

# **Predictive Modeling and GIS for Conservation**

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## **Abstract**

The combination of Geographic Information Systems (GIS) and statistical modelling is a powerful tool enabling an improved understanding of conservation issues. Two objectives that can be met include: (1) making inferences about the importance of factors of concern, and (2) predicting the response of organisms to changing conditions. GIS is intrinsically important for visualizing the impact of hypothesized factors or species responses, and for supporting spatial decision making (e.g., prioritizing areas for conservation). In collaboration with colleagues at Bird Studies Canada, Environment Canada and others, a modelling GIS study will be conducted to prioritize sections of Maritime coastline for the recovery of beached birds, oiled-at-sea. Chronic oil pollution is thought to be a potentially serious problem affecting sea birds of the East Coast of Canada, occasionally culminating in the recovery of dead and dying oiled birds. A key objective of this study is to determine the sections of coastline most likely to act as “catchments” for oiled birds, and will involve the modeling of sea bird occurrence, oil occurrence, and physical factors (e.g., favourable wind) most likely to result in a beached bird incident. It is expected that subsequent stages of this project will involve field validation of model predictions through the assistance of volunteer participants in beached bird surveys (BBS). It is anticipated that an enhanced understanding of factors determining the occurrence of sea birds, as well as their risk of oil exposure and likelihood of recovery on Maritime coastlines will result from this study.