

|  |                         |       |
|--|-------------------------|-------|
| <b>14. FOSSIL AND MODIFIED SHELL REMAINS</b> | <i>Stanley A. Ahler</i> | ..... |
| Introduction                                 |                         | ..... |
| Methods                                      |                         | ..... |
| Unmodified Fossil Specimens                  |                         | ..... |
| Modified and Exotic Specimens                |                         | ..... |
| Temporal Variation and External Comparisons  |                         | ..... |
| Summary                                      |                         | ..... |

## 14. FOSSIL AND MODIFIED SHELL REMAINS

Stanley A. Ahler

### Introduction

The purpose of this chapter is to present descriptive and distributional information concerning a modest collection of (1) unmodified fossil shells as well as (2) modified shell specimens from the 1998 excavations at Scattered Village. Unmodified fossil shells occur in all excavated areas in the site, apparently representing specimens collected and carried to the site by its inhabitants. Modified shell artifacts are less common than unmodified fossil specimens, but occur in a wide variety of forms. The approach in this study is largely descriptive, with goals of placing on record an inventory of the remains and assessing any possible change in the use of fossil and modified shell within the temporal span of the village occupation. Brief comparison will be made to other described collections in the region.

### Methods

All shell of all types was sorted from size grade G1-G3 samples during basic collection processing. Modified shell, fossil shell, and non-fossil gastropod remains (but not non-fossil bivalve remains) were also sorted from only the size grade G4 and G5 sample fractions of the waterscreen samples. No shell of any kind was sorted from the non-sample fractions in G4 and G5 (see discussion in Chapter 4 regarding sampling). Therefore, any specimen counts for artifacts of interest in G4 and G5 must be adjusted by the appropriate G4 and G5 multipliers to create reasonably accurate estimates of such remains in the smaller size classes. Such a procedure has been conducted for all count data presented in this chapter.

Gail Ryser conducted the initial study of shell remains during the course of her work with unmodified freshwater bivalve samples from the site. She sorted all shell into four basic categories: unmodified bivalves (non-fossil specimens exhibiting no evidence of intentional shaping or use-modification); unmodified fossil shell; modified fossil and non-fossil shell; and unmodified non-fossil and non-exotic gastropods. After this initial sort, Ahler checked the classification of the latter three kinds of specimens. Data on the unmodified bivalve remains, which are predominantly food remains and residue of specimens collected from nearby streams for purposes of tool production, are presented in Chapter 10. Unmodified, non-fossil and non-exotic gastropods are assumed to largely be naturally occurring fauna that have inadvertently found their way into the excavated deposits. Their presence may be of some importance for environmental reconstruction or for the study of sedimentation processes at the site. These tasks are beyond the scope of the present study, and these gastropod samples are not further studied in this report (see Chapter 10 for an inventory of such remains).

Fossil shell occurs predominantly in the form of gastropods and rarely as bivalve pieces that are typically soft and chalky in composition. Unmodified fossil gastropods are those which apparently lack any form of modification (such as perforation for suspension), but which are of interest here because they were presumably transported to the site by its occupants. Modified

shell, the second major focal group in the present chapter, consists of shaped pieces of bivalve shell that were presumably obtained from nearby streams, lesser numbers of altered fossil pieces (such as drilled or perforated fossil gastropods), and any piece of scaphopod or *Dentalium* (with or without any obvious modification). *Dentalium* or tusk shell occurs in marine contexts, and whether fossil or geologically recent in origin, reflect an exotic material intentionally transported to the site. During the historic period, dentalium was widely used for ornamentation and personal adornment.

Geologically recent freshwater bivalve specimens, when sufficiently complete (including those discussed in Chapter 10), were taxonomically identified using Cvancara (1983) as a basic reference and using a comparative collection originally developed from specimens examined and identified by Robert Warren (Illinois State Museum) as part of the Slant Village project (Ahler and Ryser 1997b:393) and further refined by input from Darcy Morey (University of Kansas), and Paul Parmalee (University of Tennessee) during study of shell remains from site 32MO291 (Ahler and Ryser 2000:283).

