A BRIEF OVERVIEW OF ASHE JUNIPERS

(aka Mountain Cedars)

THESE NATIVE TREES ARE NOT WATER HOGS

Juniper water use is similar to other native trees.^{3,7,9,15} Junipers and oaks can grow side by side since they have different water use strategies.²

Juniper cover catches 40%, NOT 70%, of rains. Tall grass prairie cover catches about the same.^{17,29}

Clearcutting junipers does not significantly increase spring flows.^{21,25,26} Spring flows return to pre-clear flows after 3-5 years.^{6,3,14,22}

THEY INCREASE GROUNDWATER FLOWS

On limestone bedrock with shallow soils, junipers increase groundwater flows and storage. $^{\rm 5,8,21,22}$

Texas A&M studies discovered Hill Country river levels have increased since the 1940s where junipers have respread.²⁷



THEY REBUILD DEGRADED SOIL Better soil reduces downslope flooding and increases drought resilience.^{6,8,9,15,19,22,27}

THEY REDUCE AIR POLLUTION^{18,23}

YOU CAN STILL GET CEDAR FEVER IF YOU CUT THEM

Being within 200 miles of male junipers can still give you cedar fever.¹³ A more logical solution would be to take care of your immune system during cold and flu season. Laws that support removal of one allergy causing plant will set a precedent to remove other allergy causing plants such as oaks, elms, and prairie grasses.



THEY CAN LIVE HUNDREDS OF YEAR

These native specimen junipers have greater drought and wildfire resilience. 10,11,12



THEY PROVIDE IMPORTANT HABITAT 1,10,14,18 Dense canopies and berries shelter and feed wildlife in winter. Older juniper bark provides nesting materials for wildlife.



