

**TOWARDS A NEW CHRONOLOGY FOR THE LATEGLACIAL
ARCHAEOLOGY OF BELGIUM
PART II: RECENT RADIOCARBON DATES FROM
THE OXFORD AMS SYSTEM**

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1. Introduction

Work has been in progress since 1990 on a re-evaluation of Lateglacial faunal remains from a number of Belgian and British sites. In 1991 an application was submitted to the Oxford Accelerator Unit (part of the Research Laboratory for Archaeology and the History of Art, Oxford University) for a series of radiocarbon dates on human and humanly modified bone from Belgian Lateglacial contexts; these were presented in the last edition of *Notae Praehistoricae* (Charles 1993). Following the success of the initial project, an extended application was made in 1992. A further 11 dates resulted from this project, the results of which are presented here.

As with the initial project, the dates were intended to address the problems of association presented by conventional radiocarbon samples. Rather than dating bulk samples of bone splinters which were unidentifiable to species and which may have been accumulated over a considerable period of time by a number of predators, single modified bones which could be clearly identified to species and anatomical element were submitted. Such specimens are

unambiguously evidence of human presence at the site in question. All of these dates will eventually be published in an Oxford Accelerator datelist which will appear in *Archaeometry*. Details of the dates are given below:

2. Grotte de Remouchamps, Province of Liège (50° 28' 52" N, 5° 43' 20" E).

Both samples come from the faunal collection excavated by de Loë & Rahir in 1902 (Rahir 1921). The archaeological and palaeontological collections are held by the Musées Royaux d'Art et d'Histoire, Brussels.

The collection from the Grotte de Remouchamps is substantial and dominated by reindeer (*Rangifer tarandus*), red deer (*Cervus elaphus*), elk (*Alces alces*) a bovid (*Bos* sp.), horse (*Equus ferus*), a number of ovi-caprids including sheep (*Ovis aries*) and goat (*Capra hircus*) wild boar/pig (*Sus scrofa*), a felid (*Felis* sp.), polecat (*Mustela putorius*), wolf (*Canis lupus*), badger (*Meles meles*) and hedgehog (*Erinaceus europaeus*) alongside a varied avian fauna.

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Lab code	Date	Sample	details
OxA-4190	10330 ± 110 BP		Cut proximal humerus of <i>Tetrao urogallus</i> .
OxA-4191	10800 ± 110 BP		Cut proximal right metacarpal of <i>Rangifer tarandus</i> .

Table 1: AMS dates from the Grotte de Remouchamps

Neither sample has a direct stratigraphic assignation. They, along-side OxA-3634 (10320 ± 80; Hedges *et al.* 1993), clearly indicate human activity at the Grotte de Remouchamps during the Dryas III phase of the Lateglacial. The only Palaeolithic assemblage from the site is clearly Ahrensburgian. A conventional date (Lv-535 10380 ± 170; Dewez *et al.* 1974) is also known.

OxA-4190 comes from a specimen of capercaillie (*vide* Colin Harrison), part of an abundant avian fauna recovered from the site. The date is slightly later than OxA-3634 and OxA-4191, and which, taken together, may suggest recurrent human use of the cave during Dryas III rather than a single occupation event.

3. Trou de Chaleux, Province of Namur (50° 13' 18" N, 4° 56' 30" E).

Lab code	Date	Sample	details
OxA-3632	12790 ± 100 BP		Cut 3rd left cuneiform of <i>Equus ferus</i> .
OxA-3633	12880 ± 100 BP		Cut 3rd left cuneiform of <i>Equus ferus</i> .
OxA-4192	12860 ± 140 BP		Cut 1st phalanx of <i>Ovibos moschatus</i> .
OxA-4193	3060 ± 85 BP		Cut right distal humerus of <i>Sus scrofa</i> .

Table 2: AMS dates from the Trou de Chaleux.

The Trou de Chaleux lies on the bank of the river Lesse. It is located about 30 m above the river, just downstream of the Aiguilles de Chaleux. Originally excavated by Édouard Dupont in 1865 as part of his research on the Caves in the Dinant area (Dupont 1865), the site has more recently been re-excavated by Professor M. Otte (Otte & Teheux 1986).

The two new dates (OxA-4192 & OxA-4193) come from the Dupont collection held in the Institut Royale des Sciences Naturelles de Belgique in Brussels. The faunal collection made by Dupont is substantial: 3181 speci-mens identifiable to species and a further 24,656 unidentified bone splinters. The assemblage recovered by Dupont is currently under study by the

author. The assemblages from both excavations are dominated by horse (the nomenclature of *Equus ferus* rather than *Equus caballus* is used here), and certainly within the Dupont collection this species shows clear and consistent butchery traces. Specimens of musk ox (*Ovibos moschatus*) were originally identified by Dupont; however, doubts were cast on the accuracy of the identification by Wilkinson (1975). Four cut specimens identified as *Ovibos moschatus* were taken to the Natural History Museum in London, where the identifications were confirmed by Mr. A. P. Carrant. One of these specimens was subsequently dated (OxA-4192), confirming musk ox as an integral part of the Bölling fauna from Chaleux.

