

The Osprey Beach Locality: A Cody Complex Occupation on the South Shore of West Thumb

Mack William Shortt

In early August 2000, a group of Wichita State archeology students under the direction of Donald Blakeslee recovered four diagnostic stone tools from a beach on the shore of West Thumb. While the entire area yielded a variety of artifacts, these particular specimens were typical of an Early Precontact-period (Paleoindian) archeological unit known as the Cody Complex. Of particular interest was the knowledge that Cody components at archeological sites elsewhere have provided radiocarbon dates of ca. 10,000 and 8,000 radiocarbon years before the present (RCYBP) (Stanford 1999: 321, Table 7). Clearly, these artifacts were much older than the other archeological materials found by Blakeslee's crew at the time. The portion of the beach where the specimens were found was ultimately named the Osprey Beach Locality. To date, Osprey Beach is the oldest, best-preserved Precontact site in Yellowstone National Park. As such, its study will provide an excellent opportunity to gather information about the lifeways of Yellowstone's early human occupants.

The Cody Complex was first defined in 1951 at the Horner site, a bison kill located to the east of Yellowstone National Park near Cody, Wyoming (e.g., Frison and Todd 1987; Frison 1991). Horner subsequently became the type site for the Cody Complex because of the occurrence of diagnostic Eden and Scottsbluff projectile points and specialized, bifacially flaked tools referred to as Cody knives. Radiocarbon dates from Horner range from approximately 9,300 to 8,700 RCYBP (Frison and Todd 1987: 98; Frison and Bonnicksen 1996: 313). Since then, the Cody Complex has become a relatively well documented cultural entity identified on the Northwestern Plains and in adjacent Central and Northern Rocky Mountain basins (e.g., Stanford 1999: 321, Figure 34). The typical Cody site consists of Scottsbluff and/or Eden projectile points and Cody knives, with radiocarbon dates approximating 9,000 RCYBP.

In the archeological literature, Cody represents "classic" Early Native American plains bison hunters, who were different from contemporaneous peoples who inhabited the foothills and mountains. This impression is, for the most part, founded upon a focus on the excavation of Cody bison kill sites and their associated processing and campsite areas. Indeed, sites such as Finley in the Green River basin (Moss et al. 1953; Haspel and Frison 1987), Carter/Kerr-McGee in the Powder River basin (Frison 1984), and the Frasca (Fulgham and Stanford 1982) and Jurgens (Wheat 1979) sites in northeastern Colorado are all interpreted as large-scale bison procurement operations.

Other sites with Cody components include, as examples, Hell Gap in eastern Wyoming (Irwin-Williams et al. 1973), Medicine Lodge Creek in northern

Wyoming (Frison 1991), and Claypool (Dick and Mountain 1960; Stanford and Albanese 1975) in eastern Colorado. The MacHaffie site (Forbis and Sperry 1952; Knudson 1983) and Mammoth Meadow (Bonnichsen et al. 1992) in southwestern Montana are examples of Cody lithic workshops or areas where stone tools were manufactured. In the current study area around Yellowstone Lake, Cody artifacts have been found at Fishing Bridge (Cannon et al. 1997: 345, Table 65) and near the mouth of Solution Creek on the shore of West Thumb (Cannon, Crothers, and Pierce 1996).

After the initial recovery of Cody artifacts by the Wichita State crew, a field crew from the Museum of the Rockies returned to Osprey Beach to further site investigations. Initially, we wished to relocate the exact positions of the Wichita State surface artifacts. Then, we wanted to address questions pertaining to the geologic associations of the materials and erosional processes that had exposed the artifacts on the beach surface. In addition, it was anticipated that a small assessment-oriented excavation would result in the recovery of artifacts similar to those recovered from the beach.

The initial field program, conducted during mid-August 2000 (after the departure of the Wichita State crew), involved a pedestrian reconnaissance of the entire beach area in the vicinity of the Wichita State finds. In this undertaking, the Museum crew recovered a number of Precontact lithic artifacts, including a third Cody knife. Like the specimens collected by the Wichita State crew, this artifact was not in situ, but instead had been eroded out of its primary context onto the beach below the bluffs.

