Floristic Survey of Starved Rock and Matthiessen State Parks

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Introduction

Starved Rock and Matthiessen State Parks are located in LaSalle County, Illinois. Starved Rock State Park is on the south bank of the Illinois River and Matthiessen State Park is on the east bank of the Vermilion River. At the west end of Starved Rock State Park is a 592-acre nature preserve and Matthiessen State Park has an 86.4 acre nature preserve at its center. These two parks contain 4,568 acres of forested ravines, bluffs, ridges, sandstone and limestone cliffs, seeps, glades, and hill prairies.

Starved Rock State Park is made up of 2,777 acres. The west boundary of the park is near the confluence of the Vermilion River and runs east for 7 miles along the Illinois River. The park's rugged topography combined with its north exposure provides habitat for the 528 species of vascular plants located during this study (Appendix I). The make up of the flora is 455 native species and 73, or 14%, alien species. Ten state endangered and threatened species were identified through this inventory.

Matthiessen State Park contains 1,686 acres of forested ridges, bluffs, and ravines. During this study 183 species of vascular plants were located (Appendix II). The make up of the flora is 163 native species and 20, or 11%, alien species. Three state endangered and threatened species were identified.

Illinois State Listed Species

A rich assemblage of 15 state listed species and one species presumed extirpated from the state was located during this survey. This assemblage contained ten state endangered species, five state threatened species and one species considered extirpated. Matthiessen State Park had three endangered species and three threatened species. With eight endangered species, five threatened species and the one previously considered extirpated being located in Starved Rock State Park.

The state endangered species are *Amelanchier sanguinea* (Shadbush), *Carex communis* (Fibrous-rooted sedge), *Carex laxiculmis* (Spreading sedge), *Corydalis aurea* (Golden corydalis), *Corydalis sempervirens* (Pink Corydalis), *Dichanthelium columbianum* (Hemlock panic grass), *Luzula acuiminata* (Hairy woodrush), *Phegopteris connectilis* (Long beech fern), and *Poa languida* (Weak bluegrass), and *Veronica americana* (American brooklime). The state threatened species are *Aster furcatus* (Burgess forked aster), *Filipendula rubra* (Queen-of-the-Prairie), *Oryzopsis racemosa* (Black-seeded rice grass), *Sambucus pubens* (Red-berried elder) and *Thuja occidentalis* (White cedar). The extirpated species is *Carex plantaginea* (Plantain-leaved wood sedge). These populations range in size from a few plants to several thousand plants.

Illinois State Endangered Species

***Amelanchier sanguinea* (Pursh)DC. Shadbush**

This species was found at three sites within Starved Rock State Park and one population about 50 feet outside the park boundary (Map 2a & 2b). The species seems confined to the sandstone cliffs of the Illinois River and the park's ravines. The difficult distinguishing *A. sanguinea* from the other *Amelanchier* species in the park makes determining the extent of the population difficult. Identification is made by counting the number of teeth per centimeter on its mature leaves, the tomentose on the ovary, and its not forming stoloniferous colonies. With cliffs being the primary habitat of the *Amelanchier* species, their inaccessibility makes positive identification of most plants impossible. Making it likely *A. sanguinea* is a little more wide spread than the maps would suggest.

***Carex communis* Bailey Fibrous-rooted sedge**

Populations of *Carex communis* can be found nearly the entire length of Starved Rock State Park (Maps 3a, 3b & 3c) and several populations are also in the north dells of Matthiessen State Park (Map 4). This species is found on the steep slopes of ravines, river bluffs, crests of ridges and shaded cliffs. It is in areas too steep for leaf litter to accumulate and usually occurs in areas of sparse vegetation cover.

The combined populations at Matthiessen State Park contain 100 plus plants. Only one population in the upper dells is threatened by an unofficial path running down the slope. This population is marked with an X on map 4.

There is no threat to this species continued existence at Starved Rock State Park. The combined populations are likely a thousand plus plants. The population seems vibrant with most plants producing fruit. Once have seen this species the best time for counting the population is in the fall when all other vegetation has died.

The areas are open to more or less closed mesic forest. The following is a list of associated species: *Acer saccharum, Amelanchier leavis, Anemone quinquefolia, Antennaria plantaginifolia, Aquilegia canadensis, Arabis laevigata, Aralia nudicaulis, Arisaema triphyllum, Carex albursina, Claytonia virginica, Dryopteris marginalis, Eupatorium purpureum, Galium circaezans, Geranium maculatum, Hamamelis virginiana, Hepatica nobilis var acuta, Heuchera richardsonii, Hydrangea arborescens, Luzula acuminata* <<<, *Luzula multiflora, Maianthemum canadense interius, Mitella diphylla, Osmorhiza claytonii, Osmunda claytoniana, Parthenocissus inserta, Pinus strobus, Polygala senega, Polypodium virginianum, Polystichum acrostichoides, Prenanthes alba, Quercus rubra, Ranunculus abortivus, Sanguinaria canadensis, Smilacina racemosa,* and *Solidago flexicaulis*.

***Carex laxiculmis* Schwein. Spreading sedge**

This species was found in the north dells of Matthiessen State Park (Map 5). The identification of this species was not known at the time of collection so no data was gathered. Attempts to relocate it failed in 1997 and 1998.

***Corydalis aurea* Willd. Golden corydalis**

In 1989 several hundred plants of *C. aurea* were found growing on the north side of Starved Rock. The population being found on the north face of Starved Rock started about three meters above the river's surface to within three to four meters from it's top. Only a few plants were found in the vegetative stage in 1997. In 1998 three populations were located on Starved Rock with a total of 31 plants (Map 6b). These plants are on the soil of ledges over looking the Illinois River. The biannual nature of this species precludes making a statement that the population is in decline without farther observation, though this is very possible.

The floras for the region and neighboring state say it is a species of open habitats. These habitats are listed as open and rocky woods, glades, ledges, old fields, roadsides, river banks, gravelly and sandy shores, clearings, tails, gravel or sand pits, and prairies. More than half the habitats listed are maintained or created by disturbance. The associates of this species also suggest the need some kind of disturbance to maintain the population.

Edward G. Voss in his *Michigan Flora* goes into the greatest detail on the row disturbance plays in the ecology of both *C. aurea* and the following species *C. sempervirens*. Voss states that these species most typically appear 1-3 years after disturbance and will die out if the disturbance does not continue. Some of the natural disturbances that support these species is the soil erosion of rock outcrops, shores, soil stumping of steep slopes and overthrown tree roots or fire.

The threats to this population may come from four species *Juniperus virginiana, Lonicera maackii*, Lonicera x bella*, Rhamnus cathartica**, and *Sedum sarmentosum* *. This species is adapted to more or less open habitat. With the increase of the following shrubs and small trees *J. virginiana, L. maackii*, L. x bella**, and *R. cathartica** the face of Starved Rock is becoming more stable and shaded.

Sedum sarmentosum may be the species have the most impacted on *C. aurea*. *S. sarmentosum* is now found covering nearly all the ledges of Starved Rock where hundreds of *C. aurea* where growing in 1989. *S. sarmentosum* covers the soil so completely it is stabilizing these areas, this will negatively affect *C. aurea*.

The following is a list of associated species: *Bromus tectorum* *, *Cerastium arvense, Heuchera richardsonii, Lonicera maackii*, Lonicera x bella*, Prunus virginiana, Rhamnus cathartica**, and *Sedum sarmentosum* *.

***Corydalis sempervirens (L.) Pers.* Pink Corydalis**

The only place this species was found was along the Illinois River on a ledge between Starved Rock Lock and Dam and French Canyon (Map 7b). There were 45 plants found, but these are only on the first ledge over the river. Most of the plants were at the edge of an illegal trail on this ledge. With some plants growing on small soil slides and one plant grows out a crack in the sandstone cliff. With the ecology of *C. sempervirens* being similar to *C. aurea*, refer to the *C. aurea* for more

Thirteen populations of *Luzula acuiminata* were found at Starved Rock State Park from St. Louis Canyon to Owl Canyon (Map 9b). These populations ranged in size from a single plant to a few hundred. This species is usually found on steep slopes and crest of ravines, and shaded cliffs. It is usually in areas too steep for leaf litter to accumulate and the vegetation cover is sparse. The species was also found in one unusual area a small colony grows on nearly level ground near Owl Canyon. There was also one population of eight plants was found in Matthiessen State Park (Map 10).

The populations in Starved Rock State Park seem very vibrant with all of them having many plants in fruit. There is no known threat to the continued existence in Starved Rock State Park. The threat to the population at Matthiessen State Park is its small size though most plants had produced fruit.

The following is a list of associated species: *Aster drummondii, Acer saccharum, Amelanchier arborea, Amelanchier leavis, Anemone quinquefolia, Antennaria plantaginifolia, Aquilegia canadensis, Arabis laevigata, Aralia nudicaulis, Arisaema triphyllum, Carex albursina, Carex communis* <<<, *Carex pensylvanica, Cerastium arvense, Claytonia virginica, Dicentra cucullaria, Dichanthelium latifolium, Dioscorea villosa, Dryopteris marginalis, Eupatorium purpureum, Festuca obtusa, Fraxinus pennsylvanica, Galium circaezans, Geranium maculatum, Hamamelis virginiana, Hepatica nobilis var acuta, Heuchera richardsonii, Hydrangea arborescens, Impatiens capensis, Lonicera prolifera, Luzula multiflora, Maianthemum canadense interius, Mitchella repens, Mitella diphylla, Osmorhiza claytonii, Osmunda claytoniana, Ostrya virginiana, Panax quinquefolius, Parthenocissus inserta, Parthenocissus quinquefolia, Pinus strobus, Poa compressa*, Podophyllum peltatum, Polygala senega, Polypodium virginianum, Polystichum acrostichoides, Prenanthes alba, Prunus serotina, Quercus alba, Quercus rubra, Quercus velutina, Ranunculus abortivus, Sanguinaria canadensis, Silene stellata, Smilacina racemosa, Smilax ecirrhata, Solidago flexicaulis, Tilia americana, Toxicodendron radicans, Uvularia grandiflora*, and *Viola sororia*

***Phegopteris connectilis* (Michx.)Watt. Long beech fern**

Populations of *P. connectilis* were in found Starved Rock State Park growing on cliff faces from St. Louis Canyon to just past Owl Canyon (Map 11b). Fourteen populations of *P. connectilis* ranging in size from only three fronds to a couple of populations having thousands. This species has long creeping rhizome that produce many fronds making it impossible to determine the number of plants in these populations. These populations are found on the cliff faces where the ravines meet the escarpment that borders the Illinois River.

The species is doing well at Starved Rock State Park. The population is quite vibrant with many fronds producing sori. There is no known threat to *P. connectilis* in the state park. A future threat could be mining outside the parks boundaries possibly changing the hydrology of the sandstone cliffs they grow on.

The following is a list of associated species: *Aquilegia canadensis, Aruncus dioicus, Cystopteris protrusa, Diervilla lonicera, Dryopteris intermedia, Hydrangea arborescens, Impatiens capensis,*

Maianthemum canadense interius, Osmunda cinnamomea, Prenanthes alba, Rubus allegheniensis, Saxifraga pensylvanica, Taxus canadensis, and *Thuja occidentalis* <<

***Poa languida* A.S.Hitchc. Weak bluegrass**

In 1995 several dozen plants of *P. languida* were located in Starved Rock State Park (Map 12c). These were in an open forest on the crest of the ridge that separates Ottawa Canyon and Kaskaskia Canyon. This species was not relocated during this survey. Complicating its relocation is the appearance of hundreds of plants of the *Fectuca obtusa*, which has a similar growth form.

***Veronica americana* (Raf.)Schwein American brooklime**

A large population of *V. americana* was located in 1997 by Todd Bittner in the lower dells (Map 13). The species is a perennial but in 1997 it could not be located. It was only growing on the edge of the seep but not in the wettest parts. Plants were growing on the mud flats of the creek with on other vegetation. Where *V. americana* was growing along the creek had obvious been underwater earlier. The threat to this species is trampling by visitor.

Illinois State Threatened Species

***Aster furcatus* Burgess forked aster**

Nine populations of *A. furcatus* were located in Starved Rock State Park all but two are near the shore of the Illinois River (Map 14b). Only one population was found in a ravine and the other at the edge of the bottomland of the Illinois River. The largest population with 200 plus plants is at the center of Section 22 the others having no less than 40 plants each.

The habitat for this is listed as springy or marshy woods. Only one smaller population was connected with the large seep areas in the park. Even this one was on drier ground. The habitats of the other populations seemed more mesic than springy or marshy though there were a few scattered plants characteristic of wetlands. The populations at Starved Rock State Park were quite healthy with nearly all plant producing fruit. The threat to these populations is trail or road maintenance with all populations being near trails.

