4.3 MA 3 – Bullock Ranch Management Area

Summary of Use and Management

The Bullock Ranch opening is one of several large openings within the eastern Upper Peninsula (EUP) that are managed for a suite of open-land species including sharp-tailed grouse, merlin and upland sandpiper. Vegetative management in the Bullock Ranch management area (MA) (Figure 4.3.1) will emphasize maintaining the large opening complex; producing sustainable yields of various timber products; protecting unique areas and threatened, endangered and special concern species; and providing for forest-based recreational uses. Timber management objectives include improving the age-class balance of jack pine and red pine. Wildlife habitat management objectives include enhancing the large opening complexes, and hunting and other wildlife related recreation opportunities. Management activities may be constrained by poor access throughout much of the area. Expected issues in this 10-year planning period include the introduction and spread of spotted knapweed and other invasive plants and the difficulty in regenerating natural red pine ridges within the marshes.

Introduction

The Bullock Ranch management area is located in the eastern Upper Peninsula in Schoolcraft County, along the “Seney Stretch” of M-28. The area is bounded by the Seney National Wildlife Refuge on the south, the Driggs River on the west and the Fox River on the east. The town of Seney is in the southeast part of the management area. There are 29,710 acres of state-owned land. The primary attribute for this management area is the large Bullock Ranch open land complex. Additional attributes which are important in identifying this management area include:

- The majority of the management area falls within the Luce Subsection 8.2 of the eastern Upper Peninsula ecoregion (Albert, 1995).
- The dominant landform consists of ancient lake plain, with wet organic soils.
- Current forest communities are dominated by jack pine, red pine and open land.
- Special features include: cold water stream special conservation areas, a natural river high conservation value area and an ecological reference area.
- Recreational facilities include hiking trails, snowmobile trails and campgrounds.

This is a highly altered landscape. Historically, marshes, peatlands and low productivity swamps were the predominant vegetation on the very poorly drained topography. Much of this area was drained by ditching during the early 1900’s in a failed effort to convert the area to farmland. The altered hydrology resulted in organic soils that are hydrophobic or unable to hold water, which makes prescribed burning difficult to control.

The state land in this management area is concentrated with a few private parcels. The Bullock Ranch management area is within the Shingleton Forest Management Unit. The predominant cover types, acreages and projected harvest acres in the management area are shown in Table 4.3.1.

