ISAC Meeting – June 14-16, 2011

ACTION OR INFORMATION ITEM

SPONSOR (Name/Email): Joe DiTomaso

TOPIC: Controlling invasive *Tamarix* through water management to promote desirable riparian communities

SPEAKER (Name/Emai): Dr. Anna Sher / asher@du.edu

1. DESCRIPTION OF AGENDA ITEM:

Controlling invasive *Tamarix* through water management that promotes desirable riparian communities

2. WHY IS THIS ITEM IMPORTANT TO NISC / ISAC? HOW IS IT RELATED TO THE NATIONAL INVASIVE SPECIES MANAGEMENT PLAN?

Tamarix is currently the third most dominant woody species in the West, acting as both a symptom and cause of dramatic ecosystem change, affecting both native organisms and ecosystem services.

3. PREVIOUS ACTIONS TAKEN BY NISC / ISAC ON THIS ITEM:

Passage of HR2727: ''Salt Cedar and Russian Olive Control Demonstration Act''.

4. ACTION REQUESTED OF NISC / ISAC:

Support funding for water management to control *Tamarix* via revegetation. This will require addressing land management issues that disfavored natives and allowed *Tamarix* to establish and spread, and is critical in the context of providing habitat for endangered species, including the listed southwestern willow flycatcher.

5. ALTERNATIVES:

If desirable vegetation isn't promoted through managing hydrology, *Tamarix* and/or other invasive species will remain dominant and are likely to re-invade removal sites; ecosystems are likely to continue to be degraded, even leading to extinction of sensitive species.

6. ATTACHMENTS:

Tamarix spp (tamarisk, saltcedar) are woody invaders of riparian (river and lakeside) habitat, associated with increased flooding frequency due to channel narrowing (Blackburn et al. 1982), increased fire risk (Busch 1995, Busch and Smith 1995, Ellis et al. 1998), decreased or altered plant and/or animal diversity (Brotherson and Winkle 1986, Busch and Smith 1995, Ellis 1995, Bailey et al. 2001, Kennedy et al. 2005), salinization of soils (Brotherson and Field 1987, Busch and Smith 1995, Zamora-Arroyo *et al.* 2001), and increased evapotranspiration (Sala *et al.* 1996, Cleverly et al. 1997). While tamarisk clearly contributes to these problems, it is also evident that drought and salinity caused by water and land management choices makes habitat available for this species, which is actually a poor competitor as a seedling (Sher et al 2000, Sher and Marshall 2003). Because of this, we have seen that it is possible to control increased spread of *Tamarix* through promotion of native species through hydrology management, particularly overbank flooding (Sher et al 2002).

Promoting natives is a critical element of riparian restoration, to achieve general restoration goals as well as to prevent re-invasion (Shafroth et al 2008, Sher et al 2010). Promoting native species has become an especially

urgent issue in the context of unintended *Tamarix* control with a biocontrol beetle in endangered bird habitat. Without the immediate promotion of replacement species, birds such as the endangered southwestern willow flycatcher are in critical danger (U.S. Fish and Wildlife Service, 2002).

Millions of dollars are currently being spent on *Tamarix* removal projects, due to the dire need of repair of these ecosystems for improved habitat, recreation, agricultural, and rangeland use; many of these projects have been very successful (Nissen et al 2010). However, generally due to funding and prioritization limitations, it is common for there to be little to no adaptive management and/or effort made to revegetate the site. Without promoting desirable species, surveys of tamarisk removal sites have shown little recovery over time (Harms and Heibert 2006). Research has shown that hydrology is one of the most important elements in promoting healthy riparian plant communities via both passive and active revegetation, however it is also often one of the most inaccessible aspects for the average land manager (Bay and Sher 2008). It is imperative, therefore, that funding and directives be made available to allow restoration projects to do what is needed to address underlying issues that allowed tamarisk to become a problem; in short, to motivate agencies that manage local hydrology, as well as providing resources for active revegetation of tamarisk removal sites and long-term monitoring to ensure restoration success and protection of endangered species.

A selection of citations by presenter:

Bay, R.F. and **A.A. Sher**. 2008. Success of Active Revegetation after Tamarix spp. Removal in Riparian Ecosystems of the Southwestern USA: A Quantitative Assessment of Past Restoration Projects. Restoration Ecology 16 113-128.

Shafroth, P. B. , V. B. Beauchamp, M. K. Briggs, K. Lair, M. L. Scott, and **A. A. Sher**. 2008. Planning riparian restoration in the context of Tamarix control in western North America. Restoration Ecology 16 97-112.

Sher, A.A. and D. L. Marshall. 2003. Competition between native and exotic floodplain tree species across water regimes and soil textures. American Journal of Botany 90: 413-422.

Sher, A.A., D.L. Marshall, and J. Taylor. 2002. Spatial partitioning within southwestern floodplains: patterns of establishment of native *Populus* and *Salix* in the presence of invasive, non-native *Tamarix*. Ecological Applications 12:760-772.

Sher, A. A. ,D. L. Marshall., and S.A. Gilbert. 2000. Competition between native *Populus deltoides* and invasive *Tamarix ramosissima* and the implications of reestablishing flooding disturbance. Conservation Biology 14:1744-1754.

Sher, A.A., K. Lair, M. DePrenger-Levin, and K. Dohrenwend. 2010 Best Management Practices for Revegetation in the Upper Colorado River Basin. Denver Botanic Gardens, Denver, CO. pp 55.

Tamarisk Best Management Practices in Colorado Watersheds. 2010. S. Nissen, **A. Sher**, and A. Norton, eds. Colorado State University, Ft. Collins, CO. pp 77.

(full citations list available upon request if needed)