New Mexico Atlatl Research Continues Sponsored by NMAC

Ron Fields, Research Associate MIAC/LAB

September 4, 2005

Over seventy-five years ago three atlatls were discovered by H.P. Mera in the Guadalupe Mountains of the Lincoln National Forest, Eddy County, New Mexico. These specimens are identified as Little Pine Cave #1 Atlatl (Cat. # 13427/11), Little Pine Cave #2 Atlatl (13440/11), and Rock Fall Cave Atlatl (Cat. # 13533/11). Unfortunately these specimens were only briefly mentioned in Mera's (1938) ***Reconnaissance and Exploration in Southeastern New Mexico*** and no research had been performed on these atlatls since that time. With the help of the Museum of New Mexico's Conservation Department and the Laboratory of Anthropology, this research is focusing on describing the morphological characteristics of the Mera atlatls and determining their residue and pigments. In 2002 and 2003 NMAC awarded grants to radiocarbon date these specimens. With NMAC's support, research is addressing the following questions:

- How old are these atlatls?
- Were the Little Pine Cave and Rock Fall Cave sites occupied contemporaneously?
- Do the atlatls from these sites exhibit temporally or regionally sensitive characteristics?
- Were atlatls still used after the adoption of the bow and arrow and if so, in what context?

Figure 1
Rock Fall Cave Atlatl Courtesy of the Museum of Indian Arts and Culture

Figure 2
Sand Dune Cave Atlatl Replica. Note the channel groove and the finger-grip constrictions.

After Carrillo in Cordell (1984:15, Fig. 1.5), the American Southwest is defined as an area including Arizona, S. California, S. Colorado, New Mexico, E. Texas, S. Utah, and the extreme southern tip of Nevada in the United States and Baja California to Sonora and Chihuahua in Mexico. To provide a somewhat broader context, an arbitrary buffer of 100 miles was also added to this boundary and termed the area *Adjacent to the American Southwest*. In the United States this adds Oklahoma and in Mexico, the states of Coahuila, Durango and the northern tip of Sinaloa (See Fig. 3).

At present, 61 prehistoric atlatl specimens are documented or are known to exist in the American Southwest. Of these, 28 atlatls are intact shafts, 31 are fragments and two are undetermined. Adjacent to the American Southwest at least nine atlatl specimens have been discovered. Three have complete shafts and six are but mere fragments. Undoubtedly, a systematic investigation of museum and private collections would produce additional specimens.

Of these 70 atlatls only six have been radiocarbon dated (Table 1). In the Great Basin, at least eleven atlatls have radiometric dates (Moreno 2000:351; Hester et al. 1974). Despite an ideal environment for their preservation, little attempt has been made in the Southwest to date atlatls or to isolate patterns in their spatial/temporal distribution. With the help of a NMAC grant, the purpose of this paper is to begin to address this data gap.

The first atlatl to yield a chronometric date for the American Southwest was discovered during excavations conducted by Jesse Jennings at Cowboy Cave, Utah in 1975. Radiometric dates were obtained from a charcoal sample recovered from the same unit and stratum as the atlatl (Jennings 1980: 24, 75-76, 78, (Tables 3 and 16)). A second atlatl dated using associated charcoal was the Atlatl Cave specimen. The Atlatl Cave Atlatl was recovered during excavations in 1975 and 1976 from a cave which bears its name in Chaco Canyon, New Mexico. The radiocarbon sample was recovered from the same unit and level as the atlatl (Elliott 1986: 87, 90 and 96. M.A. Thesis).

The first atlatl to be directly radiocarbon dated for the American Southwest was from McEuen Cave, located in eastern Arizona. The McEuen Cave Atlatl (Cat. No. 20782) was discovered by Byron Cummings of the Arizona State Museum in 1934 and in 1995 the University of Arizona provided the opportunity to obtain an AMS date from this

atlatl. A human hair was extracted from the cordage wrappings that encircle the atlatl shaft. (Moreno 2000: 346). Another AMS dated atlatl was recovered from Ten January Cave. Discovered in 1976, in the Sierra Pinacate, Sonora, Mexico, this atlatl exhibits nearly all of the morphological attributes found on Southwestern atlatls. A sliver of wood was extracted from the handle of the atlatl and an AMS date was obtained (Ferg & Peachey 1998: 185).

Atlatls dated as part of this present research had to fulfill several criteria. First, the atlatls had to be readily accessible for analysis. Second, the atlatls had to be recovered from archaeological excavations which have provenience information that would permit relocating the artifact in its *in situ* context. The atlatls recovered by H.P. Mera the Little Pine Cave #1 (LA1771) and the Rock Fall Cave (LA101496) fulfilled these criteria.