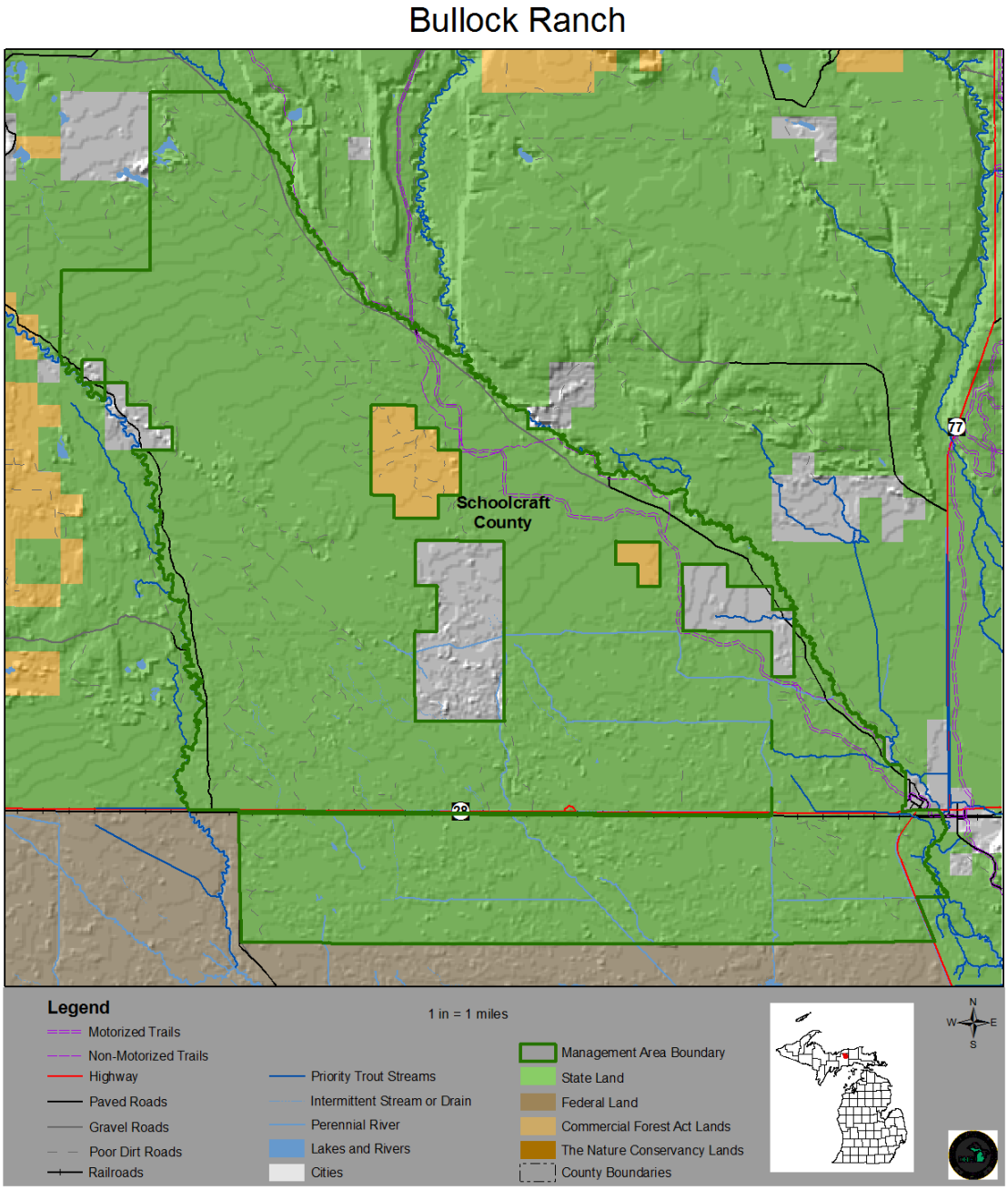

Figure 4.3.1. Location of the Bullock Ranch management area (dark green boundary) in relation to surrounding state forest lands and private ownerships.

Table 4.3.1. Current cover types, acreages, projected harvest acres and projected ten-year cover type acreage for the Bullock Ranch management area, eastern Upper Peninsula ecoregion (2012 Department of Natural Resources inventory data).

Cover Type	Cover %	Current Acreage	Hard Factor Limited Acres	Manageable Acres	10 Year Projected Harvest (Acres)		Projected Acreage in 10 Years	Desired Future Harvest (Acres)	
					Final Harvest	Partial Harvest		Final Harvest	Partial Harvest
Lowland Open/Semi-Open Lands	31%	9,320	0	9,320	0	0	9,320	0	0
Jack Pine	27%	8,071	162	7,909	177	0	8,071	1,130	0
Red Pine	18%	5,206	474	4,732	442	1,101	5,206	526	1,871
Upland Open/Semi-Open Lands	7%	2,211	0	2,211	0	0	2,211	0	0
Lowland Spruce/Fir	4%	1,185	112	1,073	0	0	1,185	119	0
Aspen	3%	999	0	999	104	0	999	167	0
White Pine	2%	509	130	379	102	40	509	34	111
Natural Mixed Pines	2%	461	7	454	0	25	461	41	52
Misc Other (Water, Local, Urban)	1%	190	0	190	0	0	190	0	0
Others	5%	1,558	166	1,392	210	39	1,558	170	89
Total	100%	29,710	1,050	28,660	1,035	1,205	29,710	2,187	2,123

Others include: lowland aspen/balsam poplar, tamarack, lowland conifers, lowland deciduous, northern hardwood, upland conifers, oak, upland spruce/fir, planted mixed pines and lowland mixed forest.

4.3.1 Forest Cover Type Management Direction

The following sections contain information on vegetation management direction in the form of Desired Future Conditions, 10-Year Management Objectives and Long-Term Management Objectives for each of the major cover types or forest communities within the management area. This information applies to those portions of the forest where active management (e.g., timber harvest, prescribed fire, planting and mowing) will be conducted. In other portions of the state forest, passive management resulting in natural succession will achieve ecological objectives. While most stands have a variety of tree species and other vegetation, they are classified by the predominant canopy species. Management areas consist of compartments and stands that are defined by their predominant vegetative cover type.

The following cover types are valued commercially for their timber products; ecologically as sources of habitat for numerous species; and for the variety of recreational opportunities they provide. Harvesting and regenerating these cover types will provide for a continuous flow of forest products and values.

Section 4.3.1.1 Forest Cover Type Management – Lowland Open/Semi-Open Lands

Current Condition

The management area contains a large amount of lowland open/semi-open lands totaling approximately 9,320 acres (31%) (Table 4.3.1) This category is a combination of lowland shrub (5,028 acres), marsh (4,268 acres), treed bog (17 acres) and bog (three acres). These cover types function ecologically as sources of habitat for numerous species of wildlife, including sharp-tailed grouse which is a featured species. The lowland shrub and marsh stands contain many ridges and islands of pine. A large portion of these cover types in the center of the management area are roadless.

