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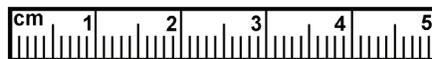
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On the Cover:

Wyoming RS/RG Points, Variant A (a-d), Variant B (e-h), Variant C (i-l), Eckles, this issue.

significant studies, archaeological method and theory, ethnographic studies, regional history, and book reviews. Submissions by professional archaeologists will be sent for peer review before acceptance.

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THE WYOMING ARCHAEOLOGIST

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VARIETIES OF CORNER-NOTCHED ARROW POINTS IN WYOMING

by
David G. Eckles

An examination of corner-notched arrow points in Wyoming is presented. Emphasis will be on points commonly included in the Rose Spring/Rosegate series with an analysis of other corner-notched arrow points which are probably not part of the Rose Spring/Rosegate series. Data were gathered from both excavated and dated components as well as from surface recorded sites in Wyoming. These data were searched in the Wyoming SHPO Cultural Records Office databases from the early 1970s through 2014 (the 2014 cutoff is somewhat arbitrary, but was chosen due to the lag in receipt and input of reports and site forms into the Cultural Records database). Most of the data are contained in compliance related reports and site forms which constitute the bulk of references used. In addition, catalog cards housed at the University of Wyoming Archaeological Repository (UWAR) and several collections at UWAR and the University of Wyoming Anthropology Department were examined. Articles in the *Wyoming Archaeologist* journal from the 1950s to the present were also searched for information on the topic. Articles in peer reviewed journals and other academic publications were also searched. In addition to compiling sites with Rose Spring/Rosegate points, sites with Late Archaic corner-notched dart points (ca. 3000-1500 B.P.) and Late Prehistoric Shoshonean Suite points (*sensu* Larson and Kornfeld 1994, ca.650-150 B.P.) were compiled for comparative purposes. Site data were compiled in Excel spreadsheets, copies of which were provided to SHPO Cultural Records.

THE ROSE SPRING SERIES

The Rose Spring corner-notched arrow point series was named for the Rose Spring site in southeastern California (Lanning 1963). Rose Spring points are slender, generally symmetrical triangular corner-

notched points with stems parallel-sided or expand toward the base (Holmer and Weder 1980:56-59). The points are barbed or straight-shouldered and blade edges often serrated (Lanning 1963:252). In the Great Basin, Rose Spring replaces Elko dart points and precedes the development of Desert Side-notched and Cottonwood unnotched arrow points (Justice 2002:320-321). It is thought Rose Spring represents the first development of bow and arrow technology in the Intermountain West (Blitz 1988). Dating of Rose Spring arrow points has generally been thought to range from about 650-1650 radiocarbon years before present (Justice 2002:321). The original excavations at the Rose Spring site were not dated, but later reanalysis of the site assemblages provided a revised date of 1600 B.P. for the Rose Spring component (Yohe 1998).

Earlier dated components with Rose Spring points have been reported from southeastern Utah (Geib 1996, Geib and Bungart 1989) with radiocarbon dates in the 1800-1900 B. P. range. Another site in northeastern Utah was dated between 1840-1960 B.P. on fill from a hearth which also included a Rose Spring projectile point (McKibben 1992:300). In southwestern Idaho, Rose Spring points were dated in excess of 2000 B.P. (Webster 1980:65).

Some researchers have combined Eastgate projectile points (Thomas 1981) with Rose Spring to designate a series or cluster called Rosegate. Eastgate points typically have larger more prominent expanding barbs and a tendency for straight stems (Justice 2002:324).

In an analysis of Great Basin projectile points, Thomas (1981) established metric criteria to distinguish Rose Spring/Rosegate points and these criteria are used here for projectile points in Wyoming (hereafter referred to with the initials RS/RG). Thomas' requirements for inclusion in the RS/RG

series are the base width is less than or equal to 10 mm; the neck width is less than or equal to the base width plus 0.5 mm; and the proximal shoulder angle is between 90-130 degrees (Thomas 1981:19). Karpinski (2004) also used these parameters in a study of surface finds in southwestern Wyoming, and on this basis, there is overall agreement with Karpinski's classifications and those presented here.

There is a range of variation in Wyoming corner-notched arrow points which have commonly been referred to as RS/RG. I grouped these points into three variants based largely on basal attributes. Line drawings and photographs of selected points from Wyoming show this variation (Figures 1-2). These variants are also common in most parts of Utah (Geib 1996, McKibben 1992) often co-occurring

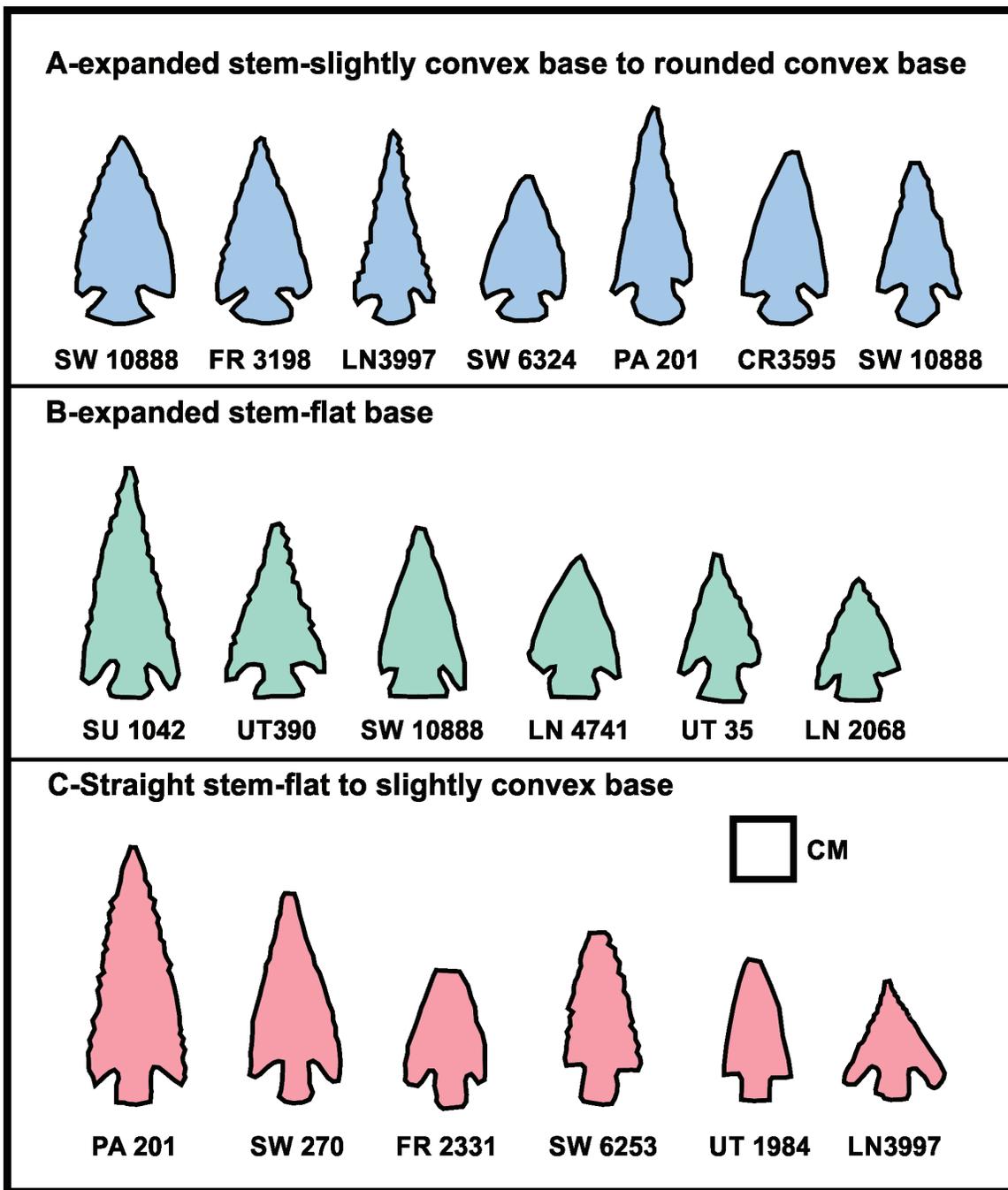


Figure 1: Line drawings of selected Rose Spring/Rosegate point variants from Wyoming and associated site numbers.



Figure 2: Wyoming RS/RG Points, Variant A (a-d), Variant B (e-h), Variant C (i-l), scale in cm.

with Fremont ceramics (Holmer and Weder 1980) and northwestern Colorado (e.g., Breternitz 1970, Cassells 1997, Stone 1999).

Variant A contains triangular points with an expanded stem and convex to steeply convex, nearly rounded bases. This is the most common variant in Wyoming. Similar examples have been documented from sites throughout Utah such as Cowboy Cave (Jennings 1980:33), Danger Cave (Jennings 1957), Hogup Cave (Aikens 1970), and the Glen Canyon region (Geib 1996) among many others. This variant is also present in northwestern Colorado (e.g., Cassells 1997, Landt 2018, Metcalf 2011). There are not exact equivalents in the Rose Spring (California) type site, although there are some examples with expanded stems and relatively wide, slightly convex bases. This variant may be a case of stylistic drift as the technology spread over time from the Great Basin into Wyoming. Selected examples from Wyoming are shown (Figures 2a-d).

Variant B contains triangular points with expanded stems with flat bases (Figures 2e-2h). This is the least common variant in Wyoming. There is at least one similar example in the Rose Spring

(California) site assemblage.

