

LATE MAGDALENIAN CARCASS MANAGEMENT STRATEGIES. THE PÉRIGORD DATA

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Summary

This paper looks at observed regularities in evidence for carcass processing at Upper Magdalenian sites in South West France. Patterning observed suggests that there are identifiable "carcass management strategies" which are specific to primary as opposed to secondary resources.

Results of detailed quantitative analysis of faunal material from sites in the Vézère Valley are described in brief and show that dominant and secondary species were not treated in the same way - differences in processing emerging when both element representation and the abundance and distribution of butchery marks are considered.

Résumé

Stratégies de gestion des carcasses au Magdalénien supérieur. Les données du Périgord.

Cet article décrit les constantes observées dans le traitement des carcasses dans des sites du Magdalénien supérieur du Sud-Ouest de la France. Les observations suggèrent qu'il existe des "stratégies de traitement des carcasses" spécifiques aux ressources principales, par opposition aux ressources secondaires.

Les résultats d'analyses quantitatives détaillées de faunes provenant de sites de la vallée de la Vézère sont brièvement décrits et montrent que les espèces dominantes et les espèces secondaires n'étaient pas traitées de la même manière. Des différences dans le traitement apparaissent quand, à la fois, la représentation des parties du squelette et l'abondance et la répartition des traces de boucherie sont prises en considération.

Zusammenfassung

Spätmagdalénienzeitliche Schlachtmethoden im Périgord.

Dieser Beitrag befaßt sich mit Gesetzmäßigkeiten, die bei der Verarbeitung von Tierkörpern im Magdalénien Südwest-Frankreichs festgestellt werden konnten. Die Untersuchungen zeigen, daß für Nahrungslieferanten erster Klasse andere "Schlachtstrategien" bestanden haben, als für die der zweiten Klasse.

Es werden kurz die Untersuchungsergebnisse von Fundmaterialien aus dem Vézèretal vorgestellt. Es zeigt sich, daß die Hauptjagdtiere nicht gleich behandelt wurden, wie die Arten, die man nur gelegentlich erlegte. Die Unterschiede zeigen sich bei der Verteilung der Skeletteile und den Schlachtspuren.

Key Words

Hunting, Magdalenian, Butchery, Périgord, Reindeer, Horse.

Mots clés

Chasse, Magdalénien, Boucherie, Périgord, Renne, Cheval.

Schlüsselworte

Jagd, Magdalénien, Schlachtung, Périgord, Rentier, Pferd.

Introduction

The Upper Magdalenian is often viewed as a period when reindeer formed the major available resource, exploited whenever possible. As knowledge of other taxa increases however, we can begin to see the extent of this over-simplification. Although reindeer often forms the numerically dominant species, others appear to have been of considerable importance, particularly the horse. The aim

of this paper is to determine the nature of Magdalenian V and VI subsistence strategies, which exploit several resources at the same time.

This paper considers material from the Vézère valley (S.W. France), those sites providing most information being La Madeleine (a large, south-facing *abri* on the right bank of the Vézère, in a highly advantageous position for the hunter), Limeuil (open-air, at the confluence

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of the Vézère and Dordogne rivers - probably the best strategic position in the area) and Reignac (a left bank site, well positioned for the interception of migrating herds).

Only large herbivores are considered; we can assume that carnivores and lagomorphs played little part in the subsistence strategies, given that they total less than 1% of the material from Limeuil and less than 2% at Reignac and La Madeleine.

Taphonomy

Bone preservation is good at all sites examined. Root etching is rare and bone surfaces show little evidence of the weathering one might expect had bones spent a long time on the surface before burial.

Bone survival depends on many things although neither density, as presented by Binford and Bertram (1977), nor any other measure of "survival potential" (Binford, 1981; Brain, 1981; Lyman, 1984) are controlling factors at any site; none is significantly positively correlated with element frequency. The most significant correlation is the negative one between density and Magdalenian V horse frequencies at La Madeleine ($r = -0.639, p = 0.000$).