At the terminus of the surface survey, the Museum crew then established a series of 1 x 1-m test excavation units on the heavily eroded edge of the bluff top directly above the Cody knife findspot. This particular portion of the shore of West Thumb is characterized by a high bluff that today rises 6.75 m above the datum at Bridge Bay which, in 1985, was 2,356 m (7,731 ft) above sea level.

The field testing program at Osprey Beach resulted in the completion of 8.5 contiguous 1 x 1-m units excavated to an average depth of 85 cm below the surface. In profile, the test excavations revealed a simple stratigraphic sequence consisting of a surficial dark brown sandy silt overlying a thick deposit of gray-brown sand, the latter of which persisted to an average depth of about 70 cm below the surface. The basal deposits reached by excavation consisted of coarse gray-brown sandy pea gravel.

With regard to cultural stratigraphy, Precontact archeological materials were recovered from almost all levels in the excavation, although there was a general tendency for artifacts to occur from 30 to 70 cm below the surface in the thick deposit of gray-brown silty sand. Artifact types included a limited quantity of lithic debris and a variety of stone tools. Of 62 waste flakes recovered, nearly one-half ($n = 28$) were small obsidian waste flakes that had resulted from manufacturing tools. Other lithic material types represented in the sample of debris included opalized wood, volcanic tuff, various colors and grades of chert, and a single piece of Knife River flint, the sources of which are located in western North Dakota. Unfortunately, zooarcheological (animal bone) specimens that

might provide direct evidence of food consumption were not recovered.

Tool types recovered from the excavation included three biface fragments, one fragmentary Cody knife, one sandstone shaft abrader, one pumice hide abrader, and a single projectile point. All were recovered in direct spatial association with quantities of stone flakes 30 to 60 cm below the ground surface.

The Cody knives found both on the beach surface below the test units and during excavation represent two lithic material types: vitreous dark green (Absaroka volcanic?) chert (Figure 1) and obsidian (Figure 2). The source of the obsidian specimens was determined to be the Obsidian Cliff Plateau, which is located in north-central Yellowstone National Park. Generally, the finely made dark green chert specimens are, in subjective terms, in better condition than their obsidian counterparts. One obsidian specimen had been snapped during use and the other appears to have been resharpened so often that the artifact had nearly lost its asymmetric form. It seems that the inhabitants of the site were less concerned with curating obsidian knives than with maintaining the integrity of the green chert specimens. This phenomenon is undoubtedly related to unlimited quantities of readily available Obsidian Cliff Plateau volcanic glass (see Davis, Aaberg, and Johnson 1992; Davis, Aaberg, and Schmitt 1995) versus more “exotic” green chert likely derived from sources to the east of Yellowstone National Park. The Cody knives from Osprey Beach are similar to specimens recovered at Horner (Frison and Todd 1987: 221, Figure 6.15) and other sites (Stanford 1999: 320, Figure 33).

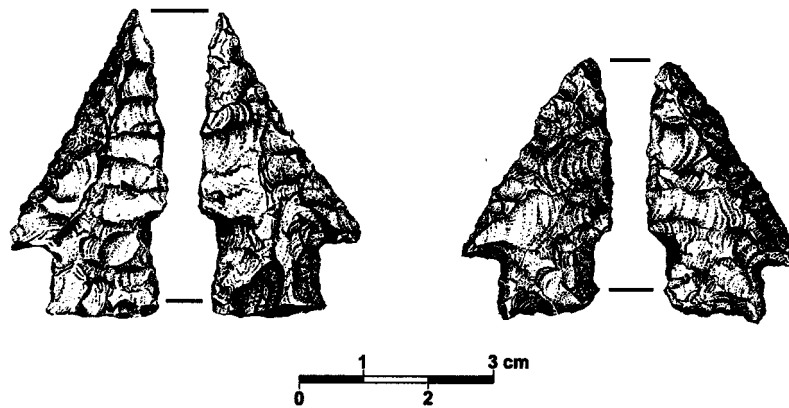


Figure 1. Osprey Beach Locality chert Cody knives.

