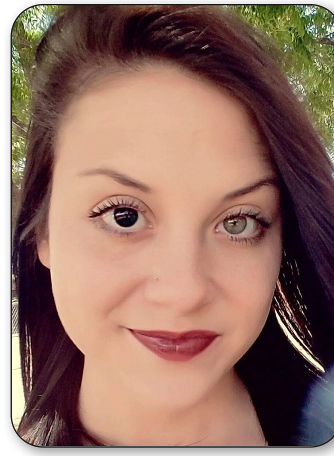
Riparian Management Effects on Flow Along the Canadian River

Jasper Brusuelas, New Mexico State University, master's degree student



Jasper Brusuelas is a graduate student at New Mexico State University. She is currently pursuing a master's degree in range science and a minor degree in geographic information systems and technology. She is from Las Cruces, NM and has a two-year-old son, Oliver. She is currently living in High Rolls, NM after accepting a pathways position as a natural resource specialist for the US Forest Service in the Lincoln National Forest. She hopes to further her career in range science or botany as she has developed a passion for researching and measuring plants from her attendance at NMSU.

Figure 1. Introduction.

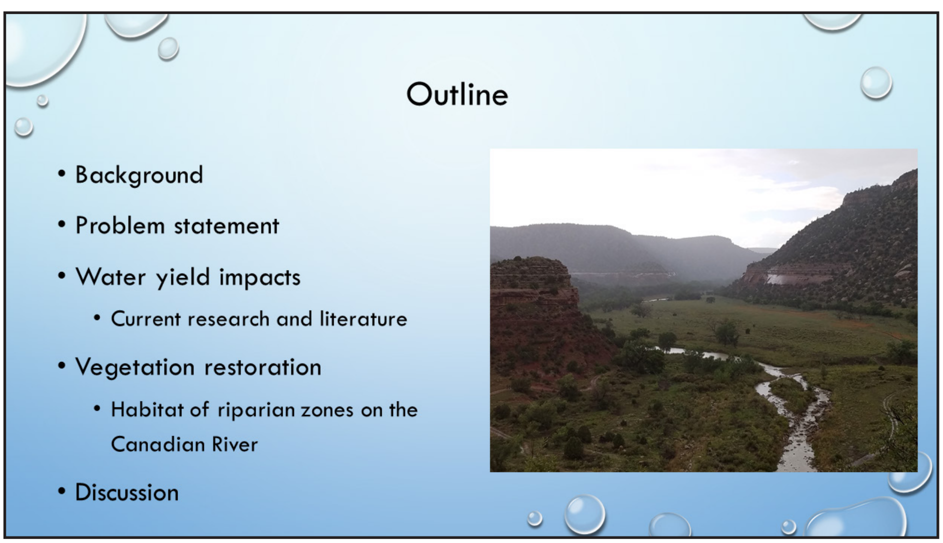


Figure 2. Outline.

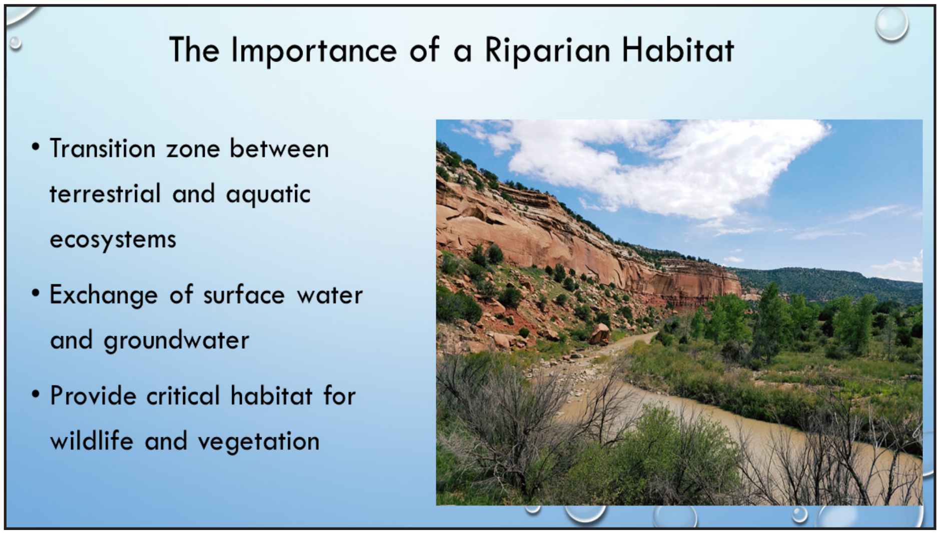


Figure 3. The importance of a riparian habitat.