Comparison of frequencies of distal versus proximal tibiae and humeri places assemblages in the *Zone of destruction* (Binford, 1981). Whereas Binford invokes carnivore activity to explain ravaging, destruction at sites is more realistically attributed to human behaviour since direct evidence of carnivore activity is virtually absent. Instead, bones bear butchery marks, most of which parallel those described by Binford (1981).

Carcass processing

Butchery marks attributable to initial and secondary dismemberment, and processing have been identified and recorded. Dismemberment marks outnumber processing marks at the sites, exploitation of both fresh and stiff carcasses being identifiable (fig. 1). Secondary species usually show more frequent evidence of intensive processing than do the reindeer.

Primary dismemberment has left abundant visible traces on bone surfaces at each site. Among reindeer they are most common on long-bones: at Reignac and Limeuil distal humeri and proximal radii bear marks which Binford (1981) attributes to carcass dismemberment (Hd-1, Hd-2 and Hd-4; RCp-5), while proximal epiphyses and associated cut marks (Hp-3) are rare. Similar marks are seen on the proximal face of the atlas, suggesting removal of the head. At La Madeleine and Limeuil there is evidence of tongue removal, an activity Binford observed during initial butchery.

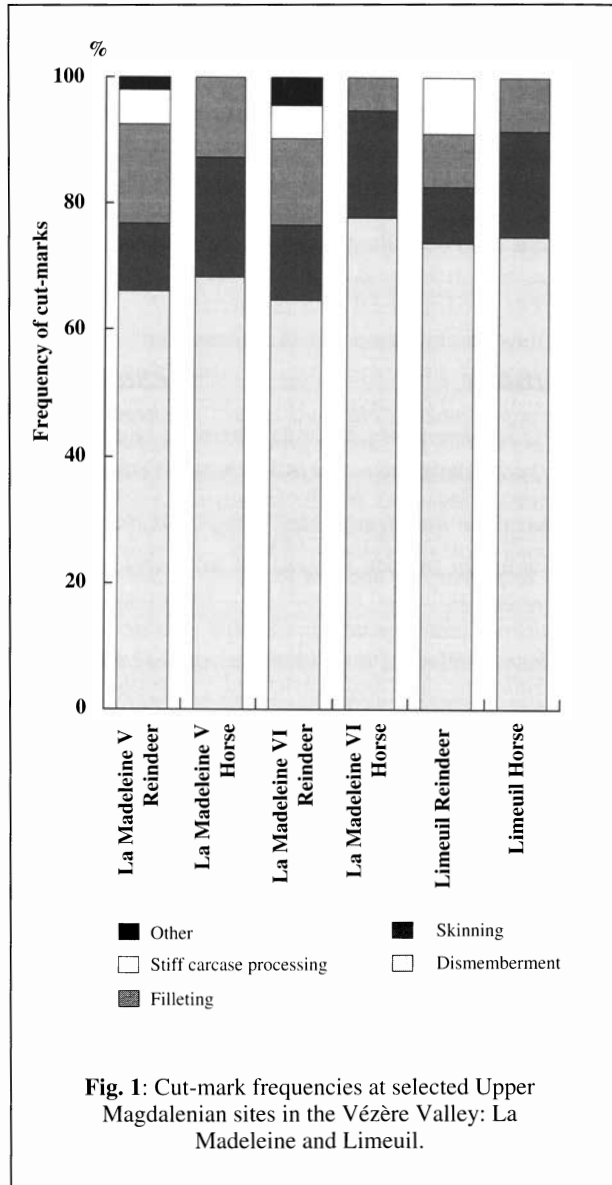


Fig. 1: Cut-mark frequencies at selected Upper Magdalenian sites in the Vézère Valley: La Madeleine and Limeuil.

Rarer but of importance are filleting and skinning marks. The former are seen on reindeer and horse at Limeuil (TC-2; reindeer MTd-4, S-3, S-4; horse TC-2) while reindeer distal humeri, tibiae and metacarpals show evidence of systematic filleting at La Madeleine. Marks on the proximal femur (Fp-2 and Fp-3) result when tissue between the pelvis and upper hind limb is cut. Evidence of skinning is more common. Reindeer distal metapodia show most evidence at all sites, similar traces on the sides of horse phalanges at La Madeleine and Limeuil and horse (and red deer) metapodia at Limeuil being seen. Although Binford rarely observed marks on phalanges (Binford, *op. cit.*), at La Madeleine they are abundant.

