

Track: Environmental Risk Assessment

Session: Trends in Environmental Risk Assessment of Pesticides

Title: Integrating FRAGSTATS, ArcGIS Pro and Excel to Automate Spatial Workflows Supporting Landscape-Level Risk Assessments

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Abstract:

Scenario selection during environmental risk assessments often involve large amounts of repetitious spatial data processing workflows which can be inefficient and burdensome when large portions are performed manually. Limitations of simple geographic information system (GIS) tools can further compound spatial data processing inefficiencies. FRAGSTATS is a robust spatial analysis program that computes a wide variety of metrics to quantify landscape structure and interaction (composition and configuration). The current study utilized FRAGSTATS to rank the relative vulnerability of a biological receptor in relation to agricultural fields and inform a site selection process in support of pesticide registration (see separate platform for details). The analysis exhibited highly repetitious workflows that involved several pieces of software (e.g., FRAGSTATS, Python, ArcGIS Pro, Excel) and were time-prohibitive when conducted manually. To address this, we leveraged Python scripting to integrate FRAGSTATS within ArcGIS Pro to automate large portions of the workflow. The resulting integration permitted a user-friendly execution of FRAGSTATS and subsequent post-processing, all from within the ArcGIS Pro interface that significantly reduced manual data management efforts. The analysis presented here showed that FRAGSTATS can be implemented efficiently to automate reoccurring spatially-based workflows in support of landscape-level pesticide risk assessments.