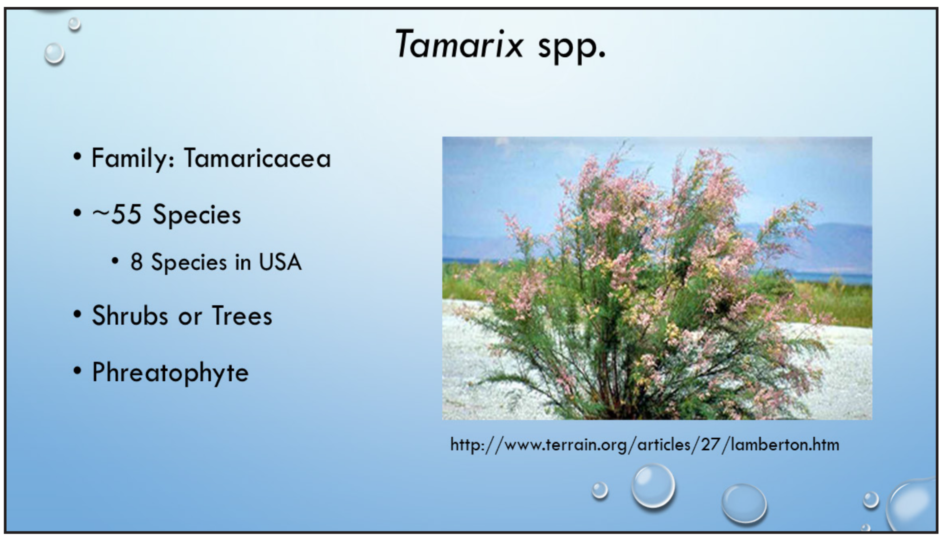


Figure 4. Tamarix spp.

Figure 5. Tamarix spp. introduced in the 1800s.

Figure 6. Tamarix spp. reasons for introduction.

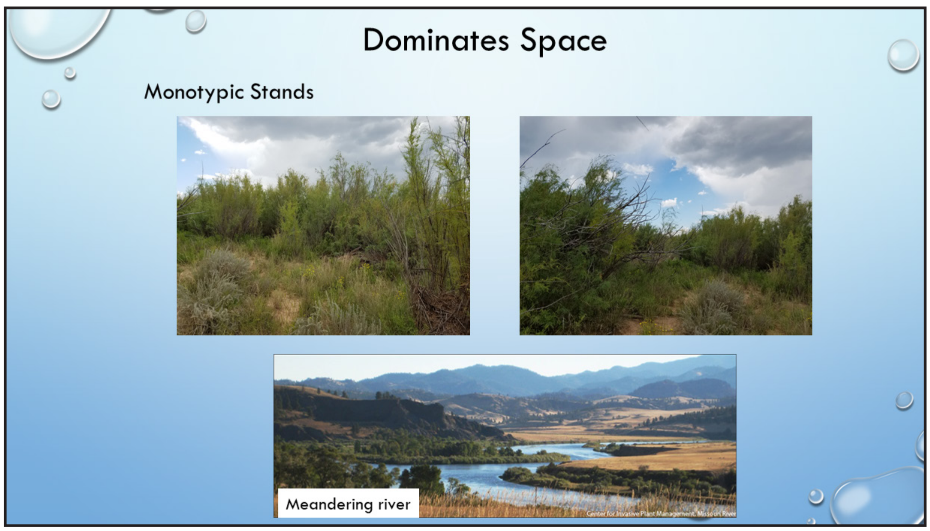


Figure 7. Tamarix spp. dominates space.

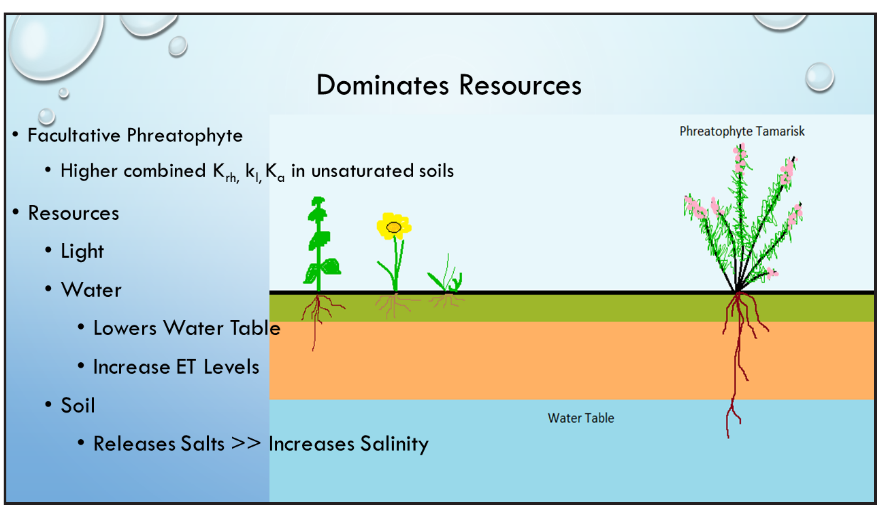


Figure 8. Tamarix spp. dominates resources.

