" to public records requests. The reality is considerably more complex. Federal and state statutes only exempt some of the information, not entire records. Land managers and SHPO offices often do have to release limited information about archaeological sites to fulfill public records requests. Doing so requires a balancing act, adhering to confidentiality while honoring the public's right to access. It also presents serious operational challenges that can consume

manpower and all too easily introduce opportunities for oversight or omission.

Some states have wisely included specific exemptions for archaeological records in their public records acts. Unfortunately, New Mexico's Inspection of Public Records Act (IPRA) does not include this protection. The IPRA does allow for withholding records as "otherwise provided by law" (NMSA 1978, § 14-2-1). This has left to the SHPO the problem of finding other pertinent legislation to support an exemption. Federal law offers surprisingly little help here. Confidentiality under the NHPA only applies to a "prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on, the National Register" (16 U.S.C. 4702-3). NHPA offers no protection for sites deemed not eligible, nor does it address the many thousands of archaeological sites in New Mexico for which no recommendation of eligibility has ever been submitted. Guidance provided by the Advisory Council on Historic Preservation cautions that, "not all archaeological records, field notes, or data analyses are subject to withholding under Section 304 of the NHPA—only information about a property's location, character, or ownership" (Advisory Council on Historic Preservation 2009). The Archaeological Resources Protection Act only affords confidentiality to sites that are at least 100 years old and it is only applicable on federal or tribal lands.

The New Mexico Cultural Properties Act does include a section ensuring the confidentiality of site locations:

> Any information in the custody of a public official concerning the location of archaeological resources, the preservation of which is in the interest of the state of New Mexico, shall remain confidential unless the custodian of such information determines that the dissemination of such information will further the purposes of the Cultural Properties Act … and will not create a risk of loss of archaeological resources [NMSA 1978, § 18-6-11.1].

Unfortunately, confidentiality applies only to site location. Unlike the federal statutes mentioned above, the Cultural Properties Act does not include any language exempting information about a site's nature or character. In actual practice, that has required the ARMS staff to create redacted copies of site records with only the locational information withheld. That's a more difficult task than one might imagine. It isn't as simple as removing the maps and striking through the UTM coordinates. The legal descriptions (township, range, and section) must be located and redacted. Far more difficult to deal with are the verbal descriptions based on nearby landmarks, such as "100 meters southeast of the intersection of county road X and state highway Y". Those narrative descriptions can appear almost anywhere in a site record. Redacting the descriptions therefore requires reviewing every site record in its entirety. Since there's no limit on the number of records that a member of the public can request, creating redacted copies for inspection can put a serious burden on the ARMS staff.

More seriously, one may question the assumption that withholding only the location of archaeological sites is sufficient to protect these resources from people who might do them harm. As other authors have pointed out, looters often already know the locations of sites. Especially in this digital age, SHPO records are hardly the only way to discover the location of a site. For instance, the resolution of the aerial imagery publicly available through Google Earth and other services is sufficient that a savvy pothunter could easily scan areas of high probability for visible indicators that a site is present. Once the location is known, current site confidentiality regulations applicable to sites on State land do nothing to prevent someone from filing an IPRA request and then using those records to determine what items of commercial value might be, or have already been, found on the site. Clearly, the exemptions for archaeological records from public records requests should be strengthened. The sometimes contradictory demands to protect New Mexico's archaeological sites and still honor the requirements of public records statutes creates the kind of dilemma that, frankly, keeps the author up at night.

Still, the greatest threat to archaeological resources isn't the potential that someone with malicious intent might take advantage of public records laws to

access otherwise restricted information. It's the very real threat posed by the online dissemination of information by perfectly well-meaning people. In our modern digital age anyone can publish almost anything directly to the web for the whole world to see. Far too often people's enthusiasm to share everything online results in the casual or unintended release of information on the location of archaeological sites. This type of information posts to the internet in a thousand ways. An interested hiker "pins" the location of a petroglyph site on a social media app. A perfectly reputable online archive publishes a gray literature report as a public service, unaware that the report includes confidential site location information. A federal agency is required to post a NEPA document for public comment and forgets, or doesn't know to, hold back the archaeological site information. Preventing this kind of accidental or incidental release of information can be incredibly difficult. The truth is that cultural resource professionals often have precious little control over what happens to their data after they submit their work.

Similarly, SHPOs can exercise only limited control on the use of information after they've released it. The regulations governing who can access the information in NMCRIS and the records repository say precious little on the responsible use of that information. A paucity of strong legal requirements to maintain confidentiality is certainly one of the challenges. Another is the need to reach a consensus, even among experiences cultural resource professionals, on what constitutes responsible use. We in the discipline need to be able to engage in public outreach in order to build support for preservation efforts. We should all strive to educate the public on the threats to archaeological resources. Naturally, in our presentations we want to use real and meaningful information as visual aids. That need is especially strong for web-based presentations; the internet is such a visually-oriented media. But at what point do those presentations themselves pose a risk to the very resources we're all trying so hard to protect?

