WILDLIFE INTERACTIONS AT GREAT BASIN SPRINGS

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Water both limits and constrains life and is essential for completion of life cycles for a host of organisms. In arid and semi-arid environments, springs provide free or drinking water to wildlife. Availability of drinking water can be a limiting factor for some wildlife species. Large exotic species, such as the horse (Equus caballus), may have a competitive advantage over smaller native species and could exclude them from access to limited water resources. For the past 10 years, we've used remote cameras placed at springs in Utah's Great Basin desert to test hypotheses about how wildlife interact with other species at water sources. Wildlife detected in imagery taken at springs include 40 species of birds and 13 species of mammals. Of the images of mammals, 79% contained horses. Horses were associated with decreased richness and diversity of native species at water sources. Furthermore, native species had fewer visits and spent less time at water sources frequented by horses. For the two native ungulates (mule deer, Odocoileus hemionus and pronghorn, Antilocapra Americana) in our study area, we also found that both species used water sources less often where horse activity at water sources was high, indicating that spatial avoidance occurred. Further, we observed significant differences in peak arrival time for pronghorn, but not mule deer at horse-occupied sites versus sites where horses were absent or uncommon, indicating that temporal avoidance may be more important for pronghorn than mule deer. Our findings indicate that feral horses can further constrain access to an already limited resource for native species in a semi-arid environment. These findings form the basis for a new initiative to sample several hundred springs in Utah's west desert and assess their condition.