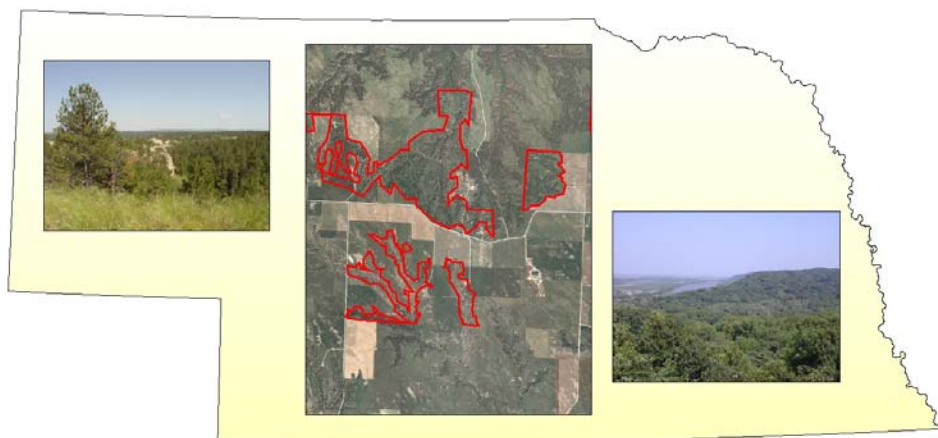


**APPENDIX G**  
**Nebraska Forest Stewardship Spatial Analysis Project**

# Forest Stewardship Spatial Analysis Project Nebraska September 2008



## Contact Info:

Cullen Robbins  
GIS/RS Research Specialist  
313 Hardin Hall, East Campus  
CALMIT, University of Nebraska – Lincoln  
Lincoln, NE 68588-0517  
(402)-309-7466  
[crobbins2@unl.edu](mailto:crobbins2@unl.edu)

Dennis Adams  
Program Leader – Rural Forestry  
Stewardship Coordinator  
109 Plant Industries, East Campus  
Nebraska Forest Service  
University of Nebraska – Lincoln  
Lincoln, NE 68588  
(402)-472-5822  
[dadams2@unl.edu](mailto:dadams2@unl.edu)

Scott Josiah  
State Forester & Director  
103 Plant Industries, East Campus  
Nebraska Forest Service  
University of Nebraska – Lincoln  
Lincoln, NE 68588  
(402)-472-1467  
[sjosiah2@unl.edu](mailto:sjosiah2@unl.edu)

## **Executive Summary**

The Forest Stewardship Program Spatial Analysis Project (SAP) was developed to identify and spatially display important forested lands, map existing stewardship tracts, and identify areas of opportunity to focus future Forest Stewardship Program efforts. Using GIS, the project focused on two primary objectives: determining areas of suitability within the state based on 11 factors, which represent either potential resources or potential threats as they apply to any given parcel of land, and developing a spatial database that contains the current stewardship plans within the state.

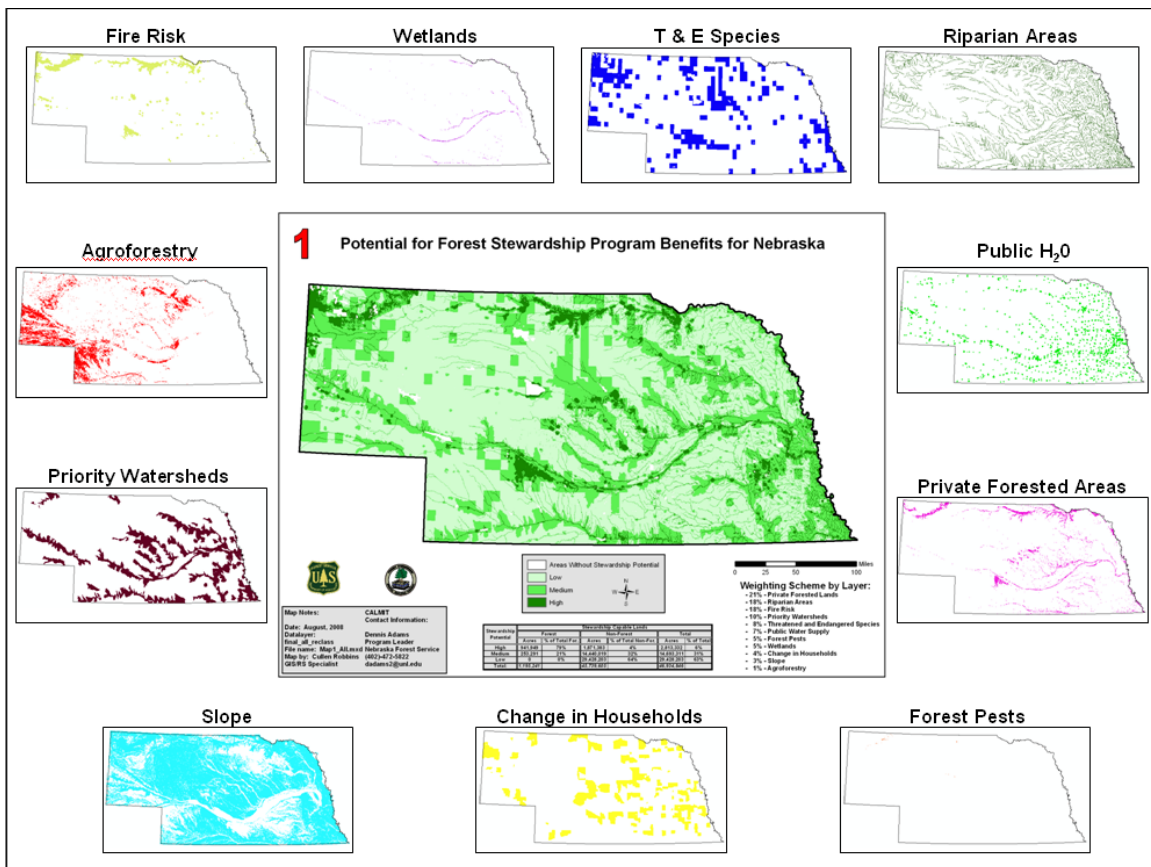
The resource potential factors include:

- Riparian Areas
- Priority Watersheds
- Public Drinking Water Supply
- Private Forested Lands
- Wetlands
- Topographic Slope
- Threatened and Endangered Species
- Agroforestry

The resource threat factors include:

- Forest Pests and Disease
- Woodland Fire Assessment
- Change in Households

In addition to the standard analysis completed by many states, Nebraska also included an additional analysis of stewardship potential using an increased emphasis on agroforestry. This analysis largely mirrors the analysis described above, but with specific differences in how agroforestry was emphasized in the analysis. Further details are provided throughout this report.



**Figure 1. The 11 datalayers surround the final map product showing Stewardship potential for the state of Nebraska.**

## Data Development

Each of the 11 layers were created to conform to the following: areas that were selected for a given factor were given a value of 1, indicating presence or occurrence of the given factor, while all other areas were given a value of zero, indicating that the given factor was not present.

Certain areas within the state are not eligible for the stewardship program, and were thus removed from the analysis. These areas include open water, urban areas, and publicly owned lands. A mask was created based on the corresponding classes in the MRLC/NLCD classification system to exclude these areas from analysis. These classes are 11 (open water), 21 (low intensity residential), 22 (high intensity residential), and 23 (commercial, industrial, transportation). A publicly owned lands layer developed by the Nebraska GAP Analysis Program was added to this dataset to remove public lands from the analysis.

For the agroforestry-based analysis, not all of the 11 layers were used. Those that were excluded are noted in the layer descriptions.

The origin and methods of development for each of the factors is described below.

### Priority Watersheds

Priority watersheds were selected from 6<sup>th</sup> level hydrologic units (12 digit, sub-watershed level) and the Environmental Protection Agency's list of impaired waters. These waters are listed as impaired based on the inability of the water body to support one of its intended uses. The hydrologic units that contain an impaired water body as defined by the EPA were selected as priority watersheds for this analysis.

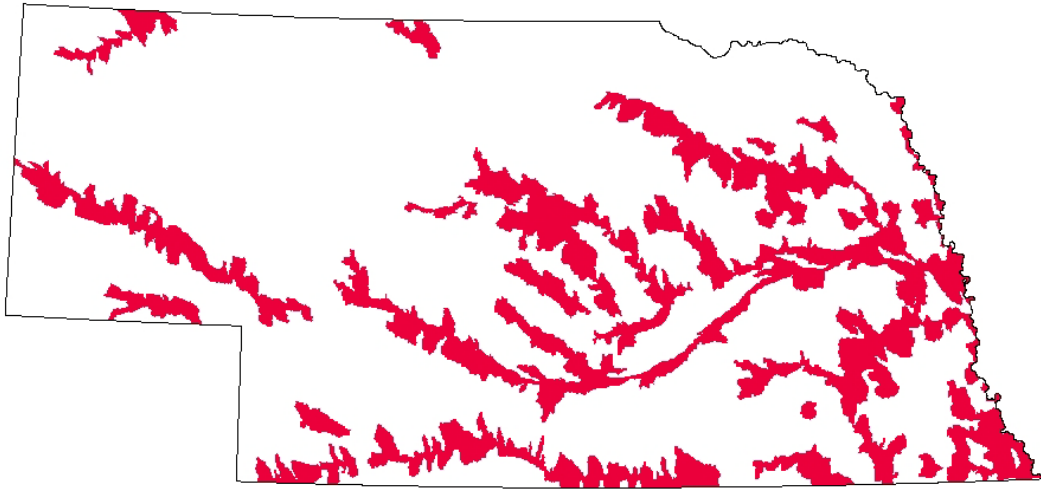


Figure 2. Priority Watersheds in Nebraska.

### Threatened and Endangered (T & E) Species

A list of threatened and endangered species was provided by the Nebraska Game and Parks with the point locations of the T&E species buffered to the nearest 7.5 minute quadrangle. The species that could potentially benefit from stewardship were selected from the list, and the quads that contain these species were selected and given a value of 1. All remaining quads were given a value of 0.



Figure 3. Areas containing Threatened and Endangered Species in Nebraska.

### Public Water Supply Sources

Public water well intake point data was supplied by the Nebraska Department of Natural Resources. These well points were buffered to 1 mile and the resulting areas were selected as the sources of the public water supply. This dataset is restricted and will not be distributed with the final SAP deliverables.

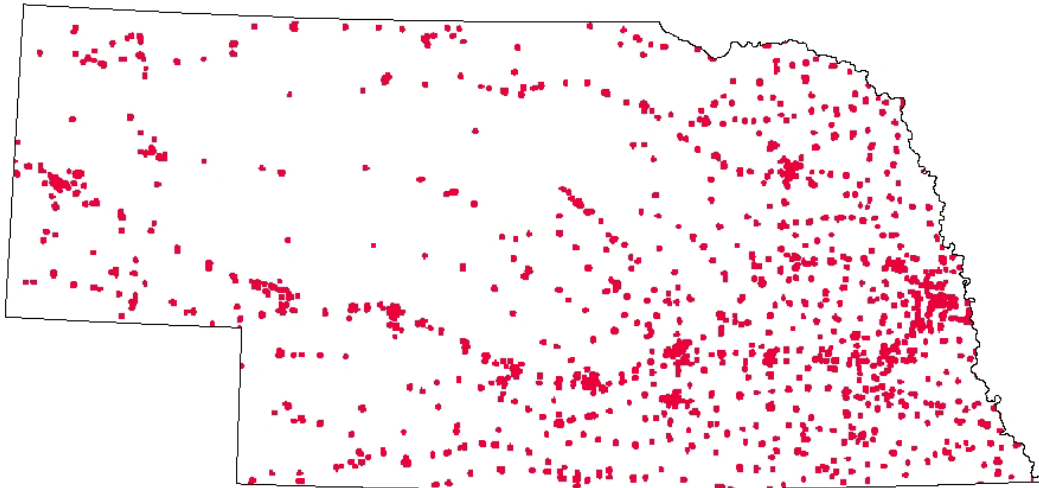


Figure 4. Public Water Supply Sources for Nebraska.

