

CHAPTER 4

LAND STEWARDSHIP

Introduction

To fulfill the analytical mission of GAP, it is necessary to compare the mapped distribution of elements of biodiversity with their representation in different categories of land ownership and management. As will be explained in the next chapter, these comparisons do not measure viability, but are a start to assessing the likelihood of future threat to a biotic element through habitat conversion--the primary cause of biodiversity decline. We use the term "stewardship" in place of "ownership" in recognition that legal ownership does not necessarily equate to the entity charged with management of the resource, and that the mix of ownership and managing entities is a complex and rapidly changing condition not suitably mapped by GAP. At the same time, it is necessary to distinguish between stewardship and management status in that a single category of land stewardship such as a national forest may contain several degrees of management for biodiversity.

The purpose of comparing biotic distribution with stewardship is to provide a method by which land stewards can assess their relative amount of responsibility for the management of a species or plant community and identify other stewards sharing that responsibility. This information can reveal opportunities for cooperative management of that resource, which directly supports the primary mission of GAP to provide objective, scientific information to decision makers and managers to make informed decisions regarding biodiversity. It also is not unlikely that a steward that has previously borne the major responsibility for managing a species may, through such analyses, identify a more equitable distribution of that responsibility. We emphasize, however, that GAP only identifies private land as a homogeneous category and does not differentiate individual tracts or owners, unless the information was provided voluntarily to recognize a long-term commitment to biodiversity maintenance.

After comparison to stewardship, it is also necessary to compare biotic occurrence to categories of management status. The purpose of this comparison is to identify the need for change in management status for the distribution of individual elements or areas containing high degrees of diversity. Such changes can be accomplished in many ways that do not affect the stewardship status. While it will eventually be desirable to identify specific management practices for each tract, and whether they are beneficial or harmful to each element, GAP currently uses a scale of 1 to 4 to denote relative degree of maintenance of biodiversity for each tract. A status of "1" denotes the highest, most permanent level of maintenance, and "4" represents the lowest level of biodiversity management, or unknown status. This is a highly subjective area, and we recognize a variety of limitations in our approach, although we maintain certain principles in assigning the status level. Our first principle is that land ownership is not the primary determinant in assigning status. The second principle is that while data are imperfect, and all land is subject to changes in ownership and management, we can use the intent of a land steward as evidenced by legal and institutional factors to assign status. In other words, if a land steward institutes a program backed by legal and institutional arrangements that are intended for permanent biodiversity maintenance, we use that as the guide for assigning status.

The characteristics used to determine status are as follows:

- Permanence of protection from conversion of natural land cover to unnatural (human-induced barren, exotic-dominated, arrested succession).
- Relative amount of the tract managed for natural cover.
- Inclusiveness of the management, i.e., single feature or species versus all biota.
- Type of management and degree that it is mandated through legal and institutional arrangements.

The four status categories can generally be defined as follows (after Scott et al. 1993, Edwards et al. 1995, Crist et al. 1995):

Status 1: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, and intensity) are allowed to proceed without interference or are mimicked through management.

Status 2: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive use or management practices that degrade the quality of existing natural communities.

Status 3: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area.

Status 4: Lack of irrevocable easement or mandate to prevent conversion of natural habitat types to anthropogenic habitat types. Allows for intensive use throughout the tract. Also includes those tracts for which the existence of such restrictions or sufficient information to establish a higher status is unknown.

Mapping Standards and Methods

National GAP standards have been set at a minimum mapping unit (MMU) of 40 acres/16 ha (quarter-quarter Township section) or smaller. Digital spatial data for NE-GAP meet these standards and USGS accuracy standards for 1:100,000 scale products, although some of the data for the stewardship layer was provided at a 1:24,000 scale.

