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**Technical report: Marine shell from bulk-sieved samples from
three sites in Lincoln (site codes WF89, WNW88, WO89)**

by

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Summary

Five species of marine molluscs were recorded from bulk-sieved samples from the three waterfront sites. Two contexts contained concentrations of marine shell, and, although few contexts contained other than small amounts of material, Roman contexts tended to contain higher numbers of oysters, whilst Saxon contexts tended to contain higher numbers of mussels.

Keywords: Lincoln, Saxon, Roman, marine shell

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Technical Report: Marine shell from bulk-sieved samples from three sites in Lincoln (Site codes WF89, WNW88, WO89)

Introduction and methods

Bulk-sieving programmes carried out as part of the excavations of Saxon and Roman deposits along the Lincoln waterfront yielded small amounts of marine shell. An assessment of the potential of the site for further bioarchaeological analysis was undertaken (Carrott *et al.* 1994), in which it was considered worthwhile to examine and record the marine shell from some contexts.

The marine shell from the residues of bulk-sieved samples ('BS' sensu Dobney *et al.* 1992) was identified using modern reference material available in the Environmental Archaeology Unit.

Results

Five species of marine mollusc were identified from these sites: *Ostrea edulis* L. (oyster), *Littorina* sp. (periwinkle), *Buccinum* sp. (whelk), *Mytilus edulis* L. (mussel), and *Cerastoderma* sp. (cockle): only oysters and mussels were identified in more than small numbers.

WF89

The results are displayed in full in Table 3, and in summary in Table 4.

None of the contexts from this site contained large numbers of shells: most contained small fragments of oyster and mussel, with occasional fragments of periwinkle and cockle. Contexts 721, 749, 756, 757, 758, 760 and 761 contained more oysters than other species. Context 707 contained mussels and periwinkles, and a whelk; context 708 mostly mussels and few periwinkles. It is likely that the marine shell in these contexts represents a background waste component. It is noticeable that the Roman contexts tend to contain more oysters, whereas the Saxon contexts contain more mussels.

WNW88

The results are displayed in full in Table 5, and in summary in Table 6.

Most of the contexts contained small numbers of fragments of oyster and mussel shell, with occasional periwinkle and cockle. Contexts 219, 303 and 309 contained larger numbers of mussels, and context 332 contained very large numbers of mussels. Context 302, 314, 414, 425 and 426 contained slightly larger numbers of oysters.

The large assemblage of mussels from context 332 consisted of very fragmented valves, and thus only a small proportion of them could be measured (Table 1).

In general, however, the small numbers of shell suggest that they are largely a background component, probably of kitchen waste originally, although again the Roman contexts tend to contain more oysters, whereas the Saxon contexts tend to have more mussels.

WO89

The results are displayed in full in Table 7, and in summary in Table 8.

Most of the contexts from this site contained few fragments of marine shell. Contexts 501 and 504 contained mostly fragments of mussels, with a minor component of edible periwinkle and cockles, and context 504 also contained fragments of oyster. Contexts 570, 571 and 572 contained small amounts of oyster and mussel fragments, while context 571 also contained a cockle shell and fragment of a whelk. It is likely that the marine shell in these contexts represents a background kitchen waste component. Again there is a tendency for the Roman contexts to contain more oysters, and for the Saxon (and modern) contexts to contain more mussels.

The assemblage from context 569 contained oysters as the main component, but also included a few mussels and a whelk. This assemblage of oysters was the only moderately sized one from any of the contexts examined, but contained only 20 upper valves and 34 lower valves - barely a

meal if 6 oysters per person are suggested in modern cookery books as a starter (Alcock 1994). Some of the oysters in this assemblage bore knife-marks. The rusty brown staining and slight encrustation evident on some of the shell might have resulted from contact with ferruginous sands, or from immersion in cess deposits (Winder 1994). A comparison of the mean length of the oysters (measured at their greatest length) with those cited by Winder for oysters found in London and Southampton (1992) shows that those from Lincoln are rather smaller. Table 2 summarises the size of the oyster shells from this assemblage.

Conclusion

In general in these contexts, mussels were identified more frequently than oysters from Saxon contexts, whereas oysters were more frequent from Roman contexts.

Little work has been done on marine shell from archaeological sites in the midlands and north of Britain, so there is little to compare this assemblage with. Although there is little potential for the material to be used for site interpretation, the record made may be of some use in comparisons with other marine shell assemblages.

Retention and disposal

Most of the marine shell assemblages are not worth keeping in the long term, with the exception of WNW88 context 332 and WO89 context 569.

Archive

All fossils from samples, and the residues and flots will be returned to CLAU for storage. Paper and electronic records pertaining to the work described here are stored in the Environmental Archaeology Unit, University of York.