### Private Forested Lands

This layer includes privately owned forested areas within the state. These areas were selected by extracting the forested classes from the NLCD (classes 41, 42, 43, 51, and 91). The analysis mask removes public areas from the resulting layer, leaving only private forested areas. Because the location of privately owned forested lands is not important when choosing areas for stewardship when basing the decision on agroforestry, this layer was not used in the agroforestry-based analysis.

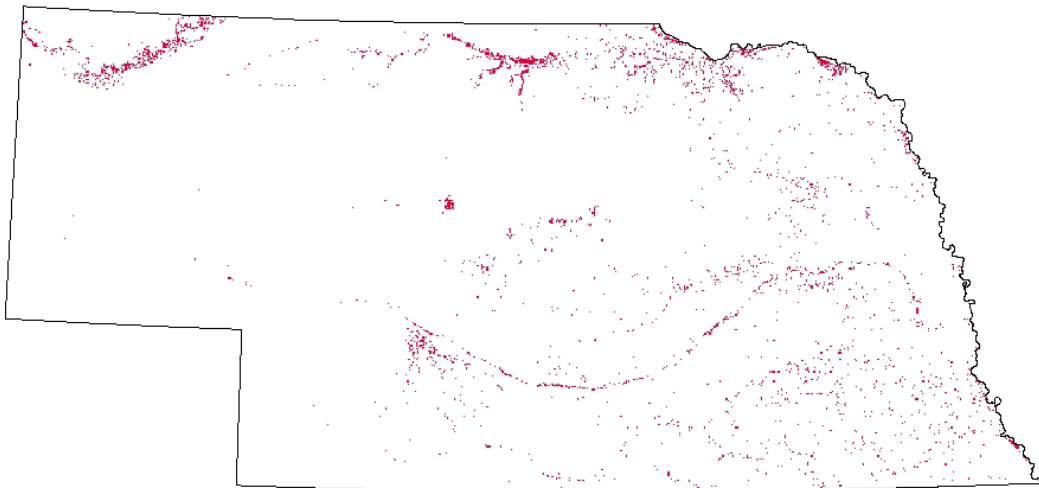


Figure 5. Privately owned forested areas in Nebraska.

### Topographic Slope

Topographic slope was derived from 30 m Digital Elevation Models that were developed for the entire state by the Nebraska Department of Natural Resources and the USGS. Percent Slope (the amount of deviation from horizontal) was extracted for areas between 5 and 40% for the entire state excluding the Sandhills. These selected areas were assumed to be better candidates for stewardship because areas with less than a 5% slope are assumed to be utilized for agriculture, while areas with greater than 40% slope are too steep to be utilized for stewardship plans. In the Sandhills, areas were only selected that had a slope less than 5%, because areas with a higher slope than 5% are more susceptible to erosion, and therefore not good candidates for implementing a stewardship plan.

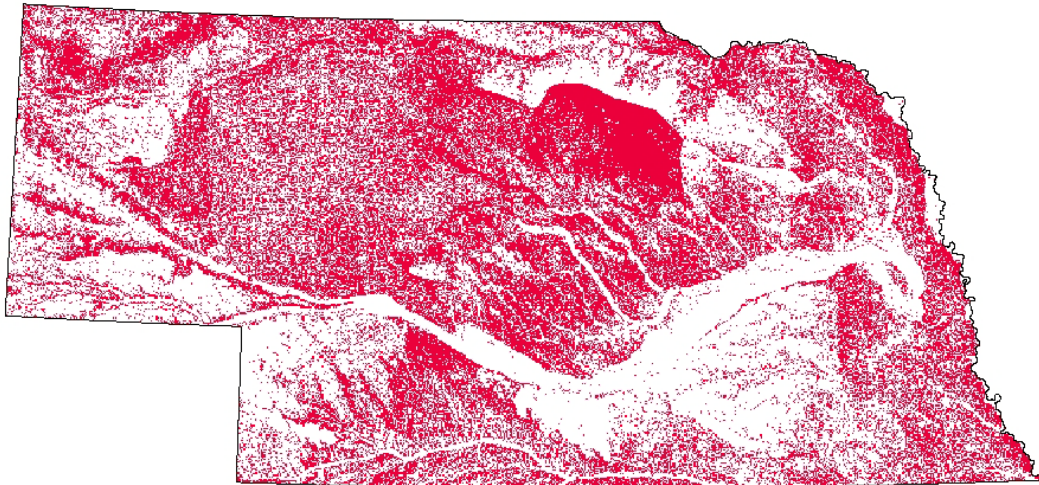


Figure 6. Topographic slope for Nebraska. Areas in red fall within the desired range of suitable slopes.



### Riparian Areas

This datalayer was developed from perennial streams data provided by the Nebraska Department of Natural Resources. The goal of this datalayer was to capture all of the areas that could be considered “riparian” areas around streams and rivers. To approximate the area that would be considered riparian, the perennial streams dataset was buffered to 100 meters, so that areas within 100 m of a stream are considered riparian areas.

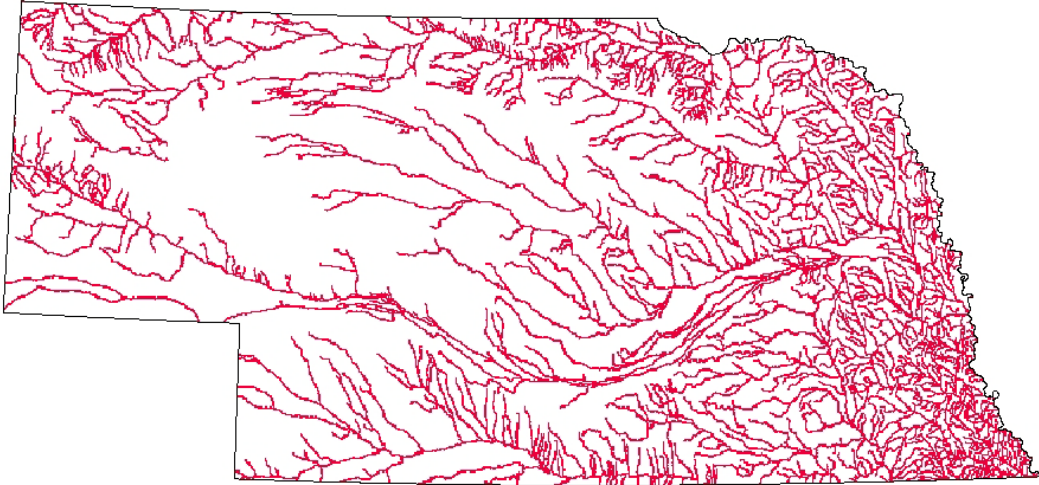


Figure 7. Riparian areas for the state of Nebraska.

### Wetlands

The National Wetlands Inventory (NWI) dataset developed by the US Fish and Wildlife Service was used for this layer. The goal was to determine which areas within the state have a co-occurrence of wetlands and woodlands. The NWI data shows all of the areas within the state that are considered wetlands and uses a hierarchical classification system to separate the wetlands into distinct types. For this analysis, wetlands that were grouped into the FO (forested) and SS (shrub/scrub) wetland classes were selected. These classes include wetlands areas that also contain a woody or shrubby component.

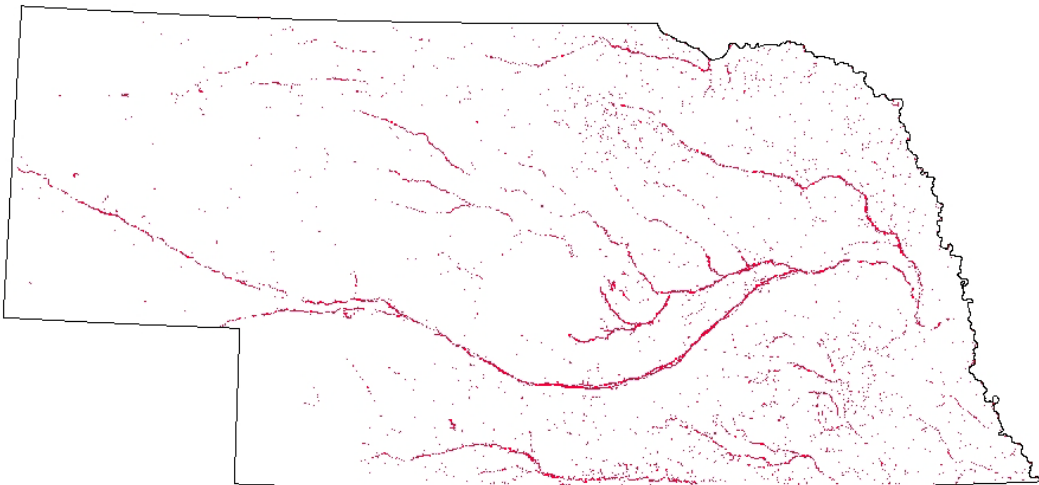


Figure 8. Wooded wetlands within the state of Nebraska.

### Forest Health

This layer represents the areas that are being threatened by insect and disease. The USDA Forest Service's Forest Health Group in Fort Collins, CO, developed a statewide assessment of threats to Nebraska's forested areas. This statewide assessment included a spatial display of areas that are threatened by various forest pests. In Nebraska, these pests include pine engraver, Jack Pine budworm, oak wilt, pinewood nematode, and dutch elm disease. Each of these pest types were combined into one class for Nebraska representing overall forest pests. This layer is less important when selecting an area from the agroforestry-based approach, so it was not included in the agroforestry-based analysis.

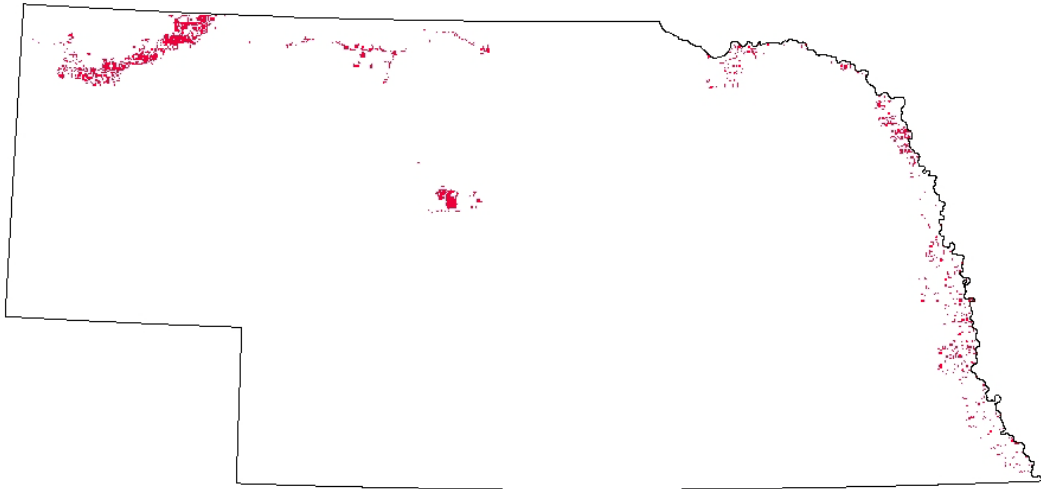


Figure 9. Areas in red are those areas being affected by forest pests and diseases.