Fossil gastropods (modified and unmodified) were identified with assistance from Dr. John Hoganson, State Paleontologist of North Dakota. A sample of ca. 37 unmodified fossil gastropods and eight apparently modified fossil gastropods and scaphopods from excavations in Block 1 were sent to Hoganson for identification. Among the gastropods he identified three taxa, all of which are from Paleocene age (60 million years) freshwater deposits: *Campeloma nebrascensis*, *Lioplacodes nebrascensis*, and ?*Physa* sp. (Hoganson 2001). A specific formation could not be identified as a source for these specimens, although John felt it was likely that they were collected from exposures along the Missouri River north of Scattered Village. Marine deposits in the Paleocene age Cannonball formation outcrop in the hill immediately north of the site, so these freshwater fossil specimens must have been transported from a somewhat more distant source to the site locality. John also identified two scaphopods as possible *Dentalium*, noting that no rock formations in North Dakota have scaphopods preserved like the ones from the site. Therefore, the scaphopod remains can be treated as truly exotic specimens, regardless of source (Hoganson 2001).

The examples of fossil gastropod and scaphopod specimens examined and identified by Hoganson were subsequently used by workers in Flagstaff as a comparative collection for the identification of as much of the remaining fossil collection from Scattered Village as possible. A few relatively complete specimens, absent from the sample studied by Hoganson, remain unidentified. Working with this comparative collection as a guide, Chad Badorek collected taxonomic data on all of the modified and unmodified fossil specimens in the site collection. In addition, Chad studied the modified specimens in greater detail and classified them according to descriptive groups that were created in part following classes used by Ahler and Ryser (1997b) and in part as needed to accommodate observed variation within the collection. The following variables were entered into a database for the fossil and modified shell specimens:

|                 |   |
|-----------------|---|
| Catalog Number  |   |
| Specimen Number | a unique number assigned to each modified specimen; unmodified fossil shells are not assigned a specimen number |
| Size Grade      |   |

|                 |   |
|-----------------|---|
| Modification    | unmodified fossil versus modified fossil/non-fossil             |
| Artifact Type   | for modified and exotic specimens only; discussed below         |
| Burning         | presence – absence  |
| Encrustation    | presence – absence of a brown encrustation                      |
| Use-Phase Class | as per modified bone/antler; class 6 = unmodified fossil        |
| Completeness    | As per unmodified bivalves, Chapter 10                          |
| Length          | modified specimens only   |
| Width           | modified specimens only   |
| Thickness       | modified specimens only   |
| Weight          | all specimens   |
| Taxon           | see following discussion  |
| Count           | 1 for modified specimens, or possible >1 for unmodified fossils |
| Comment         | as appropriate  |
| Illustrate      | tagged for illustration   |

Chad recorded the above information for all modified and fossil specimens. Ahler checked, in particular, artifact type classifications, some of the taxonomic identifications, and the illustration tags. Badorek conducted data entry; Ahler conducted data error checking and all of the data analysis and wrote the present chapter. In the discussion that follows, data are limited to specimens from TP1 – TP4 analytic contexts. A small number of specimens from TP0 (unassigned) and TP5 (pre- or sub-village contexts) are not considered here.

### Unmodified Fossil Specimens

The size distribution of unmodified fossil specimens and modified specimens is presented in Table 14.1. Modified specimens are discussed in the following section. An estimated 197 fossil specimens occur in the excavated collection (as noted, estimated counts involve the use of sampling multipliers). More than half of this sample consists of very small fragments of whole shells occurring in size grades G4 and G5. Table 14.2 provides data on the taxonomic makeup of the fossil shell remains according to time period within the site. Only 59 gastropod specimens are taxonomically identifiable, and these occur predominantly in the larger G2 and G3 size classes. Among these, *Campeloma* is slightly more common than *Lioplacodes*, with *?Physa* occurring infrequently. Two pieces of apparently fossil bivalve remains occur in the sample, and these are unidentified by taxa. Chi-square analysis indicates a mildly nonrandom distribution of fossil taxa according to time period ( $X^2=22.560$ ,  $df=12$ ,  $p=.032$ ). The rare specimens (fossil bivalves and *?Physa*) occur exclusively in TP2; *Campeloma* has its highest frequency in TP4, and *Lioplacodes* is particularly common in TP3 and TP1. The meaning of this distribution is presently unclear, unless it reflects temporally shifting preferences for the collection of particular kinds of fossil shells. The overall occurrence of fossil specimens mirrors closely the volume of excavation by time period unit (see Chapter 5); the only deviation from this is a slightly higher specimen frequency in TP4.