OxA-4192, with OxA-3632 & 3633 (Hedges *et al.* 1993), directly dates human activity at the Trou de Chaleux during the earliest part of the Bölling phase of the Lateglacial; these three dates come from a stratigraphic unit termed the "1^{er} niveau ossifère" (which corresponds with the Magdalenian layer reported by Dupont) and form a close grouping. Conventional dates from the site span a broader range of the Bölling Interstadial (table 3).

OxA-4193 was intended to test whether one of a number of wild boar/pig specimens was part of the Lateglacial megafauna or intrusive. These were also provenanced to the "1^{er} niveau ossifère". The date is clearly post-glacial, and confirms the presence of more recent faunal material which includes sheep and goat within the "1^{er} niveau ossifère". *Sus* sp. has been reported from a number of other late Palaeolithic sites in Belgium; it remains unclear whether this

Lab code	Date	Sample details
Lv-1136	12710 ± 150 BP	Bone splinters (Dupont excavation)
Lv-1568	12370 ± 170 BP	Bone splinters (Otte excavation)
Lv-1569	12990 ± 140 BP	Bone splinters (Otte excavation)

Table 3: Conventional radiocarbon dates from the Trou de Chaleux.

species was locally present during the Lateglacial.

4. Trou des Nutons (Furfooz), Province of Namur (50° 12' 45" N, 4° 57' 29"E).

This was the first cave excavated by Dupont in 1864 during his survey of the caves in the Dinant region. The Furfooz caves are within 2 km of the Trou de Chaleux. The fauna recovered from the site, associated with Magdalenian artefacts, comes from an upper unit which Dupont again termed the "1^{er} niveau ossifère". As with the Trou de Chaleux, this unit included animal domesticates such as sheep, goat and pig, which indicated that the faunal assemblage must span a considerable period of time.

Lab code	Date	Sample details
OxA-4194	2210 ± 80 BP	Cut left navicular cuboid of <i>Cervus elaphus</i> .
OxA-4195	12630 ± 140 BP	Cut 2nd phalanx of <i>Equus ferus</i> .

Table 4: AMS dates from the Trou des Nutons, Furfooz.

OxA-4195 confirms human presence at the Trou des Nutons during the Bölling phase of the Lateglacial. A conventional date (Lv-1137 7720 ± 110) taken from a bulk sample of bone splinters had been the only previous attempt to date Palaeolithic use of the site.

OxA-4194 was intended to test whether the specimen of red deer was Lateglacial or more recent in origin. It clearly indicates more recent human activity at the site, and confirms suspicions that fauna of considerably different ages was present within the "1^{er} niveau ossifère".

5. Trou du Frontal (Furfooz), Province of Namur (50° 12' 45" N, 4° 57' 45" E).

As with the Trou des Nutons and the Trou de Chaleux, the Late-glacial archaeology from this site is characteristically Magdalenian. Likewise, it was excavated by Édouard Dupont in 1864. The term "1^{er} niveau ossifère" was used by Dupont to describe the upper stratigraphic unit at this site, which includes typically Magdalenian artefacts. The "1^{er} niveau ossifère" also includes evidence for later prehistoric and

historic use of the site; the faunal assemblage clearly reflects this.

Lab code	Date	Sample details
OxA-4196	4430 ± 80 BP	Cut right distal tibia of <i>Homo sapiens</i> .
OxA-4197	12800 ± 130 BP	Partial cut left metacarpal of <i>Equus ferus</i> .

Table 5: AMS dates from the Trou du Frontal, Furfooz

The faunal assemblage from the site contains a range of species, including horse (*Equus ferus*), red deer (*Cervus elaphus*), wild boar/pig (*Sus sp.*) and a range of ovicaprids including sheep (*Ovis aries*) and goat (*Capra hircus*). A number of the horse specimens show distinct cut marks, reminiscent of the butchery patterns found on the horses from Chaleux, and OxA-4197 is certainly close to the dates on horse bones from that site (see above).

The other date (OxA-4196) confirms the use of the Trou du Frontal during the Neolithic as a burial place. A large number of human bones were recovered by Dupont from the site; these are currently held in the Department d'Anthropologie et Préhistoire, Institut Royale des Sciences Naturelles de Belgique. The date is in agreement with GrN-10179 (4430 ± 30) a bulk sample taken from human rib fragments from the Trou du Frontal.