REFERENCES

- 1. Chavez-Ramirez, Felipe, 1992. The Role of Birds and Mammals in the Dispersal Ecology of Ashe Juniper in the Edwards Plateau. Texas, A&M University Thesis.
- Crouchet, Sarah E., Jennifer Jensen, Benjamin F. Schwartz, and Susanne Schwinning, 2019. "Tree Mortality after a Hot Drought: Distinguishing Density-Dependent and -Independent Drivers and Why It Matters," Frontiers in Forests and Global Change. Volume 2(21): 1-14.
- 3. Dammaeyer, Heather Cardella, 2010. Short-term Responses of Clear Cutting on the Water Supplies, Water Status, and Growth of Remaining Vegetation: Which Species Has Most to Gain? Texas State University thesis.
- Dammeyer, Heather Cardella, Susanne Schwinning, Benjamin F. Schwartz, and Georgiane Moore, 2016. "Effects of Juniper Removal and Rainfall Variation on Tree Transpiration in a Semi-Arid Karst: Evidence of Complex Water Storage Dynamics," Hydrological Processes. Volume 30: 4568-4581.
- 5. Dasgupta, S., B. P. Mohanty, and J. M. Kohne, 2006. "Impacts of Juniper Vegetation and Karst Geology on Subsurface Flow Processes in the Edwards Plateau," *Texas, Vadose Zone Journal.* Volume 5(4), 1076-1085.
- 6. Dugas, W.A., R. A. Hicks and P. Wright, 1998. "Effect of removal of Juniperus Ashei on Evapotranspiration and Runoff in the Seco Creek Watershed," *Water Resources Research*. Volume 34(6): 1499-1506.
- 7. Heilman, J.L., K.J. McInnes, J.F. Kjelgaard, M. Keith Owens, and S. Schwinning, 2009. "Energy Balance and Water Use in a Subtropical Karst Woodland on the Edwards Plateau, Texas," *Journal of Hydrology*. doi:10.1016/j.jhydrol.2009.05.007.
- Litvak, M.E., S. Schwinning, and J.L. Heilman, 2010. "Woody Plant Rooting Depth and Ecosystem Function of Savannas: A Case Study from the Edwards Plateau Karst, Texas, USA.," *Ecosystem Function in Global Savannas: Measurement and Modeling at Landscape to Global Scales*, edts. M.J. Hill and N.P. Hanan. CRC Press: Boca Raton.
- 9. McGreevy, Elizabeth, 2021. Wanted! Mountain Cedars, Dead and Alive. Spicewood Publications: Austin, Texas.
- 10. McLemore, Caren L., 2001. Physiognomy and Age Structure of Selected Mature Juniperus Ashei (Buchholtz) Stands in Guadalupe River and Meridian State Parks, Texas. Texas Christian University Thesis: Fort Worth.
- 11. Miller, Rock, Robin Tausch, and Wendy Waichler, 1999. "Old-Growth Juniper and Pinyon Woodlands," USDA Forest Service Proceedings. RMRS-P-9: 375-384.
- 12. Mohanty, Rashmi Prava, Mark Alan Buccheim and Estelle Levetin, 2017. "Molecular Analysis Confirms the Long-Distance Transport of Juniperus Ashei Pollen," *PLoS ONE*. Volume 12(3): 1-13.
- 13. Nelle, Steve, 2001. "A Holistic Perspective on Juniper," 2001 Juniper Symposium Proceedings. Texas A&M Research Station: Sonora. Technical Report 01-1.
- 14. Owens, Keith and Jim Ansley, 2001. "Ecophysiology and Growth of Ashe and Redberry Juniper," Juniper Symposium 2001. Technical Report 01-1.
- 15. Owens M.K. and R.K. Lyons, 2004. Evaporation and Interception Water Loss from Juniper Communities on the Edwards Aquifer Recharge Zone, Final Report. Texas A&M University: College Station.
- Owens, Keith M., Robert K. Lyons, and Chris L. Alejandro, 2006. "Rainfall Partitioning within Semiarid Juniper Communities: Effects of Event Size and Canopy Cover," Hydrological Processes. Volume 20: 3179-3189.
- 17. Rollins, Dale and Bill Armstrong, 2001. "Cedar Through the Eyes of Wildlife," 2001 Juniper Symposium Proceedings. Texas A&M Research Station: Sonora. Technical Report 01-1.
- 18. Sawers, Brian, 2019. "Controlling Biogenic Volatile Organic Compounds for Air Quality." The Supplement, 94(5).
- 19. Sorenson, Joshua Russell, 2004. The Use of Large Plot Rainfall Simulation to Investigate Runoff Generation on the Edwards Plateau, Texas. Texas A&M University Thesis: College Station.
- 20. Taucer, Philip Isaiah, 2006. "The Effects of Juniper Removal on Rainfall Partitioning in the Edwards Aquifer Region: Large-Scale Rainfall Simulation Experiments," Texas A&M University Thesis: College Station.
- Thurow, Tom, Amy P. Thurow, Charles Taylor, Jr., Richard Conner, and Matthew Garriga, 2001. "Environmental and Economic Tradeoffs Associated with Vegetation Management on the Edwards Plateau," 2001 Juniper Symposium Proceedings. Texas A&M Research Station: Sonora. Technical Report 01-1.
- 22. Thurow, T.L. and J.W. Hester, 1997. "How an Increase or Reduction in Juniper Cover Alters Rangeland Hydrology," 1997 Juniper Symposium Proceedings. Texas A&M Research Center. Technical Report 97-1.
- 23. Traverso, Vittoria, 2020. "Urban trees can help cut air pollution from New York to Beijing, but which trees do the best job? Future Planet weighs up the options." The BBC, May 4, 2020.
- 24. Weinheimer, Justin Andrew. 2006. Economic Value of Soil Water Enhancement from Brush Removal on the Pedernales Watershed. Agricultural and Applied Economics. Texas Tech University Thesis: Lubbock.
- 25. Wilcox, Bradford P., M. Keith Owens, William Dugas, Darrell N. Ueckert and Charles R. Hart. 2006. "Shrubs, Streamflow and the Paradox of Scale," *Hydrological Processes*. Volume 20: 3245-3259.
- 26. Wilcox, Bradford P. and Yun Huang, 2010. "Woody Plant Encroachment Paradox: Rivers Rebound as Degraded Grasslands Convert to Woodlands," *Geophysical Research Letters*. Volume 37, doi:10.1029/2009GL041929.
- 27. Woodruff, Jr. C.M., William M. Marsh, and L.P. Wilding, 1992. "Junipers, Grassland, and Historical Land Use Change in the Texas Hill Country Uplands, Central Texas," Soil, Landforms, Hydrologic Processes, and Land-Use Issues-Glen Rose Limestone Terrains, Barton Creek Watershed, Travis County, Texas. Society of Independent Professional Earth Scientists Central Texas Chapter: Austin.
- Zhou, Guoqing, Jingjin Huang, Xiaodong Tao, Qingli Luo, Rongting Zhang and Zaihua Liu, 2015. "Overview of 30 Years of Research on Solubility Trapping in Chinese Karst," *Earth Science Reviews*. Volume 146: 183-194.