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Reexamining the timing of reindeer disappearance in southwestern France in the larger context of late glacial faunal turnover

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ABSTRACT

During the Tardiglacial, the significant changes in plant communities relating to climate changes were responsible for faunal recompositions perceptible throughout Europe. In this article, by comparing all the AMS radiocarbon dates obtained on reindeer bone and the faunal communities derived from bone assemblages dated between ca. 19,000 cal BP and 11,700 cal BP, we examine the disappearance of reindeer from the southwest of France. The new dating shows that the species disappeared slightly earlier in the Pyrenees, at ca. 14,000 cal BP, than in the northern Aquitaine where reindeer remained until ca. 13,800 cal BP. In the southwest of France, the natural range of reindeer began to fragment very early, from the Bølling period, and by the end of the GI-1e only residual reindeer populations remained in the Dordogne. These results are consistent with those observed throughout the rest of France and Switzerland, where reindeer also disappeared at the GI-1e/GI-1ca transition. Further north (Belgium, Germany, and Denmark), the species found favourable conditions for its development throughout the GS-1. In England, reindeer remained present until the beginning of the Holocene at very low latitudes compared to what has been observed on the continent. These results clearly illustrate the gradual withdrawal of reindeer towards the north and east of Europe and probably the local extinction of reindeer in Britain.

1. Introduction

Due to their abundance in the environment, reindeer were often the preferred game of European Palaeolithic hunters. Throughout the Mousterian (Les Pradelles, Roc de Marsal, Jonzac, and Salzgitter Gaudzinski and Roebroeks, 2000; Costamagno et al., 2006; Soulier, 2007; Niven et al., 2012), the Aurignacian (La Quina Aval and Brassempouy Letourneux, 2005; Soulier, 2013), the Gravettian (Flageolet I and Abri Pataud Enloe, 1993), the Magdalenian (La Madeleine, Petersfels, Schussenquelle, Pincevent, Verberie, Gazel Cave, and Magdeleine La Plaine Delpech, 1983; Enloe and David, 1989; Enloe, 1997, 2003; Fontana, 1999; Gaudzinski and Street, 2003; Kuntz, 2006), and even the Epipalaeolithic for the northernmost regions (Stellmoor and Meiendorf Grønnow, 1985; Bratlund, 1996; Gaudzinski and Street, 2003; Bratlund, 2008), this cervid was widely hunted during glacial periods. While it was not always the main source of subsistence (Morel and Müller, 1997; Costamagno, 1999, 2001, 2003; Turner, 2002; Costamagno, 2004; Street et al., 2006; Bignon, 2008; Müller, 2013; Street and Turner, 2013), its increased scarcity and subsequent disappearance must have profoundly affected human groups, forcing them to turn to other game (Bridault and Chaix, 2009; Costamagno et al., 2009;

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Langlais et al., 2014a) and/or to develop new hunting strategies (Pelegrin, 2000; Valentin, 2008).

During the Late glacial, the disappearance of reindeer from diverse regions of Europe (Sommer et al., 2014) was accompanied by a broader recomposition of faunal communities (Delpech, 1989; Aaris-Sørensen, 1992; Coard and Chamberlain, 1999; Aaris-Sørensen et al., 2007; Lister and Stuart, 2008; Bridault and Chaix, 2009; Costamagno et al., 2009). The last deglacial period, i.e. the Late glacial (19,000 to 11,700 cal BP) was a period of high climatic instability (Barker et al., 2009), during which successive cold and temperate oscillations preceded the onset of the current climate (Fig. 1). Furthermore, Greenland ice-core records show that climatic shifts during this period were very abrupt (Rasmussen et al., 2006, 2014; Lowe et al., 2008). Succeeding the GS-2, the first climate warming (GI-1e) (14,692–14,075 b2k Rasmussen et al., 2014) was extremely rapid and comparable in scale to the climate warming of