Land Stewardship Mapping:

In Nebraska there is no single entity that is responsible for maintaining a comprehensive inventory of all public lands. This NE-GAP land stewardship map represents the first effort to accurately map all the public lands and private conservation lands. Federal and state agencies controlling land in the state were contacted, as well as private non-governmental conservation organizations such as The Nature Conservancy, the Audubon Society and the Platte River Whooping Crane Maintenance trust.

Stewardship data were received in many forms and of varying quality (Table 4.1). Boundaries for stewardship units were compiled from a variety of sources at different map scales, projections, and qualities of base materials. Some unit boundaries were available as existing GIS layers digitized by their administrative agency, while other units required digitizing by NE-GAP from the source maps provided by the agencies. In a number of cases, the source maps could not be directly digitized because they either did not contain registration points or their boundaries had to be interpreted from legal descriptions. In these cases, the boundaries were manually transcribed onto DLGs and digitized. Metadata for the source maps were frequently unavailable.

The Nebraska Game and Parks Commission provided maps for their properties and properties of several other agencies at a scale of 1:24,000. Bureau of Land Management properties were identified using 1:100,000-section maps and splitting sections based upon legal descriptions they provided. Army Corps of Engineers (ACOE) property ownership maps at various scales with legal descriptions (Township, Range, Section) were provided by ACOE-Omaha District in 1998; current personnel, however, would not verify that data. The United States Forest Service provided updated coverages, while the U.S. Fish and

Wildlife Service was in the process of reviewing their property boundaries in Nebraska and could not verify boundaries.

Digitizing was completed in 1999 and the current stewardship map is shown in Figure 4.1. Disclaimers are provided throughout to indicate data sources that could not be verified from 1998 to 2001 or where source data is subject to question.

Table 4.1. Sources for data used to create the NE-GAP Stewardship Layer

Land Steward	Agency	Source of Data
Federal	Army Corps of Engineers (ACOE)	Digitized by NE-GAP using maps provided by Omaha District ACOE
	Bureau of Land Management	Digitized by NE-GAP using maps provided by regional BLM office
	Department of Defense	Digitized by NE-GAP using maps provided by the Department of Defense.
	National Park Service	Digitized by NE-GAP from maps provided by NGPC
	U.S. Fish & Wildlife Service	Digitized by NE-GAP from maps provided by NGPC
Native	U.S. Forest Service	Digital products provided by U.S. Forest Service, Nebraska NF
	Bureau of Indian Affairs	Digitized by NE-GAP using maps provided by Bureau of Indian Affairs.
State	Nebraska Game & Parks Commission (NGPC)	Digitized by NE-GAP from maps provided by NGPC, some digital products provided by NGPC
	University of Nebraska	Digital products provided by Institute of Agriculture and Natural Resources, University of Nebraska and digitized by NE-GAP from maps provided by NGPC
Private	Nebraska Natural Resource Districts (NRDs)	Digitized by NE-GAP from maps provided by NGPC and individual NRDs, some digital products provided by NRDs.
	Audubon	Digital products provided by Audubon state office and digitized by NE-GAP
	Fontenelle Forest Association	Digitized by NE-GAP from maps provided by NGPC
	Platte River Whooping Crane Maintenance Trust, Inc.	Digital products provided by Platte River Whooping Crane Maintenance Trust, Inc.
	Prairie Plains Resource Institute	Digital products provided by Prairie Plains Resource Institute
	The Nature Conservancy (TNC)	Digital products provided by TNC state and regional offices
	City of Lincoln	Digital products provided by Lincoln-Lancaster Co. Planning Dept.
	City of Omaha	Digital products provided by Omaha Parks & Rec Dept.
Other Cities/Counties	Digitized by NE-GAP from maps provided by NGPC	

