



NEVADA ARCHAEOLOGIST

VOLUME 12 1994

NEVADA ARCHAEOLOGICAL ASSOCIATION

NEVADA ARCHAEOLOGICAL ASSOCIATION

THE DESIGN OF THE NAA LOGO WAS
ADAPTED BY ROBERT ELSTON FROM A
GARFIELD FLAT PETROGLYPH



MEMBERSHIP

The Nevada Archaeological Association is an incorporated, non-profit organization registered in the State of Nevada, and has no paid employees. Membership is open to any person signing the NAA Code of Ethics who is interested in archaeology and its allied sciences, and in the conservation of archaeological resources. Requests for membership and dues should be sent to the treasurer whose address is shown below. Make all checks and money orders payable to the Nevada Archaeological Association. Membership cards will be issued on the payment of dues and the receipt of a signed Code of Ethics. Active members receive a subscription to the *Nevada Archaeologist* and the *NAA Newsletter*. Subscription is by membership only; however, individual or back issues may be purchased separately.

NEVADA ARCHAEOLOGICAL ASSOCIATION OFFICERS

President	David Johnson	687-5280
	Carson City, Nevada	
Secretary	Mark Henderson	289-4865
	Ely, Nevada	
Treasurer	Diane Jennings	782-0204
	Minden, Nevada	
Editor, Volume 12	Patricia Hicks	482-7800
	Tonopah, Nevada	

BOARD of DIRECTORS

The Board of Directors of the Nevada Archaeological Association is elected annually by the membership. Board members serve one year terms. The Board of Directors elects the Association's officers from those members elected to the Board. The Board of Directors also appoints the Editor of the *Nevada Archaeologist* for a term not to exceed three years. The Board of Directors meets five times a year, once in November, once in March, and twice in May immediately prior to, and immediately following, the Annual Meeting.

Member	Chet Bate	Elko, Nevada
Member	Colleen M. Beck	Las Vegas, Nevada
Member	Dawna Ferris	Caliente, Nevada
Member	Mark Henderson	Ely, Nevada
Member	Patricia Hicks	Tonopah, Nevada
Member	Diane Jennings	Minden, Nevada
Member	William G. Johnson	Henderson, Nevada
Member	David Johnson	Carson City, Nevada
Member	Susan Murphy	Las Vegas, Nevada

DUES

STUDENT	\$ 5.00
ACTIVE	12.00
ACTIVE FAMILY	15.00
SUPPORTING	25.00
SPONSOR	50.00
PATRON	100.00

FUTURE ISSUES

Manuscripts submitted for publication in the *Nevada Archaeologist* should follow the style guide of the January, 1979 issue of *American Antiquity*. Manuscripts should be typed and double spaced throughout, including notes and bibliography, and illustrations should be camera-ready with a caption typed on a separate sheet of paper, also double-spaced. Submissions from avocational as well as professionals, are encouraged.

Manuscripts should be submitted to *Nevada Archaeologist*, c/o David S. Johnson, P. O. Box 704, Carson City, Nevada 89702-0704.

GENERAL CORRESPONDENCE

Inquires and general correspondence with the Nevada Archaeological Association should be directed as follows:

c/o Mark Henderson
Nevada Archaeological Association
1001 Canyon Street
Ely, Nevada 89301-2104

EDITOR'S CORNER

The Nevada Archaeologist was established to inform members of the Nevada Archaeological Association (NAA) and other interested individuals of research being undertaken in Nevada and adjacent areas of the Great Basin. Amateur, student, and professional members of the NAA are encouraged to report on research in progress and on other topics they feel will be of interest to the membership. The papers contained in the following pages are reflective of the diversity of the research and problems that are of interest to and are being addressed by participants in the organization.

Sadly, 1994 was marked by the death of one of the NAA's most well known and respected avocational members, Jean Stevens. Jean's contributions to the NAA and the White Pine Archaeological Society, and her efforts to preserve and protect Nevada's resources are summarized in the obituary prepared by Mark Henderson and David Johnson. Two papers by Jean have been included in this volume. The first describes how to construct the flexible grids that she frequently used to record rock art. These grids are light and compact, easily transported, and should prove to be valuable additions to any archaeologist's tool kit. The second paper by Jean describes the genesis of her "Knights and Ladies of the Road" organization. This paper is an excellent example of just how much good some enthusiastic, one on one, public education can do. Jean's creativity, warmth, and love for archaeology shines through in both these articles. She will be missed.

Lithic assemblages ascribed to the Lake Mojave period sometimes contain fragments of bifacially flaked stone artifacts referred to as "bifacial knives." In their article, Moody Smith and William Pond attack the problem of the "missing pieces" of these artifacts. Citing information obtained from Mud Lake near Tonopah, Nevada, and the ethnographic literature, these authors present a functional explanation for the "missing pieces."

Environmental conditions in the Great Basin during the Late Pleistocene and Early Holocene were vastly different than those that prevail today. What resources were present where, and how early human occupants of Nevada and other areas of the Basin utilized them is one of the most hotly debated questions in Great Basin archaeological circles. Robert Jones and Susan Edwards describe the discovery of a Clovis projectile point on the Nevada Test Site. Their discussion of the topographic and geomorphological context of the find will be of interest to those who seek a greater understanding of the Paleoindian occupation of southern Nevada.

The discovery of perishable wooden artifacts in a shelter on the Nevada Test Site was the genesis of the article by Colleen Beck. In this article she describes the methods she used to determine the probable functions of these materials. There are several lessons to be learned from this paper.

I would like to thank the Desert Research Institute for assistance in producing this volume for publication. Robert Jones and Evelyn Faulkner prepared the layout and Colleen Beck oversaw the final publication of the volume. The cover photographs taken in the White River Narrows are courtesy of Diane Winslow. Special thanks, as always, to the contributors, for their interesting papers and their effort to share information and ideas with all of us.

Patricia Hicks
Archaeologist

CONTENTS

Jean Stevens	1
Mark Henderson and David Johnson	
The Soft Grid; A Great Tool	5
Jean Stevens	
The Knights and Ladies of the Road	8
Jean Stevens	
Broken Knives: Complete Implements in The Lake Mohave Tool Kit	11
Moody F. Smith and William A. Pond	
A Clovis Point on the Nevada Test Site	18
Robert C. Jones and Susan R. Edwards	
Unfledged Wooden Shafts From Southern Nevada	24
Colleen M. Beck	

JEAN STEVENS (1936 - 1994)

Jean Stevens died February 18, 1994. She represented the best in Nevada archaeology conservation. Jean attributed her conversion to archaeology to a trip to White River Narrows in 1977. She fell in love with the place and it became her personal refuge. She wanted to protect it so others could appreciate it, but perhaps as only she could: "I wanted my grandchildren and even my unborn great grandchildren to see this wonder."

In March, 1979, Jean presented a slide program on White River Narrows at the Spring meeting of the Nevada Archaeological Association stressing the need for close surveillance of its condition.

In Spring of 1979, Jean took Introduction to Archaeology at the Ely Branch of Northern Nevada Community College. This course became a family enterprise with her children Rachel and Eddie. At Jean's insistence we took a class and family campout field trip to the Narrows.

Jean returned to the Narrows countless times, monitoring the construction of paved Nevada Highway 318 through its heart. The conversion of this back country road to the paved Sunnyside Cutoff bothered her slightly, but Jean was not one to stand in the way of "progress." She didn't resent the road,

just perhaps the fact that some of "we professionals" weren't more concerned about how it was done.

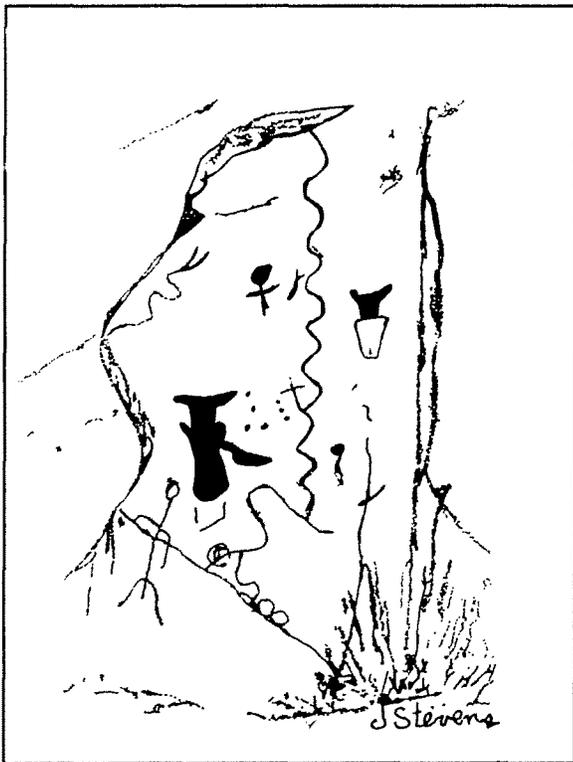


For some time Jean entertained the idea of getting a college degree so she could spend more time with archaeological efforts, but financing such an effort was a problem. She signed-up as cook on the Borealis project in 1981. Again, she became concerned with the lack of connection some professionals felt for irreplaceable heritage resources. Jean believed she pulled some "professional" out of the fire by being astute about local

Nevada politics. She became a camp counselor.

After struggling with a meter square rigid mapping frame to make measured drawings of rock art, Jean developed a "soft" mapping grid from cord and fishing line sinkers. Her paper illustrating how to construct and use this soft grid is included in this volume of the *Nevada Archaeologist*.

At the Fall meeting in Tonopah (October 18) in 1980 Jean was elected to the Board of the Nevada Archaeological Association. Jean was perhaps the first Board member from a rural Nevada community. She served on the Board of the Association (1983-85 as Secretary) until 1987.



Jean worked as a cashier at the Bank Club in Ely, and also worked in Tonopah at the Mizpah. In the late 1980's, suffering from poor health, Jean went to live on family property at Preston. At work she always talked with customers and co-workers about archaeology and particularly about White River Narrows. Her trips to the Narrows were pilgrimages where she felt healed. She became acquainted with Dr. Ben Swartz who chose the Narrows in 1987 as a study area and generously shared her knowledge and home with the professor.

Jean discovered that the El Paso Archaeological Society had long interest in Rock Art conservation. She became acquainted with Dr. Alex Apostolides, traveling to El Paso to confer with him.

At one point in the 1980's she discovered some spray painted graffiti at the eastern entrance of White River Narrows. Because she was a local person she was able to discover the young people suspected of the vandalism. Without fanfare the graffiti was removed and the perpetrators learned a little bit about their own backyard.

In 1990 Jean served on the organizing committee of the newly formed (not yet recognized) White Pine Archaeological Society. Invitations to the initial meeting went out on stationary that carried her drawings of White River Narrows rock art. She presented a program on White River Narrows at WPAS on January 16, 1991 in preparation for a graffiti cleaning trip to the Narrows on January 26. Jean pointed out that professionals do not always live

up to their own standards and that site protection can often be better accomplished by "amateurs."

Late in 1990 and early in 1991 Jean collaborated with Russ Hapke, one of Dr. Swartzes' students in proposing four locations (including White River Narrows) as BLM Areas of Critical Environmental Concern. Jean went to Reno to meet with BLM staff on this matter believing this would result in better protection of the sites. Jean signed up as a Bureau of Land Management volunteer to be a rock art site steward in the Ely District. She was very pleased by her husband Steve's involvement and support for this effort. Jean delighted in the opportunity to be on the scene with some of the initial BLM reconnaissance work done at Bubba's Bighorn Site and Crystal Wash.

Jean also volunteered at the White Pine Public Museum helping to catalog, refurbish, dress and display the Hesselgesser Doll Collection there. At this time Jean was working at Lane's Truck Stop in Preston. She talked conservation to the truck drivers constantly. On May Day 1991 she sent out the organizing letter formalizing "The Knights and Ladies of the Road." This group had some of the features of a secret conservation fraternity of Truck Drivers.

