Author Correction: Climate warming restructures food webs and carbon flow in high-latitude ecosystems

Correction to: *Nature Climate Change*
https://doi.org/10.1038/s41558-023-01893-0,
published online 3 January 2024

https://doi.org/10.1038/s41558-024-02050-x

Published online: 19 June 2024

Philip J. Manlick, Nolan L. Perryman, Amanda M. Koltz, Joseph A. Cook & Seth D. Newsome

Since the publication of this paper, the authors have found an error in the analysis of radiocarbon (^{14}C) ages from small mammal bone collagen. The primary conclusions of this study – that microbial contributions to food webs increase with climate warming – have not changed, but the interpretation of the radiocarbon data has been amended.

In the original version of this article, we reported radiocarbon ages for small mammals that did not properly account for "post-bomb" increases in atmospheric ^{14}C given that all specimens were collected after 1950. As a result, the reported radiocarbon ages were erroneous and have been removed from the paper. Instead, we introduce a new analysis of $\Delta^{14}C$ values in consumer bone collagen compared to atmospheric $\Delta^{14}C$ values from the same time periods. Specifically, we conducted two-sided *t* tests comparing measured $\Delta^{14}C$ values of small mammal consumers collected from two time periods (1990 and 2021) to monthly atmospheric $\Delta^{14}C$ values from Northern Hemisphere Zone 1 for the same time periods[1]. Small mammal specimens collected in 2021 were compared to atmospheric $\Delta^{14}C$ values for 2019, the most recent measurements reported. We detected significant enrichment in mean (±SD) $\Delta^{14}C$ of consumers from 1990 ($\Delta^{14}C_{consumer} = 172.5‰ \pm 19.7$; $\Delta^{14}C_{atmosphere} = 149.2‰ \pm 4.5$; $p = 0.007$) and 2021 ($\Delta^{14}C_{consumer} = 12.0‰ \pm 6.5$; $\Delta^{14}C_{atmosphere} = 0.6‰ \pm 1.2$; $p = 0.001$) compared to mean atmospheric levels at the same times, indicating that both historical (*c.* 1990) and contemporary (*c.* 2021) animals assimilate primarily modern carbon.

The previously published version of this study stated "radiocarbon data revealed that there has been a shift in the type of C utilized by terrestrial consumers in boreal ecosystems from 1990 to 2021" and that "contemporary animals assimilated exclusively modern C while historical animals assimilated more ancient C." These statements have been amended to say that "both historical and contemporary animals assimilated modern C" and that "while overall trends in assimilated $\Delta^{14}C$ by consumers did not indicate contributions of ancient permafrost C, significant enrichment of consumers relative to atmospheric levels suggests animals assimilate slightly older C that was fixed in preceding years." In addition, Fig. 3 has been amended to reflect comparisons to atmospheric $\Delta^{14}C$ values. We provide a Supplementary Information file here with both the original and amended versions of all figures and text, and all data and code have been updated at https://doi.org/10.6084/m9.figshare.22975145.

References

1. Hua, Q. et al. Atmospheric radiocarbon for the period 1950-2019. *Radiocarbon* **64**, 723–745 (2022).

Additional information

Supplementary information The online version contains supplementary material available at https://doi.org/10.1038/s41558-024-02050-x.