# LEOPOLD-PINE ISLAND IMPORTANT BIRD AREA

# DETAILED STEWARDSHIP RECOMMENDATIONS

Jim Lutes, Lower Baraboo River WPA, USFWS

**MICHAEL J. MOSSMAN**
**YOYI STEELE**
**STEVE SWENSON**

**FEBRUARY 2010 DRAFT**

# TABLE OF CONTENTS

## INTRODUCTION

This document represents the latest step in the ongoing process to effect bird conservation on the 15,000 acre Leopold-Pine Island Important Bird Area (LPI IBA), along the Wisconsin and Lower Baraboo Rivers in south-central Wisconsin. This process began with the initial identification of the potential IBA based on incomplete available information, proceeded through the design and accomplishment of a thorough inventory and monitoring baseline, the analysis and evaluation of the inventory data, identification of an appropriate IBA boundary, formal IBA approval and dedication, and extensive data interpretation and meetings with the diverse partners responsible for managing the various tracts (Table 1) within the IBA. This culminated in 2009 with *A Strategic Vision for Bird Conservation on the LPI IBA*, which describes the IBA and its breeding avifauna, identifies bird and habitat priorities, and suggests management priorities for individual tracts. This current stewardship document follows the *Strategic Vision* and additional conversations with land managers, and makes more specific goals and recommendations for tract-specific management that we hope integrate goals of both the IBA and the individual tracts, which are managed by various public agencies and private owners. We also hope that it furthers the process of adaptive management by which priority-setting, planning, management and evaluation are integrated and evolve for the benefit of the birds and plant-animal communities of this unique and significant IBA, as well as benefiting the people who manage and appreciate it.

Table 1. Tracts within the Leopold-Pine Island IBA.

| Code | Tract name | Owner/Manager | Acreage |
|---|---|---|---|
| PT | Pines Tract | Phill and Joan Pines | 2,078 |
| LMR | Leopold Memorial Reserve | Aldo Leopold Foundation, Sand County Foundation, private | 1,743 |
| PIWA | Pine Island Wildlife Area[1] | Wisconsin Dept. Natural Resources (WDNR) | 5,989 |
| BRWPA | Baraboo River Waterfowl Production Area | U.S. Fish and Wildlife Service (USFWS) | 847 |
| LBRFF | Lower Baraboo River Floodplain Forest | Private, State of Wisconsin, USFWS | 5,000 |

[1] PIWA now includes most of the Van Wormer Tract, which was identified as a separate tract in the *Strategic Vision*.

The *Strategic Vision* emphasizes a mosaic of open and semi-open communities, especially native and surrogate grasslands, shrub communities, marshes, savannas and barrens, and limited areas of floodplain forest. Specifically, it states:

> …this IBA's best contribution to bird conservation lies with the more open-country habitats, particularly grassland, shrub, and savanna communities. Management and restoration activities should focus on expanding these habitat types. Marsh communities are well-represented in some portions of the IBA and support a diverse bird assemblage, including several Priority Species; these communities should be maintained and restoration opportunities pursued. The forest communities in the IBA also support several Priority Species; however, opportunity for those species is significantly higher at other sites farther downstream along the Wisconsin River and throughout the Driftless

> Area. Forest habitats should be maintained but not be targeted for restoration or additional management, except perhaps in the Lower Baraboo River Floodplain Forest, which needs more evaluation.
>
> Overall, our process recognizes the following lowland habitat associations as highly significant for management in the Leopold-Pine Island IBA floodplain: Black Oak Forest, Shrub Carr, Native Grassland, Oldfield, Marsh and Grass Hay. Highly significant upland habitat associations include Cutover or Burned Over Forest, Shrubby and Non-shrubby Oldfield, Native Prairie and Grass Hay. Upland and lowland Savanna and River Barrens have high potential significance if expanded (p. 36).

Of the IBA's 117 breeding bird species (the *Strategic Vision* documented 116, but subsequent surveys in the LBRFF have added Prothonotary Warbler), 24 are identified as Priority species (Table 2) on the basis of high regional conservation priorities and the ability to inform management on the IBA. The *Strategic Vision* stopped short of setting population goals for any species but identified tract-specific opportunities and management needs that would best contribute to the overall value of the IBA for Priority birds and the plant-animal communities they represent.

Table 2. The 24 Priority Species with moderate or high opportunity to inform management decision-making at the Leopold-Pine Island IBA by broad habitat category.

| | Grassland | Marsh | Shrub/Savanna | Forest |
|---|---|---|---|---|
| High Opportunity | Sedge Wren<br>Field Sparrow<br>Grasshopper Sparrow<br>Henslow's Sparrow<br>Bobolink | Sandhill Crane<br>Marsh Wren<br>Swamp Sparrow | Willow Flycatcher | Yellow-billed Cuckoo |
| Moderate Opportunity | Northern Bobwhite<br>Vesper Sparrow<br>Savannah Sparrow<br>Dickcissel<br>Eastern Meadowlark | Blue-winged Teal<br>Black Tern | Black-billed Cuckoo<br>Red-headed Woodpecker<br>Blue-winged Warbler | Red-shouldered Hawk<br>Veery<br>Wood Thrush<br>Cerulean Warbler |

In the remainder of this stewardship document, we first describe some general "axioms" that may serve as useful habitat management guidelines across all tracts, then guidelines for a selection of Priority Species (including population goals) and habitat guilds. This is followed by a fairly detailed treatment of species and habitat priorities for each tract, which we have divided into tentative management units, and suggested management actions. We end with a list of information needs.

We expect that the priorities and recommendations described in this report will be modified as the IBA's community of partners continues managing the land, evaluating the results, considering new information and opportunities, and working to mesh objectives of the varied programs and principles that guide management on individual tracts. Regardless of these inevitable changes, we hope that this community nurtures and actively pursues its commitment to "a whole that is greater than the sum of its parts", and by so doing, helps the LPI IBA realize its full conservation potential.

## AXIOMS OF BREEDING BIRD MANAGEMENT

- **Management for birds should be considered within the context of management for entire plant-animal communities:** Bird-related goals for this IBA are not meant to trump broader goals for the complex ecosystems of which they are part, but rather to complement them. The constellation of Priority bird species was chosen partly for its ability to indicate ecosystem health, e.g., to reflect the range of conditions that suit not only these species but other plant and animal species as well, and most of our recommendations are community-oriented. Priority bird populations can be used to help gauge the success of community management goals, but only in addition to other indicators such as population monitoring data for other priority plant and animal species, species lists, etc. We encourage explicit objectives for non-bird species, and consider it a welcome challenge to integrate them with those of the IBA. In some cases, management to benefit an entire community or its other priority components may modify management recommended specifically for a priority bird species, e.g., where prescribed fire regimes must be adapted to accommodate fire-sensitive grassland species, including rare herptiles and insects such as Regal Fritillary.
- **Size matters:** Bigger blocks of habitat are better than small blocks, because they are managed more efficiently, they provide for bird species that may be sensitive to edge or area effects, and they accommodate natural variation in site characteristics and diverse habitat structure. This IBA is naturally quite varied in site, exposure, topography, hydrology and history, and large habitat patches are not always practical or desirable, nor should we expect or desire an unvaried structure within large management units.
- **Connectivity matters:** When possible and practical, blocks of similar habitats should be connected rather than separated by dissimilar habitats; for example in areas where forest is high priority, it will be improved by foresting or reforesting interior openings, or fields that separate nearby woods. Important open grasslands should not be separated by tree rows or hedgerows, or interrupted by isolated woodlots. When considered important, corridors between blocks of similar habitat should be widened. This general rule should be balanced by the fact that many habitats in this IBA are naturally fragmented, and always the challenge is to create the balance that best accommodates site characteristics and the needs of Priority species.
- **Context matters:** A habitat surrounded by physically similar habitat is of more value than a habitat surrounded by a physically dissimilar habitat. For example, a 20-acre block of sparse grassland will be much better for Grasshopper Sparrow if it is surrounded by denser grassland than if surrounded by shrubs or trees, even though in each case the surrounding habitat is inappropriate for Grasshopper Sparrow. The surrounding grassland also has the advantage that it may accommodate species like Eastern Meadowlark that use both sparse and thick grassland structures. Some habitats naturally often occur in small blocks surrounded by rather dissimilar habitats, and certain bird species birds are adapted to this situation; for example small (<1 acre) savannas surrounded by grassland can provide excellent habitat for Eastern Meadowlark and Red-headed Woodpecker, while small (<0.25 acre) patches of shrubs surrounded by grassland or marsh can be very appropriate for Willow Flycatcher.
- **Temporal and spatial dynamism:** Specific habitat types, their distribution and abundance are in a constant state of flux. Under appropriate management, populations of some Priority bird

species will move around the IBA over time. The important result is long-term population levels across the entire IBA. This is most obviously the case for species that prefer habitats that are typically short-lived at certain successional stages, for example woody growth in grasslands, sparse vegetation at the early stages of prairie restoration, or shrubby forest openings. Slower changes are to be expected in the dynamics of other communities or habitat features such as the development of woodland or savanna structure, old-growth characteristics, supercanopy white pines, oak regeneration, etc. Hydrological variations (e.g., associated with drought cycles and flood events) also contribute to this dynamic across the IBA.

- **Match management goals with site, landscape and ownership limitations and opportunities:** This common theme is to be assumed in setting management goals for all communities, bird species specific properties and management units within the IBA. The art of balancing both science and practicality is essential if management is to succeed without wasted time and effort, or unneeded conflict. For example, an area such as the Baraboo River WPA, already dedicated to providing waterfowl nesting and migration habitat, provides excellent opportunity for Priority birds of hemi-marsh and grassland; the private Pines Tract presents options for cattle grazing not likely to occur on Public or NGO lands, and this presents excellent possibilities for grassland habitat suitable for species that prefer short and sparse grass-forb cover; the Leopold Memorial Reserve is naturally fragmented by its mosaic of hydrological, soil and historical characteristics, and has an existing goal, history and expertise to create and manage native plant-animal communities, so a natural mosaic of marsh, shrub and savanna communities is especially appropriate and probably more likely to succeed here than elsewhere in the IBA.
- **Gradual ecotones** are of more value than hard or sharp transitions between habitat types, especially when these follow natural transitions in substrate, hydrology etc. This often provides habitat for species that may find their best habitat opportunities in these ecotones (e.g., Willow Flycatcher, Blue-winged Warbler), as well as often being suitable for birds whose breeding territories extend mostly into one or the other adjacent habitat. Moreover, gradual ecotones allow individual plant species and communities to shift or migrate readily in response to changing conditions such as hydrology and climate, both of which can be expected to continue in the near and distant future. For example, we generally recommend “feathered” or gradual, “soft” borders between open grasslands and forest tracts, e.g., a 10-30m-wide band of shrubs or scattered trees.
- **Woody cover in open grasslands** such as sedge meadow, prairie, and oldfield should be scattered or clumped, less than 15% cover, and ephemeral. Linear woody cover is undesirable because it fragments open grasslands and serves as a pathway for predators and an inroad for competitors of forest edge. Shrub-loving birds on the IBA Priority list and SGCN do well among scattered shrubs or shrub patches (e.g., Willow Flycatcher), or in shrubby forest openings (e.g., Blue-winged Warbler), and do not rely on hedgerows. Scattered woody cover should be considered ephemeral in the sense that shrub or seedling growth is likely to increase in areas between fire or cutting events, or where fire is incomplete; but these should be controlled before they become so widespread or strongly rooted, that they interfere with grassland management. Thus it is likely that woody growth will come and go at specific spots in a grassland over the course of many years, and that the pattern of this patchiness will constantly change as management, succession and site characteristics interplay. Exotic woody growth should not be tolerated.