In June and July Jean took a leave of absence from her job at Preston to be cook (and camp counselor) for Dr. Swartz, his students and Earthwatch Volunteers on the Mt. Irish Rock Art

recording project. In her characteristic style Jean put everything into this project. She believed that her fading health might make this her last opportunity to do archaeological fieldwork that she really loved. She made some astute observations about the Mt. Irish location, including hosting a Mountain Lion in the camp one day.

Jean prepared a paper which was presented at the Nevada Archaeological Association meetings in October 1991 in Tonopah on the "Knights and Ladies of the Road." She wanted to be present when the charter for White Pine Archaeological Society was formally recognized as a Chapter of the Nevada Archaeological Association, but she was now working in Ely at R-Place where she continued to chat with truckers.

Poor health and finances again converged on Jean in 1992. She maintained the "Knights and Ladies" by remote control from her daughter's home in Reno and then her sister's home in Hawthorne.

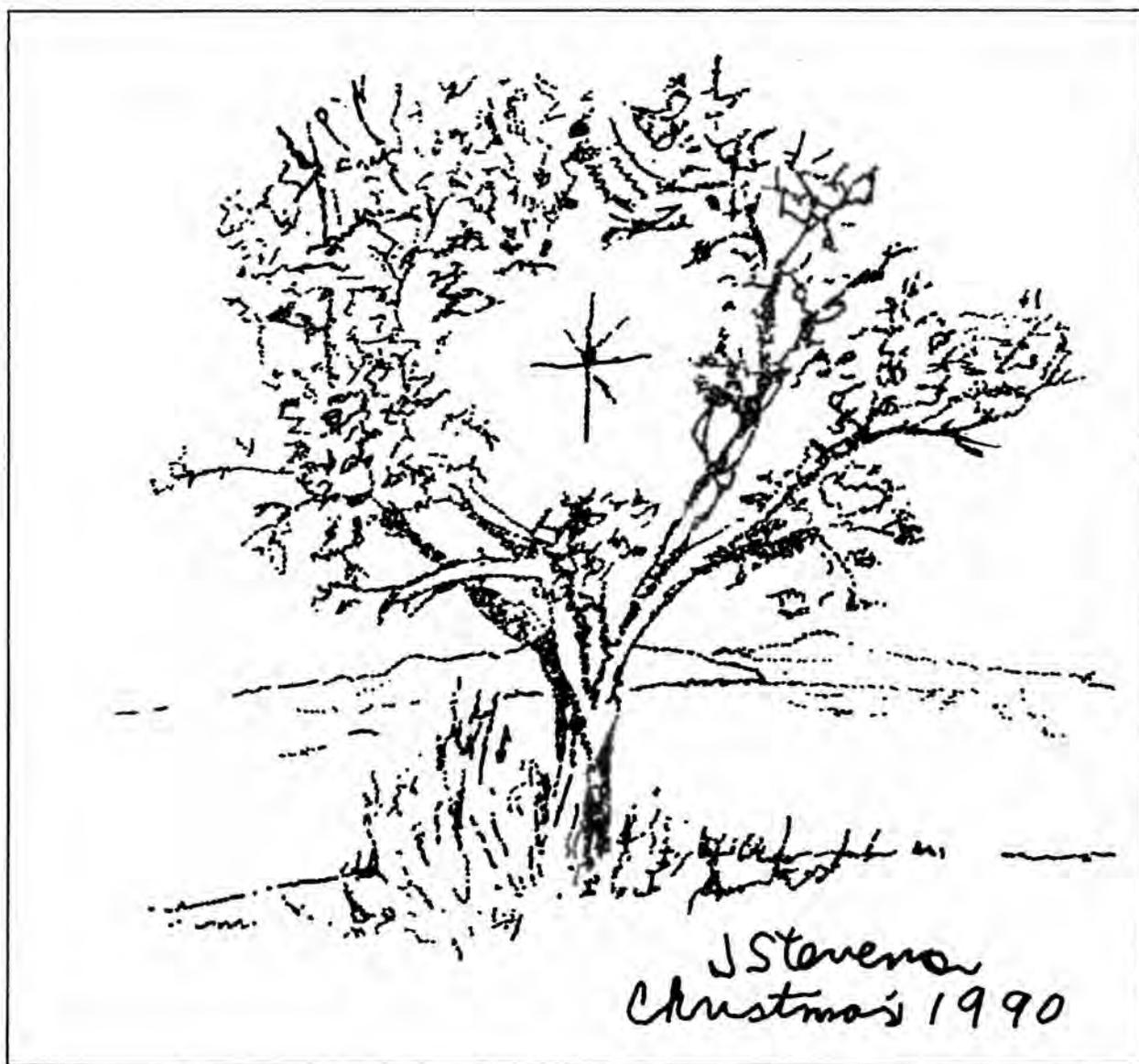
Jean desperately wanted to be involved in the White Pine Archaeological Society activities, but health, finances and distance from Ely made this difficult. When she saw that the White Pine Archaeological Society was having difficulty maintaining momentum, she volunteered to address, fold and mail newsletters.

On an excursion to Crystal Wash Jean discussed her dream of starting a guest ranch on some property she owned

south of Lund. Jean believed that there were special powers in the places of the past; powers that could not be understood by empirical probing, description or science. She thought the world was improved and everyone could personally experience these places and

in this she was indubitably correct. We have lost a fellow traveler and a friend.

Mark Henderson and
David Johnson



THE SOFT GRID; A GREAT TOOL

(Paper was submitted to NAA Annual Meeting, September 1-3, 1989, Ely, Nevada by Jean Stevens, Star Route 2, Box 11-A, Ely, Nevada 89301. Edited for publication by Mark Henderson, March 4, 1994)

We would like to thank Harry Rhea for editorial assistance and reviewing this paper for content. Any errors in fact or inference or any omissions are, of course, solely the liability of the authors.

The size of rock art elements in relation to other elements and positioning on the panel it is found on are important to accurate recording of rock art. I could never depict these relationships very well without measuring these relationships. I describe here a device to make these measurements.

I have used rulers, photo cards and Coke cans or scales, but there needed to be something better. Mark Henderson gave me a meter square mapping frame (see Heizer 1964:59) he had used, to try to bring some order into my recording. An aluminum frame helped to keep it from being too heavy and the white cord showed up well in photos. Golly Gee...this was great...but it took a small army to hold it in place and the lines were too close together (10 cm intervals) and obscured too much. I also found the task of getting it in and out of a site could be an adventure, even life threatening. I have taken some bad falls carrying this unyielding monster over rough terrain and the sudden feeling of being suspended in space because the grid, strapped on my backpack, had become entangled in the rocks I was trying to get through, was frightening to say the least.

As I muddled through, trying to record the petroglyphs in the White River Narrows, I tried many of the different types of measuring devices. I have used a 100 foot tape, doing my sketches of walls and putting my figures where and how far apart the panels or elements were. I oft times and most generally forgot to put a ruler in my photographs. I also worried about damaging the rock surface when the ruler would not stay put. Bubble gum wasn't an acceptable anchor for the scale, even if it would have worked.

As I neared the completion of recording all the sites I knew, I really understood the need for a standard scale for recording rock art.

David Johnson of the Carson area once asked me how I recorded around an uneven rock surface. I replied that I had taken the frame off of the mapping frame. This system worked but was still difficult to use. I knew there had to be a better way.

When I moved to Tonopah I found that there were many folks interested in recording rock art. I also happened to read about the fisherman of the

southeast, who make nets for different kinds and sizes of fish. This made me think..."Why not a net to size the Rock Art?"

I needed a net in the size and measurement I understood and could handle. An overhand knot isn't difficult, even I can tie that. So I set to work and came up with two soft grids.

The grids are light weight, easy to carry, won't hang up from your backpack and will not trip you going into a site.

The grids that I like the best are described as follows:

Grid #1. This grid is made of soft crochet cotton thread, double thickness with split shot fish weights to hold the edges out. This grid is so light and soft that it will cling to many surfaces and does not create any rock surface damage. The problem with this grid is that it tangles and can be a real curse to untangle. One must roll it up very carefully to put it away. When getting it out for use I follow the weights on the outside of a plastic drafting triangle. The grid cells are large enough so they do not obscure the elements and the cotton does not stretch. This grid needs only a small amount of roughness on the rock surface to cling to it and even with the wind blowing, it will often stay in place. Best of all I can use it without anyone else to help hold the grid in place.

Grid #2. This grid is made of stiffer cotton cord but also uses split short

fishing weights on the edges. This grid is good for horizontal rock art surfaces or for surface mapping artifact scatters. Because this grid has more surface area and mass, it moves in the wind and because of gravity is more difficult to keep in place on a nearly vertical surface. Because of the weight, I make the knot in one corner larger than the others to act as a fastening hole or a datum pin to stabilize the grid. The advantage of this grid is that it does not tangle as easily as the grid of thinner diameter materials. I can just stuff this grid in my pocket, my day pack or my camera bag.

Both of the grids are three feet by three feet with six inch blocks but they could as easily be designed on metric increments.

A friend of mine in Tonopah needed a nine foot square with one foot intervals to use in off road racing. We laid out a form in my yard in Tonopah, using macrame cord. The friend now has a portable grid that can be used even when the ground is too hard or rocky to stake each node. This might even be an idea of gridding out a large block of an archaeological site for mapping or surface collections?

Constructing the yard square grid takes only about three hours to make from start to finish.

The soft grid has made it much easier for me to keep a consistent scale in my recording efforts. I hope others will find this idea of use. Happy Recording.

Jean Stevens

Reference Cited

Heizer, Robert F.

1964 *A Guide to Archaeological Field Methods*. Third Edition. National Press,
Palo Alto, CA.

THE KNIGHTS AND LADIES OF THE ROAD

[Paper written by Jean Stevens and presented by Mark Henderson at the NAA Annual Meeting, October, 1990, Tonopah]

As in olden times the Knights and Ladies are banishing the modern day Vandals. Here goes the tale.

In November of 1990, I took a job at Lane's Truck Stop in Preston, Nevada. The outdated system of dispensing gas allowed me an opportunity to talk with a lot of people. The job also allowed me some time and a large desk to work on my rock art projects. After a customer fueled up, I would read the meter, record the data and then the customer and I would go to the office to settle the bill. Since my drawings, books, papers, and maps were on the desk in view of the customer, they would often ask, "what is rock art?" I would explain and tell them the rock art at White River Narrows is, and has been, my passion.

Truck drivers come from all walks of life and educational levels. Most are well versed on anything to do with the highway. If they are not familiar with some aspects of their work they will not admit it, but will try to learn about the subject. They will ask questions and give opinions.

During one swing shift I had photos of recent graffiti at the Narrows spread out on the desk. I was comparing the photos with measured drawings that Mark Henderson had done of some of the panels in 1979 (Henderson 1980). Two "Jack B. Kelley" drivers came in.

"What's that?" they asked. I explained to them what I was working on. I told them that I wished I could be on the highway as often as they were so I could watch the site.

"Well, we can watch the site for you," they answered.

So the "Knights and Ladies" was born with two truck drivers with a commitment to preserve our heritage.

Later on I talked with Mark Henderson of the BLM about developing a monitoring report format. Mark suggested we adapt the existing "Incident Reporting Forms." I distributed these forms and told the drivers to use this if they saw any suspicious activity. They could drop these off with the BLM or Sheriff.

Word spread. I started to hear from drivers about incidents of people that might be doing irresponsible things. The truckers asked me more questions about rock art. Several truckers stopped specifically to see me to ask how they could join in. So far it was just a matter of expressed interest and intent to get involved. I thought to myself that I would not want to cross a truck driver if they suspected I was damaging some rock art.

To the drivers it gives them an additional involvement in the city, county,

state and nation through which they drive. It helps them do what they do best...watch the highway. The drivers need the sites identified for them along with explanation of why the sites are important. It is when they have an understanding of why the sites are important that they are willing to help watch the site. This activity actually gives them an active role in the communities they pass through. Drivers spend so much time on the road it is difficult to be involved in the towns that they claim as a residence.

I have found out that the drivers have a desire to learn more about the history of the area they drive through.

There is also now evidence that the drivers' attention works. In January of 1991 the White Pine Archaeological Society along with Susan Murphy of the Friends of Red Rock and the Ely District BLM did a clean-up job of ten years of accumulation of painted graffiti in White River Narrows. As of early October the area is still clean.