### Modified and Exotic Specimens

A total of 91 modified and exotic shell specimens occur in the study collection (Table 14.1). These specimens are organized into 13 descriptive categories. The taxonomic makeup of

Table 14.1. Size grade distribution of unmodified fossil and modified fossil and modern shell specimens discussed in this chapter, Scattered Village (32MO31), 1998 excavations. Counts for G4 and G5 specimens are estimates based on sample multipliers.

| Modified                 | Size Grade |     |      |      |      | Total |       |
|--------------------------|------------|-----|------|------|------|-------|-------|
|                          | G1         | G2  | G3   | G4   | G5   |       |       |
| Unmodified fossil        | n          |     | 15   | 72   | 75   | 35    | 197   |
|                          | %          |     | 7.6  | 36.5 | 38.1 | 17.8  | 100.0 |
| Modified fossil & modern | n          | 2   | 32   | 36   | 21   |       | 91    |
|                          | %          | 2.2 | 35.2 | 39.6 | 23.1 |       | 100.0 |
| Total                    | n          | 2   | 47   | 108  | 96   | 35    | 288   |
|                          | %          | .7  | 16.3 | 37.5 | 33.3 | 12.2  | 100.0 |

Table 14.2 Taxonomic make-up and temporal distribution of the unmodified fossil shell collection from Scattered Village (32MO31), 1998 excavated collection. Estimated counts top, percentages middle, and standardized cell residual values at bottom. Residual values >+1.0 are shaded for emphasis.

| Taxon                           | Time Period         |                     |                   |                    | Total  |
|---------------------------------|---------------------|---------------------|-------------------|--------------------|--------|
|                                 | 1 later postcontact | 2 early postcontact | 3 late precontact | 4 early precontact |        |
| unid bivalve                    | 0                   | 2                   | 0                 | 0                  | 2      |
| unid fossil gastropod           | 34                  | 60                  | 9                 | 23                 | 126    |
| <i>Campeloma nebrascensis</i>   | 6                   | 18                  | 2                 | 12                 | 38     |
| <i>Lioplacodes nebrascensis</i> | 10                  | 9                   | 6                 | 2                  | 27     |
| ? <i>Physa</i> sp.              | 0                   | 4                   | 0                 | 0                  | 4      |
| unid bivalve                    | .0%                 | 2.2%                | .0%               | .0%                | 1.0%   |
| unid fossil gastropod           | 68.0%               | 64.5%               | 52.9%             | 62.2%              | 64.0%  |
| <i>Campeloma nebrascensis</i>   | 12.0%               | 19.4%               | 11.8%             | 32.4%              | 19.3%  |
| <i>Lioplacodes nebrascensis</i> | 20.0%               | 9.7%                | 35.3%             | 5.4%               | 13.7%  |
| ? <i>Physa</i> sp.              | .0%                 | 4.3%                | .0%               | .0%                | 2.0%   |
| unid bivalve                    | -.7                 | 1.1                 | -.4               | -.6                |        |
| unid fossil gastropod           | .4                  | .1                  | -.6               | -.1                |        |
| <i>Campeloma nebrascensis</i>   | -1.2                | .0                  | -.7               | 1.8                |        |
| <i>Lioplacodes nebrascensis</i> | 1.2                 | -1.0                | 2.4               | -1.4               |        |
| ? <i>Physa</i> sp.              | -1.0                | 1.5                 | -.6               | -.9                |        |
| Total                           | 50                  | 93                  | 17                | 37                 | 197    |
|                                 | 100.0%              | 100.0%              | 100.0%            | 100.0%             | 100.0% |

these categories is provided in Table 14.3, and a use-phase classification by category is provided in Table 14.4. Specimens representing most of these artifact types are illustrated in Figures 14.1 and 14.2, and each category or type will be briefly discussed.

