

Conservation Focus Areas

Overview Sheets

Conservation Focus Areas

Introduction to Overviews

Conservation Focus Areas (CFA) are priority areas for working with partners to identify, design, and implement actions and to report on the effectiveness toward achieving the goals and objectives defined in the Wildlife Action Plan. Conservation Focus Areas are intended to focus conservation efforts over the next 10 years to maintain and enhance the resiliency of the Wildlife Action Network.

Conservation Focus Areas were selected to represent locations with Species in Greatest Conservation Need (SGCN) and habitat resources that need attention and have the opportunity, such as organized and willing partners or funding, to address those needs over the next 10 years. Conservation Focus Areas do not represent all of the important areas in the Wildlife Action Network for SGCN. Some important areas have received a great deal of attention in the past so that relatively little additional conservation work needs to be done; for other important areas, there may be limited opportunity to address their needs over the next 10 years.

The following pages summarize 36 Conservation Focus Areas, of which at least 6 will be identified for work over the next 10 years. The CFA overviews include a map showing the Wildlife Action Network, ownership, and orientation landmarks such as cities and major highways. The Wildlife Action Network is presented with scores based on five scalable metrics: SGCN population viability scores, SGCN richness, spatially prioritized Sites of Biodiversity Significance, ranks of Lakes of Biological Significance, and Stream Indices of Biological Integrity (IBI). Lower scores (green) in a given area indicate the scores for any of the five metrics were either low or zero, while high scores (red) indicate that multiple metrics with high scores overlap. See Appendix E for more details. Ownership includes federal, state, county, and municipal fee title lands as well as permanent conservation easements on private land.

Each Conservation Focus Area overview also provides a list of target habitats and SGCN present for that focus area. Target habitats are defined as habitats that are present in a Conservation Focus Area which are utilized by SGCN and require management attention to be sustained or enhanced over time. Target species are defined as individual or groups of SGCN that inhabit target habitats and require special management attention or could serve as focal species for monitoring purposes. The target habitats are presented as broad categories (e.g., Upland Hardwood Forest) with crosswalks to the MN DNR Native Plant Community Classification when available (see: <http://www.dnr.state.mn.us/npc/index.html>). Lakes, rivers, and surrogate grasslands do not have related native plant community classifications. Not all target habitats have associated target species listed as there may not be specific management needs or monitoring opportunities for species that use those habitats. The overview also contains examples of issues and approaches to address those issues related to the target habitats and species. This list is illustrative and not exhaustive. The target habitats, species, issues, and approaches will be reviewed and refined during implementation.

Implementation will consist of biennial regional meetings with partners from within the DNR divisions and other agencies and organizations to be held in each DNR region beginning in early 2016. Examples of regional partners include Tribal Governments, Soil and Water Conservation

Districts, US Department of Agriculture Natural Resources Conservation Service, Minnesota Pollution Control Agency, Bureau of Water and Soil Resources, US Fish and Wildlife Service, US Forest Service, The Nature Conservancy, The Wildlife Society, Ducks Unlimited, and other land managers, including local and regional governments. To the extent possible, CFA teams will utilize existing teams such as the Local Technical Teams organized for implementation of the Minnesota Prairie Conservation Plan.

These meetings will accomplish the following:

- Provide opportunities to coordinate implementation of on-the-ground habitat conservation projects to meet Wildlife Action Plan objectives.
- Identify, prioritize, and develop Wildlife Action Plan projects to be implemented within one or more of the mapped Conservation Focus Areas. This could include assessing available resources needed to implement projects; selecting projects; reviewing new information on species and habitats that has become available; establishing clear results specific to SGCN or their habitats; developing Specific, Measurable, Attainable, Results-oriented and Time-bound (SMART) objectives; identifying conservation actions; defining project effectiveness; and implementing monitoring to evaluate and report on effectiveness.
- Recommend new Conservation Focus Areas for the region or revise the boundaries of existing Conservation Focus Areas.
- Address opportunities for watershed/landscape project planning within Conservation Focus Areas or the Wildlife Action Network. This can include considering how management objectives and actions at the site level can be coordinated across sites to sustain or enhance landscape-scale biological diversity and improve the ecological functionality of conservation lands and waters.

Some conservation issues and approaches were not included in individual Conservation Focus Areas since they apply to most areas or have policy issues best addressed at a statewide scale. Examples of these are the following:

Example conservation issues

Example conservation approaches

Loss of wetlands

Apply Minnesota Wetland Conservation Act standards, and ensure replacement standards are followed.

Reduced incentives for conservation easements due to increased commodity prices

Influence Farm Bill policy: Make incentives match commodity prices, strategically target landowners within Wildlife Action Network.

Pesticide and herbicide impacts on pollinators and other invertebrates and insectivores

Provide Best Management Practices and habitat buffers.

Agassiz Beach Ridges

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Grassland-wetland complexes: ABR_CX-Agassiz Beach Ridge Complex, AIP_CX-Agassiz Interbeach Prairie Complex, PWL_CX-Prairie Wetland Complex, SEW_CX-Seepage Wetland Complex, SWP_CX-Saline Wet Prairie Complex

Prairie/grassland: UPn12b-Dry Sand-Gravel Prairie (Northern), UPn23b-Mesic Prairie (Northern), UPs13b-Dry Sand-Gravel Prairie (Southern), WPn53-Northern Wet Prairie, WPn53a-Wet Seepage Prairie (Northern), WPn53b-Wet Brush-Prairie (Northern), WPn53c-Wet Prairie (Northern), WPn53d-Wet Saline Prairie (Northern), *also includes surrogate grasslands*

Prairie streams (Buffalo River)

Open peatland: OPp93a-Calcareous Fen (Northwestern)

Wetland: MRn93-Northern Bulrush-Spikerush Marsh, MRp83-Prairie Mixed Cattail Marsh, MRp83a-Cattail-Sedge Marsh (Prairie), WMn82a-Willow-Dogwood Shrub Swamp, WMp73a-Prairie Meadow/Carr, WMs83a-Seepage Meadow/Carr, WMs92a-Basin Meadow/Carr

Target Species:

Prairie mammals: northern grasshopper mouse, prairie vole, Richardson's ground squirrel

Dry-mesic prairie birds: chestnut-collared longspur, grasshopper sparrow, greater prairie chicken, Henslow's sparrow, marbled godwit, upland sandpiper, western meadowlark

Wet prairie/sedge meadow birds: Le Conte's sparrow, Nelson's sparrow, Wilson's phalarope

Loggerhead shrike

Plains hog-nosed snake

Mussels: creek heelsplitter, black sandshell

Red-tailed leafhopper

Prairie butterflies: Arogos skipper, Assiniboia skipper, Dakota skipper, dusted skipper, Leonard's skipper, Poweshiek skipperling, Uhler's arctic, regal fritillary

Example conservation issues

Conversion of native habitat to agriculture or aggregate mining

Prairie and wetland habitat degradation due to invasive species

Habitat management impacts

Wind power development impacts on habitat quality

Example conservation approaches

Assess suitability to conversion through environmental review, Target land protection of prairie/grassland and wetland sites in the Wildlife Action Network using acquisition/easements.

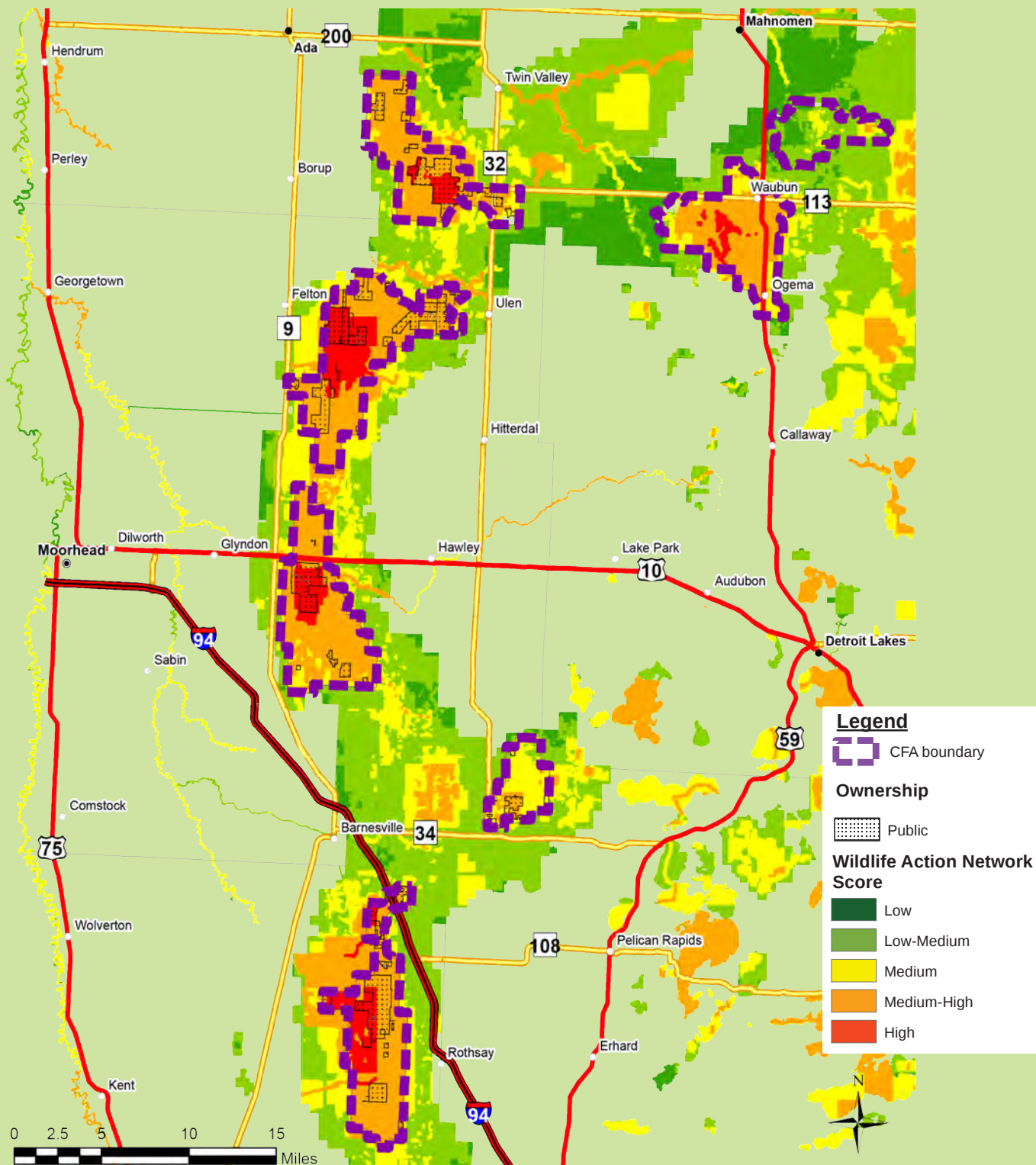
Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals. Landscape-level coordination of management between landowners on individual protected parcels.

Provide guidelines for appropriate areas for siting of new towers to minimize habitat impacts.

Agassiz Beach Ridges

Conservation Focus Area



Aitkin Hardwoods

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: MHc36-Central Mesic Hardwood Forest (Eastern), MHc47-Central Wet-Mesic Hardwood Forest, MHn35-Northern Mesic Hardwood Forest, MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHn46-Northern Wet-Mesic Hardwood Forest, MHn47-Northern Rich Mesic Hardwood Forest

Wetland (forested): Vernal pool

Target Species:

Mature upland forest birds: red-shouldered hawk, wood thrush

Forest salamanders

Example conservation issues

Forest habitat degradation due to invasive species

Mature forest size requirements for SGCN habitat

Reduced age, species, and structural diversity of mesic hardwood forests

Degradation and loss of ephemeral wetlands (vernal pools)

Example conservation approaches

Monitor for new invasive species and utilize rapid treatment methods if detected.

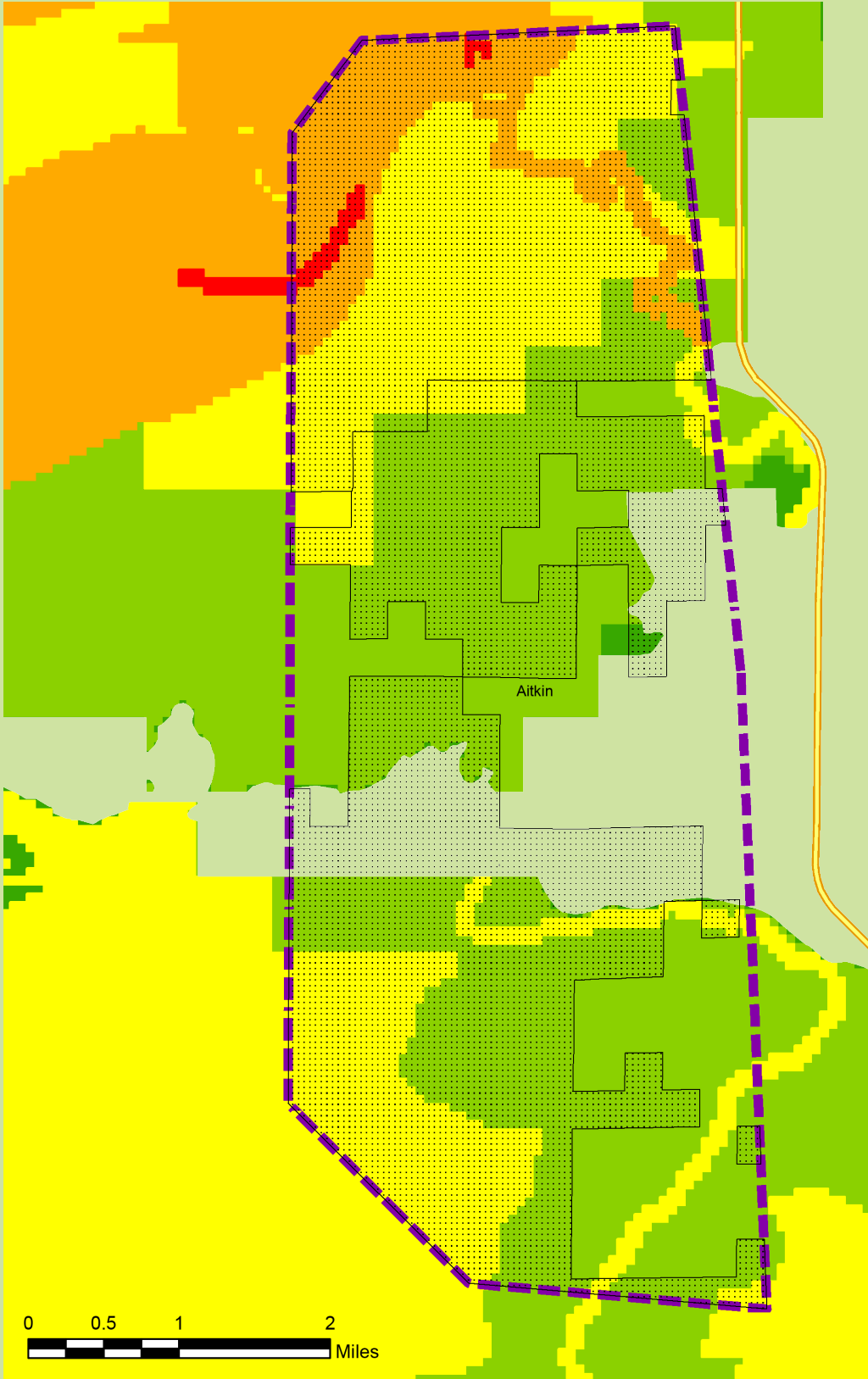
Where possible, maintain large blocks of mature forest.

Manage for forests exhibiting mature characteristics such as multiple age-classes, snags, canopy gaps. Improve knowledge of the impacts of gap management on forest birds. Manage to increase plant species and structural diversity.

Develop and implement Best Management Practices to reduce impacts to ephemeral wetlands (vernal pools). Improve knowledge of habitat requirements of salamanders that depend on vernal pools and adjacent upland habitat.

Aitkin Hardwoods

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

Low

Low-Medium

Medium

Medium-High

High

Altamont Moraine

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Grassland-wetland complexes: PWL_CX-Prairie Wetland Complex

Prairie / grassland: UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13d-Dry Hill Prairie (Southern), UPs14-Southern Dry Savanna, UPs23-Southern Mesic Prairie, UPs23a-Mesic Prairie (Southern), WPs54-Southern Wet Prairie, *also includes surrogate grasslands*

Prairie stream ecosystems

Upland Hardwood Forest: MHS38b-Basswood-Bur Oak-(Green Ash) Forest, MHS39-Southern Mesic Maple-Basswood Forest, MHS49-Southern Wet-Mesic Hardwood Forest

Wetland: MRp83-Prairie Mixed Cattail Marsh, WMP73-Prairie Wet Meadow/Carr, WMP73a-Prairie Meadow/Carr, WMS83-Southern Seepage Meadow/Carr, WMS83a-Seepage Meadow/Carr, WMS92-Southern Basin Wet Meadow/Carr

Open Peatland: OPp93b-Calcareous Fen (Southwestern)

Target Species:

Prairie vole

Dry-mesic prairie birds: grasshopper sparrow, upland sandpiper, western meadowlark

Smooth greensnake

Prairie butterflies: Arogos skipper, Dakota skipper, dusted skipper, Leonard's skipper, Poweshiek skipperling, regal fritillary

Example conservation issues

Prairie/grassland loss and fragmentation

Groundwater depletion and contamination impacting municipal water availability, stream flows, and wetlands (especially calcareous fens)

Stream sedimentation and contamination, channelization, and impoundments, increased extreme rainfall events due to climate change

Prairie and wetland habitat degradation due to invasive species

Habitat management impacts

Management of shallow lakes for fish removal or vegetation objectives

Wind power effects on habitat quality

Example conservation approaches

Implement Minnesota Prairie Conservation Plan—buffer and connect prairie habitat.

Protect groundwater recharge areas using appropriate native vegetation.

Reduce channelization, maintain oxbows, enhance main stream connectivity, buffer stream banks with permanent, native vegetation.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

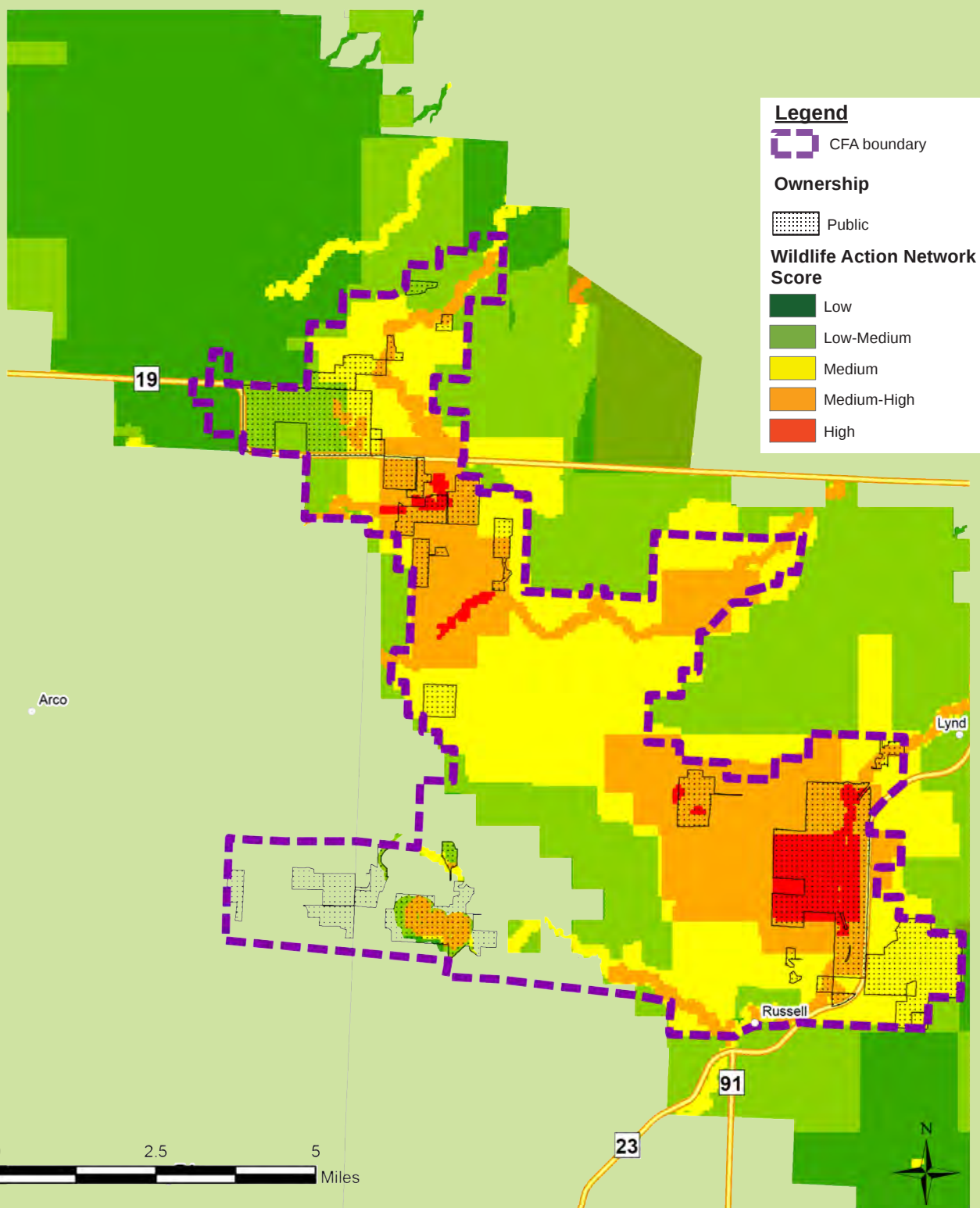
Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Coordinated approach to prioritize varying management needs for fish, amphibians, birds, and invasive species.

Provide guidelines for appropriate areas for siting of new towers to minimize habitat impacts.

Altamont Moraine

Conservation Focus Area



Anoka Sand Plain

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Prairie/grasslands: UPs13a-Dry Barrens Prairie (Southern), UPs14a-Dry Barrens Oak Savanna (Southern), UPs14a2-Dry Barrens Oak Savanna (Southern), Oak Subtype, UPs14b-Dry Sand-Gravel Oak Savanna (Southern), WPs54-Southern Wet Prairie, WPs54b-Wet Prairie (Southern), *also includes surrogate grasslands*

Lowland conifer forest: FPs63a-Tamarack Swamp (Southern)

Wetlands (nonforested): MRn83-Northern Mixed Cattail Marsh, MRn93-Northern Bulrush-Spikerush Marsh, WMn82a-Willow-Dogwood Shrub Swamp, WMn82b-Sedge Meadow

Open Peatland: OPn92-Northern Rich Fen (Basin), OPn92a-Graminoid Rich Fen (Basin), OPp91-Prairie Rich Fen

Target Species:

Prairie mammals: American badger, plains pocket mouse

Dry-mesic prairie birds: eastern meadowlark, grasshopper sparrow

Woodland/savanna birds: brown thrasher, eastern towhee, eastern whip-poor-will, field sparrow, lark sparrow, red-headed woodpecker

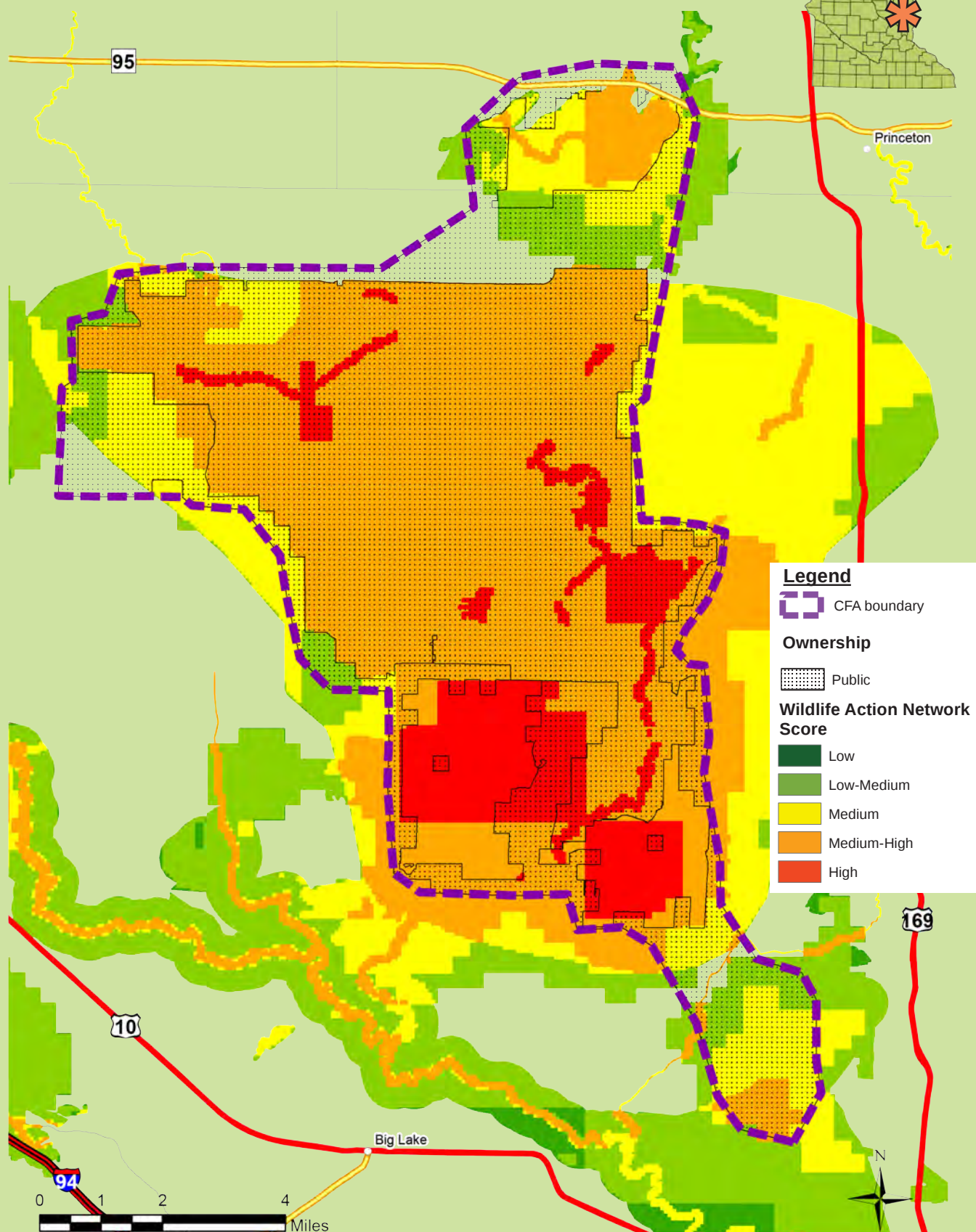
Sand prairie reptiles: Blanding's turtle, gophersnake, plains hog-nosed snake, smooth greensnake

Prairie/dune invertebrates: dusted skipper, Leonard's skipper, Uncas skipper, *Pelegrina arizonsis* (a jumping spider), northern barrens tiger beetle

Example conservation issues	Example conservation approaches
Habitat fragmentation	Target land protection in Wildlife Action Network through fee acquisition, easements, stewardship plans, Forest Legacy Program.
Impact of woody vegetation on grassland/savannah on SGCN species	Support savannah restoration efforts to improve habitat conditions for SGCN.
Prairie and wetland habitat degradation due to invasive species	Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.
Habitat management impacts	Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals. Research and trials of community restoration techniques. Provide management guidance.