How does the Knights and Ladies of the Road work? First off, understand that truckers are not prone to join a "group." Some of them may join the Nevada Archaeological Association, an archaeological society in their home town or even the American Rock Art Research Association. Some of the drivers will share their name, address, telephone number, who they work for and any particular area they can watch. I keep a list that I use to keep track of the drivers. In less than a year I have about 25

drivers on my list from as far as Alaska and Texas. My daughter even met one by chance in Glasgow, Montana.

The network has spread mostly by word of mouth, trucker telling trucker about areas they know about and incidents they have witnessed. I have sent out a newsletter irregularly, but always am sure to include an incident report in each one.

When truckers see some activity they don't approve of they often use the size of their trucks, lights, air horn, CB Radio and when all else fails a big monkey wrench. Some have told me that they find it very effective to let suspects see them writing down the license plate number. One small woman driver has yelled out to people "The Lord doesn't like that!" as she pulls her rig back out on the road.

I have heard from some automobile drivers who informed me that they thought the police might be looking for them because a trucker had confronted them. I simply suggested that they better stop doing whatever it was they were doing to make a trucker angry. Some of the drivers may border on being vigilantes. For instance, a Pacifica driver interceded when he saw a couple of men chipping at a rock wall in the Narrows that had spray painted graffiti on it. About three hours after the incident the men were still very frightened when they told me all about the incident. These men had never heard about Antiquities Laws before they had it explained to them by the truck driver. They learned their lesson and they are now concerned that other

people not destroy the history of their area that the outside truck driver was so concerned about.

There is another driver that now often takes his rest break at the Narrows. The truck is like a huge watchdog. This driver has now hiked extensively around the Narrows to see things for himself. He has discovered some things that I didn't know about. It is a delight to converse with him about his most recent inspections.

Most of the drivers are not immediately acceptant of conservation archaeology. One driver had already slowed down in the Narrows to see if he could spot some of the rock art. He noticed that there was a car with a family stranded so he stopped to help get them back on the road. He explained to them that the reason he had slowed down was to look at the rock art and that they were in a pretty special place. This family now thinks that this trucker is a Prince and the rock art is worth protecting.

There are some companies that do not want their drivers to be on any lists or part of any networks. This does not stop the drivers from helping out though. These drivers just talk to other drivers about the activities of the Knights and Ladies.

Other companies want all their drivers to help out and have put the incident reports in the drivers' pay envelopes. Either way letters of thank you to the companies of drivers that do something helpful haven't hurt.

Some day I hope the drivers will take over the Knights and Ladies network. If more time were spent educating people than just reporting all the bad things that happen truckers would become even better partners to protect and preserve our heritage. This is what I am trying to do in my community. But this network won't be able to go much farther. There needs to be other networks in other communities. If you let truckers know that you need their help and can take the time to explain why it is important, they will get involved. I wish I had been part of a truckers network when vandals tore down my great grandparent's homestead. Truckers saw the vandals doing the damage, but didn't know that this wasn't approved demolition. The truckers in Knights and Ladies of the Road are now on the look out for anything that is happening.

Truck drivers can, of course, be rude, crude and socially unacceptable. But, they can also don shinny armor if they know how their help is needed. Besides we are better off if truckers are on our side. They are the best chance we have to save road side sites. These folks drive every road in the nation and will help if asked and we share our concerns with them.

Thanks for listening.

Jean Stevens

BROKEN KNIVES: COMPLETE IMPLEMENTS IN THE LAKE MOHAVE TOOL KIT

by

Moody F. Smith and William A. Pond

Both in the field at Mud Lake near Tonopah, Nevada, and in the collection of Gary D. Noyes, we saw what appeared to be halves of well made bifaces that other authors have termed "bifacial knives." We will also use the term in the following discussion. Some of the pieces appear to be the pointed end of the tool, but most appear to be basal halves, some with a rounded end and some with a squared end (Figure 1). Regardless of form, all exhibit what we believe to be use wear. Try as we might, we could not locate the other half of any piece during our field visit. Mr. Noyes obviously had a better chance of locating a missing half than we, but he was no more successful. The pioneers of Southwestern Paleoindian archaeology, even through they were the first archaeologists on the sites, had the same experience.

Campbell made numerous references to broken knives in her descriptions of sites at Pleistocene Lake Mohave (Campbell and Campbell 1937:32-36). In Death Valley, Hunt found thin knives, all broken, "...restricted to and characteristic of Death Valley I sites" (Hunt 1960:38-39). Hunt's Death Valley I artifacts equate to those of the so-called Lake Mohave culture.

In his notes regarding a visit to a Lake

Mohave site at Nelson Lake, presently within the boundaries of Fort Irwin, California, Malcolm Rogers stated:

A count was made of the artifacts a remote site in the center of the Mojave Desert, which at the time, in 1932, gave no evidence of ever having been visited by relic hunters. Out of a total of 154 knives, only three were found intact. Another peculiar situation was that of all the broken knives, no two parts could be fitted together (Rogers n.d.).

Rogers speculated on the possibility of property sacrifice to account for the broken knives (Brott 1966:167), but was evidently completely puzzled by his inability to find any matching pieces.

After gathering together the evidence from Nelson Basin from various museum files and drawers, Warren and Schneider (1989) determined that the inhabitants of the Lake Nelson area belonged to the Lake Mohave culture. As a part of their study, Warren and Schneider classified the broken knives collected by Rogers and others according to reduction stages (Warren and Schneider 1989:26-28). These authors used a width-thickness ratio of 3:1 as the criterion to define the "early" reduction stage, a ratio of about

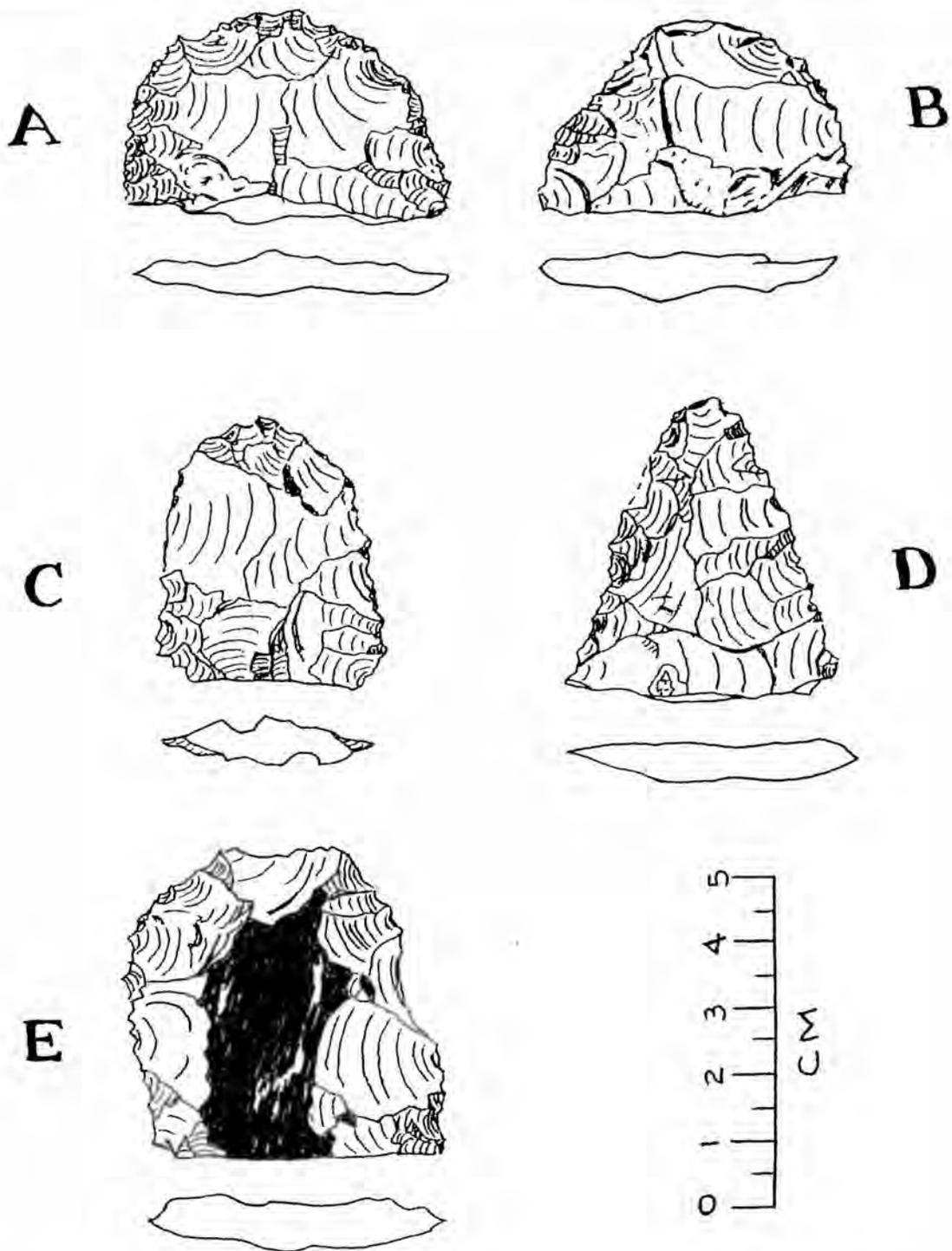


Figure 1. Examples of "broken knife" cleavers. Note proximal thinning blows on C.

4:1 to indicate the "mid" reduction stage, and a ratio of between 4:1 and 5:1 to characterize the "late" reduction stage. Because less than 25% of the broken knives met the "late" reduction stage criterion, the implication is that the knives were broken during manufacture and were discarded. Perhaps the people who lived around Nelson Lake could afford to be wasteful with their resources as there were at least ten lithic procurement sites within a short walk to the lake site (Warren and Schneider 1989:18-19), but neither Warren and Schneiders' implication that these artifacts represent broken stage forms, or the possibility of a wasteful people addresses the question of the missing pieces.

While the Paleoindians at Nelson Lake may have been guilty of carelessness for leaving so many "broken knives" behind, we suggest that they were neither wasteful with their resources nor inept rock knappers. We suggest that the "broken knife" was deliberately made and was either a complete tool or the stone portion of a larger tool. To support our suggestions, we turn to the evidence from Mud Lake.

The flakeable stone preferred by Paleoindians is non-existent at Mud Lake. Except for some coarse igneous material used for push planes, all the toolstone was imported. Obsidian was the stone of first choice. Four obsidian projectile points collected from the Mud Lake environs were submitted for source determination, and were found to have originated from four different locations (Tuohy 1984). One of the sources could

not be determined. The three identified sources are at some distance from Mud Lake: Crow Springs northeast of Tonopah, a crow-flight distance of 62 km; Queen Hill, near the California border west of Montgomery Pass, approximately 125 km for a determined crow; and, if Tuohy's map (1984: 197-198) is correct, a source in the southwest arm of Sarcobatus Flat, a straight-line distance of 92 km. We located a deposit of obsidian cobbles at the relatively short distance of 32 km, in Alkali Springs Valley, the basin immediately west of Mud Lake, which we assume derive from an outcrop in the Montezuma Range west of Goldfield.

The Paleoindian occupants of the Mud Lake area also used chalcedony and chert. The two most easily accessible sources of chalcedony and chert are, respectfully, 20 km to the west and 23 km to the north of Mud Lake.

So many broken Lake Mohave and Silver Lake points were returned to Mud Lake living areas and then further used as burins and scrapers that Tuohy (1969) investigated the possibility that a separate lithic industry had been devoted to the production of haftable implements having a chisel-shaped end, or burin facet. We doubt these tools were deliberately produced; if they had been, their similarities would be much more striking. They appear to us to be nothing more than broken points that have been put to another use; a broken point was still a valuable piece of glassy rock with sharp edges in an area where rocks that could yield sharp edges did not exist.

After further reflection, Tuohy (1988:226) came to the same conclusion. Additional support for this conclusion is found in the large percentage of flakes on the surface of these sites that show signs of use on at least one edge.