Variant C generally exhibits straight to slightly expanded stems. This includes the Eastgate point and stemmed variety which has a straight stem and horizontal to slightly acute angled ears. The latter tend to be found in components dating from roughly 1500 to over 1800 B.P. in Wyoming (hereafter referred to as “early stemmed”). Examples similar to the “early stemmed” variant are present in the Rose Spring type site as well as early dated sites in Utah (Geib 1996, McKibben 1992) and Idaho (Webster 1978). Variant C points are also common in Utah and northwestern Colorado sites (see e.g., Metcalf 2011). Variant C points are shown (Figures 2i-l), including an “early stemmed” example (Figures 2k-j) and one Eastgate example (Figure 2i).

In Wyoming, RS/RG points have been found in a large number of sites, especially in the southwestern counties (Sweetwater, Lincoln, Uinta, Sublette) (Thompson et al. 2000:466-467), with fewer sites in the south-central, central, north-central and northwestern portions of the state. Few to no RS/RG points are known from the eastern portion of Wyoming, either as surface finds or in dated con-

texts. RS/RG points are often associated with the Fremont tradition in Utah, northwestern Colorado and southwestern Wyoming (Thompson and Pastor 1995). Fremont ceramics in Wyoming have been dated from 880-1650 B.P. (Smith 1992).

RADIOCARBON DATING

Results of the current project found 93 dated components or deposits in the state containing RS/RG points. Given the number, these data are listed in Appendices A-D; each component or dated deposit also lists the variants present. Based on these data, sites with RS/RG points in Wyoming date from about 800-900 to over 1800 radiocarbon years before present, with a peak range from about 1100 to 1500 radiocarbon years before present (in all cases the measured radiocarbon date was used as reported) (Figure 3). The trend depicted has been noted by many of the authors of the references cited in this article.

Variants A, B and C occur throughout the time range; only the so-called “early stemmed” (placed within Variant C) points appear to be restricted to the early part of the time range. Eastgate points have been found in dated contexts (n=6) in Lincoln, Uinta and Sweetwater counties (see Appendix B). Surface finds of the Eastgate point have been recorded in Lincoln (48LN1128, 2461 and 3069), Uinta (48UT1

and 1308), Sublette (48SU108 and 260) and Sweetwater (48SW1645, 1656, 13151 and 18610) counties. The so-called “early stemmed” points have been found in dated components in Uinta, Lincoln and Sweetwater counties (see Appendix B). Fifty-six dated components contained only one of the variants, 29 contained two of the variants and eight contained all three of the variants.

UNKNOWN CORNER-NOTCHED ARROW POINT

It should be mentioned, there is a distinctive corner-notched arrow point which does not fall within the parameters for RS/RG points as used here. It is rare but occurs in several of the counties with RS/RG points. It is a triangular, symmetrical point with a wide, generally flat base and deep, wide corner notches (Figure 4). Counties with these points include Big Horn (n=2), Carbon (n=13), Fremont (n=1), Lincoln (n=1), Natrona (n=2), Park (n=3) and Sweetwater (n=4). One of these points was recovered in a dated component (1240+/-40 B.P.) at site 48CR7309 (Fleming et al. 2010). It was referred to as “Avonlea-like,” and exhibits slight similarities to possible Avonlea corner-notched points from the Beehive site (Frison 1991, Hall 1998). Whether this point is a Wyoming RS/RG variant or part of another tradition is at this time unknown.

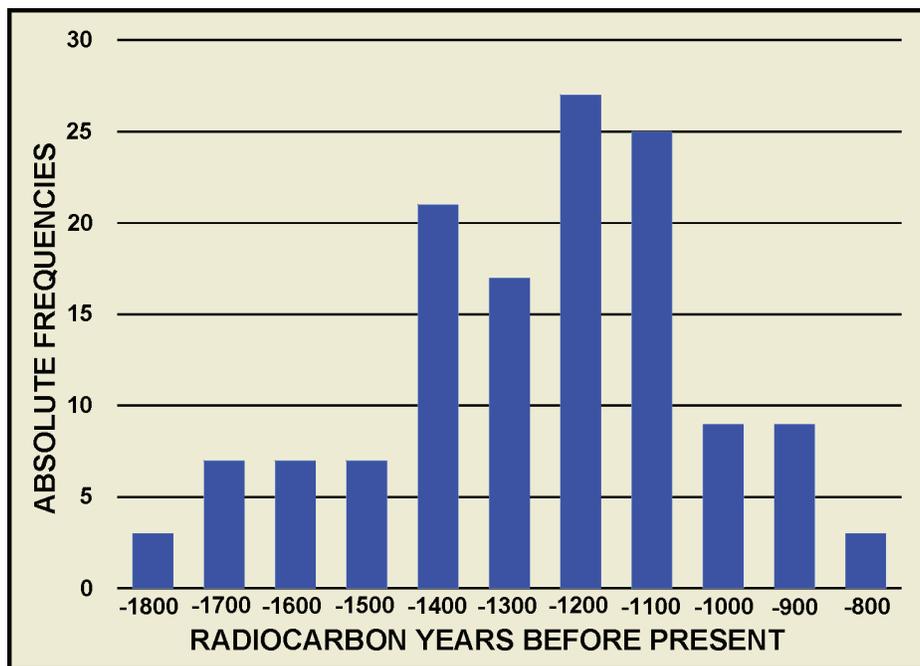


Figure 3: Graph of all radiocarbon dates, RS/RG components in 100-year increments.

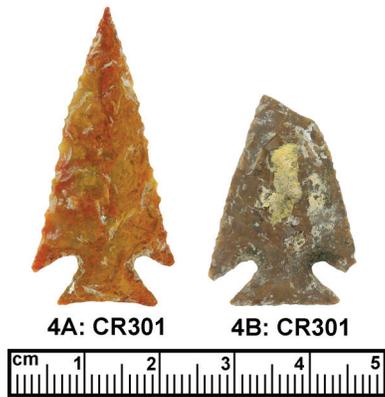


Figure 4: Examples of unknown corner-notched arrow points (48CR301), scale in cm.

GEOGRAPHIC DISTRIBUTION

The geographic distribution of RS/RG arrow points is variable within Wyoming. In general, points within the series occur with greatest absolute frequencies in the southwestern (Lincoln, Sweetwater, Sublette counties), south-central (Carbon County) and central (Fremont County) portions of the state. Lower frequencies occur in the northwestern counties (Park, Hot Springs), Natrona County (central) and Uinta County (southwest). Few to no RS/RG points have been recorded in the eastern third of Wyoming.

To represent densities of RS/RG points in Wyoming, data from excavated sites as well as surface sites were compiled. This included searches of site forms for each county and data recovery reports and research publications. In addition, data on sites with Late Archaic period corner-notched dart points (CND) from the time range of about 3000-1500 B.P. such as found at the Medicine Lodge Creek site (Frisson 2007) and the Garrett Allen site (Eckles 2013), were compiled as well as sites with Late Prehistoric arrow points (ca. 650-150 B.P.). These have been referred to as the Shoshonean suite (Larson and Kornfeld (1994) and includes side-notched, side and basal notched and unnotched points (SHOS). Examples of Late Archaic CND and Late Prehistoric SHOS points are shown (Figures 5-6).

It should be noted the intensity of surface inventory is variable across Wyoming. The counties with the highest level of compliance survey are Sweetwater, Carbon, Campbell and Sublette. Somewhat fewer surveys have been conducted in



Figure 5: Examples of Late Archaic corner-notched dart points from dated sites, scale in cm.

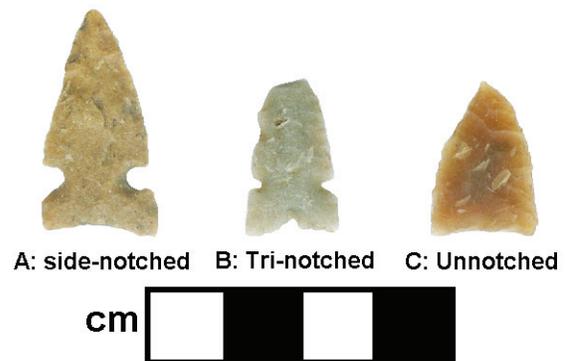


Figure 6: Examples of Shoshonean Suite points (48CR301), scale in cm.

Fremont, Natrona, Lincoln, Converse, Uinta, Park and Bighorn counties. Counties with low survey coverage include Sheridan, Crook, Weston, Albany, Platte, Hot Springs, Washakie, Teton and Yellowstone National Park. Comparatively little survey has been conducted in Laramie, Niobrara, Goshen and Hot Springs counties.

Given this caveat, it is the case both CND and Shoshonean Suite points have been found throughout Wyoming and are therefore potentially useful as baselines for comparison. The absolute frequencies of RS/RG, CND, and SHOS points by each county and ratios of RS/RG to CND and RS/RG to SHOS are presented (Table 1). The ratio of RS/RG to CND is shown graphically (Figure 7) (the ratios of RS/RG to Shoshonean suite points show a similar pattern).

If these data accurately portray the distribution of points in the state, there are high frequencies of RS/RG points in the southwestern counties (Uinta, Lincoln, Sublette, Sweetwater). Proceeding east and

Table 1: Projectile Point Ratios by Wyoming Counties, West to East.

