Conference Abstract

Interpreting and Georeferencing the Concept of "Near" in Locality Descriptors in Biodiversity Records

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Abstract

The process of georeferencing is fundamentally a matter of spatial relationships: where is the point of interest in relation to the Prime Meridian, the Equator, the nearest landmark, etc. The process of adding geographic coordinates and uncertainty measurements to data coming from the work of others is often complicated by interpretation and subjectivity. Take for instance the description, "found **near** the city of Springfield", which might be assigned a coordinate pair based on the centroid of the city's footprint. If the implication is that the subject was found around Springfield, then how close? Could this description refer to a point *within* the city? Is this description referring to the city limits, the farthest reaches of city mailing addresses, or the original author's interpretation of the territory of Springfield? At present, best practices for adding coordinate uncertainty to such data records is to expand arbitrarily the boundaries of the feature (e.g., the city limits of Springfield), and use the distance from this new shape's center to its farthest point (Zermoglio et al. 2020). In this talk, I propose a way to objectively quantify the area that can be considered "near" a given reference point. Voronoi diagrams are collections of points (or "cells") that correspond to a single region. Any coordinate location within a given region is closer to that region's cell than to any other cell in the diagram (Dobrin 2005). I describe possible applications of Voronoi diagrams in georeferencing sites described as "near" named places, which take into account the uneven distribution of named places across a region. I

demonstrate the straightforward process of generating these diagrams using readily available open-source GIS (Geographic Information System) data and programs, and discuss both shortcomings and possible deeper-level applications of these approaches.

Keywords

open-source, QGIS, coordinate uncertainty, best practices, Voronoi diagram

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