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COMPOSITION OF MONTEZUMA QUAIL'S DIET IN ARIZONA, NEW MEXICO, AND TEXAS

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ABSTRACT

The Montezuma quail (*Cyrtonyx montezumae*) is a popular game bird and an indicator species of oak-pine savannas in the northern part of its range. In Arizona and New Mexico, USA, robust populations allow for a hunting season from mid-November through mid-February. However, there is no open hunting season for this quail in Texas, USA. Data on the Montezuma quail's diet can provide new information and improve management of the species. Our objective was to analyze the diet composition of the Montezuma quail in Arizona, New Mexico, and Texas. Specimens were collected by hunters in Arizona and New Mexico during 2016–2020 seasons and by researchers during 2018–2020 winter and spring seasons in Texas. We estimated the diet composition by macrohistological analysis of the collected quail crops. We found a high variety of food items: 178 items or morphospecies in crops ($n = 175$), from which 110 and 66 items were of plant and animal origin, respectively, and 2 unidentified items. We found an average (\pm standard error) of 5.89 ± 0.42 items/crop (range = 0–22) in Arizona ($n = 107$) samples, 4.15 ± 0.99 items/crop (range = 1–13) in New Mexico ($n = 13$), and 4.38 ± 0.40 items/crop (range = 1–12) in Texas ($n = 55$). Winter diet of Montezuma quail in Arizona was mainly represented by bulbs of *Oxalis* spp. (35.22% of dry weight), bulbs and rhizomes of *Cyperus* spp. (30.92%), acorns (*Quercus* spp.; 7.17%), and tepari beans (*Phaseolus acutifolius*; 6.50%). Winter diet in New Mexico consisted mainly of bulbs of *Cyperus* spp. (64.13%), beans of *Macroptilium* spp. (15.82%), and *Panicum hallii* grains (10.11%). In Texas, winter diet consisted mostly of rhizomes and bulbs of *Cyperus* spp. (28.17%), *Rhynchosia senna* beans (22.49%), *P. hallii* grains (19.54%), *Allium* wild onions (8.58%), and *Cylindropuntia imbricata* seeds (4.16%). The Montezuma quail's spring diet in Texas consisted mainly of rhizomes and bulbs of *Cyperus* spp. (61.64%) and bulbs of *Oxalis* spp. (19.46%). The Montezuma quail diet changes in composition and proportion according to the site and season, but bulbs and rhizomes of *Cyperus* spp. are the predominant food items in all 3 states. This work provides novel information about the winter and spring diet of Montezuma quail in Texas. Information about Montezuma quail diet at several temporal and geographic scales will prove to be highly relevant to implement better management and conservation strategies in the northern edge of the species' range.

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

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