The point we are making is that, for the Paleoindians at Mud Lake, flakeable stone had a cost. The people practiced conservation of this valuable commodity and it never would have occurred to them to discard a piece as large as a "broken knife." Yet, "broken knives" were found there. We suggest that the "broken knives" were, in fact, cleavers that were either hand-held or hafted.

The Paiute of southwest Nevada hafted this type of cleaver at the middle of a stout stick approximately 30 cm long, for the purpose of harvesting the base of the flower stalk of the mescal, a member of the Agave family (Figure 1); Harrington n.d.:25 and Figure 2). The large number of cleavers collected at Lake Nelson should, therefore, tell us something about the subsistence strategy of the people who lived there.

The various groups of Paoleindians in the American West produced distinctive projectile points. Except for that of the should, therefore, tell us something about the subsistence strategy of the people who lived there. Clovis people, their n.d.:25 and Figure 2). The large number of cleavers collected at Lake Nelson the flower stalk of the mescal, a member of the Agave family (Figure 1); Harrington toolkits have thus far been virtually indistinguishable. The "broken knife"/cleaver appears to have been a tool used exclusively by the people who produced the Lake Mohave point. When one of these artifacts is found in a Lake Mohave site context, no time should be spent looking for the "missing half;" what there is, is all there was.

Acknowledgments

Thanks to Mr. and Mrs. Gary D. Noyes of Tonopah, Nevada, for making their artifact collection available for study. And, to Donald R. Tuohy of the Nevada State Museum or providing reference material and information concerning the artifact collections from the Mud Lake area.

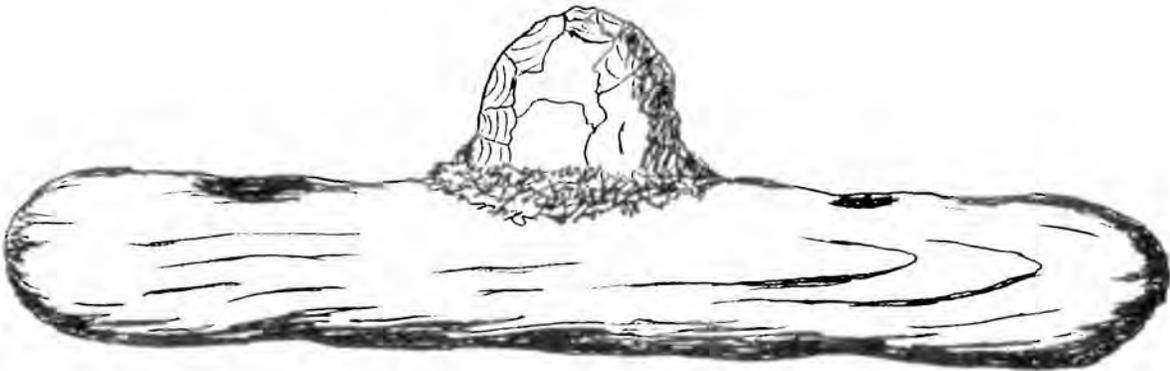


Figure 2. Mescal cleaver (after Harrington). Length approximately 30 cm.

REFERENCES CITED

Brott, C. W.

- 1966 How Stones Became Tools and Weapons. In *Ancient Hunters of the Far West*, edited by R. F. Pourade, pp 139-193. Union-Tribun Publishing, San Diego.

Campbell, E. W. C. and W. H. Campbell

- 1937 The Lake Mohave Site. In *The Archaeology of Pleistocene Lake Mohave*, edited by E. W. C. Campbell, W. H. Campbell, E. Antevs, C. A. Amsden, V. A. Barbieri, and F. D. Bode, pp 9-44. Southwest Museum Papers, No. 11, Los Angeles.

Harrington, M. H.

- n.d. *Ancient Tribes of the Boulder Dam Country*. Southwest Museum Leaflets, No. 9. Los Angeles.

Hunt, A. P.

- 1960 *Archaeology of the Death Valley Salt Pan, California*. University of Utah Anthropological Papers, No. 47. Salt Lake City.

Tuohy, D. R.

- 1969 Breakage, Burin Facets, and the Probable Technological Linkage Among Lake Mohave, Silver Lake, and Other Varieties o Projectile Points in the Desert West. *Nevada State Museum Anthropological Papers*, No. 14, pp. 132-152. Carson City
- 1984 Implications of Obsidian Hydration Reading and Source Determinations for 28 Presumed "Early Man" Points in Nevada. In *Obsidian Studies in the Great Basin*, edited by R. E. Hughes, pp. 193-221. Contributions of the University of California Archaeological Research Facility, No. 45, Berkeley.
- 1988 Paleoindian and Early Archaic Cultural Complexes From Three Nevada Locations. In *Early Human Occupations in Far Western North America: The Clovis-Archaic Interface*, edited by J. A. Willig, C. M. Aikens, and J. L. Fagan, pp. 217-230. *Nevada State Museum Anthropological Papers*, No. 21. Carson City.

Warren, C. N. and J. S. Schneider

- 1989 Nelson Lake, San Bernadino County, California: Museum Records and Collections From Important Early Sites. *San Bernadino County Museum Association Quarterly* 36(2):3-50. Redlands, California.

A Clovis Point on the Nevada Test Site

by

Robert C. Jones and Susan R. Edwards
Desert Research Institute, Las Vegas

Introduction

The Desert Research Institute (DRI) conducts archaeological site monitoring activities for the U.S. Department of Energy at the Nevada Test Site (NTS) to record any impact to sites after construction projects have been completed. During the spring of 1994, Robert Jones, Susan Edwards, and Diane Winslow revisited site 26NY8062 to determine if any impact had occurred as a result of recent construction activities in the area (Jones 1994). A proximal end of a Clovis projectile point was found during the resurvey.

Site Description

Originally recorded by Drollinger (1992) during a preconstruction survey in 1992, site 26NY8062 is located in an area (Figure 1) that has been extensively exploited or inhabited prehistorically. The site consists of a diffuse lithic scatter of approximately 1,000 artifacts that is situated at the base of Pahute Mesa on the top of a small gravelly alluvial fan at an elevation of approximately 1,768 m. The alluvial fan extends southwest from the southern toe of a south-trending ridge. A small drainage borders the southern and eastern edges of the

scatter. Soils in the area consist of shallow, unconsolidated alluvial sediments. Vegetation can be characterized as an open pinyon-juniper woodland with big sagebrush, four-wing salt bush and little rabbit brush dominating the understory.

The artifact assemblage at site 26NY8062 includes projectile points, utilized flakes, unifaces, and debitage. Obsidian dominates the assemblage, but chert, jasper, and silicified volcanic are also present in small quantities. Point types identified at the site include Clovis, Silver Lake, Pinto and Humboldt. Dates associated with these projectile points range from Paleoindian through Middle Archaic periods, or from 12,000 to 1,500 B.P. (Warren and Crabtree 1986).

The Clovis projectile point was found on the surface in a flat area of the site where many of the other points were located. The point probably eroded from under nearby shrubs during a major precipitation event. An intensive, unsuccessful effort was made to locate the distal portion of the projectile point. Because of the rarity of Clovis points on the NTS, numerous photographs were taken of the projectile point.

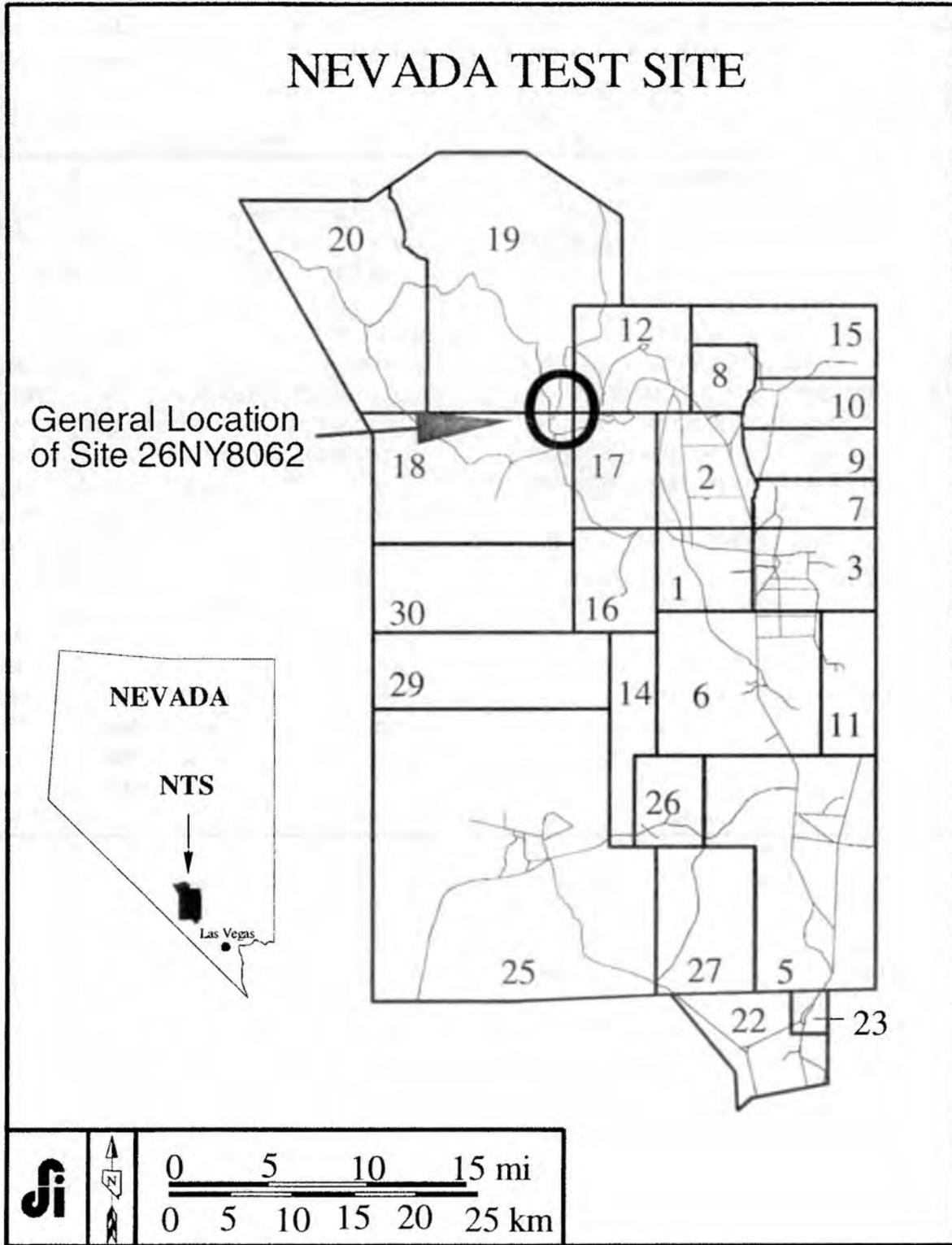


Figure 1. General location of site 26NY8062 on the NTS.

Its location was marked at the site with a metal tag and it was collected and transported to DRI in Las Vegas for further study and curation.

Projectile Point Description

The Clovis point (Figure 2) found at site 26NY8062 is made of a pale yellowish-brown chert, 10YR 6/2, with very thin light red, 5R 6/6 veins or stringers (Munsell Rock Color Chart 1991). The point has broad, relatively shallow fluting on both surfaces. Prior to the channel flake removals, the point was lenticular in cross section. Basal thinning is indicated by the presence of longitudinal flake scars parallel to the channel flake scars. The base is concave and slightly rounded. Under magnification, edge-grinding is visible along the entire basal margin. The specimen has regular collateral flaking. Although most of these thinning flake scars were truncated by the removal of the channel flakes, several of the flake scars terminated in steps. Both the lateral edges and the base were pressure flaked, probably during final shaping of the point. The break appears to be an impact fracture. This fracture occurs at the hafting area where one would expect sinew to have been wrapped.

The point weighs 6.71 grams, and measures 3.60 cm wide at the break and 3.00 cm at the base. Partial length measurements for the lateral edges are 2.69 cm and 2.30 cm. Thickness at the break is 0.67 cm and the depth of the concave base is 0.62 cm. The break truncates the channel flake scars so the

length of the fluting could not be determined. Width of the channel flakes are 1.70 cm and 1.71 cm.