6. Trou Burnot, Province of Namur (50° 21' 45" N, 4° 51' 45" E).

Lab Code	Date	Sample details
OxA-4198	12660 ± 140 BP	Antler <i>sagaie</i> base, 3A.

Table 6: AMS date from the Trou Burnot.

The site is currently under excavation by J-M. Leotard (University of Liège) who made the sample available for dating. OxA-4198 is one of three bevelled and ringed *sagaie* bases found at the site, associated with an Upper Palaeolithic lithic assemblage. These *sagaies* are characteristic of the local late Magdalenian. The sample clearly dates Magdalenian presence at this site. No other radiocarbon dates are currently known from the site.

7. Trou da Somme, Province of Namur (50° 13' 38" N, 4° 52' 45" E).

Lab code	Date	Sample details
OxA-4199	12240 ± 130 BP	Mid section of a <i>sagaie</i> . TDS 88 P21 - 107.

Table 7: AMS date from the Trou da Somme.

The Trou da Somme is currently under excavation by J-M. Leotard (Leotard 1988) who made this sample available for dating. OxA-4199 was intended to date Magdalenian presence at the Trou da Somme during the Lateglacial. As with other accelerator dates for the Belgian Magdalenian, OxA-4199 falls within the

Bölling Interstadial. However, the date is somewhat later than other accelerator dates on the Belgian Magdalenian, indicating human presence during the latter part of the Bölling.

8. Trou des Blaireaux, Vaucelles (50° 07' 14" N, 4° 44' 16" E).

Lab code	Date	Sample details
OxA-4200	13330 ± 160 BP	Cut (?) partial right proximal ulna of <i>Equus ferus</i> .D7 5.

Table 8: AMS date from the Trou des Blaireaux.

This sample comes from the faunal assemblage excavated by C. Bellier & P. Cattelain (1986). The collection is currently under study by Bellier & Cattelain, and is held in the excellent "Musée du Malgré Tout". OxA-4200 was intended to test suggestions that human use of the Trou des Blaireaux predated the Bölling Interstadial. A series of radiocarbon dates falling within Dryas I and the Bölling Interstadial are already known from the site (table 9).

However, OxA-4200 was the only specimen thought to be modified after an inspection of the available fauna. As with much of the fauna, the dated specimen is quite demineralised, and although the bone surface is in relatively good condition, the specimen was not ideal for determining butchery marks.

Lab code	Date	Sample details
Lv-1385	16270 ± 230 BP	From the base of couche III.
Lv-1558	16130 ± 250 BP	From the base of couche III.
Lv-1433	13930 ± 120 BP	From the middle of couche III.
Lv-1309D	13850 ± 335 BP	From the middle of couche III.
Lv-1434D	13730 ± 400 BP	From the middle of couche III.
Lv-1314	13790 ± 150 BP	From the top of couche III.
Lv-1386	12440 ± 180 BP	From couche II.

Table 9: Conventional radiocarbon dates from the Trou des Blaireaux.

Whilst I was initially convinced that the specimen was cut, having showed it to a number of fellow researchers opinions were divided as to whether the sample had or had not been modified. Further microscopic examination of the supposed butchery mark has not been conclusive. Accordingly it seems wisest to treat OxA-4200 solely as a faunal date on *Equus ferus*, as it stands this date does not give any evidence for a pre- Bölling human presence at this site.

9. Grotte de Sy Verlainne, Province of Luxembourg (50° 24' 15" N, 5° 31' 00" E).

Archaeological and palaeontological collections held in the Musées Royaux d'Art et d'Histoire and the Dept. de Paléontologie, Université de Liège. This sample comes from

Lab code	Date	Sample details
OxA-4041	12870 ± 110 BP	Cut left pisiform of <i>Equus ferus</i> .

Table 10: AMS date from the Grotte de Sy Verlainne.

the Musée Royaux d'Art et d'Histoire collections. The Lateglacial archaeology from the Grotte de Sy Verlainne (also known as the Grotte de Verlainne) has long posed a problem, as an earlier date (Lv-690 13780 ± 220) on a bulk sample of bone fragments had prompted suggestions of human presence during Dryas I, and had been used to support arguments for an "early" date for the human re-colonisation of north-western Europe after the Lateglacial Maximum, and a suggestion that the 'associated' Magdalenian assemblage (which included a uniserial 'harpoon') could be linked to the Magdalenian IV rather than Magdalenian V stage.

The archaeological and palaeontological collections from the site lack any form of stratigraphic differentiation, although Destinez & Moreels (1888) described a tripartite division. Characteristically post-glacial, Late-glacial and mid-Weichselian species are all present within the collection. Intensive carnivore activity at the site is attested by heavily gnawed and acid etched bones; specimens of hyaena, bear and fox are all present alongside woolly rhinoceros (*Coleodonta antiquitatis*) horse (*Equus ferus*) and red deer (*Cervus elaphus*). It is clear that the fauna from this site has been accumulated over a considerable period of time, by a number of agencies.