- **Savanna structure** can be variable, with 5-30% canopy cover, most of it from mature, open-grown fire-resistant trees, primarily oaks, and 0-30% total shrub and sapling cover. As with the open grassland, the low woody cover should be considered ephemeral, but some stems should survive to replace canopy trees. Savanna pasture, if not overgrazed, can provide valuable habitat, especially if it helps create or maintain an open ground layer. Savannas are generally more valuable for Priority birds if adjacent to some grassland.
- **"Surrogate" (non-native) communities can have high or low values to priority birds, depending on management:** In general, the types of active agriculture that provide appropriate habitat for Priority and other breeding birds include low- to moderate-intensity pasture and late-cut hay. Row crops provide no nesting habitat, and very little foraging habitat (mostly for turkeys, cranes and blackbirds), and is best if no-till; alfalfa is a breeding bird sink because nest attempts almost always fail due to frequent cutting; grass or grass-legume hay provides good breeding habitat if cut only after July 15; small grains provide marginal nesting habitat at best (if harvested after July 15) and may provide marginal feeding habitat to birds that nest in secure nesting habitat nearby. On the other hand, many grassland and shrub habitats dominated by non-native ground cover or simplified mixtures of native grasses can be extremely valuable to Priority birds: oldfields at various stages of woody invasion; warm-season CRP or "duck-nesting" cover; and unmowed former hay or pasture.
- **Exotics** are an ongoing and significant issue on all properties of the IBA, although more so in some Units than others. The effect may be direct and immediate (e.g., by quickly creating simple monotypic stands suitable for only a few bird species), or more gradual and long-term (e.g., thick shrub growth limiting establishment of tree seedlings in forest stands); in either case, extreme or widespread invasions can limit future management options. Often, if exotics can be maintained as a minor component of a community, the effect on Priority and other breeding birds is minimal. Although the list of significant exotic invasives is long for the IBA, the most critical are:
    - **Reed canary grass** invasion dramatically simplifies and deteriorates habitat for grassland birds and waterfowl, more so when it becomes dominant than when it remains mixed with native grasses, sedges and forbs. Monotypes are most likely in situations such as drained muck soils, sites repeatedly silted-over with fertile agricultural run-off, and where invasion is longstanding, and in these areas drastic control or conversion measures may be needed. In areas that still retain significant native herbaceous cover, reed canary grass may be kept in check with burning. This species is especially critical to control in newly established prairie or grass plantings, as well as in floodplain forests where it already occurs and the canopy is further opened by harvest or savanna restoration; in such forest sites, harvest may be ill advised, especially if fire cannot be used to control invasion afterward.
    - **Buckthorn**, **honeysuckle** and **garlic mustard** are major threats to upland and floodplain forests and their edges, and active control is essential for the long-term health and regeneration of nearly all forested tracts in the IBA.
    - **Narrowleaf cattail** and **phragmites** can form monotypic stands, preclude native emergent marsh plants, and produce a depauperate bird fauna dominated by a few species such as Red-winged Blackbird and Marsh Wren. Even though the latter species is High

Priority in the IBA, its populations can be maintained by native vegetation such as native cattail and river bulrush, which tend not to from dense, extensive, monotypic stands and thus provide for more bird species.

- **Maintaining open (grassland, marsh) and semi-open (savanna, barrens, shrub carr) habitats can be done with a variety of methods,** including timber harvest, mechanical removal, chemical treatment, cultivation, mowing, grazing, and spring and fall burning. Bird species vary in their habitat needs, and thus respond differently to extent and density of woody cover, thatch accumulation, forb vs. grass cover, and herbaceous height and density, etc., and thus to different types and intervals of disturbance. Some important examples are described in the following section on Specific Management Guidelines. At a given site, target plant communities and bird species should fit with site characteristics and with management constraints and opportunities.
- **River corridor management** involves minimizing human disturbance during Sandhill and Whooping Crane migration in October-November, especially at traditional roosting areas.

## SPECIFIC MANAGEMENT GUIDELINES FOR INDIVIDUAL SPECIES AND SPECIES GUILDS

Following are some initial population goals and management recommendations for a few Priority birds on the IBA. The species were selected because their populations can be readily monitored, they represent a range of habitats that will respond to readily identifiable management actions, they exemplify the sorts of dynamic goals and recommendations that we hope can be developed for more species in the future, and they serve as subjects on which we might test our willingness and ability to focus management efforts on their behalf. Other Priority species currently less suited for such recommendations we treat generally within habitat guilds.

- **Henslow's Sparrow:** We estimate that about 50-100 pairs now breed on the LPI IBA and that this can and should be doubled, to 200 pairs. Four areas are identified specifically for management of Henslow's Sparrow and species such as Sedge Wren that will benefit from the same management. These areas and the recommended number of breeding Henslow's Sparrow pairs are: PT Units 5, 6, 7 (40 pairs); LMR Unit 1 (30 pairs); PIWA Units 5, 6 (80 pairs); and BRWPA Unit 2 (50 pairs). Each area should be at least 200 acres in size (continuous or separated by <1/4 mi of unsuitable grassland), maintained by infrequent fire and possibly mowing after 15 July, to control woody invasion and provide thick prostrate residual material (thatch). No more than 30% of each area is to be burned in a single year, and >30% of the area should be 4-6 years since last burn. Native prairie vegetation is preferable, but warm-season and cool-season grasses are acceptable, although monotypes are not. Woody cover should be <5%. When possible, these areas should be adjacent to additional open grasslands to increase the beneficial effects of a large open landscape.
- **Grasshopper Sparrow:** Approximately 80-150 pairs breed on the IBA. With appropriate management, this could be increased to 200 pairs, and this seems reasonable within the overall goals of the IBA. The best opportunities for this species are in open grasslands on light soils, and in areas with heavier soils that are grazed or in early stages of grassland restoration. In some

grasslands, territories may be localized in and around sandy lenses or knolls. Of the 200 potential pairs, 60 could be accommodated by sandy oldfields and dry prairie within Units 5 and 6 of the PIWA, another 60 in oldfield, prairie and pasture of the PT's Units 5-9, 20 in upland native and surrogate grasslands of LMR, and 60 throughout the IBA in temporarily suitable habitat within recently burned or early, weedy phases of prairie restorations and oldfield succession. All of these sites should be imbedded in grassland tracts >200 acres in size maintained by fire, mowing after 15 July, or grazing, to control woody invasion and maintain short, sparse cover of grasses and forbs with sparse residuum. Native prairie vegetation is preferable, but warm-season and cool-season grasses are acceptable, although monotypes are not. Woody cover should be <5%. When possible, these areas should be adjacent to additional open grasslands to increase the beneficial effects of a large open landscape.

- **Field Sparrow:** There are now about 200-300 pairs breeding on the IBA, in a wide range of habitats with scattered to no canopy cover and scattered to patchy shrub or sapling cover, ranging from native and surrogate grasslands to savannas, barrens and forest openings, in both upland and floodplain sites. Its highest importance values are attained in uplands, especially native grassland, savanna and shrubby oldfield, and with moderate numbers in barrens, shrubby lowland oldfield and upland young conifer plantations and open oldfields. The IBA should probably support about 300 pairs—similar or slightly more than the current population. This should reflect an increase in upland and floodplain savannas and barrens as forests are thinned or converted to these communities, and a slight decrease in some currently suitable shrub-dominated areas that will revert or convert to more open, managed grassland. As now, about half of the population will be on the PIWA and the rest will be divided about equally between the PT and LMR. In most communities, it will occur in and around ephemeral patches of shrub or sapling growth, but will be most constant in sites with more a permanent component of scattered woody cover such as barrens, savanna, and the "soft" borders between grassland and wooded habitats, especially on more xeric sites. Key habitat features include some grass cover with 5-25% cover of scattered shrubs or saplings, and 0-20% tree cover.

- **Red-headed Woodpecker:** The size and distribution of the IBA's Red-headed Woodpecker population probably varies considerably among years, and is generally 10-20 pr. This species prefers habitats with scattered trees, often oaks, but also silver maples and other species, especially where the understory is open for foraging on or near the ground, and where there are many dead trees or large dead limbs for nesting. They often appear in numbers after burning, flooding or disease outbreak has killed an acre or more of mature timber, as long as the trees remain standing. They prefer to nest in boles or limbs from which the bark has detached. With ongoing and planned savanna, woodland and barrens management, suitable habitat will increase on the IBA, supporting a breeding population of 20-50 pairs. The population will be variable as suitable nest-sites appear in different areas according to management and natural disturbance, but should be most constant in large savannas. Over 10-yr periods, the IBA should be able to support an annual mean of at least 40 pairs, with 20 in the PIWA, 10 on the LMR, and the remainder in other properties, especially PT and LBRFF. Recommended management includes: continue and expand savanna, barrens and woodland restoration, with substantial areas that have <25% cover of shrubs and saplings; leave standing dead trees or live trees bearing large dead limbs in open and semi-open habitats, including floodplain forest.

- **Willow Flycatcher:** This species' breeding population of approximately 250-500 pairs occurs in scattered or patchy shrubs in a variety of open or savanna-like communities. Recommended management across the IBA will reduce habitat in some areas (e.g., where hedges are removed to consolidate open grasslands), increase it in others (e.g., by thinning thick shrub cover in some oldfields, shrub swamps and young shrubby woods), and maintain it in others (in existing stands of scattered shrubs). A goal of 350 breeding pairs seems suitable, although the distribution of this population would be expected to change annually and especially over 10- to 20-year periods, as woody plants respond to management and successional opportunities at local sites.