By way of example, a former SHPO and current member of the Advisory Council on Historic Preservation recently guided the production of an educational web video that prominently featured data from NMCRIS and the archaeological records repository. The video had both its admirers and its detractors. Its admirers appreciated the effort to explain to a public audience the purpose of the NHPA and to highlight all of the preservation work that has been done under the act. Many also welcomed the focus on the research potential of the "big data" managed in SHPO databases. The detractors, on the other hand, raised an alarm that some of the map images captured in the video could potentially be used as road maps to find actual sites. Based upon that feedback the producers removed those images from the final product. Still, a robust and lengthy discussion grew out of the debate over the initial video. The many participants expressed a great diversity of opinion as to whether the video's initial content posed a realistic threat to resources. This debate highlights the difficulty in reaching a consensus on the appropriate use of archaeological information form SHPO databases and other sources.

Unfortunately, there is no single set of published guidelines that inform NMCRIS subscribers on the prudent and allowable use of the data they access. It's a deficiency that ARMS would like to remedy. It's a fix that's overdue. However, it will require a venture into uncharted territory, at least for New Mexico. It's not at all clear how, or even if, the SHPO and the ARMS staff can assert some control over the ultimate use of the digital data it shares with NMCRIS users. Perhaps some of the readers of this NewsMAC issue will be willing to share their experiences with other entities that have tried to tackle this issue.

In truth, this solicitation for readers to share their own experiences and opinions is the real purpose of this essay. It certainly isn't the author's intent to suggest that the New Mexico SHPO and the ARMS staff have the solutions to the many challenges of protecting archaeological information in the digital age. Like many who bear this responsibility, we're feeling our way through the maze. The discussion above describes some of the protocols we've implemented in an effort to keep up with that responsibility. Through this essay, though, we to hope to foster an open dialogue that addresses how we all, collectively, can do a better job of safeguarding information about archaeological sites in an increasingly online world. Ultimately, the

secure management of the information contained in NMCRIS requires a partnership between ARMS and every one of the system's users. In the spirit of that partnership we welcome any and all suggestions to meet the many challenges.

References

Advisory Council on Historic Preservation
2009 *Section 106 Archaeology Guidance*. http://www.achp.gov/archguide/, accessed June 12, 2016.

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Are We Putting the Archaeological Record at Risk?

Lynne Sebastian

Several times a week most of us use a credit or debit card to make a purchase, either online or in a brick-and-mortar establishment. We do this even though we know that the phrase "massive data breach" appears so often in the newspapers that it has become a cliché, and even though we know that every time we use that little piece of plastic or its magic string of numbers we risk having our identities and/or our money stolen. Even just carrying the darned thing around in my purse, apparently, puts me at risk. My boss gave me a special paper sleeve that I'm supposed to keep my company credit card in so that random people can't bump into me on the street and use some kind of techie gizmo to suck my credit card information right out of my wallet. Why on earth do we continue to use these cards, given the risk involved? Because it is hugely inconvenient, verging on impossible, to participate in life in the 21st century without them. So, we take reasonable precautions, accept some level of risk, and get on with life, hoping for the best. And most of the time we win, but once in a while we lose.

It seems to me that, as archaeologists, we are in a similar situation with regard to protection of the archaeological record, when we define risk to the archaeological record as disclosure of information that could be used by looters and vandals to locate and damage archaeological sites. Pretty much everything that we do in our professional lives involves gathering, analyzing, synthesizing, and disseminating information about the archaeological record. And we are constantly revealing all kinds of information about that record to an unknowable and uncontrollable universe of recipients. We have to, or we couldn't do our jobs.

We reveal the location of archaeological sites to developers, project proponents, and construction crews when we require them to reroute, restrict rights-of-way, and fence and protect sites during construction. We write survey reports by the hundreds, and after scrupulously redacting all the UTMs and the maps with little dots on them, we provide these reports to clients, local governments, landowners, and whatnot. And every one of those reports includes a section of an identified topo map with the project area boundaries on it and a summary description of the sites found during the survey. If I am inclined toward nefarious behavior, how dumb do I have to be not to be able to find a sherd and lithic scatter on a south-facing slope overlooking an intermittent drainage in a 4-acre project area? Or better still, the 9 sites recorded during a 20-mile pipeline survey where all sites have been avoided by reroutes, especially if the reroutes are shown on the project area map?

In order to fulfill their legal responsibilities to be good stewards of archaeological sites under their jurisdiction, federal agencies have to share information about cultural resources with personnel from a broad range of programs within the agency – range, surface protection, timber management, law

enforcement, right-of-way, biologists, fire management, training, UXO demolition. All of the multitude of programs within a modern multiple-use or single-mission agency have, and need to have. access to certain information including the locations of archaeological sites.

To meet the requirements of government-to-government consultation with Indian tribes, federal agencies send survey reports, complete with the UTMs and the little dots on maps, to all tribes who might ascribe religious and cultural significance to archaeological sites within the area of potential effect for Section 106 undertakings. Many tribes have excellent document-management controls in place for handling all this information. Others do not. How many of us have had the experience of having to send second and third copies of survey reports to a tribe because the copies sent earlier cannot be found?