The following is a list of associated species: *Solidago ulmifolia, Aster lateriflorus, Cinna arundinacea, Elymus virginicus, Eupatorium rugosum, Fraxinus pennsylvanica, Helianthus strumosus, Iris shrevei, Oenothera biennis, Phalaris arundinacea* *, *Quercus alba, Ranunculus recurvatus, Scutellaria lateriflora, Smilax hispida, Tilia americana, Uvularia grandiflora, Verbena urticifolia*, and *Verbesina alternifolia*

Filipendula rubra (Hill) Robins. Queen-of-the-Prairie

This population does not seem to have changed much since Harty and Moran reported on it June of 1977. They reported about 10 plants at that time. There are still about 10 plants located in a small area only 12 by 3 meters near the edge of a seep (Map 15a). None of the plants had bloomed or produced fruit in 1997. These plants were becoming covered by shrubs and the whole area is heavily browsed by deer.

The following is a list of associated species: *Athyrium angustum, Cicuta maculata, Cinna arundinacea, Corylus americana, Dioscorea villosa, Impatiens capensis, Onoclea sensibilis, Osmunda cinnamomea, Parthenocissus quinquefolia, Ribes americanum, Salix eriocephala, Scutellaria lateriflora, Solidago patula,* and *Ulmus americana.*

***Oryzopsis racemosa* (J.E.Smith) Ricker Black-seeded rice grass**

Oryzopsis racemosa is found in both Starved Rock and Matthiessen State Parks. Starved Rock State Park has a couple of population that were more than a hundred plants in LaSalle Canyon and French Canyon(Map 16a & 16b). There is also a large population in Starved Rock Nature Preserve on the slope of the Illinois River.

Three populations were found at Matthiessen State Park in the upper dells (Map 17). This species is on the mesic slopes where the vegetation is sparse. It is likely more populations will be located in these parks.

The populations at both parks are healthy with a few hundred plants. Most plants had produced fruit in 1997 and 1998. At Matthiessen State Park the largest population has a wooden staircase running through it. The second largest population has several illegal path going through it. There are no threats to the populations in Starved Rock State Park.

The following is a list of associated species: *Adiantum pedatum, Aquilegia canadensis, Arabis laevigata, Aralia nudicaulis, Arisaema triphyllum, Athyrium angustum, Carex blanda, Carex pensylvanica, Carpinus caroliniana, Cryptotaenia canadensis, Cypripedium pubescens, Dichanthelium latifolium, Dryopteris marginalis, Festuca obtusa, Geranium maculatum, Hackelia virginiana, Hamamelis virginiana, Hepatica nobilis var acuta, Luzula acuminata* <<<, *Maianthemum canadense interius, Mitella diphylla, Osmunda claytoniana, Ostrya virginiana, Parthenocissus quinquefolia, Polystichum acrostichoides, Prenanthes alba, Quercus alba, Sanguinaria canadensis, Smilax ecirrhata, Solidago flexicaulis,* and *Tilia americana*

***Sambucus pubens* Michx. Red-berried elder**

Five hundred forty-five plants of this species were found in Starved Rock State Park from Little Rock in the nature preserve to Kaskaskia Canyon at the park's east end (Maps 18a, 18b, & 18c). Most of the plants were found from St. Louis Canyon to Owl Canyon. The Starved Rock State Park population is extremely healthy with many plants producing fruit. There is no threat to their continued existence in the park.

Only six plants were located at Matthiessen State Park (Map 19). These were on the north facing cliffs of the upper dells. During the two years of the survey none of these plants bloomed or produced fruit. At this point the threat to this population is their lack of reproduction.

S. pubens leaf out much earlier then the other shrubs of the area, making them easy to see at a distance making counting possible. In 1998 the warm winter had many plants leaving out and one

had even produced flowers. The population should be checked in 1999 to see if hard freeze after budding had damaged them. These plants can be found on the slopes and cliffs of the ravines and Illinois River. One plant was found in the dry-mesic forest above the escarpment that runs along the Illinois River.

***Solidago sciaphila* Steele Cliff goldenrod**

There were 26 populations of *S. sciaphila* located in Starved Rock State Park (Map 20a, 20b & 20c) and one population at Matthiessen State Park (Map 21). *S. sciaphila* is found growing on sandstone cliffs and out of sandstone at there crest. The only way too true separate *S. hispida* from *S. sciaphila* is by the stem and achene being either glabrous or pubescent. Being on cliffs, they are usually out of reach. To separate them habitat was used, if plants were growing on out of the cliff they were considered *S. sciaphila* and if growing out of soil on ledges it was considered *S. hispida*. This method has likely under estimated the number of populations at both state parks.

The taxonomy of these two species seems confused at Starved Rock State Park. The pubescent achene and glabrous stem are determining chacteristics for *S. sciaphila*, while glabrous achene and pubescent stem are determining chacteristics for *S. hispida*. Specimens with both glabrous and pubescent stems have had pubescent achene.

The only threat to this species is the cliffs becoming too shaded for their continued existence. The population at Matthiessen State Park is on the crest of a cliff and is being shaded out by woody growth.

***Thuja occidentalis* L. White cedar**

Populations of *T. occidentalis* were found at both Starved Rock and Matthiessen State Parks. In Starved Rock State Park, 15 separate populations were located from just east of Little Rock in the nature preserve to just east of Hinnepin Canyon near the west end of the park (Maps 22a, 22b, & 22c). This species is mostly found near the crest of cliffs along the Illinois River and its ravines. Few plants were found on the slopes of the Illinois River.

The species was found only in the upper dells at Matthiessen State Park (Map 23). This population contains a hundred plus plants with much fruit production. There are no known threats to either of these populations. Although a future threat could be mining outside the parks boundaries that could changing the hydrology of the sandstone cliffs they where they grow.

State Extirpated Species Relocated at Starved Rock State Park

***Carex plantaginea* Lam. Plantain-leaved wood sedge**

A large population of *C. plantaginea* was found in Lasalle Canyon (Map 24b). The species was last seen in the state in Cook County in 1896 and was considered extirpated from the state. A specimen was sent to Alfred C. Koelling who verified its identification.

This population of several hundred plants runs 91.2 meters along the east side of the canyon near its bottom and is three meters wide at its widest point. The community is deeply shaded mesic forest. The LaSalle Canyon trail goes through the length of this population so care needs to be taken with trail maintenance.

The following is a list of associated species: *Acer saccharum, Aquilegia canadensis, Athyrium thelypterioides, Claytonia virginica, Cystopteris protrusa, Dentaria laciniata, Dicentra canadensis, Dicentra cucullaria, Dryopteris marginalis, Hepatica nobilis var acuta, Hydrophyllum appendiculatum, Laportea canadensis, Osmorhiza claytonii, Prenanthes alba, Ribes cynosbati, Smilacina racemosa, Staphylea trifolia, Thalictrum dioicum,* and *Trillium flexipes*.

Problem Species

There were 73 alien species located during this study. Seventeen have the potential to cause serious problems. These seventeen are as follows: *Alliaria petiolata, Alnus glutinosa , Bromus inermis , Coronilla varia, Dipsacus laciniatus , Elaeagnus umbellata , Forsythia x intermedia , Lonicera maackii, Lonicera x bella, Lythrum salicaria, Phalaris arundinacea , Phragmites australis, Rhamnus cathartica, Rhodotypos scandens , Robinia pseudoacacia, Rosa multiflora,* and *Viburnum opulus*.

***Alliaria petiolata* (M. Bieb.)Cavara &Grande Garlic mustard**

Colonies of this species are found throughout both Starved Rock and Matthiessen State Parks. The largest colonies are found in Starved Rock Nature Preserve. These colonies may be the result of a larger deer population in the nature preserve. Less human activity in the nature preserve is a possible reason for the larger deer population.

***Elaeagnus umbellata* Thumb. Autumn olive**

This species is scattered throughout both parks. An area east of LaSalle Canyon has a couple of large colonies (Map 25b).

***Forsythia x intermedia* Zabel Golden bell**

All but one population at these parks are in areas of likely planting (Map 26). There was one population growing out of the cliff of the lower dell at Matthiessen State Park (Map 27). This may have escaped but could have been put there by the landscape architect to give them a more natural look. *F. x intermedia* should not reproduce seed, but *F. viridissima* found planted at Starved Rock State Park could spread by seed.

***Phagmites australis* (Cav.)Steud. Wild reed**

This species is over taking open wetlands along the Illinois River. It would be difficult to control these populations. But a population that is invading a seep area near the west entrance is a manageable size (Map 28).

Burning and cutting, unless done several times a year, only stimulates its growth and hand pulling does not retrieve enough of the root system to kill it. The best way to remove this problem is by hand cutting just before flowering and spot treating with Rodeo. As with management of all problem species, this must be repeated until all plants and any that may regenerate are killed. The treatment will work best if there are native species to replace it.

High Quality Natural Communities

There were five high quality communities identified at Starved Rock State Park (Map 29) and two at Matthiessen State Park (Map 30) during the 1977 Illinois Natural Area Inventory. The communities identified at Starved Rock State Park are Dry upland forest, Dry-mesic upland forest, Mesic upland forest, Northern flatwoods, and Sandstone cliff. The two at Matthiessen State Park were Dry-mesic upland forest and Sandstone cliff.

There were three grade A communities totaling 36.5 acres (excluding the Sandstone cliff communities) and two grade B communities totaling 61 acres at Starved Rock. The Mesic upland forest, Northern flatwoods, and Sandstone cliff were identified as grade A. With the Dry upland forest and Dry-mesic upland forest identified as grade B. Matthiessen State Park has 52 acres of grade B Dry-mesic upland forest that is now a dedicated nature preserve.

These forests are 8% of the 1,870 acres of high quality forest left in the Grand Prairie Section of the Grand Prairie Division of the Natural Divisions of Illinois. They are the last remaining high quality forest in LaSalle County. The high quality Dry upland forest at Starved Rock is the last high quality forest of this type that remain in this natural division. With so few acres of high quality forest left in this natural division the importance of the remnants left at Starved Rock State Park cannot be emphasis enough.

Areas in Need of Burning

Starved Rock State Park is losing its hill prairies and glades. Periodic burning is needed to maintain these communities. Twelve areas marked on maps 31a, 31b & 31c are the last remnants of these communities. Without burning these areas are now nearly engulfed by woody growth and are in the process of losing the species of prairies and glades.

The last time some of these areas were burned was in the 1970's by Marlin Bowles. Without brush removal and a burn program the hill prairies and glades will soon be lost. This burning may help increase the number of *Corydalis sempervirens* and *C. aurea*. It is unknown what effect fire will have on *Dichanthelium columbianum* but it is healthier in open habitats.

Appendix I Species List of Starved Rock State Park.

FIELD LIST FOR STARVED ROCK STATE PARK

	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Abutilon theophrasti*		X											X								
Acer negundo	X	X			X	X	X	X			X				X						X
Acer saccharinum	X	X			X		X					X									
Acer saccharum	X	X	X	X	X	X															
Achillea millefolium*	X	X						X	X	X											
Actaea pachypoda	X	X			X	X															
Actaea rubra	X				X																
Adiantum pedatum	X	X			X					X					X						
Aesculus glabra		X	X			X	X														
Agalinis gattingeri	X																				
Agastache nepetoides	X	X	X				X														
Agrimonia parviflora	X	X	X		X																X
Agrimonia pubescens	X	X	X	X	X																X
Agrimonia rostellata	X	X	X			X															
Agropyron repens*	X	X																X			
Agrostis alba *	X		X															X			X
Agrostis alba var palustris	X																				
Agrostis perennans	X	X	X					X	X	X	X	X									X
Alliaria petiolata*	X	X	X	X	X	X	X	X			X										
Allium burdickii		X	X			X		X													
Allium canadense	X							X													
Allium tricoccum	X	X		X																	
Alnus glutinosa *	X														X						
Ambrosia artemisiifolia	X	X							X									X			X
Ambrosia trifida	X																	X			
Amelanchier arborea	X	X		X	X			X		X	X										
Amelanchier humilis	X										X										
Amelanchier laevis	X	X		X				X			X										
Amelanchier sanguinea <<<	X	X							X												
Amorpha canescens	X								X												
Amorpha fruticosa	X	X					X		X				X		X			X			

* = Alien species, << = state threatened species, <<< = state endangered species, CR = crest of cliff, SREM = stream, WETLND = wetland, SP = state park, NP = nature preserve, DM = dry-mesic forest, RT = ravine terrace, RV = ravine slope, RS = river slope, BT = rivir bottom terrace, S = shaded crest of cliff, O = open crest of cliff, OP = open cliff, RB = river bank, SP = seep, P = pond, W wetland, F = field R = restoration, M = mowed area, PTH = path

	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Amphicarpaea bracteata	X	X	X	X	X	X	X			X											
Anemone quinquefolia		X			X																
Anemone virginiana	X	X	X							X											X
Antennaria plantaginifolia	X	X	X					X	X												
Apocynum androsaemifolium	X				X													X			
Aquilegia canadensis	X	X			X	X		X	X	X	X	X									
Arabis canadensis	X							X													
Arabis hirsuta	X																				
Arabis laevigata	X	X		X	X	X		X			X	X									
Arabis shortii	X	X		X	X	X	X	X		X	X				X						X
Aralia nudicaulis	X	X		X					X												
Aralia racemosa	X	X			X					X											
Arctium minus*	X	X	X		X																X
Arisaema triphyllum	X	X	X	X	X	X		X		X					X						
Aronia melanocarpa	X											X									
Aruncus dioicus	X				X																
Asarum canadense var reflexum	X	X	X	X	X	X	X				X				X						
Asclepias amplexicaulis	X								X												
Asclepias incarnata	X	X				X									X						
Asclepias syriaca	X	X																X			
Asclepias verticillata	X					X												X			
Asimina triloba	X	X			X	X	X								X						
Asparagus officinalis*	X								X			X						X			
Asplenium platyneuron	X	X			X																
ster cordifolius	X										X										
Aster drummondii	X	X	X						X												X
Aster furcatus <<	X				X	X															
Aster lateriflorus	X	X		X			X														
Aster pilosus	X																	X			
Aster ontarionis Aster ontarionis	X	X					X														
Aster shortii	X	X	X																		X

