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Article *in* Norwegian Archaeological Review · June 2013

DOI: 10.1080/00293652.2013.777102

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Boats and Pioneer Settlement: The Scottish Dimension

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Published online: 07 Jun 2013.

To cite this article: Clive Bonsall, Catriona Pickard & Peter Groom (2013): Boats and Pioneer Settlement: The Scottish Dimension, Norwegian Archaeological Review, 46:1, 87-90

To link to this article: http://dx.doi.org/10.1080/00293652.2013.777102

admits that 'they could have been simple skin boats'. His main point is that the boats were 'simple', and had 'only moderate seagoing qualities' and that their use was restricted to 'small-scale sea traffic'.

Evidently, the long-term history perspective needs to cool down the Mesolithic, to enhance the contrast to 'the great change in the Scandinavian history of communication', with the late Neolithic 'plank built boats, metal craft and elite networks throughout Europe'. With reference to Prescott and Glørstad (2011), this is claimed to be an 'historical watershed'. In the need for a better profile in the long-term cultural trajectory, the Mesolithic needs some flattening, to be rendered more basic and primitive, a hand-to-mouth, barely-making-it lifestyle. In the world according to Glørstad, the colonizers are left with vessels that he most certainly would not recommend for himself or his immediate family, not even on calm days, perhaps not even for his worst cousin.

The connection between 'plank-built boats' and the 'historical watershed' is turned on its head. I also believe that overseas travels (like crossing the North Sea) did not occur until late Neolithic/Bronze Age. But overseas seafaring was hardly a *result* of new boat-building techniques. Quite the opposite, it was the need for travels as a strategy in a new political and social regime, it was the urge for objects, alliances, warfare that followed in the wake of long sea journeys that carved out a need for the bigger boats that could make this happen. Thus, there is no need (or any archaeological clues) to 'reserve' this technological development for the 'big watershed'.

Quite to the contrary, plank boats may just as well have considerable longer traditions. The polished or pecked gouges of basaltic rock, including the local Nøstvet adzes in the Oslo region, were a new development in parallel with the emergence of the Boreal forests. As demonstrated by Sanger (2009), there is no clear-cut relation between gouges and dugout canoes like Glørstad suggests. These gouges could also have been involved in a wood–splitting and plank-procurement industry, making seaworthy vessels for the coastal regions of Scandinavia throughout the millennia of marine foraging societies.

Without reducing the importance of the late Neolithic achievements, it seems timely to hint at the often experienced fact that 'historical watersheds' tend to coincide with focuses of interest. Is there any reason to claim that the development of marine foraging and the colonizing of Scandinavian seascapes are achievements of lesser grandeur and cultural importance?

BOATS AND PIONEER SETTLEMENT: THE SCOTTISH DIMENSION

Clive Bonsall, Catriona Pickard and Peter Groom

The paper by Håkon Glørstad offers an interesting and thought-provoking perspective in which boats are seen as the limiting factor in the post-glacial colonization of the Norwegian coast and trees the limiting factor in boat building. Glørstad argues that colonization of the Norway coast would not have been possible until trees were present to enable the building of log boats (dugouts). This hypothesis rests on the presence of heavy woodworking equipment (flake axes) in the earliest Mesolithic sites, a proven (late) Mesolithic tradition of log-boat building in the Baltic region, the apparent synchrony between the earliest coastal settlement and afforestation of western Norway, and the assumption that skin boats were a more recent, Arctic (Inuit-Yupik) tradition.

We claim no specialized knowledge of the Norwegian Mesolithic. We are, however, familiar with the evidence from western

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Scotland, a region that bears some similarities to south-west Norway in terms of climate, physical features and the general coastal environment. Both regions have a mountainous coastline with fjords and offshore islands, were heavily glaciated in the late Pleistocene and show similar patterns of post-glacial sea-level change. Thus the first post-glacial settlers of the Atlantic seaboard of Scotland likely had to confront a similar environment and similar logistical problems as their counterparts in Norway. On present evidence large areas of western Scotland, like Norway, were ice free and available for colonization before the beginning of the Holocene (Ballantyne and Stone 2012).

The exploitation of coastal resources does not require boats *per se*. Our experimental studies of Mesolithic fishing practices have shown that fish, crustaceans and marine molluscs whose remains are found in Mesolithic shell middens in Scotland, including some 'deep water' species, can all be taken from the shore without the use of boats. Boats are an efficient means of transporting people and heavy loads; in particular they shorten distances along indented coastlines – put simply, it is quicker to cross a fjord by boat than to walk around the shoreline. That boats were used in the Scottish Mesolithic is not in doubt. A number of islands off the northern and western coasts of Scotland were occupied during the Mesolithic and could only have been accessed by boat (Fig. 10). People had reached the Outer Hebrides by 6600 cal. BC (Gregory *et al.* 2005), which would have involved a sea crossing of at least 22 km (from the island of Skye).

