

# Joint Fire Science Program Knowledge Exchange Publication List for Resource Managers

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## **MOJAVE AND SONORAN DESERT REGION**

The following list of publications has been selected to identify useful and applicable scientific resources relating to the ecology and management of fire in the Mojave and Sonoran Deserts. Please communicate any edits or additions to Matt Brooks (contact info above). Contact information for many of the researchers whose work is included in this bibliography is included on page 6.

# **Fire History**

Brooks ML and JR Matchett. 2006. Spatial and temporal patterns of wildfires in the Mojave Desert. 1980-2004. Journal of Arid Environments 67,148-164.

McKinley RA, ML Brooks, and RC Klinger. 2011. Fire History of Southern Nevada: U.S. Geological Survey, Cooperator Publication. Reston, Virginia.

Rogers, GF and MK Vint. 1987. Winter precipitation and fire in the Sonoran Desert. Journal of Arid Environments 13:47-52.

Schmid, MK, and GF Rogers. 1988. Trends in fire occurrence in the Arizona upland subdivision of the Sonoran Desert, 1955 to 1983. The Southwestern Naturalist 33:437–444.

#### Fire Effects and Postfire Succession

Abella, SE. 2009. Post-fire plant recovery in the Mojave and Sonoran Deserts of western North America. Journal of Arid Environments 73, 699-707.

Abella, SE. 2010. Disturbance and plant succession in the Mojave and Sonoran deserts of the American southwest. International Journal of Environmental Research and Public Health 7:1248-1284.

Alford, EJ, JH Brock, and GJ Gottfried. 2005. Effects of fire on Sonoran Desert plant communities. Pages 451-454 in GJ Gottfried, BS Gebow, LG Eskew, CB Edminster (comps.). Connecting Mountain Islands and Desert Seas: Biodiversity and Management of the Madrean Archipelago II. Proceeding RMRS-P-36. Fort Collins, CO.

Allen, EB, RJ Steers and SJ Dickens. *In press*. Impacts of fire and invasive species on desert soil ecology. Rangeland Ecology and Management.

Brooks ML. 2002. Peak fire temperatures and effects on annual plants in the Mojave Desert. Ecological Applications 12,1088-1102.

Brooks, ML. *In press.* Effects of high fire frequency in creosote bush scrub vegetation of the Mojave Desert International Journal of Wildland Fire.

- Brooks, ML and TC Esque. 2006. Fire effects on the desert tortoise (*Gopherus agassizii*). Page 411 in NG Sugihara, JW van Wagtendonk, KE Shaffer, J Fites-Kaufman, and AE Thode, (eds). Fire in California's Ecosystems The University of California Press, Berkeley.
- Brooks ML and JR Matchett. 2003. Plant community patterns in unburned and burned blackbrush (*Coleogyne ramosissima*) shrublands in the Mojave Desert. Western North American Naturalist 63, 283-298.
- Brown DE. 1984. Fire and changes in creosote bush scrub on the western Colorado Desert, California. M.S. thesis, University of California, Riverside.
- Brown, DE and RA Minnich. 1986. Fire and creosote bush scrub of the western Sonoran Desert, California. American Midland Naturalist 116:411–422.
- Busch, DE and SD Smith. 1992. Fire in a riparian shrub community: postburn water relations in the *Tamarix-Salix* association along the lower Colorado River. Pages 52–55 in WP Clary, ME Durant, D Bedunah, and CL Wambolt (comp.), Proceedings on the ecology and management of riparian shrub communities. USDA-FS GTR-INT-289.
- Callison J, JD Brotherson, JE Bowns. 1985. The effects of fire on the blackbrush (Coleogyne ramosissima) community of southwestern Utah. Journal of Range Management 38, 535–538.
- DeFalco, LA, TC Esque, SJ Scoles-Sciulla, and J Rodgers. 2010. Desert wildfire and severe drought diminish survivorship of the long-lived Joshua tree (*Yucca brevifolia*; Agavaceae). American Journal of Botany 97:243-250.
- Esque, TC, JP Kaye, SE Eckert, LA DeFalco, and CR Tracy. 2010. Short-term soil inorganic N pulse after experimental fire alters invasive and native annual plant production in a Mojave Desert shrubland. Oecologia 164:253-263.
- Esque, TC, CR Schwalbe, LA DeFalco, RB Duncan, and TJ Hughes 2003. Effects of wildfire on desert tortoise (*Gopherus agassizii*) and other small vertebrates. The Southwestern Naturalist. 48:103–111.
- Lei SA. 1999. Postfire woody vegetation recovery and soil properties in blackbrush (Coleogyne ramosissima) shrubland ecotones. Journal of the Arizona-Nevada Academy of Science 32, 105–115.
- Minnich RA 1995. Wildland fire and early postfire succession in Joshua tree woodland and blackbrush scrub of the Mojave Desert of California. San Bernardino County Museum Association Quarterly 42, 99–106.
- O'Leary JF and RA Minnich. 1981. Postfire recovery of creosote bush scrub vegetation in the western Colorado Desert. Madroño 8, 61-66.
- Steers, RJ and EB Allen. *In press*. Are desert annual plants resilient to fire in creosote bush scrub? In N Jensen (ed.). California Plant Conservation: Strategies and Solutions. California Native Plant Society, Sacramento.
- Steers, RJ and EB Allen. *In press*. Native annual plant response to fire: an examination of invaded, 3 to 29 year old burned creosote bush scrub from the western Colorado Desert. USDA Forest Service General Technical Report RMRS-GTR-, Fort Collins, Colorado, USA.
- Tratz, WM 1978. Postfire vegetational recovery, productivity and herbivore utilization of a chaparral-desert ecotone. M.S. Thesis, Cal. State University, Los Angeles. 74 p.
- Tratz, WM and RJ Vogl. 1977. Postfire vegetational recovery, productivity, and herbivore utilization of a chaparral-desert ecotone. Pages 426-430 in HA Mooney and CE Conrad (eds.). Proceedings of the symposium on the environmental consequences of fire and fuel management in Mediterranean ecosystems. 1-5 August 1977. Palo Alto, Calif. US. For. Serv. Gen. Tech. Rep. WO-3.