Desired Future Condition

- Lowland open/semi-open lands will be retained in their large, roadless state to ensure an adequate level of wildlife habitat and recreational opportunity.

Long-Term Management Objectives

- Within marshes, treed bogs and bogs, allow natural processes to occur while protecting the ecological values from man-made disturbances; and
- Lowland shrub stands will generally remain unmanaged, with the possible exceptions of management for wildlife habitat and/or for biomass, if markets materialize.

Section 4.3.1.2 Forest Cover Type Management – Jack Pine

Current Condition

Jack pine occurs on 8,071 acres (27%) of this management area (Table 4.3.1). Jack pine is distributed throughout the management area on lake plains, outwash plains and depressions on outwash plains. The upland sites have Kotar habitat types of PVE and PArV (See Appendix E). The greater proportion of the jack pine stands in this management area are on

low, wet ground. The majority of the jack pine stands are of natural origin. Many of the stands in the older age classes are found on islands within the large wetland matrix. Jack pine stands have been consistently harvested and regenerated in this area. Most of the young jack pine stands were regenerated through prescribed burning or scarification after harvesting, followed by planting where necessary.

Currently, there are 764 acres prescribed with a final harvest method of cut (Figure 4.3.2). There are acres in other cover types that are expected to be converted to jack pine following harvest, and some stands of jack pine may be converted to other cover types after final harvest. These acres are shown in Figure 4.3.2 in the regeneration prescriptions column. This is being done to take advantage of site conditions. The total acres of jack pine are expected to remain similar to what they are now. There are 162 acres of jack pine that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Inaccessible islands of jack pine will eventually convert to other climax species.

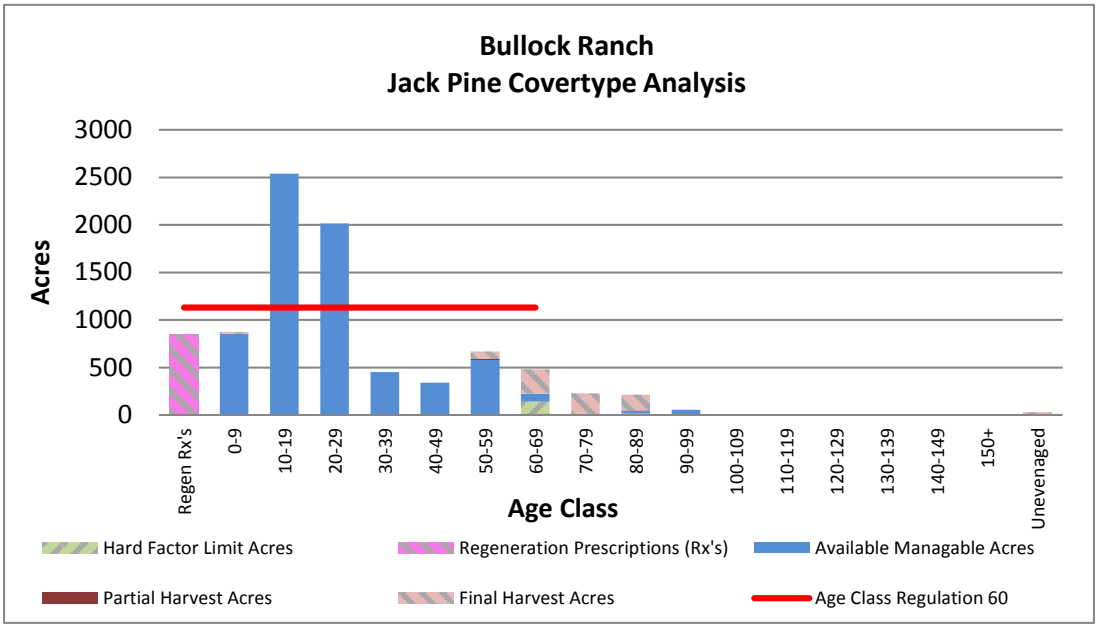

Figure 4.3.2. Age-class distribution of jack pine in the Bullock Ranch management area (2012 Department of Natural Resources inventory data).

Desired Future Condition

- Jack pine stands will be maintained on operable sites through even-aged management with acres balanced between 0-69 years of age to provide for regulated harvest, wildlife management and recreational opportunities.

10-Year Management Objectives

- The 10-year harvest projection is for 177 acres of jack pine final harvest. This is lower than the regulated amount due to the current age-class structure where the majority of stands are found in the 10-29 year age classes.