### Developing Areas

This layer assesses the stability of land owners for a given area. The development of this layer was based on census block data from the 2000 and 1990 censuses. The census block data was used to calculate the change in the number of households between 1990 and 2000. Areas were selected where the change was greater than or equal to 1 and less than or equal to 8. These areas are ostensibly beginning to develop, but not yet at the point where pressure is too great.

Additionally, areas that were within 1 mile of urban areas as classified in the NLCD (classes 21, 22, 23, and 24) were also selected. These areas are considered to be at the highest risk for development, and are therefore prime candidates for the stewardship program.

All areas that fit the census or proximity to urban criteria were given a value of 1, while all other areas were given a value of zero.

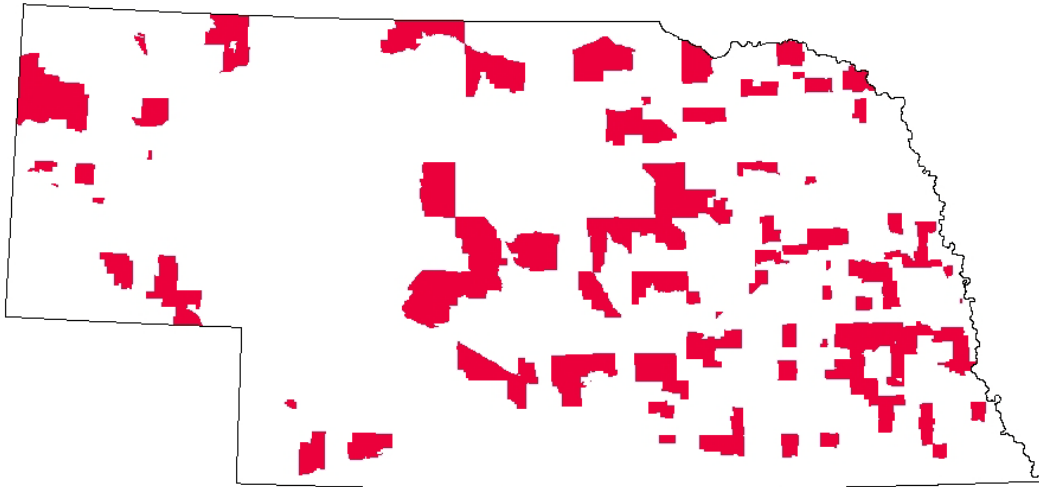


Figure 10. Areas in red fall within the targeted range of changes in households between 1990 and 2000.

### Fire Risk

The fire risk layer displays the risk of woodland fire at any given point in the state. It was developed from the NLCD based on cover type, where classes 42, 43, and 51 (evergreen forest, mixed forest, and shrub respectively) were selected as cover types most susceptible to fire. A smoothing procedure was used to remove areas that were considered isolated, and thus not as susceptible to fire. The remaining areas were buffered to distances between 0.6-1.6 miles (depending on cover type) to select areas that were in close proximity to the most susceptible cover types. These selected cover types and the buffered areas were then designated “high risk” for the purposes of this analysis. This layer was also not included in the agroforestry-based analysis.



Figure 11. Areas that are at a high risk of fire are shown in red.

## Agroforestry

This layer shows the areas of Nebraska that are suitable for agroforestry. Suitability was determined by combining two factors: land cover type that is most suitable to agroforestry, and areas that are susceptible to wind erosion that would most benefit from agroforestry. Land cover was determined by selecting those areas that are considered croplands, using land cover data from the Cooperative Hydrology Study (COHYST), a cropland-targeted land cover based on Landsat TM data from the 2005 growing season. All crop layers were selected for analysis (classes 1-8, 14 and 15, and 18-23 in the COHYST classification). For the erosion portion of this datalayer, statewide Soil Survey Geographic Database (SSURGO) data was used. This dataset contains an erodability index for each given area that measures the susceptibility to wind erosion. Those polygons with an index value equal to or above 8 are considered highly erodible lands. These were selected for analysis.

Those areas that were both highly erodible and were in the selected land cover classes were selected for analysis and given a value of 1, and the remaining areas were given a value of 0.

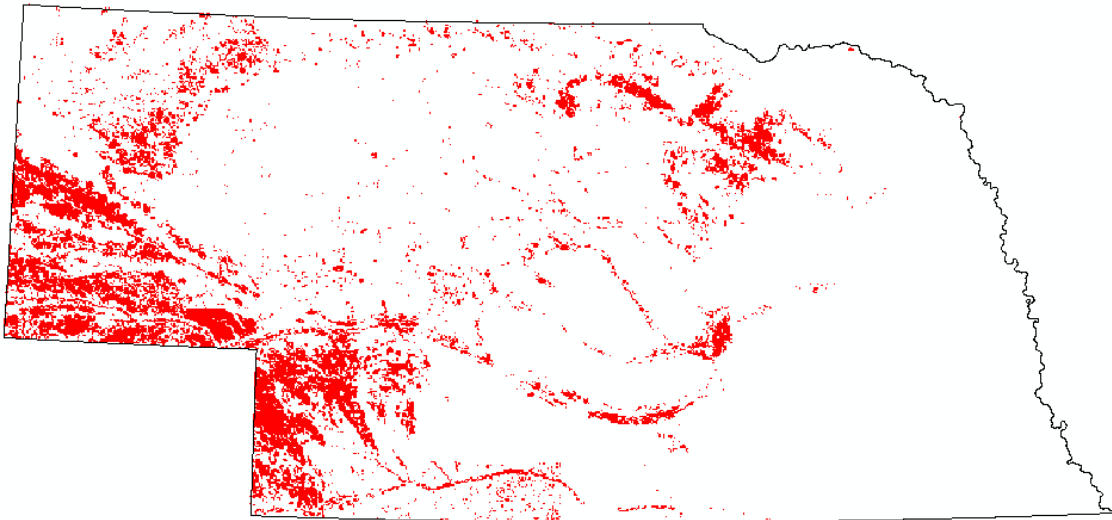


Figure 12. Areas which are suitable for agroforestry in Nebraska.

## **Weighting**

Of the 11 factors used in the analysis, some are considered more important than others when determining the suitability of a given piece of ground for the stewardship program. To determine the relative importance of these factors, the Nebraska Forest Stewardship Coordinating Committee (9 members) ranked the 11 factors. For each of the 11 factors, the mean response value was calculated. These mean response values were then subtracted from the highest possible weight (11). The resulting value was divided by the sum of the mean response values to determine the relative weight. For Nebraska, two parallel analyses were completed: the first analysis involved the traditional weights to determine stewardship plan selection, and the second, which put particular emphasis on agroforestry, while de-emphasizing some other factors. This agroforestry-based analysis removed three factors from the analysis: Private forested lands, Fire Risk, and Forest Pests. The result was an analysis using 8 factors instead of 11. The weighting for

the agroforestry-based analysis was determined by the Nebraska State Stewardship Coordinator. The weights for each method are shown in Table 1.

Table 1. Datalayer weights

Layer	Weight (Forest Land)	Weight (Agroforestry)
Private Forested Lands	21%	0%
Riparian Areas	18%	20%
Fire Risk	18%	0%
Priority Watersheds	10%	20%
Forest Pests	5%	0%
T&E Species	8%	5%
Slope	3%	10%
Public Water Supply	7%	3%
Wetlands	5%	2%
Agroforestry	1%	35%
Change in Households	4%	5%
<b>Total</b>	<b>100%</b>	<b>100%</b>

To determine the final value, the relative weights of each datalayer were multiplied by their value in the scene (either 0 or 1) for every pixel, and then the values for each datalayer were added at each pixel within the image. This would result in values between 0 and 1 for each pixel in the image that represented the overall stewardship potential, with values of 1 representing the highest potential for stewardship, and values of 0 representing the lowest potential for stewardship.

## Results

The actual values returned after the analysis were between 0 and 0.89 for the normal analysis (between 0 and 0.91 for the agroforestry analysis), indicating that no cell within the state “hit” all 11 of the datalayers, while a zero indicates that some areas within the state contained none of the datalayers. To simplify the stewardship potential data, the values were split into three stewardship potential categories (Low, Medium, and High) according to the Natural Breaks Classification algorithm in ArcGIS. The values were broken down as follows:

### Traditional Analysis:

Low: 0 – 0.07  
 Medium: 0.07 - .023  
 High: 0.23 – 0.89

### Agroforestry:

Low: 0 - 0.13  
 Medium: 0.13 – 0.31  
 High: 0.31 – 0.91

The results of the analysis shown in Table 2 indicate that in Nebraska, the acres of stewardship capable land are predominantly non-forested. Of the stewardship capable areas that are forested, nearly 80% are classified as having a high stewardship potential. This indicates that most of the forested areas in Nebraska would benefit from stewardship plans. In fact, since there are no forested areas included in the “Low” category, it could be argued that all forested lands in Nebraska would benefit from some type of

stewardship plan. For the non-forested areas, only 4% of the total non-forested acreage is within the “High” stewardship potential category, but the total acreage in this category alone is still larger than the total forested acreage.

Stewardship Potential	Stewardship Capable Lands					
	Forest		Non-Forest		Total	
	Acres	% of Total For.	Acres	% of Total Non-For.	Acres	% of Total
<b>High</b>	<b>941,949</b>	<b>79%</b>	<b>1,871,383</b>	<b>4%</b>	<b>2,813,332</b>	<b>6%</b>
<b>Medium</b>	<b>253,291</b>	<b>21%</b>	<b>14,440,019</b>	<b>32%</b>	<b>14,693,311</b>	<b>31%</b>
<b>Low</b>	<b>0</b>	<b>0%</b>	<b>29,428,203</b>	<b>64%</b>	<b>29,428,203</b>	<b>63%</b>
<b>Total:</b>	<b>1,195,241</b>		<b>45,739,605</b>		<b>46,934,846</b>	

Table 2. Map #1 table showing breakdown of stewardship capable lands in Nebraska

Table 3 shows how current stewardship plans are addressing the areas within the state that are capable of stewardship. While the total acreage of the current plans only cover about 0.3% of the areas that are capable of stewardship, approximately 85% of the current stewardship plans are located in areas of Medium or High stewardship potential. This indicates that the previous methods of determining where stewardship plans were located were effective.

	Stewardship Potential			Total
	Low	Medium	High	
<b>Acres Capable of Stewardship</b>	<b>29,428,203</b>	<b>14,693,311</b>	<b>2,813,332</b>	<b>46,934,846</b>
<b>Stewardship Plan (acres)</b>	<b>19,789</b>	<b>43,800</b>	<b>64,715</b>	<b>128,304</b>
<b>Stew. Plan vs Acres Capable of Stewardship</b>	<b>0.1%</b>	<b>0.3%</b>	<b>2.3%</b>	<b>0.3%</b>

Table 3. Map #2 table showing stewardship capable lands and current stewardship plans in Nebraska.