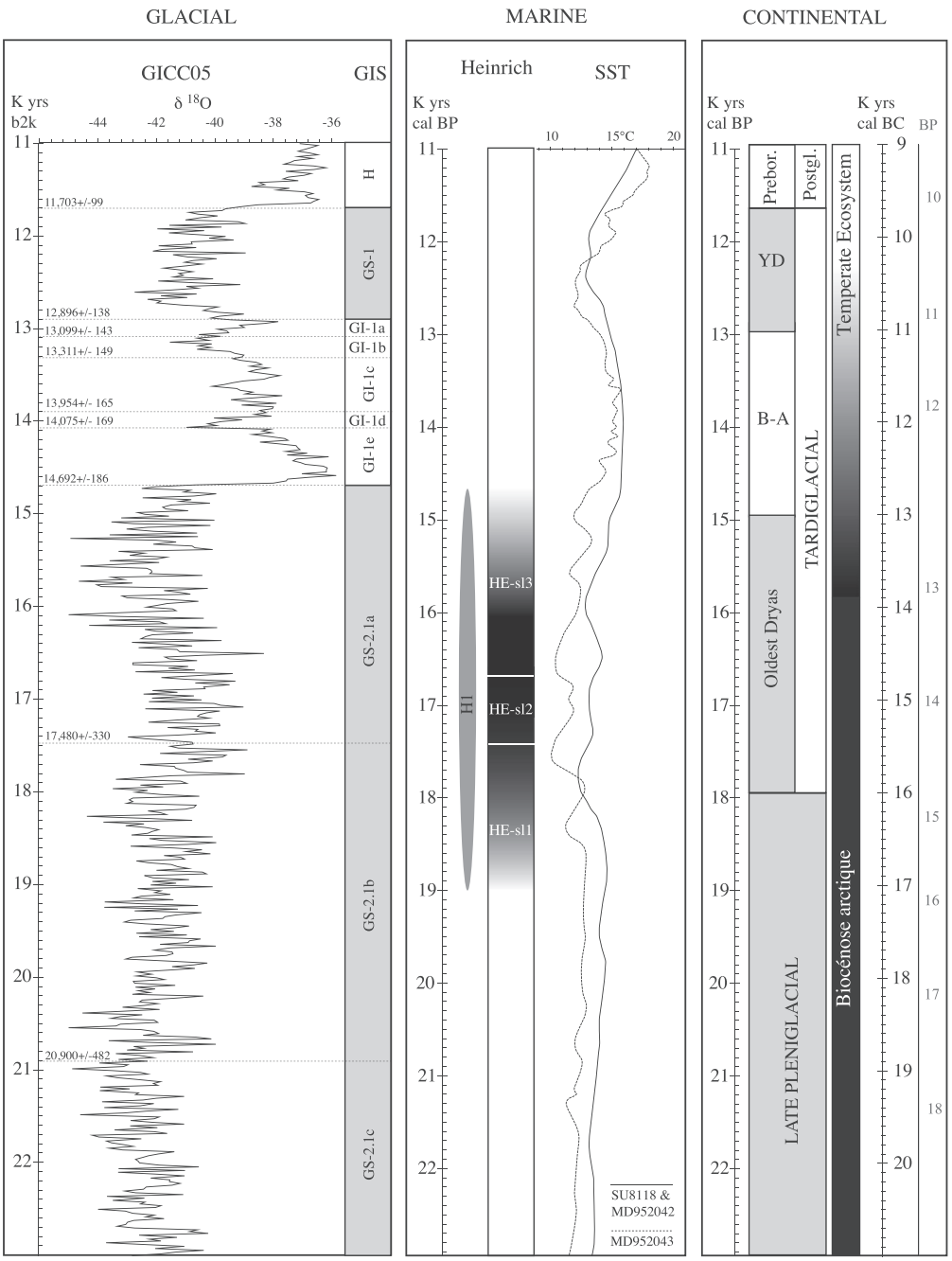

Fig. 1. Climatic contexts between 20 and 11 ka cal BP according to glacial data after Rasmussen et al. (2014); marine data: Heinrich 1 limits from Stanford et al. (2011); surface sea temperatures (SST) from Cacho et al. (2001), Bard (2003), Cacho (2006). According to Stanford et al. (2011), H1 has been divided into three phases. HE-sl2 (Heinrich Event sensu lato phase 2) corresponds to the 'conventional' Heinrich event sensu stricto (HE-ss) and represents the intense IRD deposition. Bølling-Allerød (B–A), Younger Dryas (YD), Holocene (H) (modified after Langlais, 2010).

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