Southwestern Willow Flycatcher (Empidonax traillii extimus): A Species Conservation Plan for Rio Mora National Wildlife Refuge

Department of Environmental Biology, Regis University, Denver, CO

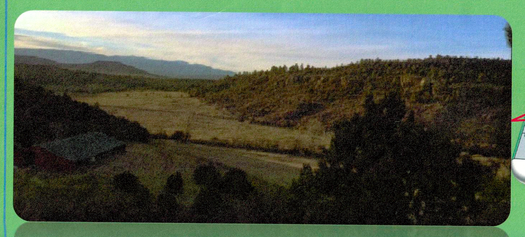
Ryan Lee[1], Ricky Martinez[2], and Chris Scott[3]

[1]rlee005@regis.edu, [2]rmartinez012@regis.edu, [3]cscott005@regis.edu

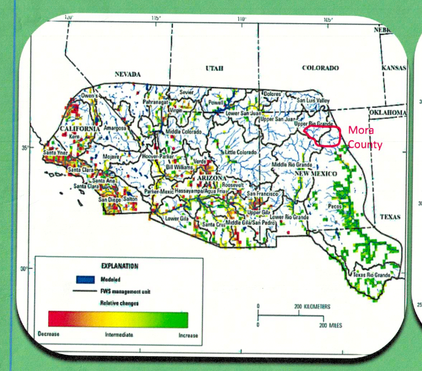
Background

About Rio Mora National Wildlife Refuge

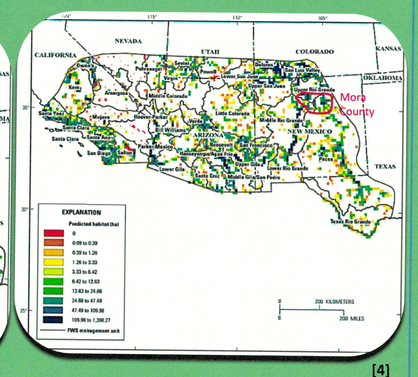
- 4,224-acre refuge established in 2012 [2]
- A wildlife corridor that ensures protection and restoration of the Mora River watershed [2]
- Benefits many grassland and woodland species, including the southwestern willow flycatcher [2]



Relative Changes in Habitat [1]



Predicted SWFL Habitat [1]



[4]

- **Predicted Southwestern Willow Flycatcher Habitat Below 5,000 feet, as determined by satellite, USGS 2013-2015**
- **Predicted Southwestern Willow Flycatcher breeding habitat (averaged across 2013-15) at all elevations in 6,521 USGS 7.5 minute quadrangles**

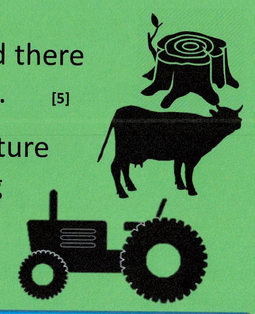
- **National Status:** ENDANGERED (Federally listed 1995) [1]
- **Population Size:** Roughly ~2,500-3,000 nesting pairs [4]
- **Historic Trend:** Population declined by 46% (1970-2014)
- **Population Trend:** Increasing with conservation efforts
- **Range:** Neotropical Migrant, winters in Central America and breeds in the southwestern United States.
- **Habitat Requirements:**
  - Riparian Obligates [5]
    - Surface water must be present or soil must be moist enough to maintain appropriate vegetation
  - Dense vegetation
  - Tree or shrub cover ≥ 3m tall
  - Dense twig structure
  - high level of live green foliage

[4]

Threats

Why is SWFL listed on the ESA?

- Loss of riparian habitat is what played there largest roll in the decline of the SWFL. [5]
  - Dam construction
  - Groundwater pumping
  - Water diversions
  - Flood control
  - Agriculture
  - Grazing



Ecological Significance

- SWFLs control insect populations around wetlands and waterways.
- They are biological indicators of healthy riparian habitat.
- Promoting the conservation of SWFLs also means promoting the restoration and health of riparian systems, eliminating invasive species, and restoring native vegetation
- Restoring populations will bring back a native insectivore that will enhance the natural food web

[4]

Objective & Goals

- **Awareness:** Raising awareness and setting up outreach events is always one of the key first steps to starting a conservation project.
- **Filling Gaps In Knowledge:** Even with rapidly growing technology we still are lacking knowledge in many area like population size and trends when it comes to threatened and endangered species.
- **More Research:** Study, study study, more data and information Is never a bad thing.
- **A Movement:** Getting other involved and making a conservation movement is exciting and works.

