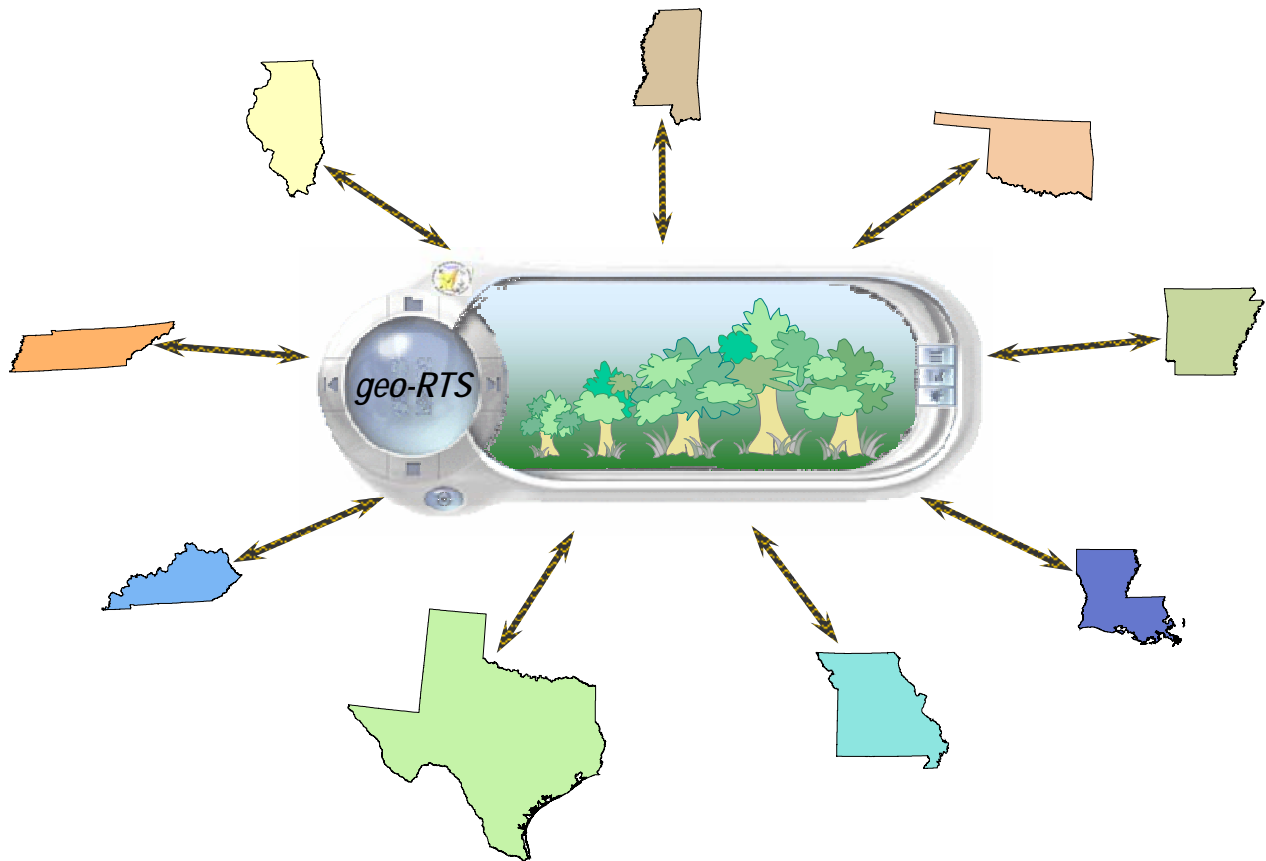# Lower Mississippi Valley Joint Venture

BIOLOGICAL TRACKING SYSTEM FOR REFORESTATION & TREE SURVIVAL SURVEYS

an enterprise geodatabase and web-interface for data entry, data update and data analysis designed and developed by and for the joint venture partnership

GEO-RTS MANUAL
Version 2.0

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6/22/2007

geo-RTS Manual

Table of Contents

Welcome to the Reforestation Tracking System (RTS)

of the Lower Mississippi Valley (LMV) Joint Venture partnership. The RTS is a centralized database for biological data about reforestation within the administrative boundary of the LMV Joint Venture.

To meet the needs of the partners, two web-accessible applications for entering data into the RTS have been developed: **e-RTS** and **geo-RTS**. There is one fundamental difference between these two applications.

- With the **e-RTS**, shapefiles of the reforestation locations (the geospatial data) are sent to the LMV Joint Venture office (blaine_elliott@fws.gov), while the tabular data is entered via the web.
- With the **geo-RTS**, both the geospatial and tabular data are entered via the web application.

The **e-RTS** and **geo-RTS** each have their own User Manual, which are available in pdf format on the LMV Joint Venture web site (lmvjv.org).

This is the User Manual for the **geo-RTS**. It includes answers to common "How To" questions, a datasheet template, and data entry examples. The **geo-RTS** web interface allows the user to

- Enter a new reforestation record,
- View and/or modify an existing reforestation record,
- Add data from a tree survival survey to an existing reforestation record, and
- Review existing tree survival records.

What is the RTS?

The RTS is a geospatial relational database for biological data. It has been designed to track data related to reforestation efforts of partners and associated agencies within the Mississippi Alluvial Valley and West Gulf Coastal Plain. Its purpose is to provide foresters and wildlife biologists with an easy-to-use, centralized repository for biological information in a standardized format that can be used by foresters, wildlife biologists and land managers to help

1. Monitor forest quality and land use change across the landscape, and
2. Support land management decisions for wildlife habitat across the landscape over the long term.

What is 'reforestation?'

"Reforestation," as defined for this database, is *the re-establishment of a forested land use on areas previously converted from a forest to non-forest land practice* (e.g., agriculture). This is sometimes referred to as afforestation.

This re-establishment of forest can be through active (tree planting) or passive (area allowed to proceed naturally through the stages of forest succession as a deliberate management decision) management. Only lands reforested in these manners are to be recorded in the RTS.

An active *"reforestation event"* is defined as *a contiguous planting of trees that is unique to all other plantings either by time, space, site preparation, planting methods, agreement type, agreement duration, or mix of tree species planted.* If plantings differ from each other in any of these characteristics, they must be tracked as separate reforestation events (i.e., entered as separate polygons and tabular records in the RTS).

A single reforestation event can be delivered under more than one signed agreement and be funded by more than one funding source. However, only one of any type of agreement can be recognized on a single reforestation event. In other words, if adjoining lands are planted in the same manner at the same time but partially under a 15-year CRP agreement and partially under a 10-year CRP agreement, <u>two</u> polygons and <u>two</u> reforestation events must be entered into the RTS database.

RTS Data: Biological Tracking

The RTS is an enterprise geodatabase (ArcSDE; SQL Server). In a geodatabase, both geospatial data and tabular data are stored in the relational database format. Geospatial data is GIS-based data pertaining to the shape, location and juxtaposition of the reforestation event. The RTS tabular data includes items like pre-planting conditions of the land [prior land use, existing groundcover and site preparation activities] and planting details [trees species planted, tree spacing, tree stock type, and planting method].

The RTS is designed for biological data related to reforestation and, as such, does **NOT** keep track of details regarding
- Private land ownership,
- Planting contracts, or
- Other types of administrative data

RTS Access: Private & Secure

Access to RTS data is controlled. Security is established using ASP.NET and IIS technologies. A user entering data must be both authenticated and authorized before access is allowed.

Each partner agency or organization formally assigns data entry responsibilities to an individual, called an RTS Rep. An RTS Rep is assigned a UserID and Password by the RTS database manager. Only the RTS Rep can modify the records he or she enters.

The RTS Query Builder Tool, also located on lmvjv.org, allows anyone to generate customized query reports from the RTS data.

What We've Learned

Connection speeds to the Internet vary; thus, monitor 'refresh rates' vary. Refresh time is the amount of time the users' screen takes to "redraw." Average refresh times range from 1 - 60 seconds depending on the Internet connection speed (I – Table 1). If your screen goes blank after you make a selection, don't panic; just allow the screen enough time to refresh.

If you use Microsoft *Outlook* as your email program, you may experience a slower than normal refresh rate and may lose data if you receive an email message notification during data entry. We recommend you log out of *Outlook* before you log in to geo-RTS.

Do not use the BACK button on the browser's interface while entering data. Doing so will corrupt your data entry. Any data modifications you want to make to your record can be done using the customized Modify buttons on the Data Summary page (III – Figure 20).

I – Table 1   Average time (seconds) it takes for geo-RTS pages to "load" or "redraw." [Note times shaded in blue.]

Page Name	Internet Connections	
	56K	T-1
Digitize Reforestation Unit	52	24
Field Contact & Ownership	6	2
Field Contact Information	7	1
Management Agreements	6	2
Funding Sources	7	1
Prior Landuse	8	1
Landcover	3	1
Site Preparation *(if done)*	3	1
Site Conditions at Time of Planting	2	1
Planting Date *or* Natural Succession Date	6	1
Replant Reason *(if replant)*	2	1
Bare-root Seedlings *(if planted)*	5	1
Seeds (Acorns) *(if planted)*	5	1
Containerized Seedlings *(if planted)*	5	4
Data Summary	10	1
Store Record	57	32

What data is needed?

The web interface asks for basic biological data related to tree planting activities (I –Table 2; see Section II for a data collection template). It is not time consuming (I – Table 3) to enter a reforestation record as long as the user follows the directions provided in this User Manual.

I – Table 2   Data required to complete a reforestation record. (For an explanation of the **red** letters see Page II – 1.)