County	Sites w/ RS/RG	Sites w/ CND	Sites w/ SHOS	Ratio RS/RG to CND	Ratio RS/RD to SHOS
Northern Tier					
Yellowstone NP	5	52	20	0.096	0.250
Teton	12	41	19	0.293	0.632
Park	29	79	57	0.367	0.509
Hot Springs	7	24	12	0.292	0.583
Washakie	6	61	28	0.098	0.214
Big Horn	5	126	62	0.039	0.081
Sheridan	0	39	27	0.000	0.000
Johnson	0	122	67	0.000	0.000
Campbell	0	303	121	0.000	0.000
Crook	0	72	36	0.000	0.000
Weston	0	50	17	0.000	0.000
Middle Tier					
Sublette	260	367	153	0.708	1.699
Fremont	124	230	113	0.539	1.097
Natrona	70	230	94	0.304	0.744
Converse	0	122	55	0.000	0.000
Niobrara	0	8	4	0.000	0.000
Southern Tier					
Lincoln	163	224	77	0.728	2.126
Uinta	80	106	50	0.755	1.600
Sweetwater	574	785	283	0.731	2.028
Carbon	247	510	210	0.484	1.176
Albany	4	39	16	0.102	0.250
Platte	1	73	26	0.014	0.038
Goshen	0	11	8	0.000	0.000
Laramie	0	24	11	0.000	0.000

RS/RG=Rose Spring/Rosegate, CND=Late Archaic corner-notched dart, SHOS=Shoshonean Suite

north, the ratios show decreasing densities of RS/RG points in Fremont, Park, Hot Springs, Natrona, Carbon and Teton counties and Yellowstone National Park. Proceeding north and east from Natrona and Carbon counties, there are quite dramatic decreases in RS/RG densities for the remaining counties. In fact, there are no known examples of RS/RG points in Laramie, Goshen, Niobrara, Weston, Crook, Campbell, Johnson and Sheridan counties with

only a few examples in Albany, Platte, Converse, Washakie and Bighorn counties.

It is clear RS/RG projectile points are restricted geographically in Wyoming. This may not be surprising given the RS/RG phenomenon has its roots in the Great Basin, with an apparent spread into the intermountain basins of southwestern, south-central, central and northwestern Wyoming. As mentioned above, within Variant C are the so-called “early

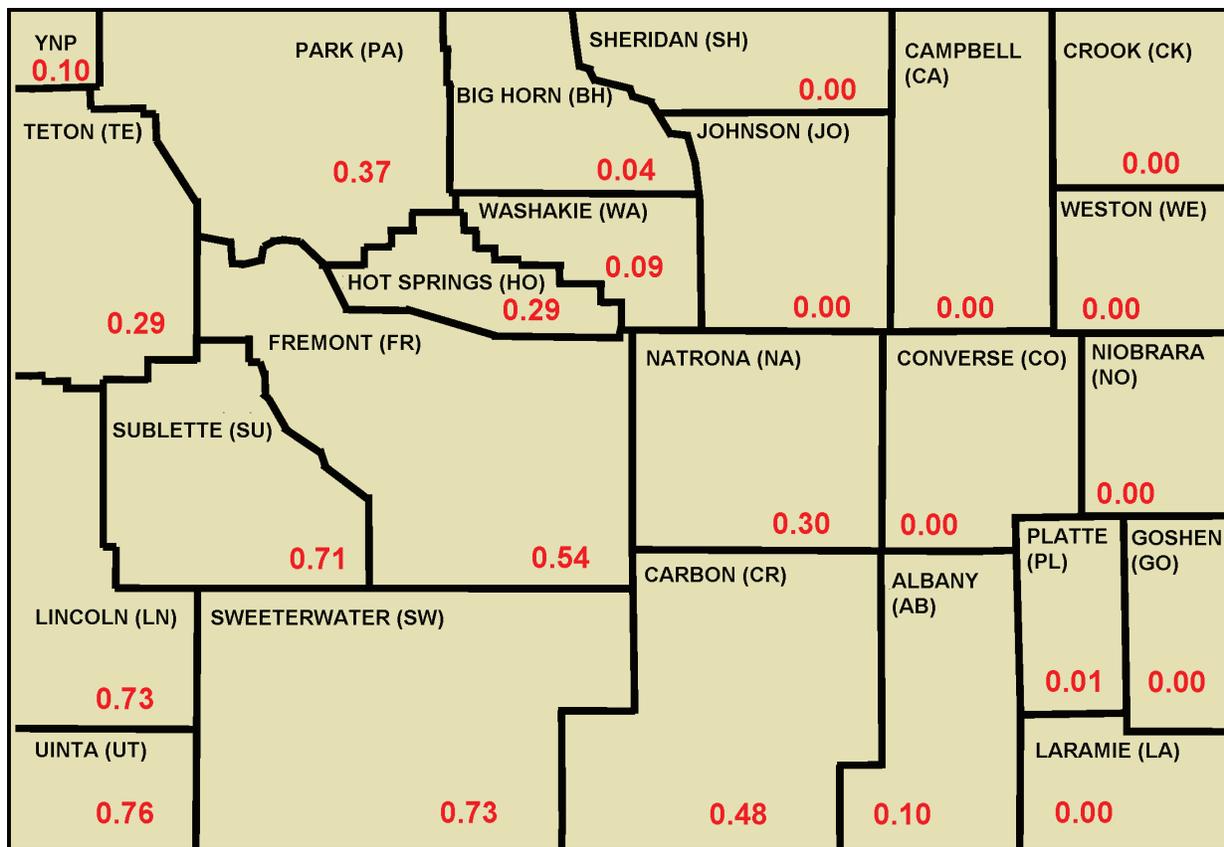


Figure 7: Ratio of RS/RG to CND by Wyoming county (rounded up to two decimals).

stemmed” examples which appear to be restricted to the early part of the date range and occur only in southwestern Wyoming. They occur in dated sites in Lincoln, Uinta and Sweetwater counties, with surface finds in these counties as well as southwestern Fremont County. Eastgate examples are present in dated sites and as surface finds in Lincoln, Sublette, Uinta and Sweetwater counties.

Radiocarbon dated sites with RS/RG points are concentrated in the southwestern counties throughout the time sequence. Away from this “core” area, to the north and east, there are fewer dates overall and fewer dates from the early part of the sequence and somewhat more dates in the latter part of the sequence. Between 1500-1100 B.P. dated RS/RG components occur throughout southwestern and south-central Wyoming with several sites in central and west-central Wyoming. There is only one dated component in the northwestern part of the state (Mummy Cave) in Park County (Husted and Edgar 2002). After about 1100 B.P., the range constricts and by 900-800 B.P., there are only a few sites dated to this time in southwestern Wyoming.

These points occur in dated components and as surface finds primarily in the intermountain basins of western and south-central Wyoming. Few RS/RG have been recorded at higher elevations in alpine settings and the foothills of the major mountain ranges. Taken as a whole, only 3.6 percent of all RS/RG points examined in this study have been found in alpine and foothills settings in the counties containing both high elevation mountain ranges and intermountain basins. In contrast, 18 percent of Late Archaic corner-notched dart points have been found in alpine and foothills settings of the major mountain ranges. Still, the RS/RG assemblage found at Mummy Cave (48PA201) in the northwestern Wyoming mountains might be a cautionary tale, given few sites of this age have been found and investigated in this area.

OTHER CORNER-NOTCHED ARROW POINTS

There are other corner-notched arrow points in the eastern portions of the state which are probably not part of the RS/RG series. These are considered

below. A somewhat common corner-notched arrow point in eastern Wyoming is shorter in height with a generally much wider, slightly convex to flat base compared to the RS/RG series, especially Variant A as presented here. Most of the specimens are asymmetrical (including blades, bases and positioning of the corner notches), an uncommon attribute among RS/RG points (Figure 8).

These points are similar to those of a suggested type in Colorado called Hog Back (Nelson 1971) and quite asymmetrical points found at the LoDaisKa site near Denver (Irwin and Irwin 1959). In eastern Colorado and the central Plains, these small arrow points often co-occur with cord marked ceramics (for a summary of these data, see e.g., Gilmore and Larmore 2003) and have been referred to as Woodland complexes (Butler 1998). Most of the Woodland sites have been found in the northern Colorado Front Range and northeastern Colorado, dating from about 1700 to 900 years before present (Cassells 1997:192-197, Gilmore and Larmore 2003).

It is possible short, wide base corner-notched arrow points (often asymmetrical) in Wyoming are an extension of Woodland complexes found to the south and east. For lack of a better term, they will be referred to here as Woodland corner-notched arrow points. A list of excavated sites with these artifacts in

Wyoming is shown (Table 2). Several of these sites also contained cord marked (Woodland) ceramics. Radiocarbon dates, when present, indicate a range of about 1200-800 years before present.

A simple comparison of RS/RG and Woodland points is shown (Figure 9). Examples of each from dated components using a date range between 1200-800 radiocarbon years before present were employed. This is a scatter plot of the total width divided by total height and base width divided by total height (in millimeters) of complete points. These metrics were chosen given the observed differences in height and base width between the two-point series. There appear to be two separate clusters, one for RS/RG points in the western counties of Wyoming and one for Woodland points in the eastern counties.

Overall, the ratio of width to height ranges from about 0.3 to 0.6 for Rose Spring and 0.5 to over 0.8 for Woodland. Base width to total length ranges from 0.41 to over 0.62 for the Woodland examples while the Rose Spring points have a ratio of about 0.15 to 0.36. There appears to be some separation between the two-point series based on these metrics.

