

119 - T112. Halo-Dash: The Deep and Shallow History of Aquatic Life's Passages between
Marine and Freshwater Habitats
Monday, 10 October 2022
1:30 PM - 5:30 PM

[119-1: LOST LAKES AND THE COLONIZATION OF THE CONTINENTS](#) **CARROLL, Alan**, Department of Geoscience, University of Wisconsin-Madison, 1215 W Dayton St, Madison, WI 53706, **PETERS, Shanan**, Department of Geoscience, University of Wisconsin - Madison, Madison, WI 53706, **GYGI, Danielle**, Department of Geoscience, University of Wisconsin-Madison, 1215 W. Dayton St., Madison, WI 53706 and **PARK BOUSH, Lisa**, Department of Earth Sciences, University of Connecticut, 354 Mansfield Road U-1045, Storrs, CT 06269
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Abstract

Lake deposits occur throughout the Phanerozoic geologic record but are infrequently recognized in lower Paleozoic strata. One potential explanation is that they are present but overlooked due to their lack of fossils or other diagnostic features. Macrostratigraphic analysis of North America shows that other nonmarine deposits are also scarce, suggesting that the apparent paucity of lake deposits may be real. If it is the case, a potential explanation could be decreased preservation of lake deposits with increasing age, due to the cumulative effects of sedimentary cycling. However, the quantity of surviving shallow marine deposits peaks in the lower Paleozoic, suggesting that preservation primarily reflects accumulation rather than subsequent destruction. Nonmarine deposits may appear to be more vulnerable by virtue of their higher initial elevation, but a compilation of modern lakes occupying tectonic basins shows that ~80% of their area lies below 1000 m. Furthermore, lacustrine and associated nonmarine strata often attain kilometers in thickness, making their complete elimination less likely. A novel third hypothesis is that exceptionally large areas of the continents experienced early Paleozoic marine inundation, possibly resulting from erosional thinning during Neoproterozoic glaciation. Prolonged inundation precluded lake formation in flooded areas, and thereby delayed the diversification of terrestrial plants and animals due to restrictions on freshwater habitats, groundwater reserves, and nutrient release by soils. The accumulation of a lower Paleozoic sedimentary carapace on the continents may thus have been a prerequisite for their colonization.

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