

MULTIFOCAL NECROTIZING MYOPATHY OF NORTHERN FUR SEALS (CALLORHINUS URSINUS) FROM ST. PAUL ISLAND, ALASKA. T. R. Spraker, Department of Pathology, Colorado State University, Fort Collins, Colorado 80523; D. L. DeGhetto and G. A. Antonelis; National Marine Mammal Laboratory, 7600 Sand Point Way NE, Seattle, Washington 98115

During July-October 1986-1994, 1,917 fur seal pups (Callorhinus ursinus) were necropsied from rookeries on the Pribilof Islands of Alaska. A condition characterized by multifocal necrosis of skeletal muscle and myocardium was found in 1990 and 1991. This condition was called white muscle syndrome (WMS). Gross lesions were in skeletal muscle of the pectoral girdle, cervical region, intercostal and abdominal wall and characterized by 2 to 3 mm, multiple, linear, white foci randomly scattered throughout. Of the 98 animals with WMS, 23 animals also had 1 to 2 mm, multiple, round to elongated, white foci within the myocardium. The histological lesions of WMS were characterized by multifocal necrosis of myocytes and myocardial cells with calcification. The cause of WMS was not determined. The epidemiology, gross and histologic lesions and laboratory work suggest that the etiology was not an infectious agent, vitamin A or E deficiency, trace mineral deficiency or toxicity, heavy metal toxicity or aromatic hydrocarbon toxicity. The cause of WMS may be an unidentified (inorganic) toxin.

ALBATROSS AS SENTINELS OF ORGANOCHLORINE POLLUTION IN THE NORTH PACIFIC OCEAN. Rosalind M. Rolland and Theo Colborn, World Wildlife Fund, 1250 Twenty-Fourth St. NW, Washington, DC 20037; John P. Giesy, Heidi Auman, Dave Verbrugge, Dept. of Fish and Wildlife, Pesticide Research Center, Institute of Environmental Toxicology, Michigan State University, E. Lansing, MI 48824; Paul D. Jones, ESR:Environmental, PO Box 30-547, Lower Hutt, New Zealand; Cheryl L. Summer and Jim P. Ludwig, The SERE Group LTD, Box 556, Eureka, MI 58833

This paper examines the biological effects and concentrations of organochlorine contaminants in Laysan and black-footed albatrosses nesting on Midway Atoll in the North Pacific Ocean. From 1992-1995, albatross tissues and eggs were analyzed for total and coplanar PCBs, dioxins, furans, dioxin equivalents (TCDD-EQ), and DDT and metabolites. Organochlorine contaminants have been found in all samples examined to date. The black-footed albatross samples were 2-4 times more contaminated with PCBs and DDT group compounds compared to the Laysan samples. The TCDD-EQ for the black-foot samples indicates that they are at or above the threshold where reproductive effects are seen in sensitive fish-eating avian species. Although fledgling rates are meeting replacement levels in both species, the black-foots show a higher rate of eggshell cracking, decreased egg viability and embryonic defects when compared to the Laysans. The use of albatrosses to monitor trends of organochlorine contamination in the marine environment will be discussed.

DIAGNOSTIC FINDINGS ON LAYSAN ALBATROSS ON MIDWAY WITH SPECIFIC REFERENCE TO LEAD. Thierry M. Work, National Wildlife Health Center -Hawaii Field Station, PO Box 50167, Honolulu, HI 96850 and Milt Smith, National Wildlife Health Center, 6006 Schroeder Rd., Madison, WI 53711

Clinical, pathologic, toxicologic, and epizootiologic aspects of mortality causes in Laysan albatross chicks on Midway atoll, Hawaii, were investigated in 1993 and 1994. Referent values for hematology including hematocrit, total white cell count and differential were formulated for healthy Laysan albatross adults and chicks. Control populations came from Laysan and Tern Islands as well as Kauai. We found that blood parameters for adults and chicks varied with location (island) of collection and season. When compared to healthy adults, healthy albatross chicks had lower PCVs, absolute and relative heterophil, eosinophil and basophil counts, glucose and AST and relatively higher absolute and relative lymphocyte counts, WBC counts, and globulin. When compared to "healthy" chicks, sick chicks on Midway had higher absolute and relative heterophil counts, glucose, AST and albumin/globulin ratios and lower total white and absolute and relative lymphocyte counts.

Chicks with elevated blood lead had depressed ALAD activity and, using this enzyme as an endpoint, we determined 0.06 ug/ml to be the no-effect blood lead level in albatross chicks. Blood lead levels in adults were within background limits or undetectable. Necropsy findings in 1993 revealed suspect lead poisoning as the most common cause of death followed by necrotizing enteritis, trauma and miscellaneous. In 1993 blood lead was partially responsible for clinical signs in ill chicks. In 1994, the most common diagnosis was necrotizing enteritis followed by trauma, suspect lead poisoning and miscellaneous. Exposure to peeling paint from abandoned buildings were risk factors in both years determining whether albatross chicks had elevated tissue lead levels. Similarly, prevalence of birds with elevated tissue lead levels was highest in areas of Midway atoll with the highest densities of buildings. The cause of the necrotizing enteritis remains undetermined.