

Contaminant Bioaccumulation in Seabird Eggs of the Southern California Bight

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EXECUTIVE SUMMARY

Local and global processes concentrate anthropogenic toxicants in aquatic systems. There, toxicants enter biotic food webs and can potentially adversely affect organismal physiology and immune function at lethal and sub-lethal concentrations. Natural resource and water quality stakeholders are often tasked with monitoring the extent and magnitude of contamination in aquatic food webs. However, most monitoring efforts are limited by spatial scale, numbers of species, and number of toxicants assessed, thus are unable to consider bioaccumulation at regional scales. Here, we show the utility of seabird eggs in a regional bioaccumulation monitoring program across an urbanized region of coastline, the Southern California Bight. We assessed the egg contents from four seabird species for four organic contaminant classes (polychlorinated biphenyls, polybrominated diphenyl ethers, DDTs, and chlordanes) and three elements (mercury, selenium, and arsenic). Results indicate toxicants are detectable across species throughout the region, and levels are steady or declining based on comparison to results from historic site-specific monitoring. While some individual eggs were found to have toxicants at levels above those known to cause adverse effects, on average no species met or exceeded lowest-observed adverse effect concentrations (LOAECs) and eggshell thicknesses were not related to PBDE or DDT concentrations. Our results suggest that continued monitoring of legacy and more recent contaminants in seabird eggs is useful in the Southern California Bight to inform site remediation, management, and protection of threatened wildlife in coastal systems.

Full text:

http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/944_ContaminantBioaccInSeabirdEggs.pdf