Were the Little Pine Cave and Rock Fall Cave sites occupied contemporaneously? From this radiometric analysis, it is now known that the wood used for the Little Pine Cave #1 specimen dates from 790 to 410 B.C.; whereas wood used for the Rock Fall Cave specimen dates from 1140 to 920 B.C. The Rock Fall Cave atlatl wood predates the Little Pine Cave #1 wood anywhere from 130 to 620 years. Although they provide important data points, the resulting AMS dates contribute little to our understanding of the complex occupational histories that characterize these shelter sites.

Are the Little Pine Cave #1 and Rock Fall Cave atlatls temporally or regionally distinct atlatl types? Evidence suggests that this may be the case. Ferg and Peachey (1998) described Southwestern atlatls as “projecting spur atlatls” and “flush spur atlatls”. They believe that the flush atlatl spur is indicative of the Anasazi and Mogollon areas (Ferg and Peachey 1998:186). This conclusion may be too simplistic and subjective. A more productive approach may be to differentiate atlatl types based on channel groove form. At least three distinct channel groove types are clearly evident for the prehistoric Southwest, these are the “parallel-sided”, “trapezoidal”, and “heart-shaped” (Fig. 4a, 4b, and 4c.). The Little Pine Cave #1 atlatl and Rock Fall Cave atlatl are classifiable as “parallel-sided” channel groove.

Re-dating the Mera atlatls is the first of many steps in understanding the relevance of these atlatl types as cultural/temporal markers. Comparisons between channel groove form and radiocarbon dates (Figure 3) suggest that “heart-shaped” and “parallel-sided”

channel groove specimens are contemporaneous. Unfortunately no radiometric data is available for "Trapezoidal" channel groove types. Preliminary examination of channel groove types and their spatial distribution leads to the following conclusions:

- "Heart-shaped" channel grooved atlatls (Figure 4a) are wide spread throughout the Southwest (and beyond) but generally exhibit a northern distribution (Figure 5).
- "Parallel-sided" channel grooved atlatls (Figure 4c) are wide spread throughout the Southwest (and beyond) but generally exhibit a southern distribution (Figure 6).
- "Trapezoidal" channel grooved atlatls (Figure 4b) are tightly clustered in the Four Corners area and may be a regional/cultural indicator (Figure 7).

A more thorough understanding of the spatial/temporal significance of these types depends upon additional radiocarbon dating of extant specimens.

Were atlatls still used after the adoption of the bow and arrow and if so, in what context? At present, no late radiocarbon dates for atlatls are known for the Southwest. Examination of this question necessarily relies upon less direct evidence including projectile point technologies, archival and historic references for "late" atlatl and spear depictions.

Projectile points technologies recovered from Canyon del Muerto, Obelisk Cave and Tularosa Cave suggest that bow technology replaced the earlier atlatl technology sometime around A.D. 700; however, other sites like the Grasshopper Spring and Chodistaas suggest that this replacement occurred much later, circa A.D. 1200 (Lorentzen 1991, Justice 2002:44-45). Obsidian hydration studies of debitage and projectiles from sites near Abiquiu Reservoir also support a replacement as late as A.D. 1200 (Bertram et. al. 1989: 346-347). Problems, however, exist with this chronological technique and these results must be viewed with caution. Distinguishing dart points from arrow points is a difficult task. Often, lithic analysts differentiate the two based on variables such as weight, hafting element width, and overall size (Thomas 1978). Rarely is ethnographic data consulted (Thomas 1978). Not surprisingly most archaeologists conclude that arrow points are much smaller than dart points. Few, if any, lithic analysts would support the assumption that dart points became smaller through time and were used interchangeably

with arrows yet this may actually be what happened. Instead, archaeologists look for a continuation of large/robust points in the form of earlier Archaic types (Turnbow 1997:228-229) to indicate the persistence of the atlatl in later time periods. Yet this holdover of tradition may not have always occurred. Martin and Gardner have found evidence of arrow-sized, lightweight darts used in conjunction with lightweight atlatls from Shumla Caves and the Coontail Spin Rockshelter site in Texas:

