ENVIRONMENTAL CHARACTERISTICS OF GREAT BASIN AND MOJAVE DESERT SPRING SYSTEMS

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We report on the environmental characteristics at 2,256 Great Basin and Mojave Desert springs that were inventoried from the late 1980s into 2013. These springs ranged widely in size, water chemistry, and vegetative cover. Median estimated discharged was less than 10 l/min, springbrook length was less than 50 m, water depth was less than 3 cm, and median springbrook width was less than 100 cm. Water chemistry varied from cold to very hot, from low to very high electrical conductance (EC) and dissolved oxygen (DO) concentrations, and Ph from moderately low to moderately high. The environment at most springs was relatively moderate with median temperatures near ambient, relatively high EC, pH slightly higher than neutral, and DO was moderate. Median emergent and bank cover generally exceeded 50 and 68 percent, respectively, and fines dominated substrate composition in most springs. Sand, gravel, cobbles, and boulders were relatively scarce.

Approximately 3 percent the springs were disturbed by natural factors, and evidence of human disturbance was at approximately 83 percent of springs. by either diversion, horse, burro, or cattle use, recreation, or dredging, and many springs were degraded by several of these uses Approximately 65 percent were moderately or highly disturbed. Degraded springs were most common on US Bureau of Land Management land, followed by private lands, US Forest Service, then U.S. Fish and Wildlife Service.

Changes in the condition of 265 springs over approximately 20 years found that condition improved in 16 percent, was unchanged in 40 percent, and more degraded in 44 percent of springs. Furthermore, extirpation of 82 populations of 49 rare taxa, and seven extinctions were documented from these springs.

Clearly, existing management is not providing for the ecological health of these systems and new strategies are needed to change an increasing downward trend.