Wangler, M and RA Minnich. 1996. Fire and succession in pinyon-juniper woodlands of the San Bernardino Mountains. Madroño 43:493–514.

# **Ecological Effects of Fire Suppression Actions**

Duck, TA, TC Esque, and TJ Hughes. 1997. Fighting wildfires in desert tortoise habitat, considerations for land managers. Proceedings for symposium on fire effects on rare and endangered species habitats conference. November 13–16, 1995. International Wildland Fire Association, Coeur D'Alene, ID.

## **Postfire Management**

- Abella SE, J Gunn, ML Danielas, JD Springer, and SE Nyoka. 2009. Using a diverse seed mix to establish native plants on a Sonoran Desert burn. Native Plants 10:21-31.
- Brooks, ML, JR Matchett and C Deuser. 2006. Technical support for Ash Meadows National Wildlife Refuge BAER activities on the Longstreet Fire of 2004. Technical report prepared for the US Fish and Wildlife Service, Ash Meadows National Wildlife Refuge, 10 pp.
- Eckert, SE, TC Esque, LA DeFalco and DF Haines. 2001. Evaluating options for revegetation following a catastrophic fire in a pinyon-juniper community at Grand Canyon / Parashant National Monument, on the Arizona Strip of Mohave County, Arizona. Report delivered to the USDI Bureau of Land Management, Arizona Strip District, St. George, Utah.
- Scoles, SJ, TC Esque, LA DeFalco, SE Eckert and DF Haines. 2002. Evaluating options for revegetation following a catastrophic fire in a Pinyon-Juniper community at Grand Canyon/Parashaunt National Monument, Arizona. Report delivered to USDI-Bureau of Land Management, Arizona Strip District, St. George, Utah.
- Steers, RJ and EB Allen. 2010. Post-fire control of invasive plants promotes native recovery in a burned desert shrubland. Restoration Ecology 18:334-343.
- Steers, RJ, JL Funk and EB Allen. *In press*. Can resource-use traits predict native versus exotic plant success in carbon amended soils? Ecological Applications. [doi:10.1890/09-2345.1].

#### Fire and Invasive Plants

- Brooks, ML. 1998. Ecology of a biological invasion: alien annual plants in the Mojave Desert. Ph.D Dissertation, University of California, Riverside. 186 pages.
- Brooks ML. 1999. Alien annual grasses and fire in the Mojave Desert. Madroño. 46,13-19.
- Brooks, ML. 2000. *Bromus madritensis* subsp. *rubens* (L.) Husnot. Pages 72-76 in C. Bossard, M. Hoshovsky, and J. Randall (eds.). Invasive Plants of California 's Wildlands. University of California Press. Berkeley, CA.
- Brooks, ML. 2000. *Schismus arabicus* Nees, *Schismus barbatus* (L.) Thell. Pages 287-291 *in* C. Bossard, M. Hoshovsky, and J. Randall (eds.), Invasive Plants of California's Wildlands. University of California Press. Berkeley, CA.
- Brooks, ML. 2001. Fire and invasive plants in the wildlands of California. Noxious Times 3(4):4-5. Brooks ML and KH Berry. 2006. Dominance and environmental correlates of alien annual plants in the Mojave Desert. Journal of Arid Environments 67:100-124.
- Brooks ML and JC Chambers. *In press*. Resistance to invasion and resilience to fire in desert shrublands of North America. Rangeland Ecology and Management.
- Brooks, ML and TC Esque. 2000. Fire and exotic grasses changing Mojave's face. U.S. Department of the Interior. People, Land & Water (July/August):25.
- Brooks, ML and TC Esque. 2002. Alien annual plants and wildfire in desert tortoise habitat: status, ecological effects, and management. Chelonian Conservation and Biology 4,330-340.