What kinds of boats were used? Although both dugouts and skin boats are documented in historical times, there are no unequivocal finds of Mesolithic watercraft from Scotland or elsewhere in Britain. The pine 'log boat' from the River Tay at Friarton, often assumed to be Mesolithic, was never dated and is no longer available for study (Smith 1992), while the Preboreal birch-wood 'paddle' from Star Carr has been reinterpreted as a digging tool by Darvill (1987) or a ski pole by Burov (1996). In Ireland the use of dugouts can be traced back to the late Mesolithic (Breen and Forsythe 2004) and skin boats to the Iron Age (Forsythe and Gregory 2007). Taphonomic bias may account for the rarity of skin boats in the archaeological record. Log boats, being relatively heavy, were probably moored offshore; they may even have been kept submerged when not in use to prevent drying and splitting of the wood (e.g. Malm 1995). Skin boats, being much lighter, could more easily have been hauled up on shore, which would tend to reduce the chances of archaeological preservation.

It is often assumed that the colonization of the Scottish islands and Ireland was accomplished using skin boats, based on the historically documented tradition of skin-boat building (coracles and curraghs) in areas surrounding the Irish Sea basin (e.g. Smith 1992, p. 140). There is also a general perception (derived from ethnographic observations) that skin boats are more stable in rough water and open seas than dugouts (e.g. Burov 1996). Peacock *et al.* (2010) discussed the relative performance of log boats and skin boats in maritime contexts. Experiments with replica log boats in the Mediterranean and Atlantic have shown that it is possible to cover distances of 30 km or more at one stretch. With a payload (paddlers plus cargo) of *c.* 1000 kg they were able to cope with gale force winds and 2 m-high waves. On the other hand, as Peacock *et al.* (2010) acknowledged, skin boats are lighter and better suited to landing on rocky coastlines.

The widespread occurrence of skin-working tools and the lack of woodworking technology in the Scottish Mesolithic may seem to argue against the production of log boats and in favour of skin boats (cf. Smith 1992). Although stone axes appear not to have been part of the Mesolithic toolkit in western Scotland, axes ('mattocks') made from red-deer antler have occasionally been found, and antler axes have been shown to be very effective in the experimental construction of dugout canoes of oak (Poissonnier and Rouzo 2007).