Discussion

In many areas of North America, Clovis points have been found in association with the remains of Pleistocene megafauna. Some researchers have assumed that the Paleoindians of Nevada hunted these animals and other fauna of the period. Although, none of the early points found in the Great Basin have been found in undisputed association with large Pleistocene megafauna. Fluted projectile points on the NTS are exceptionally rare with only two others previously recorded. One was found along Fortymile Wash at the eastern edge of Timber Mountain (Worman 1969:33). While another was found along a terrace of Fortymile Wash (Reno 1985) near Yucca Mountain. The latest or third point was found in an area which drains into Fortymile Wash and also affords easy access onto Pahute Mesa. Assuming that Paleoindians were hunting late Pleistocene megafauna and given the occurrence of Clovis point finds in the Fortymile Wash area it is here proposed that Fortymile Wash and the area below Pahute Mesa was a game route exploited by the Paleoindians of southern Nevada.

While the discovery of the third Clovis projectile point extends the range of Paleoindian utilization on the NTS, it does not resolve the question of how fluted points relate to other assemblages. As is the problem with most surface sites

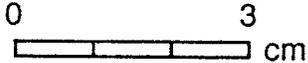
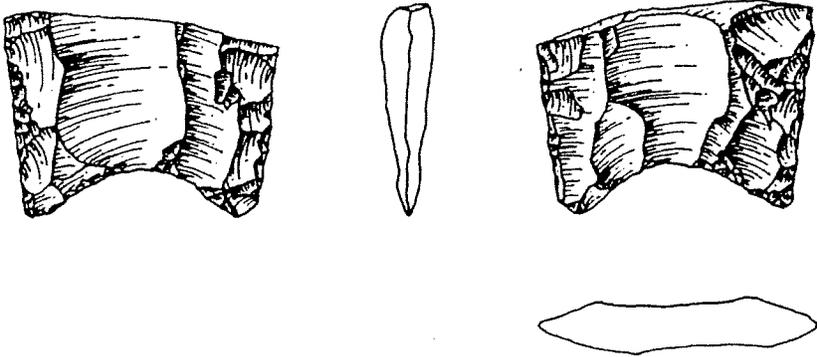


Figure 2. Clovis projectile point from site 26NY8062.

on the NTS, at site 26NY8062 there is little stratigraphic separation or horizontal patterning in the artifact assemblage, making relative positioning of the Clovis projectile point within the assemblage difficult to determine. The Clovis point may be an isolate, a component of the surrounding artifact assemblage left during a Paleoindian utilization of the site, or an artifact curated by later inhabitants of the area. A geomorphological investigation (Nials 1994) of the site locale in conjunction with the early component (Silver Lake projectile points) of the artifact assemblage lends support for possible Paleoindian occupation of the site. Topographic positioning, geomorphological characteristics, and weathering of surface materials at the site

indicate that the surface is of sufficient antiquity to have existed at the time of Clovis occupation.

ACKNOWLEDGMENTS

This paper is based on field work conducted by the Desert Research Institute for the Department of Energy, Nevada Operations Office. The submitted manuscript has been authored by a contractor (grantee) of the U.S. Government under contract (grant) No. DE-AC08-90NV10845. Accordingly, the U.S. Government retains a non-exclusive, royalty-free license to publish or reproduce the published form of this contribution or allow others to do so, for U.S. Government purposes.

REFERENCES CITED

Drollinger, H.

- 1992 *A Class III Cultural Resources Reconnaissance of an Access Road, Borrow Pit, and Pad with a Water Retention Area Extension for Groundwater Characterization Well ER-19-1, Areas 18 and 19, Nevada Test Site, Nye County, Nevada.* Desert Research Institute, Quaternary Sciences Center Short Report #SR070192-1. Las Vegas.

Jones, R.C.

- 1994 Letter report to the Department of Energy. Desert Research Institute, Quaternary Sciences Center. Las Vegas.

Munsell Rock Color Chart

- 1991 Distributed by The Geological Society of America, Boulder.

Nials, F.

- 1994 Letter report on the age determination of site 26NY8062. Desert Research Institute, Quaternary Sciences Center. Las Vegas.

Reno, R.L.

- 1985 Clovis Projectile Points from Lahontan Reservoir and the Nevada Test Site. *Nevada Archaeologist* 5(1):7-9.

Tuohy, D. R.

- 1968 Some Early Lithic Sites in Central Nevada. In *Early Man in Western North America*, edited by C. Irwin-Williams. Eastern New Mexico University Contributions in Anthropology 1(4):2738.
- 1974 A Comparative Study of Late Paleo-Indian Manifestations in the Western Great Basin in *A Collection of Papers on Great Basin Archaeology*, edited by R. G. Elston and L. Sabini, pp. 90-116. Nevada Archaeological Survey Research Papers. Reno.

Warren, C.N. and R.H. Crabtree

- 1986 Prehistory of the Southwestern Area. In *Great Basin*, edited by W.L. d'Azevedo, pp. 183-193. Handbook of North American Indians, Volume 11. Smithsonian Institution, Washington, D.C.

Worman, F.C.V.

- 1969 *Archaeological Investigations at the U.S. Atomic Energy Commission's Nevada Test Site and Nuclear Rocket Development Station*. University of California Los Alamos Scientific Laboratory Report LA4125. Los Alamos, New Mexico.

UNFLETCHED WOODEN SHAFTS FROM SOUTHERN NEVADA

by

Colleen M. Beck

INTRODUCTION

Nineteen artifacts, commonly referred to as "wooden arrows," have been found in Southern Nevada in the last thirty years. In general, these artifacts are made from one piece of wood and have one notched end and one pointed end. However, in addition to the absence of a stone point, there is no evidence of fletching (feathers) on these artifacts. While all of these wooden artifacts resemble each other, there are some variations in manufacturing technique. These variations, coupled with other attributes, have given rise to speculation that some of these artifacts may not have functioned as arrows at all but as other types of implements. Following this avenue of thought, the research focused on the archaeological contexts, the ethnographic literature, and the structural variability of the wooden shafts were examined to determine possible alternative functional interpretations of these implements.

HISTORY OF DISCOVERY

Wooden shafts were first recorded in an archaeological context in southern Nevada in 1964. Donald Tuohy, while working with Frederick Worman at the Nevada Test Site, discovered a

rockshelter (26NY90) on Rainier Mesa (Figure 1, #1). The rockshelter contained ten wooden shafts, two digging sticks and six forked juniper branches protruding from debris on the floor of the rockshelter (Tuohy 1965:50-53). All of the artifacts were located near the back of the rockshelter, an overhang with two large exterior boulders near the base of a slope. Four juniper branches covered the wooden shafts. The other two branches were nearby and had been charred on the ends, interpreted by Tuohy as an indication that they were used as firebrands (1965:51). Tuohy described the ten wooden shafts as arrows, in accordance with ethnographic accounts of Paiutes using wood pointed arrows (Figure 2). The ten wooden shafts from site 26NY90 are curated by the Nevada State Museum. Four of them are in public exhibits; two can be seen at the Nevada State Museum in Carson City and the other two are in the Nevada State Museum in Las Vegas.

The second discovery occurred in early 1988, when two wooden shafts were found on the surface in a cave near Alamo (Figure 1, #2) by a private individual who collected the artifacts and donated them to the Lost City Museum in

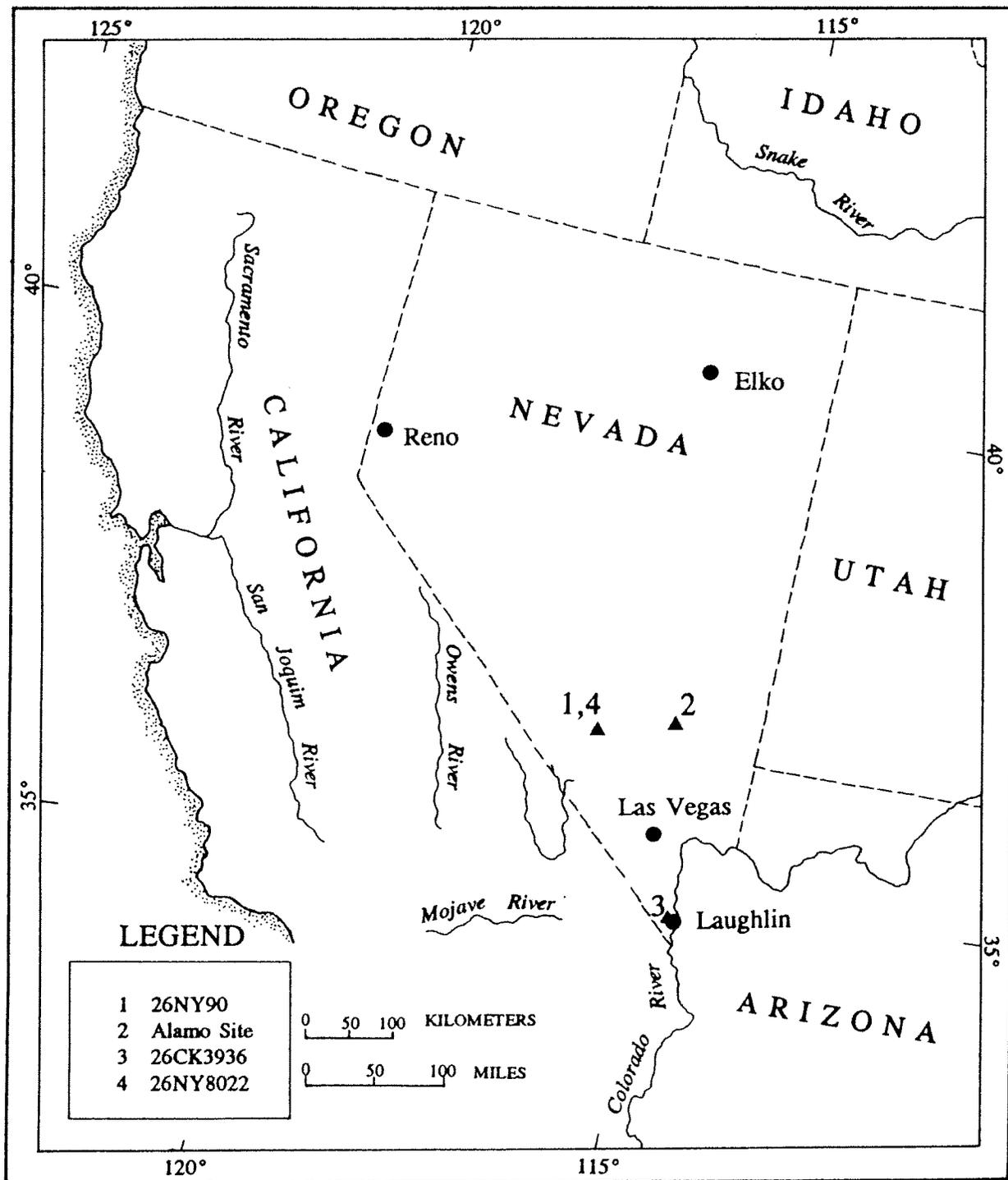


Figure 1. Map showing locations of sites in Southern Nevada.