Fifty-eight specimens are made from what appears to be freshwater bivalve shell, presumably collected from streams near the site. Only three of these 58 artifacts are complete enough for identification to species, with one possible *shell scraper* made from a valve of *Lasmigona complanata* (Figure 14.1s), and with two *perforated valves* of *Lampsilis siliquoidea* occurring in the sample (Figure 14.1v). The most common artifact types made of mussel shell

Table 14.3. Taxonomic makeup of the modified shell collection at Scattered Village (32MO31), 1998 excavations.

| Artifact Type                | Taxon                       |                              |              |                       |                         |                        |                               |                                 |                       |                       |    |
|------------------------------|-----------------------------|------------------------------|--------------|-----------------------|-------------------------|------------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|----|
|                              | <i>Lasmigona complanata</i> | <i>Lampsilis siliquoidea</i> | unid bivalve | unid fossil gastropod | modern exotic gastropod | marine shell, any kind | <i>Campeloma nebrascensis</i> | <i>Lioplacodes nebrascensis</i> | ? <i>Anculosa</i> sp. | <i>Marginella</i> sp. |    |
| red stained mussel           |                             |                              | 1            |                       |                         |                        |                               |                                 |                       |                       | 1  |
| mussel shell disc            |                             |                              | 25           |                       |                         |                        |                               |                                 |                       |                       | 25 |
| incised mussel disc          |                             |                              | 1            |                       |                         |                        |                               |                                 |                       |                       | 1  |
| shaped mussel shell          |                             |                              | 14           |                       |                         |                        |                               |                                 |                       |                       | 14 |
| mussel shell scraper         | 1                           |                              |              |                       |                         |                        |                               |                                 |                       |                       | 1  |
| mussel disc bead             |                             |                              | 9            |                       |                         |                        |                               |                                 |                       |                       | 9  |
| perforated mussel valve      |                             | 2                            |              |                       |                         |                        |                               |                                 |                       |                       | 2  |
| drilled mussel ornament      |                             |                              | 1            |                       |                         |                        |                               |                                 |                       |                       | 1  |
| mussel pendant               |                             |                              | 2            |                       |                         |                        |                               |                                 |                       |                       | 2  |
| incised mussel               |                             |                              | 2            |                       |                         |                        |                               |                                 |                       |                       | 2  |
| modern exotic gastropod bead |                             |                              |              |                       | 6                       |                        |                               |                                 | 1                     | 2                     | 9  |
| fossil gastropod bead        |                             |                              |              | 2                     |                         |                        | 4                             | 4                               |                       |                       | 10 |
| tusk or <i>Dentalium</i>     |                             |                              |              |                       |                         | 14                     |                               |                                 |                       |                       | 14 |
| Total                        | 1                           | 2                            | 55           | 2                     | 6                       | 14                     | 4                             | 4                               | 1                     | 2                     | 91 |

are simple *shell disks* (n=25) and *shaped shell pieces* (n=14). The specimens classified as *shell disks* are approximately equidimensional in plan form and vary considerably in overall size (Figure 14.1a-n). Both thin-walled and thick-walled specimens occur in the disk sample, but thickness measurements exhibit a unimodal distribution with a mean of 4.3 mm. Shell disks are shaped by trimming and controlled fracture and, less frequently, by grinding the margins. On most of the disk specimens the interior and exterior surfaces are visibly quite distinct, and it is possible that many of these specimens functioned as “heads / tails” gaming pieces. One *incised shell disk* occurs in the sample (Figure 14.1u), this resembling more closely gaming pieces made in bone, stone, and other media.

*Shaped mussel shell* pieces are less clearly equidimensional in form (Figure 14.1o-r). One small specimen (Figure 14.1q) is highly abraded and rounded on several surfaces, and may have been used as a noise-maker in a rattle. Another very small piece (Figure 14.1r) was carefully shaped to an asymmetrical diamond-shaped form. A single heavily modified valve fragment is classified as a *mussel shell scraper* (Figure 14.1s); the hinge area on this specimen is heavily ground, and much of the unfractured margin on the specimen exhibits abrasion across the edge. Two pieces of *incised mussel valve* occur in the sample (Figure 14.1t); these specimens bear several narrow incised lines on the interior surface that occur in no particular pattern. Two *perforated whole mussel valves* occur in the sample (Figure 14.1v). Each bears a single small

Table 14.4. Use-phase classification by artifact type for modified shell remains from Scattered Village (32MO31), 1998 excavations.