- Brooks, ML and RA Minnich. 2006. Ecological effects of non-native annual grasses. Page 409 in NG Sugihara, JW van Wagtendonk, J Fites-Kaufman, KE Shaffer, and AE Thode (eds.). Fire in California ecosystems. University of California Press, Berkeley.
- Brooks ML and DA Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1-14 in KEM Galley and TP Wilson (eds.). Proceedings of the invasive plant workshop: the role of fire in the control and spread of invasive species. Tall Timbers Research Station: Tallahassee.
- Dudley, TL and ML Brooks. 2006. Saltcedar invasions can change riparian fire regimes. Page 409 in NG Sugihara, JW van Wagtendonk, J Fites-Kaufman, KE Shaffer, and AE Thode (eds.). Fire in California's ecosystems. University of California Press, Berkeley.
- Dudley, TL, CJ DeLoach, JE Lovich, and RI Carruthers. 2000. Saltcedar invasion of western riparian areas: impacts and new prospects for control. Pages 345–381 in RE McCabe and SE Loos (eds.). Transactions of the 65th North Amererican Wildlife Management Institute. Washington, DC.
- Esque, TC and CR Schwalbe. 2002. Non-native annual plants and their relationships to fire and biotic change in Sonoran desertscrub. Pages 165–194 in B Tellman (ed.), Invasive exotic species in the Sonoran region. Arizona-Sonora Desert Museum and the University of Arizona Press, Tuscon, AZ.
- Klinger, RC, ML Brooks and JM Randall. 2006. Fire and invasive plant species. Pages 499-519 in NG Sugihara, JW van Wagtendonk, J Fites-Kaufman, KE Shaffer and AE Thode (eds.). Fire in California's ecosystems. University of California Press, Berkeley.
- Robinson, TW. 1965. Introduction, spread and areal extent of saltcedar (*Tamarix*) in the western states. US Geological Professional Paper 491-A.
- Steers RJ. 2008. Invasive plants, fire succession, and restoration of creosote bush scrub in southern California. Dissertation, University of California. Riverside, CA.

#### **Other Fire Documents**

- Bates, PA. 1984. The role and use of fire in blackbrush (*Coleogyne ramosissima* Torr.) communities in California. Doctoral dissertation, University of California, Davis. 56 p.
- Brooks, ML, TC Esque and T Duck. 2007. Fuels and fire regimes in creosotebush, blackbrush, and interior chaparral shrublands. Page 97-110 in S Hood nad M Miller (eds.). Fire ecology and management of the major ecosystems of southern Utah. USDA Forest Service, Rocky Mountain Research Station, General Technical Report RMRS-GTR-202. Fort Collins, CO.
- Brooks ML and Minnich RA. 2006. Southeastern deserts bioregion. Pages 391-414 in NG Sugihara, JW van Wagtendonk, KE Shaffer, J. Fites-Kaufman, AE Thode (eds.). Fire in California's Ecosystems. University of California Press, Berkeley.
- Brooks, ML. 2009. Blackbrush shrublands: fire conditions and solutions in the Mojave Desert. Joint Fire Science Program, Fire Science Brief 53:1-6.
- Croft, AR. 1950. Inspection of black brush burn, May 12, 1950. Memorandum to the unpublished report, Bureau of Land Management, State Supervisor for Nevada, 6 p. plus photographs.
- Dimock, DE. 1960. Report on blackbrush burn observations, April 18-20, 1960. Memorandum to the Bureau of Land Management, State Supervisor for Nevada. 6p.
- Esque, TC, AM Búrquez, CR Schwalbe, TR VanDevender, MJM Nijhuis, and P Anning. 2002. Fire ecology of the Sonoran desert tortoise. Pages 312–333 in The Sonoran desert tortoise: natural history, biology, and conservation. Arizona- Sonora Desert Museum and the University of Arizona Press, Tuscon, AZ.
- Holmgren RC. 1960. Inspection tour of old blackbrush burns in BLM District N-5, southern Nevada. USDA Forest Service, Intermountain Forest and Range Experiment Station, Reno Research Center, Unpublished report. Reno, NV.