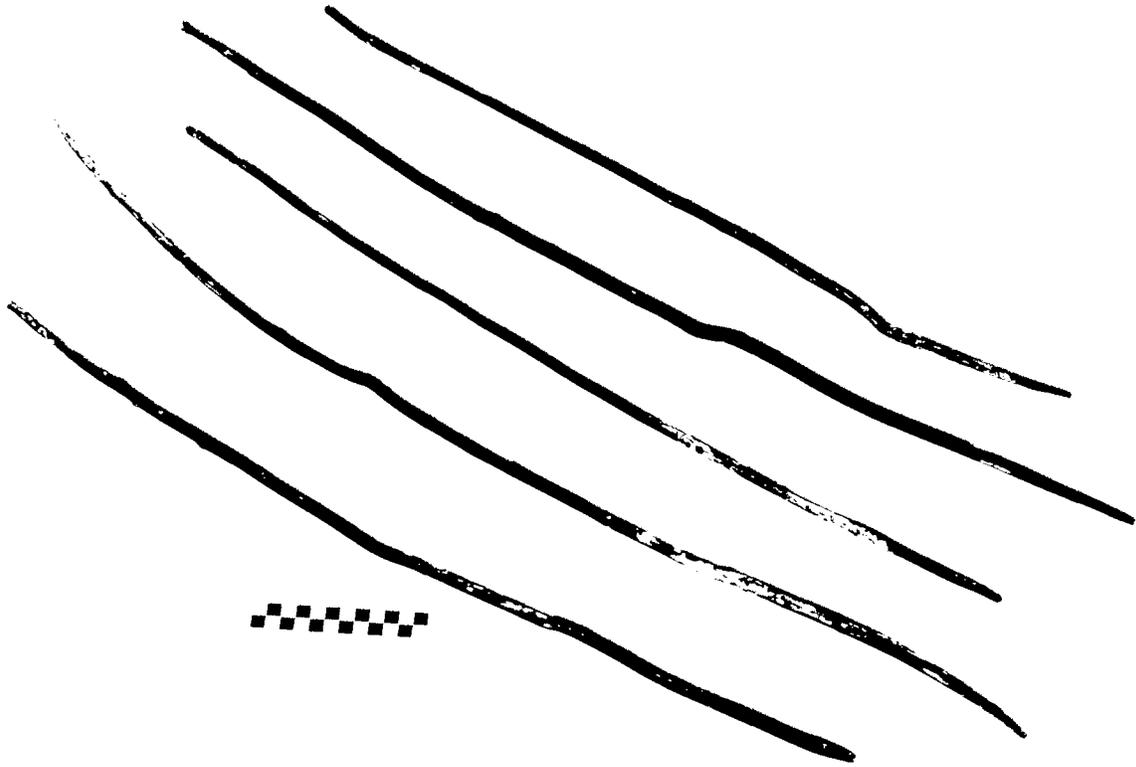


Figure 2. Photograph of five shafts from 26NY90 (Photograph by Scott W. Klette, Nevada State Museum).

Overton, Nevada. This site remains unrecorded and no supplemental information is available. The two shafts from the site are included in an exhibit the Lost City Museum has on display at Expeditions Depot in Boulder City. A few months later, in 1988 Nevada Department of Transportation archaeologist found the third site (26CK3936), a rockshelter on a slope near the top of a ridge west of Laughlin, Nevada (Figure 1, #3). This site contained "three presumed wooden arrow shafts and a harvesting stick" (Seldomridge 1988:4). These artifacts were discovered on the surface at the back of the rockshelter. Seldomridge compared these wooden shafts to the ones found at the Alamo site and determined the Alamo shafts were closer in size and shape to ethnographic descriptions of small game arrows than the shafts from the Laughlin site. He noted that due to their size and shape, the shafts from the Laughlin site would be unstable in flight. One possible functional interpretation offered by Seldomridge was that the Laughlin shafts were used to hold up nets during rabbit drives. However, he preferred another idea proposed by Robert Leavitt that these artifacts may possibly have been fishing arrows (Seldomridge 1988:4). The three shafts and the harvesting stick from 26CK3936 are curated by the Nevada State Museum in Carson City. The fourth site (26NY8022), a cave on a talus slope, was discovered in 1992 on the Nevada Test Site (Figure 1, #4; Beck 1994). This site contained four wooden shafts, two digging sticks, two burden baskets, one seedbeater and two historic

metal cans that were lying on the surface. Some of the items were covered slightly by windblown debris. A shaft straightener and several brownware sherds were found outside the cave. During recordation of this site, the four wooden shafts were presumed to be the ethnographic wood pointed arrows. The four shafts from 26NY8022 currently remain at the archaeological site, under the jurisdiction of the United States Department of Energy.

The information provided here is based on data in archaeological reports and the recent direct examination of ten of the shafts, with another four viewed in exhibit cases. One shaft from 26NY90 (Reference No. 26NY90-15) and the four shafts from 26NY8022 were unavailable for additional study. There is some discrepancy between the specimen numbers in Tuohy's report (1965:50-53) and those recorded during this research.

ARCHAEOLOGICAL CONTEXT

The four archaeological sites which produced the wooden shafts are all similar in nature. All are protected, covered rockshelters or caves that are within easy walking distance of a water source. All the shafts were found on the surface or protruding from beneath unconsolidated debris, indicating that the shafts and associated artifacts were left by Native Americans on the surface of the sites. All of the artifacts at these sites are complete, suggesting that they were cached for future use rather than discarded by their owners.

The artifacts associated with the wooden shafts at 26NY90, 26CK3936 and 26NY8022 are items used on a daily basis by Native Americans for subsistence activities. The wooden shafts at 26NY90 were found with two digging sticks and six forked juniper branches, two of which appeared to be firebrands. At 26CK3936, the wooden shafts were associated with a wooden crook or harvesting stick, which given the environment in which it was found was probably used to extract chuckwallas or rodents from their holes. Seldomridge noted wear on the stick indicative of use in such an activity (1988:4). At 26NY8022, there were two digging sticks, two burden baskets and one seedbeater. All of these items were used to procure, process and transport food from plants. The two historic metal cans originally contained food that may have supplemented the diet of the Native Americans and could have been used as some sort of receptacles. The shaft straightener and pottery outside the cave follow an interpretation of the site as an area for food procurement.

Wooden shafts have not been found in buried, archaeological deposits. The arrows in the Great Basin archaeological record are composite arrows, consisting of a foreshaft and a main shaft which were tipped by a stone point. However, during Jennings' excavations at Danger Cave, he found pointed sticks that are similar, at least in regard to the tip end, to the wooden shafts discussed here (Jennings 1957:186-189). In all likelihood, they do not represent fragments of long wooden shafts, but

wood tips for composite arrows. Due to the absence of wooden shafts in the archaeological record and their presence in the ethnographic record, Tuohy placed them in the protohistoric period (near the time of contact between the Native Americans and outsiders; 1965:51). A recent age for the shafts does seem logical given their surface context and the lack of this type of artifact in the older, archaeological record.

Only one of the three sites has easily dated artifacts, i.e., the two metal cans at 26NY8022. One was manufactured between 1890 and 1930 and the other between 1910 and 1930. A later date for occupation is possible, but in the early 1940's, this land was withdrawn for the Nellis Bombing and Gunnery Range. Therefore, the most likely date for use of the cave spans from 1910 to 1930, indicating the manufacture and use of the shafts extended well into this historic period.

DESCRIPTION OF THE ARTIFACTS

The nineteen wooden shafts vary in length from 69 to 107.5 cm (Table 1) and the diameters range from 8 mm to 1.4 cm with a maximum variability of 5 mm on a single shaft. All but one of the shafts have tapered, blunt tips (Figure 3). On the one exception, Alamo 124G-2, the shaft has been shaved toward the tip, beginning approximately 20 cm from the tip, producing a thinner, more pointed end. Fifteen shafts are warped and some are best described as crooked. The most extreme of these is 26NY90-20; at 20 cm

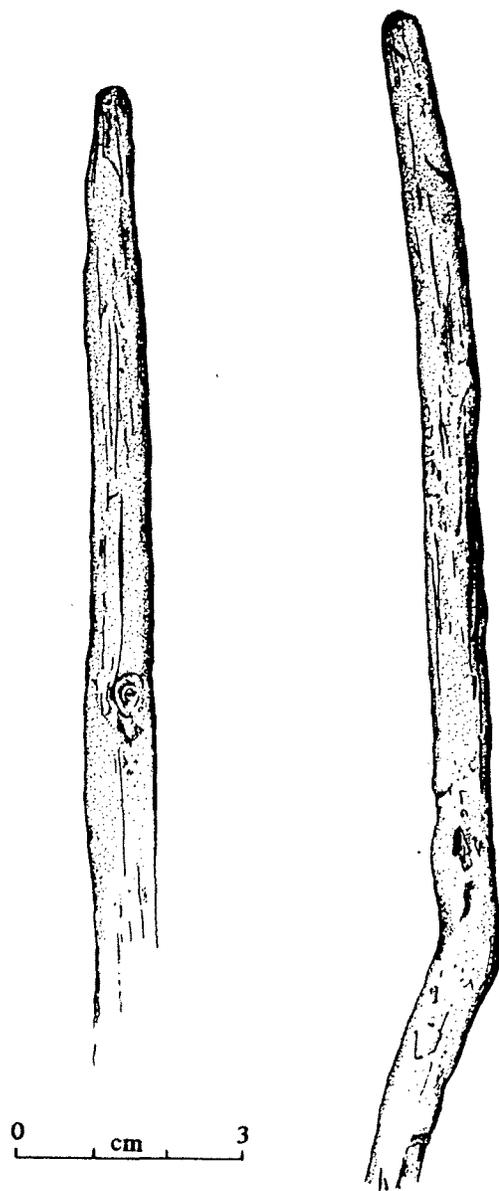


Figure 3. Two examples of wooden shaft tips (Drawing by Maureen King).

above the tip, the shaft turns almost 30 degrees.

The wood used for the shafts at 26NY90, the Alamo site and 26NY8022 appears to be varieties of *Ribes*. The stems of *Ribes inebrians* (currant) were used by the Shoshone to make arrow stems. In contrast *Sarcobatus vermiculites* (greasewood) was used by the Shoshone for arrow foreshafts, digging sticks or other items requiring a hard wood (Steward 1938:312). *Ribes cereum* (squaw currant) is known to exist near 26NY90 and *Ribes velutinuum* (gooseberry) grows in the immediate vicinity of 26NY8022 (Beatley 1976: 255-256). The wood used to make the Alamo shafts and one of the 26CK3936 shafts also appears to be varieties of *Ribes*. Seldomridge suggested that the other two shafts at 26CK3936 are *Acacia* (catclaw), which is available in the area and is a dense wood (Seldomridge 1988:4).

While the overall appearance of these wooden shafts is similar, the most distinctive feature of each is the treatment of the nock end. The shafts can be divided into three types on the basis of the nock end alone. The nock end was chosen as the attribute upon which categorization should take place for two reasons: it is the most variable attribute of the shafts and the type of nock end may be related to the activity in which these artifacts were utilized. The three types of nock ends are: Type 1 - shafts with a carved U-shaped notch; Type 2 - shafts with a natural V- or Y-shaped notch; and Type 3 - shafts with no notch

at the nock end (Table 1 and Figure 4).

Type 1

The nine Type 1 shafts are from 26NY90 and 26NY8022, the two locations on the Nevada Test Site. The nine specimens have notches carved into the butt end of the wood. The notches average 5 mm deep with a width of 5 mm across the top of the notch. The Type 1 shafts have only a minimal variation in length of 5.2 cm; the range is 84 cm to 89.2 cm. The wood appears fire-hardened. The five shafts from 26NY90 are warped and the four from 26NY8022 are straight. The nock ends of two of the shafts from 26NY8022 (Reference Nos. 26NY8022-3 and 26NY8022-4) showed beveling on the exterior base of the nock.

Four of the shafts from 26NY90 had vegetable fiber or possibly animal fur bindings near the pointed ends when found in 1964 (Tuohy 1965:52). However, these accouterments are no longer visible on two of the four shafts. On the four shafts from 26NY8022, daubs of a dark reddish pigment had been applied to an area within 10 cm of the tip.

Type 2

The nine Type 2 shafts are from 26NY90 (four), the Alamo site (two) and 26CK3936 (three). The nock end was constructed by cutting off the extra lengths of the branches, producing either a rounded or flattened end to the nocks. The shafts from 26NY90 and the Alamo site are similar in shape and manufacturing technique; the shafts from 26CK3936 are very distinct.