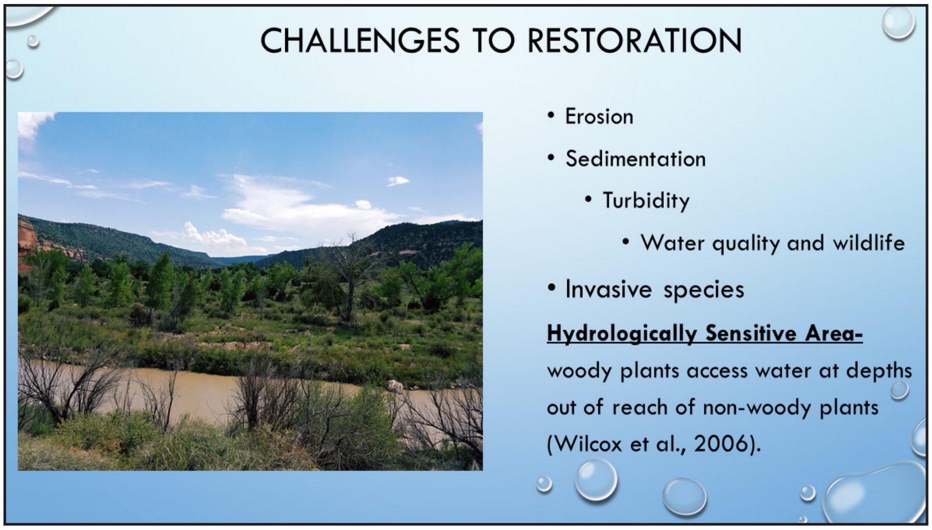


Figure 9. Challenges to restoration.

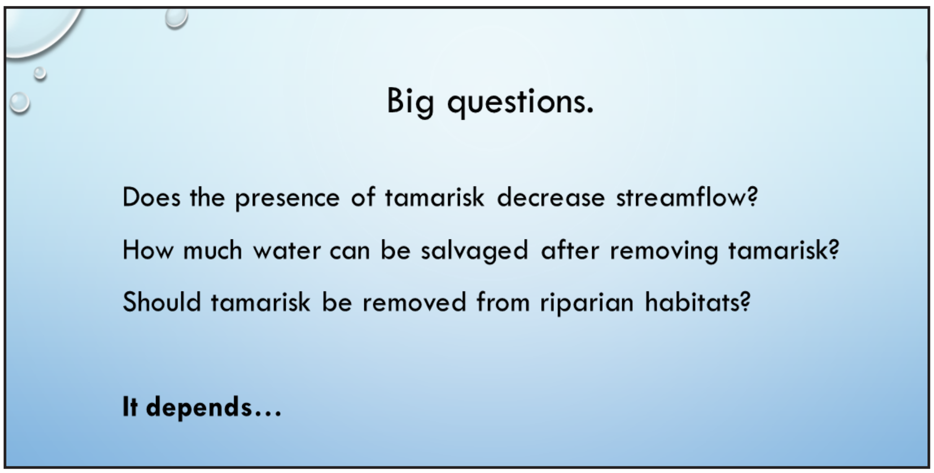


Figure 10. Big questions.

Figure 11. Tamarix spp. is highly resilient.

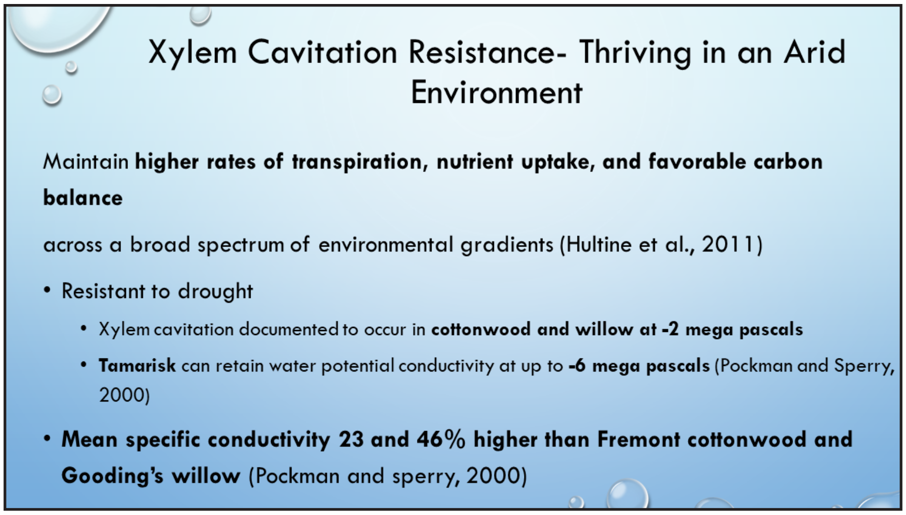


Figure 12. Xylem cavitation resistance - Thriving in an arid environment.

