

The Importance of Federal and State Reforestation Sites in the Lower Mississippi River Alluvial Valley to Wintering Migratory Birds

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INTRODUCTION

In both the Departments of Interior and Agriculture, major efforts have been initiated in the Lower Mississippi River Alluvial Valley (LMAV, Fig. 1) to restore/enhance wetlands, improve hydrology and reestablish bottomland hardwood forests. These programs were initiated because most palustrine forested wetlands have been either lost or altered and the rate of forested wetland loss continues to increase in the region (Hefner et al. 1994). These restoration initiatives have many goals, one of which is the management of habitats for the benefit of migratory birds. While some management techniques are currently available for land managers to pursue these objectives, to date, they have made few evaluations of the success of these programs. Also, evaluations of the use of these lands by migratory birds have not been made, nor have the management methods employed there been evaluated from the standpoint of bird use.

One group of migratory birds that frequents the LMAV, birds preferring early-successional habitats (also referred to as grassland and scrub-successional birds), are of special interest to wildlife managers for two reasons. First, as a whole, this group of birds has experienced widespread population declines and range reductions (Sauer et al. 1999). Second, the habitats preferred by these birds require perturbations at regular intervals to set succession back to an earlier stage (Kremetz and Christie 1999). Thus, knowledge of management tools for private lands managed by federal agencies, as well as public-owned lands, is required.

Of the many bird species of early-successional habitats, there occur several migratory species, for example, Northern Harrier (*Circus cyaneus*), Sedge Wren (*Cistothorus platensis*), and Song Sparrow (*Melospiza melodia*). One species in particular, the American Woodcock (*Scolopax minor*) has been a focus of much research and management over the past 30 years (Straw et al. 1994). These efforts have increased especially since the U. S. Fish and Wildlife Service (FWS), U. S. Forest Service and the Ruffed Grouse Society signed the American Woodcock Plan in 1990. These groups signed this Memorandum of Understanding because, despite all management efforts attempted to date, woodcock populations have and continue to experience long-term population declines (Bruggink 1998). Many woodcock experts agree that habitat loss and alteration are the most likely causes of these population declines (Straw et al. 1994). On the breeding grounds, woodcock respond favorably to habitat management (Dwyer et al. 1988). However, habitat management on the wintering grounds is little researched and not well

transect line straight while the second person recorded data. Birds were counted when flushed from between observers and particular care was taken not to double-count individuals. Observers recorded birds up to 70 m away on either side opposite the centerline. This method gave intense coverage of the birds immediately in front of the observers and insured that species visible within the entire 150 m wide strip were recorded. For each site, transects were placed across habitats at 150 m intervals and no closer than 75 m to the site's edge. All transects within units of each site were placed parallel to each other and were positioned so as to give maximize coverage to all microhabitats within the site. Observers also recorded the birds' approximate (± 5 m) distance from the transect centerline. The program DISTANCE (Thomas et al. 1998) will be used to estimate wintering bird densities. Dependent on the resulting data, estimates of density will be attempted by species but most likely the data will have to be lumped by higher order categories, e.g., guild, family, order.

Crepuscular flight surveys (Glasgow 1958) were used to survey bird species (such as American Woodcock and Short-eared Owl) that become active during the crepuscular periods of the day. These surveys were conducted during periods of suitable weather (air temperature $>0^{\circ}$ C, no precipitation, or within two days of a full moon [Berdeen and Krementz 1998]). From sunset to approximately 40 min after sunset, observers were positioned along a field edge, >100 m apart, close to areas of forest where they counted American Woodcock flying into the fields and Short-eared Owls hunting over the fields. Most observations that were recorded were aural. A total of 19 Short-eared Owls and 21 American Woodcock were recorded using this method.

A total of 9,350 individual birds belonging to 53 species were observed in early-successional habitats or were in some way associated with these sites (e.g., observed aerially hunting). Table 2 lists the species recorded during the 2000 winter field season, gives numbers of individuals observed (frequency), and the relative percentage for each species compared to the total. Several birds were only identified to genus or order and are indicated so in the table. In many instances it was difficult to distinguish between Song (*Melospiza melodia*) and Swamp (*Melospiza georgiana*) sparrows because of their similarity of appearance in flight and also their similar behavior. A separate category, simply called Song/Swamp, contains 364 observations where the observer could not identify the birds to species.