> **"No complete arrows were found [at Shumla Caves]. Portions of reed shafts, fore and nock ends were frequently met with. These vary greatly in diameter. They appear to have been made for use with an atlatl especially designed for throwing a light arrow rather than for use with a bow."(Martin 1933:26)**
>
> **"Two proximal (handle) ends of atlatls were taken from the Shumla caves. One is of the broad heavy type used for casting javelins or spears, as differenced from the type which speeded light arrows.... Another specimen was taken from old Shumla Cave. This represents the light type which cast arrows rather than spears."(Martin 1933:30).**
>
> **"This specimen [from Coontail Spin Rockshelter] consists of the distal end of an atlatl apparently designed solely for the casting of light arrows, and probably represents a development of the better known weapon of this class which was used for throwing light spears or javelins." (Gardner & Martin 1933:15).**

If Martin and Gardner are correct this would clarify why nocked "arrows", atlatls, atlatl dart main-shafts, and atlatl dart fore-shafts were often found in the same contexts by Coffin 1922:28, 61; Mera 1938:58; and Jackson 1937: 186-190. Such lightweight darts and dart points might be misclassified as arrow points. Michael Shott supports this conclusion:

> **"Small points could be used on darts, large ones on arrows. The possibility is exemplified in an earlier study (Shott 1993:433) and in the persistent misclassification of some darts and arrows…. It also is illustrated…by a hafted dart point from Danger Cave…." (Shott 1997:95) "Indeed, Jennings (1957:182-183) would have classified the point as an arrow had it not been hafted to a dart foreshaft."(Shott 1997:95)**
>
> **"The main shaft, however is composed of reed rather than solid wood, much more common in arrows than darts, and the assembled piece measures roughly 400 mm in length, more in the range of arrows than darts. SA-3758 unquestionably is a dart point, but size and design imply strong continuities between dart and arrow technologies…." (Shott 1997:93).**

Why would darts become smaller and coexist alongside bow and arrow technology? What was the overall adaptive significance for atlatl technology? One advantage may have been obtained in warfare in which atlatl darts could be fired while holding a shield.

The Aztecs, Incas and Chibcha knew about the existence of the bow and arrow but preferred the atlatl when it came to war (Kroeber 1946). This preference may have been ritually based or a code of conduct but either way it had to be rooted in practical and sound warfare techniques and strategies in order to be successful. Robust atlatl darts may have been utilized for their *high impact characteristics*, as described by Larralde 1990:160. Such high impact weapons would cause massive wounds resulting in immediate hemorrhage wherever the wound was inflicted. On the opposite extreme, lightweight darts may have been used to inflict fatal but refined *surgical* wounds as described by Larralde 1990:161. Such a dart would have permitted the warrior to carry more than one dart into battle. Rarely are Aztec, Toltec/Itza, Chimu, Moche, and Nazca warriors depicted carrying just one atlatl dart. Furthermore, such a surgical weapon would have afforded its wielder the ability to pierce enemy armor. Regardless of the dart types utilized, one glance at the battle murals from Cacaxtla, Mexico (Baird 1989) makes one realize that atlatl warfare is nothing to make light of.

Are there any murals or depictions in the Southwest that illustrate the atlatl and may indicate its persistence alongside the bow and arrow? At Pottery Mound, New Mexico, a mural panel located on the north wall of Kiva 1 depicts what may be a stylized illustration of an atlatl. These depictions illustrate many of the attributes of an atlatl such as the handle, the finger-loops and what may be a ridge roll hook, see Figure 9 (Hibben 1975:70, Fig. 50). Also, in Kiva 2 at Pottery Mound shield bearers appear to be holding curved sticks which Hibben again interprets as atlatls, (see Figure 10) (Hibben 1975: 130 -131, Fig. 102). If Hibben is correct, the atlatl persisted among the Rio Grande Pueblos as late as Pueblo IV Period from A.D. 1350 -1475. Another possible atlatl is depicted on a Classic Mimbres bowl from Oldtown Ruin (see Figure 11) (Fewkes 1989: 26-29, Fig. 15). Fewkes interprets both individuals as hunters. It could, however be interpreted as a warfare scene in which the encircled animal figure is a shield depiction. Fewkes cautions in 1914 that there is no evidence of atlatls being recovered among Mimbres sites (Fewkes 1989: 28). It is interesting to note, however, that one atlatl fragment was recovered in the Gila Cliff Dwellings (Anderson et al. 1986). Only direct radiocarbon dating of this atlatl may reveal this specimen's true age. One of the clearest examples of an atlatl depiction was found outside of the Southwest at Spiro Mounds, Oklahoma (see Figure 12). Here

two conjoining shell cup fragments (USNM 448858 and 448880) are incised with two different individuals. One individual is carrying a bow while the other has his hand on an atlatl. The atlatl depiction illustrates all of the “classic” attributes of an atlatl – a hook, a handle, a weight and finger loops or finger holes. This evidence and atlatl weights from Spiro suggest that atlatls were used as late as A.D. 900 – 1000 and possibly as late as A.D. 1250 (Phillips & Brown 1978: Plate 9).