Anoka Sand Plain

Conservation Focus Area



Aspen Parklands

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Grassland-wetland complexes: AIP_CX-Agassiz Interbeach Prairie Complex, ASP_CX-Aspen Parkland Complex, ASR_CX-Agassiz Shoreline Ridge and Swale Complex, MFS_CX-Meadow-Marsh-Fen-Swamp Complex, PBW_CX-Parkland Brush Prairie-Wetland Complex, PWL_CX-Prairie Wetland Complex, SS_CX-Shrub Swamp Complex

Open Peatlands: OPp91-Prairie Rich Fen, OPp91a-Rich Fen (Mineral Soil), OPp91b-Rich Fen (Peatland), OPp91c-Rich Fen (Prairie Seepage), OPp93-Prairie Extremely Rich Fen, OPp93a-Calcareous Fen (Northwestern)

Shallow lakes

Prairie/grassland: UPn12a-Dry Barrens Prairie (Northern), UPn12b-Dry Sand-Gravel Prairie (Northern), UPn12c-Dry Sand-Gravel Brush-Prairie (Northern), UPn13-Northern Dry Savanna, UPn13b-Dry Barrens Oak Savanna (Northern), UPn13c-Dry Sand-Gravel Oak Savanna (Northern), UPn23a-Mesic Brush-Prairie (Northern), UPn23b-Mesic Prairie (Northern), UPn24b-Aspen Openings (Northern), WPn53a-Wet Seepage Prairie (Northern), WPn53b-Wet Brush-Prairie (Northern), WPn53c-Wet Prairie (Northern), WPn53d-Wet Saline Prairie (Northern), *also includes surrogate grasslands*

Prairie/forest complexes: AOX_CX-Aspen-Oak Woodland Complex, AWA_F_CX-Aspen Woodland/Forest Complex, DPW_CX-Dry Prairie-Woodland Complex-Central, MSA_CX-Meadow-Marsh-Shrub Swamp-Wet Aspen Complex

Wetland (nonforested): MRn83-Northern Mixed Cattail Marsh, MRn83a-Cattail-Sedge Marsh (Northern), MRn83b-Cattail Marsh (Northern), MRn93-Northern Bulrush-Spikerush Marsh, MRp83a-Cattail-Sedge Marsh (Prairie), MRp93-Prairie Bulrush-Arrowhead Marsh, MRp93a-Bulrush Marsh (Prairie), WMn82b-Sedge Meadow, WMp73a-Prairie Meadow/Carr, WMs83a-Seepage Meadow/Carr, WMs92a-Basin Meadow/Carr

Target Species:

Mammals: elk, northern pocket gopher

Dry-mesic prairie birds: marbled godwit, short-eared owl, upland sandpiper, western meadowlark

Wet prairie/sedge meadow birds: Le Conte's sparrow, Nelson's sparrow, Wilson's phalarope, yellow rail

Wetland/shallow lake birds: Forster's tern, red-necked grebe, western grebe

Woodland/savanna birds: eastern towhee, eastern whip-poor-will

Reptiles: smooth greensnake, gophersnake

Prairie butterflies: Assiniboia skipper, Dakota skipper, dusted skipper, Garita skipperling, Poweshiek skipperling

Sandy tiger beetle

Example conservation issues

Conversion of native habitat to agriculture or aggregate mining

Prairie and wetland habitat degradation due to invasive species

Management of shallow lakes for fish removal

Habitat management impacts

Example conservation approaches

Assess suitability to conversion through environmental review. Target land protection of prairie/grassland and wetland sites in the Wildlife Action Network using acquisition/easements.

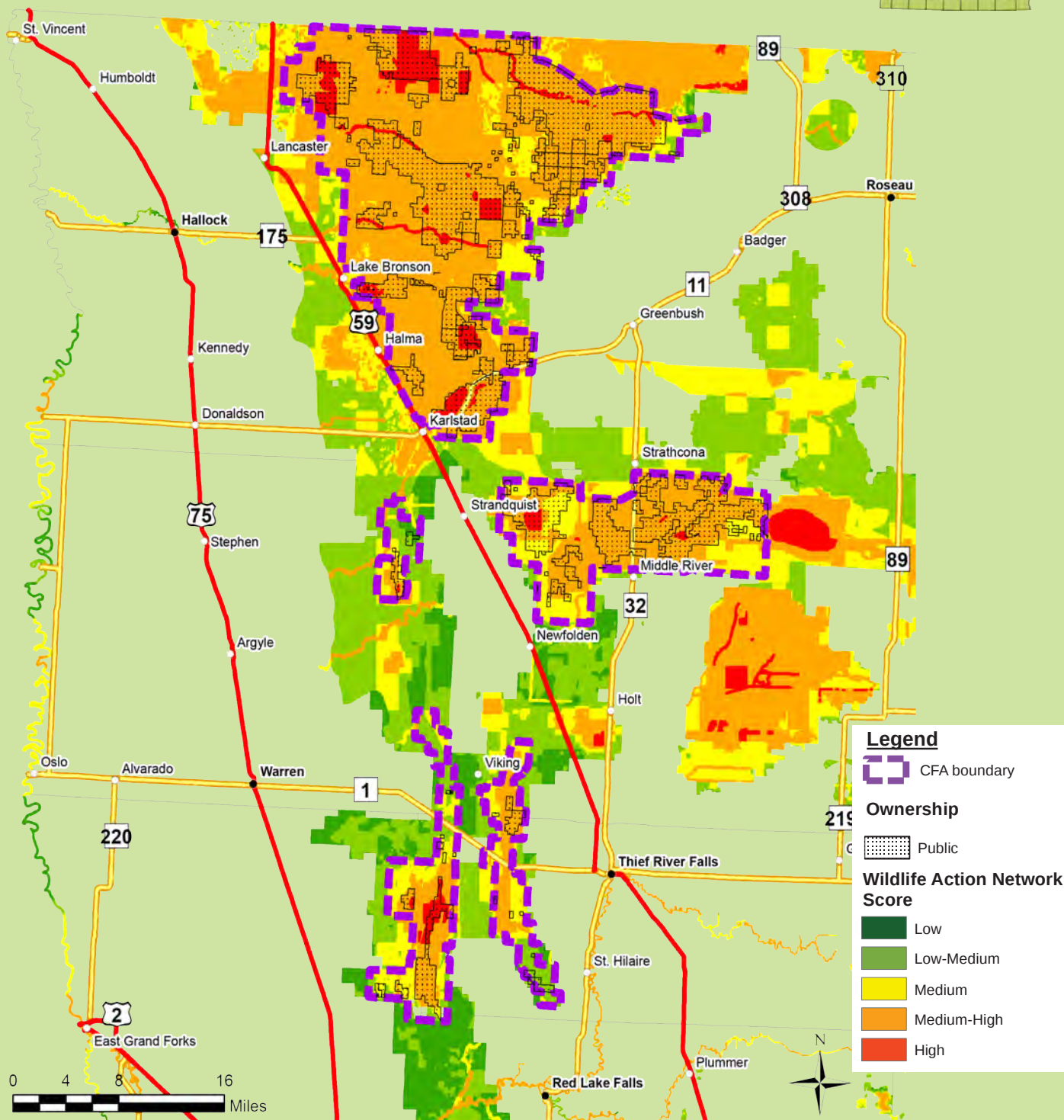
Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Coordinated approach to prioritize varying management needs for fish, amphibians, birds, and invasive species.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Aspen Parklands

Conservation Focus Area



Avon Hills

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: MHc36-Central Mesic Hardwood Forest (Eastern), MHc36a-Red Oak-Basswood Forest (Noncalcareous Till), MHs39c-Sugar Maple Forest (Big Woods), MHs49a-Elm-Basswood-Black Ash-(Hackberry) Forest

Lowland conifer forest: FPs63a-Tamarack Swamp (Southern)

Wetland (nonforested): WMn82a-Willow-Dogwood Shrub Swamp, WMn82b-Sedge Meadow

Target Species:

Mature upland forest birds: cerulean warbler, red-shouldered hawk, wood thrush

Example conservation issues

Forest fragmentation (urbanization)

Degraded Conditions for Forest Interior Birds

Forest and wetland habitat degradation due to invasive species

Example conservation approaches

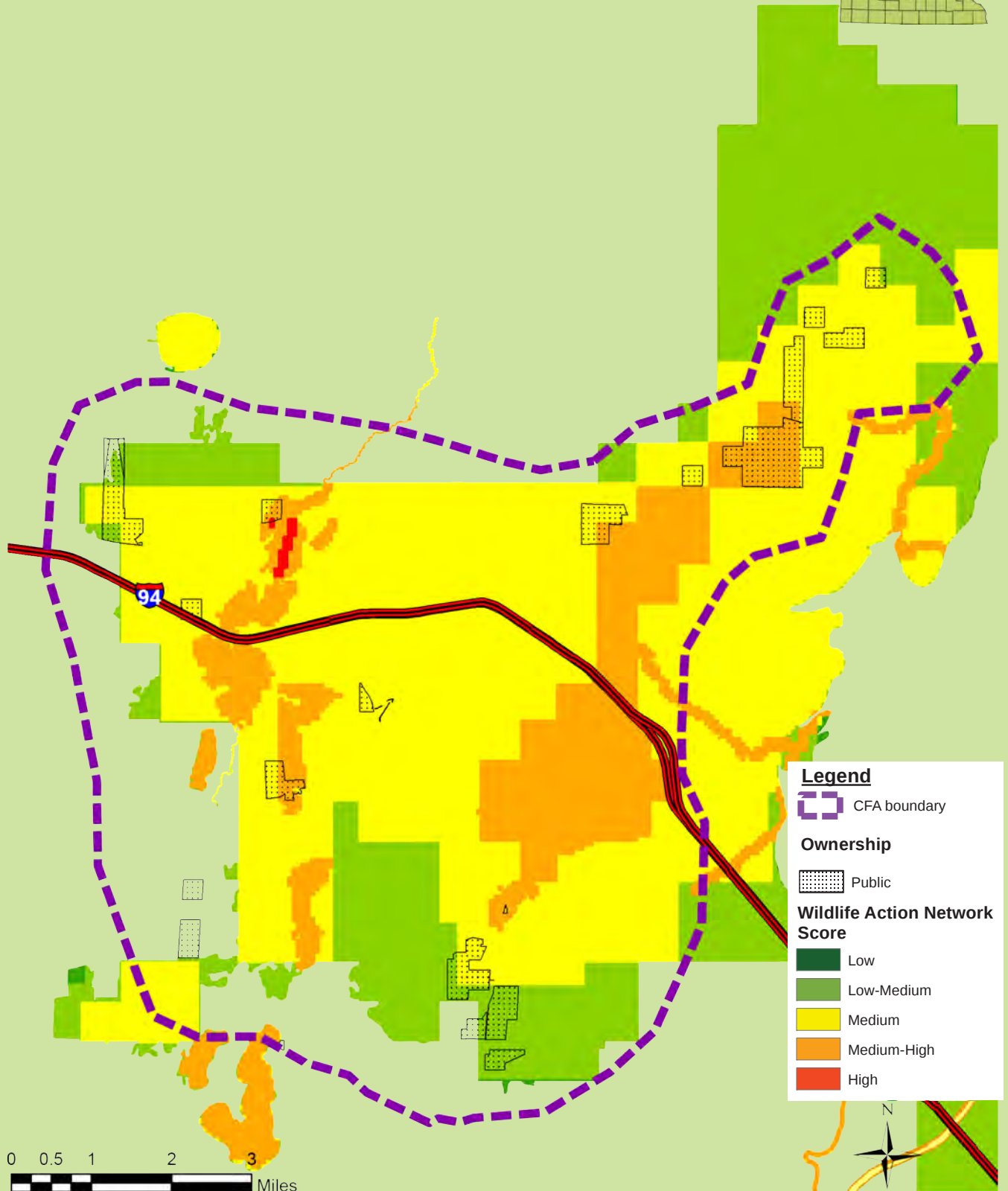
Target land protection in Wildlife Action Network through fee acquisition, easements, stewardship plans, Forest Legacy Program.

Forest management plans to promote selective cutting and small patch cuts to minimize large gaps for cowbird nesting.

Remove invasive species from mesic forests. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected.

Avon Hills

Conservation Focus Area



Big Rice-Lost Lake

Targets, Conservation Issues, Approaches

Target Habitats: (with NPC class/type):

Lowland conifer forest: AP-Acid Peatland System, FP-Forested Rich Peatland System

Upland deciduous forest: FDn32-Northern Poor Dry-Mesic Mixed Woodland, FDn33-Northern Dry-Mesic Mixed Woodland, FDn43-Northern Mesic Mixed Forest

Open peatland: OP-Open Rich Peatland System

Target Species:

Mature upland forest birds

Lowland conifer birds: boreal chickadee, Connecticut warbler

Other birds: northern goshawk, Philadelphia vireo

Dragonflies and damselflies

Example conservation issues

Mature forest habitat size requirements for SGCN habitat

Species and structural diversity required for SGCN habitat and resilient forests

Lowland conifer requirements for SGCN habitat

Maintain peatland hydrology

Forest habitat degradation due to invasive species

Wetland loss

Example conservation approaches

Where possible, maintain large blocks of mature forest.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests.

Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat.

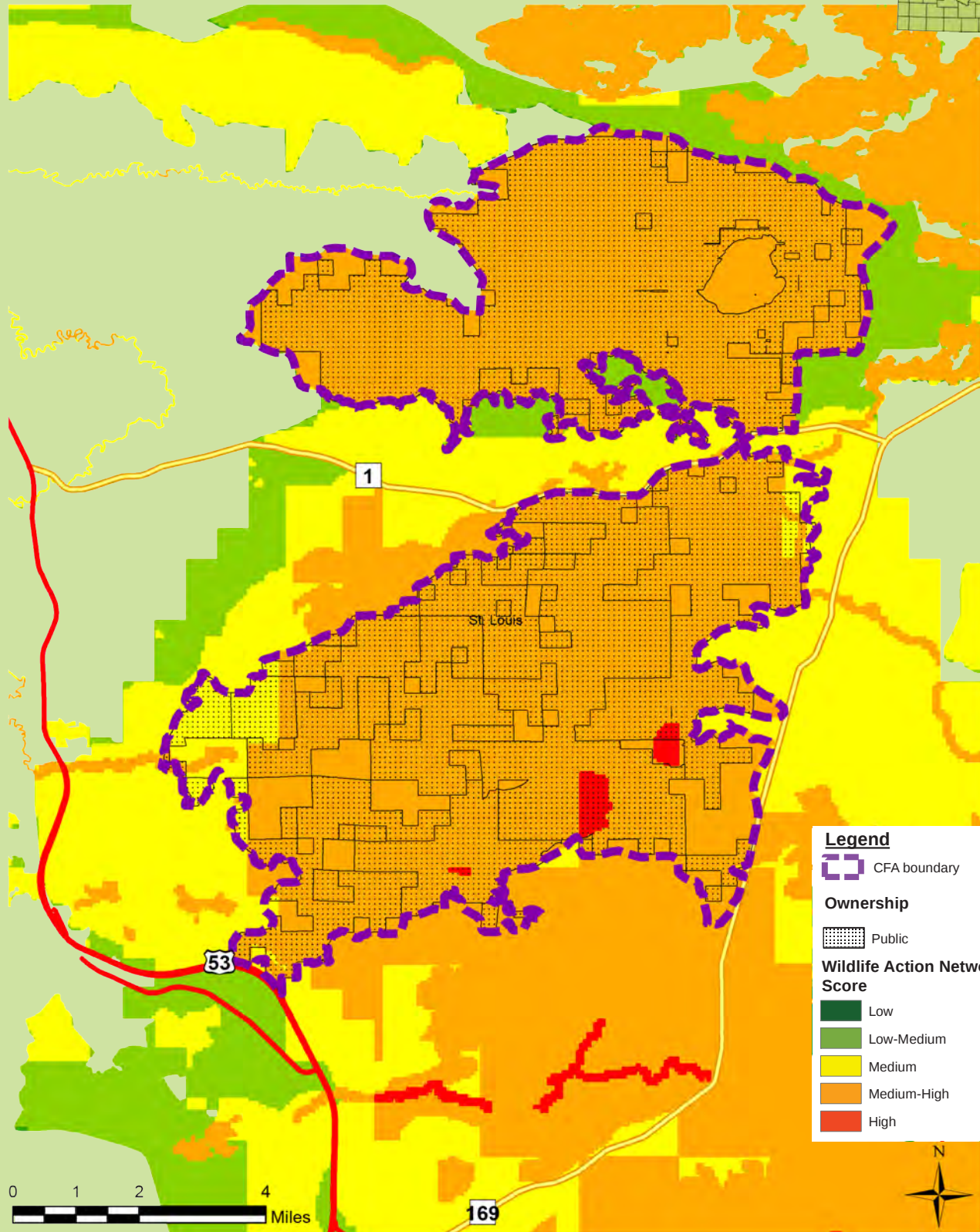
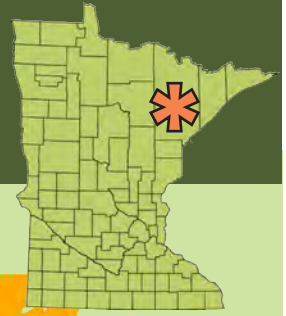
Assess agricultural and mining conversion and management impacts to peatland hydrology.

Monitor for new invasive species and utilize rapid treatment methods if detected.

Apply MN Wetland Conservation Act standards. Ensure replacement standards are followed. Regulate agricultural conversion of peatlands.

Big Rice-Lost Lake

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

- Low
- Low-Medium
- Medium
- Medium-High
- High

Black Duck-Elephant

Targets, Conservation Issues, Approaches

Target Habitats: (with NPC class/type):

Lowland conifer forest: FPN63-Northern Cedar Swamp, WFn53-Northern Wet Cedar Forest, WFn64-Northern Very Wet Ash Swamp

Upland conifer forest

Deep lakes (Elephant Lake)

Target Species:

Lowland conifer birds: boreal chickadee, Connecticut warbler

Mature upland forest birds

Other birds: eastern whip-poor-will
northern goshawk

Example conservation issues

Mature forest size requirements for SGCN habitat

Species and structural diversity required for SGCN habitat and resilient forests

Reduced age, species, and structural diversity of mesic hardwood forests

Upland white cedar stressors: herbivory, reduce age classes, simplified structure, lack of regeneration

Lowland conifer requirements for SGCN habitat

Forest habitat degradation due to invasive species

Example conservation approaches

Where possible, maintain large blocks of mature forest.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests.

Manage for forests exhibiting mature characteristics such as multiple age-classes, snags, canopy gaps.

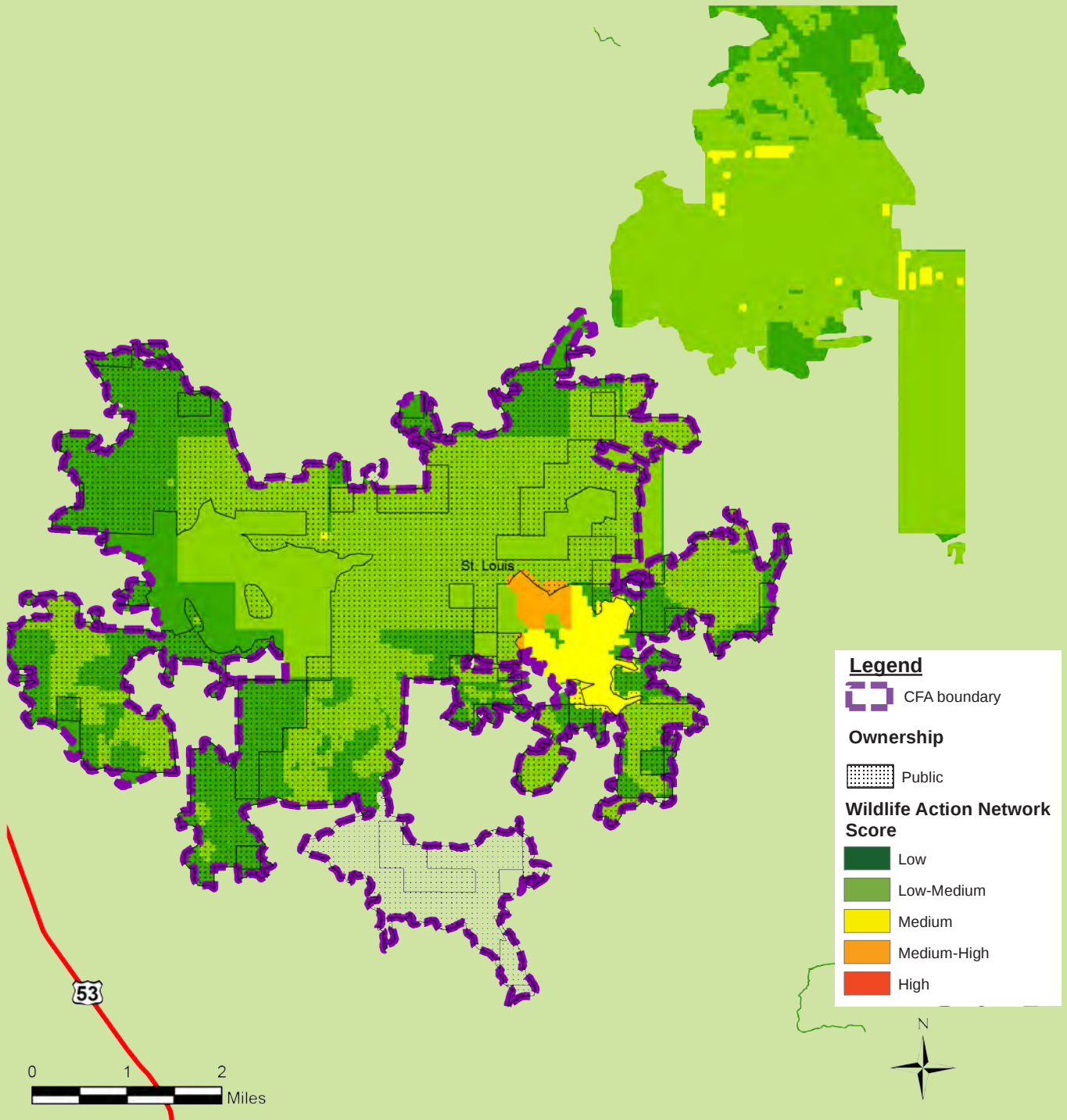
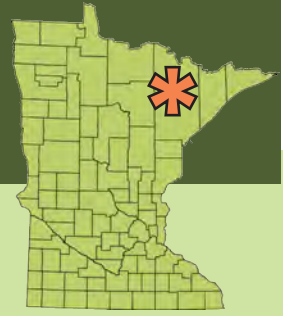
Reduce herbivory impacts through exclosures, bud capping, and landscape patterning. Selective cutting of hardwood stands to ensure remnant mature cedar.

Improve knowledge of pathogen management, clear cuts, and the impact of gaps on lowland conifer bird habitat.

Monitor for new invasive species and utilize rapid treatment methods if detected.

Black Duck-Elephant

Conservation Focus Area



Bonanza Valley

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Prairie/grasslands: UPn12b-Dry Sand-Gravel Prairie (Northern), UPs13a-Dry Barrens Prairie (Southern), UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13c-Dry Bedrock Bluff Prairie (Southern), UPs13d-Dry Hill Prairie (Southern), UPs14c-Dry Hill Oak Savanna (Southern), UPs23a-Mesic Prairie (Southern), WPs54a-Wet Seepage Prairie (Southern), WPs54b-Wet Prairie (Southern), *also includes surrogate grasslands*

Grassland-Wetland complexes: FWMM_CX-Fen/Wet Meadow/Marsh Complex, MMS_CX-Meadow-Marsh-Fen-Swamp Complex, PWL_CX-Prairie Wetland Complex

Shallow Lakes

Wetland (nonforested): MRp83a-Cattail-Sedge Marsh (Prairie), MRp83b-Cattail Marsh (Prairie), MRp93c-Arrowhead Marsh (Prairie), WMn82b-Sedge Meadow, WMP73a-Prairie Meadow/Carr, WMs83a-Seepage Meadow/Carr, WMs83a1-Seepage Meadow/Carr, Tussock Sedge Subtype, WMs92a-Basin Meadow/Carr

Open Peatland: OPn92b-Graminoid-Sphagnum Rich Fen (Basin), OPp91a-Rich Fen (Mineral Soil), OPp91c-Rich Fen (Prairie Seepage), OPp93-Prairie Extremely Rich Fen, OPp93b-Calcareous Fen (Southwestern), OPp93c-Calcareous Fen (Southeastern)

Upland Hardwood Forest: FDs37b-Pin Oak-Bur Oak Woodland, MHs38b-Basswood-Bur Oak-(Green Ash) Forest

Target Species:

Dry-mesic prairie birds: grasshopper sparrow, marbled godwit, upland sandpiper, western meadowlark

Wetland/shallow lake birds: black-crowned night-heron, red-necked grebe, western grebe

Eastern newt

Plains hog-nosed snake

Fish: hornyhead chub, pugnose shiner

Red-tailed leafhopper

Prairie butterflies: Arogos skipper, Dakota skipper, dusted skipper, Leonard's skipper, Poweshiek skipperling, regal fritillary

Example conservation issues

Prairie/grassland loss and fragmentation

Groundwater depletion and contamination impacting municipal water availability, stream flows, and wetlands (especially calcareous fens)

Prairie, forest, and wetland habitat degradation due to invasive species

Management of shallow lakes for fish removal

Habitat management impacts

Example conservation approaches

Implement Minnesota Prairie Conservation Plan—buffer and connect prairie habitat.

Protect groundwater recharge areas using appropriate native vegetation, monitor water levels in wetlands/ponds to help determine amount of groundwater pumping impacts.