TABLE 1
WOODEN SHAFT ATTRIBUTES

Reference No.	Length (cm)	Notch	Type	Comments
26NY90-11	71	Natural	2	
26NY90-12	81	Natural	2-Y	Fiber near tip
26NY90-13	88	Carved	1	
26NY90-14	89	Natural	2-V	
26NY90-15*	74-89	Natural	2	Yellow pigment
26NY90-16	74	None	3	Fiber near tip
26NY90-17	86.5	Carved	1	
26NY90-18**	84	Carved	1	
26NY90-19**	84	Carved	1	
26NY90-20	69	Carved	1	
Alamo 124G-1	84	Natural	2-V	
Alamo 124G-2	76	Natural	2-V	
26CK3936-1	104	Natural	2-Y	
26CK3936-2	107.5	Natural	2-Y	Notch on shaft
26CK3936-3	102.3	Natural	2-Y	
26NY8022-1	88	Carved	1	Red pigment
26NY8022-2	85.5	Carved	1	Red pigment
26NY8022-3	87	Carved	1	Red pigment
26NY8022-4	89.2	Carved	1	Red pigment

*Unavailable for study; no exact measurements available; range of length based on information in Tuohy (1965).

**Approximate length estimated while on exhibit.

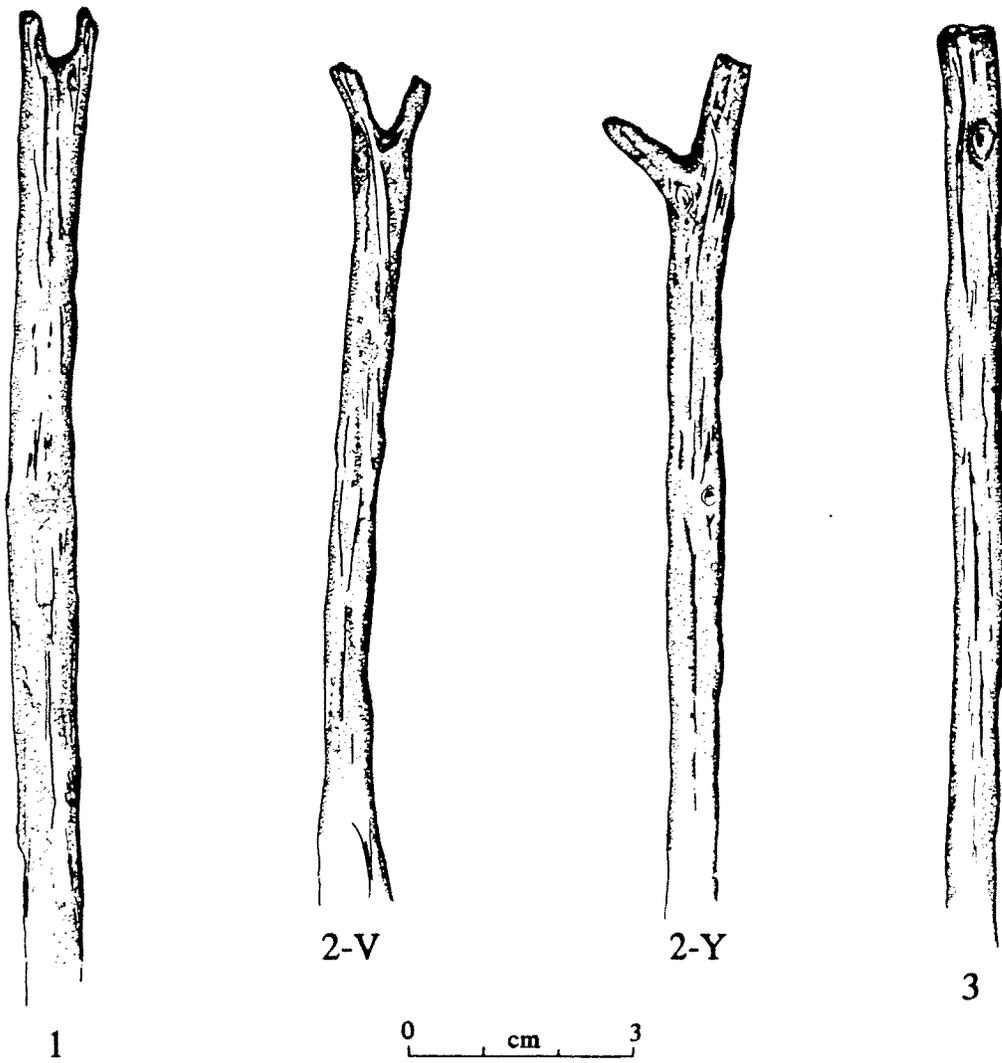


Figure 4. Types of nock ends on wooden shafts (Drawing by Maureen King).

The Type 2 shafts have nock ends that either are V-shaped with a natural fork at the end of the shaft, or Y-shaped with the end of the shaft forming one side of the fork. The shafts from 26CK3936 are "made by the angle between the main shaft and a small branch growing out at a 45-degree angle approximately 1 cm from the end of the shaft" (Seldomridge 1988:4). The notch depth on the specimens from 26NY90 and the Alamo site average 1 cm with the width at the top of the V-notch averaging 1.4 cm. The Y-shaped nocks average 2 cm across with an average depth of 2 cm. The Type 2 shafts were tapered to a dull tip and appear to have been fire-hardened. With the exception of two shafts from 26CK3936, all are slightly warped. In terms of length, the shafts from 26NY90 and the Alamo site range from 69 to 89 cm. The 26CK3936 shafts are much longer, measuring 102.3 to 107.5 cm.

V-shaped forks are found on three of the shafts, one from 26NY90 (26NY90-14) and the two shafts from the Alamo site (124G-1 and 2). In some cases, the interior of the nock was reshaped. Four of the Type 2 shafts are Y-shaped; one from 26NY90 (26NY90-12) and all three shafts from 26CK3936.

Two shafts from 26NY90 (26NY90-11 and -15) are Type 2 according to Tuohy's data. However, the nock end of 26NY90-11 has been damaged and its original shape could not be reconstructed. The other shaft (26NY90-15) could not be studied.

Interesting features occur on two of these shafts. On shaft 26NY90-12 there was a residue from vegetable fiber or animal fur that begins 4 cm from the tip and extends for 7 cm up the shaft. On 26NY90-15, there was a daub of yellow pigment on the center of the shaft (Tuohy 1965:52).

There are some notable differences in the shafts from 26CK3936. Two of the specimens, 26CK3936-1 and 2, are quite heavy, 88.5 g and 77.7 g respectively. The third specimen, 26CK3936-3, weighs 48.83 g. Although the other shafts in this study have not been weighed, they are much lighter than 26CK3936-1 and 2, and probably weigh near the same as 26CK3936-3. This difference in weight is not due to a differentiation in length. Specimen 26CK3936-3 is only 1.7 and 5.2 cm shorter than the other two shafts from this site. The heavy weight of the two shafts is due to a use of a heavier wood to make the artifacts.

In the report on 26CK3936, an additional notch was noted on two of the shafts; 26CK3936-2 at 16.8 cm below the nock end and 26CK3936-3 at 14.5 cm below the nock end (Seldomridge 1988:4). These notches are indentations on the side of the main shaft. Microscopic examination of the indentation on 26CK3936-2 showed that it was natural and as noted by Seldomridge, "is barely present" (1988:4). This was not the case with the other specimen. The indentation on 26CK3936-3 was cut into the shaft.

Type 3

There is only one Type 3 shaft and it is from 26NY90. Instead of a notch at the nock end, the end has been cut and beveled at the nub where the branch originally joined the main part of the shrub. Otherwise, this shaft is similar to the other shafts. It is slightly warped and the pointed end is a tapered, blunt tip, probably fire-hardened. The shaft is 71 cm long with a diameter between 7 and 8 mm. Near the tip of the shaft, extending from 8 to 12 cm from the end, is the residue from some type of vegetable fiber or fur bindings.

In summary, in terms of shaft design, the various attributes are: the nock end, the wooden pointed tip, the single shaft, the lack of fletching, fire hardening, the wrapping of the tip end with some type of binding and the application of pigment. The nock ends were divided into three types. Type 1, the U-shape carved into the butt end of the shaft, is a typical notch for the nock end of most arrows. Type 2, the naturally forked end, has much variation in style and does not seem compatible with use on a bow. Type 3, with no notch on the nock end, could not have been used in a bow. However, it may have originally had a notch which broke off and was modified to its present shape.

ETHNOGRAPHIC DATA AND FUNCTIONAL INTERPRETATIONS

The differences in the structure of the nineteen shafts support the idea that the wooden shafts may have served

different and overlapping functions in the Native American societies. The region where these items were found is known to have been occupied historically by the Western Shoshone and the Southern Paiute. The following discussion is based on studies of Native American groups by ethnographers in the 20th century.

Wooden pointed arrows are represented in the ethnographic record and were used by Great Basin and adjacent groups, such as the Surprise Valley Paiute (Kelly 1934:134-144), Northern Paiute (Fowler 1989:66-67; Stewart 1941:384), the Northern Utes (Smith 1984:111), the Ute-Southern Paiute (Stewart 1942:267), the Owens Valley Paiute (Stewart 1933:260-262) and the Washo Indians (Barrett 1917:39).

Most of these groups used composite arrows, made with a main shaft and foreshaft. Some of the composite arrows were tipped wooden points. Single shaft fletched wooden pointed arrows were used by all of these groups. Some of the ethnographic data is unclear as to whether the groups used unfletched single shaft wood pointed arrows or only fletched arrows. To add to the confusion, some accounts describe all arrows as fletched and then, after describing the fletching on composite arrows, do not include a description of the fletching on a single shaft arrow. However, it is important to remember that the people who made and used the arrows distinguished several types. For example, among the Northern Paiute:

There are four kinds of arrows: 1) a blunt point used for rabbits; 2) a sharpened wooden point with foreshaft of cane and point of greasewood used for prairie dogs; 3) poisoned arrow with a flint head used for big game; 4) and a bird arrow (Fowler 1989:68).

The size of single shaft wooden pointed arrows varies. Northern Paiute informants generally agreed that they were 2.5 feet (76.2 cm) in length (Stewart 1941:384). The Ute-Southern Paiutes estimated the arrows at 2 feet (60.9 cm) in length (Stewart 1941:384). Comments on the functional effect of arrow length are rare. In California, a Chumash Indian told anthropologist Harrington that arrows 3 feet (91.4 cm) long were good for game only up to 20 feet (6.09 m) away, explaining that shorter arrows were more accurate for distance (Hudson and Blackburn 1982:98). In Kelly's (1934) monograph on the Southern Paiute, she includes an illustration of a blunt arrow for small game that is identical to the unfletched wooden shafts. This arrow was made by a Kaibab Indian and the drawing is based on a sketch in the field notes of Sapir, another ethnographer. Unfortunately, there was no scale with his notes so the size is unknown.

Single shaft arrows are almost always mentioned in association with hunting small game:

Arrows for birds and small game such as squirrels, rabbits, and groundhogs, were one-piece,

sharpened at the end. They were dried in the sun or hardened in the fire, meanwhile being turned to prevent warping (Kelly 1934:144).

The one exception was recorded for the Northern Paiute:

Hunting arrows are feathered. Those used in war are not feathered for the people have no time to put feathers on them. Also, if the arrow has no feathers it is harder for the enemy to see it coming (Fowler 1989:68).

The effectiveness of a wood tipped arrow should not be underestimated. Strong (1969: 109, 214) describes and presents a photograph of a human hip bone with a tapered wood tipped arrow extending through it. This bone was found in a cave in Nevada.

Another type of arrow that was usually made from a single shaft is the bird arrow. The bird arrow did not have a stone point; the tip was sharpened. Unique to some of the bird arrows was the practice of attaching one to four short pieces of wood crossways near the end of the arrow (Figure 5) or a practice of wrapping the arrows (Figure 5). The wrapped shaft near the tip, illustrated by Stewart (1933:261) mirrors the location of the binding remnants that still exist on two of the shafts from 26NY90 (another two had binding remnants when discovered).