| Artifact Type                | Use-Phase Class     |                               |                   |                          | Total |       |
|------------------------------|---------------------|-------------------------------|-------------------|--------------------------|-------|-------|
|                              | 1 unfin.,<br>usable | 2 bkn/disc.<br>in manufacture | 3 fin.,<br>usable | 4 fin.,<br>bkn/discarded |       |       |
| red stained mussel           | n                   |                               |                   | 1                        | 1     |       |
|                              | %                   |                               |                   | 100.0                    | 100.0 |       |
| mussel shell disc            | n                   |                               | 24                | 1                        | 25    |       |
|                              | %                   |                               | 96.0              | 4.0                      | 100.0 |       |
| incised mussel disc          | n                   |                               | 1                 |                          | 1     |       |
|                              | %                   |                               | 100.0             |                          | 100.0 |       |
| shaped mussel shell          | n                   |                               | 14                |                          | 14    |       |
|                              | %                   |                               | 100.0             |                          | 100.0 |       |
| mussel shell scraper         | n                   |                               |                   | 1                        | 1     |       |
|                              | %                   |                               |                   | 100.0                    | 100.0 |       |
| mussel disc bead             | n                   | 4                             | 3                 | 2                        | 9     |       |
|                              | %                   | 44.4                          | 33.3              | 22.2                     | 100.0 |       |
| perforated mussel valve      | n                   |                               | 2                 |                          | 2     |       |
|                              | %                   |                               | 100.0             |                          | 100.0 |       |
| drilled mussel ornament      | n                   |                               |                   | 1                        | 1     |       |
|                              | %                   |                               |                   | 100.0                    | 100.0 |       |
| mussel pendant               | n                   |                               |                   | 2                        | 2     |       |
|                              | %                   |                               |                   | 100.0                    | 100.0 |       |
| incised mussel               | n                   |                               | 1                 | 1                        | 2     |       |
|                              | %                   |                               | 50.0              | 50.0                     | 100.0 |       |
| modern exotic gastropod bead | n                   | 1                             | 3                 | 5                        | 9     |       |
|                              | %                   | 11.1                          | 33.3              | 55.6                     | 100.0 |       |
| fossil gastropod bead        | n                   |                               | 2                 | 5                        | 10    |       |
|                              | %                   |                               | 20.0              | 50.0                     | 100.0 |       |
| tusk or <i>Dentalium</i>     | n                   |                               | 12                | 2                        | 14    |       |
|                              | %                   |                               | 85.7              | 14.3                     | 100.0 |       |
| Total                        | n                   | 5                             | 2                 | 65                       | 19    | 91    |
|                              | %                   | 5.5                           | 2.2               | 71.4                     | 20.9  | 100.0 |

circular hole; it is possible that one or both of these holes were produced with a steel chaining pin that was used frequently during fieldwork as a probe for feature definition.

Several more elaborately worked and probable decorative items occur in the sample. Nine *mussel shell disk beads* occur in the sample (Figure 14.2d-h), and four of these are partially drilled, unfinished specimens (Figure 14.2f). One apparent *drilled ornament* made from mussel shell bears three perforations in the small extant fragment (Figure 14.2c). Two fragmentary *mussel shell pendants* are identified in the sample. One is carefully shaped and thinned at its margins, and has a circular hole near the wider end (Figure 14.2b). The other has a carefully shaped triangular form, with the narrow apex of the triangle broken away (the portion where a hole for suspension may have occurred) (Figure 14.2a).

Ten *fossil gastropod beads* occur in the study collection (Figure 14.2i-l,n). These are made into beads by drilling, sawing, grinding, or incising a small hole to facilitate suspension.