In our professional careers we research, write, and publish scads of information about the archaeological record. We publish in journals, books, and blogs. We give papers at conferences, and share copies of those papers with anyone who asks. Paper copies of our synthetic works are sent to libraries and our articles are available online through JSTOR and myriad other platforms that anyone with a library card can access. If you Google "scanned books on line," you begin to suspect that before long every single word that anyone has ever written since the Sumerians invented cuneiform will be available online.

Yes, but . . . we don't include site locations in those papers, journal articles, books, and blogs. While it is true that we don't generally include UTMs and maps with dots, that doesn't mean that we aren't broadcasting information that could pose a risk to the archaeological record. Consider settlement pattern studies, and especially predictive models, as just one example. There are innumerable models out there, often published online because of the large number and size of the illustrations. These models are built on digital topo maps and show specific, identifiable areas that have a high probability of containing sites in general, as well as sites of a particular time period or culture or functional category. Given the choice between spending my time tracking down a bunch of anonymous dots some archaeologist put on a topo map – most of which are likely to be lithic scatters or can dumps – or going out and wandering around an area that has a big sign on it that says "Hey, y'all, look here for the good stuff!" I know which one I would choose if I were that hypothetical individual bent on nefarious behavior.

And we also reveal information about the archaeological record to the public. We take groups out to view rock art sites and have public visitation days on sites where we are doing only partial excavations. We publish books and articles with lots of photos – some of which could undoubtedly be used to locate the sites with enough effort. I watched a Time Team episode the other night where they were working on a Paleo site, showing off those beautiful points, and there were some buttes in the background that might be recognizable. Some of us are even foolish enough to include a brief glimpse of dots on a map in a video intended for the public. And speaking of those dots, we put them into databases on computers that are connected to the internet. In an era when hackers can break into the Department of Defense, Homeland Security, major banks and corporations, movie stars' nude photos, your baby monitor, and my granddaughter's Kung Fu Panda talking doll, what on earth makes us think that those dots are safe in NMCRIS?

Are we running the risk of revealing site locations to potential looters by doing all of the things described above? Absolutely; there is no doubt about it. But what are the options? If we won't tell developers and project proponents where sites are, we can't expect them to avoid damaging those sites. If federal agencies can't share site location information internally and with Indian tribes they can't meet their responsibilities under Section 110 and Section 106. And if we don't make our data and the results of our research broadly and readily accessible to our colleagues, which more and more means accessible online, then we impede the entire purpose of our discipline – advancing our understanding of the great span of human history (ref to Hogan essay in this issue).

So, when it comes to putting the archaeological record at risk, are we in the same basic position as the credit card user – take reasonable precautions and

hope for the best? My answer would be yes, insofar as we define "risk" as potentially revealing the locations of archaeological sites to looters and vandals. But I would also say that there is much more to the question than this. For one thing, I am in the camp with those who pointed out, during our recent discussions of this subject on NM-Arch-L, that the serious pothunters of our acquaintance already know where the "good" sites are. They don't spend a lot of time and energy trying to discover where archaeologists have put dots on maps as a strategy for finding sites to loot. And while we want to be mindful of protecting site locations as a general policy, as Laumbach points out in his essay in this issue, if our main goal is trying to deter looting, there are other places that we should be putting our energy.

More important, however, we need to devote more attention to considering the full range of risks to the archaeological record and apportioning our protective efforts accordingly. I would suggest that we need to focus on two constant and critical threats to the archaeological record. First, we need to extend some level of protection to currently unprotected sites. Looting and vandalism run a very distant second to uncontrolled development when it comes to activities that damage and destroy the archaeological record. As a profession we need to develop strategies and tools for bringing more of the archaeological record under some kind of protective umbrella, whether it be state laws, local ordinances and planning initiatives, protective covenants on private land sites, or creative cooperative efforts like the *Leaders in Energy and Preservation* initiative. Development of some kind of national clearinghouse for sharing resources, experience, ideas, and expertise could be invaluable in this effort.

Second, we need to be constantly vigilant to ensure that the legal protections currently afforded to the archaeological record are not weakened, eviscerated, or lost entirely. For most (though not all!) of us, the National Historic Preservation Act, National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act have always existed. We tend to take those protections for granted, and most of us are largely unaware of the more or less constant trickle of proposed measures to weaken or circumvent or eliminate protections for archaeological and other kinds of historic properties. Not all of us have the personality or the skill set for political action – I know that I don't. But all of us can lend support to our major professional and trade organizations: SAA, SHA, and ACRA spend huge amounts of volunteer, staff, and consultant time monitoring for and working to counter threats to preservation of cultural resources as they crop up on Capitol Hill. If you aren't a member of one or more of these organizations, sign up; they are doing the work for all of us to keep our preservation laws strong. And if you are politically inclined, volunteer to help out. They can absolutely use your help.

