3_6_1_REPORT

Some key questions for this report are as follows:

- What was the relative contribution of hunted vs. herded animals at Nebelivka, and how does this fit into wider trends noted for the Tripillia period?
- Are there any detectable differences in animal use (or at least bone deposition) between areas of the site and/or between different context types, e.g. houses and their associated pits?
- What was the nature of bone deposition in the Mega-Structure?

Tables 1 and 2 (ADS LINK TO 3_6_2_IMAGES/3_6_3_1_overall_taxonomic_distribution & 3_6_2_IMAGES/3_6_3_2_PHASE_A_DOMESTIC_SPECIES) shows the total counts of bones included in this chapter, by site area and analyst.

Given that the underlying data was produced by multiple analysts with differing methodologies, it was necessary to adopt what might be termed a 'lowest common denominator' approach, limiting the detail that can be presented here. Pre-existing data from ten separate data sheets were combined into a single master-database, decoded as far as possible—using keys provided by the analysts where available—and the terminology standardised. Inevitably, there were details that were either incommensurate or could not be decoded (ADS LINK TO 3_6_2_IMAGES/3_6_3_1_overall_taxonomic_distribution).

It is apparent from Table 1 that the ratio of diagnostic to non-diagnostic bones varies considerably across the overall assemblage. A comparison of identification rates by excavation team, area, and faunal analyst for all subdivisions with greater than 300 fragments recorded suggest that inter-analyst differences are the primary factor in identification rates at Nebelivka, with Dr. Sekerskaya consistently recording c.40% of specimens to taxon (*excluding* ribs and vertebrae) regardless of excavation team or site area, while the other analysts reported a significantly higher proportion of non-diagnostic specimens.

The sole quantification method used here is Number of Identified Specimens (NISP, aka fragment count), since it is not possible reliably to calculate Minimum Numbers of Individuals (MNI) and related measures when working from previously recorded data. For

modifications by burning, the range of descriptions was simplified to 'burnt' or 'unburnt'. Few metrical data are available for the Nebelivka fauna. It was impossible to conduct an analysis of age-at-death.

Table 3 (ADS LINK TO 3_6_2_IMAGES/3_6_3_3_PHASE_B2&C1_DOMESTIC SPECIES) shows taxonomic frequencies by excavation area, with the overall assemblage summarised in Figure 1 (ADS LINK TO 3_6_2_IMAGES/3_6_2_1_overall_taxonomic_distribution). The vast majority of specimens identified were large mammals, dominated by the main Neolithic domesticates (cattle, pig, sheep, goat, and dog - collectively making up as much as 92.7% of identified fragments). The range of presumably hunted taxa is rather small, including red and roe deer, aurochs, equids, hare, turtle, and possibly wild pig - but no wild carnivores with the possible exception of wolf. Fish and bird bones were very rarely recovered, even in wet-sieved material, while the small number of rodent specimens recorded by the present authors includes at least one vole, hamster (*Cricetus cricetus*) and ground squirrel (*Spermophilus* sp.).

The taxonomic composition as recorded at Nebelivka was compared with a wider dataset of Tripillia and Cucuteni zooarchaeological results collated from published sources. A trend from hunted taxa to the major domesticates over the course of the Tripillia period has been previously noted (Kruts 2002; Kirleis & Dal Corso 2016) but is not clearly apparent in this dataset, with variation in the wild:domestic ratio appearing to be geographical as much as temporal. Hunting generally seems to play a bigger role in Western areas than in the East, with domesticates particularly dominant in the core mega-site region around Uman, where the c.93% domestic fauna at Nebelivka is consistent with neighbouring sites. A low contribution of wild meat might be expected at such large sites *a priori*, simply due to limits on the amount of game that could be caught within a practical distance from the site. That said, this broad regional pattern appears to hold both before the mega-sites and in the period of their decline, albeit based on limited data. Breaking the domestic component down into the three main taxa (cattle, pigs, and sheep/goat), regional trends again appear at least as prominent as temporal ones (ADS LINK TO 3_6_2_IMAGES/3_6_2_2_PHASE A_DOMESTIC_SPECIES; 3_6_2_IMAGES/3_6_2_3_PHASE B2_&_C1_DOMESTIC SPECIES; 3_6_2_IMAGES/3_6_2_4_PHASE C1_2_&_C2_DOMESTIC_SPECIES). Cattle are the dominant taxon at most sites in all periods. In the Trypillia B period, the four Southwestern-most Cucuteni sites in the dataset stand out as having similar numbers of sheep

and of cattle specimens, while sites across the rest of the region have fairly uniform cattle-dominated assemblages—with the exception of Nebelivka itself, where a higher contribution of sheep/goat and especially pig stands out even from other sites in its immediate region. One possible explanation for this might lie in excavation strategies.