Long-Term Management Objectives

- Maintain a lower acreage of over-mature stands to lessen the prevalence and severity of jack pine budworm outbreaks; and
- Balance the age-class structure of jack pine providing a regulated harvest of approximately 1,130 acres to be harvested per decade (red line in Figure 4.3.2).

Section 4.3.1.3 Forest Cover Type Management – Red Pine

Current Condition

Red pine occurs on 5,206 acres (18%) of the management area (Table 4.3.1). Red pine is distributed throughout the management area on outwash plains, lake plains and stream terraces, with Kotar habitat types of PVE, PArV and PArVAa (See Appendix E). While the majority of the red pine stands in this management area are of natural origin, there are a

number of planted stands along the Fox River Road north of Seney. Red pine has been successfully harvested and regenerated in this area. In general, the planted stands will continue to be thinned approximately every 10 years until economic maturity at age 80, then harvested and replanted.

Many of the natural red pine stands have had shelterwood or seed tree harvests, followed by natural regeneration, which has resulted in some two-aged and uneven-aged stands. Where natural regeneration is low due to competition, trenching and planting has been used. In areas with aspen competition on sandy soils, consider reintroducing fire in the red pine stands to encourage red pine regeneration. Most of the older acres of red pine are natural stands on islands within large roadless marshes, and may not be accessible. A portion of the inaccessible islands of red pine north of M-28 are within a dry northern forest ecological reference area.

Currently, there are 74 acres prescribed for final harvest, and 229 acres prescribed for partial harvest (Figure 4.3.3). There are stands prescribed for harvest in other cover types that are prescribed to be converted to red pine after harvest, and red pine acres that are prescribed to be converted to other cover types to take advantage of site conditions. These acres have been accounted for in the totals and are shown in Figure 4.3.3 in the regeneration prescriptions column. While this may slightly change the red pine acreage, the total acres of red pine in the management area is expected to remain similar to what it is now.

There are 474 acres of red pine that have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Small inaccessible islands of red pine in the large marsh complexes may never have access for harvesting and will remain until natural senescence.

Desired Future Condition

- Red pine will be maintained and managed through thinning until stand replacement harvest at economic maturity with acres balanced between 0-89 years of age to provide for continual harvest, available wildlife habitat and recreational opportunity. Small islands of red pine dispersed in marsh areas may never have access for harvesting and will be allowed to reach biological maturity (over 200 years).

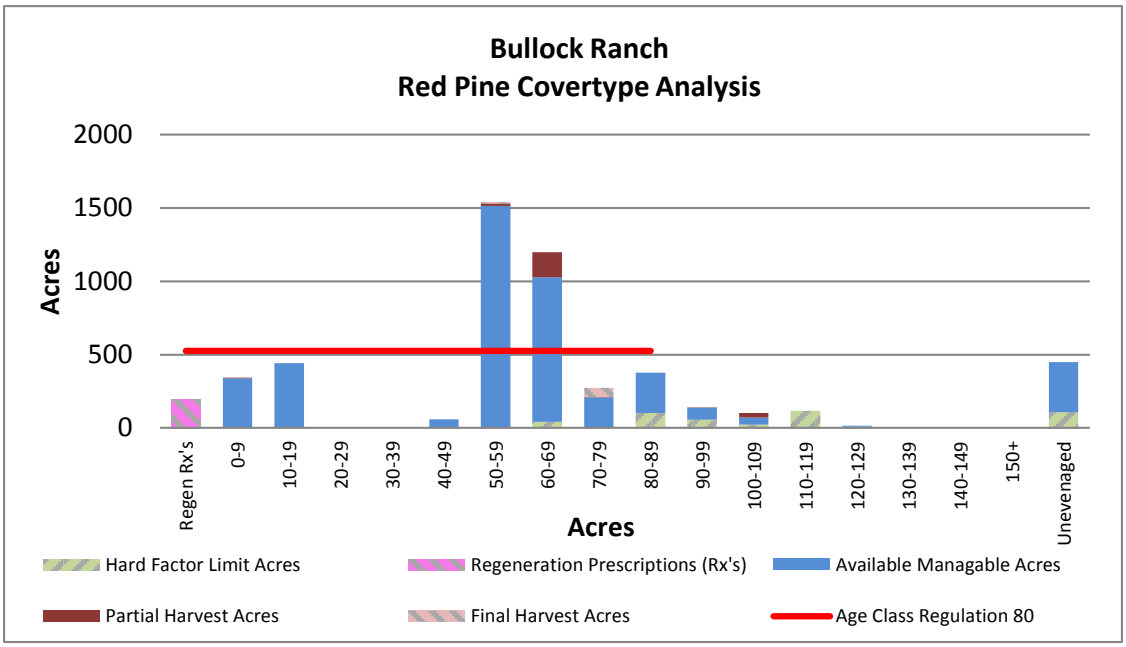

Figure 4.3.3. Age-class distribution of red pine in the Bullock Ranch management area (2012 Department of Natural Resources inventory data).