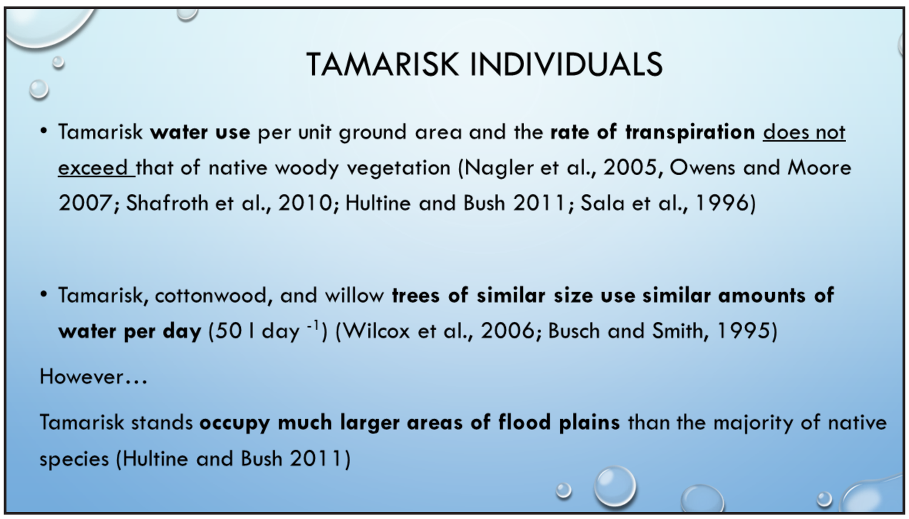


Figure 13. Tamarisk water use and rate of transpiration do not exceed that of native woody vegetation, but tamarisk stands occupy much larger areas of flood plains.

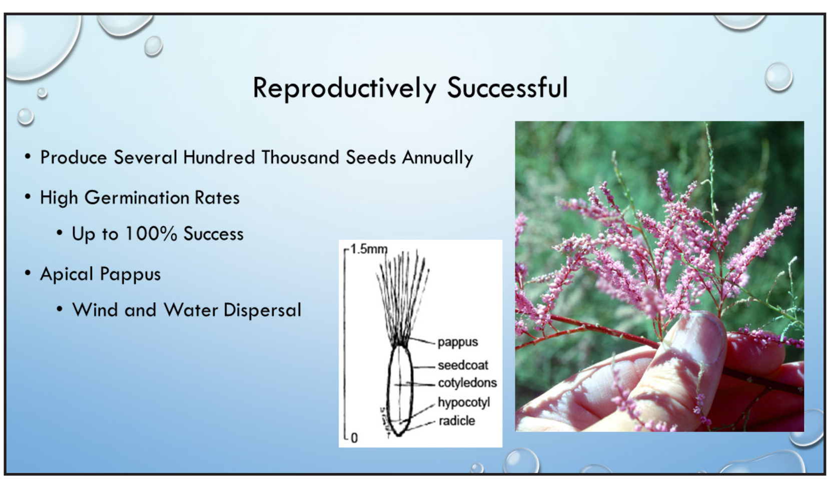


Figure 14. Tamarisk reproductively successful.

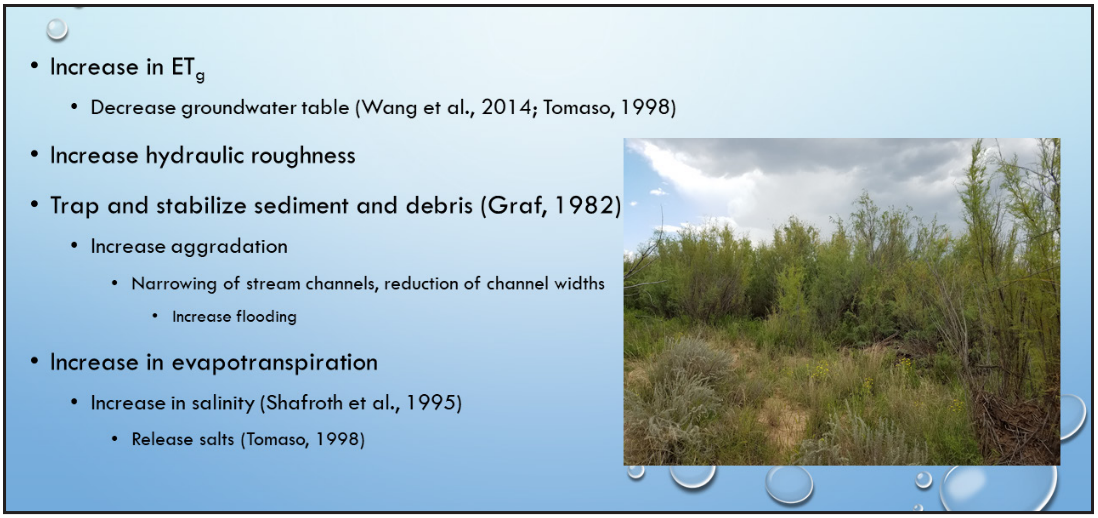


Figure 15. Tamarisk stands.

