Perinatal Animal Bones. PZG meeting, Saturday March 16th 2019. Fort Cumberland, Portsmouth

Minutes

On Saturday 16th March 2019, the PZG returned to Fort Cumberland for a fourth event, this time to take advantage of Historic England's extensive collection of very young mammals and birds. The topic of the meeting was perinatal animals (a term used here to described ages ranging from foetal through to the first few weeks or months of life). Seventeen zooarchaeologists attended the meeting, many bringing specimens to display in the afternoon workshop.

The morning kicked off with an introduction to the day by hosts **Polydora Baker** and **Fay Worley**. Poly introduced the potential of perinates for archaeological interpretation, citing examples provided by the authors of regional reviews for southern England, each of which quantified data in a different way. These included interpretation of herd management and season of occupation in the Neolithic based on dental data (Dale Serjeantson, 2011, after Legge 1981a, 1981b, Serjeantson and Bond 2007); relative prevalence of sites with neonates of different taxa between Bronze Age to Iron Age periods and at different site types, showing an unusual prevalence of hillfort sites with very young cattle (Ellen Hambleton, 2008); and association of neonatal taxa with sites of different status through the Saxon to post-medieval, highlighting a late medieval increase in proportion of high status sites and urban sites with piglets (Matty Holmes, 2017). Poly also presented NISP data published for Saxon to post-medieval Norwich (Umberto Albarella, 2004), which uses NISP data to demonstrate a high medieval to post-medieval shift from local breeding of cattle and sheep implying availability of pasture in or around the town, to greater reliance on neonatal pigs, which can be raised in urbanized areas and therefore suggests that open spaces are less available. Poly also addressed issues of recovery and preservation of perinatal remains, including increased likelihood of speciation of pigs in fragmented remains compared to dogs or caprines. Fay Worley introduced the afternoon workshop, noting the scarcity of resources for assisting in identification of perinatal remains, and issues of identification such as age related shape change, differing rates of maturation between species and size overlap between foetal large mammals and neonatal medium mammals. She noted how Historic England has increased the utility of their specimens through a foetal/neonatal index collection and now plans to produce a photographic atlas, informed by the PZG afternoon workshop.

The first talk of the day was by **Julia Cussans** entitled 'Sheep dairying in Iron Age Scotland: a case study from Broxmouth, East Lothian', presenting the work of Cussans, Sykes, Armit and McKenzie, and published in Armit and McKenzie (2013). The assemblage from this 7th century BC to 3rd century AD fort included a large number of young cattle and sheep, the calves killed in the first month of life, and the lambs dying at various times between the ages of two and six months. Sheep horn cores suggested that the surviving flock was mostly ewes with a few rams and no certain wethers. Julia used the sheep age at death and sex profiles to argue against seasonal sacrifice or natural mortality as an interpretation for the death of the young lambs, suggesting instead that both the sheep and cattle were managed for dairy, necessitating a different cull profile for each species. Members should contact Julia if they would like to see the full report and can look forward to the assemblage being used as a case study in a forthcoming paper on sexing horncores with Naomi Sykes.

A double headliner presentation followed with **Dale Serjeantson** and Polydora Baker inviting us to think about skeletal development in juvenile birds. Dale began by outlining aging methods applicable

to bird bones, noting how subtle differences can be and concluding that while with enough samples you can get a sequence of development, there has been little research into actual ages at death, a topic addressed by Poly in relation to columbids. Members should look out for new work by Eda Masaki, who has researched aging goose remains. Dale introduced the typology for bird developmental states at hatching from those that leave the nest shortly after hatching and while their bones are immature (precocial) such as ducks and pheasants, to those that are not independent/mobile until much later and after their skeletons appear mature (altricial), such as owls and columbids. She cautioned against expecting birds defined as juvenile based on plumage to have immature skeletons, noting that this is a particular concern for age records in reference collections, or when using data derived from bird watchers.

Dale considered the interpretative value of bird age data and challenged the audience to define an osteological signature for caponisation – the castration, fattening and slaughter of male domestic fowl. She suggested that the high number of chicken tarso-metatarsi with a spur scar, but no spur at sites such as Eynsham Abbey may reflect age at death of capons.

