



Western Tanager

SONGBIRDS WE STUDY

Different songbird species are selected as indicators of how various anthropogenic stressors impact the ecosystems in which they live. Experienced BRI biologists study the following 12 families of songbirds:

- Flycatchers
- Wrens
- Sparrows
- Corvids
- Thrushes
- Tanagers
- Swallows
- Mimids
- Blackbirds
- Chickadees
- Warblers
- Finches

River Point Bird Observatory

In 2011, BRI initiated a long-term migratory bird banding station (spring and fall) in Falmouth, Maine. Since that first year, we have captured more than 12,000 birds. We also host student internships, training workshops, and community educational programs for students of all ages.

www.briloon.org/riverpoint



BRI's SONGBIRD PROGRAM

Since 1999, BRI biologists have been collecting scientific data to effectively survey and monitor songbird populations using the most current biological sampling techniques. Our songbird staff includes state and federally permitted biologists.

Many anthropogenic stressors affect songbirds. At BRI, we are working to understand how contaminants, wind power development, climate change, and habitat alterations impact songbird ecology and demography.

Research Capabilities

Methods used to study songbird species on private, state and federal lands throughout the United States include:

- Tracking (geolocators, satellite telemetry, ecological analysis, and modeling)
- Surveying (point count and nest box surveys, Monitoring Avian Productivity and Survivorship [MAPS] stations)
- Sampling (live capture and banding, nonlethal blood and feather collection, contaminant analysis, stable isotope analysis)

Where We Work

We conduct our research at diverse geographic locations to better understand the ecology, movements, and contaminant effects on a variety of songbird species, with an emphasis on neotropical migrants.

North America

- Alaska
- Florida
- Louisiana
- Maine
- Massachusetts
- Mississippi
- New Hampshire
- New Jersey
- New York
- Pennsylvania
- South Carolina
- Wyoming
- Virginia

Central America

- Belize
- Costa Rica
- Mexico
- Nicaragua
- Panama

Caribbean Islands

- Puerto Rico



Northern Waterthrush



Tree Swallows

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Black and White Warbler

TRACKING

Migratory connectivity—the linkages between northern breeding sites and southern nonbreeding areas—is a critical component to understanding how threats affect migratory songbird populations. Advances in transmitter technology allow us to track smaller species, like songbirds. Below is a selection of representative songbird movement studies:

- Documenting bird migration around the Great Lakes to assess risk to migrants from wind power development
- Modeling abundance of marine wildlife to promote informed offshore wind power decision making
- Developing novel methods for monitoring songbirds with offshore buoys
- Employing geolocator technology to track the seasonal behavior, migratory patterns, and wintering site locations of Veeries, Olive-sided Flycatchers, and Gray Catbirds
- Determining breeding site fidelity of Mountain Bluebirds in nest boxes in Wyoming



Gray Catbird

CONTAMINANTS MONITORING

BRI biologists have extensive experience investigating mercury exposure in songbird populations across North and Central America including ongoing assessments under the U.S. Fish and Wildlife Service Natural Resource Damage and Assessment.

To date, BRI has captured and sampled more than 11,000 songbirds to study mercury concentrations in regional populations. We also conducted studies on archived museum specimens to examine changes in environmental mercury loads over time. Cumulatively, these data provide critical information on species sensitivity, as well as geographic areas and habitats of greatest concern. Below is a selection of representative songbird contaminant studies:

Regional Studies

- Eastern United States: Forest songbird mercury exposure at wildlife refuges
- Western United States: Songbirds as indicators of mercury in national park ecosystems
- Central America and Caribbean Islands: Songbird mercury exposure in tropical ecosystems

Site-based Studies

- Florida: Tracking mercury loads in migrating songbirds
- Maine: Using mercury isotopes to understand methylmercury availability in Acadia National Park
- New Hampshire, New Jersey, New York, Massachusetts, Tennessee, Virginia: Risk assessment of mercury
- New Jersey and Virginia: Impacts of mercury on reproductive success of Carolina Wrens
- New York: Monitoring spatial gradients and temporal trends of mercury in songbirds; Mercury stable isotope analysis in Long Island and Adirondack songbirds
- Oregon: Relationship of forest management and songbird mercury exposure
- Virginia: Riverine mercury footprint study



SURVEYING

Utilizing standardized biological survey methodologies, BRI biologists collect scientific data on various aspects of health, behavior, and life history of songbird populations through capture, marking and monitoring studies. Below is a selection of representative songbird survey projects:

- MAPS surveys at Cutler Maine Naval Installation—Monitoring Avian Productivity and Survivorship (MAPS) using standardized protocols
- River Point Bird Observatory—Long-term banding station in Falmouth, Maine, to monitor songbird populations during yearly migration, conduct MAPS surveys, and manage on-site nest box studies
- Survey and monitor cavity-nesting songbirds in sagebrush habitat, aspen stands, willow-riparian areas, and spruce-fir forests in Wyoming's upper Hoback River Valley
- Developing demographic models for Painted Buntings



American Redstart

ABOUT BRI

Biodiversity Research Institute (BRI), headquartered in Portland, Maine, is a nonprofit ecological research group whose mission is to assess emerging threats to wildlife and ecosystems through collaborative research, and to use scientific findings to advance environmental awareness and inform decision makers.

BRI supports 10 research programs within three research centers including the **Center for Ecology and Conservation Research**, the **Center for Mercury Studies**, and the **Center for Loon Conservation**. Within the Center for Ecology and Conservation Research, BRI manages the following programs:

Taxonomic

- Mammal Program
- Marine Bird Program
- Raptor Program
- Songbird Program
- Waterfowl Program



Ecosystems

- Arctic Program
- Tropical Program
- Wetlands Program

Environmental Issues

- Wildlife Health Program
- Wildlife and Renewable Energy Program

BRI has been conducting scientific inquiries for private sector and government clients nationwide and globally since 1998. Using both traditional and innovative approaches, our researchers collect, analyze, and interpret scientific results on how ecological stressors impact living systems.

By incorporating regional data and developing strategies for collecting additional data, BRI has effectively modeled such stressors on species and community distributions, phenology, adaptive strategies and population viability across tropical, temperate, and arctic biomes.

BRI's Wildlife Mercury Lab has the capacity to analyze various tissue samples for mercury concentrations.

For more information on our capabilities and services, visit: www.briloon.org/services