- **Emergent marsh bird community:** Many of these species are secretive, and specific management goals and recommendations are contingent on a better inventory and monitoring system, which should be high priority to develop in the near future. Breeding populations within this bird guild tend to fluctuate markedly between years at individual wetland sites in response to natural and anthropogenic changes in water levels, muskrat activity, etc. Monitoring should track both the short- and long-term responses of bird populations to these habitat changes so that the dynamic can be understood, but population goals should be based, e.g., on multi-year population means or ranges. In general, the current goal is to maintain the recent mean annual population levels and diversity of Priority marsh birds, to the extent that this is known; and more concretely, to maintain healthy marshes with little or no invasion by exotic invasive plants, which would compromise habitat quality and future management options. The most control over marsh bird habitat occurs at the impoundment of the BRWPA, where existing water level management should be continued to maintain a dynamic hemi-marsh system dominated by native plant species. Management may require adjustment if flooding issues on adjacent I-39 demand lower maximum levels. A major habitat development opportunity exists on the PT, where the creation of hemi-marsh and sedge meadow could add significant numbers of a few species (e.g., Sedge Wren, Blue-winged Teal) to the IBA, although invasion by exotics may require vigilance here and especially at the WPA. The conversion of grassland to marsh and meadow at this PT site is considered a beneficial one overall, especially if combined with conversion of adjacent exotic and monotypic grass fields to a more diverse native community that has a natural, dynamic ecotone with the wetland. We should expect that the IBA's list of Priority marsh birds will change and probably expand, with habitat development and with additional inventory and monitoring data on the IBA, and its statewide context from the new Wisconsin Marshbird Monitoring Program.

- **Forest bird community:** This broad community is not highly ranked overall within the IBA, and much recent and existing forest is being converted, or is recommended for conversion, to upland and floodplain savanna. However, areas of floodplain forest will continue to exist in wet areas as part of a fire-maintained floodplain barrens-savanna-woodland-forest matrix at LPI and PIWA, and significant floodplain forest areas will be maintained at PT and BRWPA, where an expansion along the Baraboo River corridor is recommended. Some areas of young and fragmented floodplain and upland forest may persist at several tracts, as a matter of practicality and to provide habitat for early successional species such as Blue-winged Warbler, Black-billed Cuckoo and American Woodcock. The best opportunity for forest breeding bird communities, by far, is within the LBRFF, where existing forest supports significant populations of Prothonotary Warbler, Red-shouldered Hawk, Wood Thrush and other Priority species and state-ranked SGCNs; and agricultural and oldfield habitats offer opportunities for forest expansion and

consolidation. Although the best forest habitat of this area has been surveyed by canoe, it still needs more thorough transect point-count surveys consistent with the rest of the IBA. These surveys might suggest the addition or upgrade of one or more Priority forest species to the IBA list. Tentatively the recommendation is to work with private landowners in this area, primarily through DNR forester Jim Bernett, to encourage mature forest conditions in a large proportion of the forest, minimize invasives such as reed canary grass, control or reduce home development, and reforest agricultural and oldfield habitats as opportunities arise. The goal of this tract should be to support viable populations of Priority floodplain forest bird species, as well as non-priority SGCNs such as Prothonotary Warbler. Before pursuing such a goal we should assess the current and potential populations of these species here, and whether they might attain a level by which they would contribute to the viability of regional metapopulations. The expansion and development of the LBRFF may increase the value of floodplain forest and savanna elsewhere in the IBA, for smaller or more ephemeral populations of forest birds that might be peripheral but connected to those of the Lower Baraboo and adjacent Wisconsin River.

## SPECIFIC MANAGEMENT GUIDELINES FOR INDIVIDUAL TRACTS WITHIN THE IBA

The following guidelines are meant to serve as a starting point for planning, such that management of the IBA becomes incorporated into the overall goals and full management objectives and plans of each tract. They follow from the general management recommendations identified for each tract in the *Strategic Vision* document, are the result of many previous and subsequent discussions with managers, and reflect an integration of goals that exist for the IBA and for the individual tracts. Each tract is described in terms of how it does and could best contribute to the goals if the IBA In each tract we then differentiate conceptual, habitat focus areas (e.g., native grassland, surrogate grassland, floodplain forest, floodplain barrens-savanna-woodland) to help accomplish this potential. For the sake of management, the tract is also divided into practicable management units, which often reflect existing management units, or are based on convenient boundaries such as roads and hydrologic divisions. For each unit we describe both the current and desired habitat condition, and explain the justification for the latter according to such things as IBA and tract goals, hydrology, soils, historical cover and use, and position in the larger landscape. We then recommend management to attain or maintain the desired condition, rank the units according to management priority (a combination of value to Priority birds and the immediacy of management needs), and list Priority birds that will benefit.

### Phill and Joan Pines Tract

This tract is divided into 4 main areas: a potentially large core of mostly native grassland in its western half; an adjacent eastern section characterized by working grasslands (hay, pasture) mixed with some restored prairie; a large tract of mixed floodplain forest and barrens along the river; and the river channel with its extensive sandbars and wooded islands. The grasslands are highest priority, and have the special advantage of incorporating management such as haying and grazing, which are less likely to occur elsewhere in the IBA, but can provide excellent habitat for species that prefer short grass (e.g., Grasshopper Sparrow) and cool-season grass (e.g., Bobolink, Savannah Sparrow) as well as more

generalized species (e.g., Eastern Meadowlark) that will benefit from the large continuous blocks of varied grassland. The forest offers a special opportunity to attain old-growth conditions within its mosaic of hardwood, mixed hardwood-pine, and barrens communities, and thus provide for many forest, barrens and edge Priority species. The significance of the relatively undisturbed river channel is due to its native forest and barrens communities and its use as a major roosting and staging area by Sandhill Crane and Whooping Crane.

The most important management recommendations include conversion of some row crops to working or native grassland, more extensive grassland management, the possible introduction of light to moderate grazing onto some grassland tracts, control of exotic invasives, removal of some tree and shrub hedges and conifer plantations, and establishment of broad, dynamic ecotones including some areas in which shrubs and young trees may remain dominant long-term.

**IBA Units with highest priority for management: 5, 6, 10, 7, 9.**

1. **Current Condition:** pine plantation with mixed hardwoods at the south and north ends; south end currently has some nice open-grown oaks.
   **Desired Future Condition:** mix of native prairie, scattered shrubs and oaks.
   **Justification:** pine plantations provide little value for birds and any value at this site will decrease with age; prairie, shrub and savanna will fit much better with adjacent habitat areas.
   **Recommendation:** convert, thin/remove pine after they mature or are profitable and replace with a mix of native prairie, shrubs and woodland/savanna; maintain quality oak on site; long -term strategy might include prescribed burning; short of native prairie, warm-season grass would provide acceptable bird habitat.
   **Bird Species Supported with Recommendation:**
   **Probable:** Grasshopper Sparrow; Field Sparrow; Eastern Meadowlark.
   **Possible:** Bobolink.

2. **Current Condition:** west half is upland non-native grasses, oldfield (Poa sp., Bromus sp.); dry-mesic soils; eastern half has wetter soils including sedge meadow, wet prairie and scattered shrubs.
   **Desired Future Condition:** native prairie, short to mid-height grasses with scattered shrubs; current oldfield, if maintained, still provides acceptable habitat; wetter areas could be sedge meadow with scattered clumps of shrubs.
   **Justification:** maintaining open habitats will continue to support grassland birds, especially if adjacent Unit 1 is opened up.
   **Recommendation:** maintain or convert; keep open with fire and cutting of shrubs and trees if necessary to maintain only a scattered and ephemeral presence of shrubs and trees.
   **Bird Species Supported with Recommendation:**
   **Probable:** Eastern Meadowlark (wet and dry areas); Grasshopper Sparrow, Field Sparrow (dry areas); Sedge Wren, Willow Flycatcher (wet areas).
   **Possible:** Bobolink.

3. **Current Condition:** native shrub carr with willow and scattered elm, reed canary grass, sedges, and big bluestem; woods are aspen, elm, river birch, and scattered shrubs.
   **Desired Future Condition:** mix of scattered trees, shrubs, native prairie and sedge meadow; soft edge between Units 3 and 5, ranging from woodland/savanna to grassland; gradual transition between Units 2 and 3.
   **Justification:** if not managed, will continue to succeed toward dominant shrub and tree cover, diminishing bird habitat; will be relatively easy to maintain in desired condition; woody growth here will not bisect core grassland areas.
   **Recommendation:** maintain with options of harvest, brush control or burning.
   **Bird Species Supported with Recommendation:**
      **Probable:** Willow Flycatcher; American Woodcock; Black-billed Cuckoo.
      **Possible:** Blue-winged Warbler; Swamp Sparrow.

4. **Current Condition:** cropped.
   **Desired Future Condition:** native prairie, scattered shrub, and/or savanna.
   **Justification:** will create a feathered edge between the woods to the south and west and the savanna/prairie areas of Units 1, 2, and 5.
   **Recommendation:** convert; plant to native prairie and allow encroachment of quality scattered oaks.
   **Bird Species Supported with Recommendation:**
      **Probable:** Field Sparrow
      **Possible:** Black-billed Cuckoo; Blue-winged Warbler; Willow Flycatcher.

5. **Current Condition:** cropped, with grassy landing strip, oldfield, and hedges; soils are sandy to wet-mesic; northwestern end is drier than rest.
   **Desired Future Condition:** native prairie with scattered ephemeral shrubs; target grassland structure generally is shorter, sparser, drier, grading to wet-mesic prairie and sedge meadow at east end.
   **Justification:** already excellent for Priority grassland birds, with obvious potential for improvement with minimal management and by expanding and connecting with nearby open areas.
   **Recommendation:** maintain or convert; if maintained in current cover, oldfields offer the best habitat; landing strip is lesser quality if frequently mowed; cropped fields have almost no value to breeding grassland birds; oldfields could be maintained with prescribed burning (5-year interval) and/or mechanical removal of invading shrubs/trees; if converted, native prairie would be ideal; landing strip has value as foraging habitat for birds nesting in adjacent oldfields; ideally, mow as infrequently as is practical between mid-May and late July; remove hedges and tree rows to connect open grasslands; some scattered trees can remain but not in linear configuration; scattered ephemeral shrubs or patches are okay; light to moderate grazing; northeast corner has sedge meadow and reed canary grass capable of supporting Henslow's Sparrow and Sedge Wren; this area might require longer burn interval and more hand-cutting to maintain thatch build-up; do not allow reed canary grass to spread.
   **Bird Species Supported with Recommendation:**

**Probable:** Field Sparrow; Grasshopper Sparrow; Bobolink; Northern Bobwhite; Vesper Sparrow; Eastern Meadowlark; Willow Flycatcher.
**Possible:** Savanna Sparrow; Henslow's Sparrow (east side); Sedge Wren (east side).