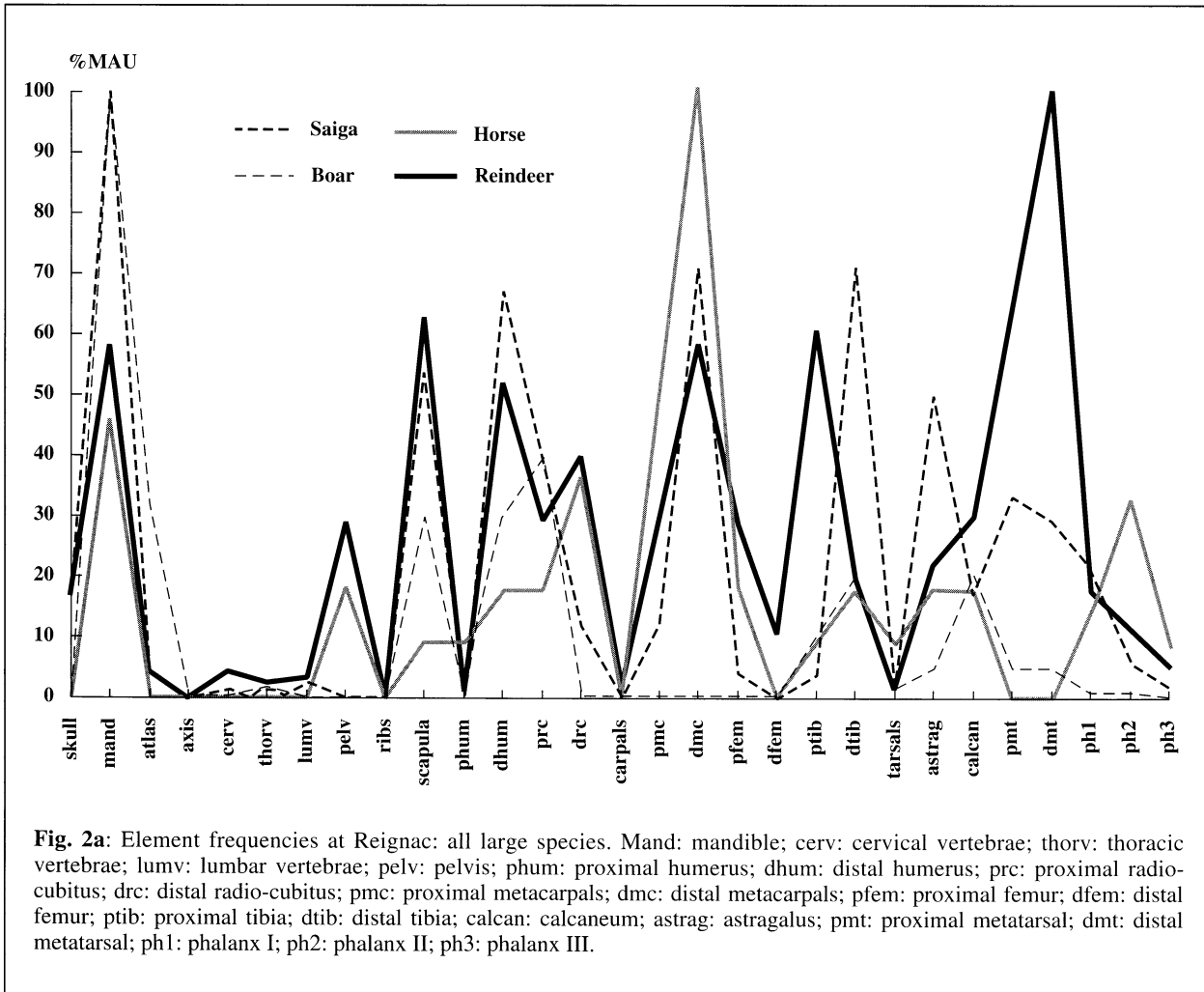
Finally, “hanging carcass” and “stiff carcass” processing are clearly evidenced at Limeuil and La Madeleine (CV-3, Hd-3, TC-3). If multiple reindeer kills were made at or close to these sites, many carcasses would have required processing and a large amount of meat would have been available - hence the filleting. Some carcasses, or parts thereof, may have been left long enough to become “stiff”. The marks, which are found only on reindeer, are distinct and not sufficiently rare to be coincidence. In addition, as a result of “multiple” kills some parts of the reindeer carcasses may not have been processed at all, the need to intensively process every part of the carcass not arising.