Data Field	Figure & Table References	Need to Know
Site location	III – Figures 3 - 8	Location and be able to digitize its shape referencing an aerial photo at 1:5,000 map scale
Field Contact	III – Figure 9	First name, last name, phone number, and e-mail address if contact is not already in database
Land Ownership Type	II – Table 1 III – Figure 9	Type of land ownership
State	III – Figure 9	State reforestation took place
Land Management	III – Figure 9	Name of office managing trees on site
Local Site Name	III – Figure 9	User's name for the site
Local Site Code	III – Figure 9	User's code for the site
Management Agreement	III – Figure 10	Type and Duration
Sources of Funding	III – Figure 11	How reforestation was funded
Reforestation Action	III – Figure 11	--Select One-- • Initial • Replant • Natural Succession
Prior Landuses	III – Figure 12	How land was used in the past 5 years
Landcover	III – Figure 13	Landcover at time of site preparation (or tree planting, if no site prep occurred)
Site Preparation	III – Figure 14	If and how land was prepared for trees
Conditions at Planting	Page II – 2: **H** III – Figure 15	• Percent herbaceous groundcover (estimate) • Tree stems/acre (estimate)
Comments	III – Figure 15	Planting conditions that could impact reforestation success
Date Planting Finished	III – Figure 16	Date reforestation "started"
Time Interval	Page II – 2: **K** III – Figure 17	Range (months) between site preparation and tree planting
Planting Details	Page II – 2: **N** III – Figure 18	• Tree species • Planting method • Tree spacing (x and y, in feet) • Stock type • Seedling quality (when planted) • Quantity of seedlings or pounds of seeds (acorns)

I – Table 3   Time required to enter reforestation record using T-1 Internet connection.

Number of Tree Species in Record	Minutes
5	9
13	13
21	14

NOTE: Once you start the geo-RTS web application, do not interrupt the data entry process. Turn off any automatic pop-up messaging software (e. g., e-mail). Do NOT reference the geo-RTS User Manual on your computer while using the web application. If the computer's "focus" is shifted away from the geo-RTS web application during data entry, the ArcGIS Server "dictionary" drops the workspace definition and corrupts the data you are entering.

Using the RTS Datasheet

Look Up Tables

A relational database uses Look Up Tables (LUT) to reduce the amount of digital space it takes to store an individual record. Any data field for which the possible "answers" are confined to a specific set of options (e. g., land owner type, prior landuse, site preparation) is "related" to a LUT. The LUT associates a number with the description of each option. The number(s) for the option(s) selected by the user is stored in the individual record. This number can always be related to the option description through a reference to the LUT.   For example, there are nine different land owner types listed in *Owner Type LUT* (II – Table 1). When a reforestation site is located on state wildlife agency land, the value placed in the record's *Owner Type* data field is 1; when a reforestation site is located on refuge lands, the value placed in the record's *Owner Type* data field is 2 (II – Table 1).

There are seventeen LUT in the geo-RTS (II – Table 2). The options listed in each LUT are shown in this User Guide (I – Table 2: Table & Page References). If you have suggestions for additions to the LUT, please contact Blaine Elliott (blaine_elliott@fws.gov).

Datasheets

For your convenience an example of a datasheet that can be used in the field to record geo-RTS data is provided (Page II-2 – II-5). The same two-page datasheet is printed twice: once with explanatory references and once left blank so it can be directly photocopied for use in your office.

Data Entry Order
The **red** letters (Page II-2 – II-3: A - N) indicate the order that the data is entered into the geo-RTS web application. (For details, see Section III: Examples.)

Prior Landuse & Current Landcover
- The Landcover options are the same as the Landuse options with the addition of Fallow (III – Figure 12 and Figure 13).
- Data QA/QC checks records to ensure that if Landcover was not Fallow, the selected entries for Landuse include the Landcover selected.

Number of Tree Species Planted
The number of rows in each Planting Event table (Page II-2 – II-3) *does not* indicate the number of tree species that can be entered into the geodatabase for any one reforestation event. The number of rows on the datasheet was limited by the number of lines that fit on the page. You can enter as many tree species per reforestation event as were planted.

II – Table 1   Land owner types in Owner Type LUT

OwnerType_ID	Description
	Public
1	State Wildlife Agency
2	National Wildlife Refuge
3	Army Corps of Engineers
4	Forest Service
5	Other
	Private
6	Agriculture
7	Energy company
8	Forest, industrial
9	Forest, non-industrial

II – Table 2   List of Look Up Tables (LUT)

geo-RTS Look Up Tables
Administration Organization
Agreement Type
Field Contact
Funding Source
Groundcover
Landuse / Landcover
Land Management
Land Owner Type
Planting Method
Replant Reason
Seedling Quality
Site Preparation
State
Stock Type
Time Interval
Tree Species
Tree Stem Count

(A)

Land Owner		Site Name		Site Code	
Land Management		Field Contact		State	

Once entered, Planting Action (Initial, Replant, or None (Natural Succession) cannot be changed

(E) Landcover at time of site preparation or planting | Options shown in III – Figure 13 | Years Fallow 0 1 2 3 4 5

Site left to Natural Succession? True / False

(F)

If Replant, what was the reason?
☐ Complete replant   ☐ Stem count augmentation
☐ Species augmentation   ☐ Species and stem count augmentation

If Planting Action = Replant, Landcover = Failed Reforestation and Years Fallow = 0 automatically.
If Planting Action is Initial or Replant, the answer to Natural Succession? Is false automatically.

Before site preparation or planting (if no site preparation occurred), what was the…..

(H) % Groundcover ☐ 0 – 75 %   ☐ 76 – 100 %   Tree Stems / Acre ☐ 0   ☐ 51 – 300
                                                                        ☐ 1 – 50   ☐ > 300

Record any site or weather conditions that might influence reforestation success in this comment space.

(I) Comment | |

(J) Date Planting Finished or Natural Succession Began | |

(K) Site Prep to Plant Interval
☐ 0 – 3 months   ☐ 13 – 24 months
☐ 4 – 6 months   ☐ > 2 years
☐ 7 – 12 months

(B) *Agreement*	*Duration*
Options shown in III – Figure 10	

(C) *Funding Source*
Options shown in III - Figure 11

(D) *Prior Landuse*
Options shown in III - Figure 12

(G) *Site Preparation*
Options shown in III - Figure 14

Duration of 200 means that the agreement is perpetual   If Planting Action = Replant, Landuse = Failed Reforestation automatically

(N) Planting Event: **Containerized Seedlings** | Trees Planted as **Containerized Seedlings**

Planting Method
☐ Hand, staff
☐ Hand, contractor
☐ By tractor, staff
☐ By tractor, contractor

Planting Contractor | |

Spacing-X (ft) | |

Spacing-Y (ft) | |

Seedling Quality Options: Good
                           Fair
                           Poor

Common Name	Seedling Quality	Total Planted

L Planting Event: **Bare-root Seedlings**   Trees Planted as **Bare-root Seedlings**

Planting Method
- ☐ Hand, staff
- ☐ Hand, contractor
- ☐ By tractor, staff
- ☐ By tractor, contractor

Planting Contractor _____

Spacing-X (ft) ☐

Spacing-Y (ft) ☐

Seedling Quality Options: Good
                          Fair
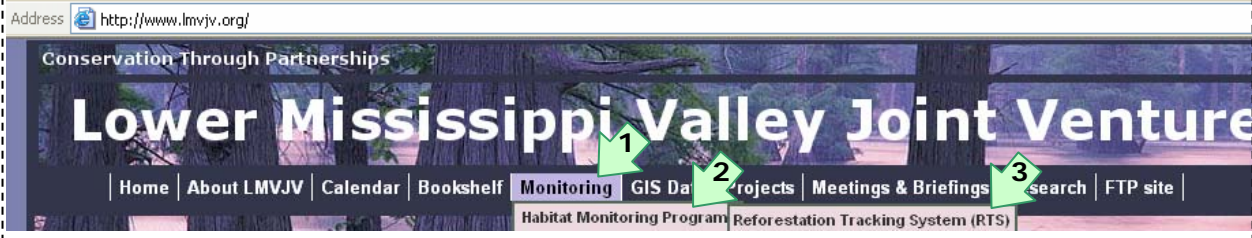   Poor

Common Name	Seedling Quality	Total Planted

M Planting Event: **Seeds (Acorns)**   Trees Planted as **Seeds (Acorns)**

Planting Method
- ☐ Hand, staff
- ☐ Hand, contractor
- ☐ By tractor, staff
- ☐ By tractor, contractor
- ☐ Aerial, staff
- ☐ Aerial, contractor

Planting Contractor _____

Spacing-X (ft) ☐

Spacing-Y (ft) ☐

Common Name	Pounds Planted [...#.#]

Land Owner		Site Name		Site Code	
Land Management		Field Contact		State	

Once entered, Planting Action (Initial, Replant, or None (Natural Succession) cannot be changed

Landcover at time of site preparation or planting [ ]   Years Fallow 0 1 2 3 4 5

Site left to Natural Succession? True / False

If Replant, what was the reason?
☐ Complete replant   ☐ Stem count augmentation
☐ Species augmentation   ☐ Species and stem count augmentation

If Planting Action = Replant, Landcover = Failed Reforestation and Years Fallow = 0 automatically,
Natural Succession? = False automatically when planting is an Initial Planting or a Replant.

Before site preparation or planting (if no site prep occurred), what was the.....

% Groundcover ☐ 0 – 75 %   ☐ 76 – 100 %   Tree Stems / Acre
☐ 0   ☐ 51 – 300
☐ 1 – 50   ☐ > 300

Record any site or weather conditions that might influence reforestation success in this comment space.