The single most numerous bird species was Swamp Sparrow with 1955 individuals identified. Swamp Sparrows outnumbered the third most numerous bird, Song Sparrow (1024), almost 2:1. Red-winged Blackbirds (*Agelaius phoeniceus*) were the second most numerous species but because many of the individuals that were recorded were in flight over the sites, this species can't be accurately classified as being associated with the study sites. Future work will separate the number of Red-winged Blackbirds that were recorded as occurring on-site versus flyovers.

Several species that were recorded only once or twice in the study sites include birds that typically occur in forest or edge habitats. These species include Tufted Titmouse (*Baeolophus bicolor*), Carolina Wren (*Thryothorus ludovicianus*), and Northern Cardinal (*Cardinalis cardinalis*). A number of the study sites were adjacent to forest blocks and were likely the source for detection of forest bird species. Several species that are actually rare in their occurrence in the LMV include Palm Warbler (*Dendroica palmarum*), Bewick's Wren (*Thryomanes bewickii*), and Sandhill Crane (*Grus canadensis*), which were observed in flight

Dryness also characterized the winter season, with 1999-2000 ranked as the 16th driest on record. Long-term dryness intensified in the northern Gulf states with Louisiana reporting its driest winter on record and Mississippi its third driest (National Drought Mitigation Center 2000). By the end of the study season, the LMAV was experiencing first stage and severe drought conditions (Fig. 4).

This combination of warmth and drought kept many of the sites dry that are typically inundated with water at this time of year. It is unknown what, if any, affect this protracted drought had on the avian communities of the LMAV. Future field seasons may help to reveal how weather affects bird populations and communities in early-successional habitats.

FUTURE WORK

Avian surveys and habitat data collection will continue through the winter 2001 and 2002 seasons. We anticipate that each of the remaining two field seasons will begin near the first of the year, possibly earlier, and continue through February. All sites surveyed in 2000 will be surveyed again in following years with the addition of more sites in Arkansas, and possibly Louisiana, so as to provide better landscape-scale coverage of the LMAV. We will continue to incorporate any additional sites that have received vegetation management or will be managed. We are contacting foresters in Arkansas, Mississippi, and Louisiana to locate such sites.

Four observers (one graduate assistant and three field assistants) were used during the 2000 field season. In order to incorporate more sites into the study in the next two years and to include more replicate surveys to detect intra-seasonal variation in bird communities with a site, more field assistants will be required. Should adequate funding be secured, five field assistants will be necessary to better survey the region. The addition of two more persons will allow for a total of three two-person field crews, one in each state, which should allow for more thorough coverage of the areas.

Housing for field crews during the first season varied between motels and bunkhouses at state owned wildlife management areas and an office at a National Wildlife Refuge. The use of state properties owned by the Louisiana Department of Wildlife and Fisheries is greatly appreciated and helped reduce project costs during the first field season. To further help reduce housing costs, it will be necessary to make similar arrangements, if possible, with the Arkansas Game and Fish Commission and the Mississippi Department of Wildlife, Fisheries and Parks. Local housing near study sites will aid greatly in reducing travel time to some of the more remote study sites. During the 2000 field season, travel time to the first site of the day was often in excess of an hour. Driving great distances some days (>160 km) was not uncommon. To reduce travel time and increase time spent doing field work it will be important to have as many local housing options available in the upcoming two field seasons.

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Table 2. Bird species encountered in line transect sampling of early-successional tracts throughout the Lower Mississippi River Alluvial Valley in Arkansas, Louisiana and Mississippi (14 January – 28 February 2000).

