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Searching for Scandinavians in pre-Viking Scotland: molecular fingerprinting of Early Medieval combs

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Highlights

- â€¢ Non-native reindeer antler has been identified in â€˜Pictishâ€™ combs from pre-9th century Orkney.
- â€¢ We tested these identifications with a non-destructive proteomic method, ZooMS.
- â€¢ Reindeer was identified only in Scandinavian-style combs.
- â€¢ Results were confirmed by subsequent DNA testing on the same samples.

- â€¢ Early cultural contact between Atlantic Scotland and Scandinavia was not supported.

Abstract

The character and chronology of Norse colonisation in Early Medieval northern Scotland (8thâ€“10th centuries AD) is hotly debated. The presence of reindeer antler raw material in â€˜nativeâ€™ or â€˜Pictishâ€™ type combs from the Orkney Isles, northern Scotland has been put forward as evidence for a long and largely peaceful initial period of cultural contact, as opposed to a shorter, more polarised period probably in the late ninth century. Here this hypothesis is tested using a minimally-destructive collagen peptide mass fingerprinting method (ZooMS) to speciate the raw material of 20 combs. Eleven were identified as red deer, four as reindeer and one as whale. The accuracy and gentleness of this method was tested by the subsequent application of ancient DNA (aDNA) methods to fourteen of the same samples: in ten, amplification was successful and all supported the preliminary ZooMS identification. All â€˜nativeâ€™-type combs in the sample are identified as red deer, and all Norse types as reindeer. These results challenge previous species identifications for these combs' raw materials. The balance of evidence no longer supports the existence of a long period of cultural contact between Atlantic Scotland and Scandinavian settlers before the late 9th century. ZooMS is shown to have considerable potential for identification of worked bone and antler artefacts, with applications in archaeology and wildlife/art-history forensics.

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Keywords

Combs; Collagen; Peptide mass fingerprinting; aDNA; Orkney; Early Medieval

[1] Deceased 18 January 2011.

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