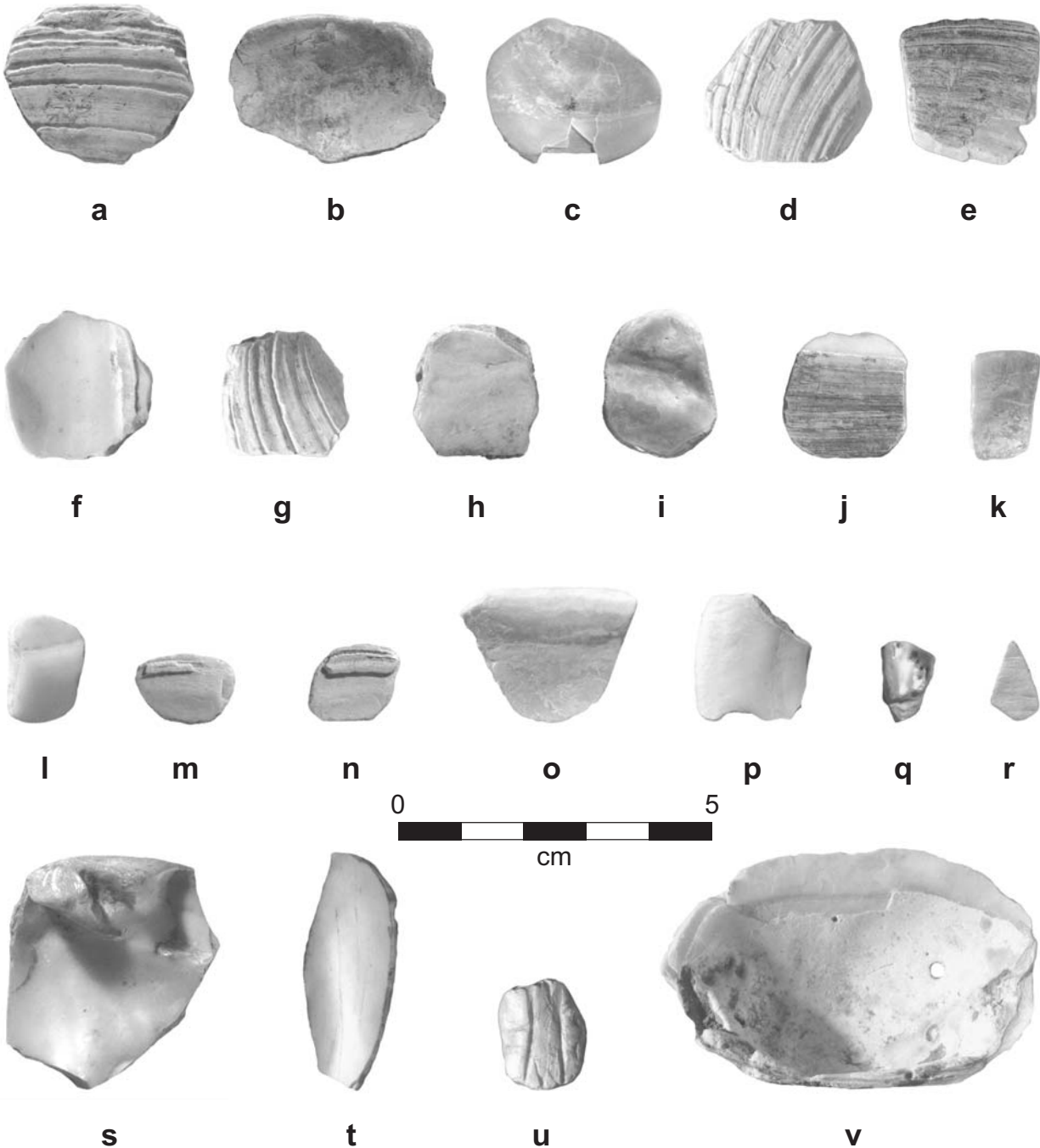


Figure 14.1. Photographs of modified shell specimens from Scattered Village (32MO31). A-n: mussel shell disks; o-r: shaped mussel shell pieces; s: mussel shell scraper; t,u: incised mussel shell; v: perforated mussel shell.