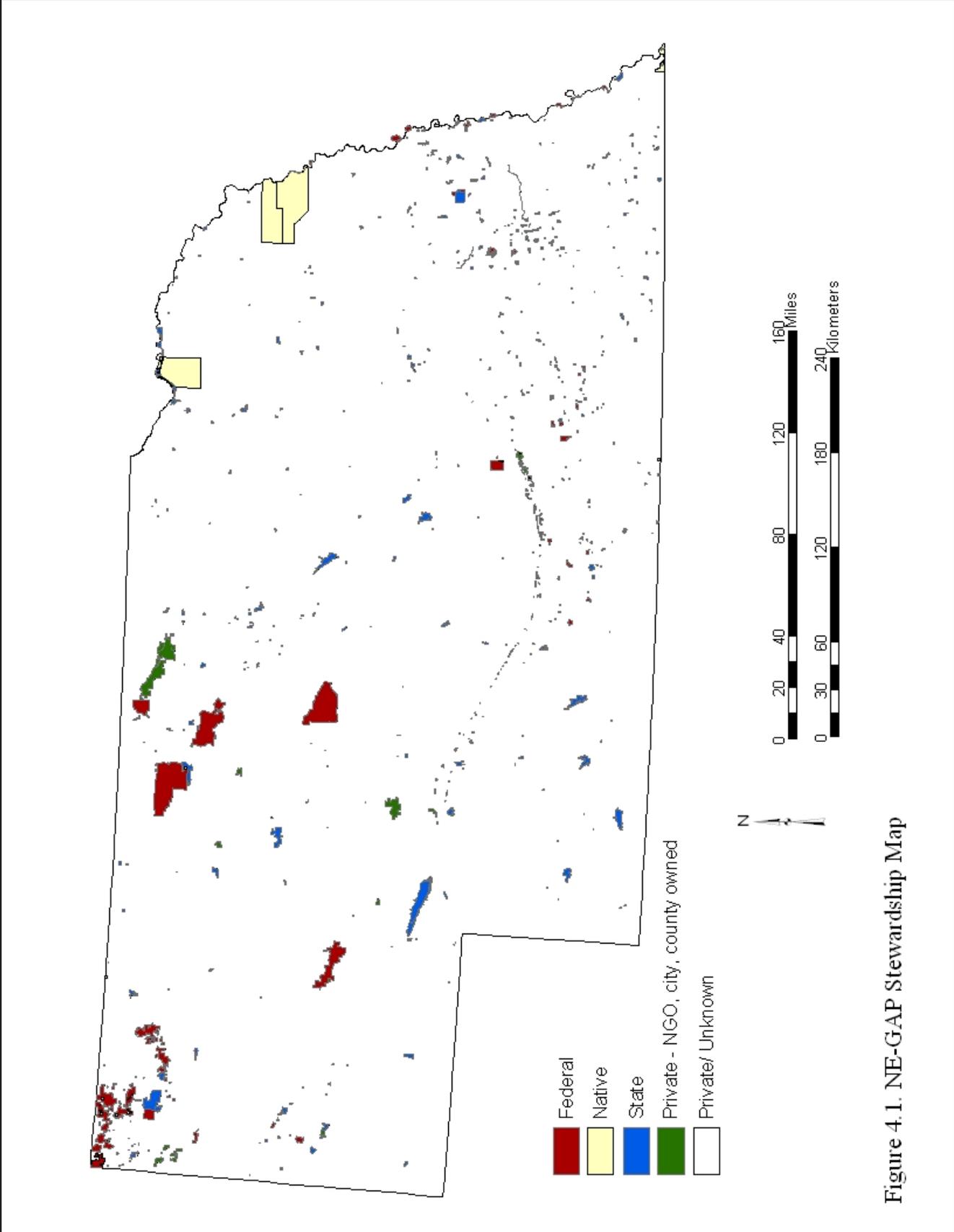


Figure 4.1. NE-GAP Stewardship Map

Overlaps in ownership boundaries could be ascribed to informal agreements between various agencies or to errors in maps provided by the agencies. It was not within the scope of NE-GAP to resolve these conflicts and dual ownership has been noted where these overlaps occur.

