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

119-3: THE ROLE OF HABITAT TRANSITIONS IN THE DIVERSIFICATION OF FISHES (AND VICE VERSA) **SALLAN, Lauren**, Marine Macroevolution Unit, Okinawa Institute of Science and Technology, 1919-1 Tancha, Onna-Son, Kunigami-Gun, Okinawa, PA 904-0495, Japan
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Modern fishes - all aquatic vertebrates without terrestrial ancestors - are colorful, diverse, and ubiquitous, occupying habitats ranging from the Himalayan lakes to abyssal plain. The processes by which fishes came to have such habitat breadth remains obscure, as does the ancestral habitat of most major clades. Yet, identifying the timing and drivers of habitat transitions is critical for understanding everything from vertebrate physiology to diversification to survival through mass extinction. Here, I show how new databases and phylogenetic comparative approaches are revealing critical and perhaps predictable roles for ecomorphology and mass extinction in triggering habitat transitions in vertebrates. For example, streamlined morphologies evolved in the natal subtidal ecosystems enabled easy transitions into the open ocean and freshwaters starting in the early Paleozoic. Mass extinctions are marked by wholesale invasions of marine and freshwater by previously restricted clades, and in some cases even clade-wide extirpation from ancestral salinities. Reconstruction of habitat transitions, and their circumstances, is critical to put the diversification, extinction, and morphology of fishes in full context.

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