

## THE ORIGIN OF THE WEST COAST NATTERJACKS – KERRY ACROSS TO MERSEY?

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### INTRODUCTION

In the interest of healthy and objective scientific discussion, every idea should be aired. From the title of this article, it might already be obvious what I am about to suggest. I write with the aim of stimulating replies, whether in agreement or disagreement. Evidence which disproves particular scenarios, allows them to be eliminated (which is a positive step!). So how and when did the present-day Natterjack populations arrive? This is not a new question and has frequently been debated and discussed in previous literature (e.g. Beebee, 1978; 1993; Wilkinson, 1988; Yalden, 1980). There is still no conclusive evidence, but recent data throws a new light on the subject.

### EVIDENCE

Sub-fossil finds of Natterjack (*Bufo calamita* Laur) suggested that this most thermophilous of our amphibians arrived in southwest Britain during the Lateglacial Interstadial (c. 13,000 to 11,000 years ago), a warm period towards the end of the last glaciation. A radiocarbon age of  $11,080 \pm 220$  years was given for a Natterjack scapula from Broken Cavern, Torbryan Valley, Devon (Gleed-Owen, 1996; in press). I have identified other remains believed to be of this age, from caves in Devon, Gloucestershire and Pembrokeshire (accounts are in preparation). According to recent thinking (Wingfield, 1995), sea level at this time was still low enough for land to have extended from Brittany to Devon, and from Cornwall to Ireland. The implications for Natterjack colonisation are obvious, and it is possible that the Kerry Natterjacks arrived then. However, between about 11,000 and 10,000 years ago, an arctic climate (the 'Younger Dryas' period) returned and would have eliminated all Natterjacks from Britain until the climate ameliorated again. Sea level rise meant that the land-bridges had by then narrowed to the Dover Straits/southern North Sea, and to a northward-migrating strip of land from Ireland to Wales or northwest England. Colonisation routes were therefore more restricted, with all land-bridges probably gone by about 8,000 years ago. All of our non-arctic species must therefore have arrived early in this 'Holocene' period (10,000 to present day), but routes which they took and their origins are not clear.

### ORIGINS

As it is only recently that sub-fossil records and detailed sea-level data have been available, none of the considerations by previous workers realised the potential importance of an initial colonisation during the Lateglacial Interstadial. We are now in a much better position to discuss Natterjack origins, though there are still many gaps in the record. The Natterjack populations around the south and east of Britain could easily have come via a land crossing, during the early Holocene. Those along the west coast are more difficult to explain, as explanations have to involve trans-Pennine crossings or coastal routes which ought to have left remnant populations in southwest Britain. The Irish populations have attracted the most debate, apparently inexplicable by traditional

theories. However, if the Younger Dryas climate was less severe in extreme southwest Ireland, then the Natterjacks from the original colonisation might have survived until the present day? This would require that the polar front shifted north in the summer, or another mitigating circumstance, but the possibility must be considered. During the early Holocene, when a narrow but more northerly land-bridge still existed to Britain, could they have 'returned' from the Irish coast to the west coast of Britain? Certainly, wide areas of low-lying sandy coastline have since been submerged around much of the Irish Sea. An ephemeral environment of salt-marshes, brackish pools and dunes, exposed but then drowned after a few hundred years, are likely to have suited the Natterjack. This route is also much shorter and surely more credible than one from Europe to southeast England, and then to northwest England. A colonisation from Ireland to the west coast of Britain, could have been synchronous with, but entirely unrelated to, the colonisation of southeast England from the continent. The land-bridge from Ireland is likely to have been relatively shortlived, only enabling establishment along immediate west coast areas. This also explains the apparent Holocene absence of Natterjack from Devon, Cornwall, and South Wales, where there are sizeable areas of seemingly prime habitat.

Finally, the last and perhaps least orthodox suggestion I have, concerns the issues of human introduction. It has been suggested before (e.g. Beebee, 1983) that the Kerry Natterjacks might have been introduced unwittingly, for example in sand ballast dumped from ships. It must also be considered, therefore, that this scenario is equally likely in other places, such as Merseyside, an area not unknown for its maritime history. If the Irish Natterjacks *did* colonise via an early land-bridge, and survived the Younger Dryas cold due to their extreme geographical position, then perhaps they were introduced *from* Kerry to Merseyside, and not the other way round? There may even be some corroborative circumstances, depending on the relationship of historical events and the earliest known Natterjack records for the respective areas. Beginning at around 1845, Ireland was in the grip of the potato famine, in which many thousands of people died, and large numbers emigrated to Britain. As far as I am aware, many Irish refugees landed in Liverpool during this period. In the event of a human introduction of Natterjacks, is it not possible and even more likely, that it took place in this direction? There must have been numerous ships arriving, over several decades, potentially bringing Natterjacks across with them. The idea could also be applied to other western sea-ports. Are there any reliable records of west coast Natterjacks dating from before the first immigrant, or from before the earliest Kerry records?

## CONCLUSION

Previous ideas on the origins of the British and Irish natterjack populations have been unable to produce a watertight model for colonisation and establishment of such a fragmented distribution. Some new sub-fossil records, and recent data on past sea-levels, have inspired a new round of theories and hypotheses. Obviously these are only ideas, but they must be considered, even if only to be eliminated from the forum. Genetic work by Trevor Beebee (Sussex University) is likely to feature strongly in the future, and the results of such work are eagerly awaited. I would appreciate any feedback, particularly concerning historical records, and hope that some thought stimulation has been achieved!

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