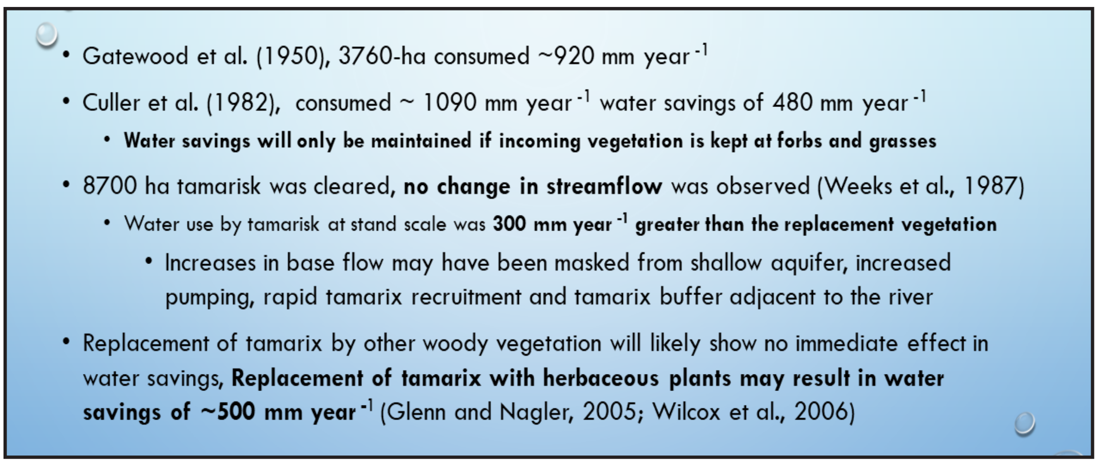


Figure 16. Water salvage studies.

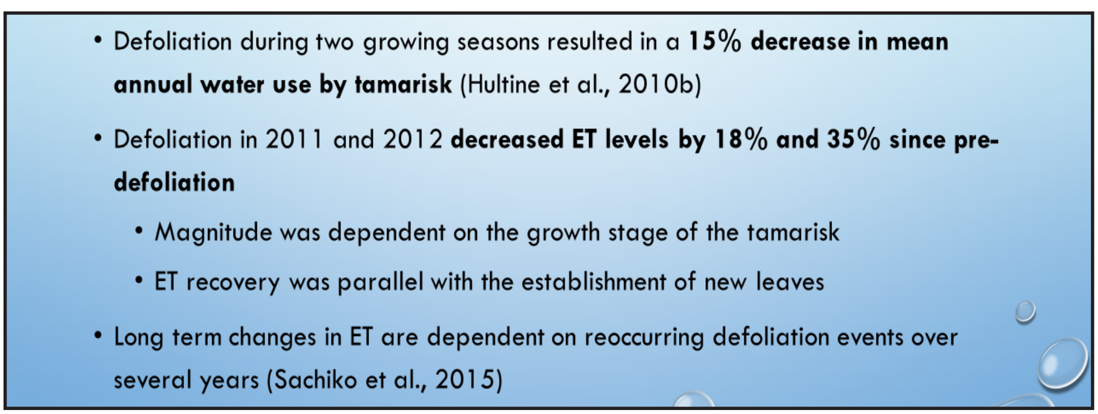


Figure 17. Control of tamarisk by diorhabda carinulata (species of leaf beetle) and effects on ET.

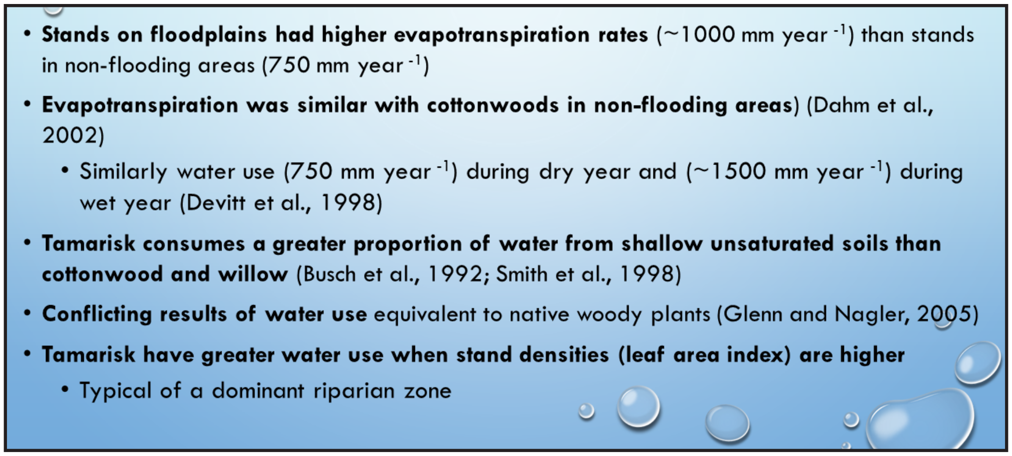


Figure 18. Results will vary at different scales: tree, stand, and landscape.