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Athyrium angustum	X	X	X	X	X						X										
Athyrium pycnocarpon		X			X																
Athyrium thelyptereioides	X					X				X					X						
Aureolaria grandiflora var pulchra	X							X	X												
Azolla mexicana	X												X								
Baptisia lactea	X								X												
Barbarea vulgaris*	X		X		X	X															
Berberis thunbergii*	X	X		X				X	X						X						
Boehmeria cylindrica	X	X			X																
Botrychium virginianum	X	X		X	X																
Brachyelytrum erectum	X	X			X	X									X						
Bromus inermis *		X																X			
Bromus tectorum *	X										X	X						X			
Bromus pubescens	X	X	X	X	X			X	X												X
Cacalia atriplicifolia	X																	X			
Caltha palustris	X	X													X						
Calystegia sepium	X																	X			
Calystegia spithamaea	X								X												
Campanula americana	X	X				X															X
Campanula americana	X	X	X	X	X																X
Campanula rotundifolia	X								X												
Cardamine pensylvanica	X	X																X			
Carex aggregata	X														X						
Carex albursina	X	X		X																	
Carex amphibola	X			X	X																
Carex annectens	X						X														
Carex blanda	X	X	X	X	X	X	X	X				X			X						X
Carex brevior	X																	X			
Carex cephalophora	X		X	X	X																
Carex communis <<<	X	X			X	X		X		X	X										
Carex convoluta	X	X	X	X	X			X													

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Carex crinita	X														X						
Carex cristatella	X														X						
Carex davisii	X				X																
Carex frankii	X														X						
Carex gracillima	X														X						
Carex gravida	X	X																			
Carex grayi	X	X		X		X									X						
Carex grisea	X	X																			
Carex hirsutella	X		X	X				X													
Carex hystericina	X														X						
Carex jamesii	X	X		X																	
Carex lanuginosa	X																	X			
Carex laxiflora	X				X																
Carex normalis	X														X						
Carex pensylvanica	X	X	X	X	X	X		X	X	X	X										
Carex plantaginea	X									X											
Carex rosea	X	X	X		X	X			X						X						
Carex scoparia	X	X													X						
Carex shortiana	X														X						
Carex sparganioides	X	X				X															
Carex stipata	X				X																
Carex swanii	X	X						X													
Carex umbellata	X										X										
Carpinus caroliniana	X	X			X	X				X											
Carya cordiformis	X	X	X	X	X	X															
Carya ovata	X	X	X	X	X				X									X			
Caulophyllum thalictroides	X	X	X		X	X				X											
Celastrus scandens	X	X			X																
Celtis occidentalis	X	X	X	X	X	X	X	X			X										X
Cephalanthus occidentalis	X	X			X					X					X						
Cerastium arvense	X	X						X	X			X									
Cercis canadensis	X		X															X			X

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Chaerophyllum procumbens	X				X																
Chelone glabra	X														X						
Cichorium intybus*	X																	X			X
Cicuta bulbifera	X	X			X																
Cicuta maculata	X	X											X		X						
Cinna arundinacea	X	X	X		X	X	X							X							X
Circaea lutetiana	X	X	X	X	X	X		X			X		X								
Cirsium altissimum	X	X			X																
Cirsium discolor	X	X													X						
Claytonia virginica	X	X	X	X	X	X	X	X			X				X			X		X	X
Clematis virginiana	X														X						
Comandra umbellata	X							X	X												
Conyza canadensis	X	X																X			
Corallorhiza odontorhiza		X			X																
Corallorhiza wisteriana	X			X																	
Coreopsis palmata	X								X												
Coreopsis tripteris	X								X												
Cornus alternifolia	X	X		X	X							X									
Cornus drummondii	X	X			X																
Cornus racemosa	X	X	X	X	X				X												
Coronilla varia*	X					X															
Corydalis aurea <<<	X																				
Corydalis sempervirens <<<	X					X					X										X
Corylus americana	X	X	X		X		X	X							X						
Crataegus crus-galli	X		X																		
Crataegus mollis	X	X					X														
Crataegus pruinosa	X		X																		
Cryptogramma stelleri		X								X											
Cryptotaenia canadensis	X	X	X	X	X	X									X						X
Cuscuta gronovii	X																X				
Cyperus filiculmis	X																	X			
Cypripedium pubescens	X	X	X		X																

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	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Cypripedium pubescens	X	X			X																
Cystopteris bulbifera	X	X			X					X	X										
Cystopteris protrusa	X	X		X	X	X		X	X	X	X										
Dactylis glomerata*	X	X																X			X
Dalea candida	X								X												
Danthonia spicata	X	X							X												
Daucus carota*	X	X																X			
Dentaria laciniata	X	X	X	X	X	X		X							X						
Descurainia pinnata var. brachycarpa *	X										X										
Desmodium glutinosum	X	X		X	X	X									X						
Desmodium nudiflorum	X	X	X						X												
Diarrhena americana		X		X	X	X															
Dicentra canadensis	X	X	X	X	X	X															
Dicentra cucullaria	X	X	X	X	X	X		X		X	X				X						
Dichanthelium acuminatum	X	X			X			X	X									X			X
Dichanthelium acuminatum var lindheimeri	X								X												
Dichanthelium columbianum	X							X	X	X		X									
Dichanthelium commutatum	X							X													
Dichanthelium depauperatum	X								X												
Dichanthelium latifolium	X	X	X	X	X			X	X												
Dichanthelium oligosanthes var scribnerianum	X								X									X			
Dichanthelium villosissimum	X							X													
Diervilla lonicera	X	X						X	X	X	X										
Dioscorea villosa	X		X	X	X	X						X			X						
Dipsacus laciniatus *	X																	X			
Dirca palustris		X						X													
Dodecatheon meadia		X				X		X	X	X	X										
Draba repens	X	X									X										
Dryopteris carthusiana	X				X										X						
Dryopteris intermedia	X	X			X	X				X	X										

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Dryopteris marginalis	X	X			X	X		X	X	X		X									
Echinochloa crus-galli *	X	X					X														
Elaeagnus angustifolia*	X		X																		X
Elaeagnus umbellata *	X				X			X													X
Eleocharis acicularis	X														X						
Eleocharis erythropoda	X																	X			
Eleusine indica*	X																	X			
Ellisia nyctelea	X	X		X	X																
Elymus canadensis	X																	X			
Elymus hystrix	X	X	X	X	X	X		X													X
Elymus villosus	X	X	X		X	X		X													X
Elymus virginicus	X	X	X	X	X	X	X								X						X
Equisetum arvense	X	X			X								X	X	X						
Equisetum hyemale var. affine	X	X			X					X											
Eragrostis spectabilis	X																	X			
Eragrostis trichodes	X																	X			
Erigeron annuus	X																				X
Erigeron strigosus	X	X						X	X											X	
Erysimum inconspicuum *	X										X										
Erythronium albidum	X	X	X	X	X	X	X	X							X						
Euonymus alatus*		X			X																
Euonymus europaeus *		X					X														
Eupatorium perfoliatum	X														X						
Eupatorium purpureum	X	X	X			X															X
Eupatorium rugosum	X	X	X	X	X	X	X														X
Eupatorium serotinum	X																	X			
Euphorbia corollata	X							X													
Festuca obtusa	X	X	X		X	X		X	X			X									X
Filipendula rubra <<		X													N						
Floerkea proserpinacoides	X			X	X																
Forsythia x intermedia *	X			X		X		X		X											

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Fragaria americana	X									X											
Fragaria virginiana	X	X							X												
Fraxinus americana	X	X	X																		X
Fraxinus nigra	X	X													X						
Fraxinus pennsylvanica	X	X	X		X																X
Fraxinus quadrangulata	X	X	X			X	X														
Galium aparine	X	X	X		X	X	X				X										X
Galium circaezans	X	X		X	X																
Galium circaezans var. hypomalacum	X		X		X																
Galium concinnum	X	X	X	X	X	X		X							X						
Galium triflorum	X	X	X		X			X							X						X
Gaylussacia baccata	X								X			X									
Geranium maculatum	X	X	X	X	X			X				X			X						
Geum canadense	X	X	X		X	X	X								X						X
Glechoma hederacea var micrantha*	X	X			X										X						X
Gleditsia triacanthos	X						X														
Gleditsia triacanthos var inermis	X						X														
Glyceria striata	X	X	X		X	X	X							X	X	X		X			
Gymnocladus dioicus		X			X	X															
Hackelia virginiana	X	X	X		X																X
Hamamelis virginiana	X	X		X	X	X		X	X						X						
Hedyotis longifolia var ciliolata	X								X												
Helianthemum bicknellii	X																				
Helianthus divaricatus	X					X															X
Helianthus mollis	X																		X		
Heliopsis helianthoides		X	X																		X
Hepatica nobilis var acuta	X	X		X	X	X		X			X										
Heuchera richardsonii	X	X	X						X												
Hieracium canadense	X				X	X					X										
Humulus lupulus	X	X	X				X								X						X

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Hydrangea arborescens	X	X			X			X	X	X	X	X			X						
Hydrophyllum appendiculatum	X	X			X																
Hydrophyllum canadense	X			X																	
Hydrophyllum virginianum		X		X	X	X	X			X	X										
Hypoxis hirsuta	X								X												
Impatiens capensis	X	X					X						X		X		X				
Impatiens pallida	X	X			X	X									X						
Iris pseudacorus*	X														X						
Iris shrevei	X	X													X						
Isopyrum biternatum	X	X	X	X	X	X					X										
Ilex verticillata	X									X	X										
Juglans cinerea	X	X			X	X															
Juglans nigra	X	X		X					X												
Juncus effusus var solutus	X														X						
Juncus interior	X								X												
Juncus tenuis	X							X	X			X									X
Juniperus virginiana	X	X		X	X			X	X		X	X						X			
Koeleria macrantha	X								X									X			
Krigia virginica	X	X							X			X									
Lactuca floridana	X	X			X	X															X
Laportea canadensis	X	X		X	X	X	X			X					X						
Lechea tenuifolia	X							X	X												
Leersia oryzoides	X	X					X								X						
Leersia virginica	X	X	X			X	X	X						X							X
Lemna minor	X	X											X	X	X	X	X				
Lemna trisulca		X					P														
Leonurus cardiaca*	X	X			X						X										
Lepidium virginicum	X	X																X			
Leptoloma cognatum	X																	X			
Lespedeza capitata	X																	X			
Lespedeza virginica	X							X	X												

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Liatris aspera	X								X												
Ligustrum vulgare*	X		X																		
Linaria canadensis	X								X												
Liparis liliifolia	X			X					X												X
Lithospermum canescens		X							X												
Lithospermum latifolium	X				X																
Lobelia inflata	X	X	X																		X
Lonicera maackii*	X	X		X				X	X												
Lonicera prolifera	X	X		X	X			X	X												
Lonicera sempervirens	X								X												
Lonicera x bella*	X	X	X																		
Ludwigia peploides ssp glabrescens	X														X						
Luzula acuminata <<<	X				X			X		X											
Luzula multiflora	X							X													
Lycopodium porophilum	X										X										
Lysimachia nummularia *	X	X					X								X						
Lysimachia vulgaris*	X																	X			
Lythrum salicaria*	X												X								
Maclura pomifera*		X																X			
Maianthemum canadense interius	X	X			X			X	X	X	X				X						
Malus ioensis	X		X																		
Malus pumila*	X						X														
Matricaria perforata*	X																	X			
Matteuccia struthiopteris		X			X	X				X					X						
Medicago lupulina*	X																	X			X
Melilotus alba*	X																	X			X
Melilotus officinalis*	X																	x			x
Menispermum canadense	X	X		X	X										X						
Mertensia virginica		X		X	X	X	X	X		X	X										
Mimulus ringens	X				X																
Mitchella repens	X				X					X											

