Innovative Technology

for **Onshore** and **Offshore** Wind Energy Development

Data Visualization

- Remote Marine and Onshore Technology (ReMOTe)
- Spatial Collision and Electrocution Risk Assessment Modeling

Remote Sensing & Monitoring

- Remote Bat Acoustic Technology (ReBAT®)
- Turbine Integrated Mortality Reduction (TIMR℠)
- Acoustic-Thermographic Offshore Monitoring System (ATOM™)
- Remote Condor Observation Network (ReCON™)
- Ultra-high resolution digital aerial imaging

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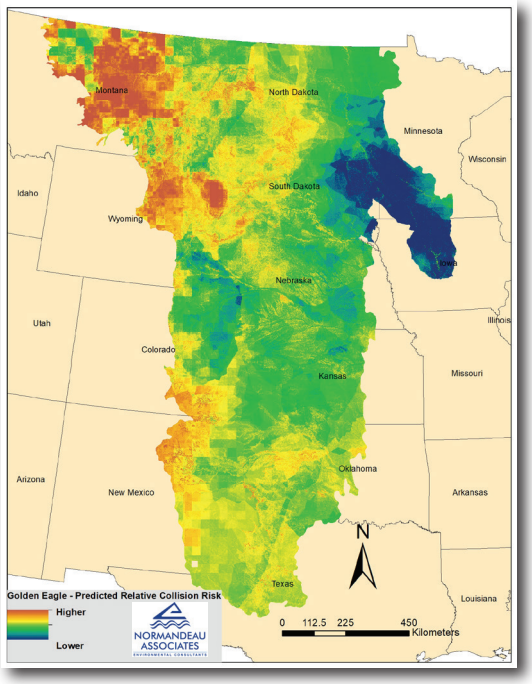
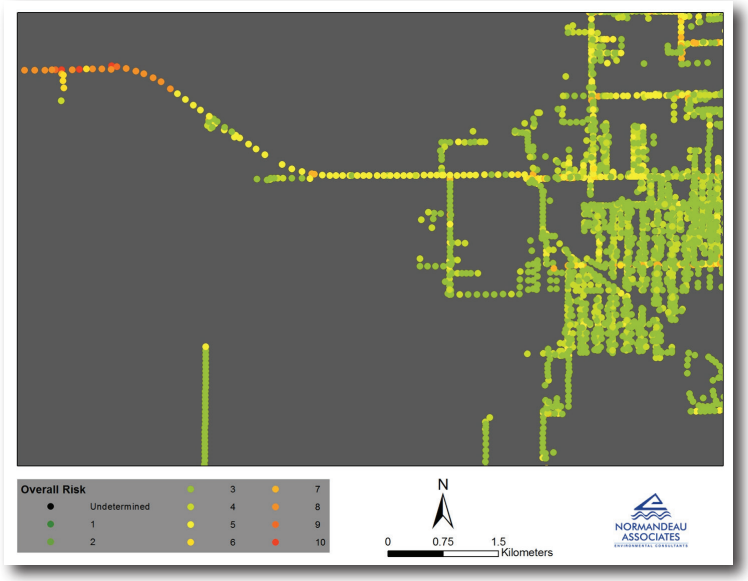
Normandeau is much more than an environmental consulting firm. With software developers on staff, we design, program, and implement **custom software and hardware solutions**, allowing us to go well beyond the standard services. With this flexibility, we can make changes during the course of a project to truly meet the specific requirements of our clients.

Our biologists also have expertise with R, SAS®, and Python programming languages to develop custom models and applied solutions for utility clients. We use these tools to build **spatial collision risk models** for wind turbines and **electrocution risk models** for distribution poles. These models guide the utility siting process at a high level to **minimize collision and electrocution risk to wildlife**.





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ReMOTe

Remote Marine and Onshore Technology

(Your Project Here)

Project Overview | Results | Gallery | Documents | Contacts | Data Portal

Remote **M**arine and **O**nshore **Te**chnology (ReMOTe) is Normandeau's secure, real-time data portal. ReMOTe provides the ability to access, analyze, and visualize data in a secure, user-friendly platform. Images and data are well organized, secure, and easily accessible for sharing.

Data are uploaded to ReMOTe where our analysts and taxa-specific experts access the data, identify species, and interpret results, and processed survey results are available in real time.

Project members can log in to ReMOTe to access the project-specific data, which can be public, restricted, or a combination of both depending on client needs. Outputs are also customizable based on project needs.

Georeferenced image data (often displayed in an interactive map with associated identifications and metadata) and graphic and tabular data can be downloaded at the click of a mouse.

While initially developed for bat acoustic and high resolution aerial imaging data, ReMOTe is also used for risk model visualization and visual and acoustic species data collected by other methods.

Normandeau stands out for its ability to guide clients to defensible and reasonable science-based decisions for project and regulatory compliance. We have earned a **reputation for excellence** in understanding and solving complex natural resource issues using sound science and **innovative technology.**

ReBAT®

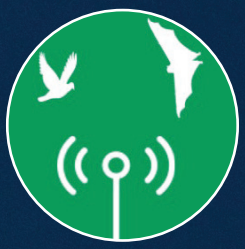
Remote Bat Acoustic Technology

Bat acoustic monitoring is more than deploying a detector and collecting bat echolocation calls. The calls must also be stored, filtered, analyzed, and classified to provide information on the spatial and temporal activity patterns at the species level. The higher quality the data set, the more useful and reliable the pattern analysis results will be. The optimum data set is collected using a full-spectrum ultrasonic microphone and analyzed using the most reliable software available.

TIMR℠

Turbine Integrated Mortality Reduction

Normandeau's Smart Curtailment System **significantly reduces bat fatalities** and **increases operating time** for wind energy facilities. The TIMR smart curtailment system is the result of research conducted by Normandeau, sponsored by the Electric Power Research Institute, Inc., and hosted by We Energies.



ATOM™

Acoustic Thermographic Offshore Monitoring

ATOM was designed for offshore studies of birds and bats. It enables the species-level identification that is essential for species-specific regulatory drivers such as the Endangered Species Act and the Migratory Bird Treaty Act. ATOM can be used for preconstruction studies and post-construction monitoring.

ReCON™

Remote Condor Observation Network

ReCON is a detection and alerting system for approaching condors (and other VHF-tagged wildlife). Through the USFWS condor recovery program, uniquely identifiable VHF tags are attached to individual condors. ReCON is designed to detect these VHF tags when they are within the detection grid and alert the energy facility with enough lead time to initiate a response, if needed.

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