

SURVEY METHODS FOR ASSESSING LAND COVER MAP ACCURACY

by

S. M. Nusser and E. E. Klaas

September 2002

ABSTRACT

The increasing availability of digital photographic materials has fueled efforts by agencies and organizations to generate land cover maps for states, regions, and the US as a whole. Regardless of the information sources and classification methods used, land cover maps are subject to numerous sources of error. In order to understand the quality of the information contained in these maps, it is desirable to generate statistically valid estimates of accuracy rates describing misclassification errors. We explored a full sample survey framework for creating accuracy assessment study designs that balance statistical and operational considerations in relation to study objectives for a regional assessment of GAP land cover maps. We focused not only on appropriate sample designs and estimation approaches, but on aspects of the data collection process, such as gaining cooperation of land owners and using pixel clusters as an observation unit. The approach was tested in a pilot study to assess the accuracy of Iowa GAP land cover maps. A stratified two-stage cluster sampling design addressed sample size requirements for land covers and the need for geographic spread while minimizing operational effort. Recruitment methods used for private land owners yielded high response rates, minimizing a source of nonresponse error. Collecting data for a 9-pixel cluster centered on the sampled pixel was simple to implement, and provided better information on rarer vegetation classes as well as substantial gains in precision relative to observing data at a single-pixel.