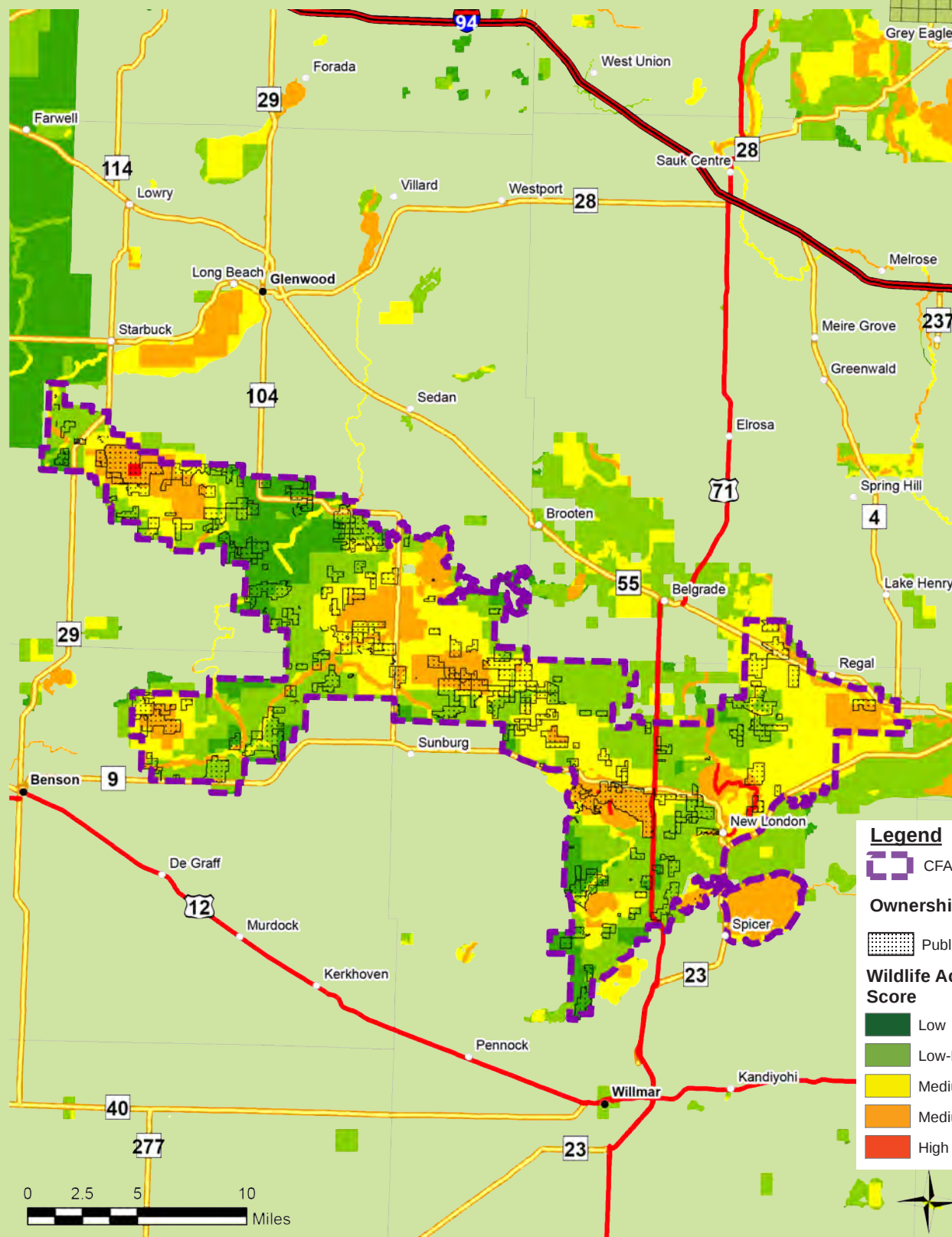
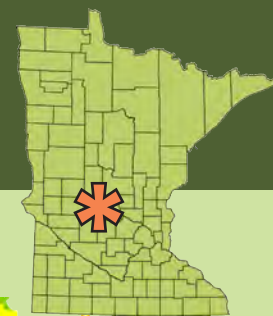
Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove invasive species from forests. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected.

Coordinated approach to prioritize varying management needs for fish, amphibians, birds, and invasive species.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals. Landscape level coordination of management between landowners on individual protected parcels.

Bonanza Valley

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

- Low
- Low-Medium
- Medium
- Medium-High
- High

Cedar River

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Native prairie and surrogate grasslands: UPs13b-Dry Sand-Gravel Prairie (Southern), UPs23a-Mesic Prairie (Southern), *also includes surrogate grasslands*

Prairie streams

Wetland (nonforested): MRp93c-Arrowhead Marsh (Prairie), WMs83a-Seepage Meadow/Carr

Lowland deciduous forest: FFs59a-Silver Maple-Green Ash-Cottonwood Terrace Forest, FFs68-Southern Floodplain Forest

Target Species:

Wood turtle

Slender madtom

SGCN Mussels

Prairie butterflies: Arogos skipper, dusted skipper, Poweshiek skipperling, regal fritillary

Caddisfly: *Hydroptila quinola*

Example conservation issues

Prairie/grassland loss and fragmentation

Groundwater depletion and contamination impacting municipal water availability, stream flows, and wetlands (especially calcareous fens)

Stream sedimentation and contamination, channelization, and impoundments, increased extreme rainfall events due to climate change

Prairie, forest, and wetland habitat degradation due to invasive species

Habitat management impacts

Wind power effects on habitat quality

Example conservation approaches

Buffer and connect prairie habitat.

Protect groundwater recharge areas using appropriate native vegetation.

Reduce channelization, maintain oxbows, enhance main stream connectivity, buffer stream banks with permanent, native vegetation.

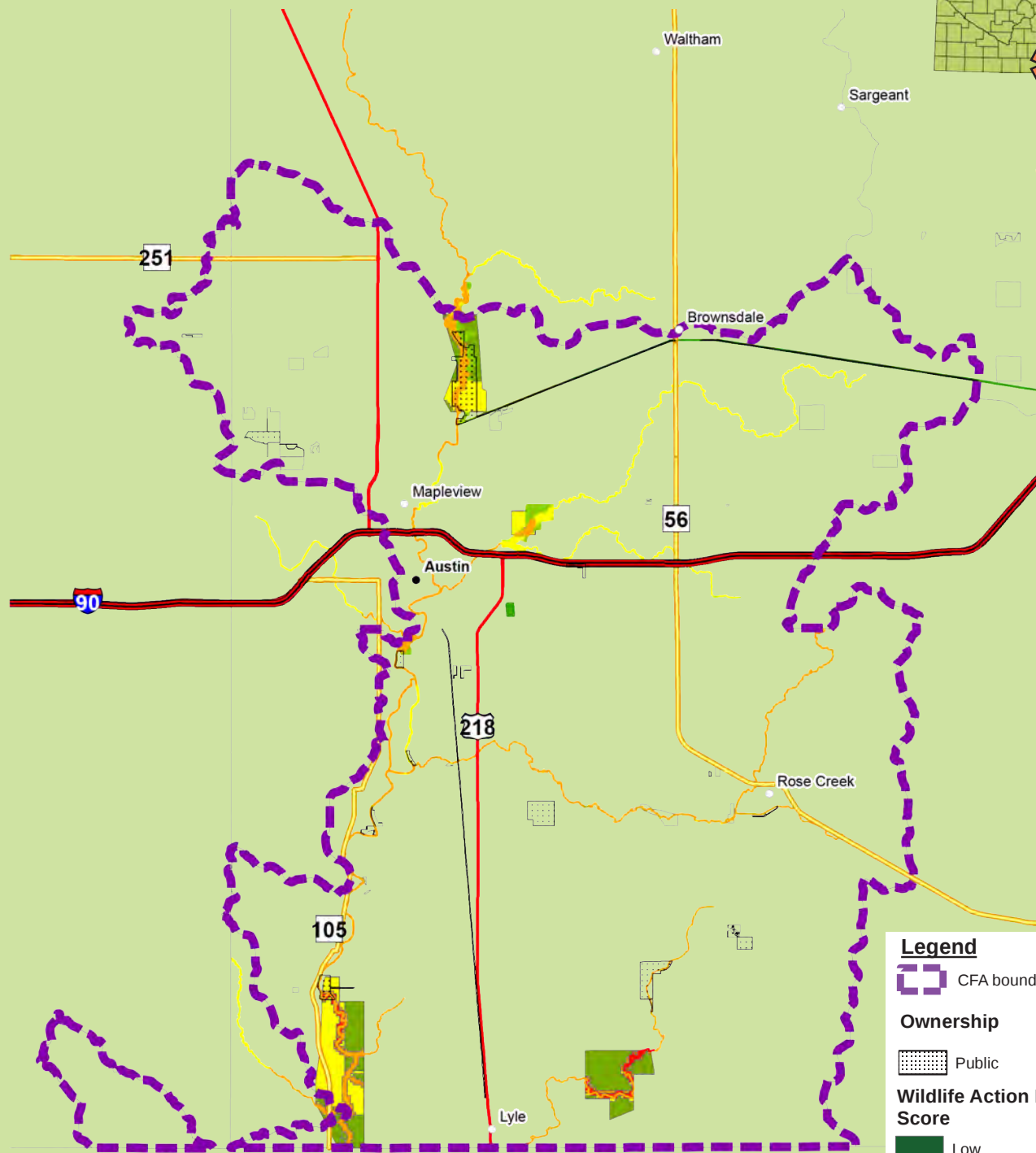
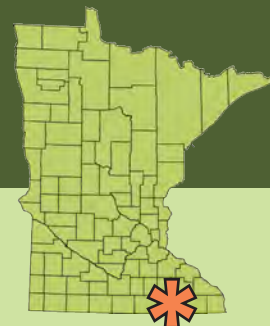
Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove invasive species from forests. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Provide guidelines for appropriate areas for siting of new towers to minimize habitat impacts.

Cedar River

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

Low
 Low-Medium
 Medium
 Medium-High
 High

0 1 2 4 6 Miles



Cloquet River

Targets, Conservation Issues, Approaches

Target Habitats: (with NPC class/type):

Lowland conifer forest: AFP_CX-Alder Swamp / Forested Peatland Complex, APn80a-Black Spruce Bog, APn81-Northern Poor Conifer Swamp, APn81a-Poor Black Spruce Swamp, APn81b-Poor Tamarack-Black Spruce Swamp, APn91-Northern Poor Fen, FPn62a-Rich Black Spruce Swamp (Basin), FPn63a-White Cedar Swamp (Northeastern), , FPn82-Northern Rich Tamarack Swamp (Western Basin), FPn82a-Rich Tamarack-(Alder) Swamp, WFn53-Northern Wet Cedar Forest, WFn64a-Black Ash-Conifer Swamp (Northeastern)

Lowland deciduous forest: FFn57a-Black Ash-Silver Maple Terrace Forest

Upland conifer forest: FDn32d-Jack Pine-Black Spruce Woodland (Sand), FDn33a1-Red Pine-White Pine Woodland, Balsam Fir Subtype, FDn33a2-Red Pine-White Pine Woodland, Mountain Maple Subtype, FDn43-Northern Mesic Mixed Forest, FDn43a-White Pine-Red Pine Forest, FDn12-Northern Dry-Sand Pine Woodland, FDn32-Northern Poor Dry-Mesic Mixed Woodland

Upland hardwood forest: MHn35b-Red Oak-Sugar Maple-Basswood-(Blue-bead Lily) Forest, MHn46-Northern Wet-Mesic Hardwood Forest, MHn46b-Black Ash-Basswood Forest

River/stream: Cloquet River

Target Species:

Mature upland forest birds

Lowland conifer forest birds: boreal chickadee, Connecticut warbler

Wood turtle

Mussels: black sandshell, creek heelsplitter

Dragonflies and damselflies: eastern least clubtail, riffle snaketail, subarctic bluet

Butterflies: arctic fritillary, Nabokov's blue, taiga alpine

Caddisfly: *Oxyethira itasca*

Example conservation issues

Maintain water quality, hydrology

Mature forest size requirements for SGCN habitat

Lowland conifer requirements for SGCN habitat

Forest habitat degradation due to invasive species

Example conservation approaches

Maintain public ownership. Buffer tributary waterways from disturbance. Management of adjacent upland fire-dependent communities. In wood turtle habitat areas, restore fire to the forest management and silvicultural actions that enhance/maintain fire-dependent diversity

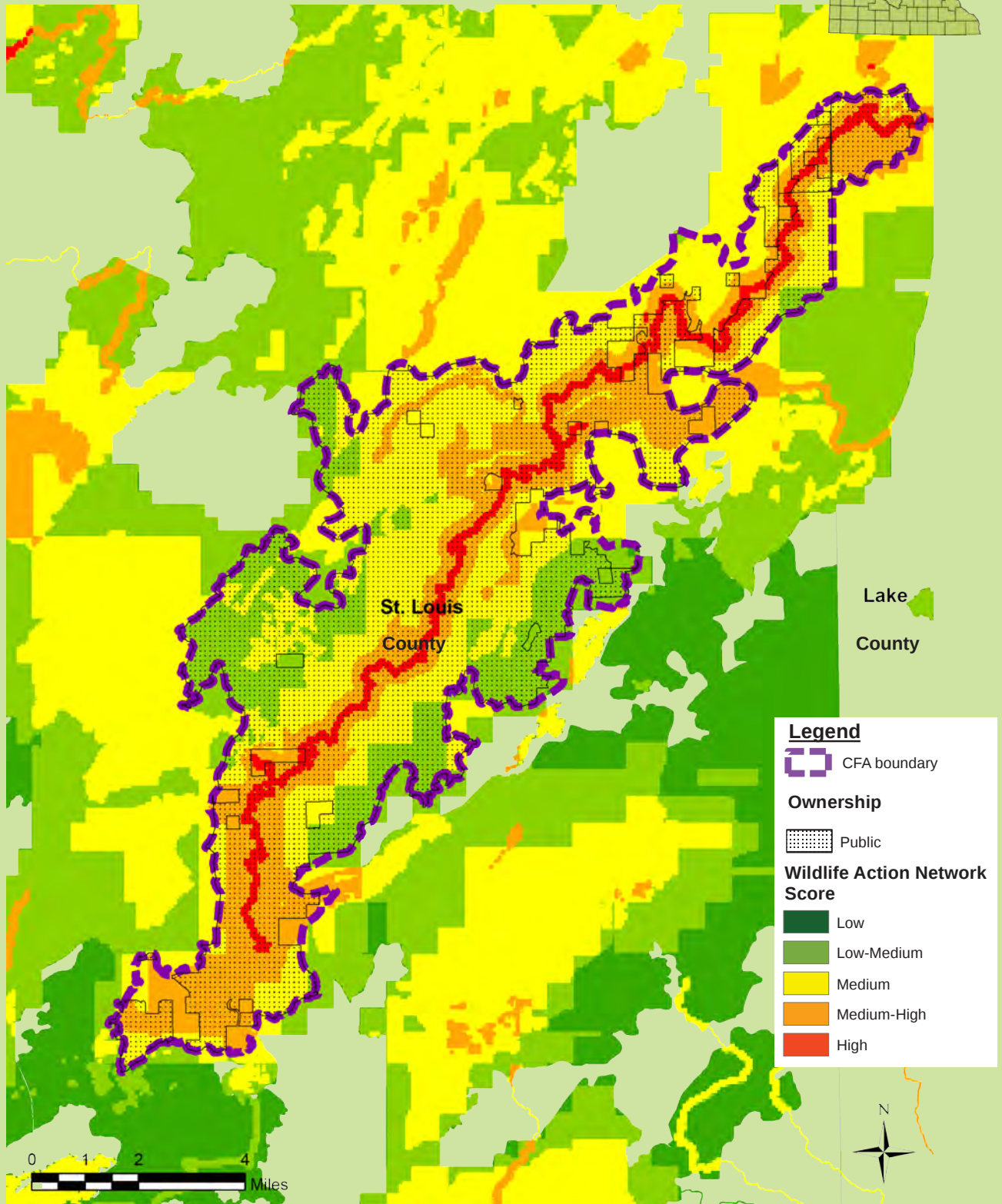
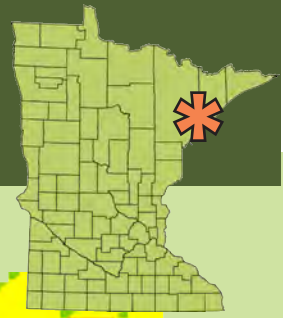
Where possible, maintain large blocks of mature forest, selective cutting.

Improve knowledge of pathogen management, clear cuts and gaps' impacts to lowland conifer bird habitat.

Monitor for new invasive species and utilize rapid treatment methods if detected.

Cloquet River

Conservation Focus Area



Coon Creek

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Lowland conifer forest: FPn63b-White Cedar Swamp (Northcentral), FPn82a-Rich Tamarack-(Alder) Swamp

Upland conifer forest: FDn12-Northern Dry-Sand Pine Woodland, FDn33a-Red Pine-White Pine Woodland, MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest

Upland hardwood forest: MHn35a-Aspen-Birch-Basswood Forest

Target Species:

Lowland conifer birds: boreal chickadee, Connecticut warbler

Mature upland forest birds

Northern goshawk

Example conservation issues

Mature forest size requirements for SGCN habitat

Lowland conifer requirements for SGCN habitat

Limited pine regeneration

Species and structural diversity required for SGCN habitat and resilient forests

Forest habitat degradation due to invasive species

Example conservation approaches

Where possible, maintain large blocks of mature forest.

Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat.

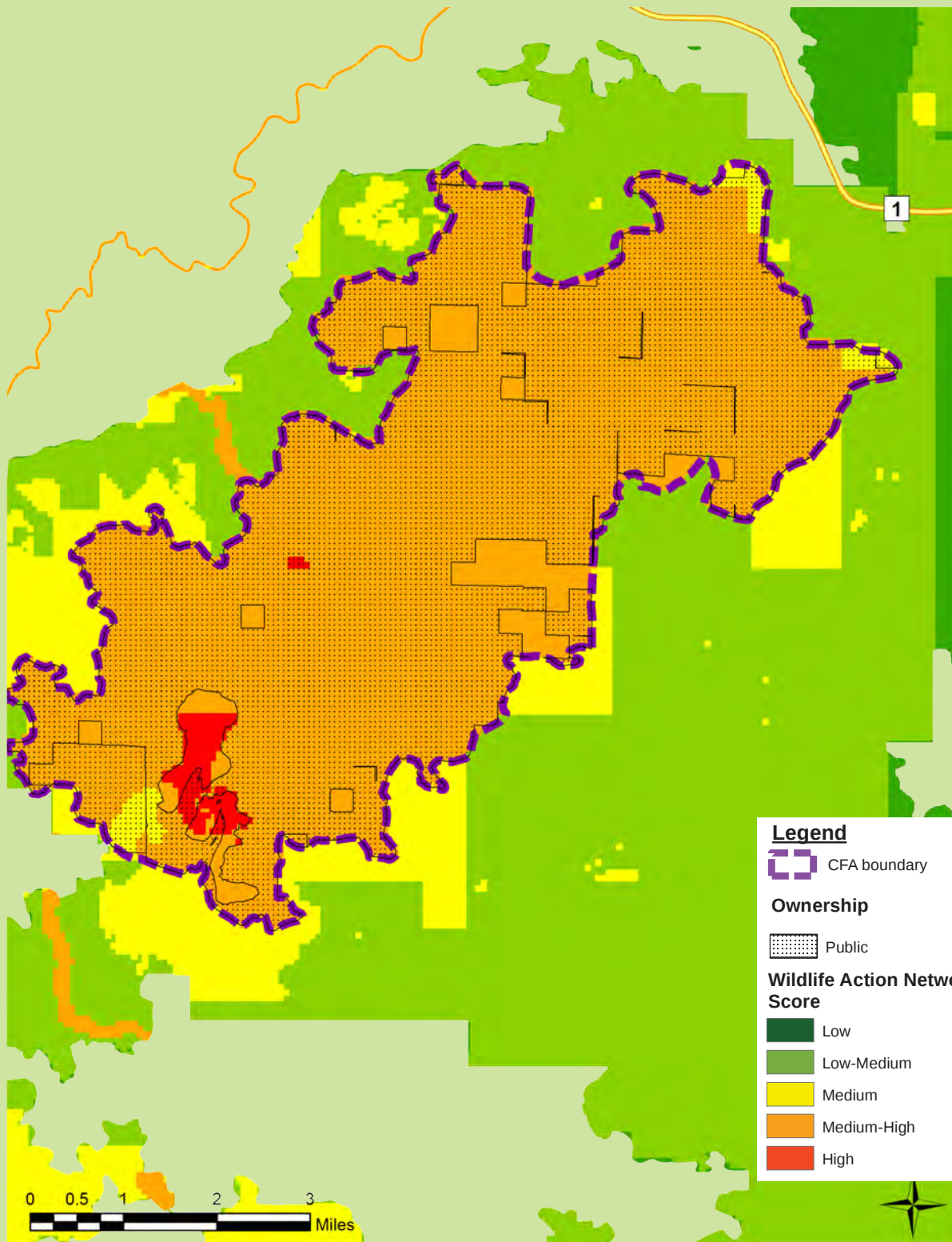
Manage for reproduction: thinning, low fuel burns, increase knowledge of new pathogens, reduce herbivory pressures.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests.

Monitor for new invasive species and utilize rapid treatment methods if detected.

Coon Creek

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

Low
 Low-Medium
 Medium
 Medium-High
 High

Cornish Hardwoods

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Lowland conifer forest: APn80-Northern Spruce Bog, APn80a-Black Spruce Bog, APn80a1-Black Spruce Bog, Treed Subtype, APn80a2-Black Spruce Bog, Semi-Treed Subtype, APn81-Northern Poor Conifer Swamp, APn81a-Poor Black Spruce Swamp, APn81b-Poor Tamarack-Black Spruce Swamp, APn81b2-Poor Tamarack-Black Spruce Swamp, Tamarack Subtype, APn90-Northern Open Bog, APn91-Northern Poor Fen, APn91a-Low Shrub Poor Fen, APn91b-Graminoid Poor Fen (Basin), FPN62a-Rich Black Spruce Swamp (Basin), FPN63-Northern Cedar Swamp, FPN63b-White Cedar Swamp (Northcentral), FPN73-Northern Rich Alder Swamp, FPN73a-Alder-(Maple-Loosestrife) Swamp, FPN82-Northern Rich Tamarack Swamp (Western Basin), FPN82a-Rich Tamarack-(Alder) Swamp, FPN82b-Extremely Rich Tamarack Swamp, WFn53-Northern Wet Cedar Forest, WFn53b-Lowland White Cedar Forest (Northern), WFn64a-Black Ash-Conifer Swamp (Northeastern)

Open Peatland: OPn81-Northern Shrub Shore Fen, OPn81a-Bog birch-Alder Shore Fen, OPn92-Northern Rich Fen (Basin), OPn92a-Graminoid Rich Fen (Basin), OPn92b-Graminoid-Sphagnum Rich Fen (Basin)

Upland hardwood forest: MHn35-Northern Mesic Hardwood Forest, MHn35a-Aspen-Birch-Basswood Forest, MHn35b-Red Oak-Sugar Maple-Basswood-(Bluebead Lily) Forest, MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHn44a-Aspen-Birch-Red Maple Forest, MHn46-Northern Wet-Mesic Hardwood Forest, MHn46b-Black Ash-Basswood Forest, MHn47-Northern Rich Mesic Hardwood Forest, MHn47b-Sugar Maple-Basswood-(Horsetail) Forest, FDC34b-Oak-Aspen Forest

Upland Conifer Forest: FDC34a-Red Pine-White Pine Forest, FDN33a-Red Pine-White Pine Woodland, FDN33b-Aspen-Birch Woodland

Wetland (forested): Vernal pool

Target Species:

Lowland conifer birds: Connecticut warbler

Mature upland forest birds: red-shouldered hawk, wood thrush

Forest salamanders: eastern red-backed salamander, four-toed salamander

Example conservation issues

Mature forest size requirements for SGCN habitat

Age, species, and structural diversity required for SGCN habitat and resilient forests

Forest habitat degradation due to invasive species

Degradation and loss of ephemeral wetlands (vernal pools)

Lowland conifer requirements for SGCN habitat

Example conservation approaches

Where possible, maintain large blocks of mature forest.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests. Manage for forests exhibiting mature characteristics such as multiple age-classes, snags, and canopy gaps.

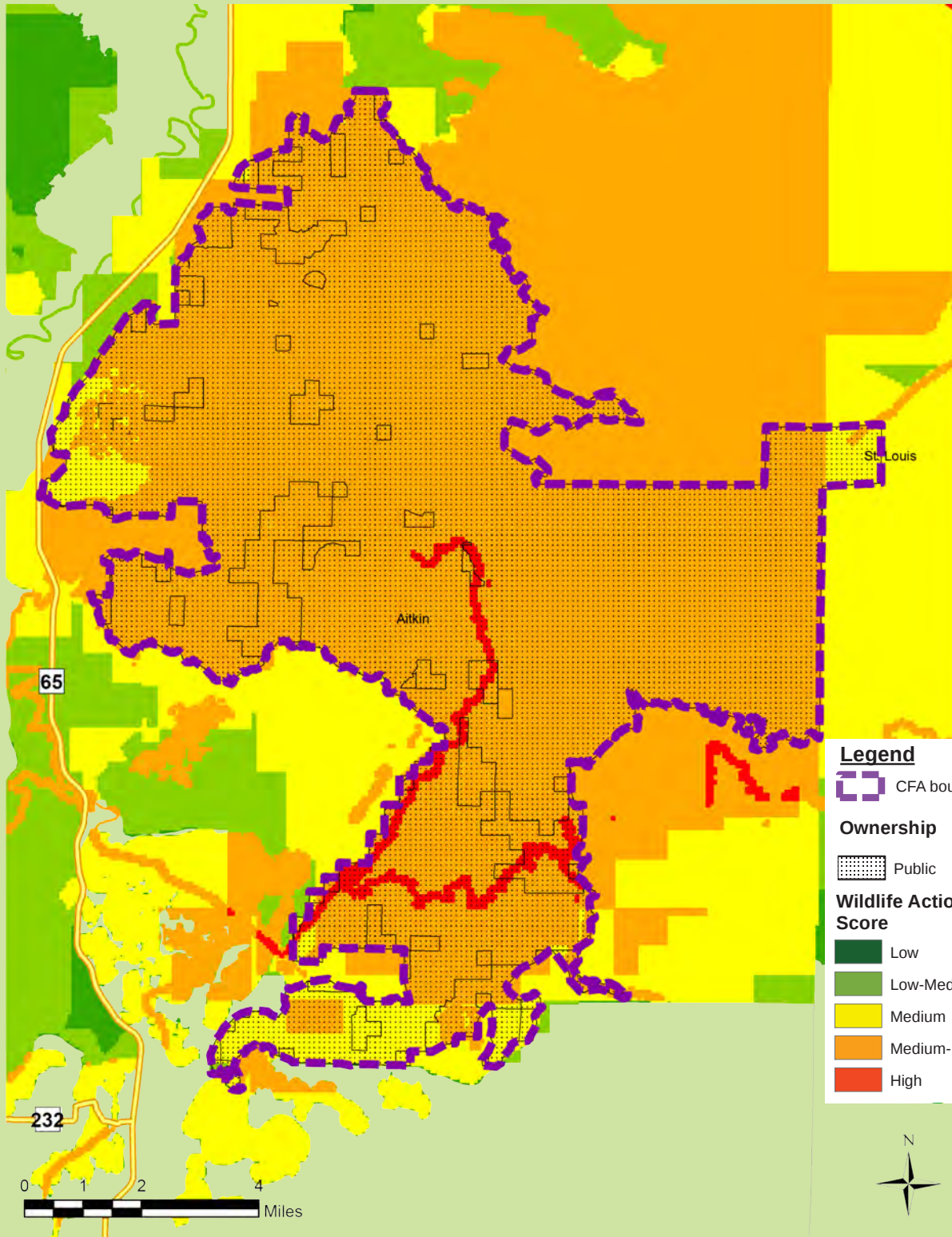
Monitor for new invasive species and utilize rapid treatment methods if detected.

Develop and implement Best Management Practices to reduce impacts to ephemeral wetlands (vernal pools). Improve knowledge of habitat requirements of salamanders that depend on vernal pools and adjacent upland habitat.

Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat.