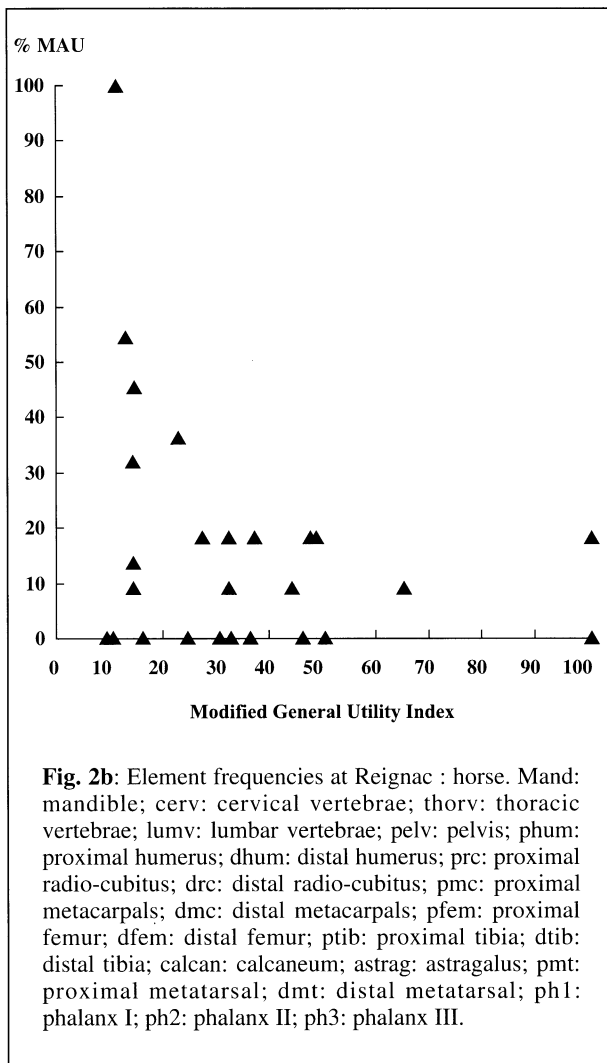
Recent years have seen a growth in studies adapting Binford’s 1978 analysis of Nunamiut subsistence - namely the quantitative/graphical comparison of element frequency (%MAU) and various utility values which often yields a series of curves, the *bulk*, *gourmet* and *mixed strategy*

curves being the most common. Here detailed patterning is not considered. Only a summary is offered.

Limb bones dominate all but two taxa at Reignac (fig. 2a), no single profile closely resembling any of those described by Binford (1978). However, reindeer can be argued to be somewhat similar to a fall hunting stand, secondary taxa yielding profiles suggesting that more intensive processing was carried out at the site. In general, %MAU values are lower and suggest a high degree of element destruction.

Horse yields a bulk curve (fig. 2b), which reflects selection of high and moderate value parts and emphasises the degree of processing and destruction. Rarity or absence of high/medium value parts may be explained in two ways. We have either a site from which butchery units were removed for consumption elsewhere, or one where such intensive processing was undertaken that parts of secondary species were





destroyed or rendered unrecognizable. The large quantity of fragments and splinters of bone and antler at Reignac supports this interpretation and the suggestion that Reignac represents a residential site at or close to hunting “events”.

The reindeer profile at Limeuil, mirrored by a gourmet curve, reflects selection of parts of high value and abandonment of those of medium or low value (fig. 3). Horse, unlike at Reignac, is represented by higher frequencies of each of the element types observed. Significant correlations between marrow values and secondary species frequencies point, however, to intentional intensive processing (horse, $r = 0.412$, $p = 0.02$; red deer, $r = 0.69$, $p = 0.000$).