Management Status Categorization:

Using the definitions and dichotomous key provided in the GAP Handbook, status designations were assigned to each land unit (Figure 4.2). When possible, land managers were consulted to review the status designations and efforts were made to obtain land management plans for status 1 and status 2 lands (Appendix X). When status was in question due to an overlap of ownership boundaries of varying status, status was conservatively assigned as the higher of the two. In assigning management status to water features, the same management status of the surrounding land was assigned to the water. In the case where earlier data could not be verified (as with the ACOE), status designations of “4” were assigned.

Results

The following tables present summary statistics of stewardship and management categories in the state. Table 4.2 gives an overview of the management status categories and the primary land stewards within those categories in Nebraska. Most federal land management agencies (ACOE, DOD, BLM, BIA, NPS, USFWS, USFS) administer properties in the state, as do a number of national and state non-profit organizations, such as The Nature Conservancy, National Audubon Society, Platte River Whooping Crane Maintenance Trust, and Prairie Plains Resource Institute. State agencies, such as the Nebraska Game and Parks Commission and a network of Natural Resource Districts, are also responsible for the management of a variety of properties.

The proportional makeup of management status and corresponding land stewards are shown in Table 4.3. Privately owned lands comprise the majority of Nebraska’s land area, (approximately 97.4%) and >98% of land in Nebraska can be classified as belonging to land management Status class 4. Status 4 is characterized by the lack of irrevocable easements or mandates to prevent conversion of natural habitat types to anthropogenic habitat types. Only 0.61% of Nebraska’s land area can be designated as Status 1 or Status 2 lands, those having permanent protection from conversion of natural cover and a mandated management plan. The largest property-owners of these lands are The Nature Conservancy, which manages a number of preserves, and the U.S. Fish and Wildlife Service, which manages three National Wildlife Refuges in the state. Status 3 lands, those having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses, comprise 1.25% of the land area of Nebraska. Primary stewards of these lands include the U.S. Fish and Wildlife Service, which manages numerous waterfowl production areas and the Nebraska Game and Parks Commission, which manages state parks and other recreational areas.

Limitations and Discussion

The land stewardship map (Figure 4.1) is a compilation of ownership maps provided by a variety of sources that are individually responsible for their accuracy. It was created solely for the purpose of conducting the analyses described in this report and is not suitable for locating boundaries on the ground or determining precise area measurements of individual tracts.

