

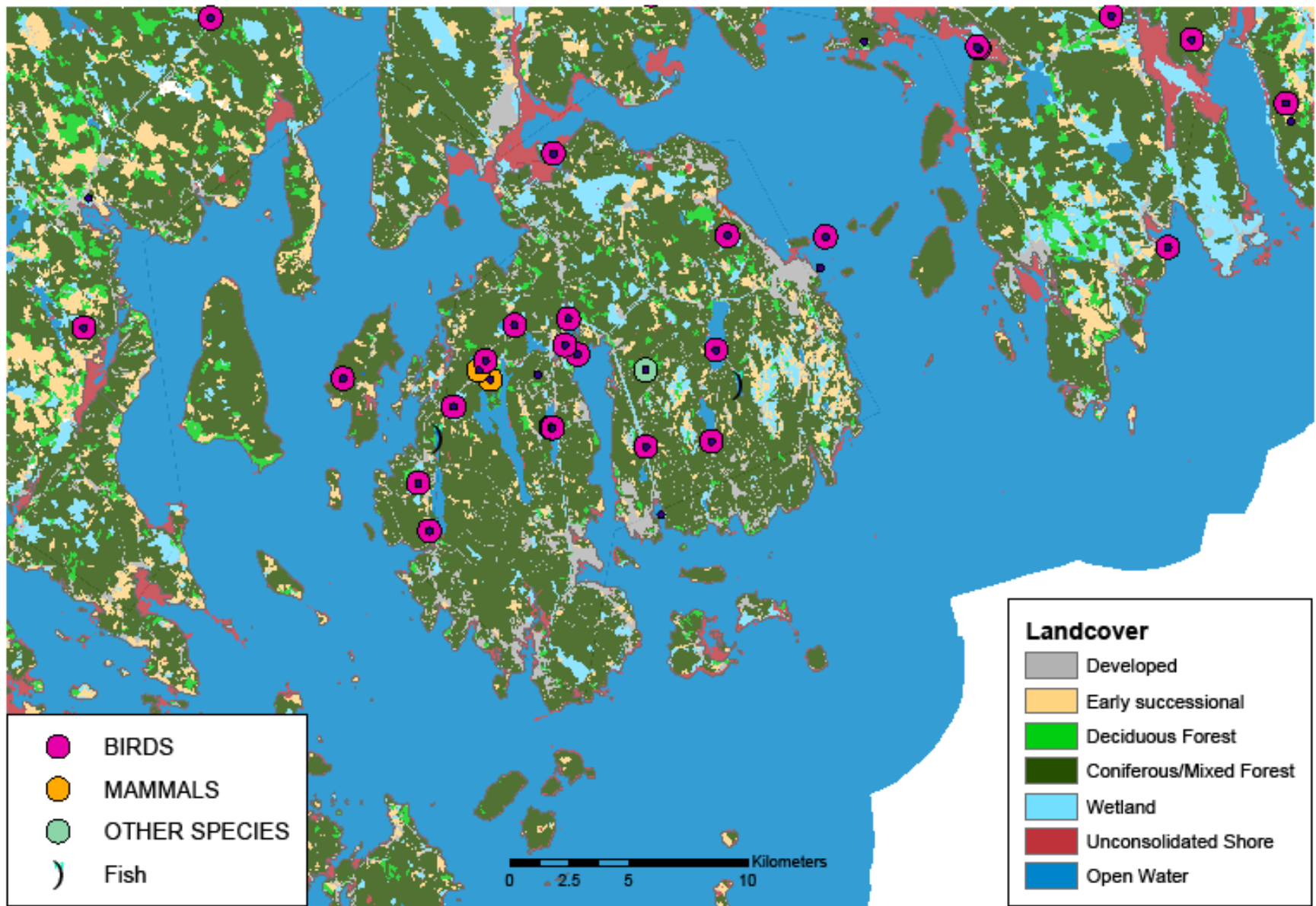
Cluster Site Case Study: Acadia National Park

