

criterion, but it is vastly more computationally intensive. Consequently, discovery of the optimal tree(s) is less likely due to the necessity of using more approximate tree searches. We agree with Sidow's desire for increased acceptance of model-based methods, but there are significant tradeoffs to be considered. The choice between these tradeoffs is, unfortunately, much more complicated than Sidow's "brief statistical guide".

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## Holocene mammoth dates

**SIR** — The reported persistence of dwarf mammoths well into the Holocene on Wrangel Island (S. Vartanyan, V. E. Garutt and A. V. Sher, *Nature* **362**, 337–340; 1993) has been called into question by some people who doubt the validity of the dates obtained in two Russian laboratories by conventional <sup>14</sup>C dating. We have now submitted two previously dated dwarf teeth from Wrangel to the accelerator mass spectrometry (AMS) dating facility at the University of Arizona. Here are the uncalibrated results based on the 5568-year half-life from the paper by Vartanyan *et al.*:

Sample	Conventional date and lab no.	AMS date and lab no.
GUS-9	6,260 ± 5; (LU-2799)	6,360 ± 60 (AA-11529)
PIK-1	7,250 ± 60 (LU-2809)	7,295 ± 95 (AA-11530)

The extremely close correspondence of the dates corroborates both the veracity of the Russian results and the Holocene survival of the mammoths.

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## Mammoths in ancient Egypt?

**SIR** — Lister in News and Views<sup>1</sup> described new work<sup>2</sup> on the genus *Mammuthus* and its allies, suggesting that dwarf mammoths may have survived in northeast Siberia to coexist with the Egyptian pharaohs, and that dwarfed-mammoth populations and other dwarf

trunk is more like a reconstruction of a living mammoth than an immature elephant. The beast is probably unrelated to the modern mini-elephant reported from central Africa<sup>6,7</sup>. It looks different and no direct contact (transport of live animals) between that part of Africa and ancient Egypt has ever been documented. Both now and in the Pleistocene, miniature elephantids tended to segregate into miniature forms, which further suggests that the figure does depict a mature



elephantids survived on Mediterranean islands well into the Pleistocene. The figure, reproduced from a scene painted in a pharonic tomb<sup>3</sup>, is about the ivory trade, and raises the possibility that the elephantid represents a dwarf mammoth.

Egyptian artists could reproduce in colour two-dimensional identifying marks of living biological specimens very much like those in field-identifying manuals today. Thus specimens such as fish<sup>4</sup> and birds<sup>5</sup> can be placed into the modern frame of genus and species.

The figure represents tribute brought to Egypt and a parade of exotic animals. The bear is probably a sub-species of *Ursus arctos*, *U. arctos syriacicus* or *U. arctos arctos*<sup>4</sup>. As native bears and modern man did not co-exist in Egypt<sup>4,5</sup>, the first bear seen would be as exotic to the Egyptians as the dwarf mammoth. This picture demonstrates the artist's ability to draw a creature alien to him. Similar bears existed in Asia (Palestine to Asia Minor), on some Mediterranean islands, south Europe and northwest Africa<sup>4</sup>.

The elephantid depicted here is not an immature elephant because of its large tusks. Its skull is domed, similar to a mammoth or possibly an Asian elephant. Its stance and the position of the tusks and

elephantid. Nevertheless, the man in the figure leading the animal is carrying two elephant tusks on his shoulder, and it is possible that the animal could be an elephant symbolic of the ivory's source rather than intended to be an accurate representation of its size.

If the elephantid, the tusks, the bear and the ingot (in the figure) came from the same source, one could speculate that they had a common origin.

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- Lister, A. M. *Nature* **362**, 288–289 (1993).
- Vartanyan, S. L. *et al.* *Nature* **362**, 337–340 (1993).
- Bass, G. F. in *A History of Seafaring* (ed. Bass, G. F.) Ch. 1 p. 34 (Walker, New York, 1972).
- Corbet, G. B. & Hill, J. E. *A World List of Mammalian Species* 2nd ed (Br. Mus. (nat. Hist.), London, 1986).
- Osborn, D. J. & Helmy, I. *The Contemporary Land Mammals of Egypt* (Field Mus. of nat. Hist., Chicago, 1980).
- Knapp, A. B. *World Archaeology* **24**, 332–347 (1993).
- Sherratt, S. & Sherratt, A. *World Archaeology* **24**, 361–378 (1993).

### Scientific Correspondence

Scientific Correspondence is intended to provide a forum in which readers may raise points of a scientific character. Priority will be given to letters of fewer than 500 words and five references.