Figure 5 (ADS LINK TO 3_6_2_IMAGES/3_6_2_5_taxa_by_excavation_unit) plots the main taxa identified at Nebelivka by excavation area, excluding wet-sieved material and the smallest samples. Wide variation is seen across the site, with some areas - notably House A9 - being heavily dominated by cattle, and others - particularly some of the pits - having much higher percentages of the smaller domesticates. The sample from House B18 and its associated pit are really too small to be reliable, but are included to highlight the striking similarity between their assemblages, both of which feature an unusual proportion of dog remains, and an absence of pigs. This would seem to confirm the association between these two features. House B17 and its pit have equally similar assemblages, with more pig in the house and more caprines in the pit.

A division is immediately apparent between the Mega-Structure and all other excavation units: the former has by far the lowest percentage of cattle (c. 45%), with the next lowest percentage reaching just under 60% in the Test Pits. This is an interesting pattern, which *might* point to functional differentiation, spatial variation in preferences for or access to resources, or perhaps temporal changes within the period of occupation. However, any such interpretation must be tempered by the possibility of taphonomic differences.

A more detailed consideration of the bones in the mega-structure was attempted (ADS LINK TO 3_6_2_IMAGES/3_6_2_6_BONES_BY_PHASE_MEGA-STRUCTURE). Bones beneath the thin soil level sometimes found after abandonment are assumed to represent activity within the building at or immediately after the point of abandonment (Phase 2); those within the burnt debris, or at the interface between soil and debris, are assigned to the destruction event (Phase 3). The authors also suggest a possible final phase (4) of post-destruction deposition.

Table 4 (ADS LINK TO 3_6_2_IMAGES/3_6_3_5_taxa_by_excavation_unit) shows counts of bone fragments assigned to each of these phases. The number of bones assigned to the destruction phase is somewhat surprising, but at face value might be taken to indicate significant deposition within the abandoned structure shortly before the burning event.

Alternatively, some of these bones may belong to phase 4, perhaps becoming mixed into the destruction debris by subsequent disturbance and recent ploughing. The low burning rate of bones within the building suggests either that a substantial portion of the bone was deposited *after* the burning event, or that bones within the building were somehow protected from the effects of the fire. Within the burnt portion of the building, burnt fragments are generally present in proportion to the total density of bones, with the surprising exception of the North-west corner.

The spatial distribution of taxa within the Mega-Structure remains does not show any obvious patterning; cattle are possibly over-represented within the unburnt area, but this is based on a small sample size. Nor is there any discernible pattern of body part representation. There is an interesting concentration of foetal/neonatal bones in the South-west corner of the building, however, including remains from at least one pig and at least two sheep or goats - all unburnt and associated with the living floor and possibly a placed deposit.

Summary: The various zooarchaeological datasets from Nebelivka have been combined , though the secondary nature of this report inevitably limits the depths of conclusions. Nonetheless, some general observations can be made.

First, while differences both in excavation strategy and in analytical protocols appear to have had an effect upon the results, there do also appear to be genuine differences in bone deposition between areas. Cattle remains are extremely abundant in the remains of House A9, for example, while the Mega-structure contained far more of the smaller domestic taxa. House B18 and its pit have intriguingly similar faunal assemblages that stand out from all other areas, but this must be treated with caution due to very small sample sizes. All these intra-site differences have obvious implications for inter-site comparisons, highlighting the risks in assuming that bones recovered from large and complex settlements, especially from small-scale excavation, are necessarily representative of those sites as a whole.

The processes by which the bone assemblage from the Mega-Structure formed remain enigmatic, with the low rate of burning being particularly hard to explain. While the small number of bones found on the living floor—including a curious cluster of perinatal lamb and piglet bones—may have been protected from fire by accumulation of sediment during the period between abandonment and destruction, the large number of unburnt bones found within the destruction layer is harder to explain. One possibility is that a significant quantity

of these bones was actually deposited *on* the house after the destruction event, becoming included in the daub layer by subsequent disturbance. This would be a very interesting phenomenon, if correct, but does not accord well with stratigraphic observations in the field.

If the combined recorded fauna from Nebelivka are taken at face value, they indicate that the settlement relied heavily on domestic animals, in keeping with other nearby Tripillia sites, but that there was an unusually even mix of cattle, pigs, and sheep/goats. The higher than usual contribution of smaller domestic taxa cannot be attributed primarily to recovery strategy, since it applies even in some areas of the site which were not sieved.