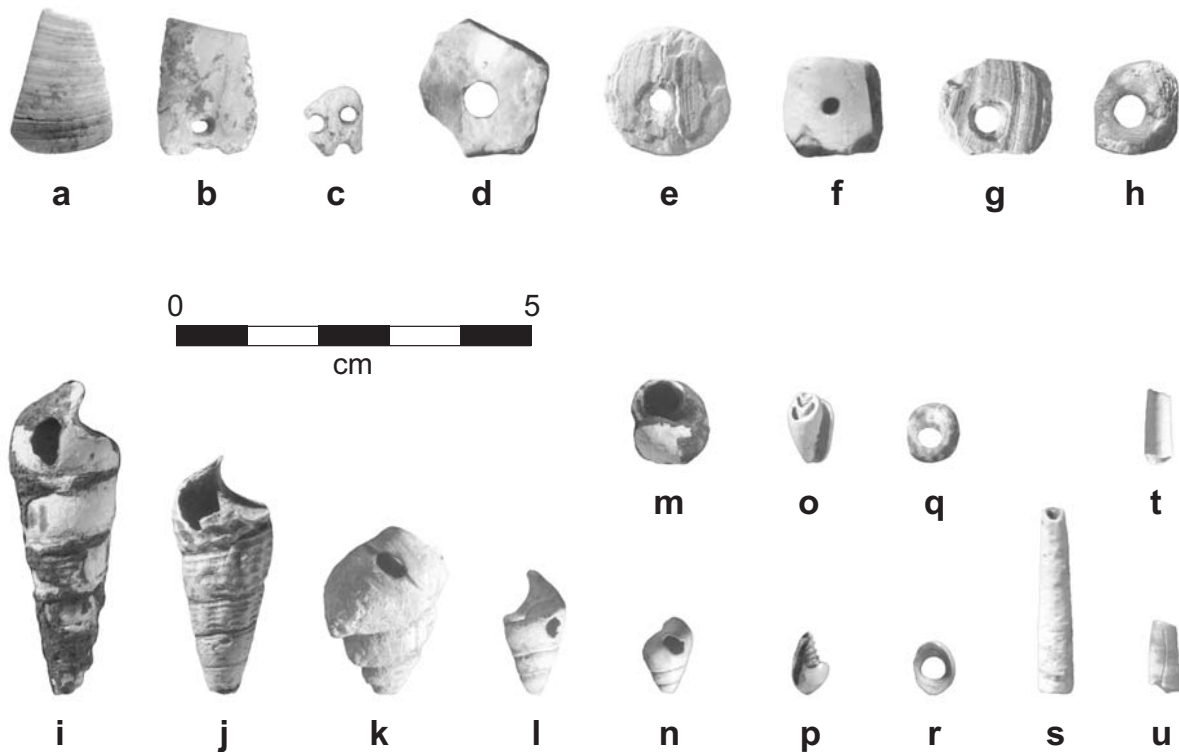


Figure 14.2. Photographs of modified shell artifacts from Scattered village (32MO31). a,b: mussel shell pendants; c: drilled mussel shell; d-h: mussel shell disk beads; i-l,n: fossil gastropod beads; m: ?*Anculosa* bead; o,p: *Marginella* beads; q,r: exotic gastropod beads; s-u: scaphopod or *Dentalium* shell.

Four of these are identified as *Lioplacodes* sp. (Figure 14.2l,n), four as *Campeloma* sp. (Figure 14.2k), and two are unidentified as to species (Figure 14.2i,j).

Nine **non-fossil or exotic gastropod beads** occur in the sample. One of these is identified as a possible *Anculosa* shell (Figure 14.2m) based on illustrations in several archaeological reports (e.g., Wood and Brock 2000); two others are tentatively identified as *Marginella* sp. shells (Figure 14.2o,p) (see Ahler and Ryser 1997b:399-400). The remaining specimens are unidentified and probably unidentifiable. These consist of small concave sections of the wall of a small gastropod, carefully shaped and perforated (Figure 14.2q,r). Fourteen pieces of **scaphopod shell** or probable *Dentalium* occur in the sample; many of these are small fragments of once-longer shells (Figure 14.2s-u). Most of these are fragile and in very poor condition, and it is consequently difficult to identify use-wear on these specimens.

A brown encrustation occurs on 16 of the 91 modified shell specimens (Figure 14.2i,m), occurring more frequently on non-fossil gastropod beads and mussel disk beads and rarely on the mussel disks and shaped mussel pieces. The origin or significance of this crust is not clear. Its presence or absence does not vary significantly according to context type (storage pits, storage pits with burials, burial pits, sheet middens, trash dumps, etc.).

## Temporal Variation and External Comparisons

Table 14.5 presents data on the distribution of modified shell artifacts types according to time period. Chi-square analysis indicates no meaningful relationship between artifact type and temporal unit ( $X^2=32.611$ ,  $df=36$ ;  $p=.631$ ). In effect, all artifact types identified in the sample occur consistently throughout the defined temporal units for the site.

Table 14.5. Distribution of modified shell artifact types according to time period, Scattered Village (32MO31), 1998 excavated collection.