The distribution of Woodland points appears to be concentrated in the eastern portion of the state, including Laramie, Albany, Platte, Converse, Campbell, Goshen and Johnson counties. In Natrona and

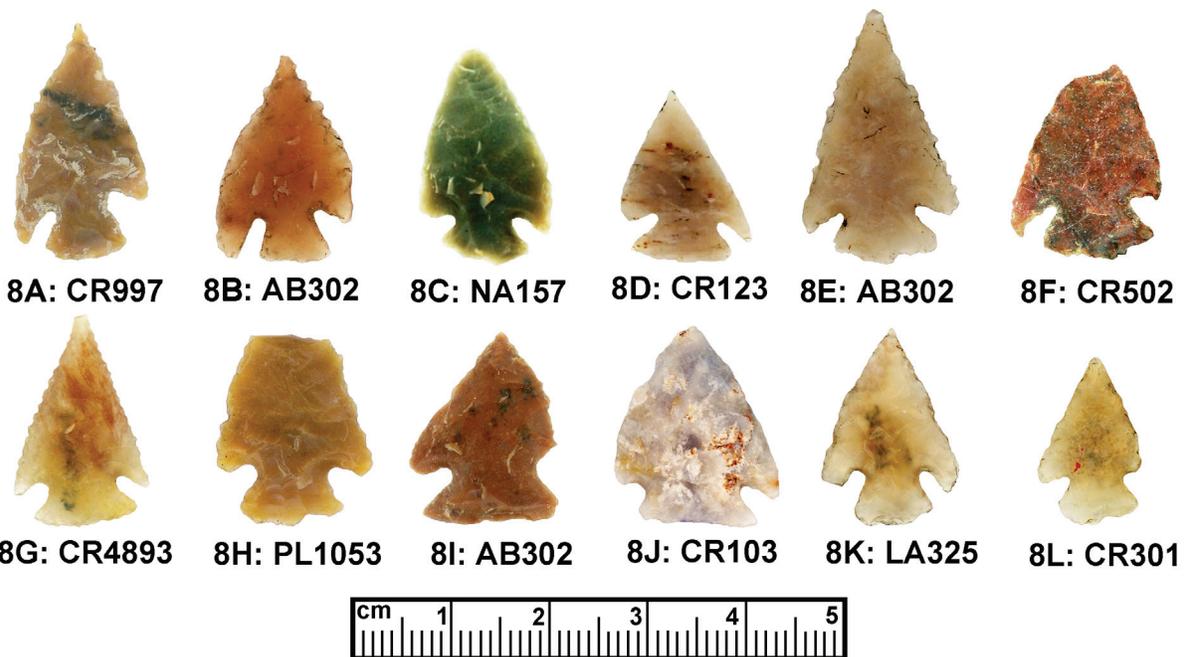


Figure 8: Examples of probable Woodland points from Wyoming sites (scale in cm.).

Table 2: Excavated Sites in Wyoming with Probable Woodland Corner-notched Arrow Points and/or Cord-marked Ceramics.

Site Number	Location WY	Co-occur w/ ceramics	Radiocarbon Date	Reference
AB301	Southeast	Cord marked	Not dated	Zeimens 1975
AB130	Southeast		Not dated	Bupp 1981
AB302	Southeast	Cord marked	Not dated	Reher 1971, UWAR
AB305	Southeast	“Thong” marks	Not Dated	Gebhard et al. 1964
CA553	East-central		990+/-70	Peterson et al. 1982
CO637	East-central		1160+/-80	Hall et al. 1983
CO2640	East-central	Beads, figurines	1100+/-40	Munson 2008
CR123**	South-central	Cord marked	950+/-110 1060+/-100	McGuire and Joyner 1981
CR301*	South-central	Cord marked	ca. 920+/-110	Eckles 2013
CR502	South-central		1050+/-100	Tibesar 1981
CR997, Stratum 1	Central		1060+/-100 1140+/-110	Moe and Todd 1982
CR2538	South-central		1090+/-50	McGuire et al. 1984
CR2582	South-central		1100+/-50	McGuire et al. 1984
CR2624	South-central		1150+/-60	McGuire et al. 1984
FR3842	Central		1050+/-60	Martin and Smith 1999
GO54***	Southeast	Cord marked	1150+/-90	Korell 1989
GO302	Southeast	Cord marked	Not dated	Reher 1971
JO303	North-central		1140+/-150	Grey 2004
JO315	North-central		975+/-180	Anonymous 1969
LA304	Southeast	Cord marked	800+/-80 930+/-60	Frison 1991:36 Reher 1971
LA311	Southeast	Cord marked	Not dated	Reher 1971
LA312	Southeast	Cord marked	1060+/-90 1080+/-70	Frison 1991:36 Reher 1971
LA325*	Southeast	Cord marked	1080+/-180 1130+/-110	Frison 1991:35, and UWAR catalog cards
NA326	Central		1020+/-86	Randall 1963, and UWAR catalog cards
NA1431	Central		1080+/-80	Martin et al. 1999
PL29	East-central		1025+/-150	Mulloy and Steege 1967
PL951	Southeast		1180+/-60	Reiss 2000
PL709	Southeast	Cord marked	940+/-70	Zeimens et al. 1992

* Point(s) in mixed deposits with other LA and LP points

** Points found on surface, CM ceramics from test unit with radiocarbon dates

*** Ceramics only

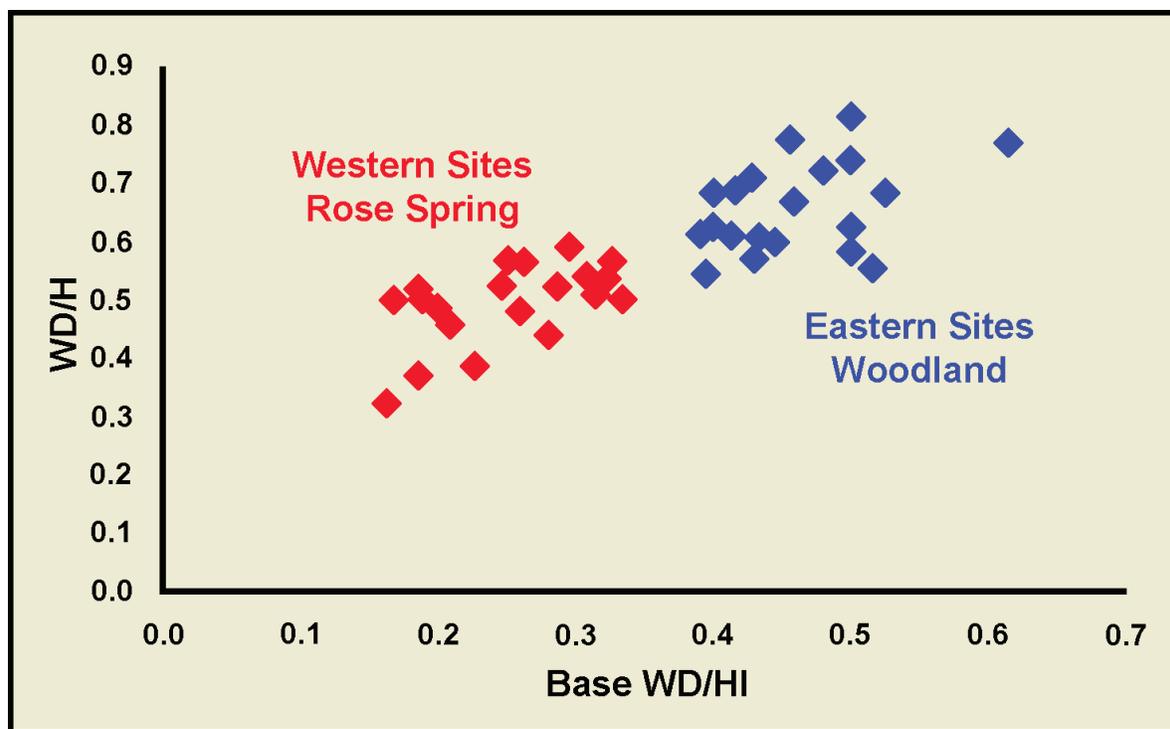


Figure 9: Ratios of total width/total height by base width/total height for dated sites (1200-800 B.P.) with corner-notched arrow points, western counties and eastern counties, Wyoming.

Carbon counties, they appear to be concentrated in the eastern portions of these counties. In addition to the excavated sites (Table 2), cord marked ceramics have been recorded from surface sites in eastern portions of Carbon and Natrona counties, Albany, Laramie, Goshen, Platte, Converse, Campbell and Johnson counties, roughly in the eastern one-third of the state (it should be noted cord-marked ceramics also co-occur with Late Archaic age Besant points and Late Prehistoric Upper Republican components).

Similarly with RS/RG points, there is a drop-off in Woodland point densities from east to west. This dynamic is shown (Table 3) and included points in both dated and surface contexts. Points referred to here as Woodland occur in the eastern counties, but rarely if at all in the central and western counties. Interestingly, there are sharp drop-offs of RS/RG points between Park and Big Horn counties, Hot Springs and Washakie counties, and the eastern portions of Natrona and Carbon counties compared to the eastern portions of these two counties.

Taking a closer look at Carbon and Natrona counties, absolute frequencies of sites with RS/RG series and Woodland points were compiled for the

western and eastern halves of each county (dividing line between range 85/84 for Carbon County and 84/83 for Natrona County) (Table 4).

In both cases, there are more RS/RG points compared to Woodland points in the western portions of these counties with relatively more Woodland points in the eastern portions. It should be noted considerably more compliance related survey has been conducted in the western portions of both counties, possibly resulting in a biased view of these counties as a whole. Even so, relatively few Woodland points compared to RS/RG occur in the western portions of the counties.

Lithic raw material sources for RS/RG points in the eastern portions of Carbon County tend to be from sources located in south-central and southwestern Wyoming (fossiliferous cherts, zebra flint, Bridger Fm. cherts). At the Garrett Allen (Elk Mountain) site, 48CR301, located in south-eastern Carbon County, RS/RG points are dominated by the above-mentioned raw materials, while the Woodland points are dominated by east-central Wyoming dendritic agates and Spanish Diggings orthoquartzites, jaspers likely from east-central Wyoming and Flattop chalcedonies from northeastern Colorado

Table 3: Sites with Woodland and RS/RG Points in Selected Counties, East to West.

County	Sites w/ Woodland points	Sites w/ RS/RG points
Southern Tier		
Laramie	10	0
Goshen	4	0
Platte	23	1
Albany	19	4
Carbon	53	247
Sweetwater	8	574
Uinta	0	80
Lincoln	0	163
Middle Tier		
Niobrara	4	0
Converse	33	0
Natrona	22	70
Fremont	4	124
Sublette	0	260
Northern Tier		
Campbell	27	0
Johnson	32	0
Big Horn	10	5
Washakie	6	6
Hot Springs	4	8
Park	0	29

(Eckles and Guinard 2015). Examination of collections from 48CR997 (Moe and Todd 1982) in northeastern Carbon County and 48AB301 and 48AB302 in western Albany County show a similar pattern: RS/RG points are from raw material sources in south-central and southwestern Wyoming and Woodland points are from eastern sources.