Cornish Hardwoods

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

Low
 Low-Medium
 Medium
 Medium-High
 High

Cottonwood River-Red Rock Ridge

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Grassland-wetland complexes: PWL_CX-Prairie Wetland Complex

Prairies/grasslands: UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13d-Dry Hill Prairie (Southern), UPs23a-Mesic Prairie (Southern), WPs54b-Wet Prairie (Southern), *also includes surrogate grasslands*

Wetland: WMp73a-Prairie Meadow/Carr, WMs83a-Seepage Meadow/Carr

Cliff/Talus community: CTs12c-Dry Sioux Quartzite Cliff (Southern)

Rock outcrop communities: ROs12a2-Crystalline Bedrock Outcrop (Prairie), Sioux Quartzite Subtype

Target Species:

Dry-mesic prairie birds: grasshopper sparrow, Henslow's sparrow, upland sandpiper, western meadowlark

Great plains toad

Blanding's turtle

Prairie butterflies: Arogos skipper, dusted skipper, Poweshiek skipperling, regal fritillary

Example conservation issues

Increased flashiness of river flows due to extreme rainfall events causing sedimentation, undercutting of banks, vertical separation from oxbows and floodplain wetlands

Prairie and wetland habitat degradation due to invasive species

Prairie/grassland loss and fragmentation

Habitat management impacts

Conversion of native habitat to agriculture or aggregate mining

Example conservation approaches

Promote infiltration practices in cultivated and urbanized landscapes; restore riparian cross-sections, connect floodplains with main channels.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

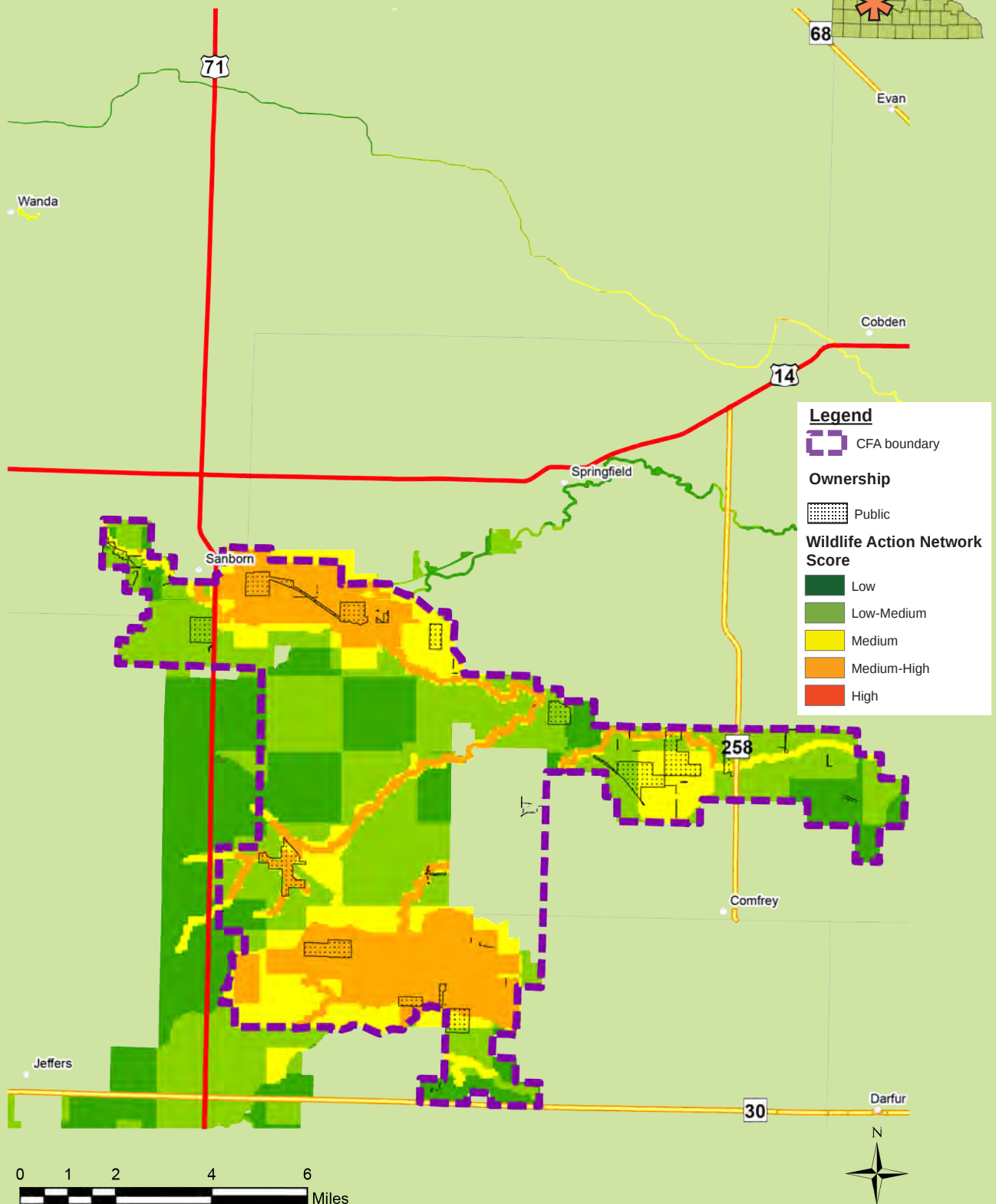
Implement Minnesota Prairie Conservation Plan-buffer and connect prairie habitat.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities and Blanding's turtles). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Assess suitability to conversion through environmental review
Target land protection of prairie/grassland, wetland, and rock outcrop sites in the Wildlife Action Network using acquisition/easements.

Cottonwood River-Red Rock Ridge

Conservation Focus Area



Des Moines River Valley

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Grassland-wetland complexes: PWL CX-Prairie Wetland Complex

Prairie/grassland: UPs13-Southern Dry Prairie, UPs23-Southern Mesic Prairie, WPs54-Southern Wet Prairie, *also includes surrogate grasslands*

Prairie streams

Open peatland: OPp93b-Calcareous Fen (Southwestern)

Shallow lakes (Heron Lake)

Wetlands: MRp83-Prairie Mixed Cattail Marsh, WMp73-Prairie Wet Meadow/Carr, WMs83-Southern Seepage Meadow/Carr, WMs83a-Seepage Meadow/Carr, WMs92-Southern Basin Wet Meadow/Carr

Upland hardwood forest: MHs38-Southern Mesic Oak-Basswood Forest, MHs38b-Basswood-Bur Oak-(Green Ash) Forest, MHs39-Southern Mesic Maple-Basswood Forest, MHs49-Southern Wet-Mesic Hardwood Forest, MHs49a-Elm-Basswood-Black Ash-(Hackberry) Forest

Target Species:

Dry-mesic prairie birds: grasshopper sparrow, Henslow's sparrow, upland sandpiper, western meadowlark

Wetland/shallow lake birds: black-crowned night heron, black tern, Forster's tern, red-necked grebe, western grebe, yellow-headed blackbird

Blanding's turtle

Great Plains toad

Prairie butterflies: Arogos skipper, dusted skipper, Poweshiek skipperling, regal fritillary

Example conservation issues

Prairie/grassland loss and fragmentation

Groundwater depletion and contamination impacting municipal water availability, stream flows, and wetlands (especially calcareous fens)

Stream sedimentation and contamination, channelization, and impoundments, increased extreme rainfall events due to climate change

Prairie and wetland habitat degradation due to invasive species

Terrestrial habitat management impacts

Management of shallow lakes for fish removal or vegetation objectives

Shallow lakes water level fluctuation

Example conservation approaches

Implement Minnesota Prairie Conservation Plan—buffer and connect prairie habitat.

Protect groundwater recharge areas using appropriate native vegetation.

Reduce channelization, maintain oxbows, enhance main stream connectivity, buffer stream banks with permanent, native vegetation.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

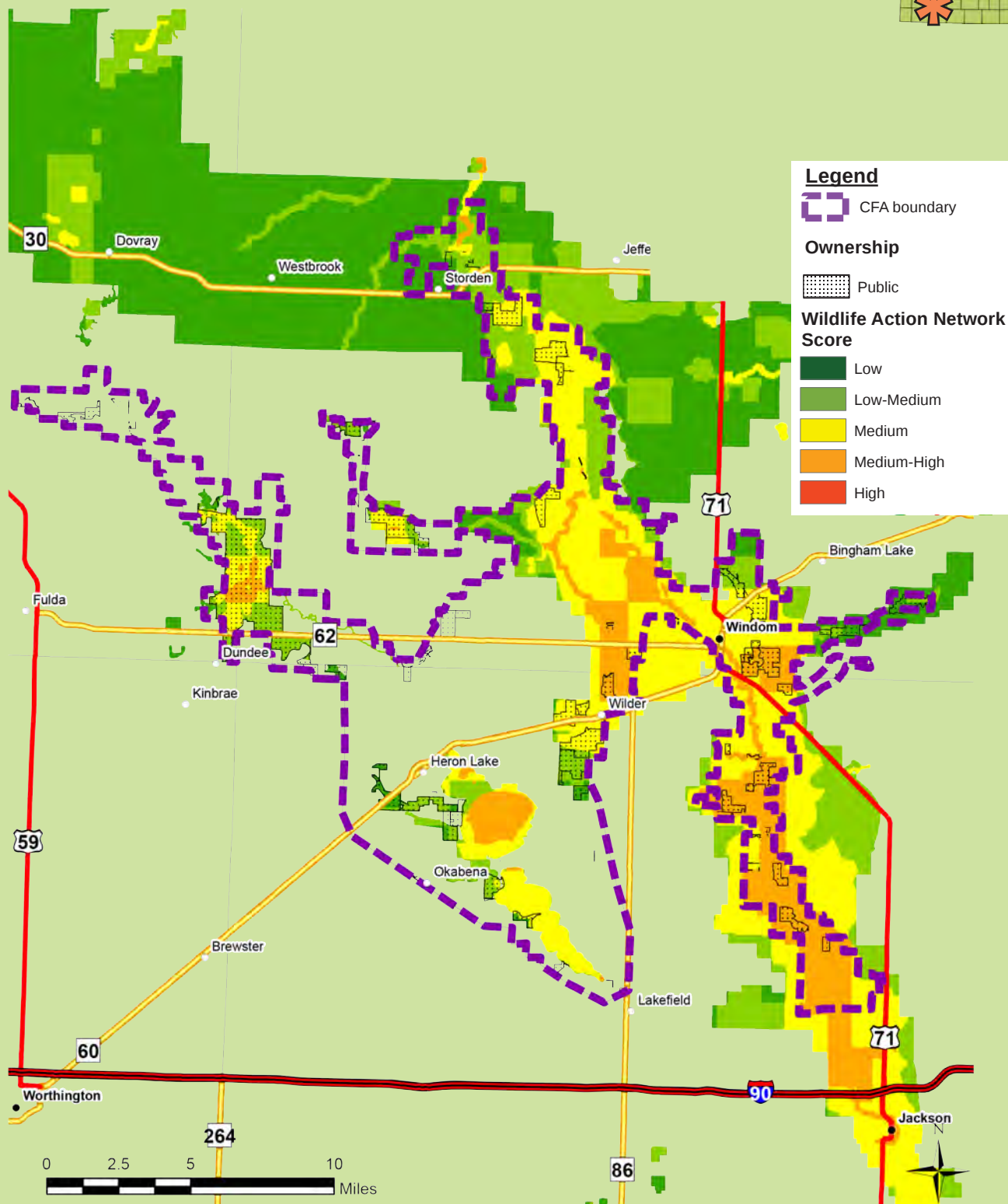
Alter frequency, timing, and extent and other factors of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Coordinated approach to prioritize varying management needs for fish, amphibians, turtles, birds, and exotic, invasive species.

BMPs that promote infiltration within watersheds. Protect recharge areas.

Des Moines River Valley

Conservation Focus Area



Glacial Ridge

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Grassland-wetland complexes: AIP_CX-Agassiz Interbeach Prairie Complex, MFS_CX-Meadow-Marsh-Fen-Swamp Complex, MMS_CX-Meadow-Marsh-Fen-Swamp Complex, PMA_CX-Wet-Mesic Prairie / Lowland Aspen Complex, PWL_CX-Prairie Wetland Complex, SEW_CX-Seepage Wetland Complex

Prairie/grassland: UPn12b-Dry Sand-Gravel Prairie (Northern), UPn13-Northern Dry Savanna, UPn13b-Dry Barrens Oak Savanna (Northern), UPn23a-Mesic Brush-Prairie (Northern), UPn23b-Mesic Prairie (Northern), WPn53-Northern Wet Prairie, WPn53a-Wet Seepage Prairie (Northern), WPn53b-Wet Brush-Prairie (Northern), WPn53c-Wet Prairie (Northern), WPn53d-Wet Saline Prairie (Northern), *also includes surrogate grasslands*

River/streams (Red Lake and Clearwater Rivers)

Lowland conifer forest: FPw63b-Tamarack Seepage Swamp (Aspen Parkland)

Open peatland: OPn92a-Graminoid Rich Fen (Basin), OPp91-Prairie Rich Fen, OPp91a-Rich Fen (Mineral Soil), OPp91b-Rich Fen (Peatland), OPp91c-Rich Fen (Prairie Seepage), OPp93-Prairie Extremely Rich Fen, OPp93a-Calcareous Fen (Northwestern)

Wetland (nonforested): MRn83-Northern Mixed Cattail Marsh, MRp83a-Cattail-Sedge Marsh (Prairie), MRp93a-Bulrush Marsh (Prairie), WMn82b-Sedge Meadow, WMp73a-Prairie Meadow/Carr, WMs83-Southern Seepage Meadow/Carr, WMs83a-Seepage Meadow/Carr, WMs83a1-Seepage Meadow/Carr, Tussock Sedge Subtype, WMs92a-Basin Meadow/Carr

Target Species:

Prairie mammals: plains pocket mouse, prairie vole, Richardson's ground squirrel

Dry-mesic prairie birds: marbled godwit, short-eared owl, upland sandpiper, western meadowlark

Wet prairie/sedge meadow birds: Le Conte's sparrow, Nelson's sparrow, Wilson's phalarope, yellow rail

Mussels: black sandshell, creek heelsplitter

Prairie butterflies: Assiniboia skipper, Dakota skipper, dusted skipper, Poweshiek skipperling

Tiger beetles: ghost tiger beetle, sandy tiger beetle

Example conservation issues

Conversion of native habitat to agriculture or peat or aggregate mining

Prairie and wetland habitat degradation due to invasive species

Habitat management impacts

Stream sedimentation and contamination, channelization, and impoundments, increased extreme rainfall events due to climate change

Example conservation approaches

Assess suitability to conversion through environmental review. Target land protection of prairie/grassland and wetland sites in the Wildlife Action Network using acquisition/easements. Implement Minnesota Prairie Conservation Plan. Develop a sensitive, cost-effective trend monitoring strategy for Lepidoptera SGCNs,

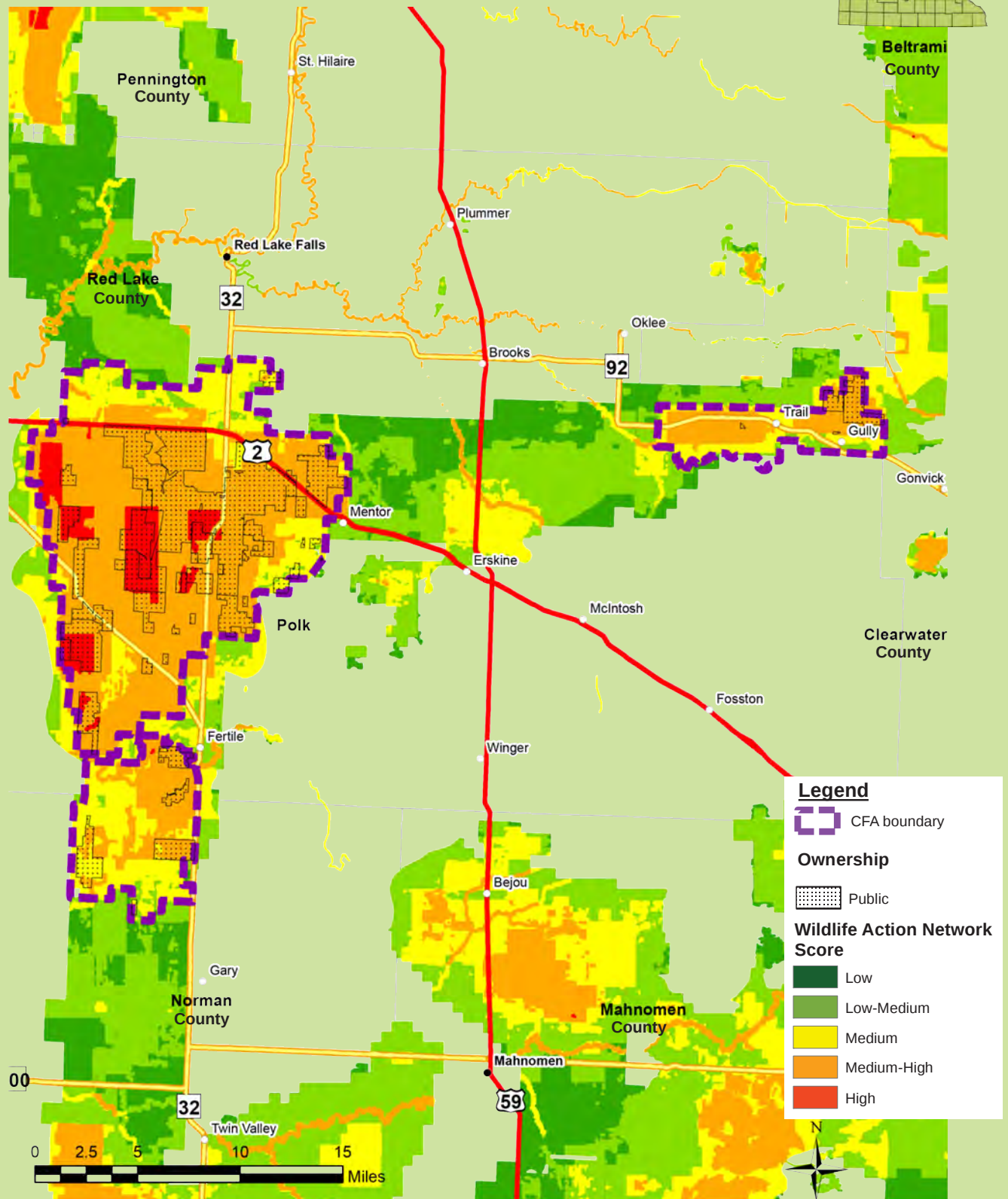
Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals. Landscape level coordination of management between landowners on individual protected parcels.

Reduce channelization, reduce stream entrenchment, restore connections between streams and riparian wetlands, maintain oxbows, enhance main stream connectivity, Buffer stream banks with permanent, native vegetation.

Glacial Ridge

Conservation Focus Area



Holyoke

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Lowland conifer forest: APn81-Northern Poor Conifer Swamp, APn81a-Poor Black Spruce Swamp, APn81b-Poor Tamarack-Black Spruce Swamp, APn81b1-Poor Tamarack-Black Spruce Swamp, Black Spruce Subtype, APn81b2-Poor Tamarack-Black Spruce Swamp, Tamarack Subtype, WFn53b-Lowland White Cedar Forest (Northern), WFn64a-Black Ash-Conifer Swamp (Northeastern)

Upland hardwood forest: MHn35-Northern Mesic Hardwood Forest, MHn35a-Aspen-Birch-Basswood Forest, MHn35b-Red Oak-Sugar Maple-Basswood-(Bluebead Lily) Forest, MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHn46b-Black Ash-Basswood Forest, MHn47a-Sugar Maple-Basswood-(Bluebead Lily) Forest

Wetland (forested): Vernal pool

Target Species:

Mature upland forest birds: red-shouldered hawk, wood thrush

Forest salamanders: eastern red-backed salamander, four-toed salamander, spotted salamander

Example conservation issues

Example conservation approaches

Mature forest habitat size requirements for SGCN habitat

Where possible, maintain large blocks of mature forest.

Forest habitat degradation due to invasive species

Monitor for new invasive species and utilize rapid treatment methods if detected.

Degradation and loss of ephemeral wetlands (vernal pools)

Improve knowledge of habitat requirements of salamanders that depend on vernal pools and adjacent upland habitat. Develop and implement Best Management Practices to reduce impacts to ephemeral wetlands (vernal pools).

Lowland conifer requirements for SGCN habitat

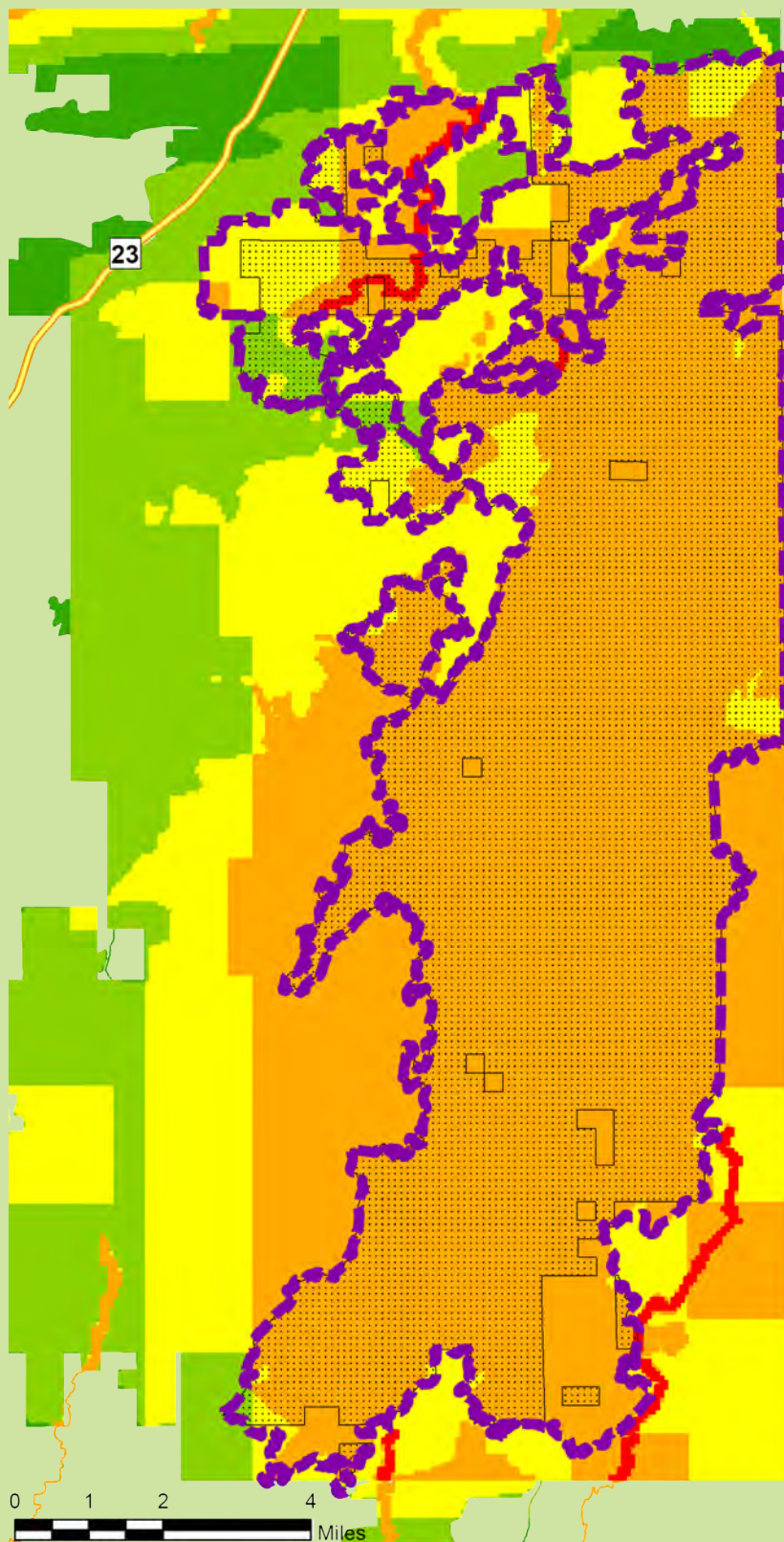
Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat.

Species and structural diversity required for SGCN habitat and resilient forests

Improve plant species and structural diversity to create higher quality habitat for SGCN and more resilient forests.

Holyoke

Conservation Focus Area



State of Wisconsin

Legend

 CFA boundary

Ownership

 Public

Wildlife Action Network Score

 Low
 Low-Medium
 Medium
 Medium-High
 High

Lower Minnesota River Valley

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: MHs37b-Red Oak-White Oak-(Sugar Maple) Forest, MHs38b-Basswood-Bur Oak-(Green Ash) Forest, MHs38c-Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs39a-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs39c-Sugar Maple Forest (Big Woods), MHs49a-Elm-Basswood-Black Ash-(Hackberry) Forest

River/stream: Minnesota River

Lowland deciduous forest: FFs68a-Silver Maple-(Virginia Creeper) Floodplain Forest

Wetland: MRn93a-Bulrush Marsh (Northern), MRn93b-Spikerush-Bur Reed Marsh (Northern), WMn82a-Willow-Dogwood Shrub Swamp, WMn82b-Sedge Meadow, WMs83a-Seepage Meadow/Carr

Open peatland: OPp93c-Calcareous Fen (Southeastern)

Prairie/grassland: UPs13-Southern Dry Prairie, UPs13a-Dry Barrens Prairie (Southern), UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13d-Dry Hill Prairie (Southern), UPs14a2-Dry Barrens Oak Savanna (Southern), Oak Subtype, UPs14b-Dry Sand-Gravel Oak Savanna (Southern), UPs14c-Dry Hill Oak Savanna (Southern), UPs23a-Mesic Prairie (Southern), *also includes surrogate grasslands.*

Target Species:

Mature upland/woodland forest birds: Acadian flycatcher, cerulean warbler, hooded warbler, prothonotary warbler, wood thrush

Blanchard's cricket frog

Smooth softshell

SGCN fish

SGCN mussels

Prairie butterflies: Arogos skipper, dusted skipper, regal fritillary

Sandy Stream Tiger Beetle

Example conservation issues

Increased flashiness of river flows due to extreme rainfall events causing sedimentation, undercutting of banks, vertical separation from oxbows and floodplain wetlands

Prairie, forest, wetland, river habitat quality impacted by invasive species

Mining, urban development impact habitat

Example conservation approaches

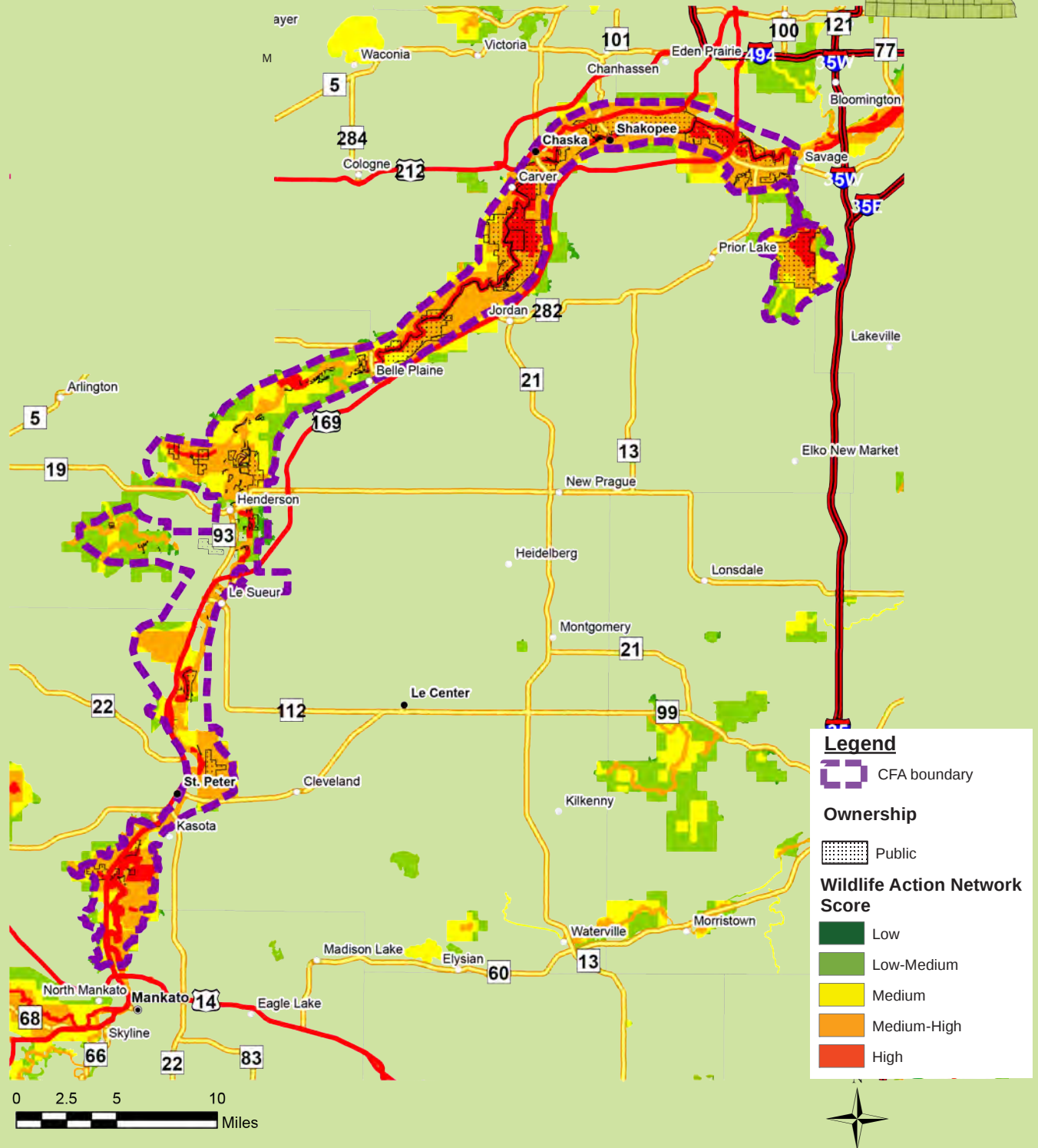
Promote infiltration practices in cultivated and urbanized landscapes; restore riparian cross-sections, connect floodplains with main channels, buffer stream banks with permanent, native vegetation.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove invasive species from forests. Implement reed canary grass and invasive cattail control. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible. Reduce cultural disturbances that provide opportunities for invasion. Monitor for new invasive species, including invasive carp, and utilize rapid treatment methods if detected.

