

### Preparing the Southwestern Willow Flycatcher for the Tamarisk leaf beetle

Presentation to the Middle Rio Grande Endangered Species Collaborative Program

**Ondrea Hummel and Joe Schroeder** 

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#### Introduction

#### **Ondrea Hummel Senior Environmental Scientist**

- Ecological restoration (riparian and wetland) planning, environmental documentation, implementation and monitoring
- Threatened and endangered species habitat analysis and species inventory
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#### Joe Schroeder Environmental Scientist

- Wetland delineation, CWA Section 404 permitting
- Upland/wetland riverine ecological restoration, habitat sampling and mapping
- Advanced remote sensing analysis, LiDAR data analysis, GIS modeling and mapping
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#### **Goals and Objectives:**

- Issues and key habitat relationships for SWFL
- Habitat restoration planning
- Complete an analysis of existing SWFL habitat along the MRG in terms of:
  - plant species composition and structure,
  - patch size,
  - location of territories,
  - fire,
  - saltcedar
  - biocontrol by TLB defoliation
  - other stressors
  - connectivity and distance of habitat to surface water
- Identified 25 areas with 103 potential sites between Los Lunas to the full pool and delta of Elephant Butte Reservoir (RM 40)

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Endangered Southwestern Willow Flycatcher Habitat Relationships along the MRG in NM



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# Current Study (2018-2019) Goals and Objectives

- Further use by TLB and resulting effects
- Evaluate changes within the system for the past 4-5 years
- 'metapopulation connection'
- Provide more detailed update and analysis in order to 'provide a logical set of potential restoration sites such that managers may begin a site screening and planning process'



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### **Current Study**

- TLB throughout MRG
- Vegetation (H&O, 2016)
  - Sites with greater than 25% salt cedar (A)
  - Sites with less than 25% salt cedar (B)
- Groundwater depth to groundwater less than 5 feet
  - Used RIP-ET model
- Flycatcher territories within </= 10 miles of existing territories
  - List of sites provided by USFWS to NOT include
  - Also added one site per discussion with USFWS
- Completed or Planned HR Projects
- Fire
- Land Ownership

- Found some anomalies in sites; therefore, looked at other new/additional data:
- Flycatcher Habitat Suitability Model, 2016
- USGS Flycatcher Breeding Habitat Model, 2016
  - Verification
- NDVI Verification
- Additional alternative ('Alt') sites



#### **MRG TLB convergence**





#### **TLB Distribution 2019**





### **Results of Initial Model Assessment** and Discussion

- Presentation to CP Joint Workgroups 10/2018, 3/2019
- Results of Discussion:
  - Do not include sites outside 10-mile nesting buffer
  - Do not include sites within Elephant Butte Full Pool extent (South of RM 60)
  - Received updated information on completed/planned projects (RM83, etc.)





# Results of Secondary Model Assessment

- Approximately 203 sites initially identified
- Reduced to 50 sites by reviewing:
  - 10-mile nesting buffer
  - Patch size
  - Ease of transition from unsuitable to suitable habitat
  - Ecological site potential
  - Adjacent land uses RR, etc.
  - Access/ownership
  - Inundation
  - Depth to water
  - Susceptibility to scour (+/-)





### **Field Validation**

#### Field validation of 50 semifinal sites

- Sites removed when spatial datasets were not representative of field conditions:
  - Depth to Water
  - Inundation
  - Vegetation Density (site potential)
  - Vegetation Type
  - Access
- Sites removed when unanticipated adverse conditions existed
  - Saline/sodic soils
- Sites removed per discussion with USFWS regarding overlap with suitable YBCU habitat





### Recommendations

- 50 semifinal sites honed down to 9 final priority sites
  - Installed groundwater wells where not present
  - Collected soils and additional data
  - Synthesized and presented to stakeholders Nov 2019.

#### • What do the Priority Sites represent?

- The 'low hanging fruit'. Getting more for less...
  - Ease of Access
  - Risk
  - Construction Practicality/Cost
  - Habitat Value
  - Ownership
  - Mesohabitat (trap habitat/fill the gaps)

#### • What do Non-Priority Sites represent?

- Inventory of all viable restoration sites from Los Lunas to the full pool extent of Elephant Butte Reservoir.
- Memorialization of restoration siting information gathered into an easily referenced document/mapset





#### Site 1: A-43



- Site Size: 5 acres
- Post Restoration Habitat Patch Size: 15-acres+
- Access: Good (Existing fire road)
- Suitability: 50% M 50% U
- Vegetation and Habitat: RO-SC4 & C-RO/SC-CW-NMO3d
- Hydrology: 3-5ft DTW and edge inundation during 4k flows
- Disturbance History: Formerly agricultural field and contains relict berm infrastructure (inset)
- Yellow-Billed Cuckoo and Silvery Minnow: No recent YBCU territories within 2-miles of site. Silvery minnow considerations required during design phase due existing water retention berms.
- Flycatcher Risk Factor: High. High affinity habitat with significant saltcedar component. Flycatcher colonies located 8 miles south of site utilizing similar habitat.
- Restoration Goal: Removal of trap habitat and development of high affinity native habitat. Connecting with suitable habitat to the north to create one of the largest suitable habitat patches north of EBFPD.
- Restoration Value: Northward expansion of breeding range.

# Southwest Willow Flycatcher Modeling: Lessons Learned





- MRG Spatial Data Inventory
- Correlations: Spatial Resource Data -Nesting Habitat
  - Inundation Mapping (aerial interpretation)

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- Streamflow Modeling
- Vegetation Productivity (NDVI)
- Vegetation Density (LiDAR)
- Vegetation Height (LiDAR)
- Vegetation Type and Patch Size (H&O Mapping/LiDAR/NDVI/Aerial Imagery)

#### Models and Modules

- Correlations
- Filters
- Sorting and Scoring
- Adaptability

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