

---

## 4 The skeletons from Loch Borrallie by Julie Roberts

---

The remains of possibly three individuals were received for analysis. However, those recovered in 1998 (a skull) were found to belong to the excavated burial Skeleton 2 and are discussed below as part of this burial.

### 4.1 Preservation

**Skeleton 1** was approximately 50% complete. The right and left tibia, fibula and feet were entirely missing, as was the right femur with the exception of the proximal end, which was lodged in the acetabulum. The right clavicle, left radius and left hand, and the facial bones (right and left zygoma, nasal bones, and maxilla) were also missing. All of the surviving long bones had been broken around the mid-shaft region, and there was evidence of gnawing by rodents at the fractured ends. There was also gnawing of the menton (the chin) on the anterior surface.

**Skeleton 2** (incorporating the earlier find of a skull) was approximately 25% complete. The left scapula, clavicle, radius, pelvis, femur, fibula, foot and most of the hand were missing entirely, as were the sternum, sacrum, right fibula and foot. Only a small fragment of the right ilium was present, and the surviving piece of femur could not be attributed to either side. Again, there was severe surface erosion of the bones, and many were split longitudinally. There was possible evidence of gnawing by rodents at the ends of the humeri and tibial fragments, but no mid-shaft breakage as seen in Skeleton 1.

### 4.2 Age at Death and Sex

Skeleton 1 had reached dental and skeletal maturity, and the auricular surface of the ilium indicated an age of between 45 and 60 years. The degenerative changes present in the spine were also consistent with an age at death greater than 45 years. The bones of Skeleton 1 were extremely small and gracile and, on the basis of size alone, looked more female than male. The sexually dimorphic features of the pelvis, sacrum, and cranium were, however, all male. The impression they gave, therefore, was of a small, slightly built male, of middle age or older.

Skeleton 2 was immature; therefore, a more precise age could not be determined. Analysis of the dentition has indicated an age at death of 15 years  $\pm$  36 months. In addition, the epiphyses of the humerus and scapula had not fused, suggesting an age of less

than 15 to 18 years at death. Also, as Skeleton 2 was an immature individual, the sex could not be estimated.

### 4.3 Non-metric traits

Non-metric traits are not generally recorded on immature individuals, as skeletal development is not complete. In this instance, however, the presence of a metopic suture in the younger individual was recorded, as this particular trait has in the past been associated both with specific population groups and metabolic disorders (Bruce 2000, 300–01). Bridging of the right and left supra-orbital notch was also recorded in this individual, as it was observed in Skeleton 1. In addition to the bridged supra-orbital notches, Skeleton 1 had an extra-sutural mastoid foramen on the left side, and a lateral flange on the surviving femur. The latter is likely to be related to musculature and physical activity.

### 4.4 Health and Disease

The evidence was that Skeleton 1 had suffered from osteoarthritis of the spine and iron deficiency anaemia. Skeleton 2 had suffered from possible scurvy and secondary arthritis of the cervical spine. Both individuals had suffered from different types of oral pathology.

The adult male (Skeleton 1) had also suffered from iron deficiency anaemia of moderate severity, characterised by *Cribræ Orbitalia* (lesions in the roofs of the orbits). There are many causes of iron deficiency anaemia, among the most common being lack of absorbable iron in the diet and a high pathogen load within the body (Grauer 1991). The disease, in this instance, may have caused a general feeling of fatigue and malaise, but it was probably of insufficient severity to cause the more extreme manifestations of breathlessness and palpitations.

Skeleton 2 had suffered from a different type of metabolic disorder – scurvy, a condition caused by prolonged, inadequate intake of vitamin C (Ortner and Putschar 1981). The resultant weakening of the blood vessels can cause sub-periosteal haemorrhaging, commonly on the orbital roofs and at the metaphyses of the long bones. Due to the poor state of preservation of Skeleton 2, and in particular the absence of the ends of the long bones, differential diagnosis of the condition was difficult. The presence of new bone formation in the orbits was, however, suggestive of scurvy.

This individual also suffered from dental enamel

hypoplasia (DEH) and it is possible that the two conditions were linked. DEH is the name given to the defects that appear in the enamel of the teeth, representing a cessation in growth and development. They are considered to be indicators of physiological stress, and febrile infections, malnutrition and metabolic disorders during childhood have all been cited as possible causes (Aufderheide and Rodriguez-Martin 1998). The condition was evident on all the maxillary incisors, the mandibular and maxillary canines and the right mandibular third molar of Skeleton 2.

Skeleton 1 had experienced ante-mortem loss of both mandibular first molars and second pre-molars. A common cause of this is the formation of plaque and it occurs due to poor oral hygiene.

#### 4.5 Discussion of the Loch Borrallie skeletons

The amount of surface erosion present and the weathering of the bones suggested that, although both individuals were recovered from formal graves, their remains had at some point lain exposed above the ground. The breakage of the long bones in Skeleton 1 and the gnawing evident on the bones of both individuals would also support this interpretation. The fracture patterns observed in Skeleton 1 were characteristic of damage caused by carnivores such as dogs and wolves, the shafts of the long bones having been broken in order to obtain marrow (Brain 1981).

The gnawing of the ends of the long bones in both skeletons was most likely the work of rats. The reason for the exposure of the bodies before formal

burial is unclear. It is possible that the individuals died during the winter months and were left unburied until the spring because the earth was too hard and frozen for graves to be dug. It is also possible that these individuals had been left after death somewhere safe, in a cave perhaps, until the ground was soft enough to bury them, and that they had unfortunately been discovered and mauled by animals.

The role of excarnation in the Iron Age has previously been discussed in relation to the evidence from Central Southern Britain (Carr and Knüsel 1997). That review of the evidence supports the contention that excarnation and secondary burial rites were practiced during this period. Carr and Knüsel suggest four major indicators of excarnation: animal gnawing on bones; scattered, isolated, fragmentary, weathered or splintered bones; disarticulated skeletons; incomplete skeletons lacking a limb, phalanges or other parts (Carr and Knüsel 1997, 170). In the case of the burials from Loch Borrallie, at least three of the major indicators are present and as such would support the interpretation that some form of purposeful exposure of the bodies took place prior to burial beneath the cairn.

Another interesting feature of the burials was the general ill-health of the two individuals. Both had suffered from nutritional disorders that may have been the result of dietary deficiencies or endemic infection. The poor state of preservation of the remains meant that a true assessment of skeletal pathology could not be made, but the available evidence is suggestive of individuals that were physiologically stressed. Analysis of more burials from this group would be required in order to determine whether this applied to the community as a whole.