Polydora Baker presented research into the interpretation of columbid age profiles from two medieval castle sites, having first used newly prepared known age carcasses to establish an age estimation series, and subdividing the 'nestling stage' as published by Dale into two shorter stages. Poly's aim was to see whether the archaeofaunal remains supported an interpretation of pigeon husbandry for squabs (birds of an age just prior to fledging, approximately 4 weeks old) from kitchen deposits at Windsor castle in contrast to a natural death profile for pigeons from a garderobe shaft at Dudley castle. Though cautioning of the equifinality of culling at approximately c. four weeks versus death from nest falls at the same age, and the fragility and thus taphonomic loss of very young bones, Poly found that while both assemblages contained c. four-week old individuals, the Dudley castle assemblage had a broader range of ages than Windsor, including younger birds, and therefore supporting the interpretation of a natural death assemblage. She was also able to use development in combination with metrics to exclude smaller taxa (*Streptopelia* sp) for the younger columbids and suggest culling focussed on a particular age and size range of squabs at Windsor. As an introduction Poly reviewed briefly Columbid exploitation in Southern England from regional review data and availability of reference resources in UK collections.

Moving onto wild mammal assemblages, and back to Scotland, **Adrienne Powell** gave a presentation titled 'Seasonal red deer harvesting in the Hebrides: exploitation or management'. This paper discussed the behavior of red deer, based largely on observations of the herd on Rum, noting that hinds give birth outside of their normal home range and leave their newborn in hiding for 7-10 days, returning to it only to suckle. Whilst alone the calf crouches in long grass, and won't move even if approached, making them vulnerable to predation, especially hunting assisted by dogs. The hiding behaviour lasts 1-2 weeks and decreases after the 3rd week. Lactating hinds have a higher energy demand than those without calves, increasing conflict with agriculture during the summer and autumn. Adrienne presented data from well preserved assemblages found at Bornish and Cladh Hallan on Uist, the latter containing high numbers of red deer neonates (0-1 month old based on dental aging). She noted the importance of distinguishing neonatal cattle from deer. At Cladh Hallan of 86 red deer jaws, 35% were neonatal, with a similar proportion of cattle jaws also from neonates. Adrienne suggested that the culling red deer neonates would have provided an easily acquired source of meat in late May/early June, but an additional consequence of killing them would be

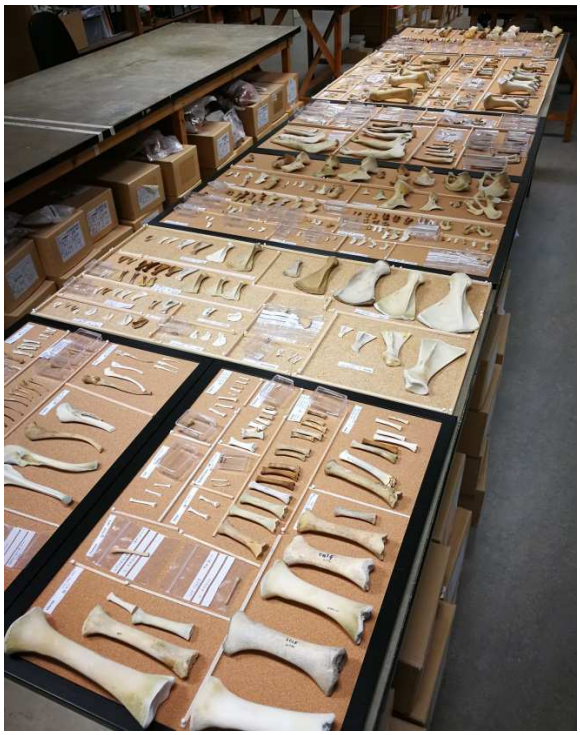
control of adult deer numbers and reduction of grazing pressure on their crops. She argues that whether the intention or not, they were managing the deer population.