10-Year Management Objectives

- The 10-year projected final harvest of red pine is for approximately 442 acres to work toward balancing the age classes of red pine. This is less than the regulated amount due to the current age class structure, where the majority of stands is in the 50-69 year classes and is available for thinning.
- The 10-year projected partial harvest, or thinning, of red pine is 1,101 acres.

Long-Term Management Objectives

- Balance the age-class structure of available red pine providing a regulated harvest of approximately 526 acres for final harvest per decade;
- Stands will be periodically thinned until they meet silvicultural criteria; and
- Protect the ecological values in the dry northern forest ecological reference area.

Section 4.3.1.4 Forest Cover Type Management – Upland Open/Semi-Open Lands

Current Condition

Upland open/semi-open lands occur on approximately 2,211 acres (7%) of the management area (Table 4.3.1). This category is a combination of the following non-forested land cover types: herbaceous open land (1,843 acres), bare/sparsely vegetated (197 acres), upland shrub (90 acres) and low-density trees (48 acres). These communities are valued ecologically as sources of open land habitat for numerous species of wildlife. The large grass openings contain sharp-tail grouse leks and wildlife management goals in these cover types will focus on open land species, such as sharp-tailed grouse. The large Bullock Ranch opening has been historically managed through planting, mowing, prescribed burning, herbicide spraying and the removal of competing vegetation using both hand tools and timber sales where volume is sufficient.

Mechanical and biological control measures have been used in this area to reduce the amount of spotted knapweed in the core large Bullock Ranch herbaceous opening.

Desired Future Condition

- The large upland openings will be maintained to benefit a variety of wildlife species and to provide recreational opportunities.

10-Year Management Objectives

- Maintain large upland openings through timber sales and forest treatment proposals; and
- Decrease the amount of spotted knapweed and other invasive plants in the large opening complexes, using biological, chemical and mechanical treatments.

Long-Term Management Objectives

- Consolidate or link large opening complexes across the landscape to provide habitat.

Section 4.3.1.5 Forest Cover Type Management – Other Types

Current Condition

There are many other forest cover types spread across the management area that have less than 5% of the total management area acreage (Table 4.3.1). Lowland spruce/fir (1,185 or 4%), aspen (999 acres or 3%), white pine (509 acres or 2%) and natural mixed pines (461 acres or 1%) are the largest. The “others” category contains 1,558 acres (5%) and is a sum of cover types with less than 1% of the total management area acres, including: lowland aspen/balsam poplar, tamarack, lowland conifers, lowland deciduous, northern hardwood, upland conifers, oak, upland spruce/fir, planted mixed pines and lowland mixed forest. In addition, there are 190 acres (1%) of “miscellaneous other” stands, which includes water, sand/soil and roads.

With the exception of northern hardwood and natural mixed pines, these cover types have been managed as even-aged stands, using general timber management guidelines regarding harvest. Natural regeneration of species currently on site has been effective. Depending upon species composition, mixed cover types with high basal area may be thinned prior to final harvest at rotation age.

Just over 300 acres of these other minor cover types have site conditions limiting their harvest at this time. These hard factor limited acres have been removed from the total number of manageable acres available for harvest calculations. Where stands are inaccessible, early successional cover types will be changed through natural succession, thus slightly changing the cover type distribution.

Desired Future Condition

- These cover types will be maintained on suitable sites and will contribute to the compositional diversity of the landscape while providing forest products and wildlife habitat.

10-Year Management Objectives

- The projected 10-year final harvest acres include: 104 acres of aspen, 102 acres of white pine and 210 acres of other types; and
- The projected 10-year partial harvest (thinning) acres include: 40 acres of white pine, 25 acres of natural mixed pines and 39 acres of other types.

Long-Term Management Objectives

- Continue management of these other cover types to provide a sustainable yield of forest products and wildlife habitat; and
- In cover types with sufficient acreage, work towards balancing the age classes.

4.3.2 – Featured Species Management

Historical land use has created a wildlife management opportunity in this management area. The large herbaceous openings, which are peatlands that were drained in the early 1900's, provide habitat for open-land species and provide connectivity to other open lands across the eastern Upper Peninsula landscape. Other dominant forest cover types including high-quality examples of dry northern forest and lowland conifers allow for a diversity of wildlife management options. This management area borders the Seney National Wildlife Refuge so collaboration with the U.S. Fish and Wildlife Service across ownerships is desirable and does occur on a regular basis.

