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New book chapter reviewing Mojave Desert revegetation practices is forthcoming

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New Book Chapter Reviewing Mojave Desert Revegetation Practices is Forthcoming

- Scott Abella

I was invited to write a chapter for a forthcoming book on Arid Environments to be published by Nova Science Publishers. This book is anticipated to appear in late 2008 or early 2009, and we will be able to provide additional details about the entire book at that time. I co-authored our chapter on revegetation with Alice Newton, Vegetation Manager at Lake Mead National Recreation Area. We systematically reviewed 23 published studies of planting or seeding native species in the Mojave Desert. We used this published literature to address the following questions:

- Which species have been most commonly and effectively planted or seeded?
- Which treatments (e.g., grazing protection) have increased plant establishment?
- What are the relative performances of planting and seeding, and are these species specific?

We found that 15 planting studies assessed a total of 41 species, 36 of them shrubs. None of the nine species planted in ≥ 3 studies avoided a complete failure (0% survival) in one or more treatments in one or more studies, but several species (e.g., *Larrea tridentata*, *Atriplex* spp.) consistently exhibited high ($> 50\%$) survival even in years of below-average precipitation. Fencing, shelters, and irrigation increased survival of some species, but these treatments require cost/benefit analyses. Though seeding frequently has been discouraged relative to planting, seeding success has been species and situational specific. For example, *Baileya multiradiata*, *Phacelia parishii*, *Atriplex polycarpa*, *Penstemon palmeri*, and *Penstemon bicolor* became established at densities ranging from 3-9 plants/m² in individual seeding studies.

Of the 19 publications covering the 23 studies included in our review, 47% were published prior to 1988, only 16% since 2000, and none after 2001. This highlights a need to rejuvenate revegetation research and the defensible monitoring of operational revegetation projects in the Mojave Desert. For instance, most of the published studies took place prior to extensive, relatively recent desert wildfires. None of the research we systematically reviewed dealt with revegetating desert burns, which is currently a priority challenge for desert managers.

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JTNP post-fire ecosystem recovery research

Burned Area Revegetation

Also in July 2006, the Western Complex Fire burned 1,525 acres in higher elevation shrub and woodland communities in the western portion of the park. To revegetate denuded burned over building sites in this area, several thousand native plants, propagated in JTNP's Center for Arid Lands Restoration (top and right photos), will be outplanted this fall. Revegetation will consist of early and late successional plant communities to compare the effectiveness of these community types in promoting post-burn recovery and/or resilience to invasive species.



Top: Jean Graham, nursery manager for JTNP's Center for Arid Land's Restoration, collecting seeds for burned area revegetation. Right: Mojave desert plants ready for outplanting in JTNP's Center for Arid Land's Restoration.