By radiocarbon dating atlatl specimens, we are making new discoveries about New Mexico’s heritage without digging one centimeter into the ground. With continued research and dating of atlatls and bows and their associated accoutrements we will finally have a better handle on the appearance, duration, variability, and ultimate demise of the atlatl for the American Southwest.

I am indebted to NMAC for supporting this research. Without the NMAC grants this research would not have been made possible. Very seldom, if ever, do agencies or museums allow researchers to extract samples from such rare artifacts. Thanks to Richard Newton of the United States Forest Service, Christopher A. Turnbow, Valerie Verzuh and John Torres of the Museum of Indian Arts and Culture/Laboratory of Anthropology. And thanks to Teresa Myers and Dale Kronkright of the Museum of New Mexico's Conservation Department. Finally thanks to John Acklen of the Public Service Company of New Mexico (PNM). Without these institutions and without these special individuals, atlatls from Little Pine Cave #1 and #2 and Rock Fall Cave would bear mute testimony of their past. We are now writing a new chapter in southwestern atlatl research as well as a new chapter in the occupation of the Guadalupe Mountains.

Sincerely,

Ronald C.D. Fields
Museum of Indian Arts and Culture - Research Associate

References Cited:

Anderson, Keith M.; Gloria J. Fenner; Don P. Morris; G. A. Teague and C. McKusick
1986 *The Archaeology of Gila Cliff Dwellings***.** Western Archaeological and Conservation Center Tucson, Arizona. Publications in Anthropology 36.

Baird, Ellen T.
1989 Stars and War at Cacaxtla. In *MesoAmerica After the Decline of Teotihuacan. A.D. 700-900*. Dumbarton Oaks Research Library and Collection. Washington D.C.

Bertram, J.B., J.A. Schutt, S. Kuhn, A.C. Earls, W.N. Trierweiler, C. Lintz, J.C. Acklen, C.M. Carillo, and J. Elyea
*1989 Report of Surface Collection and Testing at 18 Sites near Abiquiu Reservior, Northern New Mexico***.** Report prepared for U.S. Army Corps of Engineers, Albuquerque District. Contract No. DACW47-86-D-0002, Delivery Order DM0002. Mariah Associates, Inc., Albuquerque.

Coffin, Edwin F.
1932 *Archaeological Exploration of a Rock Shelter in Brewster County, Texas*. Indian Notes and Monographs No. 48. Museum of the American Indian Heye Foundation, New York.

Cordell, Linda S.
1984 *Prehistory of the Southwest*. Academic Press, Inc. San Diego, California.

Dibble, David S.
1967 *Bonfire Shelter: A Stratified Bison Kill Site Valverde County, Texas.* Miscellaneous Papers No. 1. Texas Memorial Museum.

Elliott, Michael Lee
1986 *Altatl Cave and the Late Archaic Period in Chaco Canyon, New Mexico.* Unpublished Masters of Arts Thesis, Department of Anthropology, University of New Mexico, Albuquerque.

Ferg, Alan and William D. Peachey
1998 An Atlatl From the Sierra Pincate**.** *Kiva* 64(2): 175-200**.**

Fewkes, J. Walter
1989 *The Mimbres Art and Archaeology***.** Avanyu Publishing, Albuquerque, NM.

Fields, Ronald C.D.
2003 Report on NMAC-Supported Atlatl Research**.** In *NMAC* News**.** No. 2.

Newsletter of the New Mexico Archaeological Council. April Edition.

Gardner, Fletcher Gardner and George C. Martin
1933 A New Type of Atlatl From a Cave Shelter on the Rio Grande Near Shumla,Valverde County, Texas**.** In *Big Bend Basket Maker Papers No. 2*. Southwest Texas Archaeological Society. Witte Memorial Museum**.**

Hester, T. R., M. P. Mildner, and L. Spencer
1974 *Great Basin Atlatl Studies*. Ramona: Ballena Press Publications in Archaeology, Ethnology, and History No. 2.

Hibben, Frank C.
1975 *Kiva Art of the Anasazi at Pottery Mound***.** KC Publications/Las Vegas, Nevada.