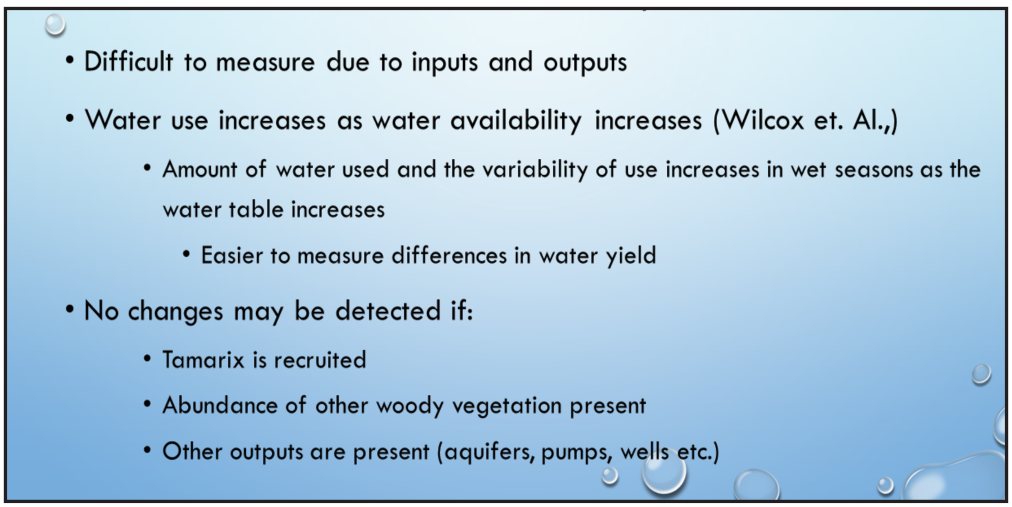


Figure 19. Tamarisk landscape.

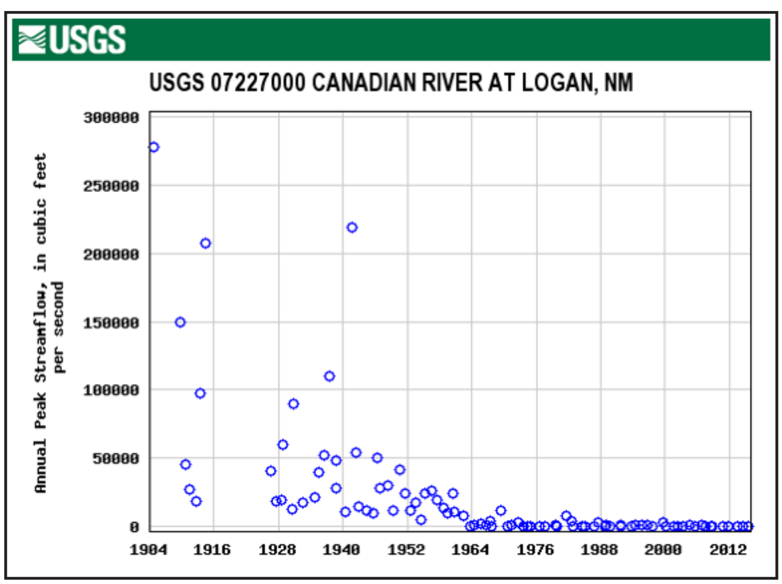


Figure 20. Canadian River streamflow reduction since early 1900s.

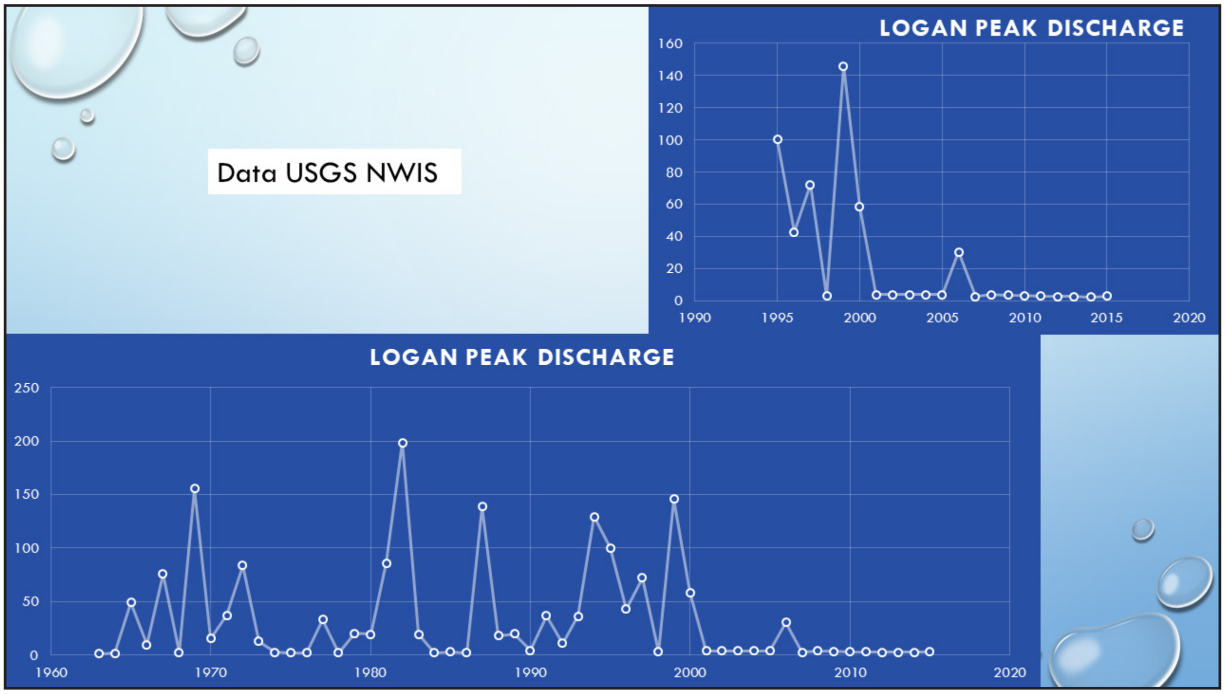


Figure 21. USGS data for Logan Peak discharge.