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Mitella diphylla	X	X			X										X						
Monarda fistulosa	X	X	X					X													X
Monotropa uniflora		X			X	X									X						
Morus rubra	X									X											
Muhlenbergia frondosa	X									X											
Muhlenbergia mexicana	X				X																
Muhlenbergia schreberi	X	X	X								X										X
Muhlenbergia sobolifera	X	X									X										
Muhlenbergia tenuiflora	X	X		X	X																
Myosotis scorpioides*	X														X						
Myosotis stricta	X																	Z			
Napaea dioica	X												X								
Nepeta cataria*	X	X				X															X
Oenothera biennis	X	X																			X
Oenothera rhombipetala	X																				
Onoclea sensibilis	X	X			X										X						
Opuntia humifusa		X											X								
Oryzopsis racemosa <<	X	X			X																
Osmorhiza claytonii	X	X	X	X	X	X		X		X											
Osmunda cinnamomea	X	X			X					X	X				X						
Osmunda claytoniana	X	X			X	X				X											
Ostrya virginiana	X	X	X		X	X		X		X	X										
Oxalis europaea *	X					X															
Oxalis stricta	X	X	X	X					X									X			X
Oxalis violacea	X								X												
Oxypolis rigidior	X	X															X				
Panax quinquefolius	X			X																	
Panicum virgatum	X																		X		
Paronychia canadensis	X				X			X	X			X									
Parthenocissus inserta	X	X																			
Parthenocissus quinquefolia	X	X		X																	
Pastinaca sativa*	X																	X			

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Pedicularis canadensis		X						X	X	X											
Phacelia bipinnatifida	X				X	N	X														
Phalaris arundinacea *	X						X								X			X			
Phegopteris connectilis <<<	X									X	X	X									
Phegopteris hexagonoptera	X	X			X																
Phlox divaricata	X	X	X	X	X			X													
Phlox pilosa	X								X												
Phragmites australis	X	X													X						
Phryma leptostachya	X	X	X		X					X											X
Physalis heterophylla	X																	X			
Physocarpus opulifolius	X				X																
Physostegia virginiana		X							X												
Phytolacca americana	X	X		X																	
Pilea fontana	X									X	X				X						
Pilea pumila	X	X	X	X	X		X							X		X					
Pinus strobus	X	X			X	X		X	X	X	X	X			X						
Pinus sylvestris*	X			X				X													
Plantago lanceolata*	X																	X			X
Plantago rugelii*	X	X																X			X
Platanus occidentalis	X	X			X		X								X						
Poa compressa*	X	X	X		X	X		X	X	X		X						X			X
Poa languida <<<	X								X												
Poa nemoralis*	X								X												
Poa pratensis*	X	X	X		X				X	X	X	X						X			X
Poa sylvestris	X				X	X	X														
Podophyllum peltatum	X	X	X	X	X	X		X							X						
Polemonium reptans	X					X															
Polygala sanguinea	X								X												
Polygala senega	X																				
Polygala verticillata	X						X														
Polygonatum commutatum	X			X	X	X			X												
Polygonum arenastrum*	X							X													

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Polygonum persicaria*	X					X															X
Polygonum punctatum	X				X																X
Polygonum tenue	X								X			X									
Polygonum virginianum	X	X	X	X	X		X								X						X
Polymnia canadensis	X				X					X											
Polypodium virginianum	X	X	X	X				X	X	X	X	X									
Polystichum acrostichoides		X		X	X					X	X	X									
Populus deltoides	X	X					X		X												
Populus grandidentata	X	X							X												
Porteranthus stipulatus	X							X	X												
Potentilla recta*	X																	X			
Potentilla simplex	X	X			X				X												
Prenanthes alba	X	X		X	X	X		X		X	X				X						
Prenanthes crepidinea	X				X																
Proserpinaca palustris	X				X		X														
Prunella vulgaris var elongata	X		X					X													X
Prunus americana		X	X															X			X
Prunus avium *	X			X																	
Prunus serotina	X	X	X	X	X		X				X				X						
Prunus virginiana	X	X	X	X	X	X	X														
Ptelea trifoliata	X					X			X									X			
Pteridium aquilinum var latiusculum	X	X							X												
Quercus alba	X	X	X	X	X	X		X													
Quercus bicolor	X	X		X			X														
Quercus imbricaria	X		X															X			
Quercus macrocarpa	X	X	X																		
Quercus prinoides var. acuminata	X	X			X			X		X											
Quercus rubra	X	X	X	X	X	X		X			X				X						
Quercus velutina	X	X							X												
Ranunculus abortivus	X	X	X	X	X	X	X	X		X	X				X						
Ranunculus fascicularis	X							X													

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Ranunculus pensylvanicus	X			X	X										X						X
Ranunculus recurvatus	X	X								X					X						
Ranunculus sceleratus	X														X						
Ranunculus septentrionalis	X						X			X					X			X			
Ratibida pinnata	X								X												
Rhamnus cathartica*	X	X		X	X	X		X	X		X				X						X
Rhodotypos scandens *		X	X																		X
Rhus glabra	X	X																X			
Rhus typhina		X							X			X									
Ribes americanum	X	X													X						
Ribes cynosbati		X						X		X	X										
Ribes missouriense	X	X	X	X	X	X	X	X		X	X	X									
Robinia pseudoacacia*	X	X	X			X			X									X			
Rosa blanda	X								X												
Rosa carolina	X								X			X									
Rosa multiflora*	X	X		X			X			X					X			X			
Rosa setigera	X						X														
Rosa suffulta	X								X												
Rubus allegheniensis	X	X			X				X												
Rubus flagellaris	X								X									X			
Rubus occidentalis	X	X	X		X	X		X		X	X				X						X
Rubus pensilvanicus	X	X	X			X							X	X							
Rudbeckia hirta	X		X						X				X					X			X
Rudbeckia laciniata	X						X														
Rumex acetosella	X								X		X										
Rumex verticillatus	X														X						
Sagittaria brevirostra	X																	X			
Sagittaria latifolia	X																	X			
Salix eriocephala	X	X								X					X						
Salix exigua	X	X					X														
Sambucus canadensis	X	X					X														

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Sambucus racemosa ssp. pubens <<	X	X		X	X	X				X	X	X									
Sanguinaria canadensis	X	X	X	X	X	X		X	X	X	X										
Sanicula canadensis	X	X	X																		
Sanicula gregaria	X	X	X	X	X	X	X														X
Sanicula trifoliata	X	X			X	X															
Saponaria officinalis*	X																	X			
Sassafras albidum	X	X	X	X	X																
Saxifraga pensylvanica	X									X	X				X						
Schizachyrium scoparium	X	X						X	X												
Scirpus atrovirens	X				X					X					X						
Scrophularia lanceolata	X	X		X																	
Scrophularia marilandica	X	X		X																	
Scutellaria lateriflora	X	X				X	X								X						
Scutellaria ovata var versicolor	X	X		X	X																
Sedum sarmentosum *	X									X	X	X									
Selaginella rupestris	X							X		X		X									
Silene antirrhina	X							X										X			
Silene stellata	X	X	X			X			X												
Silphium terebinthinaceum	X																	X			
Sisyrinchium albidum	X								X												
Sium suave	X	X											X				X				
Smilacina racemosa	X	X		X					X												
Smilacina stellata	X														X						
Smilax ecirrhata	X	X		X	X																
Smilax hispida	X	X		X	X																
Smilax lasioneuron	X			X																	
Solanum ptycanthum	X	X								X			X								
Solidago canadensis	X																	X	X		X
Solidago flexicaulis	X	X		X	X	X						X									
Solidago gigantea	X																X	X			X
Solidago hispida	X	X								X	X	X									

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Solidago missouriensis	X																	X			
Solidago patula	X														X						
Solidago sciaphila <<	X	X									X										
Solidago speciosa	X							X	X												
Solidago ulmifolia	X	X	X						X												X
Spartina pectinata	X																				X
Sphenopholis obtusata	X		X		X	X		X	X												
Sporobolus asper	X	X											X					X			
Sporobolus cryptandrus	X																	X			
Sporobolus heterolepis		X						X													
Staphylea trifolia	X	X			X																
Symplocarpus foetidus		X			X										X						
Taenidia integerrima	X	X	X						X												
Talinum rugospermum	X								X			X						X			
Taraxacum officinale*	X	X	X		X			X	X			X						X			X
Taxus canadensis	X							X		X											
Teucrium canadense var virginicum	X				X										X			X			
Thalictrum dioicum	X				X																
Thalictrum thalictroides	X					X															
Thelypteris palustris var. pubescens	X	X													X						
Thuja occidentalis <<	X	X				X		X	X	X	X										
Tilia americana	X	X	X	X	X	X		X			X				X						
Toxicodendron radicans	X	X		X					X	X											
Tradescantia ohiensis	X	X			X	X			X			X									
Tridens flavus*	X						X														X
Trifolium pratense*	X	X																			X
Trifolium repens*	X																			X	
Trillium flexipes	X				X																
Trillium recurvatum	X	X	X	X	X	X	X	X													
Triodanis perfoliata	X								X												
Triosteum perfoliatum	X		X																		X

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPE			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Tsuga canadensis *	X				X	X									X						
Typha angustifolia	X																	X			
Typha latifolia	X																				
Ulmus americana	X	X	X			X	X			X	X		X								
Ulmus rubra	X	X					X														
Uvularia grandiflora	X	X	X	X	X			X	X	X	X										
Vaccinium angustifolium	X					X		X	X												
Vaccinium pallidum	X					X		X	X												
Verbascum thapsus*	X																	X			
Verbena stricta	X											X									
Verbena urticifolia	X	X			X													X			X
Veronica arvensis	X										X										
Vernonia gigantea	X		X																		X
Veronicastrum virginicum	X	X	X			X															
Viburnum dentatum var deamii	X							X	X												
Viburnum Lentago	X														X						
Viburnum opulus*	X	X	X		X																
Viburnum prunifolium	X	X	X	X				X	X						X						
Viburnum rafinesquianum	X		X	X			X					X									
Viburnum recognitum	X			X					X												
Viola pedata	X			X					X												
Viola pubescens var eriocarpa	X	X				X		X	X												
Viola sagittata	X								X												
Viola sororia	X	X	X	X	X			X	X						X			X			X
Vitis riparia var syrticola	X	X	X			X	X														
Vulpia octoflora	X							X	X												
Woodsia obtusa	X	X						X	X	X		X									
Xanthium strumarium		X											X								
Zanthoxylum americanum	X	X	X	X	X			X	X												
Zizia aurea	X						X														

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Appendix II Species List of Matthiessen State Park.

MATTHIESSON STATE PARK SPECIES LIST

	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Acalypha rhomboidea	X		X							X				X	X						
Acer negundo		X																			
Acer saccharinum		X																			
Acer saccharum	X	X	X			X				X											
Achillea millefolium*	X																		X		
Actaea pachypoda	X	X			X					X											
Adiantum pedatum	X	X								X											
Aesculus glabra		X	X					X													
Agrimonia pubescens	X	X	X	X	X																
Agrimonia rostellata	X		X																		
Agropyron repens*	X																		X		
Agrostis alba *	X																		X		
Agrostis alba var palustris	X							X			X										
Alliaria petiolata*	X		X																		
Allium canadense		X								X											
Allium tricoccum		X																			
Ambrosia artemisiifolia	X																		X		
Ambrosia trifida	X																		X		
Amelanchier arborea	X							X													
Amorpha canescens	X							X													
Amphicarpa bracteata	X		X		X					X											
Amphicarpa bracteata var comosa	X		X																		
Andopogon gerardi	X																		X		
Anemone cylindrica		X																			
Anemone virginiana		X				X															
Antennaria plantaginifolia	X							X													

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Apocynum sibiricum	X																		X		
Aquilegia canadensis		X								X											
Arabis laevigata	X	X	X			X				X											
Arabis shortii		X								X											
Aralia racemosa		X								X											
Arctium minus*	X	X						X													
Arisaema dracontium	X		X																		
Arisaema triphyllum	X	X	X							X											
Aruncus dioicus	X	X								X											
Asarum canadense		X																			
Asclepias exaltata		X	X																		
Asclepias syriaca	X																		X		
Asclepias verticillata	X																		X		
Asimina triloba		X																			
Asplenium platyneuron	X			X				X													
Aster cordifolius	X				X			X		X											
Aster drummondii	X				X			X													
Aster laevis	X							X		X	X										
Aster lateriflorus	X		X		X			X		X											
Aster ontarionis	X				X										X						
Aster pilosus	X																		X		
Aster shortii	X		X		X			X													
Barbarea vulgaris*	X																	X			
Berberis thunbergii*	X	X	X																		
Boehmeria cylindrica	X				X										X						
Botrychium virginianum	X	X	X																		
Bouteloua curtipendula	X																		X		

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Brachyelytrum erectum	X	X	X																		
Brassica nigra*	X																		X		
Bromus inermis*	X										X								X		
Bromus pubescens	X	X	X			X		X													
Campanula americana	X							X													
Campanula rotundifolia		X								X											
Cardamine pensylvanica		X								X											
Carex albursina		X								X											
Carex blanda	X	X	X			X				X											
Carex cephalophora	X		X																		
Carex communis <<<	X	X								X											
Carex frankii	X							X													
Carex grisea		X																			
Carex hirtifolia	X		X																		
Carex laxiculmis <<<		X																			
Carex pensylvanica	X		X			X															
Carex rosea	X	X	X																		
Carex sparganioides	X	X	X																		
Carex swanii	X	X	X					X													
Carpinus caroliniana	X	X								X											
Carya cordiformis	X	X				X															
Carya ovata	X	X	X			X															
Catalpa bignonioides*		X																			
Caulophyllum thalictroides		X																			
Celastrus scandens	X							X													
Celtis occidentalis	X	X				X				X											
Cercis canadensis		X								X	X										

