Biodiversity Research Institute

Reason for HOPE
“The drive toward perpetual expansion—or personal freedom—is basic to the human spirit. But to sustain it we need the most delicate, knowing stewardship of the living world that can be devised.”  – Edward O. Wilson

**Biodiversity:** Vertebrates and invertebrates. Aquatic and terrestrial ecosystems. Research designed to understand at-risk organisms around the world.

**Research:** Arctic, temperate, and tropical regions. More than 100 projects worldwide to assess emerging threats, raise awareness, and inform policymakers.

**Institute:** Scientists, educators, and technical experts. Staff, volunteers, and hundreds of partnering organizations conduct innovative wildlife science at home and abroad.

**Biodiversity Research Institute:** A nonprofit ecological research group headquartered in Maine working to identify and analyze the links between ecological stressors (chemical, biological, physical) and a healthy planet.

An invitation to be a part of our team.
**A reason for hope.**
A Critical Intersection: Where Science Informs Policy

French, Chinese, Swahili, Arabic—the buzz of hundreds of voices greet David Evers as he enters the cavernous room. Giant banners depicting the familiar United Nations logo hang from the ceiling. Placards neatly placed on tabletops identify representatives from more than 160 countries. Dr. Evers, about to present his research, stands at a critical intersection of science and policy.

David C. Evers, Ph.D., BRI’s executive director, is a leading expert on the effects of mercury contamination on wildlife and the environment. His foundational mercury studies in North America, begun nearly 25 years ago, have led him, and BRI, to this prominent place on the world stage. As a member of the United Nations Environment Programme, he is influencing and informing the UN’s landmark treaty on global mercury monitoring—infusing international policy with solid science.

Building Upon Success

- Our international compilation of mercury data, *Mercury Connections*, highlights the broad extent and serious effects of mercury across North America.
- Our science findings published in *Hidden Risk* demonstrate the need to continue research on mercury contamination in forests and other nonaquatic ecosystems.
- International collaborations with government agencies and nonprofit organizations help us to understand mercury pollution on a global scale.

Support of BRI’s mission and goals will help us understand and reduce chemical stressors such as heavy metals deposition, petroleum pollution, and pesticide impacts.

BRI pioneered mercury studies on Common Loons, now studies others, including Pacific Loons; Dr. Evers at the UNEP conference in Uruguay.
Building Upon Success

Viewing video footage recorded at 2,000 feet above the ocean, BRI wildlife biologist Robby Lambert notes something interesting. He freezes the frame to examine the screen more closely. This scrutiny is not possible with traditional boat-based surveying techniques.

Robby is one of nearly a dozen BRI researchers working on a three-year marine wildlife project funded by the U.S. Department of Energy. Data collected will help decision makers determine where to site wind turbines off the mid-Atlantic coast.

BRI’s collaboration with HiDef Aerial Surveying, Inc., pioneering developers of super high definition digital survey equipment, has led to the first broadscale application of this technology in North America. The study will determine new benchmarks for marine wildlife surveys. Boat-based surveys—time consuming, weather dependent, and subject to greater human error—disturb wildlife and influence behavior. High altitude aerial surveys allow us to learn how animals behave in their natural environment without interference, thereby providing more accurate data.

Support of BRI’s mission and goals will help us understand the potential impacts of physical stressors such as offshore wind turbines and plastics pollution.

Data gathered from tracking technologies—satellite transmitters, GPS loggers, nanotags—allow BRI biologists to relay the most accurate information to policymakers, enhancing their ability to prioritize conservation actions.

Millions of people have logged onto our website to watch nesting raptors and loons. Valuable to wildlife studies, BRI’s webcams also help engage the general public in science and ecology.

Acoustical recordings help researchers identify at-risk birds and bats on land and offshore.

Satellite tags (Northern Gannet), geolocator tracking devices (Black Guillemot), and acoustic signatures are important tools for wildlife research.
One week after the Deepwater Horizon explosion in the Gulf of Mexico, veterinarian Nina Schoch, received a call from BRI’s executive director, Dr. Evers, to enlist her unique expertise. Within weeks, she established a field laboratory and hired a skilled team to study the health of coastal birds, such as the Brown Pelican, affected by the oil spill. In collaboration with the U.S. Fish & Wildlife Service, Dr. Schoch developed protocols for sampling blood and feathers to evaluate the impacts of oil exposure to avian health. This breakthrough work highlighted the ongoing need for an innovative approach to wildlife and ecosystem health assessment.

BRI is responding to this need with new initiatives, such as equipping a mobile unit to enable Dr. Schoch to rapidly deploy equipment and staff anywhere in the United States. The ability to arrive at a site quickly can help contain a volatile situation or address a potential epidemic.

Our recent publication of a 10-year study of Common Loons in New York’s Adirondack Park assesses the relationships between environmental mercury pollution and loon immune function.