Protect critical areas.

Lower Minnesota River Valley

Conservation Focus Area



Mahnomen

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Grassland-wetland complexes: MMS_CX-Meadow-Marsh-Fen-Swamp Complex, PWL_CX-Prairie Wetland Complex

Prairie/grassland: UPn12b-Dry Sand-Gravel Prairie (Northern), UPn23a-Mesic Brush-Prairie (Northern), UPn23b-Mesic Prairie (Northern), WPn53-Northern Wet Prairie, *also includes surrogate grasslands.*

Wetland (nonforested): MRn83-Northern Mixed Cattail Marsh, WMn82b-Sedge Meadow, WMs83-Southern Seepage Meadow/Carr

Open Peatland: OPp91-Prairie Rich Fen, OPp91c-Rich Fen (Prairie Seepage), OPp93-Prairie Extremely Rich Fen, OPp93a-Calcareous Fen (Northwestern)

Target Species:

Dry-mesic prairie birds: marbled godwit, upland sandpiper, western meadowlark

Wet prairie/sedge meadow birds: Le Conte's sparrow, Nelson's sparrow, yellow rail

Prairie butterflies: dusted skipper, Poweshiek skipperling

Example conservation issues

Prairie/grassland loss and fragmentation

Prairie and wetland habitat degradation due to invasive species

Habitat management impacts

Example conservation approaches

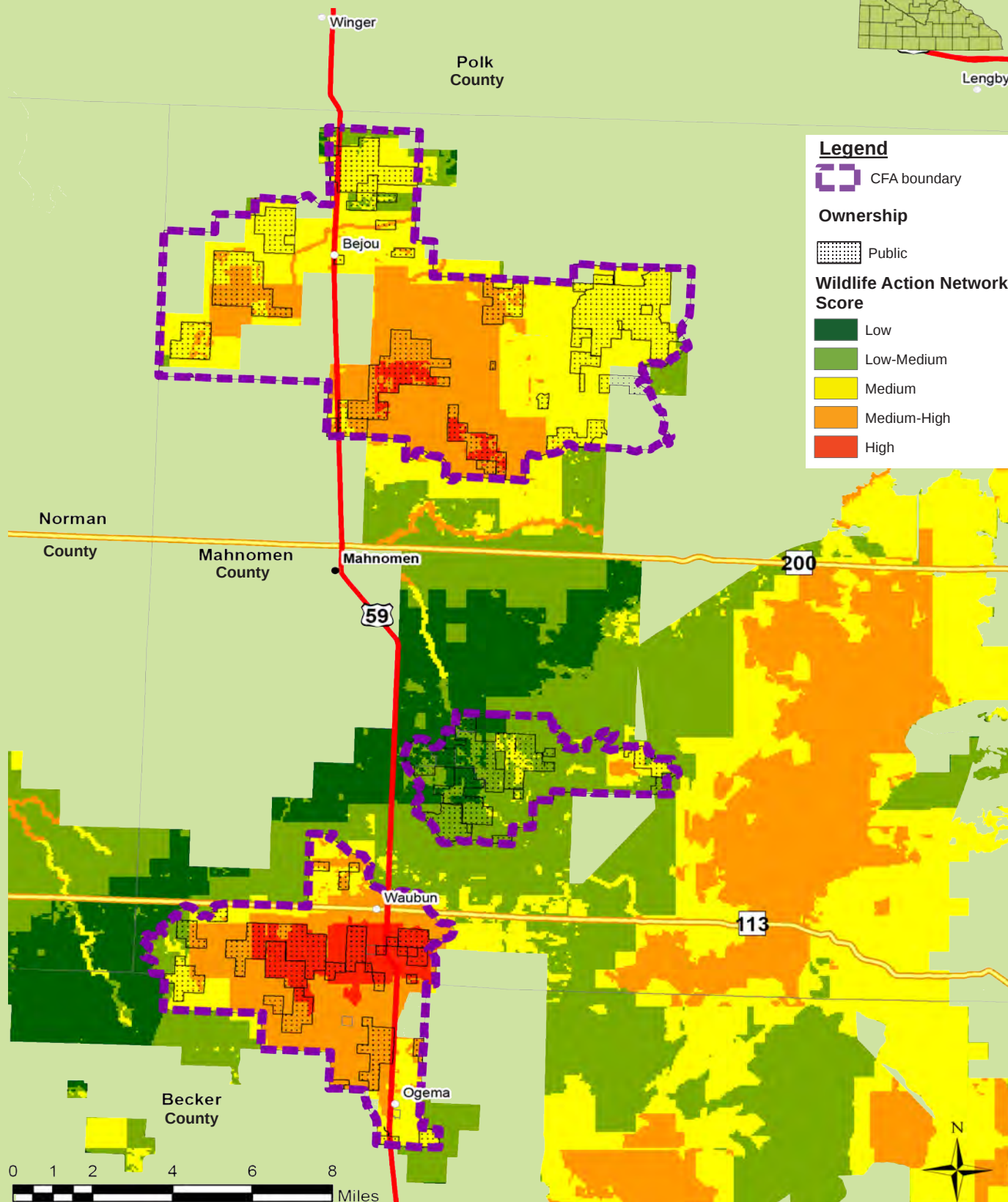
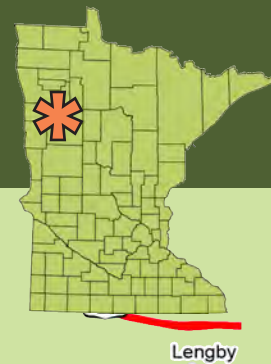
Implement Minnesota Prairie Conservation Plan—buffer and connect prairie habitat.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Mahnomen

Conservation Focus Area



Manitou

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHn45a-Paper Birch-Sugar Maple Forest (North Shore), MHn45c-Sugar Maple Forest (North Shore)

Upland conifer forest: FDn43b1-Aspen-Birch Forest, Balsam Fir Subtype, FDn43c-Upland White Cedar Forest, MHn45b-White Cedar-Yellow Birch Forest

Lowland conifer forest: WFn53a-Lowland White Cedar Forest (North Shore)

Target Species:

Northern long-eared bat

Mature upland forest birds: black-throated blue warbler, wood thrush

Other birds: boreal owl, northern goshawk

Example conservation issues

Forest habitat degradation due to invasive species

Mature forest size requirements for SGCN habitat

Lowland conifer requirements for SGCN habitat

Species and structural diversity required for SGCN habitat and resilient forests

Fire-dependent forest management

Example conservation approaches

Monitor for new invasive species and utilize rapid treatment methods if detected.

Where possible, maintain large blocks of mature forest.

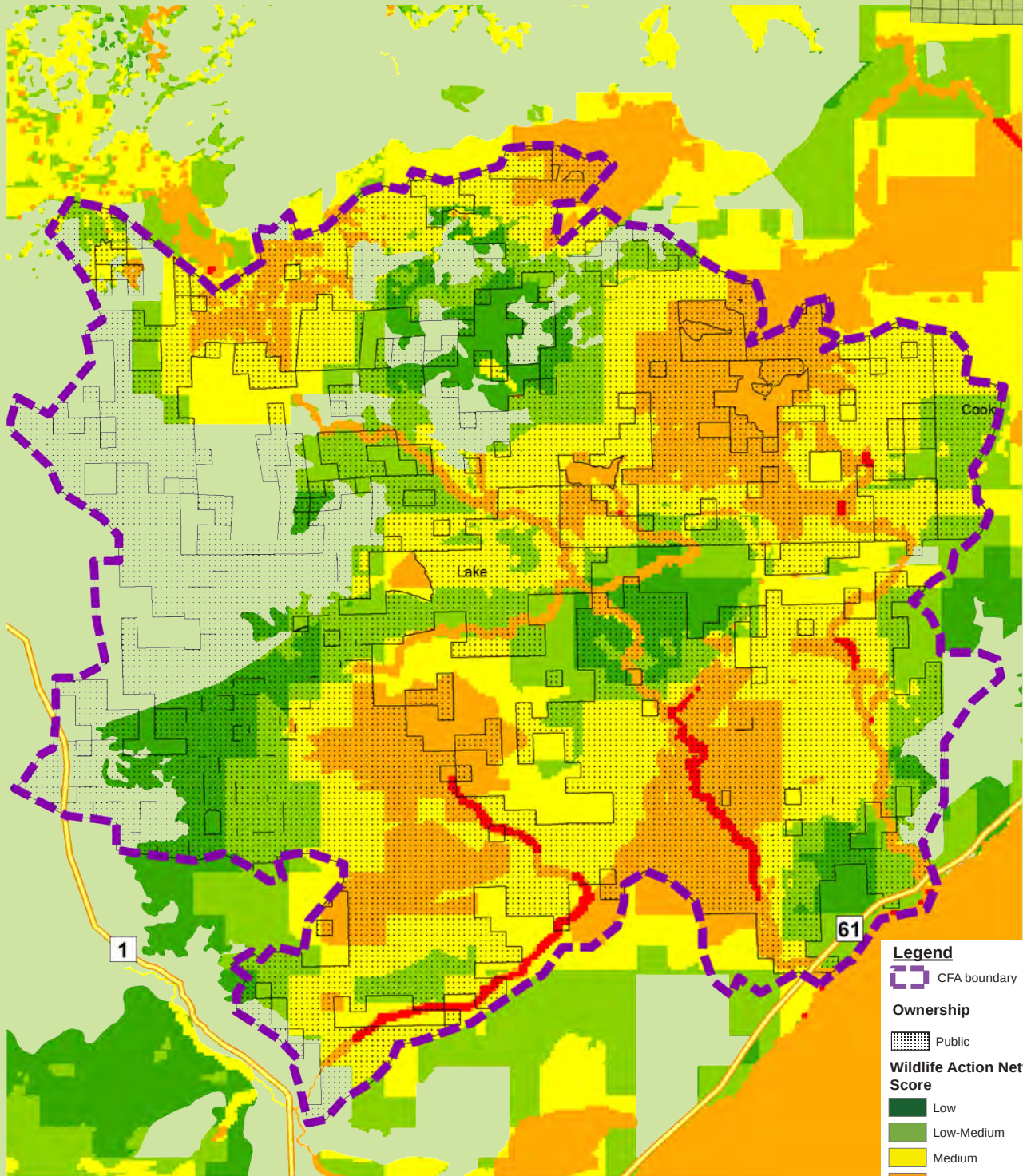
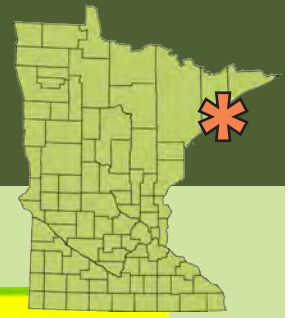
Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests.

Management for reproduction: thinning, low fuel burns, increase knowledge of new pathogens.

Manitou

Conservation Focus Area



0 0.5 1 2 3 4
Miles

Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

Low

Low-Medium

Medium

Medium-High

High



Mille Lacs Moraines

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: MHc26-Central Dry-Mesic Oak-Aspen Forest, MHc26b-Red Oak-Sugar Maple-Basswood-(Large-Flowered Trillium) Forest, MHc36-Central Mesic Hardwood Forest (Eastern), MHc36a-Red Oak-Basswood Forest (Noncalcareous Till), MHc36b-Red Oak-Basswood Forest (Calcareous Till), MHc37b-Sugar Maple-Basswood-(Aspen) Forest, MHc47-Central Wet-Mesic Hardwood Forest, MHc47a-Basswood-Black Ash Forest, MHn35-Northern Mesic Hardwood Forest, MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHn46a-Aspen-Ash Forest, MHn47a-Sugar Maple-Basswood-(Bluebead Lily) Forest, MHs38a-White Pine-Oak-Sugar Maple Forest

Lowland deciduous forest: WFn55-Northern Wet Ash Swamp, WFn55b-Black Ash-Yellow Birch-Red Maple-Basswood Swamp (Eastcentral), WFn64-Northern Very Wet Ash Swamp, WFn64b-Black Ash-Yellow Birch-Red Maple-Alder Swamp (Eastcentral), WFn74-Northern Wet Alder Swamp

Wetland (forested): Vernal pool

Target Species:

Mature upland/lowland forest birds: cerulean warbler, red-shouldered hawk

Golden-winged warbler

Forest salamanders: eastern newt, eastern red-backed salamander, four-toed salamander

Example conservation issues

Forest fragmentation

Reduced age, species, and structural diversity of mesic hardwood forests

Degradation and loss of ephemeral wetlands (vernal pools)

Climate change impacts on soil moisture and forest composition

Invasive species may impact forest and wetland structure and diversity

Conservation approaches

Facilitate wildlife movement across transportation barriers, such as US Hwy 169. Strategic land protection to maintain forest connectivity. Provide terrestrial habitat by protecting large parcels and corridors connecting them.

Explore the use of economically viable alternative selective harvest strategies (for example, gap management). Provide technical guidance to private landowners.

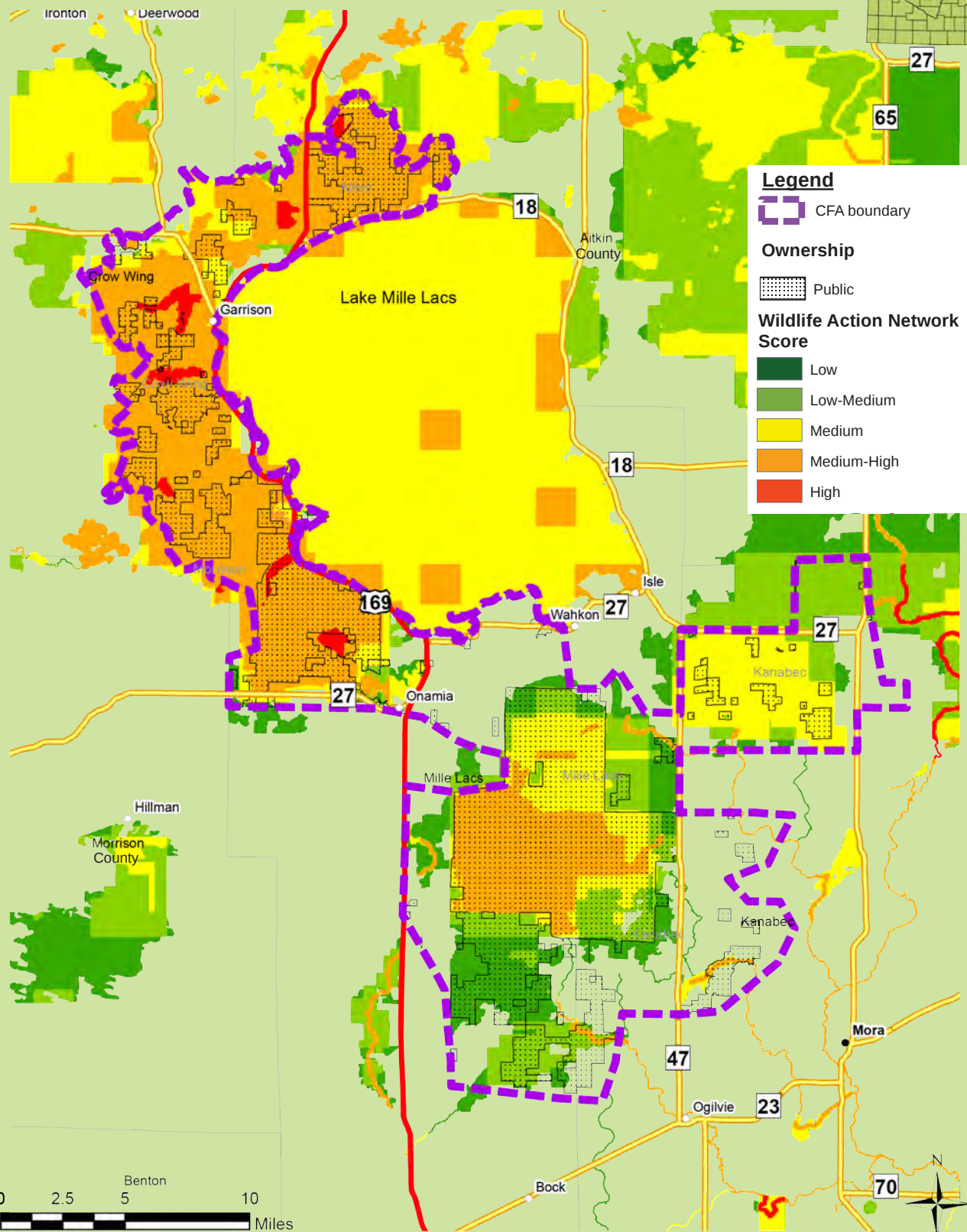
Develop and implement Best Management Practices to reduce impacts to ephemeral wetlands (vernal pools). Improve knowledge of habitat requirements of salamanders that depend on vernal pools and adjacent upland habitat.

Practice adaptive management to respond to changes in soil moisture.

Monitor for new invasive species and utilize rapid treatment methods if detected.

Mille Lacs Moraines

Conservation Focus Area



North Shore Hardwoods

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: MHN45a-Paper Birch-Sugar Maple Forest (North Shore), MHN45c-Sugar Maple Forest (North Shore)

Upland conifer forest: FDN43c-Upland White Cedar Forest, MHN45b-White Cedar-Yellow Birch Forest

Lowland conifer forest: WFN53a-Lowland White Cedar Forest (North Shore), WFN64a-Black Ash-Conifer Swamp (Northeastern)

Target Species:

Smoky shrew

Mature upland forest birds: black-throated blue warbler, wood thrush

Other birds: boreal owl, northern goshawk

Example conservation issues

Forest habitat degradation due to invasive species

Mature forest habitat size requirements for SGCN habitat

Upland white cedar stressors: herbivory, reduce age classes, simplified structure, lack of regeneration

Species and structural diversity required for SGCN habitat and resilient forests

Example conservation approaches

Monitor for new invasive species and utilize rapid treatment methods if detected.

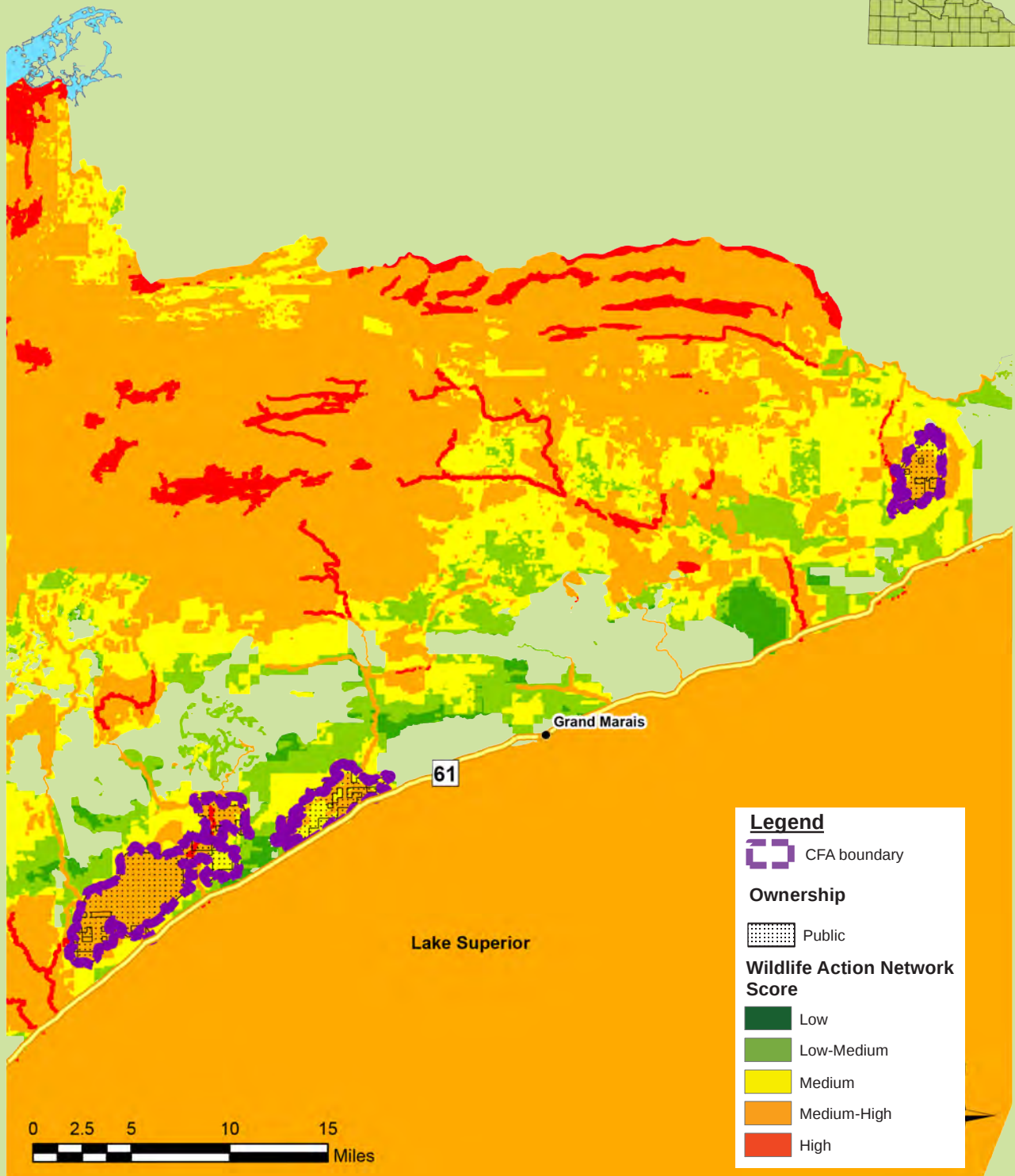
Where possible, maintain large blocks of mature forest.

Reduce herbivory impacts through exclosures, bud capping, and landscape patterning. Maintain and increase forest age and structural diversity.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests.

North Shore Hardwoods

Conservation Focus Area



Pike Range

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: MH-Mesic Hardwood Forest System
(NPC types not provided as NPC mapping has not been completed within this CFA)

Upland conifer forest: FDn43c-Upland White Cedar Forest (NPC types not fully provided as NPC mapping has not been completed within this CFA)

Lowland conifer forest: FP-Forested Rich Peatland System (NPC types not provided as NPC mapping has not been completed within this CFA)

Open Peatland: AP-Open Rich Peatland System

Target Species:

Smoky shrew

Mature upland forest birds: black-throated blue warbler, wood thrush

Lowland conifer birds: boreal chickadee, Connecticut warbler

Northern goshawk

Example conservation issues

Mature forest habitat size requirements for SGCN habitat

Lowland conifer requirements for SGCN habitat

Species and structural diversity required for SGCN habitat and resilient forests

Example conservation approaches

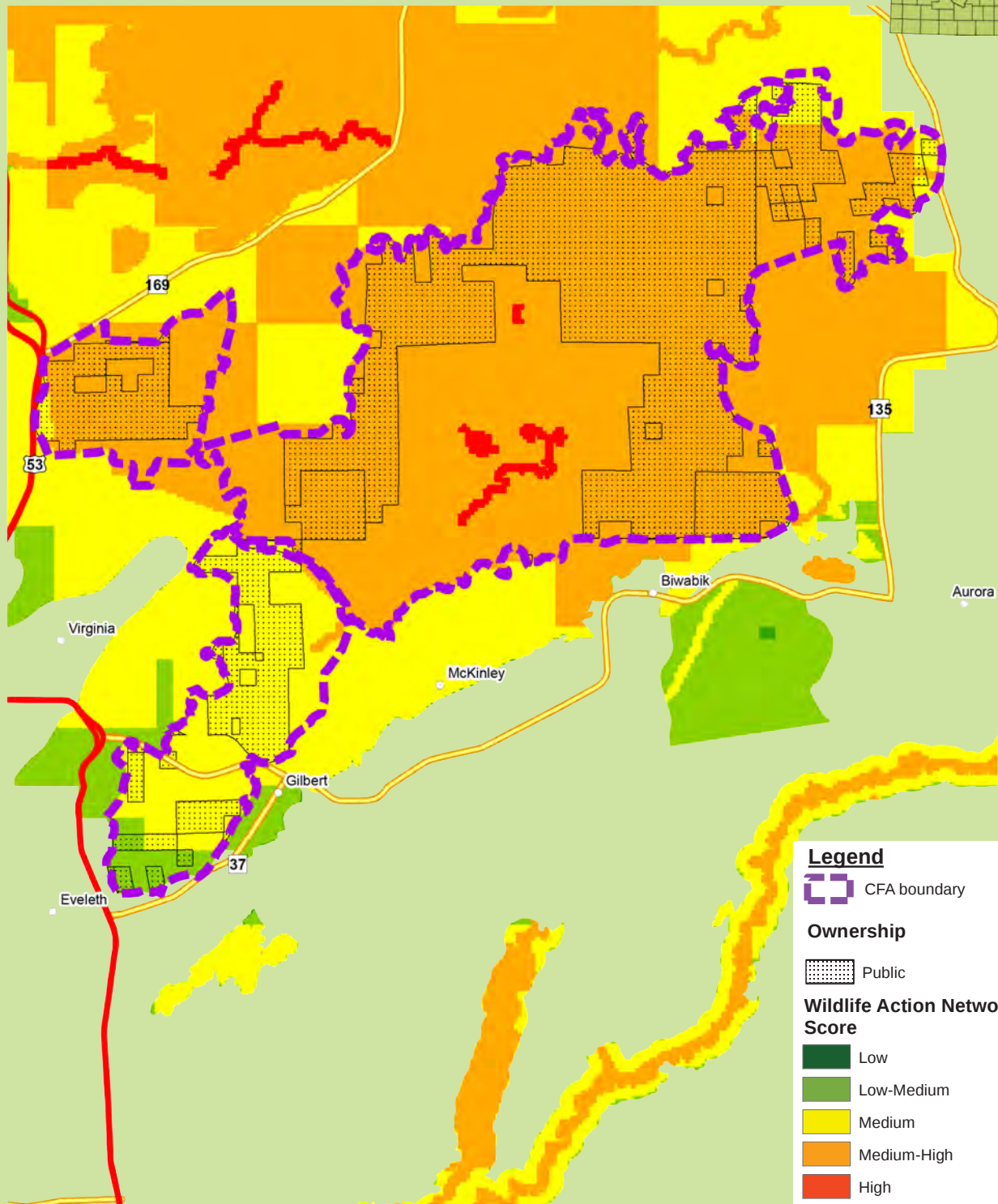
Where possible, maintain large blocks of mature forest.

Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests.

Pike Range

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

Low
 Low-Medium
 Medium
 Medium-High
 High

Pine Island

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Lowland conifer forest: AP Acidic Peatland System, FP-Forested Rich Peatland System (NPC types not provided as NPC mapping has not been completed within this CFA)

Peatland systems: OP-Open Rich Peatland System (NPC types not provided as NPC mapping has not been completed within this CFA)

Target Species:

Lowland conifer birds: boreal chickadee, Connecticut warbler

Example conservation issues

Mature forest habitat size requirements for SGCN habitat

Lowland conifer requirements for SGCN habitat

Maintain peatland hydrology

Forest habitat degradation due to invasive species

Wetland loss

Example conservation approaches

Where possible, maintain large blocks of mature forest.

Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat. Utilize information from existing harvesting experiments.

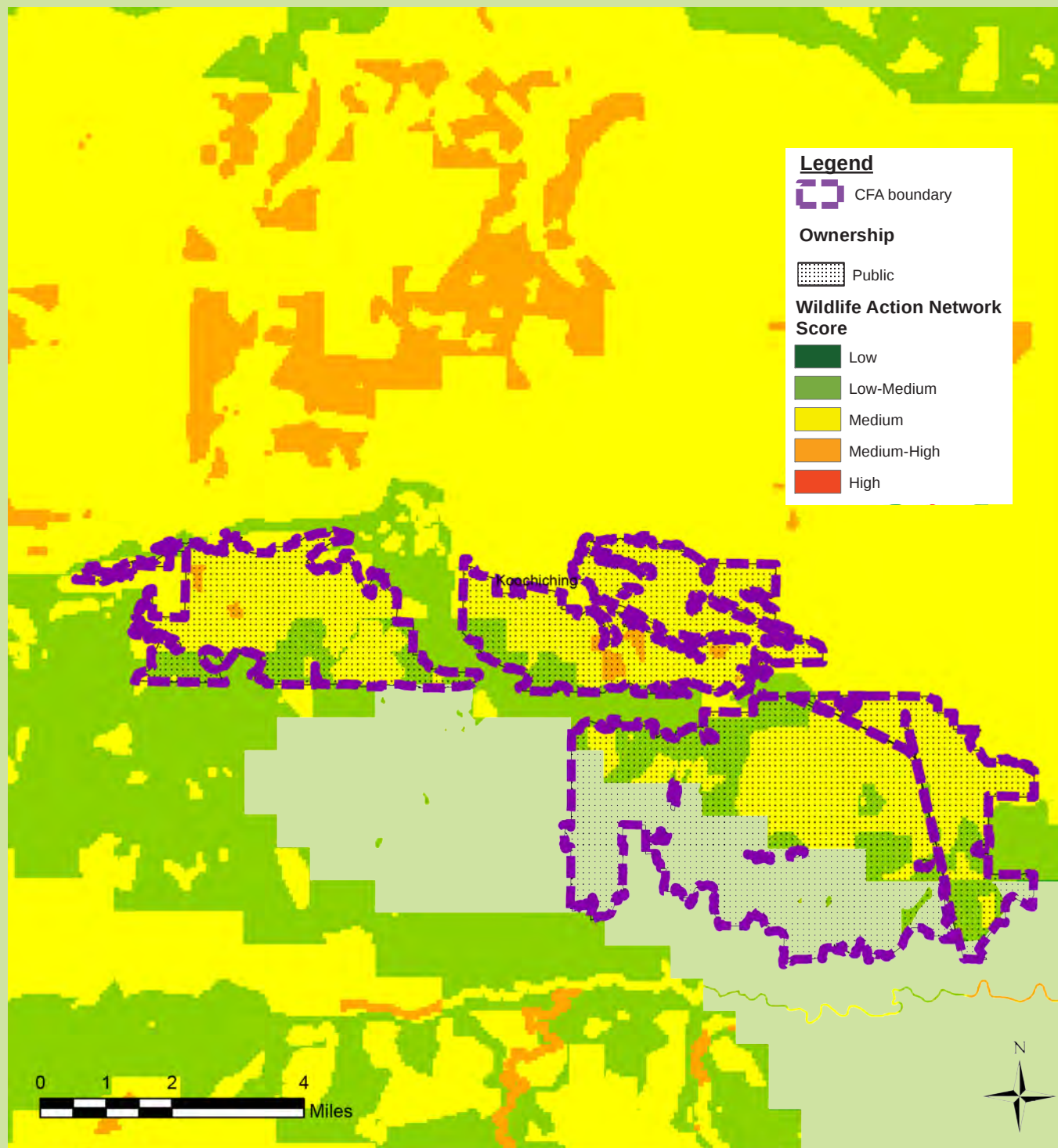
Assess agricultural and mining conversion and management impacts to peatland hydrology.

Monitor for new invasive species and utilize rapid treatment methods if detected.

Apply MN Wetland Conservation Act standards. Ensure replacement standards are followed. Regulate agricultural and mining conversion of peatlands.

Pine Island

Conservation Focus Area



Pine Sands North

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland conifer forest: FFDc12a-Jack Pine-(Bearberry) Woodland, FDc23-Central Dry Pine Woodland, FDc23a-Jack Pine-(Yarrow) Woodland, FDc24a-Jack Pine-(Bush Honeysuckle) Woodland, FDc24a1-Jack Pine-(Bush Honeysuckle) Woodland, Bracken Subtype, FDc34-Central Dry-Mesic Pine-Hardwood Forest, FDc34a-Red Pine-White Pine Forest, FDn12b-Red Pine Woodland (Sand), FDn33a1-Red Pine-White Pine Woodland, Balsam Fir Subtype, FDn33a2-Red Pine-White Pine Woodland, Mountain Maple Subtype

Upland Hardwood Forest: FDc34b-Oak-Aspen Forest, MHc26-Central Dry-Mesic Oak-Aspen Forest, MHc26a-Oak-Aspen-Red Maple Forest, MHc26b-Red Oak-Sugar Maple-Basswood-(Large-Flowered Trillium) Forest, MHc37-Central Mesic Hardwood Forest (Western), MHc37a-Aspen-(Sugar Maple-Basswood) Forest, MHn35-Northern Mesic Hardwood Forest, MHn44a-Aspen-Birch-Red Maple Forest, MHn44c-Aspen-Fir Forest, MHn44d-Aspen-Birch-Fir Forest,

Target Species:

Woodland/savanna birds: eastern towhee, eastern whip-poor-will

Reptiles: eastern hog-nosed snake, smooth greensnake

Northern barrens tiger beetle

Example conservation issues

Conversion of native habitat to agriculture

Forest habitat degradation due to invasive species

Changes in hydrology from groundwater-based irrigation

Decreasing connectivity

Limited pine regeneration

Example conservation approaches

Target land protection of forest sites in the Wildlife Action Network using acquisition/easements.

Monitor for new invasive species and utilize rapid treatment methods if detected.

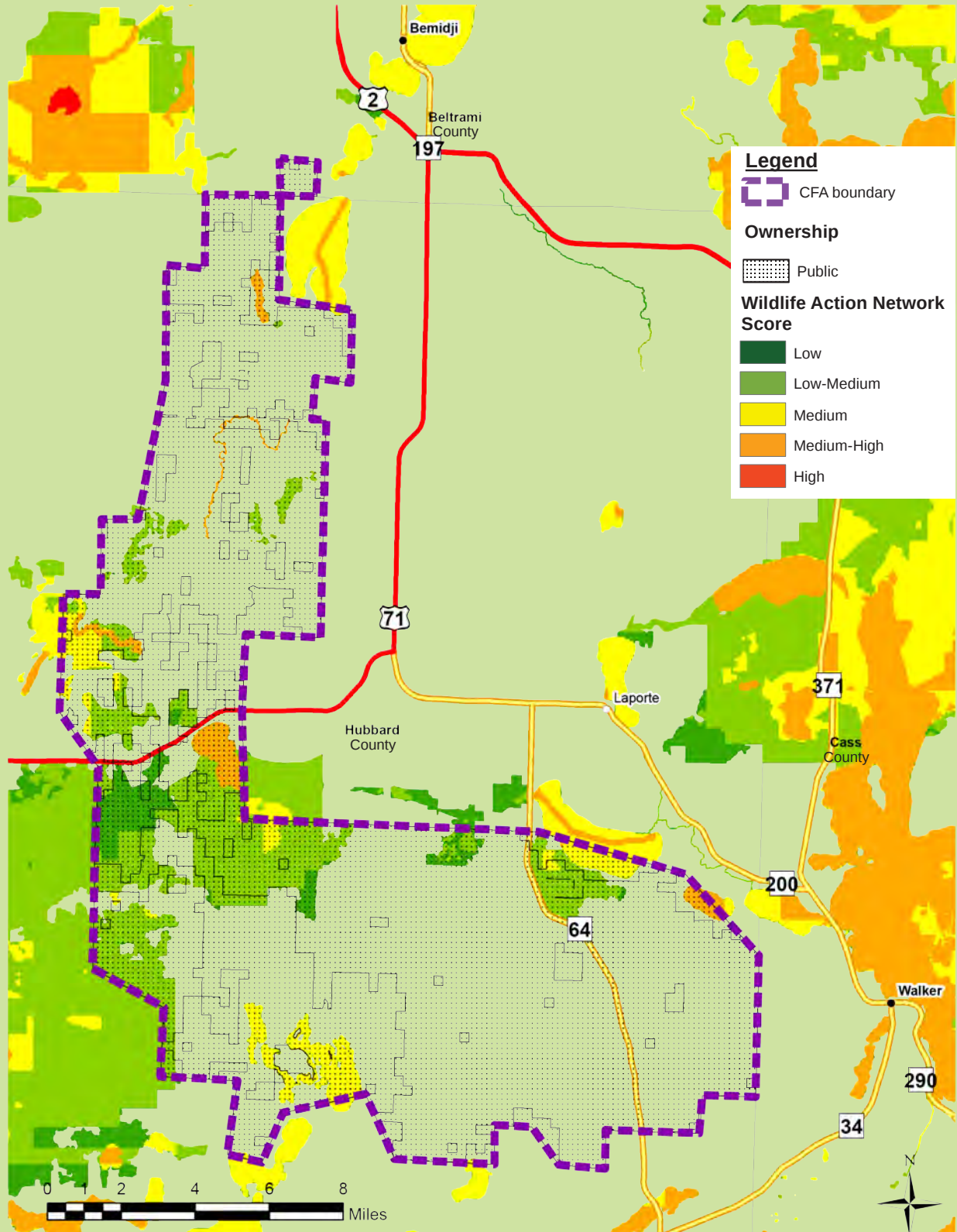
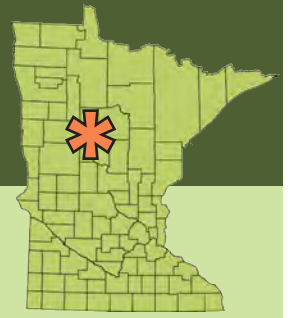
Increase knowledge of groundwater impacts to pine forest/woodland systems. Protect groundwater recharge areas.

Protection strategies to increase buffers, corridors, and cores within the Wildlife Action Network. Use of prescribed fire, alternate management methods to increase natural regeneration, mechanical brush removal to lessen competition.

Manage for reproduction: thinning, low fuel burns, increase knowledge of new pathogens, reduce herbivory pressures.

Pine Sands North

Conservation Focus Area



Pine Sands South

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland hardwood forest: FDc34b-Oak-Aspen Forest, MHc26-Central Dry-Mesic Oak-Aspen Forest, MHc26a-Oak-Aspen-Red Maple Forest, MHc26b-Red Oak-Sugar Maple-Basswood-(Large-Flowered Trillium) Forest, MHc37-Central Mesic Hardwood Forest (Western), MHc37a-Aspen-(Sugar Maple-Basswood) Forest, MHc37b-Sugar Maple-Basswood-(Aspen) Forest, MHn35-Northern Mesic Hardwood Forest, MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHn46a-Aspen-Ash Forest

Upland conifer forest: FDc12-Central Poor Dry Pine Woodland, FDc23-Central Dry Pine Woodland, FDc23a-Jack Pine-(Yarrow) Woodland, FDc24-Central Rich Dry Pine Woodland, FDc24a-Jack Pine-(Bush Honeysuckle) Woodland, FDc34a-Red Pine-White Pine Forest, FDn33a-Red Pine-White Pine Woodland, FDn33a1-Red Pine-White Pine Woodland, Balsam Fir Subtype

Wetlands (nonforested): WMn82a-Willow-Dogwood Shrub Swamp, WMn82b-Sedge Meadow

Open peatland: OPn81a-Bog birch-Alder Shore Fen, OPn91b1-Graminoid Rich Fen (Water Track), Featureless Water Track Subtype, OPn92-Northern Rich Fen (Basin), OPn92a-Graminoid Rich Fen (Basin), OPn92b-Graminoid-Sphagnum Rich Fen (Basin)

Target Species:

Woodland/savanna birds: eastern towhee, eastern whip-poor-will

Reptiles: eastern hog-nosed snake, smooth greensnake

Northern barrens tiger beetle

Example conservation issues

Conversion of native habitat to agriculture

Forest habitat degradation due to invasive species

Changes in hydrology from groundwater-based irrigation

Decreasing connectivity

Limited pine regeneration

Example conservation approaches

Target land protection of forest sites in the Wildlife Action Network using acquisition/easements.

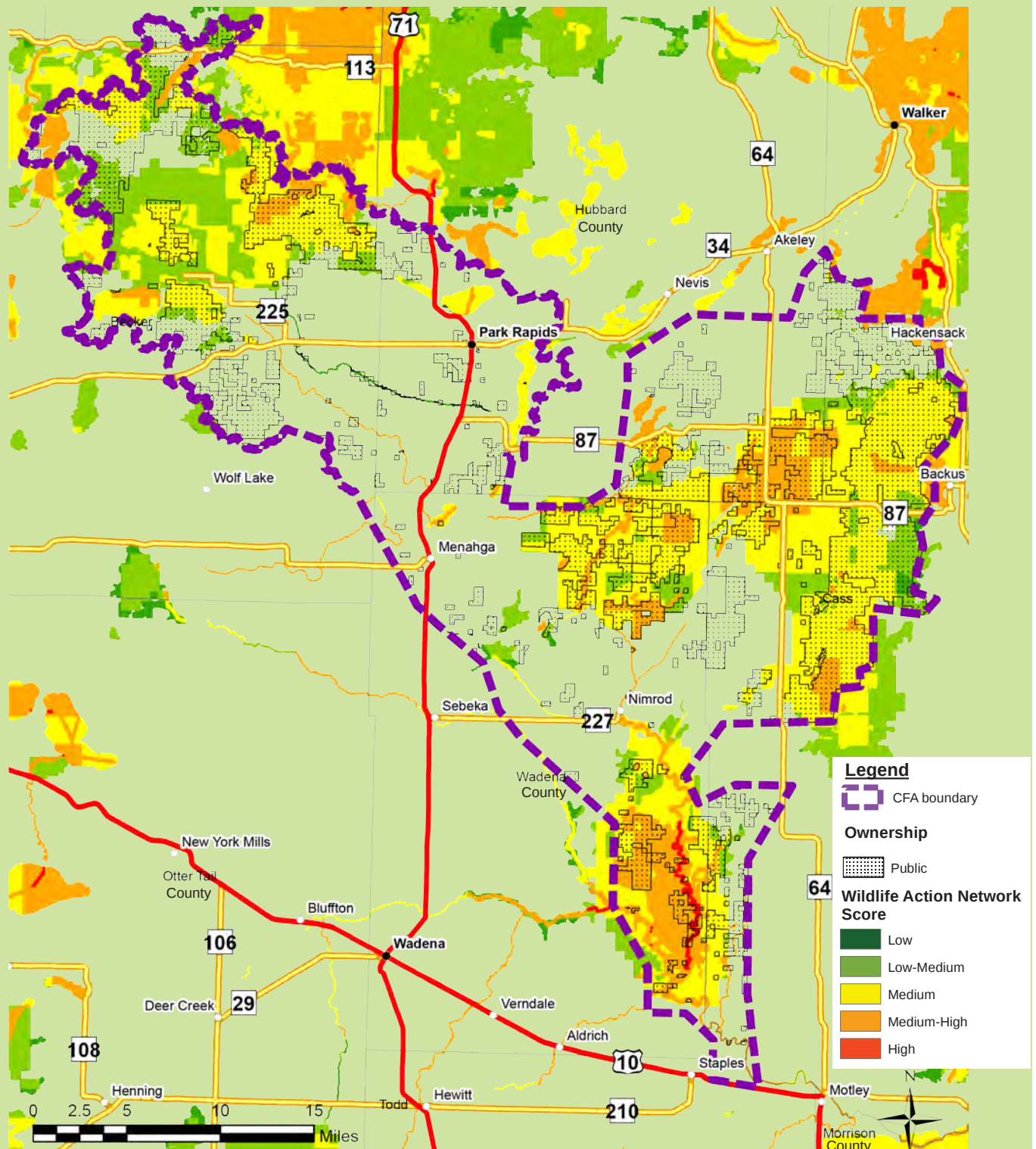
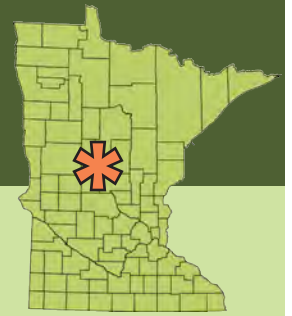
Monitor for new invasive species and utilize rapid treatment methods if detected.

Increase knowledge of groundwater impacts to pine forest/woodland systems. Protect groundwater recharge areas.

Protection strategies to increase buffers, corridors, and cores within the Wildlife Action Network. Use of prescribed fire, alternate management methods to increase natural regeneration, mechanical brush removal to lessen competition.

Manage for reproduction: thinning, low fuel burns, increase knowledge of new pathogens, reduce herbivory pressures.

Pine Sands South Conservation Focus Area



Prairie Coteau

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Prairie stream ecosystems

Open peatland: OPp93b-Calcareous Fen (Southwestern)

Prairie/grassland: UPs13-Southern Dry Prairie, UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13d-Dry Hill Prairie (Southern), UPs14c-Dry Hill Oak Savanna (Southern), UPs23a-Mesic Prairie (Southern), UPs24a-Mesic Oak Savanna (Southern), WPs54-Southern Wet Prairie, WPs54a-Wet Seepage Prairie (Southern), WPs54b-Wet Prairie (Southern), *also includes surrogate grasslands*

Rock Outcrop community: ROs12a2-Crystalline Bedrock Outcrop (Prairie), Sioux Quartzite Subtype

Wetlands (nonforested): WMp73a-Prairie Meadow/Carr, WMs83-Southern Seepage Meadow/Carr, WMs83a-Seepage Meadow/Carr, WMs83a1-Seepage Meadow/Carr, Tussock Sedge Subtype, WMs83a2-Seepage Meadow/Carr, Aquatic Sedge Subtype

Target Species:

Prairie mammals: northern grasshopper mouse, prairie vole, Richardson's ground squirrel

Dry-mesic prairie birds: grasshopper sparrow, greater prairie chicken, upland sandpiper, western meadowlark

Reptiles: Blanding's turtle, lined snake

Blanchard's cricket frog

Fish: plains topminnow, Topeka shiner

Prairie Butterflies: Arogos skipper, Dakota skipper, dusted skipper, Leonard's skipper, monarch, Ottoe skipper, Poweshiek skipperling, regal fritillary, Uhler's arctic

Example conservation issues

Prairie/grassland loss and fragmentation

Groundwater depletion and contamination impacting municipal water availability, stream flows, and wetlands (especially calcareous fens)

Stream sedimentation and contamination, channelization, and impoundments, increased extreme rainfall events due to climate change

Prairie and wetland habitat degradation due to invasive species

Habitat management impacts

Wind power effects on habitat quality

Example conservation approaches

Implement Minnesota Prairie Conservation Plan-buffer and connect prairie habitat.

Protect groundwater recharge areas (e.g., Lincoln-Pipestone Wellhead Protection Area) using appropriate native vegetation.

Reduce channelization, reduce stream entrenchment, restore connections between streams and riparian wetlands, maintain oxbows, enhance main stream connectivity, Buffer stream banks with permanent, native vegetation.

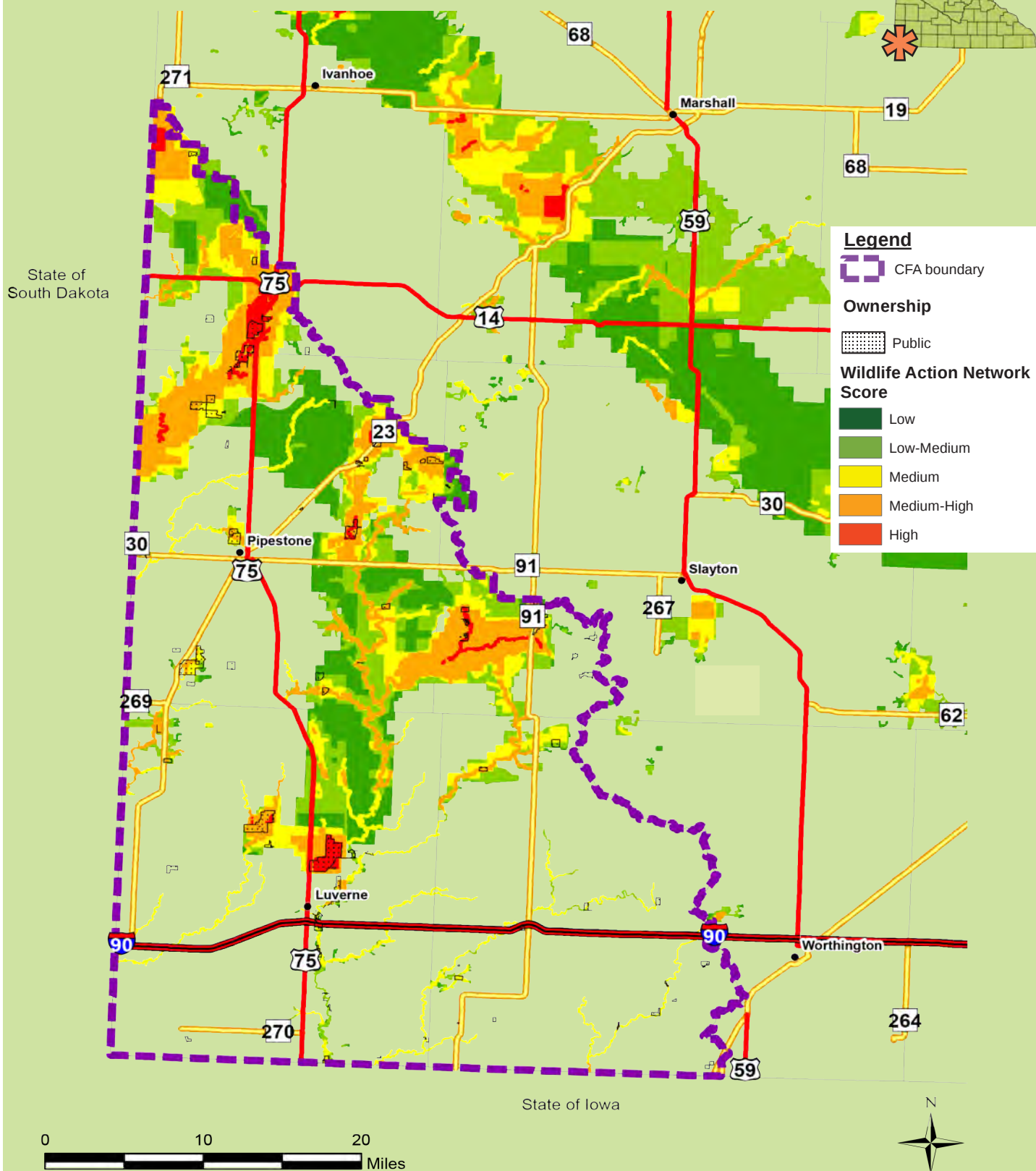
Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Provide guidelines for appropriate areas for siting of new towers to minimize habitat impacts.

Prairie Coteau

Conservation Focus Area



Root River Watershed

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

River/stream: Warm and cold water tributaries, main stems of Root and Mississippi Rivers: RVx32b-Sand Beach/Sandbar (River), RVx32c2-Gravel/Cobble Beach (River), Permanent Stream Subtype

Lowland deciduous Forest: FFs59a-Silver Maple-Green Ash-Cottonwood Terrace Forest, FFs59b-Swamp White Oak Terrace Forest, FFs59c-Elm-Ash-Basswood Terrace Forest, FFs68a-Silver Maple-(Virginia Creeper) Floodplain Forest

Open peatland: OPp93c-Calcareous Fen (Southeastern)

Upland hardwood forest: FDs27b-White Pine-Oak Woodland (Sand), FDs27c-Black Oak-White Oak Woodland (Sand), FDs38-Southern Dry-Mesic Oak-Hickory Woodland, FDs38a-Oak-Shagbark Hickory Woodland, MHc38a-White Pine-Sugar Maple-Basswood Forest (Cold Slope), MHs37-Southern Dry-Mesic Oak Forest, MHs37a-Red Oak-White Oak Forest, MHs37b-Red Oak-White Oak-(Sugar Maple) Forest, MHs38-Southern Mesic Oak-Basswood Forest, MHs38a-White Pine-Oak-Sugar Maple Forest, MHs38c-Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs39-Southern Mesic Maple-Basswood Forest, MHs39a-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs39b-Sugar Maple-Basswood-Red Oak-(Blue Beech) Forest, MHs49-Southern Wet-Mesic Hardwood Forest, MHs49b-Elm-Basswood-Black Ash-(Blue Beech) Forest, MHw36a-Green Ash-Bur Oak-Elm Forest

Bluff prairies/grasslands: UPs13-Southern Dry Prairie, UPs13a-Dry Barrens Prairie (Southern), UPs13c-Dry Bedrock Bluff Prairie (Southern), UPs14-Southern Dry Savanna, UPs14a2-Dry Barrens Oak Savanna (Southern), Oak Subtype

Cliff/Talus slopes: CTs12-Southern Dry Cliff, CTs12b-Dry Limestone-Dolomite Cliff (Southern), CTs23-Southern Open Talus, CTs23b-Mesic Limestone-Dolomite Talus (Southern), CTs33-Southern Mesic Cliff, CTs33a-Mesic Sandstone

Cliff (Southern), CTs33b-Mesic Limestone-Dolomite Cliff (Southern), CTs43a1-Moderate Cliff, Limestone Subtype, CTs43a2-Moderate Cliff, Dolomite Subtype, CTs46a1-Algific Talus, Limestone Subtype, CTs46a2-Algific Talus, Dolomite Subtype, CTs53-Southern Wet Cliff

Wetland (nonforested): MRn93-Northern Bulrush-Spikerush Marsh, WMn82b-Sedge Meadow, WMs83a-Seepage Meadow/Carr, WMs83a1-Seepage Meadow/Carr, Tussock Sedge Subtype

Target Species:

Mammals: northern long-eared bat, tri-colored bat

Mature upland/lowland forest birds

Reptiles: common five-lined skink, North American racer, smooth softshell, timber rattlesnake, western ratsnake

Pickerel frog

SGCN fish

SGCN mussels

Hill prairie shovelhead leafhopper

Prairie/savanna butterflies: Arogos skipper, Leonard's skipper, mottled duskywing, Ottoo skipper, Persius duskywing

Sandy stream tiger beetle

Example conservation issues

Degraded water quality, altered hydrology, increased extreme rainfall events due to climate change. Reduced stream connectivity

Age, species, and structural diversity required for SGCN habitat and resilient forests. Lack of oak regeneration

Prairie, forest, river and wetland habitat quality impacted by invasive species

Habitat management impacts

Impacts to talus slopes and cliff communities due to blufftop conversion and climate change

Example conservation approaches

Buffer riparian habitat, sinkholes and other groundwater input areas with appropriate native vegetation. Increase conservation tillage incentives. Increase perennial vegetation. Restore overgrazed pastureland. Restore wetlands and connect rivers with adjacent wetlands. Reduce channelization, maintain oxbows, Enhance main stream connectivity. Technical assistance to local governments and landowners. Restore river/stream connectivity by removing dams.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests. Increase acreage of forests with multiple age classes. Use prescribed fire to increase oak regeneration.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove invasive species from forests. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Buffer cold air drainage source areas.