Species	Frequency	Percent	Species	Frequency	Percent
Great Blue Heron (<i>Ardea herodias</i>)	1	0.01	Marsh Wren (<i>Cistothorus palustris</i>)	4	0.06
Black Vulture (<i>Coragyps atratus</i>)	(Flyover)		Ruby-crowned Kinglet (<i>Regulus calendula</i>)	1	0.01
Turkey Vulture (<i>Cathartes aura</i>)	(Flyover)		Northern Mockingbird (<i>Mimus polyglottos</i>)	7	0.10
Gadwall (<i>Anas strepera</i>)	13	0.19	European Starling (<i>Sturnus vulgaris</i>)	7	0.10
Mallard (<i>Anas platyrhynchos</i>)	92	1.32	American Pipit (<i>Anthus rubescens</i>)	17	0.24
Northern Harrier (<i>Circus cyaneus</i>)	48	0.69	Palm Warbler (<i>Dendroica palmarum</i>)	1	0.01
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	1	0.01	Yellow-rumped Warbler (<i>Dendroica coronata</i>)	2	0.03
Cooper's Hawk (<i>Accipiter cooperii</i>)	1	0.01	Common Yellowthroat (<i>Geothlypis trichas</i>)	2	0.03
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	17	0.24	Chipping Sparrow (<i>Spizella passerina</i>)	1	0.01
Sandhill Crane (<i>Grus canadensis</i>)	(Flyover)		Field Sparrow (<i>Spizella pusilla</i>)	17	0.24
Killdeer (<i>Charadrius vociferus</i>)	22	0.32	Vesper Sparrow (<i>Poocetes gramineus</i>)	1	0.01
Common Snipe (<i>Gallinago gallinago</i>)	36	0.52	Savannah Sparrow (<i>Passerculus sandwichensis</i>)	539	7.74
American Woodcock (<i>Scolopax minor</i>)	22 ^a	0.30	Savannah/Le Conte's Sparrow	7	0.10
Mourning Dove (<i>Zenaida macroura</i>)	43	0.62	Le Conte's Sparrow (<i>Ammodramus leconteii</i>)	77	1.11
Barn Owl (<i>Tyto alba</i>)	1	0.01	<i>Ammodramus</i> sp.	11	0.16
Short-eared Owl (<i>Asio flammeus</i>)	49 ^b	0.70	Fox Sparrow (<i>Passerella iliaca</i>)	21	0.30
Red-bellied Woodpecker (<i>Melanerpes carolinus</i>)	1	0.01	Song Sparrow (<i>Melospiza melodia</i>)	1024	14.7
Downy Woodpecker (<i>Picoides pubescens</i>)	1	0.01	Song/Swamp Sparrow	364	5.23
Northern Flicker (<i>Colaptes auratus</i>)	5	0.07	Lincoln's Sparrow (<i>Melospiza lincolnii</i>)	1	0.01
Eastern Phoebe (<i>Sayornis phoebe</i>)	4	0.06	Swamp Sparrow (<i>Melospiza georgiana</i>)	1955	28.07
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	18	0.26	White-throated Sparrow (<i>Zonotrichia albicollis</i>)	30	0.43
American Crow (<i>Corvus brachyrhynchos</i>)	(Flyover)		White-crowned Sparrow (<i>Zonotrichia leucophrys</i>)	4	0.06
Horned Lark (<i>Eremophila alpestris</i>)	1	0.01	Sparrow sp.	407	5.84
Purple Martin (<i>Progne subis</i>)	(Flyover)		Northern Cardinal (<i>Cardinalis cardinalis</i>)	5	0.07
Carolina Chickadee (<i>Poecile carolinensis</i>)	9	0.13	Red-winged Blackbird ^c (<i>Agelaius phoeniceus</i>)	1295	18.59
Tufted Titmouse (<i>Baeolophus bicolor</i>)	1	0.01	Eastern Meadowlark (<i>Sturnella magna</i>)	492	7.06
Carolina Wren (<i>Thryothorus ludovicianus</i>)	3	0.04	Rusty Blackbird (<i>Euphagus carolinus</i>)	22	0.32
Bewick's Wren (<i>Thryomanes bewickii</i>)	1	0.01	Common Grackle (<i>Quiscalus quiscula</i>)	105	1.51
Sedge Wren (<i>Cistothorus platensis</i>)	166	2.38	Blackbird sp.	2	0.03

^a 21 counted during crepuscular flight surveys.

^b 19 counted during crepuscular flight surveys.

