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Poster Presentation - Wildlife

Title: Contaminant Assessment of Common Terns in the Gulf of Maine

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Abstract: In 2001, developmental abnormalities were reported in common tern (*Sterna hirundo*) chicks from three islands on the Maine coast - Stratton Island, Jenny Island, and Pond Island. A screening-level contaminant survey was initiated in 2004. During the 2004 and 2005 breeding seasons, 50 non-viable eggs and 42 moribund or dead common tern chicks were collected and analyzed for residues of organochlorine compounds and trace elements. Besides the three islands with reported abnormalities, eggs and chicks were collected from two reference islands - Eastern Egg Rock and Petit Manan Island. Egg and chick samples were examined for 26 organochlorine compounds. Three 3-egg composites from three islands were also analyzed for congeners of dioxins, furans, and polychlorinated biphenyls. Total PCB concentrations in eggs (0.36 ± 0.19 µg/g fresh wet weight) were below biological effect thresholds. Similarly, Total PCB levels in chicks (0.62 ± 0.46 µg/g wet weight) were not elevated. Dioxin toxic equivalents in three composite tern egg samples were not elevated (max. 65 pg/g) and well below reported tern embryotoxicity levels (600 pg/g). DDE, a metabolite of the pesticide DDT, was found in all samples, but at low concentrations (< 0.10 µg/g). Other organochlorine compounds (e.g., chlordane compounds, cyclodiene pesticides, hexachlorcyclohexanes) were also detected in eggs and chicks, but at low concentrations (< 5 ng/g). Nineteen trace elements were also measured in egg and chick samples. Mercury concentrations in tern eggs (0.11 ± 0.03 µg/g fresh wet weight) and chicks (0.16 ± 0.07 µg/g wet weight) were low compared to concentrations found in other fish-eating bird species in Maine and to biological effects thresholds. Except for a few anomalous elevated detections, concentrations of eighteen other trace elements were either within previously reported ranges, low, sporadically detected, or below detection. Some statistical differences in contaminant concentrations were found among islands by sample type, but in most cases contaminant concentrations were not biologically significant. Although concentrations of individual organochlorine compounds and trace elements in eggs and chicks were not found at levels associated with developmental abnormalities, it is not known what role combinations of low, sub-lethal body burdens of these contaminants may have on developing birds.