Finally (you knew I would get to this sooner or later, and here it is), the single most important thing that we can all do to counter risk to the archaeological record – whether from looting or uncontrolled development or Congressional machinations – is to feed the public's interest in and support for archaeology and archaeological preservation. If we build a large enough and strong enough constituency for archaeology, law enforcement, prosecutors, and judges will have to treat looting as the serious property crime that it is. If we have an interested and engaged public behind us, we will have the political clout to protect our existing laws and expand the umbrella of protection to currently unprotected sites. No matter what the specific risk to the archaeological record that we are trying to counter, public outreach, constituency building, and providing maximum benefits to have public from public archaeology are always critical components of the solution.

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Preservation and the Public

David Grant Noble

Need a site-protection challenge? Write a guidebook! Having been at this for a long time (four editions of *Ancient Ruins and Rock Art of the Southwest: An Archaeological Guide*, as well as a guidebook to historic sites in New Mexico) I've naturally had plenty of opportunity consider issues of site protection and public visitation. I think we're all aware of a potential dilemma: on the one hand, we accept the value of public education as regards archaeology and our shared history and we want to foster respect for our national patrimony; on the other, we don't want to do anything that leads to increased erosion, vandalism, or other negative impacts, intentional or accidental, caused by public visitation. (Several NMAC members have already pointed out that looters don't operate from guidebooks.)

I've worked up my own guidelines on whether or not to include sites in the guidebook. Of course, the site has to be officially and legally open to the public—that's easy. But, as we know, much western land harboring archaeological sites is publicly owned by federal, state, county, and city governments. When in doubt, I contact the relevant archaeologists about the matter of guidebook inclusion but, in the end, it often comes down to a personal judgement call. Some years ago, at a Four Corners States economic-development conference, it was agreed that the outstanding natural and cultural resources in the Four Corners should be drawing more tourists than was happening and, in this regard, more archaeological sites should be opened and promoted. Cliff dwellings should be competitive with pyramids. Predictably, an economically-motivated objective such as this had other consequences not necessarily good for site conservation.

Not long after the conference, I remember being asked by one federal agency to include a particular site in southeastern Utah in the guidebook—I was then working on the book's first edition. The site was (is) a large unexcavated Chacoan great-house along an unpaved back road—off the beaten track but not hard to find. I was given a map to the site and, by chance, arrived there at the same time as a car with tourists from out of state who also had been given the same directions. "This isn't it," the group's authoritative-sounding leader announced as we climbed the brush-covered mound— "I know what a ruin looks like and this isn't one!" I failed to persuade him that, indeed, we were looking at the remains of an ancient building. In his favor, the place had no signage, no interpretive brochure, no trail, and there were no visible standing walls. For the lay person, the site lacked visual interest and educational value and would only be harmed by public visitation. Of course, no chapter in the book.

But here's a contrasting example: the Lynx Creek Ruin, a small pueblo (c. 1050-1300 CE) near Prescott, Arizona. For years, it had no interpretation or signage and only an informal litter-strewn trail to it through the woods, and it had been suffering from vandalism and trashing. In its wisdom, the Forest Service predicted that if they constructed an interpretive trail and viewing platform, offered an informative brochure, built a parking lot, and welcomed the public, the site would benefit. They did these things and people came and the former problems greatly diminished. The public presence brought protection. Now, schools can have field trips to the site and, who knows, the place may even be giving the local tourist economy a small uptick. And yes, it's in the new edition of my guidebook.

So, you see how important it is to plan carefully and manage well when promoting archaeological sites. When this is done, numerous desirable objectives can be achieved. And, as the second case illustrates (and I certainly believe) the presence of informed and caring people at archaeological sites helps protect them. I'm thinking not just of archaeology buffs but hunters, fishers, farmers, ranchers, back-country hikers, bird watchers, horseback riders, photographers, naturalists, and others. In recognition of the potential contribution the public can make to archaeological security, the Archaeological

Resources Protection Act of 1979 (ARPA) offers a financial reward "to any person who furnishes information which leads to the finding of a civil violation, or the conviction of a criminal violation…" of persons who excavate or damage any archaeological resource. If you or I witness a violation and assist law-enforcement officials, we can potentially receive up to $500. Members of the public can help in another important way, as many already are doing, by participating in a site stewardship program.

In my guidebook's chapter, "Preserving Our Archaeological Heritage," I have listed a series of things that members of the public can do to help safeguard sites. Here they are:

1. Be sure when visiting archaeological sites that you and your family and companions do not climb on walls, disturb ruins, touch rock art, or collect artifacts.
2. If you notice signs of recent or current pothunting, vandalism, natural erosion, or any activities proscribed in the Archaeological Resources Protection Act of 1979, make a report immediately to the owner or manager of the property or local law enforcement authorities. Photographs, license numbers, and descriptive information all are useful in apprehending offenders; however, don't place yourself at personal risk in collecting information.
3. Should you become aware of a proposed development or land-disturbing activity that might damage an archaeological site, become an advocate and work with local political bodies and media to find an acceptable way to resolve the problem.
4. When hiking in backcountry, don't upload photographs and locations of unprotected and vulnerable sites to the Internet; the less some sites are visited, the better.
5. Support and/or participate in educational programs that communicate the value of our cultural heritage. This can be done through museums, cultural and civic organizations, or school systems, and can be as simple as telling a scout troop about your visit to Mesa Verde.
6. Become a site steward through one of the federal or state agencies that monitor and manage archaeological sites. Support organizations such as the Archaeological Conservancy (www.archaeologicalconservancy.org), Crow Canyon Archaeological Center (www.crowcanyon.org), American Rock Art Research Association (www.arara.org), and Archaeology Southwest (www.archaeologysouthwest.org).