If we omit the reindeer astragalus, Limeuil shows similarities to the winter-occupied “Bear Site” described by Binford (1978). The under-representation of high value parts is explained in terms of filleting and potential grease-rendering strategies which were planned but never execut-

ed at the “Bear Site”, where articular ends were retained in order to make bone grease (Boyle, 1993).

Mandibles and distal humerus dominate the Magdalenian V reindeer assemblage at La Madeleine (fig. 4), mirroring Binford’s data for the autumn residential “Tulukana” and the “Disturbed Site”. These are assemblages “abandoned in residential locations adjacent to the kill-butchered locations for animals killed in lakes” (Binford, 1978: 399), a description relevant to La Madeleine if we consider the Vézère to represent the lake (Boyle, 1994). While Gordon (1988) claims that reindeer was not killed at La Madeleine during the autumn, Delpech (Gordon, *op. cit.*) suggests otherwise. Furthermore, Binford observed autumn-killed reindeer antlers at spring hunting stands (Binford, 1978).

Phalanges dominate the Magdalenian V horse, forelimb elements outnumbering those from the hindlimb and axial skeleton. The species is represented by a bulk curve, high meat value parts (except scapula) being rare, while grease and marrow rich parts are more abundant. The low overall frequency of horse reflects the intensive use of almost all the carcass, intensive processing reducing much of the skeleton to small fragments, particularly the high marrow and grease yielding hind-limb bones. Alternatively, high yield parts may have been filleted and transported to the site as “meat parcels”, thereby reducing transport ‘costs’ during a period when reindeer were not exploited (summer) (Burke, 1993).

During Magdalenian VI patterning is more typical of the Upper Magdalenian as a whole. Both reindeer and horse are better represented by leg portions, the front and hind limbs forming distinct butchery units, although horse phalanges are much more important than those of the reindeer. Overall, reindeer is well represented and broadly speaking forms a gourmet curve. Available in abundance when killed (close to the ford some 150 m away; White, 1985), reindeer carcasses were not always processed intensively. The horse, on the other hand, more closely resembles a bulk curve although the femur is quite well represented. More intensive processing of the horse is mirrored by a low, but significant, positive correlation between %MAU values and Binford’s (1978) marrow values ($r = 0.412$, $p = 0.027$).

Discussion

Various things emerge from detailed analysis of assemblages which allow us to begin to form a detailed picture of the subsistence system.

Over-representation of reindeer proximal tibiae at Reignac (Boyle, 1993) is of interest when considered in relation to seasonality data. Speth (1983) tells us that tibia