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Cichorium intybus*	X																	X			
Cinna arundinacea	X		X					X		X											
Circaea lutetiana ssp canadensis	X	X	X																		
Cirsium altissimum	X							X							X						
Cirsium arvense*	X																		X		
Cirsium vulgare*	X																		X		
Claytonia virginica	X		X																		
Comandra umbellata	X							X													
Commelina communis*	X							X													
Conyza canadensis	X																		X		
Corallorhiza odontorhiza	X				X			X													
Coreopsis palmata	X							X													
Cornus alternifolia	X	X	X							X											
Cornus drummondii	X		X																		
Cornus racemosa	X	X																			
Coronilla varia*	X																		X		
Corylus americana	X		X																		
Cryptotaenia canadensis	X	X	X		X					X											
Cypripedium pubescens	X	X						X													
Cystopteris bulbifera	X	X								X											
Cystopteris protrusa	X	X								X											
Dactylis glomerata*	X							X													
Dalea candida	X																		X		
Dalea purpurea	X																		X		
Daucus carota*	X																		X		
Dentaria laciniata	X		X																		
Desmanthus illinoensis	X																		X		

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Desmodium glutinosum	X		X					X													
Dianthus armeria*	X																		X		
Diervilla lonicera		X																			
Dioscorea villosa	X		X																		
Dirca palustris	X	X								X											
Dirca palustris	X				X			X													
Dryopteris marginalis	X	X								X											
Echinacea pallida	X																		X		
Echinochloa crus-galli *	X													X							
Eclipta prostrata	X												X								
Elymus hystrix	X		X		X																
Elymus villosus	X	X	X			X		X													
Elymus virginicus	X				X																
Equisetum arvense	X	X						X							X						
Erigeron annuus	X																		X		
Erigeron philadelphicus		X																			
Erigeron strigosus																					
Eryngium yuccifolium	X																		X		
Eupatorium purpureum	X	X	X		X			X		X											X
Eupatorium rugosum	X				X			X													
Eupatorium serotinum	X		X																X		
Euphorbia corollata	X	X						X				X									
Euthamia graminifolia	X				X								X								
Festuca obtusa	X	X	X							X											
Forsythia x intermedia *	X							X	X	X											
Fragaria americana	X	X								X											
Fraxinus nigra		X													X						

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Fraxinus pennsylvanica	X	X	X																		
Fraxinus quadrangulata	X							X													
Galium aparine	X	X	X							X											
Galium asprellum	X	X	X																		
Galium circaezans		X						X													
Galium concinnum	X	X	X																		
Galium triflorum	X	X	X	X	X	X															
Geranium maculatum	X	X																			
Geum canadense	X	X	X			X															
Glechoma hederacea var micrantha*		X																			
Gleditsia triacanthos	X																		X		
Gleditsia triacanthos var inermis	X																				
Glyceria striata	X	X	X							X											
Hackelia virginiana	X							X											X		
Hamamelis virginiana		X								X											
Helianthus decapetalus	X							X													
Helianthus occidentalis	X																		X		
Helianthus strumosus	X							X													
Heliopsis helianthoides	X																		X		
Hepatica nobilis var acuta	X	X			X			X		X											
Thlaspi arvense*	X																		X		
Hydrangea arborescens	X	X								X											
Hydrophyllum appendiculatum		X																			
Hydrophyllum virginianum		X																			
Isopyrum biternatus		X																			
Juglans nigra	X		X			X															

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Juniperus virginiana	X	X				X				X									X		
Lactuca floridana	X		X		X																X
Laportea canadensis	X	X								X											
Leersia oryzoides		X													X						
Leersia virginica	X	X	X	X				X			X				X						
Lobelia inflata	X		X																		
Lobelia siphilitica	X				X					X			X								
Lonicera maackii*		X								X											
Lonicera prolifera	X																				
Luzula acuminata <<<	X							X													
Lycopus virginicus	X		X																		
Lysimachia nummularia*	X	X		X	X					X					X						
Maianthemum canadense var interius		X								X											
Melilotus alba*	X																		X		
Melilotus officinalis*	X																		X		
Menispermum canadense	X	X	X							X											
Mertensia virginica		X										X									
Mimulus alatus	X																				
Mitella diphylla		X								X											
Monarda fistulosa	X																		X		
Morus alba*		X																			
Muhlenbergia schreberi	X		X					X													
Muhlenbergia tenuiflora	X				X																
Myosotis scorpioides*		X													X						
Oenothera biennis	X																		X		
Onoclea sensibilis	X		X																		
Oryzopsis racemosa <<	X				X			X		X											

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Osmorhiza claytonii	X	X	X							X											
Osmorhiza longistylis		X								X											
Ostrya virginiana	X	X	X			X				X											
Oxalis stricta	X	X						X			X										
Panax quinquefolius		X				X															
Panicum virgatum	X																		X		
Parthenocissus inserta	X	X								X											
Parthenocissus quinquefolia	X	X																			
Pastinaca sativa*	X																	X			
Pedicularis canadensis		X						X													
Pellaea glabella		X										X									
Phalaris arundinacea *	X	X																	X		
Phegopteris hexagonoptera	X																				
Phleum pratense*	X																		X		
Phlox divaricata	X	X								X											
Phryma leptostachya	X		X																		
Physalis subglabrata	X																		X		
Physostegia virginiana	X													X	X						
Pilea fontana	X				X										X						
Pilea pumila	X	X	X																		
Pinus resinosa <<<		X									X										
Pinus strobus	X	X								X											
Plantago lanceolata*	X																		X		
Plantago rugelii*	X	X																	X		
Platanus occidentalis	X				X								X								
Poa annua*		X																			X
Poa compressa*		X				X						X									

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Poa pratensis*		X	X																X		
Poa trivialis*		X													X						
Podophyllum peltatum	X	X	X																		
Polygonatum commutatum	X	X				X				X											
Polygonum convolvulus*	X																		X		
Polygonum pensylvanicum	X																		X		
Polygonum scandens	X		X																		
Polygonum virginianum	X	X	X					X			X										
Polystichum acrostichoides		X								X											
Populus deltoides		X																			
Potentilla norvegica*	X																		X		
Potentilla simplex	X							X	X												
Prenanthes alba	X				X																
Prunella vulgaris var elongata	X		X																		
Prunus americana	X																	X			
Prunus serotina	X					X															
Prunus virginiana		X								X											
Ptelea trifoliata	X	X				X				X											
Quercus alba	X	X	X			X															
Quercus macrocarpa	X		X			X															
Quercus prinoides var acuminata		X				X															
Quercus rubra	X	X	X							X											
Quercus velutina	X					X		X													
Ranunculus abortivus	X		X							X											
Ranunculus recurvatus	X	X																			
Ranunculus sceleratus		X													X						
Ranunculus septentrionalis	X	X								X											

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PI	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Ratibida pinnata	X							X											X		
Rhamnus cathartica*	X	X	X			X				X											
Rhus glabra	X							X													
Rhus typhina	X																		X		
Ribes missouriense	X	X				X				X											
Robinia pseudoacacia*	X	X								X											
Rosa multiflora*		X				X		X													
Rosa setigera	X		X																		
Rubus occidentalis	X	X								X											
Rudbeckia hirta	X																		X		
Rudbeckia laciniata	X	X			X								X								
Ruellia strepens	X												X								
Rumex crispus*	X																		X		
Sagittaria latifolia	X												X								
Sambucus canadensis	X	X	X									X									
Sambucus racemosa ssp. pubens <<	X									X											
Sanguinaria canadensis		X								X											
Sanicula canadensis	X					X		X													
Sanicula gregaria	X	X	X			X				X											
Sanicula trifoliata		X																			
Saxifraga pensylvanica		X								X											
Schizachyrium scoparium	X							X											X		
Scirpus atrovirens	X							X													
Scirpus pendulus	X																				X
Scutellaria lateriflora	X		X										X								
Scutellaria ovata var versicolor	X							X													

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Setaria glauca*	X																		X	X	
Silphium laciniatum	X																		X		
Silphium terebinthinaceum	X							X													
Sisymbrium loeselii*		X													X						
Smilacina racemosa	X	X	X							X											
Smilax ecirrhata	X	X																			
Smilax hispida	X	X	X																		
Solidago canadensis	X																	X	X		X
Solidago flexicaulis	X	X	X		X			X		X											
Solidago gigantea	X																	X	X		
Solidago juncea	X							X													
Solidago sciaphila <<	X							X		X											
Solidago ulmifolia	X				X			X													
Sonchus asper	X																		X		
Sonchus asper*																					
Sonchus oleraceus*	X																		X		
Sphenopholis obtusata var major		X						X			X										
Staphylea trifolia		X								X											
Symplocarpus foetidus		X													X						
Taenidia integerrima	X		X					X													
Taraxacum officinale*	X	X						X			X		X								
Taxus canadensis	X	X								X											
Thalictrum dioicum	X									X											
Thalictrum revolutum		X																			
Thalictrum thalictroides		X								X											
Thuja occidentalis <<		X								X											
Tilia americana	X	X								X											

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	AREA		FOREST					CR		CLIFF			SREM		WETND			DEVELOPED			
	SP	NP	PL	RT	RV	RS	BT	S	B	RV	RS	OP	RB	RV	SP	P	W	F	R	M	PTH
Toxicodendron radicans	X	X	X							X											
Tradescantia ohiensis		X						X													
Tragopogon pratensis*	X																		X		
Trifolium pratense*	X																		X		
Trifolium repens*	X																		X		
Trillium flexipes		X																			
Tsuga canadensis *		X								X											
Ulmus americana	X	X	X							X											
Ulmus rubra	X	X	X					X													
Urtica dioica		X								X					X						
Uvularia grandiflora	X	X								X											
Verbascum thapsus*	X																		X		
Verbena urticifolia	X		X																X		
Verbesina alternifolia	X				X										X						
Veronica americana <<<	X				X										X						
Veronica catenata		X													X						
Veronicastrum virginicum	X				X																
Viburnum opulus*	X	X	X																		
Viburnum prunifolium	X	X	X			X		X													
Viburnum rafinesquianum	X	X								X											
Viola pubescens var eriocarpa	X	X	X																		
Viola sororia	X	X	X							X											
Vitis riparia	X		X																		
Zanthoxylum americanum	X	X	X			X				X											
Zizia aurea		X																			X