Lee Broderick presented case studies from three commercial sites he has recently analysed, focussing on the interpretation of neonates as natural deaths or intentional culls. The first, Queens College, Oxford, was a Saxon site located just outside the burgh walls. This site included foetal caprine and pig bones, for which both the age of the animals and site location led Lee to interpret as evidence for on-site husbandry. The second site, Salisbury Road, Marlborough included Neolithic and Middle Iron Age features. Preservation was poor, with no Neolithic bones surviving and the Iron Age assemblage numbering less than 400 fragments, most of which were unidentifiable. Using Hambleton (2008) to determine that the Iron Age is poorly represented amongst assemblages from Wiltshire, Lee decided that the assemblage warranted full analysis despite its small size. The identifiable bones were recovered from a post-hole or small pit, and found in the basal and a secondary fill and final fill. The basal fill assemblage (and occasional bones from the secondary fill) comprised around ten perinatal caprine and medium mammal bones, some of which were butchered, from a minimum of three individuals. Metric data suggested that the caprines were aged a month prior to birth. Using James Morris' research into animal bone groups, Lee noted that Iron Age ABGs from post-holes are usually caprines, that half of all Iron Age ABGs were foetal to perinatal, but that butchery marks were rare. On this basis, Lee interpreted that assemblage as a ritual deposit and asked whether neonatal animals might have held a special role in Iron Age Britain. Discussion followed regarding both the use of neonatal lamb skins to encourage ewes to foster orphaned lambs, and the use of Astrakhan (foetal sheep skin). The third site is commercially sensitive and so will not be reported here, but included foetal caprine and cattle bones deposited with a raven.

The final presentation of the morning was a case study by **Jessica Waterworth**, discussing an assemblage recovered from a late 3rd century AD well at Stanwick, Northamptonshire. Around 1100 specimens were recordable, the vast majority which was from the basal fill, interpreted as representing activity after the well had gone out of use. In addition to a likely natural death assemblage of small mammals and amphibians, MNI five sheep/goats represented almost exclusively by heads and feet, the head and neck of an adult goose and an adult corvid (carrion or hooded crow size), the assemblage included a number of young animals: MNI 2 immature dog/foxes, MNI 4 mustelids (likely to have only just emerged from the den) and most bones from MNI 6 nestling corvids. Jess noted that corvids are often recovered from Roman pits, wells and shafts and that it may represent a continuation of Iron Age depositional practice. She commented that dogs were also common deposits, but that foxes are usually interpreted as natural deaths, and both these animals and the mustelids could be natural casualties in this well.

Over lunch participants were invited to tour the zooarchaeology facilities at Fort Cumberland, which include the store collection, recently reboxed to guard against fluctuations in humidity and insect attack, the main zooarchaeology laboratory housing the most frequently consulted specimens and index collections for mammals and birds, and the skeleton preparation lab, including a newly accessioned skull collection and recently prepared yellow-necked mouse, complete with baculum.

Workshop: Distinction of foetal and perinate mammal bones



Foetal and neonatal mammal specimens at the PZG workshop.

In *Animal Bones and Archaeology* Baker and Worley noted 'In foetal/perinatal animals, ossification of bone is largely incomplete and bone shape is ill-defined. Foetal bones are difficult to identify to species, even with the aid of guides and reference material.' (Baker and Worley 2014, 32)

The aim of the afternoon workshop was to provide the opportunity for participants to familiarise themselves with foetal and neonatal animal bones and to test published and newly devised criteria for distinguishing foetal/neonatal bones of different species. The workshop will feed into the preparation of an atlas for the identification of foetal and neonatal animal bones. Girdle and limbones from over 60 individual animals from 16 mammal species were available. Fay Worley and Polydora Baker prepared a handout based on the publication by Prummel (1987a, 1988b) including the published drawings and descriptions. These handouts were used by participants to make notes regarding species distinctions as well as any new criteria they identified. The participant notes were kindly provided to Fay and Poly following the workshop so that participant observations can be taken into account in developing the foetal/neonatal atlas (with authors of new criteria duly acknowledged). Progress on the development of the foetal/neonatal atlas will be provided in due course. Additional specimens on display included various juvenile bird reference specimens.

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Announcements at the end of the meeting included:

- preliminary details of the 2019 summer meeting at Bournemouth University, held in July (keep an eye on your emails and the website for further information)
- a notice regarding the call for abstracts for the ICAZ Marine Mammal Research Group meeting in September. One day is on environmental change and one is an open programme: https://www.mcdonald.cam.ac.uk/events/marinemammal
- an invitation to get in touch with Eva Fairnell at York if you would like to include your reference collection in the 2020 update of the National Zooarchaeology Reference Resource. The 2019 update will be released shortly.
- an announcement that the 2014 English Heritage animal bones guidelines have been reformatted and and given minor updates to take into account rebranding of Historic England and Chartered Institute for Archaeologists documentation. They will shortly be published as a Historic England handbook under the title 'Animal Bones and Archaeology: Recovery to Archive'. The volume will be available to download to to purchase as a book, likely priced at around £20.

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Minutes by Fay Worley and Polydora Baker