

MOVEMENT PATTERNS, SITE FIDELITY, AND HABITAT USE OF CALIFORNIA
SHEEPHEAD (*SEMICOSSYPHUS PULCHER*) IN A MARINE LIFE RESERVE AT
SANTA CATALINA ISLAND, CALIFORNIA

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ABSTRACT

MOVEMENT PATTERNS, SITE FIDELITY, AND HABITAT USE OF CALIFORNIA SHEEPHEAD (*SEMICOSSYPHUS PULCHER*) IN A MARINE LIFE RESERVE AT SANTA CATALINA ISLAND, CALIFORNIA

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The California sheephead, *Semicossyphus pulcher* (Labridae), is a carnivorous, temperate, rocky-reef/kelp-bed fish that is highly sought in recreational and commercial fisheries. The marked decline in numbers of this species has recently prompted action to be taken to effectively manage its fishery. In addition to traditional bag and size limits recently imposed to manage the fishery, it is possible that no-take marine reserves would be an effective management strategy that could protect and increase stocks; however, first it is necessary to determine this species' space use, movement patterns, and fidelity to an area. In this study, fine-scale acoustic telemetry tracking was used in conjunction with long-term acoustic monitoring as a unique method to ascertain the stability of defined home ranges over time. Sixteen adult sheephead (26 to 40 cm SL) were surgically fitted with small acoustic transmitters and manually tracked for up to 144 h during multiple, 24-h periods within the Catalina Marine Science Center Marine Life Reserve (CMLR). A Geographic Information System (GIS) was used to calculate home range sizes (95% Kernel Utilization Distributions) and habitat use. Home range sizes of fish varied greatly, ranging from 938 to 82,070 m², with a mean of 15,134 ± 26,007 m² (± SD).

Variability in home range sizes among fish was attributed to differences in habitat shape (embayment vs. linear coastline) and to natural habitat boundaries (deep, sandy expanses) in adjacent areas within the reserve. Larger sheephead within the CMLR were found within sand habitat significantly more often than smaller fish ($R^2 = 0.41$, $F = 5.6$, $p = 0.04$); however, this relationship may vary with sand habitat availability or prey availability. Sheephead were found within rocky reef areas 54% of the time and of these rocky areas, a greater percentage of daytime was spent within high-relief areas of the reef. Sixteen additional sheephead were fitted with long-term (~ 1 y) coded transmitters and their presence in the reserve was monitored. Sheephead exhibited high site fidelity; however, 2 of the smaller females shifted location of home ranges during the study, with 1 leaving the reserve after 11 mos. Based on the relatively small home ranges observed and the persistence of these home ranges over time, no-take reserves, if containing appropriate habitat, may provide adequate protection for a large stock of mature sheephead.

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