The sandstone shaft abrader found at Osprey Beach is significant in light of the fact that similar artifacts are rare at other Cody Complex sites. Other shaft abraders of similar age have been recovered only at the MacHaffie site near Helena, Montana, at the Claypool site, and at the Jurgens site. In overall form, the Osprey Beach specimen is roughly rectangular, with a broad U-shaped transverse cross-section that continues over the length of the artifact (Figure 3). The main tool face exhibits a wide, relatively deep groove caused by the grinding and

The Osprey Beach Locality

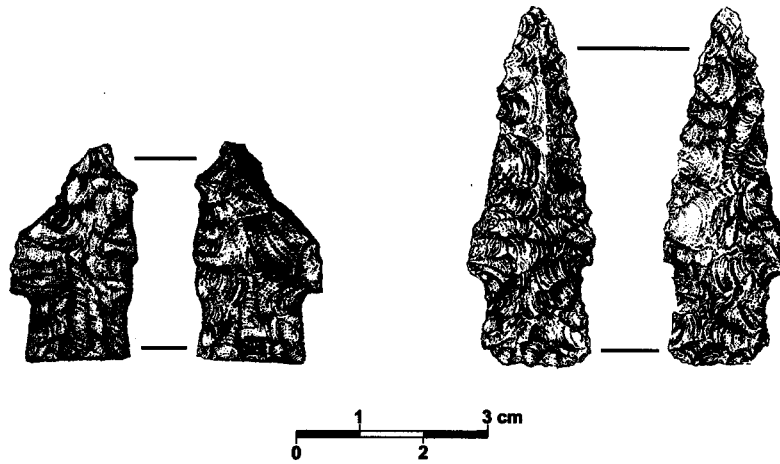


Figure 2. Osprey Beach Locality obsidian Cody knives.

smoothing of what were likely wooden shafts to which the stone artifacts were attached. Indeed, it was this heavy use that resulted in the U-shape. Close examination of the U-shaped interior, however, revealed narrower, incised grooves probably related to the actual abrading or sharpening of pointed shafts. The reverse face, rather than exhibiting a wide U-shape, exhibits four relatively narrow grooves that do not extend over the entire length of the artifact. These features are interpreted as the result of sharpening the pointed ends of shafts rather than the actual grinding of the main shaft itself.

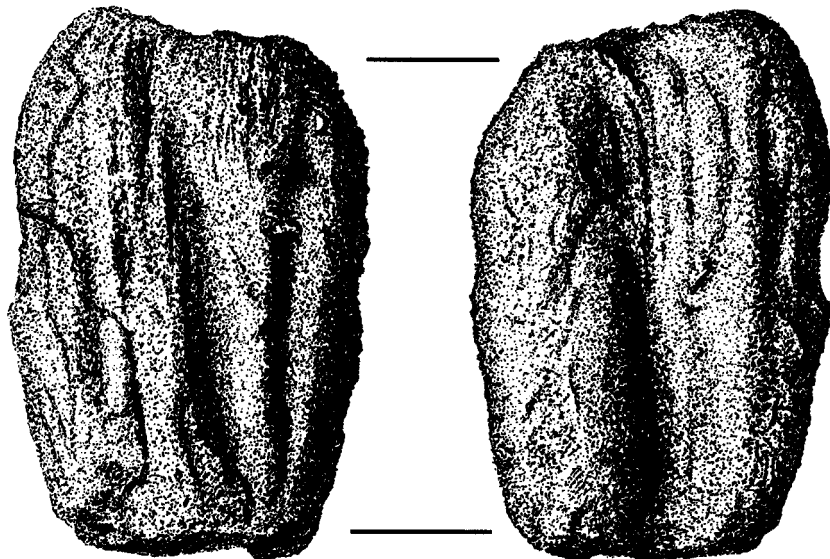


Figure 3. Osprey Beach Locality sandstone shaft abrader.