CERAMIC ASSOCIATIONS WITH RS/RG AND WOODLAND POINTS

As noted above, RS/RG points often co-occur with Fremont tradition ceramics while Woodland points as suggested here sometimes co-occur with cord-marked ceramics. There appears to be an east/west divide between the Woodland and RS/RG series points, and there is a similar east/west divide

Table 4: Rose Spring/Rosegate and Woodland Points in Carbon and Natrona Counties, West to East.

Carbon	West	East	Totals
RS/RG	228	19	247
Woodland	15	38	53
Natrona			
RS/RG	66	4	70
Woodland	7	15	22

between cord-marked (Woodland) and Fremont ceramics.

During the course of compiling data on projectile points, sites with Fremont and cord-marked ceramics were also tabulated. This includes data from both dated components and surface sites. Again, given the numbers, sites with these ceramics are presented in Appendix E (Fremont) and Appendix F (cord-marked). Sites with examples of the two ceramic traditions are illustrated (Figure 10).

The distribution of Fremont ceramics in southwestern and south-central Wyoming and cord-marked (Woodland) ceramics in southeastern Wyoming parallels RS/RG and Woodland projectile points. There appears to be a transition area in Carbon and Natrona counties with greater densities of RS/RG points in the western portions of these counties and greater densities of Woodland points in the eastern portions. Only a few examples of Woodland points have been found in extreme eastern Sweetwater County and southeastern Fremont County and only a few examples of RS/RG in Albany County. A similar dynamic appears to be the case between Park and Hot Springs counties to the west and Big Horn and Washakie counties to the east, that is, greater densities of RS/RG points in the former with few examples in the latter.

BURIALS WITH RS/RG POINTS EMBEDDED IN BONE

ROBBER’S GULCH BURIALS (48CR3595)

Three burials in south-central Carbon County were excavated in 1982. Two were sub-adults and one was an elderly male. The remains of the adult male had been placed (unceremoniously) in an alcove or crevice in the surrounding sediments. The

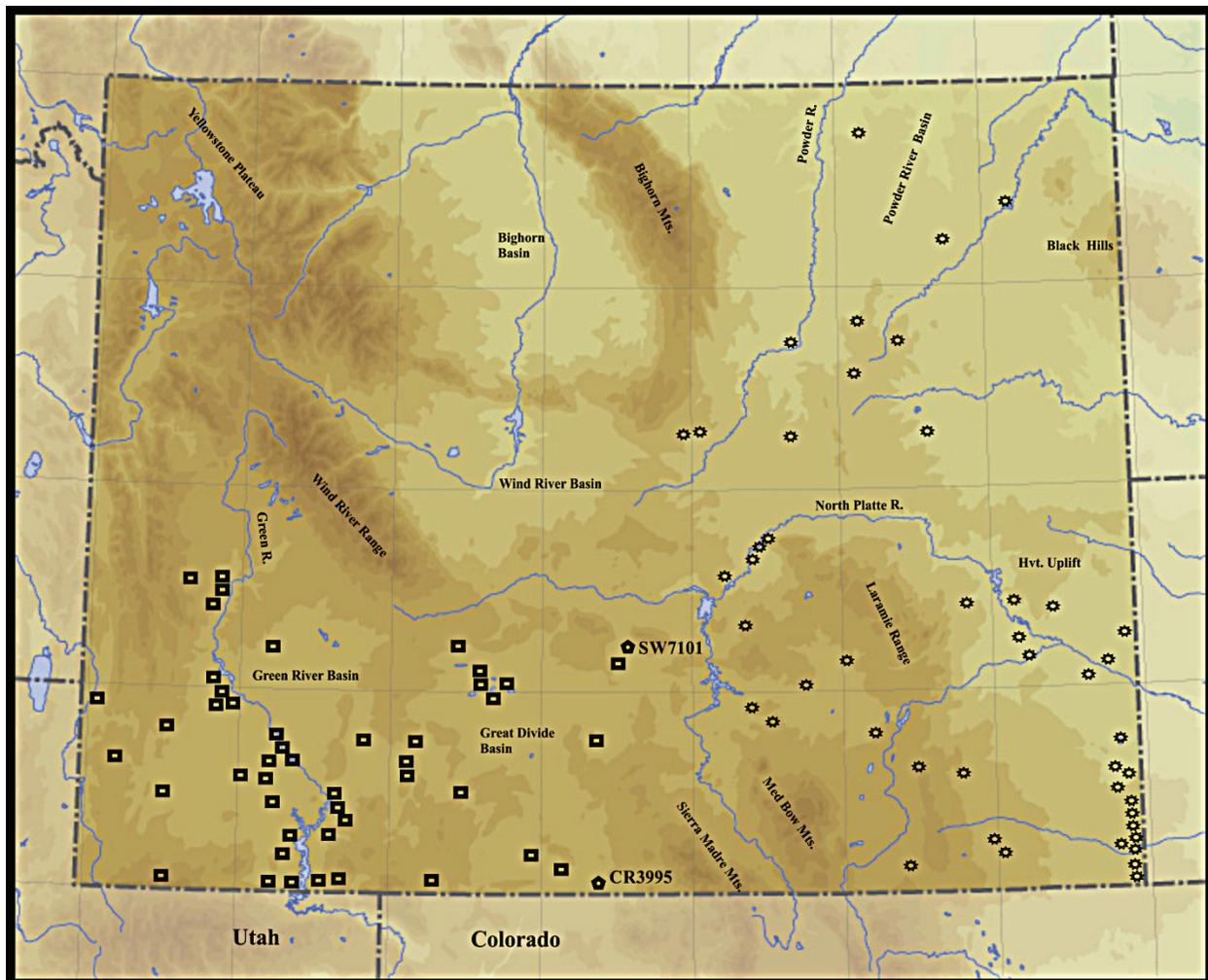


Figure 10: Distribution of Fremont (squares) and Woodland (stars) ceramics in Wyoming. Also depicted are the locations of two burials, 48CR3995 and 48SW7101 with RS/RG points embedded in bone.

sub-adults were located a short distance from the adult male in a similar setting. These remains were not dated.

During the excavation, corner-notched arrow points were observed lying directly on several skeletal elements or in close proximity of the adult male. Subsequent analysis revealed several of these points were embedded in bone (Eckles 1982, Gill 2010, Martindale and Gill 1983). All appear to be similar to points in the RS/RG series and include variants A and B as used here. All were made of lithic raw materials (fossiliferous cherts, Bridger formation chert and zebra flint, aka. tiger chert) found in south-central and southwestern Wyoming. One point is somewhat smaller compared to the rest and has a wider, slightly convex base (see Figure 1).

The two sub-adults include one probable male and one probable female. Near the female, a modified fresh water mollusk shell was recovered and identified as *Actinonaias carinata carinata*. This subspecies is present in the Mississippi River drainage system as far west as Arkansas and Kansas (Eckles 1982).

BAIROIL BURIAL (48SW7101)

A single adult male skeleton was recovered in extreme northeastern Sweetwater County which exhibited considerable blunt force trauma to the face area and a single RS/RG point embedded in its right patella and tibia (Gill 2010, Shields et al. 1989). A date of 1060 \pm 90 was obtained on bone from the skeleton (see Figure 10).

DEER BUTTE 2 BURIAL (48SW10878)

Another burial in central Sweetwater County contained the remains of a single adult male with a chipped stone (arrow?) point tip embedded in its sternum (Gill 1995). It was not dated. The type of point is unknown.

The Robber's Gulch and Bairoil burials are located in extreme southwestern Carbon County and extreme northeastern Sweetwater County in what appears to be the transition area between Fremont-RS/RG sites and Woodland sites in Wyoming. It is tempting to conclude in addition to a probable transition area between the two traditions, there was also conflict between them. This must remain a tentative conclusion given the small sample size of such burials and the causes of human conflict can have many sources.

COMPLICATIONS

A distinction between RS/RG and Woodland corner-notched arrow points has been presented above based on size and basal attributes. There appears to be a separation between the two-point series on the basis of several metrics, and a separation geographically. However, there are several sites with corner-notched arrow points which complicate this picture. No projectile point typology works perfectly given anomalies and inter grades of style. The following sites are examples of the problems inherent in any typology.

WILLOW SPRINGS BISON POUND (48AB130)

The Willow Springs bison pound contains Late Archaic and Late Prehistoric bone beds with multiple projectile points from these periods (Bupp 1981). Besant and CND points were found in the lower level, corner-notched arrow points were found in the middle level and Shoshonean suite points were found in the upper level. There appeared to be some mixing of artifacts between the middle and lower levels. The multiple episodes of bison trapping in the pound resulted in compression of the deposits, making it difficult to separate episodes (Bupp 1981). None of the levels within the site were radiocarbon dated.

Corner-notched arrow points recovered from the middle bone level (examples shown in Figure 11) were found to be similar to other corner-notched

arrow points found in north-central and northeastern Colorado and southeastern Wyoming (Bupp 1981:55). Lithic raw materials were identified as coming from sources in east-central Wyoming and extreme north-central Colorado (Bupp 1981:89-90).

Many of these corner-notched arrow points closely resemble those found in Colorado sites often found in association with cord marked (Woodland) ceramics. However, some of the Willow Springs points are similar to points within the RS/RG series as discussed here. Using the ratios of width/height and base width/height as discussed above, there is no separation between RS/RG and Woodland points as shown above (Figure 9).