OxA-4041 comes from a humanly modified bone, and so can be directly linked to human activity. It lies at the earliest part of

the Bölling Interstadial. The date is also in line with expectations, and ties in well with the ascription of the archaeological assemblage to Magdalenian V.

10. Overview and further prospects for research

The dates reported here, in conjunction with those published in 1993, form a firm basis upon which to start a re-assessment of the Belgian Magdalenian and Ahrensburgian. However, these dates should only be seen as a starting point.

There are now three accelerator dates for Ahrensburgian use of the Grotte de Remouchamps. Attempts at dating the Ahrensburgian from the Grotte du Coléoptère have been unsuccessful, as an appropriate sample could not be found. It is hoped that in the future Ahrensburgian material from other Belgian sites will become available for dating.

It is interesting to note that the vast majority of dates for the Magdalenian fall within the range 12 900 to 12 600 BP. Only one date, from the Trou de Somme, falls beyond this range. This suggests that Magdalenian presence in Belgium was not restricted to the earliest part of the Bölling Interstadial; however, it remains unclear whether that presence was continuous or episodic. The results from the two dated *sagaies* (OxA-4198 & OxA-4199), both of which are marginally more recent than the majority of the other dates, demonstrates the usefulness of Accelerator Mass Spectrometry over conventional radio-carbon techniques, as it has permitted the dating of worked antler artefacts which would not normally be considered as potential dating samples because of the destructive nature of sampling for the conventional method.

The large mammal biostratigraphy of Belgium during the Late-glacial is another area where much work remains to be done. The presence of saiga antelope (*Saiga tatarica*) can be confirmed during the Bölling Interstadial on the basis of a single specimen (a horn core from Chaleux). Musk oxen (*Ovibos moschatus*) are an unexpected addition to the Lateglacial fauna; some 78 specimens were recorded from the Trou de Chaleux, of which 9 were cut.

The three later prehistoric dates (OxA-4193, OxA-4194 & OxA-4196) fall broadly in line with prior expectations. The faunal assemblages from the Trou de Chaleux, Trou des Nutons and the Trou du Frontal all contain clear indicators of later prehistoric and historic elements. The two faunal dates were intended to give an indication of the ages of these more recent elements. A significant number of ovi-caprids are present at these sites, many of which are clearly domesticates. Whilst it would be extremely useful to obtain clear seasonality data from these assemblages for Lateglacial use of the sites, it would seem wise to avoid basing any such work on the ovi-caprids because of the problems of later prehistoric contamination which these new readings highlight. As the Magdalenian faunal assemblages studied from Belgium are dominated by horse, the technique of tooth growth structure analysis for the horse developed by Burke (1992) might be usefully applied in this instance.

The problem of mixed assemblages still looms large, especially from sites excavated during the 19th century and the earlier part of the 20th. Whilst it is clear that the best of the earlier excavators noted complex stratigraphies in the sites they excavated (see, for example Dupont 1865b planche I), in the majority of cases little or no key exists to any stratigraphic differentiation

for the fauna and artefacts recovered during these excavations. As discussed above, the Magdalenian faunal remains from the Dupont collections from Chaleux and the Furfooz caves are clearly mixed with much more recent material.

The timing of the earliest human re-colonisation of Belgium after the Lateglacial Maximum was a major problem that this dating project was designed to address. The apparently 'early' dates from the Trou des Blaireaux and the Grotte de Sy Verlaine, alongside dates from Germany, Britain and France, have been used to support suggestions of human presence predating the Bölling Interstadial (see, for example, Straus 1991). For Belgium at least, the majority of accelerator dates fall at the interface of the Bölling and Dryas I. The new date from Sy Verlaine (OxA-4041) is especially interesting: it not only lies on this notional boundary, but is significantly more recent than the conventional radiocarbon date for the site (Lv-690 13780 \pm 220) by almost a millennium. The accelerator date comes from a clearly modified single specimen of horse. However, the faunal assemblage contains large mammal species indicative of an extremely long period of faunal accumulation. There appears to be no general method by which one can clearly distinguish Lateglacial elements from specimens of wildly divergent ages. The conventional date comes from an undocumented bulk sample, most probably of unidentified bone fragments.

Unfortunately, an attempt to clarify the situation at the Trou des Blaireaux was unsuccessful. The ulna of *Equus ferus* which was dated carried a single longitudinal mark which might have been a cut. Due to the time constraints on this project, it was not possible to verify the mark prior to dating. Subsequent attempts at microscopic verification proved

undiagnostic, so that the date can only be treated as a faunal one.

There are no immediate plans to extend this project at the time of writing. However, should further suitable material become available the situation will be reassessed.

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