The test excavation program at Osprey Beach also resulted in the recovery of a split pumice cobble, 7.8 cm long, that had likely been utilized as an abrading type of implement (Figure 4). One aspect is relatively flat with rough, unmodified surfaces, while the opposite exhibits an undulating surface with smoothed, polished facets. Portions of the artifact's lateral margins also appear to have been worn smooth. While additional microscopic analyses are needed to verify the use-wear pattern on this specimen, it is clear that the cobble was transported into the site by Precontact native people. References to the use of such artifacts occur in the ethnographic literature. Denig, for example, in reference to the Assiniboine in 1854, describes rubbing a heated hide "with a pumice stone or porous bone..." (Dyck 1977: 159).

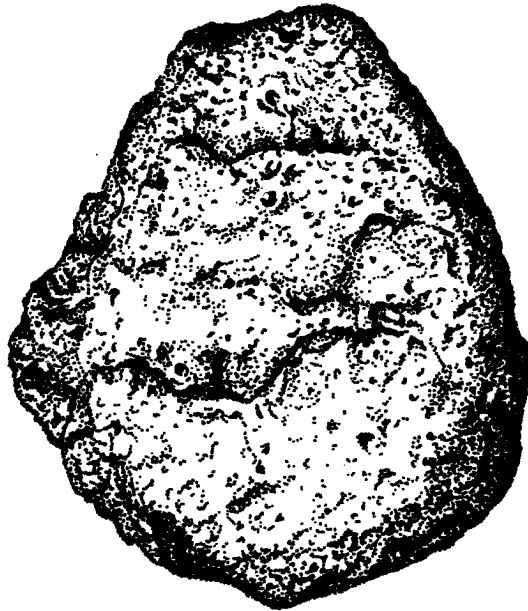


Figure 4. Osprey Beach Locality pumice hide abrader.

The projectile points recovered by Donald Blakeslee and the Museum of the Rockies are, for the most part, consistent with styles recovered at other Cody sites (e.g., Frison 1991; Stanford 1999). The beach finds included the midsection of an Eden point and the base of what appears to be a Scottsbluff point. Both styles conform to specimens in Cody assemblages at, for example, the Horner, Carter/Kerr-McGee, and Finley sites.

The projectile point recovered during excavation, however, differs morphologically from Scottsbluff and Eden, the hallmarks of the Cody Complex. Instead, this artifact is characterized by a convex base, excursive lateral margins, a slightly narrowing stem, incipient shoulders, and a parallel-oblique flaking pattern typical of post-Cody Complex projectiles (Figure 5). The Osprey Beach-

The Osprey Beach Locality

excavated specimen closely resembles forms from the Lookingbill site in northwestern Wyoming (Frison 1991: 75, Figure 2.37). While most parallel-oblique lanceolate projectiles succeed the Cody Complex in later assemblages (ca. 9,000 to 8,500 RCYBP; e.g., Frison 1991), archeological research at Barton Gulch (Alder Complex) in southwestern Montana (Davis et al. 1989: 7-8) and Medicine Lodge Creek in the Bighorn Basin (Frison 1997: 93), for example, demonstrated that lanceolate projectiles, often exhibiting parallel-oblique flaking, occur in assemblages that are roughly contemporaneous with or older than Cody. As such, we suggest that the projectile point data from Osprey Beach indicate a mixture of peoples or members of different cultural groups probably coalescing seasonally.

When were Precontact Native American people at Osprey Beach and what activities took place there? What was the local landscape like? Ken Pierce of the U.S. Geological Survey, during a visit to the site in the summer of 2000, recovered a piece of charcoal for radiocarbon analysis from a locality several meters east of the Museum of the Rockies test excavation units. It was recovered from the lowest part of the artifact-bearing stratum, slightly lower than the main Cody Complex. A conventional radiocarbon age of $9,360 \pm 60$ years before present was subsequently obtained (Beta-148567). Given the relative stratigraphic