Beaver

The goal for beaver in the eastern Upper Peninsula is to maintain suitable habitat for beaver. Management should focus on providing favorable food within 100 feet of streams that are not designated as high priority trout streams. Consideration will be given to best management practices, trout stream management and trends in beaver nuisance permits issued.

Wildlife habitat specifications:

- Maintain or promote alder, aspen, birch, maple or willow within 100 feet of non-high priority trout streams with gradients of less than 15% and other inland bodies of water.

Gray Jay

The goal for gray jay in the eastern Upper Peninsula is to maintain or increase suitable habitat. Management should focus on maintaining representation of older age classes of appropriate cover types, as well as retention of important structural features within harvested stands in priority areas.

Wildlife habitat specifications:

- The primary goal is to maintain appropriate forest types (birch, lowland deciduous, fir, lowland conifer, lowland spruce/fir, tamarack and bogs) in the management area, in a variety of age classes. Maintain 15% of the total acres in relevant cover types in older age classes (at least 20 years beyond "normal" rotation length for the cover type).
  - This can be accomplished either with stands that are already factor limited or by extending the rotation age. In this management area, older age classes (greater than 100 years) for gray jay habitat are being met by the large number of stands with site conditions that limit harvesting.
- Patches are preferred over single trees within timber harvest sale boundaries, though it is beneficial to have both.
- Offset salvage harvests deemed necessary due to insect, disease or fire within the same cover type and age class (within the compartment, management area or eastern Upper Peninsula ecoregion), to minimize impacts on gray jay habitat. Total allowable harvest in these situations will be evaluated on a case-by-case basis.

Sharp-tailed Grouse

In the eastern Upper Peninsula, the goal for sharp-tailed grouse is to maintain or increase suitable habitat resulting in a harvestable surplus across the ecoregion. Management should focus on enhancing large opening complexes so there is an increase of available habitat.

Higher densities of sharp-tail grouse are present within the Bullock Ranch management area, due to the heterogeneous nature of the cover type assemblages.

Wildlife habitat specifications:

- Maintain or expand herbaceous open lands where existing leks occur.
- Manage adjacent forest to maintain young regenerating forest adjacent to permanent openings to maximize use by sharp-tailed grouse.
- Use prescribed fire where appropriate to maintain openings and manage pine types.
- Within open land complexes maintain connectivity across the landscape.

4.3.3 – Rare Species and Special Resource Area Management

All forest operations must be reviewed for potential conflicts between rare species and proposed forest operations following the guidance in "*Rare Species Protection Approach and Assessment Guidelines for DNR Staff on State Forest Lands*" (IC 4172). This is especially important when listed species are present, past surveys have indicated a possibility of their presence, or when appropriate habitat is available and the species is known to occur in the general region.

Past surveys have noted and confirmed two listed species and one natural community of note occurring in the management area as shown in Table 4.3.2. Any established management guidelines will be followed.

Table 4.3.2. Occurrence information for special concern, rare, threatened and endangered communities and species for the Bullock Ranch management area.

Common Name	Scientific Name	Status	Status in Management Area	Climate Change Vulnerability Index (CCVI)	Confidence	Natural Community Association	Probable Cover Types	Successional Stage
Natural Communities								
Dry northern forest		S3/G3?	Confirmed				Jack Pine, Red Pine	Late
Birds								
Sharp-tailed grouse	*Tympanuchus phasianellus*	SC/G5/S4	Confirmed	PS	Moderate	Pine barrens	Jack Pine	Early
						Oak-pine barrens	Oak	Mid
						Dry sand prairie	Upland open/semi-open	N/A
						Wet-mesic sand prairie	Upland open/semi-open	N/A
						Northern shrub thicket	Upland open/semi-open	N/A
Plants								
Vasey's rush	*Juncus vaseyi*	T/G5?/S1S2	Confirmed			Intermittent wetland	Lowland open/semi-open	N/A
						Lakeplain wet prairie	Lowland open/semi-open	N/A
						Lakeplain wet-mesic prairie	Lowland open/semi-open	N/A

Climate Change Vulnerability Index: EV – Extremely Vulnerable; HV – Highly Vulnerable; MV – Moderately Vulnerable; PS – Presumed Stable; and IL – Increase Likely.

The Bullock Ranch is a large open complex that is recognized as a state wildlife area special conservation area. Other special conservation areas in this management area are potential old growth areas, the Fox River high priority trout stream and the Driggs River cold water stream and high priority trout stream (Figure 4.3.1).