Comment [   ]

Date Planting Finished or
Natural Succession Began [   ]   Site Prep to Plant Interval
☐ 0 – 3 months   ☐ 13 – 24 months
☐ 4 – 6 months   ☐ > 2 years
☐ 7 – 12 months

Agreement	Duration		Funding Source		Prior Landuse		Site Preparation

Duration of 200 means that the agreement is perpetual   If Planting Action = Replant, Landuse = Failed Reforestation automatically

Planting Event: **Containerized Seedlings**	Trees Planted as **Containerized Seedlings**		
	Common Name	Seedling Quality	Total Planted

Planting Method
☐ Hand, staff
☐ Hand, contractor
☐ By tractor, staff
☐ By tractor, contractor

Planting Contractor [   ]

Spacing-X (ft) [   ]

Spacing-Y (ft) [   ]

Seedling Quality Options: Good
                              Fair
                              Poor

Planting Event: **Bare-root Seedlings**	Trees Planted as **Bare-root Seedlings**		

Planting Method	☐ Hand, staff
	☐ Hand, contractor
	☐ By tractor, staff
	☐ By tractor, contractor

Planting Contractor [   ]

Spacing-X (ft) [ ]

Spacing-Y (ft) [ ]

Seedling Quality Options: Good
                            Fair
                            Poor

Common Name	Seedling Quality	Total Planted

Planting Event: **Seeds (Acorns)**	Trees Planted as **Seeds (Acorns)**	

Planting Method	☐ Hand, staff
	☐ Hand, contractor
	☐ By tractor, staff
	☐ By tractor, contractor
	☐ Aerial, staff
	☐ Aerial, contractor

Planting Contractor [   ]

Spacing-X (ft) [ ]

Spacing-Y (ft) [ ]

Common Name	Pounds Planted [...#.#]

Where is the geo-RTS located?

To record data in geo-RTS, log on to the web using Internet Explorer v6 or higher, go to the LMV Joint Venture homepage (www.lmvjv.org) and access the geo-RTS web application (III – Figure 1). At the log in page (III - Figure 2) type in the **user name** and **password** provided to you by the LMV Joint Venture office and then click on the button that represents the action you want to take. Refer to the Examples section for illustrated examples of data entry and modification.

III – Figure 1   Access the geo-RTS web application with four movements of the mouse.

III - Figure 2   The user types in the user name and password on the geo-RTS log in page.

Entering a new reforestation record

III – Figure 3   Digitizing map, legend and tools.
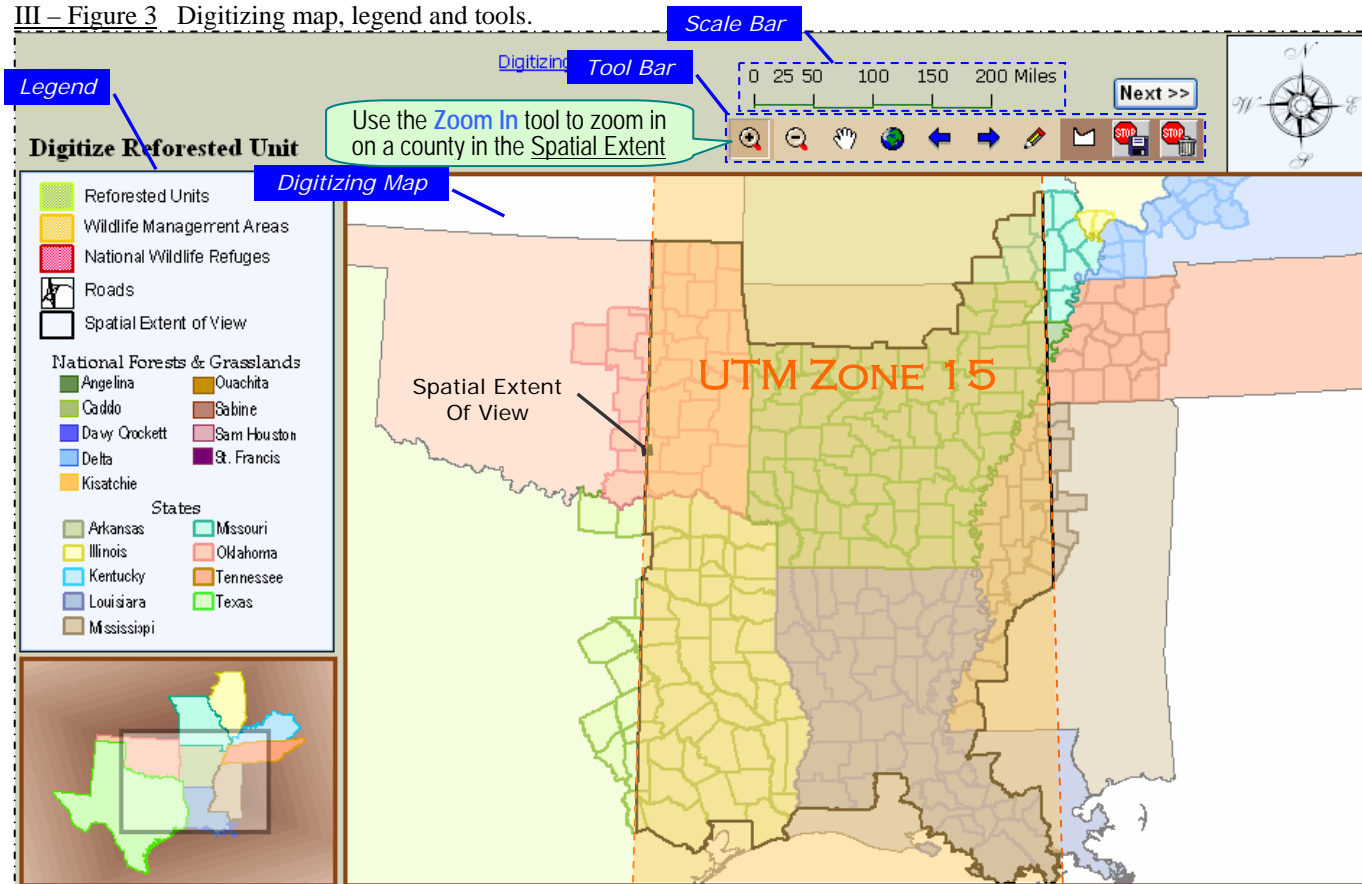
Spatial Extent of View
The counties outlined in each state are either in

- The LMV Joint Venture partnership boundary, and/or
- One of the two bird conservation regions (BCR) within the LMV Joint Venture region[1]:
  - Mississippi Alluvial Valley (MAV), and
  - West Gulf Coastal Plain (WGCP).

The east and west sides of the Spatial Extent of View match the eastern and western limits of ZONE 15 of the Universal Transverse Mercator (UTM) projection. These are the east and west limits of the spatial extent because the web map service providing the images of the USGS topographic quadrangle maps (DRGs) and the black and white aerial photographs (DOQQs) provides data by UTM zone.

Foresters and land managers planting trees in UTM Zones 14 and 16 can enter their reforestation data into the RTS via the e-RTS web application, also located at lmvjv.org.

III – Table 1   Layers in digitizing map and the scale at which they appear and disappear.

Feature Name Label	Show At (1:x)	Hide At (1:x)
Reforested Units	350,000	0
RTS_ID	100,000	0
Wildlife Management Units	2,000,000	0
Name	750,000	0
National Wildlife Refuges	2,000,000	0
Name	750,000	0
Roads	2,000,000	500,000
Counties	All scales	
Name (Small map scale)	4,000,000	500,000
Name (Large map scale)	500,000	350,000
Topographic quadrangles (DRGs)	500,000	12,000
Aerial photographs (DOQQs)	12,000	~ 5,000[2]

---

1. For consistency, the entire county was included in the spatial extent if a portion of the county was in one of the BCRs.

