Current MITHE-SN Projects Metadata

A7 Dr. Scott Petrie (P.I.) – Department of Biology, University of Western Ontario

Food-chain transfer and effects of selenium in waterfowl (Aquatic Ecosystems)

Objectives being Investigated
The combined continental population of Lesser (Aythya affinis) and Greater Scaup (Aythya marila)(hereafter scaup) declined by 50% between the mid-1980s and late 1990s (Austin et al. 2000). One hypothesis for the decline is that birds are acquiring unhealthy contaminant burdens on the lower Great Lakes (LGL). This project has 3 inter-related parts to: 1/ determine levels of contaminants (particularly selenium) acquired by scaup (and other diving ducks) staging and wintering on the LGL, 2/ evaluate the contribution of Se contamination from food as well as surrounding water and sediments, and 3/ determine contaminant levels in Greater Scaup breeding on the Yukon-Kuskokwim Delta (YKD), Alaska.

Study/Sampling Design
Waterfowl, benthic food species and sediment are collected for chemical analysis at sites in the LGL where the waterfowl stage or over-winter as part of their annual migratory cycle.

Number of projects providing material for study: 0

Location of Field Site(s)
Lower Great Lakes & LGL Coastal Marsh Complexes in southern Ontario, Canada, specifically:
Long Point Bay – Lake Erie: 42˚ 35’ N, 80° 17’ W
Mitchell’s & St. Luke’s Bays – Lake St. Clair: 42˚ 24’ N, 82° 26’ W
Bay of Quinte & Wolfe Island areas of eastern Lake Ontario: 44˚ 9’ N, 77° 16’ W & 44˚ 6’ N,76° 44’ W

Human Studies

Outcome or Process Studied
--- none provided ---

Exposure Medium, and Metals/Substances Quantified
--- none provided ---

Biological Endpoint(s) Monitored
--- none provided ---

Biota Studied

Species

- Lesser Scaup (*Aythya affinis*)
- Greater Scaup (*Aythya marila*)
- Long-tailed Duck (*Clangula hyemalis*)
- Bufflehead (*Bucephala albeola*)
- Common Goldeneye (*Bucephala clangula*)
- White-winged Scoters (*Melanitta fusca*)
- Zebra Mussel (*Dreissena polymorpha*)

Metals, etc. Quantified
Aluminum (Al), Arsenic (As), Calcium (Ca), Cadmium (Cd), Cobalt (Co), Chromium (Cr), Copper (Cu), Iron (Fe), Potassium (K), Magnesium (Mg), Manganese (Mn), Sodium (Na), Nickel (Ni), Lead (Pb), Selenium (Se), Vanadium (V), Zinc (Zn), and total Mercury (Hg)

Biological Endpoint(s)
Liver concentrations

Physical Material(s) Studied

Medium/Media
Water samples & aquatic sediments

Metals, etc. Quantified
Selenium (Se)

Bibliographic References on-file with Secretariat: No

Data Available: Yes

Data Archived with MITHE-SN: No

Collaborators

Dr. Shannon Badzinski (Co-Inv.) – Long Point Waterfowl & Wetlands Research Fund, Bird Studies Canada

Dr. Nelson Belzile (Co-Inv.) – Department of Chemistry & Biochemistry, Laurentian University

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Metals in the Human Environment Strategic Network
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