Given the compressed nature of the bone beds at the Willow Springs site, it was only possible to speculate as to the sequencing of the bison trapping (Bupp 1981). There may have been a Besant and CND episode in the lower level (or separate Besant and CND episodes). The upper level with Shoshonean points many have been a separate (and final) episode at the site. It is possible there were separate RS/RG and Woodland episodes, or perhaps there was one episode which included groups from the different traditions. Bupp (1981:77-85) attempted to reconstruct the episodes using several analyses, but none indicated any unambiguous results.

BATES HOLE SITE (48CR997)

Arrow points from the Bates Hole site (Moe and Todd 1982) were found in two dated strata, one clearly a RS/RG point (see Figure 2b) dated at 1370+/-110 B.P. (Stratum 2). As for points in Stratum 1 (dates of 1060+/-100 and 1140+/-110 B.P.), the picture is complicated. There are two points which could fit in the RS/RG series based on height and basal attributes (one with base missing). Raw materials are of fossiliferous chert and tan chalcedony. The other identifiable points (n=4) from Stratum 1 are of relatively shorter height with relatively wide flat to convex expanded bases. Two are asymmetrical (see Figure 12). Raw materials include dendritic agates and jasper, likely from east-central Wyoming sources.

MOUNTAIN MEADOW RANCH BURIAL (48AB459)

A single elderly female skeleton was discovered in a rock crevice near Woods Landing, Wyoming.

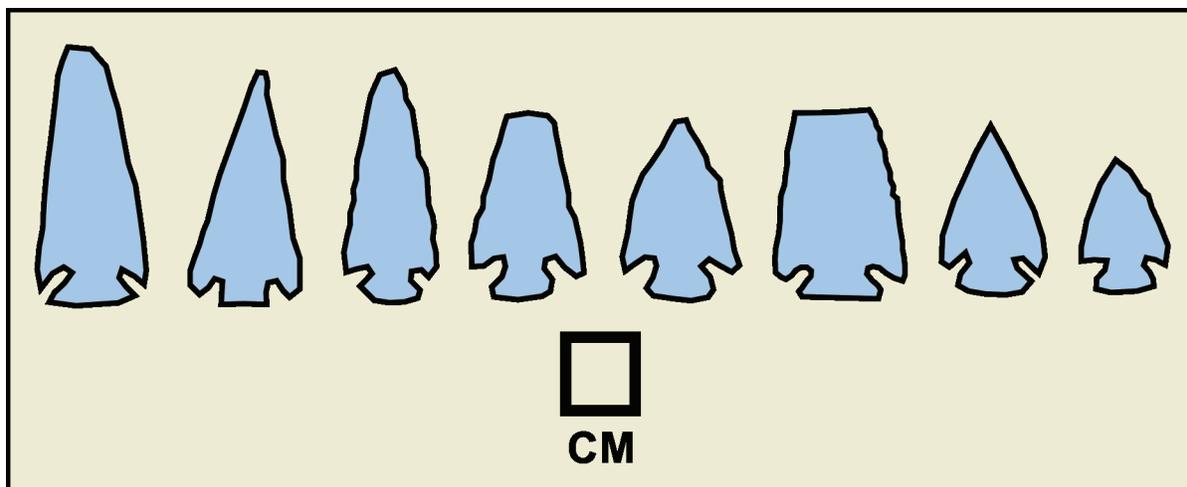


Figure 11: Examples of corner-notched arrow points from 48AB130, Willow Springs site.

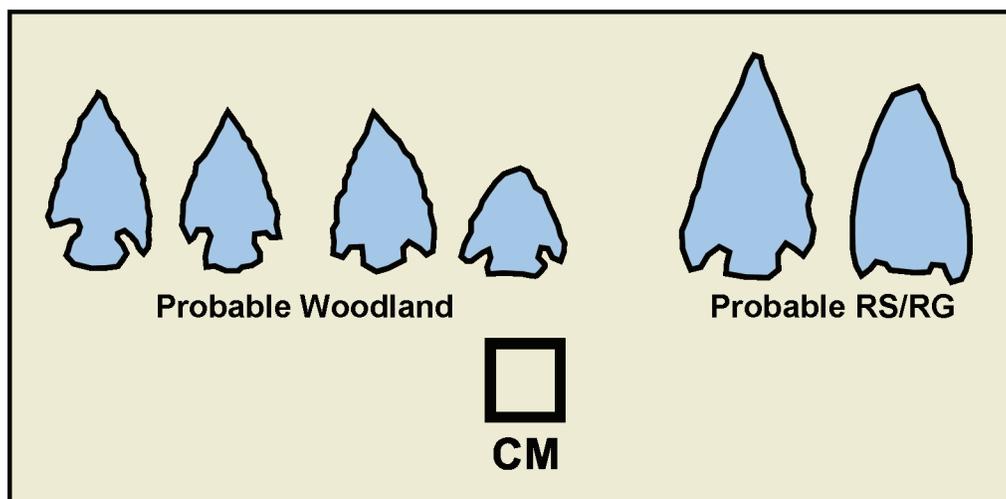


Figure 12: Corner-notched arrow points from Stratum 1, 48CR997.

Eight points which could be included in the RS/RG series were found in association with the bones but no trauma or conflict injuries were apparent on the remains (Truesdale and Gill 1994). The burial was not dated.

Metric analysis of the points by Truesdale and Gill (1994) showed most of these arrow points could be assigned to the RS/RG series with one example having attributes more consistent with the Woodland series. All of the raw materials were dendritic agates, likely from east-central Wyoming.

TURK BURIAL (48WA301)

The Turk Burial in north-central Wyoming contained multiple interments (Grey 1963). Grave goods included a Besant point and four corner-

notched arrow points (it is not clear which of the skeletons is associated with the projectile points). A date of 670+/-160 B.P. was returned on bone from one of the skeletons (Frison 1991:35).

Line drawings of the arrow points are shown (Figure 13). The bases are quite wide (similar to Woodland) but of relatively greater height than the Woodland points discussed here. Because of their wide bases they would not fit in the RS/RG series as per Thomas (1981), but their overall height and serrated blade edges are more typical of RS/RG.

ROBBERS GULCH BURIALS (48CR3595)

One of the arrow points found lying under the elderly male skeleton at Robbers Gulch has a wider base and is of lesser height compared to all the other

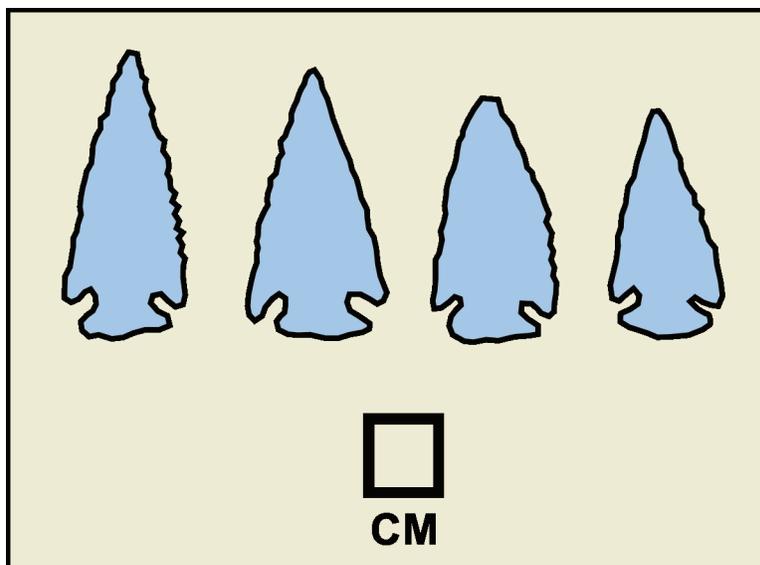


Figure 13: Corner-notched arrow points from Turk burial, 48WA301.

points. Based on the metric analysis above, it is within the RS/RG series range, but has similarities to the Woodland series as discussed here. All of the points from this assemblage are of raw materials found in south-central and southwestern Wyoming (Eckles 1982).

The above data show separating RS/RG (Variant A) and Woodland points may not be so straightforward, lacking clear association with Fremont or Woodland ceramics. This problem appears largely in the so-called transition area between the two traditions. It would appear some contact between these populations occurred at times.

DISCUSSION

Research during this study has shown the presence of corner-notch arrow points in Wyoming which appear to be similar to those from the Great Basin commonly referred to as the Rose Spring/Rosegate (RS/RG) series. These points in Wyoming are commonly found in prehistoric sites in the southwestern, south-central, central, west-central and northwestern portions of the state, often co-occurring with Fremont ceramics.

Dating of RS/RG components suggests the beginnings of bow and arrow technology in southwestern Wyoming occurring about 1800+ years before present. The technology most probably spread from the core area in southwestern Wyoming into the basins to the east and north.

Several of the sites with dates from 1800+ to about 1200 B.P. contained both RS/RG arrow points and CND points within the same component (Table 5). The transition from dart to arrow likely began as a process of relatively slow adoption of the bow and arrow but eventually led to the widespread use of this technology. Even so, it appears CND points persisted (in relatively low numbers) until about 1200 B.P. based on the Wyoming data as well as for northwestern Colorado (Mullen 2018). Similar trends have been reported from the eastern Plains (Tarabek 2012), Canadian Plains (Walde 2014), Great Basin (Geib 1996), Columbia Plateau (Ames et al. 2010) and southeast (Nassaney and Pyle 1999).

The RS/RG phenomenon in Wyoming appears to be largely restricted to the intermountain basins (Green River, Great Divide, Washakie, Wind River, Wyoming, Big Horn). Few RS/RG points have been documented in the mountain ranges of western and central Wyoming. It does appear the RS/RG phenomenon is largely an intermountain basin adaptation with transhumance largely within the basins. Creasman and Thompson (1997) have posited a seasonal round from basin interiors to mountain foothills during the Uinta Phase (Late Prehistoric) covering the time span discussed here. Reliance was on floral resources, especially seeds from weedy plants such as the Chenopods. Both large and small game animals were exploited largely on an ad-hoc basis. Research on southwestern Wyoming sites

Table 5: Rose Spring/Rosegate Components with Corner-notched Dart Points.