While working on the fourth edition of the book, which was published in 2015, I was surprised by how very many archaeological sites had been opened to the public by federal, state, county, and city governments since the third edition appeared in 2000. Tonto National Forest, for example, sent me a map showing about a dozen, from which I selected three, all easily accessible and reasonably well protected and interpreted. One had been thoroughly researched and reported on by Arizona State University.

We're all aware how underfunded public agencies are as regards enforcing laws and regulations that protect archaeological resources across the Southwest's vast public lands. I strongly believe that, in the long run at least, public education is the most effective approach to protecting them. Members of the public need to understand and appreciate the intrinsic value of the places where our predecessors lived, loved, farmed, raised their children, prepared their meals, and died. This knowledge encourages people to respect the sites, even revere them as sacred places, and to want to preserve and protect them; sometimes even to contribute financially to archaeological research. Book and classroom learning are important, of course, but they are no substitute for being at a site with a well-informed teacher or guide. Only then can a person personally relate to the place itself and to the people who long-ago lived in the rooms or made the petroglyphs. Over the years, I've met individuals who, after coming to the Southwest and going around to see ancient ruins and rock art sites, actually gave up their careers, went back to school, and became archaeologists.

Public education should be an important part of the mission not only of anthropological organizations

(both non- and for-profit), museums, research centers, and government agencies, but also of private companies working in cultural resource management (contract archaeology). A few years ago, a private archaeological contract company hired me to write the copy for a short popular version of a significant site they had investigated and written a technical report on. They had budgeted to publish this as an interpretive booklet summarizing their findings in layman's language. It was made available to students and people living in the project area. This kind of thing should become standard procedure. It can be in the form of talks to schools, civic organizations, and other groups and tours of the site.

Happily, this is increasingly happening. More popular books are being published; museums, research institutions, and travel companies are conducting educational field trips and tours; more sites are being opened to the public in a responsible and informative manner; and public participatory archaeological programs are growing.

Now, having underscored the value of public education, I want to emphasize the importance of two other points critical to archaeological site preservation. The first is that many sites should be allowed to enjoy complete privacy. The late archaeologist Alden Hayes once gave my wife and me directions to a very interesting and little-known rock-art site near Deming, NM. In doing so, he said this was one of those sites that was best known to only a few people. At some point, they could tell a few other trusted people such that knowledge about it would be carried along from one generation to the next. Al was talking about protecting these special places, not about being exclusive or elitist. As we know, there are uncounted thousands of archaeological sites that should not be listed in guidebooks or tourist brochures and should be left off maps and web sites. These are the remote vulnerable ones. (For their own safety, many people should not even try to go to them.) At most, these sites should have a posted ARPA notice for the benefit of back-country hikers who happen on them.

The second point is that, valuable as public education is, it doesn't nearly do the job—law enforcement and successfully prosecuting vandals and looters is essential. As we know, in some communities, destroying, desecrating, and looting sites is culturally and socially acceptable. And many of the violators are well educated and archaeologically well-informed. This is where enforcement officers from the counties, states, FBI, BLM, and Forest Service should play a vigorous role and be supported by the courts.

To conclude, there's a new preservation problem—well, not so new anymore—the Internet; it's loaded with information about the sort of sites Al Hayes referred to. There are uncounted internet trail guides for the benefit of hikers, bikers, and jeepers and they often mention archaeological sites as attractions, sometimes even giving detailed locations. Added to these are untold thousands of personal web sites by people who visit out-of-the-way ruins and rock-art panels, display photos and videos, give directions, and often provide erroneous cultural information. It's a free-for-all out there in virtual-land and it's bad for archaeological preservation, especially given the limited ability of governmental agencies to monitor sites and enforce antiquities laws. For this, I do not know a remedy.

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On Babies and Bathwater

Patrick Hogan

As a graduate student in the mid-1970s, I was intrigued by New Archaeology's emphasis on studying the relationships between cultural and environmental systems at a regional level. Like many others during that period, I spent weeks plotting site locations, making acetate overlays of various environmental variables, coding those data on decks of punch cards, and trudging off to the computer center at 3 am (uphill and in the snow) to conserve my meagre allocation of mainframe time. The culmination of all this work was a thick stack of printout showing partial correlations between a few of the environmental variables and the locations of roughly a hundred sites scattered over a single valley and its adjacent uplands. Useful but hardly up to the lofty objectives trumpeted for the regional approach.