**David Evers
BioDiversity Research Institute**

**Mercury Monitoring Workshop
Annapolis, MD
May 7, 2008**

Mercury studies (past 5 years)

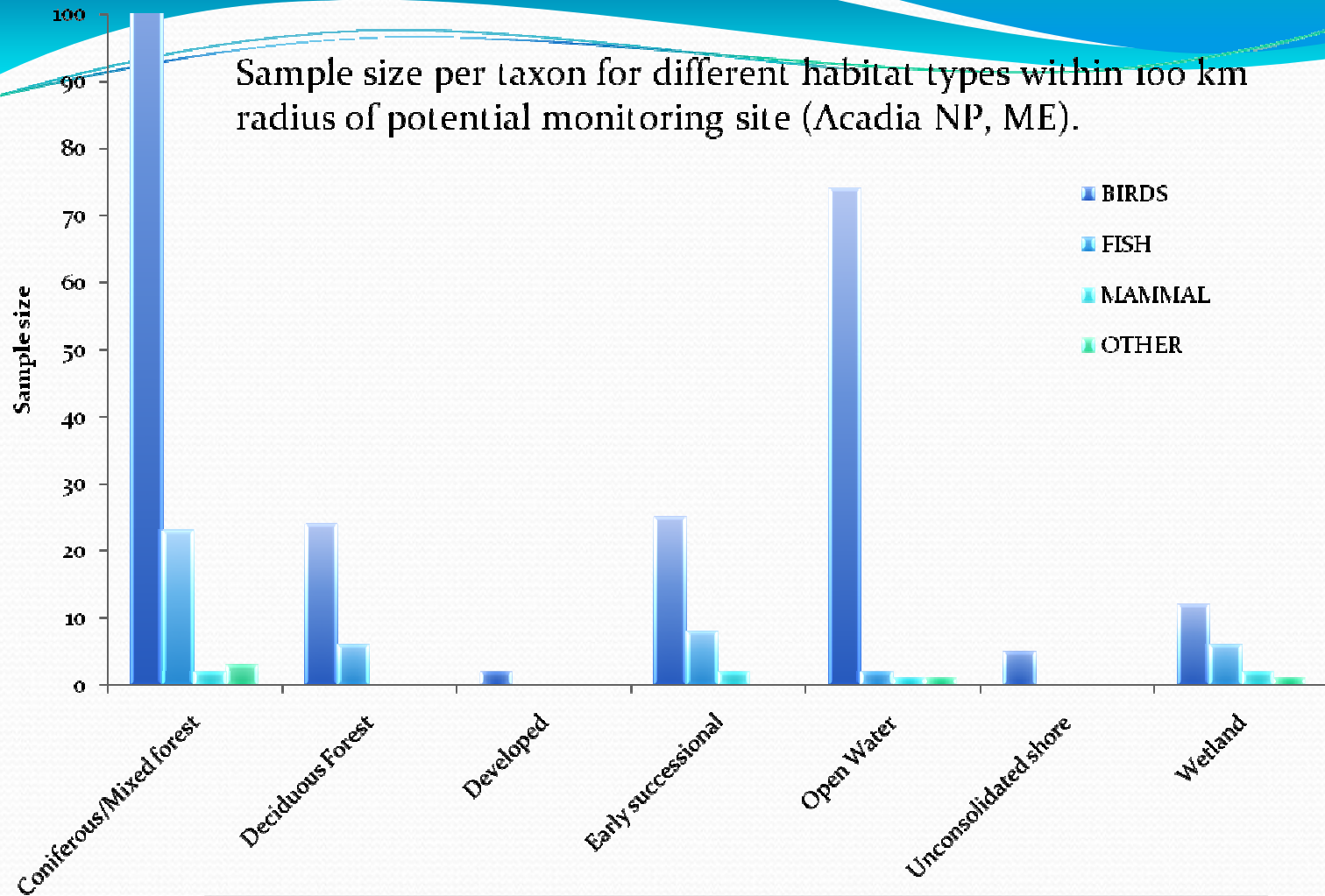
- Air Deposition
 - Johnson et al. 2007. Controls on Mercury and Methylmercury Deposition for Two Watersheds in Acadia National Park, Maine
 - Nelson 2002. Determining Atmospheric Deposition Inputs to Two Small Watersheds at Acadia National Park
- Soils
 - Amirbahman et al. 2004. The Effect of Fire on Mercury Cycling in the Soils of Forested Watersheds: Acadia National Park, Maine, U.S.A.
 - Ruck 2002. Cycling and speciation of mercury in soils at Cadillac Brook and Hadlock Brook watersheds, Acadia National Park (MS Thesis)
- Water
 - Peckenham et al. 2007. Landscape Controls on Mercury in Streamwater at Acadia National Park, USA
- Forest
 - Amirbahman et al. 2006. Litterfall Mercury in Two Forested Watersheds at Acadia National Park, Maine, USA
 - Nelson et al. 2007. Mass Balances of Mercury and Nitrogen in Burned and Unburned Forested Watersheds at Acadia National Park, Maine, USA
 - Sheehan 2005. Vegetative and Landscape Influences on Forest Litter Mercury at Acadia National Park (MS Thesis)
 - Kahl et al. 2007. Watershed Nitrogen and Mercury Geochemical Fluxes Integrate Landscape Factors in Long-term Research Watersheds at Acadia National Park, Maine, USA
- Herpetofauna
 - Bank et al. 2005. Mercury Bioaccumulation in Northern Two-lined Salamanders from Streams in the Northeastern United States
- Birds
 - Bank et al. 2007. Mercury Contamination of Biota from Acadia National Park, Maine: A Review
 - Evers et al. 2003. Common Loon Eggs as Indicators of Methylmercury Availability in North America.
 - Evers et al. 2005. Patterns and Interpretation of Mercury Exposure in Freshwater Avian Communities in Northeastern North America
 - Longcore et al. 2007. Mercury in Tree Swallow Food, Eggs, Bodies, and Feathers at Acadia National Park, Maine, and an EPA Superfund Site, Ayer, Massachusetts
 - Longcore et al. 2007. Mercury and Growth of Tree Swallows at Acadia National Park, and at Orono, Maine, USA
- Mammals
 - Yates et al. 2005. Mercury Levels in Mink (*Mustela vison*) and River Otter (*Lontra canadensis*) from Northeastern North America



