S1 Appendix - The body size of *Archaeodobenus akamatsui* can be inferred by the method of Churchill et al. [[1](#_ENREF_1)].

The formula for body length (all subsets) is 1.9\*Log(basal length as 30.4)-0.66\*Log(palatal length as between 13 and 15)+0.4. The formula for body mass (step wise) is 10.11\*Log(basal length) -1.35\*Log(palatal length)-3.23\*Log(length of upper tooth row as 9.5)-1.06\*Log(width of bulla as 2.6)+3.49\*Log (length of orbit as 4.8)-3.60\*Log(length of mandible as 22.0)+3.98\*Log(length of lower tooth row from canine to m1 as 9.3)-1.90\*Log(length of lower post canine tooth row as 6.3)-6.94.

1. Churchill M, Clementz MT and Kohno N (2014) Predictive equations for the estimation of body size in seals and sea lions (Carnivora: Pinnipedia). J Anat 225: 232-245.