Fast forward to the present, and the development of powerful personal computers and geographic information systems (GIS) has now given us the tools to make regional analysis practical. Concomitantly, there have been dramatic increases in the land area surveyed and the number of documented sites. Given these advances, it is not surprising that interest in regional analysis has re-emerged, this time as "landscape archaeology" among other labels. We have only started to realize the potential of that research, but its promise is evident in model-based studies like the Village Ecodynamics Project.

Cultural resources management is also moving to a regional scale. Site locations and other basic information are now commonly available from agency and state-wide GIS databases. Such databases allow cultural resource managers to better gauge the probable effects of large development projects and the cumulative effects of smaller projects on the lands under their jurisdiction. Increasingly, they also provide much of the basic data needed for the development of predictive models to project site locations or density for the large areas that have yet to be surveyed. This regional perspective is likely to become even more central as federal agencies adopt an ecosystem approach to compliance with the National Environmental Policy Act.

How is any of this relevant to the present discussion? All of the applications mentioned above utilize graphic displays of spatial data to reveal meaningful patterns, so there is some risk that the products of those analyses might inadvertently reveal site locations to cyber-looters. Admittedly, that risk probably can be reduced by placing additional restrictions on where the reports of these studies are released, to whom they are released, and in what form. In our zeal to maintain the confidentiality of site locations, however, we need to be very careful that we don't hobble our own research and cultural resource management activities, or our efforts to communicate the results of our work to the public. After waiting 40 years, it would be a shame to find that we had over-estimated the risk and kept ourselves from taking full advantage of the new technologies.

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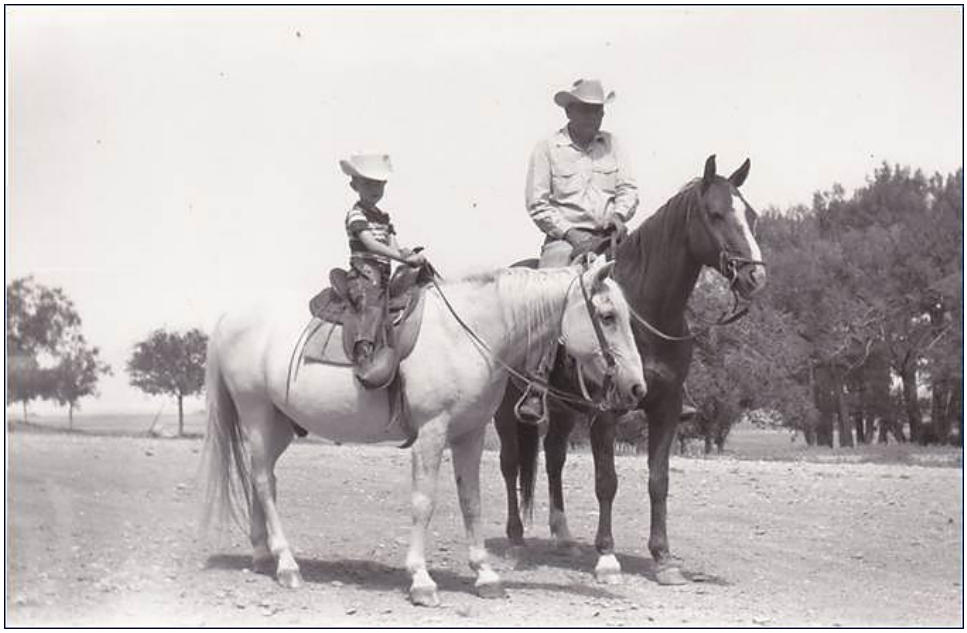
Historic Preservation is a Rearguard Action

Karl W. Laumbach
Human Systems Research, Inc.

Reviewing the questions posed by Rebecca, I came to the conclusion that either I had no answers or that others would likely have much better answers. What I can provide are the insights accumulated over the many years that I have been enthralled with the history and archaeology of New Mexico.

As some of you know, I was raised on a northeastern New Mexico cattle ranch comprised of about 50,000 acres of private land on the southern edge of the Maxwell Land Grant. My father worked on that ranch for 52 years. He had already been there 20 years when I was born (1951). On a high cabinet shelf were several Christmas card boxes containing arrowheads, flake tools, and an occasional cartridge casing from an early firearm. When I was six years old he took me (at my request) across the Cimarron River from the house to hunt arrowheads. I remember that he directed me to follow a cow trail and sure enough, a few steps down the trail was a small, white projectile point (didn't call them that then). On that same outing, he told me the story of the Battle of the Little Bighorn and I vividly remember looking across the Valley of the Cimarron and seeing it all play out in my mind's eye. For better or worse, I was hooked.

My father was born (1910) and raised on his father's ranch near the Canadian River, southwest of Roy, New Mexico. He and his brothers regularly "hunted arrowheads" along La Cinta Creek. He remembered finding French and English coins on some of the sites that have since succumbed to bank erosion. He also remembered his Uncle Sito (Jesusito Candelario, owner of the Original Old Curio Store on San Francisco Street in Santa Fe) coming to visit and when he left, all their arrowheads were gone as well, replaced by boxes of .22 cartridges left here and there for the boys to find. The arrowheads, of course, ended up being sold in Santa Fe.



