

## Chlorinated hydrocarbons in pelagic forage fishes and squid of the Southern California Bight, USA

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### ABSTRACT

Large quantities of dichlorodiphenyltrichloroethane (DDT) and polychlorinated biphenyls (PCB) have been historically discharged to the southern California Bight (SCB). While these contaminants have bioaccumulated in sediment-associated fishes, little data exists on concentrations of these compounds in pelagic forage species that are the likely food source to larger predatory mammals and birds. The goal of the present study was to assess the extent and magnitude of DDT and PCB bioaccumulation in the four major pelagic species of the SCB: Pacific sardine (*Sardinops sagax*), Pacific chub mackerel (*Scomber japonicus*), northern anchovy (*Engraulis mordax*), and California market squid (*Loligo opalescens*). A total of 99 composite samples were collected from commercial landing docks along the southern California coast from July 2003 to February 2004. Whole fish were homogenized and analyzed for total DDT (*ortho*- and *para*-isomers of DDT and its degradation products) and 41 PCB congeners. Virtually all of the samples of Pacific sardine, northern anchovy, and Pacific chub mackerel had detectable levels of total DDT. Only 50% of the California market squid samples had detectable total DDT. Northern anchovy had the highest total DDT concentrations ( $60 \pm 38$   $\mu\text{g}/\text{kg}$  wet wt), followed by Pacific chub mackerel ( $41 \pm 40$   $\mu\text{g}/\text{kg}$  wet wt), Pacific sardine ( $34 \pm 29$   $\mu\text{g}/\text{kg}$  wet wt), and California market squid ( $0.8 \pm 1.2$   $\mu\text{g}/\text{kg}$  wet wt). In general, concentrations were highest in the central SCB. An estimated 99% of northern anchovy, 83% of Pacific sardine, 33% of Pacific chub mackerel, and 0% of California market squid landings exceeded wildlife risk screening values for total DDT. Virtually none of the landings were estimated to exceed wildlife risk screening values for PCBs.

### Full Text

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