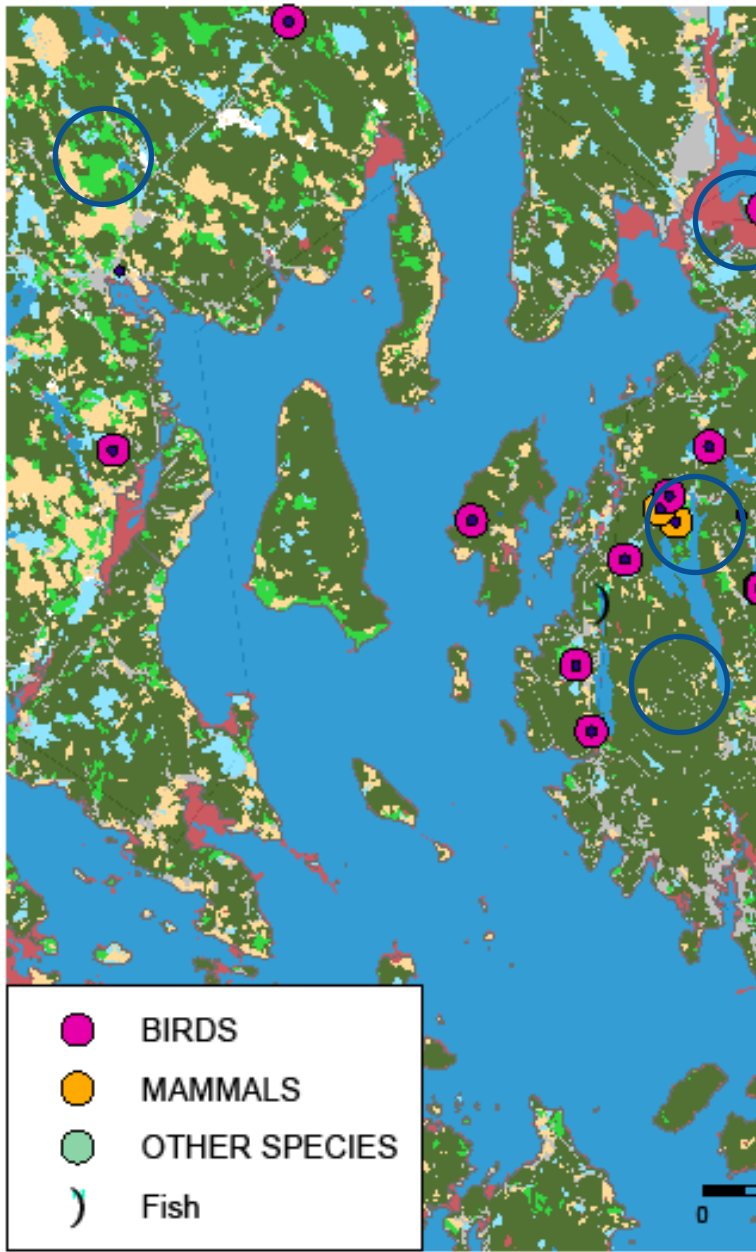
Samples per Habitat Type Acadia National Park, ME