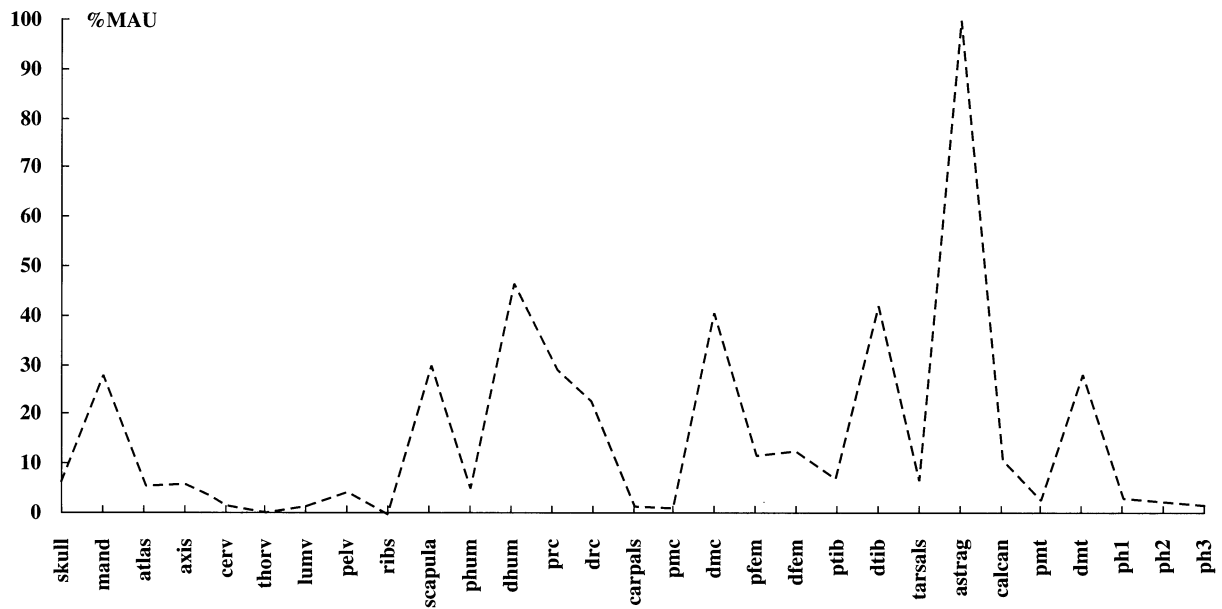
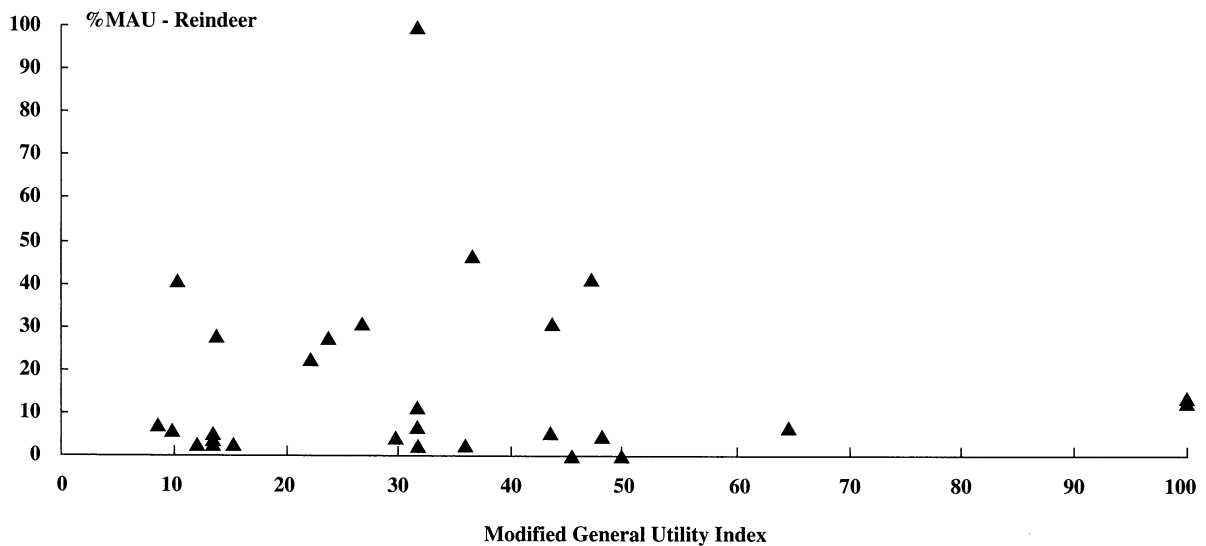


Fig. 3: Reindeer element representation at Limeuil. Mand: mandible; cerv: cervical vertebrae; thorv: thoracic vertebrae; lumv: lumbar vertebrae; pelv: pelvis; phum: proximal humerus; dhum: distal humerus; prc: proximal radio-cubitus; drc: distal radio-cubitus; pmc: proximal metacarpals; dmc: distal metacarpals; pfem: proximal femur; dfem: distal femur; ptib: proximal tibia; dtib: distal tibia; calcan: calcaneum; astrag: astragalus; pmt: proximal metatarsal; dmt: distal metatarsal; ph1: phalanx I; ph2: phalanx II; ph3: phalanx III.



