

Evidence of drought-induced stress on biotic crust moss in the Mojave Desert

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Abstract Widespread bleaching (chlorosis) of patches of the dominant desert moss *Syntrichia caninervis* was observed across the northern Mojave Desert in the winter of 2002–03 following an extended period of drought interrupted by small rain events. These rain events were more frequent during the warmer months just prior to the appearance of chlorosis. We hypothesized that the patches were experiencing physiological stress due to partial hydration/rapid dehydration cycling during the warmer months. Compared to unbleached (green) shoots, chlorotic shoots exhibited significantly reduced photochemical performance, photosynthetic pigments, regenerational potential, sex expression, and lower rates of growth and productivity. However, age specific analyses revealed older leaves from chlorotic shoots did not show the typical decline in vigour, suggesting that stress may primarily affect younger tissues. It is concluded that this chlorosis phenomenon is indicative of physiological stress presently occurring in the Mojave Desert, and is likely due to exposure to a higher than normal frequency of light rain events (<3.5 mm), which serve to partially hydrate moss patches that then rapidly desiccate.