Grazing

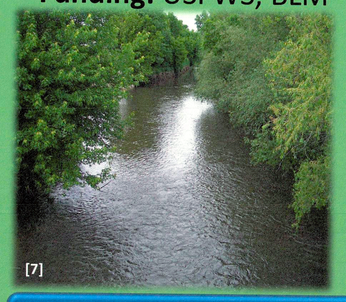
- **Action:** Tracking grazers to develop strategy for where to replant willow
- **Funding:** DZF, USFWS, USDA
- **Cost:** $125 per bison,$350 per year additional costs
- **Success:** Obtaining spatial data determines effective locations for willow planting .
- **Monitor:** Ground surveys to assess riparian areas
- **Stakeholders:** RMNWR, USFWS, Pojoaque Pueblo

[9]

Replanting

- **Action:** Replanting willows and removing weeds like *Centaurea stoebe* to increase suitable habitat
- **Funding:** USFWS, BLM
- **Stakeholders:** RMNWR, Local K-12 students, Anglers, Local ranchers & farmers
- **Cost:** $10,000 per year
- **Success:** Aerial photos reveal an increase in riparian vegetation cover
- **Monitor:** Aerial photos

[8]



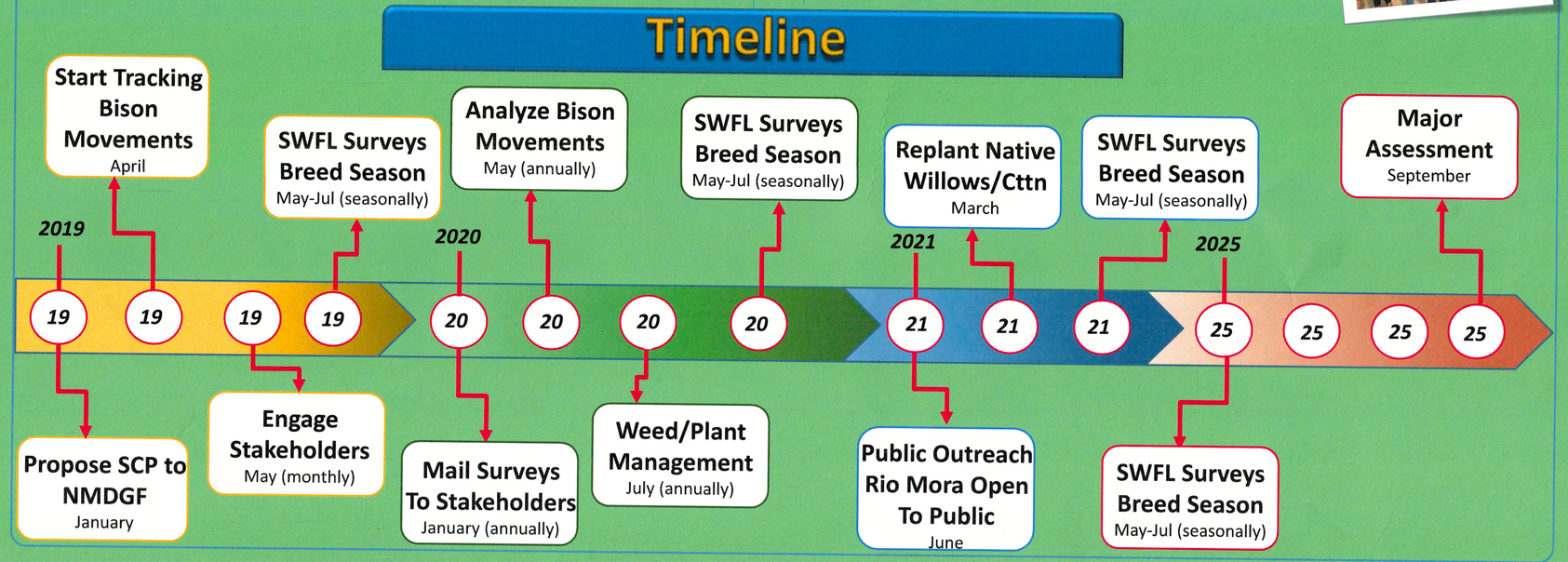
[7]

