CONSERVATION OPPORTUNITY AREA ASSESSMENT
PROVIDING ECOLOGICAL CONTEXT AND UNDERSTANDABLE PRODUCTS FOR NATURAL RESOURCE PLANNERS AND MANAGERS

STATEMENT OF PROBLEM
Land managers and planners have generally not made much use of available remote sensing data; relevant analyses have not been completed in a transparent way that user's can accept and believe and information has not been delivered in an accessible way. When data are available, important questions regarding ecological context and land potential as they related to remote sensing results and analyses are often not addressed. Our goal is to provide relevant analyses of remotely sensed data mechanisms and ecological interpretations important for land use planning and land management.

PRESENT SITUATION
Planners and land managers now face a demand from the public they serve to address the need for habitat conservation on many scales. Remotely sensed data could serve as the cornerstone of inventories and analyses that guide land use planning at many scales. However, planners face monetary restraints; may not be well versed in remote sensing, GIS, and natural resource management; and often do not trust the results of new technologies that are not transparent and easy to understand. Information needs to be presented in a format that is cost effective, easily interpreted, and easy to understand. Thus a simple decision support system and delivery mechanism is required where none is now available. Remotely sensed data will never be used as it might unless information is accessible and the results are put in their proper ecological context.

POTENTIAL BENEFITS
We set out to defined conservation opportunity areas for Boone County, Missouri, and to place the results within their proper ecological context. We used the structure provided by the Missouri Resource Assessment Partnership (MoRAP) to form an interagency committee made up of agency partners to oversee our progress, and to ensure buy-in from partners by seeking input from the start through all phases of the project. This explicit, up-front participation by the user community is the first important aspect of our approach. The second is our clear placement of remote sensing and other data layers within an understandable ecological context. Any given site has a unique set of abiotic conditions (geology, elevation, drainage, soil, slope, aspect) and will tend to support different biota and respond differently to management, whether the management is for biodiversity conservation, agriculture, or

Figure 1(a)
industrial development. Planners must consider differences among sites and site types in order to select appropriate targets for action. Ecoregion delineations are accessible and provide a convenient tool for defining ecological context. We have divided Missouri into four ecological sections, 32 subsections, and 358 land type associations (LTAs), and each one has a different potential for supporting plants and animals. Figure 1(a) shows the land type associations and their potential to support natural grasslands and forests within Missouri and Figure 1(b) shows the potential for LTAs that bisect Boone County. The third important principle we employed was the idea that data layers need to be available at low cost to users across the nation. Therefore, we selected basic analyses that use the National Land Cover Database (NLCD), the National Elevation Database (NED), and TIGER road files.

TECHNICAL APPROACH
We used well-known GIS software (ARC/INFO and ArcView) to perform novel analyses to easily accessible data layers. A key aspect of this approach was the creation of ArcView extension tools that allow the user to perform these analyses in a flexible way using widely available computer hardware and software. The procedures include: (1) define core blocks of natural vegetation via analysis of the NLCD (user defines what 'core' habitat is), (2) create a road buffer coverage (user defines road buffer width by road type), and (3) intersect the results of the core habitat and the road buffer layers to create an Opportunity Area (OA) coverage.

PRODUCTS: CASE STUDY FOR BOONE COUNTY
Boone County is situated on the northern border of the Ozark Highlands, and the southern and western portions of the county were historically forested landscapes whereas the northern and eastern portions were grassland (Fig. 1a, 1b). The current land cover corresponds with historical patterns and potentials; the former grasslands have been converted to cropland and the former forests are a mixture of wooded area and open grassland. The Missouri River Corridor, which forms the southern boundary of the County, has largely been converted to cropland. Figure 2(a) shows the forest and grassland conservation opportunity areas for Boone County when the user selects a 30 meter buffer away from habitat edges and a variable width road buffer (depending on