## Stewardship Plan Digitizing

A major component of the SAP is the digitizing of the current stewardship plans for the entire state of Nebraska. For Nebraska, all of the plans are centrally located at the Nebraska Forest Service main office in Lincoln, NE. Plans were completed in each of six Forest Service Districts by the District Forester from that particular district. These plans included the legal description of the plan and occasionally a map (usually drawn on DRGs or aerial photos) showing delineated plans. 2003 Farm Service Agency color DOQs were used as the reference for digitizing these plans from the hard copies. The plans were located on the aerial photos usually through the use of the legal descriptions, and details from the maps (when available) were utilized to improve the accuracy of the digitized plan. The plans were manually digitized as polygons in an ArcGIS geodatabase.

Because Nebraska contains such a wide variety of land cover types, digitized plans can cover anywhere from just a couple of acres to thousands of acres. This made

digitizing very challenging, as the larger plans are less concerned with details that are on the scale of less than an acre, while the very small plans are obviously very concerned about this level of detail. As each individual plan was digitized, land owner first name, last name, and company (if applicable) were recorded in the geodatabase, along with a unique id that incorporates the legal description into the id. Using the last name, this database can be coupled with the detailed Microsoft Access database that the Nebraska Forest Service Program Leader maintains. This database contains detailed information, such as addresses and phone numbers, which the NFS may want to keep out of the public domain. Keeping it separate from the SAP database helps prevent landowner information from inadvertently being added to the public domain.

Nebraska contains approximately 800 individual stewardship plans that cover approximately 131,000 acres. The larger plans are generally located in the northwest part of the state, where large areas of privately owned forested lands on the Pine Ridge are located. In eastern Nebraska, population density and farming practices have resulted in much smaller land holdings and more fragmented forested areas. This difference is reflected in generally smaller stewardship plan sizes across the eastern portion of Nebraska.

## **Metadata**

Metadata was produced for each of the 11 datalayers, the final Stewardship Suitability map, and the stewardship plan layer using the FGDC metadata editor in ArcCatalog. Metadata was written to Federal Geographic Data Committee (FGDC) standards.

## **GIS Analysis**

The analysis of the 11 layers (8 for agroforestry) was completed using ESRI's ArcGIS platform. The data for each of the layers was converted to a raster format where the presence of a given factor resulted in a value of 1, while all other areas resulted in a value of zero, i.e. a null value. Areas that are not suitable for stewardship plans (water, urban, public lands) were masked out of each layer. The cell size of the analysis was set at 30 meters.

Using a Weighted Overlay tool in ArcGIS, each of the raster layers were multiplied by their weight values, so that areas within a layer that contain a layer of 1 take on the weight value, while cells with a zero value remain at zero. All layers are then overlaid so that the resulting layer shows the sum of all 11 layers for every point within the state. Theoretically, a cell that "hits" on every single layer (where the cell has a value of 1 for every layer) would result in a final value of "1", while a cell that "misses" on every layer (where the cell value is 0 for every layer) would result in a final value of "0." In practice, final cell values ranged from 0 to 0.85 (0 to 0.91 for the agroforestry analysis), indicating that no area within the state hit on all 11 layers.

## **Map #1**

This map shows the areas of state-wide stewardship potential for Nebraska. The table accompanying the map compares the total acreage of areas that have the potential for stewardship programs with the total acres that have the potential for stewardship broken down into forested and non-forested categories. Each of these three categories is



broken down into three levels of stewardship potential: high, medium, and low. Stewardship potential for Nebraska was determined through the analysis of the 11 datalayers. The 11 layers were combined according to their relative weights to produce a value for each point within the state that represented the potential for stewardship. These values were then broken down into the three stewardship levels according to the Natural Breaks Classification algorithm.

### **Map #2**

Similar to map 1, this map shows areas of state-wide stewardship potential for Nebraska, based on the Agroforestry-focused approach. Acreages and classes were determined based on analysis of 8 layers, instead of the 11 for the typical stewardship analysis.

### **Map #3**

This map compares the areas with the potential for stewardship programs with the areas currently in stewardship programs. Current stewardship plans were digitized manually using 2003 color DOQs and the paper copy plans produced by the foresters in charge of the plans. These paper copies contained legal descriptions of the plans and occasionally maps that showed the location of the plans. For this map, the plans were converted to raster format from shapefiles and overlaid on the statewide stewardship potential map. The Stewardship Potential table compares the current stewardship plans (in acres) and the stewardship potential of the entire state (in acres) in each of the 3 stewardship suitability categories.

### **Map #4**

This map mirrors Map #3, showing areas with the potential for stewardship programs with the areas currently in stewardship programs, except that it uses the results from the agroforestry-based analysis.

### **Map #5**

Map #5 shows the stewardship potential on privately owned forested lands only, and compares these areas with those areas of privately forested lands that are currently in stewardship plans. The accompanying table shows this comparison numerically (in acres) and as a percentage of the total areas for each of the three stewardship potential suitability categories. Private forested lands were determined by extracting NLCD/MRLC values 41, 42, 43, 51, 61, and 91 from the NLCD. These values correspond to forest-type categories in the NLCD/MRLC classification system. Because public lands were removed from the analysis using the mask, only private forested areas are shown after the extraction.

### **Map #6**

This map shows the stewardship potential on forested lands only, and compares these areas with those of privately owned forested lands that are currently in stewardship plans. It is similar to Map #5, except that the resulting stewardship potential categories are based on the agroforestry analysis, and the stewardship potential categories (low, medium, and high) are based on the agroforestry-based analysis. It should be noted,

however, that in the agroforestry-based analysis, the privately forested lands factor is not used in the analysis. This map was included because it may still be useful to know where current stewardship plans are in relation to the forested areas of the agroforestry-based stewardship analysis, and to determine how well past stewardship plan selections addressed forested areas of high agroforestry-based potential.

### **Map #7**

This map separates from the 11 total datalayers those that are considered “resource richness” datalayers, which includes 8 of the 11 datalayers (see the map for details on the 10 datalayers). Nebraska added agroforestry as a datalayer as well, and this was added to the resource richness category. To determine the resource richness levels (high, medium, low), the relative weights of the 8 themes were maintained, and the natural breaks classification algorithm was used to separate the analyzed image into the three categories.

### **Map #8**

This map details the 3 datalayers (of 11 total) that are considered “resource threats” in Nebraska. These 3 themes include the wildfire assessment, change in households as determined through US Census data, and forest pests and disease. Like map #7, the relative weights of these themes were maintained, and the resulting analysis was completed using the Weighted Overlay tool. The three threat categories (Low, Medium, and High) were again determined using the Natural Breaks classification algorithm.

### **Map #9**

Non-forested, non-developed areas of Nebraska were extracted from the statewide Stewardship Potential map to produce map #9. Current stewardship plans were overlaid on the resulting map to show how current stewardship plans compare to those areas that aren't forested and privately owned. The table shows quantitatively (in acres) how the current plans are allotted among the 3 Stewardship Potential levels (Low, Medium, and High). The non-forested, non-developed areas in Nebraska were determined using the NLCD, where NLCD/MRLC classes 31, 33, 71, 81, 82, 83, 84, 85, and 92 were extracted from the NLCD. Additional details on these classes can be found on map #9.

### **Map #10**

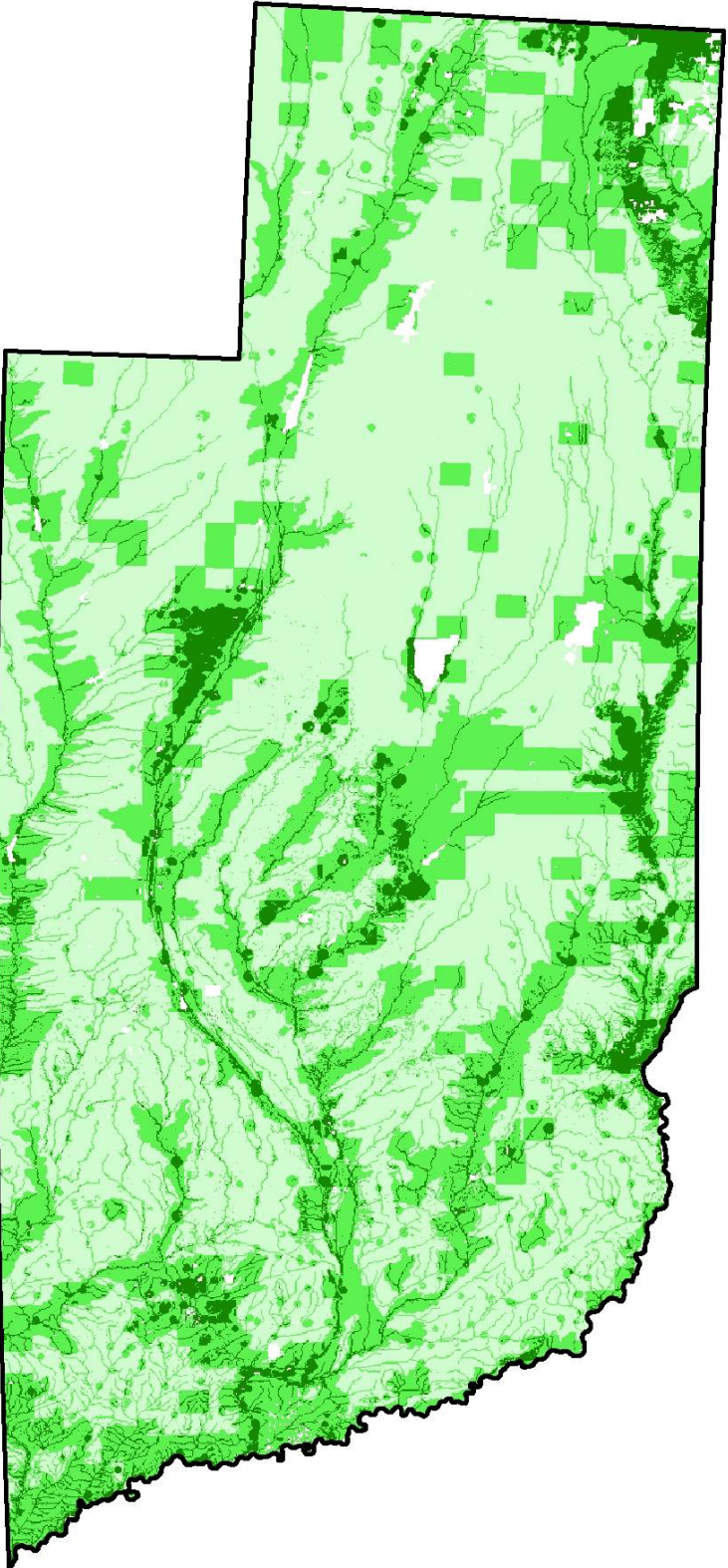
Map #10 is similar to Map #9, in that it shows the non-forested, non-developed areas and their stewardship potential. This stewardship potential is based on the agroforestry-centered analysis, however, and the results shown in the table reflect this agroforestry-based analysis.

### **Map #11**

The Pine Ridge area of Nebraska is of particular interest to state and regional planners because of its susceptibility to fires. As its name indicates, pine is the predominant forest species in this area. Recent catastrophic fires in the areas surrounding Valentine and Chadron have focused the public's attention on the state of these forested areas. This map shows the Pine Ridge areas near Crawford and Chadron and the public and privately owned forested areas that surround these communities. Also shown are the current stewardship plans for this area.

