

Gaining Ground for Wildlife in The Delta

Forest is Making a Comeback

Environmental disasters, ecosystems in peril, and other conservation challenges are in the news all too often these days. And no doubt there are very real conservation problems and challenges facing us today more than ever. However, there is a good news story in one very important region of the continent - the Lower Mississippi River Valley. This enormous river floodplain, dubbed by locals as simply “The Delta”, stretches from the confluence of the Ohio and Mississippi Rivers at Cairo, Illinois, to the Gulf of Mexico – a distance of 500 miles. At its widest point, a traveler going west to east remains in The Delta for 120 miles (roughly Little Rock to just south of Memphis)! In all, it encompasses 22 million acres, and some of the richest alluvial soil on the planet.

THE WAY IT WAS

What you would see today in a drive across the valley is a landscape dominated by wide open fields of row crop agriculture; soybeans, cotton, corn, rice. The Delta’s rich alluvial soils have supported large-scale agricultural production since early European settlers discovered them. As an example, at least 65% of the rice produced in the U.S. is grown in The Delta. And here is where our story requires reaching back in time a bit, because the valley wasn’t always this way. Before European settlement the Lower Mississippi River Valley was the largest and most productive forested wetland ecosystem in North America. The complex, yet subtle, topography of the floodplain was a mosaic of ridges, swales, meander belts and backswamps that supported a diverse and ecologically rich forested wetland community. To grow crops, however, the trees had to go, and not only that, but taming the floodwaters which came with great force and frequency became a high priority for local, state, and federal interests. So by the 1950s, as a result of drainage projects, levees, and deforestation only the wettest, most flood-prone portions of the floodplain remained in forest – about 9 million acres. And as commodity prices increased over time, so did motivation to clear significant amounts of these wet, poorly-drained sites such that by 1992 less than 6.5 million acres of forest remained. And as you might assume, numbers of forest-dwelling creatures such as black bears, panthers, mallards, and numerous forest-nesting birds dwindled as a result. But here’s where the story takes a surprising turn!



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by Keith McKnight, Coordinator
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AN EARLY MODEL FOR SUCCESS

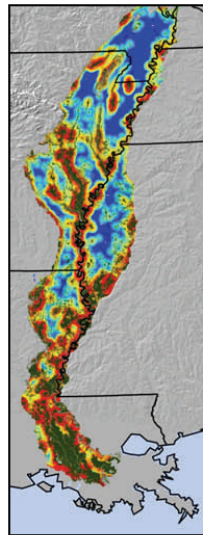
Agronomists, wildlife conservationists, and economists alike recognized the ultimate folly in clearing trees on exceptionally flood-prone ground to grow crops during the very driest times, only to suffer crop failure from too much water during the more frequent years of normal or wet conditions. Costs to the farmer, local community, tax payer, and ecological integrity of the system were just too high to ignore. Wildlife conservation partners began in the late 1980s to rally around the concept of 'joint ventures' focused on habitat conservation for the benefit of continental waterfowl populations, in response to the newly formulated 1986 North American Waterfowl Management Plan (NAWMP). NAWMP set population objectives for the continent's waterfowl, to be translated into habitat objectives and action by regional partnerships (Joint Ventures). As one of the most important wintering grounds for waterfowl, the Lower Mississippi River Valley was among the very first regions in North America to form one of these partnerships – the Lower Mississippi Valley Joint Venture. Conservation partners in portions of Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana quickly went to work identifying the highest priority actions and locations within The Delta for wetland conservation in support of wintering waterfowl needs, and getting that work done! The legacy of this early work can be seen on just about every state wildlife management area, USFWS Refuge, National Forest, and on numerous private land tracts across The Delta. Shallow water areas managed to produce abundant natural seeds ('moist soil units'), low berms with water control structures that retain water on agricultural fields, and various other habitat projects continue to provide feeding and resting habitat for non-breeding waterfowl, and habitat for a diversity of other wildlife.

BROADER APPLICATION OF THE SUCCESSFUL MODEL

With the partnership's firmly established experience and success in addressing waterfowl conservation planning and delivery, the LMVJV was ready to expand its scope to include habitat conservation for all migratory birds within its geography. The North American Bird Conservation Initiative (NABCI) had laid groundwork in 2000 for "all-bird" conservation. NABCI's "Vision of American Bird Conservation" encouraged the full spectrum of bird conservation through regionally based, biologically driven, landscape oriented partnerships, and the LMVJV was well positioned to fulfill that vision, and formally took on the responsibility to coordinate conservation for migratory birds – of all kinds – in 2001. The highest priority task under this newly-adopted responsibility was to better understand the status and desired future condition of forest habitat in The Delta – with particular attention on needs of declining species that require large blocks of mature forest. The Partners In Flight Bird Conservation Plan for the Mississippi Alluvial Valley (published in 1999) detailed landbird priorities and biological needs.