BRI’s field crews captured and sampled more than 800 birds to assess the health of colonial waterbirds and secretive marshbirds as part of the Deepwater Horizon oil spill Natural Resource Damage Assessment.

Our ongoing study monitoring eagles via satellite has been providing data on the foraging patterns, seasonal movements, and habitat use of adult Bald Eagles—information vital to helping state and federal biologists manage these birds.

Support of BRI’s mission and goals will help us understand biological stressors such as emerging wildlife diseases and invasive species.

BRI biologists study emerging threats to wildlife, such as Surf Scoters and Magnolia Warblers, that have implications for human health.
Creative and Thoughtful Land Stewardship Benefits Both Wildlife and People

Bob Packard smiles as he climbs off his tractor. His wife, Ella Mae, has been working in the garden; their farm has been in her family for more than 150 years. With assistance from BRI’s wildlife biologists, and the U.S. Department of Agriculture, the Packards are securing a healthy future for wildlife on their 400+ acres.

The expansive lands of the Northeast, much of it privately owned, are home to many wildlife species that are in decline (Maine is the last stronghold for native brook trout). Federal aid is available to conserve our wildlife heritage, but these programs have limited reach—BRI is stepping in to fill a crucial gap; biologist Deborah Perkins is federally certified to help landowners like the Packards improve their wildlife habitats.

This work extends BRI’s history of science-based land stewardship; we continue to conduct surveys and investigate animal movements, phenology, and habitat studies to answer basic ecological and life history questions, as well as to apply those findings to wildlife conservation.

Support of BRI’s mission and goals will help us apply conservation biology as a powerful tool to protect wildlife and ecosystems worldwide.

As a result of monitoring efforts and research carried out on banded loon populations across the U.S., laws designed to regulate and reduce mercury and lead have been implemented.

Our outreach programs conducted at River Point Conservation Area in Falmouth, Maine help inform and engage the public in wildlife conservation. We share our research methods and knowledge about migratory songbirds with a variety of student and community groups. In 2012, we partnered with the Town of Falmouth to host the first BioBlitz, designed to catalogue wildlife species on the property.

BRI’s work with land trusts has helped managers preserve wildlife habitat throughout Maine for future generations to enjoy.

Deborah Perkins works with landowners to sustain habitat for species of concern like the Bobolink; BioBlitz engages the public in conservation.
Adapt. Conserve. Explore.
Destructive hurricanes, rising sea levels, disappearing mangrove forests. Although hard to ignore, these vivid manifestations of climate change may overshadow the need to explore future threats that simmer below the surface. BRI researchers are looking beyond the clear and immediate dangers of habitat destruction and wildlife displacement to understand how the hidden risk of mercury contamination might shift due to a changing climate.

Research biologist, David Buck, Ph.D., has initiated a pilot study that will help quantify potential changes in mercury toxicity in the Yucatán Peninsula, an area already facing serious ecological stressors. With support from The Explorers Club and other organizations, BRI researchers are investigating the links between mercury dynamics—how the toxin travels and where it settles—and the physical changes to sensitive ecosystems. This knowledge will help conservationists plan long-term protection for these environments.

BRI’s internationally-recognized mercury research has laid the groundwork for our proposed investigations of how the threat of chemical toxins might shift due to climate change. Other examples of studies proposed:

- Document baseline levels of mercury contamination within the Connecticut River watershed under current climate conditions; predict how mercury contamination may impact habitat quality under future climate scenarios.
- Investigate how climate changes may alter the biochemical processes associated with methylation, possibly increasing toxicity of mercury.

Support of BRI’s mission and goals will help us monitor the regional effects of climate change as part of BRI’s studies of ecological stressors.

Dr. Buck focuses his research on tropical ecosystems like mangrove forests; the greater bulldog bat is at risk for mercury contamination.
“The future belongs to those who give the next generation reason for hope.”

– Teilhard de Chardin
Philosopher and Scientist
1881-1955
Innovative Wildlife Research: A Reason for Hope

BRI's distinguished team of scientists and educators works tirelessly across the globe—from arctic tundra to tropical rainforest, temperate mountains to ocean depths—to protect wildlife and ecosystems. Innovative wildlife research helps us understand the intricacies of these ecosystems so we will know how to manage and sustain them for tomorrow.

BRI has already made a difference through collaborative field research, scientific discoveries, outreach to policymakers and land managers, and advancement of environmental awareness.

Your interest in BRI will further our work on the study of ecological stressors on wildlife, and their habitats. A commitment to BRI is an investment in life itself: 30 million or more species of living organisms interwoven into the planet's ecosystems.

Support of BRI will reinforce the next generation’s reason for hope.
BRI’s Mission:
To **assess** emerging threats to wildlife and ecosystems through collaborative research and to use scientific findings to **advance** environmental awareness and **inform** decision makers.