

Integration of Habitat Models Database with a Spatially Explicit Wildlife Foraging Model

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Habitat Suitability Index (HSI) values, derived from comparatively routine measures of landscape features, describe the quality of habitat for particular wildlife species. The values represent estimates of potential carrying capacity of a specific area and provide indications of relative use patterns by the species. Previously, we encoded the information to enable calculation of the HSIs for approximately 90 wildlife species. These values are assigned to polygons or for an entire site. The values can then be used to modify the exposure estimates of Ecological Risk Assessments. In this project, we are developing and adapting software to link the calculations of HSI values to a series of modules (known collectively as Risk Trace) that calculate spatially explicit probabilistic estimates of foraging activities and hence exposure estimates. The modules use Microsoft applications and functions (e.g., Access, Excel, Visual Basic) for calculations, data processing, tracking user decisions, and reporting. Libraries of species-specific information on life histories, foraging range, food preferences, ingestion rates, foraging behaviors, etc. are incorporated into the calculation of exposure. Output will include Geographic Information System (GIS) and tabular displays that will provide probabilistic summaries of receptors, calculates exposures based on ingestion rates, and generates Hazard Quotients (HQs) for each contaminant. More sophisticated risk estimates (i.e., concentration-response relationships not just HQs) will be built into the software package where possible.

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Presentation(s): None to date.

Peer-reviewed publication(s):

Kapustka, L. A., Galbraith, H., and Luxon, M. (2001). Using landscape ecology to focus ecological risk assessment and guide risk management decision-making. *Toxicology and Industrial Health* 17, 236-246.

Kapustka, L. (2003). Rationale for use of wildlife habitat characterization to improve relevance of ecological risk assessments. *Human and Ecol. Risk Assessment* 9, 1425-1430.

Other publication(s): None to date.

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