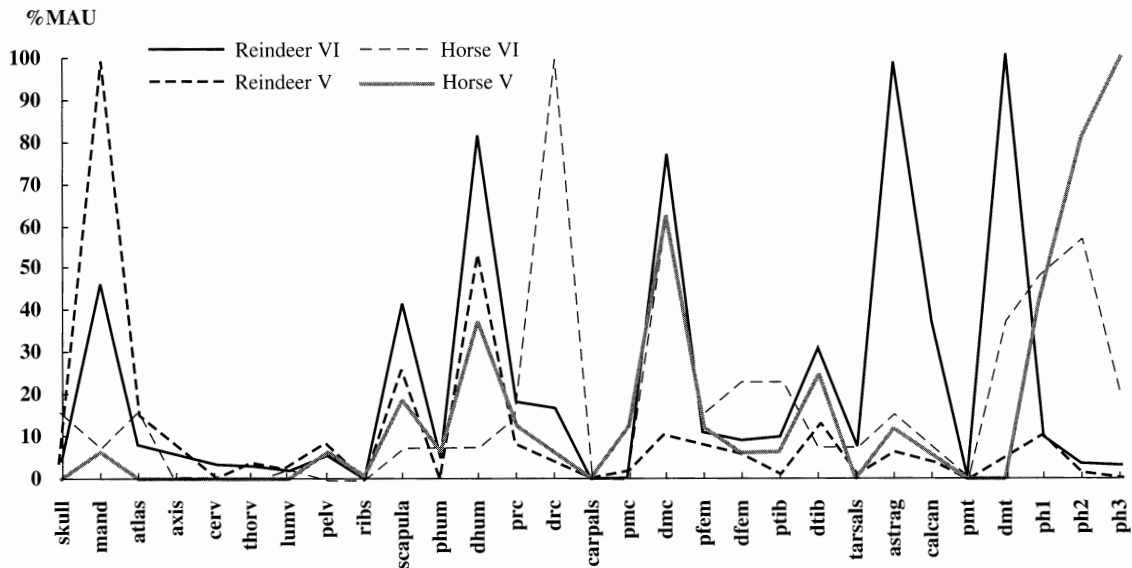


Fig. 4: Element representation profiles for horse and reindeer at La Madeleine: Magdalenian V and Magdalenian VI. Mand: mandible; cerv: cervical vertebrae; thorv: thoracic vertebrae; lumv: lumbar vertebrae; pelv: pelvis; phum: proximal humerus; dhum: distal humerus; prc: proximal radio-cubitus; drc: distal radio-cubitus; pmc: proximal metacarpals; dmc: distal metacarpals; pfem: proximal femur; dfem: distal femur; ptib: proximal tibia; dtib: distal tibia; calcan: calcaneum; astrag: astragalus; pmt: proximal metatarsal; dmt: distal metatarsal; ph1: phalanx I; ph2: phalanx II; ph3: phalanx III.

quality varies according to season and associated nutritional status of the animal. Over-representation may reflect selection of nutritionally rich elements and discard of parts of low value. In spring, when, according to Gordon (1988) Reignac was occupied, proximal tibia marrow quality declines and the element is undesirable. Patterning observed (low distal tibia, high proximal tibia) may reflect use of high marrow value parts (distal tibia = 92.60; Binford, 1978: 27) and discard of lower value parts.

Selection of high utility value parts is usually associated with the major species at Upper Palaeolithic sites in South West France. Where several taxa occur and one clearly dominates the assemblage gourmet curves are seen for the major species. Only at La Mège (Teyjat) do we see a major taxon characterised by a "bulk curve".

Gourmet curves reflect, to some extent, natural resource abundance at a time when nutritional quality of the meat/marrow ratio was poor. The lack of the need to process the complete reindeer carcass (resulting from its abundance) may have led to two things; (a) the return of more valuable parts to the residential site, low utility parts being left at the kill, and (b) the failure to process these parts to the point of destruction. More filleting marks are

seen on reindeer bones than on secondary species, the former often being subjected to less intense processing.

In general, there is a tendency for secondary species to yield mixed strategy or bulk curves, reflecting more intensive processing of carcasses and greater destruction, as evidenced by relatively abundant cut-marks and a high degree of fragmentation, all perhaps related to lower abundance of the animal concerned. More exceptions to this rule are seen than in the case of the major taxon/gourmet curve association.