Source: Federal, state, academic, and private research datasets
 Projection: NAD83_UTM19N
 Date: 4/30/2008
 Scale: 1:200,000

Sample size per taxon for different habitat types within 100 km radius of potential monitoring site (Acadia NP, ME).



Map landcover names	BIRDS	FISH	MAMMAL	OTHER	TOTAL
Coniferous/Mixed forest	136	23	2	3	164
Deciduous Forest	24	6			30
Developed	2				2
Early successional	25	8	2		35
Open Water	74	2	1	1	78
Unconsolidated shore	5				5
Wetland	12	6	2	1	21

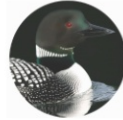


Samples per Habitat Type Acadia National Park, ME

Figure 11: Mercury in Birds Across the Landscape

Many bird species serve as good indicators of the availability of methylmercury across the landscape. Pictured are preferred indicator species.

Fish-eating birds



Ecosystem:
Natural lake
Indicator:
Common loon
Mercury levels:
0.1 - 8.6 ppm



Ecosystem:
Small river
Indicator:
Common merganser
Mercury levels:
0.7 - 2.4 ppm



Ecosystem:
Reservoir
Indicator:
Bald eagle*
Mercury levels:
0.1 - 1.2 ppm



Ecosystem:
Large river
Indicator:
Belted kingfisher
Mercury levels:
0.1 - 4.6 ppm

* **Note:**
Mercury concentrations are in adult blood, except for the bald eagle and common tern which are in juvenile blood.

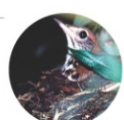
Insect-eating birds



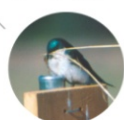
Ecosystem:
High elevation forest
Indicator:
Bicknell's thrush
Mercury levels:
0.10 - 0.80 ppm



Ecosystem:
Riverine forested wetland
Indicator:
Northern waterthrush
Mercury levels:
0.30 - 1.60 ppm



Ecosystem:
Upland forest
Indicator:
Wood thrush
Mercury levels:
0.02 - 0.14 ppm



Ecosystem:
Emergent wetland
Indicator:
Tree swallow
Mercury levels:
0.10 - 1.00 ppm



Ecosystem:
Nearshore marine
Indicator:
Common tern*
Mercury levels:
0.1 - 1.0 ppm



Ecosystem:
Estuary
Indicator:
Saltmarsh sharp-tailed sparrow
Mercury levels:
0.20 - 1.70 ppm