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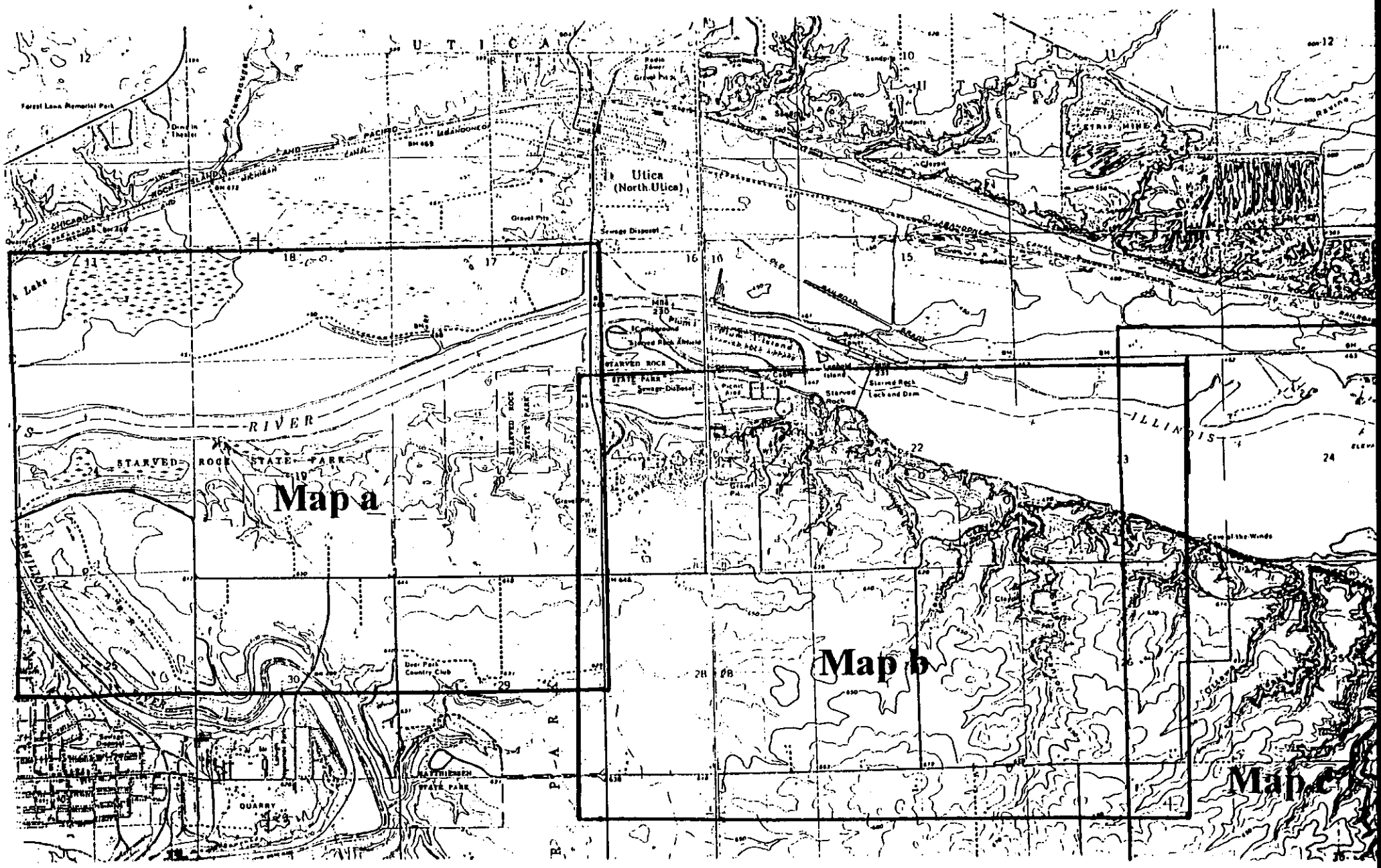
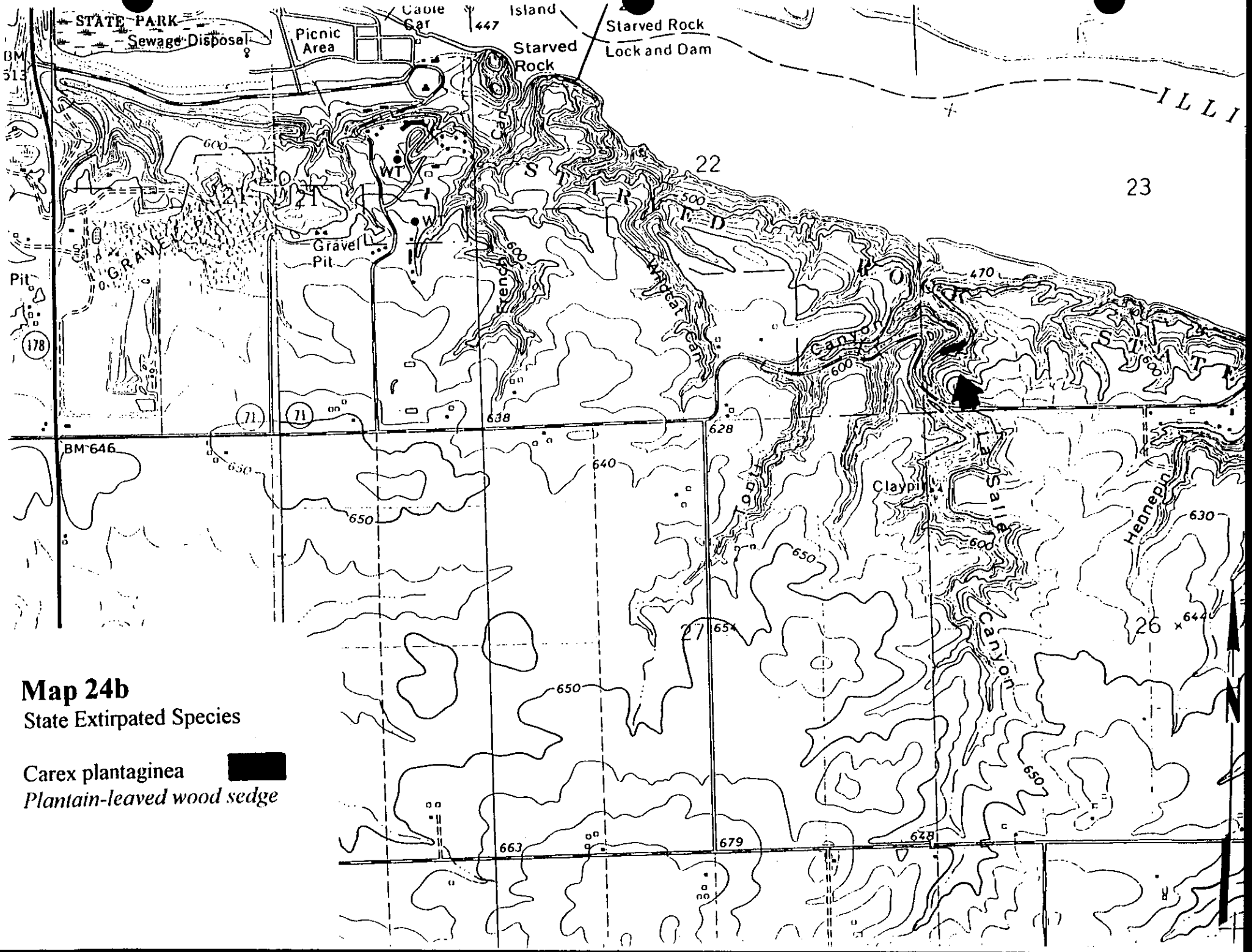
Appendix III Maps of Starved Rock and Matthiessen State Parks.

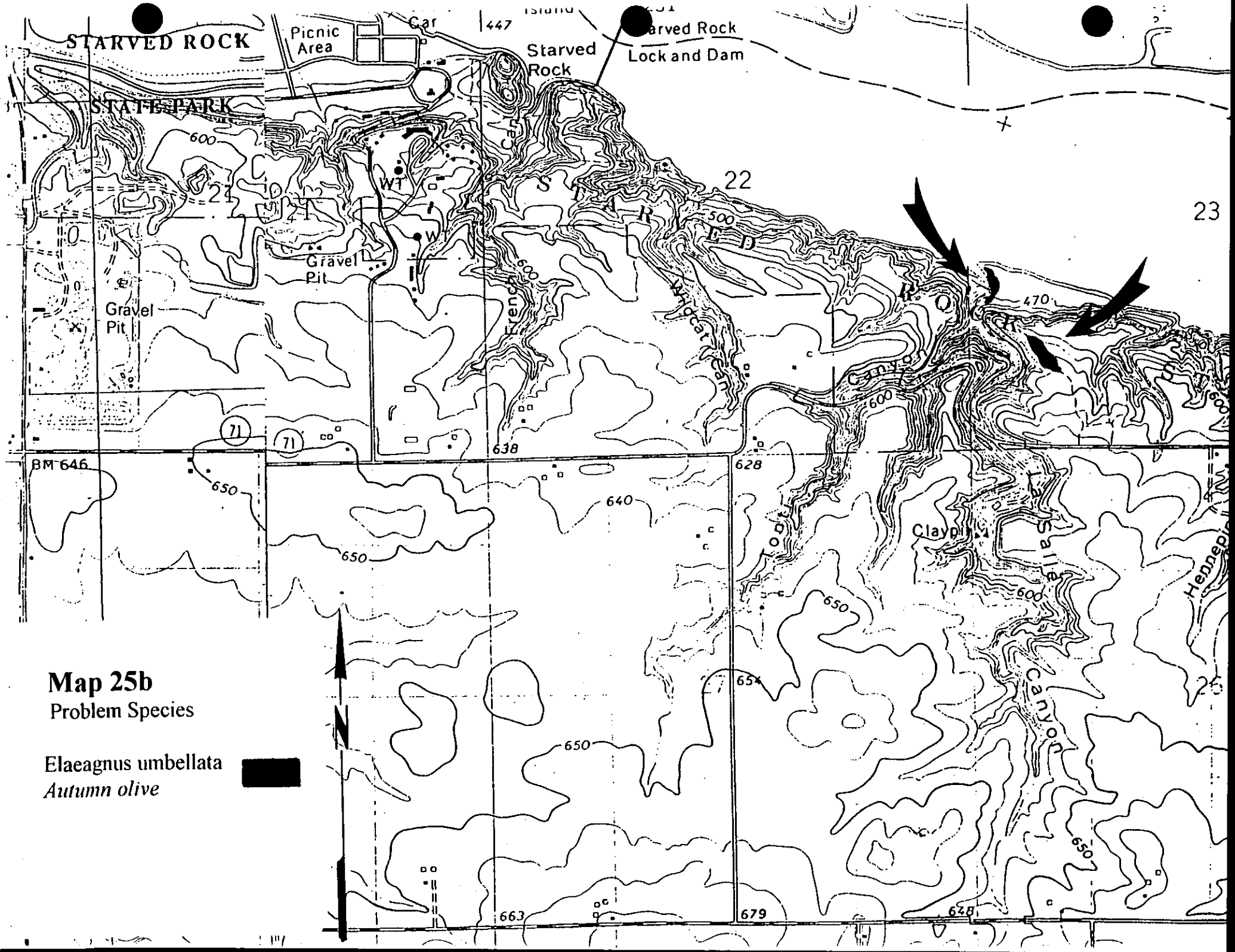


Map 1 Location of Starved Rock State Park **Unit Maps**.