# 1

## Potential for Forest Stewardship Program Benefits for Nebraska



Map Notes:

Date: August, 2008

Datalayer:

Final\_all\_reclass

File name: Map1\_All.mxd

Map by: Cullen Robbins

GIS/RS Specialist

CALMIT  
Contact Information:

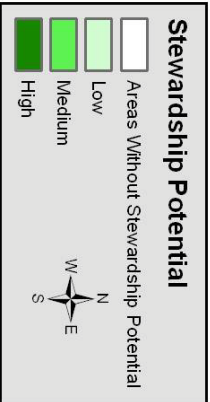
Dennis Adams  
Program Leader

Nebraska Forest Service  
(402)-472-5822

dadams2@unl.edu



Stewardship Potential	Forest		Stewardship Capable Lands		Total	
	Acre	% of Total For.	Acre	% of Total Non-For.	Acre	% of Total
High	941,949	79%	1,871,383	4%	2,813,332	6%
Medium	283,291	21%	14,440,019	32%	14,693,311	31%
Low	0	0%	29,428,203	64%	29,428,203	63%
<b>Total:</b>	<b>1,735,241</b>		<b>45,739,605</b>		<b>46,934,846</b>	

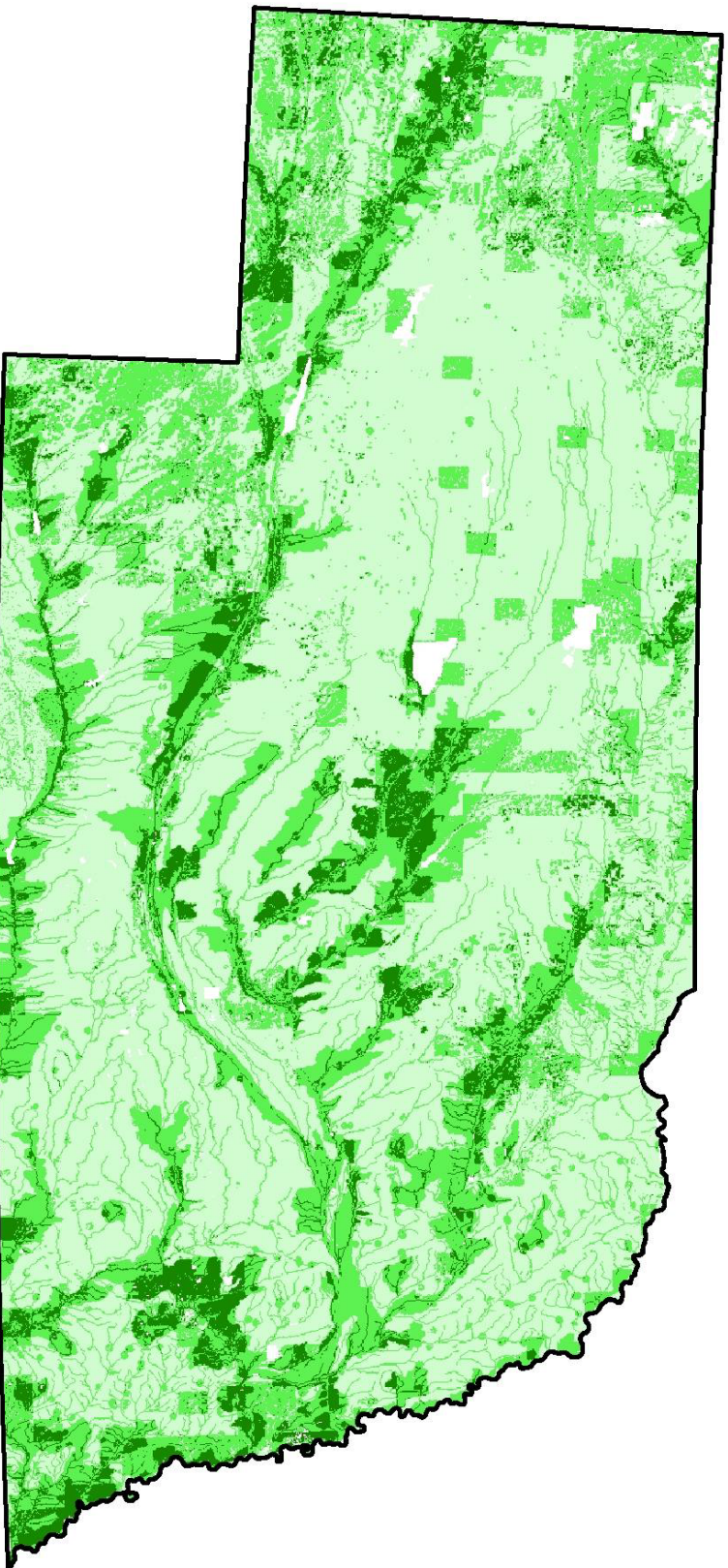


### Weighting Scheme by Layer:

- 21% - Private Forested Lands
- 18% - Riparian Areas
- 18% - Fire Risk
- 10% - Priority Watersheds
- 8% - Threatened and Endangered Species
- 7% - Public Water Supply
- 5% - Forest Pests
- 5% - Wetlands
- 4% - Change in Households
- 3% - Slope
- 1% - Agroforestry

# 2

## Potential for Forest Stewardship Program Benefits for Nebraska Agroforestry Based



Map Notes: CALMIT  
 Contact Information:  
 Date: August, 2008  
 Datalayer: Dennis Adams  
 final\_agro\_reclass Program Leader  
 File name: Map1\_Agro.mxd Nebraska Forest Service  
 Map by: Cullen Robbins (402)-472-5822  
 GIS/RS Specialist dadams2@unl.edu

**Stewardship Potential**

- Areas Without Stewardship Potential
- Low
- Medium
- High

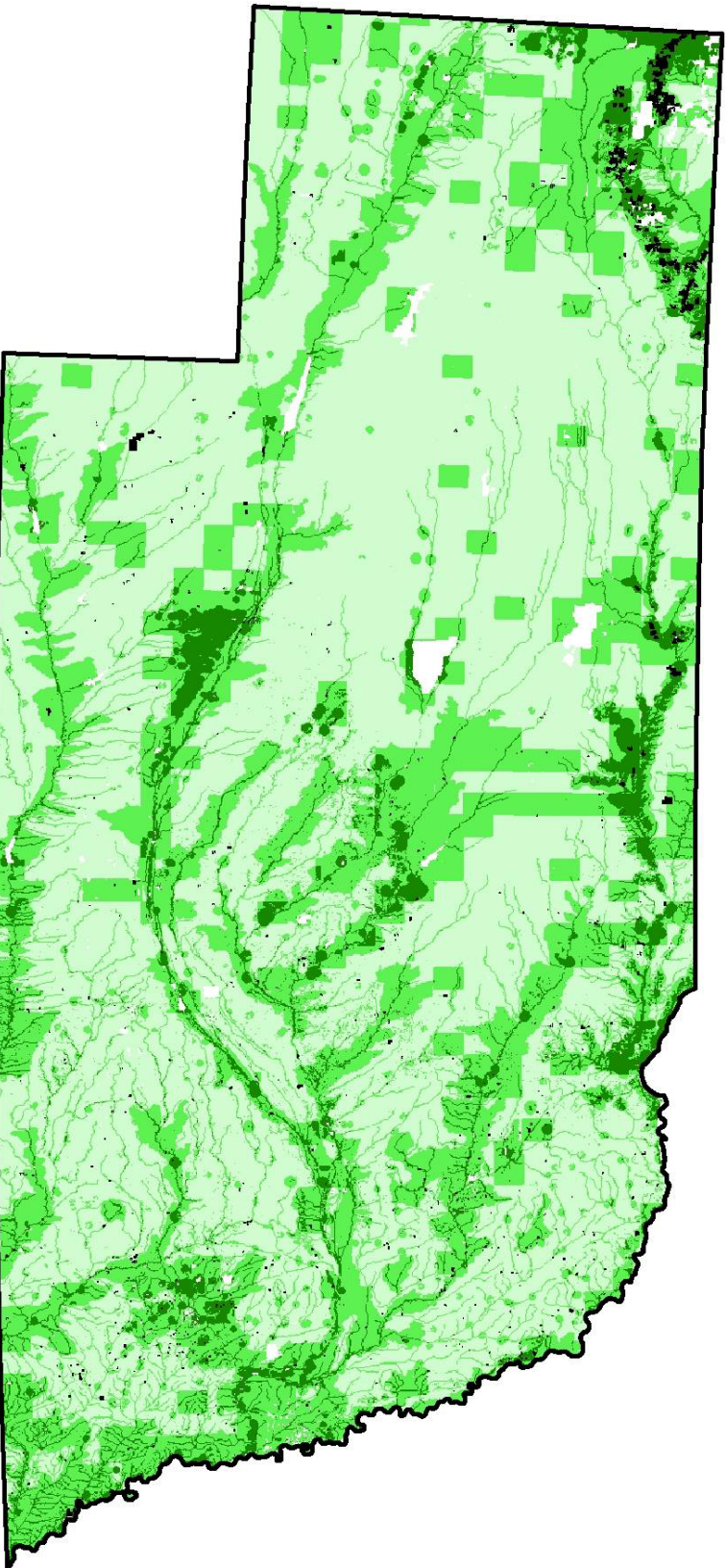
Stewardship Potential	Forest		Non-Forest		Total	
	Acres	% of Total For.	Acres	% of Total Non-For.	Acres	% of Total
High	197,986	17%	2,877,852	6%	3,075,837	7%
Medium	453,617	38%	11,010,723	24%	11,464,341	24%
Low	543,638	45%	31,851,030	70%	32,394,668	69%
<b>Total:</b>	<b>1,195,241</b>		<b>45,739,605</b>		<b>46,934,846</b>	



- Weighting Scheme by Layer:**
- 35% - Agroforestry
  - 20% - Riparian Areas
  - 10% - Priority Watersheds
  - 5% - Threatened and Endangered Species
  - 5% - Change in Households
  - 3% - Public Water Supply
  - 2% - Wetlands

# 3

## Potential for Forest Stewardship Program Benefits for Nebraska And Existing Stewardship Plans



Stewardship Potential	Forest			Non-Forest			Total	
	Acres	% of Total For.	Acres	% of Total Non-For.	Acres	% of Total	Acres	% of Total
High	941,949	79%	1,871,383	4%	2,813,332	6%	14,593,311	31%
Medium	253,291	21%	14,440,019	32%	29,428,203	63%	29,428,203	63%
Low	0	0%	29,428,203	64%	46,934,846	100%	46,934,846	100%
<b>Total:</b>	<b>1,195,241</b>		<b>45,739,605</b>		<b>46,934,846</b>		<b>46,934,846</b>	

Acres Capable of Stewardship	Stewardship Potential			Total
	Low	Medium	High	
Acres Capable of Stewardship	29,428,203	14,593,311	2,813,332	46,934,846
Stewardship Plan (acres)	19,789	43,800	64,715	128,304
Stew. Plan vs Acres Capable of Stewardship	0.1%	0.3%	2.3%	0.3%



**Map Notes:** Contact Information: Dennis Adams  
Program Leader  
Nebraska Forest Service  
final all\_reclass  
File name: Map2\_All.mxd (402)-472-5822  
Map by: Cullen Robbins dadams2@unl.edu  
GIS/RS Specialist  
CALMIT