Considerable support is available for the suggestion that the same, or similar, processing strategies were used in the exploitation of reindeer at several sites in the region. In contrast, horse and reindeer exploitation appear to have been practised quite independently of each other. High values of r and r_s ($r = 0.836$, $p = 0.001$; $r_s = 0.9263$, $p = 0.000$), obtained when comparing Magdalenian VI reindeer from La Madeleine and Limeuil (Boyle, 1993) emphasise similarities in assemblage structure which may reflect regional subsistence strategies which are often separate in terms of species and season of death. Statistically significant figures are also obtained using reindeer data from Les Eyzies (Olsen, 1987) [$r = 0.7386$, $p = 0.000$; $r_s = 0.639$, $p = 0.001$], Gare de Couze, couche supérieure (Prat, 1962

Table 1: Correlation values between element frequency at Kongumuvuk Pass [Binford, 1978, tab. 6.6, cols. 2 and 5 and Reignac (Boyle, 1993, tab. 11.3)].

| | Saiga | Boar | Red Deer | Bovids | Horse | Reindeer |
|------------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|--------------------------|
| Kongumuvuk Pass total | 0.6844 <i>p</i> =.000 | 0.5610 <i>p</i> =.002 | 0.5857 <i>p</i> =.001 | 0.3239 <i>p</i> =.086 | 0.2361 <i>p</i> =.218 | 0.4010 <i>p</i> =.031 |
| broken bones | 0.6457 <i>p</i> =.000 | 0.6285 <i>p</i> =.000 | 0.4590 <i>p</i> =.012 | -0.0644 <i>p</i> =.740 | -0.0172 <i>p</i> =.929 | 0.2625 <i>p</i> =.169 |

[$r = 0.693$, $p = 0.001$; $r_s = 0.744$, $p = 0.000$]) and Reignac (Boyle, 1990 [$r = 0.635$, $p = 0.001$; $r_s = 0.571$, $p = 0.001$]). The structural similarities which are particularly noticeable include the shared rarity of bones making up the axial skeleton, low frequencies of upper hindlimb parts, and the general abundance of the lower hindlimb, mirrored, to some extent, by the relatively high frequency of much of the lower forelimb.

Upper Magdalenian subsistence strategies are often viewed as being reindeer dependent. Here I have tried to show that at least one other species was regularly taken and processed more intensively. Given that multiple resource exploitation provides the diversity necessary for survival, systematic exploitation of alternative resources not only provides variety in the diet but also security.

At sites such as Reignac secondary species were taken on a (short-term) encounter basis like that which Binford (1978) records when prey is not overly abundant. Comparison of element frequencies with Nunamiut kill-sites such as Kongumuvuk Pass and the high mountain hunting camps shows that reindeer, horse and bovids display little or no correlation, other species fitting the "model" reasonably well (tab. 1). This suggests a strategy based on encounter hunting for smaller subsidiary species, with intensive carcass processing practised in order to gain maximum yield for effort expended.

Planned hunting of rare but large prey species may well have been undertaken when reindeer was scarce. At any site in the region where reindeer dominates, its apparent over-abundance may well have been balanced with intentional hunting of "something different".

To conclude, intentional reindeer hunting formed an important, seasonal, component of the Upper Magdalenian subsistence economy. It was usually abundant and its seasonal appearance sufficiently predictable to preclude the

need to process all carcasses intensively, especially if potential yield from each carcass was poor due to variation in physiological condition. "Best" parts were selected. Reindeer meat is usually low in fat (Stern *et al.*, 1980) and in late winter and spring animals are often in very poor condition. These may have been ignored by hunters (Speth, 1983), practising marrow and grease extraction and concentrating on those in better condition. Low percentages of cuts on reindeer suggest that some may have either been abandoned or only partly processed. The relative abundance of filleting and skinning marks implies that the species was sufficiently abundant to warrant a very selective processing strategy. Species abundance warranted at least partial discard, the occurrence of "stiff carcass" processing marks lending support to the argument that more reindeer was killed than used immediately. The lack of stiff carcass marks on bones of other species reflects immediate butchery and the relative abundance of cut marks implies intense processing.

While selective reindeer processing forms the basis of Upper Magdalenian subsistence strategies in the Vézère valley (and wider Périgord region), secondary species provided both variety and a way in which to supplement the existing subsistence base.

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