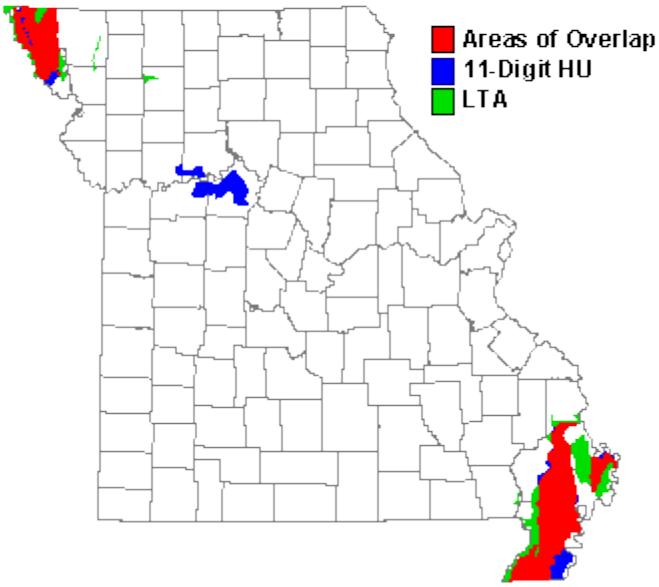
Resource Assessments Based on Ecoregion versus Watershed Polygons - Fall 1999 Update

MoRAP is working with MDNR and the EPA to assess the utility of using different types of polygons on which to base environmental assessments. Traditionally, many agencies have attached variables to watershed polygons, especially 8-digit hydrologic units (HUs), in order to complete environmental assessments. The results are used to help define priorities for expenditure of resources. The logic is that certain measurable variables, such as percentage of cropland, are important non-point source environmental stressors (or are good practical indices to stressors). Which polygon type should be used when conducting environmental assessments based primarily on land cover statistics such as the recent EPA “Mid-Atlantic Assessment”? We are not set to challenge the usefulness of watershed nor ecoregion polygons for other purposes, nor define a ‘one size fits all’ cookbook defining all of the appropriate uses for these two polygons types.

So far, we’ve found that high priority areas selected using ecoregions versus watersheds generally don’t overlap as much as 50%.

The same model for priority setting applied to different scales and types of polygons (large and small ecoregion and watershed polygons) result in different priority areas. Land type association (ecoregion) polygons circumscribe more uniform landscapes in terms of land cover than 11-digit hydrologic unit (watershed) polygons. Finally, watershed polygons are generally not more uniform in land cover than a random, regular grid of approximately the same size. Thus, it appears that the use of ecoregion polygons for assessment may be more appropriate versus watersheds whenever the assessments are mainly based on land cover variables. All else being equal, assessments using uniform polygon coverage should result in an equally valid set of conservation priorities versus watershed delineations of approximately the same size.Use of a smaller regular grid probably would provide a better, more spatially specific set of priorities versus larger watershed polygons.

For more details on methods and results please contact David Diamond or Taisia Gordon at MoRAP.

Non-Point Source Pollution
LTA vs. 11-Digit HU > 750,000 Ha
56% Overlap