Woods Hole Oceanographic Institution

Biology Department Seminar

Thursday, May 9, 2024 – 12:00 Noon

The deep ocean represents the largest habitable environment on our planet. Although humans typically consider deep-sea environments harsh—with cold temperatures, high pressures, an absence of sunlight, and an often-limited food supply—these habitats are home to an amazing diversity of fishes. This talk explores how environmental conditions in the deep ocean structure the distribution and adaptations of bony fishes, with a focus on hydrostatic pressure. First, we investigate how deep-sea fishes show specialized adaptation to hydrostatic pressure by accumulating the pressure-counteractant trimethylamine n-oxide and intrinsically changing enzyme structure to function at depth. We illustrate how the limits of these molecular adaptations likely limit fishes from inhabiting full-ocean depths. Second, we discuss how high hydrostatic pressures influence buoyancy in deep-living fishes, with implications for the evolution of fish skeletons. Finally, we examine how deep-sea conditions have influenced the morphology and function of fish otoliths and patterns of longevity with increasing habitat depth. This research applies an integrative approach, spanning molecular, organismal, and ecological scales to inform new understanding of life in the deep ocean and the evolutionary consequences of high hydrostatic pressures.

VIRTUAL ONLY! **Zoom:** https://whoi-edu.zoom.us/j/97000865816 Meeting ID: 970 0086 5816 **By phone**: Find your local number: https://whoi-edu.zoom.us/u/adIvMow3LQ