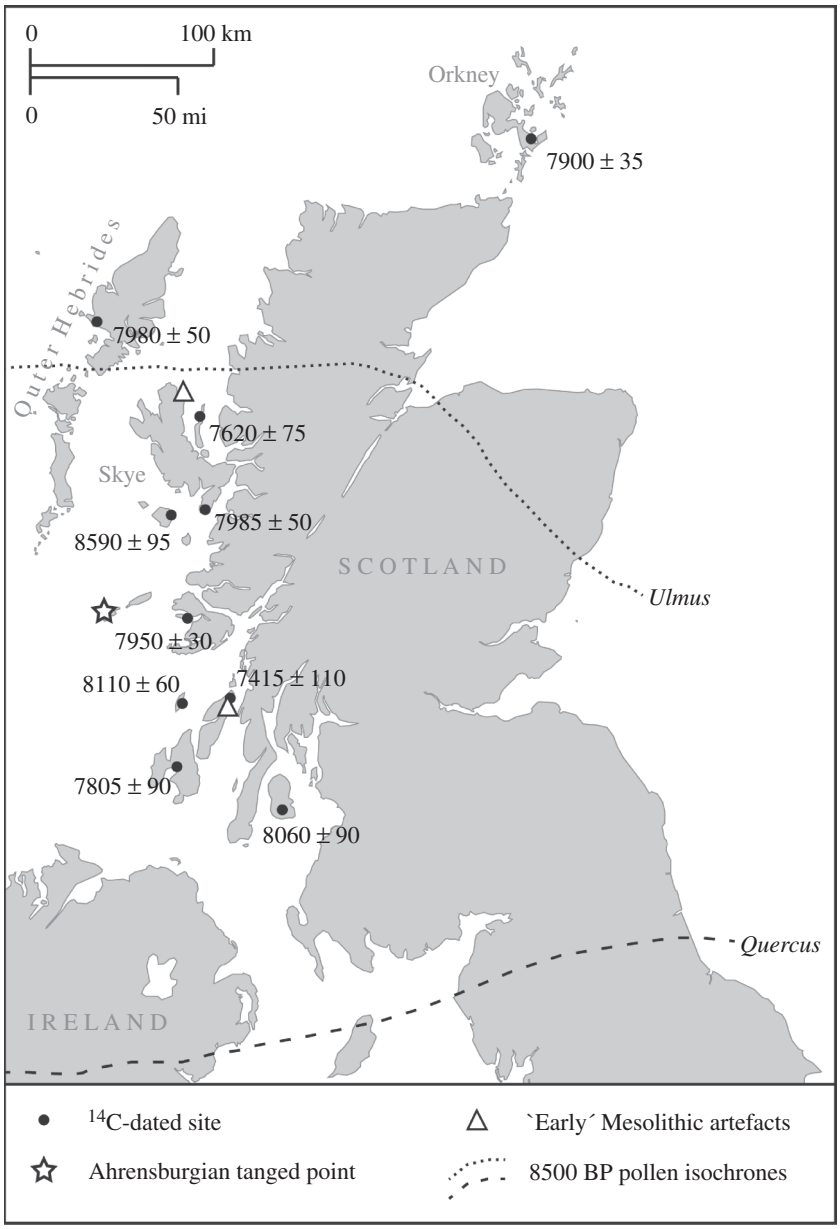

Fig. 10. *Earliest settlement evidence from offshore islands in Scotland plotted against the 8500 BP (7550 cal. BC) isochrones for elm and oak pollen. Data from Birks (1989), Morrison and Bonsall (1989), Edwards and Whittington (1997), Ashmore (2003), Ballin and Saville (2003), Saville (2003) and Wickham-Jones and Downes (2013).*

As Glørstad has emphasized, construction of log boats requires suitable trees. Oak was the preferred species for dugouts from the Neolithic onwards in the British lsles, although other species (alder, pine and poplar) were sometimes used. Following deglaciation, early tree colonizers along the west Scottish coast were species such as

juniper (*Juniperus communis*), birch (*Betula* spp.), willow (*Salix* spp.) and hazel (*Corylus avellana*), which are generally unsuitable for dugouts. The major tree species arrived later (Birks 1989, see also Edwards and Whittington 1997): elm (*Ulmus glabra*) spread along the mainland coast and islands between 8000 and 7000 cal. BC; oak (*Quercus* spp.) had reached the southern part of the west coast and inner islands by 7000 cal. BC and thereafter spread slowly north and west reaching Skye by 5000 cal. BC; pine (*Pinus sylvestris*), it seems, was never a major component of late glacial or Holocene woodland along the west coast, except perhaps locally in the north-west after 5000 cal. BC.

On this evidence, at 7600 cal. BC (the earliest secure date for human occupation of an offshore island) elm would have been present in woodlands along the west coast, but oak, pine and other major tree species were likely either rare or absent. If islands along the west coast of Scotland were colonized *before* 7600 cal. BC, as suggested by the small number of sites with 'early Mesolithic' and 'final Palaeolithic' technologies (Fig. 10), then trees suitable for the construction of log boats may have been unavailable to the very first settlers, although use of driftwood and sourcing of boats (or tree trunks) outside the region are also possibilities.

On the other hand, materials necessary for making skin boats (animal hides and 'whippy' growth (branches) from birch, willow and hazel trees) would have been available from the beginning of the Holocene and at times during the late glacial. Although there is no demonstrable *Mesolithic* skin-boat tradition, it should be borne in mind that the basic methods and wood materials involved in constructing the frames of skin boats are similar to those used for manufacturing certain kinds of (portable) fish trap, a tradition that can be traced back to at least the late Mesolithic in many areas of northern Europe. In fact, hunter-gatherers familiar with simple weaving techniques applicable to cordage, textiles, baskets and portable fish traps would possess the skills to 'weave' a skin-boat frame, as the technologies are transferable.

We thank the editors of *Norwegian Archaeologi-cal Review* for inviting us to comment on Håkon Glørstad's paper. Although we can offer no firm evidence of the types of boats used by the final Palaeolithic or early Mesolithic groups who colonized the Atlantic coasts of Scotland and Norway at the end of the last Ice Age, we hope nevertheless that our observations and ideas will be seen as a positive contribution to the recurrent debate surrounding the earliest post-glacial settlement of northern Europe.

THE MARITIME IDENTITIES OF COMMUNITIES COLONIZING NORWAY

Vicki Cummings

The colonization of the northernmost parts of Europe is one of the most exciting periods of prehistory to consider. This was a time when previously inhospitable ecozones were opening up, new forms of flora and fauna were becoming established and people were encountering new and unoccupied landscapes (Spikins 2008). While the people involved almost certainly had a different view on this process from ourselves, nevertheless they would have known that they were moving into hitherto unknown worlds (cf. Riede 2007). In his paper Glørstad considers one element of this process: the boats that we know must have been involved in the colonization process but which are nevertheless missing from the archaeological record. While the focus of the paper is boats, in actual fact this discussion could be about many components of the archaeological record: much of

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http://dx.doi.org/10.1080/00293652.2013.777096 © 2013 Norwegian Archaeological Review