

SPATIAL STRUCTURE
of the
MESOPELAGIC FISH COMMUNITY
in the
HAWAIIAN BOUNDARY REGION

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ABSTRACT

Mesopelagic species form a major component of the midwater fish community over the upper slope of the Hawaiian Islands. This mesopelagic boundary region is comprised of the relatively narrow region between the 250m and 700m bottom isobaths in Hawaii, yet the spatial distributions of mesopelagic fishes within this limited region are highly structured, both horizontally and vertically, and two abundant boundary species have size classes which themselves have clearly delimited distributions. The mesopelagic boundary fish community is dominated primarily by species which are generally restricted to the boundary region, and even at the outer depth horizons the boundary community is apparently influenced very little by the encroachment of offshore oceanic species. While the offshore mesopelagic community is apparently restricted to daytime depths below 400m, some mesopelagic boundary populations are resident over bottoms as shallow as 250m during the day. These shallow populations exhibit behavioral adaptations to both near-bottom and shallow midwater habitats, where predators and light regimes are very different from those characteristically encountered by deeper mesopelagic populations. The consistent encroachment of some boundary species into waters as shallow as 100m at night suggests that these populations also interact with local neritic communities previously considered outside the reach of mesopelagic fishes.