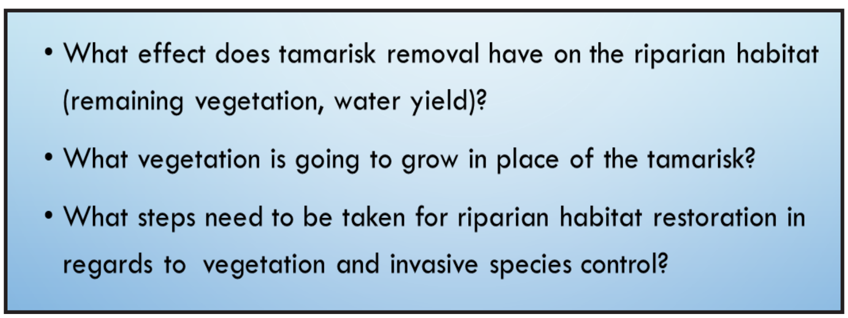


Figure 22. Vegetation response and restoration in riparian habitats on the Canadian River.

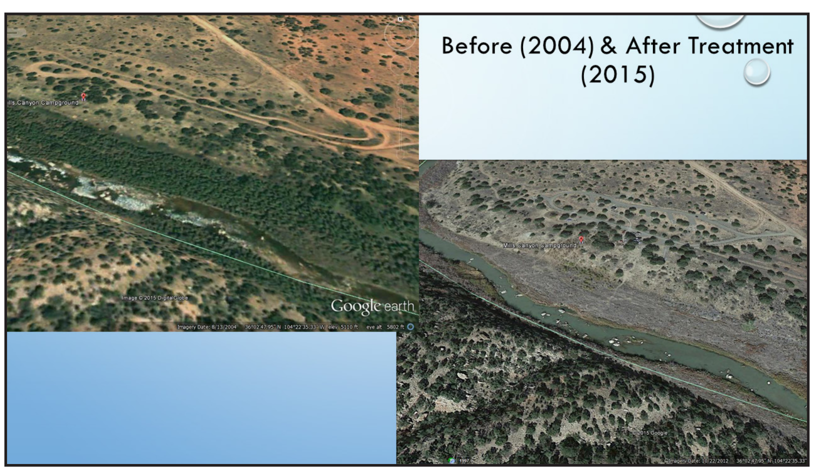


Figure 23. Before (2004) and after treatment (2015).

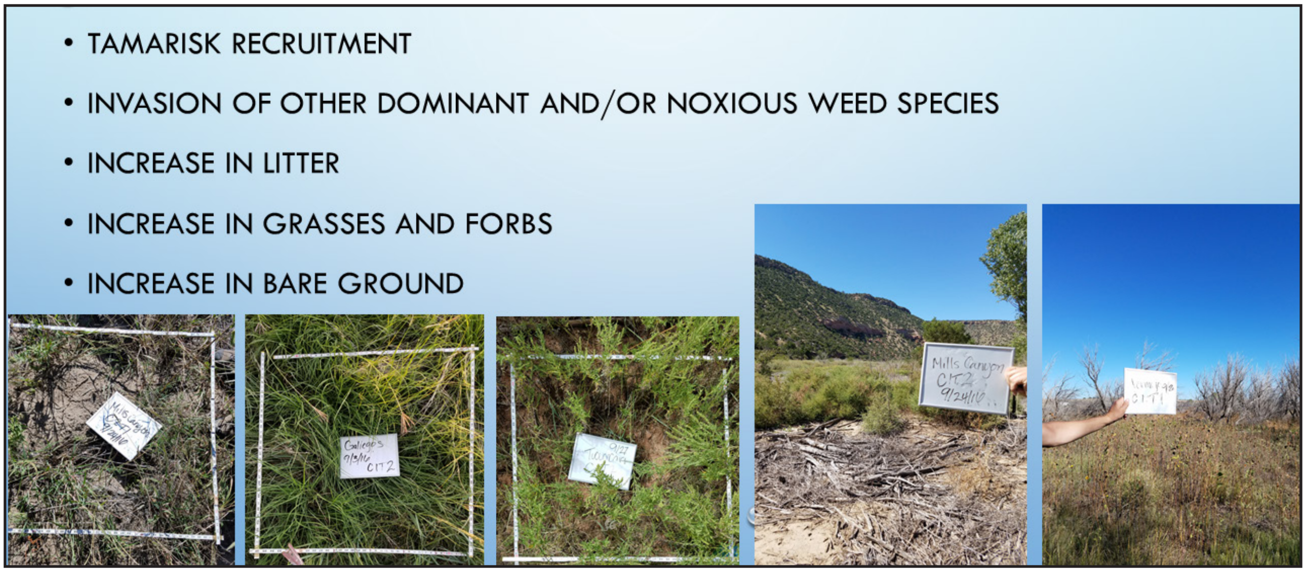


Figure 24. Response of vegetation to the treatment and removal of tamarisk in arid riparian zones; a case study of potential forage availability for mule deer along the Canadian River.