6. **Current Condition:** wetland restoration; lowland oldfield (Dactylis sp., Poa sp., Bromus sp.); pasture; hedges.
**Desired Future Condition: wetland restoration:** native wetland; emergent marsh surrounded by sedge meadow, wet prairie, and shrub carr, with gradual transitions between communities (probably will come in on its own—no need to manage for it); **lowland oldfield:** retaining oldfield is acceptable; conversion to native wet-mesic prairie and sedge meadow is ideal; target grassland structure generally is taller, thicker, and wetter.
**Justification:** with Unit 5, this comprises the main opportunity for a large open block of habitat on this property, and it joins this block with the adjacent "working grassland" area of Units 7 and 9; an excellent wetland restoration has already begun.
**Recommendation:**
**Wetland restoration:** specific recommendations will depend on the nature and extent of the pending restoration; in general, these wetlands can be managed by natural or artificial water level changes and burning; prevent establishment of reed canary grass and narrow-leaved cattail, as they tend to form dense, monotypic patches that exclude other native vegetation and provide little habitat for birds.
**Lowland oldfield:** ideally, convert to wet-mesic prairie and sedge meadow; lowland oldfield currently provides habitat for grassland birds so leaving as oldfield would be okay; in either case, maintain as open habitat through prescribed burning (5-year interval), light-to-moderate grazing, or late-season mowing/cutting; target structure is taller, thicker grass (although there are some dry, sandy areas that could support shorter, sparser structure for Grasshopper Sparrow).
**Bird Species Supported with Recommendation:**
**Probable:** migrating and nesting waterfowl (e.g., Blue-winged Teal); Sedge Wren; Bobolink; Eastern Meadowlark; Willow Flycatcher; Sandhill Crane.
**Possible:** Henslow's Sparrow; Grasshopper Sparrow (drier, sandy areas); Dickcissel (where tall flowers are mixed with grass); Savannah Sparrow; Swamp Sparrow; Marsh Wren.

7. **Current Condition:** upland and lowland cropped fields; mixed hardwood woodlots; hedges and tree lines; upland oldfield; a black oak barrens knoll; 2 farmsteads, 1 homestead and a cemetery; one small pine plantation; higher/drier on western end, lower/wetter towards eastern end.
**Desired Future Condition:** mixture of upland and lowland native prairie, surrogate grassland, savanna/open woodland, and some scattered trees; can accommodate a variety of grassland structures, depending on land use and site conditions.
**Justification:** expands open habitat core of Units 5 and 6 and connects to grasslands in Unit 9, while providing some cool-season grass habitat that might not be available in Units 5 and 6, and allowing an economic return.
**Recommendation:** thin/remove pines after they mature or are profitable; remove hedges and tree lines, such as the trees on the old levee overlooking the wetland restoration (this will improve the view), but leave some scattered trees; conduct harvest and burn in central woodlot that straddles

Hwy O to convert to open oak woodland/savanna; maintain black oak barrens knoll through thinning and burning; Unit 7 is the likeliest to attract Red-headed Woodpeckers; burning and girdling can create clusters of standing dead or dying trees favored by this species; Unit 7 can accommodate more agricultural use than Units 5 and 6; convert crop fields to native prairie, pasture, late-cut grass-hay, or oldfield (lower priority for conversion to prairie than Units 5 and 6); plug ditch at east end to restore hydrology in adjacent fields which will improve quality and diversity of habitats there.

**Bird Species Supported with Recommendation:**

**Probable:** Eastern Meadowlark; Bobolink; Dickcissel; Savannah Sparrow; Field Sparrow.

**Possible:** Sedge Wren; Grasshopper Sparrow; Henslow's Sparrow; Willow Flycatcher; Red-headed Woodpecker; Northern Bobwhite.

8. **Current Condition:** cropped fields and small mixed hardwood woodlot.
   **Desired Future Condition:** undetermined.
   **Justification:** fields are separated from rest of Pines Tract by railroad and Hwy 16 and are surrounded by adjacent land ownerships dominated by cropped fields, pine plantations, and woodlots; potential value for priority birds dependent on more compatible management of adjacent lands.
   **Recommendation:** from a bird perspective these fields are the lowest priority on the whole Pines Tract to convert; keeping them cropped will retain the greatest number of future options for conversion, should this become possible and desirable.
   **Bird Species Supported with Recommendation:** limited foraging value to Vesper Sparrow.

9. **Current Condition:** mostly upland with one drained lowland hayfield in northwest corner; hay; pasture; restored prairie; pine and spruce plantations; mixed hardwood woodlots; tree rows and hedges; main residence; trap-shooting range.
   **Desired Future Condition:** mixture of native and surrogate grasslands with small areas of oak savanna/open woodland; a variety of grassland structures ranging from lush grasses in the northwest corner to drier, sparser vegetation in the southeast corner.
   **Justification:** this area is already dominated by hay and currently supports many grassland birds; mixture of native and surrogate grasslands will continue to provide good habitat for these birds, including those that prefer cool-season grass; removing linear tree and hedge rows and opening woodlots will improve grassland and savanna bird habitat.
   **Recommendation:** maintaining the hay and pasture in this area is compatible with good grassland bird populations as long as the hay is cut as late as possible, ideally after July 15; plug ditches and break drain tile at northwest corner to restore hydrology in adjacent fields which will improve quality and diversity of habitats there; fields in Unit 9 are lower priority than those in all the areas to the west for conversion to native types, although conversion generally is always desirable; remove linear hedge and tree rows, especially conifers, as these have particularly low value to native grassland and savanna birds; use harvest, thinning, and burning to convert woodlots to open woodland/savanna; thin/remove pines and spruces after they mature or are profitable; scattered ephemeral shrubs or clumps are acceptable.
   **Bird Species Supported with Recommendation:**

**Probable:** Eastern Meadowlark; Bobolink; Dickcissel; Savannah Sparrow; Field Sparrow; Grasshopper Sparrow.
**Possible:** Willow Flycatcher; Northern Bobwhite; Sedge Wren.

10. **Current Condition:** floodplain forest variously dominated by silver maple or swamp white oak, with black oak, green ash, white ash, aspen, white pine, and cottonwood as important secondary species; patchy but considerable invasion by garlic mustard and buckthorn; evidence of timber cutting ranges from fairly recent (~10 yrs ago) to none; oak barrens on sandy riverside terraces extend considerably into the floodplain forest in some areas; in the western part of the tract are scattered openings dominated by exotic grasses with some natives; one pine small pine plantation on the west edge of the area.
    **Desired Future Condition:** mature floodplain forest, barrens, and some existing openings, with minimal presence of exotic herbs and shrubs and diverse tree species composition.
    **Justification:** this area is unlikely to be managed as savanna and currently supports some Priority forest bird species; controlling exotics and maintaining a diversity of tree species will improve habitat for these birds; habitat will also improve as the forest matures; barrens and openings are a natural part of this floodplain forest ecosystem and contribute to diversity of plant and bird life.
    **Recommendation:** the floodplain forest will persist without active management, although it is likely that oaks and silver maples will be replaced by more shade-tolerant species such as ashes, red maple, black cherry, and white pine in some areas; selective cutting, understory treatment (removal of invasive shrubs and shade-tolerant saplings), and burning can help retain oaks and silver maples; on sandy sites that support barrens, similar management may be necessary to maintain black oak, river birch, and cottonwood; the scattered openings that are concentrated in the western part of this area (SW corner of Section 27) can be maintained by mowing or burning; edges are currently feathered and should be maintained as such; control of exotic invasives is the most critical need in this Unit.
    **Bird Species Supported with Recommendation:**
        **Probable:** Yellow-billed Cuckoo; Wood Thrush; American Woodcock; Blue-winged Warbler.
        **Possible:** Red-shouldered Hawk; Cerulean Warbler.

11. **Current Condition:** Wisconsin River and islands consisting of exposed sandbars, open river terrace, river barrens, and floodplain forest dominated by silver maple or swamp white oak.
    **Desired Future Condition:** islands remaining more-or-less as they are, influenced by forest succession and natural disturbance.
    **Justification:** this is a dynamic system that is difficult and unnecessary to manage; it provides important habitat for migrating birds, particularly Sandhill Cranes.
    **Recommendation:** minimize human disturbance on the islands.
    **Bird Species Supported with Recommendation:**
        **Probable:** Sandhill Crane (staging); Field Sparrow.
        **Possible:** Black-billed Cuckoo; Yellow-billed Cuckoo; Blue-winged Warbler.

**Leopold Memorial Reserve**

The LMR is especially valuable within the IBA for its high quality marshes, sedge meadows and floodplain forest-savanna-barrens complex. In the floodplain, recommended management will create a mosaic of marsh, meadow, shrub carr, savanna, barrens and forest, including conversion of some forest back to native savanna and barrens. In the uplands, recommendations will result in a mosaic of prairie, savanna and woodland, with a general conversion of forest to more open habitats, and development of more gradual ecotones between communities. The tract's 13 Units vary from one currently primarily in cropland, and which may not be converted to grassland for some years, to others that have been managed intensively for decades. In general, the envisioned landscape here includes a large upland grassland in the west, which grades eastward into sedge meadow, marsh, shrub swamp and upland prairie-savanna. North of Levee Rd. the open and semi-open wetlands will grade into floodplain savanna, barrens and forest. Recommended management follows methods currently being employed such as planting, tree harvest, mechanical and chemical treatment and especially prescribed fire, with increased effort to open forest, especially between at the upland-floodplain boundary.

**IBA Units with highest priority for management: 5, 8, 4, 6, 7, 9, 2, 3, 12, 10, 13, 11, 1.**

1. **Current Condition:** cultivated fields; restored prairie and cool-season grasses on both sides of Hwy T; channelized stream course through the middle of Unit with reed canary grass and some plantings of wetland trees along the course; a peninsula of woods extends into the southeastern prairie area.
   **Desired Future Condition:** restored to mid-height dry to dry-mesic prairie, with sedge meadow and mesic prairie along the stream and soft edges bordering adjacent Units; grassland is mostly open, with <5% cover of widely scattered ephemeral upland or lowland shrubs, and supports ~30 pr of Henslow's Sparrows; this Unit is managed in conjunction with Units 2 and 3.
   **Justification:** row-crop agriculture provides no breeding habitat and minimal forage opportunity; foraging opportunity is somewhat improved when in no-till; this is the largest potential grassland block on the LMR, presenting good opportunity for mid-to-tall grassland bird community, especially since cultivation has precluded woody invasion.
   **Recommendation:** restore agricultural lands to native prairie as opportunity arises; remove hedgerows and tree rows; retention pond proposed for nutrient management will have minimal benefit to birds (mostly migrants) unless surrounded by grass or grass-shrub habitat; this is given lowest priority of all the LMR Units only because conversion is not imminent; however, when this does occur, its priority should be very high.
   **Bird Species Supported with Recommendation:**
   **Probable:** Henslow's Sparrow; Bobolink; Sedge Wren; Dickcissel; Savannah Sparrow; Eastern Meadowlark.
   **Possible:** Northern Bobwhite; Sandhill Crane; Grasshopper Sparrow.