2. The web map service will not show the DOQQs at a map scale greater than ~1:5,000.

III – Figure 4   Digitizing map zoomed in to where Oklahoma, Arkansas and Texas meet.
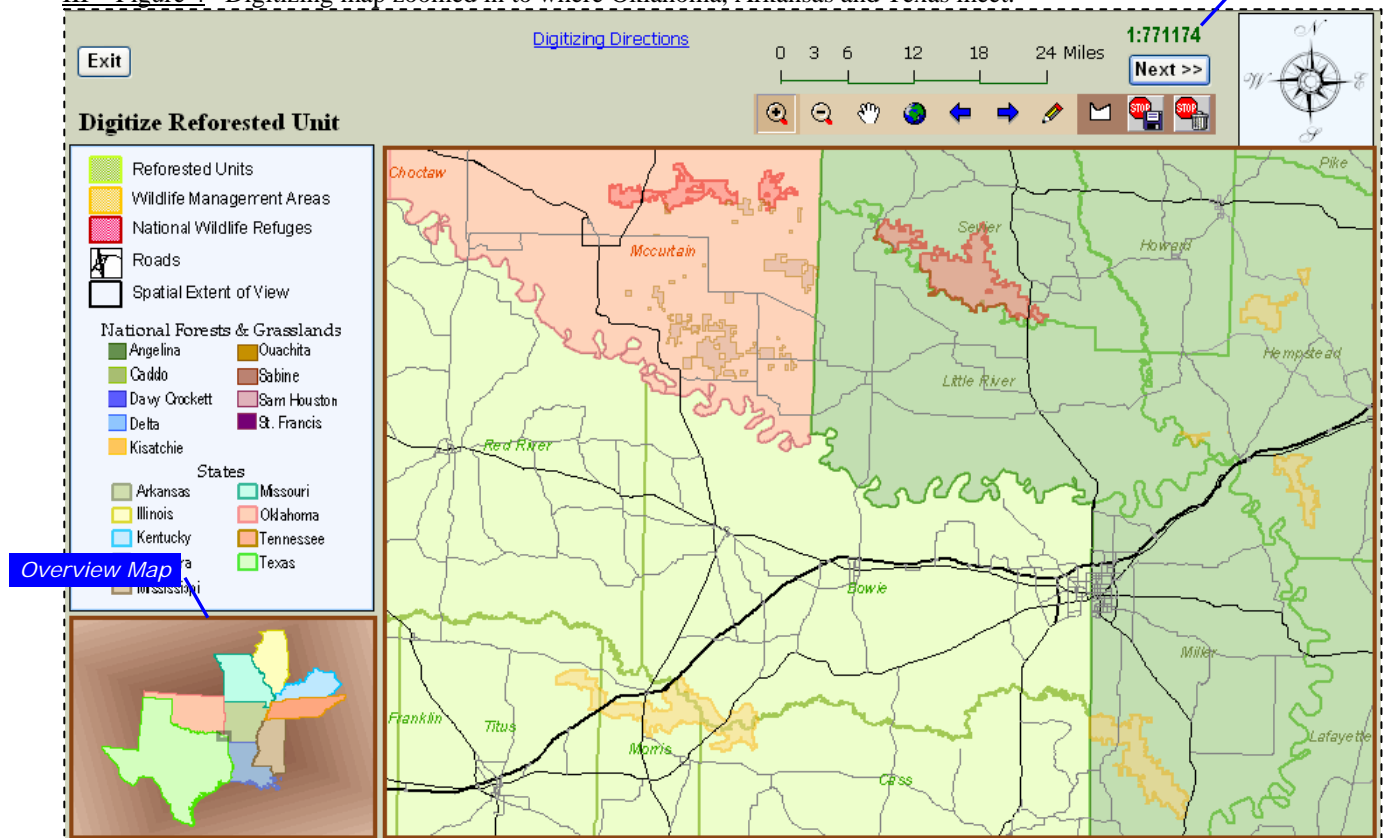
III – Figure 5   Quad maps (DRGs) are visible when the map scale is larger than 1:500,000 (III – Table 1).
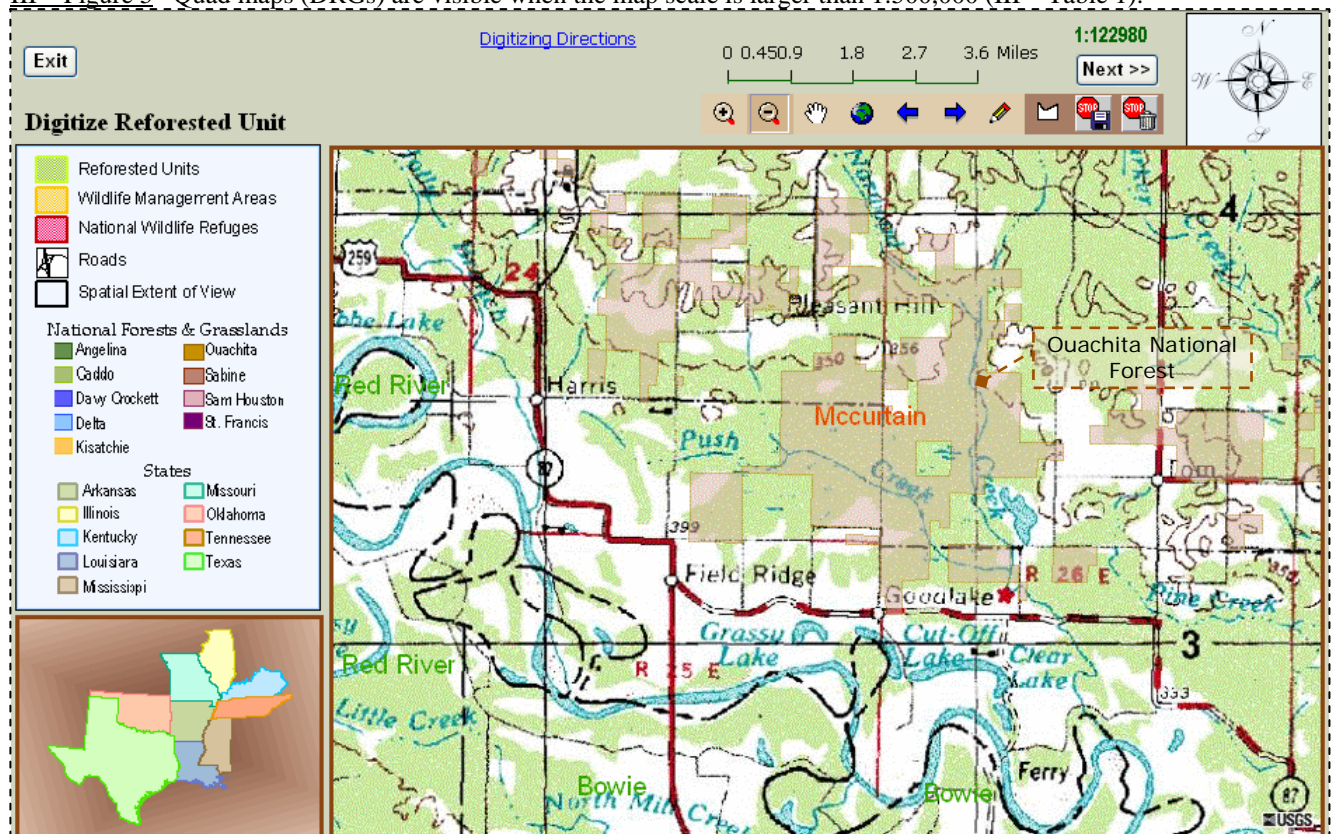
III – Figure 6   Aerial photos become visible when the map scale is larger than 1:12,000 (III – Table 1).
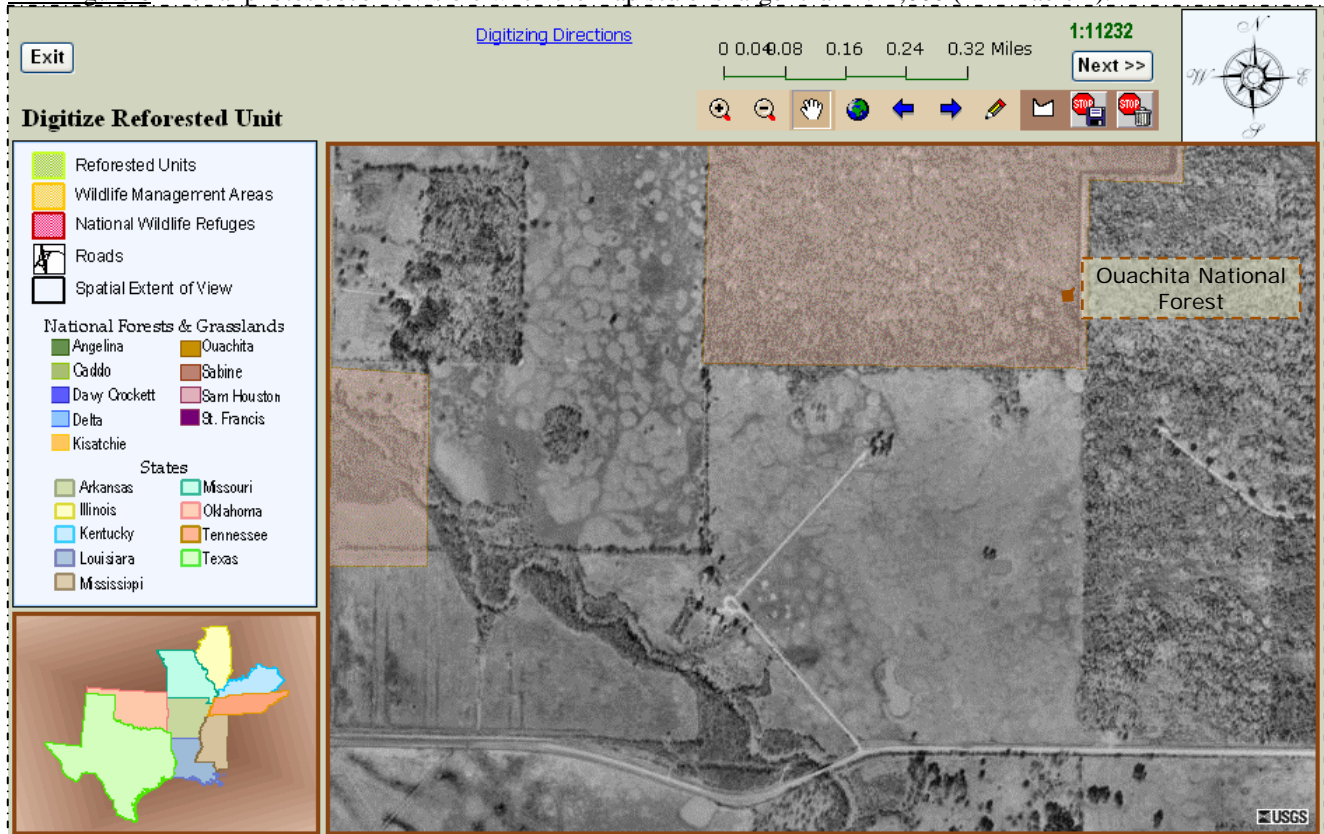
III – Figure 7   If the user zooms in too far, the map scale will be > 1:5,000 and all he'll see in the Digitizing Map area is a pastel color. Use the **Zoom Out** tool to zoom out to ~ 1:5,000 and the aerial photo will reappear.
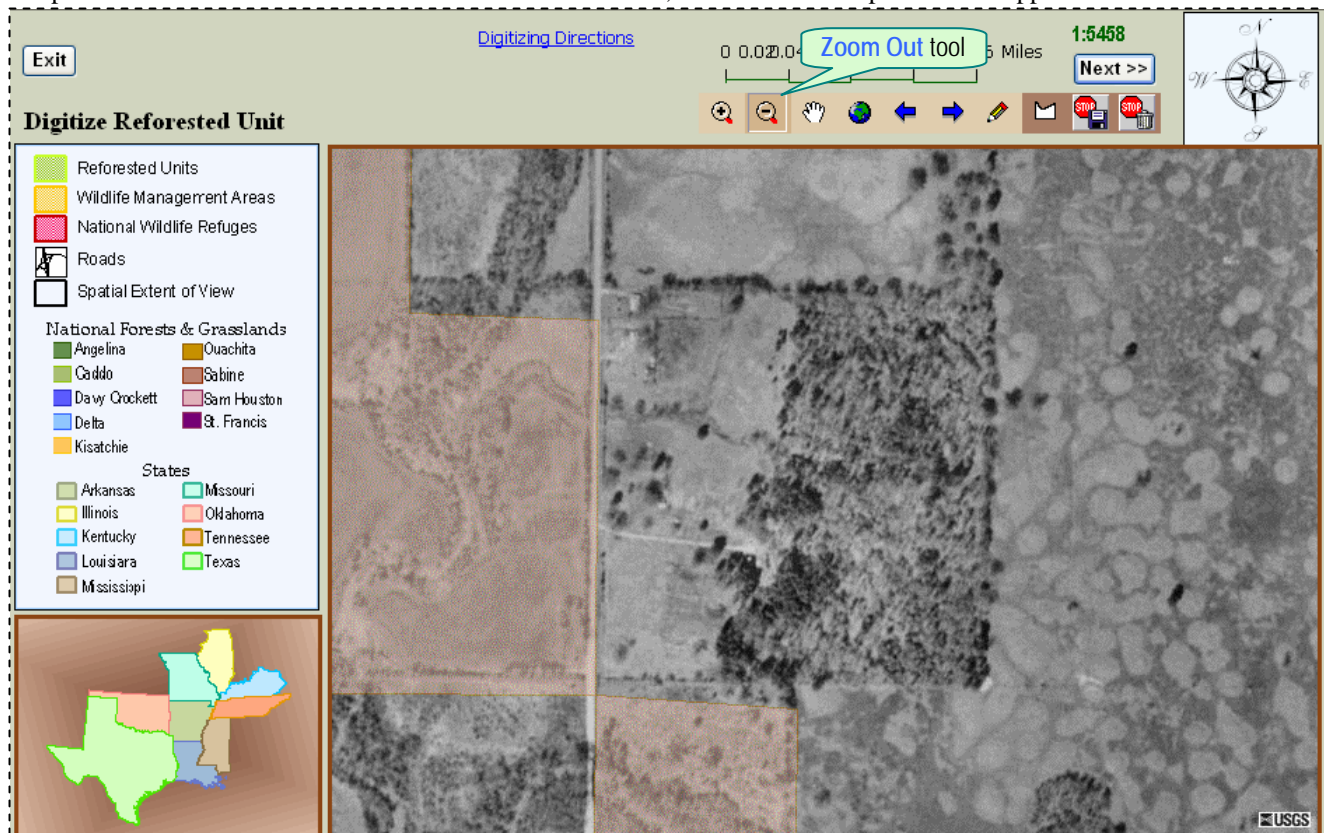
III – Figure 8   Once the user has honed in on the reforestation site and the map scale is ~1:5,000, center the site using the **Pan** tool. Make sure all parts of the site can be seen at the same time. Then, follow the step-by-step Digitizing Directions. If the Date & Acres table appears when the **Stop & Save** button is clicked, click **Next**.