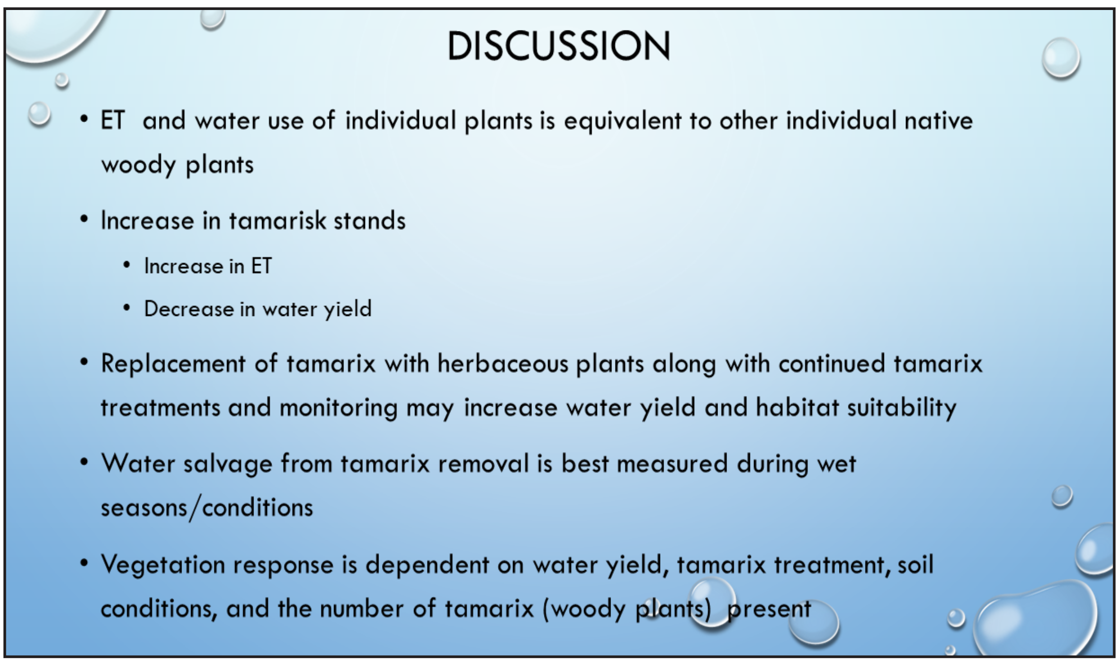


Figure 25. Discussion.

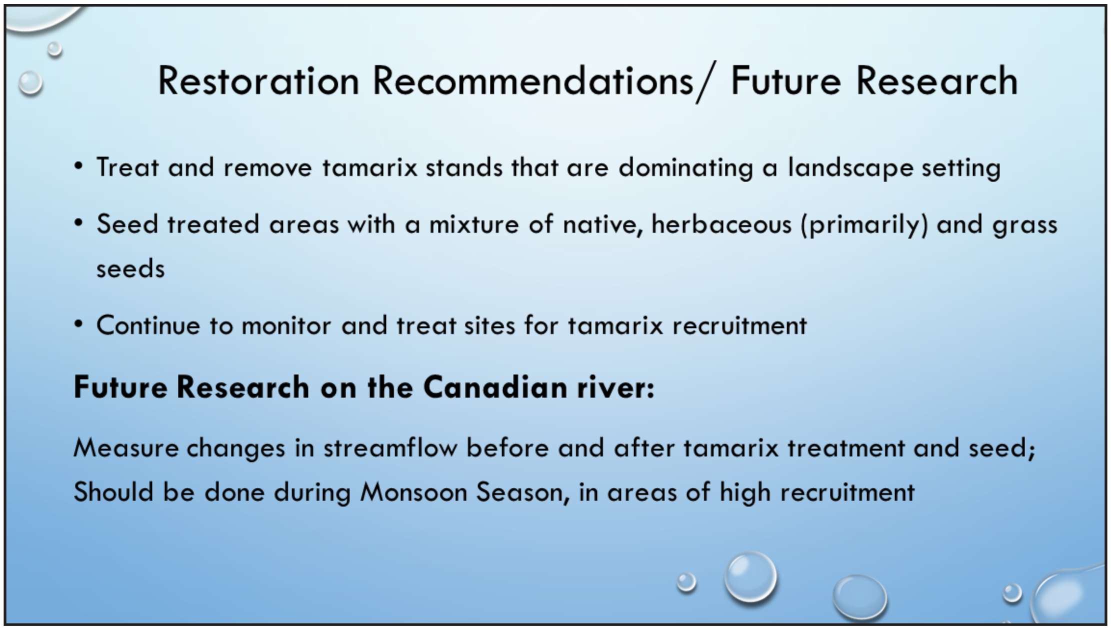


Figure 26. Restoration recommendations/future research.