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Descriptive trends in Southern California Bight demersal fish assemblages, 1994-2008

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ABSTRACT

Despite intense localized monitoring, few regional assessments of demersal fish assemblages are conducted in the Southern California Bight (SCB). The goal of this study was to describe temporal changes in regionalscale SCB demersal fish assemblages (density, biomass, size class) in relation to regional environmental changes (temperature and related climate indices). Nearly 600 small otter trawls were conducted by collaborating agencies between 3 and 200 m depth during the summers of 1994, 1998, 2003, and 2008 under a standardized sampling plan. Summer water temperature at depth between 1950 and 2008 has remained relatively stable although temperatures in 1998 and 2008 were above the long-term mean while the 1994 and 2003 temperatures were at or below the mean. Mean demersal fish density increased each survey between 1994 and 2003 before declining in 2008, while mean biomass increased each survey since 1994 reaching its maximum in 2008. Based on community similarity analyses, the 1998 survey was appreciably different than the other three surveys, with 2003 and 2008 being the most similar. This could be the result of anomalously warm-water conditions recorded during the 1997-1998 El Niño and the resultant temporary poleward expansion of numerous species. Although the sample size was limited to four regional surveys, the best predictors of mean demersal fish density and biomass were the Northern Pacific Gyre Oscillation and the Multivariate El Niño-Southern Oscillation Index. Increasing temperature, or similar patterns in environmental indices, resulted in reduced density and biomass. Furthermore, habitat valuation revealed a trend of increasing value with depth and latitude with the southern inner shelf areas scoring the lowest habitat value. With the addition of more data, regional surveys such as these surveys provide a good foundation on which to analyze changes in demersal fish assemblages.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2012AnnualReport/ar12_129_144.pdf