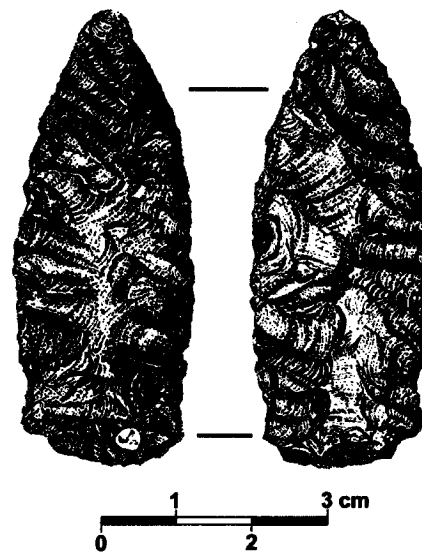


Figure 5. Osprey Beach Locality projectile point.

position of the charcoal, one can surmise that occupation of the site by Cody peoples may have been slightly later. However, tree tip-ups, rodent burrowing, and other natural site formation processes had likely, to some extent, mixed the archeological deposits in the past.

In terms of geomorphologic history, Pierce has suggested that, after the formation of a paleo-shoreline which is dated to ca. 10,500 years ago, the level of Yellowstone Lake lowered and retreated to the north. A shoreline of similar age was identified on the Fishing Bridge peninsula (Cannon et al. 1997: 357, Figure 8) where Cody artifacts were also found. Immediately following the lake recession, Precontact Native American peoples occupied the bench adjacent to the lake at Osprey Beach (the level of which was several meters higher than today), eventually abandoning some artifacts. Pierce suggests that, after site abandonment, aeolian sands blew into the area and eventually buried the archeological deposits.

Upon completion of the field program during the summer of 2000, eight of the Cody tools were submitted for blood residue analysis, a test that seeks to identify species of origin for blood proteins extant on some artifacts. The results, derived through crossover immunoelectrophoresis analyses, were surprising. The stem of one of the green chert Cody knives provided a positive reaction to rabbit antiserum. Whether this is related to the consumption of rabbit by site inhabitants or to the use of rabbit tissue for hafting is unknown, although both are strong possibilities. Second, the blade of the broken obsidian Cody knife yielded a positive reaction to dog antiserum. As such, any canid could be represented. The third test, undertaken on the parallel-obliquely flaked projectile point, provided a positive reaction to deer antiserum.

Finally, and perhaps what is the most interesting, the Cody knife collected from the surface of the beach below our excavation units provided two positive test results: rabbit on the stem and Rocky Mountain bighorn sheep on the blade. It is interesting to note that bison, the hallmark of the Cody Complex (e.g., Frison 1991), was conspicuously absent in the small sample of artifacts tested from Osprey Beach. As an aside, however, a Cody knife previously recovered from a site located near Solution Creek had tested positive to bison antiserum (Cannon, Crothers, and Pierce 1996: 149, Table 25). In addition, a Cody stemmed projectile point collected from Fishing Bridge in 1992 tested positive to rabbit antiserum (Cannon, Crothers, and Pierce 1994: 359, Figure 56e).

Some archeologists have suggested that, about 10,000 years ago, an ecological boundary separated plains-oriented, bison-hunting cultural groups from other contemporaneous Precontact cultural groups that occupied adjacent foothill and mountain regions. It is suggested that cultural groups in the latter were adapted to hunting and gathering in environs where more diverse faunal and floral species could be exploited (e.g., Frison 1992: 337; Frison 1997: 99). It is further suggested that, by Cody Complex times, the dichotomy between the ecological zones was breaking down (Frison 1992: 339; Frison and Bonnichsen 1996: 314; Frison 1997: 100).

The variety of mammalian species represented by blood residues on Osprey Beach artifacts indicate that a more diverse economy typified the Cody Complex adaptation around Yellowstone Lake than on the plains and intermountain basins to the east and southeast. Indeed, the Osprey Beach data suggest that the foothills-mountain/plains cultural dichotomy suggested by some researchers was in fact breaking down by the time of the Osprey Beach occupation. That Osprey Beach yielded relatively large numbers of Cody Complex artifacts suggests that Cody peoples were adapted to not only the plains and intermountain basins as bison hunters, but also to upland and mountain environs around Yellowstone Lake where a more diverse faunal resource base was exploited.