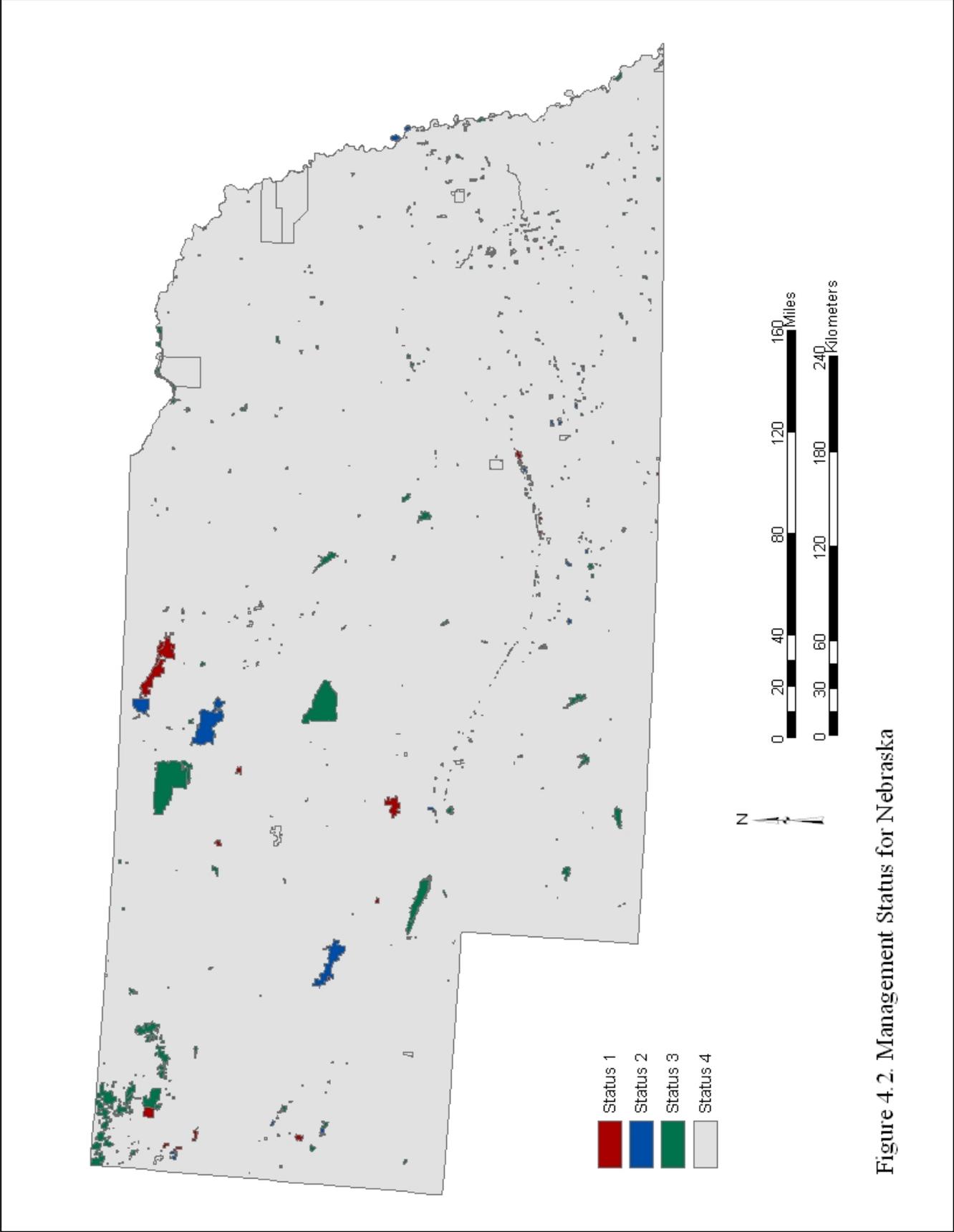


Figure 4.2. Management Status for Nebraska

Table 4.2. Management status assigned to land stewardship categories in Nebraska.

Status 1	Status 2	Status 3	Status 4
National Audubon Society –preserves	NE Natural Resources Districts – Wildlife Management areas, conservation easements	NE Natural Resources Districts – dam projects, wildlife management areas, recreational areas	U.S. Army Corps of Engineers lands / Department of Defense lands
National Park Service – National Monuments Platte River Whooping Crane Maintenance Trust – preserves	The Nature Conservancy – working ranches U.S. Fish and Wildlife Service – Waterfowl production areas, National Wildlife Refuges	National Park Service – National Historic Site City /County Parks	Bureau of Indian Affairs – native lands Bureau of Land Management lands
Prairie Plains Institute – preserves The Nature Conservancy – preserves and easements	University of Nebraska – prairie preserves	Private parks Nebraska Game and Parks Commission – Wildlife Management Areas, State Recreation Areas, State Parks, State Historic Parks, Fish Hatcheries	City/County parks Platte River Whooping Crane Maintenance Trust – working farm
U.S. Forest Service – wilderness area		U.S. Forest Service – National grasslands, national forests	Prairie Plains Institute – working ranch
NE Natural Resources Districts – preserves and easements		University of Nebraska– research areas, biological station, state forests NE State Historical Society – historic sites	University of Nebraska – agricultural research sites Unknown/Private Lands

Changes in NE-GAP personnel, as well as turnover of agency and organization personnel during the course of this project resulted in difficulties verifying information and obtaining accurate metadata. As a consequence, these results should be treated as only preliminary. Follow-up to this initial effort should include better communication and establishment of collaborative mapping efforts with major federal, state and non-profit landowners in the state. An attempt also needs to be made to reconcile occurrences of overlapping ownership boundaries.