Jackson, A.T.
1937 Exploration of Certain Sites in Culberson County, Texas**.** In *Bulletin of the Texas Archaeological and Paleontological Society.* Vol. 9. pp. 146-192. Society at Abilene, Texas.

Jennings, Jesse D.
1957 *Danger Cave***.** Anthropological Papers No. 27. University of Utah, Salt Lake City, Utah.
1980 *Cowboy Cave***.** Anthropological Papers No. 104. University of Utah, Salt Lake City, Utah.

Justice, Noel D.
*2002 Stone Age Spear and Arrow Points of the Southwestern United States***.** Indiana University Press. Bloomington, Indiana.

Kroeber, A.L.
1946 The Chibcha. In *Handbook of South American Indians. The Andean Civilizations*. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. United States Government Office, Washington.

Larralde S. L.
1990 *Design of Hunting Weapons: Archaeological Evidence from Southwestern Wyoming.* Unpublished Ph.D. dissertation, Department of Anthropology, University of New Mexico, Albuquerque.

Lorentzen, Leon H.
1990 *Projectile Points of the Grasshopper, Arizona Region***.** Paper presented at the Southwest Anthropology Association Symposium, April 1991.

Martin, George C.
1933 *Archaeological Exploration of the Shumla Caves.* The Big Bend Basket Maker Papers Bulletin 1. Witte Memorial Museum, Southwest Texas Archaeological Society, San Antonio, Texas.

Mera, H. P.
1938 *Reconnaissance and Exploration in Southeastern New Mexico,* Memoirs of the American Anthropological Association, No. 51. Menasha.

Moreno, Teresa K.
2000 Accelerator Mass Spectrometry Dates From McEuen Cave. *Kiva.* 65(4):341-360.

Phillips, Philip and James A. Brown
1978 *Pre-Columbian Shell Engravings from the Craig Mound at Spiro, Oklahoma*. Vol. Peabody Museum Press. Peabody Museum of Archaeology and Ethnology. Harvard University, Cambridge.

Shott, Michael
1993 Spears, Darts, and Arrows: Late Woodland Hunting Techniques in the Upper Ohio Valley**.** In *American Antiquity* 58(3): 425-443.
1997 Stones and Shafts Redux: The Metric Discrimination of Chipped-Stone Dart and Arrow Points. In *American Antiquity* 62(1):86-101.

Thomas, D. H.
1978 Arrowheads and Atlatl Darts: How the Stones Got the Shaft. In *American Antiquity* 43(3):461-472.

Turnbow, Christopher A. et. al.
1997 Projectile Points as Chronological Indicators. In *OLE***.** *Vol. II: Artifacts*. Public Service Company of New Mexico and TRC Mariah Associates, Inc. Public Service Company of New Mexico, Albuquerque.

Table 1:
Atlatls associated with radiometric dates for the Southwest and adjacent areas:

Atlatl Name	Provenience	Radiocarbon Years	B.C. Date	Source
McEuen Cave+	Arizona	2355±65 B.P. (1 Sigma)	Cal. 761 to 260 B.C.	Moreno 2000:350
Atlatl Cave†	New Mexico	2700±65 B.P.	1030 to 780 B.C.	Elliott 1986:90 M.A. Thesis
Little Pine Cave #1*	New Mexico	2480±40 B.P. (2 Sigma)	Cal. 790 to 410 B.C.	Fields 2003:5-8
Rock Fall Cave*	New Mexico	2850±40 B.P.	Cal. 1140 to 920 B.C.	Herein
Bonfire Cave†	Texas	1690±80 B.P. 1400±130 B.P.	Uncalibrated Uncalibrated	Dibble 1967:57, 61 and 63
Cowboy Cave†	Utah	3635±55 B.P.	1685 B.C.	Jennings 1980: 24 (Table 3) 78 (Table 16)
Ten January Cave*	Mexico	3230±70 B.P.	Cal. 1691 to 1325 B.C.	Ferg & Peachey 1998:185

† Indirectly dated by charcoal from context. *Directly dated by atlatl shaft wood. +Directly dated by atlatl finger-loop bindings.