2. **Current Condition:** retired pasture with open-grown oaks; ground flora is degraded and composed primarily of non-native species.
   **Desired Future Condition:** native oak savanna.

**Justification:** the mature, open-grown oaks present the appropriate structure for Priority savanna birds, although the full potential of this habitat will not be realized while the adjacent Unit 1 remains in cultivation.
**Recommendations:** retain open-grown oaks and prevent shrub encroachment through burning and cutting to preserve future restoration options.
**Bird Species Supported with Recommendation (if adjacent Unit 1 restored to prairie):**
**Probable:** Field Sparrow.
**Possible:** Red-headed Woodpecker; Northern Bobwhite; Black-billed Cuckoo; Eastern Meadowlark.

3. **Current Condition:** degraded upland woods, varying from mature mesic forest (basswood, white oak, sugar maple) in the western portion to weedy tree (black locust, box elder) and shrub species in the east.
**Desired Future Condition:** native open oak woodland or savanna.
**Justification:** this Unit is too small to be of value to Priority forest birds; oak component could have value to Priority savanna birds, particularly in the context of proposed prairie and savanna restoration in nearby Units.
**Recommendation:** retain oaks; thin, eventually remove, and stump-treat the other trees, especially black locust; consider prescribed burning as part of long-term maintenance.
**Bird Species Supported with Recommendation:**
**Probable:** Red-headed Woodpecker (if snags, cavity trees retained).
**Possible:** Field Sparrow; Black-billed Cuckoo; Northern Bobwhite.

4. **Current Condition:** mix of restored oak woodland, oak forest, degraded white pine stands, and shrubby mixed woods.
**Desired Future Condition:** native oak woodland and savanna, with soft edge bordering Unit 1.
**Justification:** currently contains healthy, maturing white and black oaks that would be compatible with the maintenance of "open" plant communities adapted to fire.
**Recommendation:** retain oaks; use commercial or non-commercial harvest to remove undesirable species such as white pine; use prescribed fire for long-term maintenance.
**Bird Species Supported with Recommendation:**
**Probable:** Red-headed Woodpecker (if snags, cavity trees retained); Black-billed Cuckoo; Blue-winged Warbler; Yellow-billed Cuckoo.
**Possible:** Field Sparrow.

5. **Current Condition:** mix of upland communities with hard edges between open and wooded types: planted prairie, CRP grasslands, cultivated fields, oak forest, experimental treatment areas of cut and burned forest and burned forest, pine plantation, and cultural pine plantings around the Coleman Cabin; small area of mixed lowland shrubs and trees at north edge.
**Desired Future Condition:** a mix of oak woodland, savanna, shrub, and prairie with soft, feathered transitions and open structure towards the sedge meadows on the northern and eastern borders.
**Justification:** this Unit demonstrates the need to consider the surrounding context when planning restoration projects: restored prairies currently are isolated from each other and from the sedge

meadows of Unit 7 by forested ridges and slopes, which greatly diminishes their value to Priority birds; likewise, the small tracts of forest are too small and isolated to benefit Priority forest birds; a mix of shrub/savanna and grass-shrub habitats with soft transitions will have the greatest benefit to Priority birds and complement the surrounding Units.

**Recommendation:** maintain restored prairies; create a more savanna-like structure in wooded areas and thin the woody edge along the border with Unit 7 using commercial or non-commercial harvest; areas of dense shrubs may be unavoidable in this Unit and are compatible with Priority shrub/savanna birds as long as they don't become ubiquitous across the entire Unit; use prescribed fire for long-term maintenance.

**Bird Species Supported with Recommendation:**

**Probable:** Northern Bobwhite; Field Sparrow; Black-billed Cuckoo; Red-headed Woodpecker (if snags and cavity trees retained); Willow Flycatcher; Blue-winged Warbler.

**Possible:** Vesper Sparrow.

6. **Current Condition:** a mix of early-successional forest types, including aspen, river birch, cherry, elm, and ash; created wildlife ponds; shrub carr and sedge meadow.

   **Desired Future Condition:** similar to current but more open—varying from 30-60% woody cover of shrubs less than 3 meters in height and some scattered trees.

   **Justification:** this Unit is unlikely to be converted to more open habitat types (i.e., grassland or savanna); if allowed to succeed completely to forest, it will interrupt the connection to surrounding Units and have little value to Priority forest birds; maintaining it as shrub habitat will benefit several Priority shrub/savanna birds and complement habitats in surrounding Units as well as possible.

   **Recommendation:** maintain in semi-open condition; all methods of woody control should be considered.

   **Bird Species Supported with Recommendation:**

   **Probable:** Swamp Sparrow; Black-billed Cuckoo; Willow Flycatcher; Blue-winged Warbler.

   **Possible:** Northern Bobwhite; Field Sparrow; Red-headed Woodpecker (if snags and cavity trees retained); Veery.

7. **Current Condition:** wet prairie; sedge meadow; reed canary grass; emergent marsh; created wildlife ponds with diverse submergents; shrub carr; patches of aspen and silver maple floodplain forest.

   **Desired Future Condition:** native sedge meadow, wet prairie, and emergent marsh with scattered, ephemeral shrubs and copses of early-successional trees.

   **Justification:** already provides habitat for wetland and wet-grass Priority birds; small amounts of shrub carr and copses of early-successional trees are inevitable; shrub carr is valuable to some Priority birds.

   **Recommendation:** maintain openness of this unit through prescribed burning and, where necessary, mechanical control of large shrub clones and trees; maintain woody cover at no more than 15%.

   **Bird Species Supported with Recommendation:**

**Probable:** Sedge Wren; Blue-winged Teal; Sandhill Crane; Marsh Wren; Swamp Sparrow; Willow Flycatcher; although not Priority birds for the LPI-IBA, other important species include Sora; Virginia Rail; Least Bittern.
**Possible:** Northern Bobwhite.

8. **Current Condition:** floodplain forest with scattered open barrens, sedge meadow, and linear stands of natural-origin white pines.
**Desired Future Condition:** mix of silver maple floodplain forest along wettest abandoned stream channels and black oak, swamp white oak, and mixed pine floodplain forest, oak woodland, oak barrens, and swamp white oak savanna scattered throughout; small area of sedge meadow along former river channel; in general, the floodplain forest gets progressively drier to the west and transitions from swamp white oak in the east to white oak in the west.
**Justification:** the more open forest types will benefit more Priority birds than closed types in this landscape; the white pine stands are a unique and valued characteristic of this floodplain; floodplain savanna is a globally rare community for which this IBA holds significant opportunity.
**Recommendation:** use commercial or non-commercial harvest to open the canopy; retain white pines; maintain open character using fire where feasible and mechanical and chemical treatments where necessary.
**Bird Species Supported with Recommendation:**
**Probable:** Red-headed Woodpecker (if snags and cavity trees retained); Blue-winged Warbler; Yellow-billed Cuckoo.
**Possible:** Willow Flycatcher; Veery; Wood Thrush.

9. **Current Condition:** dry black oak river barrens; open river terrace with aspen, green ash, elm, silver maple, river birch, and swamp white oak.
**Desired Future Condition:** river barrens, open river terrace, and sand prairie.
**Justification:** natural disturbance (flooding) has kept this Unit in an early-successional condition, but it is now succeeding to more shade-tolerant and invasive species as flooding has been mitigated by upstream dams; it represents a natural continuum from riverine sand deposits to floodplain forest, and supports several Priority bird species.
**Recommendation:** maintain and increase open aspect through prescribed burning, commercial or non-commercial harvest, and mechanical and chemical treatments.
**Bird Species Supported with Recommendation:**
**Probable:** Field Sparrow; Black-billed Cuckoo; Blue-winged Warbler.
**Possible:** Sandhill Crane; Red-headed Woodpecker (if snags and cavity trees retained); Willow Flycatcher.

10. **Current Condition:** silver maple floodplain forest; reed canary grass.
**Desired Future Condition:** silver maple floodplain forest.
**Justification:** silver maple floodplain forest is most suitable for these soils although regeneration will need to be addressed to replace current canopy.
**Recommendation:** this Unit's proximity to edge of LMR and surrounding context make management here a very low priority.
**Bird Species Supported with Recommendation:**

**Probable:**
**Possible:** Blue-winged Warbler; Yellow-billed Cuckoo; Veery; Wood Thrush.

11. **Current Condition:** upland oak forest with shade-tolerant hardwoods and white pine intermixed; some swamp white oak floodplain forest at south end.
    **Desired Future Condition:** upland oak forest with hickory, other hardwoods and white pine, managed for timber production.
    **Justification:** this area is currently in Managed Forest Law (MFL) and management is dictated by this contract.
    **Recommendation:** follow MFL recommendations that maintain the highest quality of timber.
    **Bird Species Supported with Recommendation:**
    **Probable:** Yellow-billed Cuckoo; Veery; Wood Thrush; Blue-winged Warbler.
    **Possible:** Black-billed Cuckoo.

12. **Current Condition:** remnant, native dry prairie and savanna, pine plantation, and degraded oak woodland.
    **Desired Future Condition:** native dry prairie and savanna.
    **Justification:** this unit contains the best example of remnant, native prairie on the IBA; because of its lack of connectedness to larger grasslands and its position at the edge of the LMR, it is much more valued for its floristic diversity than bird habitat.
    **Recommendation:** prescribed burning, brush management; harvest the pine plantation and convert to prairie or savanna to maintain the integrity and continuity of this unit.
    **Bird Species Supported with Recommendation:**
    **Probable:** Field Sparrow.
    **Possible:** Red-headed Woodpecker (if snags and cavity trees retained); Blue-winged Warbler; Black-billed Cuckoo.

13. **Current Condition:** willow clones and river barrens grading into young and mature floodplain forest with scattered white pine.
    **Desired Future Condition:** willow clones and river barrens grading into young and mature floodplain forest with scattered white pine.
    **Justification:** difficult access precludes frequent management; succession is slow; flooding, ice action and sand deposition tend to maintain and create some early successional habitats naturally.
    **Recommendation:** control invasives.
    **Bird Species Supported with Recommendation:**
    **Probable:** Field Sparrow; Blue-winged Warbler.
    **Possible:** Black-billed Cuckoo; Yellow-billed Cuckoo.