The Fox River system is a state designated natural river and along with its corridor is a high conservation value area as shown in Figure 4.3.4. The Fox River Natural River Plan (DNR, Nov. 3, 1988) contains specific requirements for management in this area.

There is also a dry northern forest natural community ecological reference area of 109 acres within the management area. The ecological reference area will be managed to protect and enhance the natural vegetative and wildlife communities by an ecological reference area-specific management plan. The special resource areas are shown in Figure 4.3.4.

Management goals during this planning period are:

- Document occurrences of rare, threatened, endangered and special concern species and natural communities for the management area through the inventory process or with occasional focused surveys.
- Evaluate all potential Type-1, potential Type-2 and potential old growth areas to determine their status as a special resource area.
- Develop and maintain management and monitoring plans for ecological reference areas on state forest land.

4.3.4 – Forest Health Management

Although forest health issues span the entire landscape, some specific threats are more important in this management area, due to the species composition, site quality or other factors. Some of the more important forest health pests in this management area by major cover type include:

- Red and jack pine: jack pine budworm, pine engraver and *Scleroderris* canker.

Further information on forest health can be found in Section 3.

Invasive Plant Species

Glossy buckthorn has been documented within a five mile buffer of the management area (Table 4.3.3), and monitoring efforts should specifically look for new populations of this species. Control efforts, including herbicide and burning, in conjunction with the Seney National Wildlife Refuge, have helped reduce the amount of glossy buckthorn in the area. Wild parsnip is found within the management area along M-28.

An invasive plant species of concern within this management area is spotted knapweed. Mechanical and biological control measures have been used in this area to reduce the amount of spotted knapweed in the large herbaceous openings. As resources allow, continue work on decreasing the amount of spotted knapweed and other invasive plants in the large opening complexes.

Invasive species that merit eradication efforts are those species that threaten sensitive sites, due to their location or growth characteristics and have population levels that may be successfully controlled.