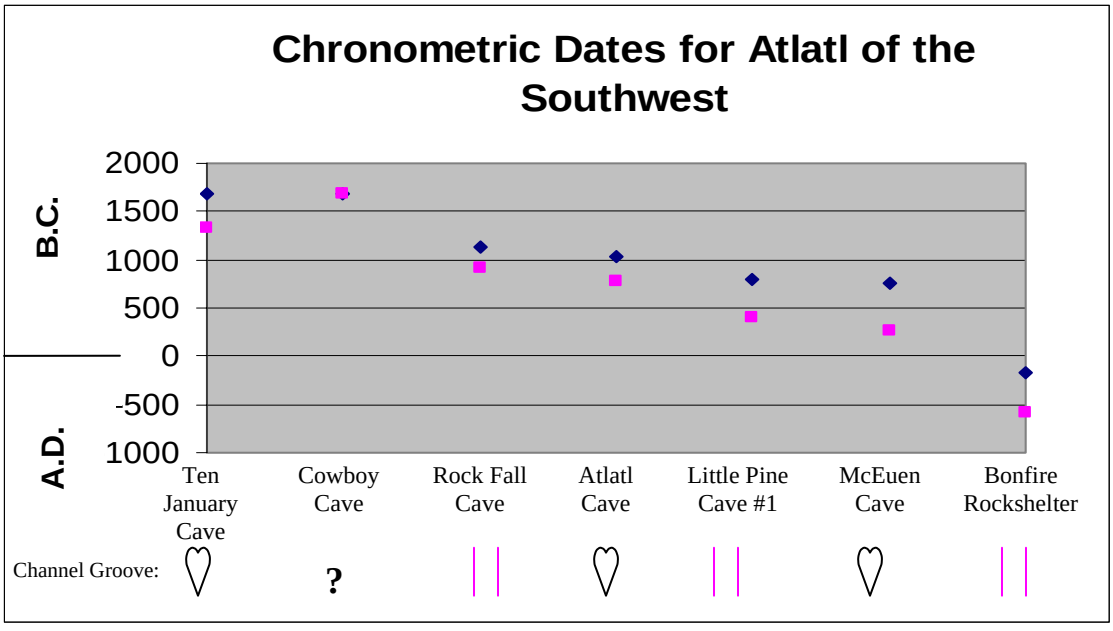
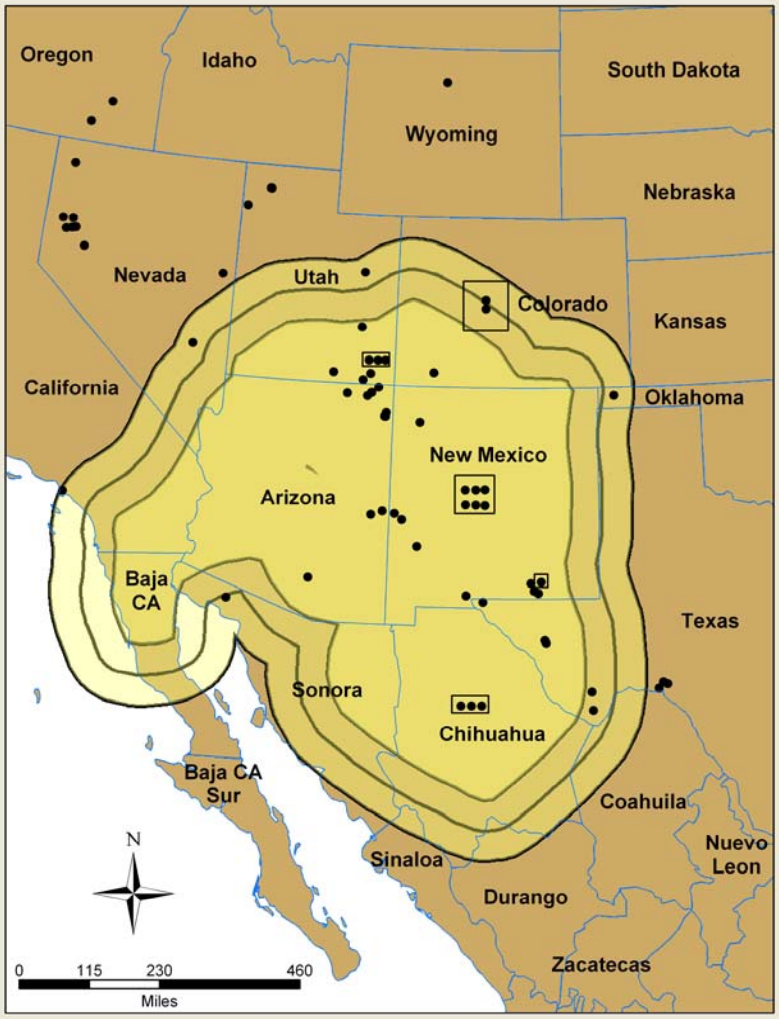


Figure 3 (Above)
Chronometric Dates for Atlatls of the Southwest compared with channel groove form.