Digitizing Directions hyperlink

Digitizing Directions

Date & Acres table

Date	Acres
9/20/2007	15

Pan tool

0.06 0.09 0.12 Miles

1:5085

Next button

Next >>

Exit

Digitize Reforested Unit

Reforested Units
Wildlife Management Areas
National Wildlife Refuges
Roads
Spatial Extent of View

National Forests & Grasslands
Angelina   Ouachita
Caddo   Sabine
Davy Crockett   Sam Houston
Delta   St. Francis
Kisatchie

States
Arkansas   Missouri
Illinois   Oklahoma
Kentucky   Tennessee
Louisiana   Texas
Mississippi

Reforestation Site

1. Start Editing tool
2. Start Digitizing tool
3. Stop & Save tool

When first digitized, a polygon is lattice-orange. After it is stored permanently in the geodatabase, it becomes green.

USGS

http://lmvjv.org - Digitizing Directions - Microsoft Internet Explorer

Digitizing Directions

❖ Use [ZOOM IN] to hone in close on the area where the reforestation event occurred. (Reference the Web Pages section in the geo-RTS Manual for specifics.)
❖ Make sure that the entire reforestation site is visible in the view window before you begin digitizing.

(1) To start an edit session, click [START EDITING].

(2) To start digitizing a polygon, click [POLYGON].
   ◆ One click to begin
   ◆ One click to bend
   ◆ Ctrl + click to end [Close the polygon]

Once the polygon is closed,

(3) if you want to **keep** what you've digitized, click [STOP & SAVE].
❖ if you want to **erase** what you've digitized and re-digitize the polygon,

   1. Click [STOP & DISCARD]
   2. Click [PAN] to refresh the toolbar settings {NOTE: is disabled.}
   3. Re-situate the view window, if necessary, using and / or [ZOOM OUT]
   4. Click to start an edit session
   5. Etc.

III – Figure 9   Providing unique local site names/codes now will make site identification easier later.

Field Contact & Land Ownership

Field Contact
Individual to contact regarding the preparation and/or planting details of this site

Rio, Johnnie

If you don't see the Field Contact name you need in this drop-down list, select "Other." This will open a new page called **Field Contact**. Fill in the data for the new contact and close the **Field Contact** page. Select your addition to the field contact list, which now appears in this drop-down list.

Land Ownership
Both Land Ownership and State must be selected before Land

Private, agriculture

State

Oklahoma

Land Management

Owner

Local Office Site Codes
The name and code used locally for internal tracking   (optional)

Compartment / Local Site Name Example

Stand / Local Site Code C5-S2   **Next >>**

III – Figure 10   More than one agreement type can be selected for the same reforestation site even if the durations of the agreements are not equal in length.

Management Agreements   **Next >>**

Agreement Type
○ None
◉ Select from list

Unlisted Agreement Type
Other Agreement Example
Duration of Other Agreement 15
(Perpetual = 200)

These textboxes appear when you select "Other" in the Agreement List.

Agreement Duration choices appear when you select the related agreement in the Agreement List.

Agreement List
Check all that apply.

☐ Carbon Sequestration   ☐ Mitigation
☐ CRP   ☐ Partners for Fish & Wildlife
☐ Ducks Unlimited   ☑ WRP
☑ FSA/FmHA Easement   ☑ Other

Agreement Duration
CRP   DU   Mitigation   Partners

WRP
○ Perpetual
○ 30 years
◉ 10 years

The duration for a Carbon Sequestration agreement is 70 years; the duration of an FSA Easement agreement is perpetual. The durations are set automatically for carbon sequestration and FSA Easement agreements.

The duration of a Carbon Sequestration agreement is 70 years; the duration is automatically completed by the web application. The duration of an FSA Easement agreement is perpetual; the duration is automatically completed by the web application.

If you do not find the agreement type you need for the reforestation event you are recording, select "Other" in the check-box list and fill in the agreement name and duration in the textboxes provided. This "Other" option is similarly provided on other pages in the web application where the provided list might not be all inclusive.

III – Figure 11   If a user does not find the funding source needed in the provided list, she can select "Other" in the check-box list and fill in the funding source name in the textbox provided, as this example shows.

Funding Resources for Reforestation
Sources of funding or in-kind support for
Check all that apply.

☑ Other - (If source not in list, enter it in textbox below)
☐ AGFC - Arkansas Game and Fish Commission
☐ APP - Arkansas Partners Program
☐ Carbon - Sequestration
☐ DU - Ducks Unlimited
☐ ETWI - East Texas Wetland Initiative
☐ KDFW - Kentucky Department of Fish and Wildlife
☑ Landowner - Contribution
☐ LDWF - Louisiana Department of Wildlife and Fisheries
☐ LPP - Louisiana Partners Program
☐ MDWFP - Mississippi Department of Wildlife, Fisheries, and Parks
☐ MFWF - Mississippi Fish and Wildlife Foundation
☐ MPFW - Mississippi Partners for Wildlife
☐ MPP - Mississippi Partners Program
☐ NAWCA - North American Wetland Conservation Act Grant
☐ NRCS CREP - Conservation Reserve Enhancement Program
☐ NRCS CRP - Conservation Reserve Program
☐ NRCS EQIP - Environmental Quality Incentives Program
☐ NRCS EWPP - Emergency Watershed Protection Program

☐ NWTF - National Wild Turkey Federation
☐ ODWC - Oklahoma Department of Wildlife Conservation
☐ TPP - Tennessee Partners Program
☐ TPWD - Texas Parks and Wildlife Department
☐ TWRA - Tennessee Wildlife Resources Agency
☐ USACE - Army Corps of Engineers
☐ USFS - Forest Service
☐ USFS - Restoring the Delta
☐ USFWS 1113 - Black Bear Recovery
☐ USFWS 1116 - ESA Landowner Incentives
☐ USFWS 1121 - Partners for Fish and Wildlife Program
☐ USFWS 1231 - Migratory Bird Program
☐ USFWS 1261a - Refuge Challenge Grant
☐ USFWS 1261b - Refuge Operations
☐ USGS - Experimental: Patuxent Research Center

> Organizations or individuals that provide funding or in-kind support for
> ♦ The purchase of planting stock
> ♦ Site preparation activities
> ♦ Tree planting

Unlisted Funding Source [Example]

Description of reforestation action
○ --Select one--
⦿ Initial Planting
○ Replanting
○ Land left to natural succession

[Next >>]

III – Figure 12   In this example, the land at this site produced hay and was used as pasture (seeded) during the past five years; the correct options for **Landcover** (III – Figure 13) are Hay, Pasture, seeded, or Fallow.