In sum, the archeological program at Osprey Beach has demonstrated that, by at least $9,360 \pm 60$ RCYBP, Precontact Native American peoples were traveling into the heart of Yellowstone country to exploit local game populations. While in the area around the lake, people utilized obsidian from the Obsidian Cliff Plateau to manufacture projectile points and specialized bifaces. Other non-local cherts

were also used by Osprey Beach peoples.

With regard to daily activities at Osprey Beach, the tool types collected by the Museum of the Rockies are suggestive of a variety of tasks, from projectile point and biface manufacture to the production of wooden shafts and, possibly, the preparation of animal hides. The use of the area was likely seasonal and limited to the spring to fall time of the year. The projectile point sample represents not only Cody peoples, but also other contemporaneous groups traveling from the plains and intermountain basins and foothills to Yellowstone—a seasonal subsistence and settlement pattern that continued throughout the Precontact Period.

Finally, plans for future research at the Osprey Beach locality include additional evaluative excavation to determine the horizontal extent of the site and to mitigate the negative effects of continual landform erosion. Not only will an additional field program stabilize this ancient and highly significant site, but it will also contribute to a better understanding of Yellowstone's distant cultural past. This, we believe, can only enhance the Yellowstone National Park experience for its employees and visitors.

Acknowledgments

The author wishes to acknowledge Dr. Donald Blakeslee, Wichita State University, for his efforts during the initial site inventory along the shore of West Thumb. Dr. Ken Pierce of the U.S. Geological Survey is recognized for information regarding site geomorphology and for collecting the charcoal sample. Dr. Ann Johnson, Branch of Cultural Resources, Yellowstone Center for Resources, facilitated and coordinated the entire project. Dr. Leslie B. Davis, Curator of Prehistoric Archaeology and Ethnology, Museum of the Rockies, interfaced between the project, the Museum, and the National Park Service. He is also to be acknowledged for his guidance as the principal investigator of the program and for providing editorial services. Tom Besom, Doug Mitchell, John Reynolds, Dinah Shortt, and Kevin Thorson are recognized for their efforts as the field crew. Priscilla Madsen and Nancy Saxberg are acknowledged for providing the artifact illustrations.

References

- Bonnichsen, R., M. Beaty, M.D. Turner, J.C. Turner, and D. Douglas. 1992. Paleoindian lithic procurement at the South Fork of Everson Creek, southwestern Montana: a preliminary statement. In *Ice Age Hunters of the Rockies*. D.J. Stanford and J.S. Day, eds. Niwot, Colo.: Denver Museum of Natural History and University Press of Colorado, 285–321.
- Cannon, K.P., G.M. Crothers, and K.L. Pierce. 1994. Archeological investigations along the Fishing Bridge Peninsula, Yellowstone National Park, Wyoming: The archeology, geology, and paleoenvironment. Unpublished report. Lincoln, Neb.: Midwest Archeological Center. (On file, Yellowstone National Park, Wyoming.)
- . 1996. Archeological investigations along the Arnica Creek to Little Thumb Creek section of the Grand Loop Road, Yellowstone National Park, Wyoming. Unpublished report. Lincoln, Neb.: Midwest Archeological Center. (On file, National Park Service, Rocky Mountain Region, Denver, Colorado.)