The LMVJV partnership responded by assessing the amount and distribution of forest within the Lower Mississippi River Valley, and discovered that a mere 6.45 million acres of forest remained in 1992, with much of that in small, scattered patches providing little benefit to species of concern such as Swainson's Warbler, Hooded Warbler, and Swallow-tailed Kite. What followed was a scientific model that helped decision-makers prioritize tracts for reforestation in a way that would more quickly and efficiently restore forest blocks large enough to provide quality forest-interior habitat. Such landscape level planning allowed public land management agencies (such as the U.S. Fish & Wildlife Service, and state wildlife agencies) and non-governmental partners (such as The Nature Conservancy, The Conservation Fund, and Ducks Unlimited) to more effectively target acquisition, protection, and reforestation efforts to realize optimum benefits to priority bird species.

Coordinated + Strategic = Efficient Reforestation



Partners have added strategically to the forest habitat base (green in the map at left) in The Delta with the aid of the LMVJV's Forest Breeding Bird Decision Support Model, developed by scientists with the U.S. Geological Survey, U.S. Fish & Wildlife Service, and LMVJV Support Office. The model basically prioritizes unforested areas based on the probability that reforestation there will ultimately contribute to building larger forest blocks – forest core. The highest priority sites are depicted in warmer colors (orange to red), whereas the lowest priorities show up as cool (light blue to blue) in the map. By incorporating these priorities into acquisition and restoration decisions, partners have actively ensured that a large percentage of the reforestation accomplished within the Lower Mississippi River Valley since 1992 contributes substantially to forest breeding bird priorities.

WETLANDS RESERVE PROGRAM

A pivotal piece of the restoration puzzle was gained through passage of the 1990 Farm Bill, which saw creation of the Wetlands Reserve Program (WRP), designed to retire poorly-drained, flood-prone, poorly-producing agricultural lands on wetland soils, and restore at least some of their natural wetland characteristics. This was a superb fit for much of The Delta's cleared bottomland. So with a blueprint for optimal placement of forest restoration in place and a robust partnership of private, state, and federal partners committed to (and already) using it, coupled with an unprecedented funding program focused on wetland restoration, a recipe for conservation success was written! For over two decades conservation partners have worked together throughout The Delta to bring numerous funding streams (in addition to WRP) to bear on targeted reforestation, as well as protection of existing forested wetlands. The result of this significant regional collaboration and cooperation, grounded heavily within the Joint Venture partnership approach, has produced substantial habitat gains for priority bird species throughout The Delta.

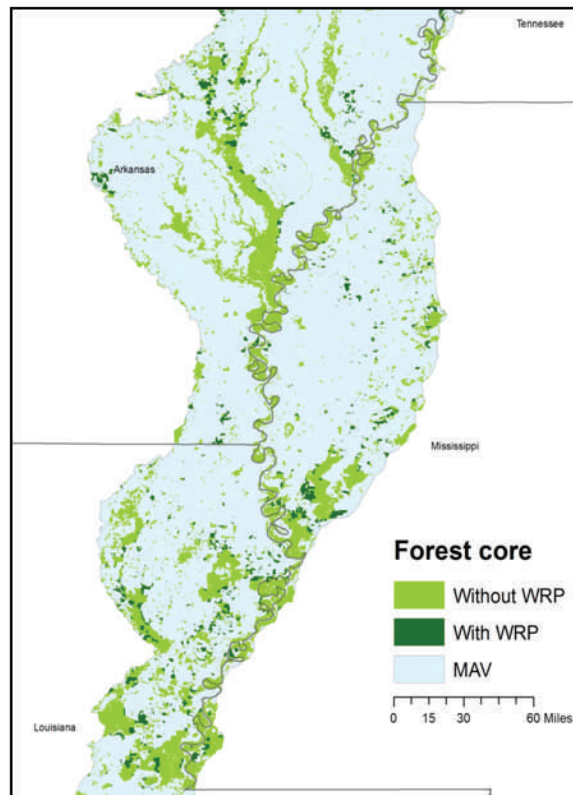
Protecting Forest with Easements

Net gain in forested habitat within the Lower Mississippi River Valley is the result not only of reforestation, but also of maintaining the integrity of existing forest tracts. Public lands are readily identified in this conservation role, but conservation easements on private lands are equally important. A great example of this can be seen at Davis Island in Warren County, Mississippi. Here, Ducks Unlimited holds a 6,090-ac conservation easement in the heart of a large forested block. Incidentally, this site also has historical significance, as the home of Jefferson Davis, President of the Confederacy.