Root River Watershed

Conservation Focus Area



Legend

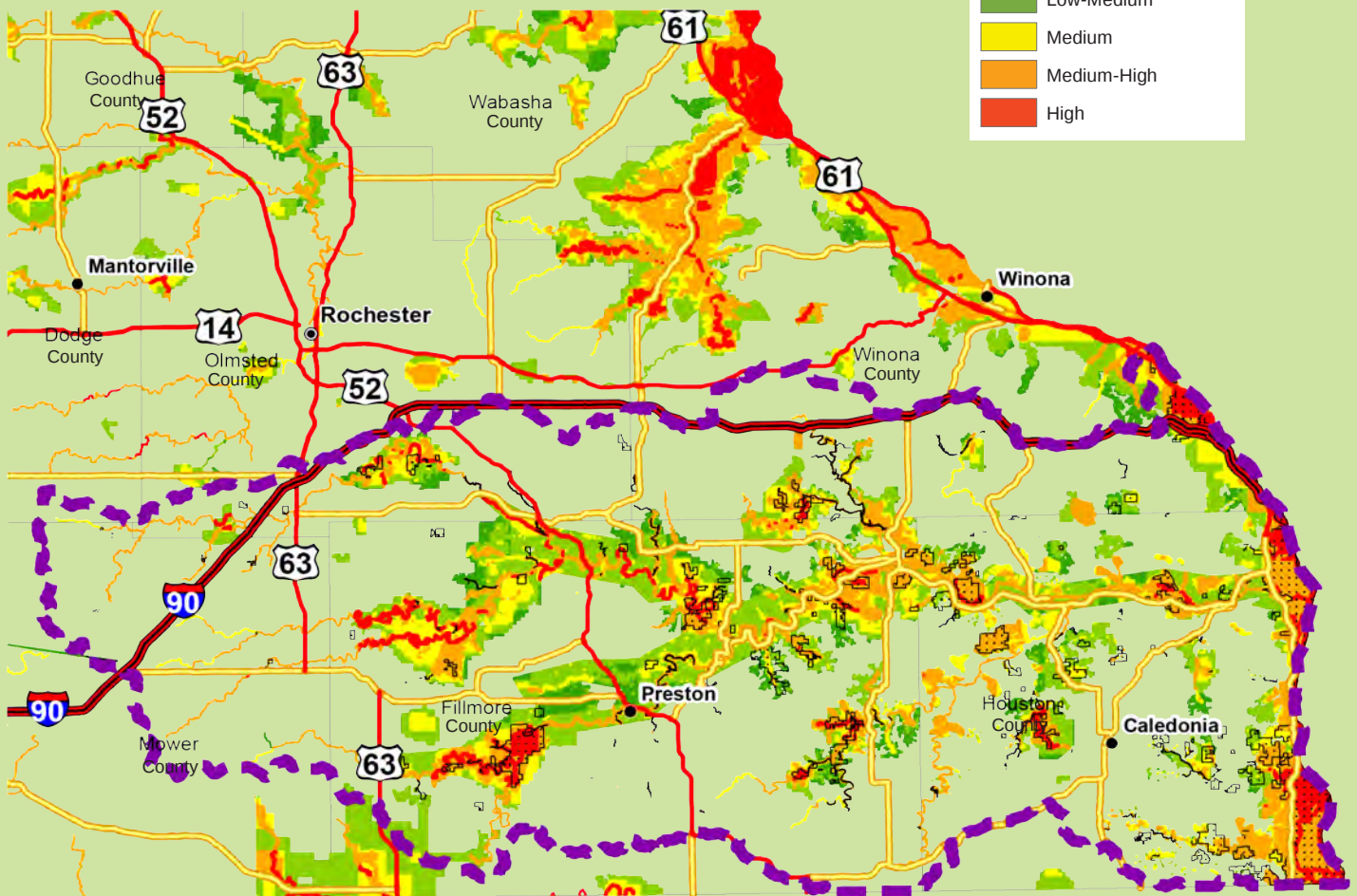
 CFA boundary

Ownership

 Public

Wildlife Action Network Score

 Low
 Low-Medium
 Medium
 Medium-High
 High



0 2.5 5 10 15 20 25
 Miles



St. Croix River Watershed

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

River/stream: Warm and cold water tributaries, main stems of St. Croix and Snake Rivers

RVx32b-Sand Beach/Sandbar (River), RVx32b2-Sand Beach/Sandbar (River), Permanent Stream Subtype, RVx32c2-Gravel/Cobble Beach (River), Permanent Stream Subtype

Upland hardwood forests: FDC25-Central Dry Oak-Aspen (Pine) Woodland, FDC25b-Oak-Aspen Woodland, FDC34-Central Dry-Mesic Pine-Hardwood Forest, FDS37-Southern Dry-Mesic Oak (Maple) Woodland, FDS37a-Oak-(Red Maple) Woodland, FDS37b-Pin Oak-Bur Oak Woodland, MHC26-Central Dry-Mesic Oak-Aspen Forest, MHC26a-Oak-Aspen-Red Maple Forest, MHC26b-Red Oak-Sugar Maple-Basswood-(Large-Flowered Trillium) Forest, MHC36a-Red Oak-Basswood Forest (Noncalcareous Till), MHC36b-Red Oak-Basswood Forest (Calcareous Till), MHC38a-White Pine-Sugar Maple-Basswood Forest (Cold Slope), MHC47a-Basswood-Black Ash Forest, MHN35-Northern Mesic Hardwood Forest, MHN35a-Aspen-Birch-Basswood Forest, MHN35b-Red Oak-Sugar Maple-Basswood-(Bluebead Lily) Forest, MHN44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHN46-Northern Wet-Mesic Hardwood Forest, MHN47-Northern Rich Mesic Hardwood Forest, MHN47a-Sugar Maple-Basswood-(Bluebead Lily) Forest, MHS37b-Red Oak-White Oak-(Sugar Maple) Forest, MHS38a-White Pine-Oak-Sugar Maple Forest, MHS38b-Basswood-Bur Oak-(Green Ash) Forest, MHS38c-Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHS39a-Sugar Maple-Basswood-(Bitternut Hickory) Forest

Prairie/grassland: UPS13-Southern Dry Prairie, UPS13b-Dry Sand-Gravel Prairie (Southern), UPS13c-Dry Bedrock Bluff Prairie (Southern), UPS14-Southern Dry Savanna, UPS14a2-Dry Barrens Oak Savanna (Southern), Oak Subtype, UPS14b-Dry Sand-Gravel Oak Savanna (Southern), UPS14c-Dry Hill Oak Savanna (Southern)

Lowland deciduous forests: FFN57a-Black Ash-Silver Maple Terrace Forest, FFN67a-Silver Maple-(Sensitive Fern) Floodplain Forest, FFs59c-Elm-Ash-Basswood Terrace Forest, FFs68a-Silver Maple-(Virginia Creeper) Floodplain Forest

Lowland conifer forests: APN80-Northern Spruce Bog, APN80a-Black Spruce Bog, APN80a1-Black Spruce Bog, Treed Subtype, APN80a2-Black Spruce Bog, Semi-Treed Subtype, APN81-Northern Poor Conifer Swamp, APN81a-Poor Black Spruce Swamp,

APN81b-Poor Tamarack-Black Spruce Swamp, APN81b1-Poor Tamarack-Black Spruce Swamp, Black Spruce Subtype, APN81b2-Poor Tamarack-Black Spruce Swamp, Tamarack Subtype, APN90-Northern Open Bog, APN90b-Graminoid Bog, APN91-Northern Poor Fen, APN91a-Low Shrub Poor Fen, APN91b-Graminoid Poor Fen (Basin), FPN72-Northern Rich Tamarack Swamp (Eastern Basin), FPN72a-Rich Tamarack Swamp (Eastcentral), FPN73-Northern Rich Alder Swamp, FPN73a-Alder-(Maple-Loosestrife) Swamp, FPN82-Northern Rich Tamarack Swamp (Western Basin), FPN82b-Extremely Rich Tamarack Swamp, FPs63-Southern Rich Conifer Swamp, FPs63a-Tamarack Swamp (Southern)

Target Species:

Mature upland/lowland forest birds: Acadian flycatcher, cerulean warbler, hooded warbler, Louisiana waterthrush, prothonotary warbler, red-shouldered hawk, wood thrush

Reptiles: common five-lined skink, eastern hog-nosed snake, gophersnake, smooth greensnake, wood turtle

Mudpuppy

SGCN fish

SGCN mussels

St. Croix snaketail

Mottled dusky wing

Caddisflies: *Limnephilus rossi*, *Ochrotrichia spinosa* and *Parapsyche apicali*

Example conservation issues

Degrading water quality, altered hydrology, increased extreme rainfall events due to climate change

Age, species, and structural diversity required for SGCN habitat and resilient forests. Lack of oak regeneration

Prairie, forest, wetland, river habitat quality impacted by invasive species

Habitat management impacts

Degraded conditions for forest interior birds

Decreased availability of nesting sites for forest birds

Example conservation approaches

Buffer riparian habitat and groundwater input areas using appropriate native vegetation. Increase conservation tillage incentives. Increase perennial vegetation. Restore overgrazed pasture land. Restore river/stream connectivity by removing dams.

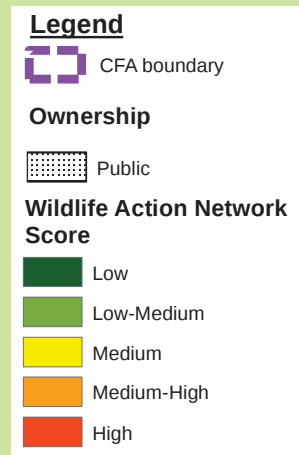
Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests. Increase acreage of forests with multiple age classes. Use prescribed fire to increase oak regeneration.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove invasive species from forests. Implement reed canary grass and invasive cattail control. Reduce cultural disturbances that provide opportunities for invasion. Monitor for new invasive species, including invasive carp, and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Forest management plans to promote selective cutting and small patch cuts to minimize large gaps for cowbird nesting.

Implement BMPs for species by retaining upright snags, buffers.



St. Louis Estuary

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Lakeshore: LKu32b-Juniper Dune Shrubland (Lake Superior), LKu32c-Sand Beach (Lake Superior)

River/Stream: RVx32a-Willow Sandbar Shrubland (River), RVx32c2-Gravel/Cobble Beach (River), Permanent Stream Subtype, RVx54a-Slumping Clay/Mud Slope (River)

Wetland (nonforested): MRu94a-Estuary Marsh (Lake Superior)

Target Species:

Birds: common tern, piping plover

Fish: lake sturgeon, longnose sucker

Eastern elliptio mussel

Hairy-necked tiger beetle ssp. *rhondensis*

Example conservation issues

Water quality degradation from contaminants

Loss of dune habitat

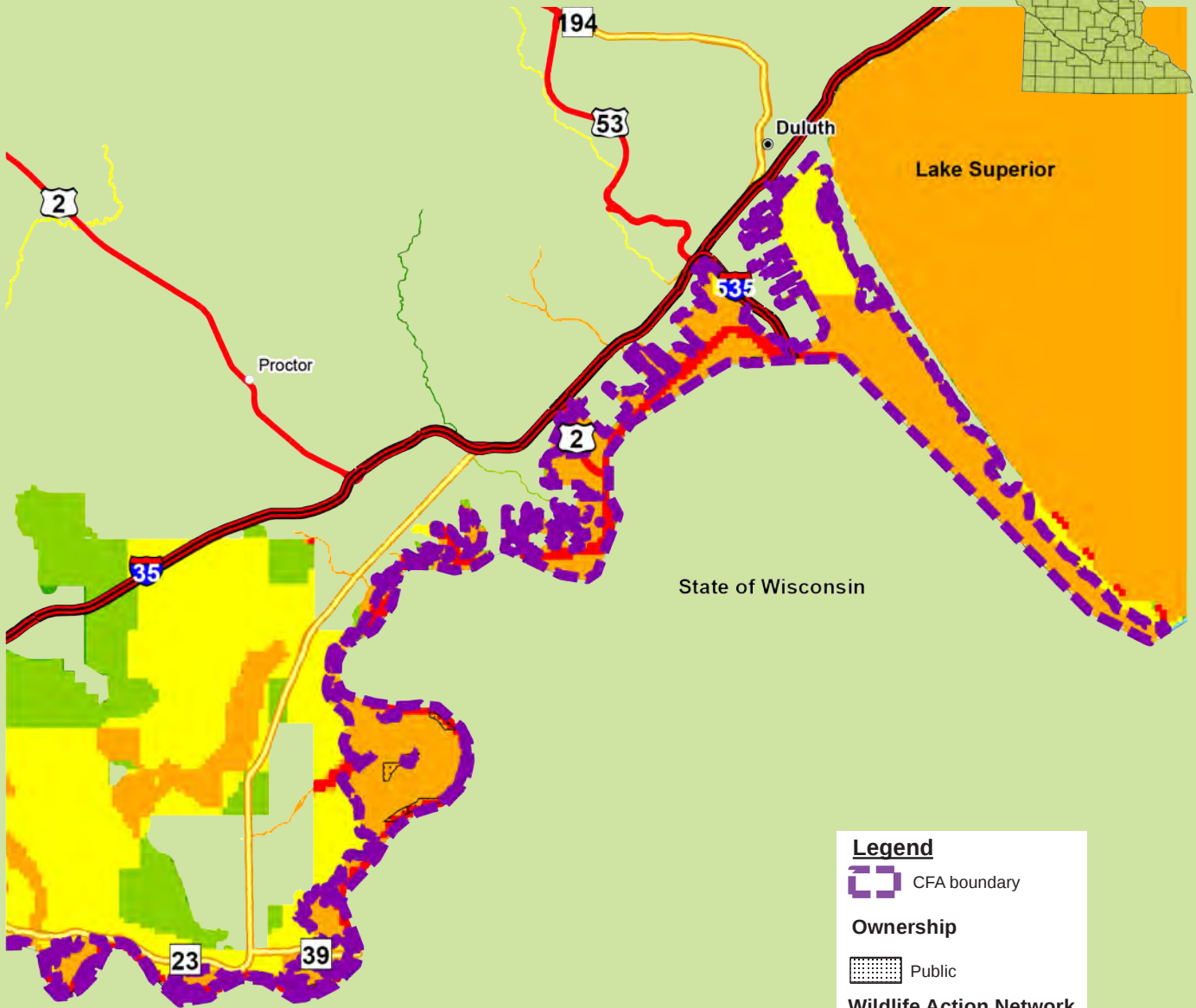
Example conservation approaches

Enforce existing standards. Incorporate SGCN consideration in remedial action plans.

Protect and/or restore dune areas.

St. Louis Estuary

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

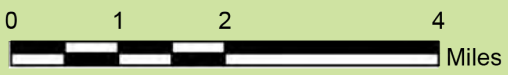
Low

Low-Medium

Medium

Medium-High

High



Sand Lake

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland deciduous forest : FDn43b-Aspen-Birch Forest, FDn43b1-Aspen-Birch Forest, Balsam Fir Subtype,

Upland conifer forest: FDn32c1-Black Spruce-Jack Pine Woodland, Jack Pine-Balsam Fir Subtype, FDn32c2-Black Spruce-Jack Pine Woodland, Black Spruce-Feathermoss Subtype, FDn32d-Jack Pine-Black Spruce Woodland (Sand), FDn43a-White Pine-Red Pine Forest, FDn43c-Upland White Cedar Forest, MHn44-Northern Wet-Mesic Boreal Hardwood-Conifer Forest, MHn45b-White Cedar-Yellow Birch Forest,

Lowland conifer forest: AFP_CX-Alder Swamp / Forested Peatland Complex, APn80a-Black Spruce Bog, APn80a1-Black Spruce Bog, Treed Subtype, APn80a2-Black Spruce Bog, Semi-Treed Subtype, APn81-Northern Poor Conifer Swamp, APn81a-Poor Black Spruce Swamp, APn81b-Poor Tamarack-Black Spruce Swamp, APn90-Northern Open Bog, APn90a-Low Shrub Bog, APn90b1-Graminoid Bog, Typic Subtype, APn91-Northern Poor Fen, APn91a-Low Shrub Poor Fen, APn91b-Graminoid Poor Fen (Basin), APn91c1-Graminoid Poor Fen (Water Track), Featureless Water Track Subtype, APn91c2-Graminoid Poor Fen (Water Track), Flark Subtype, FPN62a-Rich Black Spruce Swamp (Basin), FPN63a-White Cedar Swamp (Northeastern), FPN73a-Alder-(Maple-Loosestrife) Swamp, FPN81-Northern Rich Tamarack Swamp (Water Track), FPN82a-Rich Tamarack-(Alder) Swamp, FPT_CX-Forested Peatland / Upland Transition Complex, NPF_CX-Northern Poor Fen Complex, WFn53-Northern Wet Cedar Forest, WFn53a-Lowland White Cedar Forest (North Shore), WFn53b-Lowland White Cedar Forest (Northern)

Open peatland systems: OOPn81-Northern Shrub Shore Fen, OPn81a-Bog birch-Alder Shore Fen, OPn81b-Leatherleaf-Sweet Gale Shore Fen, OPn91-Northern Rich Fen (Water Track), OPn91a-Shrub Rich Fen (Water Track), OPn91b-Graminoid Rich Fen (Water Track), OPn91b1-Graminoid Rich Fen (Water Track), Featureless Water Track Subtype, OPn91b2-Graminoid Rich Fen (Water Track), Flark Subtype, OPn92-Northern Rich Fen (Basin), OPn92a-Graminoid Rich Fen (Basin), OPn92b-Graminoid-Sphagnum Rich Fen (Basin),

Target Species:

Lowland conifer birds: boreal chickadee, Connecticut warbler

Mature upland forest birds

Other birds: boreal owl, northern goshawk

Butterflies: arctic fritillary, taiga alpine

Headwaters Chilostigman caddisfly

Example conservation issues

Example conservation approaches

Mature forest habitat size requirements for SGCN habitat

Where possible, maintain large blocks of mature forest.

Lowland conifer requirements for SGCN habitat

Improve knowledge of pathogen management, clear cuts and the impact of gaps on lowland conifer bird habitat.

Maintain peatland hydrology

Assess agricultural and mining conversion and management impacts to peatland hydrology.

Forest habitat degradation due to invasive species

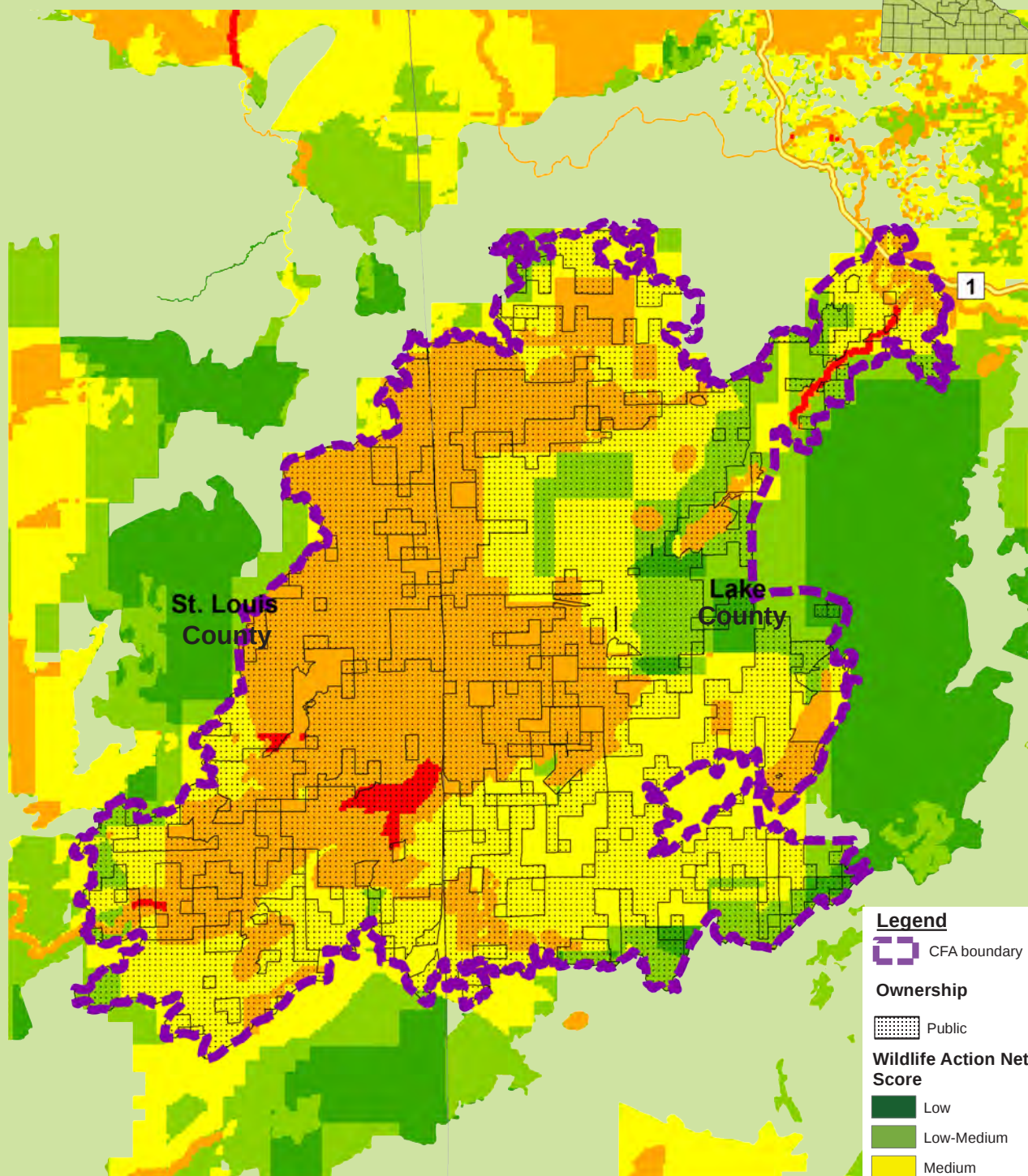
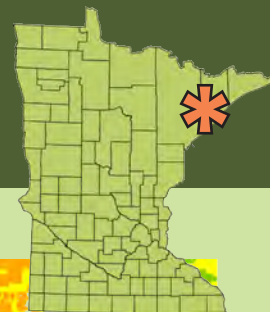
Monitor for new invasive species and utilize rapid treatment methods if detected.

Wetland loss

Apply MN Wetland Conservation Act standards. Ensure replacement standards are followed. Regulate agricultural and mining conversion of peatlands.

Sand Lake

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

- Low
- Low-Medium
- Medium
- Medium-High
- High



Temperance Pines

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Upland Conifer Forest: FDn32c3-Black Spruce-Jack Pine Woodland, Jack Pine-Black Spruce-Aspen Subtype, FDn43a-White Pine-Red Pine Forest,

Upland Deciduous Forest: FDn43b1-Aspen-Birch Forest, Balsam Fir Subtype,

Target Species:

Smoky shrew

Mature upland coniferous forest birds: black-backed woodpecker, purple finch, spruce grouse

Other birds: boreal owl, northern goshawk

Example conservation issues

Mature forest size requirements for SGCN habitat

Limited pine regeneration

Species and structural diversity required for SGCN habitat and resilient forests

Forest habitat degradation due to invasive species

Climate change–increased frequency of extended droughts, larger more frequent wildfires

Example conservation approaches

Where possible, maintain large blocks of mature forest.

Manage for reproduction: thinning, low fuel burns, increase knowledge of new pathogens, reduce herbivory pressures.

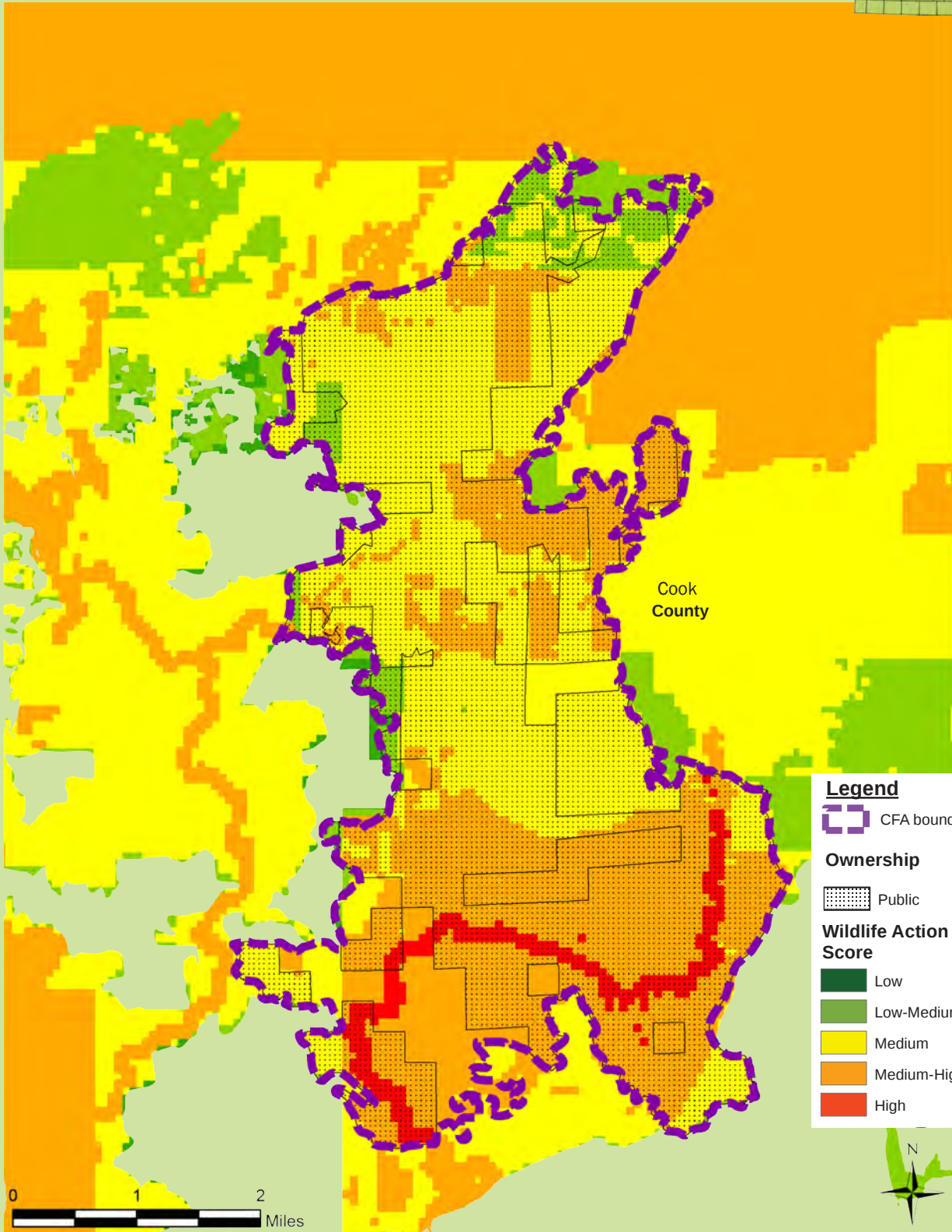
Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests.

