

Chlorinated hydrocarbons in flatfishes from the southern California, USA, Bight

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ABSTRACT

Although inputs of chlorinated hydrocarbon compounds to the Southern California Bight (SCB) are presently low, historical deposits represent a source of bioaccumulation potential to sediment-associated fauna. To assess this bioaccumulation potential, 14 chlorinated hydrocarbon classes were measured in livers of three species flatfish collected from 63 randomly selected sites on the coastal shelf between Point Conception and the United States—Mexico international border. Tissue contamination was widespread throughout the SCB, but was limited to just two chlorinated hydrocarbon classes. Virtually 100% of Pacific sanddab (*Citharichthys sordidus*) and longfin sanddab (*Citharichthys xanthostigma*) populations were estimated to be contaminated with dichlorodiphenyltrichloroethane (total DDT = sum of *o,p'* and *p,p'* isomers of DDT _ dichlorodipenyldichloroethylene [DDE] + dichlorodipenyldichloroethane [DDD] and/or polychlorinated biphenyls (total PCBs). Total DDT also contaminated the majority (64%) of the Dover sole (*Microstomus pacificus*) population in the SCB. Total PCB measurements in tissues of SCB flatfish were dominated by 12 congeners (52, 66, 87, 101, 105, 118, 128, 138, 153, 170, 180, and 187), which averaged 95% of the combined mass of the 27 congeners analyzed. Sediment concentrations (normalized by lipid content) for 8 of these 12 congeners and total PCBs. Normalized sediment concentrations were also significantly correlated to normalized tissue concentrations for total DDT and *p,p'*-DDE. Tissue concentrations measured in this study from reference areas of the SCB were compared to tissue concentrations measured from reference areas in studies conducted in 1977 and 1985. Total DDT and total PCB liver concentrations were found to have decreased one to two orders of magnitude in Pacific and longfin sanddabs between 1985 and 1994. Total DDT and total PCB liver concentrations decreased 5- to 35-fold in Dover sole between 1977 and 1994.

Keywords—Bioaccumulation, Flatfish, Dichlorodiphenyltrichloroethane, Polychlorinated biphenyl, Southern California

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