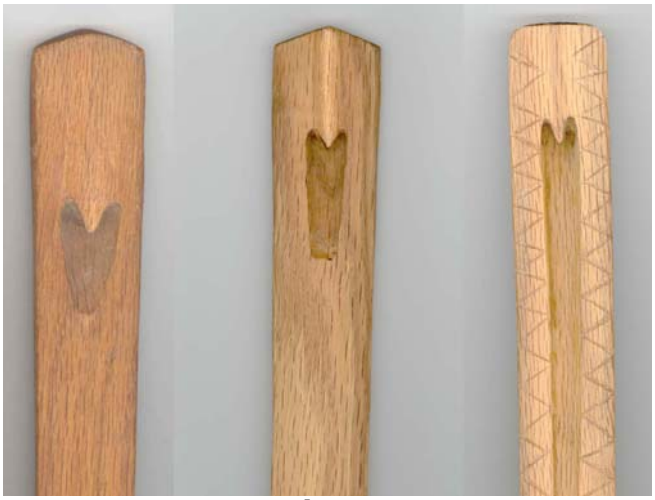


Atlatl Distribution for the Southwest & Adjacent Areas

Figure 4 (See Above)
American Southwest and Adjacent Areas. Atlatl recovery locations are shown as points. Atlatls with little provenience data are located in rectangles within the State that they are were reported to be found.

Note: Some atlatls are known to have been recovered from certain states or areas but exact provenience is unknown. These atlatls are located in boxes.

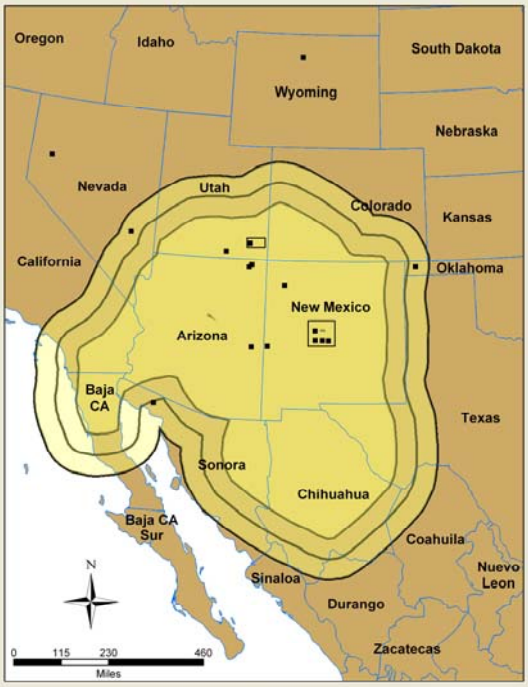
Figure 5 (See Right)
Atlatls differentiated by channel groove variation.