Photo at right shows remains of the old Davis home.



WRP & Forest Core



The Wetlands Reserve Program has been responsible for reforestation of over 700,000 acres within The Delta. What's more, most of this reforestation has been strategically placed to help build forest "core". Composed of forest tracts with a 250-meter buffer against surrounding unsuitable habitats, forest core is the basic building block of priority bird habitat in the LMRV. Since its establishment, WRP reforestation has helped build just over 500,000 acres of forest core in the LMRV, increasing available habitat for priority bird species by 10%!



TAKING STOCK AFTER 20 YEARS

So, what is the net result of all that work? A forest assessment by the LMJV using recent satellite imagery reveals 7.45 million acres of hardwood forest within The Delta. That's a net gain of 1 million acres since 1992! As previously described, achieving this milestone was not the result of one or even a few organizations or agencies – it is the result of effective partnership. From conservation easements protecting large swaths of mature forest, to reforestation on private lands, to conversion of agricultural fields into forest on state and federal lands, to scientists identifying species needs and translating them into practical priorities for action, this achievement is shared by many.

However, the job certainly is not complete. For one thing, these additional forest tracts are decades away from the mature condition required by many wildlife species they are intended to benefit. We know these tracts can provide optimal habitat conditions for wildlife (e.g., structure and composition) through active, careful management. LMJV partners are actively working to provide and apply basic principles of forest and wildlife management to assist landowners (public and private) in managing their forest habitat to produce desired wildlife conditions and merchantable timber. We're not done yet, but progress to date is encouraging. If the last 20 years is any indication, the next 20 will be something to watch!



Reforestation on Historic Ground - Tensas River NWR

Tensas River National Wildlife Refuge (TRNWR) in northwest Louisiana encompasses ground that once boasted one of the last known populations of ivory-billed woodpeckers, and where James Tanner wrote his seminal book on this bird. Although the ivory-bill disappeared with the old-growth trees that were logged out by the mid 1940s, the Refuge and its partners are restoring this land to its former natural glory.

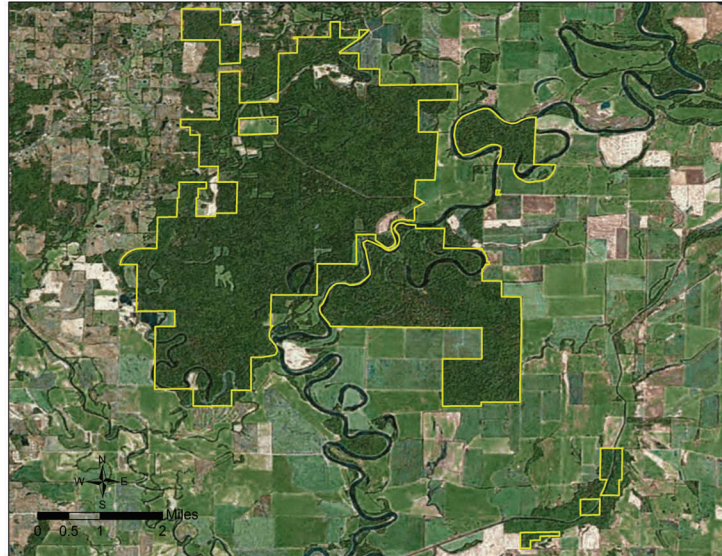
TRNWR and Trust for Public Land (TPL) entered into a partnership in 1999 where TPL would acquire 11,000 acres of agricultural ground from Chicago Mill and Timber Company, reforest it, and then allow the FWS to acquire it. This extraordinary partnership provided the connecting piece of land between the northern and southern portion of TRNWR. In 2015, the final parcel of the 11,000-acre partnership was acquired by the U.S. Fish and Wildlife Service (FWS). Before FWS acquired this last 1,171-acre piece of historic Chicago Mill property, TPL utilized the Wetland Reserve Program to restore 700 acres of bottomland hardwood forest with more than 17 species of trees, and 341 acres of moist soil habitat. Management of this property will focus on wildlife needs and the benefits of a reforested landscape in an ever changing bottomland hardwood ecosystem. Thanks to the FWS - TPL partnership, one of the largest, now-contiguous, bottomland hardwood forests has been conserved for the enjoyment of future generations.



