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WINTER DIET OF MONTEZUMA QUAIL IN ARIZONA AND NEW MEXICO

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ABSTRACT

Investigating the diet composition of Montezuma quail (*Cyrtonyx montezumae*) is fundamental for unveiling how food resources limit the species' population size and may provide relevant tools for their harvest and habitat management. The objective of this research was to determine the composition and geographic variation of the winter diet of the Montezuma quail in Arizona and New Mexico, USA, from quail crops harvested during the hunting seasons of 2008–2017. In addition, we used beta regression analyses to determine the effect of environmental factors and ecological variables (annual mean precipitation, annual mean temperature, landscape diversity, diet diversity, time of hunt, longitude, latitude, and elevation) on Montezuma quail diet composition. We found that acorns (*Quercus* spp.) and sedge rhizomes (*Cyperus fendlerianus*) are the most frequent food items of Montezuma quail in Arizona and New Mexico, respectively, followed by tepary beans (*Phaseolus acutifolius*), woodsorrel tubers (*Oxalis* spp.) and insects in both states. Individual crop wet mass is positively associated with time of day during winter. Geographic variation in Montezuma quail diet composition in Arizona and New Mexico was associated with mean annual precipitation for acorns and with geographic variation in mean annual temperature for rhizomes and tubers of sedge (*Cyperus* spp.). Geographic variation of other food items was not associated with those environmental factors. These functional relationships between the species' diet and environmental factors suggest that Montezuma quail preference towards these two principal food items is subject to climatic control. Therefore, warmer and drier environments in the southwestern United States and northern Mexico may affect the species' distribution through changes in food availability.

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Key words: Arizona, *Cyrtonyx montezumae*, foraging, Montezuma quail, New Mexico, winter diet

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