- Cannon, K.P., K.L. Pierce, P. Stormberg, and M.V. MacMillan. 1997. Results of archeological and paleoenvironmental investigations along the north shore of Yellowstone Lake, Yellowstone National Park, Wyoming: 1990–1994. Unpublished report. Lincoln, Neb.: Midwest Archeological Center. (On file, Yellowstone National Park, Wyoming.)
- Davis, L.B., S.A. Aaberg, and A.M. Johnson. 1992. Archaeological fieldwork at Yellowstone's Obsidian Cliff. *Park Science* 12:2, 26–27.
- Davis, L.B., S.A. Aaberg, and J.G. Schmitt. 1995. *The Obsidian Cliff Plateau Prehistoric Lithic Source, Yellowstone National Park, Wyoming*. Selections from the Division of Cultural Resources no. 6. Denver: Rocky Mountain Region, National Park Service.
- Davis, L.B., S.A. Aaberg, W.P. Eckerle, J.W. Fisher, Jr., and S.T. Greiser. 1989. Montane Paleoindian occupation of the Barton Gulch Site, Ruby Valley, southwestern Montana. *Current Research in the Pleistocene* 6, 7–9.
- Dick, H.W., and B. Mountain. 1960. The Claypool Site: A Cody Complex site in northeastern Colorado. *American Antiquity* 26:2, 223–235.
- Dyck, I.G. 1977. *The Harder Site: A Middle Period Bison Hunter's Campsite in the Northern Great Plains*. National Museum of Man Mercury Series, Paper no. 67. Ottawa, Ont.: National Museums of Canada.
- Forbis, R.G., and J.D. Sperry. 1952. An Early Man site in Montana. *American Antiquity* 18, 127–137.
- Frison, G.C. 1984. The Carter/Kerr-McGee Paleoindian Site: cultural resource management and archaeological research. *American Antiquity* 49, 288–314.
- . 1991. *Prehistoric Hunters of the High Plains*. 2nd ed. New York: Academic Press.
- . 1992. The foothills-mountains and the open plains: the dichotomy in Paleoindian subsistence strategies between two ecosystems. In *Ice Age Hunters of the Rockies*. D.J. Stanford and J.S. Day, eds. Niwot, Colo.: Denver Museum of Natural History and University Press of Colorado, 323–342.
- . 1997. The Foothill-Mountain Late Paleoindian and Early Plains Archaic chronology and subsistence. In *Changing Perspectives of the Archaic on the Northwest Plains and Rocky Mountains*. M.L. Larson and J.E. Francis, eds. Vermillion, So. Dak.: University of South Dakota Press, 85–104.
- Frison, G.C., and R. Bonnichsen. 1996. The Pleistocene-Holocene transition on the Plains and Rocky Mountains of North America. In *Humans at the End of the Ice Age: The Archaeology of the Pleistocene–Holocene Transition*. L.G. Straus, B.V. Eriksen, J.M. Erlandson, and D.R. Yesner, eds. New York: Plenum Press, 303–318.
- Frison, G.C., and L.C. Todd, eds. 1987. *The Horner Site: The Type Site of the Cody Cultural Complex*. New York: Academic Press.
- Fulgham, T., and D.J. Stanford. 1982. The Frasca Site: a preliminary report. *Southwestern Lore* 48, 1–9.
- Haspel, H., and G.C. Frison. 1987. The Finley Site bison bone. In *The Horner Site: The Type Site of the Cody Cultural Complex*. G.C. Frison and L.C. Todd, eds. New York: Academic Press, 475–491.
- Irwin-Williams, C., H.T. Irwin, G. Agogino, and C.V. Haynes, Jr. 1973. Hell Gap: Paleo-Indian occupation on the High Plains. *Plains Anthropologist* 18, 40–53.
- Knudson, R. 1983. *Organizational Variability in Late Paleo-Indian Assemblages*. Reports of Investigations no. 60. Pullman, Wash.: Laboratory of Anthropology, Washington State University.
- Moss, J.H., K. Bryan, G.W. Holmes, L. Satterthwaite Jr., H.P. Hansen, C.B. Schultz, and W.D. Frankforter. 1953. *Early Man in the Eden Valley*. Museum Monographs no. 6.

The Osprey Beach Locality

Philadelphia: University of Pennsylvania.

Stanford, D.J. 1999. Paleoindian archaeology and Late Pleistocene environments in the Plains and southwestern United States. In *Ice Age Peoples of North America: Environments, Origins, and Adaptations of the First Americans*. R. Bonnicksen and K.L. Turnmire, eds. Corvallis, Ore.: Center for the Study of the First Americans, 281–339.

Stanford, D.J., and J. Albanese. 1975. Preliminary results of the Smithsonian Institution excavation at the Claypool Site, Washington County, Colorado. *Southwestern Lore* 41, 22–28.

Wheat, J.B. 1979. The Jurgens Site. *Plains Anthropologist*, Memoir no. 15.

Mack William Shortt, 20 Inverness Drive SE, Calgary, Alberta T2Z 3E4, Canada; mackshortt@shaw.ca