Landuse
If the land was **fallow for more than 5 years**, **select, on this page, the last use** to which the land was put before it went fallow. **On next page** check **Fallow** for **Landcover** and for **Years Fallow** check **5**.
   Landuses during five (5) years prior to reforestation
      Check all that apply.

☐ Other
☐ Aquaculture, catfish
☐ Aquaculture, crawfish
☐ Corn, conventionally tilled
☐ Corn, no till
☐ Cotton, conventionally tilled
☐ Cotton, no till
☑ Hay

☐ Milo, conventionally tilled
☐ Milo, no till
☐ Pasture, native
☑ Pasture, seeded
☐ Rice
☐ Soybeans, conventionally tilled
☐ Soybeans, no till
☐ Wheat

[Next >>]

III – Figure 13   In this example the landcover at time of site preparation was Fallow. When landcover is fallow an answer to **Years Fallow Prior to Reforestation** must be given.

Landcover

Landcover at time of site preparation *(or planting if no site prep occurred)*
Select one

- ○ Other
- ○ Aquaculture, catfish
- ○ Aquaculture, crawfish
- ○ Corn, conventionally tilled
- ○ Corn, no till
- ○ Cotton, conventionally tilled
- ○ Cotton, no till
- ⦿ Fallow
- ○ Hay

- ○ Milo, conventionally tilled
- ○ Milo, no till
- ○ Pasture, native
- ○ Pasture, seeded
- ○ Rice
- ○ Soybeans, conventionally tilled
- ○ Soybeans, no till
- ○ Wheat

Years Fallow Prior to Reforestation
Check one

○ 0	⦿ 2	○ 4
○ 1	○ 3	○ 5

Did Site Preparation Occur?
Check one

- ⦿ Yes
- ○ No

Next >>

III – Figure 14   If the site was prepared for tree planting, place a check mark beside each type of site preparation that was completed.

Site Preparations

Site Preparation Actions
Check all that apply.

- ☐ Disking/Plowing
- ☑ Mowing/Bush hogging
- ☐ Burning
- ☐ Chemical burndown
- ☐ Draining

- ☑ Chopping/Rolling/Crushing
- ☐ Scraping/Scalping
- ☐ Smoothing/Leveling
- ☐ Blading/Dozing/Shear blading/Root raking/Windrowing

- ☐ Sub-soiling/Ripping
- ☐ Bedding
- ☐ Terracing
- ☐ Other

Next >>

III – Figure 15   The **Comments** field is a good place to note special or unusual circumstances that might impact tree survival or reforestation success like poorly drained portions of the site or the condition of a particular planting stock.

Site Conditions At Time of Planting

Percentage Herbaceous Groundcover
Qualitative estimate of percent herbaceous groundcover (best guess)

76-100% herbaceous groundcover ▾

Woody Stem Count (range)
Qualitative estimate of woody stems in area to be reforested (best guess)

1-50 tree stems per acre ▾

Your Comments
Note particular conditions that could impact reforestation success

Drought in region for past three years.

Next >>

III – Figure 16   A date can be formatted many different ways. By using a **Calendar** tool like this, the date is consistently entered into the database in the same format. To start, click the **Calendar** tool.

Planting Date, Time Intervals & Planting Stock

Date Tree Planting Concluded
§ **Click on the calendar icon.**
§ To **change the year**, click on the given year. A set of 10 years will roll out to the right.
   Use the top or bottom arrow to scroll to the correct year. **Click on the correct year.**
§ To **change the month**, click on the given month. The list of all 12 months will roll out
   to the bottom of the calendar. **Click on the correct month.**
§ **Click on the correct day** in the calendar.

1/1/1990   [12]   Calendar tool

Modify the Year

1. Click on the given year.

Jan 1990

3. Select the correct year.

2. Use arrows to scroll to the correct year.

Modify the Month

1. Click on the given month.

Jan 1985

2. Select the correct month.

Modify the Day

Nov 1985

1. Select the correct day.

III – Figure 17   Here is the same page now showing the date selected by the user in the textbox. If no site preparation activities occurred, the web application does not ask the **Time Interval** question.

11/22/1985   [12]

Time Interval Between Most Recent Site Preparation Activities and Tree Planting
Select one

○ 0 - 3 months prior to planting   ○ 13 - 24 months prior to planting
◉ 4 - 6 months prior to planting   ○ > 2 years prior to planting
○ 7 - 12 months prior to planting

Types of Planting Stock Used
Select all that apply

☑ Bare-root Seedlings
☐ Seeds (Acorns)   Next >>
☐ Containerized Seedlings

III – Figure 18   Repeat Steps 1 – 4 until each tree species planted as bare-root seedling stock has its own row in the table. If you find an error, remove the row by clicking the Delete Row hyperlink for that row. Then, enter the correct data into a new row using the four steps.

III – Figure 19   In this example, five different tree species were planted as bare-root seedling stock on a 10-ft x 10-ft spacing. On the entire 15-acre site, 6,540 trees were planted.

This is the **Data Summary** page, the page with the MODIFY buttons. When the user clicks on a specific MODIFY button the application is directed to a customized page from which she can modify the data entry.

The MODIFY buttons are color-coded in shades of gray. For example,
- The light-gray MODIFY button labeled $\mathcal{A}$ transfers the user to a page that allows revision of Field Contact, Site Name & Code, Owner and Management;
- The medium-gray MODIFY button labeled $\mathcal{B}$ transfers the user to a page that allows modification of the agreement types.
- The dark-gray MODIFY button labeled $\mathcal{C}$ transfers the user to a page for revising funding sources.

Read Click here for directions and Footnotes (hyperlinks) on this page for additional information.

III – Figure 20   Review the data. If an entry needs to be altered, use the **MODIFY** buttons to access customized pages designed specifically for revising data.

Note: Since the **Store Record** page calls on ArcGIS Server to draw a map, it can take up to a minute, depending on the Internet connection speed, to draw the map on the monitor (I – Table 1).

III – Figure 21   Up to this point in the application no data have been permanently stored.
  a) Click **Save Geometry** and the spatial data and attribute table data are saved to the ArcSDE geodatabase.
  b) Click **Save Tables** and the remaining tabular data are saved to the ArcSDE geodatabase.
  Make sure and click both buttons.

To produce a hard copy map of the area digitized with the aerial photo in the background along with the computer-assigned RTS_ID and the user-assigned Site Name and Site Code, click the **Save Tables** button and then print the page.

Modifying an existing reforestation record

III – Figure 22   The **Log In** page is the same whether the user is entering new data or modifying existing data.

Please Note

a. This application was designed to be used with Internet Explorer v6.
b. Depending on the speed of your web connection, it can take 60 seconds to load the pages that contain ESRI maps.
c. Please allow one week for your new records and record edits to become reviewable.
d. Following the directions in the *geo-RTS User Manual* will make it easier to use this application; you can download the *Manual* from http://www.lmvjv.org/RTS_2ways.htm
e. Don't use the browser's BACK function. ESRI web tools don't play nice with the BACK function. The **MODIFY** buttons on the Data Summary page let you edit your entries.
f. Don't change focus from this application to a different program (even to read the *Manual*) while you are using this application. ESRI web tools don't like that either.
g. When digitizing, let each function completely finish before clicking on the next tool.
h. Digitize only one [1] polygon per record.
i. E-mail question to hwhiffen@usgs.gov

LOWER MISSISSIPPI VALLEY
Private, State, & Federal Conservation Partnership
JOINT VENTURE

Biological Tracking System for
Reforestation & Tree Survival Surveys
geo-RTS Web Application
In the boxes below, type in the user name and password assigned to you

User Name [   ]
Password [   ]

Select option
[Add New Record]   [Review/Update Records]   [Clear]
[Add Survival Data]

> To view or modify an existing record, click this button.

III – Figure 23   The **Review Record List** page shows all the records for which the logged in user is responsible. The list indicates if the record includes Tree Planting Data and Tree Survival Data. To see the complete record for a specific site, click its RTS_ID number.

Review Record List

Records Entered by [Whiffen, Helen]

Below is the list of records you have entered or to which you have been assigned.

You can identify a site by the **Site Name** and **Site Code** assigned to it by the field contact.

The **Start Date** is the date tree planting was completed or natural regeneration was initiated at the reforestation site.

If there is a *Yes* in a row for **Tree Data**, tree planting data for that record has been entered;
if there is a *NA* for **Tree Data**, the processes of natural succession were utilized at this location;
if there is a *No* for **Tree Data**, you need to enter the tree planting data to complete the record.
Records must be complete before they are "query-able" in the geo-RTS Query Builder.
Tree planting data for an existing record can be added from the **review / update** page.

If there is a *Yes* in a row for **Survival**, tree survival data for that record has been entered;
if there is a *No* for **Survival**, tree survival data has not been entered.
Tree survival data for an existing record can be added from the **review / update** page.