Site	Location WY	Radiocarbon dates B.P.	Reference
FR4426	Central	1720+/-40, 1810+/-70	McNees et al. 2005
LN373, Area A, O12	Southwest	1640+/-60	Wheeler et al. 1986a
LN373, Area C	Southwest	1620+/-70	Wheeler et al. 1986a
LN1296, C2	Southwest	1390+/-90, 1590+/-70	Wheeler et al. 1986a
LN1296, C3	Southwest	1460+/-80, 1490+/-100, 1710+/-50	Wheeler et al. 1986a
LN2068, AU-A1	Southwest	1170+/-100	McKibben 1995
LN2068, AU-B1	Southwest	1420+/-90	McKibben 1995
LN2068, AU-B2	Southwest	1880+/-130	McKibben 1995
SW390	Southwest	1270+/-60, 1410+/-80	Rood et al. 1992
SW1080, C4	Southwest	1370+/-50	Reust 1989
SW5057, C2	South-central	1420+/-50, 1480+/-60	Harrell 1987
SW8842	Southwest	1740+/-100	Pool 2001

from this period (Smith 1988) has expanded the discussion of weedy, seedy plant exploitation and suggested intensive gathering and processing with the probability surpluses were collected and stored for winter use. Smith (1988) also suggests the possibility Uinta Phase groups intentionally encouraged the growth of seed-bearing plants including the Cheno-ams, resulting in more or less predictable locations for later collection.

There also appears to be a different kind of corner-notched arrow point (called Woodland here) which is shorter, has a wider base and is often asymmetrical compared to points in the RS/RG series. These points are usually found in the southeastern and east-central portions of Wyoming with a few examples recorded from the south-central, central, north-central and northeastern portions of the state. They sometimes co-occur with cord-marked (Woodland) ceramics.

Over time, there appears to be movement of RS/RG points east across the southern Wyoming basins (and north into the Bighorn Basin) and movement of Woodland points west and north probably from north-central and northeastern Colorado and possibly west from the central Plains across eastern Wyoming. In the period from about 1200-800 B.P., these two traditions may have come into contact in south-central Wyoming.

Based on the distribution of these points and their associated ceramics, there appears to be a transition area in roughly the central portion of the state. That is, there are far fewer RS/RG or no points (and no Fremont ceramics) east of this “boundary” and far fewer or no Woodland points (and no Woodland ceramics) west of the transition area. A similar conclusion was reached by Francis (2001) with regard to rock art styles in Wyoming. West of the Bighorn River in north-central Wyoming, the rock art is typical of Great Basin styles and east of the river the rock art is typical of Plains styles.

Two sites with human remains have been excavated in this transition area, both with RS/RG points embedded in bone. This is suggestive of conflict between the Great Basin oriented groups (RS/RG) and Plains oriented groups, although we do not know with certainty if the victims of the conflict are necessarily part of the Woodland (or other) tradition.

On the other hand, contact may also have been cooperative (or at least not openly hostile) at times, during which interaction resulted in exchange of material culture and ideas. This possibility is suggested at the Garrett Allen (Elk Mountain) site in east-central Carbon County. Sources of lithic raw materials from western and eastern sources in Wyoming and sources from northern Colorado are present together in all the depth increments spanning

over 3000 years of prehistory (Eckles and Guinard 2015; Eckles and Miller 2019). While no well-defined cultural components could be established, RS/RG and Woodland points were found at roughly the same depths, suggesting (possibly) contact (and exchange?) between the two traditions.

The Late Prehistoric period in Wyoming is marked by the adoption of bow and arrow technology, but the styles of arrow projectile points are variable within the state. There are several traditions which appear to be geographically restricted. Not discussed in this article are other arrow points styles which occurred within the RS/RG time range, namely corner-notched Avonlea and Avonlea-like points such as at the Beehive (Hall 1998), Wortham Shelter (Greer 1978) and Irvine (Duguid 1971) sites and the side-notched Wardell site arrow points (Frison 1973). Dates from these sites range from about 1400 to about 1000 B.P. These traditions are generally rare in Wyoming and may indicate movement of people into Wyoming. Clearly, the Late Prehistoric was a time of both technological and societal change in which several cultural traditions came into contact.

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Appendix A: Excavated sites in Wyoming with Rose Spring/Rosegate diagnostics, various counties (key to abbreviations at end).

Site Number	Location WY	Radiocarbon Dates	Variants present	Reference
CR301*	South-central	ca. 920+/-110	A	Eckles 2013
CR332, F. B	South-central	1260+/-40	A	Davis and Murray 2008
CR997, Str 1	South-central	1060+/-100 1140+/-110	C	Moe and Todd 1982
CR997, Str 2	South-central	1370+/-110	A	Moe and Todd 1982
CR2521	South-central	1110+/-50	A	McGuire et al. 1984
CR2653	South-central	1480+/-60	A	McGuire et al. 1984
CR3595	South-central	Not dated	A, B	Gill 2010
CR4114	South-central	1190+/-60 1440+/-90	A, B	Bower et al. 1986
CR9597, C.B	South-central	1220+/-40 to 1310+/-30	A, B	Murray 2015
FR3123	Central	1210+/-70 1220+/-50	A	Walker 2004
FR3244	Central	1210+/-60	A	Goss and Davis 2001
FR4426**	Central	1720+/-40 1810+/-70	A	McNees et al. 2005

PA201	Northwest	1230+/-110	A, B, C	Husted and Edgar 2002
Park County (burial)	Northwest	Not dated	A	Weatherman n.d.
SU1042	West-central	1050+/-50 1200+/-60 1300+/-70	B	Hoefer 1991
SU3871	West-central	1150+/-40	B	Hill and Wolfe 2016 Wolfe 2014
UT35	Southwest	1350+/-60	A, C and C(EST-SF)	Zier 1982
UT199 North Block	Southwest	1320+/-60 1420+/-80 1490+/-60	A, C(EG)	Schroedl 1985
UT199 South Block	Southwest	930+/-70	C	Batterman and Smith (1989) Smith (1992)
UT390	Southwest	1160+/-50 1250+/-60	A, C	Schroedl 1985
UT779	Southwest	1130+/-80	C	Schroedl 1985
UT920	Southwest	1650+/-60	A, C(EST)	Latady 1989
UT1984, Upper Comp.	Southwest	1210+/-70 1260+/-60	A	Adams et al. 2011
UT1984, Lower Comp.	Southwest	1710+/-70	A, C(EST)	Adams et al. 2011
UT2010	Southwest	1450+/-50	B	Brechtel 1999
LN127	Southwest	1280+/-85	A, C	Schock et al. 1983

* RS/RG in mixed deposits with other diagnostics.

**RS/RG co-occur with CND in component

Appendix B: Excavated Sites with Rose Spring/Rosegate Diagnostics, Lincoln and Sweetwater Counties.

Site	Location WY	Radiocarbon Dates	Variants present	Reference
LN176	Southwest	1170+/-60	A, B	Bruder and Rhodes 1993
LN373, Area A, O13	Southwest	1030+/-80	A, C	Wheeler et al. 1986a
LN373, Area A, O12	Southwest	1170+/-60	A, C and C(EG)	Wheeler et al. 1986a
LN373, Area A O14**	Southwest	1640+/-60	A, C	Wheeler et al. 1986a
LN373 Area C**	Southwest	1620+/-70	A, C	Wheeler et al. 1986a
LN373, Area D	Southwest	1460+/-65	B	Wheeler et al. 1986a
LN1185	Southwest	1320+/-80	C	McDonald 1993
LN1296, C2**	Southwest	1390+/-90 1590+/-70	A	Wheeler et al. 1986b
LN1296, C3**	Southwest	1460+/-80 1490+/-100 1710+/-50	A, B, C(EST)	Wheeler et al. 1986b

LN1296, C4	Southwest	980+/-70	A, C	Wheeler et al. 1986b
LN1301	Southwest	1070+/-30 1220+/-30	A, C	Scott 2015
LN1334	Southwest	1580+/-80	C(EST)	Wheeler et al. 1986a
LN1468, C7	Southwest	960+/-60	A, C	Smith and Creasman 1987
LN1468, C6	Southwest	1170+/-60	A, C	Smith and Creasman 1987
LN1468, C5	Southwest	1310+/-70	A, C	Smith and Creasman 1987
LN1468, C4	Southwest	1500+/-70	A, B	Smith and Creasman 1987
LN1733	Southwest	1250+/-90	B	Hoefer and Darlington 1991
LN2068, AU-B3	Southwest	1150+/-100	B, C	McKibben 1995
LN2068, AU-A1**	Southwest	1170+/-100	A	McKibben 1995
LN2068, AU-B1**	Southwest	1420+/-90	A, B	McKibben 1995
LN2068, AU-B2**	Southwest	1880+/-130	C	McKibben 1995
LN3997, AU3	Southwest	1180+/-40 1220+/-30 1230+/-30 1320+/-60 1350+/-60	A, B, C and C(EG)	Williams et al. 2013 Nelson 2015
SW212	Southwest	1470+/-100	A, B, C	Metcalf 1975
SW270	Southwest	1210+/-60 1400+/-80 1460+/-90	A, B, C	McNees et al. 1992a

*RS/RG points present with other diagnostics in mixed deposits.

** RS/RG co-occur with CND in component

Appendix C: Excavated Sites in Wyoming with Rose Spring/Rosegate Diagnostics, Sweetwater County.