**Pine Island State Wildlife Area**

Easily the largest ownership within the IBA, this tract has many scattered high quality marshes and sedge meadows, a very significant floodplain savanna—most of it in early stages of restoration—along the river, and a large, central grassland that provides habitat for every Priority species that requires open or shrubby

grasslands. In the western section, including the former Van Wormer Tract (recently purchased by WDNR), is a good mosaic of late-successional barrens, woodland, meadow and marsh. The remainder is mostly patchy, in various stages of succession from oldfield to forest, with few conifer plantations and share-cropped fields as well. The PIWA serves several purposes, including natural areas protection and management in the floodplain savanna, dog training and trialing in the central grassland, hunting and other outdoor recreation throughout, and more general management for native plant-animal communities and Species of Greatest Conservation Need (SGCN), such as marsh, meadow, grassland (including, e.g., Regal Fritillary and Henslow's Sparrow), savanna, early-successional shrub-tree habitat, savanna, woodland and floodplain forest.

The extent and quality of this tract presents unique opportunities to manage large blocks of habitat, yet demands a degree of attention that stretches available resources. Highest management priorities for birds are to maintain the vast complexes of river terrace savanna-barrens, central grassland-shrub, and western barrens-woodland-marsh, and their interspersed meadows, marshes and oxbow sloughs; and to consolidate and join these areas with more open, gradual ecotones. The most important issues are setting back succession with fire, mechanical, herbicide and harvest methods; and especially fighting the onslaught of invasives such as garlic mustard, reed canary grass, buckthorn, Japanese hedge parsley, Japanese knotweed, crown vetch and spotted knapweed.

**IBA Units with highest priority for management: 1, 5, 6, 2, 3, 9, 4, 8, 7.**

1. **Current Condition:** part of Pine Island Savanna State Natural Area; mixed terrace barrens and overgrown swamp white oak savanna; much coarse, woody debris and shrub/sapling growth; silver maple forest; in the process of being heavily cut and burned to recreate swamp white oak savanna; a few small, old oxbow channels, both open and forested; northwest part of the unit is the tornado blowdown area.
   **Desired Future Condition:** open to semi-open mixed swamp white oak savanna and terrace barrens, and silver maple sloughs; understory varies from shrubby to open, with gradual ecotones and soft edges.
   **Justification:** this unit is already being managed toward savanna; this is an excellent opportunity to recreate a rare community at a scale large enough to provide for characteristic savanna birds; this, along with the adjacent Pine Island (Unit 4), is the best large-extent floodplain savanna restoration opportunity on the whole IBA, and one of the top opportunities in the state.
   **Recommendation:** continue savanna and barrens restoration using cutting and burning; control of woody and herbaceous invasives, particularly buckthorn and reed canary grass, is critical; leaving small clusters (~5) of dead or dying trees will improve habitat for Red-headed Woodpecker and other cavity nesters.
   **Bird Species Supported with Recommendation:**
   **Probable:** Field Sparrow; Blue-winged Warbler; Black-billed Cuckoo; Yellow-billed Cuckoo.
   **Possible:** Vesper Sparrow; Red-headed Woodpecker; Willow Flycatcher.

2. **Current Condition:** edgy aspen-dominated woods; black oak barrens, some overgrown; high quality open wetlands, including emergent marsh and sedge meadow; some silver maple; shrub

swamp; open-understoried aspen groves; one area of dry prairie and oldfield along Levee Road; small conifer plantations.

**Desired Future Condition:** semi-open landscape with gradual ecotones varying from high quality sedge meadow and emergent marsh to shrub swamp, oak barrens, and aspen groves and edges; maintain dry prairie and oldfield; remove conifer plantations and hedgerows; minimal invasion by exotics.

**Justification:** this unit is naturally fragmented among different community types, and is most conducive to open wetlands, savanna, and barrens (i.e., probably could not attain conditions favorable to Priority forest birds); existing wetlands are very high quality; birds will benefit from a more open landscape, especially considering that this unit is broadly connected to ongoing savanna restoration in Unit 1.

**Recommendation:** continue and expand efforts to open canopy with cutting and fire; high quality overgrown oak barrens (e.g., such as those on the former Van Wormer property) should receive light management (thinning and burning) and special care to avoid introducing exotics or creating ideal conditions for their invasion; maintain and increase openness of sedge meadows and marshes with fire; maintain aspen as an ephemeral component of landscape, ranging from young to over mature.

**Bird Species Supported with Recommendation:**

**Probable:** Sedge Wren; Field Sparrow; Blue-winged Warbler; Marsh Wren; Swamp Sparrow; Black-billed Cuckoo; Willow Flycatcher; Yellow-billed Cuckoo.

**Possible:** Red-headed Woodpecker; Veery.

3. **Current Condition:** floodplain forest dominated by silver maple and black oak with some aspen, much of it shrubby; open shrub carr; some upland shrub and upland oak forest; one small prairie seeding.

   **Desired Future Condition:** undetermined; **option A:** semi-open savanna woodlands with open wetlands connected to Unit 7; **option B:** floodplain and upland oak forest with shrub swamp, with potential for intensive management.

   **Justification: option A:** potential connection with savanna and woodland in Unit 7; some good open landscape birds currently present, and management would expand habitat for them; **option B:** isolated from all other units; logistically difficult to manage with fire; is unlikely to provide habitat for sustainable populations of forest interior birds, so more intensive forest management could be considered here.

   **Recommendation: option A:** open up into lowland and upland savanna with open wetland inclusions using harvest and fire; this option is more desirable if there is any chance that intervening private land could be acquired to connect this unit with Unit 7; **option B:** continue current management; will likely succeed to forest; consider more intensive forest management.

   **Bird Species Supported with Recommendation, option A:**

   **Probable:** Field Sparrow; Willow Flycatcher; Sedge Wren; Black-billed Cuckoo; Swamp Sparrow.

   **Possible:** Blue-winged Warbler; Red-headed Woodpecker.

   **Bird Species Supported with Recommendation, option B:**

   **Probable:** Wood Thrush; Veery; Swamp Sparrow.

   **Possible:** Yellow-billed Cuckoo.

4. **Current Condition:** part of Pine Island Savanna State Natural Area; high quality swamp white oak savanna mixed with black oak barrens and sand prairie; swales have floodplain species (silver maple, green ash); has been managed only with fire and not cutting, unlike the rest of the state natural area (Unit 1) and has considerably less invasion by exotics.
   **Desired Future Condition:** maintain swamp white oak savanna.
   **Justification:** this unit is already being managed toward savanna; this is an excellent opportunity to protect and manage a rare community at a scale large enough to provide for characteristic savanna birds; this, along with the mainland parcels (Unit 1), is the best large-extent floodplain savanna restoration opportunity on the whole IBA, and one of the top opportunities in the state.
   **Recommendation:** continue managing with fire; consider opening up with limited cutting; control exotics invading on the west end of the island.
   **Bird Species Supported with Recommendation:**
      **Probable:** Yellow-billed Cuckoo; Blue-winged Warbler; Wood Thrush.
      **Possible:** Field Sparrow; Black-billed Cuckoo; Red-headed Woodpecker.

5. **Current Condition:** dog training and trialing grounds; northwestern portion is overgrown black oak barrens and black oak/quaking aspen woods with gray dogwood, some black locust, and interspersed small oldfields (Poa, brome, reed canary grass, gray dogwood, dewberry); wooded tract in north-central area along Levee Road has aspen, black oak, and black locust with substantial understory of red raspberry and gray dogwood; eastern section (east of Blount Road) is mixed grassland (Poa, Carex, bluejoint, reed canary grass, common milkweed, goldenrod), shrub carr of willow, Spirea, and dogwood, and aspen stands with dogwood, Ilex, and sensitive fern; gray dogwood and dewberry are scattered throughout; remaining open areas are characterized by terrace-and-swale topography and consist of mixed open grassland (patches of native prairie, warm-season grass or mixed Poa/switch grass/brome, goldenrod, reed canary grass) sedge meadow, and small patches of marsh with some patches of shrub carr, scattered trees, and small tracts of open, shrubby woods (quaking aspen, black cherry, green ash, river birch).
   **Desired Future Condition:** dry to wet prairie and sedge meadow with scattered shrubs, saplings, and trees; woody cover is mostly towards the east, west, and south perimeters of the Unit; central area, along with Unit 6, supports ~80 pr of Henslow's Sparrows.
   **Justification:** along with Unit 6, this is the largest open landscape suitable for grassland birds within the entire IBA; more or less compatible with existing dog trialing and wildlife area goals and management; already supports good populations of grassland birds, including Henslow's Sparrow; birds using the shrubby wooded areas (e.g., Veery, Blue-winged Warbler) have better management opportunities elsewhere on the IBA.
   **Recommendation:** open up wooded areas in northwest and north-central portions with fire, cutting, and chemical treatment; north-central woodlot should be opened from the south to connect the areas of open grassland to the east and west; even if this woodlot cannot be converted to grassland, it should remain as much as possible in low shrubs and tree seedlings; area east and south of Blount Road should be managed for a more open condition, with no more than 25% woody cover; in the central grassland area, maintain 500 acres between this Unit and Unit 6 according to the Henslow's Sparrow guidelines and include a broad connection to Unit 6; follow

general woody cover guidelines for remainder of this area; woody cover should be scattered and clumped in distribution rather than linear; hedgerows and tree rows should be removed or interrupted; manage grasslands with fire and mowing, avoiding the period from May 15 to July 15.

**Bird Species Supported with Recommendation:**

**Probable:** Henslow's Sparrow; Sedge Wren; Field Sparrow; Grasshopper Sparrow; Dickcissel; Bobolink; Eastern Meadowlark; Blue-winged Teal; Willow Flycatcher.
**Possible:** Northern Bobwhite; Vesper Sparrow; Savannah Sparrow; Swamp Sparrow; Sandhill Crane; Black-billed Cuckoo; Red-headed Woodpecker (if snags, cavity trees are retained).