^c Observed in habitat and as flyovers.

Figure 2. Location of early-successional habitat study sites for 2000 field season. Numbers correspond to site names in Table 1.

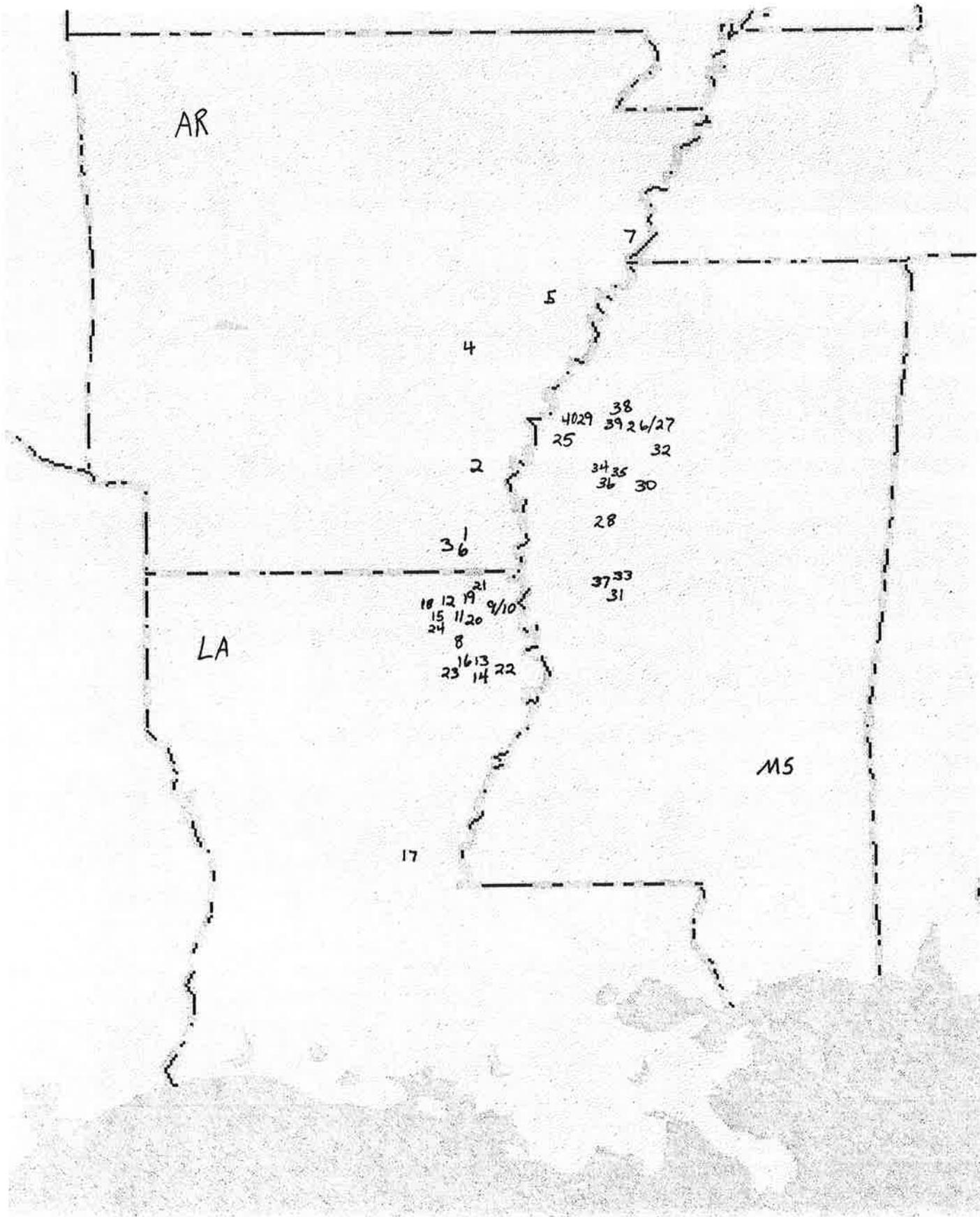


Figure 4. National summary map showing extent and severity of drought within the United States (National Drought Mitigation Center 2000).