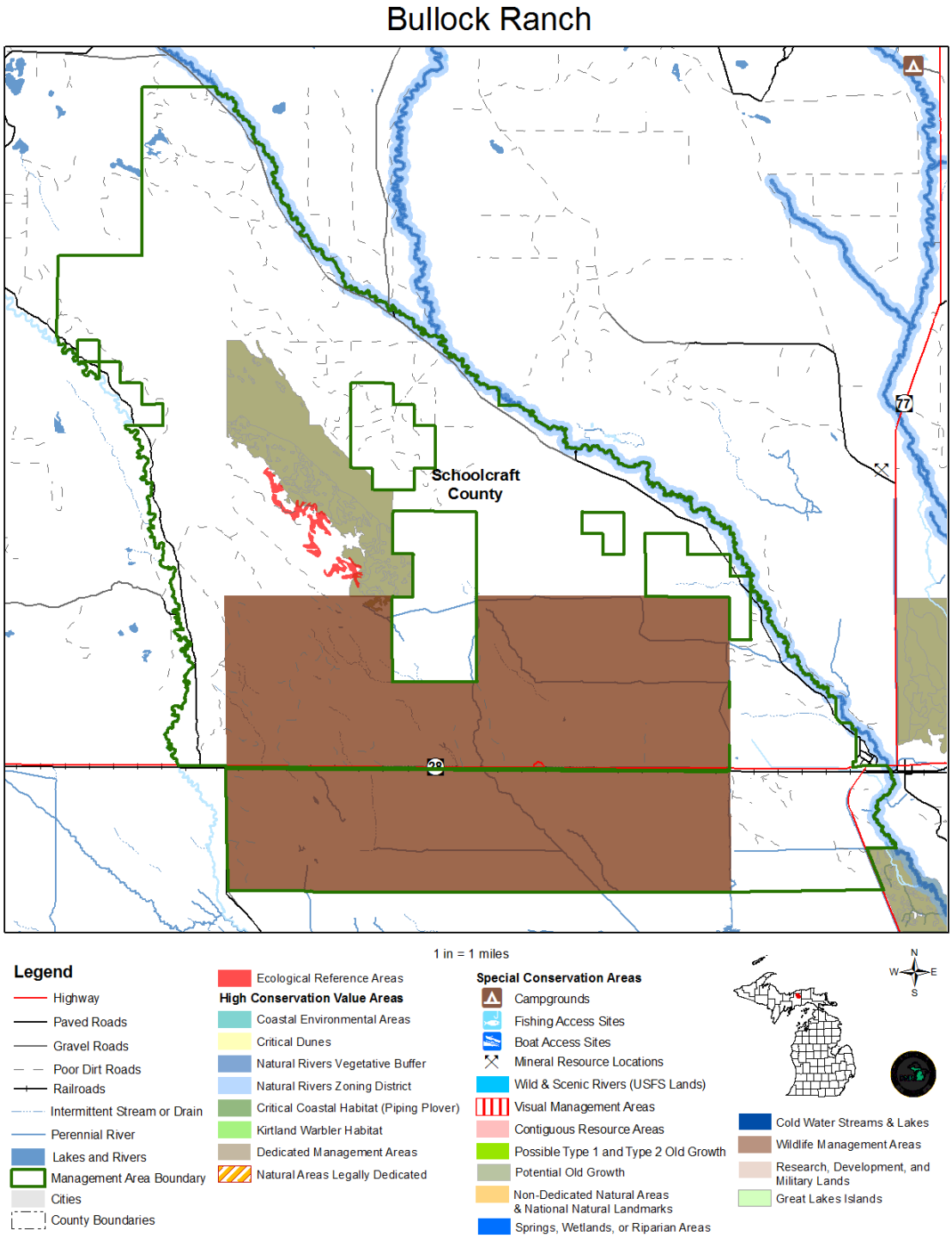

Figure 4.3.4. A map of the Bullock Ranch management area showing the special resource areas.

Table 4.3.3. Invasive plant species within or near the Bullock Ranch management area (Data from the Michigan Invasive Plant Identification Network database).

Bullock Ranch - FRD Management Areas	Cases within FRD Areas	Cases within 5 Mile Buffer	Total number of cases	Total number of different Invasive Species
	1	12	12	1

Invasive Species within FRD Areas	Occurrences	Invasive Species within 5 Mile Buffer	Occurrences
Wild Parsnip	1	Glossy Buckthorn *Rhamnus frangula*	12

4.3.5 – Fire Management

Interspersed dry forests and wetland communities probably supported a natural fire regime much like dry and dry-mesic forest communities. Stand replacement fires probably occurred with drought conditions that occur periodically. Recent examples of such extreme widespread drought are 1976 and 2007.

Fire suppression in this management area is often difficult, due to the organic soils found here.

The following fire management concepts will be used in this management area:

- Where appropriate, re-introduce fire in the red pine stands to encourage red pine regeneration and to discourage competition, particularly from aspen. Generally, this will not occur on organic soils.

- This management area falls within the DNR Seney protection area. All wildfires are subject to appropriate initial attack response.

4.3.6 – Public Access and Recreation

The state land in this management area is concentrated with few private parcels. A large portion of the management area is without roads. Access for management and/or recreation is generally very limited due to the large areas of marsh and lowland brush. The Wisconsin Central Railroad along the south side of M-28 limits access to the south to the existing crossings.

Recreational facilities include: the Fox River pathway and snowmobile trails (Figure 4.3.1). The Fox River state forest campground and Fox River boat access site are close to but outside the state forest land.

Other recreational opportunities include: dispersed camping, fishing, canoeing and kayaking along the Fox and Driggs Rivers. The area is also heavily used for deer, bear and grouse hunting.

4.3.7 – Aquatic Resource Management

Fisheries Division management unit biologists will review proposed forest management activities using the compartment review process and will consider the potential impact of proposed prescriptions upon riparian and aquatic values. Management prescriptions will be modified to account for riparian and aquatic values by applying the standards and guidance documents listed in the introduction to this plan section to the unique conditions specific to any given forest stand.

Prescription of riparian management zone widths greater than the minimum widths provided in IC4011 (*Sustainable Soil and Water Quality Practices on Forest Land*) must be justified and documented during the compartment review process.

Forested stands adjacent to designated high priority trout streams will specifically be managed to discourage beaver use in accordance with both DNR Policy and Procedure 39.21-20 Beaver Management and IC 4011. A portion of the Manistique River system is designated as high priority trout stream in this management area and the details are shown in the Integrated Forest Monitoring Assessment and Prescription Geographic Decision Support Environment.

4.3.8 - Minerals

Surface sediments consist of peat and muck and lacustrine (lake) sand and gravel. There is insufficient data to determine the glacial drift thickness. Sand and gravel pits are not located in the area, and potential for additional pits appears to be limited.

The Ordovician Utica and Collingwood Shales and Trenton and Black River Formations subcrop below the glacial drift. The Trenton and Black River are quarried for stone/dolostone in the Upper Peninsula.

Exploration and development for oil and gas has been limited to a few wells drilled in the Upper Peninsula. (five in Schoolcraft County). No economic oil and gas production has been found in the Upper Peninsula.

Metallic mineral production is not supported by the geology given the depth to known metallic bearing formations.