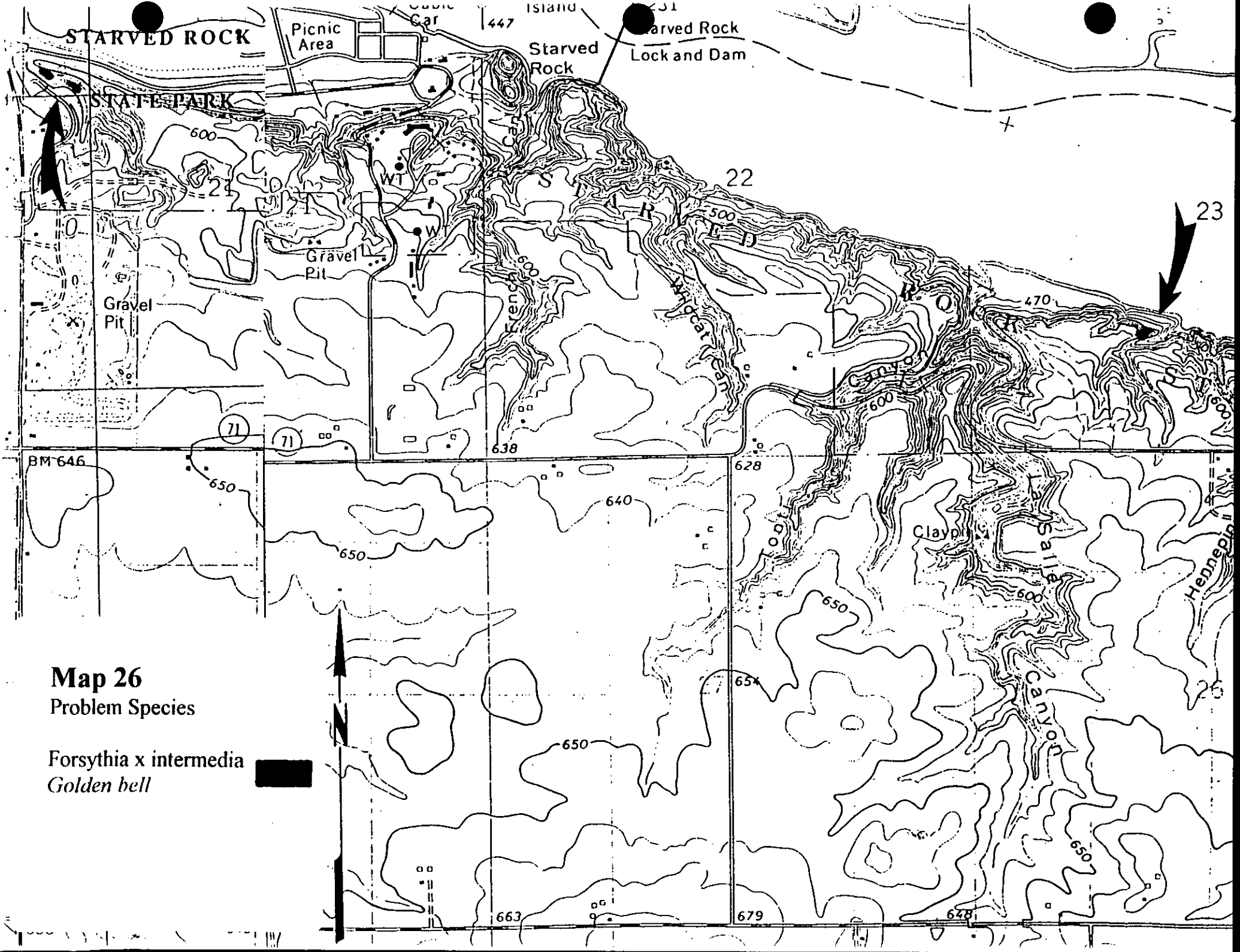
Map 24b
State Extirpated Species

Carex plantaginea
Plantain-leaved wood sedge



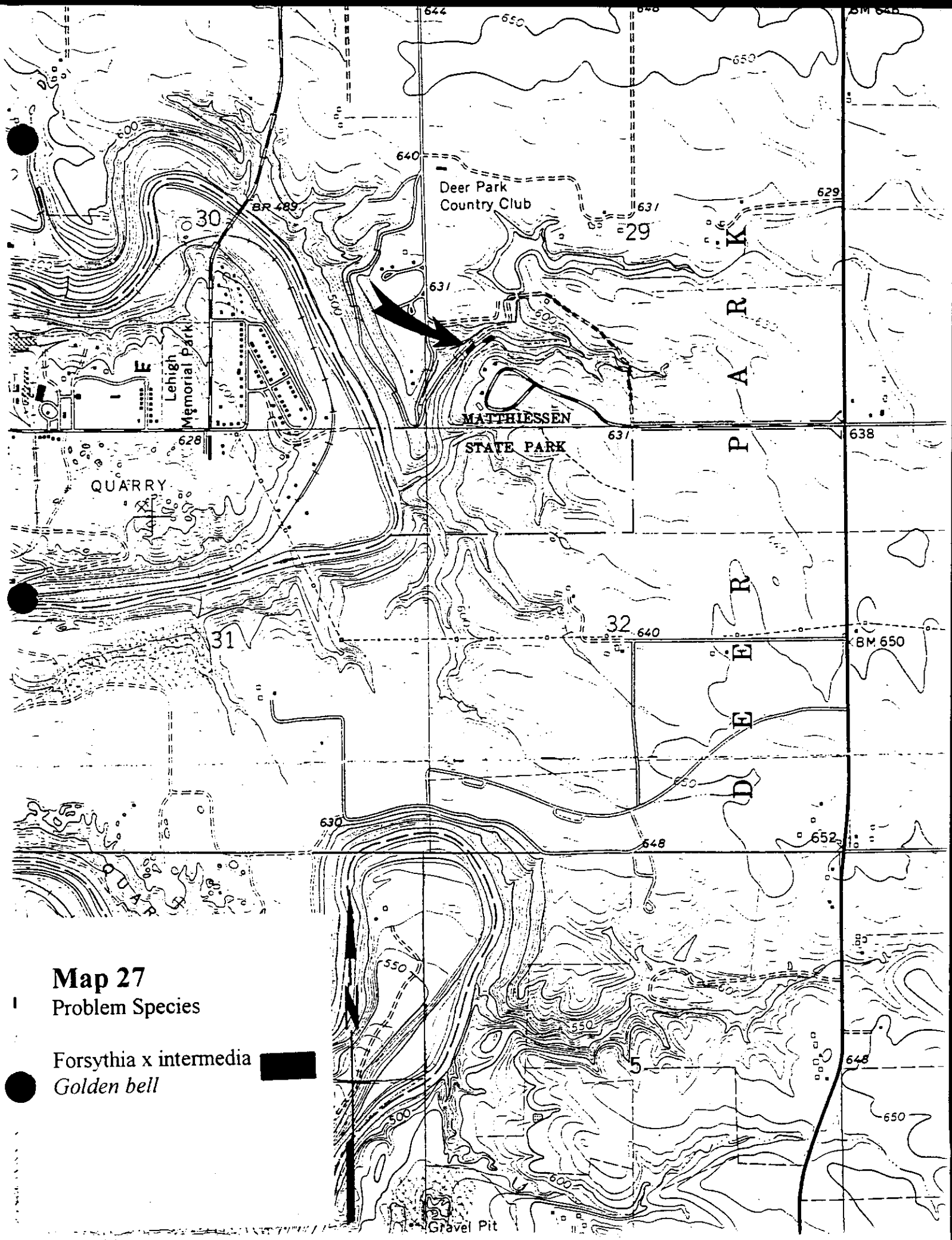
Map 25b
Problem Species

Elaeagnus umbellata
Autumn olive



Map 26
Problem Species

Forsythia x intermedia
Golden bell

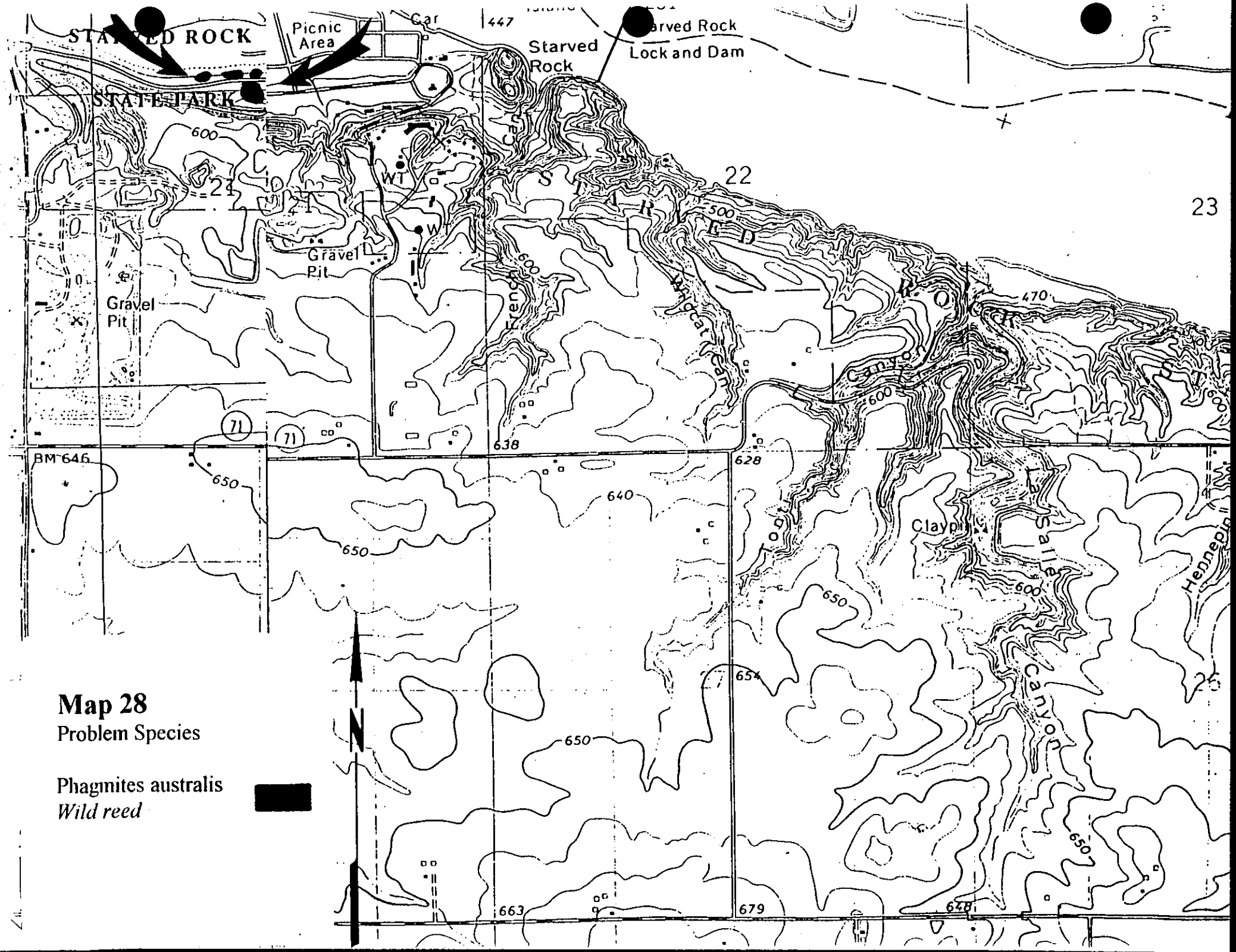


Map 27

Problem Species

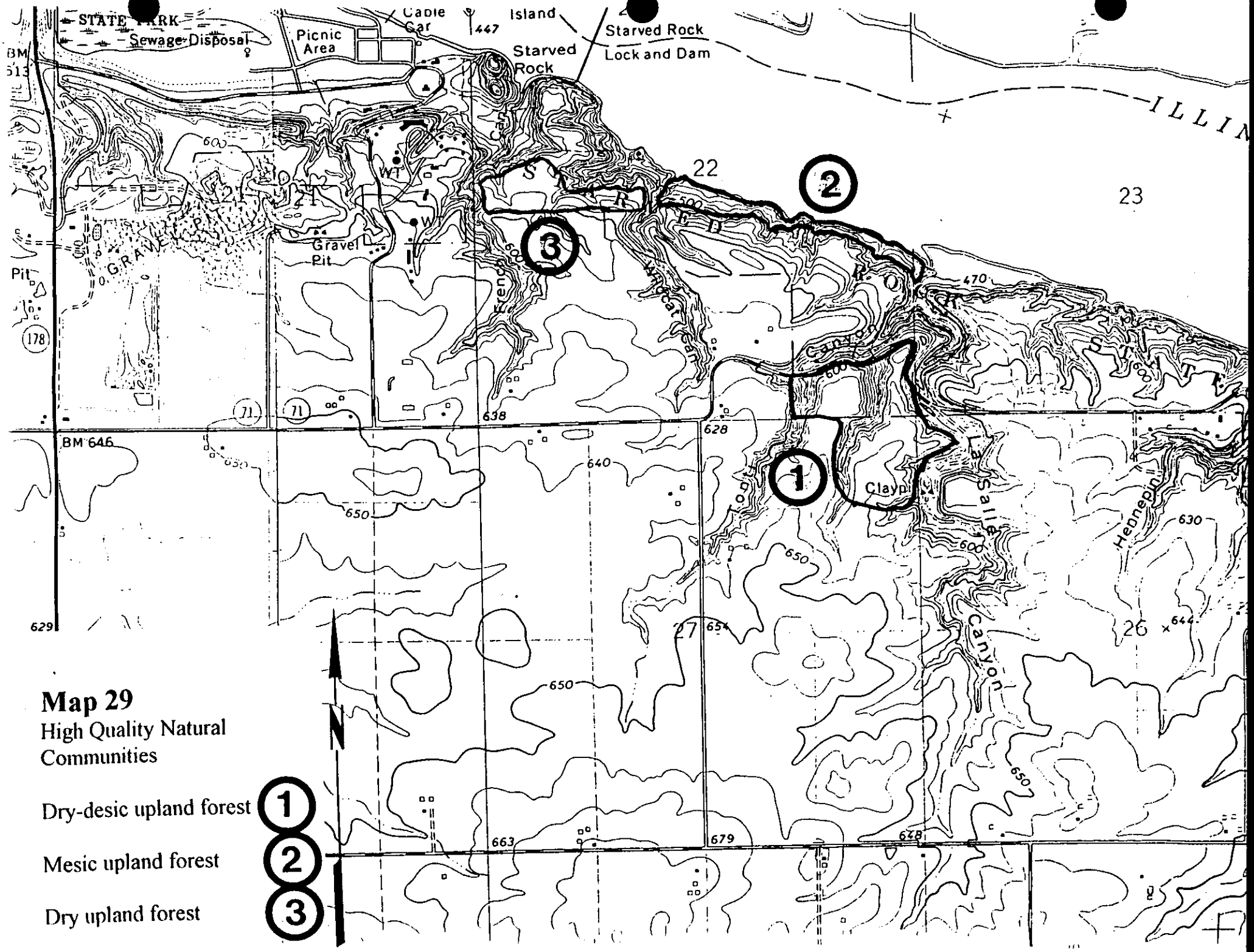
Forsythia x intermedia

Golden bell



Map 28
Problem Species

Phagmites australis
Wild reed

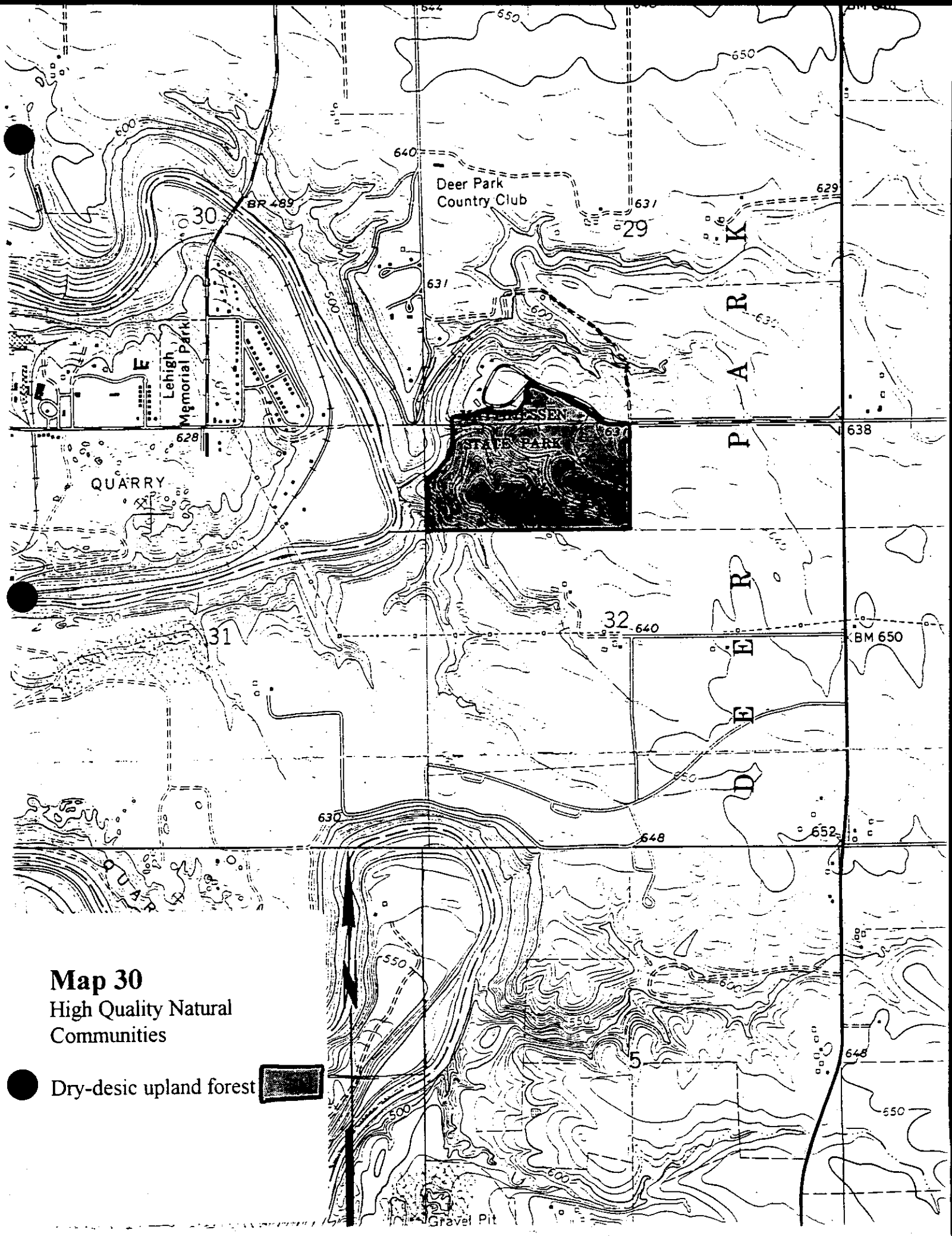


Map 29
High Quality Natural Communities

Dry-desic upland forest (1)