Tensas River NWR reforestation in the foreground, with mature forest behind.

State Wildlife Conservation Agencies Doing Their Part

State wildlife conservation agencies have played an important role in reforestation of the Delta. The Arkansas Game and Fish Commission (AGFC) has been active in many facets of forest conservation for several decades. Notable examples of reforestation can be found on Dave Donaldson Black River Wildlife Management Area (WMA), Shirey Bay-Rainey Brake WMA, and St. Francis Sunken Lands WMA, where the agency has reforested a combined 5,000 acres of poorly drained former agricultural land. AGFC also played a unique role in reforestation on private lands during the 1990s, donating 75,000 pounds of acorns for use in Farm Bill conservation programs.



Shirey Bay-Rainey Brake WMA in northeast Arkansas, characterized by extensive bottomland hardwood forest.

Desired Forest Conditions for Wildlife

Development of Desired Forest Conditions for Wildlife by the LMJVJ is based on the premise that (1) levels of certain measurable forest attributes (e.g., canopy cover, snag density, stand size) strongly impact habitat quality for wildlife species, and (2) active management utilizing modern forestry principles and techniques often is necessary to achieve desired levels of these attributes in reasonable timeframes. Desired conditions are expressed as a range of each forest attribute associated with optimal habitat suitability. Landowners interested in optimizing wildlife habitat are encouraged to assess their particular forest stands and forest landscape, determine where they fall with respect to those desired ranges, and work with a forest consultant to determine the forest management actions that align best with their goals and objectives.

Go to www.lmvjv.org/DFC for more information and to download the full document

FOREST VARIABLES ¹	DESIRED STAND STRUCTURE	CONDITIONS THAT MAY WARRANT MANAGEMENT
Primary Management Factors		
Overstory Canopy Cover	60-70%	>80%
Midstory Cover	25-40%	<20% or >50%
Basal Area ²	60-70 ft ² /acre with ≥ 25% in older classes ³	>90 ft ² /acre OR ≥60% in older age classes
Secondary Management Factors		
Dominant Trees	>2/acre	<1/acre
Understory Cover	25-40%	<20%
Regeneration ⁴	30-40% of area	<20% of area
Small Cavities (<10-inch diameter)	>4 visible holes/acre OR >4 "snag" stems ≥4 inch dbh OR ≥2 stems >20 inch dbh	<2 visible holes/acre OR <2 snags ≥4 inch dbh OR <1 stem ≥20 inch dbh

¹ Promotion of species and structural diversity within stands is the underlying principle of management. Management should promote vines, cane and Spanish moss within site limitations.

² Basal area is the square foot occupancy of woody stems measured at 4.5 feet above ground level on an acre of land; one acre of land occupies 43,560 square feet.

³ "Older age class" stems are those approaching biological maturity. We do not advocate aging individual trees, but use of species-site-size relationships as a practical surrogate to discern age.

⁴ Advanced regeneration of shade-intolerant trees in sufficient numbers (about 400 per acre) to ensure their succession to forest canopy. Areas lacking canopy (i.e., group cuts) should be restricted to less than 20 percent of stand area.



Lower Mississippi Valley
JOINT VENTURE
www.lmvjv.org

The Vision of the Lower Mississippi Valley Joint Venture is

***A landscape supporting healthy native bird populations
and other wildlife across the LMJV***

Thanks to the following individuals for their contributions in developing this communication:

Martin Blaney, Arkansas Game & Fish Commission

Steve Brock, LMJV-US Fish & Wildlife Service

Mike Mitchell, Ducks Unlimited

Luke Naylor, Arkansas Game & Fish Commission

Kelly Purkey, US Fish & Wildlife Service

Tim Willis, Ducks Unlimited

The Lower Mississippi Valley Joint Venture is a self-directed, non-regulatory private, state, federal conservation partnership that exists for the purpose of sustaining bird populations and their habitats within the Lower Mississippi Valley region through implementing and communicating the goals and objectives of relevant national and international bird conservation plans.



Find us at www.lmvjv.org