Deep-sea octopuses (*Muusoctopus leioderma*) consume local infauna in shallow waters of Burrows Bay, WA, USA

This study identified the prey items of the deep-sea octopus, Muusoctopus leioderma, in a shallow water environment. Muusoctopus leioderma have recently migrated from deep depths of the Pacific (90-1400 m), to the shallow waters of Burrows Bay, WA. It is unknown what has caused octopus migration from deep waters into a different ecosystem and what makes up the octopuses' diet in this new habitat. Octopuses were collected and maintained at Rosario Beach Marine Laboratory, WA, where they were fed local polychaetes, bivalves, and crustaceans. The different prey species were separately enriched with the stable isotopes 13C, 15N, and 2H, respectively, and offered to octopuses. Stable isotope results indicated that polychaetes were consumed by M. leioderma and observational findings suggest that polychaetes are highly preferred over bivalves and crustaceans. The prey density of polychaetes in Burrows Bay was higher and more evenly distributed than bivalves. Polychaetes were also found to have low energy content, suggesting that octopuses have energic trade-offs that conflict with the optimal foraging theory. These data suggest that the more abundant nutritional prey resources in Burrows Bay may be a driver in the migration of this species to shallower waters.

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