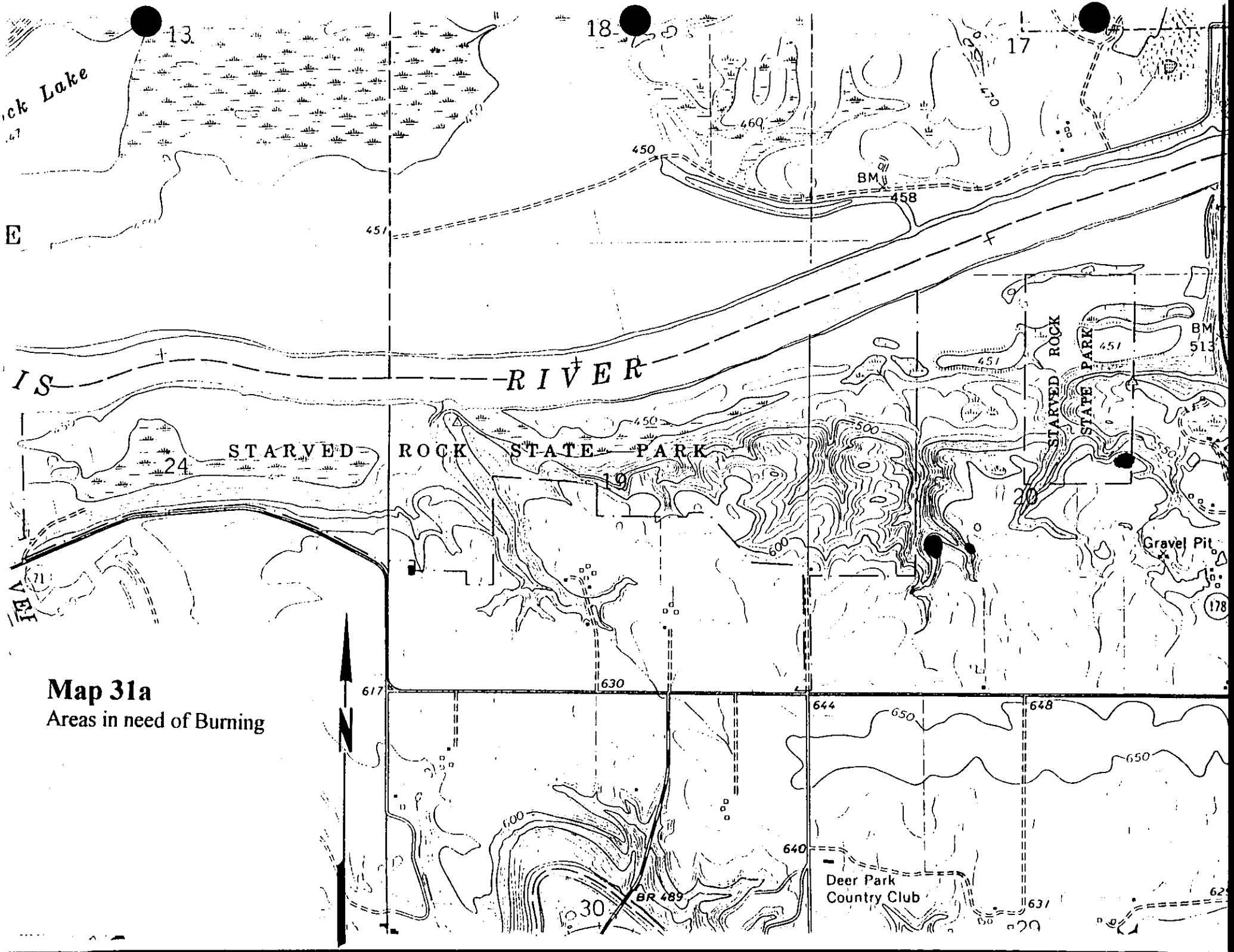
Mesic upland forest (2)

Dry upland forest (3)

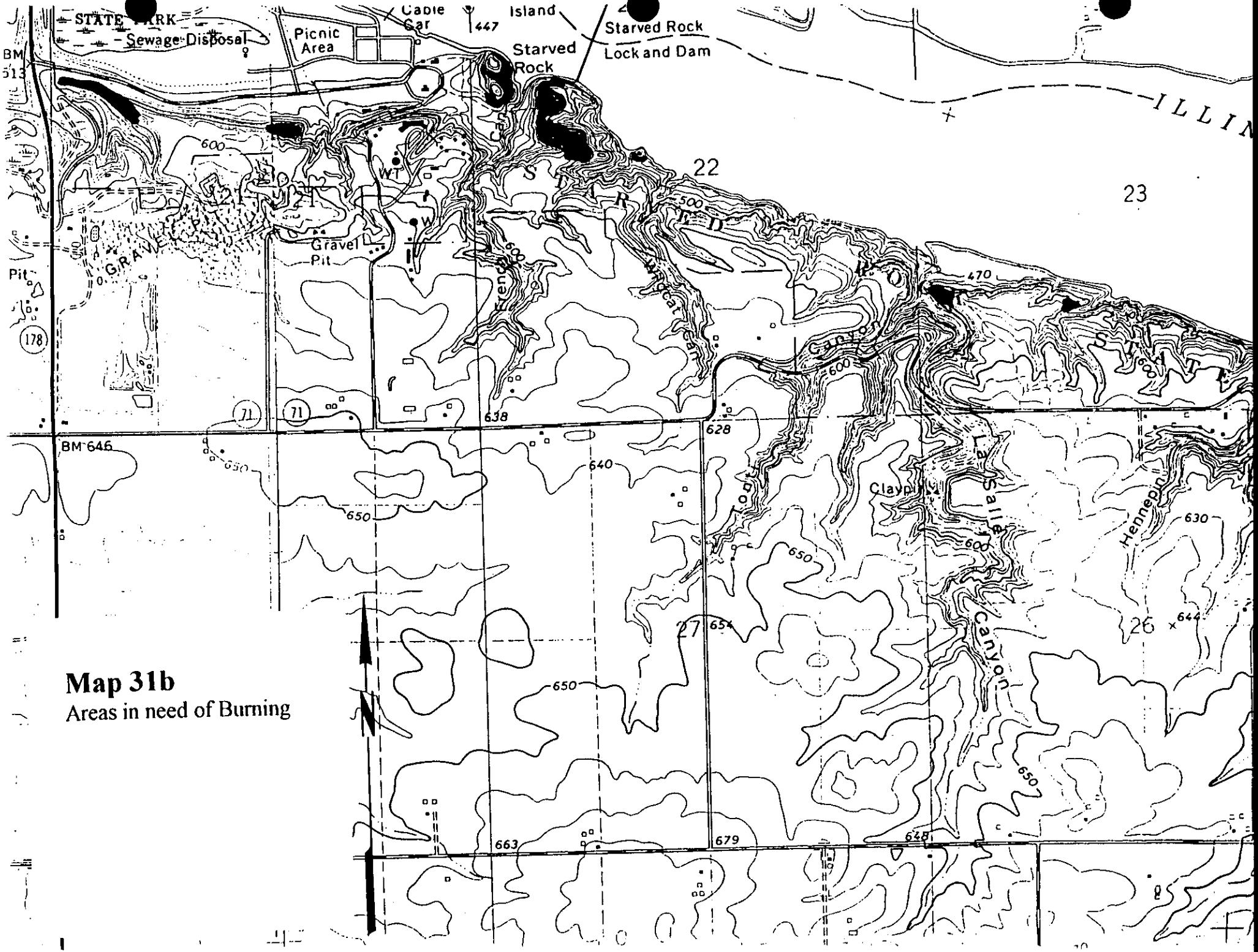


Map 30
High Quality Natural Communities

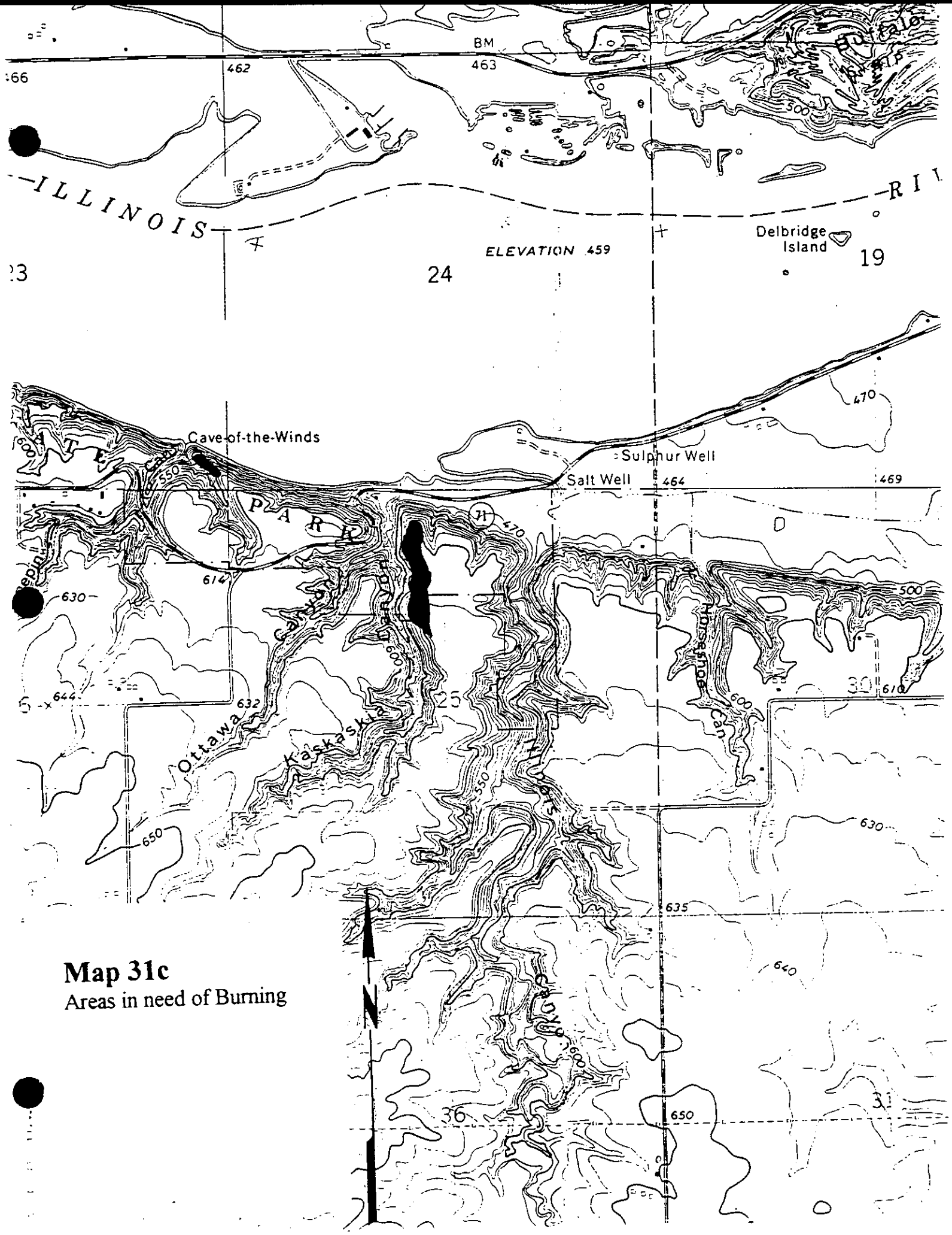
● Dry-desic upland forest



Map 31a
Areas in need of Burning



Map 31b
Areas in need of Burning



Map 31c
Areas in need of Burning