Site	Location WY	Radiocarbon Dates	Variants present	Reference
SW390 A, F1	Southwest	1270+/-80	A	Burns 1988
SW390**	Southwest	1270+/-60 1410+/-80	A	Rood et al. 1992
SW550, C2	South-central	1660+/-80 1420+/-40	A	Darlington et al. 2004
SW871, F2	South-central	1050+/-100	A	Pinner and Larson 1977
SW883	South-central	1430+/-50 1840+/-70	A	Davis 2008
SW1080, C4**	Southwest	1370+/-50	A	Reust 1989
SW1090	Southwest	1140+/-70 to 1370+/-40	A	Lubinski 2003 Darlington et al. 2004
SW1708	Southwest	1160+/-50 1290+/-80	C	Metcalf and Anderson 1982

SW5057, C3	South-central	1250+/-60 to 1300+/-100	A	Harrell 1987
SW5057, C2**	South-central	1420+/-50 1480+/-60	A, B	Harrell 1987
SW5215	Southwest	1090+/-60	B	McKern 1987
SW5222, North #2	Southwest	850+/-60	A	Hakiel et al. 1985
SW5377	Southwest	980+/-90 1210+/-60	C	Harrison 1986
SW5649, CB	Southwest	1400+/-70	A	McKibben et al. 1989
SW5649, CA	Southwest	1520+/-60	A	McKibben et al. 1989
SW5655	Southwest	1730+/-70	B, C(EG)	McKibben et al. 1989
SW5800	Southwest	1290+/-70	A, C	Reust et al. 1984
SW6253	South-central	1630+/-70	C(EST)	Swenson 1986
SW6324, CE4	South-central	1270+/-80	C	McNees et al. 1992b
SW6324, CW2	South-central	1010+/-50	A, C	McNees et al. 1992b
SW6454, O1	Southwest	1010+/-60	A	Kautzman 2000
SW6454, O2	Southwest	1270+/-70	A, C	Kautzman 2000
SW6926, C3	Southwest	1420+/-90	A, C and C(EG)	Darlington and Hoefer 1992
SW7101	South-central	1060+/-90	C	Shields et al. 1989
SW7107	South-central	1110+/-70 1460+/-70	A	Reust et al. 1992
SW7991, C2*	South-central	1220+/-60 1360+/-60 1640+/-80 1740+/-80	A, C, and C(EST)	McNees et al. 1992b

*RS points present with other diagnostics in overlapping occupations.

** RS/RG co-occur with CND in component

Appendix D: Excavated Sites in Wyoming with Rose Spring/Rosegate Diagnostics, Sweetwater County.

Site	Location WY	Radiocarbon Dates	Variants present	Reference
SW7678	Southwest	1580+/-80	C	Thompson et al. 1988
SW8842**	Southwest	1740+/-100	A	Pool 2001
SW9251, C3	Southwest	1530+/-90	A	Murray 2000
SW10233	Southwest	1190+/-70	A	Johnson 2000
SW10888, C3-O3	Southwest	950+/-80	A, B	Stainbrook 2000
SW10888, C3-O5	Southwest	950+/-90	A, B	Stainbrook 2000
SW10888, C3-O6	Southwest	1020+/-60	A	Stainbrook 2000
SW10893, C1	Southwest	1450+/-60 1750+/-60	C, and C(EG)	Darlington 2000

SW11902	Southwest	1190+/-60	A	Roufs 2005
SW12174	South-central	1160+/-50	A	Darlington 2004
SW12352	South-central	1250+/-60	A	Lubinski 2000
SW13490, C1	Southwest	810+/-60 970+/-60 1180+/-60	A	Buenger et al. 2007
SW13490, C2	Southwest	820+/-70 910+/-40 1180+/-60	A	Buenger et al. 2007
SW13552, C1-O3	Southwest	1490+/-60 1620+/-50	A, C	Buenger et al. 2007
SW13992*	Southwest	1260+/-60	A	Buenger et al. 2007
SW16684	Southwest	1120+/-30 1130+/-40	B	Darlington 2015
SW17760	Southwest	1230+/-30 to 1440+/-40	A	Kautzman 2017
SW18090	Southwest	1050+/-30	A	Waitkus 2012

*RS points present with other diagnostics (mixed deposits?).

** RS/RG co-occur with CND in componentKey:

AU=Analytical unit

C=Component

CND=Corner-notched dart

Comp.=component

EG=Eastgate

EST="early stemmed"

F=Feature

O=Occupation

SF=Surface

Str=Stratum

Appendix E: Sites with Fremont Ceramics in Wyoming.

Site	Location in WY	Context	Co-occur with Rose Spring/Rosegate points	Reference
CR4114	South-central	Dated component	Yes	Bower et al. 1986
LN22	Southwest	Surface		Site form
LN346	Southwest	Surface	Yes	Site form
LN919	Southwest	Undated component	Yes	Hoefler and Schoen 1985
LN1296	Southwest	Dated component	Yes	Wheeler et al. 1986b
LN3040	Southwest	Surface		Site form
LN3117	Southwest	Surface		Site form
SU1087	Southwest	Surface		Mackey et al. 1989
SU1879	Southwest	Surface		Site form
SU2508	Southwest	Surface		Site form
SU3871	Southwest	Surface	Yes	Wolfe 2014

SW30	Southwest	Surface		Batterman and Smith 1989
SW44	Southwest	Surface		Batterman and Smith 1989
SW88	Southwest	Surface		Batterman and Smith 1989
SW94	Southwest	Surface		Smith 1992
SW97	Southwest	Dated component		Smith 1992
SW101	Southwest	Surface	Yes	Batterman and Smith 1989
SW155	Southwest	Dated component		Batterman and Smith 1989
SW1433	Southwest	Dated component		Batterman and Smith 1989
SW2327	Southwest	Surface		Batterman and Smith 1989
SW2942	South-central	Surface		Smith 1992
SW3036	Southwest	Surface		Smith 1992
SW4560	Southwest	Surface		Batterman and Smith 1989
SW4643	Southwest	Surface	Yes	Batterman and Smith 1989
SW4689	Southwest	Surface		Batterman and Smith 1989
SW5222	Southwest	Dated components	Yes	Hakiel et al. 1985, 1987
SW5377	Southwest	Surface	Yes	Smith 1992
SW6191	Southwest	Dated component	Yes	Truesdale and Eckerle 1986
SW6454	Southwest	Dated component	Yes	Kautzman 2000
SW7107	South-central	Dated component	Yes	Greer and Greer 1989
SW7672	Southwest	Surface		Site form
SW7951	South-central	Surface		Site form
SW9376	South-central	Surface	Yes	Site form
SW10233	Southwest	Dated component	Yes	Johnson 2000
SW10242	Southwest	Surface	Yes	Site form
SW14071	Southwest	Surface		Site form
SW14775	South-central	Surface	Yes	Site form
SW14892	Southwest	Surface	Yes	Site form
SW15694	Southwest	Surface		Site form
SW16000	South-central	Surface		Site form
SW16761	Southwest	Surface		Site form
SW17185	Southwest	Surface		Site form
SW18479	Southwest	Surface		Site form
UT199	Southwest	Dated component	Yes	Batterman and Smith 1989
UT920	Southwest	Dated component	Yes	Latady 1989
UT967	Southwest	Surface	Yes	Site form

Appendix F: Sites with Cord-marked Ceramics in Wyoming.

Site	Location in WY	Context	Co-occur w/ BSNT Pt	Co-occur w/ WD Pt	Reference
AB301	Southeast	Surface		Yes	Zeimens 1975
AB302	Southeast	Undated component		Yes	Reher 1971
AB305	Southeast	Undated component		Yes	Gebhard et al. 1984
AB1137	Southeast	Surface			Site form
CA1998	Northeast	Surface			Site form
CA4475	Northeast	Surface	Yes		Site form
CA4787	Northeast	Surface			Site form
CA6865	Northeast	Surface	Yes		Site form
CA7008	Northeast	Surface			Site form
CK204	Northeast	Undated component			Wheeler 1996
CO3450	East-central	Surface			Site form
CR123	South-central	Dated component		Yes	McGuire and Joyner 1981
CR301	South-central	Dated deposits	Yes	Yes	Eckles 2013
CR325	South-central	Dated component	Yes		Reher 1987
CR6524	South-central	Surface	Yes	Yes	Site form
GO51	Southeast	Surface		Yes	Site form
GO54	Southeast	Dated component			Korell 1989
GO302	Southeast	Surface		Yes	Reher 1971
GO303	Southeast	Surface			Reher 1971
GO305	Southeast	Undated component			Zeimens et al. 1995
JO938	North-central	Dated component	Yes		Bower et al. 1991
LA277	Southeast	Surface			Site form
LA303	Southeast	Dated component	Yes	Yes	Reher 1971
LA304	Southeast	Dated component		Yes	Reher 1971
LA305	Southeast	Undated component		Yes	Reher 1971
LA306	Southeast	Surface			Reher 1971
LA307	Southeast	Surface			Reher 1971
LA310	Southeast	Surface			Reher 1971
LA311	Southeast	Undated component		Yes	Reher 1971
LA312	Southeast	Dated component		Yes	Reher 1971
LA313	Southeast	Surface			Reher 1971
LA319	Southeast	Surface			Reher 1971
LA320	Southeast	Surface			Reher 1971
LA325	Southeast	Dated component		Yes	Frison 1991
LA534	Southeast	Surface			Site form
NA83	Central	Dated component	Yes		Eckles et al. 2012
NA157	Central	Surface	Yes	Yes	Reiss et al. 1985

NA182	East-central	Surface	Yes	Yes	Goss and Slensker (2002)
NA543	East-central	Surface			Site form
NA999	East-central	Surface			Site form
NA1000	East-central	Dated component	Yes		Miller and Waitkus 1989
NA3502	East-central	Surface			Site form
PL65	Southeast	Dated component	Yes		Tibesar (1980)
PL249	Southeast	Surface			Site form
PL487	Southeast	Surface			Site form
PL709	Southeast	Dated component		Yes	Zeimens et al. 1992

BSNT=Besant, WD=Woodland