Classification Results

Vectorize This

Myth

Pixels are just fine.

Polygons are unnecessary!

Reality

Pixel Heterogeneity Confounds the User

- Excessive information and detail
- Represents data at a level that is not manageable
- Difficult to process and query
- Difficult to summarize and evaluate
- Pixel errors resolved in polygons

Traditional Approach to Polygon Formation

Filtering, Scanning and Smoothing or

Making a bad situation worse !

Myth

- Modal or Majority filters are useful tools for forming polygons

Reality

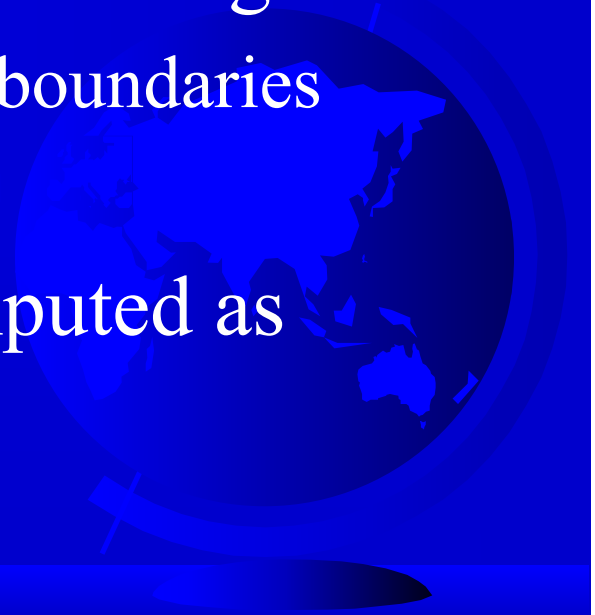
Mathematical Filters Do Not Approximate Ecological Relationships and Morphological Differences

- Feast or famine; grass or tree
- Linear feature removal and edge degradation
- Minimum mapping unit or “when do you stop filtering?”

Reality

Vegetation Characteristics are Interrelated

- Cannot build separate themes and merge
  - make wrong decision about type boundaries
  - massive sliver problems
- Polygon attributes must be computed as weighted averages



Solution: Ecological Rule-based Pixel Aggregation

- The classified pixel is a stratum in a stratification
- Each stratum represents a distinct set of cover, size, and species descriptions that are based on ground data collection efforts
- Polygons are formed by grouping areas that have the most similar vegetation characteristics
- Continue to form polygons until all polygons meet minimum mapping unit size

Step 1: Define Rules to Guide the Aggregation Process

- Vegetation classification definitions, relationships, and relative importance
- Minimum mapping unit size (by characteristic)

Step 2: Evaluate Similarity and Merge With Most Similar

- Represent the rules as a function and attempt to quantify similarity
- For each subject area evaluate all adjacent areas and determine the most similar area
  - Merge the subject area into the most similar area
  - Recompute merged area attributes
- Stop when minimum mapping unit thresholds are met

Step 3: Report Polygon Attributes

- Summarize weighted averages of pixel characteristics within the polygon boundary
- Develop discrete estimates and variances from weighted averages as polygon attributes
  - variance of tree cover is related to spatial distribution of cover
  - variance of tree size is related to stand structure
- Develop single theme maps from polygon map through reclassification of database characteristics

Rule-based Aggregation Benefits

- Process millions of acres at one time
- Repeatable, Consistent, and Objective
- No human digitizing of stand boundaries
- Can modify rules to change emphasis and produce different maps.
- Can aggregate using different vegetation classification schemes to develop different maps
- Similarity of values ,not classes, yield polygons with lower within stand variation.
- Discrete estimates allow reclassification by user defined classes