Case study: Tidal Wetland Mapping

Kelly is a GIS analyst and owner of a small environmental consulting firm that specializes in wetlands assessment and mapping. In addition to her GIS skills, she is a trained botanist with years of experience doing field surveys and analyzing soil samples to delineate tidal wetlands. She has recently begun work on a project commissioned by the State of Oregon to identify estuarine areas on the Pacific coast and to prioritize them for conservation and restoration. The contract is a great opportunity for Kelly's firm. If her work is well received, it could lead to similar and even more lucrative contracts in Oregon and elsewhere.

The contract requires Kelly and her team to follow the client agency's established protocol for mapping tidal wetlands. The protocol involves several existing data sources. One is a digital map of probable tidal wetlands in the area (Scranton 2004). The protocol allows removal of polygons from this dataset if aerial photography interpretation, field visits and other ancillary data suggest these do not represent actual tidal wetlands. In addition, areas may be added to the tidal wetlands dataset after field inspection if these areas are already identified and mapped in the National Wetlands Inventory (NWI) database. However, because the protocol is designed to be repeatable and usable by many people who may not have a background in wetland delineation, it does not include methods for adding new wetlands to the database that aren't already mapped in the NWI.

During Kelly's visits to sites of previously identified tidal wetlands, she finds evidence of additional wetlands that aren't mapped in either data source. However, the client agency's protocol doesn't accommodate the soil sampling needed to confirm Kelly's hypothesis. Neither does her project budget and schedule of deliverables provide the money or time needed to perform the extra work. She knows she cannot devote unbillable hours to the tasks either, since the project budget is barely adequate for the scope of work.

There seems to be no way to verify with certainty that these areas are or are not wetlands. Leaving the sites out of her map products could result in important estuarine resources being excluded from conservation and restoration plans. It may even reduce the overall efficacy of the agency's wetland conservation program by leaving out ecologically and spatially important linkages between previously mapped wetlands. But including them would violate the methodology of the protocol and could threaten the perceived integrity of her work. It would also cause her firm to lose money, which a small company cannot afford to do.

What should Kelly do?

References

Scranton, R. (2004). The application of Geographic Information Systems for delineation and classification of tidal wetlands for resource management of Oregon's coastal watersheds. Thesis, Marine Resources Management Program, Oregon State University, Corvallis.

U.S. Fish and Wildlife Service. National Wetlands Inventory. Retrieved March 6, 2009 from http://www.nwi.fws.gov/wetlands/.

Resources for educators

Suggested discussion points, relevant GISCI Rules of Conduct, and further resources related to this case study are available on request. Send request to David DiBiase (dibiase@psu.edu) along with contact information (including your position and affiliation) and a brief description of how you plan to use the case.

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