Karl Laumbach and his father, George Laumbach, in 1957

The discovery of that first arrowhead resulted in the intensification of arrowhead hunting by my father and myself. Didn't have any ARMS maps to follow. Didn't need them. My father had ridden horseback over the ranch for 3 decades and was an expert at recognizing oxidized rocks from an ancient hearth or a metate located in an area where that type of rock just shouldn't be. I remember riding with him and pointing to a large river cobble some distance away. He told me not to bother with it, that it was already slick from him turning it over. Like so many ranch homes in the Southwest, a line of metates and manos graced our yard fence. In northeastern New Mexico, pottery was rare and even a small fragment was a novelty. We did find a corrugated vessel with two jug handles buried upside down (only a few sherds from the base were showing) and associated with a .58 caliber minie ball. We carefully glued it together with a product call ChemWeld, assuring that it wouldn't ever come apart again. And we took it to the Laboratory of Anthropology where a very kind archaeologist (wish I knew who it was—ca. 1965, maybe Stew Peckham?) told us that it was probably made in Taos during the late 1700s. During my sophomore year of high school, I put together a science fair project based on our collections. We didn't think of ourselves as looters. We were just interested in the past. But in the process of pursuing our interest we certainly made a significant impact on those sites.

Now multiply that by every ranch, private or public land, in New Mexico. When I have the privilege of talking to local ranchers (and they are becoming less and less willing to talk), I get one of two responses when I ask about site locations. The first is something like "yeah I've been over there but hell Karl, I was looking for cows." The second response is a treasure trove of information regarding site locations both in terms of type and extent. And much of these data are not on anybody's map.

Now fast forward to 1971 after I took Dr. Brad Blake's "Introduction to Anthropology" at New Mexico State University. Part of the course, taken during a summer session, was a weekend trip into the Black Range to get some experience doing archaeology on a Mogollon pueblo site located on private land near Winston. Wow! Stone walls, lots of ceramics, a very different scenario than that found on the high plains of northeastern New Mexico. Dr. Stan Bussey came on board the following year and I was able to explore a world of pueblo sites, some of which had been shovel dug by collectors but where outlines of rooms and site structure could still be seen.

And then the art market discovered all things Southwest, including prehistoric ceramics. The rush was on. Bulldozers and backhoes were the order of the day. Reasonably pristine sites on both private and public land were ravaged, leaving only a patch of disturbed bare ground. There was no one to stop them. I met with the BLM Manager in Las Cruces and he showed me his report on cultural resources to the state office. It was a drawing of an ostrich with his head buried in the sand.

In the spring and summer of 1976, the bulldozing of Mimbres sites and the looting of human burials for profit was in full swing. A young archaeologist from the University of California at Los Angeles and a cadre of students were valiantly fighting to salvage information from key Mimbres sites in the Mimbres Valley before the bulldozers completely obliterated the sites.

The kingpin of the bulldozing community lived in Deming and methodically arranged for his minions to systematically bulldoze pueblo sites across southwestern New Mexico. A colleague had the opportunity to visit his home. There she saw many wonderful things including a Mimbres Polychrome bowl depicting a warrior with shield and greaves. He pointed to the collection and commented "just a little milk for my babies' glass". My colleague commented on a stuffed mountain lion and he responded that he was going to Mexico to hunt jaguar in the next few weeks. When she commented that jaguar were on the endangered species list, he replied "that's okay, they're going to die anyway."

So, the bulldozing continued and by 1983 had spread into the east slope of the Black Range and other outlying bastions of Mimbres culture, including the upper and lower Gila, Mule Creek and the Jornada del Muerto where the Bruton Bead Site, located on BLM land, was eradicated by looters from the Hatch area. Dave Kirkpatrick and I were just completing field work on a reconnaissance survey of the Black Range in western Sierra County when the bulldozing began to eliminate many of the Mimbres sites that

we had been privileged to see in the previous year. I happened to drive up on a hundred-room pueblo as it was being bulldozed. It contained two large parallel room blocks with a flat grassy plaza area in between. They let me make one last map. Both men had been previously convicted of looting sites on federal land. As a result, they had been very careful to survey in the site location to make sure that they were on private property. I couldn't stand to watch or go back. I remember being physically ill, both because of the destruction and the feeling of having been betrayed by the landowner, with whom we had been friendly and with whom we thought we had fostered a relationship. I later regretted that I had not gone back when I was told that the looters had put their blade down in the "flat, grassy" plaza area and uncovered jacal structures with datable posts and burials with pots. If I had had the fortitude to go back, I might have recovered datable wood from this otherwise undocumented site. A year later I was given a ride in a motorized glider (a Typhoon, I think it was called) and we flew over the site where I took aerial photos. During our survey Dave and I had found several smaller (8-10 room) sites in the tributary canyons above the big site. A couple of them were pristine with not even one shovel hole. When I was flown over those locations it quickly became apparent that all of them had also been bulldozed. The land owner, without the aid of an ARMS database, had somehow known where all the sites were located.