To **review / update** a record or to **add survival data**, click the RTS_ID of the record of interest.

RTS_ID	Start Date	Site Name	Site Code	Tree Data	Survival
3769	1/1/1999	Sky Lake	278-ac	No	No
3770	1/1/1999	Sky Lake	54-ac	No	No
4367	11/22/1985	Example	C5-S77	Yes	Yes
868	11/17/2004	Example	Field5	NA	No

[Exit]

> Click here to view the record for RTS ID #3769.

III – Figure 24   This is the complete record for RTS_ID #3769 located at Sky Lake WMA. No tree planting data has been entered for this record; all three stock type buttons appear at the bottom of the page. Bare-root seedlings were planted at this site so the user clicks the **Add Bare-root Seedlings** button to go to the page that allows him to add trees of this stock type to the record.

III – Figure 25   Repeat Steps 1 – 4 until each tree species planted as bare-root seedling stock has its own row in the table. If you find an error, remove the row by clicking the Delete hyperlink for that row. Then, enter the correct data into a new row using the four steps.

III – Figure 26   In this example, four different tree species were planted as bare-root seedling stock on a 12-ft x 12-ft spacing. On the entire 278-acre site, 86,800 trees were planted.

III – Figure 27   The user needs to click the **Save Modifications** button to permanently save the record updates to the ArcSDE geodatabase. But, the user has just received new information about the date planting was completed, so she will update the date first before clicking the **Save Modifications** button.

III – Figure 28   A date can be formatted many different ways. By using a **Calendar** tool like this, the date is consistently formatted in the same way. To start, click the **Calendar** tool (For more details, see III – Figure 16).

Planting Date & Time Intervals *(modify)*

Date Tree Planting Concluded
§ **Click on the calendar icon**.
§ To **change the year**, click on the given year. A set of 10 years will roll out to the right. Use the top or bottom arrow to scroll to the correct year. **Click on the correct year**.
§ To **change the month**, click on the given month. The list of all 12 months will roll out to the bottom of the calendar. **Click on the correct month**.
§ **Click on the correct day** in the calendar.

1/1/1999   [12] Calendar tool   Return >>

III – Figure 29   In this example the Year and Month are correct; the day needs to be changed. In the calendar that appears the user can click on the correct day…

Planting Date & Time Intervals *(modify)*

Date Tree Planting Concluded
§ **Click on the calendar icon**.
§ To **change the year**, click on the given year. A set of 10 years will roll out to the right. Use the top or bottom arrow to scroll to the correct year. **Click on the correct year**.
§ To **change the month**, click on the given month. The list of all 12 months will roll out to the bottom of the calendar. **Click on the correct month**.
§ **Click on the correct day** in the calendar.

1/1/1999   [12]   Return >>

◄		Jan 1999				►
S	M	T	W	T	F	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

III – Figure 30   …and the correct day, month and year appears in the textbox. Click **Return** to go back to the **Review Record** page.

Planting Date & Time Intervals *(modify)*

Date Tree Planting Concluded
§ **Click on the calendar icon**.
§ To **change the year**, click on the given year. A set of 10 years will roll out to the right. Use the top or bottom arrow to scroll to the correct year. **Click on the correct year**.
§ To **change the month**, click on the given month. The list of all 12 months will roll out to the bottom of the calendar. **Click on the correct month**.
§ **Click on the correct day** in the calendar.

1/27/1999   [12]   Return >>

III – Figure 31   Now, all of the updates to this record have been made. Click **Save Modifications**.

Review/Update Reforestation Record   RTS_ID # 3769

Click ADD to enter tree survival data.

Save Modifications

Ignore Modifications &
View Another Record

Add

Exit

It can take over a minute to load a "map" page.

Field Contact	Perry, Baskin		

Agreement	Duration	Funding
Migitation	50	USACE - Army Corps of Engineers

Site Name Sky Lake

Site Code 278-ac

Owner U. S. Army Corps of Engineers

Management Sky Lake WMA

Acres 278   State Mississippi

MODIFY

MODIFY

MODIFY

Prior Landuses
Soybeans, conventionally tilled

MODIFY

Landcover Soybeans, conventionally

Years Fallow 0

MODIFY

Groundcover 0-75% herbaceous groundcover

Tree Stem Count 0 tree stems per acre

Comments

MODIFY

Site Preparation
None

MODIFY

Time interval between site preparation and tree planting
No site preparation

Date forested landuse began   1/27/1999

The new date appears in the Date textbox.

MODIFY

Planting Action

Replant   Initial **Y**   Natural

Footnotes

Add Seeds (Acorns)   Add Container Seedlings

Bare-root Seedlings

Planting Method By hand, contractor

Planting Rate 302   trees/acre

Contractor Arrowhead Starr Co.

Tree Species	Seedling Quality	Total Planted
Oak, Nuttall - Quercus nuttalii	Good	53300
Oak, Willow - Quercus phellos	Good	16500
Oak, Water - Quercus nigra	Good	8000
Cypress, Bald - Taxodium distichum	Good	9000

MODIFY

III – Figure 32   When you click **Save Attribute Table**, updates made to data in the attribute table are permanently saved. When you click **Save Relational Tables**, updates made to data in the remaining tables are permanently saved.
Make sure you click both buttons.

Save Updates

Click button to save your attribute table updates.
Please allow one week for your updates to become reviewable.

Save Attribute Table

The ArcSDE geodatabase needs to be compressed before feature updates are reviewable. The geodatabase is compressed once a week.

RTS_ID:3769

RTS_ID: 3770

RTS_ID: 3769

Save Updates

Click button to save your relational table updates.

Save Relational Tables

Entering tree survival data

III – Figure 33   The **Log In** page is the same whether the user is entering a new record or adding tree survival data to an existing record.

Please Note

a. This application was designed to be used with Internet Explorer v6.
b. Depending on the speed of your web connection, it can take 60 seconds to load the pages that contain ESRI maps.
c. Please allow one week for your new records and record edits to become reviewable.
d. Following the directions in the *geo-RTS User Manual* will make it easier to use this application; you can download the *Manual* from http://www.lmvjv.org/RTS_2ways.htm
e. Don't use the browser's BACK function. ESRI web tools don't play nice with the BACK function. The **MODIFY** buttons on the Data Summary page let you edit your entries.
f. Don't change focus from this application to a different program (even to read the *Manual*) while you are using this application. ESRI web tools don't like that either.
g. When digitizing, let each function completely finish before clicking on the next tool.
h. Digitize only one [1] polygon per record.
i. E-mail question to hwhiffen@usgs.gov

Biological Tracking System for
Reforestation & Tree Survival Surveys
geo-RTS Web Application
In the boxes below, type in the user name and password assigned to you

User Name [   ]
Password [   ]

Select option

[Add New Record]   [Review/Update Records]   [Clear]
[Add Survival Data]

> To add Tree Survival Data, click this button.

III – Figure 34   The **Review Record List** page shows all the records for which the logged in user is responsible. The list indicates if the record includes Tree Planting Data and Tree Survival Data. To see the complete record for a specific site, click its RTS_ID number.

Review Record List

Records Entered by [Whiffen, Helen]

Below is the list of records you have entered or to which you have been assigned.

You can identify a site by the **Site Name** and **Site Code** assigned to it by the field contact.

The **Start Date** is the date tree planting was completed or natural regeneration was initiated at the reforestation site.

If there is a *Yes* in a row for **Tree Data**, tree planting data for that record has been entered;
if there is a *NA* for **Tree Data**, the processes of natural succession were utilized at this location;
if there is a *No* for **Tree Data**, you need to enter the tree planting data to complete the record.
Records must be complete before they are "query-able" in the geo-RTS Query Builder.
Tree planting data for an existing record can be added from the **review / update** page.

If there is a *Yes* in a row for **Survival**, tree survival data for that record has been entered;
if there is a *No* for **Survival**, tree survival data has not been entered.
Tree survival data for an existing record can be added from the **review / update** page.

To **review / update** a record or to **add survival data**, click the RTS_ID of the record of interest.

RTS_ID	Start Date	Site Name	Site Code	Tree Data	Survival
3769	1/1/1999	Sky Lake	278-ac	No	No
3770	1/1/1999	Sky Lake	54-ac	No	No
4367	11/22/1985	Example	C5-S77	Yes	Yes
4368	11/17/2004	Example	Field5	NA	No

[Exit]

> Click here to view the record for RTS_ID #4368.

III – Figure 35   This is the **Review Record** page. Click the **Add** button to add tree survival data.

III – Figure 36   If the user doesn't see the name needed in the **Sample Collected By** drop-down list, he can select "Other." This will open a new page called **Contact**. After he fills in the data for the surveyor and closes the **Contact** page, he can select his addition, which now appears in the **Sample Collected By** drop-down list.

III – Figure 37   Use the **Calendar** tool to fill in the date the survey was completed (For additional details, see III – Figure 16). If the sampled plot was rectangular, fill in plot width and length; if the plot was circular, click the **Circular** radio button and fill in plot radius.

III – Figure 38   This is one of the more complicated pages in the application. The hyperlinked Directions are very helpful.

III – Figure 39   The **Planted Tree Species** drop down list shows only those trees that were planted on the site during reforestation.

III – Figure 40   Select the tree name, fill in the number of living trees of this species counted in the sampled plot and click the **ADD** button to add the record to the **Planted Tree Species** table (For additional details, see III – Figure 18). Repeat these steps for all of the planted tree species found living in this sampled plot.

III – Figure 41   The *Stock Type* is automatically filled in by the application. See **Directions: Note 2** if more that one stock type was planted during reforestation.