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Table 1. *Mussels from WNW88 context 332. Total weight of shell 2640 g.*

| GL (complete valves only) | Left | Right |
|--|------|-------|
| 25-50mm | 55 | 46 |
| 50-75mm | 61 | 46 |
| Total numbers of valves (including incomplete) | 370 | 324 |

Table 2. *Summary of the size of the oyster shells from WO89 context 569.*

| Measurement | Mean (mm) | Range (mm) |
|-------------------|-----------|------------|
| GL (upper valves) | 65.1 | 55-79 |
| W (upper valves) | 55.5 | 46-74 |
| GL (lower valves) | 72.3 | 55-98 |
| W (lower valves) | 64.9 | 52-82 |

Table 3. Marine shell from WF89

| Sitecode | | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 |
|----------------------|------------------------------------|-----------|----------|----------|----------|-------|----------|-------|-------|-------|-------|-------|-------|-------|
| Context | | 699 | 707 | 708 | 721 | 706 | 719 | 749 | 756 | 757 | 758 | 759 | 760 | 761 |
| Period | | Saxon/Med | Saxon | Saxon | Saxon | Saxon | LRom/Sax | Roman | Roman | Roman | Roman | Roman | Roman | Roman |
| Date | | L10-M12 | EM10-M10 | EM10-M10 | EM10-M10 | EM10 | VL4-9 | M3 | M3 | M3 | M3 | M3 | M3 | M3 |
| Context type | | Dump | Layer | Dump | Pit | Dump | Posthole | Inhum | Dump | Dump | Dump | Dump | Dump | Dump |
| <i>Ostrea edulis</i> | oyster | p | - | p | - | p | p | - | - | - | - | p | p | p |
| Number of | upper valves | - | - | - | - | 1 | - | 2 | 5 | 2 | - | - | - | - |
| Number of | lower valves | - | - | - | 2 | 1 | - | - | 4 | 3 | 1 | - | 1 | 3 |
| Number of | measurable valves | - | - | - | - | - | - | - | 6 | 2 | - | - | - | - |
| | weight (g) | - | - | - | - | - | - | 60 | 270 | 110 | - | - | 70 | 60 |
| | staining | - | - | - | - | - | - | - | - | - | - | - | - | brown |
| | attachment of adult/spat | - | - | - | - | - | - | - | y | - | - | - | - | y |
| | knife-marks | - | - | - | - | - | - | - | - | y | - | - | - | - |
| Infestation: | <i>Polydora ciliata</i> (Johnston) | - | - | - | - | - | - | - | y | - | - | - | - | - |
| | <i>Polydora hoplura</i> | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Sitecode | | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 |
|---------------------------|----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Context | | 699 | 707 | 708 | 721 | 706 | 719 | 749 | 756 | 757 | 758 | 759 | 760 | 761 |
| | <i>Cliona celata</i> Grant | - | - | - | - | - | - | - | y | - | - | - | - | - |
| | <i>Balanus</i> sp. | - | - | - | - | - | - | - | - | y | y | - | - | y |
| | <i>Polyzoa/Bryozoa</i> | - | - | - | - | - | - | - | - | y | - | - | - | - |
| <i>Littorina littorea</i> | Edible periwinkle | - | 27 | - | - | - | - | - | - | - | - | - | - | - |
| <i>Littorina</i> sp. | periwinkle | - | - | 2 | - | p | 4 | - | - | - | - | - | - | - |
| <i>Buccinum</i> sp. | whelk | - | 1 | - | ?1 | - | - | - | 1 | - | - | p | - | - |
| <i>Mytilus edulis</i> | Common mussel | p | - | - | p | p | p | 1 | 1 | p | p | 3 | p | 1 |
| Number of | L valves | - | 8 | 25 | - | - | - | - | - | - | - | - | - | - |
| Number of | R valves | - | 10 | 19 | - | - | - | - | - | - | - | - | - | - |
| | weight (g) | - | 158 | 150 | - | - | - | - | - | - | - | - | - | - |
| <i>Cerastoderma</i> sp. | Cockle | - | 8 | 1 | - | 1 | - | - | - | 1 | - | - | - | - |