6. **Current Condition:** closed refuge area embedded in dog trialing grounds; open fields with some wetland scrapes; fields consist of cool-season grasses, sedges, and restored prairie (including early, weedy stage).
**Desired Future Condition:** native wet to mesic prairie, sedge meadow, and small marshes associated with wetland scrapes.
**Justification:** along with Unit 5, this is the largest open landscape suitable for grassland birds within the entire IBA; restoration already is ongoing; good grassland birds already present; very little woody invasion due to relatively recent cultivation, so it should be easier to keep it out.
**Recommendation:** continue maintaining native prairie with fire or mowing.
**Bird Species Supported with Recommendation:**

**Probable:** Henslow's Sparrow; Sedge Wren; Grasshopper Sparrow; Dickcissel; Bobolink; Eastern Meadowlark; Blue-winged Teal.
**Possible:** Northern Bobwhite; Savannah Sparrow; Swamp Sparrow; Marsh Wren; Sandhill Crane.

7. **Current Condition:** upland oak woods at west end, being converted to savanna and prairie; several houses along Tritz Road; floodplain forest adjacent to, and within oxbow of, the Baraboo River; small open fields, variously in hay, warm-season grass, reed canary grass, and sunflower, divided by hedgerows.
**Desired Future Condition:** mixture of savanna, prairie, and floodplain forest, with gradual transitions; the highway right-of-way is in native prairie, with no adjacent linear woody growth, connecting this Unit to Units 5 and 6; the floodplain forest occurs along the Baraboo River and at the east end of the Unit.
**Justification:** this Unit is peripheral, narrow, and separated by the Interstate from the rest of the wildlife area; maintaining floodplain forest may help fill in the forest corridor along the Baraboo River, and some tree planting already has occurred at the east end of the Unit; maintaining an open aspect, removing hedgerows, and restoring prairie along the Interstate will benefit the extensive grassland of Units 5 and 6.
**Recommendation:** continue opening the oak savanna; manage fields to maintain open aspect and control reed canary grass to the extent feasible; remove woody hedgerows, especially along Interstate; work with DOT to establish native grassland along Interstate right-of-way; plant fields in east end to swamp white oak forest or woodland.
**Bird Species Supported with Recommendation:**

**Probable:** Field Sparrow.
**Possible:** Willow Flycatcher; Black-billed Cuckoo; Red-headed Woodpecker (if snags and cavity trees retained); Wood Thrush.

8. **Current Condition:** Wisconsin River islands and adjacent floodplain forest north of Levee Road; floodplain forest is variously dominated by silver maple, black oak, and swamp white oak; some oak barrens on islands and terraces; open sandbars with patches of willow; mowed strip along levee.
   **Desired Future Condition:** islands remaining more-or-less as they are, influenced by forest succession and natural disturbance; largest strip of mainland floodplain forest is more open, with mixed savanna and barrens.
   **Justification:** islands are part of a dynamic system that is difficult and unnecessary to manage; they provide important habitat for migrating birds, particularly Sandhill Cranes; forest is too narrow to support meaningful numbers of Priority forest birds; increasing openness will benefit adjacent Units 5 and 6, and will provide habitat for Priority shrub/savanna species.
   **Recommendation:** minimize human disturbance on the islands; use cutting and burning to create savanna and barrens; control of woody and herbaceous invasives, particularly buckthorn and reed canary grass, is critical; leaving small clusters (~5) of dead or dying trees will improve habitat for Red-headed Woodpecker and other cavity nesters.
   **Bird Species Supported with Recommendation:**
   **Probable:** Field Sparrow; Blue-winged Warbler; Black-billed Cuckoo; Yellow-billed Cuckoo; Sandhill Crane (staging).
   **Possible:** Red-headed Woodpecker.

9. **Current Condition:** this large Unit is a complex mixture of floodplain forest, shrubby aspen woods, shrub carr, sedge meadow, shrubby oldfield, high-quality emergent marsh, one share-cropped field, and a shallow artificial pond; the far eastern edge is separated from the rest of the Unit by I-39.
   **Desired Future Condition:** generally more open throughout; west end of Unit is more open than the east and blends into the open grassland of Unit 5; the woody growth separating the emergent marshes in the western and central sections is replaced by scattered shrubs, open shrub carr, and sedge meadow, especially along the main north-south access road; the east half is a mixture of sedge meadow, shrub carr, and floodplain forest of various ages, including young aspen-shrub habitat.
   **Justification:** emergent marsh is high-quality and value to Priority marsh birds will increase by opening up the surrounding habitat; completely open condition will be difficult to maintain, although likelier in the western half of the Unit; the eastern half of this Unit may be the best opportunity within the IBA to manage for young aspen-shrub habitat.
   **Recommendation:** use cutting, burning, other mechanical and chemical treatment to substantially reduce woody cover, especially in the western half, and to set back succession in the eastern half; favor fire where reed canary grass invasion is likely; if Bald Eagle territory along access road is still active, follow the National Bald Eagle Management Guidelines (http://www.fws.gov/migratorybirds/CurrentBirdIssues/BaldEagle/NationalBaldEagleManageme

ntGuidelines.pdf) except thin canopy within the 330-foot no-cut buffer around the nest; far eastern section cut off by I-39 is lowest priority for management in this Unit.

**Bird Species Supported with Recommendation:**

**Probable:** Sedge Wren; Sandhill Crane (staging); Marsh Wren; Swamp Sparrow; Black-billed Cuckoo; Willow Flycatcher; Blue-winged Warbler; Veery.

**Possible:** Blue-winged Teal; Black Tern; Red-headed Woodpecker (if snags and cavity trees retained); Wood Thrush.

## Baraboo River Waterfowl Production Area

This 847-acre former muck farm has been managed since 2001 to restore native grassland and marsh. It provides one of the IBA's best and largest blocks of grassland (300 acres in Unit 2), suitable especially for Henslow's Sparrow and other species of thick grass. Its 230-acre impoundment (Unit 4) supports the largest marsh in the IBA, with special opportunities for management through water level manipulations. Its floodplain forest (Unit 1), though narrow and at the WPA's periphery, has important management potential as a corridor along the Baraboo River, and by contributing to the extensive forest of the adjacent Lower Baraboo River Floodplain Forest .

Of the current and predicted management issues on the WPA, invasion by reed canary grass is foremost, especially in restored grasslands and at some edges of the impoundment. Another is the question of how to adjust management as a result of lowering the level of the impoundment, which was recently required as protection against flooding of adjacent highway I-39. Expansion of the floodplain forest is recommended, by converting small, marginal areas of the Unit 2 grasslands that are heavily infested with reed canary grass and isolated by wooded oxbows, and perhaps by expanding the WPA boundary northward to include forest and open areas that could be reforested.

**IBA Units with highest priority for management: 2, 4, 5.**

1. **Current Condition:** floodplain forest along the Baraboo River, ranging from about 50 ft to ½ mi in width, and including the 22-acre Baraboo River Floodplain Forest State Natural Area; small oldfields at the border of the extensive Unit 2 grasslands.
   **Desired Future Condition:** buffer along the Baraboo River that expands habitat for forest species and creates a corridor for bird movement to and from the Baraboo River Floodplain Forest.
   **Justification:** some of the floodplain forest is in excellent condition but is currently too fragmented for Priority birds; this is a good opportunity to develop the corridor linking up with the Lower Baraboo River Floodplain Forest;
   **Recommendations:** expand the WPA boundary northward up to ½ mile north of the river; reed canary grass fields isolated from the rest of the grassland by wooded oxbows at north edge of Unit 2 grasslands should be converted to floodplain forest, as should open habitats north of the river if the WPA boundary expands in that direction; manage forest for mature to old-growth conditions, with soft edges along Unit 2 grasslands.
   **Bird Species Supported with Recommendations:**

**Probable:** Red-shouldered Hawk; Yellow-billed Cuckoo; Wood Thrush.
**Possible:** Cerulean Warbler; Veery; Blue-winged Warbler; Black-billed Cuckoo.

2. **Current Condition:** restored wet to mesic prairie, oldfield (including much reed canary grass), shrubby old field, sedge meadow, pockets of emergent marsh, tree/hedge rows, and wetland scrapes.
   **Desired Future Condition:** a continuous 300-acre block of native grassland with ephemeral shrub patches, scattered scrapes with native emergent and submergent marsh, and minor presence of invasive species; variations in soils, topography, hydrology and management history will support a variety of Priority grassland habitats, but mostly tall, thick vegetation suitable for Henslow's Sparrow and Sedge Wren; border with adjacent floodplain forest is gradual, and border with the large, adjacent, impounded marsh is a broad and dynamic ecotone.
   **Justification:** this Unit provides one of the best opportunities for extensive grassland in the IBA, with potential to receive restoration, enhancement and stewardship money and attention through the mission of the USFWS and its staff; dynamic ecotone with large marsh will encourage natural variety of wet-soil and emergent vegetation, and adaptability with natural and induced variations in water level.
   **Recommendations:** to provide adequate habitat for Henslow's Sparrow, follow management guidelines for that species, including thick, diverse grassland with substantial thatch, infrequent prescribed fire and control of woody growth and exotic invasives; control of reed canary grass is most critical, and may require extreme measures or repeated native plantings (see management guidelines); remove tree/hedge rows throughout, but some scattered trees/shrubs can be left; border with forest should be feathered or gradual (see guidelines).
   **Bird Species Supported with Recommendations:**
   **Probable:** Blue-winged Teal; Sedge Wren; Henslow's Sparrow; Eastern Meadowlark; Bobolink.
   **Possible:** Savannah Sparrow; Dickcissel; Willow Flycatcher.

3. **Current Condition:** woodland strip along Cascade Mountain Road, adjacent to extensive Unit 2 grasslands.
   **Desired Future Condition:** savanna or woodland with gradual ecotone into adjacent grassland.
   **Justification:** because this narrow strip of woods is on the edge of the WPA and borders Cascade Mt Rd and I-90/94, its value for Priority birds is minimal, although it may provide some habitat for Priority savanna birds and grassland species that prefer some woody growth; it also offers educational or visual opportunities for visitors to the WPA or interstate travelers.
   **Recommendations:** continue to use burning, tree harvest or other mechanical removal of trees and shrubs to open this unit to savanna or open oak woodland structure, and soften the edge with adjacent grasslands; develop interpretive materials to help visitors understand its value and its management.
   **Bird Species Supported with Recommendations:**
   **Probable:** Red-headed Woodpecker (if snags are retained).
   **Possible:** Field Sparrow; Black-billed Cuckoo.