Outreach & Education

- **Action:** Hold public workshops and distribute flyers to educate private citizens about riparian ecosystem recovery
- **Funding:** DZF, Pojoaque Pueblo, MCMO
- **Success:** Percent of stakeholders participating in meetings & applying recommended techniques
- **Stakeholders:** Local community, Local ranchers & farmers, LVNWR, MNWR
- **Cost:** $1,450 per year
- **Monitor:** Surveys to measure participation

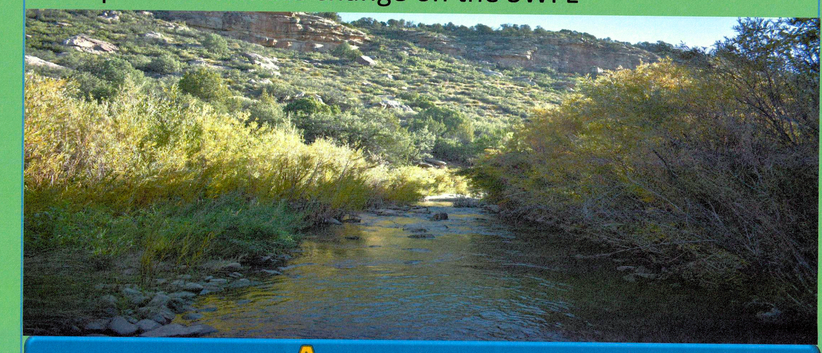
[6]

Timeline



Knowledge Gaps

- Accurate population estimates in RMNWR
- Unknown SWFL nesting sites at RMNWR
- Unknown historic population size
- Best management/monitoring practices
- Impacts of climate change on the SWFL



Acronyms

BLM – Bureau of Land Management
DZF – Denver Zoological Foundation
LVNWR – Las Vegas National Wildlife Refuge
MNWR – Maxwell National Wildlife Refuge
NMLC – New Mexico Land Conservancy
RMNWR – Rio Mora National Wildlife Refuge
SWFL – Southwestern Willow Flycatcher
USDA – U.S. Department of Agriculture
USGS – U.S. Geological Survey
USFWS – U.S. Fish & Wildlife Service
MCMO- Mora County Managers Office

[12]

Acknowledgements

We would like to list the individuals and partners that contributed in a variety ways to the design to the ideas presented in this species conservation plan:

Denver Zoological Foundation – For being superb partners and being a playmaker at Rio Mora NWR, and supplying any of our needs for research.

Erica Garroutte – For her professionalism and guidance for helping our research project.

Shantini Ramakrishnan – For her guidance and organization for our research and helping us understand Rio Mora, her wisdom of Rio Mora is beyond.

Luis Ramirez – For sharing his superior knowledge for the vegetation at Rio Mora and helping guide our research.

Literature Cited

[1] USGS. (2019). New study details endangered southwestern willow flycatcher habitat. https://www.usgs.gov/news/new- study-details-endangered-southwestern-willow-flycatcher-habitat-and-new

[2] USFWS. (2019). Rio Mora national wildlife refuge. https://www.fws.gov/refuge/Rio_Mora/about.html

[3] USFWS. ECOS environmental conservation online system. https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B094

[4] Cornell Lab of Ornithology. All about the birds. https://www.allaboutbirds.org/guide/Willow_Flycatcher/lifehistory

[5] Sogge, M. K., Ahlers, D., & Sferra, S. J. (2010). A natural history summary and survey protocol for the southwestern willow flycatcher. *U.S. Geological Survey Techniques and Methods*, 10, 1-38.

[6] USFWS. Rio Mora Visitors. https://www.fws.gov/refuge/Rio_Mora/visit/visitor_activities.html https://en.wikipedia.org/wiki/Straight_River_(southern_Minnesota)#/media/File:Straight_River_Owatonna.jpg

[8] http://www.israelnationalnews.com/News/News.aspx/224655

[9] Thomforde, S. Pollinators are grazers. http://www.israelnationalnews.com/News/News.aspx/224655

[10] National Park Service. (2019). Southwestern Willow Flycatcher. https://www.nps.gov/articles/southwestern

[11] Sogge, M.K., Ahlers, Darrell, and Sferra, S.J., 2010, A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

[12] https://www.iucnredlist.org/species/15953/123791436