

1990 Reference site survey

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SUMMARY

In 1977 and 1985 SCCWRP conducted surveys of sediment characteristics and biological communities in southern California in order to provide reference information that could be used for comparison to data collected from areas affected by wastewater discharges. In the summer of 1990, seven areas previously sampled in 1977 and 1985 reference surveys were re-sampled. Three depths (30, 60, and 150 m) were sampled in each area. Since one station was abandoned due to kelp, a total of 20 stations were sampled. The 1990 survey was designed to update the information collected in the 1977 and 1985 surveys. Sediment grain-size, organic carbon and nitrogen, nine trace metals, five DDT isomers, two PCB Aroclors, and 30 PAH compounds were measured in the surface sediment at each station.

The shelf sediments were predominantly sandy silt. Generally, the percent sand decreased as the percent clay increased as water depth increased. Off Imperial Beach there was an intrusion of coarse sand into deeper water. Since the concentrations of organic material, trace metals and organic contaminants were highly correlated with clay content, the concentration of these compounds increased with depth. The concentration of trace metals and organic contaminants in reference site sediments was generally very low. Contaminant concentrations were highest off Zuma Beach, the area nearest to Los Angeles. Except for silver, sediment contaminant concentrations measured in 1977, 1985 and 1990 were similar. The concentration of silver was an order of magnitude lower in 1985 than in 1977 or 1990.

Macrobenthos (>1 mm), and trawl-caught megabenthic invertebrates and fish were collected at each site. Macrobenthic assemblages at 30 m were the most heterogeneous and were dominated by several species of amphipods. Sites at 60 m were usually dominated by the ophiuroid *Amphiodia urtica*, but large patches of polychaete *Myriochele* sp. M dominated a few sites. While the number of species, the number of individuals, and biomass were higher at 60 than at 30 or 150 m, the difference was not significant. Sandy areas off Imperial Beach were inhabited by a very different macrobenthic assemblage.

Megabenthic assemblages at 30 m were dominated by the asteroid *Astropecten verrilli*. At 60 m, the assemblages were dominated by the sea urchin *Lytechinus pictus* and by the prawn *Sicyonia ingentis*. Many species common on the basin slopes were collected at the 150 m sites. More megabenthic species were collected at 150 m than at the other depths.

Fish assemblages also changed over depth. The 30 m sites were dominated by speckled and longfin sanddabs; the 60 m sites were dominated by Pacific and longfin sanddabs; and the 150 m sites were dominated by slender sole and plainfin midshipman. Numbers of fish species, individuals, and biomass increased with depth.

The reference assemblages sampled in 1977, 1985 and 1990 were similar. Only subtle differences in species composition and abundances were observed. However, numbers of species, individuals, and biomass per sample were usually lowest in 1985, which may reflect effects of the 1982-83 El Niño. Examination of the three Southern California Coastal Water Research Project (SCCWRP) surveys shows that the southern California mainland shelf is a stable habitat with little change over 13 years.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/269_1990RefSiteSurvey.pdf