III – Figure 42   Here is what the **Planted Tree Species** table looks like all filled in. If a tree species that was planted was NOT found alive in a plot, it does not need a record in the **Tree** table unless **Directions: Note 1** applies. In this example, the 1ˢᵗ sampled plot did not contain any colonizing trees. Click the **ADD Plot to List** button.

III – Figure 43   When the user clicks the **ADD Plot to List** button, the **Tree** tables on the page disappear and the data gets transferred to the **List** that appears on the right of the page. All of the records for a sampled plot have the same Plot_ID. Each time the user adds a plot to the **List**, the Plot_ID increments up by one.

III – Figure 44   In this example, the 2ⁿᵈ sampled plot did contain colonizing trees. When the user clicks the *Yes* radio button in answer to the question *Colonizing tree species present?,* the data entry form for **Colonizing Tree Species** appears.

III – Figure 45   Select the tree name, fill in the number of living, colonizing trees of this species counted in the sampled plot and click the **ADD** button to add the record to the **Colonizing Tree Species** table (III – Figure 18). Repeat these steps for all of the colonizing tree species found living in this sampled plot. In this example, when the 2nd sampled plot is added to the list with the **ADD Plot to List** button, four new rows will appear in the list.

III – Figure 46   In this example, the tree survival survey included eight plots. Data from all eight plots (Plot_ID 16 – 23) is shown in the **List** on the right. This is similar to what the page will look like when all of the tree survival data is entered and the user is ready to click **Go To Site Report**. Note that both **planted** Sweetgum (Stock Type: 1; Tree_ID: 71) and **colonizing** Sweetgum (Stock Type: 4; Tree_ID: 71) were found living in the 4th sampled plot (Plot_ID: 19).

III – Figure 47   The web application calculates these details from the plot data. When the **Save** button is clicked the data are permanently stored in the geodatabase, and the user is returned to the **Review Record** page.

III – Figure 48   A click of the **Save** button on the **Site Summation** page (III – Figure 47) permanently saves the tree survival data to the geodatabase. The **Save Modifications** button does **NOT** save tree survival data to the geodatabase. Now that the tree survival data has been added to the record, the **VIEW** button is available, allowing the user to access the **View Tree Survival Data** page for RTS_ID #4369.

III – Figure 49   The **View Tree Survival Data** page displays the summarized plot data. Click the **Return** button to return to the **Review Record** page.

What is the LMV Joint Venture?

The Lower Mississippi Valley (LMV) Joint Venture is a self-directed, non-regulatory private, state, federal conservation partnership that exists for the purpose of implementing the goals and objectives of national and international bird conservation plans within the Mississippi Alluvial Valley and West Gulf Coastal Plain Bird Conservation Regions (BCR's) as defined by the U. S. Committee of the North American Bird Conservation Initiative. The LMVJV is comprised of eight state wildlife agencies, three federal agencies, and three non-governmental organizations with ecoregional natural resource conservation responsibilities.

The LMV Joint Venture partnership is focused on the protection, restoration, and management of those species of North American avifauna and their habitats (endemic to the LMV Region) encompassed by the North American Waterfowl Management Plan (NAWMP); North American Land Bird Conservation Plan; United States Shorebird Conservation Plan (USSCP); North American Waterbird Conservation Plan (NAWCP); and Northern Bobwhite Conservation Initiative (NBCI). Collectively, these national and international plans are recognized as the North American Bird Conservation Initiative (NABCI). The operational scope of the LMV Joint Venture emanates from the goal and vision for integrated bird conservation partnerships established by the U.S. Committee of NABCI, that being "to deliver the full spectrum of bird conservation through regionally based, biologically driven, landscape-oriented partnerships."

Working group recommendations for enhancing wildlife habitat

The LMV Joint Venture Forest Resource Conservation Working Group is an ad-hoc committee of wildlife biologists and foresters selected by their individual partner organizations to represent them in the development of plans related to the management of forests for wildlife habitat. In 2007 this Group published *Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat*[1] in which they advocated the development of

> "local landscapes of more than 10,000 acres that are extensively forested in a matrix of large blocks of contiguous forest and closely associated smaller forest fragments…[with corridors linking] these forested landscapes" in order to address the [ecoregion]-scale habitat needs of priority wildlife species.

The Working Group concluded with the following recommendations.

- Use the RTS[2] to document and track reforestation events.

- Coordinate the exchange of data to enable the quantitative analysis of forest conditions across political boundaries and ownership.

- Use biologically-based, spatially-explicit decision support tools to determine high priority areas for restoration.

This final report by the Forest Resource Conservation Working Group was accepted for execution by the partnership at the 2007 Spring Board Meeting of the LMV Joint Venture.

Benefits of using RTS

No one agency or organization within the LMV Joint Venture controls an adequate quantity of land in the necessary spatial configuration to meet the ecoregion-scale habitat needs of most priority wildlife species. This is a given. However, working in partnership, the Joint Venture can approach the scope of these habitat requirements. This is the strength of the Joint Venture approach: where we are each working towards a common conservation goal, let us join forces to maximize benefits.

Reforestation is a traditional conservation activity. The dollars of many Joint Venture partners are committed, on a line-item basis, to tree planting and tree survival surveys. The RTS increases the "return"

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[1] Lower Mississippi Valley Joint Venture Forest Resource Conservation Working Group. 2007. *Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat*. Edited by R. Wilson, K. Ribbeck, S. King and D. Twedt.

[2] RTS: A suite of web-based tools called the Reforestation Tracking System – geo-RTS, e-RTS, and RTS Query Builder.

from these individual partner investments, turning spatially and temporally isolated events into a biologically-cognizant whole. Benefits from using RTS accrue

- In a single office within a single year,
- In a single office over several years as foresters and wildlife biologists come and go,
- Over time between different offices in the same organization or agency,
- Between LMV partners in a single year, and
- Between LMV partners over time (IV – Table 1).

IV – Table 1   Benefits from using RTS.

Easy to learn; easy to use	Past experience has shown that the RTS has a minimal user learning curve. While a well-illustrated User Manual provides step-by-step directions, and technical assistance is only a phone call away, generally, users find each page of the application self-explanatory.
Speeds data entry	Data entry time is minimized because the user wastes no time typing in repetitive answers. Drop down lists and radio buttons allow the user to quickly click his way through the answers.
Improves data quality	Skips in data entry and typos are minimized because data validators are built-in; the web application doesn't move forward until the required data is entered properly so many mistakes in data entry are eliminated.
	Data is standardized. All data fields and variable domains were defined by the Forest Resources Working Group. All organizations using RTS use the same sets of codes for land use, site preparation, tree species, etc.
	Access to enter and edit data is controlled and secure at the server level.
	Data quality control is completed in a documented manner on a scheduled timeframe.
Maintains flexibility	The RTS can handle atypical responses on-the-fly. For example, if a reforestation event was funded by a source not listed in the drop down menu, the user can easily record her specific funding source by selecting "Other" and filling in the provided textbox.
Saves money	Individual offices or organizations do not need to invest personnel man-hours or expend computer resources building, upgrading and maintaining the ArcSDE enterprise geodatabase. This work is done in one, centralized location.
Updates easily	Approved updates to the RTS database structure need to be done only in one, centralized location. For example, if the Joint Venture Partners decide there is a need to add an option to a Look Up Table, this addition to the RTS structure needs to be verified as done properly only on one server as opposed to a multitude of computers located in the distributed offices of all the partners.
Produces customized reports	The RTS lowers hardware, software and knowledge barriers that often impede access to answers from data stored in a relational database. The RTS Query Builder is a web application that enables anyone with an Internet connection and a mouse to build sophisticated queries without knowledge of query syntax or the structure of the geodatabase.
Increases the informational value of the data	The RTS transforms individual, isolated events into a biologically-cognizant whole, creating the information required to assess forest conditions across political boundaries and ownership and better inform adaptive management decisions.
Provides data for spatially explicit decision support models	For example, data from the RTS supports updates to the forest layer, a primary spatial data layer in the *Forest Breeding Bird Priority Habitat Decision Support Model*[3].

Through administrative commitment

Use of the RTS in one office in one year can increase reporting efficiencies, but it is over time (several years) and space (across the spatial extent of the Joint Venture) that the RTS will truly be of service. The potential of the RTS will be realized through a cohesive commitment to the accumulation and use of its data by all Joint Venture members. As data accumulate in the geodatabase year after year, recording the planting and survey work at individual sites located on assorted geomorphic and soil conditions under different hydrologic regimes, the RTS dataset will become more informative. When all of the distributed offices have invested the necessary "oomph" required to get the historical and current reforestation records into the RTS, the partnership will have an ecoregional depiction of reforested habitat. In addition, the partners will be able to infer the survival probabilities of seedling stock and acorns planted under a variety of conditions. These data will support the development of spatially-explicit decision support models and better inform adaptive land management decisions.

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[3] Twedt, D. J., W. B. Uihlein, III and A. B. Elliott. 2005. A Spatially Explicit Decision Support Model for Restoration of Forest Bird Habitat. *Conservation Biology* 20:1[100 – 110].

MISSION
The LOWER MISSISSIPPI VALLEY (LMV) JOINT VENTURE functions as the forum in which the private, state, and federal conservation community develops a shared vision of bird conservation for the LMV region; cooperates in its implementation; and collaborates in its refinement.

Arkansas

Kentucky

Louisiana

Mississippi

Missouri

Oklahoma

Tennessee

Texas

US Fish & Wildlife

US Forest Service

US Geological Survey

Ducks Unlimited

The Nature Conservancy

The Conservation Fund

Wildlife Management Institute