

Habitat Associations of Spotted Ratfish (*Hydrolagus colliei*) in the Monterey Bay National Marine Sanctuary

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Why study spotted ratfish?



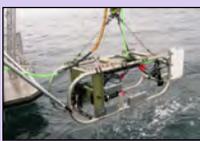
The spotted ratfish (*Hydrolagus colliei*), is a deep water (intertidal to 913m) species of the Chimeridae family ranging from north-eastern Alaska to Baja California. Along the west coast of the United States, spotted ratfish are one of the ten most abundant groundfish occurring

from 50 to 500m. Based on their relative abundance, it is presumed spotted ratfish have an ecologically important role within their range as both a predator and prey species. Though there is no direct fishery for spotted ratfish, they are commonly caught incidentally by commercial and recreational fishermen. Therefore, bycatch mortality presents a significant concern. Understanding habitat associations of spotted ratfish can help inform strategies for the successful management of the species.

Research Question

Where do spotted ratfish occur within the Monterey Bay National Marine Sanctuary (MBNMS) and with what habitat types do they associate?

Towed Camera Sled



Technology

Between 2006 and 2010, video transects were conducted within the MBNMS using a remotely operated vehicle (ROV) and benthic towed camera sled as part of a larger characterization project. The total area sampled was 174.7km.

ROV Beagle



Habitat Characterization

Video transects were observed for the presence of spotted ratfish. For each spotted ratfish occurrence, substrate, depth, and location were recorded. Substrate type was identified as either hard, soft, or mixed. The geographic position of each ratfish observed was plotted in the Geographic Information Systems (GIS) program ArcGIS to analyze the spatial distribution of spotted ratfish over different habitat types within the MBNMS.

Hard Substrate



Soft Substrate



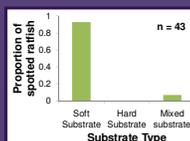
Mixed Substrate



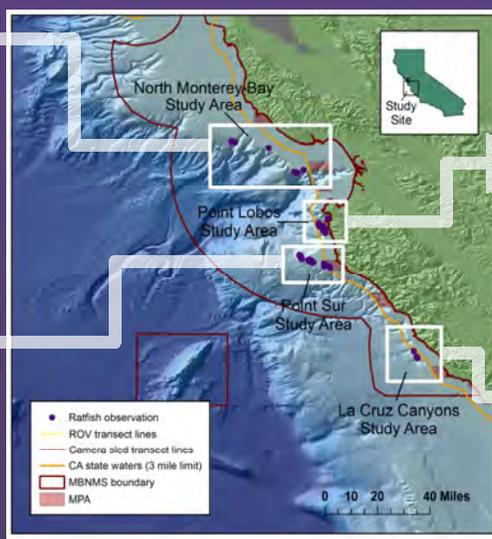
Where are spotted ratfish found?

North Monterey Bay Study Area

Area sampled: 58.7km
Ratfish per km: 0.7
Primary substrate: soft

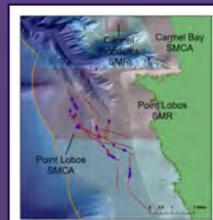
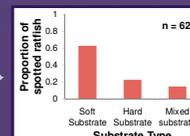


Monterey Bay National Marine Sanctuary



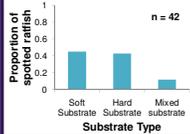
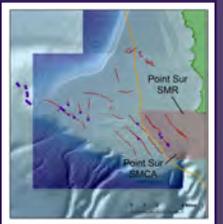
Point Lobos Study Area

Area sampled: 31.4km
Ratfish per km: 2.0
Primary substrate: soft



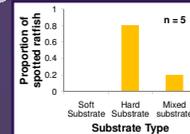
Point Sur Study Area

Area sampled: 44.0km
Ratfish per km: 1.0
Primary substrate: soft or hard



La Cruz Canyons Study Area

Area sampled: 40.6km
Ratfish per km: 0.1
Primary substrate: hard



Summary, Conclusions, and Future Work

Spotted ratfish are everywhere!

Spotted ratfish were observed in all study areas throughout the MBNMS over soft, hard, and mixed substrate suggesting they may associate with diverse habitat types. In the northern portion of the study site, soft substrate associations were primarily observed compared to primarily hard substrate associations in the southern portion. Spotted ratfish differentiation between habitat types can direct management efforts in those specific geographic areas.

What's next?

The second phase of this study will explore the relationship between size and ontogenetic stage of spotted ratfish and habitat type. Juveniles and adults may utilize different habitats. Sizing lasers (10cm apart) mounted on the ROV and towed camera sled will be used to measure spotted ratfish total body length. In addition, standardizing observations of spotted ratfish per study site based on surveyed habitats may reveal a clearer understanding of spotted ratfish habitat associations.

Acknowledgements

This project was funded in part by the Monterey Bay National Marine Sanctuary Program in collaboration with the Institute for Applied Marine Ecology at CSU Monterey Bay. Additional support provided in part by the National Science Foundation under the CSU-LSAMP Senior Alliance project (NSF Grant Number: HRD-0802628). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. Additional support and mentoring provided by the CSU Monterey Bay Undergraduate Research Opportunities Center.