The Northern Paiute, Southern Paiute and Western Shoshone used bird

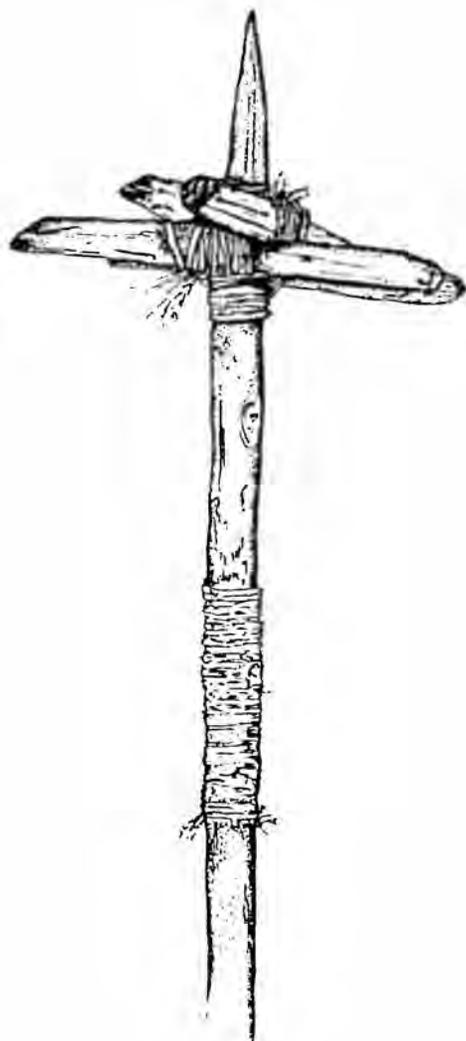


Figure 5. Bird arrow (Drawing by Maureen King, based on a drawing by S.Lohse, Fowler 1989:67).

bird arrows (Fowler 1989:69; Irwin 1980:26; Smith 1974:111; Stewart 1941:384, 1942:267):

About 1.5 inches from the end of the bird arrow, a string was tied around the shaft a couple of times and two cross pieces about 2-3 inches long were put on each side. Those are tied on with two more crosspieces running in the opposite direction. The end of the arrow is blunt. It was used for small birds for close shooting (Fowler 1989:69).

The Owens Valley Paiute used sinew wrapping with a bulge in the wrapping to make them skip on the water, when hunting ducks (Stewart 1933:260). Among the Northern Utes, these bird arrows were used occasionally for rabbits (Smith 1974:111). Information for the Northern Paiute is more specific:

There was a special arrow for mudhens and ducks and for the rabbit drive. Instead of being sharp the (greasewood) point was blunt (Fowler 1989:68).

The application of pigment to arrows was practiced in many parts of the Great Basin and adjacent regions. Designs were painted on the shaft or between the feathers. The Northern Utes considered the decoration of arrows to be an individual choice. Colors used were red, yellow, green or blue, with red the favored color (Smith 1974:110).

Among the Northern Paiute (with the exception of Surprise Valley), Ute-

Southern Paiute and Owens Valley Paiute, arrow designs were commonplace (Stewart 1933:260; Stewart 1941:385; 1942:267). The Northern Paiute of Western Nevada painted their arrows with red and yellow marks for owner identification (Fowler 1989:68). Only occasionally were the decorations interpreted as empowering the arrow. In addition to using pigment for colors, some groups smeared blood on the arrows (Stewart 1942:340).

The idea that the shafts, particularly the ones from 26CK3936, could have been used as fishing arrows was based on the notching noted midway down the shaft on two of the arrows. One of the notches is a natural indentation while the other is carved. Because the Colorado River is only six miles away, Robert Leavitt suggested that twine may have been tied around the notches for retrieval of the arrow (Seldomridge 1988:4.)

Descriptions of fishing arrows vary, but are usually barbed at one end. The Ute-Southern Paiute had fish arrows that were barbed and most commonly unfletched (Stewart 1942:249). Also, the Utes shot fish with arrows with sharpened ends which were not tethered, a method used in shallow water (Smith 1974:61). Among the Northern Paiute who regularly fished, the fish arrow was only discussed by one informant as a difficult way to fish, something boys do (Fowler 1989:39). However, Stewart had five Northern Paiute informants who knew of a single prong fish arrow (1941:371). The Owens Valley Paiute shot fish with featherless

arrows having double points of hard, sharp wood (Stewart 1933:251). The Surprise Valley Paiute had one fishing method that consisted of a fish spear which had a single point of greasewood and was used for winter fishing. They did not usually shoot fish, but it was sometimes done in small streams. "If there are many suckers, make greasewood arrows without feathers and shoot the fish" (Kelly 1934:96).

Another method used by the Paiute to catch fish is with a bag net or a basket held or secured in the water, both through ice holes and in running streams (Fowler 1989:34; Kelly 1934:96; Stewart 1933:251). Sticks were used to hold the nets or baskets.

Rabbit hunts were known to have occurred throughout the Great Basin. The idea that the wooden shafts could have been used to support nets for rabbit hunts is probably best shown in Underhill's depiction of a rabbit drive (Underhill 1941:24). The nets were held aloft across the landscape by forked sticks, as reported in the ethnographic accounts. The Southern Paiutes would use three to five nets, strung in a straight line or in an arc, each supported by about 10 three-foot stakes (Kelly 1964:50). The Northern Paiutes suspended their nets on greasewood sticks (Fowler 1989:28). Egan (1917:235) describes a Gosiute drive where the Indians used nets just more than two feet high which were fastened across pointed sticks six to eight feet apart. These accounts and others (e.g., Lowie 1924:196-198, Stewart

1938:38-39) mention that rabbits were often killed with bow and arrow.

Nets were also used to catch birds. Notched and un-notched sticks supported the nets. An excellent description of this method follows:

In Spring when the birds came to water, a net, ten or fifteen feet across, was spread horizontally about a foot and a half above the ground. One side was pegged down and the other was supported at the corners by posts. A central post, slit at the top to receive the cord, prevented sagging. The hunter concealed himself in a pit near-by and when a large number of sage hens were beneath the net, he pulled the string, releasing the supporting posts. The net fell, securing the birds, their heads protruding upward through the meshes (Kelly 1934:88).

This method was used for different birds, including quail and sagehens. (Fowler 1989:58; Smith 1976:60). Nets were also strung over water for ducks (Fowler 1989:56).

Pointed sticks were also used by some groups to get small mammals out of their holes by twisting the stick into their fur or in the case of small rodents such as prairie dogs, were used to jab the animal in the chest (Kelly 1974:52). The Northern Paiute would kill a groundhog by filling its hole with smoke and then take a long stick and feel around in the

hole until finding the animal. The stick would be twisted until it caught on the fur of the groundhog and then it was pulled out (Fowler 1989:25). Other accounts depict pulling rabbits out of holes with sticks (e.g., Smith 1976:56).

Wooden shafts could have been used to pluck cactus fruit. In California, the Chumash would use a stick with a forked end to lift the fruit out of the cactus (Hudson 1982: 231). Since cactus fruit was part of the Southern Paiute and Shoshone diet, this is a logical use of a forked stick although there are no ethnographic accounts to support this interpretation.

Another possibility for the use of notched sticks was documented for the Shoshone by Lowie. An informant told Lowie that his father had been an antelope charmer. During the ceremony preceding the hunt, the antelope charmer who was in charge of the ceremony and his assistants "notched a stick which was placed on a blanket and rasped as an accompaniment to the singing" (Lowie 1924:304). Stewart noted that among the Northern Paiute there was also a ceremony to charm antelope. But the informants denied that they used a notched stick or pointed sticks in the ceremony (Stewart 1942:335).

CONCLUSIONS

The designation of all unfletched, pointed wooden shafts as wooden arrows

is incorrect because unfletched wooden pointed shafts were used for many purposes by the Native Americans of the Great Basin and adjacent regions. Most wooden shafts were used in the procurement of small mammals, birds and fish, either as an arrow, a spear or as a device for trapping these animals. In fact, the exhibits that house six of the wooden shafts reflect this diversity. In the exhibit at the Nevada State Museum in Carson City, the shafts are holding up a bird net. The display in the Nevada State Museum in Las Vegas describes the wooden shafts as Paiute arrows. The Lost City Museum exhibit shows a Native American kneeling with the wooden shafts in his hand, amid examples of food items and subsistence tools. The documented use of notched sticks by shamans is rare and the archaeological contexts of the nineteen shafts found in Southern Nevada do not indicate a ritualistic use, but the venue of subsistence activities.

The Type 1 shafts, by all accounts, fit the description of small game arrows used for shooting short distances. Their size (although longer than most recorded ethnographically), style of manufacture, and the red pigment on four of the shafts support this functional classification. However, the crooked shape of most of these shafts would have made them unsuitable as arrows, particularly 26NY90-20.

It is not known if the crooked shape of these shafts is representative of their original form, or if they were once straighter and were warped through time. The four shafts from 26NY8022 are

straight and are decorated, indicative of real arrows.

The Type 2 shafts are even more problematic. Type 2-V shafts have small natural forks (e.g., Alamo 124G-1 and 2) and they may have been used as arrows, but all are warped. Type 2-Y shafts are not arrows. The Y-shaped nock could not have worked in a bow and would have been extremely unstable in flight. The 2-Y shaft from 26NY90-12 has binding near the tip, an attribute of the bird arrow with the crossways wood or the wrapped bird arrow used by ethnographic groups for hunting on water. Given this ethnographic context for the shafts with binding, the binding must have served another unknown function. Also, shaft 26NY90-15, a Type 2 shaft, had a daub of yellow pigment on it. However, it must be remembered that this shaft was not studied and it is possible that it could have been used as an arrow. The presence of pigment on this shaft suggests that Native Americans may have decorated some types of forked sticks as well as arrows.

The 2-Y shafts from the site near Laughlin are the most unusual. Foremost, they are the longest shafts. Shafts 26CK3936-1 and 2 are quite heavy; shaft 26CK3936-3 is much lighter. The heavy shafts could have served a variety of purposes, including use as fishing spears as their weight would have been effective traveling in water. However, it is also likely that all three Laughlin Shafts could have been used to

secure nets or baskets in water to catch fish.

The Type 3 shaft with no nock end was not an arrow. This shaft fits best the descriptions of pointed sticks used as pegs on nets, but could have been used to pull animals from their burrows. This shaft also had binding near the tip. The function of this binding is not known.

In summary, all evidence indicates the nineteen wooden shafts from Southern Nevada were manufactured and used in late prehistoric and early historic times. All had been cached in caves or rockshelters and are examples of belongings which were left and remained unclaimed by their owners. All three types of wooden shafts probably were used for several of the multiple functions identified for wooden shafts: as arrows, spears, rodent sticks and as parts of trapping devices for small mammals, fish and birds. Therefore, designation of these artifacts as small game arrows should be done only after careful analysis and consideration of all possible alternative uses in appropriate cases. The duplicity of functions for these shafts reflects the nature of the indigenous societies, ones which primarily utilized small, portable tool kits for their daily activities.

Acknowledgments

I would like to thank Amy Dansie, Anne DuBarton, Catherine Fowler, Pat Hicks, Scott Klette, David Milman,

Pat Olsen, Kathryne Olson, Sue Anne Monteleone, Barbara Phillips, Donald Tuohy, Laurie Walsh and Diane Winslow.

Special thanks to Maureen King for preparing the line drawings.

REFERENCES

Barrett, Samuel A.

- 1917 The Washo Indians. *Bulletin of the Public Museum of the City of Milwaukee*, Vol. 2, No. 4, pp. 1-52. Milwaukee.

Beatley, Janice C.

- 1976 *Vascular Plants of the Nevada Test Site and Central-Southern Nevada: Ecologic and Geographic Distributions*. Office of Technical Information. Springfield, Virginia.

Beck, Colleen M.

- 1994 The NTS Cave Site. Paper presented at the 59th Annual Meeting of the Society for American Archaeology, Anaheim.

Egan, Major Howard

- 1917 *Pioneering the West, 1846-1878*. Salt Lake City.

Fowler, Catherine S. (compiler and editor)

- 1989 *Willard Z. Park's Ethnographic Notes on the Northern Paiute of Western Nevada, 1933-1944*, Vol. 1, University of Utah Anthropological Papers, No. 114, Salt Lake City.

Hudson, Travis and Thomas C. Blackburn

- 1982 *The Material Culture of the Chumash Interaction Sphere, Vol. 1: Food Procurement and Transportation*. Ballena Press Anthropological Papers No. 25, Los Altos.