Table 4. Marine shell from WF89 (Summary)

| Sitecode | | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 | WF89 |
|-------------------------|---------------|-----------|----------|----------|----------|----------|-------|-------|
| Period | | Saxon-Med | Saxon | Saxon | Saxon | LRom-Sax | Roman | Roman |
| Date | | L10-M12 | EM10-M10 | EM10-M10 | EM10-M10 | VL4-9 | M3 | M3 |
| Context type | | Dump | Dump | Layer | Pit | Posthole | Dump | Inhum |
| <i>Ostrea edulis</i> | Oyster | p | 2 | - | 2 | p | 19 | 2 |
| | weight (g) | - | - | - | - | - | 510 | 60 |
| <i>Littorina</i> sp. | Periwinkle | - | 2 | 27 | - | 4 | - | - |
| <i>Buccinum</i> sp. | Whelk | - | - | 1 | 1 | - | 1 | - |
| <i>Mytilus edulis</i> | Common mussel | p | 44 | 18 | p | p | 5 | 1 |
| | weight (g) | - | 150 | 158 | - | - | - | - |
| <i>Cerastoderma</i> sp. | Cockle | - | 2 | - | - | - | 1 | - |

Table 5. Marine shell from WNW88

| Sitecode | | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 |
|----------------------|------------------------------------|-------|---------|------------|-------|--------------|-------|-------|-------|--------|--------|--------|
| Context | | 219 | 309 | 332 | 303 | 314 | 414 | 425 | 426 | 298 | 300 | 302 |
| Period | | Med | Saxon | Saxon | Saxon | LRoman | Roman | Roman | Roman | Roman | Roman | Roman |
| Date | | L12 | L10-M11 | E10-L11 | EM10 | VL4 | L4? | L4 | L4 | ML3-E4 | ML3-E4 | ML3-E4 |
| Context type | | | Layer | Shell dump | Layer | Layer/?beach | | Dump | | Dump | Dump | Dump |
| <i>Ostrea edulis</i> | oyster | p | - | - | - | - | - | - | - | - | - | - |
| Number of | upper valves | - | - | - | - | 2 | 7 | 1 | 5 | - | 2 | 1 |
| Number of | lower valves | - | - | 1 | - | 2 | 5 | 4 | 4 | - | - | 2 |
| Number of | measurable valves | - | - | - | - | 4 | 4 | 5 | 9 | - | 2 | 2 |
| Number of | ageable valves | - | - | - | - | - | 1 | - | - | - | - | - |
| | weight (g) | - | - | - | - | 130 | 208 | 120 | 257 | - | - | 80 |
| | attachment of adult/spat | - | - | - | - | y | y | - | - | - | - | - |
| | knife-marks | - | - | - | - | - | y | - | y | - | - | - |
| Infestation: | <i>Polydora ciliata</i> (Johnston) | - | - | - | - | - | - | - | - | - | - | - |
| | <i>Polydora hoplura</i> | - | - | - | - | - | - | - | - | - | - | - |

| Sitecode | | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 |
|-------------------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Context | | 219 | 309 | 332 | 303 | 314 | 414 | 425 | 426 | 298 | 300 | 302 |
| | <i>Cliona celata</i> Grant | - | - | - | - | - | - | - | - | - | - | - |
| | <i>Balanus</i> sp. | - | - | - | - | - | y | - | y | - | - | y |
| | <i>Polyzoa/Bryozoa</i> | - | - | - | - | - | - | - | y | - | - | y |
| <i>Littorina</i> sp. | periwinkle | 6 | - | 1 | 1 | - | - | - | - | - | - | - |
| <i>Mytilus edulis</i> | Common mussel | 51 | 18 | - | 11 | p | 1 | p | y | 2 | p | p |
| | Number of L valves | - | - | 370 | - | - | - | - | - | - | - | - |
| | Number of R valves | - | - | 324 | - | - | - | - | - | - | - | - |
| | weight (g) | 120 | 30 | 2640 | 40 | - | - | - | - | - | - | - |
| <i>Cerastoderma</i> sp. | cockle | 4 | - | 1 | - | - | - | - | - | p | - | p |

Table 6. Marine shell from WNW88 (Summary)

| Sitecode | | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 | WNW88 |
|-------------------------|---------------|-------|------------|---------|-------|--------------|--------|-------|
| Period | | Med | Saxon | Saxon | Saxon | LRoman | Roman | Roman |
| Date | | L12 | E10-L11 | L10-M11 | EM10 | VL4 | ML3-E4 | L4 |
| Context type | | | Shell dump | Layer | Layer | Layer ?Beach | Dump | Dump |
| <i>Ostrea edulis</i> | oyster | p | - | - | - | - | - | - |
| Number of | valves | - | - | - | - | 2 | 5 | 26 |
| | weight (g) | - | - | - | - | 130 | 80 | 585 |
| <i>Littorina</i> sp. | periwinkle | 6 | 1 | - | 1 | - | - | - |
| <i>Mytilus edulis</i> | Common mussel | 51 | - | 18 | 11 | p | 2 | 1 |
| | weight (g) | 120 | 2640 | 30 | 40 | - | - | - |
| <i>Cerastoderma</i> sp. | cockle | 4 | 1 | - | - | - | p | - |