Monitor for new invasive species and utilize rapid treatment methods if detected.

Practice adaptive management to respond to forest regeneration and tree species migration. Reduce fire fuel loads through regular prescribed burning.

Temperance Pines

Conservation Focus Area



Legend

CFA boundary

Ownership

Public

Wildlife Action Network Score

- Low
- Low-Medium
- Medium
- Medium-High
- High



Upper Minnesota River Valley

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Wetlands (nonforested): MRp83-Prairie Mixed Cattail Marsh, MRp93-Prairie Bulrush-Arrowhead Marsh, MRp93a-Bulrush Marsh (Prairie), WMp73a-Prairie Meadow/Carr, WMs83-Southern Seepage Meadow/Carr, WMs83a-Seepage Meadow/Carr, Riverine wetlands

Open peatlands: OPp93b-Calcareous Fen (Southwestern)

Rock outcrop communities: ROP_CX-Rock Outcrop-Prairie Complex, RO-s12a1-Crystalline Bedrock Outcrop (Prairie), Minnesota River Subtype

River/stream: Minnesota River

Prairie/grassland: UPs13-Southern Dry Prairie, UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13d-Dry Hill Prairie (Southern), UPs14c-Dry Hill Oak Savanna (Southern), UPs23-Southern Mesic Prairie, UPs23a-Mesic Prairie (Southern), WPs54a-Wet Seepage Prairie (Southern), WPs54b-Wet Prairie (Southern), WPs54c-Wet Saline Prairie (Southern)

Lowland deciduous forest: FFs59-Southern Terrace Forest, FFs68-Southern Floodplain Forest

Upland hardwood forest: FDs37b-Pin Oak-Bur Oak Woodland, MHs38-Southern Mesic Oak-Basswood Forest, MHs38b-Basswood-Bur Oak-(Green Ash) Forest, MHs38c-Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs39a-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs49a-Elm-Basswood-Black Ash-(Hackberry) Forest

Target Species:

Dry-mesic prairie birds: grasshopper sparrow, Henslow's sparrow, marbled godwit, upland sandpiper, western meadowlark

Other birds: American white pelican, lark sparrow

Reptiles: common five-lined skink, gophersnake, plains hog-nosed snake

Amphibians: Great Plains toad, mudpuppy

SGCN fish

SGCN mussels

Prairie butterflies: Arogos skipper, Dakota skipper, dusted skipper, Leonard's skipper, Poweshiek skipperling, regal fritillary

Example conservation issues

Conversion of native habitat to agriculture or clay/aggregate mining. Prairie/grassland fragmentation and loss

Increased flashiness of river flows due to extreme rainfall events causing sedimentation, undercutting of banks, vertical separation from oxbows and floodplain wetlands

Prairie, forest, wetland, and river habitat quality impacted by invasive species

Habitat management impacts

Example conservation approaches

Assess suitability to conversion through environmental review. Target land protection of prairie/grassland and rock outcrop sites in the Wildlife Action Network using acquisition/easements. Implement Minnesota Prairie Conservation Plan.

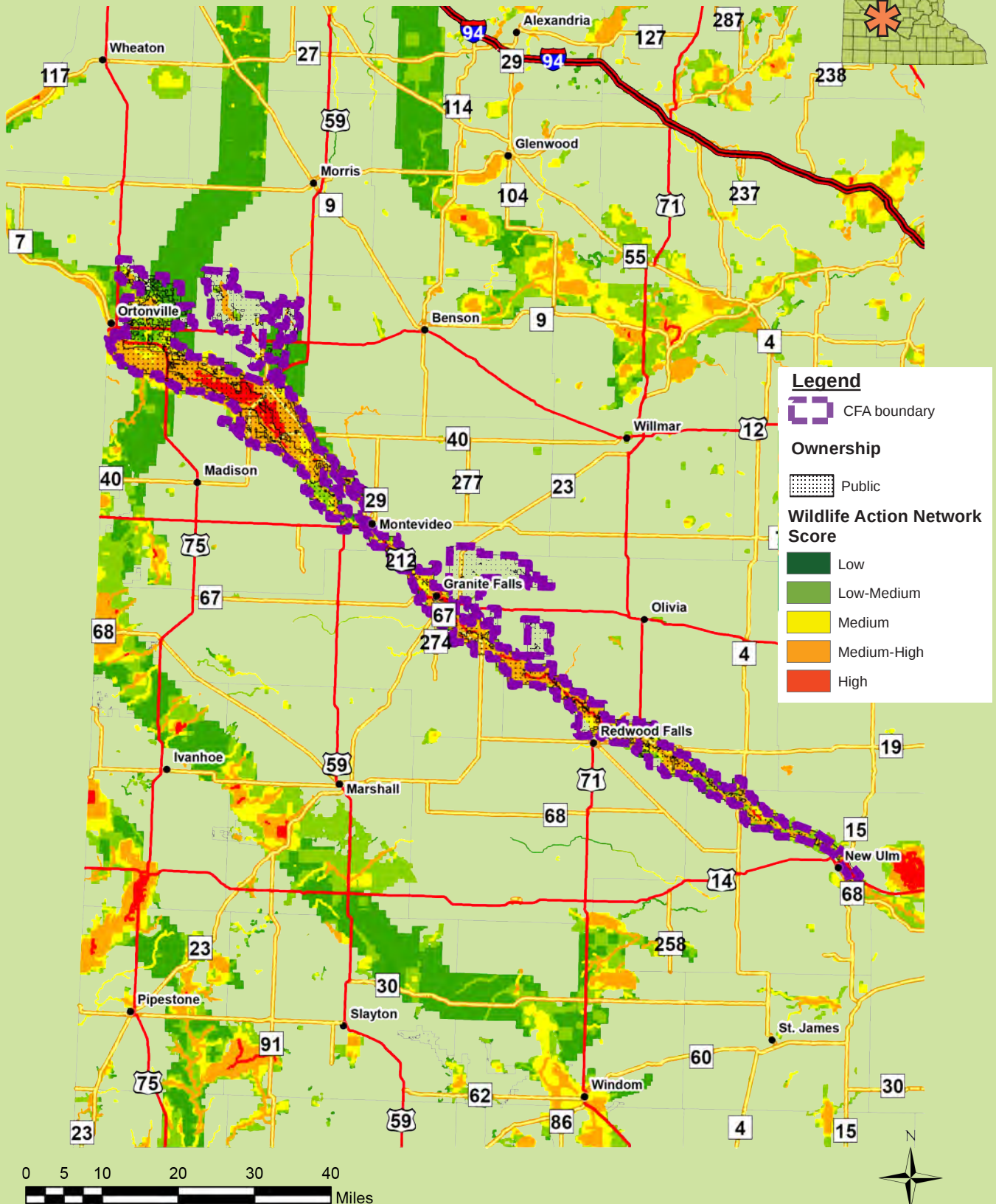
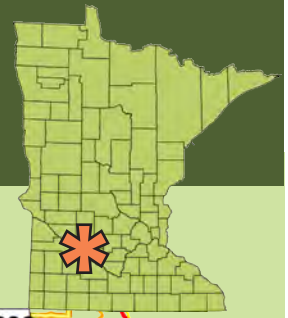
Promote infiltration practices in cultivated and urbanized landscapes; restore riparian cross-sections, connect floodplains with main channels, buffer stream banks with permanent, native vegetation.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove invasive species from forests. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities).

Upper Minnesota River Valley

Conservation Focus Area



Vermillion River Watershed

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

River/stream: Warm and cold water tributaries, main stems of Vermillion and Mississippi Rivers: RVx32-Sand/Gravel/Cobble River Shore, RVx32a-Wil-low Sandbar Shrubland (River), RVx32b2-Sand Beach/Sandbar (River), Perma-nent Stream Subtype

Upland hardwood Forest: FDs27b-White Pine-Oak Woodland (Sand), FDs27c-Black Oak-White Oak Woodland (Sand), FDs37b-Pin Oak-Bur Oak Woodland, FDs38-Southern Dry-Mesic Oak-Hickory Woodland, FDs38a-Oak-Shagbark Hickory Woodland, MHs37-Southern Dry-Mesic Oak Forest, MHs37a-Red Oak-White Oak Forest, MHs37b-Red Oak-White Oak-(Sugar Maple) Forest, MHs38-Southern Mesic Oak-Basswood Forest, MHs38a-White Pine-Oak-Sugar Maple Forest, MHs38c-Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs39-Southern Mesic Maple-Basswood Forest, MHs39a-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHs39b-Sugar Maple-Basswood-Red Oak-(Blue Beech) Forest, MHs49-Southern Wet-Mesic Hardwood Forest, MHs49b-Elm-Basswood-Black Ash-(Blue Beech) Forest

Prairies/grasslands: UPs13a-Dry Barrens Prairie (Southern), UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13c-Dry Bedrock Bluff Prairie (Southern), UPs14a-Dry Barrens Oak Savanna (Southern), UPs14b-Dry Sand-Gravel Oak Savanna (Southern)

Lowland deciduous forest: FFs59a-Silver Maple-Green Ash-Cottonwood Ter-race Forest, FFs59c-Elm-Ash-Basswood Terrace Forest, FFs68a-Silver Maple-(Vir-ginia Creeper) Floodplain Forest

Wetlands (nonforested): MRn93-Northern Bulrush-Spikerush Marsh, MRn93a-Bulrush Marsh (Northern), MRn93b-Spikerush-Bur Reed Marsh (Northern), OPp93c-Calcareous Fen (Southeastern)

Open peatlands: OPp93c-Calcareous Fen (South-eastern)

Target Species:

Mature upland/lowland forest bird: Acadian flycatcher, cerulean warbler, prothonotary warbler, wood thrush

Mudpuppy

Reptiles: smooth softshell, wood turtle, six-lined racerunner, timber rattlesnake

SGCN Fish

SGCN Mussels

Prairie butterflies: Arogos skipper, Leonard's skipper, regal fritillary

Example conservation issue

Degraded water quality, altered hydrology, increased extreme rainfall events due to climate change. Reduced stream connectivity. Low flow to Vermillion Bottoms

Age, species, and structural diversity required for SGCN habitat and resilient forests. Lack of oak regeneration

Prairie, forest, river and wetland habitat quality impacted by invasive species

Habitat management impacts

Reduced habitat diversity

Example conservation approaches

Buffer riparian habitat, sinkholes and other groundwater input areas with appropriate native vegetation. Increase conservation tillage incentives. Increase perennial vegetation. Restore overgrazed pastureland. Restore wetlands and connect rivers with adjacent wetlands. Reduce channelization, maintain oxbows, Enhance main stream connectivity. Technical assistance to local governments and landowners. Restore river/stream connectivity by removing dams. Improve flow from Truedale Slough to Vermillion Bottoms.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests. Increase acreage of forests with multiple age classes. Use prescribed fire to increase oak regeneration.

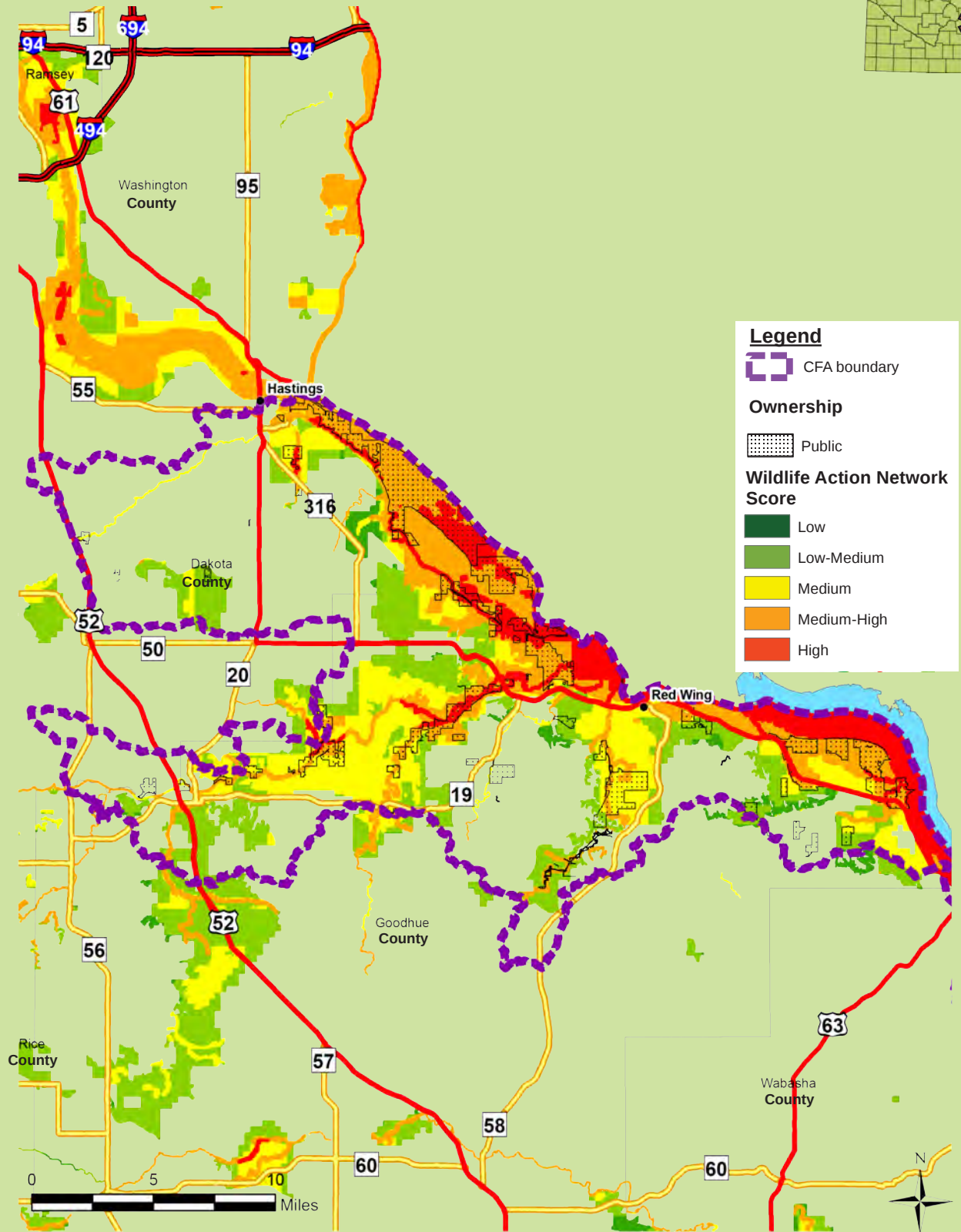
Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Remove invasive species from forests. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Increase amounts of wet meadow, lowland hardwood forest, and submergent marsh vegetation in the floodplain, and the full array of native plant communities elsewhere. Continue to restore dry prairie and dry oak savanna plant communities on Prairie Island.

Vermillion River Watershed

Conservation Focus Area



Whitewater River Watershed

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

River/streams: Warm and cold water tributaries, main stems of Whitewater and Mississippi Rivers

Upland hardwood forest: FDs27b-White Pine-Oak Woodland (Sand), FDs27c-Black Oak-White Oak Woodland (Sand), FDs38a-Oak-Shagbark Hickory Woodland, MHC38a-White Pine-Sugar Maple-Basswood Forest (Cold Slope), MHS37-Southern Dry-Mesic Oak Forest, MHS37a-Red Oak-White Oak Forest, MHS37b-Red Oak-White Oak-(Sugar Maple) Forest, MHS38a-White Pine-Oak-Sugar Maple Forest, MHS38c-Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHS39-Southern Mesic Maple-Basswood Forest, MHS39a-Sugar Maple-Basswood-(Bitternut Hickory) Forest, MHS39b-Sugar Maple-Basswood-Red Oak-(Blue Beech) Forest, MHS49-Southern Wet-Mesic Hardwood Forest, MHS49a-Elm-Basswood-Black Ash-(Hackberry) Forest, MHS49b-Elm-Basswood-Black Ash-(Blue Beech) Forest

Wetlands (nonforested): MRn83a-Cattail-Sedge Marsh (Northern), MRn93-Northern Bulrush-Spikerush Marsh, MRn93b-Spikerush-Bur Reed Marsh (Northern), WMn82b-Sedge Meadow, WMs83a-Seepage Meadow/Carr, WMs83a1-Seepage Meadow/Carr, Tussock Sedge Subtype, WMs83a3-Seepage Meadow/Carr, Impatiens Subtype

Prairies/grasslands: UPs13a-Dry Barrens Prairie (Southern), UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13c-Dry Bedrock Bluff Prairie (Southern), UPs14a1-Dry Barrens Oak Savanna (Southern), Jack Pine Subtype, UPs14a2-Dry Barrens Oak Savanna (Southern), Oak Subtype, UPs14b-Dry Sand-Gravel Oak Savanna (Southern), UPs23a-Mesic Prairie (Southern)

Cliff/talus communities: CTs12-Southern Dry Cliff, CTs12b-Dry Limestone-Dolomite Cliff (Southern), CTs33a-Mesic Sandstone Cliff (Southern), CTs33b-Mesic Limestone-Dolomite Cliff (Southern), CTs43a1-Moderate Cliff, Limestone

Subtype, CTs43a2-Moderate Cliff, Dolomite

Subtype, CTs46a2-Algific Talus, Dolomite Subtype

Lowland deciduous forest: FFs59a-Silver Maple-Green Ash-Cottonwood Terrace Forest, FFs59b-Swamp White Oak Terrace Forest, FFs59c-Elm-Ash-Basswood Terrace Forest, FFs68a-Silver Maple-(Virginia Creeper) Floodplain Forest

Target Species:

Mature upland/lowland forest birds: Acadian flycatcher, cerulean warbler, Louisiana waterthrush, prothonotary warbler, red-shouldered hawk, wood thrush

Reptiles: gopher snake, North American racer, plains hog-nosed snake, six-lined racerunner, smooth softshell, timber rattlesnake,

Amphibians: Blanchard's cricket frog, pickerel frog

SGCN fish

SGCN mussels

Bluff vertigo

Jumping spiders: *Phidippus apacheanus*

Prairie/savanna butterflies: Arogos skipper, Karner blue, Leonard's skipper, mottled duskywing, Ottoe skipper, regal fritillary

Tiger beetles: ghost tiger beetle, splendid tiger beetle

Example conservation issues

Degraded water quality, altered hydrology, increased extreme rainfall events due to climate change. Reduced stream connectivity

Age, species, and structural diversity required for SGCN habitat and resilient forests. Lack of oak regeneration

Prairie, forest, river and wetland habitat quality impacted by invasive species

Habitat management impacts

Impacts to talus slopes and cliff communities due to blufftop conversion and climate change

Example conservation approaches

Buffer riparian habitat, sinkholes and other groundwater input areas with appropriate native vegetation. Increase conservation tillage incentives. Increase perennial vegetation. Restore overgrazed pastureland. Restore wetlands and connect rivers with adjacent wetlands. Reduce channelization, maintain oxbows, Enhance main stream connectivity. Technical assistance to local governments and landowners. Restore river/stream connectivity by removing dams.

Manage to maintain/increase plant species and structural diversity to improve quality habitat for forest SGCN and ensure more resilient forests. Increase acreage of forests with multiple age classes. Use prescribed fire to increase oak regeneration.

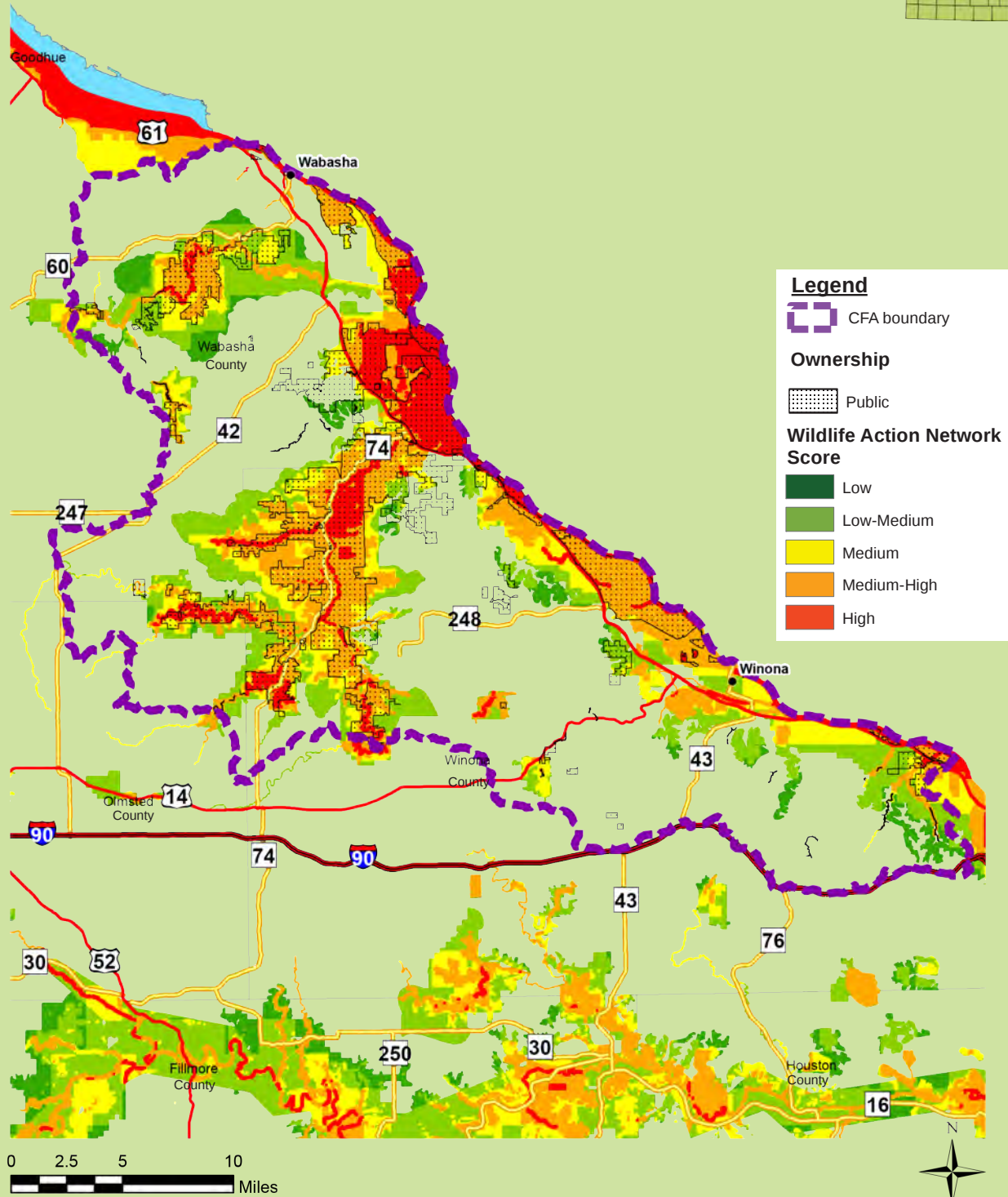
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Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals.

Buffer cold air drainage source areas (prioritize for bluff vertigo occurrences).

Whitewater River Watershed

Conservation Focus Area



Yellow Medicine Coteau

Targets, Conservation Issues, Approaches

Target Habitats (with NPC class/type):

Wetlands (nonforested): MR-Marsh System, MRp83-Prairie Mixed Cattail Marsh, MRp93-Prairie Bulrush-Arrowhead Marsh, MRp93a-Bulrush Marsh (Prairie), MRp93b-Spikerush-Bur Reed Marsh (Prairie), WMp73a-Prairie Meadow/Carr, WMs83a-Seepage Meadow/Carr, WMs83a1-Seepage Meadow/Carr, Tussock Sedge Subtype

Prairie/grasslands: UPs13b-Dry Sand-Gravel Prairie (Southern), UPs13d-Dry Hill Prairie (Southern), UPs14c-Dry Hill Oak Savanna (Southern), UPs23a-Mesic Prairie (Southern), WPs54b-Wet Prairie (Southern), WPs54c-Wet Saline Prairie (Southern), *includes surrogate grasslands*

Prairie stream ecosystems

Shallow lake

Saline Mud Flat: LKi54b1-Mud Flat (Inland Lake) Saline Subtype

Open peatland: OPp93b-Calcareous Fen (Southwestern)

Target Species:

Prairie mammals: northern grasshopper mouse, plains pocket mouse, prairie vole, Richardson's ground squirrel, white-tailed jackrabbit

Dry-mesic prairie birds: grasshopper sparrow, upland sandpiper, western meadowlark

Wet prairie/wetland/shallow lake birds: Red-necked grebe, Wilson's phalarope

Plains hog-nosed snake

Prairie butterflies: Arogos skipper, Dakota skipper, dusted skipper, Leonard's skipper, Poweshiek skipperling, regal fritillary

Crimson salt flat tiger beetle

Example conservation issues

Prairie/grassland loss and fragmentation

Groundwater depletion and contamination impacting municipal water availability, stream flows, and wetlands (especially calcareous fens)

Stream sedimentation and contamination, channelization, and impoundments, increased extreme rainfall events due to climate change

Prairie and wetland habitat degradation due to invasive species

Habitat management impacts

Management of shallow lakes for fish removal or vegetation objectives

Wind power effects on habitat quality

Example conservation approaches

Implement Minnesota Prairie Conservation Plan—buffer and connect prairie habitat.

Protect groundwater recharge areas (e.g., Lincoln-Pipestone Wellhead Protection Area) using appropriate native vegetation.

Reduce channelization, reduce stream entrenchment, restore connections between streams and riparian wetlands, maintain oxbows, enhance main stream connectivity, Buffer stream banks with permanent, native vegetation.

Natural disturbance management—use of prescribed fire, conservation grazing, haying in prairies as appropriate to maintain SGCN habitat. Implement reed canary grass and invasive cattail control, monitor for new invasive species and utilize rapid treatment methods if detected. Remove woody species using mechanical removal from prairie/grassland habitat where natural disturbance management is not sufficient or feasible.

Alter frequency, timing, and extent of prescribed fires to minimize impacts on species with limited home-ranges and or mobility (such as invertebrate communities). Evaluate effects of conservation grazing on SGCN animal communities especially invertebrates, reptiles and mammals. Minimize water management in Salt Lake that maintains high water and eliminates the saline mudflat habitat, and allow seasonal drawdown.

Coordinated approach to prioritize varying management needs for fish, amphibians, turtles, birds, and invasive species.

Provide guidelines for appropriate areas for siting of new towers to minimize habitat impacts.

Yellow Medicine Coteau

Conservation Focus Area