Date: August, 2008

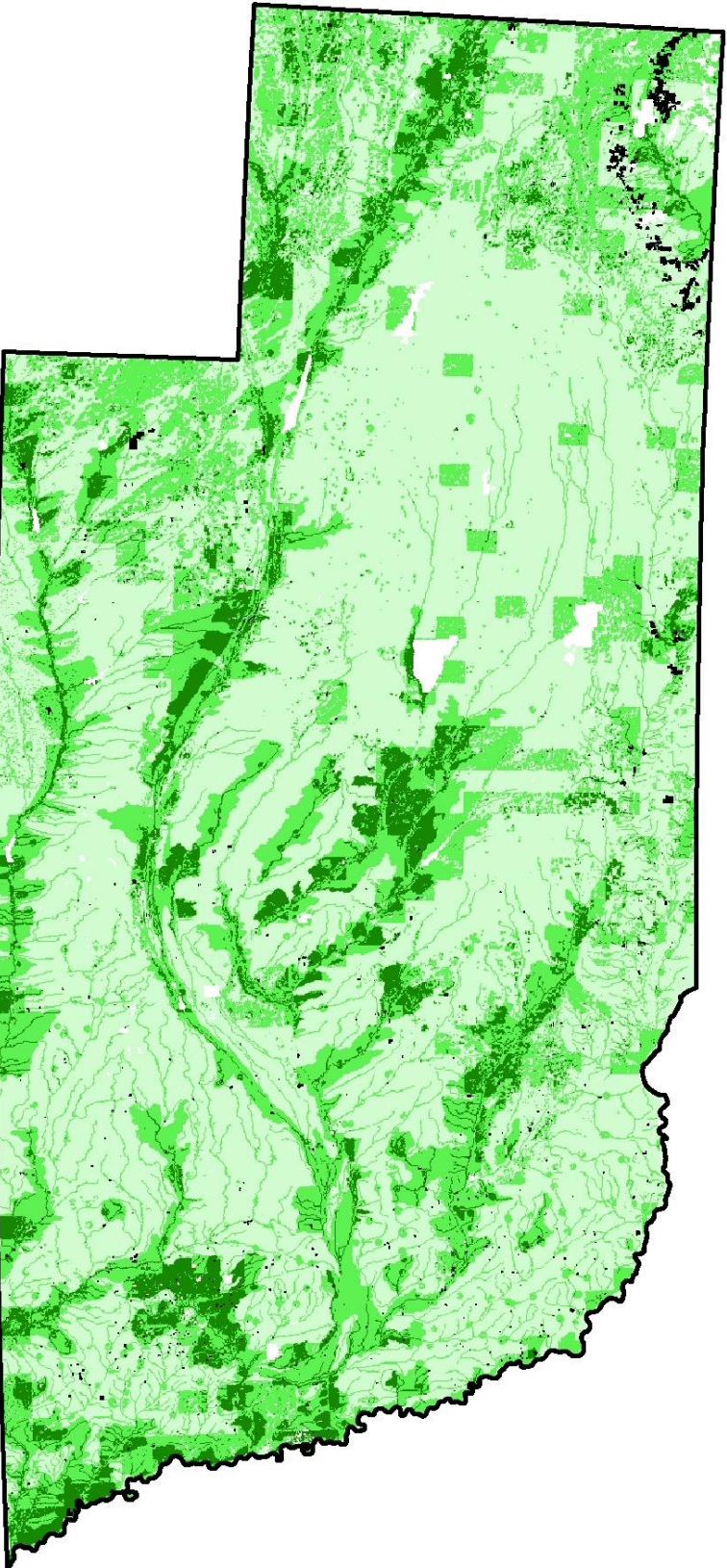
0 25 50 100 Miles

**Stewardship Potential**

- Areas Without Stewardship Potential
- Low
- Medium
- High
- Stewardship Plans

# 4

## Potential for Forest Stewardship Program Benefits for Nebraska And Existing Stewardship Plans Agroforestry Based



Stewardship Potential	Stewardship Capable Lands				Total	
	Forest	Non-Forest	Forest	Non-Forest	Acres	% of Total
High	197,986	2,877,892	6%	3,075,837	11,464,341	7%
Medium	453,617	11,010,723	38%	11,464,341	32,394,668	24%
Low	543,638	31,851,030	45%	32,394,668	46,934,846	69%
<b>Total:</b>	<b>1,195,241</b>	<b>45,739,605</b>		<b>46,934,846</b>		

Acres Capable of Stewardship Plan (acres)	Stewardship Potential			Total
	Low	Medium	High	
Stewardship Plan (acres)	32,394,668	11,464,341	3,075,837	46,934,846
Stew. Plan vs Acres Capable of Stewardship	78.314	40.365	9.624	128.304
	0.2%	0.4%	0.3%	0.3%



**Map Notes:**  
**CALMIT**  
 Contract Information:  
 Date: August, 2008  
 Data layer: final\_agro\_reclass  
 File name: map2\_Agro.mxd  
 Map by: Cullen Robbins  
 GIS/RS Specialist

**Dennis Adams**  
 Program Leader  
 Nebraska Forest Service  
 (402)-472-5822  
 dadams2@unl.edu

**Stewardship Potential**

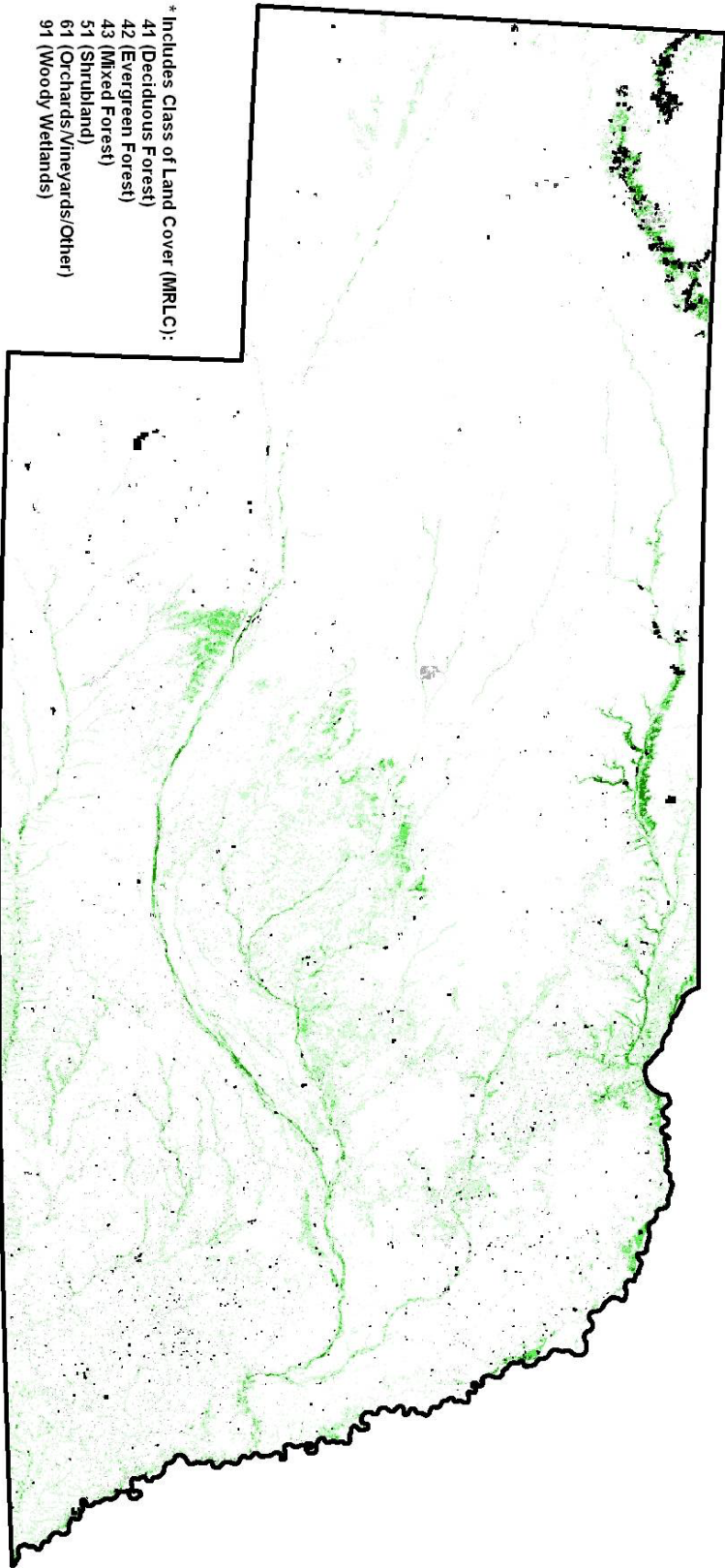
- Areas Without Stewardship Potential
- Low
- Medium
- High
- Stewardship Plans

0 25 50 100 Miles

W N  
E S

## Forest Stewardship Potential on Private Forest Lands

\*and Existing Stewardship Plans for Nebraska



- \*Includes Class of Land Cover (MRLC):
- 41 (Deciduous Forest)
  - 42 (Evergreen Forest)
  - 43 (Mixed Forest)
  - 51 (Shrubland)
  - 61 (Orchards/Vineyards/Other)
  - 91 (Woody Wetlands)



**Map Notes:**                      **Contact Information:**

Date: August, 2008                      Dennis Adams  
 Datalayer: priv\_for\_stew                      Program Leader  
 File name: Map3\_All.mxd                      Nebraska Forest Service  
 Map by: Cullen Robbins                      (402)-472-5822  
 GIS/RS Specialist                      dadams2@unl.edu  
 CALMIT

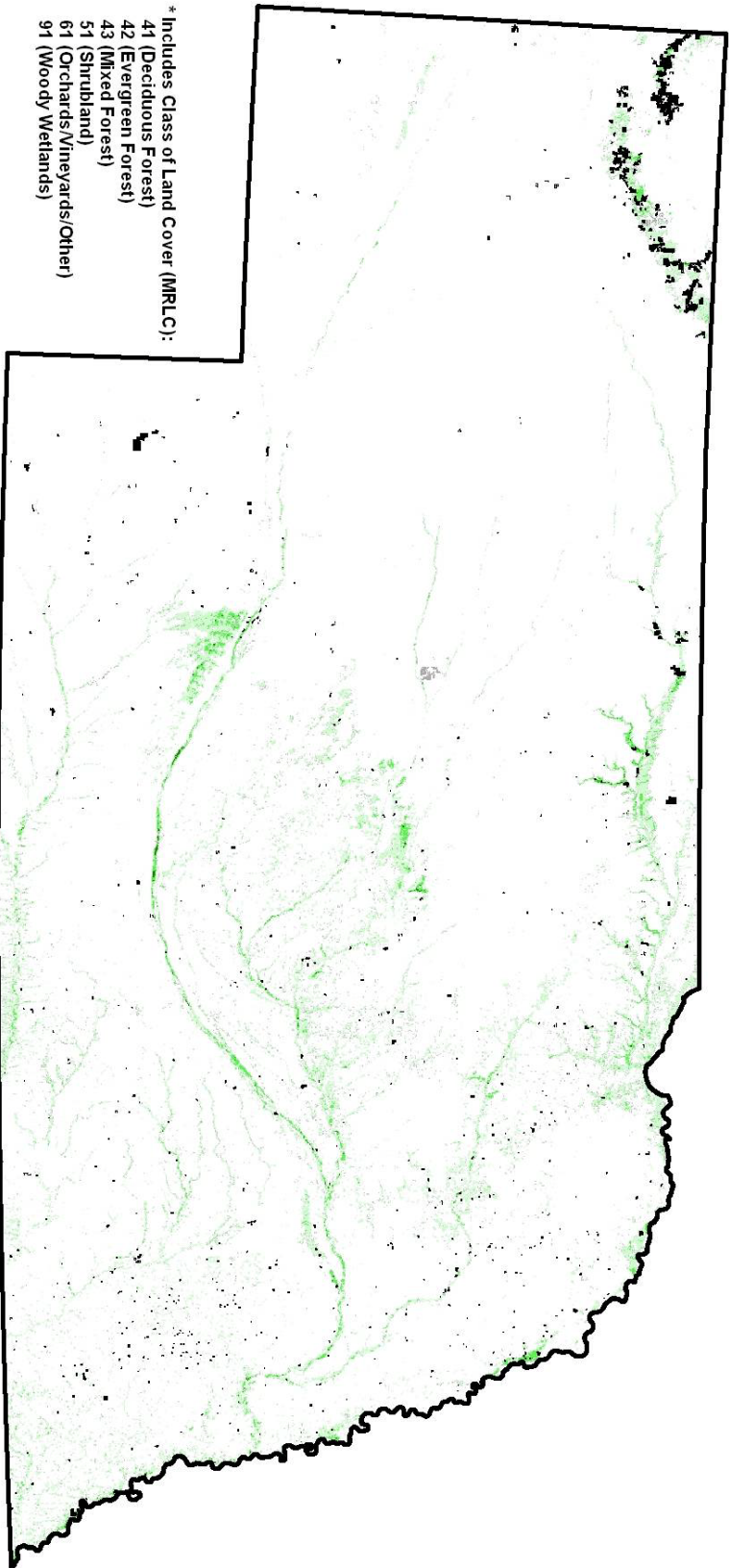
Acres Capable of Stewardship Plan (acres)	Private Forest Lands Stewardship Potential			Total:
	Low	Medium	High	
0	293,291	941,949	1,195,241	36,424
0	1,324	35,100	36,424	
Stew. Plan Acres as a % of Private Forests	N/A	0.5%	3.7%	3.0%

