The white seabass, *Atractoscion nobilis*, is the largest croaker occurring off the coast of California. This important species grows to lengths of 152 cm (5 ft) and to weights of 37.7 kg (83 lbs) (Miller and Lea 1972). White seabass have long been a highly sought-after sport and commercial species in California and, especially, in southern California waters (Frey 1971). This fish is taken primarily by the commercial gill net, rod and reel, and spear-gun fisheries. In recent years the landings of this important species have continued to decline to the point that the populations now appear to be severely impacted (Vojkovich and Reed 1983). Despite its historical economic importance, we know very little about the early life history stages of white seabass. Moser et al. (1983) described the larval development of white seabass from laboratory reared eggs, larvae and juveniles. Field investigations into early life history stages are limited to reports of larval occurrence within CalCOFI collections. Between 1950 and 1978 white seabass larvae were collected in 104 samples with the highest concentrations of larvae being in the Sebastian Viscano Bay and San Juanico Bay regions off Baja California. Only fifteen percent of the larval white seabass occurrences were in southern California waters (Moser et al. 1983). This research note presents information on the distribution and abundance of the critical young-of-the-year (YOY) stage of white seabass in the vicinity of Long Beach Harbor, California. This area has been sampled continuously since 1983 as part of a study investigating recruitment patterns in YOY California halibut (Allen 1988). This note will present information on YOY white seabass including their: (i) distribution within the various habitats of the study area, (ii) size range, (iii) depth of capture, (iv) microhabitat specificity, and (v) temporal variation in recruitment in the four years of our study, 1984–1987.

YOY white seabass were captured using 2 m beam trawls (1984) and 2 m otter trawls (1985–87) with 4 mm knotless mesh in the wings and 2 mm mesh in the codends. Both nets yielded statistically comparable catches (t-test, t = 0.001, p > 0.05) over sand-mud bottoms. A total of 276 tows was made in shallow water (1.5–6.5 m) in the following locations: (i) within Alamitos and Anaheim Bays (protected habitats, N = 98), (ii) within eastern Long Beach Harbor and along the eastern portion of Seal Beach (semi-protected habitats, N = 116), and (iii) along Sunset Beach (exposed habit, N = 62). Stations were occupied during the spring-summer period (March through September) of each year (the actual months varied from year to year). Each station consisted of five, 3 minute tows in most cases. The unit of effort was the mean number of YOY white seabass taken in the five replicate tows per station. It was necessary to combine the replicates in this manner to minimize the number of zeros for subsequent statistical analysis.

A total of 56 white seabass YOY were collected in the semi-protected and exposed portions of the study area over the 4-year period (Figure 1). YOY white seabass were never collected before May in any of the four years of the study, therefore, only tows taken after May are considered in this analysis. No YOY white seabass were ever collected in the 93 tows made in the protected
bays. The semi-protected habitats yielded a mean catch-per-unit-effort (CPUE) of 0.39 ± 0.20 individuals (grand mean ± 2 S.E.). Exposed coast tows yielded a mean CPUE of 0.27 ± 0.18 individuals. These differences in the distribution of YOY white seabass among the three habitats was statistically significant (Kruskal-Wallis test, \( H = 10.18, \text{ df} = 2, p < 0.01 \)). When only the tows from the semi-protected and exposed areas habitats (where YOY occurred) are considered the total mean CPUE of YOY white seabass over the four years of investigation was 0.35 ± 0.14 (N= 23).

![YOY WHITE SEABASS
MEAN CPUE 1984-87](image)

**FIGURE 1.** Grand mean (± 2 S.E.) catch-per-unit-effort (CPUE) of YOY white seabass within each of the three types of habitats in the vicinity of Long Beach Harbor over the four-year period, 1984–87.

The individual YOY captured ranged from 7–84 mm SL and averaged 28.8 mm SL. Newly recruited individuals seemed to range from 7–10 mm SL. Depth of capture varied between 1.5 and 6.4 m and averaged 3.8 m. Young white seabass were invariably collected with various species of drift algae including browns and reds, clumps of sessile invertebrates (e.g., ectoprocts), and/or debris of terrestrial origin. Often individual fish collected with red algae exhibited a slightly reddish tinge to their body coloration. Likewise, fish captured with golden-brown kelps displayed a slightly golden tinge to their basic dark-banded color patterns.

Apparently, YOY white seabass were utilizing a very specific microhabitat within the study area. They occupied the shallow water areas along the semi-protected and exposed beaches, just outside the wave base where debris and drift algae tend to concentrate. The variance to mean ratios for individual stations within the semi-protected and exposed areas ranged from 0.41 to 1.71...
and generally exceeded 1.0. This high variability of individual catches even within the areas known to contain YOY indicates a highly clumped distribution pattern which is probably related to the patchy occurrence of drift algae and other debris. The dark coloration and vertical bars displayed by these small juvenile fish probably serve to camouflage them in this specific microhabitat.

Recruitment of YOY white seabass to the two shoreline habitats of the study area was highly variable during the 4-year study (Figure 2). Abundance (mean CPUE ± 2 S.E.) was highest in 1984 (0.40 ± 0.25; N = 6) and 1985 (0.40 ± 0.24; N = 10) followed by 1987 (0.35 ± 0.41; N = 4). Recruitment to the study area in 1986 (.07 ± .13; N = 3) was relatively low. The differences in yearly recruitment strength, however, were not statistically distinguishable (Kruskal-Wallis test, H = 2.42, df = 3, p > 0.05) due to variable catches within years.

![YOY White Seabass](image)

**FIGURE 2.** Yearly grand mean (± 2 S.E.) catch-per-unit-effort (CPUE) of YOY white seabass within semi-protected and exposed habitats in the vicinity of Long Beach Harbor, 1984-87.

The causes of the variable recruitment are unknown at this time. However, it seems clear that the study area is near the northern limit of white seabass distribution. The main breeding populations occur in the waters off of northern and central Baja California (Moser et al. 1983, Vojkovich and Reed 1983). White seabass recruitment to coastal habitats in southern California is probably heavily dependent on the strength and persistence of northward flowing, warm-water currents during the late spring and summer from year to year. The nature of the relationship between oceanographic features (e.g., current patterns and temperature regimes) and recruitment success remains to be determined by future investigations.
Both young white seabass and California halibut recruited to and utilized the nearshore waters in the Long Beach Harbor area as nursery grounds. However, the two species exhibited a marked difference in microhabitat preference. YOY halibut were found in greatest concentrations in the calm, relatively warm waters of protected habitats such as Alamitos Bay and Anaheim Bay. Halibut also occurred in low concentrations in semi-protected waters (Long Beach Harbor and Seal Beach) within the study area, but were completely absent from the exposed habitat along Sunset Beach (Allen 1988). The distribution of YOY white seabass was almost the mirror image of the distribution of halibut with respect to the three types of habitats. The highest concentrations of young white seabass were found in the semi-protected and exposed habitats. YOY white seabass were conspicuously absent from the protected areas (bays) preferred by YOY halibut.

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