| Artifact Type                   |   | Time Period            |                        |                      |                       | Total |
|---------------------------------|---|------------------------|------------------------|----------------------|-----------------------|-------|
|                                 |   | 1 later<br>postcontact | 2 early<br>postcontact | 3 late<br>precontact | 4 early<br>precontact |       |
| red stained mussel              | n |                        | 1                      |                      |                       | 1     |
|                                 | % |                        | 2.4                    |                      |                       | 1.1   |
| mussel shell disc               | n | 7                      | 12                     | 1                    | 5                     | 25    |
|                                 | % | 25.9                   | 29.3                   | 20.0                 | 27.8                  | 27.5  |
| incised mussel disc             | n |                        | 1                      |                      |                       | 1     |
|                                 | % |                        | 2.4                    |                      |                       | 1.1   |
| shaped mussel shell             | n | 3                      | 8                      | 1                    | 2                     | 14    |
|                                 | % | 11.1                   | 19.5                   | 20.0                 | 11.1                  | 15.4  |
| mussel shell scraper            | n | 1                      |                        |                      |                       | 1     |
|                                 | % | 3.7                    |                        |                      |                       | 1.1   |
| mussel disc bead                | n | 1                      | 3                      | 1                    | 4                     | 9     |
|                                 | % | 3.7                    | 7.3                    | 20.0                 | 22.2                  | 9.9   |
| perforated mussel valve         | n | 2                      |                        |                      |                       | 2     |
|                                 | % | 7.4                    |                        |                      |                       | 2.2   |
| drilled mussel ornament         | n |                        | 1                      |                      |                       | 1     |
|                                 | % |                        | 2.4                    |                      |                       | 1.1   |
| mussel pendant                  | n | 2                      |                        |                      |                       | 2     |
|                                 | % | 7.4                    |                        |                      |                       | 2.2   |
| incised mussel                  | n | 1                      |                        | 1                    |                       | 2     |
|                                 | % | 3.7                    |                        | 20.0                 |                       | 2.2   |
| modern exotic gastropod<br>bead | n | 3                      | 4                      |                      | 2                     | 9     |
|                                 | % | 11.1                   | 9.8                    |                      | 11.1                  | 9.9   |
| fossil gastropod bead           | n | 2                      | 5                      |                      | 3                     | 10    |
|                                 | % | 7.4                    | 12.2                   |                      | 16.7                  | 11.0  |
| tusk or <i>Dentalium</i>        | n | 5                      | 6                      | 1                    | 2                     | 14    |
|                                 | % | 18.5                   | 14.6                   | 20.0                 | 11.1                  | 15.4  |
| Total                           | n | 27                     | 41                     | 5                    | 18                    | 91    |
|                                 | % | 100.0                  | 100.0                  | 100.0                | 100.0                 | 100.0 |

Most of the modified shell types identified in the Scattered Village study sample occur, albeit in low numbers, in the reported excavated sample from Slant Village (Ahler and Ryser 1997b). Types common to both sites include mussel shell disks, shaped mussel shell pieces, fossil mussel shells, unmodified fossil gastropods, fossil gastropod beads including *Marginella* and the drilled curved-wall beads, a shell pendant, and scaphopods. Modified shell is uncommon at both sites ( $n=39$  at Slant and  $n=91$  at Scattered), and the frequencies by class or type are so

low as to diminish the meaning of detailed quantitative comparisons. *Marginella* beads are the only type occurring noticeably more frequently at Slant (n=13) than at Scattered (n=2). Most of the Slant Village specimens derive from a single context and are thought to be the remnants of a single decorative string or piece of clothing deposited at that location (Ahler and Ryser 1997b:400), so this apparent difference between sites is probably due to sampling variance. Overall, the two site assemblages are remarkably similar in composition, with the only meaningful difference being perhaps the much higher frequency of unmodified fossil specimens at Scattered (n=197 versus n=9 at Slant).

### Summary

The fossil and modified shell collection from Scattered contains a sizeable number of unmodified fossil gastropods and a modest number modified specimens falling into several descriptive classes. Fossils were apparently collected from outcrops north of the site on the Missouri River, and a small fraction of those specimens brought into the village were visibly modified and used for decoration or personal adornment. Local river mussels were collected and fashioned into disks, used perhaps as gaming pieces, and less frequently into drilled beads. A small number of exotic specimens that occur in low frequency attest to connections through trade, exchange, and direct contact with sources far removed from the site. This evidence occurs in scaphopod shells, probably from West Coast marine sources, *Marginella* and ?*Anculosa* beads, and small concave disk beads cut from the wall of an unidentified but presumably exotic gastropod. In general, there is a low level of interest in the use of shell for decorative items in the Scattered collection. Other materials, such as bone beads and antler bracelets, occur in much higher frequencies. In general, the fossil and modified shell collection from Scattered differs little from that at nearby Slant Village, except that Scattered Village residents appear to have had a much higher level of interest in fossil shell specimens.