**Stewardship Potential**

	Low		Stewardship Plans
	Medium		Non-Forest
	High		All Forests

# 6

## Forest Stewardship Potential on Forested Lands \*and Existing Stewardship Plans for Nebraska - Agroforestry Based



\*Includes Class of Land Cover (MRLC):  
 41 (Deciduous Forest)  
 42 (Evergreen Forest)  
 43 (Mixed Forest)  
 51 (Shrubland)  
 61 (Orchards/Vineyards/Other)  
 91 (Woody Wetlands)



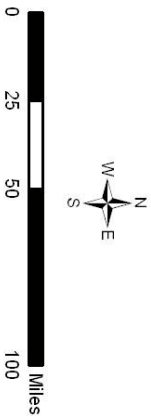
Map Notes:  
 Date: August, 2008  
 Datalayer: priv\_for\_agro\_stew2  
 File name: Map3\_Agro.mxd  
 Map by: Cullen Robins  
 GIS/RS Specialist

CALMIT  
 Contract Information:  
 Dennis Adams  
 Program Leader  
 Nebraska Forest Service  
 (402)-472-5822  
 dadams2@unl.edu

Acres Capable of Stewardship Plan (acres)	Forested Lands Stewardship Potential			Total:
	Low	Medium	High	
Stewardship Plan (acres)	31,851,030	11,010,723	2,877,852	45,739,605
Stew. Plan Acres as a % of Non-for-non-Developed	55.764	28.549	5.706	90.019
	0.2%	0.3%	0.2%	0.2%

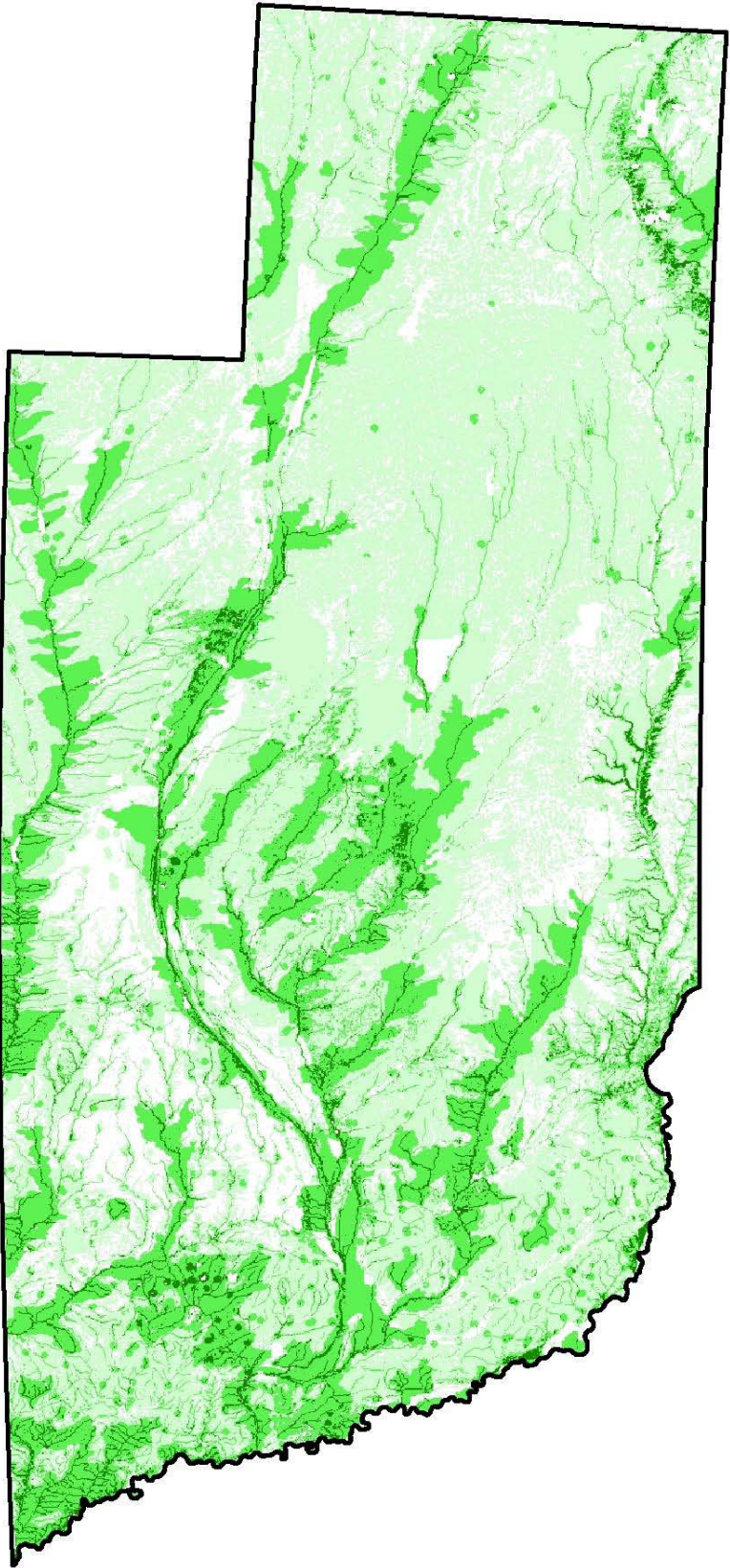
**Stewardship Potential**

	Low		Non-Forest
	Medium		All Forests
	High		Stewardship Plans





## Resource Richness - Nebraska



**Map Notes:**

**Date:** August, 2008

**Datayer:** map4\_resource\_reclass

**File name:** Map4\_All.mxd

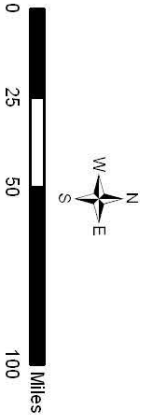
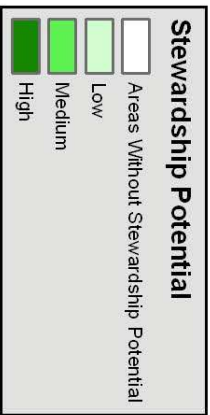
**Map by:** Cullen Robbins  
GIS/RS Specialist  
CALMIT

**Contact Information:**

**Dennis Adams**  
Program Leader  
Nebraska Forest Service  
(402)-472-5822  
dadams2@unl.edu

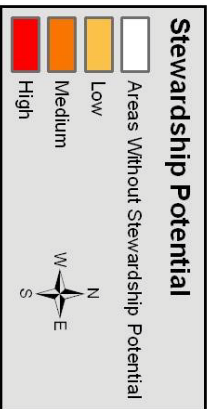
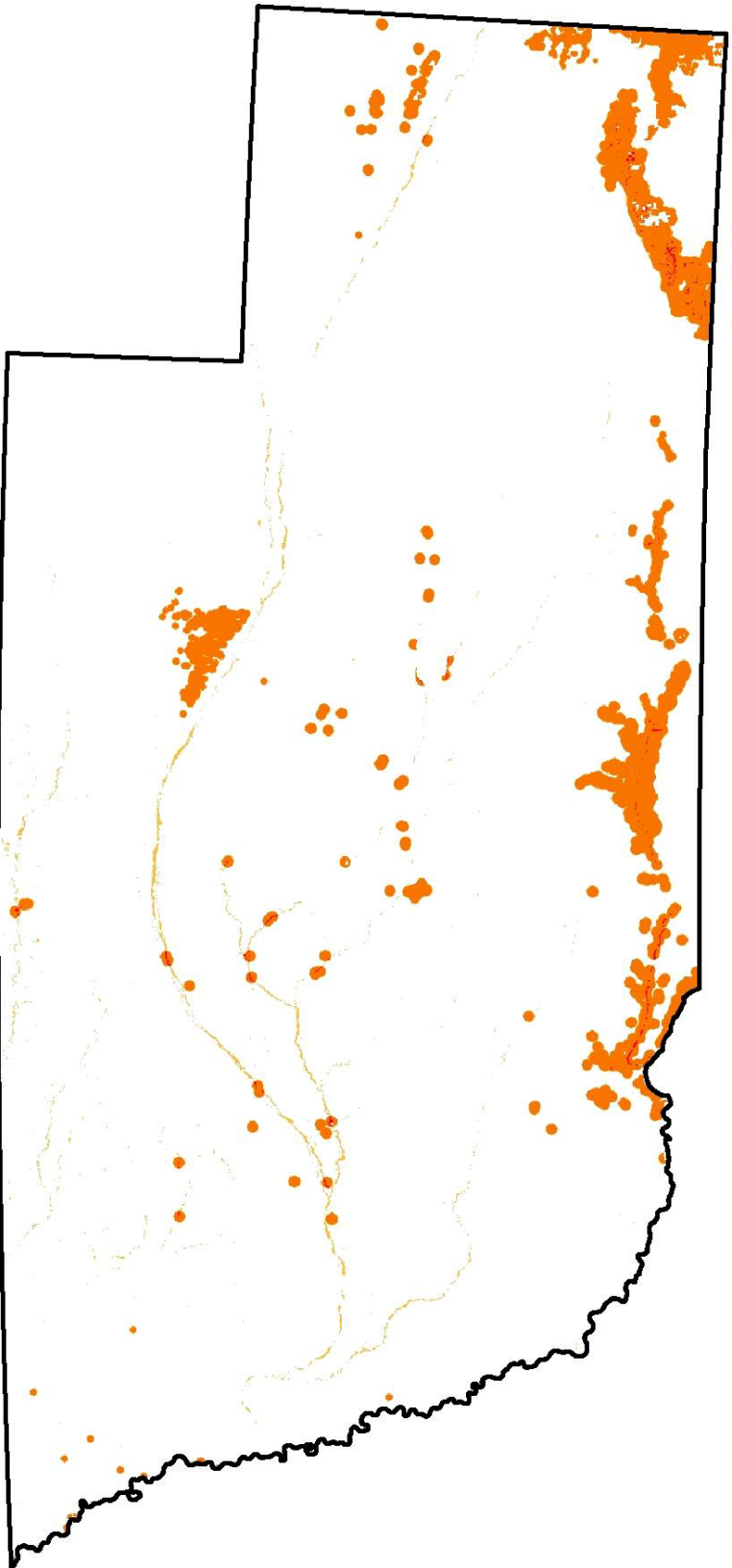
**Includes Data Themes:**