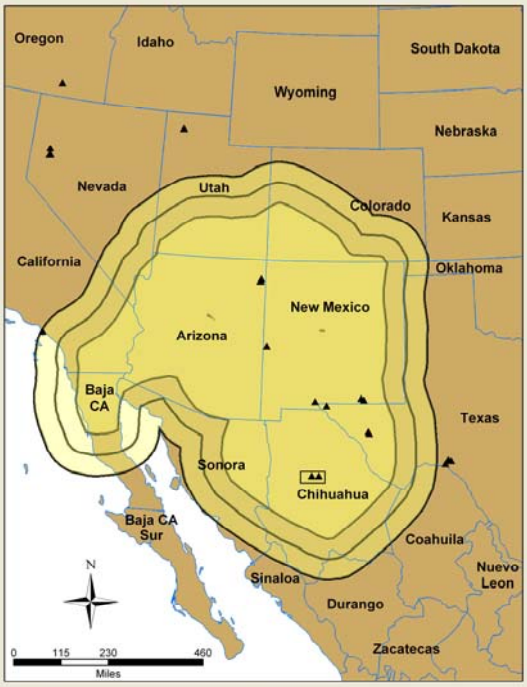
a. **“Heart-shaped”**

b. **“Trapezoidal”**

c. **“Parallel-sided”**

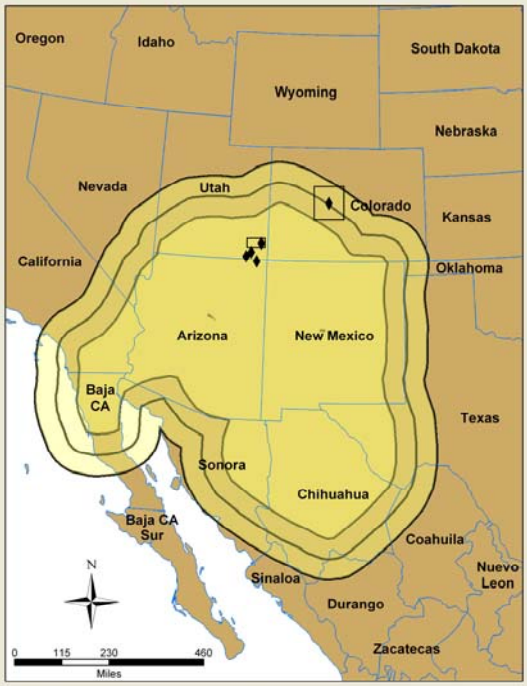


Atlatl Distribution for the Southwest & Adjacent Areas
Heart-shaped Channel Groove



Atlatl Distribution for the Southwest & Adjacent Areas
Parallel-sided Channel Groove

Figure 6 (See Above)
Atlatl Distribution for the Southwest & Adjacent Areas. Distribution of Heart Shaped Channel Groove Atlatls.



Atlatl Distribution for the Southwest & Adjacent Areas
Trapezoidal Channel Groove

Figure 7 (See Above)
Atlatl Distribution for the Southwest & Adjacent Areas. Distribution of Parallel-sided Channel Groove Atlatls.

Note regarding all maps:
Some atlatls are known to have been recovered from certain states or areas but exact provenience is unknown. These atlatls are located in boxes.

Figure 8 (To left)
Atlatl Distribution for the Southwest & Adjacent Areas. Distribution of Trapezoidal Channel Groove Atlatls.

Figure 9:
Possible atlatl depiction.
Provenience: Pottery Mound, New Mexico. Kiva 1, Layer 4, North Wall. After: Hibben 1975:70, Fig.50.

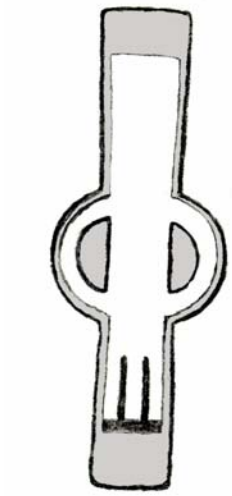


Figure 10:
Warriors with possible atlatls.
Provenience: Pottery Mound, New Mexico. Kiva 2, Layer 3, West Wall.
After: Hibben 1975:131, Fig.102.

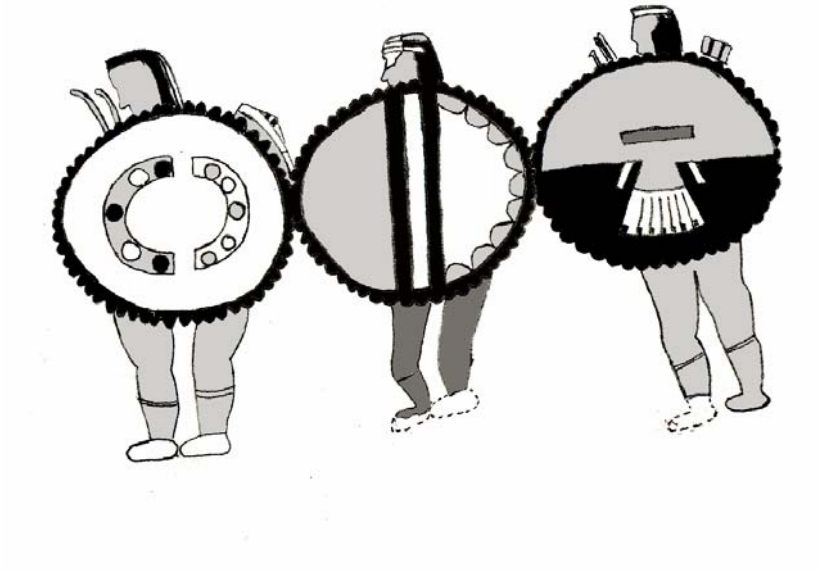


Figure 11:
Old Town Site, New Mexico. Classic Mimbres Bowl. Possible atlatl depiction. Shaded area is what is preserved. The area in white is missing and all the depictions therein are hypothetical. After: Fewkes 1989:27, Fig. 15. , after Fewkes 1914..

Figure 12:
Spiro Mounds, Oklahoma incised shell. Atlatl and Bow are depicted. Circa A.D. 1200. After: Phillips & Phillips 1978 Part I, Plate 9. Note the shaded portions are the actual artifact remains.