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LETTER

Duration of activity inestimable due to imprecision of the data

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Ledger et al. (1) report some exciting findings from the well-known site of L'Anse aux Meadows (LAM) in New-foundland. However, their eye-catching conclusion that "Norse activity at LAM may have endured for a century" is misleading and arises from a misinterpretation of the outputs of their chronological model, constructed in the program OxCal (2). To estimate the duration of Norse activity, they used OxCal's Span function, which produced a 2σ range (95% probability) of 0 to 195 y. This should not be regarded as evidence for a duration of "up to 195 y." In fact, the most probable outcome is that Norse activity was only a matter of years or even less. The reason the tail of the probability density function extends so far is because of the inherent uncertainty in the data. That is, the analysis is hindered by the fact there are too few high-precision dates available. This point is easily demonstrated by simulating some radiocarbon dates (using OxCal's R_Simulate function) of comparable precision to those available from LAM. Even if all of the dates are simulated to come from the same calendar year, the Span function tends to produce a 2σ range that extends for more than a century. The situation is analogous to estimating the size of a crowd from an image made up of too few pixels. Resolving such periods of time on the basis of the data available is simply beyond the capability of OxCal.

1 P. M. Ledger, L. Girdland-Flink, V. Forbes, New horizons at L'Anse aux Meadows. *Proc. Natl. Acad. Sci. U.S.A.* **116**, 15341–15343 (2019).
2 C. Bronk Ramsey, Radiocarbon calibration and analysis of stratigraphy: The OxCal program. *Radiocarbon* **37**, 425–430 (1995).