- Private Forest Lands
- Riparian Areas
- Priority Watersheds
- Slope
- Public Water Supply
- Wetlands
- Agroforestry
- Change in Households



# 8

## Resource Threats - Nebraska



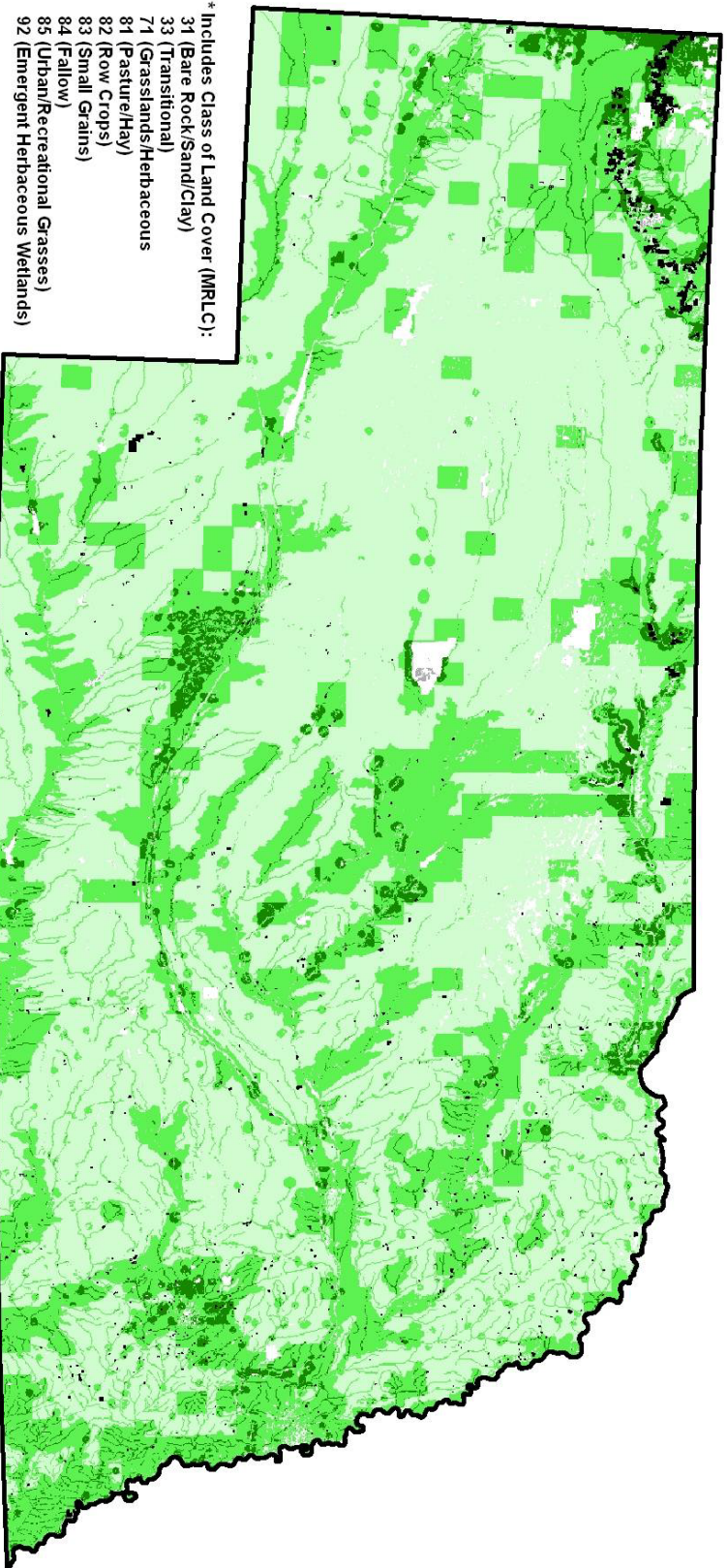
**Map Notes:**  
Date: August, 2008  
Data layer: map5\_threat\_reclass  
File name: Map5\_All.mxd  
Map by: Cullen Robins  
GIS/RS Specialist

**CALMIT**  
Contact Information:  
Dennis Adams  
Program Leader  
Nebraska Forest Service  
(402)-472-5822  
dadams2@unl.edu

Includes Data Themes:  
Wildland Fire Assessment (Fire Risk)  
Change in Households  
Forest Pests and Disease

# 9

## Forest Stewardship Potential on Non-Forested, Non-Developed Lands and Existing Stewardship Plans for Nebraska



**Map Notes:**  
**CALMIT**  
 Contact Information:  
 Dennis Adams  
 Program Leader  
 Nebraska Forest Service  
 (402)-472-5822  
 dadams2@unl.edu

Date: August, 2008  
 Datalayer:  
 map6\_all\_nofor\_stew  
 File name: Map6\_All.mxd  
 Map by: Cullen Robbins  
 GIS/RS Specialist

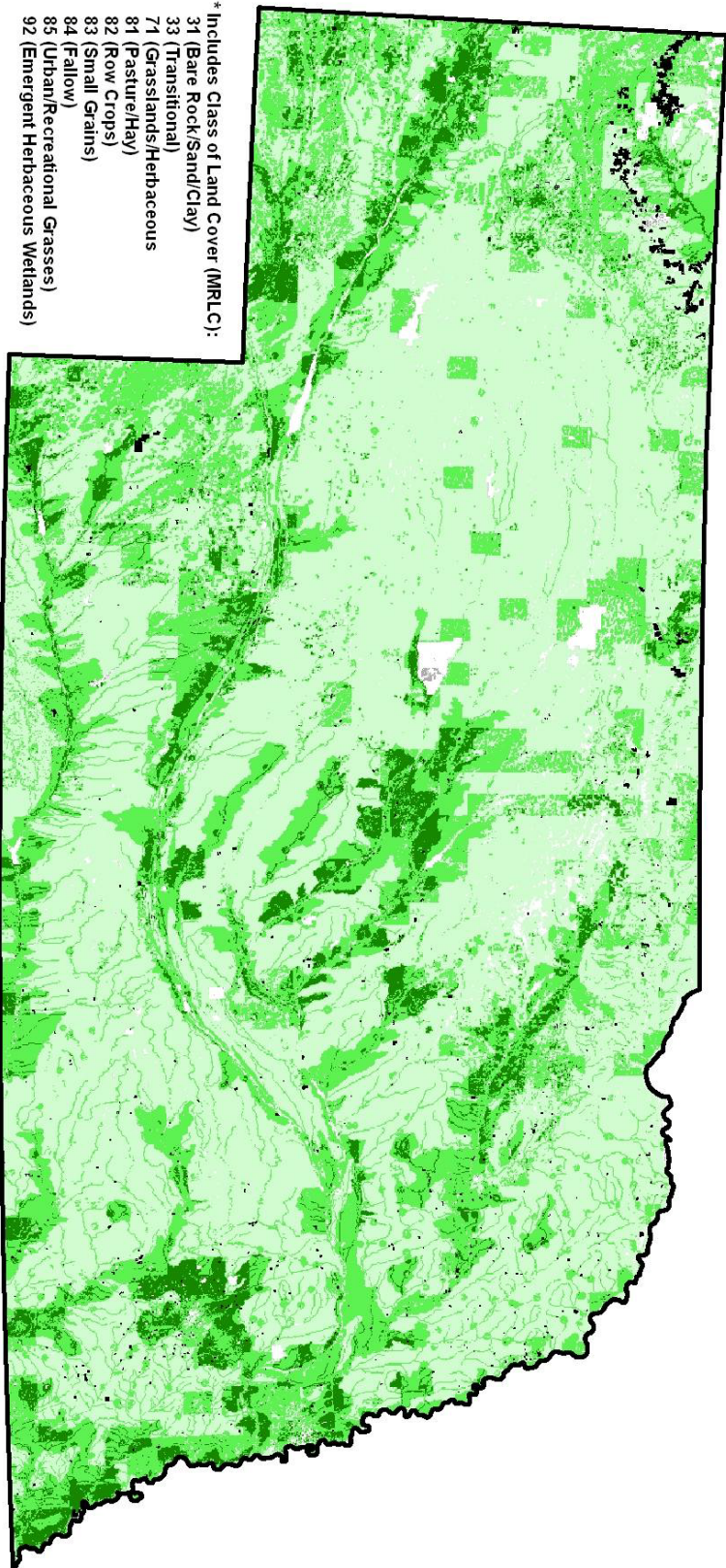
Acres Capable of Stewardship (acres)	Non-Forest Non-Developed Lands Stewardship Potential			Total:
	Low	Medium	High	
29,428,203	14,440,019	1,871,383	45,739,605	
19,341	41,373	29,305	90,019	
as a % of Non-forest-Developed	0.1%	0.3%	1.6%	0.2%

**Stewardship Potential**

- Areas Without Stewardship Potential
- Low
- Medium
- High
- Non-Forest
- All Forests
- Stewardship Plans

# 10 Forest Stewardship Potential on Non-Forested, Non-Developed Lands

\*and Existing Stewardship Plans for Nebraska  
Agroforestry Based



- \* Includes Class of Land Cover (NRLC):
- 31 (Bare Rock/Sand/Clay)
  - 33 (Transitional)
  - 71 (Grasslands/Herbaceous)
  - 81 (Pasture/Hay)
  - 82 (Row Crops)
  - 83 (Small Grains)
  - 84 (Fallow)
  - 85 (Urban/Recreational Grasses)
  - 92 (Emergent Herbaceous Wetlands)



**Map Notes:**

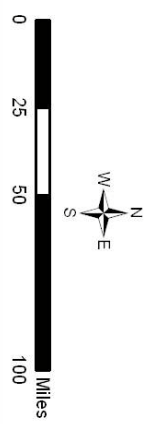
**CALMIT**  
Contact Information:  
Dennis Adams  
Program Leader  
Nebraska Forest Service  
(402)-472-5822  
dadams2@unl.edu

Date: August, 2008  
Data layer:  
map6\_agro\_nofor\_stew  
File name: Map6\_Agro.mxd  
Map by: Cullen Robbins  
GIS/RS Specialist

Acres Capable of Stewardship Plan (acres)	Non-Forest Non-Developed Lands Stewardship Potential			Total:
	Low	Medium	High	
31,851,030	11,010,723	2,877,852	45,739,605	
55,764	26,549	5,706	90,019	
Non-for-non-Developed	0.2%	0.3%	0.2%	0.2%

**Stewardship Potential**

- Areas Without Stewardship Potential
- Low
- Medium
- High
- Non-Forest
- All Forests
- Stewardship Plans



# 11

## Forest Stewardship Potential on Private Forested Lands And Existing Stewardship Plans on the Pine Ridge, Nebraska