4. **Current Condition:** 230-acre impoundment with levees along the northeast and eastern sides, and a water control structure that includes a barrier to rough fish passage; emergent marsh, submergent marsh, shrub carr, standing dead trees and shrubs, high-tension power line; gradual transition in soil moisture and vegetation to grasslands of Unit 1, and mixed marsh and grassland of Unit 5; beyond levees to north and east are Baraboo River and I-39, respectively; impoundment level will probably be lowered due to concerns with flooding of adjacent I-39.
   **Desired Future Condition:** water cover <3 feet deep over at least 150 acres of the initial 230-acre impoundment, with an average annual 1:1 ratio of submergent to emergent marsh; vegetation is native (e.g., burreed, river bulrush, native cattail, sedges), with only minor invasion by exotic submergents (e.g., curly-leaved pondweed, Eurasian milfoil), emergents (especially narrow-leaved cattail and phragmites) and wet-soil species (especially reed canary grass); rough fish are controlled and only a minor problem in most years; current dead standing trees and shrubs will gradually disappear; some shrub carr at edges of impoundment; gradual ecotones to adjacent grasslands and forest.
   **Justification:** this Unit provides the single greatest opportunity for a mixture of submergent and emergent marsh and is capable of being highly controlled by USFWS staff for this purpose; value is increased by broad, gradual ecotone with extensive grasslands; many Priority, rare and characteristic marsh birds already breed here.
   **Recommendations:** continue to manipulate water levels, including periodic drawdowns, and to control rough fish without poisons; monitor exotic plants and control when they initially invade; allow some (~20-50 acres) shrub carr; control woody invasion and reed canary grass with cutting, fire, inundation and herbicide.
   **Bird Species Supported with Recommendations:**
      **Probable:** Blue-winged Teal; Black Tern; Marsh Wren; Swamp Sparrow; Willow Flycatcher; although not Priority birds for the LPI-IBA, other important birds include Least Bittern, Sora, Ruddy Duck, Common Moorhen, American Coot, Green Heron, Osprey and American Woodcock.
      **Possible:** although not Priority birds for the LPI-IBA, other important birds include American Bittern, King Rail, and Ring-necked Duck.

5. **Current Condition:** small wetland scrapes, prairie plantings, open to shrubby oldfield, shrub carr and small groves of trees a parking area with low overlook and informational sign.
   **Desired Future Condition:** native prairie with scattered wetland scrapes and ephemeral patches of shrubs, and broad gradual connection with Unit 4 wetland; a showpiece for the overlook and interstate travelers.
   **Justification:** because of its size, this Unit has little value for grassland or marsh birds, except as it adds to adjacent open grassland and wetland habitats in Unit 4; its value as a demonstration site is supported by the existing parking area, view, access from Cascade Mt. Rd. and ready viewing from passing Interstate motorists.
   **Recommendations:** use prescribed fire, mechanical removal and herbicide treatment as needed to benefit native plant communities in both uplands (prairie, savanna groves) and wetlands (emergent and submergent marsh, sedge meadow, shrub carr), and encourage gradual ecotone with large Unit 4 marsh.
   **Bird Species Supported with Recommendations:**

**Probable:** Willow Flycatcher; Marsh Wren; Swamp Sparrow.
**Possible:** Sedge Wren; Field Sparrow; Blue-winged Teal; Swamp Sparrow; Red-headed Woodpecker.

## Lower Baraboo River Floodplain Forest

This roughly 5,000 acre tract includes a forested island owned by State of Wisconsin and the 22-acre Baraboo River Floodplain Forest State Natural Area owned by USFWS as part of the BRWPA property, but >95% of the tract consists of private properties, generally ranging in size from 20-300 acres. There are also many houses and cabins on small plots in Blackhawk Park near Long Lake. About half of the tract is in floodplain forest, and half in active and abandoned agriculture or exurban development. Some of the best floodplain forest has been surveyed by canoe, but standardized comparisons with other tracts await a transect point count survey planned for 2010 and 2011. Minimal contact has been made with landowners, through DNR forester Jim Bernett, but more contact and initial ground surveys will begin on the largest properties in spring 2010.

The LBRFF is tentatively divided into 3 areas, based on current land use and the sort of landowner-manager relationship that might characterize each, rather than on desired future condition, which cannot be determined until surveys are conducted and evaluated, and landowners and managers are consulted. However, almost certainly the goal for most of this area will be to accommodate Priority and SGCN forest birds by managing existing forests sustainably, and reforesting at least some open areas as opportunities arise in order to expand and consolidate forest blocks. It is uncertain whether grassland and shrub communities should be encouraged in parts of the tract.

Because of the incomplete nature of inventory and evaluation of this tract, the following description is based on the general 'areas' of focus rather than on yet undesignated management units.

**IBA areas with highest priority for management: 1, 3, 2,**

1. **Current Condition:** this is the mostly forested floodplain in the delta near the confluence with the Wisconsin River, extending north as far as the NE corner of the PIWA, and west more-or-less up the Baraboo as far as the Hwy 33 crossing; most of the forest is subject to flooding and is dominated by silver maple, but some areas have substantial swamp white oak, black oak, green ash or river birch, and some large cottonwoods and willows are present; sloughs are scattered in the wetter parts—some small and isolated and others (e.g., Long Lake and those adjacent to the Baraboo River) large and interconnected; there are a few shrub carrs along sloughs or isolated among the forest; a narrow, forest bottleneck exists along the river below Hwy U; the floodplain forest breeding bird community appears to be significant: among 1,382 individual birds of 67 species counted during two canoe surveys of this area (including a little of Area 2) in June 2009 were 7 Hooded Merganser, 7 Red-shouldered Hawk, 7 Yellow-billed Cuckoo, 9 Brown Creeper, 3 Wood Thrush, 24 Prothonotary Warbler, 2 Field Sparrow and 1 Swamp Sparrow.

**Desired Future Condition:** mature floodplain forest, including actively, sustainably managed and protected areas, including open and canopied sloughs; minimal invasion by reed canary grass, buckthorn and other invasives.
**Justification:** this forest already exists, in variable but largely healthy condition, and it already supports fair populations of floodplain forest interior birds.
**Recommendations:** work with landowners, especially through DNR and consulting foresters, to manage forests sustainably and with an emphasis on large trees and avoiding conditions that will encourage invasion by reed canary grass and buckthorn and other invasives; reforest active or abandoned agricultural fields as opportunities arise; further evaluate the condition and management issues with this forest.
**Bird Species Supported with Recommendations:**

**Probable:** Red-shouldered Hawk, Yellow-billed Cuckoo, Wood Thrush, Prothonotary Warbler.

**Possible:** Red-headed Woodpecker, Cerulean Warbler; Veery; Blue-winged Warbler; Black-billed Cuckoo.

2. **Current Condition:** Blackhawk Park and adjacent exurban development surrounded by floodplain forest of Area 1; the houses range from small, 3-room vacation shacks nestled within the floodplain forest (mostly along Long Lake and the Wisconsin River) to 2-story year-round suburban-like homes with lawns and ornamental shrubs and trees; there are safety and economic issues with houses in this floodplain area, especially regarding the protection that is or is not afforded by the Portage Levee, which borders the Wisconsin River in the northern section of the tract; this poorly engineered levee may not be maintained in the future, affording opportunities for the forest to reclaim some of the developed land.
   **Desired Future Condition:** uncertain, pending discourse with residents and governmental decisions on the future of the levee and adjacent floodplain developments; at the least, desired condition includes no further building in this floodplain; and, where houses remain, an increase in canopy cover and less suburban character characterized by lawns and ornamentals.
   **Justification:** desired future condition is difficult to determine until decisions are made, which balance homeowners' rights and the economic and environmental consequences of development in this floodplain, and standard bird surveys are conducted; the recommendation to maintain and improve forest cover here is suggested by the fact that the surrounding floodplain forest already contains good forest bird populations, and that some species (including Red-shouldered Hawk) occur within the developed area where houses and canopy openings are small.
   **Recommendations:** conduct transect point count survey; provide information and other input to discussions about future options for this tract; consider working with residents on improving habitat for Priority and other SGCN birds on their properties.
   **Bird Species Supported with Recommendations:**

   **Probable:** Red-shouldered Hawk; Yellow-billed Cuckoo; Prothonotary Warbler.

   **Possible:** Red-headed Woodpecker; Cerulean Warbler; Wood Thrush; Veery; Blue-winged Warbler; Black-billed Cuckoo.

3. **Current Condition:** mixed woodlots of unknown quality, cropland, pasture, set-aside grassland, and oldfields in the northwest section and southern rim of the tract, with scattered houses and farmsteads; almost no bird data available.
   **Desired Future Condition:** uncertain, pending standard surveys, communication with landowners, and decisions related to future of the Portage Levee and floodplain management; most likely at least some reforestation and consolidation of forested tracts, especially adjacent to Area 1; however, some open sections may be worth managing as grasslands or shrub habitat; there is potential for wetland restorations.
   **Justification:** desired condition is hard to determine without survey data here and in adjacent forested tracts; consolidating forest tracts is important to improve the significant but fragmented habitat for floodplain forest interior birds in Area 1; some areas may be valuable as grassland or grass-shrub habitat if adjacent to existing open habitats at PIWA and BRWPA, but effort should not proceed far if desired condition may eventually be determined to be forest; restoring wetland hydrology will be valuable regardless of what habitat an individual property may ultimately become.
   **Recommendations:** conduct transect point count survey; work with landowners, foresters, NRCS and private land managers as opportunities arise, to reforest sites that are near large forest areas, and to effect wetland restorations such as making shallow wetland scrapes, removing tile and filling ditches; this area is ranked second in management priority within this tract, but may be first, once desired future condition is determined.
   **Bird Species Supported with Recommendations:**
   **Probable:** dependent on future condition.
   **Possible:** dependent on future condition.

## INFORMATION NEEDS

1. Repeat the 2005 transect point-count survey of the entire IBA, with the addition of the Lower Baraboo River Floodplain Forest, and a well-planned and executed use of volunteers for "breeding bird atlas-style" observations.

2. Improve monitoring for secretive, nocturnal and rare species, using methods suitable for the IBA and which fit with regional or national survey programs.

   a. A nocturnal roadside monitoring survey similar to that used on the Lower Wisconsin State Riverway.

   b. A special survey for American Woodcock, based on federal survey protocol.

   c. Marshbird surveys based on the statewide Marshbird Survey playback protocol.

3. Develop a habitat monitoring system that can be used in conjunction with bird survey data to gauge the effects of habitat management, succession and natural events on breeding bird populations. This may also involve additional bird monitoring, or better linking monitoring data to population goals. It should be sensitive to significant habitat changes that may result not only

from management efforts on the IBA properties, but also to broader-scale changes that might result from, e.g., global climate change, the removal or breeching of the Portage Levee, the effects of new disease outbreaks such as Emerald Ash Borer, and the long-term effects of exotic invasive plants.

4. Initiate an integrated program for public outreach that: encourages and accommodates birding; educates the public on the IBA, its goals, the roles of management in maintaining healthy bird populations, and how this management integrates with other property and community goals on the IBA; encourages visitors to submit bird records in a way useful to tracking populations and bird use of the IBA.