

Ph.D. Dissertation Defense

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On the success of the hadal snailfish

The influence of trophic ecology, life history, and pressure adaptation on depth
deepest-living fishes

Abstract: The snailfishes, family Liparidae (Scorpaeniformes), have found notable success in the hadal zone from ~6,000 - 8,200 m, comprising the dominant ichthyofauna in at least five trenches worldwide. The hadal fish community is distinct from the surrounding abyss where solitary, scavenging fishes such as rattails (Macrouridae), cutthroat eels (Synphobranchidae), eelpouts (Zoarcidae), and cusk eels (Ophidiidae) are most common. Little is known about the biology of these deepest-living fishes, nor the factors that drive their success at hadal depths. Using recent collections from the Mariana Trench, Kermadec Trench, and neighboring abyssal plains, this dissertation investigates the role of trophic ecology, pressure adaptation, and life history in structuring fish communities at the abyssal-hadal boundary. Stomach content and amino acid isotope analyses suggest that suction-feeding predatory fishes like hadal liparids may find an advantage to descending into the trench where amphipods are abundant. More generalist feeders