The assignment of management status can also be refined. Status classification is currently based upon a ‘generalization’ for an entire unit. In a number of instances, management plans indicated that a large area is managed as smaller units of potentially varying status. Since these smaller units were either not shown on the maps provided or delineated within the digital data, they could not be classified individually by NE-GAP.

These data represent a snapshot in time. To accurately reflect land stewardship and management in Nebraska, an ongoing effort of periodic revision will be required. The National Park Service is currently working on defining boundaries and writing a management plan for the Niobrara Scenic River. Additional area could range from 22,586 acres to 24,329 acres, depending on which alternative is selected. Land could be designated as status 2 or 3, depending on use, and will be outlined in the new management plan. This information will need to be added to next revision of this document.

Table 4.3. Area (ha) and percent (%) of Nebraska's total land area by management status and land stewardship categories

Land Stewardship Category	Area (ha)		Status 1		Status 2		Status 3		Status 4	
	ha	%	ha	%	ha	%	ha	%	ha	%
Army Corps of Engineers/DOD	15,030	6.5	0.0	0.0	0.0	0.0	0.0	0.0	15,060	6.5
Bureau of Land Management	1,980	0.9	0.0	0.0	0.0	0.0	0.0	0.0	1,980	0.9
National Park Service	2,660	1.2	2,620	1.1	0.0	0.0	40	0.0	0.0	0.0
U.S. Fish & Wildlife Service	69,160	30.0	0.0	0.0	69,160	30.0	0.0	0.0	0.0	0.0
U.S. Forest Service	141,820	61.5	3,910	1.7	0.0	0.0	137,910	59.8	0.0	0.0
Total Federal Lands	230,650	100.0	6,530	2.8	69,160	30.0	137,950	59.8	17,040	7.4
Total Native Lands	159,110	100.0	0.0	0.0	0.0	0.0	0.0	0.0	159,110	100.0
NE State Historical Society	80	0.1	0.0	0.0	0.0	0.0	80	0.1	0.0	0.0
Nebraska Game & Parks Commission	105,840	85.2	0.0	0.0	0.0	0.0	105,840	85.2	0.0	0.0
Natural Resource Districts	3,800	3.1	150	0.1	90	0.1	2,880	2.3	690	0.6
University of Nebraska	14,560	11.7	0.0	0.0	200	0.2	520	0.4	13,840	11.1
Total State Lands	124,280	100.0	150	0.1	290	0.2	109,320	88.0	14,530	11.7
Total City/County Park Land	3,560	100.0	0.0	0.0	0.0	0.0	700	19.7	2,860	80.3
Audubon	780	0.0	780	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fontenelle Forest Association	580	0.0	0.0	0.0	0.0	0.0	580	0.0	0.0	0.0
Platte River Whooping Crane Maintenance Trust	4,640	0.0	1,940	0.0	1,030	0.0	1,550	0.0	120	0.0
Prairie Plains Institute	1,710	0.0	120	0.0	0.0	0.0	0.0	0.0	1,590	0.0
The Nature Conservancy	42,510	0.2	39,510	0.2	3,000	0.0	0.0	0.0	0.0	0.0
Other Private Lands	19,466,310	99.7	0.0	0.0	0.0	0.0	0.0	0.0	19,466,120	99.7
Total Private Lands	19,516,520	100.0	42,350	0.2	4,030	0.0	2,800	0.0	19,467,710	99.8
Nebraska Totals	20,034,120	100.0	49,030	0.2	73,480	0.4	250,770	1.3	19,661,250	98.1