Table 7. Marine shell from WO89

| Sitecode | | WO89 | WO89 | WO89 | WO89 | WO89 | WO89 |
|---------------------------|---------------------------------------|------|-------|-------|-------|-------|-------|
| Context | | 501 | 504 | 569 | 570 | 571 | 572 |
| Period | | Mod | Saxon | Roman | Roman | Roman | Roman |
| Date | | | EM10 | M3 | M3 | M3 | M3 |
| Context type | | Dump | Dump | Dump | Dump | Dump | Dump |
| <i>Ostrea edulis</i> | | - | p | - | p | p | p |
| Number of | upper valves | - | - | 20 | - | 1 | - |
| Number of | lower valves | - | 1 | 34 | - | 1 | - |
| | weight (g) | - | - | 1400 | - | 50 | - |
| | staining | - | brown | brown | - | - | - |
| | attachment of adult/spat | - | - | y | - | - | - |
| | knife-marks | - | - | y | - | - | - |
| Infestation: | <i>Polydora ciliata</i> (Johnston) | - | - | - | - | - | - |
| | <i>Polydora hoplura</i> | - | - | - | - | - | - |
| | <i>Cliona celata</i> Grant | - | - | - | - | - | - |
| | <i>Balanus</i> sp. | - | - | y | - | - | - |
| | <i>Polyzoa/Bryozoa</i> | - | - | - | - | - | - |
| <i>Littorina littorea</i> | Edible periwinkle | 2 | 8 | - | - | - | - |
| <i>Buccinum</i> sp. | whelk | - | - | 1 | - | p | - |
| <i>Mytilus edulis</i> | Common mussel | - | - | 5 | p | p | p |
| Number of | L valves | 22 | 20 | 1 | - | - | - |
| Number of | R valves | 25 | 25 | 1 | - | - | - |
| | weight (g) | 70 | 150 | - | - | - | - |
| <i>Cerastoderma</i> sp. | cockle | 7 | p | - | - | 1 | - |

Table 8. Marine shell from WO89 (Summary)

| Sitecode | | WO89 | WO89 | WO89 |
|-------------------------|---------------|------|-------|-------|
| Period | | Mod | Saxon | Roman |
| Date | | | EM10 | M3 |
| Context type | | Dump | Dump | Dump |
| <i>Ostrea edulis</i> | Oyster | - | 1 | 56 |
| | weight (g) | - | - | 1450 |
| <i>Littorina</i> sp. | Periwinkle | 2 | 8 | - |
| <i>Buccinum</i> sp. | Whelk | - | - | 1 |
| <i>Mytilus edulis</i> | Common mussel | 47 | 45 | 5 |
| | weight (g) | 70 | 150 | - |
| <i>Cerastoderma</i> sp. | Cockle | 7 | p | 1 |

Table 9. A comparison of the size of mussels from Lincoln waterfront contexts.

| Sitecode | Context | Period | Context type | Weight (g) | Total valves | Total left | Left 0-25 | Left 25-50 | Left 50-75 | Total right | Right 0-25 | Right 25-50 | Right 50-75 |
|----------|---------|--------|--------------|------------|--------------|------------|-----------|------------|------------|-------------|------------|-------------|-------------|
| WNW88 | 219 | Med | | 120 | 51 | 26 | - | 10 | - | 19 | 1 | 2 | - |
| WNW88 | 303 | Saxon | Layer | 40 | 11 | 5 | - | 2 | 1 | 7 | - | 1 | 1 |
| WNW88 | 309 | Saxon | Layer | 30 | 18 | 4 | - | 2 | 1 | 10 | 3 | 2 | 1 |
| WNW88 | 332 | Saxon | Shell dump | 2640 | 694 | 370 | - | 55 | 61 | 324 | - | 46 | 46 |
| WNW88 | 298 | Roman | Dump | 20 | 1 | - | - | - | - | 1 | - | 1 | - |
| WF89 | 12 | Saxon | Layer | 158 | 18 | 8 | - | - | - | 10 | - | - | - |
| WF89 | 20 | Saxon | Dump | 150 | 44 | 25 | - | 4 | 2 | 19 | - | 6 | - |
| WO89 | 501 | Mod | Dump | 110 | 47 | 22 | 2 | 13 | - | 25 | 1 | 14 | 1 |
| WO89 | 504 | Saxon | Dump | 150 | 45 | 20 | 1 | 5 | 1 | 25 | - | 12 | 2 |
| WO89 | 569 | Roman | Dump | 40 | 7 | 6 | 2 | 4 | - | 1 | - | 1 | - |