Bulldozed remains of a 100+ room Mimbres pueblo on Macho Creek, 1983

Switching focus to southeastern New Mexico, in 1979 I was privileged to conduct a survey of six sections on what was to become the Laguna Plata National Register District. Halfway between Carlsbad and Hobbs (oh crap! that may be too much information), it was a wonderful place to be in August. A rattlesnake every few hundred meters. On the south side we found deflated dune sites where all that was left was the firecracked rock. Local collectors had long since stripped them of anything resembling an artifact. On the north side, the dunes were less deflated and a few more artifacts could be found.

A report by Winston Hurst from ENMU described a survey in the same area where oral accounts claimed that the collectors, frustrated by the sand, had rigged a scoop with a screen in the bottom that they could drag through the sand with a four-wheel drive vehicle and collect artifacts in the screen. More recently a rancher from the same general area told me that when mesquite or oak brush is eradicated by toxic means and the coppice dunes that had been stabilized by the brush are deflated, the local collectors are on top of those areas like blind dogs in a meat market. Sites we don't even know about.

I don't want to beat this horse to death but it's clear to me that collectors don't need or want our site records. They already know where the sites are, and they are finding and looting more sites all the time. I'm certainly not arguing that we should not protect our records but the notion that collectors are going to use the ARMS measle maps to locate new sites is pretty far-fetched. As we have lengthy and often heated discussions about publication of measle maps and stopping the "Diggers" show, the collectors and looters (including folks with metal detectors) are busily stripping New Mexico of its cultural heritage.

Instead we should be talking about what we can do to actively discourage the looting of sites. The answer is easy to write and apparently very hard to do. We need to catch a few looters in the act and then publicize the arrest in a big way. And we need to do it at least twice a year. To do so will require the cooperation of archaeologists, the agencies, law enforcement, district attorneys and the press. I realize that finding a district attorney who will prosecute is a problem but if we can just publicize the arrest there will be a positive effect. Occasionally someone is caught and arrested but even in the case where there is a conviction, there are no headlines. If no one knows that an arrest could really happen then no one is deterred from going out and at the least, collecting artifacts from the surface of public land, or at the worst, taking a bulldozer out to a remote location (as happened in the Las Cruces BLM District in 2011) and destroying a site. To illustrate my point that we are missing an opportunity in these cases, I have two stories. Both true.

In 2002 I was taking two documentary film makers in to a restricted federal facility in preparation for a film project. As we approached a rock shelter location, one of the film makers gasped and said, "I thought I saw someone running through the brush!" The agency archaeologist was behind me in another vehicle. We stopped and soon discovered a camp with four sleeping bags. A shovel protruded from a freshly dug hole within the rockshelter. Realizing that he would be discovered, a man soon appeared and told us that his three buddies were up in the hills. They soon appeared, big lumbering fellows carrying digging tools and I thought to myself that it could all end for me and the others right there. But they were quite polite and respectful for men who had knowingly hiked several miles into a restricted federal facility to loot antiquities. The film makers took video, the federal archaeologist finally convinced law enforcement that yes, these guys were on the federal facility and it was at the very least an ARPA violation. An outside archaeologist was called in to document the ARPA violation. And there it ended. No headlines, no trial, no conviction, no punishment. Everyone walked and very quietly for reasons that have never been adequately explained to me. So, if post-911, you can walk onto a restricted facility, dig holes in archaeological sites and have no punishment or publicity, why should anyone stop looting?

The Jornada del Muerto is beautiful in the spring (when the winds aren't blowing). And it's prime time for the arrowhead hunters to walk through the dunes and arroyos looking for sites. Don't know of any who are doing it with an ARMS map. No, again, they have more time than we do to walk the area, find the good spots (many with Paleo materials) and collect. A few years ago, an archaeologist attempted to interact with some of these folks and somehow the archaeologist and two collectors were actually arrested for collecting on federal land. One of the collectors turned over evidence and both collectors were sentenced to some jail time. The archaeologist was put on probation. The event was very poorly covered in the local papers where a strong article would have done the most good. The thrust of the article that did appear was that an archaeologist was caught doing something bad. Chances are good that collectors are out there on any nice spring day.

It doesn't matter where you live in New Mexico.

While the archaeological community pontificates, they are out there. In many cases we know who they

are. Pick one, watch them, catch them, publicize the arrest at the least, publicize the conviction (if it happens) and let everyone else know that there will be a consequence.

Preservation is a rearguard action. Collecting has been going on ever since the original inhabitants left the site. As populations have grown the impact of collecting/looting has become greater and spurred on by the value of these items in the antiquities/art market. Prior to the NHPA there was little or no protection for sites, even those on public land. We have lost a lot. We now have a limited reserve of sites that are theoretically protected on public land. Due to CRM we have lots of archaeologists. Let us put the pressure on the agencies to direct their law enforcement to focus on arresting illicit collectors and then work with the agencies and the press to make sure everyone hears about it when an arrest is made. We routinely make an effort to educate the public and we should continue to do that but along with the carrot we need to let everyone know that there is also a stick that can and most importantly will, be used.

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