Geographic Resource Solutions' Land Cover Mapping Capabilities and Technical Approach

For nearly 20 years Geographic Resource Solutions (GRS) has been developing and implementing processes that have been shown to result in detailed, quantitative, and accurate vegetation/land-cover map data sets. GRS has extensive experience in every phase of Land Cover/ Vegetation Mapping Projects and has successfully mapped extremely large (18-million acre) areas of an extremely remote, rugged, and inaccessible nature. GRS undertakes these projects using a team that includes staff with local expertise; these local experts will understand the area, its vegetation and ecology, and complement GRS's staff on this project. GRS's staff have already accomplished many projects, understand this type of work, and can plan, implement, and manage land cover mapping projects, in combination with the acquired local expertise, to fulfill our clients' mapping needs.

The easiest way to demonstrate GRS's mapping capabilities is to show examples of recent GRS mapping efforts of a similar nature. Having seen these results, it is far easier to conceptualize the results we provide and the processes and methodologies that we implement to generate these information products. *Simply stated, GRS does not map vegetation or land cover like any other mapping companies map vegetation*. *GRS maps vegetation cover components and develop data sets, not just maps*. Cover components are discrete estimates of cover, based on field data information collected throughout the project area. The mapping of these discrete estimates is why GRS's image processing methodology is referred to as "Discrete Classification Mapping Methodology" (DCMM). The discrete estimates we develop enable the user of the information to generate names of types simply by processing the vegetation cover components with the appropriate set of rules (a dichotomous key) to assign class or type names to the different combinations of components that have been mapped into different polygons. One tremendous advantage of this approach is that the database contains both the type designation(s) as well as the discrete estimates of cover (type) components, so the map user can process and map cover components as well as type information.

Figures 1 and 2 illustrate the difference between mapping vegetation types and mapping components. Figure 1 shows a map of all Shrub Type Alliances for a portion of Lassen Volcanic National Park (LAVO), based on our nearly completed efforts mapping this park. These Shrub Types are different shades of red, based on the estimated density of the shrub cover in the Shrub Types. From this map it looks, in general, as though the Shrubs Types are fragmented and shrub cover is not very abundant. However, for every polygon in the map GRS has estimated the amount of shrub cover present (the shrub cover component). Cover estimates are generated in total and for each major shrub species. Figure 2 represents a map of shrub cover regardless of whether the polygon is classed or categorized as a Shrub Alliance. Figure 2 illustrates that there is far more shrub cover present in non-shrub types like Tree Types than there is in Shrub Types. By mapping components, GRS can assign categorical values, like the National Vegetation Classification System (NVCS) types used in the LAVO Mapping Project, based on an evaluation of the relative magnitude of the cover components that are present in any given polygon in the map data base. This process is the same as when a Field Botanist visits an Accuracy Assessment site, estimates the cover by species, and assigns an NVCS type call to the site based on the NVCS type key that has been developed for the project. In addition, GRS estimates discrete cover values, not classes. In other words, total shrub cover might be estimated at 45.9% or 13.5% or some other discrete estimate. Assignment of density classes is simply a matter of applying an SQL update statement based on the discrete estimates, or as simple as defining a new legend in ArcGIS.

Figure 1: Lassen Volcanic National Park Classification Map Results - Shrub Type Cover

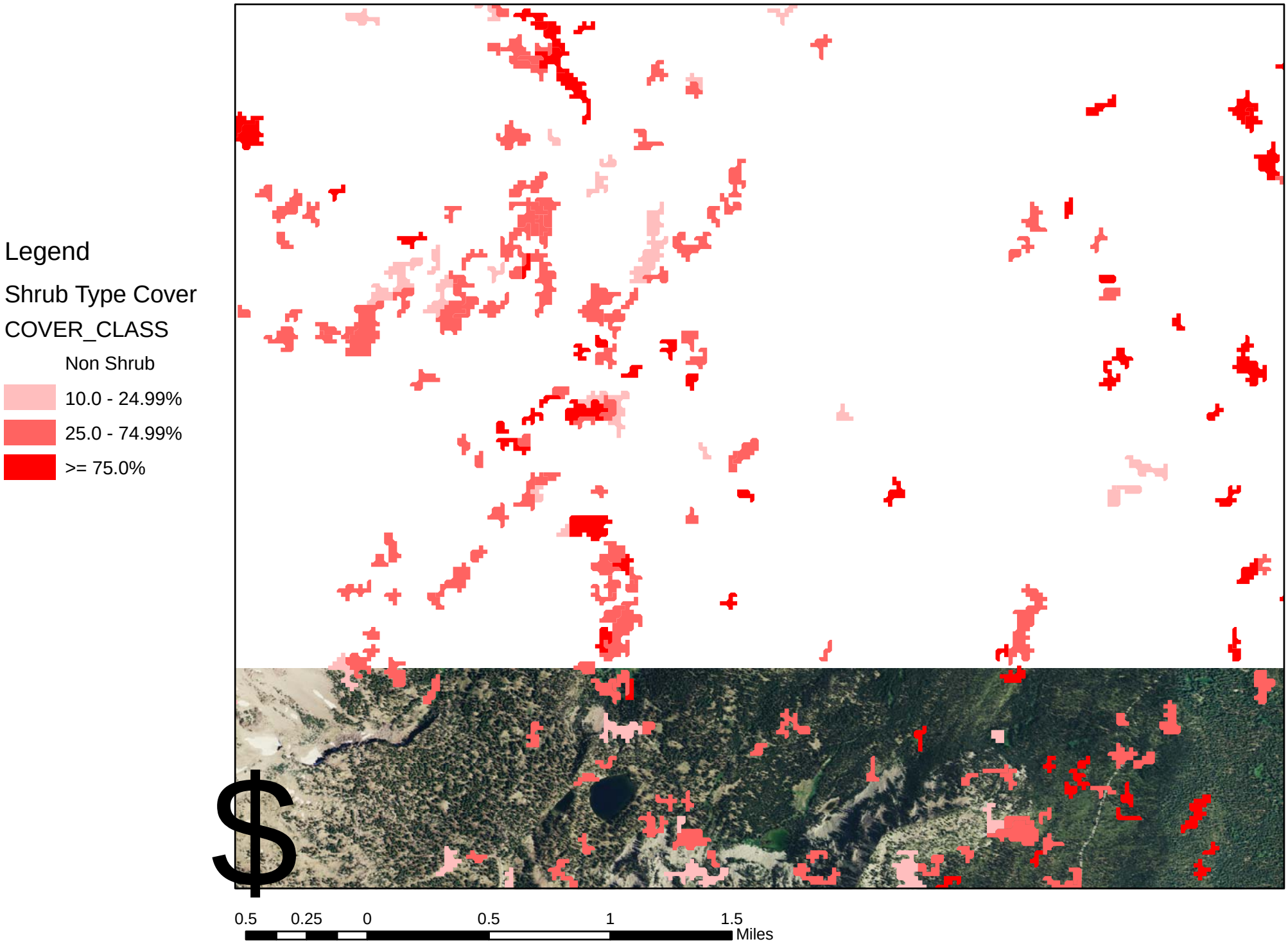

Figure 2: Lassen Volcanic National Park Classification Map Results - Shrub Cover