- Humphrey, RR. 1974. Fire in deserts and desert grassland of North America. Pages 365–401 in T.T. Kozlowski and C.E. Ahlgren (eds.), Fire and ecosystems. Academic Press, New York.
- Jenson, DE, ME Buzan, DE Dimock and R. Holmgren. 1960. Report on field examinations, blackbrush burns, Las Vegas Grazing District (Nev. 5), April 1960. Unpublished report, Bureau of Land Management, Nevada State Office. 10 p.
- McPherson, GR. 1995. The role of fire in the desert grasslands. In: MP McClaran and TR Van Devender (eds.). The Desert Grassland. Tucson, AZ: University of Arizona Press: 130-151. Minnich, R.A. 1988. The biogeography of fire in the San Bernardino Mountains of California. University of California Publications in Geography 28:1–121.
- Minnich, RA. 2003. Fire and dynamics of temperate desert woodlands in Joshua Tree National Park. Report submitted to the National Park Service, Joshua Tree National Park. Contract number P8337000034/0001. 32 p.
- White, LD. 1968. Factors affecting the susceptibility of creosotebush (*Larrea tridentata* [D.C.] Cov.) to burning. Doctoral dissertation, University of Arizona.

## **Other Publications Containing Relevant Fire Information**

- Belnap, J, RH Webb, ME Miller, DM Miller, LA DeFalco, PA Medica, ML Brooks, TC Esque, and D Bedford. 2008. Monitoring Ecosystem Quality and Function in Arid Settings of the Mojave Desert: U.S. Geological Survey Scientific Investigation Report 2008-5064, 119 pages.
- Bradley, WG and JE Deacon. 1967. The biotic communities of southern Nevada. Nevada State Museum Anthropological Papers. 13: 202–295.
- Bowns, JE. 1973. An autecological study of blackbrush (*Coleogyneramosissima* Torr.) in southwestern Utah. Doctoral dissertation, Utah State University, Logan. 115 p.
- Bowns, JE and NE West. 1976. Blackbrush (*Coleogyne ramosissima* Torr.) on southwestern Utah rangelands. Research Report 27. Logan, UT: Utah State University, Utah Agricultural Experiment Station. 27 p.
- Búrquez, AM, AY Martinez, M Miller, K Rojas, MA Quintana and D Yetman. 1996. Mexican grasslands and the changing arid lands of Mexico: an overview and a case study in northwestern Mexico. Pages 21–32 in B Tellman, DM Finch, E Edminster, and R Hamre (eds.). The future of arid grasslands: identifying issues, seeking solutions. Proceedings RMRS-P-3. U.S. Forest Service, Rocky Mountain Station, Fort Collins, CO.
- Busch, DE and SD Smith. 1995. Mechanisms associated with decline of woody species in riparian ecosystems of the southwestern U.S. Ecol. Monogr. 65:347–370.
- Carmichael, RS, OD Knipe, CP Pase, and WW Brady. 1978. Arizona chaparral: plant associations and ecology. Research Paper RM-202. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 16 p.
- Dalton, PD. 1962. Ecology of the creosotebush *Larrea tridentata* (D.C.) Cov. Doctoral Dissertation, University of Arizona.
- Keeley, JE. 2000. Chaparral. Pages 203-253 in MG Barbour and WD Billings (eds.). North American terrestrial vegetation, 2nd edition. Cambridge, UK: Cambridge University Press: 203-253.
- Leopold, A. 1924. Grass, brush, timber and fire in southern Arizona. Journal of Forestry 22: 1-10. Lovich JE and D Bainbridge. 1999. Anthropogenic degradation of the southern California desert ecosystem and prospects for natural recovery and restoration. Environmental Management 24, 309-326.
- Minnich, RA and RG Everett. 2001. Conifer tree distributions in southern California. Madrono 48:177–197.

Pase, CP and DE Brown. 1994. Interior chaparral. Pages 95-99 in DE Brown (ed.). Biotic communities: Southwestern United States and Northwestern Mexico. Salt Lake City, UT: University of Utah Press.

United States Fish and Wildlife Service. 1994. Desert Tortoise (Mojave Population) Recovery Plan. United States Fish and Wildlife Service: Portland.

Webb RH, J Belnap, and KA Thomas. 2009. Natural recovery from severe disturbance in the Mojave Desert. Pages 343-377 in RH Webb (ed.). The Mojave Desert: Ecosystems Processes and Sustainability. Springer, Heidelberg.

Webb, RH, JW Steiger and RM Turner. Dynamics of Mojave Desert assemblages in the Panamint Mountains, California. Ecology. 68: 478-490.

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